## Request List

*The date(Create Date, Approved Date, Check Date) is based on Korean standard time(GMT+9).

| | |
|---|---|
| Created Date | 2012-05-02 08:21 (Korea Time) |
| Requested by | 조한진 (TV CHW팀/주임연구원, 82-31-610-9465) |
| Subject | [Approval-4M]EAY62788701 |
| EDMS Attributes | Retention: 3 Year<br>Security Grade: Internal use (Only)<br>Tag: EAY62788701, 4M |

Component Development Information
Chassis : LA2AC
Model : 32LT560C-UA

Approval type : New () Limit () Revision () 4M (●)
Mutual Approval : No (●) Yes (From: )
Series Approval : No (●) Yes ()

HSMS (RoHS) : Complete (●) Limit Approval () Warranty Approval ()
Reliability test : Needless (●) Need (Test Report No: )
MSL (Semiconductor) : No (●) Yes (Level: )

Class Name : -
Part Number : EAY62788701
Maker : YUYANG D&U CO.,LTD
Specification : :LGP37C-12HPC 90VTO264V 170W 50/60 UL/CSA/SEMKO - YUYANG D&U CO.,LTD
Supplier Window : -
Alternative P/N : None(●) Same P/No() Different P/No:
**Component Design Check: No( ) Yes(●)**
**Approval Sheet Check: No( ) Yes(●)**
* Note : R&D verification is necessary before another model application.

Remarks
4M 승인회람
- 부품 CST 마진 확보(C512 : 100pF→47pF)

★Safety [PL안전부품 List] - PIMS Code [A]
- Power Cord, SMPS Trans, Adaptor, X-Cap, Battery (2차 전지), AL Cap (over 200V), Film Cap (over 1750㎟)
★Safety & Standard [안전부품 & 규격부품 List] - PIMS Code [C]
- Power Cord, SMPS Trans, Adaptor, X-Cap, Battery (2차 전지)
★Standard Parts [안전규격부품 List] - PIMS Code [B]
- Power Cord, SMPS Trans, Adaptor, X-Cap, Power Plug, Y-Capacitor, Power Switch, Fuse, Stand-By Trans, Pho
- Insulation (절연) Resistor, Discharge (방전)Resistor, Fusing Resistor, FBT,CPT, CPT Socket, DY, D-Coil,
- Line Filter, PCB Material, Front / Back-cover Material, Relay(1-2차간), Varistor, PSU(Power supply unit)
★Standard Parts [전파규격부품 List] - PIMS Code [B]
- X-Capacitor, Y-Capacitor, SMPS Trans, Power Plug, Line Filter, Tuner, Saw-Filter, Shield Case, Oscillator, Patte
★Green [유해물질 확인사항]
- This item must meet the standards of LG Electronics for six major substances as designated by RoHS for cor
**★ Component Check List**
**-DC-DC Converter, Crystal, Memory, PDP Filter, LCD/Touch Panel, LVDS Cable/Connector, Harness, Adapt**
**Sub A'ssy, Power Cord**

| Approval Type | Status | Approved Date | Approved by / Comment |
|---|---|---|---|
| Approval | Approved | 2012-05-02 10:39 | 채정병(TV CHW팀/책임연구원)<br>Comment : 확인합니다. |

| | | | | |
|---|---|---|---|---|
| Approval Line | Approval | Approved | 2012-05-02 10:47 | 양동현(TV규격팀/연구원)<br>Comment : 확인합니다. |
| | Approval | Approved | 2012-05-02 13:03 | 노성택(TV규격팀/책임연구원)<br>Comment : 확인합니다. |
| | Approval | Approved | 2012-05-02 13:16 | 신종곤(TV CHW팀/수석연구원)<br>Comment : 확인합니다. |

| | |
|---|---|
| CC | 박걸용 ( TV부품품질보증계 / 기정 )<br>조한진 ( TV CHW팀 / 주임연구원 )<br>조경수 ( HE회로조달1팀 / 과장 )<br>김상훈 ( HE회로구매팀 / 과장 )<br>류영환 ( TV CHW팀 / 주임연구원 ) |
| EDMS Doc Link | |
| Attached Local Files | [Approval-4M]EAY62788701.pdf (22281123 Byte) |

| Scanning | LIB. |
|---|---|
| | |

Safety

RoHS

# SPECIFICATION FOR APPROVAL

- **CUSTOMER : LG Electronics inc.**
- **ITEM : Power Supply Unit.**
- **P/NO**

| | Model Name | Customer | Supplier |
|---|---|---|---|
| LGD FHD | **LGP37C-12HPC** | EAY62788701 | **LGP37C-12HPC** |

- **DATE : 2012. 03. 23**
- **Revision : 1.1**
- **Remark : MP 승인원 (PCB REV 1.0)**

**Producing District : QYY (TING CHENGYANG QINGDAO SHANDONG )**
**(생산지) (중국 청도)**
**KYY (PALTAN-MYEON, HWASUNG-SI)**
**(한국 화성시 팔탄면)**

**★ Safety Standard Parts [안전규격부품 List ]**

Power Cord, Power Plug, X/Y-Capacitor, Power Switch, Fuse, SMPS Trans, Stand-By Trans, Photo coupler, Insulation(절연) Resistor, Discharge(방전) Resistor, Fusing Resistor, FBT.CPT, CPT Socket, DY, D-Coil, Line Filter, PCB Material, Front / Back-cover Material Relay(1-2차간), Varistor, Adapter

**★ EMC Standard Parts [전자규격 부품 List ]**

Power Plug, Line Filter, X-Capacitor, Y-Capacitor, SMPS Trans, Tuner, Saw-Filter, Shield Case, Oscillator, Pattern Change

**★ Green [유해물질 확인사항]**

This item must meet the standards of LG Electronics for six major substances as designated by RoHS for control.

(Cd: 10ppm under, Pb/Hg/Cr+6/PBB/PBDE: 100 ppm under)

YUYANG DNU

**YUYANG DNU CO., LTD**
**488-1, YULAM-LI, PALTAN-MYEON, HWASUNG-SI, KYONGGI-DO, KOREA**
**Tel : +82-31-350-7604, Fax : +82-31-350-7595**

**DOCUMENT NO :**

# Documentation For Approval

| | MODEL NAME | Customer | Supplier |
|---|---|---|---|
| LGD FHD | **LGP37C-12HPC** | EAY62788701 | **LGP37C-12HPC** |

| Written | Checked | Approved |
|---|---|---|
| | | |

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# Revision History

| Rev No. | Contents | Date of approval | Checked | Remark |
|---|---|---|---|---|
| 1.0 | APPLY TO MP (PCB Rev : 1.0)<br>PCB : 12.02.01 | 12. 02. 01 | C. J. BIN | |
| 1.1 | APPLY TO MP (PCB Rev : 1.0)<br>PCB : 12.02.01<br><br>1.Change the Ceramic cap<br>-> Secure margin of IC500 CST.<br>C512 : 100pF -> 47pF | 12. 03. 23 | C. J. BIN | |

# CTQ Management


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| 1 | 2.1.1 Power Factor | 8 |
| 2 | 2.2 Power Output Characteristics | 9 |
| 3 | 2.2.1. Stand by Power Consumption | 9 |
| 4 | 2.3 Inverter Output Characteristics | 10~11 |
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# Specification

# 1. INTRODUCTION

## 1.1 Scope

This approval is the description related to every electrical and structural specifications and reliability For Power Supply Unit LGD : LGP37C-12HPC used on 37 inch LGE LCD TV.

## 1.2 Customers product related items

Product : Power Supply Unit
Part code : LGD EAY62788701

## 1.3 Product name

Product name : LGD LGP37C-12HPC
Revision code : 1.1

# 2. SPECIFICATION

## 2.1 Input Requirements

| | |
|---|---|
| Nominal Input Voltage | AC 100V to AC 240V |
| Input Voltage Variation | AC 90V to AC 264V |
| Input Current | Under 3.5Arms . (at 100Vac & Nominal Load)<br>Under 1.5Arms . (at 240Vac & Nominal Load) |
| Nominal Frequency | 50 / 60 Hz |
| Frequency Variation Range | 47 Hz to 63 Hz |
| Phase | Single |
| Leakage Current | 0.7mA_peak. (100Vac ~ 240Vac) |
| Surge Immunity | ± 4kV / 1000ns / 0˚ to 360˚ |
| Hold-up Time | More than 20ms at 100Vac and maximum output load |
| Lightning Surge | 2kA Normal, Common Mode |
| Inrush Current | 80A zero-peak max<br>At cold start and any specified line, load, and temperature Conditions. |

The power supply efficiency should be more than 80% at the 90Vac maximum load condition, but it meet more than 85% excepted Inverter parts

### 2.1.1 Power Factor

**over than 0.9 at 90 – 264Vac & max load condition**

## 2.2 Power Output Characteristics

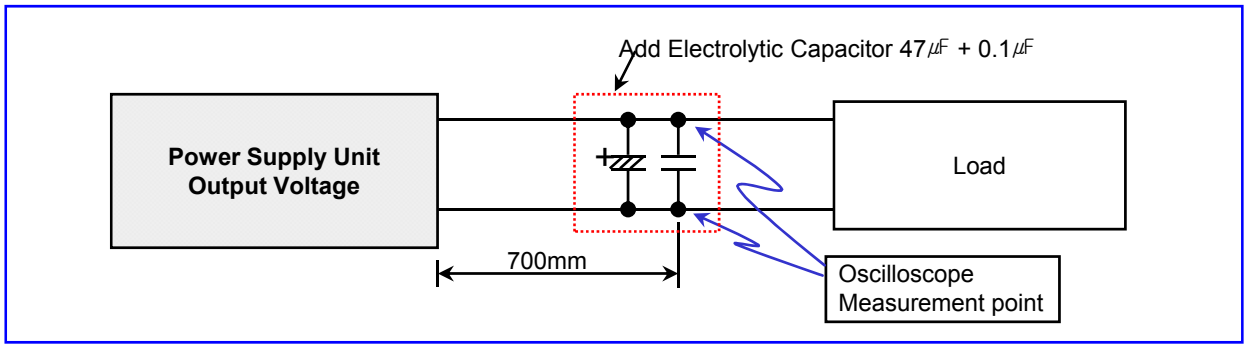
| Output | | Voltage Variable range [V] | Rated Current (Min, Max) [Amean] | Voltage Regulation [V] | Ripple Voltage [mVp_p] |
|---|---|---|---|---|---|
| | 3.5V (STBY) | 3.325V ~ 3.675V | 0.3W (0.04~2.0) (ST-BY Condition) | - | - |
| | | | 2.0 (0.04~2.0) (ON condition) | | 250 mVp_p |
| | 12V | 11.4V ~ 12.6V | 3.0 (0.5~3.0) | ± 5% | 350 mVp_p |
| | 24V | 22.8V ~ 25.2V | 4.0 (0.8~4.0) | ± 5% | 500 mVp_p |

* On Condition : In a moment of Power_ON Signal activated, the current of 3.5V output should be limited within 40mA(Max) at LCD TV condition for stability.
Do not turn “Power_ON” Signal on at the load condition of 3.5V output, more than 40mA.

* Total regulation for each output circuit includes the results of input voltage variation, load variation, warm-up drift and temperature change.

* The following instruments shall be used for measuring ripple noise.
1. Probe having impedance ratio of 1:1.
2. Oscilloscope having frequency characteristic of 100MHz or more.

Test Point : power output each pin




※ Ripple and noise are measured at the end of output cable which are added a 0.1uF ceramic capacitor and 47uF electrolytic capacitor. ( connected parallel )

### 2.2.1 Stand By Power Consumption

| Output Voltage | 3.5V (STBY) | 12V | 24V |
|---|---|---|---|
| Load [A] | 0.015 | Don’t Care (Power-Off) | |
| Wattage [W] | Less than 0.3W @ 15mA Under (230Vac / 50Hz) | | |

## 2.3 Environment Requirement

| | |
|---|---|
| Operating Temperature Range | -10℃ to 40℃<br>(60℃:No Hardware Failure, TV SET Condition) |
| Operating Humidity Range | 30 to 85 % |
| Storage Temperature Range | -25 to 85 deg. |
| Storage humidity Range | 5 to 90 % |
| MTBF (Mean Time Between Failure) | 50,000 hour |
| Cooling Condition | Natural Air |
| Shock | 98 ㎨<br>Shock test consists of pivoting the power supply, from one edge of it's bottom side, on a flat surface<br>(such as wood having thickness of 10mm or more) and allowing the opposite edge to fall from a height of 50mm to this surface.<br>The test is performed three times on each edge of the bottom side of the power supply |

## 2.4 Dielectric Strength Voltage and Insulation Resistance

Safety

Hi-Pot Test (Dielectric withstand voltage)

① Live & Neutral to Secondary : 3.0KVac or 4242Vdc for 1 Minute

→For equipment incorporating both REINFORCED INSULATION and lower grades of insulation, care is taken that the voltage applied to the REINFORCED INSULATION does not overstress Basic INSULATION or SUPPLEMENTARY INSULATION

② Live & Neutral to Secondary GND : 1.5KVac or 2121Vdc / 1Minute. ※ (Cut-off current : 10mA)

→ 1.8KVac for 1 seconds (mass production)

| | |
|---|---|
| Insulation Resistance | Insulation resistance shall be more than 10M ohm (at DC 500V) Between Primary Live, Neutral line and Secondary. |

* Above tests are performed at room temperature in non-condensing atmospheric conditions
* Frame grounds are connected to secondary circuits.

## 2.5 Burn-in

More than 30 minutes at 45℃(±5℃), Normal input voltage.
AC on/off must be test 1 time after burn-in.
80% Load of specification.

## 2.6 Interface

| Appellation | Explanation | Signal Direction | Action |
|---|---|---|---|
| POWER ON | Vcc Circuit ON/OFF | Input | Hi : Vcc ON<br>Low : Vcc OFF |

## 2.7 Product Safety

| | |
|---|---|
| Safety Standards to be applied | Design to meet the requirements as follows<br>UL60950, IEC60950, IEC60065 and 60950 |
| EMI/RFI Standards to be applied | Design to meet the requirements as follows<br>FCC and EN55020, EN55013 Class B<br>with 6dB minimum margin. |

## 2.8 Construction

| | |
|---|---|
| Weight | Less than 437g |
| Unit Size | 162(W) X 195(D) X 23(H) |

## 2.9 Function of protection

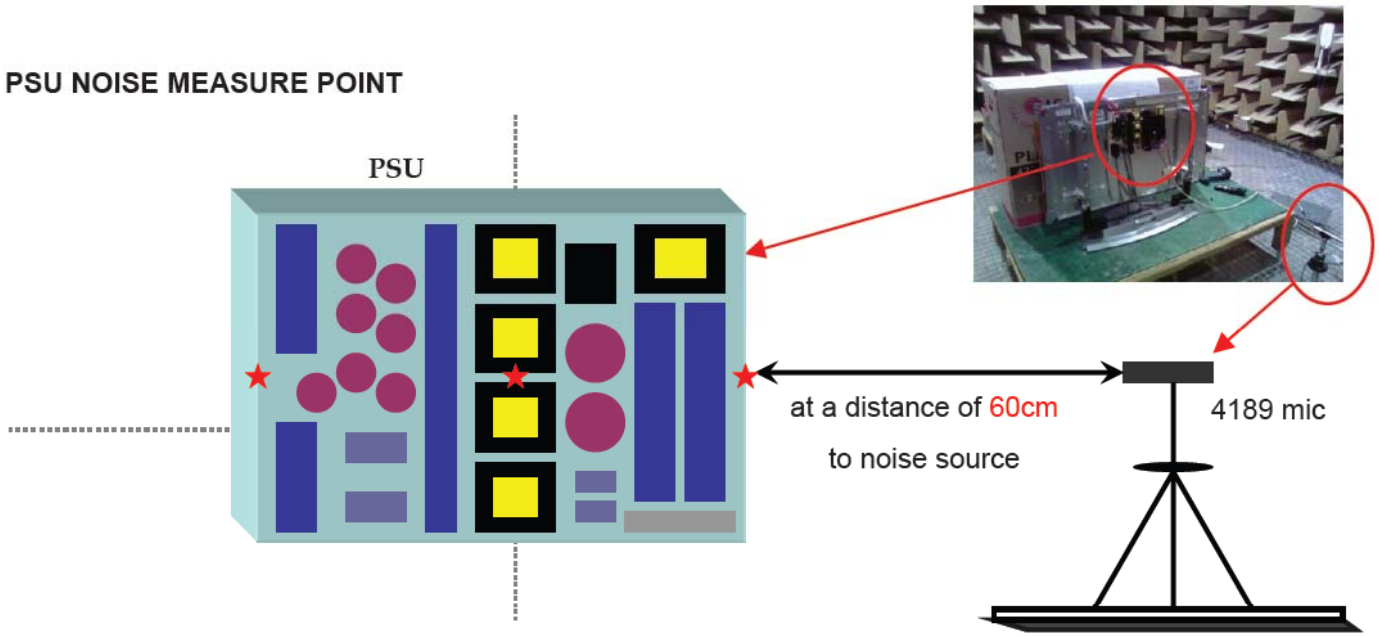
| Protection | Output Circuit | Trip point | | Notes |
|---|---|---|---|---|
| | | Min | Max | |
| Over Current | STBY 3.5V | 4.5A | 7.5A | Auto Restart |
| | 12V | 6.0A | 13.5A | Auto Restart |
| | 24V | 6.5A | 11.0A | Auto Restart |
| Short Circuit | STBY 3.5V | - | - | Auto Restart |
| | 12V | - | - | Auto Restart |
| | 24V | - | - | Auto Restart |

* This Power Supply has above-mentioned protections.
* Short circuit protection between different output terminals is not considered.
* Trip point for over voltage indicates the operating point when the output voltage slowly increases.
* The conditions of Over Current measurement
  Multi output(3.5V,12V,24V) is nominal load state except an over current measurement.

## 2.10. Sound Noise Characteristics.

PSU Noise Specification
22.5 dB(a) / 20.u Pa 2.0E-5 Pa
(1/1 octave, A-weighting, to 1khz ~ 16khz Total overall

Measure Location : Anechoic Room
Measure Condition : At a distance of 60cm mic
Full white pattern, at AC 110V/220V
The max specification
(measure 3 points, at PSU center and left & right on the side)



## 2.11 Connector Specification

### 2.11.1 Connectors Usage

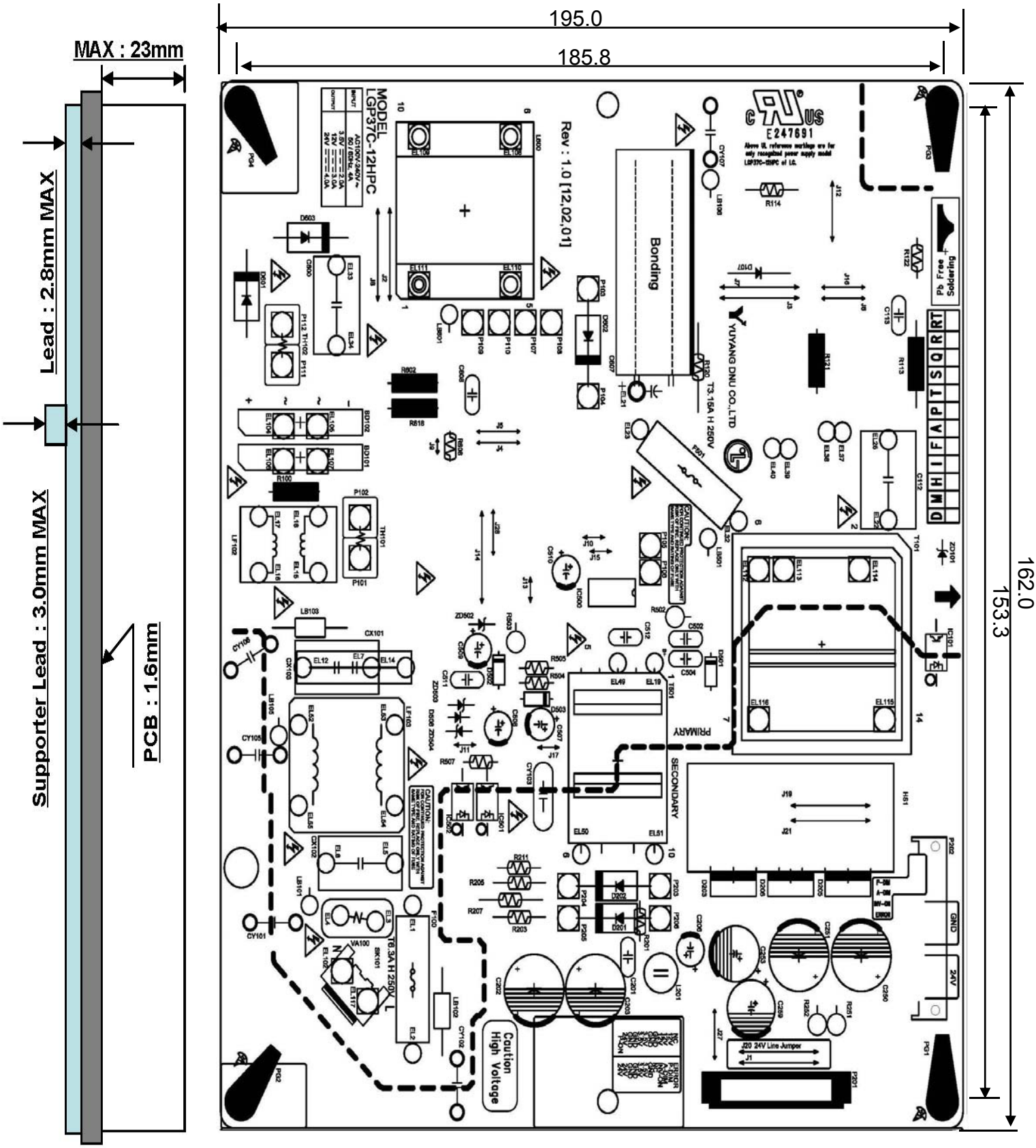
| P201 | | | |
|---|---|---|---|
| Type : (FW20020-24SB),<br>Maker : (FOOSUNG/ YEON-HO) | | | |
| Pin No. | Signal | Pin No. | Signal |
| 1 | Power-on | 2 | 24V |
| 3 | 24V | 4 | 24V |
| 5 | GND | 6 | GND |
| 7 | GND | 8 | GND |
| 9 | 3.5V | 10 | 3.5V |
| 11 | 3.5V | 12 | 3.5V |
| 13 | GND | 14 | GND |
| 15 | GND | 16 | N.C |
| 17 | 12V | 18 | INV ON/OFF |
| 19 | 12V | 20 | A-DIM |
| 21 | 12V | 22 | P-DIM |
| 23 | N.C | 24 | ERROR |

| P202 | |
|---|---|
| Type : 20022WR-4BD<br>Maker : YEON-HO | |
| Pin No. | Signal |
| 1 | 24V |
| 2 | 24V |
| 3 | 24V |
| 4 | 24V |
| 5 | 24V |
| 6 | GND |
| 7 | GND |
| 8 | GND |
| 9 | GND |
| 10 | GND |
| 11 | ERROR |
| 12 | INV – ON |
| 13 | A - DIM |
| 14 | P - DIM |

| SK101 | |
|---|---|
| Type : (YW396-03AV)<br>Maker : (YEON-HO) | |
| Pin No. | Signal |
| 1 | LIVE |
| 2 | FG |
| 3 | NEUTRAL |

## 2.12 PCB Dimension.

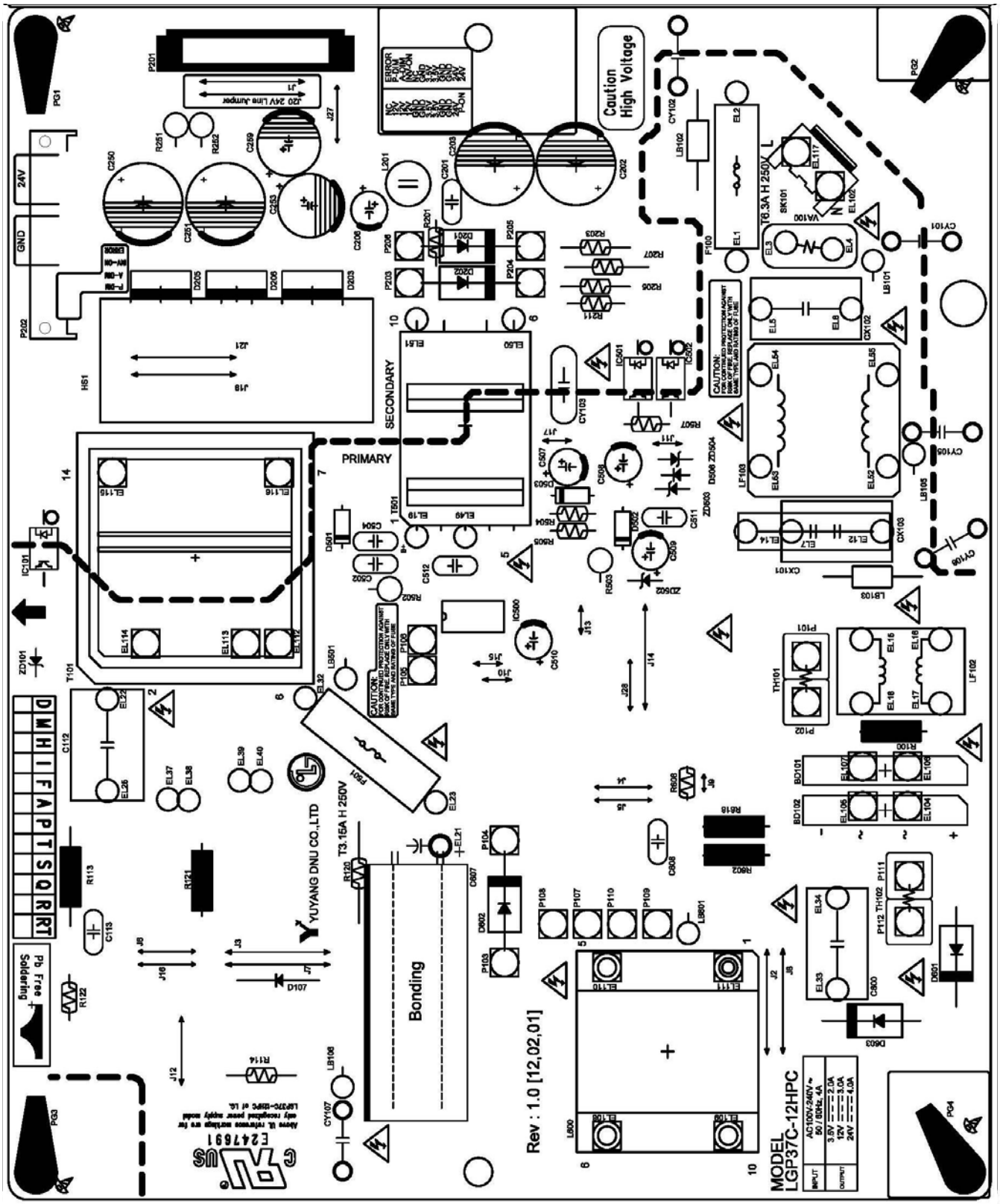
1) Power board PCB : 162mm(W) X 195mm(D) X 1.6(T)
2) Component height : Max 23.0mm
3) Lead Cutting : Max 2.8mm (except HD, Max 3.0mm)
4) PCB Material : FR-1 KB,DS,L,R-8700 CTI-600



## 2.13 Apply to the Eyelet point.(LGP37C-12HPC)

Apply to the Eyelet point 2.0Φ : EL102,EL104,EL105,EL106,EL107,EL108,EL109,EL110,EL111,EL112, EL113,EL114,EL115,EL116,EL117 (15EA)

Apply to the small Eyelet point 1.6Φ :EL1,EL2,EL3,EL4,EL5,EL6,EL7,EL12,EL14,EL15,EL16,EL18, EL19,EL21,EL22,EL23,EL25,EL32,EL33,EL34,EL37,EL38,EL39,EL40,EL49,EL50, EL51,EL52,EL53,EL54,EL55(31EA)



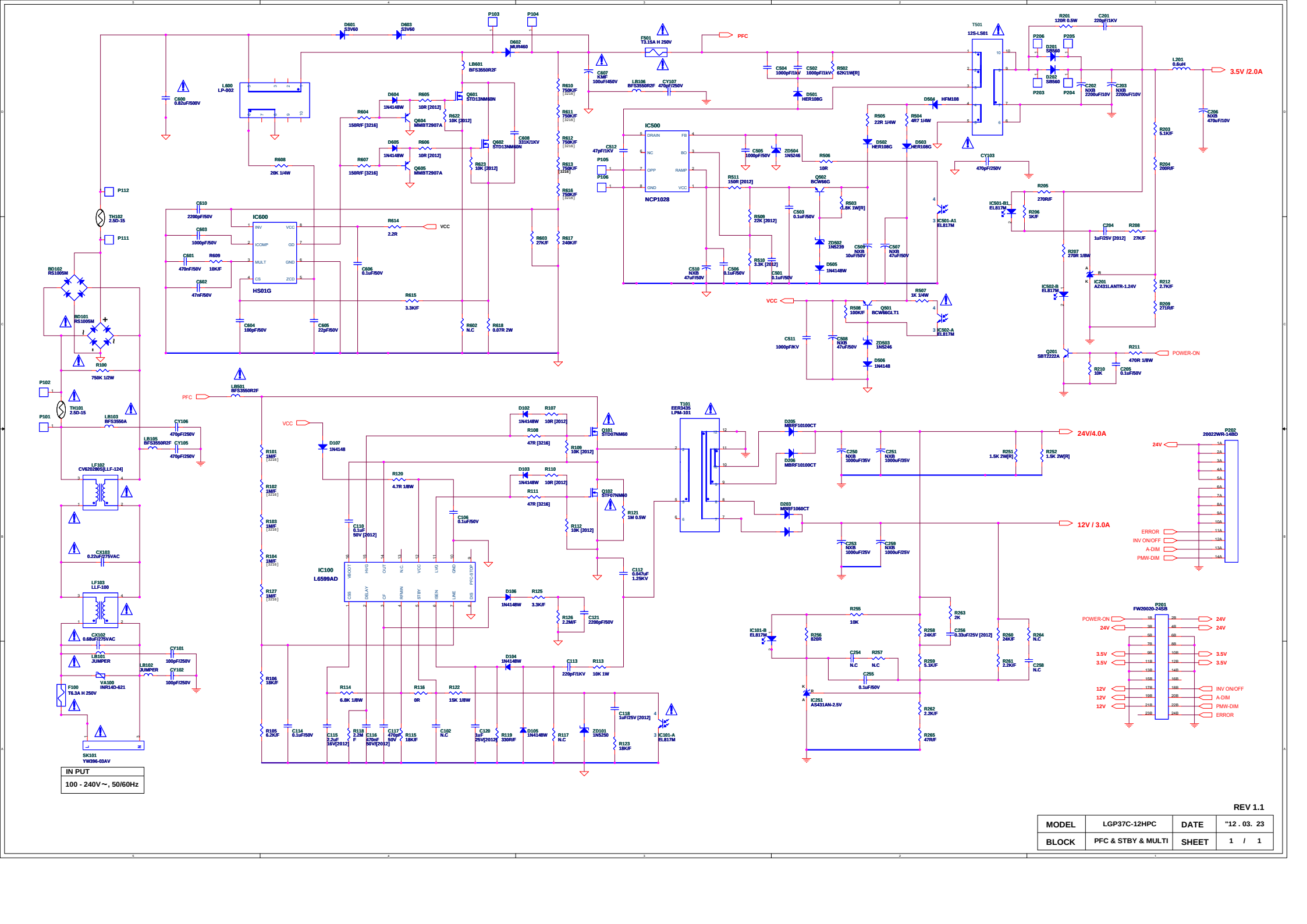
## 2.14 Electrical Characteristics

<table>
<tr><th>No.</th><th>Test Item</th><th>Test method</th></tr>
<tr><td>1</td><td>Intermittent Operation stability Test</td><td>The switching regulator shall ON/OFF for 20,000 time at an Interval of 10 sec at maximum load, after that electrical Characteristics shall be satisfied.</td></tr>
<tr><td>2</td><td>Low temperature operation</td><td>The switching regulator is left at the operating guarantee Minimum temperature for 2 hours without applying electricity. After that power shall be turned on, and then the electrical Characteristics shall be satisfied.</td></tr>
<tr><td>3</td><td>Low temperature Storage test Leave At low temperature</td><td>The switching regulator is left at minimum storage Temperature for 96 hours or more.<br>Then the switching regulator is left at a room temperature and humidity for 1 hour or more, after that electrical characteristics shall be satisfied.</td></tr>
<tr><td>4</td><td>Heat cycle storage test</td><td>The switching regulator is 10 consecutive temperature cycle that shown below is performed and then leave them at room temperature and humidity for 1 hour or more.<br>After that, electrical characteristics shall be satisfied.
<table>
<tr><th>Time</th><th>Temperature</th></tr>
<tr><td>30 minutes</td><td>25℃</td></tr>
<tr><td>30 minutes</td><td>25℃ -> -20℃</td></tr>
<tr><td>60 minutes</td><td>Minimum storage temperature (-20℃)</td></tr>
<tr><td>30 minutes</td><td>-20℃ -> 25℃</td></tr>
<tr><td>30 minutes</td><td>25℃</td></tr>
<tr><td>30 minutes</td><td>25℃ -> 70℃</td></tr>
<tr><td>60 minutes</td><td>Maximum storage temperature (70℃)</td></tr>
<tr><td>30 minutes</td><td>70℃ -> 25℃</td></tr>
</table></td></tr>
<tr><td>5</td><td>Heat shock test</td><td>Heat shock test performed under following conditions without applying electricity and then leave them at room temperature and humidity for 1 hour or more.<br>After that, electrical characteristics shall be satisfied.<br>Condition : -45℃(30minutes), 120℃(30minutes),<br>Switching time : Less than 5 minutes, 200 cycles.</td></tr>
</table>

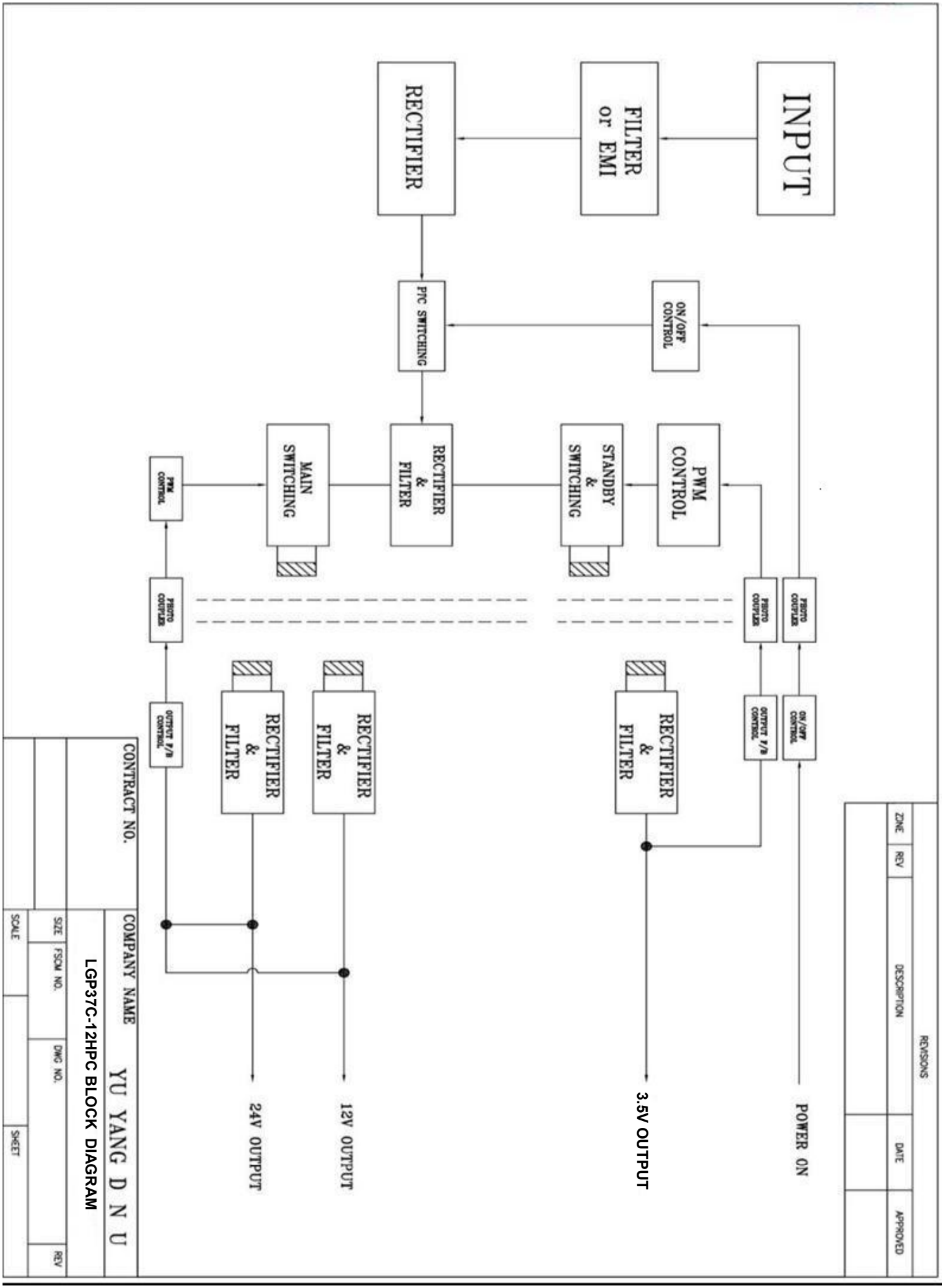
## 2.15 Mechanical Characteristics

| No. | Test Item | Test method |
|---|---|---|
| 1 | Appearance | There shall be no contaminant or dirt on the switching regulator which has adverse effect on electrical characteristics.<br>There shall be no excessive unevenness or scratches on the plated or painted surface. |
| 2 | Vibration | While applying electricity :<br>Vibration frequency : 5 ~ 100Hz<br>Acceleration : 4.9 m/s∧2<br>Vibration in X,Y,Z direction for 30 minutes<br><br>While applying electricity :<br>Vibration frequency : 5 ~ 100Hz<br>Acceleration : 14.7 m/s∧2<br>Vibration in X,Y,Z direction for 30 minutes<br><br>After that electrical characteristics shall be satisfied.<br>There shall be no damage to appearance and construction. |
| 3 | Shock | Shock : 98 m/s∧2<br><br>On the oak more than 10mm thickness with the flat face, raise the one side for 50mm, and it carries out each side free fail for three sides.<br>There shall be no damage to appearance and construction. |

# Schematic Diagram


IN PUT
100 - 240V~, 50/60Hz
3.5V /2.0A
24V/4.0A
12V / 3.0A
PFC
VCC
POWER-ON
IC500
NCP1028
IC600
HS01G
IC100
L6599AD
T101
EER3435
LPM-101
T501
12S-LS01
ERROR
INV ON/OFF
A-DIM
PMW-DIM
REV 1.1
MODEL
LGP37C-12HPC
DATE
"12 . 03. 23
BLOCK
PFC & STBY & MULTI
SHEET
1 / 1

# Block Diagram


INPUT
FILTER or EMI
RECTIFIER
ON/OFF CONTROL
PFC SWITCHING
PWM CONTROL
STANDBY & SWITCHING
RECTIFIER & FILTER
MAIN SWITCHING
PWM CONTROL
PHOTO COUPLER
PHOTO COUPLER
PHOTO COUPLER
OUTPUT V/R CONTROL
ON/OFF CONTROL
OUTPUT V/R CONTROL
RECTIFIER & FILTER
RECTIFIER & FILTER
RECTIFIER & FILTER
3.5V OUTPUT
POWER ON
12V OUTPUT
24V OUTPUT
REVISIONS
ZONE
REV
DESCRIPTION
DATE
APPROVED
CONTRACT NO.
COMPANY NAME
YU YANG D N U
LGP37C-12HPC BLOCK DIAGRAM
SIZE
FSCM NO.
DWG NO.
REV
SCALE
SHEET

# Parts List

# LGP37C-12HPC PART LIST (EAY62788701)

| NO | L/V | Q'ty | UNIT | LOCATION | SPECIFICATION | DESCRIPTION | MAKER |
|---|---|---|---|---|---|---|---|
| 1 | | 1 | EA | | LGP37C-12HPC, LGD 37" | PRODUCT | |
| 2 | P | 0.0714 | Pcs | | 509 X 344 X 180 8t | OUT BOX | JAEIL<br>QXBW |
| 3 | P | 0.1429 | Pcs | | 506 X 341 8t | PAD | JAEIL<br>QXBW |
| 4 | P | 0.5714 | Pcs | | PARTITION-A(506 X 166 8t) | PARTITION | JAEIL<br>QXBW |
| 5 | P | 0.2143 | Pcs | | PARTITION-B(341 X 166 8t) | PARTITION | JAEIL<br>QXBW |
| 6 | P | 1 | Pcs | | 440*220mm | BUBBLE SHEET | JAEIL<br>A PLUS |
| 7 | P | 1 | EA | | 40*8mm | LABEL | AIT |
| 8 | P | 1.2 | ㎖ | | QS9112<br>H828W<br>OKE-410 | SILICONE | KCC<br>OKONG<br>OKONG |
| 9 | C | 3 | Pcs | FOR D203,D205,D206 | SEMS 3*10 SCREW,SPRING WASHER | SCREW | JUNGWOO<br>TANJIN METAL |
| 10 | C | 0.2 | g | FOR D203,D205,D206 | HC300 | SILICONE OIL | CHANG AM |
| 11 | P | 1 | EA | | LGP37C-12HPC, LGD 37" | MI ASSEMBLY | |
| 12 | M | 0.018 | kg | | HSE-11 B20 BAR | SOLDER BAR | HEESUNG METAL |
| 13 | M | 0.0012 | kg | | HSE-11 B20 WIRE | SOLDER WIRE | HEESUNG METAL |
| 14 | M | 2 | g | | ILF-714(kg)<br>EF-9301(g) | FLUX | ION ELEC<br>ALPHA METALS |
| 15 | M | 2 | Pcs | BD101,BD102 | RS1005M 600V 10A RS-10M<br>TS10B05G 600V 10A TS4B | DIODE-BRIDGE | RECTRON<br>TSC |
| 16 | M | 1 | Pcs | D602 | MUR460 600V 4A C-FORMING H14.5 P20<br>MUR460 600V 4A C-FORMING H14.5 P20 | DIODE | SENSITRON<br>VISHAY |
| 17 | C | 1 | EA | HS1 | | HEAT SINK ASS'Y | |
| 18 | C | 1 | Pcs | HS1(FOR D203,D205,D206) | LGP37C-12HPC-HS1 | HEAT SINK | YUWON<br>HUAGUANG |
| 19 | C | 2 | Pcs | D205,D206 | MBRF10100CTL 100V 10A TO-220FP<br>FMEN-210A,100V / 10A<br>MBRF10U100CT | DIODE | SENSITRON<br>SANKEN<br>KEC |
| 20 | C | 1 | Pcs | D203 | MBRF1060CT 60V 10A TO-220FP<br>MBRF20U65CT 65V 20A TO-220FP | DIODE | SENSITRON<br>KEC |
| 21 | M | 1 | EA | | LGP37C-12HPC, LGD 37" INSERT | INSERT ASS'Y | |
| 22 | M | 1 | Pcs | IC500 | NCP1028,DIP-7 | IC | ONSEMI |
| 23 | M | 1 | Pcs | C607 | KMF 450V 100M LB (18x35.5mm)<br>SK 450V 100M ZB (18x35.5mm) | CAPACITOR-ELEC | SAMYOUNG<br>SUSCON |
| 24 | M | 1 | Pcs | C600 | BMPP 500V 824J(15mm),BOX_TYPE<br>PCMP 372 500V 824J(15mm),BOX_TYPE | CAPACITOR-M/F | SUNG-HO<br>PILKOR |
| 25 | M | 1 | Pcs | C112 | BNPS 1250V 473J (15mm)<br>PCMP 384 1250V 473J (15mm)<br>SPK 0.047uF 1250V J P15 (S/C 3.4) | CAPACITOR-M/F | SUNG-HO<br>PILKOR<br>LUMEN(MECO) |
| 26 | M | 1 | Pcs | CX102 | PCX2 337 684K 275VAC(P15mm) | CAPACITOR-X | PILKOR |
| 27 | M | 1 | Pcs | CX103 | PCX2 337 224K 275VAC(P22.5mm ) | CAPACITOR-X | PILKOR |
| 28 | M | 4 | Pcs | CY103,CY105,CY106,CY107 | DA2GYB471KK617(G)<br>SD B 2G 471K 08 BW,Y1<br>CT81 471K 400V/AC (10mm)<br>DA2GYB471KBKC04 | CAPACITOR-Y | APEX INT<br>SAMWHA\<br>YINAN DON'S<br>DONG IL |
| 29 | M | 2 | Pcs | CY101,CY102 | DA2GYB101KK617(G)<br>SD B 2G 101K 08 BW,Y1<br>CT81 101K 400V/AC (10mm)<br>DA2GYB101KBKC04 | CAPACITOR-Y | APEX INT<br>SAMWHA\<br>YINAN DON'S<br>DONG IL |
| 30 | M | 1 | Pcs | P202 | 20022WR-14BD | CONNECTOR | YEONHO |
| 31 | M | 1 | Pcs | P201 | FW20020-24SB<br>SMW200-24CF(B) | CONNECTOR | FOOSUNG<br>YEONHO |
| 32 | M | 1 | Pcs | SK101 | YW396-03AV<br>B2P3-VH(LF)(SN) | CONNECTOR | YEONHO<br>JST |
| 33 | M | 2 | Pcs | D601,D603 | S3V60 ,20mm<br>30PDA60,20mm | DIODE | SHINDENGEN<br>NI |
| 34 | M | 1 | Pcs | F501 | T3.15A H 250V 50CT,LEAD (ONE-LINE)<br>T3.15A H 250V,2153.15MXEP,LEAD(ONE-LINE) | FUSE | DAIN<br>LITTEL FUSE |
| 35 | M | 1 | Pcs | F100 | T6.3A H 250V 50CT,LEAD (ONE-LINE)<br>T6.3A H 250V,21506.3 MXEP,LEAD (ONE-LINE) | FUSE | DAIN<br>LITTEL FUSE |
| 36 | M | 4 | PCS | PG1,PG2,PG3,PG4 | JS-12-75-04 | GND PIN | SAMSUNG JS<br>DAERIN |
| 37 | M | 2 | Pcs | D201,D202 | SB560 60V 5A C-FORMING H14.5 P20<br>SB560 60V 5A C-FORMING H14.5 P20<br>SR560 60V 5A C-FORMING H14.5 P20 | DIODE | SENSITRON<br>VISHAY<br>RECTRON |
| 38 | M | 1 | Pcs | LF102 | 620280SH<br>LLF-124<br>LLF-124<br>LLF-124 | LINE FILTER | TNC<br>SOOJUNG<br>DONG YANG<br>FEELUX |
| 39 | M | 1 | Pcs | LF103 | LLF-100 [ SQ2525] | LINE FILTER | DONG YANG<br>FEELUX<br>SOO JUNG |

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| 40 | M | 1 | Pcs | L201 | 0.6uH(3*10) | CHOKE-BAR | SOO JUNG<br>NAM YANG<br>CLOVER<br>FEELUX |
| 41 | M | 3 | Pcs | IC101,IC501,IC502 | EL817M(DT) B TYPE(10mm)<br>LTV817M-BN TYPE(10mm) | PHOTO COUPLER | EVERLIGHT<br>LITEON |
| 42 | M | 2 | Pcs | TH101,TH102 | MF72-2.5D15(7.5mm)<br>2.5D15,MSSB<br>WTR15D2R5MA3B(7.5mm),STR BULK | THERMISTOR | NSE<br>DSC<br>WANMING |
| 43 | M | 1 | Pcs | T101 | LPM-101,EER3435-006 | TRANSFORMER | SOOJUNG<br>NAMYANG<br>CLOVER<br>FEELUX<br>DONGYANG |
| 44 | M | 1 | Pcs | T501 | 12S-LS01 | TRANSFORMER | DONGYANG<br>FEELUX<br>SOO JUNG<br>TDK |
| 45 | M | 1 | Pcs | L600 | LP-002 ,250uH,EER3019N | TRANSFORMER | SOOJUNG<br>NAMYANG<br>CLOVER<br>FEELUX<br>DONGYANG |
| 46 | M | 1 | Pcs | VA100 | INR14D621(7.5mm),073C(BLACK TUBE)<br>WMR14D621 620V Φ14 TUBE<br>SVC621D-14A(BLACK TUBE) | VARISTOR | Amotech<br>WMEC<br>SAMWHA |
| 47 | M | 2 | Pcs | C250,C251 | NXB 35V 1000M TP(12.5x20mm)<br>SG 35V 1000M PR(12.5x20mm) | CAPACITOR-ELEC | SAMYOUNG<br>SUSCON |
| 48 | M | 2 | Pcs | C202,C203 | NXB 10V 2200M 5.0TP (12.5x20mm)<br>SG 10V 2200M PR(10x20mm) | CAPACITOR-ELEC | SAMYOUNG<br>SUSCON |
| 49 | S | 1 | EA | | LGP37C-12HPC, LGD 37" SMT | SMT ASSEMBLY | |
| 50 | S | 2 | Pcs | Q101,Q102 | STD7NM60N 7A 600V DPACK<br>SPD04N60C3 4.5A 650V DPACK<br>TK5P60V | FET | STMICRO<br>INFINEON<br>TOSHIBA |
| 51 | S | 2 | Pcs | Q601,Q602 | STD13NM60N 650V 11A DPACK<br>TK8P60V<br>IPD60R380C6 | FET | STM<br>TOSHIBA<br>INFINEON |
| 52 | S | 2 | Pcs | Q501,Q502 | BCW66GL,SOT-23<br>KTC3551,SOT-23 | TR | ONSEMI<br>KEC |
| 53 | S | 1 | Pcs | C604 | CC 0603 NPO 101J 50V CT, 100pF | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 54 | S | 1 | Pcs | C605 | CC 0603 NPO 220J 50V CT, 22pF | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 55 | S | 1 | Pcs | C117 | CC 0603 NPO 471J 50V CT | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 56 | S | 2 | Pcs | C505,C603 | CC 0603 X7R 102K 50V CT | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 57 | S | 2 | Pcs | C121,C610 | CC 0603 X7R 222K 50V CT | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 58 | S | 8 | Pcs | C106,C114,C205,C255,C606,C501,<br>C506,C503 | CC 0603 X7R 104K 50V CT | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 59 | S | 1 | Pcs | C602 | CC 0603 X7R 473K 50V CT | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |

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| 60 | S | 1 | Pcs | C601 | CC 0603 X7R 474K 16V CT | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 61 | S | 1 | Pcs | C116 | CC 0805 X7R 474K 25V CT | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 62 | S | 3 | Pcs | C120, C118,C204 | CC 0805 X7R 105K 25V CT | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 63 | S | 1 | Pcs | C115 | CC 0805 X7R 225K 10V CT<br>CC 0805 X7R 225K 16V CT (2.2uF),PILKOR | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 64 | S | 1 | Pcs | C110 | CC 0805 X7R 104K 50V CT | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 65 | S | 1 | Pcs | C256 | CC 0805 X7R 334K 50V CT | CAPACITOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAMWHA |
| 66 | S | 1 | Pcs | D504 | HFM108<br>S1M | DIODE-SMD | RECTRON<br>DIODES |
| 67 | S | 8 | Pcs | D102,D103,D104,D105,<br>D106,D505,D604,D605 | MMSD4148T1G,SOD123<br>1N4148W,SOD123<br>1N4148W,SOD123 | DIODE-SMD | ONSEMI<br>DIODES<br>RECTRON |
| 68 | S | 1 | Pcs | IC600 | SCY99102BDR2G, HS01G,SO-8 | IC-SMD | ON-SEMI |
| 69 | S | 1 | Pcs | IC100 | L6599AD,SO-16 | IC-SMD | ST |
| 70 | S | 1 | Pcs | IC201 | TLV431BSN1T1G,SOT-23<br>AZ431LANTR-E1 | IC-SMD | ON-SEMI<br>BCD |
| 71 | S | 1 | Pcs | IC251 | KIA431BM,SOT-23<br>AS431AN,SOT-23<br>KA431SL,SOT-23 | IC-SMD | KEC<br>BCD<br>FIARCHILD |
| 72 | S | 4 | Pcs | R109,R112,R622,R623 | CR 0805 103JT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 73 | S | 2 | Pcs | R210,R255 | CR 0603 103JT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 74 | S | 4 | Pcs | R107,R110,R605,R606 | CR 0805 10RJT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 75 | S | 1 | Pcs | R506 | CR 0603 10RJT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 76 | S | 1 | Pcs | R614 | CR 0603 2R2JT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |

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| 77 | S | 1 | | R263 | CR 0603 202JT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 78 | S | 2 | | R258,R260 | CR 0603 243FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 79 | S | 1 | Pcs | R511 | CR 0805 151FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 80 | S | 1 | Pcs | R116 | CR 0603 000JT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 81 | S | 1 | Pcs | R259 | CR 0603 512FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 82 | S | 2 | Pcs | R108,R111 | CR 1206 47RJT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 83 | S | 1 | Pcs | R265 | CR 0603 47RFT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 84 | S | 1 | Pcs | R204 | CR 0603 201FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 85 | S | 1 | Pcs | R206 | CR 0603 102FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 86 | S | 1 | Pcs | R209 | CR 0603 271FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 87 | S | 1 | Pcs | R609 | CR 0603 103FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 88 | S | 1 | Pcs | R508 | CR 0603 104FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 89 | S | 2 | Pcs | R604,R607 | CR 1206 151FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |

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| 90 | S | 5 | Pcs | R101,R102,R103,R104,R127 | CR 1206 105FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 91 | S | 3 | Pcs | R106,R115,R123 | CR 0603 183FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 92 | S | 2 | Pcs | R261,R262 | CR 0603 222FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 93 | S | 2 | Pcs | R208,R603 | CR 0603 273FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 94 | S | 1 | Pcs | R212 | CR 0603 272FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 95 | S | 1 | Pcs | R119 | CR 0603 331FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 96 | S | 1 | Pcs | R105 | CR 0603 622FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 97 | S | 2 | Pcs | R615,R125 | CR 0603 332FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 98 | S | 5 | Pcs | R610,R611,R612,R613,R616 | CR 1206 754FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 99 | S | 1 | Pcs | R617 | CR 0603 244FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 100 | S | 2 | Pcs | R118,R126 | CR 0603 225FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 101 | S | 1 | Pcs | R256 | CR 0603 821FT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 102 | S | 1 | Pcs | R509 | CR 0805 223JT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 103 | S | 1 | Pcs | R510 | CR 0805 332JT | RESISTOR-SMD | PILKOR<br>TDK<br>MURATA<br>TAIYOYUDEN<br>YAGEO<br>SAM SUNG |
| 104 | S | 1 | Pcs | Q201 | MMBT2222A SOT-23<br>KTN2222AS SOT-23<br>KST2222A SOT-23 | TR-SMD | ONSEMI<br>KEC<br>FAIRCHILD |
| 105 | S | 2 | Pcs | Q604,Q605 | MMBT2907A SOT-23<br>KTN2907AS SOT-23<br>KST2907A SOT-23 | TR-SMD | ONSEMI<br>KEC<br>FAIRCHILD |
| 106 | S | 1 | EA | HD101 | 3.0X2.45X2.5H | SUPPORTER | POWER VALLEY |
| 107 | S | 0.025 | ㎖ | | HT-130A-106 | BOND-SMD | HI-TECH KOREA |
| 108 | S | 1 | EA | | LGP37C-12HPC, LGD 37" A/I | AI ASSEMBLY | |
| 109 | A | 1 | Pcs | PCB REV 1.0 | PCB:LGP37C-12HPC(195*162mm) FR-1,1.6T<br>DS8-V-0 94V-0<br>DC-1 or DC-2 94V-0<br>DM5-V-0<br>1994V0<br>CTI-600, REV 1.0 | PCB | DUCKSUNG<br>DAEDUCK<br>DONG MYUANG<br>HT CIRCUIT |

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| 110 | A | 4 | Pcs | LB105,LB106,LB501,LB601 | BFS3550R2F<br>SER3550050BA<br>BRS3550 TP,R-FOR | BEAD | SAMWHA<br>SCC<br>FEELUX |
| 111 | A | 1 | Pcs | LB103 | BFS3550A<br>SEB3550050BA<br>BAS3550 TP | BEAD | SAMWHA<br>SCC<br>FEELUX |
| 112 | A | 1 | Pcs | C206 | NXB 10V 470M TP(8x 11.5mm)<br>SK 10V 470M PR(6.3x11mm) | CAPACITOR-ELEC | SAM YOUNG<br>SUSCON |
| 113 | A | 3 | Pcs | C507,C508,C510 | NXB 50V 47M TP(6.3x11mm)<br>SK 50V 47M PR(6.3x11mm) | CAPACITOR-ELEC | SAM YOUNG<br>SUSCON |
| 114 | A | 1 | Pcs | C509 | NXB 50V 10M TP(5x11mm)<br>SK 50V 10M PR(5x11mm) | CAPACITOR-ELEC | SAM YOUNG<br>SUSCON |
| 115 | A | 2 | Pcs | C253,C259 | NXB 25V 1000M TP(10x20mm)<br>SG 25V 1000M PR(10x20mm) | CAPACITOR-ELEC | SAMYOUNG<br>SUSCON |
| 116 | A | 3 | Pcs | C502,C504,C511 | DG3AHR102K959(5mm- TP)<br>EK R 3A 102K 11 FK(5mm- TP)<br>CT81 1KV 102K 1000pF (5mm-TP)<br>CK 3A YR102KFK05(5mm- TP) | CAPACITOR-CERAMIC | APEX INT<br>SAMWHA<br>YINAN DON'S<br>DONG IL |
| 117 | A | 1 | Pcs | C512 | DG 47pF 1KV K P5 125℃<br>EC SL 47pF 1KV K P5 125℃<br>CC81 47pF 1KV K P5 125℃<br>CC 47pF 1KV K P5 125℃ | CAPACITOR-CERAMIC | APEX INT<br>SAMWHA<br>YINAN DON'S<br>DONG IL |
| 118 | A | 2 | Pcs | C113,C201 | DG3AHR221K959, 125℃<br>EK R 3A 221K 06 FK5, 125℃<br>CT81 1KV 221K 220pF, 125℃<br>CK3AYR221KFK, 125℃ | CAPACITOR-CERAMIC | APEX INT<br>SAMWHA<br>YINAN DON'S<br>DONG IL |
| 119 | A | 1 | Pcs | C608 | DG3AHR331K959, 125℃<br>EK R 3A 331K 06 FK5, 125℃<br>CT81 1KV 331K 220pF, 125℃<br>CK3AYR331KFK, 125℃ | CAPACITOR-CERAMIC | APEX INT<br>SAMWHA<br>YINAN DON'S<br>DONG IL |
| 120 | A | 3 | Pcs | D501,D502,D503 | HER108G,DO-41<br>UF4007,DO-41 | DIODE | RECTRON<br>TSC |
| 121 | A | 2 | Pcs | D107,D506 | 1N4148 | DIODE | RECTRON<br>VISHAY |
| 122 | A | 2 | Pcs | ZD503,ZD504 | 1N5246B,DO-35<br>1N5246B,DO-35 | DIODE-ZENER | RECTRON<br>VISHAY |
| 123 | A | 1 | Pcs | ZD502 | 1N5239B,DO-35<br>1N5239B,DO-35 | DIODE-ZENER | RECTRON<br>VISHAY |
| 124 | A | 1 | Pcs | ZD101 | 1N5250B,DO-35<br>1N5250B,DO-35 | DIODE-ZENER | RECTRON<br>VISHAY |
| 125 | A | 31 | Pcs | EL1,EL2,EL3,EL4,EL5,EL6,EL12,<br>EL14,EL15,EL17,EL16,EL18,EL19,<br>EL21,EL22,EL23,EL25,EL32,EL33,<br>EL34,EL37,EL38,EL39,EL40,EL49,<br>EL50,EL51,EL52,EL53,EL54,EL55 | SEYP-1630 | EYELET | SAMSUNG JS |
| 126 | A | 15 | Pcs | EL102,EL104,EL105,EL106,EL107,<br>EL108,EL109,EL110,EL111,EL112,<br>EL113,EL114,EL115,EL116,EL117 | SEYP-2330 | EYELET | SAMSUNG JS |
| 127 | A | 24 | Pcs | J1,J2,J3,J4,J5,J6,J7,J8,J9,J10,<br>J11,J12,J13,J14,J15,J16,J17,<br>J19,J20,J21,J27,J28,LB101,LB102 | 0.6PHI 52MM TAPING(자삽용) | JUMPER | TPI<br>DM<br>TZAI YUAN |
| 128 | A | 4 | Pcs | P101,P102,P111,P112 | GT236-6-3(6MM) | GT PIN | SAMSUNG JS |
| 129 | A | 12 | Pcs | P103,P104,P105,P106,P107,P108,<br>P109,P110,P203,P204,P205,P206 | GT236-6-4(10.3MM) | GT PIN | SAMSUNG JS |
| 130 | A | 1 | Pcs | R618 | WNPS 2N 0.07 ohmJ TP<br>PRN-02T3JR07<br>WWR 2W 0.07 ohm J | RESISTOR-W/W | ABCO<br>SMART<br>PILKOR |
| 131 | A | 1 | Pcs | R211 | CR 1/8W 470R ohm J TP<br>RDM94T1J470R<br>PSFR16S 1/8W 470R ohm J | RESISTOR-C/B | ABCO<br>SMART<br>PILKOR |
| 132 | A | 1 | Pcs | R120 | CR 1/8W 4.7R ohm J TP<br>RDM94T1J4R7<br>PSFR16S 1/8W 4R7 ohm J | RESISTOR-M/F | ABCO<br>SMART<br>PILKOR |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 133 | A | 1 | Pcs | R207 | CR 1/8W 270R ohm J TP<br>RDM94T1J270R0<br>PSFR16S 1/8W 270R ohm J | RESISTOR-C/B | ABCO<br>SMART<br>PILKOR |
| 134 | A | 1 | Pcs | R122 | MR 1/8W 15K ohm F TP<br>RN96T1F15K<br>PSFR16S 1/8W 15K ohm F | RESISTOR-C/B | ABCO<br>SMART<br>PILKOR |
| 135 | A | 1 | Pcs | R203 | MR 1/8W 5.1K ohm F TP<br>RN96T1F5.1K0<br>PSFR16S 1/8W 5.1K ohm F | RESISTOR-M/F | ABCO<br>SMART<br>PILKOR |
| 136 | A | 1 | Pcs | R205 | MR 1/8W 270R ohm F TP<br>RN96T1F270R<br>PSFR16S 1/8W 270R ohm F | RESISTOR-M/F | ABCO<br>SMART<br>PILKOR |
| 137 | A | 1 | Pcs | R114 | MR 1/8W 6.8K ohm F TP<br>RN96T1F6.8K<br>PSFR16S 1/8W 6.8K ohm F | RESISTOR-M/F | ABCO<br>SMART<br>PILKOR |
| 138 | A | 1 | Pcs | R503 | MORS 1W 1.8K ohm F(R-FORM)<br>SMR01R0F1K80(R-FORM)<br>PR01 1W 1.8K ohm F,R-FORM | RESISTOR-M/F | ABCO<br>SMART<br>PILKOR |
| 139 | A | 1 | Pcs | R504 | CRS 1/4W 4.7R ohm J TP<br>RDM94T1J4.7R<br>PSFR25 1/4W 4.7R ohm J | RESISTOR-C/B | ABCO<br>SMART<br>PILKOR |
| 140 | A | 1 | Pcs | R505 | CRS 1/4W 22R ohm J TP<br>RDM94T1J22R<br>PSFR25 1/4W 22R ohm J | RESISTOR-C/B | ABCO<br>SMART<br>PILKOR |
| 141 | A | 1 | Pcs | R608 | CRS 1/4W 20K ohm J TC, MINI<br>RDM94T1J 20K MINI<br>SFR25 1/4W 20Kohm J, MINI | RESISTOR | ABCO<br>SMART<br>PILKOR |
| 142 | A | 1 | Pcs | R507 | CRS 1/4W 1K ohm J TP<br>RDM94T1J1K<br>PSFR25 1/4W 1K ohm J | RESISTOR-C/B | ABCO<br>SMART<br>PILKOR |
| 143 | A | 1 | Pcs | R201 | CRS 1/2W 120R ohm J TP<br>RDM92T1J120R0<br>SFR25H 1/2W 120R ohm J | RESISTOR-C/B | ABCO<br>SMART<br>PILKOR |
| 144 | A | 1 | Pcs | R113 | MORS 1W 10K ohm J TP<br>RSD01T1J10K<br>PR01 1W 10K ohm J | RESISTOR-M/O | ABCO<br>SMART<br>PILKOR |
| 145 | A | 1 | Pcs | R502 | MORS 1W 62K ohm J TP(R-FORM)<br>SMR01R0J62K 1W 62K ohm J(R-FORM)<br>PR01 1W 62K ohm J(R-FORM) | RESISTOR-M/O | ABCO<br>SMART<br>PILKOR |
| 146 | A | 2 | Pcs | R251,R252 | MORS 2W 1.5K ohm J TP(R-FORM)<br>SML02R1J1K50(R-FORM)<br>PR02 2W 1.5K ohm J(R-FORM) | RESISTOR-M/O | ABCO<br>SMART<br>PILKOR |
| 147 | A | 1 | Pcs | R121 | MSR37 1/2W 1M ohm J TP<br>PRC92T1J1M | RESISTOR-SURGE | PILKOR<br>SMART |
| 148 | A | 1 | Pcs | R100 | MSR37 1/2W 750K ohm J TP<br>PRC92T1J750K | RESISTOR-SURGE | PILKOR<br>SMART |

# Process Marking & Process Flow Chart

# 공정 표시 MARK

| D | M | H | I | F | A | P | T | S | Q | R | RT |
|---|---|---|---|---|---|---|---|---|---|---|---|

D : 자삽

M : SMD

H : 수삽 최종

I : ICT

F : 1차 성능 검사

A : AGING (BURN-IN)

P : HI-POT (내압 검사)

T : 최종 검사 ( AOTO TEST)

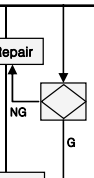
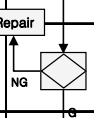
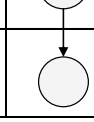
S : SET 검사 (실장 검사)

Q : QC 검사 (출하 검사)

R : 불량 수리

RT : 신뢰성 확인

| 공정번호 | 공정 흐름도 | 중요도 | 공정명 | 작업내용 | 4M | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Man(사람) | Machine(장비) | Material(재료) | Method(방법) |
| 1 | supplier<br>NG<br>G | | 수입 검사 | 샘플 수입 검사 진행 | | D/Calipers (Mitutoyo)<br>M/Meter (Mitutoyo)<br>PIN Gauage (Eisen)<br>L.C.R Meter (HP)<br>내압기 (Extech)<br>전자 현미경 (ICALSCOPE)<br>DCR Meter (GW Instek)<br>석정반 (성진이앤지) | | 수입검사 기준서 |
| 2 | | | AI | 자삽 | | Equence<br>Axial (Dynapert)<br>Radial (Panasert)<br>Eyelet (은성)<br>Jumper전용기 | 승인원 대치 | Axial / Radial<br>리드 각도 : 15 ~ 25도<br>리드 길이 : 1.5 ~ 2mm |
| 3 | | | SMT | Chip자삽 | | AIS-K411-R2SS (TSM)<br>VIP-98 (N BTU Eng co.)<br>1810 (Exl Heller)<br>HDP-2C (Panasonic)<br>YV-64D (Yamaha)<br>HSD-X (Yamaha)<br>HSD-XG (Yamaha)<br>YV-100XS (Yamaha)<br>YV-100XS (Yamaha)<br>YVL88II (Yamaha)<br>YVL88XF (Yamaha)<br>YV-100XF (Yamaha)<br>YV-100XF (Yamaha)<br>YV-100X (Yamaha)<br>YV-10 | 승인원 대치 | 1. 미삽, 오삽, 역삽 없을 것<br>2. Chip 틀어짐<br>PCB PAD 에서1/3 이상<br>벗어 낫을 경우 NG<br>3. 접착 강도<br>1608 : 1kgf 이상<br>2012 : 1.3kgf 이상<br>3216 : 1.5kgf 이상 |
| 4 | | | H/S 준비작업 | H/S 준비작업 | | | 승인원 대치 | 1. 치수에 맞게 작업 할 것 |
| 5 | | | 수삽 | 부품 삽입 | | | 승인원 대치 | 오삽,미삽,역삽,쏠삽 없을 것 |
| 6 | Rework<br>NG | | 수삽 외관 검사 | 수삽 부품 확인<br>(미삽/오삽역삽) | | | | |
| 7 | G | CTQ | Wave Soldering | 납땜 | 홍호선사원 | SAF-700 (신명기전)<br>SAS-680LTP (신명기전)<br>SAS-680TP (신명기전)<br>SAS-680 (신명기전) | HSE-11 B20 WIRE(희성)<br>SN:99%, AG:0.3%, CU:0.7% | 공정 관리 기준<br>Au : 0.2wt% 이하<br>Cu : 1.2wt% 이하<br>Zn : 0.0005wt% 이하<br>Bi : 0.025wt% 이하<br>Fe : 0.02wt% 이하<br>Cd : N.D<br>Pb : 0.1% 이하<br>- 0.08 over 시 교체 |
| 8 | Rework<br>NG | | 중간 검사 | 수삽 부품 확인<br>(미삽/오삽역삽) | | | | |
| 9 | G | | Soldering면 납을 수정 | 납땜 상태 확인 수정 | | | HSE-HGF10(희성금속) | |
| 10 | Rework<br>NG | | 반면 검사 | 납땜 상태 확인 검사 | | | | |
| 11 | Repair<br>NG<br>G | | ICT | ICT검사 | | CMS-9000 FX (우리회사)<br>CMS-9000 FX (우리회사)<br>CMS-9000 FV (우리회사) | | 1. 오삽,미삽,역삽,open,short 검출<br>2. PASS, FAIL 판정 확인 |
| 12 | Repair<br>NG<br>G | | 동작검사 | 동작 출력치 확인 | | ATS1000(1),ATS500,<br>ATS1000(2)<br>(비오비엔터프라이즈) | | 1. TEST JIG 및 CONVEYOR<br>에 제품 장착상태 확인<br>2. PASS, FAIL 판정 확인<br>(FAIL시 경광등 울림) |
| 13 | Repair<br>NG<br>G | Safetv<br>CTQ | 내압Test | 내압 검사 | | 7142 (Extech) | | 1. TEST JIG 및 CONVEYOR<br>에 제품 장착상태 확인<br>2. PASS, FAIL 판정 확인<br>(FAIL시 경광등 울림) |
| 14 | | | 실리콘 도포 | 실리콘 도포 | | | QS9112(KCC)<br>OKE-410(OKONG) | |
| 15 | Repair<br>NG<br>G | CTQ | Aging | Aging진행 | | Aging System (아진전자) | | 1. CABLE 연결상태 확인<br>2. 출력전압 확인용 LED 상태<br>확인<br>3. 부품 BURNT 유/무 확인 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 16 |  | CTQ | 특성 검사 | 제품 출력치 확인 | 김재규 대리, 이용순 반장<br>정경택 대리, 문경덕 사원 | ATS1700(1),ATS1700(2)<br>ATS1200,ATS1600,<br>ATS1000(3),ATS1500<br>(비오비엔터프라이즈) | | 1. 자재의 오삽, 설삽, 미삽 상태 확인<br>2. 냉납, SHORT, 납볼등 SOLDERING 상태 확인<br>3. READ 길이 확인 (MAX 2.5mm)<br>4. 실리콘 BONDING 상태 확인 |
| 17 |  | | 외관 검사 | 제품 외관 검사진행 | | | | |
| 18 |  | | 실장/포장 | 실장 검사 포장진행 | | | SK SK A골 1종, SK SSKK DW 2종, SK SK B골 1종, 수K수 수출용 2종(제일포장산업) | |
| 19 |  | | 출하 검사 | 제품 품질 보정,<br>출하 검사 진행 | | ATS3000<br>(비오비엔터프라이즈) | | 출하 검사 기준서 |

# PCB Layout

# P C B 제 조 규 격

| 구 분 | 항 목 | 제 조 규 격 |
|---|---|---|
| 모 델 (MODEL) | | LGP37C-12HPC |
| 외각치수 | 치 수 | 162.00mm X 196.00mm |
| | 공 차 | ± 0.5mm X ± 0.5mm |
| 원 재 료 | UL등급(GRADE) | FR-1 |
| | 생 산 업 체(MAKER) | 킹보드 / 두산전자 |
| | 모 델 명 | KB-3151C / DS-1107A |
| | 두 께 | 1.6mm |
| | 동 박 두 께 | 35um |
| | UL마크(MARK) | DS8-V-O |
| | 난 연 성 | 94V-0 |
| 층 수 | | 단 면 |
| 회 로 | Min 회로폭 | mm |
| | Max 회로폭 | mm |
| SOLDER MASK | 타 입(TYPE) | UV |
| | 생 산 업 체(MAKER) | 다이오(TAITO) |
| | 모 델 명 | UVR150G |
| | 색 상 | GREEN |
| MARKING | 생 산 업 체(MAKER) | 다이오(TAITO) |
| | 모 델 명 | UVR-182E |
| | 색 상 | 동박면 (BLACK) |
| | 생 산 업 체(MAKER) | 다이오(TAITO) |
| | 모 델 명 | UVR-182E |
| | 색 상 | 부품면 (BLACK) |
| CARBON | 생 산 업 체(MAKER) | |
| | 모 델 명 | SF-20T |
| | 두 께 | Min um |
| | 저 항 | Max Ω |
| | 도 면 / FILM | PATTREN FILM 및 COPY도 |
| | | SOLDER FILM 및 COPY도 |
| | | 동박면 FILM 및 COPY도 |
| | | 부품면 FILM 및 COPY도 |
| | | HOLE FILM 및 COPY |
| | ROHS 자료 | 미사용 증명서 |
| | | 물질 목록표 |
| 특 기 사 항 | | |

㈜ 덕 성 사

# PCB Material Approval sheet

DUCKSUNG. 20/6. 1/3-3761C 1.6×1000×1220×1200 张 01

KH 昆山日涛化工有限公司
KUNSHAN YAT TAO CHEMICAL CO.,LTD.. №0005002

昆山市经济技术开发区张浦配套区 订单号:DS100420
ZHANGPU ASSORTED AREA ECONOMIC & TECHNOLOGY
DEVELOPMENT ZONE KUNSHAN JIANGSU CHINA

TEL: 0512-57441689
FAX: 0512-57440068
P.C: 215321

## 覆铜箔层压板检测报告
## COPPER CLAD LAMINATE TEST REPORT

日期：(Date)： 10.6.12

型号 (Type)： KB-3151C Thickness： 1.6 mm 1070 mm×1220 mm

批号 (Lot)： 100609609 数量 (Quantity)： 500 Sheets

| 序号 NO | 检测项目 Item | 单位 Unit | 检测条件 Test condition | JIS规格值 JIS Standard Value | 测试值 Actual Value | 单项判定 (Judgment) |
|---|---|---|---|---|---|---|
| 1 | 表面 Surface | Grade | A | Grade A | A | Pass |
| 2 | 边缘 Edges | Grade | A | Grade A | A | Pass |
| 3 | 尺寸 Panel Size | mm | 长 Length<br>宽 Width | +3<br>+3 | 1224<br>1223 | Pass |
| 4 | 方正度 Squareness | mm | 对角线 Diagonals | ≤3 | 0.5 | Pass |
| 5 | 厚度 Thickness | mm | A | 1.5±0.15 | 1.54 | Pass |
| 6 | 弯曲 Twist and wrap | % | A | ≤1 | 0.1% | Pass |
| 7 | CTI 值 CTI Value | V | 0.1%NH4CL | ≥600 | 700 | Pass |
| 8 | 吸水率 Water Absorption | % | E-24+D-24/23 | ≤2.0 | 0.076% | Pass |
| 9 | 耐碱性 Alkaline Resistance | --- | 3%NaOH 40℃ 3min | 无变化 No CHANGE | 无变化 | Pass |
| 10 | 阻燃性 Flammability | See | UL94 | V-0 | V-0 | Pass |
| 11 | 耐焊性 Solder Blister Resistance | See | Float260℃ | ≥10 | 13-17 | Pass |
| 12 | 绝缘电阻 Insulation Resistance | Ω | C-96/20/65 | ≥10⁸ | 1.5×10 | Pass |
| 13 | 抗剥强度 Peel Strength | kgf/cm | A | ≥1.2 | 2.1-2.3 | Pass |
| 14 | 落球冲击性 Balling Impact Test | cm | A | >40 | 合格 | Pass |
| 15 | 弯曲强度 Flexural Strength | Kgf/mm² | A | ≥8.2 | 16.7 | Pass |
| 16 | 冲孔特性 Punchability | --- | 50-70℃ | NO CRACK | OK | Pass |
| 17 | 备注： Materials are in compliance with ROHS standard. | | | | | |

结论(Result)：

检验员(QA Technician)： 2544 审核(Check)：

检测条件说明 A：试样不做条件处理；
C：空气中恒温、恒湿处理；
D：恒温水中处理；
E：空气中恒湿处理。例：C-96/20/65意为65%的湿度、20℃空气中处理96小时。
符合SS-00259管理技术标准。

QR-QA-C-001

第一联：客户（白） 第二联：存根（绿）

# DOOSAN

The Best Choice of Copper Clad Laminates

## DS-1107A (ANSI : FR-1) HIGH C.T.I.

### GENERAL PROPERTIES

| Test Item | | Unit | Treatment Condition | Designation: ANSI Grade | DS-1107A: FR-1 |
|---|---|---|---|---|---|
| | | | | Property Data: Standard Value | Property Data: Guaranteed Value |
| Flammability | | sec | UL 94 | avg : 3.5 max : 8 | avg : 3.5 max : 10 |
| Insulation Resistance | | ohm | C-96/20/65<br>C-96/20/65+D-2/100 | $5\times10^{11}$ - $5\times10^{12}$<br>$3\times10^{8}$ - $8\times10^{8}$ | above $1\times10^{8}$<br>above $1\times10^{8}$ |
| Volume Resistivity | | ohm-cm | C-96/20/65<br>C-96/20/65+C-96/40/90 | $1\times10^{13}$ - $5\times10^{14}$<br>$5\times10^{12}$ - $5\times10^{13}$ | above $5\times10^{12}$<br>above $5\times10^{8}$ |
| Surface Resistance | Adhesive Surface | ohm | C-96/20/65<br>C-96/20/65+C-96/40/90 | $5\times10^{11}$ - $5\times10^{12}$<br>$1\times10^{10}$ - $1\times10^{11}$ | above $1\times10^{10}$<br>above $1\times10^{8}$ |
| | Laminate Surface | ohm | C-96/20/65<br>C-96/20/65+C-96/40/90 | $5\times10^{11}$ - $5\times10^{12}$<br>$5\times10^{8}$ - $5\times10^{10}$ | above $1\times10^{8}$<br>above $1\times10^{8}$ |
| Dielectric Constant (1 MHz) | | - | C-96/20/65<br>C-96/20/65+D-48/50 | 4.0 - 5.0<br>4.5 - 5.5 | less than 5.5<br>less than 6.0 |
| Dissipation Factor (1 MHz) | | - | C-96/20/65<br>C-96/20/65+D-48/50 | 0.020 - 0.030<br>0.025 - 0.035 | less than 0.050<br>less than 0.060 |
| Comparative Tracking Index | | volt | IEC Method | 600 | above 600 |
| Solder Float(260 C) | | sec | A | 40 - 50 | above 15 |
| Peel Strength | Cu.Foil 1 oz (0.035mm) | kgf/cm | A<br>S | 1.9 - 2.4<br>1.9 - 2.4 | above 1.42<br>above 1.42 |
| Flexural Strength(LW)<br>(CW) | | kgf/mm² | A | 15 - 18<br>14 - 17 | above 8.16<br>above 8.16 |
| Water absorption | | % | E-24/50+D-24/23 | 0.7 - 0.9 | less than 1.5 |
| Trichloroethylene Resistance | | - | Immersion in boiling Trichloroethylene (For 2 minutes) | No abnormality | No abnormality |
| Punching Processability | | | A | Suitable Temperature 40 ℃ - 60 ℃ | |

Specimen Thickness : 1.6mm

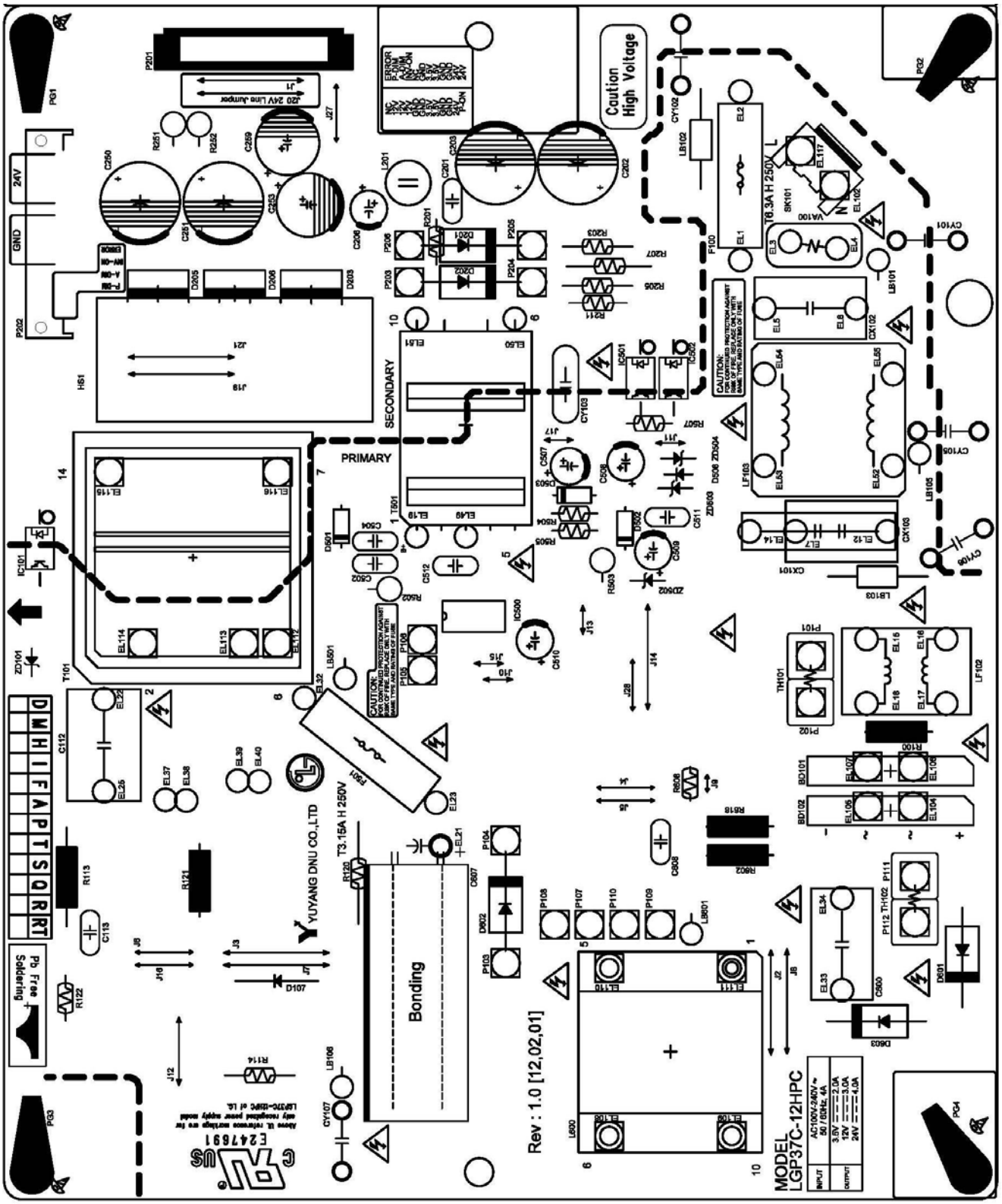
### PURCHASING INFORMATION

- Copper foil : 1 oz/ft²(0.035 mm) copper foil as standard
- Thickness : 0.6mm to 3.2mm

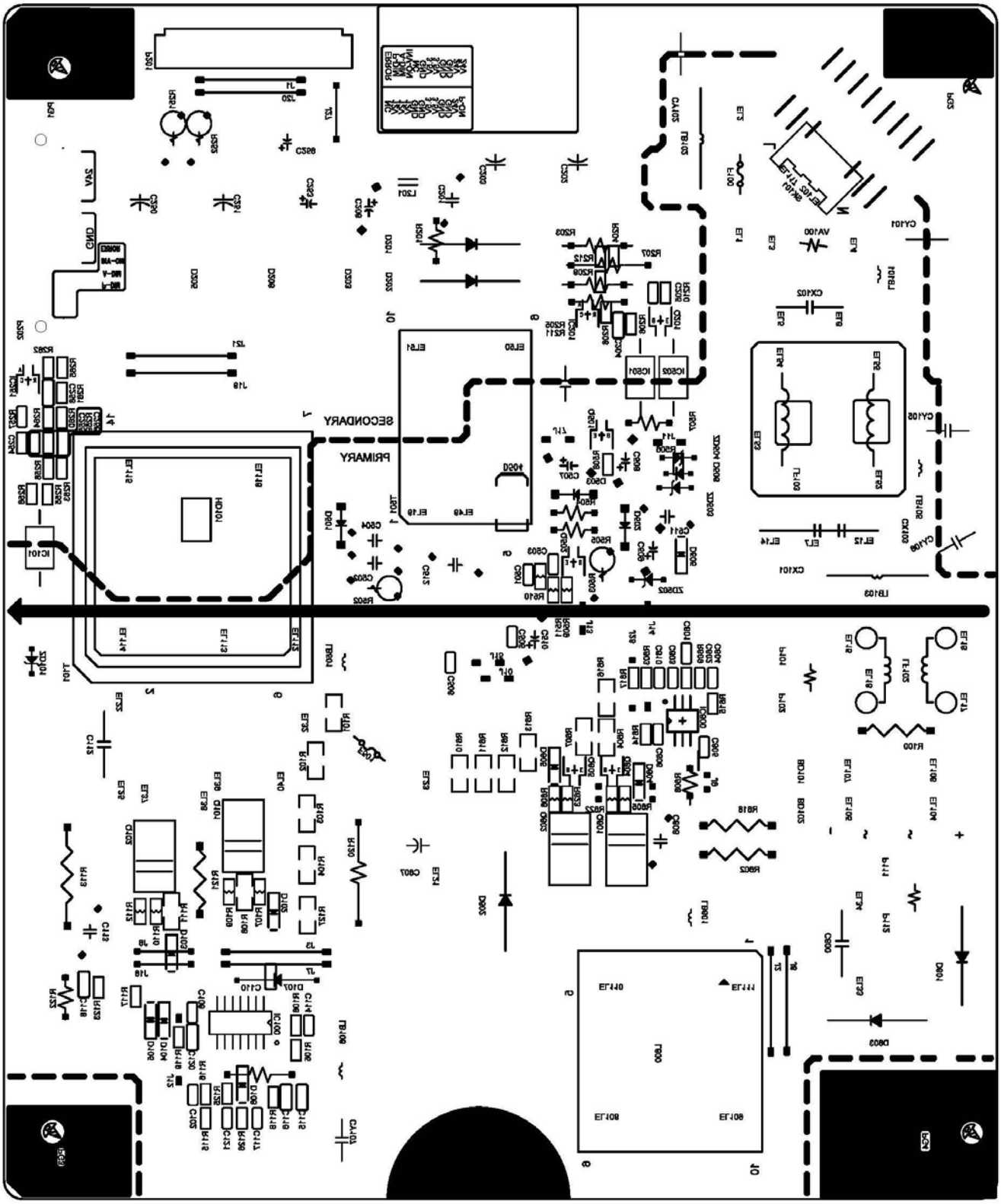
| Standard Size | Tolerance(mm) |
|---|---|
| 1,020 ×1,020mm (40" ×40")<br>1,020 ×1,220mm (40" ×48")<br>1,070 ×1,160mm (42" ×45.6") | +3<br>-0 |

※ Other sheet size and thickness could be available upon request.

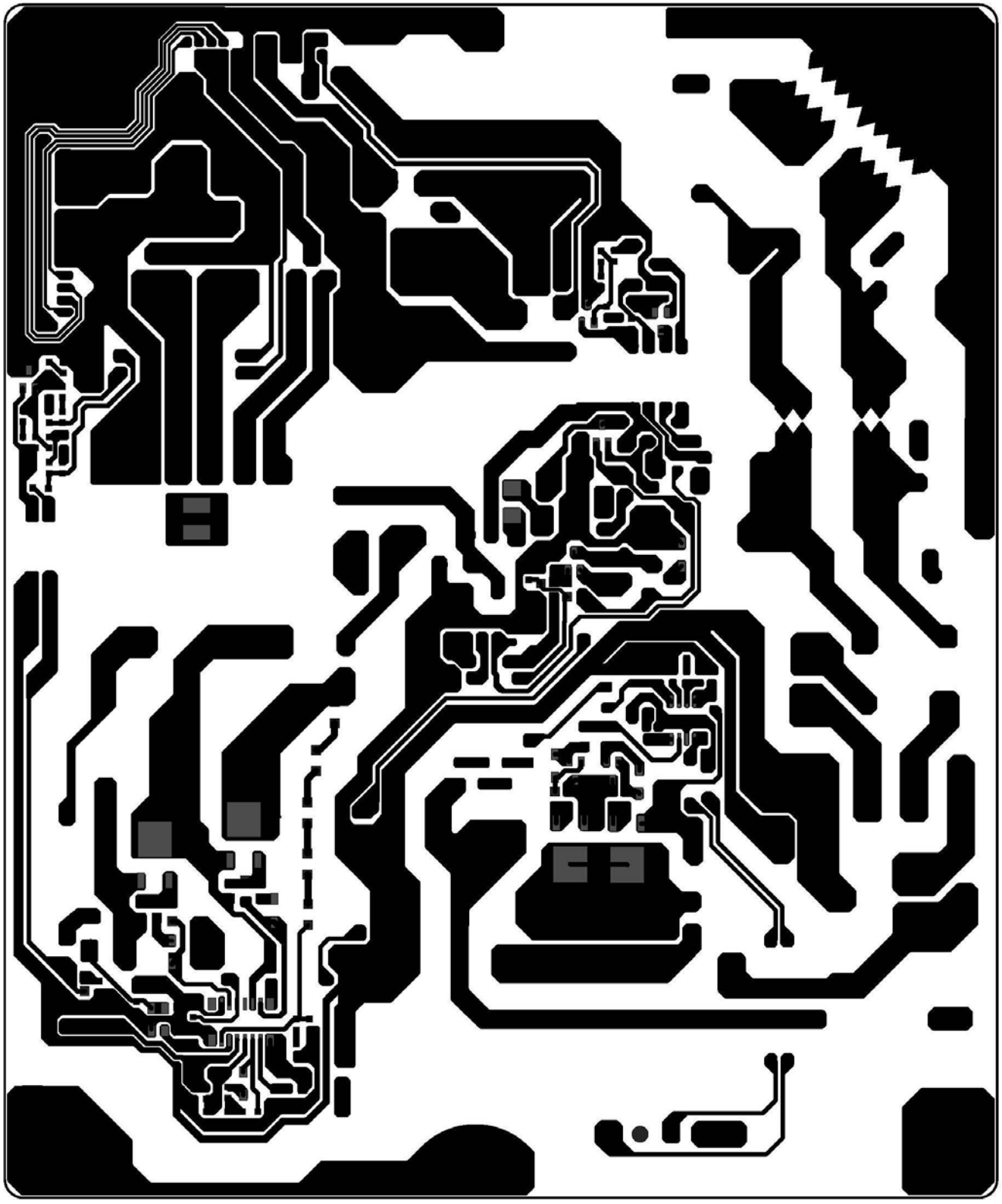
# Top Silk


Caution
High Voltage
PRIMARY
SECONDARY
Bonding
Rev : 1.0 [12,02,01]
MODEL
LGP37C-12HPC
YUYANG DNU CO.,LTD
T3.15A H 250V
T8.3A H 250V
Pb Free Soldering

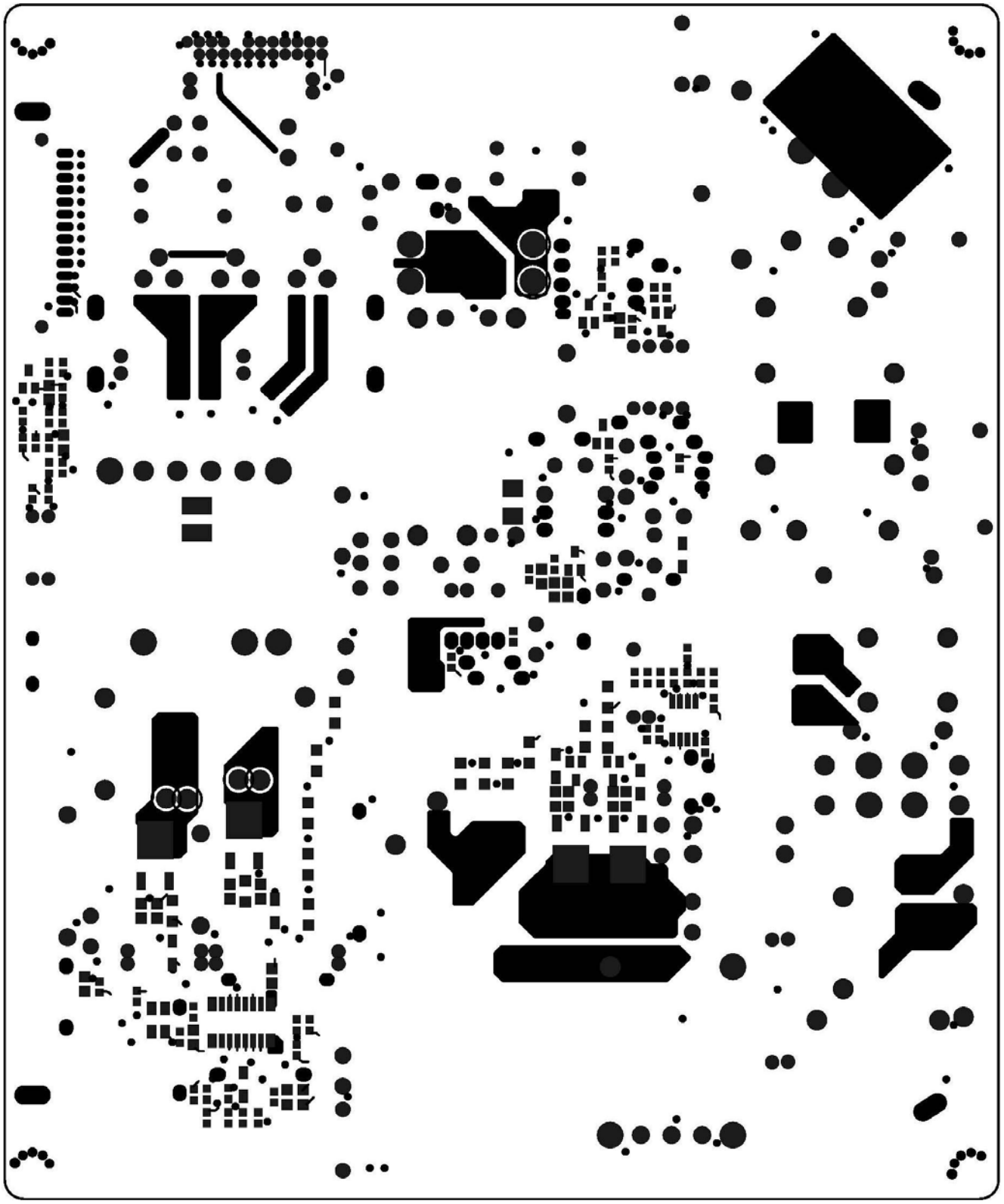
# Bottom Silk



## Bottom Pattern



# Bottom Solder mask



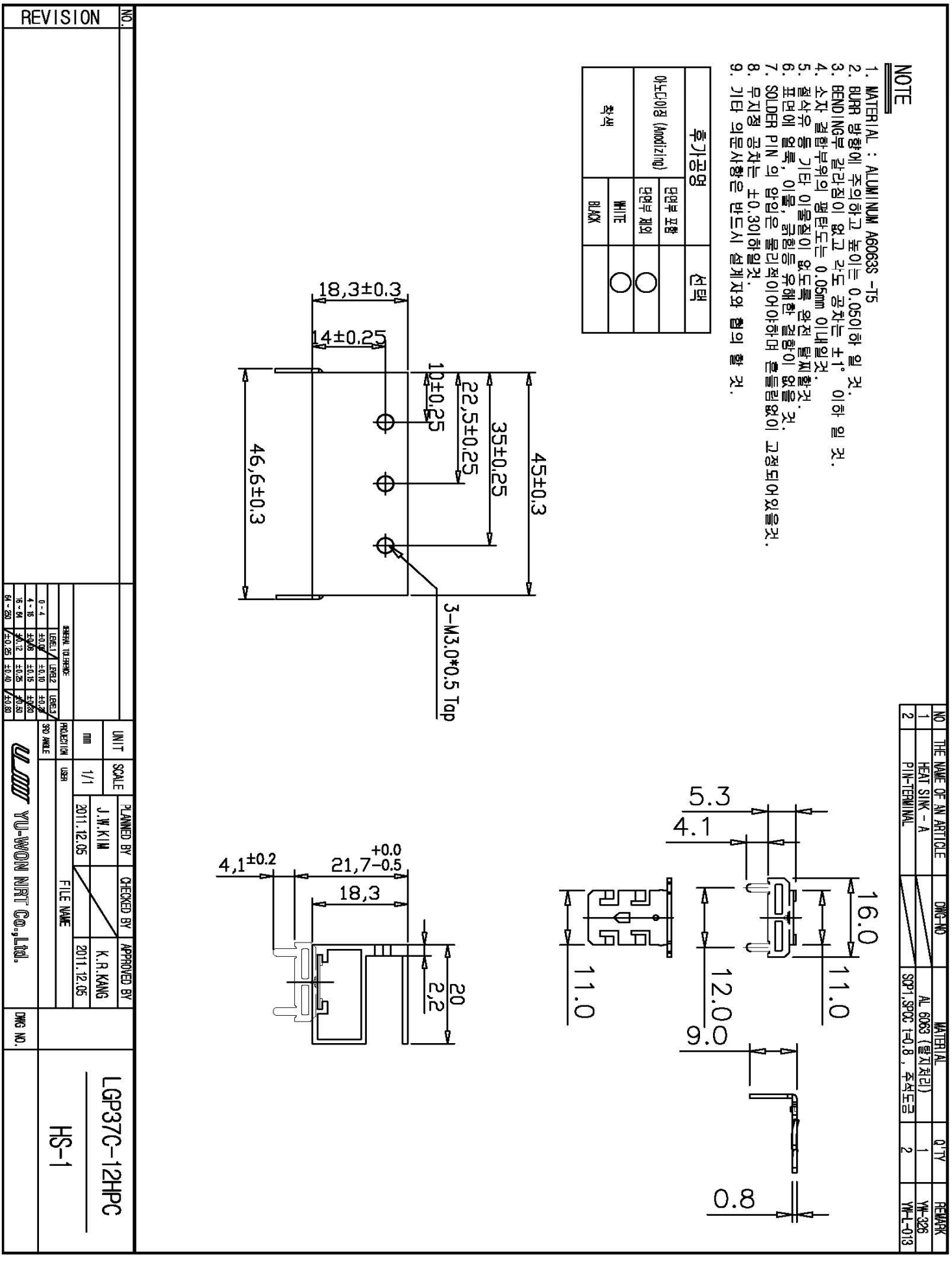
# Safety Parts

| Object/part No. | Manufacturer / Trademark | Type / Model | Value / Rating | 부품 Marking (실물) | standard | mark(s) of conformity1) |
|---|---|---|---|---|---|---|
| AC input connector, (SK101) | Yeon Ho | YW396 Series | 250V / 7.5A | | IEC 60065 | |
| | JST | VH Series | 250V / 7A | | | |
| Fuse, (F100) | Littelfuse Ltd. | 215 Series | T6.3AH / 250V | LF.T6.3AH250VP | IEC 60127-1 | |
| | Dainfuse | 50CT | | T6.3AH250V | IEC 60127 | |
| Fuse, (F501) | Littelfuse Ltd. | 215 Series | T3.15AH / 250V | LF.T3.15AH250VP | IEC 60127-1 | |
| | Dainfuse | 50CT | | T3.15AH250V | IEC 60127 | |
| Line Filter, (LF102 ) | TNC | 620280SH | Rated 130℃ | 620280SH | IEC 60065 | Test in appliance |
| | SOOJUNG | LLF-124 | | LLF-124 | | |
| | DONGYANG | LLF-124 | | LLF-124 | | |
| | FEELUX | LLF-124 | | LLF-124 | | |
| Line Filter, (LF103 ) | SOOJUNG | LLF-100 | Rated 130℃ | LLF-100 | IEC 60065 | Test in appliance |
| | FEELUX | LLF-100 | | LLF-100 | | |
| | DONG YANG | LLF-100 | | LLF-100 | | |
| Varistor, (VA100) | Samwha | SVC621D-14 | 620V,Min. | SVC621-14 | IEC61051-2 | |
| | Amotech Co., Ltd. | INR 14D621K | | INR 14D621 | | |
| | Xiamen Wanming Electronics Co.,Ltd | WMR14D621 | | WMR 14D621K | | |
| Bridge Diode, (BD101,BD102) | Rectron | RS1005M | Min. 600V / 10A | RS1005M | E94233 | Test in appliance |
| | TSC | TS10B05G | | TS10B05G | E96005 | |
| X-cap.(CX102,CX103) | Pilkor | PCX2 337 | 275V (CX102= Max 0.68uF, CX103= Max 0.22uF) | PCX2 337 | IEC 60384-14 UL1414 | |
| Thermistor.(TH101,TH102) | DSC | DSC-2.5D-15 | 2.5ohm at 25 °C | DSC-2.5D-15 | IEC 60065 | |
| | NANJING SHIHENG ELECTRONICS CO., LTD | MF72-5D15 | | MF72-2.5D15 | | |
| | Xiamen Wanming Electronics Co.,Ltd | WTR 15D2R5 | | WTR 15D2R5 | | |
| Elec.Cap., (C607) | SAMYOUNG | KMF | 450V / Max 100uF / 105℃ | KMF450V100uF | IEC 60950-1 | Test in appliance |
| | SUSCON | SK | | SK450V 100uF | | |
| Switching TR,(Q601,Q602) | STM | STD13NM60N | Min 650V / Min 11A | STD13NM60N | IEC 60950-1 | Test in appliance |
| | TOSHIBA | TK8P60V | | TK8P60V | | |
| | INFINEON | IPD60R380C6 | | IPD60R380C6 | | |
| Switching TR,(Q101,Q102) | STM | STD7NM60N | Min 600V / Min 4.5A | STD7NM60N | IEC 60950-1 | Test in appliance |
| | INFINEON | SPD04N60C3 | | SPD04N60C3 | | |
| | TOSHIBA | TK5P60V | | TK5P60V | | |
| Flyback IC, (IC500) | ONSEMI | NCP1028 | Min. 700 V / Min 0.72A | NCP1028P65 | IEC 60950-1 | Test in appliance |
| Y Cap., (CY105,CY106,CY107) | Samwha | SD | Min 250V / Max 470pF | SD471K | IEC 60384-14 | |
| | Apex intec | NK | | NK471K | | |
| | DONG IL | DA | | DA471k | | |
| | YINANDON | CT81 | | CT81 471K | | |
| Y Cap., (CY101,CY102) | Samwha | SD | Min 250V / Max 100pF | SD101K | IEC 60384-14 | |
| | Apex intec | NK | | NK101K | | |
| | DONG IL | DA | | DA101k | | |
| | YINANDON | CT81 | | CT81 101K | | |
| Bridging Cap., (CY103) | Samwha | SD | Min 250V / Max 470pF | SD471K | IEC 60384-14 | |
| | Apex intec | NK | | NK471K | | |
| | DONG IL | DA | | DA471k | | |
| | YINANDON | CT81 | | CT81 471K | | |
| PFC Coil,(L600) | SOOJUNG | LP-002 | Rated 130℃ | LP-002 | IEC 60950-1 | Test in appliance |
| | NAMYANG | | | | | |
| | DONGYANG | | | | | |
| | Clover Hi TECH | | | | | |
| | FEELUX | | | | | |
| Switching Transformer, (T101) | Nam Yang | LPM-101 | Class B | LPM-101 | IEC 60065 | Test in appliance |
| | Clover Hi TECH | | | | | |
| | DONGYANG | | | | | |
| | SOOJUNG | | | | | |
| | FEELUX | | | | | |
| Switching Transformer, (T501) | SOOJUNG | 12S-LS01 | Class B | 12S-LS01 | IEC 60065 | Test in appliance |
| | TDK | | | | | |
| | DONGYANG | | | | | |
| | DADON | | | | | |
| | FEELUX | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Opto-coupler, (IC101,IC501,IC502) | Everlight | EL817 | >0.4mm / Rated 6000Vac | EL817 | VDE 0884 | |
| | Lite-on | LTV817... | | 817BN | | |
| Discharge Resistor, (R100) | Pilkor | SR37,MSR37 | 1/2W, (MAX) 750Kohm, 5% | | IEC 60065 | |
| | Smart | PRC | 1/2W, (MAX) 750Kohm, 5% | | IEC 60065 | |
| Capacitor, (C600) | Pilkor | PCMP 372 | 0.82uF / 500V | 820n J500V 372 MKP | IEC60384-16 | UL |
| | Sung-Ho | BMPP | | 824J500V BMPP SH | | |
| Capacitor, (C112) | Pilkor | PCMP 384 | 0.047uF / 1250V | 47nF 1250V 384 MMKP | IEC60384-1 | UL |
| | LUMEN | SPK | | SPK 1250V 473J | | |
| | Sung-Ho | BNPS | | 473J 1250V BNPS | | |
| PCB | Duck sung | DS8-V-0 | 94V-0 | | | |
| | DONGMYUNG CIR. | DM5-V-0 | 94V-0 | | | |
| | HT CIRCUIT(QINGDAO) | 1994V0 | 94V-0 | | | |

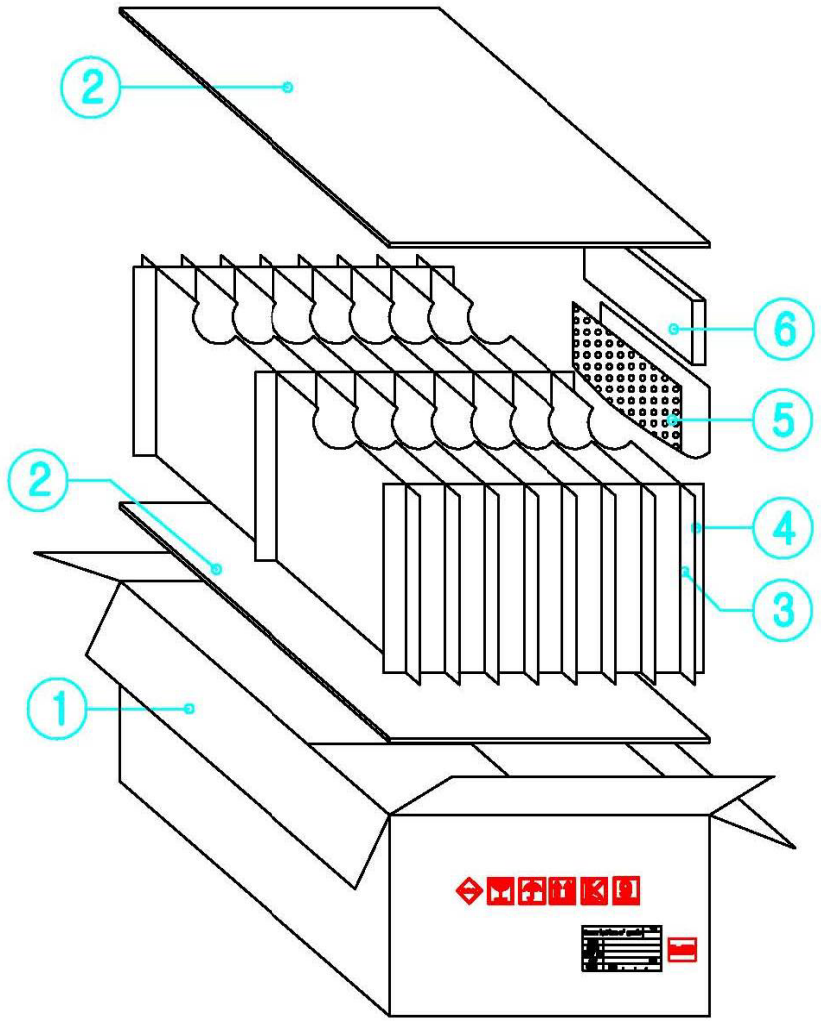
1) an asterisk indicates a mark which assures the agreed level of surveillance

# Mechanical Drawing

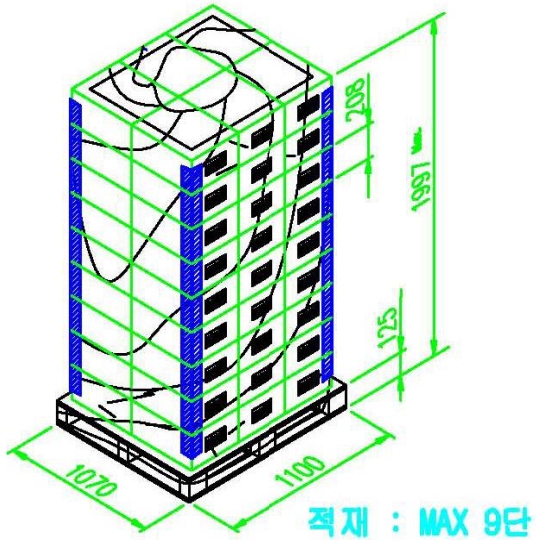

NOTE
1. MATERIAL : ALUMINUM A6063S -T5
2. BURR 방향에 주의하고 높이는 0.05이하 일 것.
3. BENDING부 칼라젤이 없고 각도 공차는 ±1° 이하 일 것.
4. 소자 결합부위의 평탄도는 0.05mm 이내일것.
5. 절삭유등 기타 이물질이 없도록 완전 탈지할것.
6. 표면에 얼룩, 이물, 긁힘등 유해한 결함이 없을 것.
7. SOLDER PIN 의 압입은 물리적이어야하며 흔들림없이 고정되어있을것.
8. 무지정 공차는 ±0.30이하일것.
9. 기타 의문사항은 반드시 설계자와 협의 할 것.
후가공명
선택
아노다이징 (Anodizing)
단면부 포함
단면부 제외
착색
WHITE
BLACK
18,3±0.3
14±0.25
10±0.25
22,5±0.25
35±0.25
45±0.3
46,6±0.3
3-M3.0*0.5 Tap
5.3
4.1
16.0
11.0
12.0
9.0
11.0
0.8
4,1±0.2
21,7+0.0 -0.5
18,3
20
2,2
NO
THE NAME OF AN ARTICLE
DWG-NO
MATERIAL
Q'TY
REMARK
1
HEAT SINK - A
AL 6063 (탈지처리)
1
YW-326
2
PIN-TERMINAL
SCP1,SPCC t=0.8, 주석도금
2
YW-L-013
REVISION
NO.
UNIT
mm
SCALE
1/1
PROJECTION
USER
PLANNED BY
J.W.KIM
2011.12.05
CHECKED BY
FILE NAME
APPROVED BY
K.R.KANG
2011.12.05
DIMENSION TOLERANCE
LEVEL1
LEVEL2
LEVEL3
0 ~ 4
4 ~ 16
16 ~ 64
64 ~ 250
YU-WON NIRT Co.,Ltd.
DWG NO.
LGP37C-12HPC
HS-1

# Packing Drawing

| NO | CHANGE ADDITION | REVISED | APPROVED | DATE |
|---|---|---|---|---|
| | | | | |




Q'TY : 54Box x 14set = 756 SETS




적재 : MAX 9단

GUIDE : 50 x 50 x (1400~2000) x 5t 4EA

PALLET : 1100 x 1070 x 125T (합판)

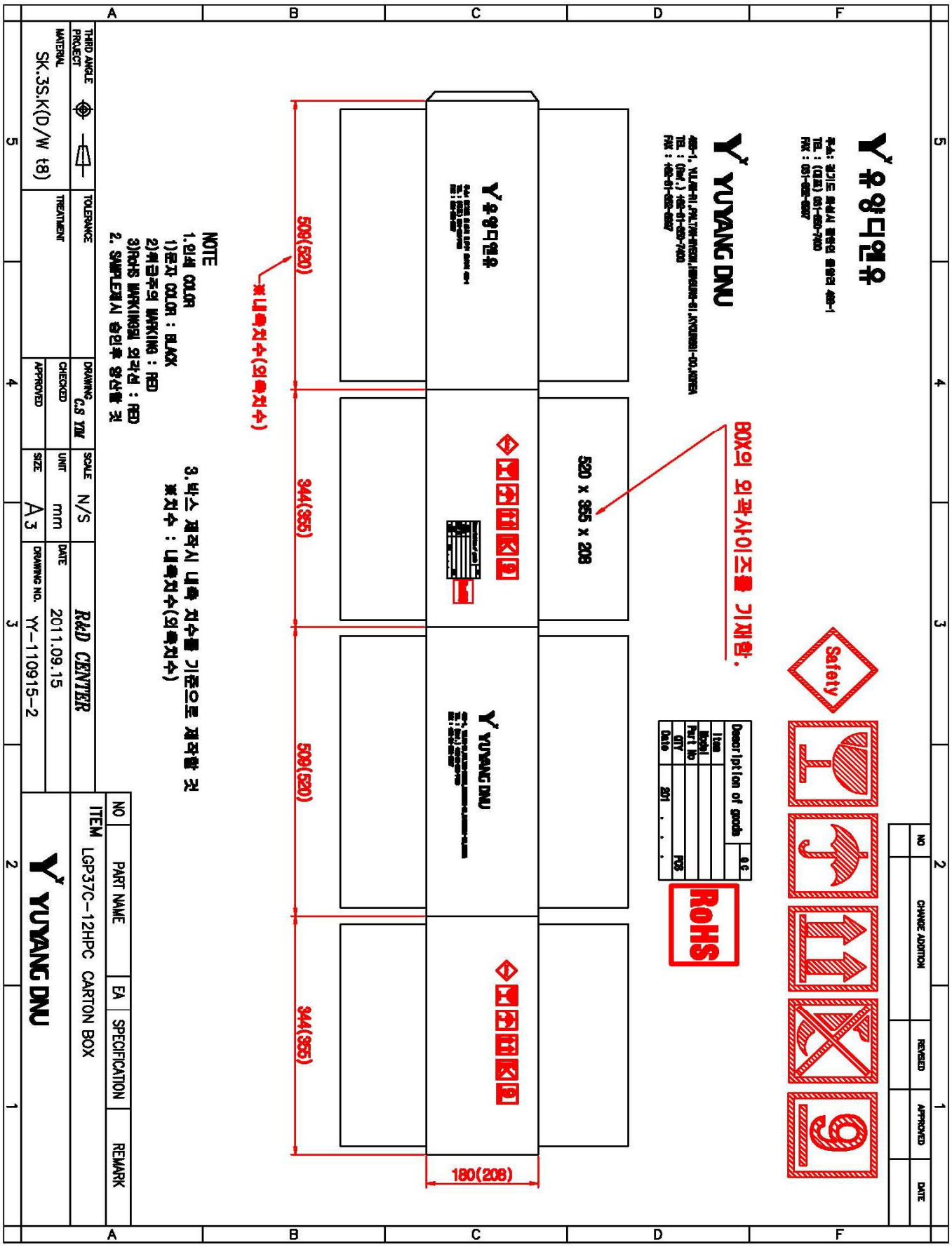
※박스치수는 내측치수임

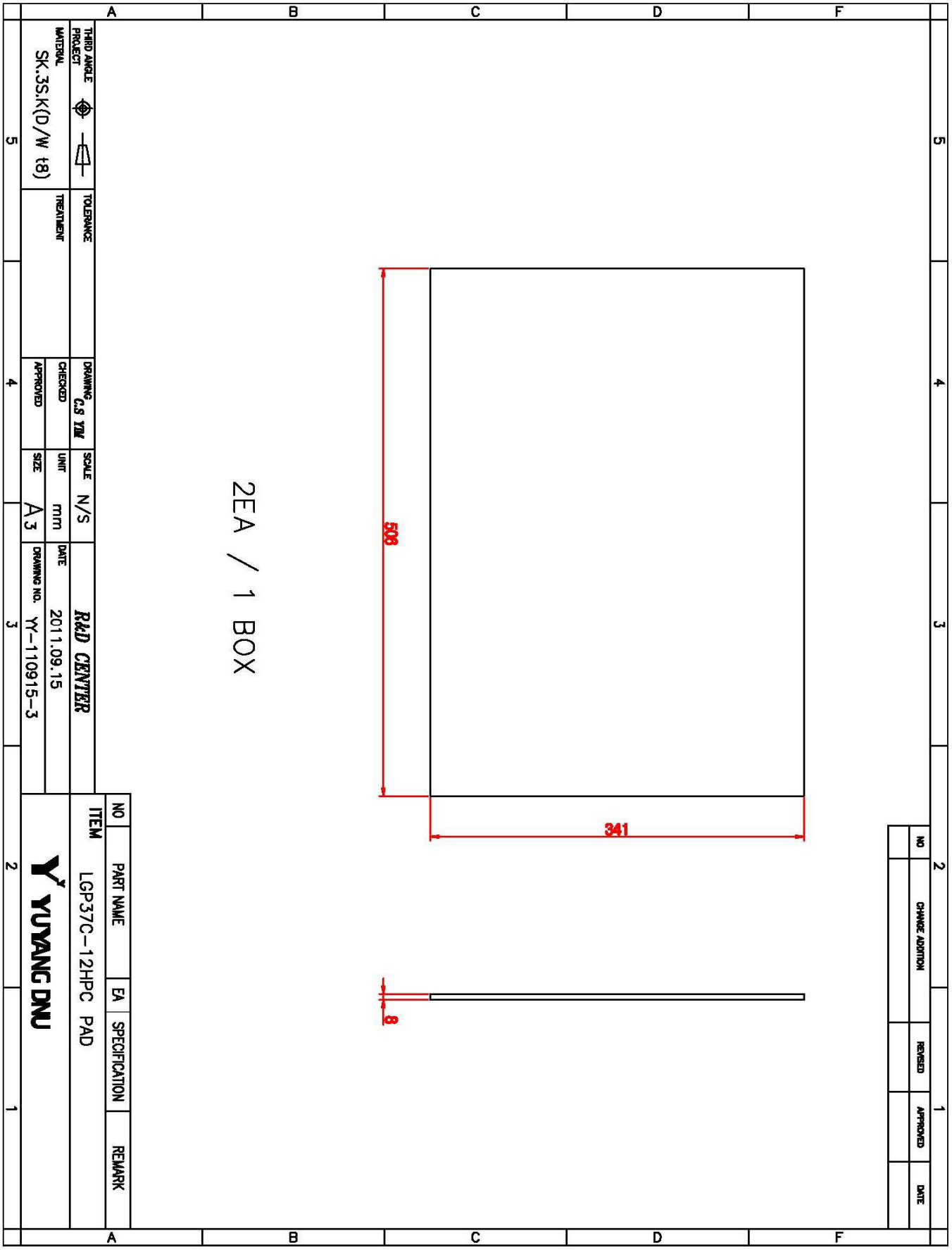
| NO | DESCRIPTION | MATERIAL | Q'TY | REMARK |
|---|---|---|---|---|
| 1 | CARTON BOX(내측) | SK.3S.K(D/W t8) (509x344x180xt8) | 1/14 | 9단 - 180 |
| 2 | PAD | SK.3S.K(D/W t8) (506x341xt8) | 2/14 | 8T PAD |
| 3 | PARTITION - A | SK.3S.K(D/W t8) (506x166xt8) | 8/14 | LGP37C-12HPC |
| 4 | PARTITION - B | SK.3S.K(D/W t8) (341x166xt8) | 3/14 | LGP37C-12HPC |
| 5 | BUBBLE SHEET | ANTI (440x220mm) | 14/14 | LGP37C-12HPC |
| 6 | POWER SUPPLY | LGP37C-12HPC계열(198x162x28) | 14/14 | LGP37C-12HPC |

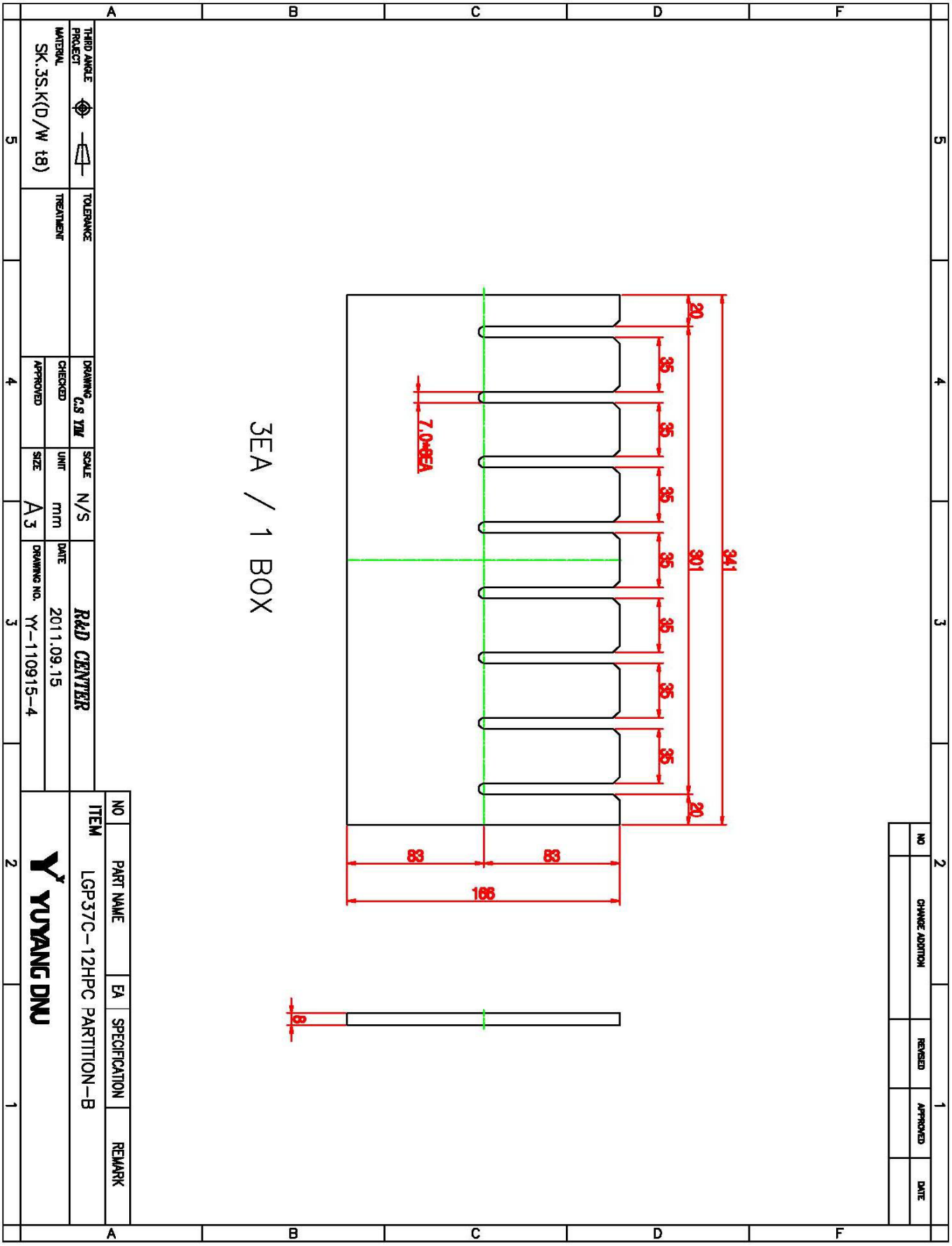
| | | | | |
|---|---|---|---|---|
| THIRD ANGLE PROJECT | TOLERANCE | DRAWING C.S YIM | SCALE N/S | R&D CENTER |
| MATERIAL | TREATMENT | CHECKED | UNIT mm | DATE 2011.09.15 |
| | | APPROVED | SIZE A3 | DRAWING NO. YY-110915-1 |

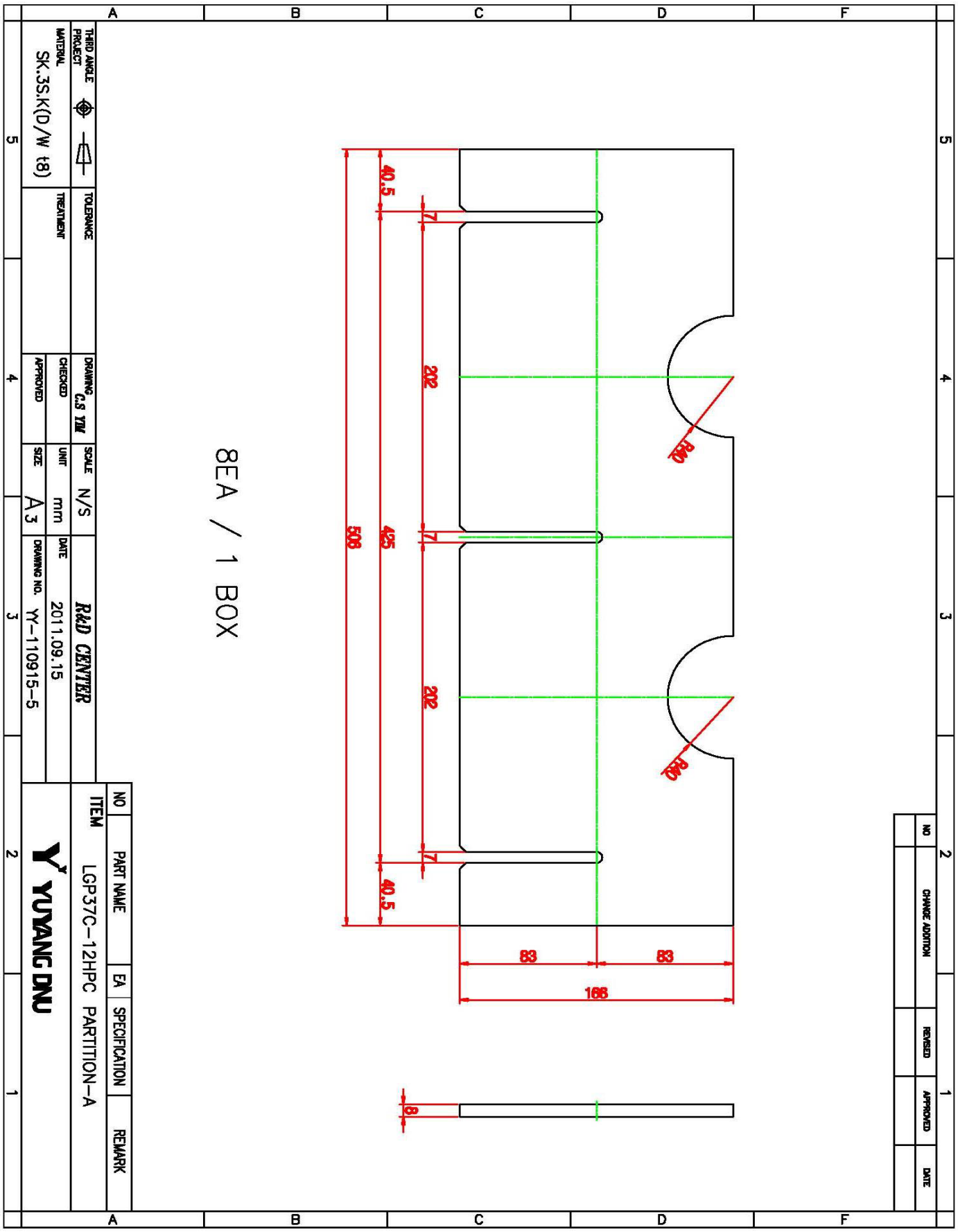
| NO | PART NAME | EA | SPECIFICATION | REMARK |
|---|---|---|---|---|
| ITEM | PACKING DWG for LGP37C-12HPC | | | |

YUYANG DNU

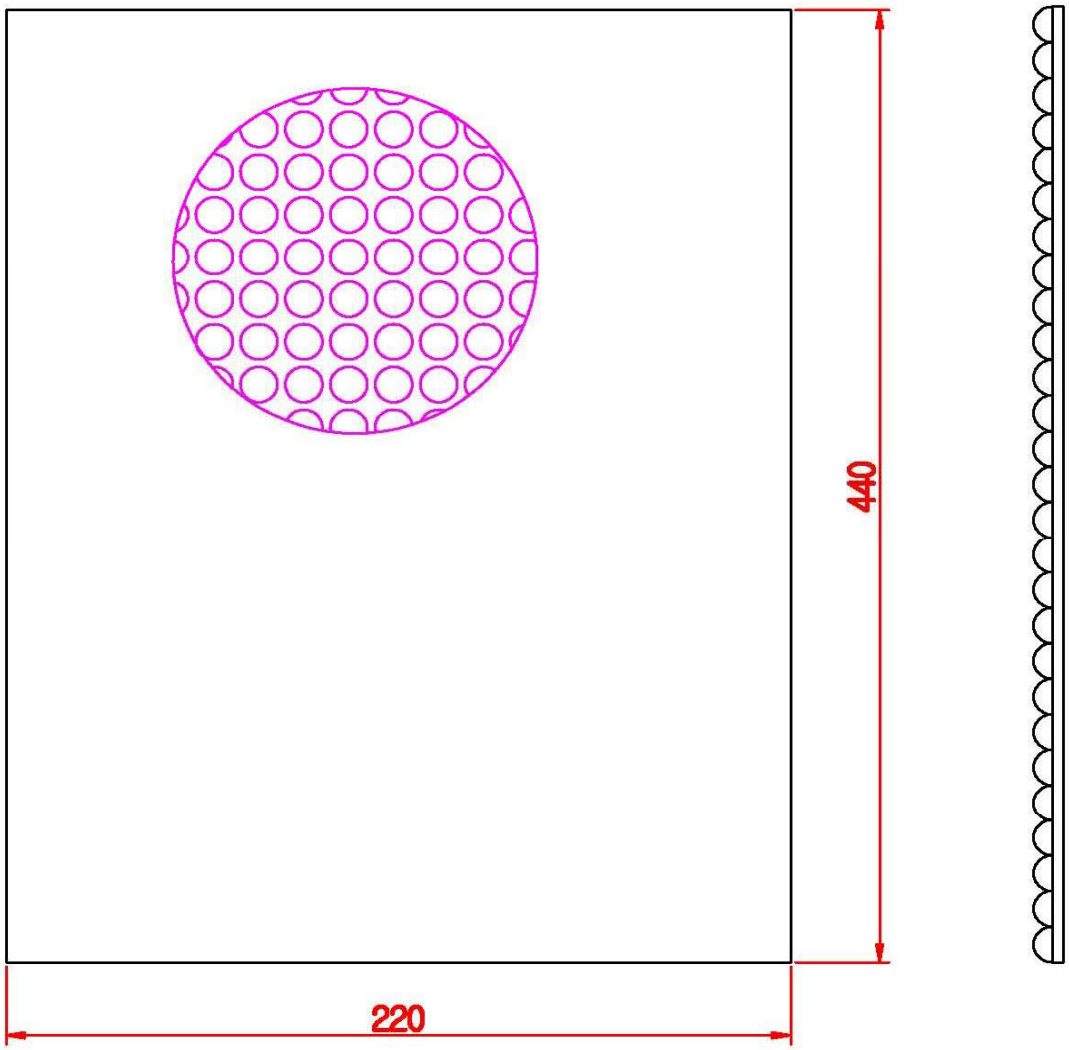

Y 유양디엔유
Y YUYANG DNU
520 x 365 x 208
80X의 외곽사이즈를 기재함.
Safety
RoHS
509(520)
344(355)
509(520)
344(355)
180(208)
NOTE
1.인쇄 COLOR
1)로고 COLOR : BLACK
2)취급주의 MARKING : RED
3)RoHS MARKING의 외곽선 : RED
2. SAMPLE제시 승인후 양산할 것
3.박스 제작시 내측 치수를 기준으로 제작할 것
※치수 : 내측치수(외측치수)
※내측치수(외측치수)
THIRD ANGLE PROJECT
MATERIAL
SK.3S.K(D/W t8)
TOLERANCE
TREATMENT
DRAWING C.S YIM
CHECKED
APPROVED
SCALE N/S
UNIT mm
SIZE A3
DATE 2011.09.15
DRAWING NO. YY-110915-2
R&D CENTER
ITEM LGP37C-12HPC CARTON BOX
NO PART NAME EA SPECIFICATION REMARK
CHANGE ADDITION REVISED APPROVED DATE
Y YUYANG DNU


2EA / 1 BOX
509
341
8
THIRD ANGLE PROJECT
MATERIAL
SK.3S.K(D/W t8)
TREATMENT
TOLERANCE
DRAWING C.S YIM
CHECKED
APPROVED
SCALE N/S
UNIT mm
SIZE A3
DATE 2011.09.15
DRAWING NO. YY-110915-3
R&D CENTER
YUYANG DNU
ITEM LGP37C-12HPC PAD
NO
PART NAME
EA
SPECIFICATION
REMARK
NO
CHANGE ADDITION
REVISED
APPROVED
DATE


3EA / 1 BOX
20
35
35
35
35
35
35
35
20
341
301
7.0±0.3EA
83
83
166
8
NO
CHANGE ADDITION
REVISED
APPROVED
DATE
ITEM
LGP37C-12HPC PARTITION-B
NO
PART NAME
EA
SPECIFICATION
REMARK
YUYANG DNU
R&D CENTER
DRAWING NO. YY-110915-4
DATE 2011.09.15
SIZE A3
UNIT mm
SCALE N/S
DRAWING C.S YIM
CHECKED
APPROVED
TOLERANCE
TREATMENT
MATERIAL SK.3S.K(D/W t8)
THIRD ANGLE PROJECT

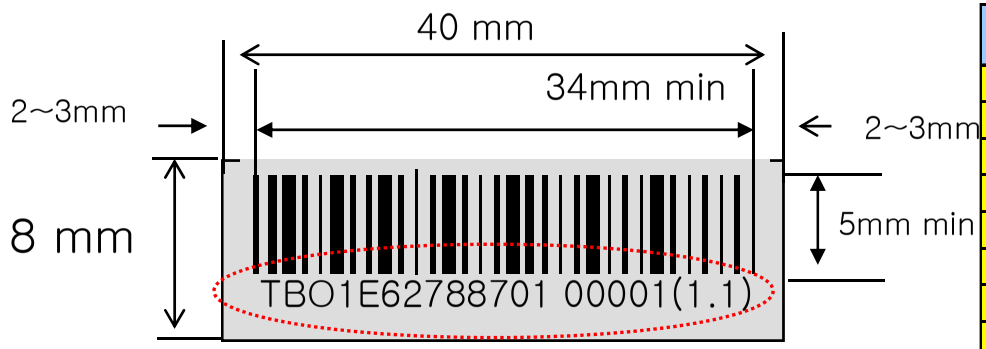

8EA / 1 BOX
40.5
7
202
R40
506
425
83
83
166
8
NO
CHANGE ADDITION
REVISED
APPROVED
DATE
ITEM
NO
PART NAME
EA
SPECIFICATION
REMARK
LGP37C-12HPC PARTITION-A
YUYANG DNU
THIRD ANGLE PROJECT
MATERIAL
SK.3S.K(D/W t8)
TOLERANCE
TREATMENT
DRAWING
C.S YM
CHECKED
APPROVED
SCALE
N/S
UNIT
mm
SIZE
A3
DATE
2011.09.15
DRAWING NO.
Y-110915-5
R&D CENTER

| REVISION | | | | |
|---|---|---|---|---|
| NO | CHANGE ADDITION | REVISED | APPROVED | DATE |
| | | | | |




| | | | |
|---|---|---|---|
| MATERIAL PE t0.03 PINK | R&D CENTER | DRAWING C.S YIM | ITEM LGP37C-12HPC BUBBLE SHEET |
| TOLERANCE + 5 / − 0 | DATE 2011.09.15 | CHECKED | DRAWING NO. YY-110915-6 |
| TREATMENT | SCALE N/S / SIZE A4 | APPROVED | YUYANG DNU |

# Bar-Code
# Label Drawing




| Method of marking | Date | Method of marking | Date | Method of marking | Date |
|---|---|---|---|---|---|
| 1 | 1 | B | 11 | M | 21 |
| 2 | 2 | C | 12 | N | 22 |
| 3 | 3 | D | 13 | P | 23 |
| 4 | 4 | E | 14 | Q | 24 |
| 5 | 5 | F | 15 | R | 25 |
| 6 | 6 | G | 16 | S | 26 |
| 7 | 7 | H | 17 | T | 27 |
| 8 | 8 | J | 18 | U | 28 |
| 9 | 9 | K | 19 | V | 29 |
| A | 10 | L | 20 | W | 30 |
| | | | | X | 31 |

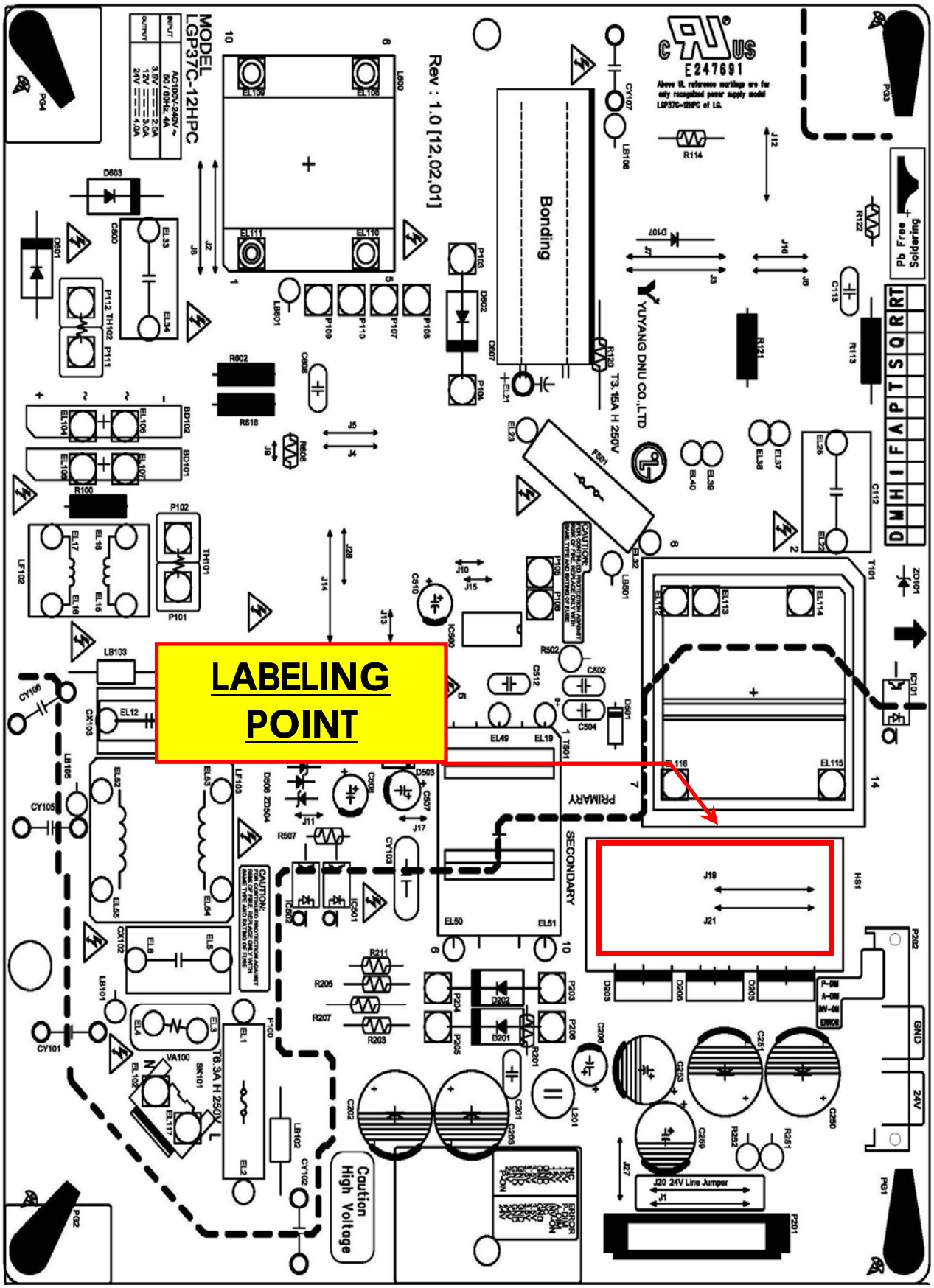
**T B O 1 E 62788701 0 0 0 1(1.1)**

- **Serial No. (10 Digit No.)**
- **Part No of LGE (EAY62788701)**
- **Manufacturing Line (A, B, C …….. )**
- **Manufacturing Date [1,2,3,4,5,6,7,8,9,A,B,C,D,E…V]**
- **Manufacturing Month (1, 2, 3, … Oct. :O, Nov. : N, Dec. : D )**
- **Manufacturing Year(9:2009)**
- **Supplier Code ( L : LGIT / B : H&E / T : YUYANG)**

▶ 재질 : **PTG** (비전도성 재질)

# Labeling Point

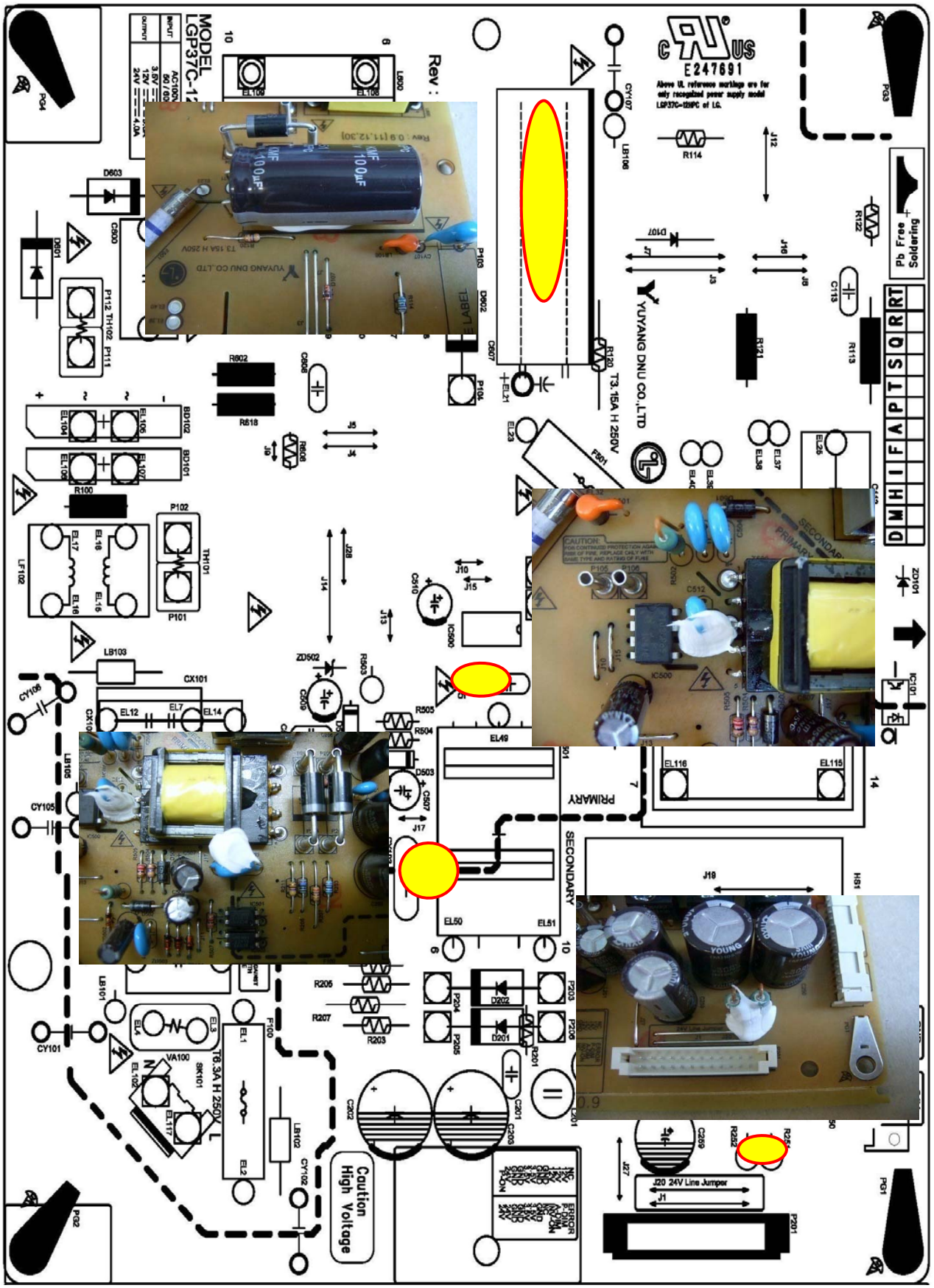
## Labeling Point



# Workmanship Point

## Silicone Bonding Point

## Silicone Bonding Point ( )



# # Appendix List

| No. | Contents |
|---|---|
| 1 | PCB Check list |
| 2 | Magnetic Part Specification<br><br>**2-1. LP-002 (PFC)**<br>2-1-1. NAMYANG<br>2-1-2. SOOJUNG<br>2-1-3. CLOVER<br>2-1-4. DONGYANG<br>2-1-5. FEELUX<br>**2-2. 12S-LS01 (ST-by Trans)**<br>2-2-1. DONGYANG<br>2-2-2. FEELUX<br>2-2-3. SOOJUNG<br>2-2-4. TDK<br>**2-3. LPM-101 (Multi Trans)**<br>2-3-1. NAMYANG<br>2-3-2. SOOJUNG<br>2-3-3. CLOVER<br>2-3-4. DONGYANG<br>2-3-5. FEELUX |
| 3 | Warranty letter |

# # Appendix 1.

# PCB CHECK LIST

| | Revision History | Rev | DATE | REMARK |
|---|---|---|---|---|
| 1 | 기존 PCB Check Sheet Ver1.9 에서<br>신규 Power Check Sheet Ver1.0 으로 개정 함 | 1.0 | 2011.06.02 | |

## LGP37C-12HPC(PCB REV1.0- 2012. 02. 01)

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ 부품 LOCATION NO. | | OK | NG | |
| 1 | Power 1차측 회로 Location No.가 100번대 일 것(Multi 1차측 포함) | OK | | |
| 2 | Power 2차측 회로 Location No.가 200번대 일 것(Stand by 2차측,Multi 2차 포함) | OK | | |
| 3 | Inverter 1차측 회로 Location No.가 300번대 일 것 | | | 해당 안됨 |
| 4 | Inverter 2차측 회로(F/B,OVP회로부 포함) Location No.가 400번대 일 것 | | | 해당 안됨 |
| 5 | Stand by 1차측은 Location No.가 500번대 일 것 | OK | | |
| 6 | PFC단은 Location No.가 600번대 일 것 | OK | | |
| 7 | MICOM 주위는 Location No.가 700번대 일 것 | | | 해당 안됨 |
| 8 | LCD : LED Driver 단은 Location No.가 800번대 일 것 | | | 해당 안됨 |
| 9 | PDP : STBY 1,2차단은 Location No.가 300번대 일 것 | | | PDP 에만 적용함 |
| 10 | PDP : Va 2차단은 Location No.가 500번대 일 것 | | | PDP 에만 적용함 |
| 11 | PDP : Vs 2차단은 Location No.가 900번대 일 것 | | | PDP 에만 적용함 |
| 12 | PDP : Vs,Va 1차단은 Location No.가 800번대 일 것 | | | PDP 에만 적용함 |
| 13 | CTV : Power Block은 Location No. 800번대 일 것 | | | 해당 안됨 |
| 14 | Resistor의 회로Location No.는 R***로 시작할 것 | OK | | |
| 15 | Capacitor의 회로Location No.는 C***로 시작할 것 | OK | | |
| 16 | Diode의 회로Location No.는 D***로 시작할 것 | OK | | |
| 17 | Zener Diode의 회로Location No는 ZD***로 시작할 것 | OK | | |
| 18 | Coil의 회로Location No.는 L***로 시작할 것 (PFC 포함) | OK | | |
| 19 | Transformer의 회로Location No.는 T***로 시작할 것(Drive Trans 포함) | OK | | |
| 20 | Bead의 회로Location No.는 LB***로 시작할 것 | OK | | |
| 21 | Fuse의 회로Location No.는 F***로 시작할 것 | OK | | |
| 22 | TR/FET/Thyristor의 회로Location No.는 Q***로 시작할 것 | OK | | |
| 23 | Varistor의 회로Location No.는 VA***로 시작할 것 | OK | | |
| 24 | Volume Resistor의 회로Location No.는 VR***로 시작할 것 | | | 해당안됨 |
| 25 | Jumper의 회로Location No.는 J***로 시작할 것 | OK | | |
| 26 | H/S의 회로Location No.는 HS***로 시작할 것 | OK | | |
| 27 | IC의 회로Location No.는 IC***로 시작할 것 | OK | | 2007.04.16 DDC 표준 |

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ 부품 LOCATION NO. | | OK | NG | |
| 28 | Connector wafer / Ass`y (Board in type)의 회로 Location No.는 P***로 시작할 것 | OK | | |
| 29 | Eyelet의 회로Location No.는 EL***로 시작할 것 | OK | | |
| 30 | Gripper의 회로Location No.는 G***로 시작할 것 | | | 해당 안됨 |
| 31 | Holder의 회로Location No.는 HD***로 시작할 것 | OK | | |
| 32 | Thermistor의 회로Location No는 TH***로 시작할 것 | OK | | |
| 33 | Metal Ground의 회로Location No.는 PG***로 시작할 것 | OK | | |
| 34 | Line Filter의 회로Location No.는 LF***로 시작할 것 | OK | | |
| 35 | AC Socket(Inlet)의 회로 Location No.는 SK***로 시작할 것 **(AC전원 Docking용 Wafer 포함)** | OK | | 2007.04.16 DDC 표준 |
| 36 | Photo Coupler의 회로Location No는 IC***로 시작할 것 | OK | | 2007.04.16 DDC 표준 |
| 37 | Relay의 회로 Location No.는 RL***로 시작할 것 | | | 해당 안됨 |
| 38 | Y-Capacitor의 회로Location No는 CY***로 시작할 것 | OK | | |
| 39 | X-Capacitor의 회로Location No는 CX***로 시작할 것 | OK | | |
| 40 | Fuseble Resistor의 회로Location No는 R***로 시작 할 것 | | | 해당 안됨 |
| ▶ PCB Pattern 간격 | | | | |
| 1 | Primary ⇔ Secondary(GND,Y-Cap,Photo Coupler) 간격이 **Creepage 기준을 만족할 것.(규격Gr. 안전규격 Check List 참조.Note 0)** (단, Working Voltage가 350V이상일 때 규격 요청 거리에 따른다.) | OK | | 첨부화일 참조. (Creepage) **NOTE 0** Creepage |
| 2 | Primary(L,N) ⇔ Safety GND 간격이 3mm이상일 것 **(단, 2심일 경우 6mm 이상 일 것)** | OK | | |
| 3 | Live ⇔ Neutral 간격이 **3mm** 이상일 것 | OK | | |
| 4 | Primary ⇔ Secondary 부품간 공간 거리는 **6mm**이상일 것 (6mm 이하일 경우에는 insulation sheet 추가) | OK | | Primary ⇔ Secondary 부품간 공간 거리는 **6mm** |
| 5 | 1차측 Main Current loop는 Pattern 두께 3mm 이상일 것 **(BD ↔ 1차 평활 Cap까지 중점 Check)** | OK | | |
| 6 | PFC Coil 밑으로 소신호 Line이 지나가지 말 것. DC는 문제 없음 | OK | | |
| 7 | 주 GND(AC 평활 Cap. GND) 에서 IC GND 연결 시 Pattern 임피던스를 고려하여 pattern을 분리 할 것. | OK | | |
| 8 | DIP Type St-By IC 일 경우 고압Pin과 근접Pin 간의 이격거리 확보 할 것. - Drain pin과 인접된 pin은 N.A나 공 pin 일 것. | OK | | |

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ Component | | OK | NG | |
| 1 | Surge Test 시 1~2차간 간격이 **6.0mm㎜** 이상일 것(safety GND와 2차 GND의 구별 주의 (절연 Y-Cap사용) 공간확보 주의, 절연Sheet) | OK | | (주) 3심:3.0mm 이상 (내압 test 必) 2심:6.0mm 이상 (Y-cap 포함) |
| 2 | 전해 Cap(전수) 부품 주위 **발열 부품**과 **3mm**이상 이격 시킬 것 **(공간거리)** | OK | | |
| 3 | 1차 평활 전해 Cap 부품 upper 영역은 1mm이상 Bottom 영역은 5mm 이상 이격 시킬 것 (Vertical type Capacitor에 한함) (Note 1) | OK | | |
| 4 | 1차 평활 Cap 3mm 영역 내 아래로 Pattern이 지나가지는 않을 것 (양면 PCB 상측 Pattern에 한함) | OK | | |
| 5 | 높이가 낮은 코어를 사용할 경우 절연 tape를 사용할 것 (PCB와의 이격거리 확보) | OK | | 1,2차 절연형 Trans 에 한함 |
| 6 | Trans의 경우 300V 기준으로 Barrier **8mm**이상 사용하고 있을 것 (Note 0) (Barrier를 줄이기 위해 Wire에 Tube 사용가능, **규격 GR. 필 확인 사항)** | OK | | 첨부화일 참조. (Creepage) |
| 7 | AC Inlet의 경우 Yellow - Green wire의 Screw 3.5Φ 이상일 것. * Y/G wire를 사용하지 않을 경우, PCB Pattern으로만 대응 시엔 200A Test통과할 것 * Safety GND는 독립적으로 GND역할만 하도록 할 것. UL Test의뢰 *** Pattern 대응 시엔 반드시 규격 확인을 할 것** | OK | | |
| 8 | 부품에 힘을 가했을 때 1~2차 부품간 6mm 공간 거리 확보할 것. Core에 절대로 부품이 접촉되면 안됨 | OK | | |
| 9 | Box type Capacitor 사용 시 Forming type이 적용할 것. RTV Bond가 되어 있을 것 (X-capacitor 포함.) **단, PDP Sony 모델에 한함** | | | 해당 안됨 |
| 10 | CORE(Trans류 All 포함) 주위에는 2mm 이상 전 부품을 이격 시킨다. * 유기전압 1kV (peak to peak) 이상 시엔 4mm 이상 (1000:1 Probe 기준) | OK | | |
| 11 | Inverter Trans와 Metal Frame(shield)과 4mm 이상 이격을 시킨다. (적용이 어려울 경우, 반드시 Insulation sheet 추가한다.) | | | 해당 안됨 |
| 12 | 2차 측 출력 Wafer 는 고정 PIN 추가 TYPE 적용 할 것 (단, LPB 일 경우 Micom Deberging 용 Wafer 는 제외) | OK | | |

**NOTE 0** Creepage

**NOTE 1** CAPACITOR

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ 필수 Marking 사항 | | OK | NG | |
| 1 | AC Socket, AC입력용 Wafer에 L/N표시는 되어 있을 것. (Docking Type도 L/N 표시(QA 요청), 상,하측 모두 표시)<br>특히, Socket B/D-in type의 경우, AC socket 자체에 L/N 표기가 되어 있으므로, 반드시 PCB L/N 마킹과 동일한지 확인한다. (Note 3-2) | OK | | |
| 2 | Safety GND는 Chassis로 부터 분리될 때 작업자가 확인 가능한 위치일 것. (Note 2)<br>* **추후, PCB 상,하면에 모두 표기,**<br>**상세한 내용은 하단의 유첨 파일 참조 요망, 그리고, 반드시 규격에 최종 확인 받을 것.** | OK | | |
| 3 | Fuse rating(전압,T,전류,H), caution(규격 문구), UL Mark는 입력되어 있을 것<br>Ex) T5A H 250V 형식으로 표시함<br>*** caution: UL에 등록되어있는 문구가 그대로** 입력되어야 함<br>**(For ~ , Replace ~ )** | OK | | |
| 4 | Fuse가 보이는 곳에 위치할 것 (Fuse Marking도 보이는 곳에.) | OK | | |
| 5 | High Voltage warning mark가 입력되어 있을 것.<br>- Inverter 출력부 : LIPS에 한함<br>Inverter 출력부 영역 표시하고 Warning mark 추가.<br>- Primary측 Metal.(H/Sink), High Voltage가 open된 곳. (Fuse) : 공통 | OK | | |
| 6 | 입력/출력 전압, 전류 Spec표기는 되어 있을 것<br>(Note 3) | OK | | |
| 7 | 1차측과 2차측 구분하는 Marking 표시할 것.<br>(상측면 / 하측면) | OK | | |
| 8 | 각 부품의 회로No.가 부품에 가려지지 않을 것 | OK | | |
| 9 | Solder pattern에 하측 회로No./부품 형상 등 겹쳐지지 말 것 | OK | | |
| 10 | 기구 Dead Space가 고려되어 PCB Marking할 것.<br>PCB 고정용 Metal 영역 표시할 것. | OK | | |
| 11 | PCB 사양서에 CTI Spec 이 있는지 확인하고,<br>PCB 에 마킹 되었는지 확인 할 것.<br>- 표기 값 : 600V 이상 (CTI 600) | OK | | |
| 12 | Critical Component List 기준으로 회로도에 Caution 마크 넣을 것 ⚠ | OK | | |
| 13 | PCB 에 Screw 마크 넣을 것 | OK | | |

**NOTE 2** Safety GND 규정

**NOTE 3** Input/Output

**NOTE 3-2** B/D-in socket

| | Details Check Item | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ EMI | | | | |
| 1 | Lightning Surge가 L/N Test 시 Varistor를 14Φ 620V 이상 사용할 것 | OK | | |
| 2 | Lightning Surge가 L/G, G/N간 : 3KV이상 시 Y-Cap. Y1급 사용할 것 | OK | | |
| 3 | Lightning Surge 로 인해 Fuse Dead시만 OK.<br>(대책 : arcing을 방지,Varistor는 Fuse와 가까운 곳에 위치할 것) | OK | | |
| 4 | GND Arcing pattern Slit은 1.2mm일 것<br>Arcing Pattern 양단 거리는 safety규정은 **최소 3.0mm 이상** 일 것 (L/N 사이) | OK | | |
| 5 | Conducted Emission 측정조건 :<br>110Vac/220Vac & 50Hz/60Hz<br>TV Model : GND 有/無, Vivid/Standard, HDMI/Antenna | OK | | |
| ▶ INVERTER (LIPS에 한함) | | | | |
| 1 | Ballaster capacitor 사용할 것 | | | 해당 안됨 |
| 2 | Inverter Trans로 부터 주변 4mm 이내에 소신호 AC pattern이 지나갈 시에는 OVP/OLP 등 Worst 상태를 반드시 확인하여 이상이 없을 것 (Feed Back Line 포함)<br>[ AC입력으로 부터 Inverter에 간섭 되는 noise 를 줄이기 위해 POWER FET의 Heat Sink 를 형상 변경하여 AC 입력부와 Inverter Trans 간 Shield로 사용. (CE 규제사항) - Design 상 고려되어야 함.] | | | 해당 안됨 |
| 3 | Inverter 출력부에 적용한 고압 Capacitor의 Lead는 인위적 힘을 가하여도 주변 부품과 Touch 되지 않도록 절연 거리 확보 or Bodning 적용할 것.<br>(특히, 다른 고압 Capacitor의 body와 touch 되지 않도록 할 것) | | | 해당 안됨 |
| 4 | INVERTR Trans Grip 및 Eyelet 부위 Size 확인할 것.<br>- Pin 동박 Size : 5.5mm<br>- Pattern Size 확대 : 6mm<br>(단, 32인치 이상 LIPS 에만 적용함) | | | 해당 안됨 |
| 5 | 고압 Inverter wafer 는 수평 Type 일 것. | | | 해당 안됨 |

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ 기타 | | OK | NG | |
| 1 | Fuse 깡통(CAN)Type 을 사용하지 말 것. | OK | | |
| 2 | Main Board/Power Board( LIPS 포함) 연결 Connector의 Housing과 Wafer의 Maker가 일치할 것. *일치가 안될 경우, Spec.확인 및 QA 인증 시험이 요구됨.(특히,Board in connector는 Terminal도 확인) | OK | | |
| 3 | Litz Wire 사용하지 말 것. | OK | | USTC 사용. |
| 4 | PFC Bypass Diode가 적용되어 있을 것. (Note 4) | OK | | 첨부화일 참조(Bypass) |
| 5 | Inrush 제어용 Relay 적용 모델인 경우,<br>Fusing Resistor 적용 확인할 것.(Note 5)<br>(단, Fusing Resister 미적용 시 Relay Open Test<br>확인 하여, PL 조건 만족할 것) | | | 첨부화일 참조(Relay)<br>적용 안됨 |
| 6 | 1차 Control IC의 IC Vcc 정류Cap.은 High Ripple, Low Impedance Cap. 사용할 것. | OK | | |
| 7 | RN Type (Metal Film Type) Resistor는 100kohm이상 사용하지 말 것. | OK | | |
| 8 | TO-220, TO-3P type FET, Diode, IC 적용 시,<br>Forming type 을 적용했을 때 forming 후 cutting을<br>하기 때문에 길이가 짧아진다.<br>따라서 반드시 Heatsink 와 PDM 등록 승인원, 부품 현물을<br>3자 확인 후 lead 길이, pitch 확인할 것.<br>(LGEAZ, LGEND 관련하여 사전 협의 필요<br>LGEND 에서는 forming type 을 전수 원함) | OK | | |
| 9 | PCB하측 lead 길이 special 관리 모델의 경우<br>( 예를 들어 2.0mm 관리 품) H/Sink, wafer, 각종<br>부품 도면 받아서 lead 길이 check 할 것 | OK | | |
| 10 | Critical Component List 의 부품인 경우 실물에서<br>형명 마킹 제대로 되어 있는지 확인 할 것 | OK | | |
| 11 | 일본향 모델에 사용되는 방전저항은 규격 인증된<br>Dip Type 저항만 사용 할 것.<br>(단, 일본향 모델에 한 함) | | | 해당안됨 |

**NOTE 4**
Bypass-Diode

**NOTE 5**
Relay

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ Attachment | | OK | NG | |
| 1 | PL check List  PL_280119 | | | |
| | | | | |
| | | | | |
| | | | | |

# # Appendix 2.

# Magnetic Part Specification

**2-1. LP-002 (PFC)**
- 2-1-1. NAMYANG
- 2-1-2. SOOJUNG
- 2-1-3. CLOVER
- 2-1-4. DONGYANG
- 2-1-5. FEELUX

**2-2. 12S-LS01 (ST-by Trans)**
- 2-2-1. DONGYANG
- 2-2-2. FEELUX
- 2-2-3. SOOJUNG
- 2-2-4. TDK

**2-3. LPM-101 (Multi Trans)**
- 2-3-1. NAMYANG
- 2-3-2. SOOJUNG
- 2-3-3. CLOVER
- 2-3-4. DONGYANG
- 2-3-5. FEELUX

# TRANS SPECIFICATION
# [L600]

# APPROVAL SHEET

CUSTOMER: LG ELECTRONICS Inc.

MODEL : 10P 2632"

I T E M : P.F.C TRANS

PART NO : EAP36781902

S.J SPEC NO : LGTR-09-28




APPROVED

DATE : 2009. 10. 09.

SOOJUNG ELECTRONICS IND. CO., LTD.


| | | | | |
|---|---|---|---|---|
| ADDRESS | Office & Factory | 35-1, HongJae4-Dong, Seodaemoon-Gu, 120-094, Seoul, KOREA | TEL<br>FAX | 02-737-2329<br>02-737-2525 |
| | Factory China 1 | Wendong Shuzheng Electronics,<br>Beijao, Wendeng City, shandong, China | TEL<br>FAX | 86-631-857-1392<br>86-631-857-1393 |
| | Factory China 2 | Dongguan Soojung Electronics,<br>Zhonghanqiao Industrial District, Wangniudun town,<br>Dongguan City, Ganding, China | TEL<br>FAX | 86-769-8851-3531<br>86-769-8851-3530 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 1. RECORD OF REVISION

| REV NO. | REASON | CONTENTS | DATA OF APPROVAL | CHECKED | REMARKS |
|---|---|---|---|---|---|
| | | | | | |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

# 2. I N D E X

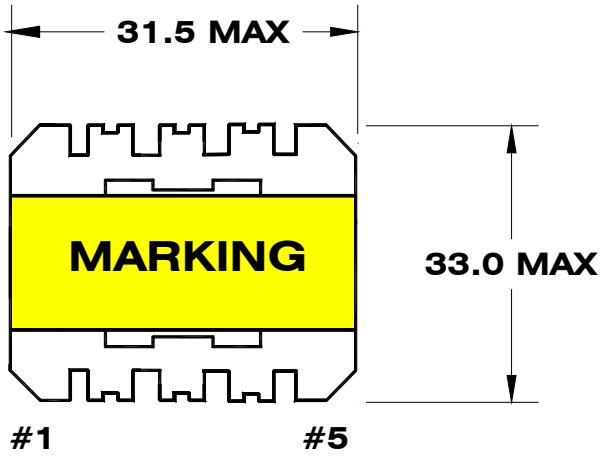

| | | |
|---|---|---|
| FILE NO | 1/20 | 1. RECORD OF REVISION |
| | 2/20 | 2. INDEX |
| | 3/20 | 3. DIMENSION |
| | 4/20 | 4. SCHEMATIC |
| | 4/20 | 5 WINDING SPECIFICATION |
| | 5/20 | 6. ELECTRICAL CHARACTERISTICS |
| | 6/20 | 7. ENVIRONMENTAL CHARACTERISTICS |
| | 7/20 | 8. MECHANICAL CHARACTERISTICS |
| | 8/20 | 9. INTERNAL CONSTRUCTION |
| | 9/20 | 10. MATERIAL LIST |
| | 10/20 | 11. UL CARD |
| | 11/20 | UL CARD |
| | 12/20 | UL CARD |
| | 13/20 | 12. CORE DIMENSION |
| | 14/20 | 13. BOBBIN DIMENSION |
| | 15/20 | 14. PROCESS FLOW |
| | 16/20 | 15. PACKING |
| | 17/20 | 16. INSPECTION DATA |
| | 18/20 | 17. ASSIGNMENT |
| | 19/20 | 18. WIRE SPECIFICATION |
| | 20/20 | 19. CHEMICAL ANALYSIS REPORT FOR CP-WIRE |

CUSTOMER : LG ELECTRONICS Inc.

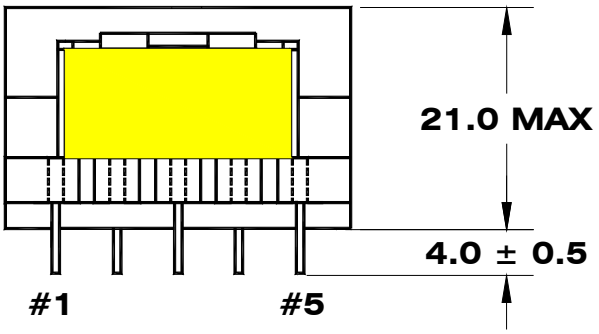
| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

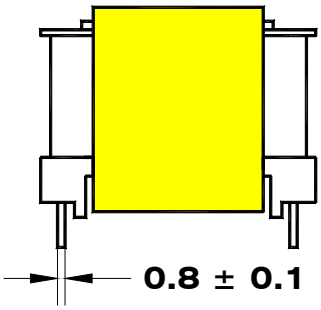
Safety

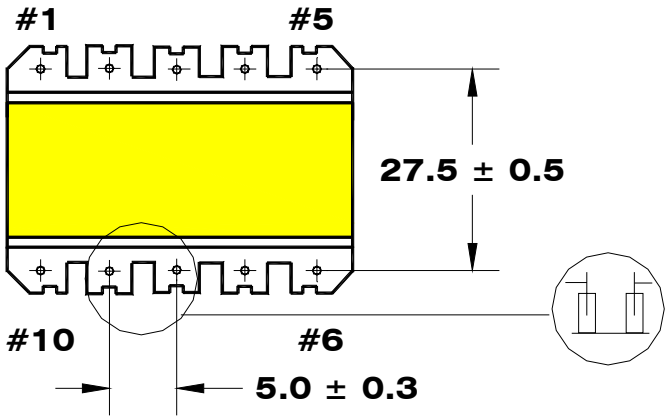
## 3. DIMENSION (UNIT:mm)




| *MARKING SPEC* LP-002 SJ 0901 EAP36781902 | | |
|---|---|---|
| PART NO | LP-002<br>EAP36781902 | |
| SJ | CHINA WENDENG FACTRY ID | |
| DGSJ | CHINA DONGGUAN FACTORY ID | |
| KSJ | KOREA FACTORY ID | |
| LOT NO | 0901 | |
| 09 | YEAR | 2009: 09<br>2010: 10 |
| 01 | WEEK | FIRST WEEK :01<br>SECOND WEEK :02 |




※ OMIT PIN NO :#2,#3,#4

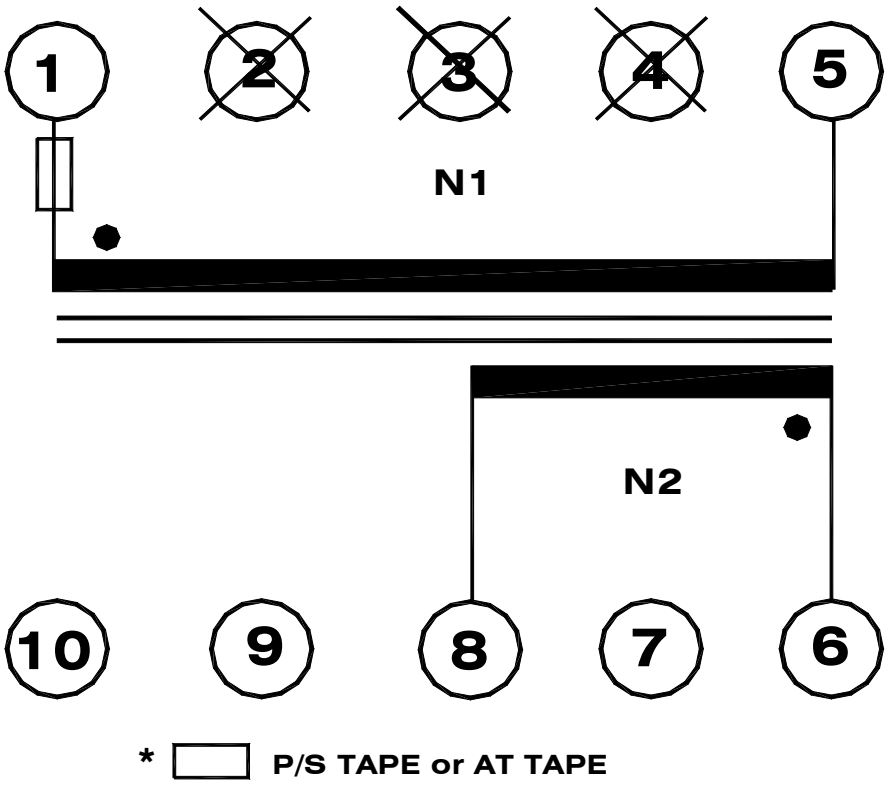
※ GAP CORE : TWIN GAP

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 3/20 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 4. SCHEMATIC




* ▭ P/S TAPE or AT TAPE

## 5. WINDING SPECIFICATION.

| No. | TERMINAL | | WIRE | TURNS | LAYER | WINDING METHOD | INSULATION TAPE | | |
|---|---|---|---|---|---|---|---|---|---|
| | S | F | | | | | MATERIAL | T/W (mm) | TURNS |
| N1 | 1 | 5 | USTC 0.12φ×25 | 50 Ts | 5 | SOLENOID | P.E TAPE | 0.025/10.5 (YELLOW) | 3 Ts |
| N2 | 6 | 8 | 1UEW 0.20φ | 6 Ts | 1 | PIN SOLENOID | P.E TAPE | 0.025/10.5 (YELLOW) | 3 Ts |
| * CORE ROUND TAPE | | | | | | | P.E TAPE | 0.025/20.0 (YELLOW) | 3 Ts |

※ AT TAPE or P/S TAPE PIN NO : #1

※ WINDING DIRECTION : BOTTOM VIEW C.C.W

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 6. ELECTRICAL CHARACTERISTICS

| No. | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 6-1 | INDUCTANCE | 1 - 5<br>6 - 8 | 250 μH ± 7%<br>5.0 μH ± 30% | LCR METER<br>HP-4284A<br>(AT 100KHz/<br>1.0V ) |
| 6-2 | LEAKAGE INDUCTANCE | 1 - 5<br>(SECONDARY ALL SHORT) | 90 μH MAX. | |
| 6-3 | D. C. RESISTANCE | 1 - 5 | 300 mΩ MAX | DC MILLI-OHM METER<br>GOM-802 |
| 6-4 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 1.5KV (rms)<br>1MINUTE. | Safety<br>TOS-8850<br>(CUT OFF CURRENT 5mA) |
| | | P COIL - CORE<br>S COIL - CORE | AC 1.50KV (rms)<br>1MINUTE. | |
| 6-5 | INSULATION RESISTANCE | P COIL - S COIL | 100(M) Ohm MIN.<br>( AT DC 500V) | Safety<br>TOS-8850 |
| 6-6 | DC SUPERIMPOSE | 1 - 5 | 90% MIN. WITH RESPECT TO ORIGINAL INDUCTANCE VALUE WHEN 8.0A DC IS SUPERIMPOSED. | |
| | | | | |
| | | | | |

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 7. ENVIRONMENTAL.

* STANDARD TEST CONDITION : TEMP. 20℃±15℃, HUMIDITY 65%±20%.
IF WHEN ANY OBJECTION IS SUGGESTED, THE TEST CAN BE OPERATED AT 20±2℃, 65±5%RH.

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>7-1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ - +105℃</td><td></td></tr>
<tr><td>7-2</td><td>KEEPING TEMPERATURE</td><td>-25℃ - +105℃</td><td></td></tr>
<tr><td>7-3</td><td>LOW TEMPERATURE RESISTANT</td><td rowspan="6">MUST MEET THE REQUIREMENTS 6-1, 6-2, 6-3 AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE.<br><br>(IT SHOULD BE MANAGED BY 10% UNDER 10μH)</td><td>-25±2℃, 96Hr. MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-4</td><td>HIGH TEMPERATURE RESISTANT</td><td>+105±2℃, 96Hr. MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-5</td><td>HUMIDITY RESISTANT</td><td>95%RH ±5% (40℃±5℃) 96Hr MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-6</td><td>TEMPERATURE CYCLE</td><td><table><tr><th>STEP</th><th>TEMP.</th><th>TIME</th></tr><tr><td>1</td><td>-25±2℃</td><td>30 MIN.</td></tr><tr><td>2</td><td>+25±2℃</td><td>10 MIN.</td></tr><tr><td>3</td><td>+105±2℃</td><td>30 MIN.</td></tr><tr><td>4</td><td>+25±2℃</td><td>10 MIN.</td></tr></table>REPEAT 5 TIME FROM STEP 1AND TEST AFTER 2 Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-7</td><td>HEAT SHOCK TEST</td><td>-20℃ 2Hr, 70℃ 2Hr, 10 CYCLE AFTER 2Hr. AT ROOM TEMP.</td></tr>
</table>

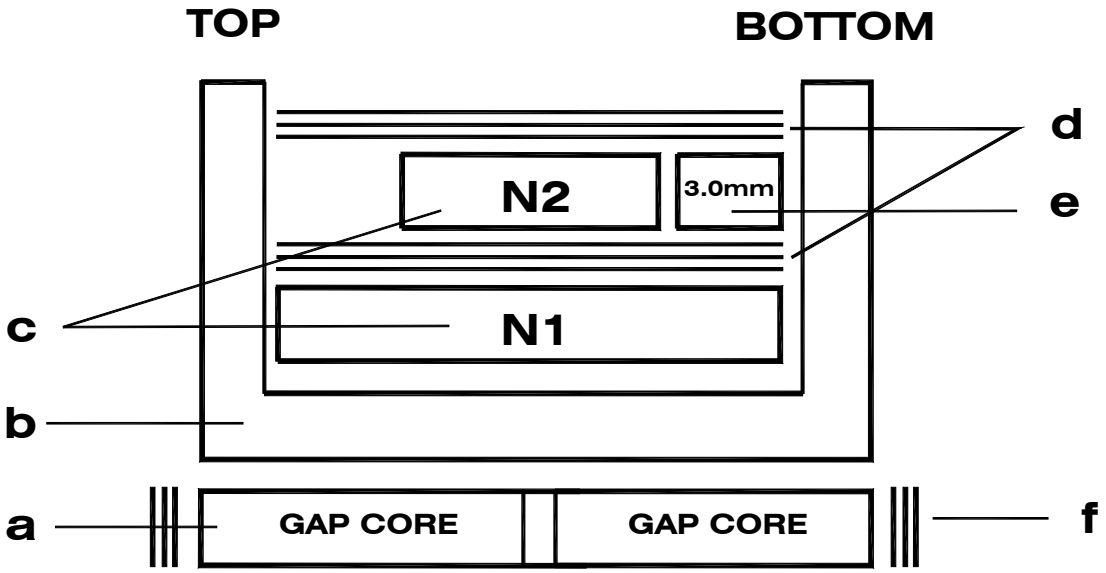
## 8. MECHANICAL CHARACTERISTICS.

| NO. | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 8-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AC 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION. |
| 8-2 | SOLDER HEAT TEST | MUST MEET THE REQUIREMENTS 6-1, 6-2, 6-3 AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER AT 260℃+5℃ FOR 10 SECONDS. MEASURE AFTER 2 Hr. AT ROOM TEMP. |
| 8-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245℃-5℃ FOR 3 SECONDS. |
| 8-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED TO INITIAL VALUE. | PULL THE PIN WITH 2.5 Kg.f DURING 30 ±5 SEC. |

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 9. INTERNAL CONSTRUCTION

Safety



CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 10. MATERIAL LIST.

Safety

| NO | COMPONENT | NAME OF MATERIAL | UL FILE NO. | MANUFACTURER COMPONENT | COLOR |
|---|---|---|---|---|---|
| a | CORE | EER-3019N PM-7 or<br>EER-3019NA PL-7<br>EC30-4R HE-4 | | TODA ISU CORPORATION<br>SAMWHA ELECTRONICS CO., LTD.<br>RUYUAN DONGYANGGUANG<br>MAGNETIC MATERIALS CO.,LTD. | BLACK |
| b | BOBBIN | EER-3019 PHENOL<br>(94V-0) PF2736 (10PIN) | E61040 | HEXION SPECIALTY<br>CHEMICALS GMBH<br>(HO SUNG INDUSTRIAL CO., LTD. or<br>DEAHUNG BOBBIN CO., LTD.) | BLACK |
| | | TERMINAL | | IL-KWANG ELECTRONIC MATERIAL<br>CO., LTD. | SILVER |
| c | WIRE | USTC : 0.12φ ×25,<br>1UEW : 0.20φ | E102761<br>E210918 | DONGYANG ELECTRONICS<br>CO., LTD. or<br>CNI ELECTRONICS CO., LTD. | NATURAL |
| d | INSULATION<br>TAPE | POLYESTER TAPE<br>Cat NO. 204 ,PZ<br>0.025t x 10.5mm (YELLOW) | E105147<br>E165111 | DUCK SUNG TAPE CO., LTD.<br>JINGJIANG YAHUA PRESSURE<br>SENSITIVE GLUE CO., LTD. | YELLOW |
| e | INSULATION<br>BARRIER | P.N.W (BUSIKPO)<br>H-5673, ,WF<br>BOTTOM (N2) :3.0mm | E92677<br>E165111 | TAEHWA INDUSTRIAL CO., LTD.<br>JINGJIANG YAHUA PRESSURE<br>SENSITIVE GLUE CO., LTD. | WHITE |
| f | APPEARANCE<br>FOR CORE | POLYESTER TAPE<br>Cat NO. 204 ,PZ<br>0.025t x 20mm (YELLOW) | E105147<br>E165111 | DUCK SUNG TAPE CO., LTD.<br>JINGJIANG YAHUA PRESSURE<br>SENSITIVE GLUE CO., LTD. | YELLOW |
| g | VARNISH | SR-337<br>DVB-2085 | E257443<br>E258023 | SEKYE CHEMICAL CO., LTD.<br>NOROO PAINT & COATINGS CO.,LTD. | LEMON<br>YELLOW |
| h | SOLDER | HSE-09<br>(Sn:95.95%,Cu:4%,Ni:0.05%) | | HEE SUNG METAL CO., LTD. | SILVER |
| i | FLUX | PF-120L | | SOLUX CO., LTD. | LEMON<br>YELLOW |
| j | MARKING | INK | | BON MARQUE | BLACK |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 11. UL CARD.

* YELLOW CARD

**BOBBIN**

HEXION SPECIALTY CHEMICALS GMBH E61040
POSTFACH 7154
58609 ISERLOHN, GERMANY

| | | Min. | | H | H | H | R T I | | | C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | V | Elec | Mech | | T |
| Mtl Dsg | Color | mm | Class | I | I | A | | Imp | Str | I |
| Phenolic (PF), "Rutaform, Bakelite", furnished as pellets, powder, granular material. | | | | | | | | | | |
| PF 2736(a)(b) | | | | | | | | | | |
| | BK | 0.46 | V-0 | - | - | - | 150 | 150 | 150 | 3 |
| | ALL | 0.81 | V-1 | 0 | 2 | - | 150 | 150 | 150 | |
| | NC, GN, BK | 0.81 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |
| | ALL | 1.5 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |
| | | 3.0 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |

(a) - Optional Suffix "H".

(b) - Grade designation may be followed by a four digit number representing color, P or S indicating type of molding, a single digit representing slight color variation.

**WIRE**

DONG YANG ELECTRONICS IND CO LTD E102761
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ | | ANSI Type | TI |
|---|---|---|---|---|
| | BC | OC | | |
| UEW(F) | Polyurethane | - | MW79, | 155, |
| UEW(B) | Polyurethane | - | MW75# | 130 |
| UAL | Polyurethane | - | @ | 155 |
| PEW | Polyester | - | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.
#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

CNICABLE CO LTD E210918
312-16 DEUKSAN-DONG
ASAN-SI, CHUNGCHEONGNAM-DO 336-120 REPUBLIC OF KOREA

| Mtl Dsg | Mark Dsg | Coat Type | | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| | | BC | OC | | |
| DSUEW-100 | (1) | Polyurethane | - | MW75C | 130# |
| UEW | (1) | Polyurethane | None | MW79 | 155 |
| | | | | MW75 | 130# |
| PEW | (1) | Polyester | None | MW30 | 180 |
| | | | | MW5 | 155# |

@ - Non-ANSI Type
(1) - Marked designations are the same as the material designations.
# - This wire may perform better than its temperature rating reflects. Hence, it may not be suitable to use in an insulation system thermal aging program.

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## UL CARD.

* YELLOW CARD

**P.E TAPE**

DUCK SUNG HITECH CO LTD — E105147
225-2 SHINNEUNG-RI SEOUN-MYEON
ANSEONG-SI, GYEONGGI-DO 456-850 REPUBLIC OF KOREA

PET(Polyethylene-Terapthalate) film insulating tape, acrylic adhesive, Cat. No. DTS-204K^, rated 130 C.

^ - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 250, per UL 746A/ASTM D 3638," and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600, per UL 746A/ASTM D 3638" or equivalent.

JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD — E165111
SOUTHWEST AROUND RD
JINGJIANG, JIANGSU 214500 CHINA

Polyethylene terephthalate film tape, Cat. No. PZ with additional suffixes, rated 130 C*(b).

*Complies with flame retardant requirements when so marked.
(b)Comparative Tracking Index (CTI) performance indicates material Group IIIa, PLC=2, CTI equal to or greater than 250 but less than 400 v.

**BARRIER TAPE**

TAE HWA INDUSTRIAL CO LTD — E92677
323-80 GUNHA-RI
WOULGOT-MYUN
KIMPO-CITY, KYUNGGI-DO 415-870 REPUBLIC OF KOREA

Polyester (PET) film insulating tapes with polyester non-woven fiber reinforcement and acrylic adhesive, Cat. Nos. H-5673@, H-5673a, white color, rated 130C.

@ - May be marked: "Film side CTI Performance Level Category PLC=0, Voltage 600, per UL 746A/ASTM D 3638" and/or "Adhesive side CTI Performance Level Category PLC=0, Voltage 600, per UL 746A/ASTM D 3638", or equivalent.

JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD — E165111
SOUTHWEST AROUND RD
JINGJIANG, JIANGSU 214500 CHINA

Nonwoven cloth/polyethylene terepthalate film tape, Cat. No. WF with suffixes, rated 130 C* (c) (h).

*Complies with flame retardant requirements when so marked.
(c)Comparative Tracking Index (CTI) performance indicates material Group I, PLC=0, CTI equal to or greater than 600 v.
(h) - The CTI test was conducted per IEC 60112, 4th Edition 2003 and the assigned level is based on the testing of both film and adhesive sides.

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

UL CARD.

* YELLOW CARD

VARNISH

SE KYE CHEMICAL CO LTD E257443
360 GUIJEON-RI
TONGJIN-EUP
KIMPO-SI, KYUNGGI-DO 415-862 REPUBLIC OF KOREA

| Varnish Dsg | ANSI Magnet Wire Type | Varnish Thermal Class C | | |
|---|---|---|---|---|
| | | TP | HC | CE |
| SR-337(#) | MW75 | 130 | 130 | - |

# - May be followed by 1 or 2 suffix numeric and /or alpha characters to denote viscosity change accomplished via solvents due to production tolerance.

NOROO PAINT &COATINGS CO LTD E258023
615 PAKDAL-DONG
ANYANG-SHI, KYONGGI-DO 430-030 REPUBLIC OF KOREA

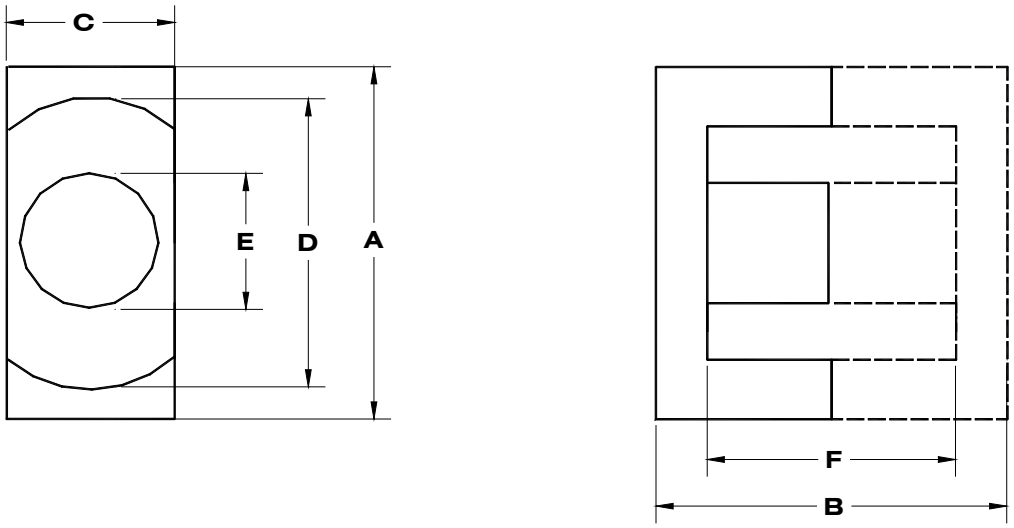
| System Component | System Dsg | System Temp Class |
|---|---|---|
| DVB-2085 (*) | SBI4.2-DPI | 130 (B) |
| DVB-2152 (#) | R152D-Noroo | 130 (B) |

(*) - Followed by one or two numbers and/or letters.
(#) - May be replaced by a number from 0 - 30 to denote the percent silica.

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 12. CORE DIMENSION




** DIMENSION (UNIT: mm)

| TYPE | DIMENSION (m/m) | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| EER-3019N | 30.0±0.5 | 19.4±0.3 | 20.3±0.3 | 25.4±0.4 | 13.3±0.2 | 13.2±0.3 | TODA ISU |
| EER-3019NA | 30.0±0.5 | 19.2±0.3 | 20.3±0.3 | 25.4±0.4 | 13.3±0.2 | 13.2±0.3 | SAMWHA |
| EC30-4R | 30.0±0.5 | 19.4±0.3 | 20.3±0.3 | 25.4±0.4 | 13.3±0.2 | 13.2±0.3 | DONGYANGGUANG |
| | | | | | | | |

** EFFECTIVE PARAMETERS

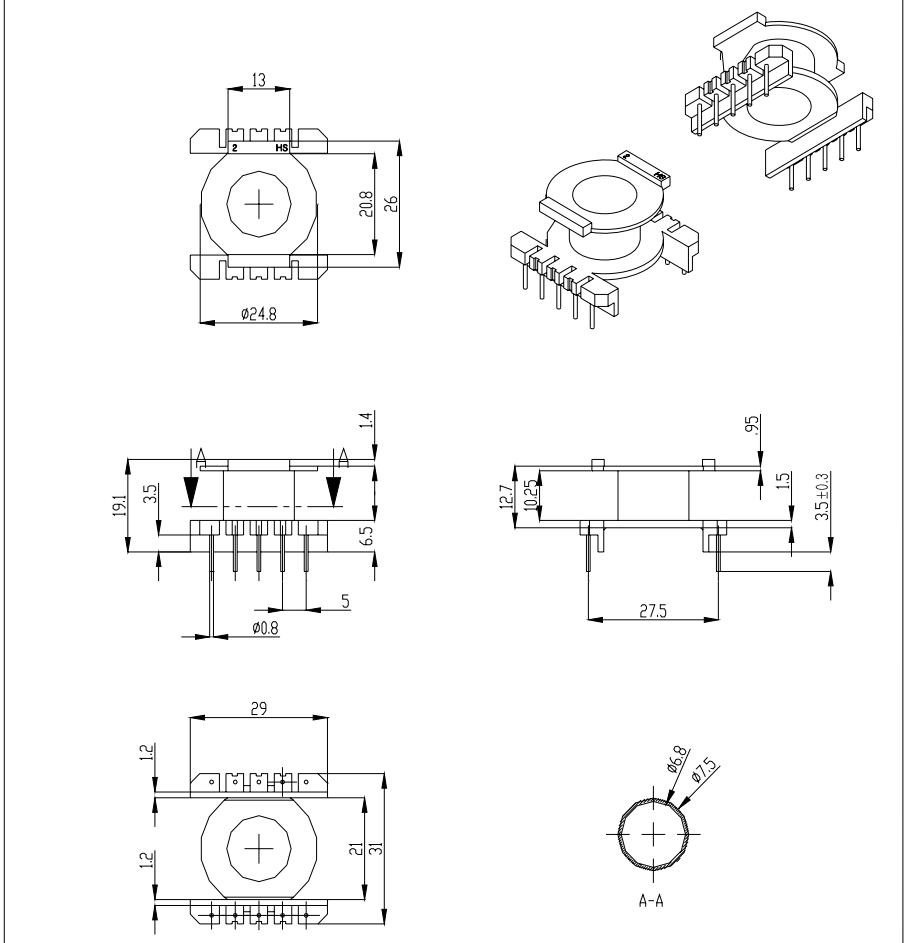
| TYPE | EFFECTIVE PARAMETERS | | | REMARKS |
|---|---|---|---|---|
| | Le (mm) | Ae (㎟) | Ve (㎣) | |
| EER-3019N | 47.3 | 134.0 | 6340 | TODA ISU |
| EER-3019NA | 55.9 | 130.7 | 7306 | SAMWHA |
| EC30-4R | 47.7 | 132.0 | 6298 | DONGYANGGUANG |
| | | | | |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 13. BOBBIN DIMENSION

| No. | REVISION NOTE | DATE | DRAWN | CHECKED | APPROVED |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |




| DRAWN | CHECKED | APPROVED | TOLERANCES | SCALE 1:1 | TITLE : EER 3019 10PIN 3.5M/M | |
|---|---|---|---|---|---|---|
| D.M.KIM | S.KIM | J.D.JANG | ±0.2 | UNIT: mm | BOBBIN MATERIAL : PHENOL | UL REC : UL 94V-0 |
| HD SUNG INDUSTRIAL CO., LTD. TEL : 82 - 31 - 953-8325 FAX : 82 - 31 - 954 - 0937 | | | | ORIGIN:DG | PIN MATERIAL : C.P WIRE | PIN TENSION LOAD : 1.0 KG MIN |
| | | | | | DATE : 2008.01.30 | DRAWING No : HS-ERV-0000 |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 14/20 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 14 PROCESS FLOW

| NO | 공정 기호 | 공정 명 | 사용설비 | 기능 | 관리항목 | 관리기준 | 검사방법 확인요령 | 검사방법 부서 | 표준 | 기록/양식 | 공정별 관련불량 및 비고 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | △ ◇ | 수입검사<br>- BASE<br>- CORE<br>- PS TAPE<br>- WIRE | 버니어켈 리퍼<br>마이크로 메터 | 수동 | 치수<br>핀홀<br>접착성<br>외관상태 | 이상<br>없을것 | SAMPLE | Q·C | 구매사양서 | 수입검사 성적서 | · 치수 불량<br>· 파손· 핀홀<br>· WIRE 피복 벗겨짐<br>· BASE 단자 위치 바뀜<br>· 접착성 나쁨 |
| 02 | ○ | 권 선 | 권 선 기 | 반자동 | 절연상태<br>권선절연상태<br>권선수 | 〃 | 전수검사 | 생산팀 | 작업지도서 | | · 권선 및 절연수 불량<br>. 절연거리 미 확보<br>· 권선위치 불량 |
| 03 | ○ | 결 선 | 니 퍼 | 수동 | 특성<br>결선 마무리 | 〃 | 육안검사 | 〃 | 〃 | | · SHORT<br>· 인접단자 접촉<br>· 미 결선 |
| 04 | ○ | 납 땜 | 납 조 | 수동 | 납땜온도<br>납땜시간 | 450℃ ±30℃<br>2~4초 | 수회 / 일 | 〃 | 〃 | | · SHORT<br>· 냉땜<br>· BASE 변형 |
| 05 | ○ | CORE조립 | | 수동 | CORE종류<br>GAP SIZE<br>조립상태 | 이상<br>없을것 | 전수검사<br>SAMPLE<br>육안검사 | 〃 | 〃 | | · 코아 역삽<br>· GAP CORE 혼입 |
| 06 | ◇ | 1차 검사 | TURN METER | 반자동 | INDUCTANCE<br>권선수 | 〃 | 전수검사 | 〃 | 〃 | | · L값 상.하 불량<br>· 권선수 미달 |
| 07 | ○ | 함침 및 경 화 | 진공 함침기<br>건 조 기 | 반자동 | 경화온도<br>경화시간 | 120℃ ±10℃<br>2.0 HR | SAMPLE | 〃 | 〃 | | · 미 함침 |
| 08 | ○ | 핀 형 합 | 핀형합기 | 반자동 | 핀간거리 | 〃 | 전수검사 | 생산팀 | | | · 핀 형합 불량<br>· 베이스 변형<br>· 단자 이탈 |
| 09 | ◇ | Safety 최종검사 | LCR METER<br>내전압 TESTER | 수동 | INDUCTANCE<br>내전압<br>절연사항 | 〃 | 전수검사 | 〃 | 〃 | | · L값 상.하 불량<br>· 단자 이물<br>· 내전압 불량 |
| 10 | ○ | 마 킹 | 불멸 잉크 | 수동 | 마킹방향<br>마킹외관 | 〃 | 육안검사 | 〃 | 〃 | | · 역방향 마킹<br>· 외관불량 |
| 11 | ○ | 포 장 | | 수동 | 수량관리<br>포장상태 | 〃 | 육안검사 | 〃 | 〃 | | |
| 12 | ○ | Safety 출하검사 | LCR METER<br>내전압 TESTER | 수동 | INDUCTANCE<br>내전압<br>절연사항 | 〃 | SAMPLE | 품질관리팀 | 승인원 | | |
| 13 | ▽ | 입 고 | | | | | | 영업팀 | 〃 | INSPEC-TION REPORT | |

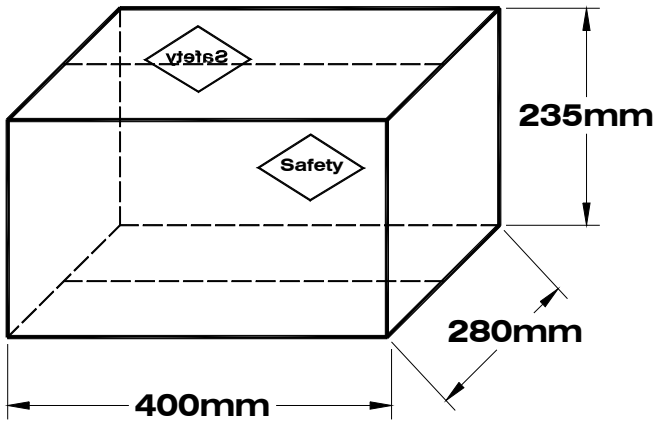
| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 15/20 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 15. PACKING

| | |
|---|---|
| NAME | |
| ITEM | |
| LOT NO. | |
| Q' TY | EA |
| SOOJUNG ELECTRONICS INC CO., LTD. | |




| PART | SPECIFICATION |
|---|---|
| BOX SIZE | 400mm × 280 mm × 235mm |
| OUT BOX MATERIAL | SK.3S.B (CARTON) |
| INNER BOX MATERIAL / QUANTITY | PET TRAY / 5PCS×7EA=35PCS |
| PACKING QUANTITY | 35PCS×7EA=245PCS |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 16. INSPECTION DATA

| ITEM NAME | P.F.C TRANS | TEST DATE | 2009. 08. 25 |
|---|---|---|---|
| PART NO. | EAP36781902 | INSTRUMENT | 4284A LCR METER(HP) (at 100KHz) |

| 시험 항목 | PIN NO. | SPEC | | 1 | 2 | 3 | 4 | 5 | | | | | | $\overline{x}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 1 - 5 | 250 μH ±5% | | 251.1 | 250.5 | 251.5 | 250.6 | 250.0 | | | | | | |
| | 6 - 8 | 5.0 μH ±30% | | 5.07 | 5.06 | 5.07 | 5.06 | 5.05 | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| LEAKAGE INDUCTANCE | 1- 5 (2차측 ALL SHORT) | 90.0 μH MAX | | 61.5 | 62.2 | 61.6 | 61.5 | 61.8 | | | | | | |
| DCR (mΩ) | 1 - 5 | 300 mΩ MAX | | 171.5 | 172.3 | 170.6 | 172.5 | 173.2 | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 내 전 압 | P-S,COIL | AC1.50KV1분간 | | 6.0KV | OK | OK | OK | OK | | | | | | |
| | P- CORE | AC1.50KV1분간 | | 4.0KV | OK | OK | OK | OK | | | | | | |
| | S -CORE | AC1.50KV1분간 | | 3.5KV | OK | OK | OK | OK | | | | | | |
| 절연저항 | P-S,COIL | 100MΩ MIN. (AT DC500V) | | ∞ | ∞ | ∞ | ∞ | ∞ | | | | | | |
| DC 전류중첩 | 1 - 5 | 8.0A/ 90% of INITIAL INDUCTANCE | L | 237.2 | 239.5 | 239.6 | 239.0 | 239.3 | | | | | | |
| | | | % | 94.4 | 95.6 | 95.2 | 95.3 | 95.7 | | | | | | |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 17/20 |

## 17. ASSIGNMENTS

1) Apply import inspection specification to the matters which are not given in drawing specification method.
2) Packing method follows specification approval.
3) If INDUCTANCE : ref is not satisfied with given specification. internal structure disassembly inspection should be necessary.
4) Wire bundle method.
   * CENTER SOLENOID: Error between the center of overall wire bundle area and the center of wire bundle is required to be smaller than 2 mm.
   * PIN SOLENOID : Error between the bottom barrier tape and winding start point is required to be smaller than 2 mm.
   * SOLENOID AFTER : Error between the last wire of the wire bundle and start wire of after-solenoid is required to be smaller than 2 mm.
   * TAB SOLENOID : Bundle should be continued from previous bundle. If bundle method is 2 layer, bundle should be done from top to bottom.
   * SPACE SOLENOID : The area between wires should be uniform. Error between start and start point of the wire bundle area is required to be smaller than 2mm. Error between end point and end point of the wire bundle area is required to be smaller than 2mm.
   * SOLENOID : No space is allowed between wires in bundling. The space between wire is required to be smaller than diameter of the wire*2. In same layer no cross is allowed between wires.

5) Auxiliary tape can be used in order to enhance. But it needs prior approval from design department.

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 18. WIRE SPECIFICATION.

POLYURETHANE ENAMELED WIRE (1UEW)

| 치수 | | | | 절연파괴 전압 (V) ↑ | 내마모 파괴하중 | | 최대도체 저항 (Ω/km) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도체 | | 최소피막 두께 (㎜) ↑ | 최대완성 외경 (㎜) ↑ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지름 (㎜) | 허용차 (㎜) | | | | | | | |
| 0.060 | ±0.003 | 0.008 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.008 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.009 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.009 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.009 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.009 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.010 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.010 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.010 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.011 | 0.180 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.011 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.011 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.012 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.012 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.012 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.012 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.012 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.013 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.013 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.016 | 0.288 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.013 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.013 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.013 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.013 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.014 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.014 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.014 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.014 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.014 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.014 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.014 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.014 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.015 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.015 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.015 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.410 | ±0.005 | 0.015 | 0.466 | 2800 | 4.16(425) | 3.52(360) | 133.8 | 20 |
| 0.420 | ±0.005 | 0.015 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.440 | ±0.005 | 0.016 | 0.496 | 2800 | 4.16(425) | 3.52(360) | 116.0 | 20 |
| 0.450 | ±0.006 | 0.016 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.017 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.017 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.017 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.018 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.019 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.020 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.021 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.022 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.023 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.024 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 0.025 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 10. 09 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | PART NO. | EAP36781902 |

## 19. CHEMICAL ANALYSIS REPORT FOR CP-WIRE

# 제 원 증 명 서 ( MATERIALS CERTIFICATE )

2007. 10.29

*. 효성산업(주)

*. Round Wire ( ETPCS / Sn100% )

1.재료 구성비 (MATERIALS COMPOSITION) (Weight %)

| 항 목 (Item) | Plating Thickness(Sn) | Iron (Fe) | Copper (Cu) | Tin (Sn) | REMARK |
|---|---|---|---|---|---|
| 0.4mm | 5±1㎛ | Balance | 15.62% | 3.61 ~ 5.39% | |
| 0.5mm | | Balance | 15.75% | 2.89 ~ 4.32% | |
| 0.6mm | | Balance | 15.77% | 2.41 ~ 3.61% | |
| 0.7mm | | Balance | 15.78% | 2.07 ~ 3.10% | |
| 0.8mm | | Balance | 15.85% | 1.81 ~ 2.71% | |
| 1.0mm | | Balance | 15.87% | 1.45 ~ 2.17% | |

2.기초재료 함확성분 (BASE MATERIALS CHEMICAL COMPOSITION) (Weight %)

| | Fe | C | Si | Mn | P | S | Sol-Al | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel Wire (SWCH6A) | Balance | 0.06 | 0.04 | 0.30 | 0.013 | 0.008 | 0.052 | - | - | - | (%) |
| | Cu | As | Sb | Bi | Pb | S | Fe | Ag | - | - | - |
| Electro Copper | 99.99↑ | 0.3 | 0.02 | 0.1 | 1.0 | 6.3 | 5.2 | 8.2 | - | - | (ppm) |
| | Sn | Sb | As | Pb | Bi | Cu | Fe | Al | Cd | Zn | |
| Tin Ingot | 99.99↑ | 0.001 | 0.0001 | 0.001 | 0.0008 | 0.0005 | 0.0005 | 0.0000 | 0.0000 | 0.0006 | (%) |

3.석도금 조성 및 단면 (TIN PLATED COMPOSITION) (Weight %)




We certify that this paper is the certificate of our products fo
inspection and materials

Quality Assurance Manager

IL-KWANG ELECTRONIC MATERIALS CO., LTD.
Head Office & Factory: #725-9 Wonshi-dong, Danwon-gu, Ansan-city, Kyounggi-do, Korea.
Phone 82-31-495-1971~3 Fax 82-31-495-1974
e-mail - ilkwang@cpleadwire.com Homepage - http://www.cpleadwire.com

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 20/20 |

# APPROVAL SHEET

**CUSTOMER : YUYANG TELECOM CO., LTD.**

| | |
|---|---|
| **ITEM** | **TRANS P.F.C** |
| **SPEC** | |
| **MODEL** | **LPG42 -08H** |
| **PART NO** | **LP-002** |

**DATE : 2007. 09. 13.**

## NAM YANG ELECTRONICS CO., LTD.

| | | | |
|---|---|---|---|
| **REQUEST CUSTOMER** | **NAM YANG** ELECTRONICS CO., LTD. (KOREA FACTORY ) | **TEL** | 031-205-0104 |
| | | **FAX** | 031-205-1245 |
| **ADDRESS** | 1202~1203, D DONG, DIGITAL EMPIRE BLDG. 980-3, YEONGTONG-DONG, YEONGTONG-GU, SUWON CITY, GYEOUNGGI-DO. KOREA. | | |
| **REQUEST CUSTOMER** | **QINGDAO** NAM YANG ELECTRONICS CO., LTD. ( CHINA FACTORY ) | **TEL** | 86-532-8705-8114 |
| | | **FAX** | 86-532-8705-8422 |
| **ADDRESS** | BIJIA VILLAGE BEIJAITOWN LAOSHAN ZONE QINGDAO CHINA | | |
| **REQUEST CUSTOMER** | **DONGGUAN** NAM YANG ELECTRONICS CO., LTD. ( CHINA FACTORY ) | **TEL** | 86-769-8322-2875 |
| | | **FAX** | 86-769-8322-2895 |
| **ADDRESS** | (XIXI INDUSTRIAL ZONE) LIAOBU TOWN, DONGGUAN CITY GUANGDONG PROV. CHINA. | | |
| **REQUEST CUSTOMER** | **LINYI** NAM YANG ELECTRONICS CO., LTD. ( CHINA FACTORY ) | **TEL** | 86-539-728-0188 |
| | | **FAX** | 86-539-728-0303 |
| **ADDRESS** | SHANDONGSHENG LINYISHI JUNANXIAN SHIZILUZHEN DACHENGJUWEI | | |

# RECORD OF REVISION

| P/N : LP - 002 | MAKER SPEC. : TRANS P.F.C |
|---|---|

| REV. No. | REASON | CONTENTS | DATE OF APPROVAL | CHECKED | REMARKS |
|---|---|---|---|---|---|
| 0 | | -. 신규제정 | 2007. 09. 13. | | |
| 1 | | ① 이수CORE NAME OF MATERIAL 변경<br>변경전 : EER 3019N PM7<br>변경후 : EER 3019NA PM7 | 2009. 02. 09. | | |

CUSTOMER : YUYANG TELECOM CO., LTD.

| SPECIFICATIONS | | DATE | 2007. 09. 13. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

# I N D E X


FILE No. 1/15 : INDEX

2/15 : 1. DIMENSION

3/15 : 2. SCHEMATIC DIAGRAM

3. WINDING SPECIFICATION

4/15 : 4. ELECTRICAL CHARACTERISTICS

5/15 : 5. ENVIRONMENTAL CHARACTERISTICS

6/15 6. MECHANICAL CHARACTERISTICS

7/15 : 7. SECTION DIAGRAM

8/15 8. MATERIAL LIST

9/15 : 9. UL-LIST

10/15 : UL-LIST

11/15 : 10. CORE DIMENSION

12/15 : 11. PROCESS FLOW

13/15 : 12. PACKING

14/15 : 13. INSPECTION DATA

15/15 : 14. ASSIGNMENTS

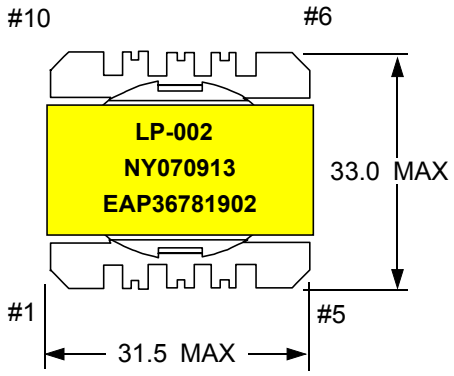
CUSTOMER : YUYANG TELECOM CO., LTD.

| SPECIFICATIONS | | DATE | 2007. 09. 13. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

## 1. DIMENSION

(UNIT : m/m)

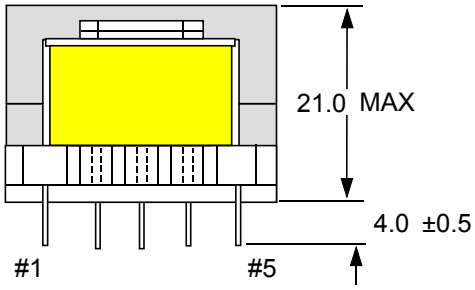
TOP VIEW



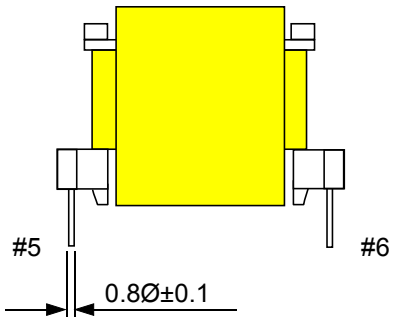

** PIN #2, #3, #4 : PIN REMOVED

** GAP CORE : TWIN GAP

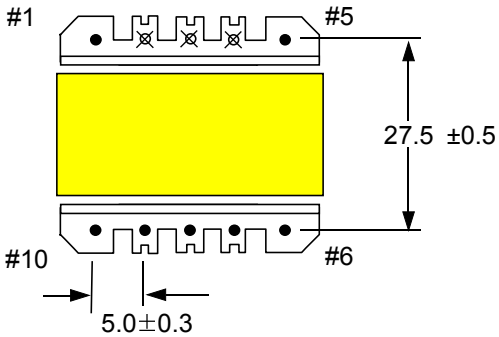
FRONT VIEW




SIDE VIEW




BOTTOM VIEW



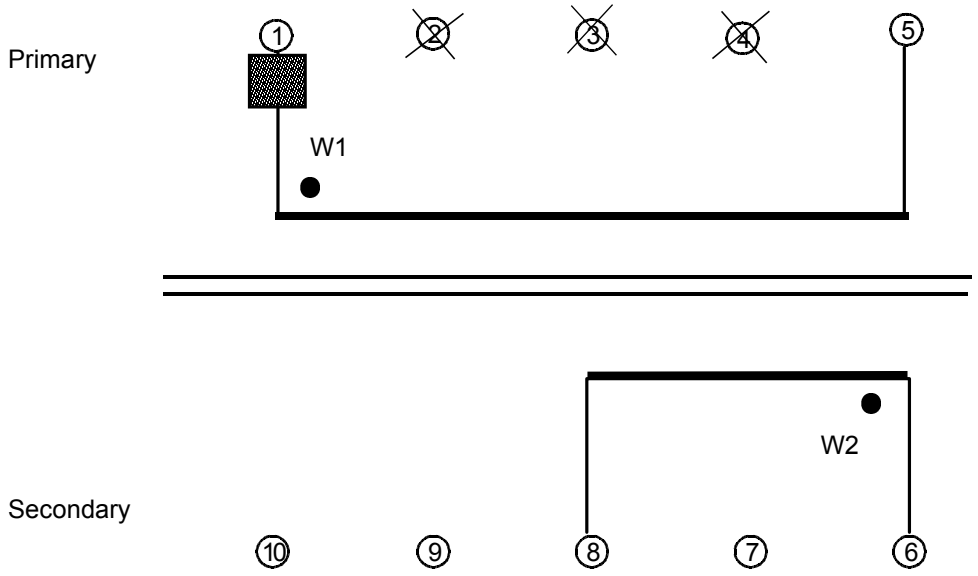

| Marking Spec | | |
|---|---|---|
| Part No. | (YUYANG) LP-002 | |
| Part No. | (LGE) EAP36781902 | |
| Lot No | NY070913 | |
| NY | NAMYANG ELECTRONICS CO., LTD | |
| 07 | Year | 2007 : 07<br>2008 : 08... |
| 09 | Month | January : 01<br>February : 02... |
| 13 | Date | First Date : 01<br>Second Date : 02... |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | Eun | | | | 2 / 16 |

CUSTOMER : YUYANG TELECOM CO., LTD.

| SPECIFICATIONS | | DATE | 2007. 09. 13. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

## 2. SCHEMATIC DIAGRAM




* ▒▒▒ MARK : A.T TAPE or P.E TAPE

## 3. WINDING SPECIFICATION

| No. | TERMINAL ( S - F ) | WIRE | TURNS | WINDING METHOD |
|---|---|---|---|---|
| W1 | 1 - 5 | USTC 0.12Ø × 25P (AWG #36) | 50 | SOLENOID WINDING |
| W2 | 6 - 8 | 1 UEW 0.20Φ (AWG #32) | 6 | PIN SOLENOID |
| CORE FIXING | | | | |

| INSULATION | | |
|---|---|---|
| MATERIAL | T/W (mm) | TURNS |
| P/E TAPE (YELLOW) | 0.025×10.5 | 3 |
| P/E TAPE (YELLOW) | 0.025×10.5 | 3 |
| P/E TAPE (YELLOW) | 0.025×20.0 | 3 |

* □ : A.T TAPE or P.E TAPE

CUSTOMER : YUYANG TELECOM CO., LTD.

| SPECIFICATIONS | | DATE | 2007. 09. 13. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

**4. ELECTRICAL CHARACTERISTICS**

| NO | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 4-1 | INDUCTANCE | 1 - 5<br>6 - 8 | 250 uH ± 7%<br>5.0 uH ± 30% | LCR-METER<br>at 100 kHz,<br>1.0 V |
| 4-2 | LEAKAGE | 1 - 5<br>(6 - 8 SHORTED) | 90 uH MAX | |
| 4-3 | DC RESISTANCE | 1 - 5 | 0.300 Ω MAX | YOKOGAWA ELECTRIC Y.E.W 2755 |
| 4-4 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 1.5KV r.m.s (1 MINUTE) | TOS-8850<br>CUT OFF CURRENT : 5 mA |
| | | COIL - CORE | AC 1.5KV r.m.s (1 MINUTE) | |
| 4-5 | INSULATION RESISTANCE | P COIL - S COIL | 100 M ohm MIN at DC 500V | TOS-8850 |
| 4-6 | D.C OVERLAP | 1 - 5 | MORE THAN 90% OF INITIAL INDUCTANCE | TEST CURRENT : 8.0 A<br>NORMAL TEMPERATURE |

## 5. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃ ± 15℃ HUMIDITY 65% ± 20%
IF WHEN ANY OBJECTION IS SUGESTED. THE TEST CAN BE OPERATED AT 20℃ ± 2℃, 65% ± 5% RH

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>5-1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>5-2</td><td>KEEPING TEMPERATURE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>5-3</td><td>LOW TEMPERATURE RESISTANT</td><td rowspan="4">MUST MEET THE REQUIREMENTS 4-1, 4-2 AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE</td><td>-25℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>5-4</td><td>HIGH TEMPERATURE RESISTANT</td><td>+105℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>5-5</td><td>HUMIDITY RESISTANT</td><td>+95%RH ± 5% (40℃ ± 5℃) 96Hr<br>MEASURE AFTER 2Hr AT ROOM TEMP
<table>
<tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr>
<tr><td>1</td><td>-25℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>2</td><td>+20℃ ± 2℃</td><td>10 MINUTE</td></tr>
<tr><td>3</td><td>+105℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>4</td><td>+20℃ ± 2℃</td><td>10 MINUTE</td></tr>
</table>
REPEAT 5 TIME FROM STEP 1 AND<br>TEST AFTER 2 Hr. AT ROOM TEMP.</td></tr>
<tr><td>5-6</td><td>TEMPERATURE CYCLE</td><td></td></tr>
</table>

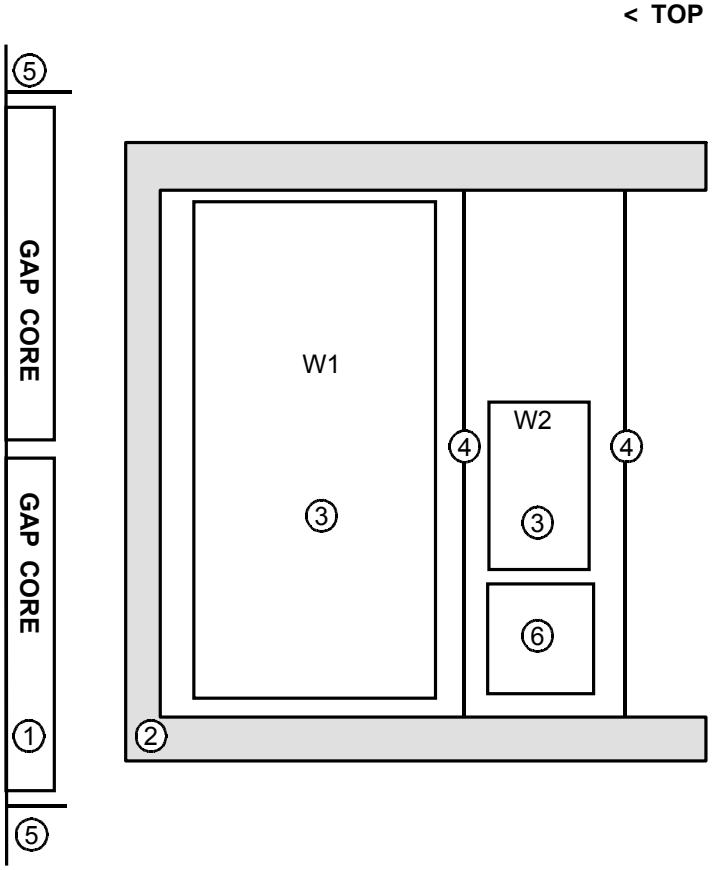
## 6. MECHANICAL CHARACTERISTICS

| NO | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 6-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 6-2 | SOLDER HEAT TEST | MUST MEET THE REQUIREMENTS 4-1, 4-2 AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER POT AT 260 ±2℃ FOR 10±0.5 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 6-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 260 ±2℃ FOR 3 ±0.5 SECONDS |
| 6-4 | VIBRATION | MUST MEET THE REQUIREMENTS 4-1, 4-2 AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE | 1) TOTAL EXCURSION MAX : 1.5mm<br>2) VIBRATION FREQUENCY : 10 ~ 55Hz<br>3) TRAVERSED TIME : 1MINUTE<br>4) TEST AFTER 2 HRs IN EACH OF 3 MUTUALLY PERPENDICULAR DIRECTION |
| 6-5 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5Kgf DURING 30 ±5 SEC |
| 6-6 | 환경성 시험 (유해물질) | XRF 장비로 시험시료를 120초간 SCAN하여 Cd측정결과 함유량이 50ppm미만이며 Std Dev(표준편차)값이 17미만, pb 200ppm, Hg 200ppm, pbde 100ppm미만일 것, ICP로 측정은 Cd 10ppm, Pb 100ppm, Hg 100ppm, Cr6 100ppm, Pbb 100pp, Pbde 100ppm미만일 것. | |

CUSTOMER : YUYANG TELECOM CO., LTD.

| SPECIFICATIONS | | DATE | 2007. 09. 13. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

7. SECTION DIAGRAM




| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 7 / 16 |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | | | | | |

CUSTOMER : YUYANG TELECOM CO., LTD.

| SPECIFICATIONS | | DATE | 2009. 02. 09. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

## 8. MATERIAL LIST

| NO. | COMPONENT | NAME OF MATERIAL | MANUFACTURE COMPONENT | UL FILE NO. |
|---|---|---|---|---|
| 1 | CORE | FERRITE<br>△1 **EER 3019NA PM7** | ISU CERAMICS CO., LTD. | |
| | | FERRITE<br>EC 30E1 HE4 | RUYUAN DONGYANGGUANG MAGNETIC MATERIAS CO., LTD. | |
| | | FERRITE<br>EER3019N PL7 | SAM WHA ELECTRONICS CO.,LTD. | |
| 2 | BOBBIN | 94V-0 PHENOL RESIN<br>(PF-2736) EER 3019 V-10P | HEXION SPECIALTY CHEMICALS GMBH<br>(HO SUNG , DAE HEUNG) | E61040(M) |
| 3 | WIRE | POLYURETHANE<br>1 UEW 0.20Φ<br>(AWG #32) | DONG YANG ELECTRONICS CO., LTD. | E102761(S) |
| | | POLYURETHANE<br>USTC 0.12Φ × 25P<br>(AWG #36) | | |
| 4 | INSULATION TAPE | POLYESTER FILM TAPE<br>0.025mm × 10.5mm (Yellow) | HYUN DAI CHEMICAL CO., LTD. | E162848(S) |
| 5 | CORE FIXING TAPE | POLYESTER FILM TAPE<br>0.025mm × 20.0mm (Yellow) | DUCK SUNG HITECH CO., LTD.<br>(Cat No. DTS-204) | E105147(S) |
| 6 | BARRIER TAPE | P.N.W TAPE<br>0.25t × 4.0mm | A-TECH CO., LTD.<br>(Cat No. BK-402) | E142633 |
| 7 | INSULATION TAPE | ACETATE TAPE | DUCK SUNG HITECH CO., LTD.<br>( Cat No. DTS-230) | E105147(S) |
| 8 | VARNISH | SR-337A, SR-337B | SE KYE CHEMICAL CO., LTD. | E257443 |
| 9 | SOLDER | LFC2.0-BAR, Sn-2Cu | SEOUL ALLOY METAL CO., LTD. | |
| 10 | FLUX | JS-7000S-1 | KOKI SANEI KOREA CO., LTD. | |
| 11 | MARKING | INK & LABEL | TAE CHU COMPANY CO., LTD | |

## 9. UL - LIST

**BOBBIN**

**HEXION SPECIALTY CHEMICALS GMBH** **E61040**
POSTFACH 7154
58609 ISERLOHN, GERMANY

| Material Dsg | Color | Min. Thk mm | Flame Class | HWI | HAI | RTI Elec | RTI Mech Imp | RTI Mech Str | HVTR | D495 | C TI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Phenolic (PF), "Rutaform, Bakelite", furnished as pellets, powder, granular material.** | | | | | | | | | | | |
| **PF 2736(a)(b)** | | | | | | | | | | | |
| | BK | 0.46 | V-0 | - | - | 150 | 150 | 150 | 0 | 5 | 3 |
| | ALL | 0.81 | V-1 | 0 | 2 | 150 | 150 | 150 | | | |
| | NC, GN, BK | 0.81 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | ALL | 1.5 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | | 3.0 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |

(a) - Optional Suffix "H".
(b) - Grade designation may be followed by a four digit number representing color, P or S indicating type of molding, a single digit representing slight color variation.

Marking: Company name or tradename "BAKELITE" , "RUTAFORM" and material designation on container, wrapper or finished part.

Last Updated on 2008-01-09

**WIRE**

**DONG YANG ELECTRONICS IND CO LTD** **E102761**
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ BC | OC | ANSI Type | TI |
|---|---|---|---|---|
| NY-PEW | Polyester | Polyamide | MW24 | 155 |
| NY-PEW(F) | Polyester | Polyamide | MW24 | 155 |
| NY-UEW | Polyurethane | Polyamide | MW80, MW28# | 155, 130 |
| UEW(F) | Polyurethane | — | MW79, | 155, |
| UEW(B) | Polyurethane | — | MW75# | 130 |
| UAL | Polyurethane | — | @ | 155 |
| PEW | Polyester | — | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.
#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

Marking: Company name or "E102761" and material designation or marked designation on package or reel .

Last Updated on 2007-01-08

**CUSTOMER : YUYANG TELECOM CO., LTD.**

| SPECIFICATIONS | | DATE | 2007. 09. 13. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

**UL - LIST**

**TAPE**

**HYUN DAI CHEMICAL CO LTD** **E162848**
330-1 BUHANG-RI SILCHON-EUP
GWANGJU-SI, GYEONGGI-DO 464-874 REPUBLIC OF KOREA

**Reinforced polyester (PET) tape with acrylic adhesive**, Cat. No. 800BT, rated 130C.
**Polyester (PET) tape with acrylic adhesive**, Cat. No. 800(a), rated 130 C.
**Polyester (PET) tape with acrylic adhesive**, Cat. No. 8000, rated 130 C.
**Flame Retardant Al foil tape with acrylic adhesive** , Cat. No. HD-110$.
**Flame Retardant Ni coated woven polyester fiber tape with acrylic adhesive** , Cat. No. HD-14$.
(a) May be marked: "Film side CTI Performance Level Category PLC=0, Voltage 600+, per UL 746A/ASTM D 3638" and/or "Film side CTI 600 + per IEC112, First Edition (1979), CTI Material Group I" or equivalent.
$ - Markings shall include "Flame Retardant".

Marking: Company name or file number "E162848",catalog designation and temperature rating printed on carton, wrapper or core.

Last Updated on 2006-04-10

**TAPE**

**DUCK SUNG HITECH CO LTD** **E105147**
DAESUNG BLDG
677 JAYANG-DONG
KWANG JIN-KU
SEOUL, 133-190 REPUBLIC OF KOREA

**Polyester film insulating tape, acrylic adhesive**, Cat. No. DTS-204(a), rated 130 C.
**Acetate cloth insulating tape, acrylic adhesive**, Cat. No. 231*, rated 105 C.
**Glass cloth insulating tape, rubber adhesive**, Cat. No. 220-B, rated 130 C.
**Glass cloth insulating tape, silicone adhesive**, Cat. No. 221H*, rated 180 C.
**Acetate cloth insulating tape, rubber adhesive**, Cat. No. DTS-230, rated 105 C.
**Nomex (Aramid fiber) film insulating tape with non-woven polyester fiber reinforcement, acrylic adhesive**, Cat. No. DTS-241*, rated 130 C.
**Polyester film insulating tape, acrylic adhesive**, Cat. No. DTS-280*, rated 130 C.

* - Complies with flame retardant requirements when so marked.

(a) - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 270, per UL 746A/ASTM D 3638", and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600+, per UL 746A/ASTM D 3638" or equivalent.

Marking: Company name or trademark  or file number "E105147" and catalog designation printed on carton, wrapper or core.

Last Updated on 2007-07-10

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 10 / 16 |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | Eun | | | | |

**CUSTOMER : YUYANG TELECOM CO., LTD.**

| SPECIFICATIONS | | DATE | 2007. 09. 13. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

**UL - LIST**

**BARRIER TAPE**

**A-TECH CO LTD** **E142633**
443 KA CHANG-RI
BAKAM-MYUN
YONGIN-SHI, KYONGGI-DO 449-860 REPUBLIC OF KOREA

**Glass cloth insulating tape, silicone based adhesive**, Cat. No. BK-201* , rated 190 C, white color.
**Polyester insulating tape, natural rubber with petro resin**, Cat. No. BK-402, rated 130 C, white color.
**Acetate cloth insulating tape, acrylic adhesive**, Cat. No. BK-401* , rated 105 C, white color.
**Polyester, acrylic adhesive**, Cat. No. BK-404, rated 105 C, all colors.

Marking: Company name and catalog designation printed on core or package.
Last Updated on 1999-09-17

**VARNISH**

**SE KYE CHEMICAL CO LTD** **E257443**
360 GUIJEON-RI
TONGJIN-EUP
KIMPO-SI, KYUNGGI-DO 415-862 REPUBLIC OF KOREA

| Varnish Dsg | ANSI Magnet Wire Type | Varnish Thermal Class C TP | HC | CE |
|---|---|---|---|---|
| SR-337(#) | MW75 | 130 | 130 | — |

# - May be followed by 1 or 2 suffix numeric and /or alpha characters to denote viscosity change accomplished via solvents due to production tolerance.

Marking: Company name and varnish designation on shipping container.
Last Updated on 2006-06-28

**VARNISH**

**NOROO PAINT & COATINGS CO LTD** **E258023**
615 PAKDAL-DONG
ANYANG-SHI, KYONGGI-DO 430-030 REPUBLIC OF KOREA

| System Component | System Dsg | System Temp Class |
|---|---|---|
| DVB-2085 (*) | SBI4.2-DPI | 130 (B) |

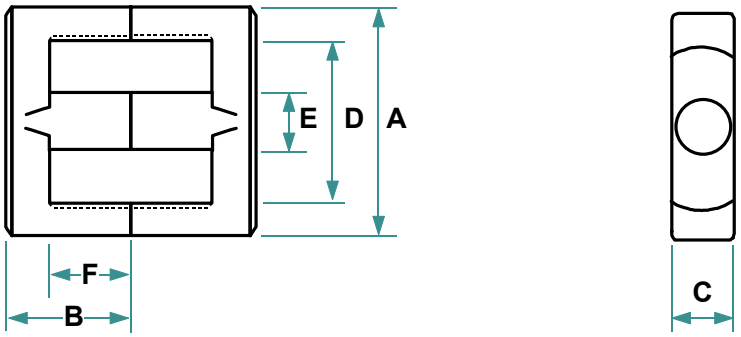
(*) - Followed by one or two numbers and/or letters.
(#) - May be replaced by a number from 0 - 30 to denote the percent silica.

Marking: Company name and system component designation.
Last Updated on 2007-09-21

CUSTOMER : YUYANG TELECOM CO., LTD.

| SPECIFICATIONS | | DATE | 2007. 09. 13. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

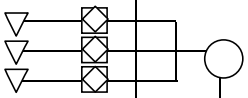
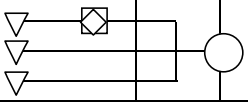
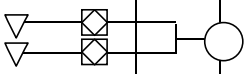
## 10. CORE DIMENSIONS




| TYPE | DIMENSION (m/m) | | | | | | Effective parameters | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | le(mm) | Ae(mm)$^2$ | Ve(mm)$^3$ | |
| EER 3019NA | 30.00 ±0.50 | 18.40 ±0.30 | 20.30 ±0.30 | 25.40 ±0.40 | 13.30 ±0.20 | 13.20 ±0.30 | 45.2 | 135.3 | 6100 | ISU |
| EC 30E1 | 30.00 ± 0.40 | 18.80 ± 0.30 | 20.30 ± 0.30 | 25.40 ± 0.40 | 13.30 ± 0.20 | 13.20 ± 0.30 | 47.2 | 137.0 | 6466 | DONG YANG GUANG |
| EER3019N | 30.00 ±0.40 | 18.80 ±0.30 | 20.30 ±0.30 | 25.40 ±0.40 | 13.30 ±0.20 | 13.20 ±0.40 | 47.2 | 137.0 | 6466 | SAM WHA |

## 11. 품 명 : TRANS P.F.C



| 공정번호 | 공정 | | 소요자재 | 공 정 명 | 관 리 항 목 | 관 리 기 준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | SUB 공정 | MAIN 공정 | | | | | | | | | |
| 01 |  | | BOBBIN<br>COIL<br>P/E TAPE | 1-N차 권선 | * COIL의 굵기와 종류<br>*권선턴수,권선상태<br>*결선상태, 절연상태 | | 2회 1일 | SAMPLING<br>LOT당 5EA | *MICRO METER | 생산 | 성적서 |
| 02 | | | SOLDER<br>FLUX | 납땜 | *납조기 온도: 430℃±10℃<br>*납땜시간 : 2.0초±0.5초 | 납땜작업표준서 | 2회 1일 | 전수 | *납조기<br>*온도계 | 생산 | 온도체크시트 |
| 03 |  | | CORE<br>GAP<br>P/E TAPE | CORE 조립 | *CORE의 종류(양갭)<br>*조립상태 GAP SIZE<br>*TAPING TURNS및 TAPING상태 | CORE 조립<br>작업표준서 | 2회 1일 | SAMPLING | *MICRO METER | 생산 | |
| 04 | | | | 1차 검사 | *전기적특성 (L값 TURNS)<br>*결선, 납땜상태 | 1차 검사 기준서 | 전수 | 전수검사 | *TURNS METER<br>*LCR-METER | 생산 | 1차검사일보 |
| 05 | | | VARNISH | 진공함침 | *VARNISH 배합상태 *함침시간<br>*함침부위 * VARNISH 점도 | 함침작업 표준서 | 매 LOT | SAMPLING | *진공함침기<br>*점도계 *시계 | 생산 | 점도체크시트 |
| 06 | | | | 건조 | *건조시간 : 3Hr<br>*건조기 온도 : 120℃ | 건조작업 표준서 | 2회 1일 | SAMPLING | *건조기 *시계<br>*온도계 | 생산 | 온도체크시트 |
| 07 | | | 불멸잉크 | MARKING | *MARKING 방향,위치,선명도<br>LOT No. | MARKING<br>작업표준서 | 전수 | 전수검사 | *MARKING 도장 | 생산 | |
| 08 | | | | PIN교정 | * 핀휨, 핀교정상태 | PIN교정<br>작업표준서 | 전수 | 전수검사 | *PIN교정JIG | 생산 | |
| 09 | | | | 2차 검사 | *전기적특성(L값,LEAKAGE)<br>*위상,TURNS *내전압 절연상태 | 2차 검사 기준서 | 전수 | 전수검사 | *TURNS METER<br>*LCR-METER,*내압기 | 생산 | 2차 검사일보 |
| 10 | | | | 외관검사 | *BOBBIN파손, 납땜상태,PIN상태<br>*기타 | 외관검사 기준서 | 전수 | 전수검사 | | 생산 | 외관검사일보 |
| 11 |  | | SNOW BOX<br>OUT BOX | 포장 | *PIN TO PIN 간격<br>* BOX규격,외관,포장상태 | 포장작업 기준서 | 전수 | | | 생산 | |
| 12 | | | | 출하검사 | *전기적특성 (L값 절연저항 내전압)<br>*치수,구조,외관,수량 | 출하검사 기준서 | SAMPLING | SAMPLING | *LCR *내압기<br>*절연저항기 | 품질관리 | 출하검사성적서 |
| 13 | | | | 창고입고 | *수량, 제품명, 포장상태,<br>*입.출고 재고관리 | 창고적재 표준서 | | | | 영업 | 입고전표<br>수불장부 |
| 14 | | | | 출 하 | *제품명, 수량 | | | | | 영업 | 출하전표 |

CUSTOMER : YUYANG TELECOM CO., LTD.

| SPECIFICATIONS | | DATE | 2007. 09. 13. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

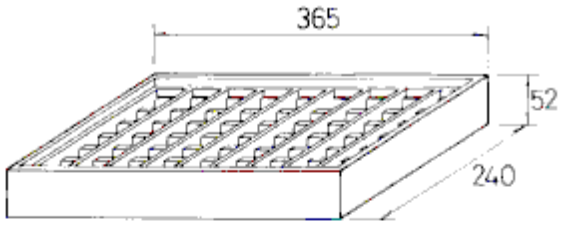
## 12. PACKING

(UNIT : m/m)

** INNER BOX (PAPER BOX)

9 PCS × 6 EA = 54 PCS

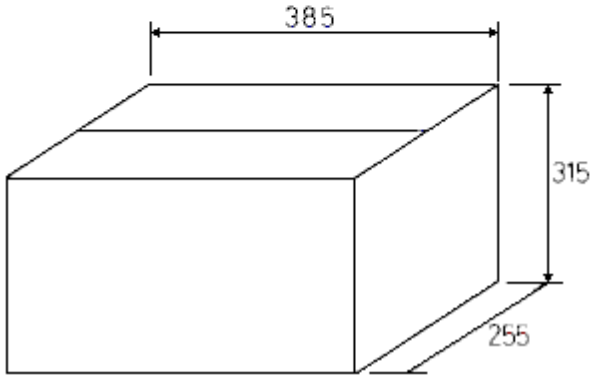
| QUANTITY | WEIGHT APPROX.(Kg) |
|---|---|
| 54 | 2.5 |




** OUT BOX (CARTON)

54 PCS × 4 EA = 216 PCS

| QUANTITY | WEIGHT APPROX.(Kg) |
|---|---|
| 216 | 10.6 |




** BOX CARTON DECLARATION

| QUANTITY | WEIGHT APPROX.(Kg) |
|---|---|
| PART No. | |
| P/O No. | |
| LOT No. | |
| P/DATE | |
| Q'TY | |
| C/NO | |
| MADE IN KOREA | |




| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 14 / 16 |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | Eun | | | | |

CUSTOMER : YUYANG TELECOM CO., LTD.

| SPECIFICATIONS | | DATE | 2007. 09. 13. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

# 13. INSPECTION DATA

| ITEM | TRANS P.F.C | MODEL | LGP42 -08H | LOT SIZE | 10 PCS |
|---|---|---|---|---|---|
| OBJ | | LOT No | NY070913 | TEST Q'TY | 10 PCS |

| No | ITEM | TERMINAL | SPEC' | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | INDUCTANCE <100KHz 1V> | 1 - 5 | 250 uH ± 7% | 252 | 249 | 253 | 254 | 251 | 255 | 254 | 249 | 249 | 251 |
| 2 | | 6 - 8 | 5.0 uH ± 30% | 5.04 | 5.07 | 5.13 | 5.09 | 5.09 | 5.20 | 4.94 | 5.03 | 4.90 | 5.09 |
| 3 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | LEAKAGE <100KHz 1V> | 1 - 5 (6 - 8 SHORTED) | 90 uH MAX | 62.5 | 64.3 | 63.6 | 63.9 | 64.2 | 66.6 | 58.2 | 63.8 | 58.9 | 64.4 |
| 8 | Rdc | 1 - 5 | 0.300 Ω MAX | 0.178 | 0.177 | 0.179 | 0.180 | 0.179 | 0.179 | 0.177 | 0.178 | 0.180 | 0.176 |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 1.5KV rms (1 MINUTE) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 15 | | P COIL - CORE | AC 1.5KV rms (1 MINUTE) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 16 | | S COIL - CORE | AC 1.5KV rms (1 MINUTE) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 17 | INSULATION RESISTANCE | P COIL - S COIL | 100M ohm MIN at DC 500V | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ |
| 18 | D.C OVERLAP <100KHz, 1V> (8 A) | 1 - 5 | MORE THAN 90% at INITIAL INDUCTANCE | 244.0 | 241.7 | 242.9 | 243.4 | 241.8 | 247.8 | 242.8 | 244.8 | 243.3 | 243.6 |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | Eun | | | | 15 / 16 |

CUSTOMER : YUYANG TELECOM CO., LTD.

| SPECIFICATIONS | | DATE | 2007. 09. 13. |
|---|---|---|---|
| PART NAME | TRANS P.F.C | PART No. | LP-002 |

## 14. ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.
2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.
3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.
4) WIRE BUNDLE METHOD.
   * CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2MM.
   * TOP SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2 MM.
   * SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER-SOLENOID IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
   * SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM. ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
   * SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2.
     IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.
5) PERFORMANCE OF THIS DRAWING IS REQUITED TO MEET PART NUMBER LP-002
6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE. BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 16 / 16 |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | Eun | | | | |

# 폴리 우레탄 동선 (1UEW)

| 치 수 | | | | 절연파괴 전 압 (V) ↑ | 내마모 파괴하중 | | 최대도체 저 항 (Ω/㎞) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성 외 경 (mm) ↑ | 최대완성 외 경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| **0.200** | **±0.003** | **0.224** | **0.246** | **2400** | **-** | **-** | **607.6** | **15** |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.686 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

# 폴리 우레탄 동선 (2UEW)

| 치 수 | | | | 절연파괴 전 압 (V) ↑ | 내마모 파괴하중 | | 최대도체 저 항 (Ω/㎞) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성 외 경 (mm) ↑ | 최대완성 외 경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.002 | 0.046 | 0.056 | 700 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.058 | 0.071 | 950 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.068 | 0.081 | 950 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.078 | 0.091 | 950 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.090 | 0.103 | 1100 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.100 | 0.113 | 1100 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.110 | 0.125 | 1100 | - | - | 2381 | 15 |
| 0.110 | ±0.003 | 0.120 | 0.135 | 1100 | - | - | 1957 | 15 |
| **0.120** | **±0.003** | **0.132** | **0.147** | **1300** | **-** | **-** | **1636** | **15** |
| 0.130 | ±0.003 | 0.142 | 0.157 | 1300 | - | - | 1389 | 15 |
| 0.140 | ±0.003 | 0.152 | 0.167 | 1300 | - | - | 1193 | 15 |
| 0.150 | ±0.003 | 0.162 | 0.177 | 1300 | - | - | 1037 | 15 |
| 0.160 | ±0.003 | 0.174 | 0.189 | 1300 | - | - | 908.8 | 15 |
| 0.170 | ±0.003 | 0.184 | 0.199 | 1300 | - | - | 803.2 | 15 |
| 0.180 | ±0.003 | 0.196 | 0.211 | 1600 | - | - | 715.0 | 15 |
| 0.190 | ±0.003 | 0.206 | 0.221 | 1600 | - | - | 640.6 | 15 |
| 0.200 | ±0.003 | 0.216 | 0.231 | 1600 | - | - | 577.2 | 15 |
| 0.210 | ±0.003 | 0.226 | 0.241 | 1600 | - | - | 552.8 | 15 |
| 0.220 | ±0.004 | 0.236 | 0.252 | 1600 | - | - | 480.1 | 15 |
| 0.230 | ±0.004 | 0.248 | 0.264 | 1600 | - | - | 438.6 | 15 |
| 0.240 | ±0.004 | 0.258 | 0.274 | 1600 | - | - | 402.2 | 15 |
| 0.250 | ±0.004 | 0.268 | 0.284 | 1600 | - | - | 370.2 | 15 |
| 0.260 | ±0.004 | 0.278 | 0.294 | 1600 | 2.35(240) | 1.96(200) | 341.8 | 15 |
| 0.270 | ±0.004 | 0.288 | 0.304 | 1600 | 2.35(240) | 2.00(205) | 316.6 | 15 |
| 0.280 | ±0.004 | 0.298 | 0.314 | 1600 | 2.35(240) | 2.00(205) | 294.1 | 15 |
| 0.290 | ±0.004 | 0.308 | 0.324 | 1600 | 2.35(240) | 2.00(205) | 273.9 | 20 |
| 0.300 | ±0.005 | 0.320 | 0.337 | 2000 | 2.64(270) | 2.25(230) | 254.0 | 20 |
| 0.310 | ±0.005 | 0.330 | 0.347 | 2000 | 2.64(270) | 2.25(230) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.340 | 0.357 | 2000 | 2.69(275) | 2.25(230) | 222.8 | 20 |
| 0.330 | ±0.005 | 0.350 | 0.367 | 2000 | 2.69(275) | 2.25(230) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.360 | 0.377 | 2000 | 2.69(275) | 2.25(230) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.370 | 0.387 | 2000 | 2.74(280) | 2.30(235) | 185.7 | 20 |
| 0.360 | ±0.005 | 0.380 | 0.397 | 2000 | 2.74(280) | 2.30(235) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.390 | 0.407 | 2000 | 2.74(280) | 2.30(235) | 165.9 | 20 |
| 0.380 | ±0.005 | 0.400 | 0.417 | 2000 | 2.74(280) | 2.30(235) | 156.1 | 20 |
| 0.400 | ±0.005 | 0.422 | 0.439 | 2000 | 3.03(310) | 2.59(265) | 141.7 | 20 |
| 0.420 | ±0.005 | 0.442 | 0.459 | 2000 | 3.03(310) | 2.59(265) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.472 | 0.490 | 2000 | 3.13(320) | 2.64(270) | 112.1 | 20 |
| 0.500 | ±0.006 | 0.524 | 0.542 | 2150 | 3.47(355) | 2.94(300) | 89.95 | 20 |
| 0.550 | ±0.006 | 0.574 | 0.592 | 2150 | 3.52(360) | 2.94(300) | 74.18 | 20 |
| 0.600 | ±0.006 | 0.624 | 0.644 | 2150 | 3.50(360) | 2.98(305) | 62.64 | 20 |
| 0.650 | ±0.008 | 0.674 | 0.694 | 2150 | 3.57(365) | 3.03(310) | 53.26 | 20 |
| 0.700 | ±0.008 | 0.726 | 0.746 | 2150 | 3.92(400) | 3.33(340) | 45.84 | 20 |
| 0.750 | ±0.008 | 0.778 | 0.798 | 2400 | 4.26(435) | 3.62(370) | 39.87 | 20 |
| 0.800 | ±0.010 | 0.830 | 0.852 | 2400 | 4.65(475) | 3.92(400) | 35.17 | 25 |
| 0.850 | ±0.010 | 0.880 | 0.904 | 2400 | 4.65(475) | 3.92(400) | 31.11 | 25 |
| 0.900 | ±0.010 | 0.936 | 0.956 | 2400 | 5.04(515) | 4.21(430) | 27.71 | 25 |
| 0.950 | ±0.010 | 0.984 | 1.008 | 2400 | 5.39(550) | 4.50(460) | 24.84 | 25 |
| 1.000 | ±0.010 | 1.034 | 1.062 | 2400 | 5.43(555) | 4.55(465) | 22.49 | 25 |
| 1.100 | ±0.010 | 1.136 | 1.164 | 2400 | 5.43(555) | 4.55(465) | 18.40 | 25 |
| 1.200 | ±0.010 | 1.236 | 1.264 | 2400 | 5.43(555) | 4.55(465) | 18.10 | 25 |
| 1.300 | ±0.010 | 1.338 | 1.364 | 2400 | 5.43(555) | 4.55(465) | 17.50 | 25 |
| 1.500 | ±0.010 | 1.540 | 1.564 | 2400 | 5.43(555) | 4.55(465) | 15.22 | 25 |

# ( LG ELECTRONICS ) SPECIFICATIONS

C U S T O M E R : LG ELECTRONICS INC.

M O D E L : 08H-42

I T E M : PFC CHOKE COIL

P A R T N O : EAP36781902 (LP-002)

D A T E : 2007. 11. 14.


| MANUFACTURE | CLOVER Hi-Tech CO.,LTD. | |
|---|---|---|
| ADDRESS | HEAD OFFICE : 224-10, JAYANG-DONG,KWANGJIN-KU, SEOUL, KOREA. | TEL) 02-453-0488<br>FAX) 02-453-8858 |
| | FACTORY 1 : 322, SINDU-RI, GONGDO-EUP, ANSEONG-SI, GYEONGGI-DO, KOREA. | TEL) 031-654-9300<br>FAX) 031-654-9400 |
| | FACTORY 2 : 62, SHENZHEN ROAD, MANSANZHEN, WENDING SHI,SHANDONG, CHINA. | TEL) 86-631-854-5420<br>FAX) 86-631-854-5330 |
| | FACTORY 3 : CHANG FA MANAGEMENT AREA FU SHAN LIAO BU TOWN, DONG GUAN CITY, GUANG DONG P.R. CHINA. | TEL) 86-769-328-1822<br>FAX) 86-769-328-3162 |

CUSTOMER : LG ELECTRONICS INC.

| S P E C I F I C A T I O N S | | DATE | 2007.11.14 |
|---|---|---|---|
| PART NAME | PFC CHOKE COIL | PART NO | EAP36781902 |

# 1. REVISION RECORD

| REV.NO | REASON | CONTENTS | DATE OF APPROVAL | CHECKED | REMARKS |
|---|---|---|---|---|---|
| | | | | | |

CUSTOMER : LG ELECTRONICS INC.

| S P E C I F I C A T I O N S | | DATE | 2007.11.14 |
|---|---|---|---|
| PART NAME | PFC CHOKE COIL | PART NO | EAP36781902 |

# 2. INDEX

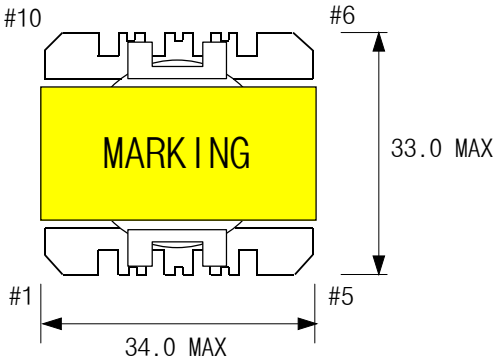

PAGE NO : 1/16 1. REVISION RECORD
: 2/16 2. INDEX
: 3/16 3. DIMENSION
: 4/16 4. SCHEMATIC DIAGRAM
: 5/16 5. WINDING SPECIFICATION
: 6/16 6. ELECTRICAL CHARACTERISTICS
: 7/16 7. ENVIRONMENTAL CHARACTERISTICS
: 8/16 8. MECHANICAL CHARACTERISTICS
: 9/16 9. SECTION DIAGRAM
: 10/16 10. MATERIAL LIST
: 11/16 11. UL LIST
: 12/16 12. CORE DIMENSION
: 13/16 13. PROCESS FLOW
: 14/16 14. PACKING
: 15/16 15. INSPECTION DATA
: 16/16 16. ASSIGNMENT

CUSTOMER : LG ELECTRONICS INC.

| S P E C I F I C A T I O N S | | DATE | 2007.11.14 |
|---|---|---|---|
| PART NAME | PFC CHOKE COIL | PART NO | EAP36781902 |

## 3. DIMENSION (UNIT:mm) SAFETY

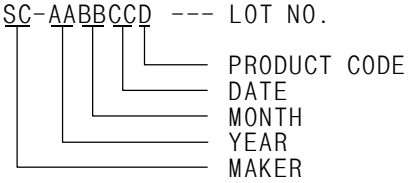
TOP VIEW




☆ MARKING (BLACK) ☆

LP-002
SC-AABBCCD
EAP36781902 -- LGE PART NO.

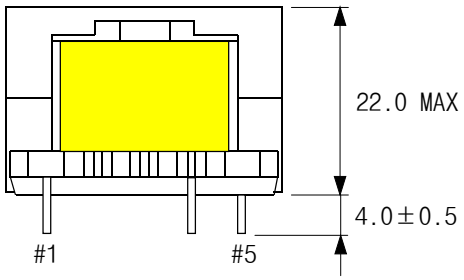
*. SC-AABBCCD --- LOT NO.



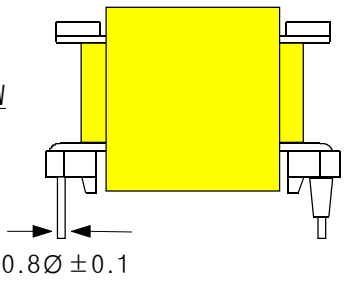

LOT NO

| YEAR(AA) | MONTH(BB) | DATE(CC) | PRODUCT CODE(D) |
|---|---|---|---|
| 2007Y→07<br>2008Y→08<br>2009Y→09 | JAN→01, FEB→02,<br>:<br>NOV→11, DEC→12 | DATE→01<br>:<br>DATE→31 | A:KOREA PRODUCT<br>C:CHINA(WENDING)<br>D:CHINA(DONGGUAN) |

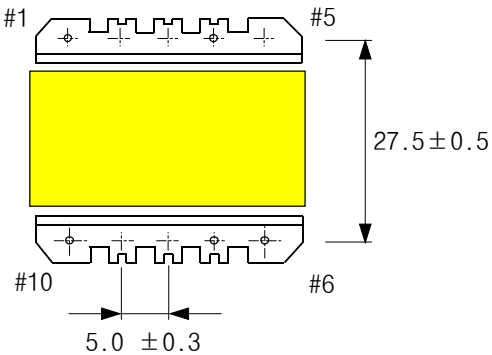
FRONT VIEW




SIDE VIEW




BOTTOM VIEW




☆ PIN NO. 2, 3, 4 : REMOVED.

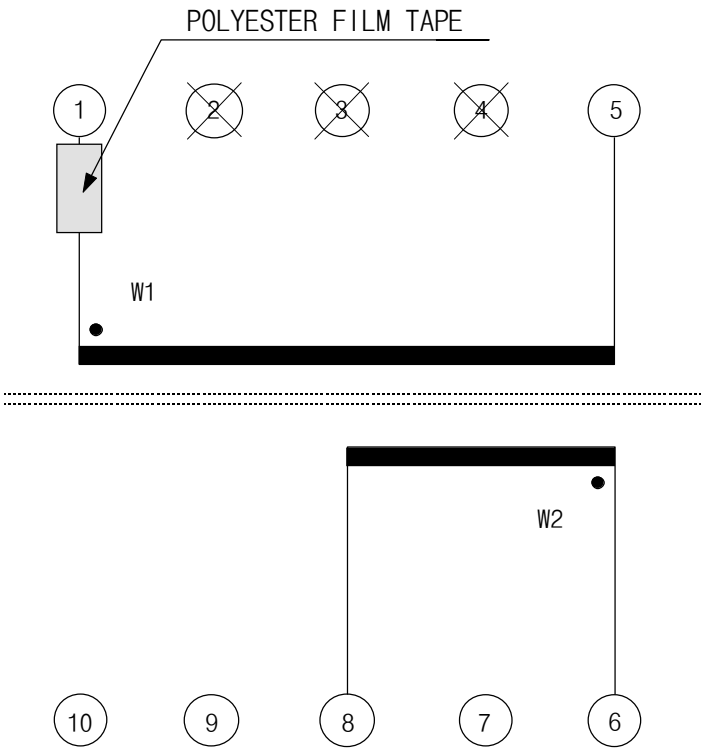
☆ GAP CORE : TWIN GAP

| CLOVER Hi-Tech CO., LTD. | DESIGN | CHECK | APPROVAL | PAGE |
|---|---|---|---|---|
| | 裵玹慶 07.11.14 技術部 | 車暎澔 07.11.14 技術部 | 劉成宰 07.11.14 技術部 | 3/16 |

CUSTOMER : LG ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2007.11.14 |
|---|---|---|---|
| PART NAME | PFC CHOKE COIL | PART NO | EAP36781902 |

# 4. SCHEMATIC DIAGRAM




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| PART NAME | PFC CHOKE COIL | PART NO | EAP36781902 |

# 5. WINDING SPECIFICATION

| NO | TERMINAL | | WIRE | TURNS | LAYERS (TOLERANCE) | WINDING METHOD | INSULATION | | |
|---|---|---|---|---|---|---|---|---|---|
| | S | F | | | | | MATERIAL | T/W(mm) | TURNS |
| W1 | 1 | 5 | USTC 0.12Ø×25 | 50 | 5 (1 ~ 4 LAYER : 10 ± 3) | SOLENOID | P.E. TAPE | 0.025/10.5 (YELLOW) | 3 |
| W2 | 6 | 8 | 1UEW 0.2Ø | 6 | 1 | SOLENOID | P.E. TAPE | 0.025/10.5 (YELLOW) | 3 |
| CORE FIXING | | | | | | | P.E. TAPE | 0.025/20 (YELLOW) | 3 |

☆ □ MARK : POLYESTER FILM TAPE

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| PART NAME | PFC CHOKE COIL | PART NO | EAP36781902 |

# 6. ELECTRICAL CHARACTERISTICS

| NO | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 6-1 | INDUCTANCE | PIN : 1 - 5 | 250uH ± 7% | HP-4284A at 100KHz, 1V |
| | | PIN : 6 - 8 | 5.0uH ±30% | |
| 6-2 | DC RESISTANCE | PIN : 1 - 5 | 0.3Ω MAX | HIOKI 3540 |
| 6-3 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 1.5KV RMS, 1 MINUTE | SAFETY TOS-8850 CUT OFF CURRENT 5mA |
| | | COIL - CORE | AC 1.5KV RMS, 1 MINUTE | |
| 6-4 | INSULATION RESISTANCE | P COIL - S COIL | 100 Mohm MIN at DC 500V. | SAFETY TOS-8850 |
| 6-5 | DC OVER LAP | PIN : 1 - 5 | MORE THAN 90% OF INITIAL INDUCTANCE | 8A (TEST CURRENT) NORMAL TEMPERATURE |

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# 7. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃±15℃ HUMIDITY 65%±20%
IF WHEN ANY OBJECTION IS SUGESTED. THE TEST CAN BE OPERATED AT 20℃±2℃, 65%±5% RH

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>7-1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>7-2</td><td>KEEPING TEMPERATURE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>7-3</td><td>HIGH TEMPERATURE RESISTANT</td><td rowspan="4">MUST MEET THE REQUIREMENTS 6-1, 6-2 AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE</td><td>+105℃±2℃, 96±4Hr MEASURE AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>7-4</td><td>LOW TEMPERATURE RESISTANT</td><td>-25℃±2℃, 96±4Hr MEASURE AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>7-5</td><td>HUMIDITY RESISTANT</td><td>+95%RH±5% (40℃±5℃), 96±4Hr MEASURE AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>7-6</td><td>TEMPERATURE CYCLE</td><td>
<table>
<tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr>
<tr><td>1</td><td>-25±2℃</td><td>30 MIN</td></tr>
<tr><td>2</td><td>+25±2℃</td><td>10 MIN</td></tr>
<tr><td>3</td><td>+105±2℃</td><td>30 MIN</td></tr>
<tr><td>4</td><td>+25±2℃</td><td>10 MIN</td></tr>
</table>
REPEAT 5 TIMES FROM STEP 1 AND TEST AFTER 2 Hr AT ROOM TEMP.
</td></tr>
<tr><td>7-7</td><td>환경성 시험 (유해물질)</td><td colspan="2">XRF 장비로 시험 시료를 120초간 SCAN하여 Cd 측정결과 함유량이 50ppm 미만이며, Std Dev(표준편차) 값이 17미만,<br>Pb 200ppm, Hg 200ppm, pbb, pbde 100ppm, Cr6 100ppm 미만일 것.<br>ICP로 측정은 Cd 10ppm, Pb 100ppm, Hg 100ppm, Cr6 100ppm,<br>pbb, pbde 100 ppm 미만일 것.</td></tr>
</table>

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|---|---|---|---|
| PART NAME | PFC CHOKE COIL | PART NO | EAP36781902 |

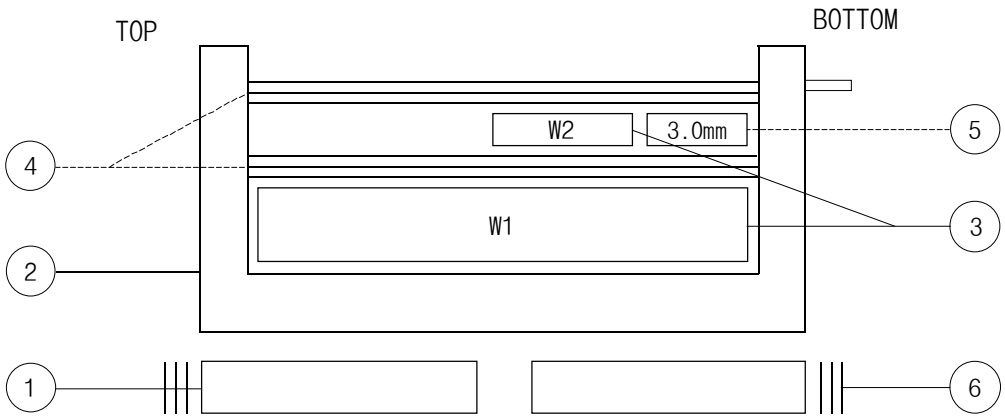
# 8. MECHANICAL CHARACTERISTICS

| NO | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 8-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 8-2 | SOLDER HEAT RESISTANCE | MUST MEET THE REQUIREMENTS 6-1, 6-2 AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER AT 260+5℃ FOR 10±0.5 SECONDS MEASURE AFTER 1 Hr AT ROOM TEMP. SOLDERING IRON(80W) TERMINAL AT 360±2℃ FOR 5±1 SECONDS MEASURE AFTER 2 Hr AT ROOM TEMP. |
| 8-3 | SOLDER -ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 260+5℃ FOR 3±0.5 SECONDS |
| 8-4 | VIBRATION | MUST MEET THE REQUIREMENTS 6-1, 6-2 AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE | 1) TOTAL EXCURSION MAX :1.5mm<br>2) VIBRATION FREQUENCY :10～55Hz<br>3) TRAVERSED TIME : 1 MINUTE<br>4) TEST AFTER 2 Hrs IN EACH OF 3 MUTUALLY PERPENDICULAR DIRECTION |
| 8-5 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED TO INITIAL VALUE | PULL THE PIN WITH 2.5Kgf DURING 30±5 SEC |

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# 9. SECTION DIAGRAM




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# 10. MATERIAL LIST

SAFETY

| NO | COMPONENT | NAME OF MATERIAL | MANUFACTURER OF MATERIAL | UL FILE NO |
|---|---|---|---|---|
| 1 | CORE | PM7, EER 3019N<br>HE4, EC 30-4R | ISU CERAMICS CO., LTD.<br>RUYUAN DONGYANGGUANG MAGNETICS MATERIALS CO., LTD. | |
| 2 | BOBBIN | PHENOLIC 94V-0<br>V"TYPE / 10PIN | HEXION SPECIALTY CHEMICALS GMBH. (PF 2736)<br>IL-KWANG ELECTRONIC MATERIALS CO., LTD. | E61040 (M) |
| 3 | WIRE | 1UEW 0.2Ø<br>USTC 0.12Ø×25 | DONGYANG ELECTRONICS IND CO., LTD. (UEW MW75) | E102761(S) |
| | | | CNI ELECTRONICS CO., LTD. (UEW MW75) | E209819 |
| 4 | INSULATION TAPE | POLYESTER FILM TAPE (YELLOW)<br>0.025T × 10.5mm | HYUNDAI CHEMICAL CO., LTD. (Cat. NO. 800(a)) | E162848(S) |
| | | | DUCKSUNG TAPE CO., LTD. (Cat. No. DTS-204A#) | E105147(S) |
| | | | JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD. (Cat. NO. PZ) | E165111 |
| 5 | BARRIER TAPE | P.N.W. (BUSIKPO)<br>BOTTOM(W2)<br>: 3.0mm | A-TECH CO., LTD. (Cat. No. BK-402) | E142633 |
| | | | TAEHWA INDUSTRIAL CO., LTD. (Cat. No. H-5673) | E92677(S) |
| | | | JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD. (Cat. NO. WF) | E165111 |
| 6 | CORE FIXING TAPE | POLYESTER FILM TAPE (YELLOW)<br>0.025T × 20mm | HYUNDAI CHEMICAL CO., LTD. (Cat. NO. 800(a)) | E162848(S) |
| | | | DUCKSUNG TAPE CO., LTD. (Cat. No. DTS-204A#) | E105147(S) |
| | | | JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD. (Cat. NO. PZ) | E165111 |
| 7 | VARNISH | SR-337<br>or equiv. | SEKYE CHEMICAL CO., LTD.<br>or equiv. | E257453 |
| 8 | SOLDER | Sn98Cu2 | SEOUL ALLOY METAL CO., LTD.<br>or equiv. | |
| 9 | FLUX | KS-PBF-G<br>or equiv. | KOKI SANEI KOREA CO., LTD.<br>or equiv. | |
| 10 | INK | JP-K33<br>or equiv. | HITACHI CHEMICAL CO., LTD.<br>or equiv. | |

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# 11. UL LIST

HEXION SPECIALTY CHEMICALS GMBH E61040 (M)
POSTFACH 7154
58609, ISERLOHN-LETMATHE, GERMANY

| Mtl Dsg | Col | Min Thk mm | UL94 Flame Class | Elec | RTI Mech with lmp | RTI Mech w/o lmp | H W I | H A I | V T R | H 4 9 5 | D C T I |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenolic molding compound (PF), designated "Rutaform" or "Bakelite", furnished in the form of pellets or powder. | | | | | | | | | | | |
| PF2736(a)(b) | BK | 0.46 | 94V-0 | 150 | 150 | 150 | -- | -- | -- | -- | -- |

DONG YANG ELECTRONICS IND CO LTD E102761 (S)
(B-cont. from A card)

| | | | | | |
|---|---|---|---|---|---|
| UEW | Polyurethane | -- | | MW75 | 130 |

CNI ELECTRONICS CO LTD E209819
643-7 YOUNGTAN-DONG
CHUNGJU, CHUNGBUK REPUBLIC OF KOREA

| Mtl Dsg | Mark Dsg | Coat Typ BC | Coat Typ OC | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| UEW | (1) | Polyurethane | None | MW79 | 155 |
| | | | | MW75 | 130(2) |
| PEW | (1) | Polyester | None | MW30 | 180 |
| | | | | MW5 | 155(2) |

HYUN DAI CHEMICAL CO LTD E162848 (S)
258 YEULMI-RI SILCHON-MYON KWANGJU
KYONGGI-DO 464-870 KOREA
Polyester tape with acrylic adhesive, Cat. No. 800 for use at temperatures not exceeding 130℃.

DUCK SUNG TAPE CO LTD E105147 (S)
TAEKWANG BLDG, ROOM A-402 162-1
JANGCHUNG-DONG 2-KA CHUNG-KU, SEOUL 100-
392 KOREA
Polyester film insulating tape, Cat. No. DTS-204 rated 130℃.
Acetate cloth insulating tape, rubber adhesive, Cat. No. DTS-230, rated 105 C.
Flame retard Copper foil tape, acrylic adhesive, Cat. no. DTS-820+.

JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD E165111
SOUTHWEST AROUND RD JINGJIANG
JIANGSU 214500, CHINA
Nonwoven cloth/polyethylene terepthalate film tape, Cat. No. WF with suffixes, rated 130 C*(a).
Polyethylene terephthalate film tape, Cat. No. PZ with additional suffixes, rated 130 C*(b).

A TECH CO LTD E142633
443 KA CHANG-RI BAKAM-MYUN YONGIN-SHI
KYONGGI-DO 449-860, KOREA
Polyester insulating tape, natural rubber with petro resin, Cat. No. BK-402, rated 130 C, white color.

TAE HWA INDUSTRIAL CO LTD E92677 (S)
323-80 GUNHA-RI KIMPO-KUN WOLGOT-MYUN,
KYONGGI-DO 415-870 KOREA
Polyester film insulating tape with acrylic adhesive , Cat. No. H-5673@, rated 130C
Flame retardant copper foil tape with conductive acrylic adhesive, Cat. No. E-3338#.

SE KYE CHEMICAL CO LTD E257443
360 GUIJEON-RI TONGJIN-EUP
KIMPO-SI, KYUNGGI-DO 415-862 REPUBLIC OF KOREA

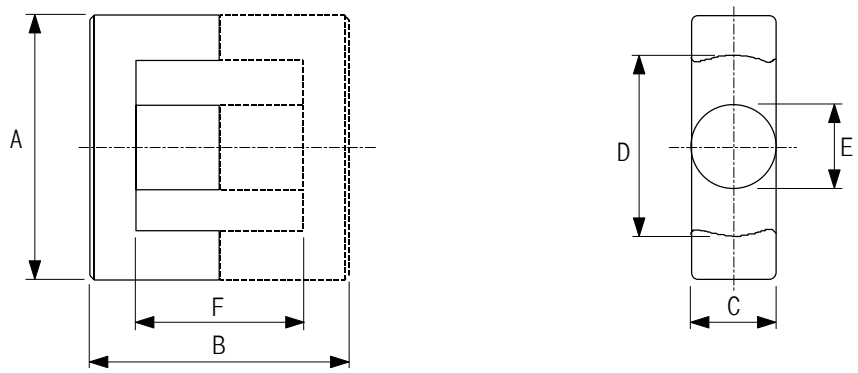
| Varnish Dsg | ANSI Magnet Wire Type | Varnish Thermal Class C TP | HC | CE |
|---|---|---|---|---|
| SR-337(#) | MW75 | 130 | 130 | - |

# - May be followed by 1 or 2 suffix numeric and /or alpha characters to denote viscosity change accomplished via solvents due to production tolerance.

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# 12. CORE DIMENSION




1) DIMENSION (UNIT:mm)

| TYPE | DIMENSION (mm) | | | | | | REMARK |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| EER 3019N | 30.0 ±0.5 | 18.8 ±0.3 | 20.3 ±0.3 | 25.4 ±0.4 | 13.3 -0.2 +0.15 | 13.2 ±0.3 | ISU |
| EC 30-4R | 30.0 ±0.4 | 18.8 ±0.3 | 20.3 ±0.3 | 25.4 ±0.4 | 13.3 ±0.2 | 13.2 ±0.4 | DONGYANGGUANG |

2) EFFECTIVE PARAMETERS

| TYPE | Effective Parameters | | | REMARK |
|---|---|---|---|---|
| | Le (mm) | Ae (㎟) | Ve (㎣) | |
| EER 3019N | 47.3 | 134.0 | 6344 | ISU |
| EC 30-4R | 47.2 | 137.0 | 6466 | DONGYANGGUANG |

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# 13. PROCESS FLOW

| SUB NO | MAIN PRO | MATERIAL | PROCESS NAME | CONTROL POINT | CONTROL STD | INS TIME | CONTROL DEPT | EQUIMENTS | RECORD |
|---|---|---|---|---|---|---|---|---|---|
| | | COIL BOBBIN P.S TAPE | 1st - Nts1 WINDING | COIL DIA.INSULATION CLASS Nr. of TRANS.WINDIG STATS. WIRE CONNECTION. SOLDERING. | DES-1-301-35 WORKING STD | 2TIME/DAY | PRODUCTION DEPT | POWER SUPPLY MICRO METER WINDING M/C | DATA SHEET |
| | | SOLDER | SOLDERING | SOLDER POT TEMP:470 ±20℃ SOLDERING TIME : 2~3 SEC. | DES-1-304 WORKING STD | " | " | TEMP.GAUGE SOLDER POT | TEMP. CHECK SHEET |
| | | CORE GAP | ASS'Y | CORE TYPE ASS'Y, STATUS, GAP SIZE | DES-1-302 WORKING STD | " | " | MICRO METER LCR METER | DATA SHEET |
| | | P.S TAPE | TAPPING | CORE FIXING TAPE TURNS | WORKING STD | " | " | | |
| | | | 1.st - INSPECTION | ELECTRIC CHARACTERISTICS WIRE CONNECTION STATUS | DS-SPEC INSPECT STD | 100% | " | LCR METER | DATA SHEET |
| | | VARNISH | VACCUM VARNISH | VARNISH MINED STATUS & TIME IMPREGNATION POSITION. | WORKING STD | 2TIME/DRY | " | | |
| | | | VARNISH DRY | DRY TEMP : 115℃ ±5℃ DRY TIME : 1.5 Hrs. | " | " | " | DRY OVEN TEMP-GAUGE, TIMER | TEMP. CHECK SHEET |
| | | INK | MARKING | MARKING DIRECTION.POSITION& LOT NO | " | 100% | " | MARKING STAMP | |
| | | | 2nd - INSPECTION | ELECTRIC CHARACTERISTICS INSULATION RESIS. | DS-SPEC. INSPECT STD | " | " | | DATA SHEET |
| | | SNOW BOX | FINAL INSPECTION & PACKING | DIMENSION, MARKING, VISUAL, BOX SIZE, PACKING STATUS | WORKING STD | " | " | PIN JIG | |
| | | | OUTGOING INSPECTION | ELECTRIC CHARACTERISTICS, DIMENSION, VISUAL, QUANTITY | DS-SPEC INSPECT STD | SAMPLING | Q.A DEPT° | LCR METER PUNCT-UER TESTER ETC | OUTGOING INSPECTION DATA |
| | | | OUTGOING | PACKING STATUS, QUANTITY | WORKING STD | | PRO. CONTOL SECTION | | CHIT |

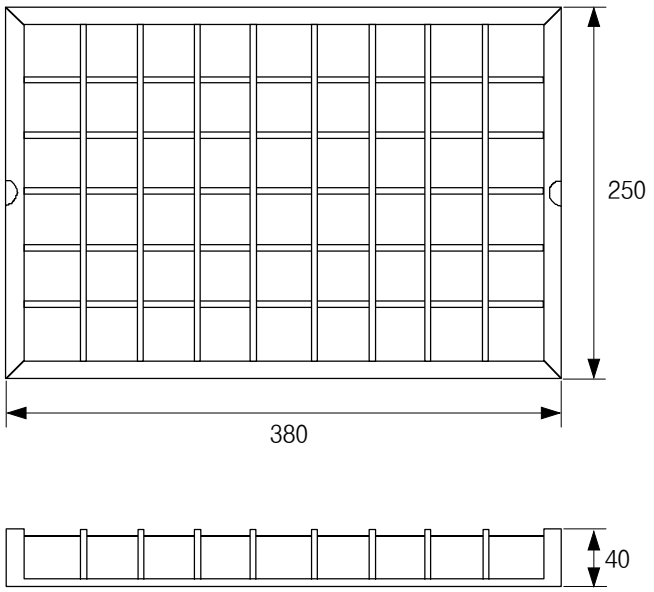
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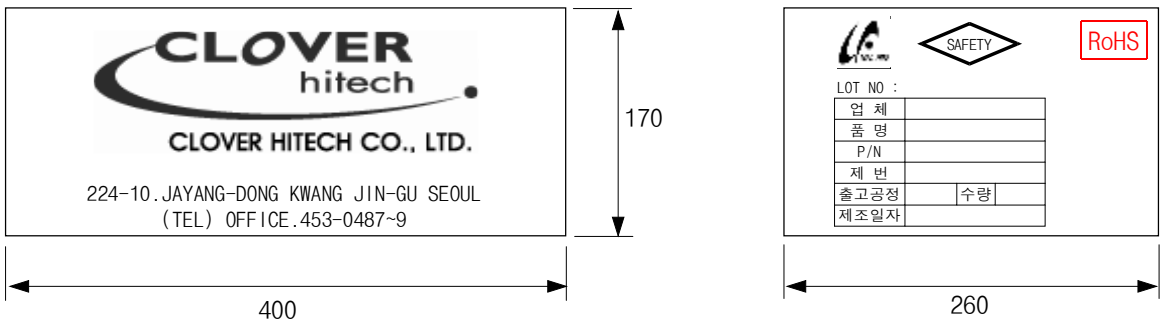
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# 14. PACKING

☆ INNER BOX (PAPER BOX) : 6 PCS x 9 PCS = 54 PCS




☆ OUT BOX (CARTON) : 54 PCS x 3 PCS = 162 PCS - 2 PCS = 160 PCS




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# 15. INSPECTION DATA

| ITEM | PFC CHOKE COIL | | MODEL | 08H-42, NATN-52, ATN-32/37 | | | | | LOT SIZE | | 5PCS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OBJ | | | LOT NO | SC-071012C | | | | | TEST Q'TY | | 5PCS | | |
| NO | ITEM | TERMINAL | SPEC | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | INDUCTANCE | 1 - 5 | 250uH ± 7% | 255 uH | 256 | 249 | 253 | 255 | | | | | |
| 2 | | 6 - 8 | 5.0uH ± 30% | 5.16 uH | 4.95 | 4.99 | 5.08 | 5.15 | | | | | |
| 3 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | D. C. R. | 1 - 5 | 0.3Ω MAX | 0.179 Ω | 0.178 | 0.179 | 0.179 | 0.179 | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 1.5KV RMS, 1 MINUTE | GOOD | GOOD | GOOD | GOOD | GOOD | | | | | |
| 13 | | COIL - CORE | AC 1,5KV RMS, 1 MINUTE | GOOD | GOOD | GOOD | GOOD | GOOD | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | INSULATION RESISTANCE | P COIL - S COIL | 100 Mohm MIN at DC 500V | GOOD | GOOD | GOOD | GOOD | GOOD | | | | | |
| 16 | DC OVER LAP (8A) | 1 - 5 | MORE THAN 90% OF INITIAL INDUCTANCE | 245 uH | 243 | 240 | 244 | 246 | | | | | |

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# 16. ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.
2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.
3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.
4) WIRE BUNDLE METHOD.
   * CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2 MM.
   * PIN SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TOP SOLENOID : ERROR BETWEEN THE TOP BARRIER TAPE AND LAST WIRE IS REQUIRED TO BE SMALLER THAN 2 MM.
   * SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER-SOLENOID IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
   * SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
   * SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2. IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.
5) PERFORMANCE OF THIS DRAWING IS REQUIRED TO MEET PART NUMBER EAP36781902.
6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE.BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

| CLOVER Hi-Tech CO., LTD. | DESIGN | CHECK | APPROVAL | PAGE |
|---|---|---|---|---|
| | 裵玹慶 07.11.14 技術部 | 車暎澔 07.11.14 技術部 | 劉成宰 07.11.14 技術部 | 16/16 |

RoHS safety

# APPROVAL SHEET

## CUSTOMER : LG Electronics Co., Ltd.

MODEL NO :

ITEM : P.F.C TRANS

PART NO : EAP36781902

DESCRIPTION :

DATE : 2010. 03. 30.

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | FEELUX ELECTRONICS CO., LTD. ( KOREA FACTORY ) | TEL | 070-7780-8421 |
| | | FAX | 070-7780-8421 |
| SALES TEAM GENERAL MANAGER | Jong Il Park | TEL | 011-799-4581 |
| | E-MAIL: kever321@feelux.com | | |
| QUALITY ASSURANCE TEAM DEPUTY GENERAL MANAGER | Kwang Hoon Cho | TEL | 016-706-2463 |
| | E-MAIL: khcho@feelux.com | | |

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | YANG JU FEELUX ELECTRONICS CO., LTD. ( HEAD OFFICE FACTORY ) | TEL | 070-7780-8000 |
| | | FAX | 070-7780-8109 |
| ADDRESS | 624-8, Seoku-Ri Kwangleok-Myun, Yangju-Kun Kyunggi-Do Korea | | |
| REQUEST CUSTOMER | Chungkye FEELUX ELECTRONICS CO., LTD. ( SEOUL OFFICE FACTORY ) | TEL | 070-7780-8420 |
| | | FAX | 070-7780-8409 |
| ADDRESS | RM 401, Chungkye-Jae 1 Kangdan, 511-2 Chungkye-3 Dong, Nowon-Ku Seoul, Korea | | |
| REQUEST CUSTOMER | WHEHAI FEELUX ELECTRONICS CO., LTD. ( CHINA FACTORY ) | TEL | 0086-631-786-7903 |
| | | FAX | 0086-631-786-7900 |
| ADDRESS | NO.166 FUYUAN(M) ROAD ROAD,GANGIL TOWN RONGCHENG CITY SHANDONG PROVICE CHINA | | |

FEELUX 주식회사 필 룩 스

영원한 우리땅, 독도
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# RECORD OF REVISION

| LG P/N : EAP36781902 | | | MAKER SPEC : | | |
|---|---|---|---|---|---|
| REV. NO | REASON | CONTENTS | DATE OF APPROVAL | CHECKED | REMARKS |
| | | 신규재정 | | | |

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# SPECIFICATION

| NO. 1 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## INDEX


1 / 17 : INDEX
2 / 17 : 1. DIMENSION
3 / 17 : 2. SCHEMATIC DIAGRAM
: 3. WINDING SPECIFICATION
4 / 17 : 4. ELECTRICAL CHARACTERISTICS
5 / 17 : 5. ENVIRONMENTAL CHARACTERISTICS
6 / 17 : 6. MECHANICAL CHARACTERISTICS
7 / 17 : 7. SECTION DIAGRAM
8 / 17 : 8. MATERIAL LIST
9 / 17 : 9. UL-LIST
10 / 17 : UL-LIST
11 / 17 : UL-LIST
12 / 17 : 10. CORE DIMENSION
13 / 17 : 11. BOBBIN DIMENTION
14 / 17 : 12. PROCESS FLOW
15 / 17 : 13. PACKING
16 / 17 : 14. INSPECTION DATA
17 / 17 : 15. ASSIGNMENT


| SPEC NO. | | DATE | 2010. 03. 30. | SHEET NO. | |
|---|---|---|---|---|---|

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# SPECIFICATION

| NO. 2 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

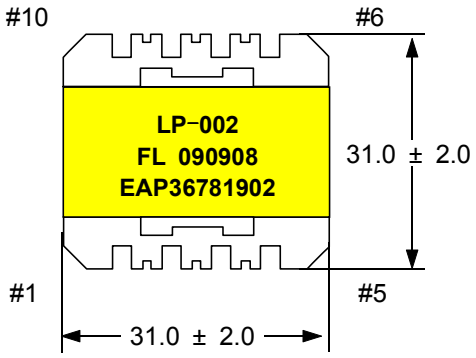
| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 1. DIMENSION

(UNIT : m/m)

safety

<< TOP VIEW >>




※ MARKING

LLP-102 → PART No.

FL 09 09 08 → DATE

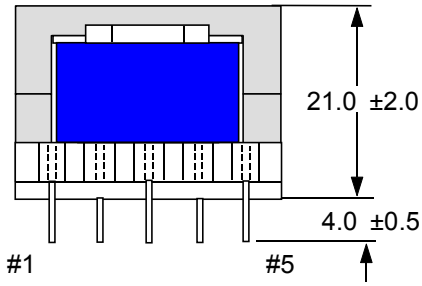
MONTH

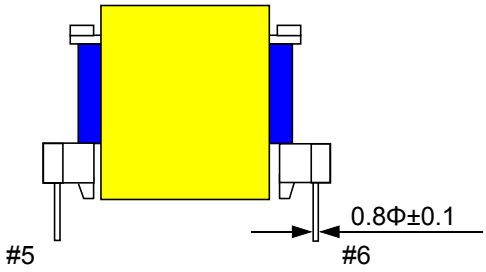
YEAR

MAKER

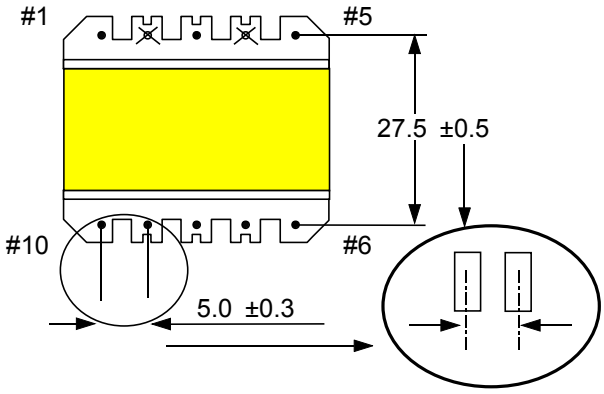
EAP36781902 → LGE PART No.

<< FRONT VIEW >>




<< BOTTOM VIEW >>




* REMOVED PIN : #2 ,#3, #4
* GAP CORE : TWIN GAP

| SPEC NO. | | DATE | 2010. 03. 30. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX



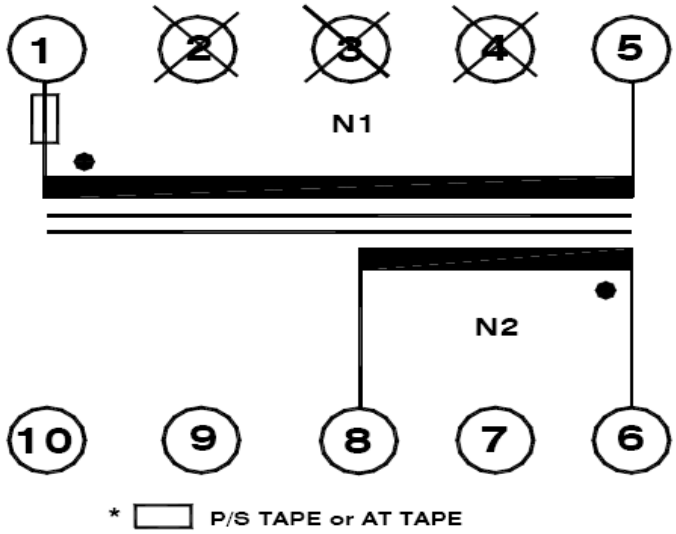
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# SPECIFICATION

| NO. 3 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 2. SCHEMATIC DIAGRAM




*REMOVE PIN : #2,#3,#4

## 3. WINDING SPEC

| No. | TERMINAL ( S - F ) | WIRE | TURNS | LAYER | WINDING METHOD |
|---|---|---|---|---|---|
| N1 | 1 - 5 | USTC 0.12ΦX25 | 50 | 5 | SOLENOID |
| N2 | 6 - 8 | 1 UEW 0.20Φ | 6 | 1 | PIN SOLENOID |
| CORE FIXING TAPE | | | | | |

| INSULATION | | |
|---|---|---|
| MATERIAL | T/W (mm) | TURNS |
| P/E TAPE (YELLOW) | 0.025×10.5 (YELLOW) | 3 |
| P/E TAPE (YELLOW) | 0.025×10.5 (YELLOW) | 3 |
| P/E TAPE (YELLOW) | 0.025×20.0 (YELLOW) | 3 |

* AT TAPE or P/S TAPE PIN NO : #1
* WINDING DIRECTION : BOTTOM VIEW C.C.W

| SPEC NO. | | DATE | 2010. 03. 30. | SHEET NO. | |
|---|---|---|---|---|---|

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# SPECIFICATION

| NO. 4 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 4. ELECTRICAL CHARACTERISTICS

| NO | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 4-1 | INDUCTANCE | 1 - 5<br>6 - 8 | 250 uH ± 7%<br>5.0 UH ± 30% | HP-4284A<br>LCR-METER<br>at 100 KHz, 1.0 V |
| 4-2 | LEAKAGE INDUCTANCE | 1 - 5<br>(SECONDARY SHORT) | 90.00 uH MAX | |
| 4-3 | DC RESISTANCE | 1 - 5 | 0.3 Ω MAX | DC MILLI-OHM METER GOM-802 |
| 4-4 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 1.5 KV r.m.s (1 MINUTE) | TOS-8850<br>safety<br>CUT OFF CURRENT<br>: 5 mA |
| | | P COIL - CORE<br>S COIL - CORE | AC 1.5 KV r.m.s (1 MINUTE) | |
| 4-5 | INSULATION RESISTANCE | P COIL - S COIL | 100 M ohm MIN<br>at DC 500V | TOS-8850<br>safety |
| 4-6 | D.C OVERLAP | 1 - 5 | 90% MIN WITH RESPECT TO ORIGINAL INDUCTANCE VALUE WHEN 8.0(A) DC IS SUPERIMPOSED | |




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# SPECIFICATION

| NO. 5 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 5. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃±15℃ HUMIDITY 65%±20%
IF WHEN ANY OBJECTION IS SUGESTED THE TEST CAN BE OPERATED AT 20℃±2℃ 65% ±5% RH

| NO. | ARTICLE | SPECIFCATION | TEST CONDITION |
|---|---|---|---|
| 5-1 | USED TEMPERATURE RANGE | -25℃ ~ +105℃ | |
| 5-2 | KEEPING TEMPERATURE | -25℃ ~ +105℃ | |
| 5-3 | LOW TEMPERATURE RESISTANT | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITAL VALUE (IT SHOULD BE MANAGED BY10% UNDER 10uH) | -25℃±2℃, 96Hr MEASURE AFTER 2Hr AT ROOM TEMP |
| 5-4 | HIGH TEMPERATURE RESISTANT | | +105℃±2℃, 96Hr MEASURE AFTER 2Hr AT ROOM TEMP |
| 5-5 | HUMIDITY RESISTANT | | +95%RH ±5% (40℃±5℃) 96Hr MEASURE AFTER 2Hr AT ROOM TEMP |
| 5-6 | TEMPERATURE CYCLE | | STEP / TEMP / TIME<br>1 / -25±2℃ / 30 MIN<br>2 / +25±2℃ / 10 MIN<br>3 / +105±2℃ / 30 MIN<br>4 / +25±2℃ / 10 MIN<br>REPEAT 5 TIME FROM STEP 1 AND TEST AFTER 2Hr. AT ROOM TEMP |
| 5-8 | HEAT SHOCK -RESISTANT | | 2HR AT -20℃->2HR AT 70℃ : 10 CYCLE |

| SPEC NO. | | DATE | 2010. 03. 30. | SHEET NO. | |
|---|---|---|---|---|---|

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# SPECIFICATION

| NO. 6 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 6. MECHANICAL CHARACTERISTICS

| NO. | ARTICLE | SPECIFCATION | TEST CONDITION |
|---|---|---|---|
| 6-1 | LAYER SHORT TEST | THREE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SUGGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 6-2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE (IT SHOULD BE MANAGED BY10% UNDER 10uH) | DIP THE TERMINAL IN SOLDER POT AT 260℃ +5℃ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 6-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER POT 245℃ -5℃ FOR 3 SECONDS |
| 6-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5kgf DURING 30±5 SEC |




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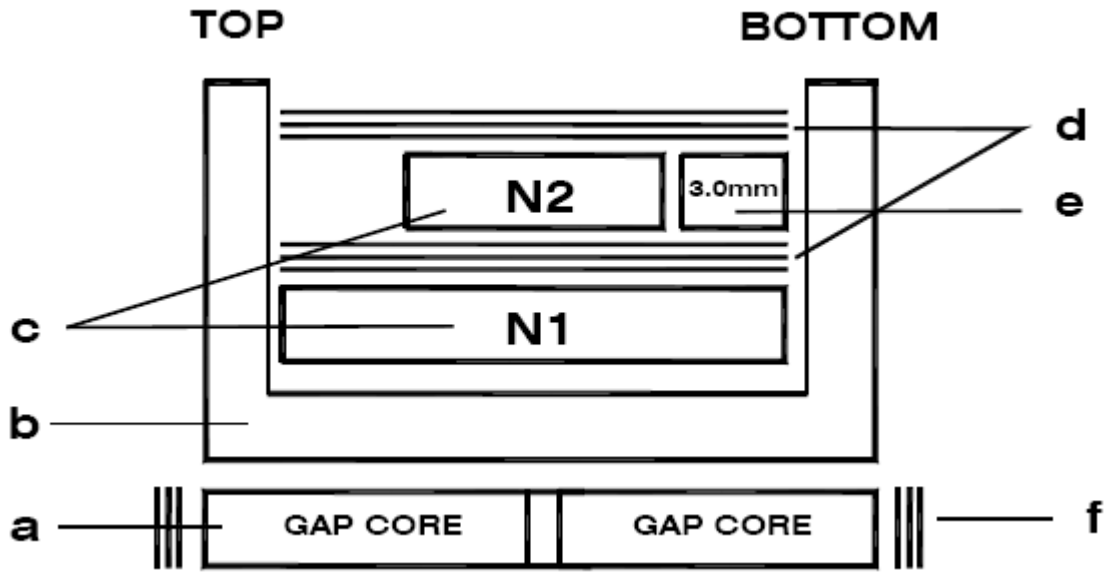
# SPECIFICATION

| NO. 7 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

Safety

## 7. SECTION DIAGRAM




*GAP CORE : TWIN GAP

| SPEC NO. | | DATE | 2010. 03. 30. | SHEET NO. | |
|---|---|---|---|---|---|

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# SPECIFICATION

| NO. 8 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## _8. MATERIAL LIST.

| NO. | PART | MATERIAL NAME | MANUFACTURES | MATERIAL COLOR | UL FILE NO |
|---|---|---|---|---|---|
| a | CORE | EER 3019 J2C<br>EER-3019N PM7<br>EC30-4R HE4 | FEELUX CO., LTD.<br>TODA ISU CORPORATION<br>RUYUAN DONGYANGGUANG<br>MAGNETIC MATERIAS CO.,LTD | BLACK | |
| b | BOBBIN | 94V-0 PHENOL RESIN<br>PM9820 10PIN<br>TERMINAL : Sn100%, 4㎛ | HEXION SPECIALTY CHEMICALS GMBH<br>(SHENZHEN HOIDJINN ELETRONICS CO., LTD<br>BOO KYOUNG BOBBIN CO.,LTD ) | BLACK | E61040 |
| | | | CHANG CHUN PLASTICS CO.,LTD | | E59481 |
| c | WIRE | POLYURETHANE<br>USTC 0.12X25<br>1 UEW 0.20Φ | JIANGSU DARTONG M&E CO.,LTD | NATURAL LIGHT PINK | E237377 |
| | | | DONG YANG ELECTRONICS CO.,LTD | | E102761(N) |
| | | | HANGZHOU WEIFENG CO.,LTD | | E229341 |
| d | INSULATION TAPE | POLYESTER FILM TAPE<br>0.025mm × 10.5mm (Yellow) | HYUN DAI CHEMICAL CO.,LTD | YELLOW | E162848(S) |
| | | | YAHUA PRESSURE SENSITIVE | | E165111 |
| e | BARRIER TAPE | P.N.W TAPE<br>BOTTOM : 3.0mm | TAE HWA INDUSTRIAL CO.,LTD. | YELLOW | E92677(S) |
| f | CORE FIXING TAPE | POLYESTER FILM TAPE<br>0.025mm × 20.0mm (Yellow) | HYUN DAI CHEMICAL CO.,LTD | YELLOW | E162848(S) |
| | | | YAHUA PRESSURE SENSITIVE | | E165111 |
| g | SOLDER | HLFC2.0-BAR, Sn-2Cu | HEESUNG MATERIAL CO.,LTD | SILVER | |
| h | VARNISH | SR-337A, SR-337B | SEGYE CHEMICAL CO.,LTD. | LEMON YELLOW | |
| j | FLUX | JS-7000S-1 | JIANGYIN CITY DENGFENG ELECRICAL MATERIL CO.,LTD | LEMON YELLOW | |
| k | MARKING | INK & LABEL | BON MARQUE | BLACK | |




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# SPECIFICATION

| NO. 9 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 9. UL CARD

### * YELLOW CARD

Component - Plastics E59481

**CHANG CHUN PLASTICS CO LTD**
7TH FL, 301 SONGKIANG RD, TAIPEI TW

**T375HF**
**Phenolic Molding Compound (PMC), "LONGLITE", furnished as pellets, granular material, or powder**

| Color | Min Thk (mm) | Flame Class | HWI | HAI | RTI Elec | RTI Imp | RTI Str |
|---|---|---|---|---|---|---|---|
| BK | 0.43 | V-0 | 0 | 0 | 150 | 150 | 150 |
| | 0.75 | V-0 | 0 | 0 | 150 | 150 | 150 |
| | 3.2 | V-0 | 0 | 0 | 150 | 150 | 150 |

**1. BOBBIN**

HEXION SPECIALTY CHEMICALS GMBH E61040
POSTFACH
58609 ISERLOHN, GERMANY

| Material Dsg | Color | Min. Thk mm | Flame Class | HWI | HAI | RTI Elec | RTI Mech Imp | RTI Mech Str | HVTR | D495 | CTI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenolic (PF), "Rutaform, Bakelite", furnished as pellets, powder, granular material. | | | | | | | | | | | |
| PF 2736(a)(b) | BK | 0.46 | V-0 | – | – | 150 | 150 | 150 | 0 | 5 | 3 |
| | ALL | 0.81 | V-1 | 0 | 2 | 150 | 150 | 150 | | | |
| | NC, GN, BK | 0.81 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | ALL | 1.5 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | | 3 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |

(a) – Optional Suffix "H".

(b) – Grade designation may be followed by a four digit number representing color, P or S indicating type of molding, a single digit representing slight color variation.

Marking: Company name or tradename "BAKELITE" , "RUTAFORM" and material designation on container, wrapper or finished part.

| SPEC NO. | | DATE | 2010. 03. 30. | SHEET NO. | |
|---|---|---|---|---|---|



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# SPECIFICATION

| NO. 10 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## * YELLOW CARD

**2. WIRE**

DONG YANG ELECTRONICS CO LTD E102761
660-1 BANWOL-RI TAIAN-EUB HWASUNG-GUN, KYUNGGI-DO KOREA

| | | | | |
|---|---|---|---|---|
| AI-EIW | Polyester-imide | polyamide-imide | MW35 | 200 |
| EIW | Polyester-imide | | MW30 | 180 |
| NY-EIW | Polyester-amide-imide | polyamide | MW76 | 180 |
| NY-PEW | Polyester | polyamide | MW24 | 155 |
| NY-PEW(F) | Polyester | polyamide | MW24 | 155 |
| NY-UEW | Polyurethane | polyamide | MW28 | 130 |
| **UEW** | **Polyurethane** | | **MW75** | **130** |

Marking:Company name or "E102761" and material designation or marked designation on package or reel,and Recognized Component Mark.

JIANGSU DARTONG M & E CO LTD E237377
1 DARTONG RD
HUAIAN ECONOMY DEVELOPMENT ZONE
HUAIAN, JIANGSU 223238 CHINA

| Mtl Dsg | Mark Dsg | Coat Type | | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| | | BC | OC | | |
| UEW | (1) | Polyurethane | — | MW 79-C | 155 |
| | | | | MW 75-C | 130 |
| UEW | UEW/180 | Polyurethane | — | MW82 | 180 |
| UEW/NY | (1) | Polyurethane | Polyamide | MW80# | 155 |
| | | | | MW28# | 130 |

HANGZHOU WEIFENG ELECTRONIC CO LTD E229341
DAICUN
XIAOSHAN
HANGZHOU, ZHEJIANG 311261 CHINA

| Mtl Dsg | Mark Dsg | Coat Type | | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| | | BC | OC | | |
| WF-@ | (1) | Polyurethane | — | MW75-C | 130 |
| UEW or QA/155 | (1) | Polyurethane | — | MW79 | 155 |
| UEW or QA/130 | (1) | Polyurethane | — | MW75# | 130 |

**3. BARRIER TAPE**

TAE HWA INDUSTRIAL CO LTD E92677 (S)
634 DEUNGCHON-DONG KANGSEO-KU, SEOUL 157-030
KOREA

Flame retardant fiberglass cloth tape, Cat. Nos. TH-gc012, H-2715.
Flame retardant acetate cloth tape, Cat. No. 6701.

Flame retardant polyester film tape, Cat No. H-5673.

Marking: Company name or E92677 and "Flame retardant"printed on carton, wrapper and/or core.

| SPEC NO. | | DATE | 2010. 03. 30. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX



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# SPECIFICATION

| NO. 11 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## * YELLOW CARD

| | |
|---|---|
| 4.**INSULATION TAPE** | HYUN DAI CHEMICAL CO LTD E162848(S)<br>258 YEULMI-RI SILCHON-MYON KWANGJU,KYONGGI-DO 464-870 KOREA<br><br>Polyester tape with acrylic adhesive, Cat. NO. 800 (a) for use at temperatures not exceeding 130℃.<br>(a)Comparitlve Tracking Index (CTI) assigned PLC-0, voltage-600V or greater, CTI600<br>Marking : Company name, catalog designation and temperature rating printed on carton, wrapper or core. |
| | **INGJIANG YAHUA PRESSURE SENSITIVE E165111**<br>**GLUE CO LTD**<br>**SOUTHWEST AROUND RD**<br>**JINGJIANG, JIANGSU 214500 CHINA**<br>**Nonwoven cloth/polyethylene terepthalate film tape, Cat. No. WF with suffixes, rated 130 C*(a).**<br>**Polyethylene terephthalate film tape, Cat. No. CT with suffixes, rated 130 C*(c) (e) .**<br>**Polyethylene terephthalate film tape , Cat. No. CT with suffixes, rated 130 C(b)(f).**<br>**Polyethylene terephthalate film tape, Cat. No. PZ with additional suffixes, rated 130 C*(b).**<br>**Polimide film tape, Cat. No. PF with suffixes, rated 180 C* (d).** |

| SPEC NO. | | DATE | 2010. 03. 30. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX



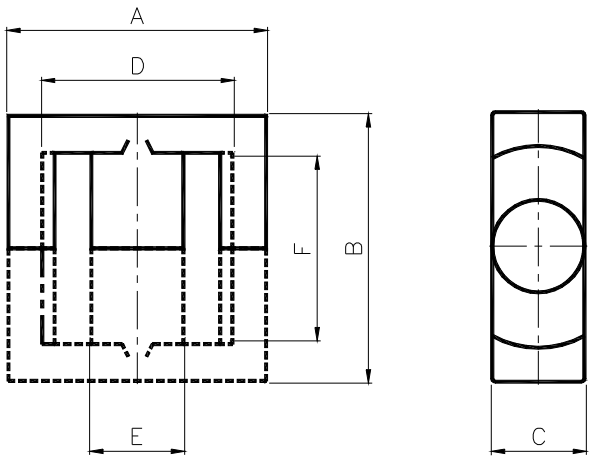
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# SPECIFICATION

| NO. 12 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변경 사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 10.CORE DIMENSION




| TYPE | DIMENSIONS IN mm | | | | | | Unit[mm] |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| EER 3019 | 30.0±0.5 | 18.8±0.3 | 20.3±0.3 | 25.4±0.4 | 13.3±0.2 | 13.2±0.3 | FEELUX |
| EER 3019N | 30.0±0.5 | 18.8±0.3 | 20.3±0.3 | 25.4±0.4 | 13.3±0.2 | 13.2±0.3 | TODA ISU |
| EC30-4R | 30.0±0.5 | 18.8±0.3 | 20.3±0.3 | 25.4±0.4 | 13.3±0.2 | 13.2±0.3 | DONGYANG GUANG |

| TYPE | Effective parameters | | | Unit[mm] |
|---|---|---|---|---|
| | le(mm) | Ae(mm)2 | Ve(mm)3 | |
| EER 3019 | 50.5 | 130.2 | 6325 | FEELUX |
| EER 3019N | 49.5 | 128.8 | 6380 | TODA ISU |
| EC30-4R | 47.7 | 132 | 6298 | DONGYANG GUANG |

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|---|---|---|---|---|---|

FEELUX



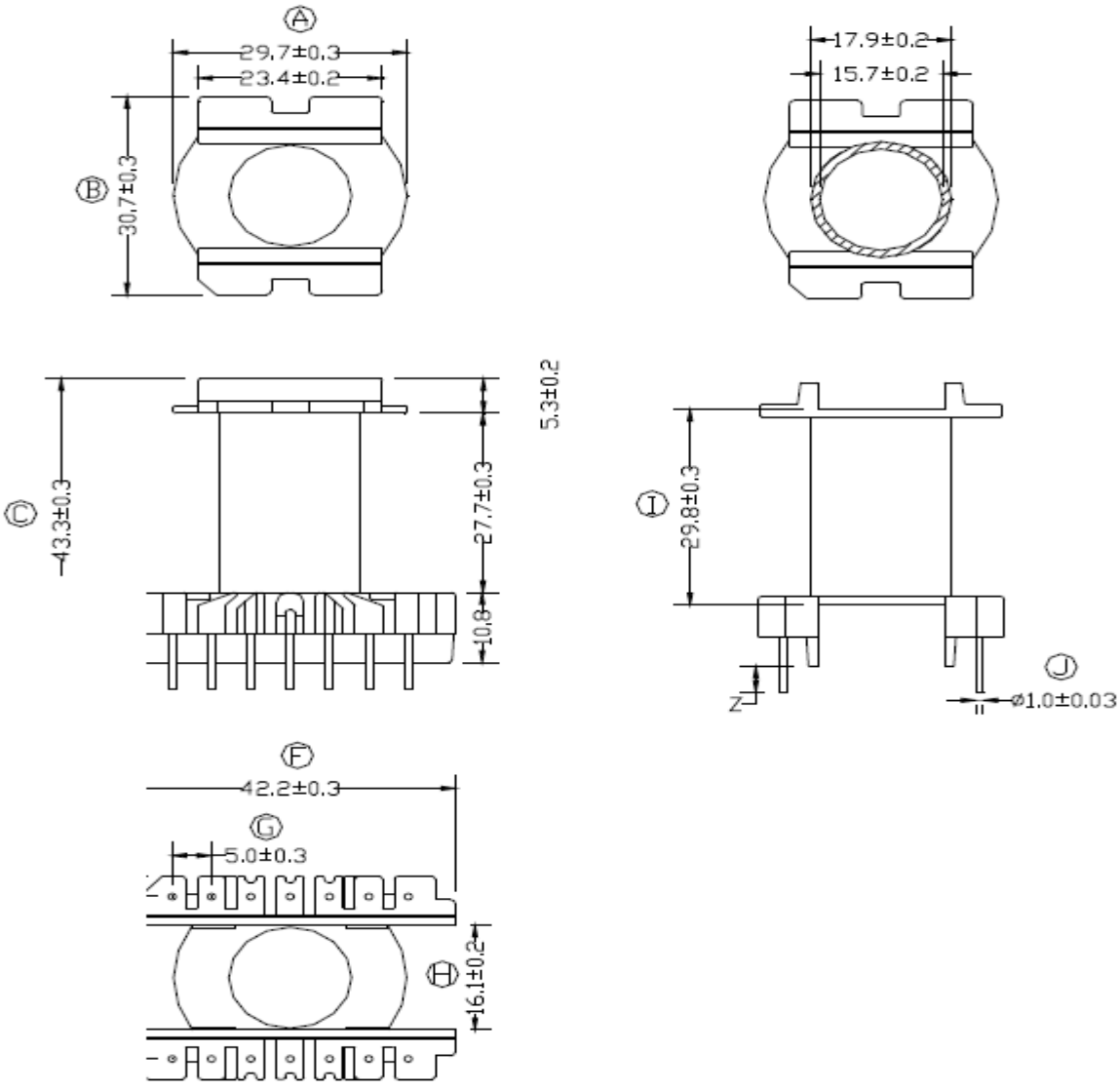
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# SPECIFICATION

| NO. 13 / 17 | P.F.C TRANS | P / N | EAP36781902 |
|---|---|---|---|

| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 11.BOBBIN DIMENSION




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|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 12.PROCESS FLOW

| 공정 번호 | 공정 SUB 공정 | 공정 MAIN 공정 | 사용자재 | 공정번호 | 관리항목 | 관리기준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ▽ ▽ ▽ | ◇ | 보빈<br>WIRE<br>절연 TAPE | 1toN차 권선 | COIL 의 굵기와 종류<br>권선 턴수 ,권선 상태<br>결선 상태 ,절연 상태 | 권선 작업 지도서 | 2회/1일 | SAMPLING<br>5EA/LOT당 | Micro Meter | 생산 | 성적서 |
| 2 | ▽ | ◇ | SOLDER<br>플럭스 | 납땜 | 납땜 시간 : 2.0±10.5초<br>납땜 온도 : 430±10℃ | 납땜 작업 표준서 | 2회/1일 | 전수 | 온도계<br>납조기 | 생산 | 온도<br>체크시트 |
| 3 | ▽ ▽ ▽ | ◇ | CORE<br>절연 TAPE<br>CAP | CAP,코아조립 | CAP/CORE 종류 확인<br>조립상태<br>TAPING TURNs 및 TAPING 상태 | CORE 조립 작업표준서 | 2회/1일 | SAMPLING | Micro Meter | 생산 | |
| 4 | | ◇ | | 1차 검사 | 전기적 특성값 (L값,TURNs 등)<br>결선, 납땜상태 | 1차 검사 기준서 | 전수 | 전수검사 | TURNs Meter<br>LCR-Meter | 생산 | 1차검사<br>일보 |
| 5 | ▽ | ◇ | VARNISH | 진공 함침 | VARNISH 배합상태 , 진공함침 시간<br>함침부위 ,VARNISH 점도 | 진공함침 작업 표준서 | 매LOT | SAMPLING | 점도계 ,시계<br>진공 함침기 | 생산 | 점도<br>체크시트 |
| 6 | | ◇ | | 건조 | 건조온도 및 시간 120℃,3Hr | 건조작업 표준서 | 2회/1일 | SAMPLING | 건조기 | 생산 | 온도<br>체크시트 |
| 7 | ▽ | ◇ | 블랙잉크 | 마킹 | 마킹방향,위치,선명도<br>LOT No. | 마킹 작업 표준서 | 전수 | 전수검사 | MARKING 도장 | 생산 | |
| 8 | | ◇ | | PIN 교정 | PIN 휨 , PIN 교정 상태 | PIN 교정 작업 표준서 | 전수 | 전수검사 | PIN 교정 JIG | 생산 | |
| 9 | | ◇ | | 2차 검사 | 전기적 특성값 (L값,LEAKAGE)<br>외상,TURNs,내전압,절연상태 등 | 2차 검사 기준서 | 전수 | 전수검사 | TURNs Meter<br>LCR-Meter,내압기 | 생산 | 2차검사<br>일보 |
| 10 | | ◇ | | 외관검사 | BOBBIN 파손, 납땜 상태<br>PIN상태 , 기타 | 외관검사 기준서 | 전수 | 전수검사 | | 생산 | 외관검사<br>일보 |
| 11 | ▽ ▽ | ◇ | PAPER BOX<br>OUT BOX | 포장 | BOX 규격 , 외관 ,포장상태<br>PIN to PIN 간격 | 포장작업 기준서 | 전수 | | | 생산 | |
| 12 | | ◇ | | 출하검사 | 전기적 특성값 (L값,절연저항,내전압<br>치수, 구조, 외관, 수량 | 출하검사 기준서 | SAMPLING | SAMPLING | LCR-Meter<br>내압기, 절연저항기 | 품질관리 | 출하검사<br>성적서 |
| 13 | | ▽ | | 창고입고 | 수량, 제품명, 포장상태<br>입, 출고 재고관리 | 창고 적재 표준서 | | | | 영업 | 입고전표<br>수불장부 |
| 14 | | ▼ | | 출하 | 제품명, 수량 | | | | | 영업 | 출하전표 |

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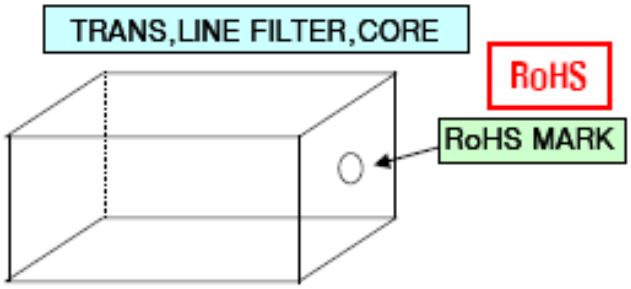
# SPECIFICATION

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|---|---|---|---|

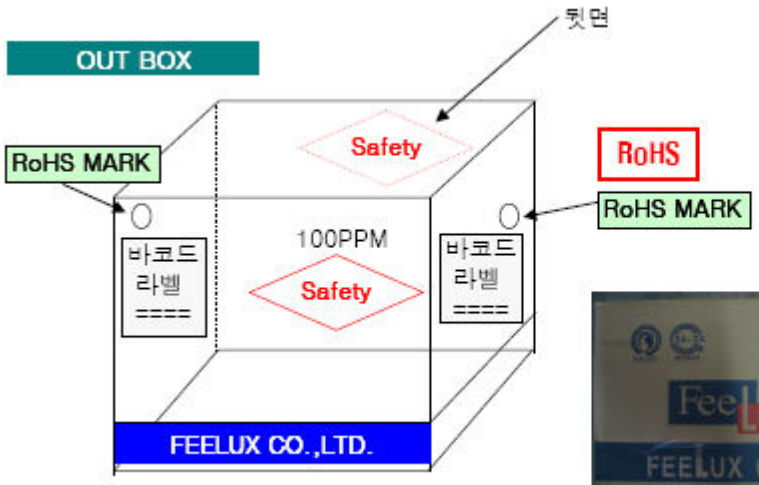
| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 13.PACKING

1. CARTON(5 PCS × 5 EA = 25 PCS)




2. OUT BOX (25 PCS × 3 EA = 75 PCS)









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| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 14.INSPECTION DATA

| ITEM NAME | | P.F.C TRANS | | | | | TEST DATE | | 2010-3-30 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PART NO. | | EAP36781902 | | | | | INSTRUMENT | | HP-4284A | | | | |
| 항목 | Terminal | Limit | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 | #10 | |
| L(uH) (100KHz 1V) | 1 - 5 | 250UH ±7% | 253 | 251 | 247 | 248 | 250 | 252 | 248 | 253 | 252 | 251 | |
| | 6 - 8 | 5.0 uH±30% | 5.2 | 5.8 | 5.7 | 5.5 | 5.8 | 5.7 | 5.9 | 5.2 | 5.8 | 5.2 | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| DCR (Ω) | 1 - 5 | 0.3 Ω MAX | 0.173 | 0.172 | 0.175 | 0.173 | 0.176 | 0.177 | 0.178 | 0.176 | 0.174 | 0.175 | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| LEAKAGE | 1 - 5 (2차측 ALL SHORT) | 90.0uH MAX | 62.5 | 63.3 | 61.6 | 61.7 | 62.4 | 62.5 | 63.1 | 64.3 | 62.4 | 61.8 | |
| DC OVERLAP 90% MIN | L(uH) | DC 8.0 A | 237 | 235 | 233 | 235 | 237 | 238 | 237 | 235 | 235 | 237 | |
| | % | 90% MIN | 93.6% | 94.3% | 94.8% | 94.8% | 94.4% | 95.6% | 92.9% | 93.3% | 95.0% | 96.0% | |
| WITHSTANDING VOLTAGE | P COIL-S.COIL | AC 1.5KV,1MIN | 6.01 | OK | OK | OK | OK | OK | OK | OK | OK | OK | |
| | P COIL -CORE | AC 1.5KV,1MIN | 4.28 | OK | OK | OK | OK | OK | OK | OK | OK | OK | |
| | S COIL -COIL | AC 1.5KV,1MIN | 3.56 | OK | OK | OK | OK | OK | OK | OK | OK | OK | |
| INSULATION RESISTANCE | COIL-COIL | 100MΩ MIN (AC. 500V) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | |
| Q (100KHz 1V) | | | | | | | | | | | | | |
| LAYER SHORT | | | | | | | | | | | | | |

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| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 15.ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.

2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.

3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.

4) WIRE BUNDLE METHOD.

* CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2MM.
* PIN SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2MM.
* TOP SOLENOID : ERROR BETWEEN THE TOP BARRIER TAPE AND LAST WIRE IS REQUIRED TO BE SMALLER THAN 2MM.
* SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER -SOLENOID IS REQUIRED TO BE SMALLER THAN 2MM.
* TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
* SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM. ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
* SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2.
IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.

5) PERFORMANCE OF THIS DRAWING IS REQUIRED TO MEET PART NUMBER EAP36781902

6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE. BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

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# 폴리 우레탄 동선 (1UEW)

| 치 수 | | | | 절연파괴전압 (V) ↑ | 내마모 파괴하중 | | 최대도체저항 (Ω/km) ↓ | 신장률 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성외경 (mm) ↑ | 최대완성외경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| **0.160** | **±0.003** | **0.182** | **0.204** | **2200** | - | - | **969.5** | **15** |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.224 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 236.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(386) | 3.18(326) | 196.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(396) | 3.28(336) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(426) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.686 | 0.724 | 3050 | 5.39(550) | 4.55(466) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.736 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(766) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

영원한 우리땅, 독도
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* **HEAD OFFICE & FACTORY 2 :** 624-8, Seoku-Ry Kwangjeok-Myun,
Yangju-Kun Kyunggi-Do Korea
TEL : (031) - 8208 - 100
FAX : (031) - 8208 - 105

* **SEOUL OFFICE & FACTORY 3:** RM 401, Chungkye-jae 1 Kangdan, 511-2
Chungkye-3 Dong, Nowon-Ku Seoul, Korea
TEL : (070) - 7780 - 8420
FAX : (070) - 7780 - 8409

* **WEIHAI FEELUX ELECTRONICS CO.,LTD**
: 390 CENTRAL ST.GANGXL TOWN RONGCHENG
TEL : (0631) - 786 - 7903
FAX : (0631) - 786 - 7900

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DATE : 2010. 04. 05.

safety

# APPROVAL SHEET

| | | |
|---|---|---|
| **CUSTOMER** | : | YU YANG D&U CO., LTD |
| **MODEL** | : | |
| **ITEM** | : | P.F.C TRANS |
| **PART NO** | : | LP-002 |
| **KESN** | : | KI043-18-0957-1 |

| RECEIVE: | REFERENCE: |
|---|---|
| | |

DONGYANG TELECOM CO.,LTD.

(구: KYUNG IN ELECTRONICS)



| | | |
|---|---|---|
| **HEAD OFFICE & FACTORY** | 942-5, Dohwa-Dong, Nam-gu, Incheon, korea | TEL : 032-584-0100<br>FAX : 032-584-0101 |
| **China 1 Factory** | Korea industrial Circles Beigong Street Office Weicheng Weifang Shandong, CHINA | TEL : 86-536-895-0501<br>FAX : 86-536-895-7291 |
| **China 2 Factory** | No.28 Feng Huang Street, Weifang Shandong, CHINA | TEL : 86-536-790-2048<br>FAX : 86-536-760-2046 |

| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

# 1. INDEX


| | |
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| 8/22 | 8. MECHANICAL CHARACTERISTICS |
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| DONGYANG TELECOM CO., LTD. | | | | | | | |

| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## 2. REVISION

| REV NO. | DATE | PAGE | REVISED CLAUSE | REVISED CAUSE |
|---|---|---|---|---|
| 0 | 10-04-04 | 1 ~ 22 | NEW ITEM | |
| 1 | 11-04-13 | ALL | 경인전자 → 동양텔레콤 회사명 변경 | 회사명 변경 |
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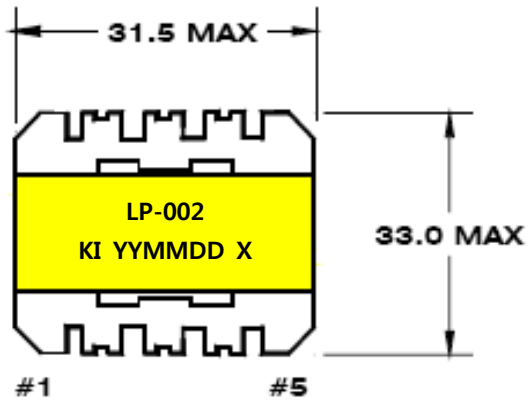
| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 2/22 |
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| DONGYANG TELECOM CO., LTD. | | | | | | | |

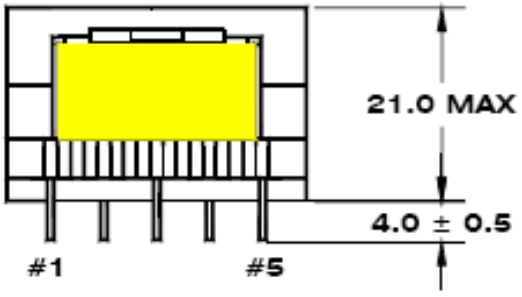
| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

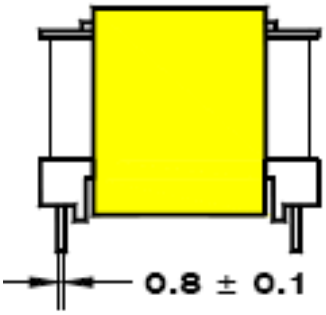
## 3. DIMENSION ( UNIT : mm )

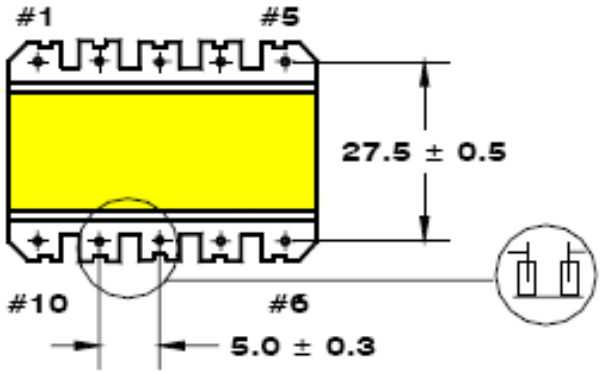
safety

| MARKING SPEC | | | |
|---|---|---|---|
| PART NO | | LP-002 | |
| KI | | DONGYANG TELECOM | |
| LOT NO | | YYWWDD | |
| YY | | YEAR | 2008 : 08<br>2009 : 09 |
| MM | | MONTH | JANUARY : 01<br>FEBRUARY : 02 |
| DD | | DAY | |
| X | PRODUCT CODE | A | KOREA INCHEON FACTORY |
| | | B | CHINA 1 FACTORY |



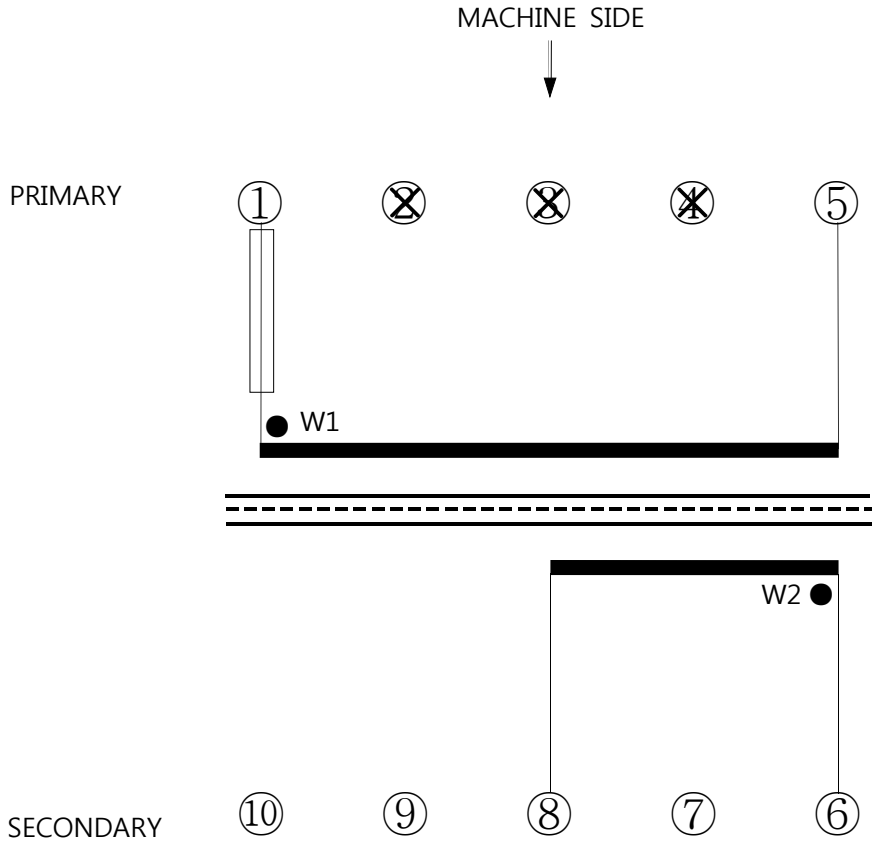




| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 3/22 |
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| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD. | | | | | | | |

| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## 4. CONNECTION ( BOTTOM VIEW )




| | |
|---|---|
| **REMOVE PIN** | #2, #3, #4 |
| **N.C PIN** | - |
| **CUTTING PIN** | - |
| **TUBE PIN** | - |
| **P.S TAPE PIN** | #1 |
| **●DOT MARK** | START OF WINDING |
| **GAP CORE** | TWIN GAP |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 4/22 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD. | | | | | | | |

| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## 5. WINDING SPECIFICATION

| NO | PIN NO | | WIRE | Ts | WINDING METHOD | INSULATION | Ts | BARRIER (㎜/Ts) | |
|---|---|---|---|---|---|---|---|---|---|
| | S | F | | | | MATERIAL (㎜/t) | | TOP | BOT |
| W1 | [1] | 5 | USTC 0.12Φ×25P | 50 | 5 LAYER SOLENOID | POLYESTER TAPE 0.025t × 10.5㎜ (YELLOW) | 3 | - | - |
| W2 | 6 | 8 | 1 UEW 0.20Φ | 6 | 1 LAYER PIN SOLENOID | POLYESTER TAPE 0.025t × 10.5㎜ (YELLOW) | 3 | - | 3.0 |
| CORE FIXING TAPE | | | | | | POLYESTER TAPE 0.025t × 20.0㎜ (YELLOW) | 3 | - | - |

* [#1] START WIRE : MUMMY (P,S TAPE 0.025t×14.0㎜)
START WIRE는 반드시 노란색 (YELLOW) P.S TAPE로WIRE를 감싸 절연 시킨 후 권선 할 것.

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 5/22 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD. | | | | | | | |

| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## 6. ELECTRICAL CHARACTERISTIC

| NO. | ITEM | TERMINAL | SPEC | | REMARKS |
|---|---|---|---|---|---|
| 1 | INDUCTANCE | 1 - 5 | 250.0 uH | ± 7% | HP-4284A or eqv at 100KHz, 1V |
| | | 6 - 8 | 5.0 uH | ± 30% | |
| 2 | LEAKAGE INDUCTANCE | 1 - 5 (SECONDARY ALL SHORT) | 90.0 uH | MAX | |
| 3 | D.C RESISTANCE (20℃) | 1 - 5 | 300.0 mΩ | MAX | HIOKI 3540 (mΩ METER) |
| 4 | WITHSTANDING VOLTAGE | P COIL TO CORE | AC 1.5 KV R.M.S 1 MINUTE. | | safety KIKUSUI T0S-8850 (CUT OFF CURRENT 5mA) |
| | | S COIL TO CORE | AC 1.5 KV R.M.S 1 MINUTE. | | |
| | | P COIL TO CORE | AC 1.5 KV R.M.S 1 MINUTE. | | |
| 5 | INSULATION RESISTANCE | P COIL TO S COIL | 100 Mohm MIN at DC 500V | | MEGOHM METER (SM-5E) |
| 6 | D.C CURRENT OVER LAP | 1 - 5 | 90% MIN | | at 100KHZ 1Vrms with 0.8(A)DC |

| 7DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 6/22 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD. | | | | | | | |

## 7. ELECTRICAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃ ± 15℃ HUMIDITY 65% ± 20%
IF WHEN ANY OBJECTION IS SUGESTED. THE TEST CAN BE OPERATED AT 20℃ ± 2℃, 65% ± 5% RH

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>2</td><td>KEEPING TEMPERATURE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>3</td><td>LOW TEMPERATURE RESISTANT</td><td rowspan="5">MUST MEET THE REQUIREMENTS REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE (IT SHOULD BE MANAGED BY 10% UNDER 10uH)</td><td>-25℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>4</td><td>HIGH TEMPERATURE RESISTANT</td><td>+105℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>5</td><td>HUMIDITY RESISTANT</td><td>+95%RH ± 5% (40℃ ± 5℃) 96Hr<br>MEASURE AFTER 2Hr AT ROOM TEMP
<table>
<tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr>
<tr><td>1</td><td>-25℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>2</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
<tr><td>3</td><td>+105℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>4</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
</table>
REPEAT 5 TIME FROM STEP 1 AND<br>TEST AFTER 2 Hr. AT ROOM TEMP.</td></tr>
<tr><td>6</td><td>TEMPERATURE CYCLE</td><td></td></tr>
<tr><td>7</td><td>HEAT SHOCK-RESISTANT</td><td>2 HR AT-20℃ →2 HR AT 70℃<br>: 10 CYCLE</td></tr>
</table>

| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## 8. MECHANICAL CHARACTERISTICS

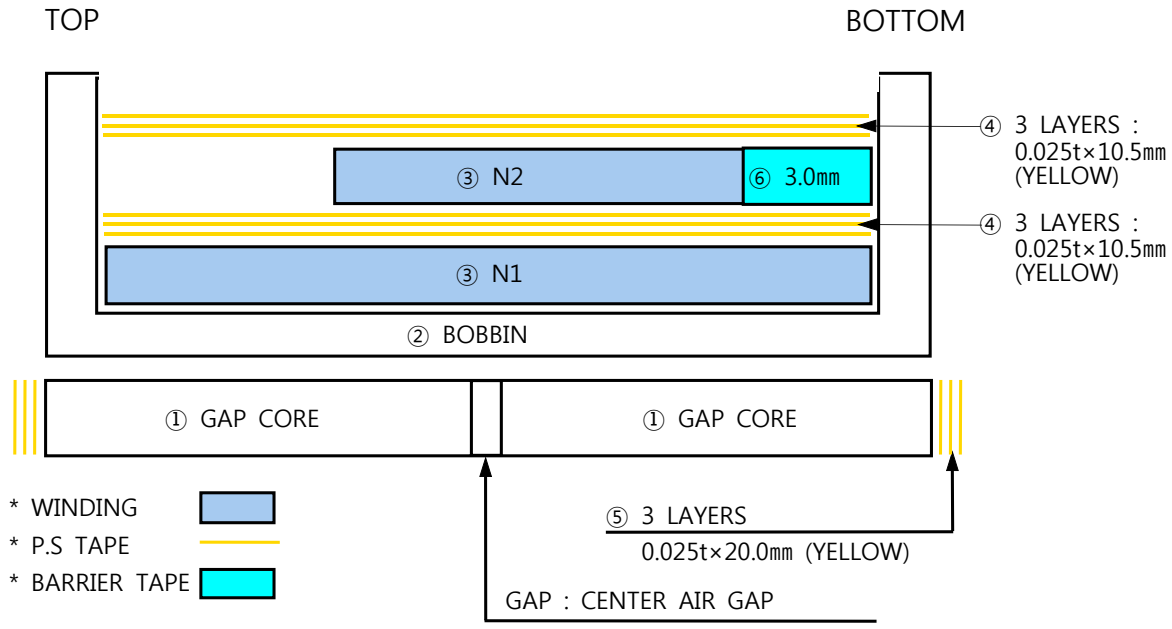
| NO | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 2 | SOLDER HEAT TEST | MUST MEET THE REQUIREMENTS REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER POT AT 260 +5℃ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245 -5℃ FOR 3 SECONDS |
| 4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5Kgf DURING 30 ±5 SEC |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 8/22 |
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| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD. | | | | | | | |

| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## 9. INTERNAL CONSTRUCTION

safety




① : CORE ② : BOBBIN ③ : WIRE ④ : INSULATION TAPE ⑤ : CORE FIXING TAPE (YELLOW)
⑥ : BARRIER TAPE

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 9/22 |
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| | | | | UNIT | mm | | |
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| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## 10. MATERIAL LIST safety

| NO | ITEM | MATERIAL | MANUFACTURER | UL FILE NO. |
|---|---|---|---|---|
| 1 | CORE | EER3019NA PL-7 | SAM HWA ELECTRONICS CO., LTD. | - |
| | | EER3019N PM-7 | TODA ISU CERAMICS CO., LTD. | - |
| | | EC30-4R HE-4 | RUYUAN DONGYANGGUANG MAGNETIC MATERIAS CO., LTD. | - |
| 2 | BOBBIN | 94V-0, PHENOL RESIN EER3019 'V' TYPE 10PIN (5+5) | HEXION SPECIALTY CHEMICALS GMBH (PF2736) | E61040 |
| 3 | WIRE | USTC 0.12Ø×25P 1 UEW 0.20Ø | DONG YANG ELECTRONICS CO., LTD. (MW75) | E102761 |
| 4 | INSULATION TAPE | POLYESTER FILM TAPE 0.025t×10.5㎜ (YELLOW) | DUCK SUNG HITECH CO., LTD. (DTS-204), (DTS-204K) METAL LINE CO., LTD. (800) | E105147 E162848 |
| 5 | CORE FIXING TAPE | POLYESTERS TAPE 0.025t×20.0㎜ (YELLOW) | | |
| 6 | BARRIER TAPE | P.N.W TAPE W≒0.25t, 0.45t 3.0㎜ | TAE HWA INDUSTRIAL CO., LTD. (H-5673) | E92677 |
| 7 | VARNISH | SR-337 DVB-2082 | SEKYE CHEMICAL CO., LTD. NOROO PAINT & COATINGS CO., LTD. | E257443 E258023 |
| 8 | SOLDER | LFC7 | SEOUL ALLOYMETAL CO., LTD. | - |
| 9 | FLUX | EF9301 | ALPHA METAL CO., LTD. | - |
| 10 | MARKING | INK 9175 | IMAJE KOREA CO., LTD. | - |

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| DONGYANG TELECOM CO., LTD. | | | | | | | |

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| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

# 11. UL YELLOW CARD

## BOBBIN

**HEXION SPECIALTY CHEMICALS GMBH**
POSTFACH 7154
58609 ISERLOHN, GERMANY

**E61040**

| Material Dsg | Color | Min. Thk mm | Flame Class | H W I | H A I | RTI Elec | RTI Mech Imp | RTI Mech Str | HDC V R | HDC 4 5 | HDC C T I |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PF 2736(a)(b) | | | | | | | | | | | |
| | BK | 0.46 | V-0 | - | - | 150 | 150 | 150 | 0 | 5 | 3 |
| | ALL | 0.81 | V-1 | 0 | 2 | 150 | 150 | 150 | | | |
| | NC, GN, BK | 0.81 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | ALL | 1.5 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | | 3.0 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |

## WIRE

**DONG YANG ELECTRONICS IND CO LTD**
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

**E102761**

| Mtl Dsg | Coat Typ BC | Coat Typ OC | ANSI Type | TI |
|---|---|---|---|---|
| EIW | Polyester-imide | | MW30 | 180 |
| NY-EIW | Polyester-amide-imide | Polyamide | MW76 | 180 |
| NY-PEW | Polyester | Polyamide | MW24 | 155 |
| NY-PEW(F) | Polyester | Polyamide | MW24 | 155 |
| NY-UEW | Polyurethane | Polyamide | MW80, | 155, |
| | | | MW28# | 130 |
| UEW(F) | Polyurethane | — | MW79, | 155, |
| UEW(B) | Polyurethane | — | MW75# | 130 |
| UAL | Polyurethane | — | @ | 155 |
| PEW | Polyester | — | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.

#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

Marking: Company name or "E102761" and material designation or marked designation on package or reel .
Last Updated on 2007-01-08

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 11/22 |
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| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

**P.E TAPE**

DUCK SUNG HITECH CO LTD
225-2 SHINNEUNG-RI SEOUN-MYEON
ANSEONG-SI, GYEONGGI-DO 456-850 REPUBLIC OF KOREA

**E105147**

Acetate cloth insulating tape, acrylic adhesive, Cat. No. 231*, rated 105 C.

Glass cloth insulating tape, rubber adhesive, Cat. No. 220-B, rated 130 C.

Glass cloth insulating tape, silicone adhesive, Cat. No. 221H*, rated 180 C.

Acetate cloth insulating tape, rubber adhesive, Cat. No. DTS-230, rated 105 C.

Nomex (Aramid fiber) film insulating tape with non-woven polyester fiber reinforcement, acrylic adhesive, Cat. No. DTS-241*, rated 130 C.

Polyester film insulating tape, acrylic adhesive, Cat. No. DTS-280*, rated 130 C.

PET (Polyethylene-Terapthalate) film insulating tape, synthetic rubber adhesive, Cat. No. DTS -204R %, rated 130 C.

PET(Polyethylene-Terapthalate) film insulated tape, acrylic adhesive, Cat. No. DTS-204F*#, rated 130C.

Flame retardant cotton cloth tape, rubber adhesive, Cat. No. DTS-250F*+.

Flame retardant acetate cloth tape, rubber adhesive, Cat. No. DTS-232F+.

Flame retardant Aluminum foil tape, acrylic adhesive, Cat. No. DTS-800A+.

Flame retardant Aluminum foil with PET (Polyethylene-Terapthalate )film tape, acrylic adhesive, Cat. No. DTS-810+.

Flame retardant Copper foil tape, acrylic adhesive, Cat. No. DTS-820+.

Flame retardant Nickel coated Polyester Fiber tape, acrylic adhesive, Cat. No. DTS-830+.

Glass cloth insulating tape, acrylic adhesive, Cat. No. DTS-221F*, rated 155 C.

PET ( Polyethylene-Terapthalate) film insulating tape with non-woven polyester fiber reinforcement, rubber adhesive , Cat. No. DTS-280R@, rated 130C.

PET (Polyethylene-Terapthalate) film insulating tape, acrylic adhesive, Cat. No. DTS-204B&, rated 130 C.

PET (Polyethylene-Terapthalate) film insulating tape, acrylic adhesive, Cat. No. DTS-204K^, rated 130 C.

PET(Polyethylene-Terapthalate) film insulating tape, acrylic adhesive, Cat. No. DTS-207$, rated 130C.

Polyimide film insulating tape, silicone base adhesive, Cat. No. DTS-701*, rated 180 C.

PET (Polyethylene-Terapthalate) film insulating tape, acrylic adhesive, Cat. No. DTS 280A, rated 130C.

Marking: Company name or trademark or file number "E105147" and catalog designation printed on carton, wrapper or core.

Last Updated on 2009-10-27

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 12/22 |
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| DONGYANG TELECOM CO., LTD. | | | | | | | |

| SPECIFICATIONS | | PART NO | LP-002 |
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| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## P.E TAPE

**METAL LINE CO LTD**
330-1 BUHANG-RI SILCHON-EUP
GWANGJU-SI, GYEONGGI-DO 464-874 REPUBLIC OF KOREA

**E162848**

**Reinforced polyester (PET) tape with acrylic adhesive**, Cat. No. 800BT, rated 130C.

**Polyester (PET) tape with acrylic adhesive**, Cat. No. 800(a), rated 130 C.

**Polyester (PET) tape with acrylic adhesive**, Cat. No. 8000, rated 130 C.

**Flame Retardant Al foil tape with acrylic adhesive** , Cat. No. HD-110$.

**Flame Retardant Ni coated woven polyester fiber tape with acrylic adhesive** , Cat. No. HD-14$.

(a) May be marked: "Film side CTI Performance Level Category PLC=0, Voltage 600+, per UL 746A/ASTM D 3638" and/or "Film side CTI 600 + per IEC112, First Edition (1979), CTI Material Group I" or equivalent.

$ - Markings shall include "Flame Retardant".

Marking: Company name or file number "E162848",catalog designation and temperature rating printed on carton, wrapper or core.
Last Updated on 2009-05-09

## BARRIER

**TAE HWA INDUSTRIAL CO LTD**
323-80 GUNHA-RI
WOULGOT-MYUN
KIMPO-CITY, KYUNGGI-DO 415-870 REPUBLIC OF KOREA

**E92677**

**Flame retardant fiberglass cloth tape with silicone adhesive** , Cat. No. TH-GC012#.

**Flame retardant acetate cloth tape with acrylic adhesive**, Cat. No. 6701#.

**Flame retardant fiberglass cloth tape with acrylic adhesive**, Cat. No. H-2715#.

**Nomex insulating tape with silicone adhesive**, Cat. No. H-8780+ , rated 180 C.

**Flame retardant copper foil tape with conductive acrylic adhesive**, Cat. No. E-3338#.

**Flame retardant aluminum foil tape with retardant acrylic adhesive**, Cat. No. E-4340#.

**Flame Retardant Polyester (PET) film insulating tape with non-woven polypropylene fiber reinforcement and acrylic adhesive**, Cat. No. H-5673N#.

**Polyester (PET) film insulating tapes with polyester non-woven fiber reinforcement and acrylic adhesive** , Cat. Nos. H-5673@, H-5673a, white color, rated 130C.

**Nomex insulating tape with silicone adhesive**, Cat. No. H-8780+, rated 180C.

**Polyimide film insulating tape with silicone adhesive**, Cat. No. S-9101+, rated 200C.

+ -Complies with flame retardant requirements when so marked.

# -Subjected to UL510 flammability tests only. Shall be marked "Flame Retardant"

@ - May be marked: "Film side CTI Performance Level Category PLC=0, Voltage 600, per UL 746A/ASTM D 3638" and/or "Adhesive side CTI Performance Level Category PLC=0, Voltage 600, per UL 746A/ASTM D 3638", or equivalent.

Marking: Company name or file number "E92677" and catalog number printed on carton, wrapper and/or core.
Last Updated on 2008-02-13

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 13/22 |
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| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD. | | | | | | | |

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|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## VARNISH

**SE KYE CHEMICAL CO LTD**
360 GUIJEON-RI
TONGJIN-EUP
KIMPO-SI, KYUNGGI-DO 415-862 REPUBLIC OF KOREA

**E257443**

| Varnish Dsg | ANSI Magnet Wire Type | Varnish Thermal Class C | | |
|---|---|---|---|---|
| | | TP | HC | CE |
| SR-337(#) | MW75 | 130 | 130 | — |

# - May be followed by 1 or 2 suffix numeric and /or alpha characters to denote viscosity change accomplished via solvents due to production tolerance.

Marking: Company name and varnish designation on shipping container.
Last Updated on 2006-06-28

## VARNISH

**NOROO PAINT & COATINGS CO LTD**
615 PAKDAL-DONG
ANYANG-SHI, KYONGGI-DO 430-030 REPUBLIC OF KOREA

**E258023**

| System Component | System Dsg | System Temp Class |
|---|---|---|
| DVB-2085 (*) | SBI4.2-DPI | 130 (B) |
| DVB-2152 (#) | R152D-Noroo | 130 (B) |
| DVB-2152 (#) | Z150H-Noroo | 130 (B) |
| DVB-2152 (#) | Z152D-Noroo | 130 (B) |
| DVB-2152 (#) | R333H | 180 (H) |

(*) - Followed by one or two numbers and/or letters.

(#) - May be replaced by a number from 0 - 30 to denote the percent silica.

Marking: Company name and system component designation.
Last Updated on 2007-09-21

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 14/22 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD. | | | | | | | |

| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

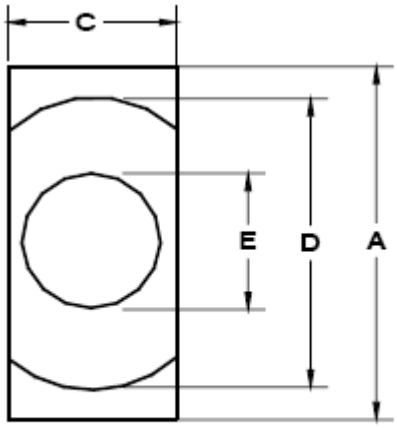
## 12. WIRE SPECIFICATION

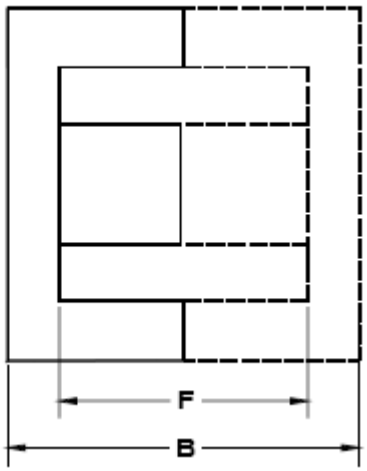
### 폴리 우레탄 동선 (1UEW)

| 품 수 | | | | 절연파괴 검 안 (V) ↑ | 내마모 파괴하중 | | 최대도체 저 항 (Ω/km) ↓ | 신장률 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소원심의 켭 (mm) ↑ | 최대원심의 켭 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6956 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.096 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.224 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2600 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2600 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2600 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2600 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2600 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2600 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2600 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2600 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2600 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2600 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2600 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2600 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2600 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.006 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.006 | 0.686 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.006 | 0.736 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.006 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.996 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## 13. CORE DIMENSION



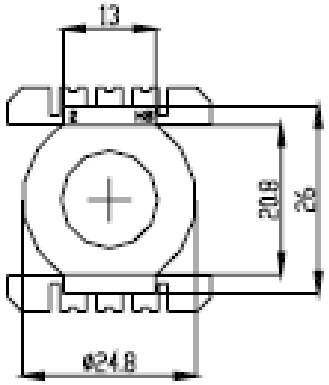



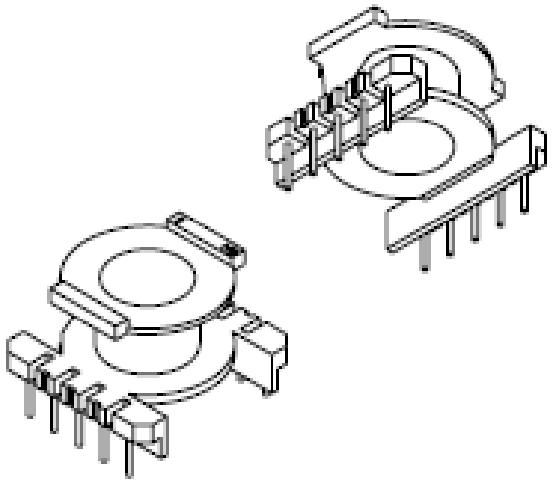

| TYPE | DIMENSION(mm) | | | | | | EFFECTIVE PARAMETERS | | | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | Le(㎜) | Ae(㎟) | Ve(㎣) | |
| EER3019NA PL-7 | 30.0 ±0.5 | 19.2 ±0.3 | 20.3 ±0.3 | 25.4 ±0.4 | 13.3 ±0.2 | 13.2 ±0.3 | 55.9 | 103.7 | 7306 | SAM HWA |
| EER3019N PM-7 | 30.0 ±0.5 | 19.4 ±0.3 | 20.3 ±0.3 | 25.4 ±0.4 | 13.3 ±0.2 | 13.2 ±0.3 | 47.3 | 134.0 | 6340 | TODA ISU |
| EC30-4R HE-4 | 30.0 ±0.5 | 19.4 ±0.3 | 20.3 ±0.3 | 25.4 ±0.4 | 13.3 ±0.2 | 13.2 ±0.3 | 47.7 | 132.0 | 6298 | DONG YANG GUANG |

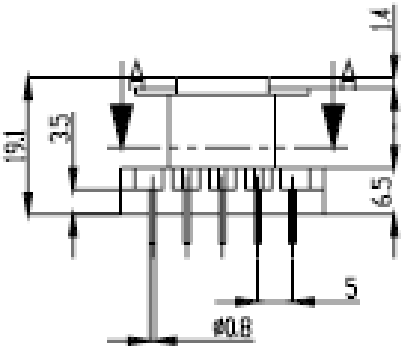
| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 16/22 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD. | | | | | | | |

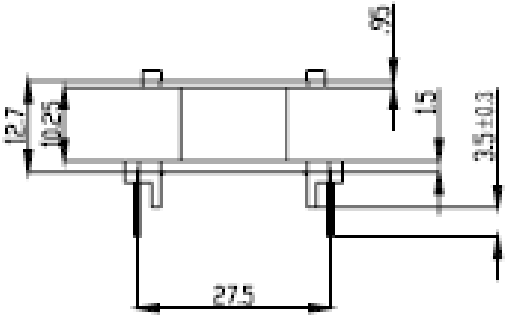
| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

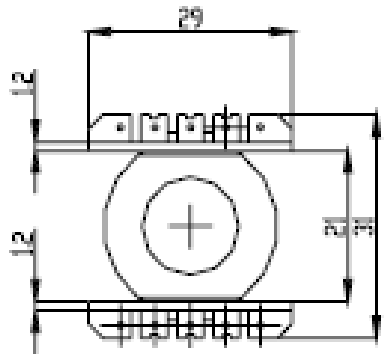
## 14. BOBBIN DIMENSION

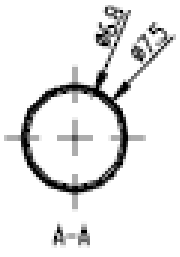





| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 17/22 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD. | | | | | | | |

| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## 15. PROCESS FLOW

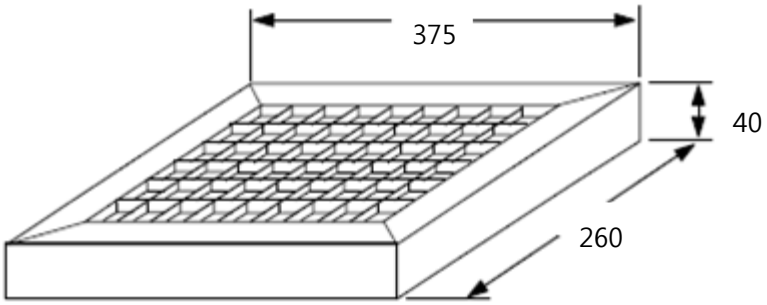
| 공정 | | 소요자재 | 공정명 | 관리항목 | 관리기준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|
| SUB 공정 | MAIN공정 | | | | | | | | | |
| △→◇<br>△→◇<br>△→◇ | ○ | BOBBIN<br>COIL<br>P/S TAPE | 권선 | COIL의 굵기와 종류<br>권선턴수,권선상태<br>절연상태,절연상태 | | 2회/1일 | SAMPLING<br>LOT당5EA | MICRO METER | 생산 | 성적서 |
| △→◇<br>△<br>△ | ○ | SOLDER<br>FLUX | 납땜 | 납조기온도: 420 ±10℃<br>납땜시간: 2~3SEC | 납땜작업표준서 | 2회/1일 | 전수검사 | 납조기<br>온도계 | 생산 | 온도체크시트 |
| | ○ | CORE<br>P/S TAPE | CORE조립 | CORE종류(GAP,NOGAP)<br>조립상태,GAP SIZE<br>TAPPING TURNS 및 TAPPING상태 | CORE조립/<br>작업표준서 | 2회/1일 | SAMPLING | MICRO METER | 생산 | |
| | ◇ | | 1차검사 | 전기적 특성(L값 TURNS)<br>결선,납땜상태 | 1차검사기준서 | 전수 | 전수검사 | TURNS METER<br>LCR METER | 생산 | 1차검사 일보 |
| △→ | ○ | VARNISH | 함침 | VANISH BR함상태,함침시간<br>함침부위,VANISH점도 | 함침작업표준서 | 0LOT | SAMPLING | 진공함침기<br>점도계,시계 | 생산 | 점도체크시트 |
| | ○ | | 건조 | 건조시간 : 2시간<br>건조온도 : 120℃ | 건조작업표준서 | 2회/1일 | SAMPLING | 건조기,시계<br>온도계 | 생산 | 온도체크시트 |
| △→ | ○ | 불멸잉크 | MARKING | MARKING 상태,위치,선명도<br>LOT NO | MARKING<br>작업표준서 | 전수 | 전수검사 | MARKING 도장<br>자동 MARKING기 | 생산 | |
| | ○ | | PIN고정 | 핀휨, 핀고정 상태 | PIN고정<br>작업표준서 | 전수 | 전수검사 | PIN고정 JIG | 생산 | |
| | ◇ | | 2차검사 | 전기적 특성(L값 LEAKGE)<br>위상, TURNS,내전압,절연상태 | 2차 검사기준서 | 전수 | 전수검사 | TURNS METER<br>LCR METER<br>내압기 | 생산 | 2차검사일보 |
| | ◇ | | 외관검사 | BOBBIN파손,납땜상태,PIN상태<br>기타 | 외관검사기준서 | 전수 | 전수검사 | | 생산 | 외관검사일보 |
| △→◇<br>△→◇ | ○ | SNOW BOX<br>OUT BOX | 포장 | PIN TO PIN간격<br>BOX 규격,외관, 포장상태 | 포장작업표준서 | 전수 | 전수검사 | | 생산 | |
| | ◇ | | 출하검사 | 전기적특성(L값,절연저항,내전압)<br>치수,구조,외관,수량 | 출하검사기준서 | SAMPLING | SAMPLING | LCR-METER<br>내압기<br>절연저항기 | 품질보증 | 출하검사성적서 |
| | △ | | 창고입고 | 수량,제품명,포장상태<br>입출고 자고관리 | 창고적재표준서 | 2회/1일 | | | 영업 | 입고완료수불 장부 |
| | △ | | 출하 | 제품명, 수량 | | | | | 영업 | 출하전표 |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 18/22 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD. | | | |

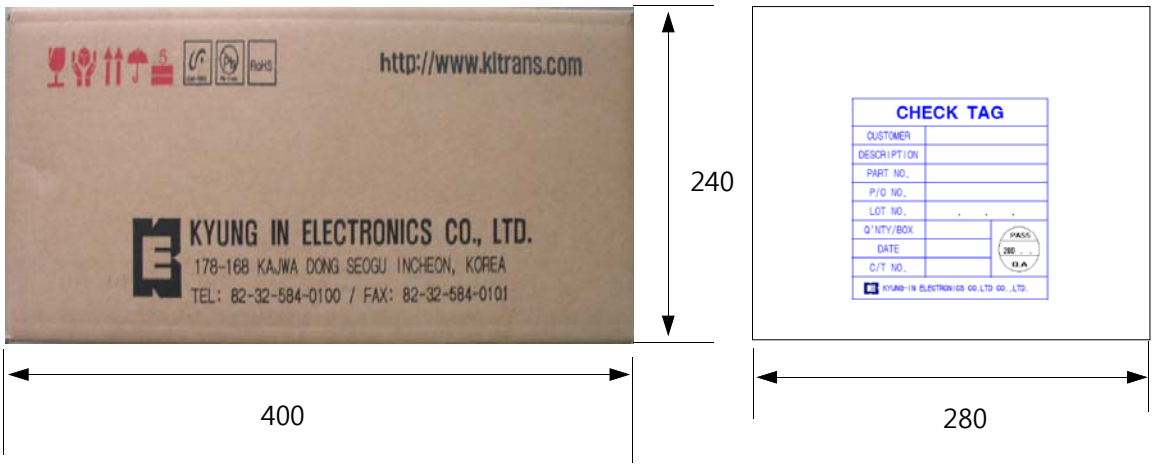
| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

## 16. PACKING

※INNER BOX (PAPER BOX) : 9PCS X 6PCS = 54PCS




OUT BOX (CARTON) : 54PCS X 4EA = 216PCS




| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 19/22 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD. | | | | | | | |

## 17. INSPECTION DATA

## 18. ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFCATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFCATION METHOD.
2) PACKING METHOD FOLLOWS SPECIFCATION APPROVAL.
3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION.INTERNAL
4) WIRE BUNDLE METHOD.
   *CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2MM
   *TOP SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2MM
   *TAP SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE
   *SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM. ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM
   *SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2 IN SAME LAYER. NO CROSS IS ALLOWED BETWEEN WIRES.
5) PERFORMANCE OF THIS DRAWING IS REQUITED TO MEET PART NUMBER LP-002
6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE. BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT

| SPECIFICATIONS | | PART NO | LP-002 |
|---|---|---|---|
| PART NAME | P.F.C TRANS | DATE | 2010. 04. 05. |

# 19. CHEMICAL ANALYSIS REPORT FOR CP-WIRE

*. (주)대흥보빈

## 제 질 증 명 서 ( MATERIALS CERTIFICATE )

2006. 12. 01.

*. Square Wire (ETPCS-S / Sn100% )

1.재료 구성비 (MATERIALS COMPOSITION) (Weight %)

| 항 목 (Item) | Plating Thickness(Sn) | Iron (Fe) | Copper (Cu) | Tin (Sn) | REMARK |
|---|---|---|---|---|---|
| 0.64x0.64㎜ | 5±1 ㎛ | Balance | 15.78% | 2.26 ~ 3.38% | |
| 0.70x0.70㎜ | | Balance | 15.78% | 2.07 ~ 3.09% | |
| 0.80x0.80㎜ | | Balance | 15.85% | 1.81 ~ 2.71% | |

2.기초재료 화학성분 (BASE MATERIALS CHEMICAL COMPOSITION) (Weight %)

| | Fe | C | Si | Mn | P | S | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel Wire (POSFIS6M1) | Balance | 0.0240 | 0.04 | 0.26 | 0.0185 | 0.0107 | - | - | - | - | (%) |
| | Cu | As | Sb | Bi | Pb | S | Fe | Ag | - | - | - |
| Electro Copper | 99.99↑ | 0.50 | 0.50 | 0.50 | 1.0 | 0.2 | 1.10 | 2.34 | - | - | (ppm) |
| | Sn | Sb | As | Pb | Bi | Cu | Fe | Al | Cd | Zn | |
| Tin Ingot | 99.93↑ | 0.005 | 0.011 | 0.027 | 0.004 | 0.005 | 0.005 | 0.001 | 0.001 | 0.001 | (%) |

3.석도금 조성 및 단면 (TIN PLATED COMPOSITION) (Weight %)




We certify that this paper is the certificate of our products fo
inspection and materials

Quality Assurance Manager

Kyoung Kwa. Lee

IKEM IL-KWANG ELECTRONIC MATERIALS CO., LTD.
Head Office & Factory: #725-9 Wonshi-dong, Danwon-gu, Ansan-city, Kyounggi-do, Korea.
Phone 82-31-495-1971~3 Fax 82-31-495-1974
e-mail - ilkwang@cpleadwire.com Homepage - http://www.cpleadwire.com

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 22/22 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD. | | | | | | | |

# TRANS SPECIFICATION
# [T501]

ROHS safety

# APPROVAL SHEET

| | | |
|---|---|---|
| CUSTOMER | : | LG ELECTRONICS INC. |
| MODEL | : | 12S ALL |
| ITEM | : | ST-BY TRANS |
| LG E. PART NO | : | EBJ61470601 |
| PART NO | : | 12S-LS01 |
| DYT SPEC NO | : | DYT069-26-1103-0 |

| APPROVAL: | REFERENCE: |
|---|---|
| | |

**DONGYANG TELECOM CO.,LTD.**

| | | | |
|---|---|---|---|
| HEAD OFFICE & FACTORY | 942-5, Dohwa-Dong, Nam-gu, Incheon, korea | | TEL : 032-584-0100<br>FAX : 032-584-0101 |
| China 1 Factory | Korea industrial Circles Beigong Street Office<br>Weicheng Weifang Shandong, CHINA | | TEL : 86-536-895-0501<br>FAX : 86-536-895-7291 |
| China 2 Factory | No.28 Feng Huang Street, Weifang Shandong, CHINA | | TEL : 86-536-790-2048<br>FAX : 86-536-760-2046 |
| 연구소 | 봉은종차장 | core715@kitrans.com | 010-8985-0682 |
| 영업부 | 김기호부장 | khkim@kitrans.com | 017-228-9127 |
| 품질보증팀 | 박재규과장 | jkpark@kitrans.com | 010-6427-6121 |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

## 2. REVISION

| REV NO. | DATE | PAGE | REVISED CLAUSE | REVISED CAUSE |
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| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 2 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

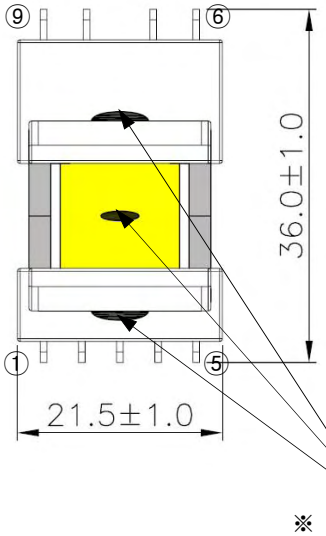
# 3. INDEX


| | |
|---|---|
| 1 | 1. APPROVAL SHEET |
| 2 | 2. REVISION |
| 3 | 3. INDEX |
| 4 | 4. DIMENSION |
| 5 | 5. CONNECTION |
| 6 | 6. WINDING SPECIFICATION |
| 7 | 7. ELECTRICAL CHARACTERISTICS |
| 8 | 8. ENVIRONMENTAL CHARACTERISTICS |
| 9 | 9. MECHANICAL CHARACTERISTICS |
| 10 | 10. INTERNAL CONSTRUCTION |
| 11 | 11. MATERIAL LIST |
| 12 | 12. UL-LIST |
| 13 | UL-LIST |
| 14 | UL-LIST |
| 15 | 13. CORE DIMENSION |
| 16 | 14. BOBBIN DIMENSION |
| 17 | 15. PROCESS FLOW |
| 18 | 16. PACKING |
| 19 | 17. INSPECTION DATA |
| 20 | 18. ASSIGNMENT |
| 21 | 19. CP-WIRE |
| 22 | 20. WIRE |
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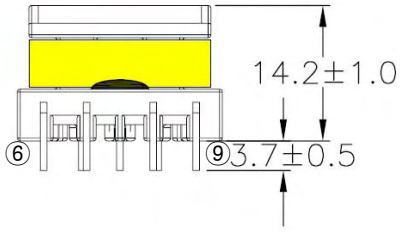

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 3 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

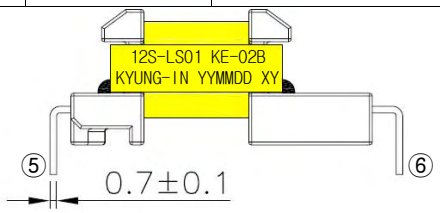
## 4. DIMENSION( UNIT : mm )

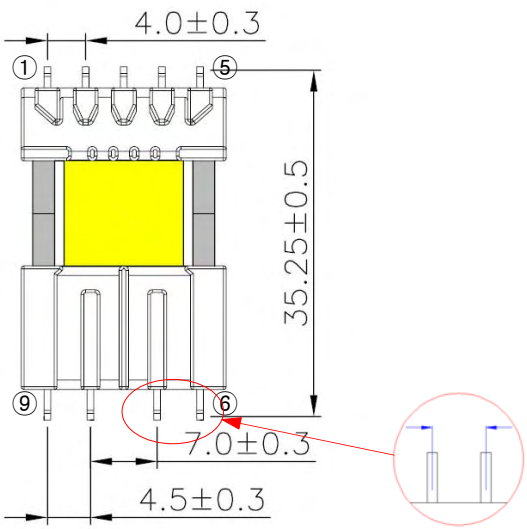



※ ADHESIVE (3POINT)




| MARKING SPEC | | | safety |
|---|---|---|---|
| PART NO | | 12P-LS01 | |
| KE-02B | | INSULATION SYSTEM | |
| KYUNG-IN | | DONGYANG TELECOM | |
| LOT NO | | YYMMDD | |
| YY | | YEAR | 2011 : 11<br>2012 : 12 |
| MM | | MONTH | 01, 02, 03.... |
| DD | | DAY | 01, 02, 03, |
| X | PRODUCT CODE | A | KOREA INCHEON FACTORY |
| | | B | CHINA 1 FACTORY |
| Y | CORE MAKER MARKING | | I:ISU, K:DONGYANGGUANG, T:TDG, A: A CORE |



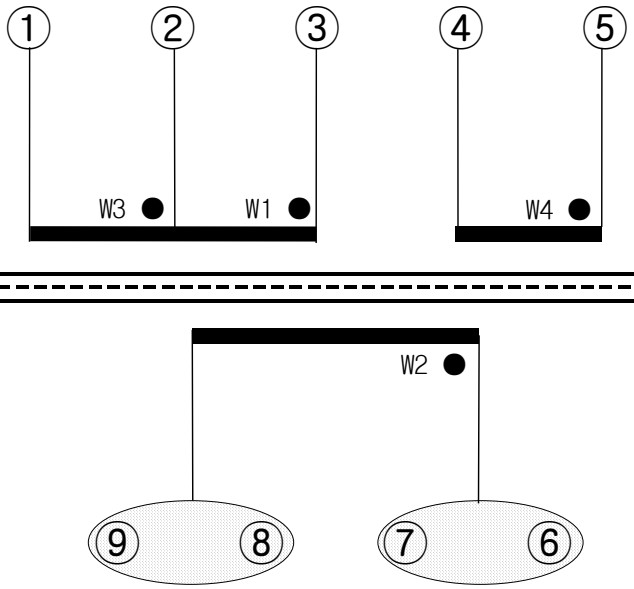




※ LG PART NUMBERS OMIT.
BECAUSE, THE MARKING SPACE IS NARROW

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 4 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD | | | | | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

## 5. SCHEMATIC DIAGRAM




| | |
|---|---|
| REMOVE PIN | - |
| CUTTING PIN | - |
| N.C PIN | - |
| TUBE PIN | - |
| PS TAPE PIN | - |
| ●DOT MARK | START OF WINDING |
| GAP | CENTER GAP |
| GAP CORE | PRIMARY |
| CENTER BOND | X 8008(BLACK), ES2172B |
| SIDE BOND | X 8008(BLACK), ES2172B |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 5 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

## 6. WINDING SPECIFICATION

| NO | TERMINAL | | WIRE | Ts | WINDING METHOD | INSULATION | | BARRIER (mm) | |
|---|---|---|---|---|---|---|---|---|---|
| | S | F | | | | MATERIAL ( t / mm) | Ts | PRI | SEC |
| W1 | 3 | 2 | 1UEW 0.20Ø | 53 | SOLENOID | POLYESTER TAPE 0.025 / 13.0 | 3 | 3 | 3 |
| W2 | 6.7 | 8.9 | TIW-M 0.20Ø×4 | 7 | SOLENOID | POLYESTER TAPE 0.025 / 13.0 | 3 | 3 | 3 |
| W3 | 2 | 1 | 1UEW 0.20Ø | 67 | SOLENOID | POLYESTER TAPE 0.025 / 13.0 | 3 | 3 | 3 |
| W4 | 5 | 4 | 1UEW 0.20Ø | 29 | SOLENOID | POLYESTER TAPE 0.025 / 13.0 (YELLOW) | 3 | 3 | 3 |
| CORE FIXING TAPE | | | | | | POLYESTER TAPE 0.025 / 5.0 (YELLOW) | 3 | | |

※ WINDING DIRECRION : PRIMARY VIEW C.C.W (Clock Contrary Winding)

※ W2 권선시 PIN당 TIW-M 0.20Φ WIRE를 2가닥씩 결선 할 것

※ Between (Pin6) and (Pin7)/ Between (Pin8) and (Pin9) are short or open.
(6-7 / 8-9 SHORT ON PCB)

※ PIN WIRING SPEC : TIW-M WIRE => 0.7Ts Min., UEW WIRE : => 1.0Ts MIN

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 6 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

## 7. ELECTRICAL CHARACTERISTICS

| NO | ITEM | TERMINAL | SPEC | REMARKS |
|---|---|---|---|---|
| 1 | INDUCTANCE | 3 - 1<br>6,7 - 8,9<br>5 - 4 | 1.10 mH ± 7%<br>3.75 uH ± 30%<br>73.0 uH ± 20% | HP-4284A or eqv<br>at 100KHz,1V |
| 2 | LEAKAGE INDUCTANCE | 3 - 1<br>(SEC. ALL SHORT) | 50 uH MAX | |
| 3 | DC RESISTANCE<br>(20℃) | 3 - 1<br>6,7 - 8,9<br>5 - 4 | 3.00 Ω MAX<br>0.05 Ω MAX<br>1.00 Ω MAX | WHEATSTONE BRIDGE<br>HIOKI 3540(mΩ METER) |
| 4 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 3.0 KV rms 1 MINUTE.<br>(M.P CONDITION<br>AC 3.6KV rms 2 SEC) | safety<br>KIKUSUI TOS-8850<br>(CURRENT SESITIVE IS 5mA) |
| | | P COIL - CORE | AC 1.5 KV rms 1 MINUTE<br>(M.P CONDITION<br>AC 1.8KV rms 2 SEC). | |
| | | S COIL - CORE | AC 1.5 KV rms 1 MINUTE.<br>(M.P CONDITION<br>AC 1.8KV rms 2 SEC). | |
| 5 | INSULATION RESISTANCE | P COIL - S COIL | 100 Mohm MIN at DC 500V | MEGOHM METER<br>(SM-5E)<br>safety |
| 6 | DC BIAS | 3 - 1 | MORE THAN 90% OF<br>INITIAL INDUCTANCE | 0.5A (TEST CURRENT)<br>NORMAL TEMPERATURE |
| 7 | QUALITY FACTOR | 3 - 1 | 50 MIN | HP-4284A<br>at 100KHz,1V |
| 8 | IMPULSE TEST | 3 - 1 | AC 1.5 KV PULSE 4 TIMES | safety<br>DWX-05 & KT-905D |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 7 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

# 8. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃ ± 15℃ HUMIDITY 65% ± 20%
IF WHEN ANY OBJECTION IS SUGESTED. THE TEST CAN BE OPERATED AT 20℃ ± 2℃, 65% ± 5% RH

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>1</td><td>USED<br>TEMPERATURE<br>RANGE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>2</td><td>KEEPING<br>TEMPERATURE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>3</td><td>LOW<br>TEMPERATURE<br>RESISTANT</td><td rowspan="6">MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER ±5% OF THE INITIAL VALUE<br><br>(IT SHOULD BE MANAGED BY ±10% UNDER 10uH)</td><td>-25℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>4</td><td>HIGH<br>TEMPERATURE<br>RESISTANT</td><td>+105℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>5</td><td>HUMIDITY<br>RESISTANT</td><td>+95%RH ± 5% (40℃ ± 5℃) 96Hr<br>MEASURE AFTER 2Hr AT ROOM TEMP
<table>
<tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr>
<tr><td>1</td><td>-25℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>2</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
<tr><td>3</td><td>+105℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>4</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
</table>
REPEAT 5 TIME FROM STEP 1 AND<br>TEST AFTER 2 Hr. AT ROOM TEMP.</td></tr>
<tr><td>6</td><td>TEMPERATURE<br>CYCLE</td><td></td></tr>
<tr><td>7</td><td>HEAT SHOCK-<br>RESISTANT</td><td>2 HR AT-20℃ →2 HR AT 70℃<br>: 10 CYCLE</td></tr>
</table>

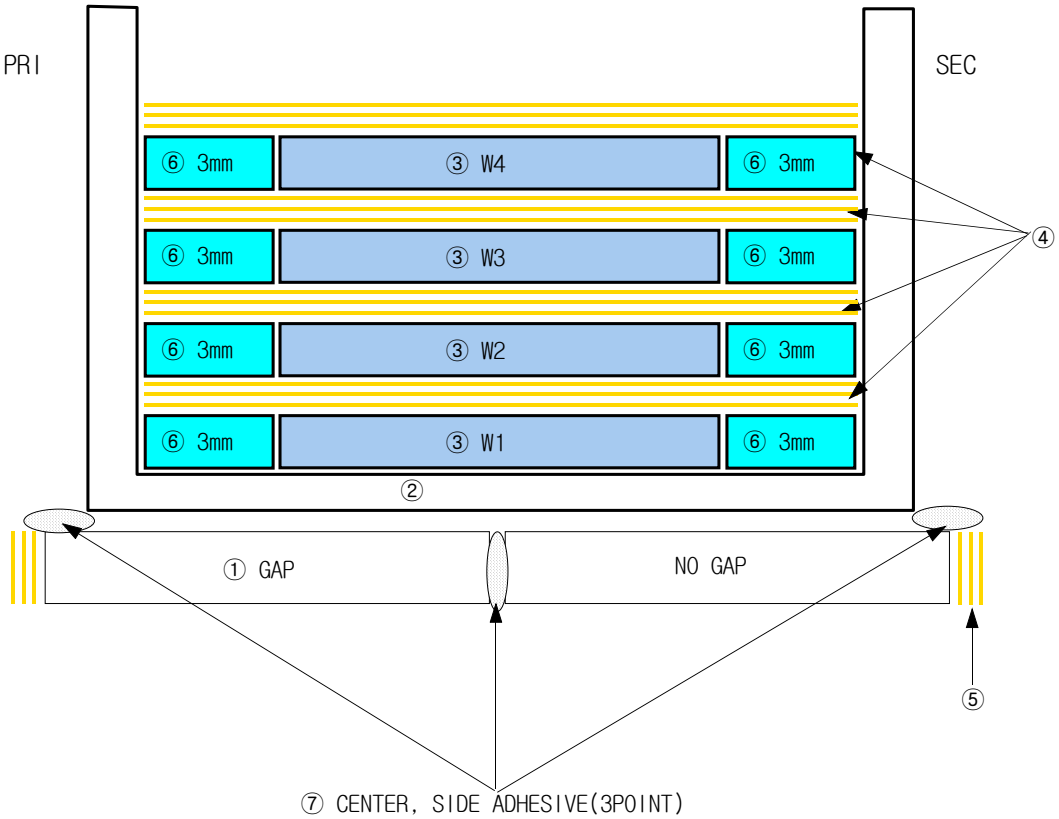
# 9. MECHANICAL CHARACTERISTICS

| NO | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER ±5% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER POT AT 260 +5℃ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245℃ -5℃ FOR 3 SECONDS |
| 4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5Kgf DURING 30 ± 5 SEC |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

## 10. INTERNAL CONSTRUCTION

safety




⑦ CENTER, SIDE ADHESIVE(3POINT)
SUPER X 8008(BLACK), ES2172B

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 10 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

## 11. MATERIAL LIST

safety

| NO | MATERIAL | ITEM | MANUFACTURE | MATERIAL COLOR | UL FILE NO. |
|---|---|---|---|---|---|
| 1 | CORE | EE1918 PM-7<br>EE1918 TP-4A<br>EE1918 HE4<br>EE1918 JPP4 | TODA ISU CERAMICS CO., LTD.<br>TDG HOLDING CO., LTD<br>RUYUAN DONGYANGGUANG MAGNETIC MATERIALS CO., LTD<br>A CORE CORPORATION | BLACK | - |
| 2 | BOBBIN | EE1918 H" TYPE(9PIN)<br>PHENOL(94V-0)(PM9820) | SUMITOMO BAKELITE CO.,LTD.<br>(HO SUNG, DAE HEUNG, PIN SHINE) | BLACK | E41429 |
| | | TERMINAL | IL-KWANG ELECTRONIC MATERIAL<br>CHUAN HUANG ENTERPRISE | SILVER | |
| 3 | WIRE | 1UEW 0.20Ø | DONG YANG ELECTRONICS CO.,LTD.(MW75)<br>CNI CABLE CO., LTD.(MW75) | NATURAL LIGHT | E102761<br>E210918 |
| | | TIW 0.20Ø | COSMOLINK CO., LTD. | NATURAL LIGHT | E213764 |
| 4 | INSULATION TAPE | POLYESTER FILM TAPE<br>0.025T x 13.0mm(YELLOW) | DUCK SUNG HI TECH CO., LTD.(DTS-204K)<br>METAL LINE CO., LTD. (800(a)) | YELLOW | E105147<br>E162848 |
| 5 | CORE FIXING TAPE | POLYESTER FILM TAPE<br>0.025T x 5.0mm(YELLOW) | | | |
| 6 | BARRIER TAPE | P.N.W TAPE<br>0.25t,0.45t W = 3.0mm | TAE HWA INDUSTRIAL CO., LTD.(H-5673) | WHITE | E92677 |
| 7 | ADHESIVE | SILICONE SUPER X 8008<br>SILICONE ES2172B | CEMEDINE CO., LTD<br>CANADA SILICONE INC | BLACK | E223694 |
| 8 | SOLDER | SCX07 | ALPHA METAL CO., LTD. | SILVER | - |
| 9 | FLUX | EF9301 | ALPHA METAL CO., LTD. | CLEAR | - |
| 10 | MARKING | INK 9175 | MARKEM IMAJE CO., LTD. | BLACK | - |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 11 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

# 12. UL YELLOW CARD

## CLASS B

**DONG YANG TELECOM CO LTD** E238422
942-5 DOHWA-DONG NAM-GU
INCHON, 404-250 REPUBLIC OF KOREA

**Class 130 (B) electrical insulation systems**, designated KE-01B, KE-02B, KE-03B

**Class 155 (F) electrical insulation systems**, designated KE-01F

Marking: Company name or tradename "KYUNG-IN" and system designation.

Last Updated on 2011-04-08

## BOBBIN

**SUMITOMO BAKELITE CO LTD** E41429
5-8 HIGASHI-SHINAGAWA 2-CHOME
SHINAGAWA-KU
TOKYO, 140-0002 JAPAN

| | | Min. Thk | Flame | H W | H A | RTI Elec | RTI Mech | RTI Mech | H V T | D 4 9 | C T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PM-8375 | BK | 0.49 | V-0 | - | - | 150 | 150 | 150 | | | 3 |
| | | 3.0 | V-0 | - | - | 150 | 150 | 150 | | | |
| PM-9820 | BK | 0.16 | V-0 | - | - | 150 | 150 | 150 | 0 | 5 | 3 |
| | | 0.51 | V-0 | 3 | 1 | 150 | 150 | 150 | | | |
| PM-9630 | BK | 0.16 | V-0 | 4 | 0 | 150 | 150 | 150 | 0 | 4 | 3 |
| | | 0.32 | V-0 | 3 | 0 | 150 | 150 | 150 | | | |

Marking: Company name or tradename "PERMAFLOW" , "SPIDAX" , "SUMIFLEX" , "SUMIKON" , "SUMILITE" , "SUMIMAC" or trademark パーマフロー , スミライト® , スミコン® , 住友ベークライト株式会社 , スパイダックス , スミフレックス® , スミマック , スミガウス® , "SUMIGAUSS®" , スミガウス , SUMIKON ® EME and material designation on container, wrapper or finished part.

Last Updated on 2009-01-22

## WIRE

**DONG YANG ELECTRONICS IND CO LTD** E102761
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ BC | Coat Typ OC | ANSI Type | TI |
|---|---|---|---|---|
| EIW | Polyester-imide | | MW30 | 180 |
| NY-EIW | Polyester-amide-imide | Polyamide | MW76 | 180 |
| NY-PEW | Polyester | Polyamide | MW24 | 155 |
| NY-PEW(F) | Polyester | Polyamide | MW24 | 155 |
| NY-UEW | Polyurethane | Polyamide | MW80, | 155, |
| | | | MW28# | 130 |
| UEW(F) | Polyurethane | — | MW79, | 155, |
| UEW(B) | Polyurethane | — | MW75# | 130 |
| UAL | Polyurethane | — | @ | 155 |
| PEW | Polyester | — | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.

#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

Marking: Company name or "E102761" and material designation or marked designation on package or reel .

Last Updated on 2007-01-08

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 12 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

WIRE

**CNICABLE CO LTD** E210918

312-16 DEUKSAN-DONG

ASAN-SI, CHUNGCHEONGNAM-DO 336-120 REPUBLIC OF KOREA

| Mtl Dsg | Mark Dsg | Coat Type | | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| | | BC | OC | | |
| DSUEW-100 | (1) | Polyurethane | — | MW75C | 130# |
| UEW | (1) | Polyurethane | None | MW79 | 155 |
| | | | | MW75 | 130# |
| PEW | (1) | Polyester | None | MW30 | 180 |
| | | | | MW5 | 155# |

(1)-Marked designations are the same as the material designations.

# - This wire may perform better than its temperature rating reflects. Hence, it may not be suitable to use in an insulation system thermal aging program.

Marking: Company name, material designation or marked designation on package or reel.

Last Updated on 2006-02-21

WIRE

**COSMOLINK CO LTD** E213764

449 GUN GIN-LEE

IWON-MYUN

OKCHUN-GUN, CHUNG CHONG BUK-DO 373-860 REPUBLIC OF KOREA

Cat. No. TIW-M, reinforced insulation rated 130℃ (Class B), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG (1.00 - 0.20 mm).

Cat. No. TIW-M (F) reinforced insulation rated 155℃ (Class F), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG.

Cat. No. TIW-M (B) reinforced insulation rated 130℃ (Class B), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG.

Cat. No. TIW-M (A) reinforced insulation rated 105℃ (Class A), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG.

Marking: Company name and material designation on smallest unit container, spool or on a tag attached to the end of the wire, and the Recognized Component Mark .

Last Updated on 2006-07-14

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 13 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

PS TAPE

**DUCK SUNG HITECH CO LTD** E105147
225-2 SHINNEUNG-RI SEOUN-MYEON
ANSEONG-SI, GYEONGGI-DO 456-850 REPUBLIC OF KOREA

**Nomex (Aramid fiber) film insulating tape with non-woven polyester fiber reinforcement, acrylic adhesive**, Cat. No. DTS-241*, rated 130 C.

**Polyester film insulating tape, acrylic adhesive**, Cat. No. DTS-280*, rated 130 C.

**PET (Polyethylene-Terapthalate) film insulating tape, synthetic rubber adhesive**, Cat. No. DTS -204R %, rated 130 C.

**PET (Polyethylene-Terapthalate) film insulating tape, synthetic rubber adhesive**, Cat. No. DTS -204R %, rated 130 C.

**PET(Polyethylene-Terapthalate) film insulated tape, acrylic adhesive**, Cat. No. DTS-204F*#, rated 130C.

**PET ( Polyethylene-Terapthalate) film insulating tape with non-woven polyester fiber reinforcement, rubber adhesive** , Cat. No. DTS-280R@, rated 130C.

**PET (Polyethylene-Terapthalate) film insulating tape, acrylic adhesive**, Cat. No. DTS-204B&, rated 130 C.

**PET (Polyethylene-Terapthalate) film insulating tape, acrylic adhesive**, Cat. No. DTS-204K^, rated 130 C.

**PET(Polyethylene-Terapthalate) film insulating tape, acrylic adhesive**, Cat. No. DTS-207$, rated 130C.

**Polyimide film insulating tape, silicone base adhesive**, Cat. No. DTS-701*, rated 180 C.

**PET (Polyethylene-Terapthalate) film insulating tape, acrylic adhesive**, Cat. No. DTS 280A, rated 130C.

* - Complies with flame retardant requirements when so marked.

+ - Must be marked "Flame Retardant".

# - May be marked: "Film side CTI Performance Level Category PLC=3 Voltage 235, per UL 746A/ASTM D 3638", and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600, per UL 746A/ASTM D 3638" or equivalent.

% - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 325, per UL 746A/ASTM D 3638", and/or "Adhesive side CTI Performance Level Category PLC=1 Voltage 575, per UL 746A/ASTM D 3638" or equivalent.

@ - May be marked: "Film side CTI Performance Level Category PLC=0 Voltage 600+, per UL 746A/ASTM D 3638," and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600+, per UL 746A/ASTM D 3638" or equivalent.

& - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 260, per UL 746A/ASTM D 3638," and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600, per UL 746A/ASTM D 3638" or equivalent.

^ - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 250, per UL 746A/ASTM D 3638," and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600, per UL 746A/ASTM D 3638" or equivalent.
^ - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 250, per UL 746A/ASTM D 3638," and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600, per UL 746A/ASTM D 3638" or equivalent.

$ - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 272, per UL 746A/ASTM D 3638," and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600, per UL 746A/ASTM D 3638" or equivalent

(a) - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 270, per UL 746A/ASTM D 3638", and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600+, per UL 746A/ASTM D 3638" or equivalent.

Marking: Company name or trademark or file number "E105147" and catalog designation printed on carton, wrapper or core.

Last Updated on 2009-10-27

PS TAPE

**METAL LINE CO LTD** E162848
330-1 BUHANG-RI SILCHON-EUP
GWANGJU-SI, GYEONGGI-DO 464-874 REPUBLIC OF KOREA

**Reinforced polyester (PET) tape with acrylic adhesive**, Cat. No. 800BT, rated 130C.

**Polyester (PET) tape with acrylic adhesive**, Cat. No. 800(a), rated 130 C.

**Polyester (PET) tape with acrylic adhesive**, Cat. No. 8000, rated 130 C.

**Flame Retardant Al foil tape with acrylic adhesive** , Cat. No. HD-110$.

**Flame Retardant Ni coated woven polyester fiber tape with acrylic adhesive** , Cat. No. HD-14$.

(a) May be marked: "Film side CTI Performance Level Category PLC=0, Voltage 600+, per UL 746A/ASTM D 3638" and/or "Film side CTI 600 + per IEC112, First Edition (1979), CTI Material Group I" or equivalent.

$ - Markings shall include "Flame Retardant".

Marking: Company name or file number "E162848",catalog designation and temperature rating printed on carton, wrapper or core.

Last Updated on 2009-05-09

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 14 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD | | | | | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

BARRIER

**TAE HWA INDUSTRIAL CO LTD** E92677
323-80 GUNHA-RI
WOULGOT-MYUN
KIMPO-CITY, KYUNGGI-DO 415-870 REPUBLIC OF KOREA

**Flame retardant fiberglass cloth tape with silicone adhesive** , Cat. No. TH-GC012#.

**Flame retardant acetate cloth tape with acrylic adhesive**, Cat. No. 6701#.

**Flame retardant fiberglass cloth tape with acrylic adhesive**, Cat. No. H-2715#.

**Nomex insulating tape with silicone adhesive**, Cat. No. H-8780+ , rated 180 C.

**Flame retardant copper foil tape with conductive acrylic adhesive**, Cat. No. E-3338#.

**Flame retardant aluminum foil tape with retardant acrylic adhesive**, Cat. No. E-4340#.

**Flame Retardant Polyester (PET) film insulating tape with non-woven polypropylene fiber reinforcement and acrylic adhesive**, Cat. No. H-5673N#.

**Polyester (PET) film insulating tape with polyester non-woven fiber reinforcement and acrylic adhesive** , Cat. No. H-5673a, white color, rated 130C.

**Nomex insulating tape with silicone adhesive**, Cat. No. H-8780+, rated 180C.

**Polyimide film insulating tape with silicone adhesive**, Cat. No. S-9101+, rated 200C.

+ -Complies with flame retardant requirements when so marked.

# -Subjected to UL510 flammability tests only. Shall be marked "Flame Retardant"

@- May be marked: "Film side CTI Performance Level Category PLC=0, Voltage 600, per UL 746A/ASTM D 3638" and/or "Adhesive side CTI Performance Level Category PLC=0, Voltage 600, per UL 746A/ASTM D 3638", or equivalent.

Marking: Company name or file number "E92677" and catalog number printed on carton, wrapper and/or core.

Last Updated on 2009-12-31

ADHESIVE

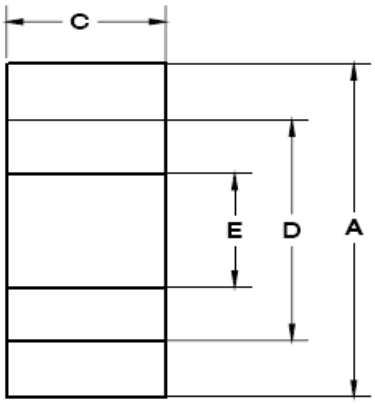
**CANADA SILICONE INC** E223694
3013 - 2560 SHELL RD
RICHMOND, BC V6X 0B8 CANADA

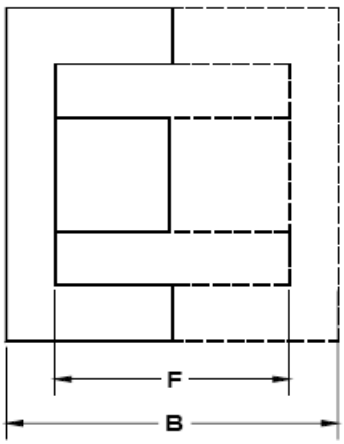
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | H | D | |
| | | Min. | | H | H | RTI | | | V | 4 | C |
| | | Thk | Flame | W | A | Elec | Mech | | T | 9 | T |
| Material Dsg | Color | mm | Class | I | I | | Imp | Str | R | 5 | I |
| Epoxy Casting Compound (EP - Casting), furnished as One liquid components. | | | | | | | | | | | |
| ES2172B, ES2173B, ES2174B, ES2175B, ES2172BX, ES2172BY, ES2172BZ | | | | | | | | | | | |
| | BK | 1.9-2.1 | V-0 | - | - | 105 | 105 | 105 | - | - | - |
| ES2172H, ES2172S | WT | 2.0-2.2 | V-0 | - | - | 105 | 105 | 105 | - | - | - |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 15 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

## 13. CORE DIMENSION

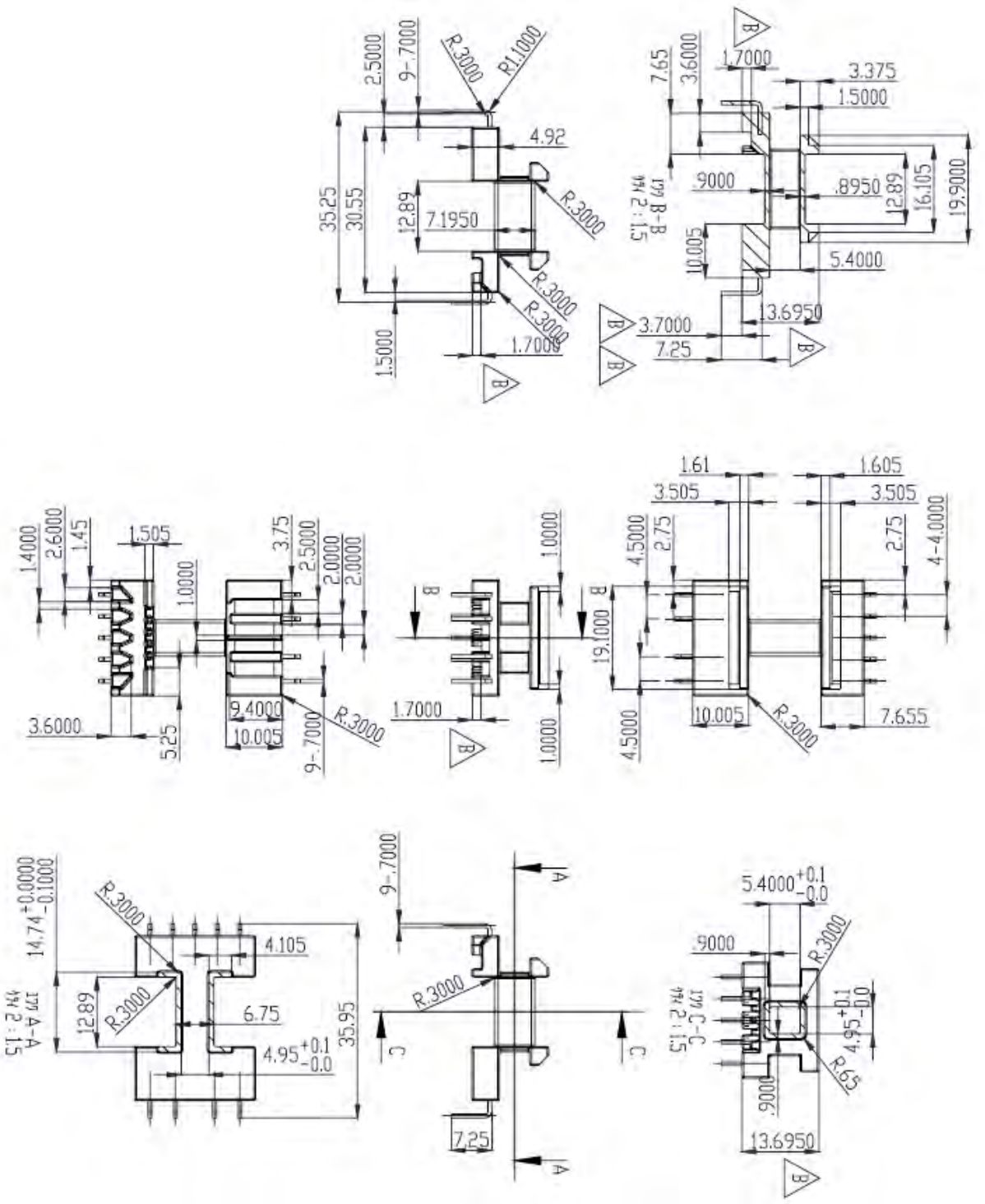



| TYPE | DIMENSION(㎜) | | | | | | EFFECTIVE PARAMETER | | | RE MARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | Le (㎜) | Ae (㎟) | Ve (㎣) | |
| EE1918 | 19.1 ±0.4 | 19.80 ±0.3 | 5.00 ±0.2 | 14.50 ±0.4 | 4.55 ±0.2 | 15.20 ±0.3 | 47.6 | 22.9 | 1090.0 | TODA ISU |
| EE1918 | 19.1 ±0.4 | 19.80 ±0.3 | 5.00 ±0.2 | 14.50 ±0.4 | 4.55 ±0.2 | 15.20 ±0.3 | 47.56 | 22.91 | 1089.5 | TDG |
| EE1918 | 19.1 ±0.5 | 19.80 ±0.4 | 5.00 ±0.5 | 14.51 ±0.5 | 4.55 ±0.5 | 15.00 ±0.3 | 47.3 | 22.87 | 1081.84 | DONGYANGGUANG |
| EE1918 | 19.1 ±0.4 | 19.80 ±0.3 | 5.00 ±0.2 | 14.50 ±0.4 | 4.55 ±0.2 | 15.20 ±0.3 | 47.5 | 23.0 | 1092.5 | A CORE |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

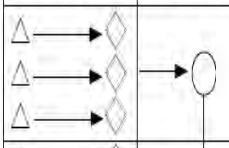
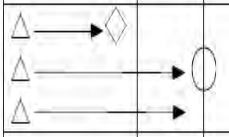
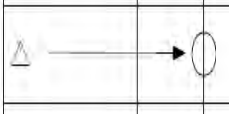
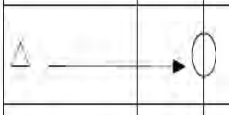
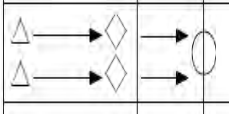
## 14. BOBBIN DIMENSION




| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 17 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

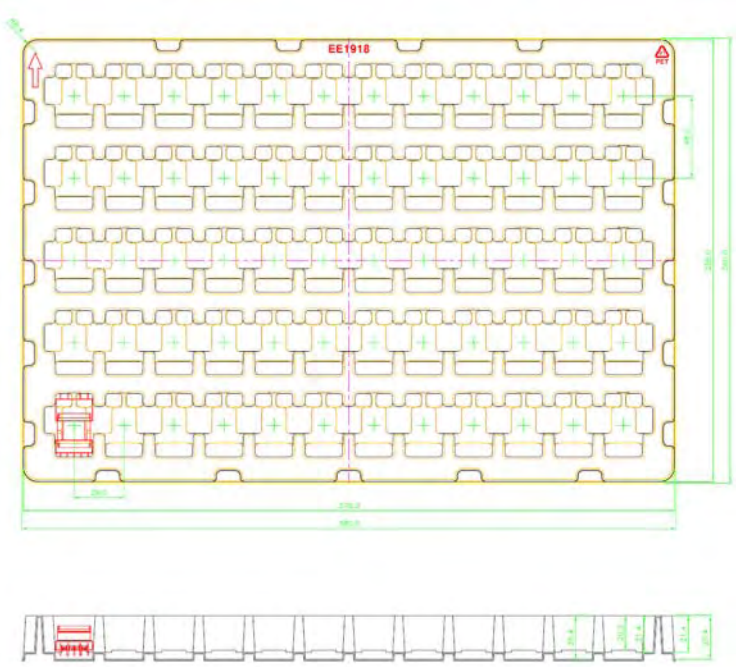
## 15. PROCESS FLOW

| 공정 | | 소요자재 | 공정명 | 관리항목 | 관리기준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|
| SUB 공정 | MAIN공정 | | | | | | | | | |
|  | | BOBBIN<br>COIL<br>P/S TAPE | 권선 | COIL의 굵기와 종류<br>권선턴수,권선상태<br>결선상태,절연상태 | | 2회/1일 | SAMPLING<br>LOT당5EA | MICRO METER | 생산 | 성적서 |
|  | | SOLDER<br>FLUX | 납땜 | 납조기온도: 460℃ MAX<br>0.2Φ이하 : 1.5SEC<br>0.2Φ이상 : 2.5SEC<br>USTC,TIW-M : 3~4SEC | 납땜작업표준서 | 2회/1일 | 전수검사 | 납조기<br>온도계 | 생산 | 온도체크시트 |
| |  | CORE<br>P/S TAPE | CORE조립 | CORE종류(GAP,NOGAP)<br>조립상태,GAP SIZE<br>TAPPING TURNS 및 TAPPING상태 | CORE조립/<br>작업표준서 | 2회/1일 | SAMPLING | MICRO METER | 생산 | |
| |  | | 1차검사 | 전기적 특성(L값 TURNS)<br>결선,납땜상태 | 1차검사기준서 | 전수 | 전수검사 | TURNS METER<br>LCR METER | 생산 | 1차검사 일보 |
|  | | | 건조 | 건조시간 : 1.5시간<br>건조온도 : 120℃ ±10℃ | 건조작업표준서 | 2회/1일 | SAMPLING | 건조기,시계<br>온도계 | 생산 | 온도체크시트 |
| |  | 불멸잉크 | MARKING | MARKING 상태,위치,선명도<br>LOT NO | MARKING<br>작업표준서 | 전수 | 전수검사 | MARKING 도장<br>자동 MARKING기 | 생산 | |
|  | | | PIN교정 | 핀휨, 핀교정 상태 | PIN교정<br>작업표준서 | 전수 | 전수검사 | PIN교정 JIG | 생산 | |
| |  | | 2차검사 | 전기적 특성(L값 LEAKGE)<br>위상,TURNS,내전압,절연상태 | 2차 검사기준서 | 전수 | 전수검사 | TURNS METER<br>LCR METER<br>내압기 | 생산 | 2차검사일보 |
| |  | | 외관검사 | BOBBIN파손,납땜상태<br>PIN상태 기타 | 외관검사기준서 | 전수 | 전수검사 | | 생산 | 외관검사일보 |
| |  | SNOW BOX<br>OUT BOX | 포장 | PIN TO PIN간격<br>BOX 규격,외관, 포장상태 | 포장작업표준서 | 전수 | 전수검사 | | 생산 | |
|  | | | 출하검사 | 전기적특성<br>(L값,절연저항,내전압)<br>치수,구조,외관,수량 | 출하검사기준서 | SAMPLING | SAMPLING | LCR-METER<br>내압기<br>절연저항기 | 품질보증 | 출하검사<br>성적서 |
| |  | | 창고입고 | 수량,제품명,포장상태<br>입출고 재고관리 | 창고적재표준서 | 2회/1일 | | | 영업 | 입고완료<br>수불 장부 |
| |  | | 출하 | 제품명, 수량 | | | | | 영업 | 출하전표 |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 18 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

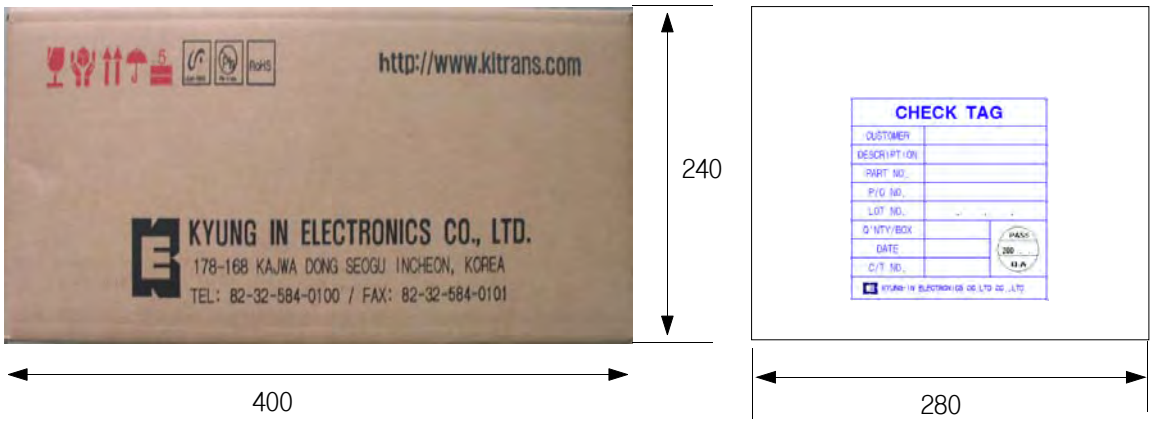
## 16. PACKING




| INNER BOX (TRAY) |
|---|
| 12PCS × 5 PCS = 60PCS |

| OUT BOX (CARTON) |
|---|
| 60PCS × 10EA = 600PCS |






| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD | | | | | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

## 17. INSPECTION DATA

| 품명 : ST-BY TRANS | 제조회사: 동양텔레콤 | 측정일 : 2011.09.05 |
|---|---|---|
| EBJ61470601(12S-LS01) | 측정기기 : LCR METER(HP4284A), mΩ METER | 시험원 : |
| 시험 조건 | 상온 초기치 측정 Frequency : 100KHz Voltage : 1V | |

| 시험항목 | 측정항목 | 규 격 | 1 (이수) | 2 (A CORE) | 3 (TDG) | 4 (동양광) | 5 (이수) | 6 (A CORE) | 7 (TDG) | 8 (동양광) | 9 (이수) | 10 (A CORE) | 11 (TDG) | 12 (동양광) | 13 (이수) | 14 (A CORE) | 15 (TDG) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inductance | 3 - 1 | 1.10 mH ±7% | 1.109 | 1.088 | 1.103 | 1.063 | 1.099 | 1.104 | 1.107 | 1.085 | 1.103 | 1.097 | 1.109 | 1.103 | 1.105 | 1.097 | 1.099 |
| | 6,7 - 8,9 | 3.75 μH ±30% | 3.801 | 3.712 | 3.746 | 3.625 | 3.741 | 3.765 | 3.799 | 3.705 | 3.774 | 3.753 | 3.775 | 3.764 | 3.782 | 3.761 | 3.664 |
| | 5 - 4 | 73.0 μH ±20% | 72.312 | 71.119 | 71.884 | 69.663 | 72.249 | 72.316 | 72.328 | 70.948 | 72.735 | 71.663 | 72.425 | 72.152 | 72.201 | 71.804 | 70.425 |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| LEAKAGE INDUCTANCE | 3 - 1 (SEC.SHORT | 50 μH MAX | 32.707 | 33.567 | 32.807 | 34.078 | 37.558 | 33.290 | 32.359 | 33.793 | 37.389 | 32.077 | 33.809 | 34.549 | 32.864 | 31.988 | 33.626 |
| DCR | 3 - 1 | 3.00 Ω MAX | 2.260 | 2.279 | 2.280 | 2.280 | 2.280 | 2.269 | 2.280 | 2.282 | 2.309 | 2.279 | 2.284 | 2.289 | 2.280 | 2.281 | 2.277 |
| | 6,7 - 8,9 | 0.05 Ω MAX | 0.034 | 0.034 | 0.034 | 0.034 | 0.035 | 0.032 | 0.035 | 0.035 | 0.039 | 0.035 | 0.035 | 0.034 | 0.034 | 0.035 | 0.034 |
| | 5 - 4 | 1.00 Ω MAX | 0.702 | 0.697 | 0.703 | 0.697 | 0.710 | 0.700 | 0.699 | 0.702 | 0.717 | 0.702 | 0.700 | 0.706 | 0.699 | 0.680 | 0.700 |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| WITHSTANDING VOLTAGE | P-S,COIL | AC 3.0KV,1분간 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| | P- CORE | AC 1.5KV,1분간 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| | S -CORE | AC 1.5KV,1분간 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| INSULATION RESISTANCE | P-S,COIL | 100MΩ MIN. (AT DC500V) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| LAYER SHORT TEST | 3-1 | 1.5KV /60Hz | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| DC OVERLAP | 3-1 | 0.5A/ 90% of INITIAL INDUCTANCE L | 1.100 | 1.080 | 1.088 | 1.054 | 1.089 | 1.094 | 1.095 | 1.076 | 1.093 | 1.088 | 1.096 | 1.094 | 1.094 | 1.087 | 1.065 |
| | | % | 99.19 | 99.26 | 98.64 | 99.15 | 99.09 | 99.09 | 98.92 | 99.17 | 99.09 | 99.18 | 98.83 | 99.18 | 99.00 | 99.09 | 96.91 |
| QUALTY FACTOR | 3-1 | 50 MIN (AT f:100KHz) | 170.2 | 162.2 | 167.2 | 165.7 | 167.5 | 165.2 | 168.2 | 170.8 | 168.8 | 165.8 | 167.7 | 172.5 | 172.0 | 163.0 | 165.0 |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 20 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

## 18. ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.
2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.
3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.
4) WIRE BUNDLE METHOD.
   * CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2 MM.
   * PIN SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TOP SOLENOID : ERROR BETWEEN THE TOP BARRIER TAPE AND LAST WIRE IS REQUIRED TO BE SMALLER THAN 2 MM.
   * SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER-SOLENOID IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
   * SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
   * SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2. IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.
5) PERFORMANCE OF THIS DRAWING IS REQUIRED TO MEET PART NUMBER EBJ61470601
6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE.BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 21 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

# 19. CHEMICAL ANALYSIS REPORT FOR CP-WIRE

## 재질증명서(MATERIALS CERTIFICATE)

*. 호성산업(주) 2009. 01. 12.

*. Square Wire (ETPCS-S / Sn100% )

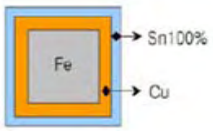
1.재료 구성비 (MATERIALS COMPOSITION) (Weight %)

| 항 목 (Item) | Plating Thickness(Sn) | | Iron (Fe) | Copper (Cu) | Tin (Sn) | REMARK |
|---|---|---|---|---|---|---|
| | 0.80x0.80㎜ | 4±1㎛ | Balance | 15.88% | 1.36 ~ 2.26% | |

2.기초재료 화학성분 (BASE MATERIALS CHEMICAL COMPOSITION) (Weight %)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel Wire (SWCH6A) | Fe | C | Si | Mn | P | S | Sol-Al | - | - | - | - |
| | Balance | 0.06 | 0.04 | 0.30 | 0.013 | 0.008 | 0.052 | - | - | - | (%) |
| Electro Copper | Cu | As | Sb | Bi | Pb | S | Fe | Ag | - | - | - |
| | 99.99↑ | 0.3 | 0.02 | 0.1 | 1.0 | 6.3 | 5.2 | 8.2 | - | - | (ppm) |
| Tin Ingot | Sn | Sb | As | Pb | Bi | Cu | Fe | Al | Cd | Zn | |
| | 99.99↑ | 0.001 | 0.0001 | 0.001 | 0.0008 | 0.0005 | 0.0005 | 0.0000 | 0.0000 | 0.0006 | (%) |

3.석도금 조성 및 단면 (TIN PLATED COMPOSITION) (Weight %)




We certify that this paper is the certificate of our products fo inspection and materials

Quality Assurance Manager

joong yul, yoo

IKEM IL-KWANG ELECTRONIC MATERIALS CO., LTD.

Head Office & Factory: #725-9 Wonshi-dong, Danwon-gu, Ansan-city, Kyounggi-do, Korea.
Phone 82-31-495-1971~3 Fax 82-31-495-1974
e-mail - ilkwang@cpleadwire.com Homepage - http://www.cpleadwire.com

| SPECIFICATIONS | | PART NO | EBJ61470601 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | DATE | 2011. 09. 06. |

## 20. WIRE

| POLYURETHANE ENAMELED WIRE (1UEW) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 치 수 | | | | 절연파괴 전 압 (V) ↑ | 내마모 파괴하중 | | 최대도체 저 항 (Ω/km) ↓ | 신장율 (%) ↑ |
| 도 체 | | 최소완성 외 경 (mm) ↑ | 최대완성 외 경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.224 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.686 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 23 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

# APPROVAL SHEET

| | |
|---|---|
| CUSTOMER | : LG ELECTRONICS Inc. |
| MODEL | : 12S ALL |
| I T E M | : STANDBY TRANS |
| PART NO | : 12S-LS01 |
| S.J SPEC NO | : LGTR-11-07 |

ROHS

Safety

APPROVED

DATE : 2011. 08. 20.

SOOJUNG ELECTRONICS IND. CO., LTD.


| | | | | | | |
|---|---|---|---|---|---|---|
| ADDRESS | Office & Factory | 35-1, HongJae4-Dong, Seodaemoon-Gu, 120-094, Seoul, KOREA | | | TEL<br>FAX | 02-737-2329<br>02-737-2525 |
| | Factory China 1 | Wendong Shuzheng Electronics,<br>Beijao, Wendeng City, shandong, China | | | TEL<br>FAX | 86-631-857-1392<br>86-631-857-1393 |
| | Factory China 2 | Dongguan Soojung Electronics,<br>Zhonghanqiao Industrial District, Wangniudun town,<br>Dongguan City, Ganding, China | | | TEL<br>FAX | 86-769-8851-3531<br>86-769-8851-3530 |
| | R&D Part | Jong Ho Kim | E-mail | jhkim@soojung.com | TEL | 010-4056-2623 |
| | Sales Part | Jong Won Lee | E-mail | ljw@soojung.com | TEL | 016-711-2443 |
| | Q.A Part | Doo Young Oh | E-mail | ody@soojung.com | TEL | 011-616-4864 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 08. 20 |
|---|---|---|---|
| PART NAME | STANDBY TRANS | PART NO. | 12S-LS01 |

## 1. RECORD OF REVISION

| REV NO. | REASON | CONTENTS | DATA OF APPROVAL | CHECKED | REMARKS |
|---|---|---|---|---|---|
| 0 | | - 신규제정. | 2011.08.20 | | |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 1/20 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 08. 20 |
|---|---|---|---|
| PART NAME | STANDBY TRANS | PART NO. | 12S-LS01 |

# 2. I N D E X

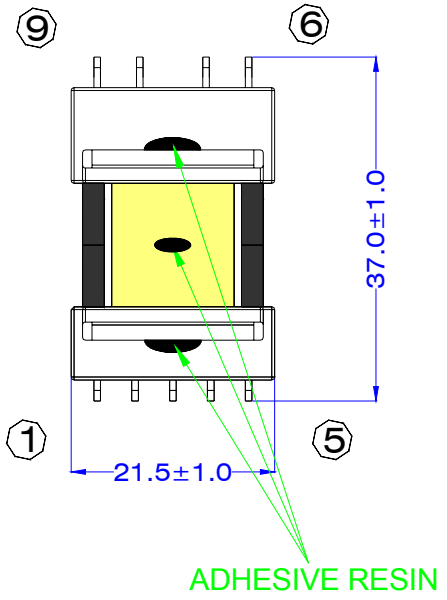

| | | |
|---|---|---|
| FILE NO | 1/20 | 1. RECORD OF REVISION |
| | 2/20 | 2. INDEX |
| | 3/20 | 3. DIMENSION |
| | 4/20 | 4. SCHEMATIC |
| | 4/20 | 5 WINDING SPECIFICATION |
| | 5/20 | 6. ELECTRICAL CHARACTERISTICS |
| | 6/20 | 7. ENVIRONMENTAL CHARACTERISTICS |
| | 7/20 | 8. MECHANICAL CHARACTERISTICS |
| | 8/20 | 9. INTERNAL CONSTRUCTION |
| | 9/20 | 10. MATERIAL LIST |
| | 10/20 | 11. UL CARD |
| | 11/20 | UL CARD |
| | 12/20 | UL CARD |
| | 13/20 | 12. CORE DIMENSION |
| | 14/20 | 13. BOBBIN DIMENSION |
| | 15/20 | 14. PROCESS FLOW |
| | 16/20 | 15. PACKING |
| | 17/20 | 16. INSPECTION DATA |
| | 18/20 | 17. ASSIGNMENT |
| | 19/20 | 18. WIRE SPECIFICATION |
| | 20/20 | 19. CHEMICAL ANALYSIS REPORT FOR CP-WIRE |

CUSTOMER : LG ELECTRONICS Inc.

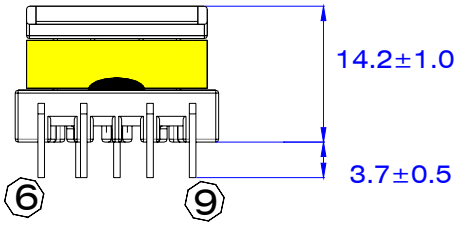
| SPECIFICATION | | DATE | 2011. 08. 20 |
|---|---|---|---|
| PART NAME | STANDBY TRANS | PART NO. | 12S-LS01 |

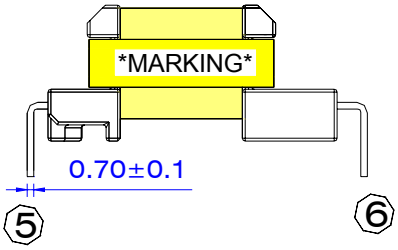
## 3. DIMENSION (UNIT:mm)

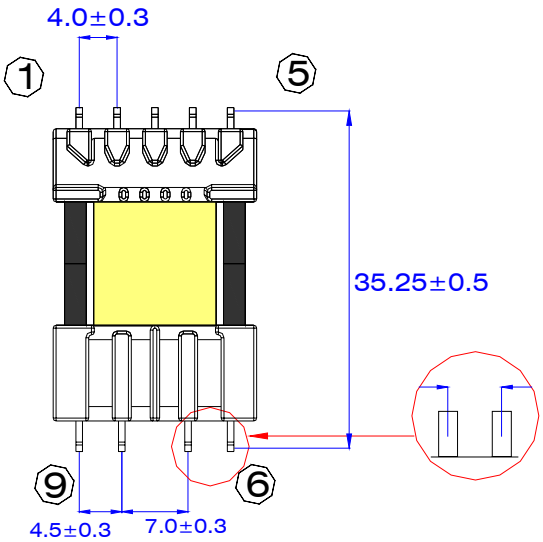
Safety




| *MARKING SPEC*<br>12S-LS01 SJB-004 SJ<br>SJ 110101 I | | |
|---|---|---|
| PART NO | 12S-LS01 | |
| SJB-004 SJ | SOOJUNG ELECTRONIC<br>"CLASS B" SYSTEM | |
| SJ | CHINA WENDENG FACTRY ID | |
| DGSJ | CHINA DONGGUAN FACTORY ID | |
| KSJ | KOREA FACTORY ID | |
| LOT NO | 110101 | |
| 11 | YEAR | 2011: 11<br>2012: 12 |
| 01 | MOONTH | JANUARY : 01<br>FEBRUARY: 02 |
| 01 | DATE | FIRST DATE: 01<br>SECOND DATE: 02 |
| I | CORE MAKER MARKING<br>I: ISU, K: Dongyangguang, T: TDG<br>A: A Core, H: Huaxing, N: Jishun | |



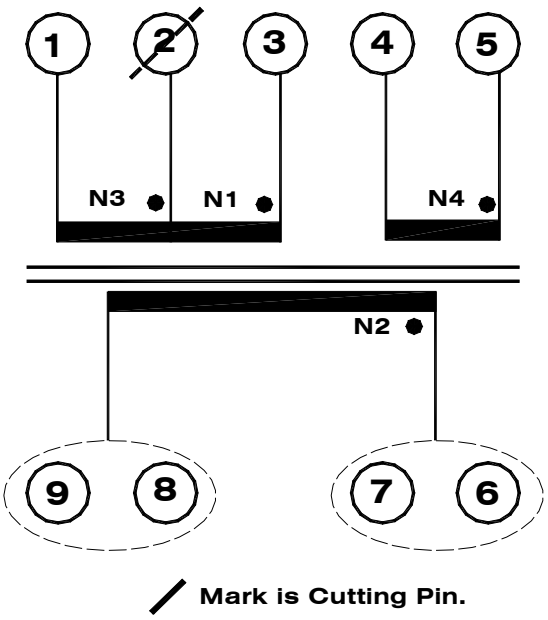

※ GAP CORE : Primary
※ CENTER GAP EPOXY: SUPER X 8008
※ CUTTING PIN No: #2
※ LG part numbers omit.
Because, the marking space is narrow

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M<br>KIM | J,H<br>KIM | K,S<br>KIM | 3/20 |

CUSTOMER : LG ELECTRONICS Inc.

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|---|---|---|---|
| PART NAME | STANDBY TRANS | PART NO. | 12S-LS01 |

## 4. SCHEMATIC




## 5. WINDING SPECIFICATION.

| No. | TERMINAL | | WIRE | TURNS | LAYER | WINDING METHOD | INSULATION TAPE | | |
|---|---|---|---|---|---|---|---|---|---|
| | S | F | | | | | MATERIAL | T/W (mm) | TURNS |
| N1 | 3 | 2 | 1UEW 0.20 ¢ | 53 Ts | 2 | SOLENOID | P.E TAPE | 0.025/13.0 (YELLOW) | 3 Ts |
| N2 | 6,7 | 8,9 | TIW-M 0.20 ¢ ×4 | 7 Ts | 2 | SOLENOID | P.E TAPE | 0.025/13.0 (YELLOW) | 3 Ts |
| N3 | 2 | 1 | 1UEW 0.20 ¢ | 67 Ts | 3 | SOLENOID | P.E TAPE | 0.025/13.0 (YELLOW) | 3 Ts |
| N4 | 5 | 4 | 1UEW 0.20 ¢ | 29 Ts | 1 | SOLENOID | P.E TAPE | 0.025/13.0 (YELLOW) | 3 Ts |
| * CORE ROUND TAPE | | | | | | | P.E TAPE | 0.025/5.0 (YELLOW) | 3 Ts |

※ WINDING DIRECTION : Primary View C.C.W (Clock Contrary Winding)

※ N2권선시 Pin당 TIW-M 0.20¢ Wire를 2가닥씩 결선 할 것.

※ Between (Pin 6) and (Pin7) / Between (Pin 8)and (Pin 9) are short or open.
(6-7 / 8-9 Short on PCB)

※ PIN WIRING SPEC.: TIW-M Wire=> 0.7Ts Min., UEW Wire=> 1.0Ts Min.

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 08. 20 |
|---|---|---|---|
| PART NAME | STANDBY TRANS | PART NO. | 12S-LS01 |

## 6. ELECTRICAL CHARACTERISTICS

| No. | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 6-1 | INDUCTANCE | 3 - 1<br>6,7 - 8,9<br>5 - 4 | 1.10 mH ± 7%<br>μH ± 30%<br>μH ± 20% | LCR METER<br>HP-4284A<br>(AT 100KHz/<br>1.0V ) |
| 6-2 | LEAKAGE INDUCTANCE | 3 - 1<br>(SECONDARY ALL SHORT) | μH MAX | |
| 6-3 | D.C. RESISTANCE | 3 - 1<br>6,7 - 8,9<br>5 - 4 | Ω MAX<br>Ω MAX<br>Ω MAX | DC MILLI-OHM METER<br>GOM-802 |
| 6-4 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 3.0KV (rms) 1MINUTE.<br>(M.P Condition :<br>AC 3.6KV (rms) 2Sec.) | Safety<br>TOS-8850<br>(CUT OFF CURRENT 5mA) |
| | | P COIL - CORE<br>S COIL - CORE | AC 1.50KV (rms) 1MINUTE.<br>(M.P Condition :<br>AC 1.8KV (rms) 2Sec.) | |
| 6-5 | INSULATION RESISTANCE | P COIL - S COIL | 100(M) Ohm MIN.<br>( AT DC 500V) | Safety<br>TOS-8850 |
| 6-6 | D.C. BIAS | 3 - 1 | 90% MIN. WITH RESPECT TO ORIGINAL INDUCTANCE VALUE WHEN A DC IS SUPERIMPOSED. | |
| 6-7 | IMPULSE TEST | 3 - 1 | 1.5 KV Pulse 4TIME | Safety |
| 6-8 | QUALITY FACTOR | 3 - 1 | MIN | AT 100KHz 1.0V |

| SPECIFICATION | | DATE | 2011. 08. 20 |
|---|---|---|---|
| PART NAME | STANDBY TRANS | PART NO. | 12S-LS01 |

## 7. ENVIRONMENTAL.

* STANDARD TEST CONDITION : TEMP. 20℃±15℃, HUMIDITY 65%±20%.
IF WHEN ANY OBJECTION IS SUGGESTED, THE TEST CAN BE OPERATED AT 20±2℃, 65±5%RH.

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>7-1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ - +105℃</td><td></td></tr>
<tr><td>7-2</td><td>KEEPING TEMPERATURE</td><td>-25℃ - +105℃</td><td></td></tr>
<tr><td>7-3</td><td>LOW TEMPERATURE RESISTANT</td><td rowspan="5">MUST MEET THE REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER ±5% OF THE INITIAL VALUE.<br><br>(IT SHOULD BE MANAGED BY ±10% UNDER 10μH)</td><td>-25±2℃, 96Hr. MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-4</td><td>HIGH TEMPERATURE RESISTANT</td><td>+105±2℃, 96Hr. MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-5</td><td>HUMIDITY RESISTANT</td><td>95%RH ±5% (40℃±5℃) 96Hr MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-6</td><td>TEMPERATURE CYCLE</td><td><table><tr><th>STEP</th><th>TEMP.</th><th>TIME</th></tr><tr><td>1</td><td>-25±2℃</td><td>30 MIN.</td></tr><tr><td>2</td><td>+25±2℃</td><td>10 MIN.</td></tr><tr><td>3</td><td>+105±2℃</td><td>30 MIN.</td></tr><tr><td>4</td><td>+25±2℃</td><td>10 MIN.</td></tr></table>REPEAT 5 TIME FROM STEP 1AND TEST AFTER 2 Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-7</td><td>HEAT SHOCK TEST</td><td>-20℃ 2Hr, 70℃ 2Hr, 10 CYCLE AFTER 2Hr. AT ROOM TEMP.</td></tr>
</table>

| SPECIFICATION | | DATE | 2011. 08. 20 |
|---|---|---|---|
| PART NAME | STANDBY TRANS | PART NO. | 12S-LS01 |

## 8. MECHANICAL CHARACTERISTICS.

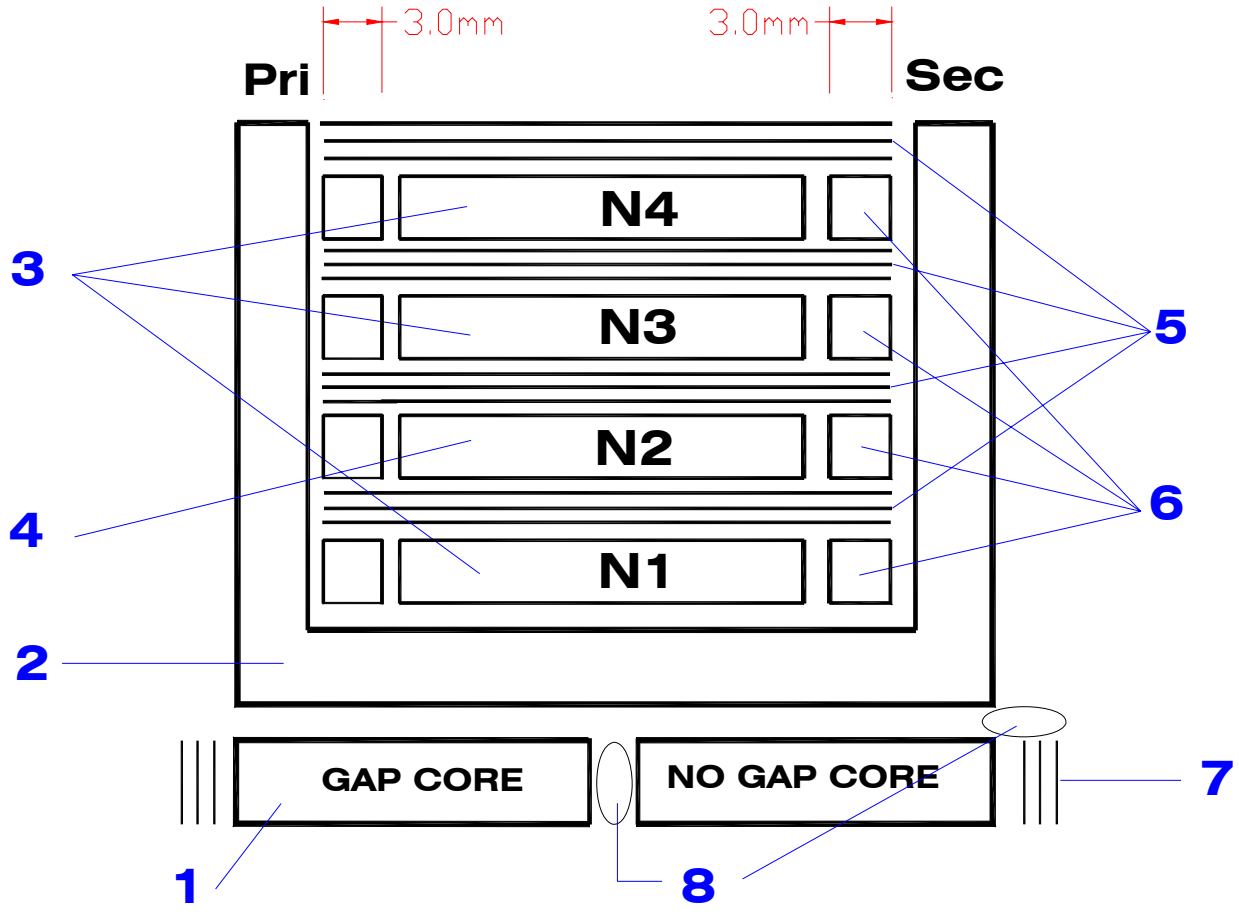
| NO. | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 8-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AC 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION. |
| 8-2 | SOLDER HEAT TEST | MUST MEET THE REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER ±5% OF THE INITIAL VALUE. (IT SHOULD BE MANAGED BY ±10% UNDER 10μH) | DIP THE TERMINAL IN SOLDER AT 260℃+5℃ FOR 10 SECONDS. MEASURE AFTER 2 Hr. AT ROOM TEMP. |
| 8-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245℃-5℃ FOR 3 SECONDS. |
| 8-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED TO INITIAL VALUE. | PULL THE PIN WITH 2.5 Kg.f DURING 30 ±5 SEC. |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 08. 20 |
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## 9. INTERNAL CONSTRUCTION

Safety




| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 8/20 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 08. 20 |
|---|---|---|---|
| PART NAME | STANDBY TRANS | PART NO. | 12S-LS01 |

## 10. MATERIAL LIST.

Safety

| NO | COMPONENT | NAME OF MATERIAL | UL FILE NO. | MANUFACTURER COMPONENT | COLOR |
|---|---|---|---|---|---|
| 1 | CORE | EE-1918 PM7<br>EE-1918 HE4<br><br>EE-1918 JPP4 | | TODA ISU CORPORATION<br>RUYUAN DONGYANGGUANG<br>MAGNETIC MATERIALS CO.,LTD.<br>A CORE CORPORATION | BLACK |
| 2 | BOBBIN | EE-1918 PHENOL<br>(94V-0) PM-9820 (9PIN) | E41429 | SUMITOMO BAKELITE CO., LTD.<br>(HO SUNG INDUSTRIAL CO., LTD.<br>TRANSFORMER BOBBIN INDUSTRIAL CO., LTD.<br>PIN SHINE ELECTRONICS CO., LTD) | BLACK |
| | | TERMINAL : Sn100%, 4μ | | IL-KWANG ELECTRONIC MATERIAL<br>CO., LTD.<br>CHUAN HUANG ENTERPRISE CO., LTD | SILVER |
| 3 | WIRE | (MW-75) UEW(B), UEW<br>1UEW 0.20φ (N1,N3,N4) | E102761<br>E210918 | DONGYANG ELECTRONICS CO., LTD.<br>CNI CABLE CO., LTD. | BRASS<br>YELLOW |
| 4 | | TIW-M, 0.20φ(N2) | E213764 | COSMOLINK CO., LTD. | BRASS<br>YELLOW |
| 5 | INSULATION TAPE | POLYESTER TAPE<br>Cat NO. 204 ,PZ<br>0.025mm x 13.0mm | E105147<br>E165111 | DUCK SUNG HITECH CO., LTD.<br>JINGJIANG YAHUA PRESSURE<br>SENSITIVE GLUE CO., LTD. | YELLOW |
| 6 | BARRIER TAPE | P.N.W (BUSIKPO)<br>H-5673,WF<br>Pri,SEC: 3.0mm | E92677<br>E165111 | TAEHWA INDUSTRIAL CO., LTD.<br>JINGJIANG YAHUA PRESSURE<br>SENSITIVE GLUE CO., LTD. | WHITE |
| 7 | CORE FIXING TAPE | POLYESTER TAPE<br>Cat NO. 204, PZ<br>0.025t x 5.0mm | E105147<br>E165111 | DUCK SUNG TAPE CO., LTD.<br>JINGJIANG YAHUA PRESSURE<br>SENSITIVE GLUE CO., LTD. | YELLOW |
| 8 | ADHESIVE RESIN | SILICONE SUPER X 8008<br>SILICONE ES2172B | E223694 | CEMEDINE CO., LTD.<br>CANADA SILICONE INC. | BLACK |
| 9 | SOLDER | HSE-09<br>(Sn:95.95%,Cu:4%,Ni:0.05%) | | HEE SUNG METAL CO., LTD. | SILVER |
| 10 | FLUX | PF-120L | | SOLUX CO., LTD. | LEMON<br>YELLOW |
| 11 | MARKING | INK & LABEL | | BON MARQUE | SILVER |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 08. 20 |
|---|---|---|---|
| PART NAME | STANDBY TRANS | PART NO. | 12S-LS01 |

## 11. UL CARD.

* YELLOW CARD

**INSULATION SYSTEM**

SOO JUNG ELECTRONICS IND CO., LTD. E157693
35-1 HONGJAE 4-DONG
SEO DAE MOON-GU
SEOUL ,120-094 REPUBLIC OF KOREA

Class 130 (B) transformer insulation system, designated SJB-001,
Class 130 (B) transformer insulation system, designated SJB-002,
Class 130 (B) transformer insulation system, designated SJB-003,
Class 130 (B) transformer insulation system, designated SJB-004,

**BOBBIN**

SUMITOMO BAKELITE CO LTD E41429
5-8 HIGASHI-SHINAGAWA 2-CHOME
SHINAGAWA-KU
TOKYO, 140-0002 JAPAN

| | | Min. | | H | H | H | R T I | | | C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | V | Elec | Mech | | T |
| Mtl Dsg | Color | mm | Class | I | I | A | | Imp | Str | I |
| Phenolic (PF), "Sumikon", furnished as pellets, granular material. | | | | | | | | | | |
| PM-9800 | BK | 0.81 | HB | - | - | - | 150 | 150 | 150 | |
| PM-9820 | BK | 0.16 | V-0 | - | - | - | 150 | 150 | 150 | 3 |
| | | 0.51 | V-0 | 3 | 1 | - | 150 | 150 | 150 | |
| | BN | 0.18 | V-0 | - | - | - | 150 | 150 | 150 | |
| | | 0.70 | V-0 | 1 | 2 | - | 150 | 150 | 150 | |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 08. 20 |
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## UL CARD.

* YELLOW CARD

WIRE

DONG YANG ELECTRONICS IND CO LTD E102761
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ | | ANSI Type | TI |
|---|---|---|---|---|
| | BC | OC | | |
| UEW(F) | Polyurethane | - | MW79, | 155, |
| UEW(B) | Polyurethane | - | MW75# | 130 |
| UAL | Polyurethane | - | @ | 155 |
| PEW | Polyester | - | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.
#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

CNICABLE CO LTD E210918
312-16 DEUKSAN-DONG
ASAN-SI, CHUNGCHEONGNAM-DO 336-120 REPUBLIC OF KOREA

| Mtl Dsg | Mark Dsg | Coat Type | | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| | | BC | OC | | |
| DSUEW-100 | (1) | Polyurethane | - | MW75C | 130# |
| UEW | (1) | Polyurethane | None | MW79 | 155 |
| | | | | MW75 | 130# |
| PEW | (1) | Polyester | None | MW30 | 180 |
| | | | | MW5 | 155# |

@ - Non-ANSI Type
(1) - Marked designations are the same as the material designations.
# - This wire may perform better than its temperature rating reflects. Hence, it may not be suitable to use in an insulation system thermal aging program.

COSMOLINK CO LTD E213764
449 GUN GIN-LEE
IWON-MYUN
OKCHUN-GUN, CHUNG CHONG BUK-DO 373-860 REPUBLIC OF KOREA

Cat. No. TIW-M, reinforced insulation rated 130℃(Class B), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG (1.00 - 0.20 mm).

Cat. No. TIW-M (F) reinforced insulation rated 155℃(Class F), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG.

Cat. No. TIW-M (B) reinforced insulation rated 130℃(Class B), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG.

Cat. No. TIW-M (A) reinforced insulation rated 105℃(Class A), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG.

CUSTOMER : LG ELECTRONICS Inc.

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## UL CARD.

* YELLOW CARD

### P.E TAPE

DUCK SUNG HITECH CO LTD E105147
225-2 SHINNEUNG-RI SEOUN-MYEON
ANSEONG-SI, GYEONGGI-DO 456-850 REPUBLIC OF KOREA

PET(Polyethylene-Terapthalate) film insulating tape, acrylic adhesive, Cat. No. DTS-204K^, rated 130 C.

^ - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 250, per UL 746A/ASTM D 3638," and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600, per UL 746A/ASTM D 3638" or equivalent.

JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD E165111
SOUTHWEST AROUND RD
JINGJIANG, JIANGSU 214500 CHINA

Polyethylene terephthalate film tape, Cat. No. PZ with additional suffixes, rated 130 C*(b).

*Complies with flame retardant requirements when so marked.

(b)Comparative Tracking Index (CTI) performance indicates material Group IIIa, PLC=2, CTI equal to or greater than 250 but less than 400 v.

### BARRIER TAPE

TAE HWA INDUSTRIAL CO LTD E92677
323-80 GUNHA-RI
WOULGOT-MYUN
KIMPO-CITY, KYUNGGI-DO 415-870 REPUBLIC OF KOREA

Polyester (PET) film insulating tapes with polyester non-woven fiber reinforcement and acrylic adhesive, Cat. Nos. H-5673@, H-5673a, white color, rated 130C.

@ - May be marked: "Film side CTI Performance Level Category PLC=0, Voltage 600, per UL 746A/ASTM D 3638" and/or "Adhesive side CTI Performance Level Category PLC=0, Voltage 600, per UL 746A/ASTM D 3638", or equivalent.

JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD E165111
SOUTHWEST AROUND RD
JINGJIANG, JIANGSU 214500 CHINA

Nonwoven cloth/polyethylene terepthalate film tape, Cat. No. WF with suffixes, rated 130 C* (c) (h).

*Complies with flame retardant requirements when so marked.

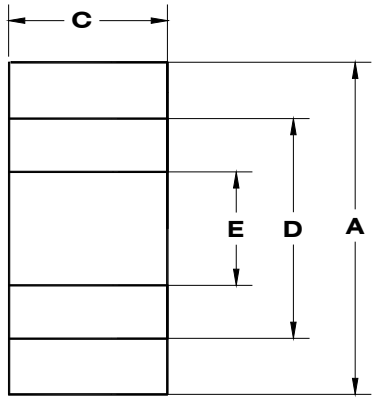
(c)Comparative Tracking Index (CTI) performance indicates material Group I, PLC=0, CTI equal to or greater than 600 v.

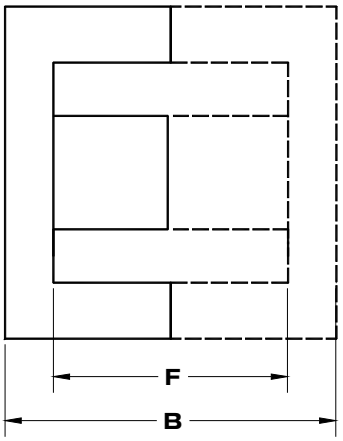
(h) - The CTI test was conducted per IEC 60112, 4th Edition 2003 and the assigned level is based on the testing of both film and adhesive sides.

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## 12. CORE DIMENSION




** DIMENSION (UNIT: mm)

| TYPE | DIMENSION (m/m) | | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | |
| EE1918 | 19.10±0.5 | 19.84±0.5 | 5.00±0.5 | 14.51±0.5 | 4.55±0.5 | | | | ISU |
| EE1918 | 19.10±0.5 | 19.84±0.5 | 5.00±0.5 | 14.51±0.5 | 4.55±0.5 | | | | 동양광 |
| EE1918 | 19.10±0.5 | 19.84±0.5 | 5.00±0.5 | 14.51±0.5 | 4.55±0.5 | | | | TDK |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

** EFFECTIVE PARAMETERS

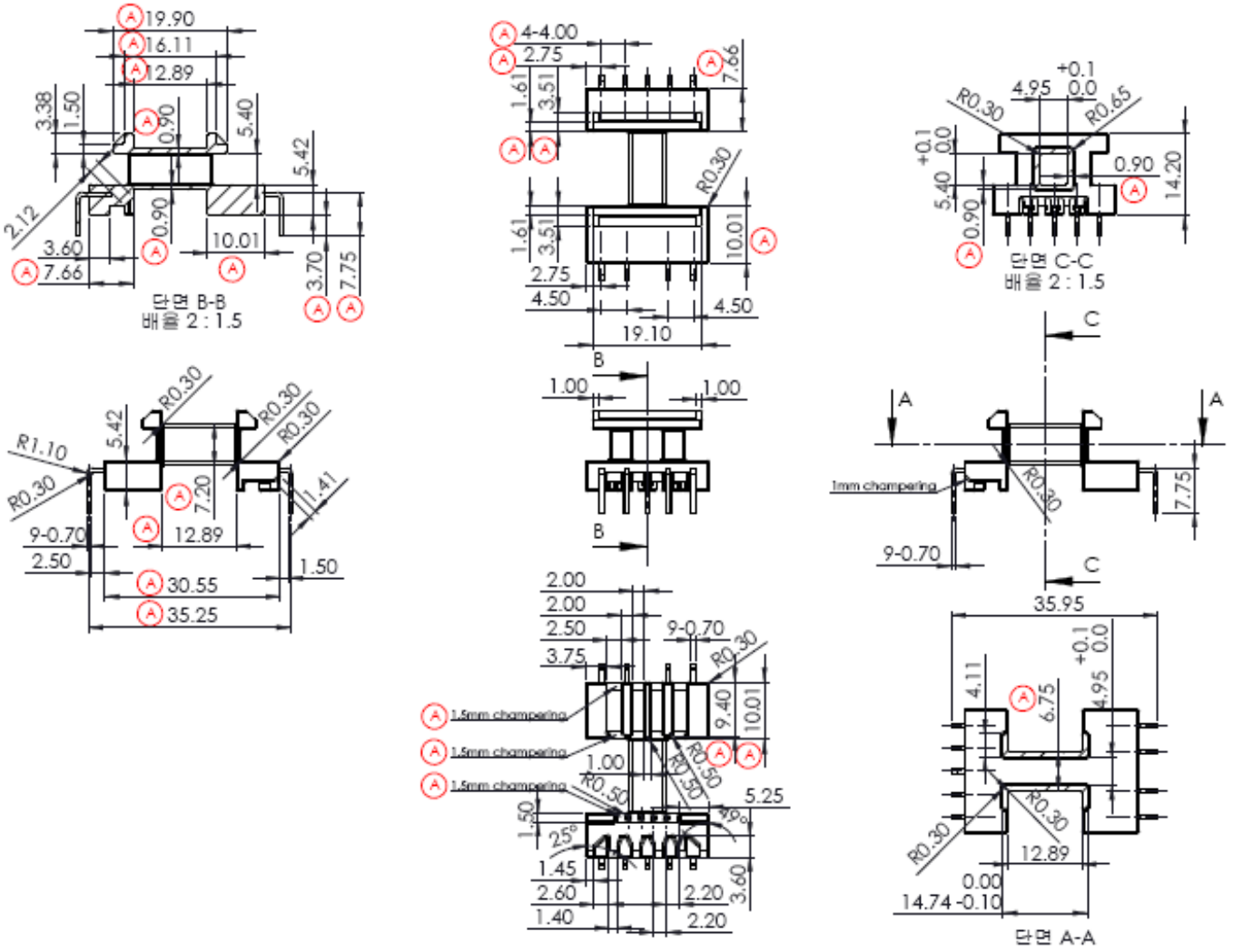
| TYPE | EFFECTIVE PARAMETERS | | | REMARKS |
|---|---|---|---|---|
| | Le (mm) | Ae (㎟) | Ve (㎣) | |
| EE1918 | | | | ISU |
| EE1918 | | | | 동양광 |
| EE1918 | | | | TDK |
| | | | | |
| | | | | |
| | | | | |

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## 13. BOBBIN DIMENSION




| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
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|---|---|---|---|
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## 14. PROCESS FLOW

| NO | 공정 기호 | 공정명 | 사용설비 | 기능 | 관리항목 | 관리기준 | 검사방법 확인요령 | 검사방법 부서 | 표준 | 기록/양식 | 공정별 관련불량 및 비고 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | △<br>◇ | 수입검사<br>-BASE<br>-CORE<br>-PE TAPE<br>-WIRE | 버니어켈리퍼<br>마이크로메터 | 수동 | 치수<br>핀홀<br>접착성<br>외관상태 | 이상<br>없을것 | SAMPLE | Q·C | 구매<br>사양서 | 수입<br>검사<br>성적서 | · 치수 불량<br>· 파손· 핀홀<br>· WIRE 피복 벗겨짐<br>· BASE 단자 위치 바뀜<br>· 접착성 나쁨 |
| 02 | ○ | 권 선 | 권 선 기 | 반자동 | 절연상태<br>권선절연상태<br>권선수 | 〃 | 전수검사 | 생산팀 | 작업<br>지도서 | | · 권선 및 절연수 불량<br>. 절연거리 미 확보<br>· 권선위치 불량 |
| 03 | ○ | 결 선<br>납 땜 | 니 퍼<br>납 조 | 수동 | 납땜온도<br>납땜시간 | 460℃ MAX.<br>0.2φ 이하:1.5Sec.<br>0.2φ 이상:2.5Sec.<br>USTC,TIW-M<br>: 3~4Sec. | 수회 /<br>일 | 〃 | 〃 | | · SHORT<br>· 미 결선,냉땜<br>· BASE 변형 |
| 04 | ○ | CORE조립 | | 수동 | CORE종류<br>GAP SIZE<br>EPOXY | 이상<br>없을것 | 전수검사<br>SAMPLE<br>육안검사 | 〃 | 〃 | | · 코아 역삽<br>· GAP CORE 혼입 |
| 05 | ◇ | 1차 검사 | TURN<br>METER | 반자동 | INDUCTANCE<br>권선수 | 〃 | 전수검사 | 〃 | 〃 | | · L값 상.하 불량<br>· 권선수 미달 |
| 06 | ○ | 경 화 | UV 건조기 | 반자동 | 경화 조도<br>경화시간 | 3.0KW<br>5 분 | SAMPLE | 〃 | 〃 | | · 미 경화 |
| 07 | ○ | 핀 형 합 | 핀형합기 | 반<br>자<br>동 | 핀간거리 | 〃 | 전수검사 | 생산팀 | | | · 핀 형합 불량<br>· 베이스 변형<br>· 단자 이탈 |
| 08 | ◇ | 최종검사<br>Safety | LCR METER<br>내전압<br>IMPULSE<br>TESTER | 수<br>동 | INDUCTANCE<br>내전압<br>Layer Short | 〃 | 전수검사 | 〃 | 〃 | | · L값 상.하 불량<br>· 단자 이물<br>· 내전압 불량<br>· Layer Short 불량 |
| 9 | ○ | 마 킹 | 불멸 잉크 | 수<br>동 | 마킹방향<br>마킹외관 | 〃 | 육안검사 | 〃 | 〃 | | · 역방향 마킹<br>· 외관불량 |
| 10 | ○ | 포 장 | | 수<br>동 | 수량관리<br>포장상태 | 〃 | 육안검사 | 〃 | 〃 | | |
| 11 | ◇ | 출하검사<br>Safety | LCR METER<br>내전압<br>TESTER | 수<br>동 | INDUCTANCE<br>내전압<br>절연사항 | 〃 | SAMPLE | 품질<br>관리팀 | 승<br>인<br>원 | | |
| 12 | ▽ | 출 고 | | | | | | 영업팀 | 〃 | INSPEC-<br>TION<br>REPORT | |

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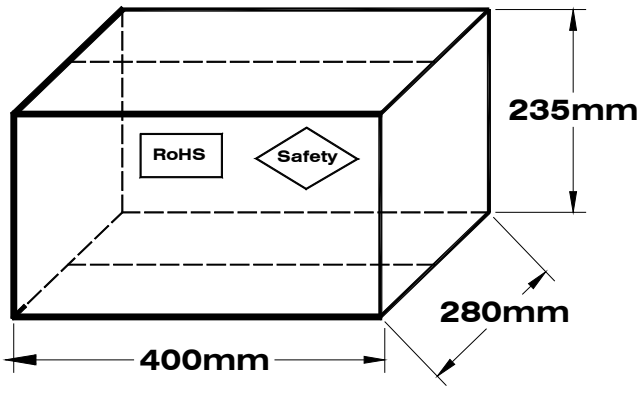
| SPECIFICATION | | DATE | 2011. 08. 20 |
|---|---|---|---|
| PART NAME | STAND BY TRANS | PART NO. | 12S-LS01 |

## 15. PACKING METHOD.

* INNER BOX (PET TRAY) : PCS × PCS = 36 PCS
* INNER BOX SIZE (PET TRAY) : (L) mm x (W) mm x (H) mm

* OUT BOX(CARTON) : PCS × PCS = PCS

| | |
|---|---|
| NAME | |
| ITEM | |
| LOT NO. | |
| Q' TY | EA |
| SOOJUNG ELECTRONICS INC CO., LTD. | |



CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 08. 20 |
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| PART NAME | STAND BY TRANS | PART NO. | 12S-LS01 |

## 16. INSPECTION DATA

| ITEM NAME | STANDBY TRANS | TEST DATE | 2011. 08. 20 |
|---|---|---|---|
| PART NO. | 12S-LS01 | INSTRUMENT | 4284A LCR METER(HP) (at 100KHz) |

| 시험 항목 | PIN NO. | SPEC | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | $\bar{x}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 3 - 1 | 1.10 mH±7% | | | | | | | | | | | | |
| | 6,7 - 8,9 | μH±30% | | | | | | | | | | | | |
| | 5 - 4 | μH±20% | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| LEAKAGE INDUCTANCE | 3 - 1 (SECONDARY ALL SHORT) | μH MAX | | | | | | | | | | | | |
| DCR (mΩ) | 3 - 1 | Ω MAX | | | | | | | | | | | | |
| | 6,7 - 8,9 | Ω MAX | | | | | | | | | | | | |
| | 5 - 4 | Ω MAX | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 내 전 압 | P-S,COIL | AC3.00KV 1분간 | | | | | | | | | | | | |
| | P- CORE | AC1.50KV 1분간 | | | | | | | | | | | | |
| | S -CORE | AC1.50KV 1분간 | | | | | | | | | | | | |
| 절연저항 | P-S,COIL | 100MΩ MIN. (AT DC500V) | | | | | | | | | | | | |
| DC 전류중첩 | 3 - 1 | A/ 90% of INITIAL INDUCTANCE | L | | | | | | | | | | | |
| | | | % | | | | | | | | | | | |
| IMPULSE TEST | 3 - 1 | 1.5 KV 4TIME | | | | | | | | | | | | |
| QUALITY FACTOR | 3 - 1 | MIN | | | | | | | | | | | | |

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| PART NAME | STANDBY TRANS | PART NO. | 12S-LS01 |

## 17. ASSIGNMENTS

1) Apply import inspection specification to the matters which are not given in drawing specification method.
2) Packing method follows specification approval.
3) If INDUCTANCE : ref is not satisfied with given specification. internal structure disassembly inspection should be necessary.
4) Wire bundle method.
   * CENTER SOLENOID: Error between the center of overall wire bundle area and the center of wire bundle is required to be smaller than 2 mm.
   * PIN SOLENOID : Error between the bottom barrier tape and winding start point is required to be smaller than 2 mm.
   * SOLENOID AFTER : Error between the last wire of the wire bundle and start wire of after-solenoid is required to be smaller than 2 mm.
   * TAB SOLENOID : Bundle should be continued from previous bundle. If bundle method is 2 layer, bundle should be done from top to bottom.
   * SPACE SOLENOID : The area between wires should be uniform. Error between start and start point of the wire bundle area is required to be smaller than 2mm. Error between end point and end point of the wire bundle area is required to be smaller than 2mm.
   * SOLENOID : No space is allowed between wires in bundling. The space between wire is required to be smaller than diameter of the wire*2. In same layer no cross is allowed between wires.

5) PERFORMANCE OF THIS DRAWING IS REQUITED TO MEET PART NUMBER 12S-LS01

6) Auxiliary tape can be used in order to enhance. But it needs prior approval from design department.

CUSTOMER : LG ELECTRONICS Inc.

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## 18. WIRE SPECIFICATION.

### 폴리 우레탄 동선 (1UEW)

| 치 수 | | | | 절연파괴전압 (V) ↑ | 내마모 파괴하중 | | 최대도체저항 (Ω/㎞) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성외경 (mm) ↑ | 최대완성외경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| **0.200** | **±0.003** | **0.224** | **0.246** | **2400** | **-** | **-** | **607.6** | **15** |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| **0.280** | **±0.004** | **0.306** | **0.330** | **2400** | **3.43(350)** | **2.89(295)** | **307.3** | **15** |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| **0.300** | **±0.005** | **0.328** | **0.352** | **2800** | **3.72(380)** | **3.13(320)** | **262.9** | **20** |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| **0.400** | **±0.005** | **0.430** | **0.456** | **2800** | **4.16(425)** | **3.52(360)** | **145.3** | **20** |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.686 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 08. 20 |
|---|---|---|---|
| PART NAME | STANDBY TRANS | PART NO. | 12S-LS01 |

## 19. CHEMICAL ANALYSIS REPORT FOR CP-WIRE

# 제 질 증 명 서 (MATERIALS CERTIFICATE)

2009. 01. 12.

*. 호성산업(주) .

*. Square Wire (ETPCS-S / Sn100% )

1.재료 구성비 (MATERIALS COMPOSITION) (Weight %)

| 항 목 (Item) | Plating Thickness(Sn) | | Iron (Fe) | Copper (Cu) | Tin (Sn) | REMARK |
|---|---|---|---|---|---|---|
| | 0.80x0.80㎜ | 4±1㎛ | Balance | 15.88% | 1.36 ~ 2.26% | |

2.기초재료 화학성분 (BASE MATERIALS CHEMICAL COMPOSITION) (Weight %)

| | Fe | C | Si | Mn | P | S | Sol-Al | – | – | – | – |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel Wire (SWCH6A) | Balance | 0.06 | 0.04 | 0.30 | 0.013 | 0.008 | 0.052 | – | – | – | (%) |
| | Cu | As | Sb | Bi | Pb | S | Fe | Ag | – | – | – |
| Electro Copper | 99.99↑ | 0.3 | 0.02 | 0.1 | 1.0 | 6.3 | 5.2 | 8.2 | – | – | (ppm) |
| | Sn | Sb | As | Pb | Bi | Cu | Fe | Al | Cd | Zn | |
| Tin Ingot | 99.99↑ | 0.001 | 0.0001 | 0.001 | 0.0008 | 0.0005 | 0.0005 | 0.0000 | 0.0000 | 0.0006 | (%) |

3.석도금 조성 및 단면 (TIN PLATED COMPOSITION) (Weight %)




We certify that this paper is the certificate of our products fo inspection and materials

Quality Assurance Manager

*Joong yul. yoo*

IL-KWANG ELECTRONIC MATERIALS CO., LTD.
Head Office & Factory: #725-9 Wonshi-dong, Danwon-gu, Ansan-city, Kyounggi-do, Korea.
Phone 82-31-495-1971~3 Fax 82-31-495-1974
e-mail - ilkwang@cpleadwire.com Homepage - http://www.cpleadwire.com

# 納 入 仕 様 書

# S P E C I F I C A T I O N

《新規・変更》

仕様書番号 **X11457-00-(00)**

発 行 日 2011 年 10 月 26 日
DATE: Y M D

LGElectronics.co.ltd

Safety ROHS

| DISCRIPTION | SPECIFICATION |
|---|---|
| **Stand By Trans** | **EEM1918** |
| MAKER SPECIFICATION<br>**SRW1918EE-K01H015** | CODE No. |
| TYPE No. | MODEL No. |
| SPECIAL ARTICLES | **2012 LG LED All Model** |

THIS SPECIFICATION IS RECEIVED

受領日 年 月 日
DATE: YEAR MONTH DAY

TDK XIAMEN CO.,LTD.
TRANS MFG. DEPARTMENT
ENGINEERING


ＴＤＫ株式会社
〒103-0027 東京都中央区日本橋1-13-1
TDK Corporation
1-13-1,Nihonbashi,Chuo-ku, Tokyo
103-0027,Japan


営業部門 SALES

| 責任者 MANAGER | 担当者 SALES |
|---|---|
| | |

技術部門 ENGINEERING

| 責任者 APPROVE | 確認者 CHECK | 担当者 ISSUE |
|---|---|---|
| | | |

担当営業所
Sales Office Seoul Sales office

営業担当者電話
Sales Tel. (02) 3019-4300

| 検索用製品分類コード PRODUCT CLASSIFICATION CODE |
|---|
| |

## 1. REVISION TABLE

| REVISION No. | REVISION MARK | REVISION PAGE,ITEM・CONTENTS | REASON OF REVISION | SIGNATURE DESIGNED / CHECKED / APPROVED |
|---|---|---|---|---|
| 1 | 1 | | | |
| 年 月 日 Y M D | | | | |
| 2 | 2 | | | |
| 年 月 日 Y M D | | | | |
| 3 | 3 | | | |
| 年 月 日 Y M D | | | | |
| 4 | 4 | | | |
| 年 月 日 Y M D | | | | |
| 5 | 5 | | | |
| 年 月 日 Y M D | | | | |
| 6 | 6 | | | |
| 年 月 日 Y M D | | | | |

| APPROVED | CHECKED | DESIGNED | CUSTOMER'S NAME | LGElectronics.co.ltd | |
|---|---|---|---|---|---|
| TDK 2011-09-06 T.Toyoda | TKR 2011-09-06 H.Maeda | TKR 2011-09-06 SH.Shin | TDK P/T No. | SRW1918EE-K01H015 | |
| | | | SPEC. No. | X11457-00-(00) | page:1/16 |

## 2. Index

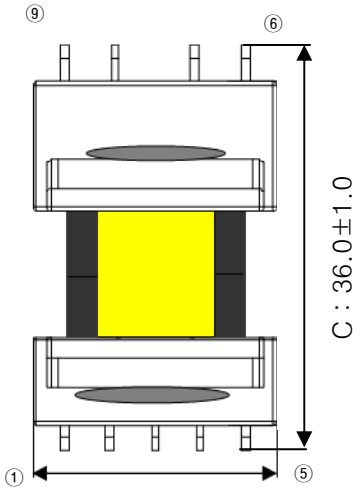
### Items


1/ 16 Revision Table
2/ 16 Index
3/ 16 Dimension Diagram
4/ 16 Schematic Diargram & Winding Spedification
5/ 16 Electronical Characteristics
6/ 16 Enviromental Caracterisitcs
7/ 16 Mechanical Caracterisitics
8/ 16 Material List & Internal Construction
9/ 16 Core&Bobbin Dimension
10/ 16 Packaging
11/ 16 UL File (Bobbin, Wire, Case)
12/ 16 UL File (Tape)
13/ 16 UL Insulation System
14/ 16 PROCESS FLOW
15/ 16 Inspection
16/ 16 Assignments

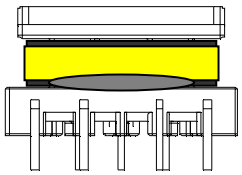
## 3. Dimension Diagram

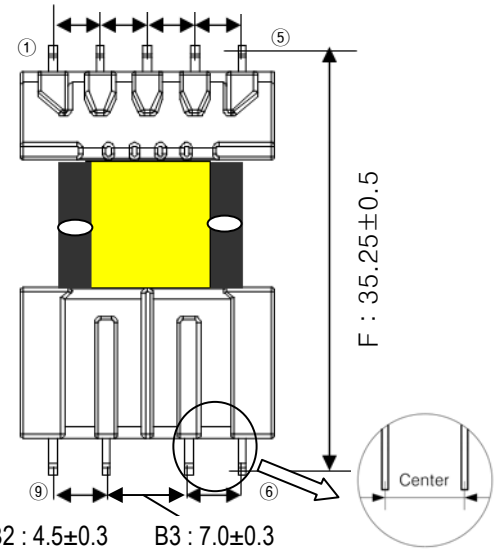
Demension (unit : mm)

Mass : 13.66g (REF.)




A : 21.5±1.0






Making

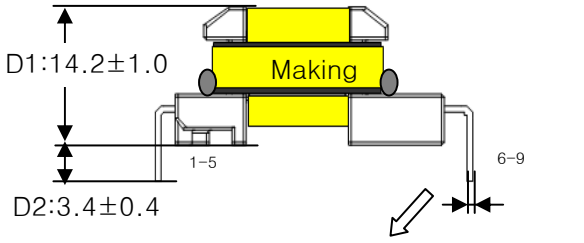
Class B

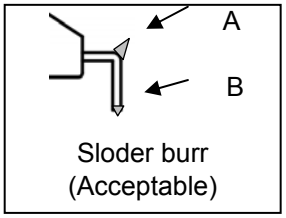
12S-LS01B TDKXOOOOD

① ②

① : Manufacture&Factory Site Xiamen "X"

② : Lot Number &Core Maker TDK " D "




[注意事項 REMARK:]

1. Lot No.: ① YEAR+ ② WEEK
   (例EX:1,June,2007→0724)
2. MANUFACTURER'S SITE:
   TDK XIAMEN→X
3. 製品須無鉛銲錫.
   THE TRANSFORMER IS A LEAD-FREE SOLDER CORRESPONDING PRODUCT.
4. 製品須點膠處理.
   FIX CORE AND CORE , CORE AND BOBBIN BY ADHESIVE.
   * Gap Core : Primary
   * Center Gap Addhesive : Super X 8008

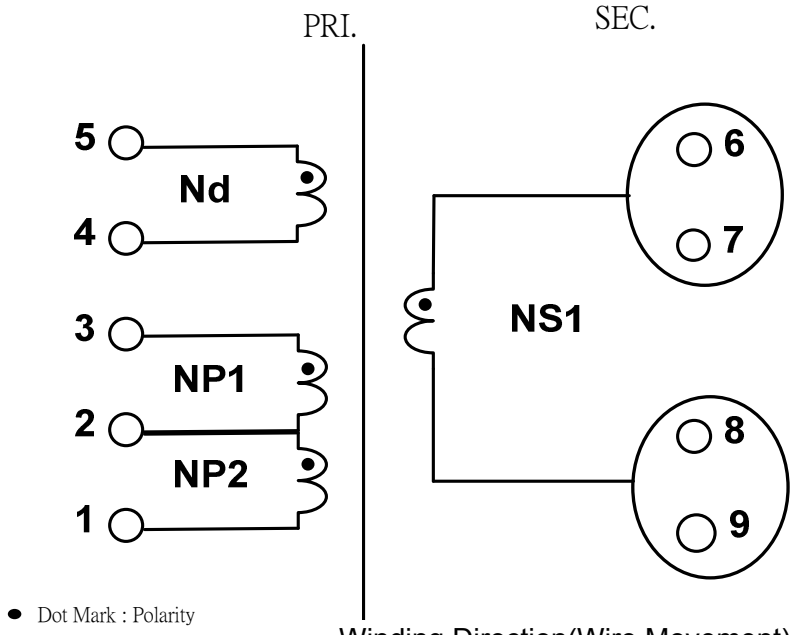
Adhesive : 3851+7247

Adhesive : Super X 8008

* Wind Insulation Tape (Yellow 5mm * 3Ts min) To Fix Core

| APPROVED | CHECKED | DESIGNED | CUSTOMER'S NAME | LG Electronics.co.ltd | |
|---|---|---|---|---|---|
| TDK 2011-10-07 T.Toyoda | TKR 2011-10-07 H.Maeda | TKR 2011-10-07 SH.Shin | TDK P/T No. | SRW1918EE-K01H015 | |
| | | | SPEC. No. | X11457-00-(00) | page:3/16 |

## 4. Schematic




Winding Direction(Wire Movement) : Primary View CCW

## 5. Winding Specification

| NO. | COIL | TERMINAL | TURNS | WIRE | WINDING METHOD | INSULATION TAPE | |
|---|---|---|---|---|---|---|---|
| | | | | | | TURNS | MATERIAL (POLYESTER TAPE ) |
| 1 | NP1 | 3--2 | 53 | 1UEW 0.2Ø | SOLENOID | 3Ts (MIN) | (YELLOW Polyeter Tape) (T : 0.025mm W :13mm) |
| 2 | NS1 | 6,7--8,9 | 7 | TEX 0.2Ø * 4 | SOLENOID | 3Ts (MIN) | (YELLOW Polyeter Tape) (T : 0.025mm W :13mm) |
| 3 | NP2 | 2--1 | 67 | 1UEW 0.2Ø | SOLENOID | 3Ts (MIN) | (YELLOW Polyeter Tape) (T : 0.025mm W :13mm) |
| 4 | Nd | 5--4 | 29 | 1UEW 0.2Ø | SOLENOID | 3Ts (MIN) | (YELLOW Polyeter Tape) (T : 0.025mm W :13mm) |

* Caution : NS1 must be wounded 2 wires (Tex Wire 0.2Ø *2) at each pin,

* Between (Pin 6) and (Pin9,10) / Between (Pin 7) and (Pin 9,10) are short or open. (6-7/ 9-10 Short on PCB)

* Wind Insulation Tape (Yellow 0.025mm * 5mm) 3 Turns (min) To Fix the Core

* Pin Winding Spec : TEX Wire 0.7Ts Min And UEW Wire 1.0Ts Min

* Wire Tolerance : 0.16±0.003 , 0.2±0.008

| APPROVED | CHECKED | DESIGNED | CUSTOMER'S NAME | LG Electronics.co.ltd | |
|---|---|---|---|---|---|
| TDK 2011-09-06 T.Toyoda | TKR 2011-09-06 H.Maeda | TKR 2011-09-06 SH.Shin | TDK P/T No. | SRW1918EE-K01H015 | |
| | | | SPEC. No. | X11457-00-(00) | page:4/16 |

## 6. Electronical Characteristics

| NO. | ITEM | TERMINAL | SPECIFICATION | TEST INSTRUMENTS |
|---|---|---|---|---|
| 1 | INDUCTANCE | 1----3 | 1.10 mH±7% | HP4284A LCR METER<br>or EQUIVALENT<br>V=1Vrms<br>f=100kHz |
| | | 6,7----8,9 | 3.75 μH±30% | |
| | | 5----4 | 73.0 μH±20% | |
| 2 | LEAKAGE INDUCTANCE | 1-----3<br>(Short<br>4,5,6,7,8,9) | 50 μH MAX | |
| 3 | Quaility Factor | 1 --- 3 | 50 MIN | |
| 4 | DC. RESISTANCE | 1----3 | 3.00 Ω MAX | CHEN HWA 502AC<br>OHM<br>or EQUIVALENT |
| | | 6,7----8,9 | 0.05 Ω MAX | |
| | | 5----4 | 1.00 Ω MAX | |
| 5 | Safety<br>WITHSTANDING VOLTAGE | P --- S | AC3.0kVrms 1Minute<br>MP Condition : 3.6kV / 2Sec | PUNCTURE TESTER<br>KIKUSUI:TOS8650<br>or EQUIVALENT<br>CUT OFF CURRENT :<br>5mA<br>f=50 or 60Hz |
| | | P --- CORE | AC1.5kVrms 1Minute<br>MP Condition : 1.8kV / 2Sec | |
| | | S --- CORE | AC1.5kVrms 1Minute<br>MP Condition : 1.8kV / 2Sec | |
| 6 | Safety<br>INSULATION RESISTANCE | P --- S | 100 MΩ MIN. at DC. 500V | MEGOHM METER<br>TOA SM-5E orSM-23GM<br>or EQUIVALENT |
| 7 | DC SUPERIMPOSE | 1 --- 3 | 90% min of initail inductance value in case input current 0.5A | |
| 8 | Safety<br>IMPULSE TEST | 3 – 4<br>(1-6/7, 8/9-5<br>Short) | 1.5kV pulse 4 times | |

* TEST CONDITION: TEMPERATURE: 25℃±10℃

HUMIDITY: 25~75%RH

| APPROVED | CHECKED | DESIGNED | CUSTOMER'S NAME | LG Electronics.co.ltd | |
|---|---|---|---|---|---|
| TDK<br>2011-09-06<br>T.Toyoda | TKR<br>2011-09-06<br>H.Maeda | TKR<br>2011-09-06<br>SH.Shin | TDK P/T No. | SRW1918EE-K01H015 | |
| | | | SPEC. No. | X11457-00-(00) | page:5/16 |

## 6. Enviromental Characteristics

* Standard test condition : Temp. 20℃±15℃, Humidity 65%±20%

The test condition can be operated af 20℃±15℃, 65±5% Rh on the any other objection

<table>
<tr><th>NO.</th><th>ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>1</td><td>USE TEMPERATURE RANGE</td><td>-25℃ ~ 105℃</td><td>-</td></tr>
<tr><td>2</td><td>KEEP TEMPERATURE</td><td>-25℃ ~ 105℃</td><td>-</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE RESISTANCE</td><td rowspan="5">Do Not have any appreance faulty and damage after the tests<br><br>The Inductance variation must be under 5% requirment from initial inductance value and electronical characterisitcs specification.<br><br>If the Inductance is under 10uH, It should be managed ±10%</td><td>Store in low temp. (-25±2℃) for 96 hours and Place in room temp for 2 hours and then measure the sample</td></tr>
<tr><td>4</td><td>HIGH TEMPERATURE RESISTANCE</td><td>Store in high temp. (105±2℃) for 96 hours and Place in room temp for 2 hours and then measure the sample</td></tr>
<tr><td>5</td><td>HUMIDITY RESISTANCE</td><td>Store in low temperature (95%±5% Rh 40±2℃) for 96 hours and then measure the sample</td></tr>
<tr><td>6</td><td>TEMPERATURE CYCLE</td><td><table><tr><th>Step</th><th>Temp</th><th>Time</th></tr><tr><td>1</td><td>-25±2℃</td><td>30 min</td></tr><tr><td>2</td><td>25±2℃</td><td>10 min</td></tr><tr><td>3</td><td>105±2℃</td><td>30 min</td></tr><tr><td>4</td><td>25±2℃</td><td>10 min</td></tr></table>Repeat 5 Cycle from low temp And then Place in room temp for 2 hours and then measure the sample</td></tr>
<tr><td>7</td><td>HEAT SHOCK TEST</td><td>Store in -20℃ place for 2 hours<br>⇕<br>Store in 70℃ place for 2 hours<br>: Repeat 10 cycle</td></tr>
</table>

## 8. MECHANICAL CHARACTERISTICS

| No. | ITEM | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 1 | Layer Short Test | Ther is no defect on the wire insulation comparing to the standard product | Input Voltage : Surge Voltage (AC 1.5 kVo-p) Measure the Insulation |
| 2 | Solder Heat Test | Must meet the specification of inductance and resistance and Don't have any damage on the appearance. But it can be up about 5% of initial value | Dip the terminal in solder pot at 260℃～265℃ for 10 sec. Measure after 2hours at room temp |
| 3 | Sodering ability | Solder must be pasted about 95% min on each pin and wire | Dip the terminal in solder pot at 240～245℃ for 3 sec |
| 4 | Terminal Pull Strength | The product doesn't have any abnormaility and operate propery satisfied to initial value | Pull the pin with 2.5kg.f during 30 ± 5 sec |

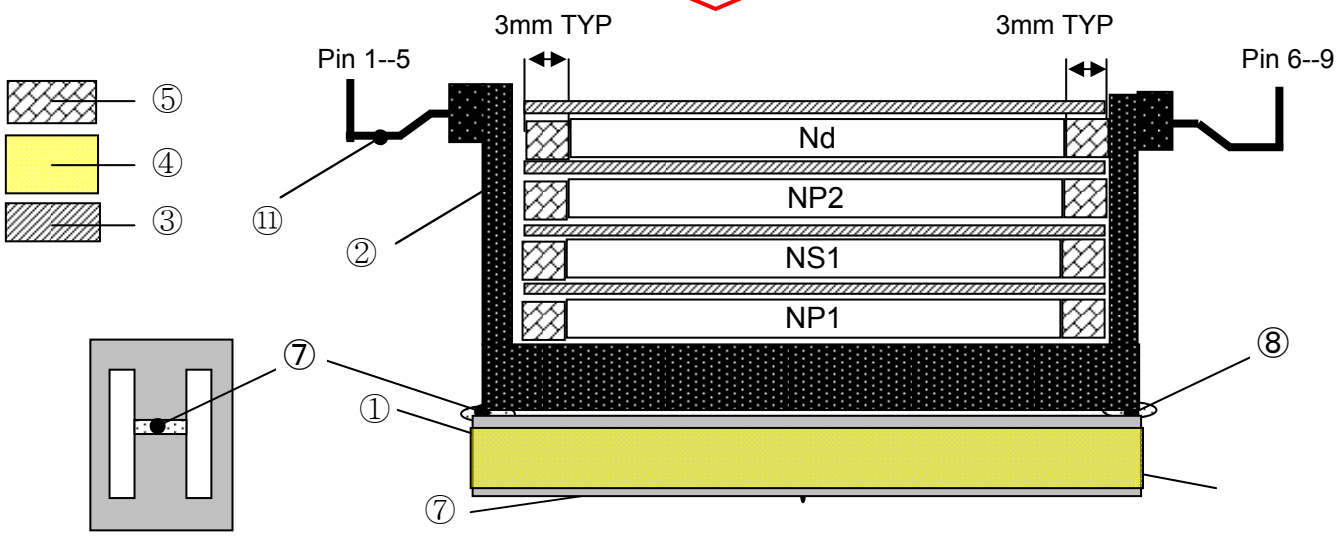
## 9. Material list

| NO | ITEM | MATERIAL&SPEC | MANUFACTURER | COLOR | THICKNESS & LAYER | UL FILE |
|---|---|---|---|---|---|---|
| 1 | CORE | FERRITE CORE PC40 EE19/18 | TDK CORPORATION | BLACK | | N/A |
| 2 | BOBBIN | PHENOLIC RESIN PM9630 | SUMITOMO BAKELITE CO.,LTD. | BLACK | | E41429 |
| 3 | INSULATION TAPE | POLYESTER TAPE No.1318-1(a)<br>NO.CTXXX | 3M COMPANY<br>JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LT | YELLOW | 0.025mm*13mm ( 2 layers) | E17385<br>E165111 |
| 4 | CORE FIXING TAPE | The same as Insulation Tape | The same as Insulation Tape | YELLOW | 0.025mm*5mm ( 2 layers) | E17385<br>E165111 |
| 5 | BARRIER TAPE | POLYESTER TAPE No.44D-A(a)<br>No.WF2902 | 3M COMPANY<br>JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LT | BRASS YELOW | - | E17385<br>E165111 |
| 6 | WINDING WIRE | POLYURETHANE ENAMELED COPPER<br>NP1,NP2,Nd UEWφ0.2 | HANGZHOU WEIFENG ELECTRONIC<br>TAI-I COPPER (GUANGZHOU) CO.,LTD<br>ZHUHAISHI WEIHAN WIRE CO.,LTD | UEW BRONZE | - | E229341<br>E85640<br>E33927 |
| | | NS1,NS2 TEX-E φ0.2 | FURUKAWA ELECTRIC CO., LTD | YELLOW | | E206440 |
| 7 | ADHESIVE | URETHANE ADHESIVE 3851<br>ACCELERATOR 7247 | HENKEL LOCTITE(CHINA) CO.,LTD | CLEAR | | N/A |
| 8 | | SUPER X 8008 | CEMENDINE | WHITE | | N/A |
| 9 | SOLDER | SOLDER M35(H)<br>Sn:99%, Ag :0.3%, Cu : 0.7% | SOLNET METAL INDUSTRY CO.,LTD | SILVER | | N/A |
| | | FLUX S-100 | TAMURA ELELTRO CHEMICAL INDUSTRY CO., LTD | | | N/A |
| 10 | MARKING | Lazer Marking | | BLACK | - | N/A |
| 11 | Terminal Pin | | Optional | SILVER | | N/A |

## 10. INTERNAL CONSTRUCTION

Safety

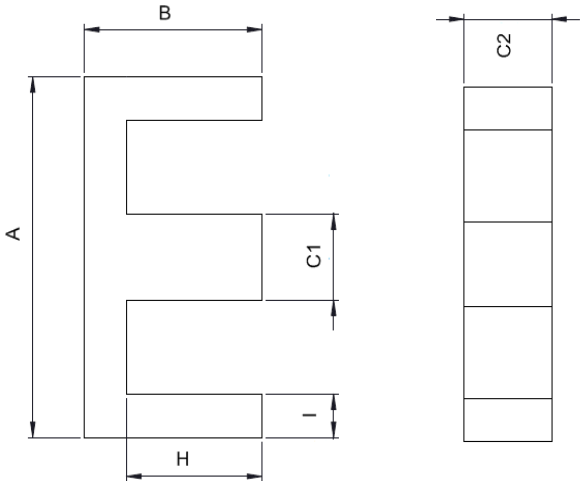
Bobbin Maker (WangPeng)




Center Bonding: ※ More than 80% of the volume applied to the gap

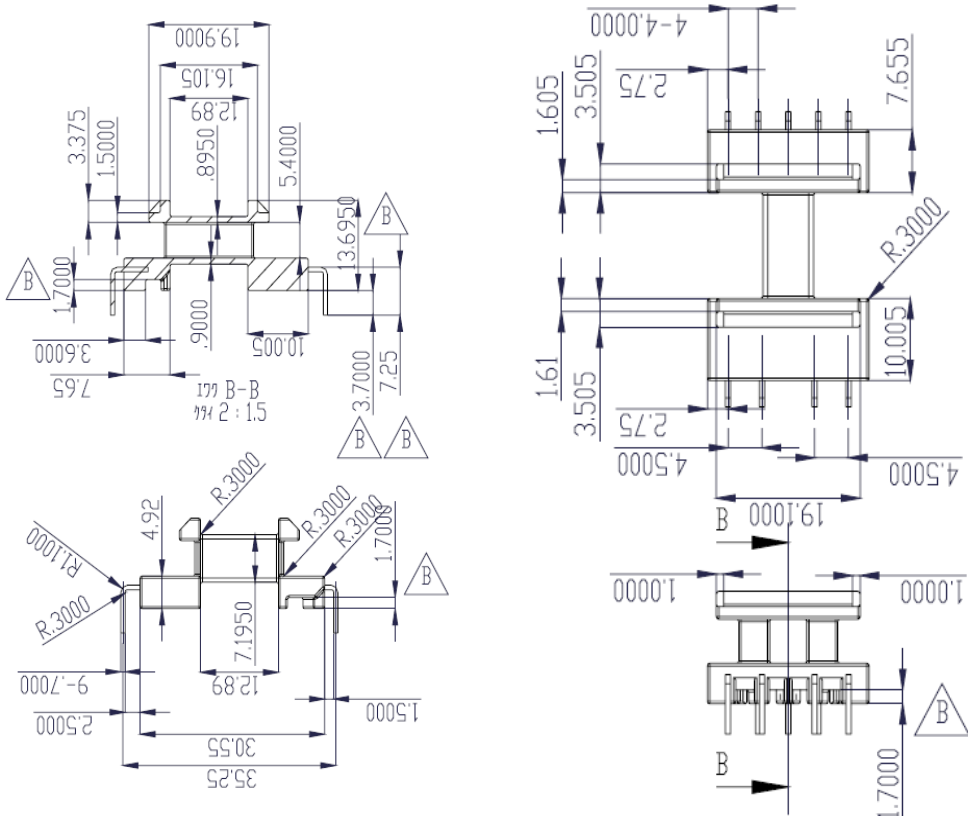
| APPROVED | CHECKED | DESIGNED | CUSTOMER'S NAME | LG Electronics.co.ltd | |
|---|---|---|---|---|---|
| TDK<br>2011-09-06<br>T.Toyoda | TKR<br>2011-09-06<br>H.Maeda | TKR<br>2011-09-06<br>SH.Shin | TDK P/T No. | SRW1918EE-K01H015 | |
| | | | SPEC. No. | X11457-00-(00) | page:8/16 |

## 11. Core&Bobbin Dimension




| Sym | PC40 EEM21B |
|---|---|
| A | 19.1±0.4 |
| B | 9.92±0.1 |
| C1 | 4.55±0.15 |
| C2 | 5.00±0.15 |
| H | 7.57±0.2 |
| I | 2.3 ±0.2 |

| Type | EFFECTIVE PARAMETER | | | REMARK |
|---|---|---|---|---|
| | Le(mm) | Ae(mm^2) | Ve(mm^2) | TDK |
| EE1918 | 47.5 | 22.76 | 1081 | TDK |




| APPROVED | CHECKED | DESIGNED | CUSTOMER'S NAME | LG Electronics.co.ltd | |
|---|---|---|---|---|---|
| TDK 2011-09-06 T.Toyoda | TKR 2011-09-06 H.Maeda | TKR 2011-09-06 SH.Shin | TDK P/T No. | SRW1918EE-K01H015 | |
| | | | SPEC. No. | X11457-00-(00) | page:9/16 |

## 13. Packaging

(1) 適用範圍 APPLIED OBJECT

本規格書僅適用該種品名 SRW1918EE-K01H015

This specification is applied for the package of SRW1918EE-K01H015

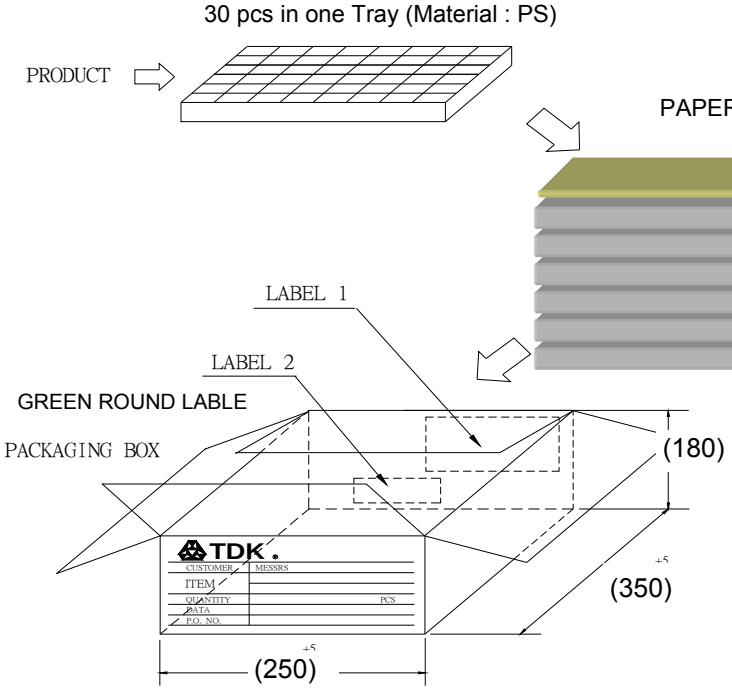
(2) 一個包裝盒裝產品數量: 30 PCS,一紙箱共裝產品: 180 PCS.

QUANTITY OF THE PRODUCTS PLACED IN THE PACKING BOX: 30 PCS PER CASE

TOTAL QUANTITY OF ONE BOX IS 180 PCS .

(3) 包裝尺寸＆外觀 (單位;mm)＆包裝過程

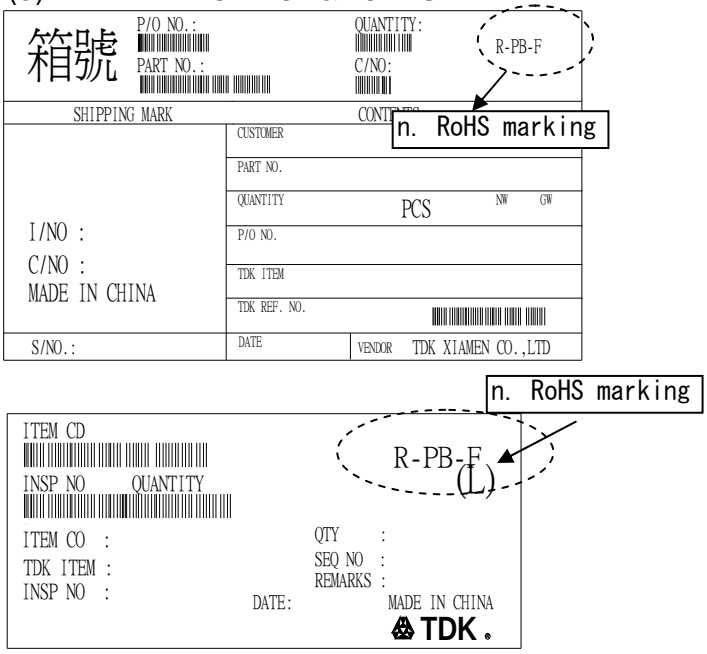
PACKAGE DIMENSIONS & APPEARANCE(UNIT:mm)&THE PROCESS OF PACKAGING




APPEARANCE



(3) LABEL INDICATION&NOTES







注意 NOTES :

a. CUSTOMER 顧客名稱
b. PART NO. 顧客料號
c. QUANTITY(QTY) 數量
d. P/O NO. 訂單號
e. TDK ITEM TDK品名
f. TDK REF.NO. TDK料號
g. DATE 出貨日期
h. I/NO invoice號碼
i. C/NO(CARTON) 包裝箱數
j. REMARKS Lot No.
k. INSP NO 檢查號碼
l. NW 淨重
m. GW 毛重
n. R-PB-F RoHS
o. Stick a green round label on the label side of the outer cardboard box to indicate that the package contains a fractional number of inner cases.

| APPROVED | CHECKED | DESIGNED | CUSTOMER'S NAME | LG Electronics.co.ltd | |
|---|---|---|---|---|---|
| TDK 2011-09-06 T.Toyoda | TKR 2011-09-06 H.Maeda | TKR 2011-09-06 SH.Shin | TDK P/T No. | SRW1918EE-K01H015 | |
| | | | SPEC. No. | X11457-00-(00) | page:10/16 |

# 14. UL Card(1)

## BOBBIN

**SUMITOMO BAKELITE CO LTD** E41429
5-8 HIGASHI-SHINAGAWA 2-CHOME
SHINAGAWA-KU
TOKYO, 140-0002 JAPAN

| | | Min. | | H | H | R T I | | | H V | D 4 | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | Elec | Mech | | T | 9 | T |
| Material Dsg | Color | mm | Class | I | I | | Imp | Str | R | 5 | I |
| PM-9630 | BK | 0.32 | V-0 | 3 | 0 | | 150 | 150 | | 150 | |

## BARRIER TAPE

**3M COMPANY** E17385
ELECTRICAL PRODUCTS DIV
3M AUSTIN CENTER
6801 RIVER PLACE BLVD
AUSTIN, TX 78726 USA

**Polyester film/nonwoven composite insulating tape**, Cat. No.44(a), 44-A(a), 44D-A(a), 44D(a), 44-18, Mil(a), 44-T(a), 44T-A(a), for use at temperatures not exceeding 130 C.

**JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD** E165111
SOUTHWEST AROUND RD
JINGJIANG, JIANGSU 214500 CHINA

**Nonwoven cloth/polyethylene terepthalate film tape**, Cat. No. WF with suffixes, rated 130 C*(c) (h).

(c)Comparative Tracking Index (CTI) performance indicates material Group I, PLC=0, CTI equal to or greater than 600 v.

(h) - The CTI test was conducted per IEC 60112, 4th Edition 2003 and the assigned level is based on the testing of both film and adhesive sides.

## WIRE

FURUKAWA ELECTRIC CO LTD
HIRATSUKA MAGNET WIRE WORKS
5-1-9 HIGASHI YAHATA
HIRATSUKA-SHI, KANAGAWA 254-0016 JAPAN

Cat Nos. TEX-E, TEX-EA, reinforced insulation rated 130□ C (Class B), 1.41 kV peak for Information Technology Equipment, 32-18 AWG (0.20 - 1.0 mm).

TAI-I ELECTRIC WIRE & CABLE CO LTD E85640
10TH FL
129 MING SHENG EAST RD, SEC 3
TAIPEI, TAIWAN

| | | | | | |
|---|---|---|---|---|---|
| UEW | (1) | Polyurethane | — | MW75C | 130 |

# - This wire may perform better than its temperature rating reflects. Hence, it may not be suitable to use in an insulation system thermal aging program.

(1)-Marked designations are the same as the material designations.

Marking: Company name and material designation on packages or reels.

# 14. UL-Card(2)

**HANGZHOU WEIFENG ELECTRONIC CO LTD** E229341
DAICUN
XIAOSHAN
HANGZHOU, ZHEJIANG 311261 CHINA

| Mtl Dsg | Mark Dsg | Coat Type | | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| | | BC | OC | | |
| WF-@ | (1) | Polyurethane | — | MW75-C | 130 |

(1)-Marked designations are the same as the material designations.

@ - May be USTC (include polyester filament yarn covering) or LITZ (twisted wire only).

**ZHUHAI WEIHAN WIRE CO LTD** E339217
9B 3F W24 JINFENG RD
JINDING SCIENCE & TECH PARK
TANGJIA BAY
ZHUHAI, GUANGDONG 519000 CHINA

| Mtl Dsg | Mark Dsg | Coat Type | | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| | | BC | OC | | |
| xUEW@/155, xUEW@/130 | — | Polyurethane | — | MW79 | 155 |
| | | | | MW75# | 130 |
| xUEW/NY | — | Poly- | Polyamide | MW80 | 155 |
| QAN/155 | | urethane | | | |
| xUEW/NY | — | Poly- | Polyamide | MW28$ | 130 |
| QAN/130 | | urethane | | | |

$-Additional consideration is needed before this magnet wire is used in an insulation system thermal aging program.

"x"-May be prefixed by 0, 1, 2, 3 to indicate coating thickness.

"@"-May be prefixed by LZ, EL , LZL,USTC or UDTC LZ - Signifies magnet wires twisted together; EL - signifies base coated magnet wire laid parallel with top coat applied overall; LZL- signifies base coated magnet wire twisted together and covered with top coat overall.

USTC-Include single layer polyester filament yarn covering.

# 14. UL Card(3)

## FIXING TAPE FOR CORE,INSULATION TAPE

**3M COMPANY** E17385

ELECTRICAL MARKETS DIV (EMD)

3M AUSTIN CENTER

6801 RIVER PLACE BLVD

AUSTIN, TX 78726 USA

**Flame retardant polyester film insulating tape**, Cat. Nos. 1298(b), 1298CR, 1350-1(b), 1350Y-1(b), 1350W-1(b), 1350B-1 (b) , 1350F-1(b), 1350FY-1(b), 1350FW-1(b), 1350FB-1(b), 1351Y-1(a), 1351W-1(a), 1351B-1(a), 1350Y-2(c), 1350W-2(c), 1350B-2(c), 1350F-2(c), 1350FY-2(c), 1350FW-2(c), 1350FB-2(c), 1351Y-2(c), 1351W-2(c), 1351B-2(c), 1350CR-1 and 1350CR-2 for use at temperatures not exceeding 130 C*.

**Polyester film insulating tapes**, Cat. Nos. 5, 54(a), 56(a), 75, 1318Y-1(a), 1318W-1, 1318B-1 , 1318Y-2(a), 1318W-2, 1318B-2, 1318 clear (#)(a), 1318-1(a), 1318-2(a), 1318MW-1(a), 1318MW-2 (#)(a) for use at temperatures not exceeding 130 C.

(a)-Comparative Tracking Index (CTI)% performance level indicates material Group I, PLC=0, CTI equal to or greater than 600V.

(b)-Comparative Tracking Index (CTI)% performance level indicates material Group II, PLC=1, CTI equal to or greater than 400 but less than 600V.

(c)-Comparative Tracking Index (CTI)% performance level indicates material Group IIIa, PLC=2 or 3, CTI equal to or greater than 175 but less than 400V.

%The CTI test was conducted per IEC 112 and the assigned level is based on the testing of both film and adhesive sides.

**JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD** E165111

SOUTHWEST AROUND RD

JINGJIANG, JIANGSU 214500 CHINA

**Polyethylene terephthalate film tape**, Cat. No. CT with suffixes, yellow color, rated 130 C*(c) (e) (g).

**Polyethylene terephthalate film tape** , Cat. No. CT with suffixes, all colors except yellow, rated 130 C(b)(f) (g).

(b)Comparative Tracking Index (CTI) performance indicates material Group IIIa, PLC=2, CTI equal to or greater than 250 but less than 400 v.

(c)Comparative Tracking Index (CTI) performance indicates material Group I, PLC=0, CTI equal to or greater than 600 v.

(d)Comparative Tracking Index (CTI) performance indicates material Group IIIb, PLC=4, CTI equal to or greater than 100 v but less than 175v.

(e) - Yellow color only

(f) - All colors except yellow

(g) - The CTI test was conducted per IEC 112, 3rd Edition 1979 and the assigned level is based on the testing of both film and adhesive sides.

## 15.Process flow

| ITEM | | | | | | Trans Power S/W | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| No | Process | | | Control Points | Tool | Inspection Method | | Reference STD. | Remarks |
| | Mark | Name | Equipment | | | Check Method | Part | | |
| 1 | | Incomming Check (Material) | Calipers | Bobbin, Wire Size | Calipers | Sampling At Incomming | I, Q, C | Inspection STD. | |
| | | | | Core, Tape | | | | | |
| 2 | | Winding | Widing Machine | Number of Turns | Long Nose Nipper | Sampling | Winding Part | Working STD. | |
| | | | | Windng Status | | | | | |
| | | | | Insulation Status | | | | | |
| | | | | Connection Status | | | | | |
| 3 | | Soldering | Solder Pot | Temperature | Thermo meter | 2Time/Day | Solder Part | Working STD. | Check Sheet |
| | | | | Time | Timer | | | | |
| 4 | | Ass'y | Ass'y Machine | Glue, Gap Size | | Sampling | Ass's Part | Working STD. | |
| | | | | Core Gap Position | | | | | |
| | | | | Ass'y Status | | | | | |
| 5 | | 1'st Inspection | LCR Meter | Inductance | JIG | ALL | Ass's Part | Working STD. | |
| | | | | | | | | | |
| | | | | | | | | | |
| 6 | | Glue | Glue Machine | Glue Position | | ALL | Ass's Part | Working STD. | |
| | | | | Glue Status | | | | | |
| 7 | | Dry | Dry Oven | Dry temperature | | ALL | Ass's Part | Working STD. | |
| | | | | Dry time | | | | | |
| 8 | | Marking | Marking Machine | Direction | Lazer Marking | ALL | Ass's Part | Working STD. | |
| | | | | Location | | | | | |
| | | | | Lot No. | | | | | |
| 9 | | 1'st Inspection | LCR Meter | Inductance | JIG | ALL | Ass's Part | Working STD. | |
| | | | Turns Meter | Ture Ratio | | | | | |
| | | | Rdc Meter | Rdc | | | | | |
| | | | Hi pot Tester | P-S , P-C, S-C | | | | | |
| | | | Impulse Test | Layer Short | | | | | |
| | | | Guage | Dimension | | | | | |
| 10 | | Packing | Inner box out Package | BOX STD. | | ALL | Inspection Part | Working STD. | |
| | | | | Appearance | | | | | |
| | | | | Packing Status | | | | | |
| 11 | | Outgoing Inspection | | L(leakage), Rdc, DC, Bias, Hi-pot, Inspection, Surge, Dimension, Quantity, Appearance | | Sampling | F,Q,C | Inspection STD. | Inspecti on Sheet |
| 12 | | Outgoing | | | | | | | |

| Revision | Date | Reason | Approval | Revision | Date | Reason | Approval | Written By | TDK Xiamen Co.Ltd |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 2011-07-01 |

| APPROVED | CHECKED | DESIGNED | CUSTOMER'S NAME | LG Electronics.co.ltd | |
|---|---|---|---|---|---|
| TDK 2011-09-06 T.Toyoda | TKR 2011-09-06 H.Maeda | TKR 2011-09-06 SH.Shin | TDK P/T No. | SRW1918EE-K01H015 | |
| | | | SPEC. No. | X11457-00-(00) | page:14/17 |

## 16. INSPECTION DATA

## OUTGOING INSPECTION DATA (Data format of mass production)

TDK

CUSTOMER: LG Electronics.co.ltd

ITEM: 12S-LS01
SRW1918EE-K01H015

TDK XIAMEN CO.,LTD
QUALITY ASSURANCE: APPROVED:
Drawing No: Rev.:01
DATE: yyyy-mm-dd
Temp: 25℃ Humidity: 65 %RH

PART No: DWG No.(CUSTOMER'S): QUANTITY: PCS
TDK DWG No: INSPECTION No: LOT No: 0813

| ITEM | TERMINAL | SPEC. | 1 | 2 | 3 | 4 | 5 | AVR | |
|---|---|---|---|---|---|---|---|---|---|
| INDUCTANCE | 1----3 | 1.10mH±7% | | | | | | | |
| | 6,7----9,10 | 3.75 μH±30% | | | | | | | |
| | 5----4 | 73.0 μH±20% | | | | | | | |
| LEAKAGE INDUCTANCE | 1---3 (Short 4,5,6,7,8,9) | 50 μH MAX | | | | | | | |
| Quality Factor | 1----3 | 50 MIN | | | | | | | |
| DC RESISTANCE | 1----3 | 3.00 Ω MAX | | | | | | | |
| | 6,7----9,10 | 0.05 Ω MAX | | | | | | | |
| | 5----4 | 1.00 Ω MAX | | | | | | | |
| WITHSTANDING VOLTAGE | P --- S | AC3.0kVrms 1Minute MP Condition : 3.6kV / 2Sec | | | | | | | |
| | P --- CORE | AC1.5kVrms 1Minute MP Condition : 1.8kV / 2Sec | | | | | | | |
| | S --- CORE | AC1.5kVrms 1Minute MP Condition : 1.8kV / 2Sec | | | | | | | |
| INSULATION RESISTANCE | P --- S | 100 MΩ MIN. at DC. 500V | | | | | | | |
| DC Superimpose | 1 --- 3 | 0.5A / 90% min of Initail Inductance | | | | | | | |
| DIMENSION (mm) | | | | | | | | | |
| A | | 21.5±1.0 | | | | | | | |
| B1 | | 4.0±0.3 | | | | | | | |
| B2 | | 4.5±0.3 | | | | | | | |
| B3 | | 7±0.3 | | | | | | | |
| C | | 36.0±1.0 | | | | | | | |
| D1 | | 14.2±1.0 | | | | | | | |
| D2 | | 3.4±0.4 | | | | | | | |
| d | | 0.7±0.1 | | | | | | | |
| F | | 35.25 ± 0.5 | | | | | | | |

| ITEM | n | C | Pn | JUDGE |
|---|---|---|---|---|
| VISUAL | 50 | 0 | 0 | PASS |
| DIMENSION | 5 | 0 | 0 | PASS |
| ELECTRICAL | 5 | 0 | 0 | PASS |

REMARK:
LOT NO: CYCLE: QUANTITY: (PCS)

Test Equipment WITH STANDING VOLTAGE TOS-8650 KIKUSUI
500VA MIN Dielectric Strength 100% Test
We certify that all components are accepted according to the inspection report

(1)Voltage: 3.6 KV rms(AC)
Time: 2 Sec
Points: Pri--Sec cut off current: 5 mA
(2)Voltage: 1.8 KV rms(AC)
Time: 2 Sec
Points: Pri--CORE cut off current: 5 mA
(3)Voltage: 1.8 KV rms(AC)
Time: 2 Sec
Points: Sec--CORE cut off current: 5 mA

| APPROVED | CHECKED | DESIGNED | CUSTOMER'S NAME | LG Electronics.co.ltd | |
|---|---|---|---|---|---|
| TDK 2011-09-06 T.Toyoda | TKR 2011-09-06 H.Maeda | TKR 2011-09-06 SH.Shin | TDK P/T No. | SRW1918EE-K01H015 | |
| | | | SPEC. No. | X11457-00-(00) | PAGE:15/16 |

# 17. Process Flow Chart

## CAUSION

- This product is designed for LG TV Power Supply Unit Component. Do not use this any other purpose
- Store this product under the conditions defined in the specificaion document
- Do not store this product in an enviroment where dust, dirt or corrosive gas ( salt, acid, base etc).
- This product is designed for use with general electornic equipment.

## ASSIGNMENTS

- TDK should make the product under the approval specificaiton.
- TDK should follow the package method whitch is discribed in the approval specification.
- If any product is not satified with referance of the inductance, it may necessary to assemble the product to finding out the cause of fault
- Defining Winding method

Center Solenoid : The center of the overall wire bundle should be located in the center of the winding space and required to be within 2mm from the center of winding space

Pin Solenoid : The start point of the wire should be close to the barrier tape and required to be within 2mm from barrier tape

Solenoid After : The space between the start wire and the finish wire should be within 2mm

Tap Solenoid : The second wire bundle should be continued from the first wire bundle. In case of the 2 layers of two wire bundle after tap solenoid, the bundles between the first and the second wire bundle should be located in the same width.

Space solenid : The space of each wires should have the same distance each other and be required to be within 2mm each wire.

Solenoid : The wire should be close to each wire and the space between the wound wire is not allowedor the space of wires should be closer than diameter of 2 by wire. The cross of each wire is not allowed.

- Subsidiary tape may be used in other to enhance product quility after taking the approval from Design Department of LG TV

RoHS safety

# APPROVAL SHEET

## CUSTOMER : LG Electronics Co., Ltd.

| | | |
|---|---|---|
| MODEL NO | : | 12S-ALL |
| ITEM | : | STANDBY TRANS |
| PART NO | : | EBJ61470601 |
| DESCRIPTION | : | 12S-LS01 |
| DATE | : | 2011. 10. 26. |

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | FEELUX ELECTRONICS CO., LTD. ( KOREA FACTORY ) | TEL | 070-7780-8421 |
| | | FAX | 070-7780-8421 |
| SALES TEAM GENERAL MANAGER | Jong il Park | TEL | 011-799-4581 |
| | E-MAIL: kever321@feelux.com | | |
| QUALITY ASSURANCE TEAM DEPUTY GENERAL MANAGER | Kwang Hoon Cho | TEL | 016-706-2463 |
| | E-MAIL: khcho@feelux.com | | |

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | YANG JU FEELUX ELECTRONICS CO., LTD. ( HEAD OFFICE FACTORY ) | TEL | 070-7780-8000 |
| | | FAX | 070-7780-8109 |
| ADDRESS | 624-8, Seoku-Ry Kwangjeok-Myun, Yangju-Kun Kyunggi-Do Korea | | |
| REQUEST CUSTOMER | Chungkye FEELUX ELECTRONICS CO., LTD. ( SEOUL OFFICE FACTORY ) | TEL | 070-7780-8420 |
| | | FAX | 070-7780-8409 |
| ADDRESS | RM 401, Chungkye-jae 1 Kangdan, 511-2 Chungkye-3 Dong, Nowon-Ku Seoul, Korea | | |
| REQUEST CUSTOMER | WHEHAI FEELUX ELECTRONICS CO., LTD. ( CHINA FACTORY ) | TEL | 0086-631-786-7903 |
| | | FAX | 0086-631-786-7900 |
| ADDRESS | NO.166 FUYUAN(M) ROAD ROAD.GANGXL TOWN RONGCHENG CITY SHANDONG PROVICE CHINA | | |

FEELUX 주식회사 필 룩 스

# RECORD OF REVISION

| LG P/N : EBJ61470601 | | | MAKER SPEC : | | |
|---|---|---|---|---|---|
| REV. NO | REASON | CONTENTS | DATE OF APPROVAL | CHECKED | REMARKS |
| | | 신규재정 | | | |

# SPECIFICATION

| NO. 1 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
|---|---|---|---|

| 변경 사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## INDEX


1 / 18 : INDEX
2 / 18 : 1. DIMENSION
3 / 18 : 2. SCHEMATIC DIAGRAM
: 3. WINDING SPECIFICATION
4 / 18 : 4. ELECTRICAL CHARACTERISTICS
5 / 18 : 5. ENVIRONMENTAL CHARACTERISTICS
6 / 18 : 6. MECHANICAL CHARACTERISTICS
7 / 18 : 7. SECTION DIAGRAM
8 / 18 : 8. MATERIAL LIST
9 / 18 : 9. UL-LIST
10 / 18 : UL-LIST
11 / 18 : UL-LIST
12 / 18 : UL-LIST
13 / 18 : 10. CORE DIMENSION
14 / 18 : 11. BOBBIN DIMENSION
15 / 18 : 12. PROCESS FLOW
16 / 18 : 13. PACKING
17 / 18 : 14. INSPECTION DATA
18 / 18 : 15. ASSIGNMENT


| SPEC NO. | | DATE | 2011. 10. 26. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

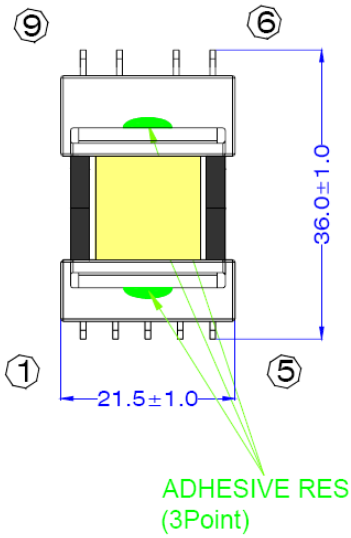
# SPECIFICATION

| NO. 2 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
|---|---|---|---|

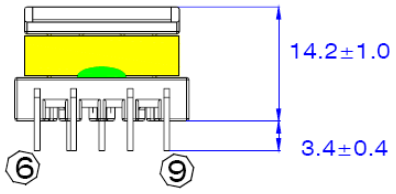
| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

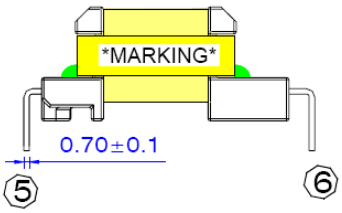
safety

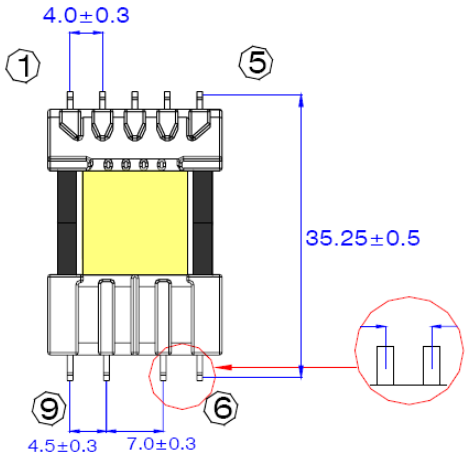
## 1. DIMENSION




| Marking Spec<br>12S-LS01 B<br>FL AABBCC F | | |
|---|---|---|
| PART NO | 12S-LS01 | |
| B | FEELUX ELECTORNIC ' CLASS B' SYSYTEM | |
| FL | CHINA WEIHAI FACTORY ID | |
| LOT NO | AABBCC | |
| F | CORE MAKER MARKING<br>I :ISU, F: FEELUX H: HUAXING | |
| AA | YEAR | 2010:10<br>2011:11... |
| BB | MONTH | JANUARY : 01<br>FEBRUARY : 02... |
| CC | DATE | FIRST DATA :01<br>SECOND DATA : 02... |




※ GAP CORE : Primary

※ LG part numbers omit.
Because, the marking space is narrow

| SPEC NO. | | DATE | 2011. 10. 26. | SHEET NO. | |
|---|---|---|---|---|---|

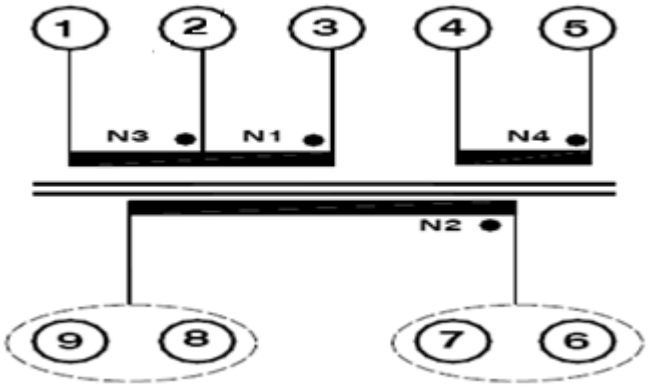
FEELUX

# SPECIFICATION

| NO. 3 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 2. SCHEMATIC DIAGRAM




## 3. WINDING SPEC

| No. | TERMINAL | | WIRE | TURNS (Ts) | WINDING METHOD | LAYER | BARRIER TAPE | | INSULATION TAPE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S | F | | | | | PRI | SEC | MATERIAL | T/W (mm) | TURNS |
| N1 | 3 | 2 | 1UEW 0.20φ | 53 | SOLENOID WINDING | 2 | 3 | 3 | P/E TAPE | 0.025/13.0 (YELLOW) | 3 Ts MIN |
| N2 | 6,7 | 8,9 | TIW-M 0.20φ X 4 | 7 | SOLENOID WINDING | 2 | 3 | 3 | P/E TAPE | 0.025/13.0 (YELLOW) | 3 Ts MIN |
| N3 | 2 | 1 | 1UEW 0.20φ | 67 | SOLENOID WINDING | 3 | 3 | 3 | P/E TAPE | 0.025/13.0 (YELLOW) | 3 Ts MIN |
| N4 | 5 | 4 | 1UEW 0.20φ | 29 | SOLENOID WINDING | 1 | 3 | 3 | P/E TAPE | 0.025/13.0 (YELLOW) | 3 Ts MIN |
| CORE FIXING TAPE | | | | | | | | | P/E TAPE | 0.025/5.0 (YELLOW) | 3 TS MIN |

*WINDING DIRECTION : Primary VIEW C.C.W(Clock Contrary Winding)

*PIN WIRING SPEC : TIW WIRE = 0.7Ts MIN , UEW WIRE = 1.0Ts MIN

*Between (pin 6) and (pin 7) / between (pin 8) and (pin 9) are short or open.
(6-7 / 8-9 short on PCB)

*N2 권선시 PIN 당 TIW-M 0.20φ WIRE 를 2가닥씩 결선 할것.

*WIRE TOLERANCE : 0.20mm ±0.003

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# SPECIFICATION

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|---|---|---|---|

| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 4. ELECTRICAL CHARACTERISTICS

| NO. | ITEM | TERMINAL | SPECIFICATION | REMARK |
|---|---|---|---|---|
| 4-1 | INDUCTANCE | 3 - 1 | 1.10 mH ± 7% | L.C.R METER<br>HP-4284A<br>AT 100KHz / 1V |
| | | 6,7 - 8,9 | 3.75 uH ± 30% | |
| | | 5 - 4 | 73.0 uH ± 20% | |
| 4-2 | LEAKAGE INDUCTANCE | 3 - 1<br>(SECONDARY ALL SHORT) | 50 uH MAX | |
| 4-3 | D. C RESISTANCE | 3 - 1 | 3.00 Ω MAX | HIOKI3224mΩ<br>HI TESTER |
| | | 6,7 - 8,9 | 0.05 Ω MAX | |
| | | 5 - 4 | 1.00 Ω MAX | |
| 4-4 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 3.0 KV r.m.s (1 MINUTE)<br>(Mp Condition :AC 3.6KV(RMS) 2Sec) | TOS-8850<br>safety |
| | | P COIL - CORE<br>S COIL - CORE | AC 1.5 KV r.m.s (1 MINUTE)<br>(Mp Condition :AC 1.8KV(RMS) 2Sec) | CUT OFF CURRENT<br>: 5 mA |
| 4-5 | INSULATION RESISTANCE | P COIL - S COIL | 100(M) Ohm MIN (AT DC 500V) | TOS-8850<br>safety |
| 4-6 | D.C BIAS | 3 - 1 | MORE THAN 90% OF INITIAL INDUCTANCE | TEST CURRENT<br>: 0.5 A<br>NORMAL TEMPERATURE |
| 4-7 | LAYER SHORT | 3 - 4<br>(1-6/7 ,8/9-5 short) | AC 1.5 KV Pulse 4 Times | DWX-05<br>safety<br>IMPULSE TESTER |
| 4-8 | QUALITY FACTOR | 3 - 1 | 50MIN | HP-4284A<br>AT 100KHz / 1V |

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# SPECIFICATION

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| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 5. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃±15℃ HUMIDITY 65%±20%
IF WHEN ANY OBJECTION IS SUGGESTED THE TEST CAN BE OPERATED AT 20℃±2℃ 65% ±5% RH

<table>
<tr><th>NO.</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>5-1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>5-2</td><td>KEEPING TEMPERATURE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>5-3</td><td>LOW TEMPERATURE RESISTANT</td><td rowspan="6">MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER ±5% OF THE INITIAL VALUE (IT SHOULD BE MANAGED BY±10% UNDER 10uH)</td><td>-25℃±2℃, 96Hr MEASURE AFTER 2Hr AT ROOM TEMP</td></tr>
<tr><td>5-4</td><td>HIGH TEMPERATURE RESISTANT</td><td>+105℃±2℃, 96Hr MEASURE AFTER 2Hr AT ROOM TEMP</td></tr>
<tr><td>5-5</td><td>HUMIDITY RESISTANT</td><td>+95%RH ±5% (40℃±5℃) 96Hr MEASURE AFTER 2Hr AT ROOM TEMP</td></tr>
<tr><td>5-6</td><td>TEMPERATURE CYCLE</td><td>
<table>
<tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr>
<tr><td>1</td><td>-25±2℃</td><td>30 MIN</td></tr>
<tr><td>2</td><td>+25±2℃</td><td>10 MIN</td></tr>
<tr><td>3</td><td>+105±2℃</td><td>30 MIN</td></tr>
<tr><td>4</td><td>+25±2℃</td><td>10 MIN</td></tr>
</table>
REPEAT 5 TIME FROM STEP 1 AND TEST AFTER 2Hr. AT ROOM TEMP
</td></tr>
<tr><td>5-8</td><td>HEAT SHOCK -RESISTANT</td><td>2HR AT -20℃->2HR AT 70℃ : 10 CYCLE</td></tr>
</table>

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FEELUX

# SPECIFICATION



| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 6. MECHANICAL CHARACTERISTICS

| NO. | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 6-1 | LAYER SHORT TEST | THREE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 6-2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER ±5% OF THE INITIAL VALUE (IT SHOULD BE MANAGED BY±10% UNDER 10uH) | DIP THE TERMINAL IN SOLDER POT AT 260℃ +5℃ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 6-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER POT 245℃ -5℃ FOR 3 SECONDS |
| 6-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5kgf DURING 30±5 SEC |

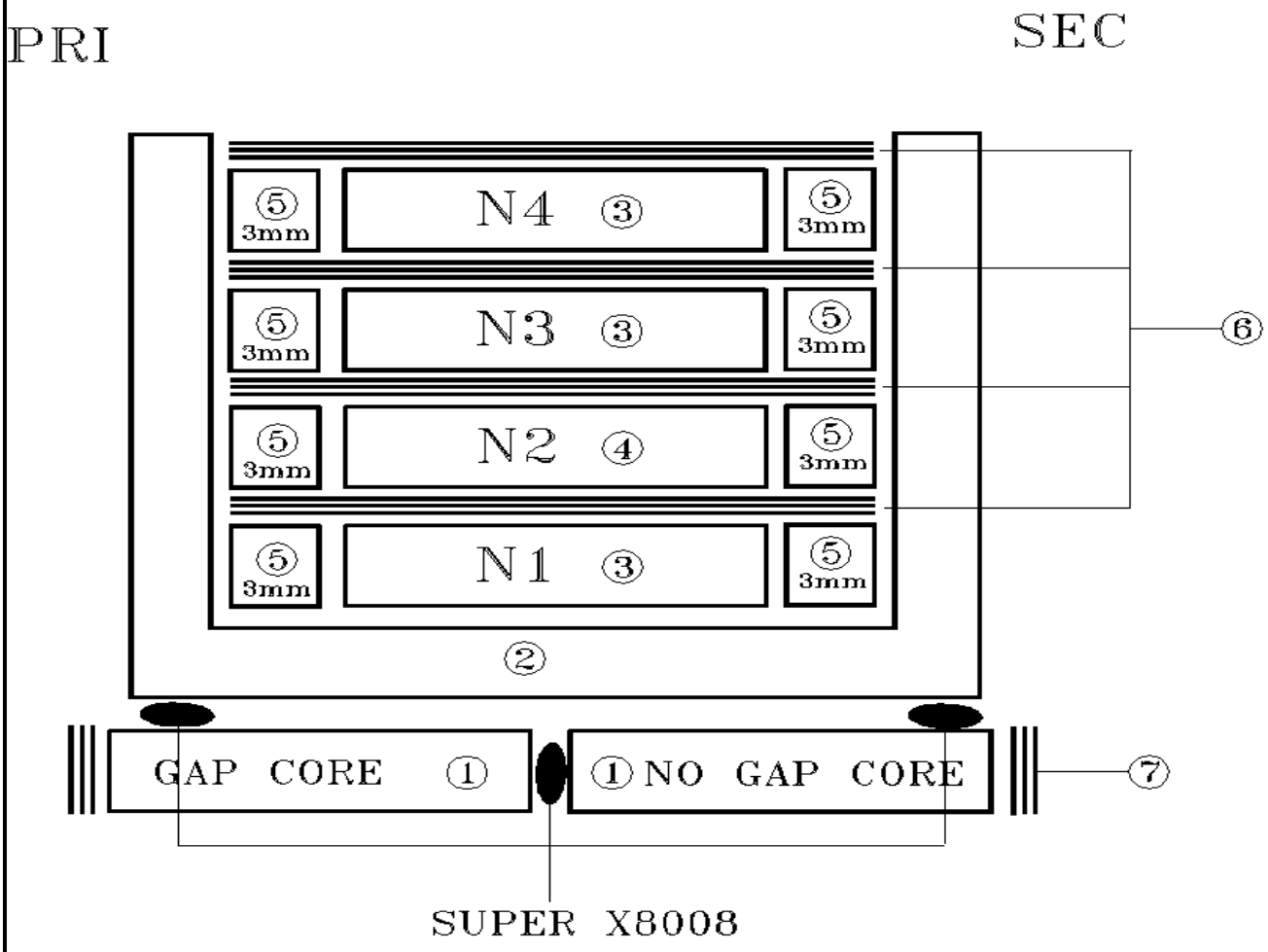
# SPECIFICATION

| NO. 7 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 7. SECTION DIAGRAM

safety




*CENTER BONDING : MORE THEN 80% OF THE VOLUME APPLIED TO THE GAP

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# SPECIFICATION

| NO. 8 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
|---|---|---|---|

| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## _8. MATERIAL LIST.

safety

| NO. | PART | MATERIAL NAME | MANUFACTURES | MATERIAL COLOR | UL FILE NO |
|---|---|---|---|---|---|
| 1 | CORE | EE 1918 PM7<br>EE 1918 J2C<br>EE 1918 HX-4P | TODA ISU CORPORATION<br>FEELUX<br>HUAXING | BLACK | |
| 2 | BOBBIN | 94V-0 PHENOL RESIN<br>PM9820 9PIN | SUMITOMO BAKELITE CO., LTD.<br>( WEIHAI HUAXIANG<br>BOO KYOUNG ,<br>KUNSHAN BANGYU INDUSTRIAL CO., LTD | BLACK | E41429 |
| | | TERMINAL | IL-KWANG ELECTRONICMATERIALCO.,LTD<br>CHUAN HUANG ENTERPRISE CO., LTD | SILVER | |
| 3 | WIRE | POLYURETHANE<br>1UEW 0.20Φ | HANGZHOU WEIFENG<br>ELECTRONICS CO.,LTD | NATURAL<br>LIGHT<br>PINK | E229341 |
| | | | JIANGSU DARTONG M&E CO.,LTD | | E237377 |
| 4 | | TIW-M 0.20Φ | COSMOLINK CO., LTD | BRASS<br>YELLOW | E213764 |
| 5 | BARRIER TAPE | P.N.W TAPE<br>0.25,0.45t × 3.0mm | TAE HWA INDUSTRIAL CO.,LTD. | WHITE | E92677 |
| 6 | INSULATION TAPE | POLYESTER FILM TAPE<br>0.025mm × 13.0mm | METAL LINE CO.,LTD | YELLOW | E162848(S) |
| | | | YAHUA PRESSURE SENSITIVE | | E16511 |
| 7 | CORE FIXING TAPE | POLYESTER FILM TAPE<br>0.025mm × 5.0mm | METAL LINE CO.,LTD | YELLOW | E162848(S) |
| | | | YAHUA PRESSURE SENSITIVE | | E16511 |
| 8 | CENTERBOND/ ADHESIVE | SILICONE SUPER X8008 | CEMEDINE CO., LTD. | BLACK | |
| 9 | SOLDER | Sn 99.3% cu 0.7% | HEESUNG MATERIAL CO.,LTD<br>TIANJIN QINGHESCIENCE –TECH<br>Dalian Jin'an Welding Industry Co., Ltd | SILVER | |
| 10 | FLUX | S-100 | TIANJIN CONGYONG ELECTRIC CO.,LTD | LEMON<br>YELLOW | |
| 11 | MARKING | INK & LABEL | BON MARQUE | BLACK | |

# SPECIFICATION

| NO. 9 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
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| 변 경 사 항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 9. UL CARD

### * YELLOW CARD

**FEELUX CO LTD** E302847
CHUNGKYE JAE 1 KONGDAN, ROOM 401
511-2 CHUNGKYE 3-DONG
NOWON-KU
SEOUL, 139-223 REPUBLIC OF KOREA

**Class 130 (B) insulation system**, designated B.

Marking: Company name or tradename "FL" and system designation.

Last Updated on 2009-05-08

**1. BOBBIN**

SUMITOMO BAKELITE CO LTD E41429
5-8 HIGASHI-SHINAGAWA 2-CHOME
SHINAGAWA-KU
TOKYO, 140-0002 JAPAN

| | | Min. | | H | H | H | RTI | | | C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | V | Elec | Mech | | T |
| Mtl Dsg | Color | mm | Class | I | I | A | | Imp | Str | I |
| Phenolic (PF), "Sumikon", furnished as pellets, granular material. | | | | | | | | | | |
| PM-9820 | BK | 0.16 | V-0 | - | - | - | 150 | 150 | 150 | 3 |
| | | 0.51 | V-0 | 3 | 1 | - | 150 | 150 | 150 | |
| | BN | 0.18 | V-0 | - | - | - | 150 | 150 | 150 | |
| | | 0.70 | V-0 | 1 | 2 | - | 150 | 150 | 150 | |
| | | 1.5 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |
| | | 3.0 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |

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| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## * YELLOW CARD

**2.WIRE (UEW)**

HANGZHOU WEIFENG ELECTRONIC CO LTD E229341
DAICUN XIAOSHAN HANGZHOU,ZHEJIANG 311261 CHINA

| Mtl Dsg | Coat Type BC | Coat Type OC | ANSI Type | Temp Class |
|---|---|---|---|---|
| UEW | Polyurethane | - | MW75-C | 180 |
| | | - | MW79 | 155 |
| | | - | MW75# | 130 |
| | Polyurethane | Polyamide | MW83-C | 180 |
| | | Polyamide | MW80-C# | 155 |
| | | Polyamide | MW28-C# | 130 |

JIANGSU DARTONG M & E CO LTD E237377
1 DARTONG RD
HUAIAN ECONOMY DEVELOPMENT ZONE
HUAIAN, JIANGSU 223238 CHINA

| Mtl Dsg | Mark Dsg | Coat Type BC | Coat Type OC | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| UEW | (1) | Polyurethane | — | MW 79-C | 155 |
| | | | | MW 75-C | 130 |
| UEW | UEW/180 | Polyurethane | — | MW82 | 180 |
| UEW/NY | (1) | Polyurethane | Polyamide | MW80# | 155 |
| | | | | MW28# | 130 |

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# SPECIFICATION

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| 변 경 사 항 CHANGE | | | | |
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| | (1) | | (3) | |
| | (2) | | (4) | |

## * YELLOW CARD

**2. WIRE (TIW-M)**

COSMOLINK CO LTD
449 GUN GIN-LEE
IWON-MYUN
OKCHUN-GUN, CHUNG CHONG BUK-DO 373-860 REPUBLIC OF KOREA

E213764

Cat. No. TIW-M, reinforced insulation rated 130℃(Class B), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG (1.00 - 0.20 mm).

Cat. No. TIW-M (F) reinforced insulation rated 155℃(Class F), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG.

Cat. No. TIW-M (B) reinforced insulation rated 130℃(Class B), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG.

Cat. No. TIW-M (A) reinforced insulation rated 105℃(Class A), 1.41 kV peak for Information Technology Equipment, 18 - 32 AWG.

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FEELUX

# SPECIFICATION

| NO. 12 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
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| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## * YELLOW CARD

**3.BARRIER**

TAE HWA INDUSTRIAL CO LTD E92677 (S)
634 DEUNGCHON-DONG KANGSEO-KU, SEOUL 157-030
KOREA

Flame retardant fiberglass cloth tape, Cat. Nos. TH-gc012, H-2715.
Flame retardant acetate cloth tape, Cat. No. 6701.

Flame retardant polyester film tape, Cat No. H-5673.

Marking: Company name or E92677 and "Flame retardant"printed on carton, wrapper and/or core.

**4.INSULATION TAPE**

METAL LINE CO LTD E162848
330-1 BUHANG-RI SILCHON-EUP
GWANGJU-SI, GYEONGGI-DO 464-874 REPUBLIC OF KOREA

**Reinforced polyester (PET) tape with acrylic adhesive**, Cat. No. 800BT, rated 130C.

**Polyester (PET) tape with acrylic adhesive**, Cat. No. 800(a), rated 130 C.

**Polyester (PET) tape with acrylic adhesive**, Cat. No. 8000, rated 130 C.

**Flame Retardant Al foil tape with acrylic adhesive**, Cat. No. FG80AL$.

**Flame Retardant Ni coated woven polyester fiber tape with acrylic adhesive**, Cat. No. FG110R$.

**Flame Retardant Polyester / AL foil tape with conductive acrylic adhesive**, Cat. No. FG65PAL$.

(a) May be marked: "Film side CTI Performance Level Category PLC=0, Voltage 600+, per UL 746A/ASTM D 3638" and/or "Film side CTI 600 + per IEC112, First Edition (1979), CTI Material Group I" or equivalent.

$ - Markings shall include "Flame Retardant".

**INGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD**
**SOUTHWEST AROUND RD**
**JINGJIANG, JIANGSU 214500 CHINA** **E165111**

**Nonwoven cloth/polyethylene terepthalate film tape, Cat. No. WF with suffixes, rated 130 C*(a).**
**Polyethylene terephthalate film tape, Cat. No. CT with suffixes, rated 130 C*(c) (e) .**
**Polyethylene terephthalate film tape , Cat. No. CT with suffixes, rated 130 C(b)(f).**
**Polyethylene terephthalate film tape, Cat. No. PZ with additional suffixes, rated 130 C*(b).**
**Polimide film tape, Cat. No. PF with suffixes, rated 180 C* (d).**

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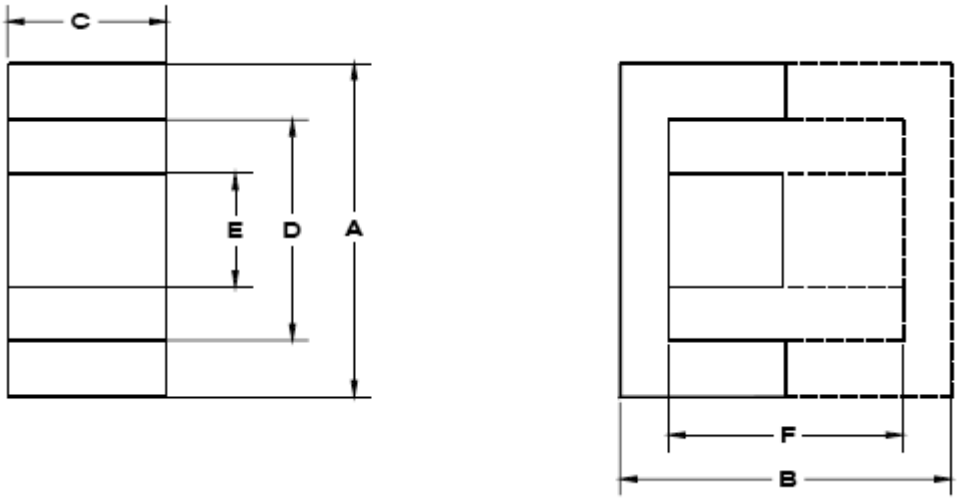
FEELUX

# SPECIFICATION

| NO. 13 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
|---|---|---|---|

| 변경 사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 10.CORE DIMENSION




| TYPE | DIMENSIONS IN mm | | | | | | Unit[mm] |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| EE1918 | 19.10±0.5 | 19.84±0.5 | 5.00±0.5 | 14.51±0.5 | 4.55±0.5 | 15.20±0.3 | ISU |
| EE1918 | 19.10±0.5 | 19.84±0.5 | 5.00±0.5 | 14.51±0.5 | 4.55±0.5 | 15.20±0.3 | FEELUX |
| EE1918 | 19.10±0.5 | 19.84±0.5 | 5.00±0.5 | 14.51±0.5 | 4.55±0.5 | 15.20±0.3 | HUAXING |

| TYPE | EFFECTIVE PRARAMETERS | | | Unit[mm] |
|---|---|---|---|---|
| | Le(mm) | Ae(㎟) | Ve(㎟) | |
| EE1918 | 47.6 | 22.9 | 1090.0 | ISU |
| EE1918 | 47.6 | 22.9 | 1090.0 | FEELUX |
| EE1918 | 47.5 | 23.0 | 1092.5 | HUAXING |

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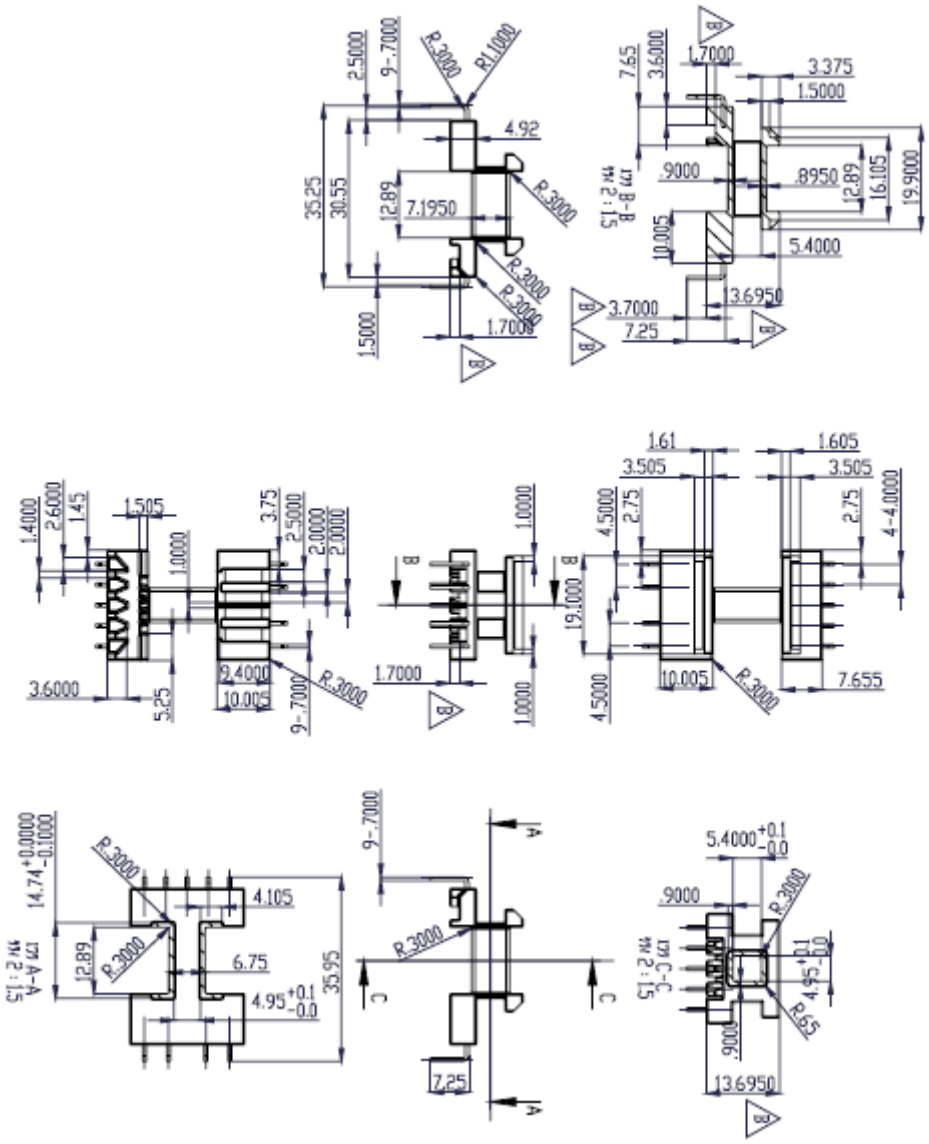
FEELUX

# SPECIFICATION

| NO. 14 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 11.BOBBIN DIMENSION




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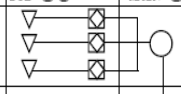
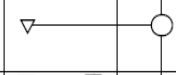
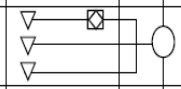
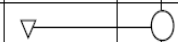
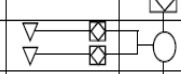
FEELUX

# SPECIFICATION

| NO. 15 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
|---|---|---|---|

| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 12.PROCESS FLOW

| 공정번호 | 공정 SUB 공정 | 공정 MAIN 공정 | 사용자재 | 공정번호 | 관리항목 | 관리기준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 |  | | 보빈<br>WIRE<br>절연 TAPE | 1toN차 권선 | COIL 의 굵기와 종류<br>권선 턴수 ,권선 상태<br>결선 상태 ,절연 상태 | 권선 작업 지도서 | 2회/1일 | SAMPLING<br>5EA/LOT당 | Micro Meter | 생산 | 성적서 |
| 2 |  | | SOLDER<br>플럭스 | 납땜 | 납땜 시간 : 0.2ϕ 이하 : 1.5sec<br>0.2ϕ 이상 : 2.5sec<br>USTC, TIW-M : 3~4sec<br>납땜 온도 : 460℃ MAX | 납땜 작업 표준서 | 2회/1일 | 전수 | 온도계<br>납조기 | 생산 | 온도<br>체크시트 |
| 3 |  | | CORE<br>절연 TAPE<br>GAP | CAP,코아조립 | CAP/CORE 종류 확인<br>조립상태<br>TAPING TURNs 및 TAPING 상태 | CORE 조립 작업표준서 | 2회/1일 | SAMPLING | Micro Meter | 생산 | |
| 4 | |  | | 1차 검사 | 전기적 특성값 (L값,TURNs 등)<br>결선, 납땜상태 | 1차 검사 기준서 | 전수 | 전수검사 | TURNs Meter<br>LCR-Meter | 생산 | 1차검사<br>일보 |
| 5 | |  | | BONDING/<br>건조 | BOND POINT 및 도포량<br>건조온도 및 시간 120℃,2Hr | 건조작업 표준서 | 2회/1일 | SAMPLING | 건조기 | 생산 | 온도<br>체크시트 |
| 6 |  | | 불멸잉크 | 마킹 | 마킹방향,위치,선명도<br>LOT No. | 마킹 작업 표준서 | 전수 | 전수검사 | MARKING 도장 | 생산 | |
| 7 | |  | | PIN 교정 | PIN 휨 , PIN 교정 상태 | PIN 교정 작업 표준서 | 전수 | 전수검사 | PIN 교정 JIG | 생산 | |
| 8 | |  | | 최종 검사 | 전기적 특성값 (L값,LEAKAGE/<br>IMPULSE TESTER)<br>위상,TURNs,내전압,<br>절연상태, Layer short등 | 2차 검사 기준서 | 전수 | 전수검사 | TURNs Meter,<br>LCR-Meter,내압기<br>IMPULSE TESTER | 생산 | 2차검사<br>일보 |
| 9 | |  | | 외관검사 | BOBBIN 파손, 납땜 상태<br>PIN상태 , 기타 | 외관검사 기준서 | 전수 | 전수검사 | | 생산 | 외관검사<br>일보 |
| 10 |  | | PAPER BOX<br>OUT BOX | 포장 | BOX 규격 , 외관 ,포장상태<br>PIN to PIN 간격 | 포장작업 기준서 | 전수 | | | 생산 | |
| 11 | |  | | 출하검사 | 전기적 특성값 (L값,절연저항,내전압,)<br>치수, 구조, 외관, 수량 | 출하검사 기준서 | SAMPLING | SAMPLING | LCR-Meter,<br>내압기, 절연저항기 | 품질관리 | 출하검사<br>성적서 |
| 12 | |  | | 창고입고 | 수량, 제품명, 포장상태<br>입, 출고 재고관리 | 창고 적재 표준서 | | | | 영업 | 입고전표<br>수불장부 |
| 13 | |  | | 출하 | 제품명, 수량 | | | | | 영업 | 출하전표 |

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|---|---|---|---|---|---|

FEELUX

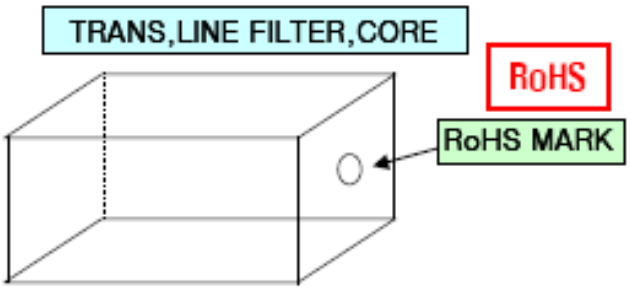
# SPECIFICATION

| NO. 16 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
|---|---|---|---|

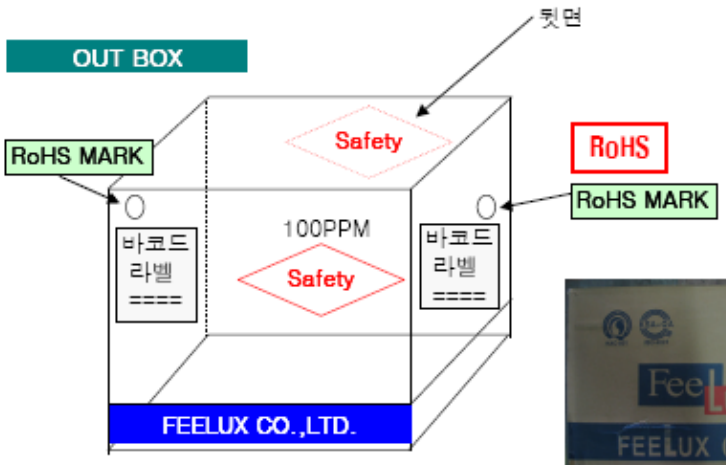
| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 13.PACKING

1. CARTON ( EA)




2. OUT BOX (IN CARTON EA)









| SPEC NO. | | DATE | 2011. 10. 26. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 17 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
|---|---|---|---|

| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 14. INSPECTION DATA

검 사 성 적 서

| ITEM NAME | | ST/BY TRANS | | | | TEST DATE | | 2011-8-8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PART NO. | | 12S-LS01 | | | | INSTRUMENT | | HP-4284A | | | | |
| 항목 | Terminal | Limit | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 | #10 |
| L (100K 1V) | 3 -- 1 | 1.10 mH ± 7% | | | | | | | | | | |
| | 6,7 -- 8,9 | 3.75 uH ± 30% | | | | | | | | | | |
| | 5 -- 4 | 73.0 uH ± 20% | | | | | | | | | | |
| DCR (Ω) | 3 -- 1 | 3.00 Ω MAX | | | | | | | | | | |
| | 6,7 -- 8,9 | 0.05 Ω MAX | | | | | | | | | | |
| | 5 -- 4 | 1.00 Ω MAX | | | | | | | | | | |
| LEAK AGEL | 3 -- 1 (SEC ALL SHORT) | 50 uH MAX | | | | | | | | | | |
| D.C BIAS (100K 1V) | 3 -- 1 | DC 0.5 A | | | | | | | | | | |
| | % | 90% MIN | | | | | | | | | | |
| Q | 3 -- 1 | 50 MIN | | | | | | | | | | |
| WITHSTANDING VOLTAGE (100K 1V) | P COIL- S COIL | AC 3.0 KV r.m.s (1 MINUTE) (Mp Condition :AC 3.6KV(RMS) 2Sec) | | | | | | | | | | |
| | P COIL- CORE | AC 1.5 KV r.m.s (1 MINUTE) (Mp Condition :AC 1.8KV(RMS) 2Sec) | | | | | | | | | | |
| | S COIL- CORE | AC 1.5 KV r.m.s (1 MINUTE) (Mp Condition :AC 1.8KV(RMS) 2Sec) | | | | | | | | | | |
| INSULATION RESISTANCE | P COIL - S COIL | 100㏁ MIN (DC. 500V) | | | | | | | | | | |
| LAYER SHORT | 3 - 4 (1-6/7 ,8/9-5 short) | AC 1.5 KV Pulse 4 Times | | | | | | | | | | |

| SPEC NO. | | DATE | 2011. 10. 26. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 18 / 18 | ST/BY TRANS | P / N | EBJ61470601(12S-LS01) |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 15.ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.

2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.

3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.

4) WIRE BUNDLE METHOD.

* CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2MM.
* PIN SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2MM.
* TOP SOLENOID : ERROR BETWEEN THE TOP BARRIER TAPE AND LAST WIRE IS REQUIRED TO BE SMALLER THAN 2MM.
* SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER -SOLENOID IS REQUIRED TO BE SMALLER THAN 2MM.
* TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
* SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM. ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
* SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2.
IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.

5) PERFORMANCE OF THIS DRAWING IS REQUIRED TO MEET PART NUMBER 12S-LS01

6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE. BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

| SPEC NO. | | DATE | 2011. 10. 26. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# 폴리 우레탄 동선 (1UEW)

| 치 수 | | | | 절연파괴전압 (V) ↑ | 내마모 파괴하중 | | 최대도체저항 (Ω/km) ↓ | 신장률 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성외경 (mm) ↑ | 최대완성외경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.224 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.686 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

| 제/개정 | 일자 | 제정사유 | 개정No. |
|---|---|---|---|
| | 07월 15일 | 신규 제정 | QC-1 |
| | | | |
| | | | |

# 4M QC 공정도

<TRANS>

| 작성 | 검토 | 승인 |
|---|---|---|
| | | |
| 07월 15일 | / | 07월 15일 |

| 공정번호 | 공정 흐름도 | 공정명 | 작업내용 | 4M | | | |
|---|---|---|---|---|---|---|---|
| | | | | Man(사람) | Machine(장비) | Material(재료) | Method(방법) |
| 1 | ▽ | 원/부자재 수입검사 | 원자재 수입검사 | | Multi Meter (HP) V/C / LUPE XRF(SKYRAY) | CORE / BOBBIN / WIRE 외 | 수입검사 기준서 승인원 |
| 2 | ○ | 권선 | BOBIN에 WIRE 권선 및 PIN결선 | | 권선기 , NIPPER 등 | BOBBIN / WIRE INSULATION TAPE BARRIER TAPE 외 | 권선 작업지도서 |
| | ◇ | | 공정검사(권,결선상태) | | 육안 / V/C TURN METER(대화) | 권선품 | 작업지도서 |
| 3 | ○ | 납땜 (★CTQ) | 권선품 PIN 결선부위 납땜 | XU TAO / XIU ZHAO YANG | DIPPING기 온도계 / TIMER | 권선품 SOLDER / FLUX | 온도: 460 MAX 시간: 선경별 납땜시간 |
| | ◇ | | 공정검사(납땜상태) | | 육안 / LUPE | 납땜 완료 권선품 | SHORT, 납땜 높이 |
| 4 | ○ | 조립 | 권선품에 CORE 조립 | | LCR METER (HP) BONDING기 | CORE / 권선품 GAP BOND / FIXING TAPE | CORE 조립 작업지도서 |
| | ◇ | | 공정검사(조립상태) | | 육안 / LUPE | 조립 완료 제품 | 조립상태: GAP위치 TAPE 턴수: 3Ts |
| 5 | ◇ | 1차 검사 | 특성(L값,턴수)검사 외관(납땜상태 등)검사 | | LCR METER (HP) TURNs METER(대화) 육안/LUPE | 조립 완료 제품 | 1차 검사 기준서 |
| 6 | ○ | 건조 (★CTQ) | 건조 작업 | YANG LIN /XIUZHAOYANG | 건조기 TIMER/ 온도계 | 함침 완료 제품 | 건조 작업 지도서 온도:120 ±5℃ 시간 :3Hr |
| | ◇ | | 공정검사(함침상태) | | 육안 | 건조 완료 제품 | 건조 상태 ,외관 PIN이물 |
| 7 | ◇ | 최종 검사 | 특성검사 | | 종합계측기(TPNGHUI) / 내압기/ SURGE (TOS)/IMPULSE TESTER | 건조 완료 제품 | 검사 기준서 승인원 특성 SPEC |
| | | | 외관 검사 | | 육안 / LUPE PIN JIG | 건조 완료 제품 | 검사 기준서 승인원 외관 SPEC |
| 8 | ○ | 마킹 | 마킹작업 | | 자동 MARKING기 | 건조 완료 제품 , INK | 마킹 작업 지도서 승인원 마킹 사양 |
| | ◇ | | 공정검사(마킹상태) | | 육안 | 마킹 완료 제품 | 마킹 사양 , 위치 등 사양 |
| 9 | ○ | 포장 | 제품 포장 진행 | | TAPE 절단기 | 완제품 , 포장 BOX 포장 TAPE | 포장 작업 지도서 포장 규격 |
| 10 | ◇ | 출하검사 | 출하검사 | | LCR/ DCR/내압기 V/C / 육안 | 완제품 | 출하 검사 기준서 출하 검사 성적서 |
| 11 | | 출하 | 출하진행 | | | | 출고 요청 수량 확인 |

* 작성방법

1. 공정번호 : 원자재 수입검사부터 완제품 출하까지 순차적 공정 No부여 (실제 공정 No와 일치해야함)

2. 공정흐름도 : 협력사에서 사용되는 기준에 따라 도형으로 표기
3. 공정명 : 해당공정 이름 (CTQ공정은 ★ 표기)
4. 작업내용 : 공정에 대한 작업내용
5. 사람 : CTQ공정에 한해 작업자 이름 (교대근무일경우 전/후 모두기입)
6. 장비 : 해당공정 사용장비명 및 회사명
7. 재료 : 생산 및 검사에 사용되는 원재료
8. 방법 : 생산 및 검사를 하기위한 조건(반드시 단위 및 Tolerance 기입)

| 4M | 4M 표준 분류 항목 | 세부항목 | 설명 | 1차 Vendor | | | 2차/3차 Vendor | | | 제출 서류 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 자체 승인 | LGE 승인 | | 1차 협) 자율 | LGE 승인 | | |
| | | | | | 단순 | 중요 | | 단순 | 중요 | |
| MAN | 일반 작업/검사자 변경 | | 최종인, 신입사원, 일용직 | O | | | O | | | 1. 교육결과 (자체) |
| | 중요 작업/검사자 변경 | | CTQ 공정 (중요공정) | | O | | O | | | 1. 4M 변경서<br>2. 교육결과<br>3. 인수인계서 (품질부서장 변경시) |
| | 상호 변경 | | | | O | | O | | | |
| | 품질책임자, 친환경 책임자 변경 | | 품질 부서장, 친환경 책임자 | | O | | O | | | |
| MACHINE | 생산설비 (In-Line) | 교정 / 수리 | | O | | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 설비점검자료<br>4. 변경 전/후 신뢰성 자료 (신규, 개조) |
| | | Spare Part 교환 | | O | | | O | | | |
| | | 신규 / 수정 | | | | O | | | O | |
| | (QA) 검사설비, Jig | 교정 / 수리 | | O | | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 설비점검자료<br>4. 변경 전/후 신뢰성 자료 (신규, 개조) |
| | | Spare Part 교환 | | O | | | O | | | |
| | | 신규/ 수정 | | | O | | O | | | |
| | 금형 | 이동 | 금형 타 업체 이동(이곡) | | O | | | O | | 1. 4M 변경서<br>2. 변경 전/후 초기 검사성적서<br>3. 금형 점검자료<br>4. 변경 전/후 신뢰성 자료 (금형 신작) |
| | | 신작 | 금형 호기 추가 | | | O | | | O | |
| | | 수정 | 성형부 수정, 교환(Punch, Die, Core) | | | O | | | O | |
| | | 수리 | | O | | | O | | | |
| | Line | 신설,복수 | 사내 Line 증설 | | O | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 작업지도서<br>4. QC 공정도 |
| | | 이동 | 설비, Jig 변동 없음 | | | O | O | | | |
| MATERIAL | 원자재 | 재질/성분 변경 | 1. 재질변경시 : 사전 HSMS 등록 | | | O | | | O | 1. 4M 변경서<br>2. 변경 전/후 검사성적서,<br>3. 변경 전/후 신뢰성 자료<br>4. 유해물질 검사성적서<br>5. 변경 전/후 사양승인원 |
| | | 물성 변경 | | | | O | | | O | |
| | | 안료/도료 변경 | | | | O | | | O | |
| | | Scrap 사용 비율 변경 | | | | O | | | O | |
| | | 색상(Color) 변경 | | | | O | | | O | |
| | | 표면 처리, 도금, 도장 | | | | O | | | O | |
| | 부자재<br>세척제, 이형제,<br>표호비닐, 부직포<br>Gasket류, Rubber류 | 추가 | 1. 재질변경시 : 사전 HSMS 등록 | | | O | | | O | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 유해물질 검사성적서 (재질변경시)<br>4. 작업지도서 |
| | | 삭제 | | | | O | | | O | |
| | | 변경 | | | | O | | | O | |
| | 하위 부품 | 추가 | 1. 재질변경시 : 사전 HSMS 등록 | | | O | | | O | 1. 4M 변경서<br>2. 변경 전/후 검사성적서,<br>3. 변경 전/후 신뢰성 자료<br>4. 유해물질 성적서 (추가, 변경)<br>5. 변경 전/후 사양승인원<br>* 사전 HSMS에 등록<br>* 부품삭제의 경우에는 유해물질 성적서 제출 無 |
| | | 삭제 | | | | O | | | O | |
| | | 변경 | | | | O | | | O | |
| | 구조 변경 | 치수 변경 | | | | O | | | O | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 변경 전/후 신뢰성 자료 (단순 변경은 제외)<br>4. 변경 전/후 사양승인원 |
| | | 형상 변경 | | | | O | | | O | |
| METHOD | 생산지 | 추가 | | | | O | | | O | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 변경 전/후 신뢰성 자료<br>4. 유해물질 성적서<br>5. QC 공정도<br>6. 공장심사 자료<br>* 2, 3차 Vendor는 1차 Vendor 실시 자료 |
| | | 이동 | | | | O | | | O | |
| | 하위 Vendor | 추가 | | | | O | | | O | |
| | | 변경 | | | | O | | | O | |
| | 검사 기준 변경 | 수입검사 | | O | | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 검사 기준서 (또는 작업지시서)<br>4. 사양승인원 |
| | | 공정검사 | | O | | | O | | | |
| | | 출하검사 | | | O | | O | | | |
| | 공정 변경 | 작업방법 변경 | | O | | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 변경 전/후 신뢰성 자료 (단순 변경은 제외)<br>4. QC 공정도<br>5. 작업지도서 |
| | | 사출/성형 조건 | | | | O | | | O | |
| | | 후가공 변경 | | | | O | | | O | |
| | Label/Marking | | 규격 Label 변경 : 규격그룹 검토 | | O | | O | | | 1. 4M 변경서<br>2. 변경 전/후 사양승인원<br>3. 작업 지도서<br>4. 규격 승인 관련 자료 (규격 Label 변경 시) |
| | Packing 변경 | BOX, Tray | | | O | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 변경 전/후 신뢰성 자료 (Packing 시험)<br>4. 사양승인원 |
| | ROM 변경 | ROM 버전 변경 | | | | O | | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 변경 전/후 신뢰성 자료<br>* PCB 단순 Version 변경 인 경우 신뢰성 자료 제외 가능<br>4. 사양승인원 |
| | S/W 변경 | S/W 버전 변경 | | | | O | | | O | |
| | PCB 변경 | 구조 변경 | PCB Hole, Pattern 변경 등 | | | O | | | O | |
| | | Version 변경 | 단순 Version 변경 | | O | | | O | O | |

1) 1차 Vendor : 제품을 조립하는 Maker

2) 2(3)차 Vendor : 1(2)차 Vendor에 공급하는 Maker

* 4M의 Vendor 정의 : 원재료를 생산 또는 조립하는 가공 업체, Agent 또는 공급권만 가지고는 있는 Supplier는 Vendor에서 제외함.

3) 단순 : 단순 4M으로 관련자료를 기준으로 LGE QA에서 접수/승인함

4) 중요 : 관련부서 (연구소, 부품개발, 규격, 인정시험, 제품 Event)등 검토 후 승인함.

# TRANS SPECIFICATION
# [T101]

# APPROVAL SHEET

| | |
|---|---|
| CUSTOMER | : LG ELECTRONICS INC. |
| MODEL | : 10P 26"32" |
| ITEM | : MULTI TRANS |
| PART NO | : EBJ60711106 (LPM-101) |
| S.J SPEC NO | : LGTR-09-20 |

Safety

APPROVED

DATE : 2009. 11. 09.

SOOJUNG ELECTRONICS IND. CO., LTD.



| | | | | | | |
|---|---|---|---|---|---|---|
| ADDRESS | Office & Factory | 35-1, HongJae4-Dong, Seodaemoon-Gu, 120-094, Seoul, KOREA | | | TEL<br>FAX | 02-737-2329<br>02-737-2525 |
| | Factory China 1 | Wendong Shuzheng Electronics,<br>Beijao, Wendeng City, shandong, China | | | TEL<br>FAX | 86-631-857-1392<br>86-631-857-1393 |
| | Factory China 2 | Dongguan Soojung Electronics,<br>Zhonghanqiao Industrial District, Wangniudun town,<br>Dongguan City, Ganding, China | | | TEL<br>FAX | 86-769-8851-3531<br>86-769-8851-3530 |
| | R&D Part | Jong Ho Kim | E-mail | jhkim@soojung.com | TEL | 010-4056-2623 |
| | Sales Part | Jong Won Lee | E-mail | ljw@soojung.com | TEL | 016-711-2443 |
| | Q.A Part | Doo Young Oh | E-mail | ody@soojung.com | TEL | 011-616-4864 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

# 1. RECORD OF REVISION

| REV NO. | REASON | CONTENTS | DATA OF APPROVAL | CHECKED | REMARKS |
|---|---|---|---|---|---|
| 0 | | - 신규제정. | 2009.11.09 | | |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

# 2. I N D E X

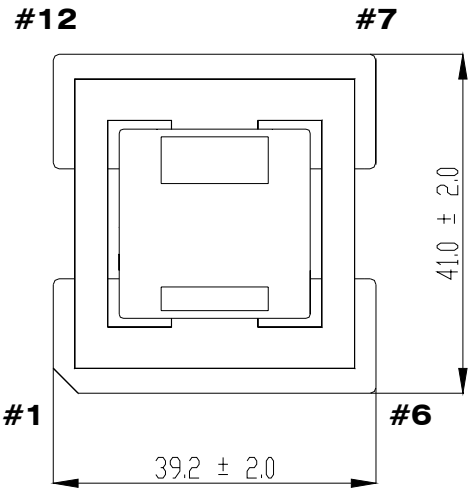

| | | |
|---|---|---|
| FILE NO | 1/20 | 1. RECORD OF REVISION |
| | 2/20 | 2. INDEX |
| | 3/20 | 3. DIMENSION |
| | 4/20 | 4. SCHEMATIC |
| | 4/20 | 5 WINDING SPECIFICATION |
| | 5/20 | 6. ELECTRICAL CHARACTERISTICS |
| | 6/20 | 7. ENVIRONMENTAL CHARACTERISTICS |
| | 7/20 | 8. MECHANICAL CHARACTERISTICS |
| | 8/20 | 9. INTERNAL CONSTRUCTION |
| | 9/20 | 10. MATERIAL LIST |
| | 10/20 | 11. UL CARD |
| | 11/20 | UL CARD |
| | 12/20 | UL CARD |
| | 13/20 | 12. CORE DIMENSION |
| | 14/20 | 13-1. BOBBIN DIMENSION |
| | 15/20 | 13-2. CAP DIMENSION |
| | 16/20 | 14. PROCESS FLOW |
| | 17/20 | 15. PACKING |
| | 18/20 | 16. INSPECTION DATA |
| | 19/20 | 17. ASSIGNMENT |
| | 20/20 | 18. WIRE SPECIFICATION |

CUSTOMER : LG ELECTRONICS Inc.

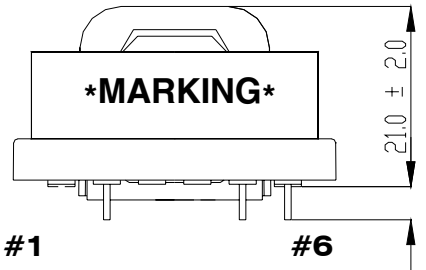
| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

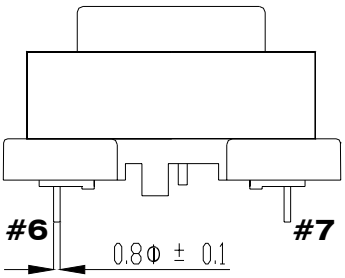
Safety

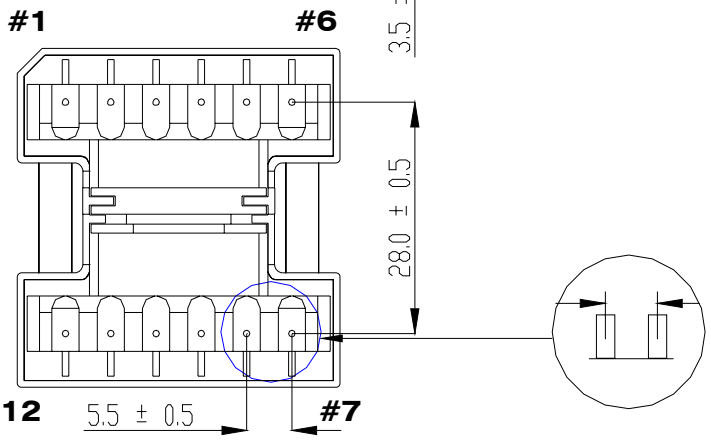
## 3. DIMENSION (UNIT:mm)




| *MARKING SPEC*<br><br>LPM-101 SJB-004 SJ<br>SJ 090101<br>EBJ60711106 | | |
|---|---|---|
| PART NO | LPM-101 | |
| | EBJ60711106 | |
| SJB-004 SJ | SOOJUNG ELECTRONIC<br>"CLASS B" SYSTEM | |
| SJ | CHINA WENDENG FACTRY ID | |
| DGSJ | CHINA DONGGUAN FACTORY ID | |
| KSJ | KOREA FACTORY ID | |
| LOT NO | 090101 | |
| 09 | YEAR | 2009: 09<br>2010: 10 |
| 01 | MONTH | JANUARY : 01<br>FEBRUARY: 02 |
| 01 | DATE | FIRST DATE :01<br>SECOND DATE :02 |




※ OMIT PIN NO : #1,#3,#4

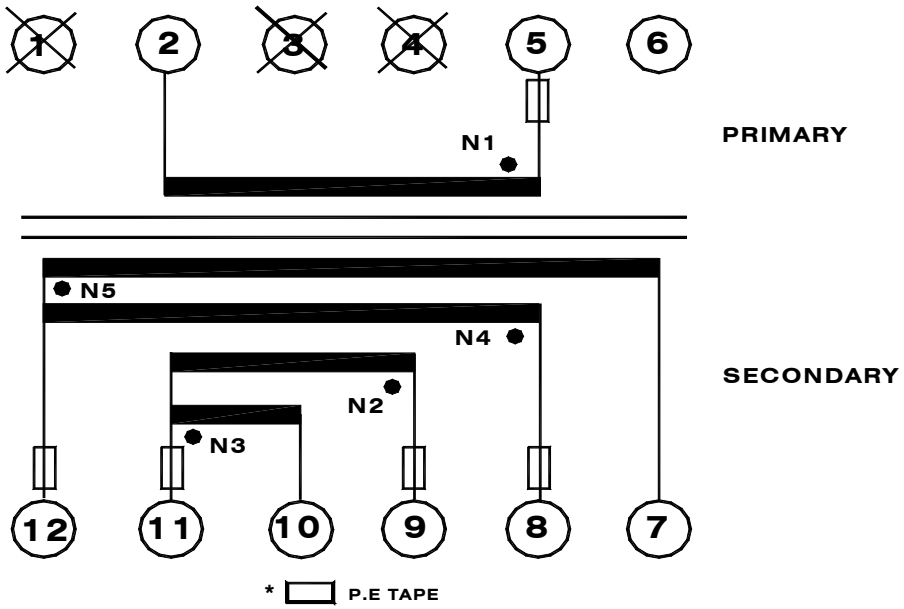
※ GAP CORE : SIDE P.E FILM(≒0.1T)

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M<br>KIM | J,H<br>KIM | K,S<br>KIM | 3/20 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 4. SCHEMATIC




## 5. WINDING SPECIFICATION.

| No. | TERMINAL | | WIRE | TURNS | LAYER | WINDING METHOD | INSULATION TAPE | | |
|---|---|---|---|---|---|---|---|---|---|
| | S | F | | | | | MATERIAL | T/W (mm) | TURNS |
| N1 | 5 | 2 | USTC 0.10¢x 20 | 50 Ts | 7 | SOLENOID | P.E TAPE | 0.025/6.0 (WHITE) | 2 Ts |
| N2 | 9 | 11 | USTC 0.10¢x 60 | 6 Ts | 1 | SOLENOID | P.E TAPE | 0.025/7.5 (YELLOW) | 1 Ts |
| N3 | 11 | 10 | USTC 0.10¢x 60 | 6 Ts | 1 | SOLENOID | P.E TAPE | 0.025/7.5 (YELLOW) | 1 Ts |
| N4 | 8 | 12 | USTC 0.10¢x 40 | 3 Ts | 1/2 | SOLENOID | P.E TAPE | 0.025/7.5 (YELLOW) | 1 Ts |
| N5 | 12 | 7 | USTC 0.10¢x 40 | 3 Ts | 1/2 | N4 AFTER SOLENOID | P.E TAPE | 0.025/7.5 (YELLOW) | 2 Ts |
| * CORE ROUND TAPE | | | | | | | P.E TAPE | 0.025/10.0 (YELLOW) | 3 Ts |

※ P.E TAPE ROUND PIN NO: : #5,#8,#9,#11,#12

※ WINDING DIRECTION : #7~#12 VIEW C.C.W

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 4/20 |

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 6. ELECTRICAL CHARACTERISTICS

| No. | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 6-1 | INDUCTANCE | 5 - 2<br>9 - 11<br>11 - 10<br>8 - 12<br>12 - 7 | 1.40 mH ± 15%<br>19.6 μH ± 30%<br>19.6 μH ± 30%<br>5.10 μH ± 30%<br>4.80 μH ± 30% | LCR METER<br>HP-4284A<br>(AT 100KHz/<br>1.0V ) |
| 6-2 | LEAKAGE INDUCTANCE | 5 - 2<br>(SECONDARY ALL SHORT) | 230 μH MAX | |
| 6-3 | D. C. RESISTANCE | 5 - 2<br>9 - 11<br>11 - 10<br>8 - 12<br>12 - 7 | 0.45 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX | DC MILLI-OHM METER<br>GOM-802 |
| 6-4 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 3.0KV (rms)<br>1MINUTE. | Safety<br>TOS-8850<br>(CUT OFF CURRENT 5mA) |
| | | P COIL - CORE<br>S COIL - CORE | AC 1.50KV (rms)<br>1MINUTE. | |
| 6-5 | INSULATION RESISTANCE | COIL - COIL | 100(M) Ohm MIN.<br>( AT DC 500V) | Safety<br>TOS-8850 |
| 6-6 | DC SUPERIMPOSE | 5 - 2 | 90% MIN. WITH RESPECT TO ORIGINAL INDUCTANCE VALUE WHEN 0.7A DC IS SUPERIMPOSED. | |
| 6-7 | IMPULSE TEST | 5 - 2 | 1.5 KV Pulse 4TIME | Safety |
| 6-8 | QUALITY FACTOR | 5 - 2 | 130 MIN | AT 100KHz 1.0V |

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 7. ENVIRONMENTAL.

* STANDARD TEST CONDITION : TEMP. 20℃±15℃, HUMIDITY 65%±20%.
IF WHEN ANY OBJECTION IS SUGGESTED, THE TEST CAN BE OPERATED AT 20±2℃, 65±5%RH.

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>7-1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ - +105℃</td><td></td></tr>
<tr><td>7-2</td><td>KEEPING TEMPERATURE</td><td>-25℃ - +105℃</td><td></td></tr>
<tr><td>7-3</td><td>LOW TEMPERATURE RESISTANT</td><td rowspan="6">MUST MEET THE REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE. (IT SHOULD BE MANAGED BY 10% UNDER 10μH)</td><td>-25±2℃, 96Hr. MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-4</td><td>HIGH TEMPERATURE RESISTANT</td><td>+105±2℃, 96Hr. MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-5</td><td>HUMIDITY RESISTANT</td><td>95%RH ±5% (40℃±5℃) 96Hr MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-6</td><td>TEMPERATURE CYCLE</td><td>
<table>
<tr><th>STEP</th><th>TEMP.</th><th>TIME</th></tr>
<tr><td>1</td><td>-25±2℃</td><td>30 MIN.</td></tr>
<tr><td>2</td><td>+25±2℃</td><td>10 MIN.</td></tr>
<tr><td>3</td><td>+105±2℃</td><td>30 MIN.</td></tr>
<tr><td>4</td><td>+25±2℃</td><td>10 MIN.</td></tr>
</table>
REPEAT 5 TIME FROM STEP 1AND TEST AFTER 2 Hr. AT ROOM TEMP.
</td></tr>
<tr><td>7-7</td><td>HEAT SHOCK TEST</td><td>2HR AT -20℃→ 2HR AT 70℃: 10 CYCLE</td></tr>
</table>

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 8. MECHANICAL CHARACTERISTICS.

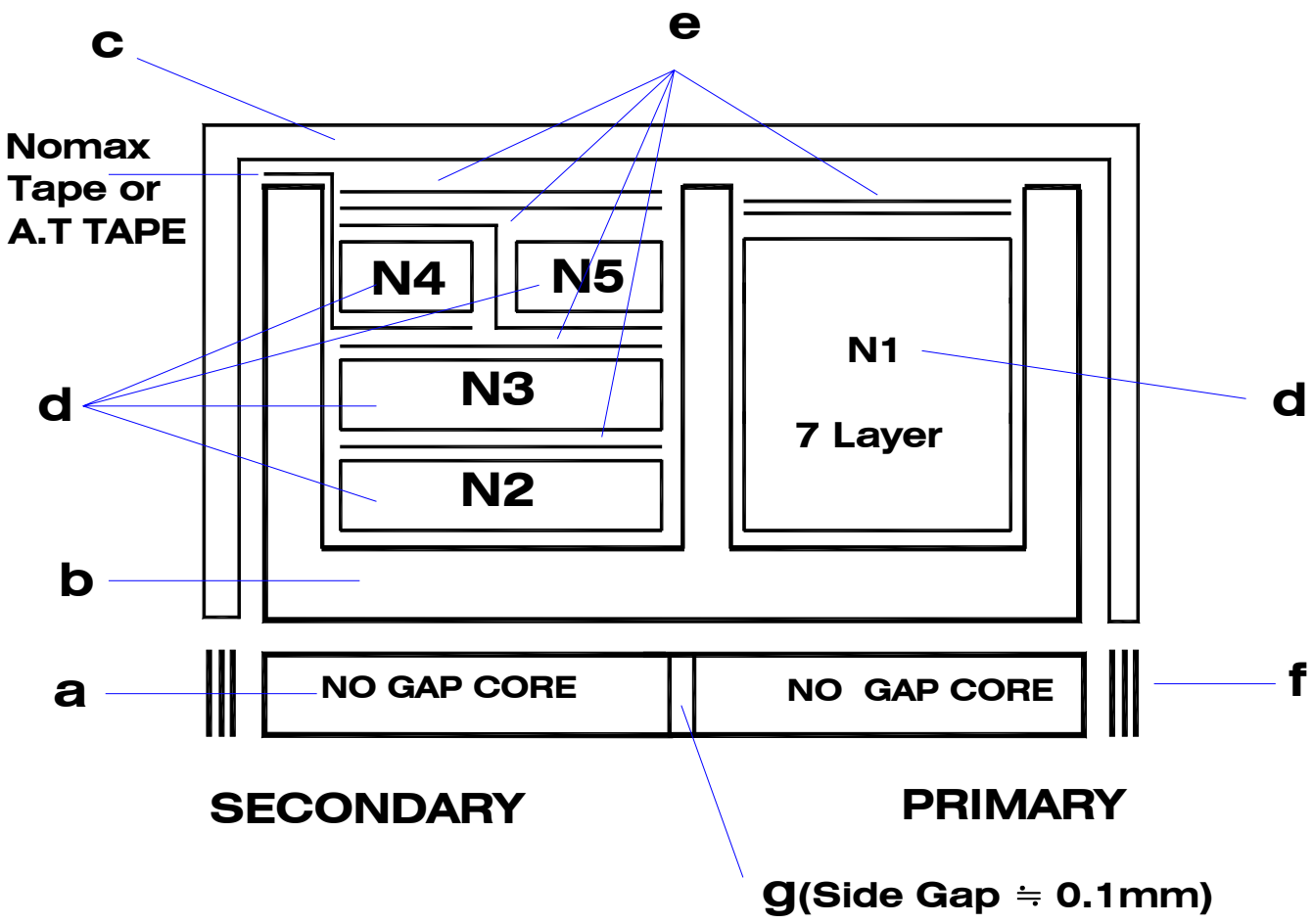
| NO. | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 8-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AC 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION. |
| 8-2 | SOLDER HEAT TEST | MUST MEET THE REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE. | DIP THE TERMINAL IN SOLDER AT 260℃+5℃ FOR 10 SECONDS. MEASURE AFTER 2 Hr. AT ROOM TEMP. |
| 8-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245℃-5℃ FOR 3 SECONDS. |
| 8-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED TO INITIAL VALUE. | PULL THE PIN WITH 2.5 Kg.f DURING 30 ±5 SEC. |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 9. INTERNAL CONSTRUCTION

Safety



CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 10. MATERIAL LIST.

Safety

| NO | COMPONENT | NAME OF MATERIAL | UL FILE NO. | MANUFACTURER COMPONENT | COLOR |
|---|---|---|---|---|---|
| a | CORE | ETD3435K PM7<br>EER3535S PL7<br>EC34-1 HE4 | | TODA ISU CORPORATION<br>SAMWHA ELECTRONICS CO., LTD.<br>RUYUAN DONGYANGGUANG<br>MAGNETIC MATERIALS CO.,LTD. | BLACK |
| b | BOBBIN | PHENOL (94V-0) PM-9820<br>EER-3435HB (12 PIN) | E41429 | SUMITOMO BAKELITE CO., LTD.<br>(HO SUNG INDUSTRIAL CO., LTD. or<br>DEAHUNG BOBBIN CO., LTD.) | BLACK |
| c | CAP | PBT (94V-0) 1500GN-30<br>EER-3435HB CAP | E121254 | SAMYANG CORPORATION<br>(HO SUNG INDUSTRIAL CO., LTD.) | BLACK |
| d | WIRE | (MW-75) UEW(B), UEW<br>USTC 0.10¢ x 20<br>USTC 0.10¢ x 40<br>USTC 0.10¢ x 60 | E102761<br>E210918 | DONGYANG ELECTRONICS<br>CO., LTD. or<br>CNI ELECTRONICS CO., LTD. | BRASS<br>YELLOW |
| e | INSULATION<br>TAPE | POLYESTER TAPE<br>Cat NO. 204 ,PZ<br>0.025t x 6.0mm (WHITE)<br>0.025t x 7.5mm (YELLOW) | E105147<br>E165111 | DUCK SUNG HITECH CO., LTD.<br>JINGJIANG YAHUA PRESSURE<br>SENSITIVE GLUE CO., LTD. | WHITE<br>YELLOW |
| f | APPEARANCE<br>FOR CORE | POLYESTER TAPE<br>Cat NO. 204 ,PZ<br>0.025t x 10.0mm (YELLOW) | E105147<br>E165111 | DUCK SUNG HITECH CO., LTD.<br>JINGJIANG YAHUA PRESSURE<br>SENSITIVE GLUE CO., LTD. | YELLOW |
| g | GAP FILM | POLYESTER FILM<br>(SR55) 0.1T | E74359 | SKC CO., LTD. | TRANSPARENCY |
| h | NOMAX TAPE | POLYESTER TAPE<br>Cat NO. 241 | E105147 | DUCK SUNG HITECH CO., LTD. | WHITE |
| i | VARNISH | SR-337<br>DVB-2085 | E257443<br>E258023 | SEKYE CHEMICAL CO., LTD.<br>NOROO PAINT & COATINGS CO.,LTD. | LEMON<br>YELLOW |
| j | SOLDER | HSE-09<br>(Sn:95.95%,Cu:4%,Ni:0.05%) | | HEE SUNG METAL CO., LTD. | SILVER |
| k | FLUX | PF-120L | | SOLUX CO., LTD. | LEMON<br>YELLOW |
| l | MARKING | INK | | BON MARQUE | BLACK |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 11. UL CARD.

* YELLOW CARD

**INSULATION SYSTEM**

SOO JUNG ELECTRONICS IND CO., LTD. E157693
35-1 HONGJAE 4-DONG
SEO DAE MOON-GU
SEOUL ,120-094 REPUBLIC OF KOREA

Class 130 (B) transformer insulation system, designated SJB-001,
Class 130 (B) transformer insulation system, designated SJB-002,
Class 130 (B) transformer insulation system, designated SJB-003,
Class 130 (B) transformer insulation system, designated SJB-004,

**BOBBIN**

SUMITOMO BAKELITE CO LTD E41429
5-8 HIGASHI-SHINAGAWA 2-CHOME
SHINAGAWA-KU
TOKYO, 140-0002 JAPAN

| | | Min. | | H | H | H | R T I | | | C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | V | Elec | Mech | | T |
| Mtl Dsg | Color | mm | Class | I | I | A | | Imp | Str | I |
| Phenolic (PF), "Sumikon", furnished as pellets, granular material. | | | | | | | | | | |
| PM-9820 | BK | 0.16 | V-0 | - | - | - | 150 | 150 | 150 | 3 |
| | | 0.51 | V-0 | 3 | 1 | - | 150 | 150 | 150 | |
| | BN | 0.18 | V-0 | - | - | - | 150 | 150 | 150 | |
| | | 0.70 | V-0 | 1 | 2 | - | 150 | 150 | 150 | |
| | | 1.5 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |
| | | 3.0 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |

**CAP**

SAMYANG CORPORATION E121254
407 3-GA PALBOK-DONG
CHEONJU, CHEONBUK 560-200 REPUBLIC OF KOREA

| | | Min. | | H | H | H | R T I | | | C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | V | Elec | Mech | | T |
| Mtl Dsg | Color | mm | Class | I | I | A | | Imp | Str | I |
| Polybutylene/Polyethylene Terephthalate (PBT/PET), "TRIBIT, Sam Yang's Co. Ltd. PBT", furnished as pellets. | | | | | | | | | | |
| 1500GN-30 | ALL | 0.75 | V-0 | 3 | 0 | 3 | 130 | 130 | 140 | 2 |
| | | 1.5 | V-0 | 2 | 0 | 2 | 130 | 130 | 140 | |
| | | 3.0 | V-0 | 2 | 0 | 3 | 130 | 130 | 140 | |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

# UL CARD.

* YELLOW CARD

## VARNISH

SE KYE CHEMICAL CO LTD E257443
360 GUIJEON-RI
TONGJIN-EUP
KIMPO-SI, KYUNGGI-DO 415-862 REPUBLIC OF KOREA

| Varnish Dsg | ANSI Magnet Wire Type | Varnish Thermal Class C | | |
|---|---|---|---|---|
| | | TP | HC | CE |
| SR-337(#) | MW75 | 130 | 130 | - |

# - May be followed by 1 or 2 suffix numeric and /or alpha characters to denote viscosity change accomplished via solvents due to production tolerance.

NOROO PAINT &COATINGS CO LTD E258023
615 PAKDAL-DONG
ANYANG-SHI, KYONGGI-DO 430-030 REPUBLIC OF KOREA

| System Component | System Dsg | System Temp Class |
|---|---|---|
| DVB-2085 (*) | SB14.2-DPI | 130 (B) |

(*) - Followed by one or two numbers and/or letters.
(#) - May be replaced by a number from 0 - 30 to denote the percent silica.

## WIRE

DONG YANG ELECTRONICS IND CO LTD E102761
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ | | ANSI Type | TI |
|---|---|---|---|---|
| | BC | OC | | |
| UEW(F) | Polyurethane | - | MW79, | 155, |
| UEW(B) | Polyurethane | - | MW75# | 130 |
| UAL | Polyurethane | - | @ | 155 |
| PEW | Polyester | - | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.
#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

CNICABLE CO LTD E210918
312-16 DEUKSAN-DONG
ASAN-SI, CHUNGCHEONGNAM-DO 336-120 REPUBLIC OF KOREA

| Mtl Dsg | Mark Dsg | Coat Type | | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| | | BC | OC | | |
| DSUEW-100 | (1) | Polyurethane | - | MW75C | 130# |
| UEW | (1) | Polyurethane | None | MW79 | 155 |
| | | | | MW75 | 130# |
| PEW | (1) | Polyester | None | MW30 | 180 |
| | | | | MW5 | 155# |

@ - Non-ANSI Type
(1) - Marked designations are the same as the material designations.
# - This wire may perform better than its temperature rating reflects. Hence, it may not be suitable to use in an insulation system thermal aging program.

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## UL CARD.

* YELLOW CARD

### P.E TAPE

DUCK SUNG HITECH CO LTD E105147
225-2 SHINNEUNG-RI SEOUN-MYEON
ANSEONG-SI, GYEONGGI-DO 456-850 REPUBLIC OF KOREA

PET(Polyethylene-Terapthalate) film insulating tape, acrylic adhesive, Cat. No. DTS-204K^, rated 130 C.

^ - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 250, per UL 746A/ASTM D 3638," and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600, per UL 746A/ASTM D 3638" or equivalent.

### NOMAX TAPE

JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD E165111
SOUTHWEST AROUND RD
JINGJIANG, JIANGSU 214500 CHINA

Polyethylene terephthalate film tape, Cat. No. PZ with additional suffixes, rated 130 C*(b).

*Complies with flame retardant requirements when so marked.

(b)Comparative Tracking Index (CTI) performance indicates material Group IIIa, PLC=2, CTI equal to or greater than 250 but less than 400 v.

### GAP FILM

SKC CO LTD E74359
PLANT MANAGEMENT TEAM
633 CHONGJA-DONG
CHANGAN-GU
SUWON-SHI, KYONGGI-DO 440-840 REPUBLIC OF KOREA

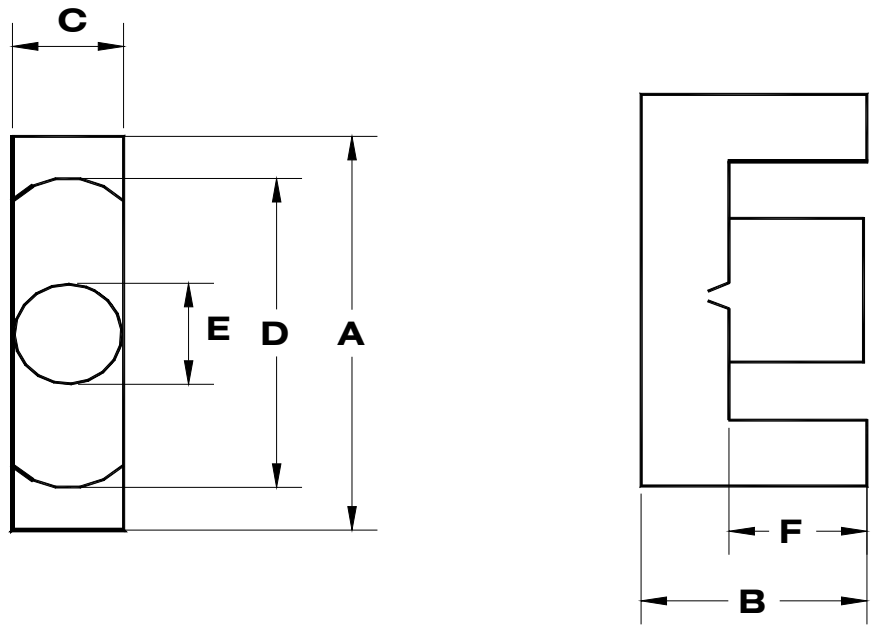
| | | | | | | | | | H | D | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Min. | | H | H | R T I | | | V | 4 | C |
| | | Thk | Flame | W | A | Elec | Mech | | T | 9 | T |
| Material Dsg | Color | mm | Class | I | I | | Imp | Str | R | 5 | I |
| Polyethylene Terephthalate (PET), film, "Skyrol", furnished as sheets or rolls. | | | | | | | | | | | |
| SR55 | NC | 0.075 | VTM-2 | - | - | 130 | 105 | 130 | | | |
| | | 0.25~0.27 | V-2 | - | - | 130 | 105 | 130 | | | |

Marking: Company name or tradename "SKC" and material designation on container, wrapper or finished part.
Last Updated on 2009-08-19

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 12. CORE DIMENSION




** DIMENSION (UNIT: mm)

| TYPE | DIMENSION (m/m) | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| ETD 3435K | 35.2±0.8 | 17.4±0.2 | 10.8+0.2 -0.3 | 27.3±0.7 | 10.8±0.3 | 12.2±0.3 | TODA ISU |
| EER 3535S | 35.2±0.8 | 17.4±0.2 | 10.8+0.2 -0.3 | 27.3±0.7 | 10.8±0.3 | 12.2±0.3 | SAMWHA |
| EC34-1 | 35.2±0.8 | 17.4±0.2 | 10.8+0.2 -0.3 | 27.3±0.7 | 10.8±0.3 | 12.2±0.3 | DONGYANGGUANG |

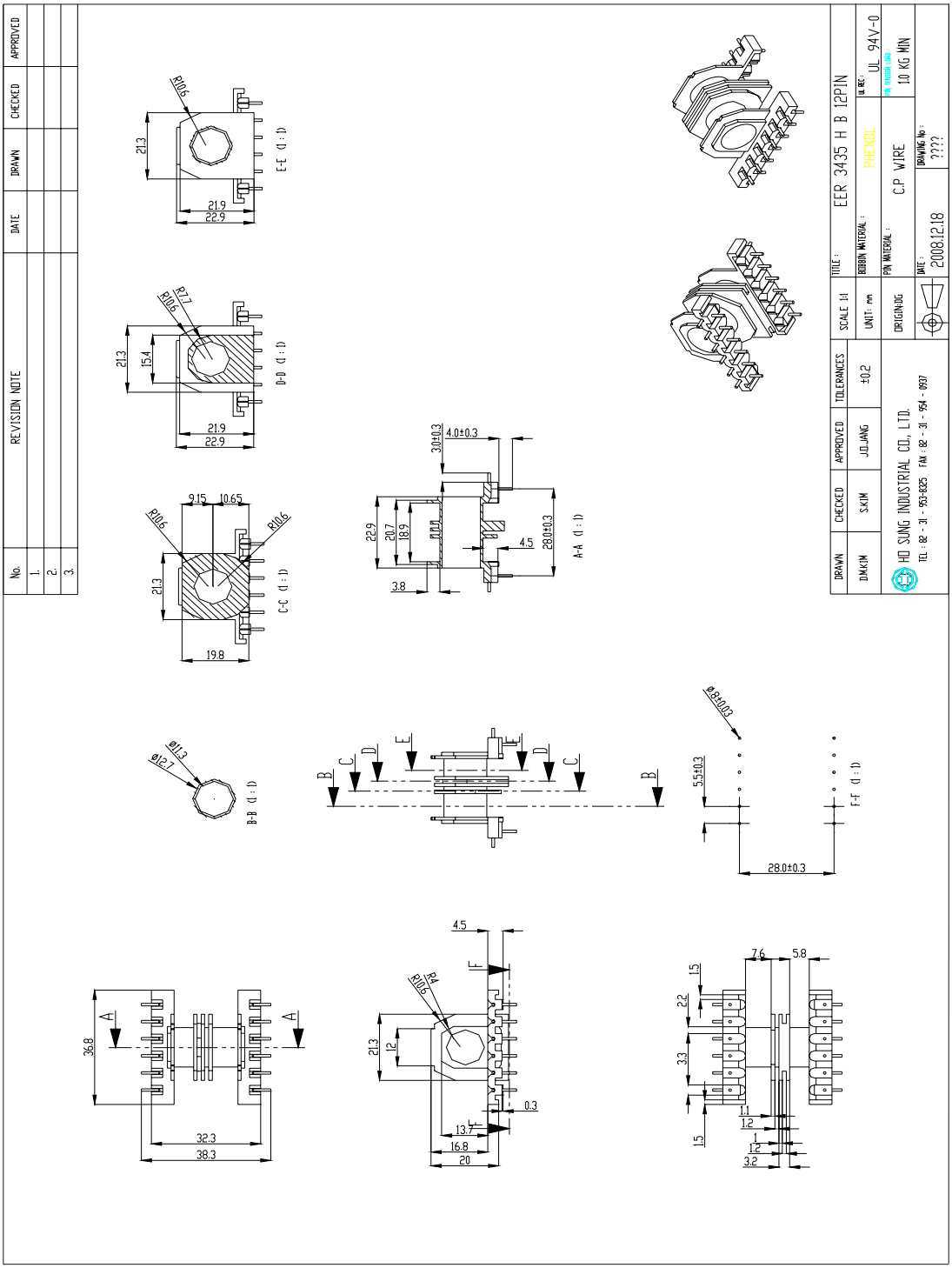
** EFFECTIVE PARAMETERS

| TYPE | EFFECTIVE PARAMETERS | | | REMARKS |
|---|---|---|---|---|
| | Le (mm) | Ae (㎟) | Ve (㎣) | |
| ETD-3435K | 80.10 | 97.1 | 7780 | TODA ISU |
| EER-3535S | 80.10 | 97.1 | 7780 | SAMWHA |
| EC34-1 | 80.03 | 96.3 | 7706 | DONGYANGGUANG |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 13-1. BOBBIN DIMENSION



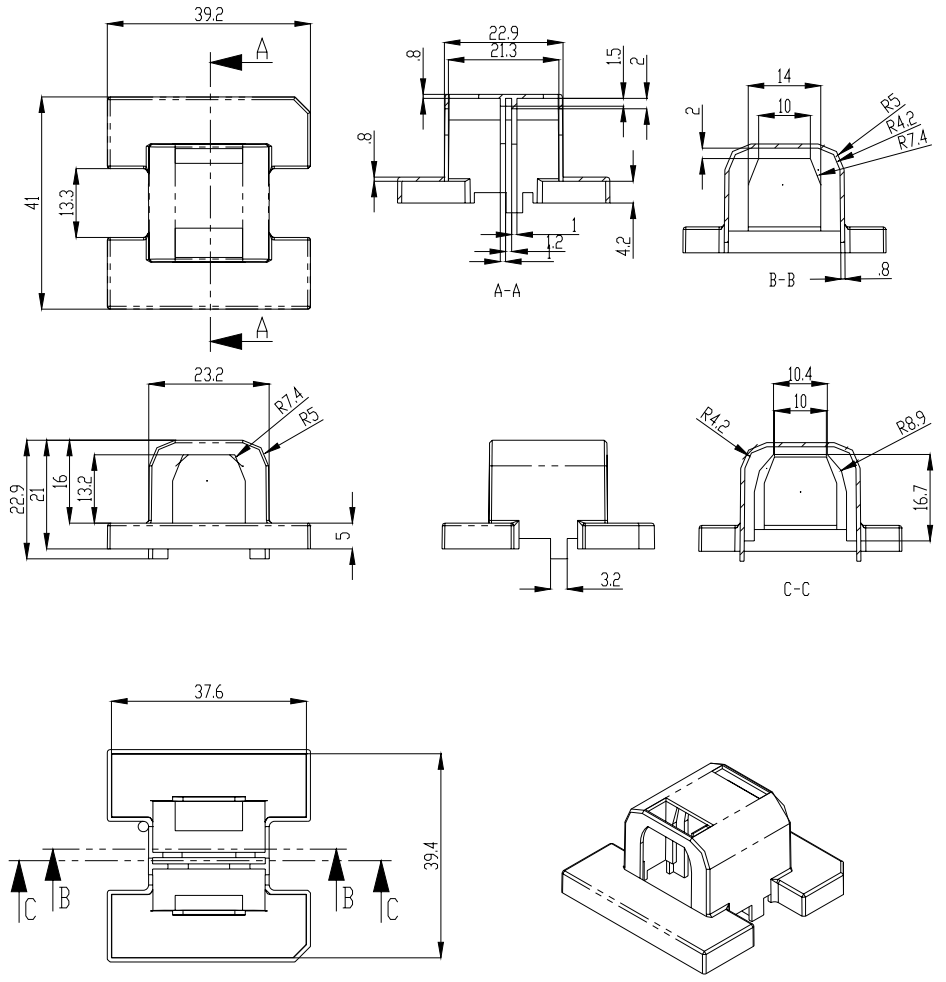

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 14/20 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 13-2. CAP DIMENSION

| No. | REVISION NOTE | DATE | DRAWN | CHECKED | APPROVED |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |




| DRAWN | CHECKED | APPROVED | TOLERANCES | SCALE 1:1 | TITLE : EER 3435 H B CAP | |
|---|---|---|---|---|---|---|
| D.M.KIM | S.KIM | J.D.JANG | ±0.2 | UNIT: mm | BOBBIN MATERIAL : PBT | UL REC : UL 94V-0 |
| HO SUNG INDUSTRIAL CO., LTD. TEL : 82 - 31 - 953-8325 FAX : 82 - 31 - 954 - 0937 | | | | ORIGIN:DG | PIN MATERIAL : | PIN TENSION LOAD : |
| | | | | | DATE : 2008.12.18 | DRAWING No : HS-ERH-0000 |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 15/20 |

CUSTOMER : HUMAN & ELECTRONICS CO., LTD.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 14. PROCESS FLOW

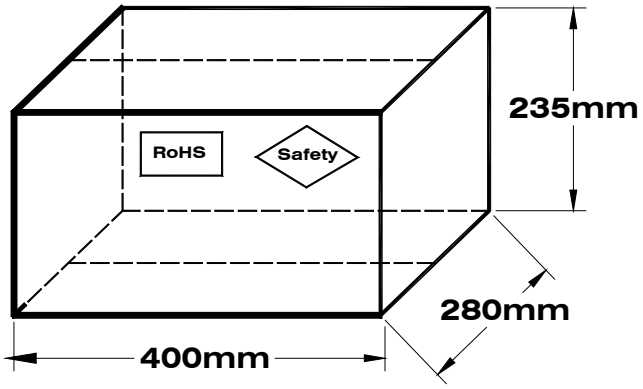
| NO | 공정 기호 | 공정 공정명 | 공정 사용설비 | 기능 | 관리항목 | 관리기준 | 검사방법 확인요령 | 검사방법 부서 | 표준 | 기록/양식 | 공정별 관련불량 및 비고 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | △<br>◇ | 수입검사<br>- BASE<br>- CORE<br>- PS TAPE<br>- WIRE | 버니어켈 리퍼<br>마이크로 메터 | 수동 | 치수<br>핀홀<br>접착성<br>외관상태 | 이상<br>없을것 | SAMPLE | Q·C | 구매사양서 | 수입검사성적서 | · 치수 불량<br>· 파손· 핀홀<br>· WIRE 피복 벗겨짐<br>· BASE 단자 위치 바뀜<br>· 접착성 나쁨 |
| 02 | ○ | 권 선 | 권 선 기 | 반자동 | 절연상태<br>권선절연상태<br>권선수 | 〃 | 전수검사 | 생산팀 | 작업지도서 | | · 권선 및 절연수 불량<br>. 절연거리 미 확보<br>· 권선위치 불량 |
| 03 | ○ | 결 선<br>납 땜 | 니 퍼<br>납 조 | 수동 | 납땜온도<br>납땜시간 | 450℃ ±30℃<br>2~4초 | 수회 / 일 | 〃 | 〃 | | · SHORT<br>· 미 결선,냉땜<br>· BASE 변형 |
| 04 | ○ | CORE조립 | | 수동 | CORE종류<br>GAP SIZE<br>EPOXY | 이상<br>없을것 | 전수검사<br>SAMPLE<br>육안검사 | 〃 | 〃 | | · 코아 역삽<br>· GAP CORE 혼입 |
| 05 | ◇ | 1차 검사 | TURN METER | 반자동 | INDUCTANCE<br>권선수 | 〃 | 전수검사 | 〃 | 〃 | | · L값 상.하 불량<br>· 권선수 미달 |
| 06 | ○ | 함침 및 경 화 | 진공 함침기<br>건 조 기 | 반자동 | 경화온도<br>경화시간 | 120℃ ±10℃<br>1.5 HR | SAMPLE | 〃 | 〃 | | · 미 함침 |
| 07 | ○ | 핀 형 합 | 핀형합기 | 반자동 | 핀간거리 | 〃 | 전수검사 | 생산팀 | | | · 핀 형합 불량<br>· 베이스 변형<br>· 단자 이탈 |
| 08 | ◇ | 최종검사<br>Safety | LCR METER<br>내전압 TESTER | 수동 | INDUCTANCE<br>내전압<br>절연사항 | 〃 | 전수검사 | 〃 | 〃 | | · L값 상.하 불량<br>· 단자 이물<br>· 내전압 불량 |
| 9 | ○ | 마 킹 | 불멸 잉크 | 수동 | 마킹방향<br>마킹외관 | 〃 | 육안검사 | 〃 | 〃 | | · 역방향 마킹<br>· 외관불량 |
| 10 | ○ | 포 장 | | 수동 | 수량관리<br>포장상태 | 〃 | 육안검사 | 〃 | 〃 | | |
| 11 | ◇ | 출하검사<br>Safety | LCR METER<br>내전압 TESTER | 수동 | INDUCTANCE<br>내전압<br>절연사항 | 〃 | SAMPLE | 품질관리팀 | 승인원 | | |
| 12 | ▽ | 출 고 | | | | | | 영업팀 | 〃 | INSPEC-TION REPORT | |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 16/20 |

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 15. PACKING

| | |
|---|---|
| NAME | |
| ITEM | |
| LOT NO. | |
| Q' TY | EA |
| SOOJUNG ELECTRONICS INC CO., LTD. | |




| PART | SPECIFICATION |
|---|---|
| BOX SIZE | 400mm × 280 mm × 235mm |
| OUT BOX MATERIAL | SK.3S.B (CARTON) |
| INNER BOX MATERIAL / QUANTITY | PET TRAY / 5PCS×7EA=35PCS |
| PACKING QUANTITY | 35PCS×7EA=245PCS |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 16. INSPECTION DATA

| ITEM NAME | MULTI TRANS | TEST DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NO. | LPM-101 | INSTRUMENT | 4284A LCR METER(HP) (at 100KHz) |

| 시험 항목 | PIN NO. | SPEC | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | $\bar{x}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 5 - 2 | 1.40 mH ±7% | | 1.39 | 1.35 | 1.37 | 1.38 | 1.39 | | | | | | |
| | 9 - 11 | 19.6 μH ± 30% | | 19.6 | 19.7 | 19.6 | 19.8 | 19.6 | | | | | | |
| | 11 - 10 | 19.6 μH ± 30% | | 19.5 | 19.6 | 19.4 | 19.7 | 19.5 | | | | | | |
| | 8 - 12 | 5.10 μH ± 30% | | 5.07 | 5.06 | 5.04 | 5.06 | 5.07 | | | | | | |
| | 12 - 7 | 4.80 μH ± 30% | | 4.83 | 4.82 | 4.82 | 4.81 | 4.82 | | | | | | |
| LEAKAGE INDUCTANCE | 5 - 2 (SECONDARY ALL SHORT) | 230 μH MAX | | 180 | 178 | 180 | 181 | 183 | | | | | | |
| DCR (mΩ) | 5 - 2 | 0.45 Ω MAX | | 0.293 | 0.292 | 0.295 | 0.297 | 0.298 | | | | | | |
| | 9 - 11 | 0.03 Ω MAX | | 0.013 | 0.013 | 0.013 | 0.014 | 0.013 | | | | | | |
| | 11 - 10 | 0.03 Ω MAX | | 0.013 | 0.014 | 0.013 | 0.013 | 0.013 | | | | | | |
| | 8 - 12 | 0.03 Ω MAX | | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | | | | | | |
| | 12 - 7 | 0.03 Ω MAX | | 0.013 | 0.013 | 0.014 | 0.013 | 0.013 | | | | | | |
| 내 전 압 | P-S,COIL | AC3.00KV 1분간 | | 6.2KV | OK | OK | OK | OK | | | | | | |
| | P- CORE | AC1.50KV 1분간 | | 6.0KV | OK | OK | OK | OK | | | | | | |
| | S -CORE | AC1.50KV 1분간 | | 5.4KV | OK | OK | OK | OK | | | | | | |
| 절연저항 | P-S,COIL | 100MΩ MIN. (AT DC500V) | | ∞ | ∞ | ∞ | ∞ | ∞ | | | | | | |
| DC 전류중첩 | 5 - 2 | 0.7 A/ 90% of INITIAL INDUCTANCE | L | 1.35 | 1.34 | 1.34 | 1.35 | 1.35 | | | | | | |
| | | | % | 97 | 99 | 98 | 98 | 97 | | | | | | |
| IMPULSE TEST | 5 - 2 | 1.5 KV 4TIME | | OK | OK | OK | OK | OK | | | | | | |
| QUALITY FACTOR | 5 - 2 | 130 MIN | | 322 | 341 | 335 | 342 | 329 | | | | | | |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 18/20 |

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 17. ASSIGNMENTS

1) Apply import inspection specification to the matters which are not given in drawing specification method.
2) Packing method follows specification approval.
3) If INDUCTANCE : ref is not satisfied with given specification. internal structure disassembly inspection should be necessary.
4) Wire bundle method.
   * CENTER SOLENOID: Error between the center of overall wire bundle area and the center of wire bundle is required to be smaller than 2 mm.
   * PIN SOLENOID : Error between the bottom barrier tape and winding start point is required to be smaller than 2 mm.
   * SOLENOID AFTER : Error between the last wire of the wire bundle and start wire of after-solenoid is required to be smaller than 2 mm.
   * TAB SOLENOID : Bundle should be continued from previous bundle. If bundle method is 2 layer, bundle should be done from top to bottom.
   * SPACE SOLENOID : The area between wires should be uniform. Error between start and start point of the wire bundle area is required to be smaller than 2mm. Error between end point and end point of the wire bundle area is required to be smaller than 2mm.
   * SOLENOID : No space is allowed between wires in bundling. The space between wire is required to be smaller than diameter of the wire*2. In same layer no cross is allowed between wires.

5) PERFORMANCE OF THIS DRAWING IS REQUITED TO MEET PART NUMBER EBJ60711106

6) Auxiliary tape can be used in order to enhance. But it needs prior approval from design department.

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 09 |
|---|---|---|---|
| PART NAME | MULTI TRANS | PART NO. | EBJ60711106 |

## 18. WIRE SPECIFICATION.

### 폴리 우레탄 동선 (1UEW)

| 치 수 | | | | 절연파괴전압 (V) ↑ | 내마모 파괴하중 | | 최대도체저항 (Ω/㎞) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성외경 (mm) ↑ | 최대완성외경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| **0.200** | **±0.003** | **0.224** | **0.246** | **2400** | **-** | **-** | **607.6** | **15** |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| **0.280** | **±0.004** | **0.306** | **0.330** | **2400** | **3.43(350)** | **2.89(295)** | **307.3** | **15** |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| **0.300** | **±0.005** | **0.328** | **0.352** | **2800** | **3.72(380)** | **3.13(320)** | **262.9** | **20** |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| **0.400** | **±0.005** | **0.430** | **0.456** | **2800** | **4.16(425)** | **3.52(360)** | **145.3** | **20** |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.686 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

| Scanning | LIB구축 |
|---|---|
| | |

ROHS safety

# SPECIFICATION FOR APPROVAL

| | | |
|---|---|---|
| CUSTOMER | : | LG ELECTRONICS INC. |
| ITEM | : | TRANS MULTI |
| DESCRIPTION | : | 26"32" PSU |
| NAMYANG P/NO | : | |
| CUSTOMER P/NO | : | EBJ60711106 (LPM-101) |
| DATE | : | 2009. 11. 09. |

## CUSTOMER' S APPROVED

## NAM YANG ELECTRONICS CO., LTD.

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | **NAM YANG** ELECTRONICS CO., LTD. ( KOREA FACTORY ) | TEL | 031-205-0104 |
| | | FAX | 031-205-1245 |
| ADDRESS | 1201, D DONG, DIGITAL EMPIRE BLDG. 980-3, YEONGTONG-DONG, YEONGTONG-GU, SUWON CITY, GYEOUNGGI-DO. KOREA. | | |
| SALES TEAM GENERAL MANAGER | Hyoung Gi Kim | TEL | 011-9731-1773 |
| | E-MAIL: khgcej@namyangele.co.kr | | |
| QUALITY ASSURANCE TEAM DEPUTY GENERAL MANAGER | Yang Ho Noh | TEL | 010-6750-7707 |
| | E-MAIL: plus951@namyangelec.co.kr | | |
| R&D TEAM MANAGER | SUNG BYOUNG CHAE | TEL | 019-440-6521 |
| | E-MAIL: sbch@namyangele.co.kr | | |

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | **QINGDAO** NAM YANG ELECTRONICS CO., LTD. ( CHINA FACTORY ) | TEL | 86-532-8705-8114 |
| | | FAX | 86-532-8705-8422 |
| ADDRESS | BIJIA VILLAGE BEIJAITOWN LAOSHAN ZONE QINGDAO CHINA | | |

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | **DONGGUAN** NAM YANG ELECTRONICS CO., LTD. ( CHINA FACTORY ) | TEL | 86-769-8322-2875 |
| | | FAX | 86-769-8322-2895 |
| ADDRESS | (XIXI INDUSTRIAL ZONE) LIAOBU TOWN, DONGGUAN CITY GUANGDONG PROV. CHINA. | | |

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | **LINYI** NAM YANG ELECTRONICS CO., LTD. ( CHINA FACTORY ) | TEL | 86-539-728-0188 |
| | | FAX | 86-539-728-0303 |
| ADDRESS | SHANDONGSHENG LINYISHI JUNANXIAN SHIZILUZHEN DACHENGJUWEI | | |

# RECORD OF REVISION

| P/N : EBJ60711106 | MAKER SPEC. : TRANS MULTI |
|---|---|

| REV. No. | REASON | CONTENTS | DATE OF APPROVAL | CHECKED | REMARKS |
|---|---|---|---|---|---|
| 0 | | -. 신규제정. | 2009. 11. 09. | | |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

# I N D E X


FILE No. 1/20 : INDEX
2/20 : 1. DIMENSION
3/20 : 2. SCHEMATIC DIAGRAM
3. WINDING SPECIFICATION
4/20 : 4. ELECTRICAL CHARACTERISTICS
5/20 : 5. ENVIRONMENTAL CHARACTERISTICS
6/20 6. MECHANICAL CHARACTERISTICS
7/20 : 7. SECTION DIAGRAM
8/20 8. MATERIAL LIST
9/20 : 9. UL-LIST
10/20 : UL-LIST
11/20 : UL-LIST
12/20 : UL-LIST
13/20 : UL-LIST
14/20 : 10. CORE DIMENSION
15/20 : 11. BOBBIN DIMENSION
16/20 : 12. CAP DIMENSION
17/20 : 13. PROCESS FLOW
18/20 : 14. PACKING
19/20 : 15. INSPECTION DATA
20/20 : 16. ASSIGNMENTS

CUSTOMER : L.G ELECTRONICS INC.

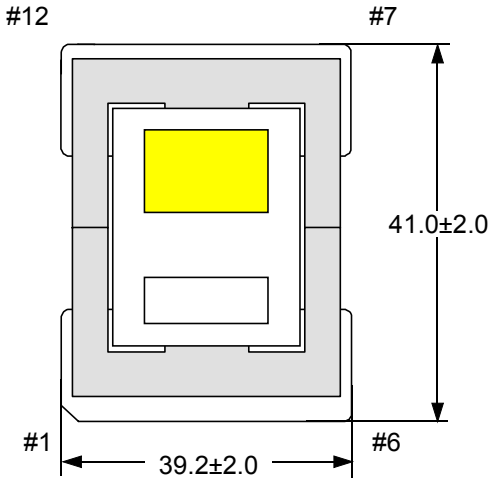
| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 1. MECHANICAL ASSEMBLY (UNIT : mm)

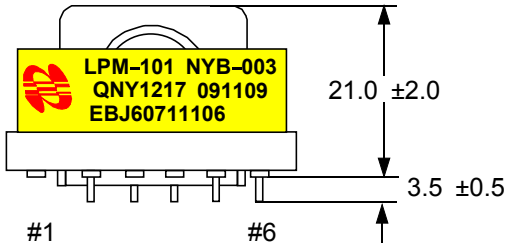
* PIN REMOVED : #1 , #3 , #4

safety

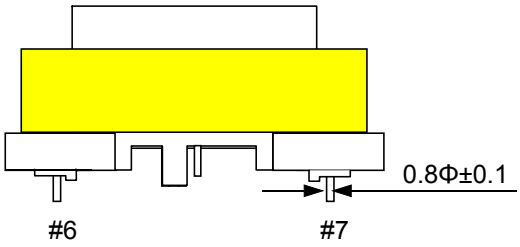
<< TOP VIEW >>




<< FRONT VIEW >>

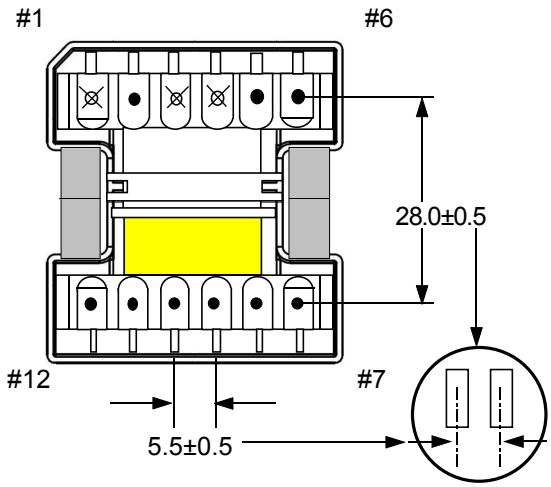



<< SIDE VIEW >>




** GAP : (SIDE) POLYESTER FILM ≒ 0.1T

<< BOTTOM VIEW >>

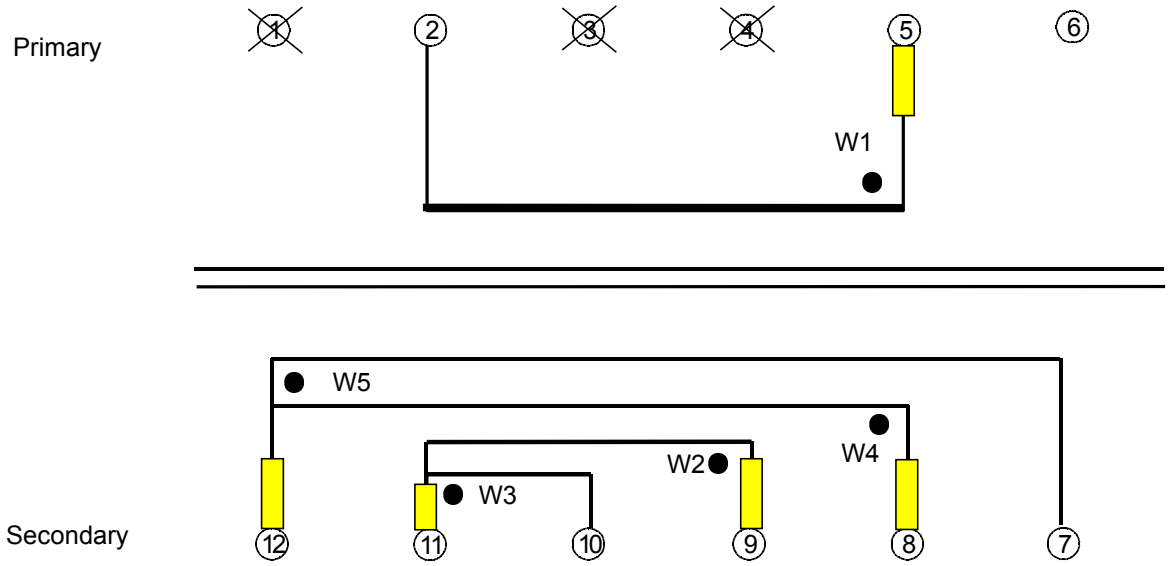



| Marking Spec | | |
|---|---|---|
| | NAMYANG ELECTRONICS CO.,LTD. LOGO | |
| PART NO | LPM-101 | |
| NYB003 | NAMYANG ELECTRONIC 'CLASS B' SYSTEM | |
| DNY1217 | CHINA DONGGUAN FACTORY ID | |
| QNY1217 | CHINA QINDAO FACTORY ID | |
| LNY1217 | CHINA LINYI FACTORY ID | |
| Lot No | 091109 | |
| LGE P/NO. | EBJ60711106 | |
| 09 | Year | 2007 : 07<br>2008 : 08... |
| 11 | Month | January : 01<br>February : 02... |
| 09 | Date | First Date : 01<br>Second Date : 02... |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 2. SCHEMATIC DIAGRAM




* ▭ MARK : P.E TAPE or A.T TAPE

## 3. WINDING SPECIFICATION.

| No. | TERMINAL ( S - F ) | WIRE | TURNS | WINDING METHOD (7-12 ViEW) C.C.W | LAYER |
|---|---|---|---|---|---|
| W1 | 5 - 2 | USTC 0.10X20P | 50 | SOLENOID WINDING | 7 |
| W2 | 9 - 11 | USTC 0.10X60P | 6 | SOLENOID WINDING | 1 |
| W3 | 11 - 10 | USTC 0.10X60P | 6 | SOLENOID WINDING | 1 |
| W4 | 8 - 12 | USTC 0.10X40P | 3 | SOLENOID WINDING | 1/2 |
| W5 | 12 - 7 | USTC 0.10X40P | 3 | W4 AFTER SOLENOID | 1/2 |
| CORE FIXING TAPE | | | | | |

| INSULATION | | |
|---|---|---|
| MATERIAL | T/W (mm) | TURNS |
| P/E TAPE (WHITE) | 0.025×6.0 (WHITE) | 2 |
| P/E TAPE (YELLOW) | 0.025×7.5 (YELLOW) | 1 |
| P/E TAPE (YELLOW) | 0.025×7.5 (YELLOW) | 1 |
| P/E TAPE (YELLOW) | 0.025×7.5 (YELLOW) | 1 |
| P/E TAPE (YELLOW) | 0.025×7.5 (YELLOW) | 2 |
| P/E TAPE (YELLOW) | 0.025×10.0 (YELLOW) | 3 |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 4. ELECTRICAL CHARACTERISTICS

| NO | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 4-1 | INDUCTANCE | 5 - 2<br>9 - 11<br>11 - 10<br>8 - 12<br>12 - 7 | 1.40 mH ± 15%<br>19.6 uH ± 30%<br>19.6 uH ± 30%<br>5.10 uH ± 30%<br>4.80 uH ± 30% | HP-4284A<br>LCR-METER<br><br>at 100 KHz, 1.0 V |
| 4-2 | LEAKAGE INDUCTANCE | 5 - 2<br>(SECONDARY SHORT) | 230 uH MAX | |
| 4-3 | DC RESISTANCE | 5 - 2<br>9 - 11<br>11 - 10<br>8 - 12<br>12 - 7 | 0.45 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX | DC MILLI-OHM<br>METER GOM-802 |
| 4-4 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 3.0 KV r.m.s (1 MINUTE) | TOS-8850 safety<br><br>CUT OFF CURRENT<br>: 5 mA |
| | | P COIL - CORE | AC 1.5 KV r.m.s (1 MINUTE) | |
| | | S COIL - CORE | AC 1.5 KV r.m.s (1 MINUTE) | |
| 4-5 | INSULATION RESISTANCE | COIL - COIL | 100 M ohm MIN<br>at DC 500V | TOS-8850 safety |
| 4-6 | D.C OVERLAP | 5 - 2 | MORE THAN 90% OF INITIAL INDUCTANCE | TEST CURRENT<br>: 0.7A<br>NORMAL<br>TEMPERATURE |
| 4-7 | Q | 5 - 2 | 130 MIN | at 100 KHz, 1.0 V |
| 4-8 | LAYER SHORT | 5 - 2 | AC 1.5 KV Pulse 4 Times | DWX-05 safety<br>IMPULSE TESTER |

## 5. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃ ± 15℃ HUMIDITY 65% ± 20%
IF WHEN ANY OBJECTION IS SUGESTED. THE TEST CAN BE OPERATED AT 20℃ ± 2℃, 65% ± 5% RH

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>5-1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>5-2</td><td>KEEPING TEMPERATURE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>5-3</td><td>LOW TEMPERATURE RESISTANT</td><td rowspan="5">MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE (IT SHOULD BE MANAGED BY 10% UNDER 10uH)</td><td>-25℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>5-4</td><td>HIGH TEMPERATURE RESISTANT</td><td>+105℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>5-5</td><td>HUMIDITY RESISTANT</td><td>+95%RH ± 5% (40℃ ± 5℃) 96Hr<br>MEASURE AFTER 2Hr AT ROOM TEMP
<table>
<tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr>
<tr><td>1</td><td>-25℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>2</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
<tr><td>3</td><td>+105℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>4</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
</table>
REPEAT 5 TIME FROM STEP 1 AND<br>TEST AFTER 2 Hr. AT ROOM TEMP.</td></tr>
<tr><td>5-6</td><td>TEMPERATURE CYCLE</td><td></td></tr>
<tr><td>5-7</td><td>HEAT SHOCK-RESISTANT</td><td>2 HR AT-20℃ →2 HR AT 70℃<br>: 10 CYCLE</td></tr>
</table>

**6. MECHANICAL CHARACTERISTICS**

| NO | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 6-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 6-2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER POT AT 260 +5℃ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 6-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245℃ -5℃ FOR 3 SECONDS |
| 6-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5Kgf DURING 30 ± 5 SEC |

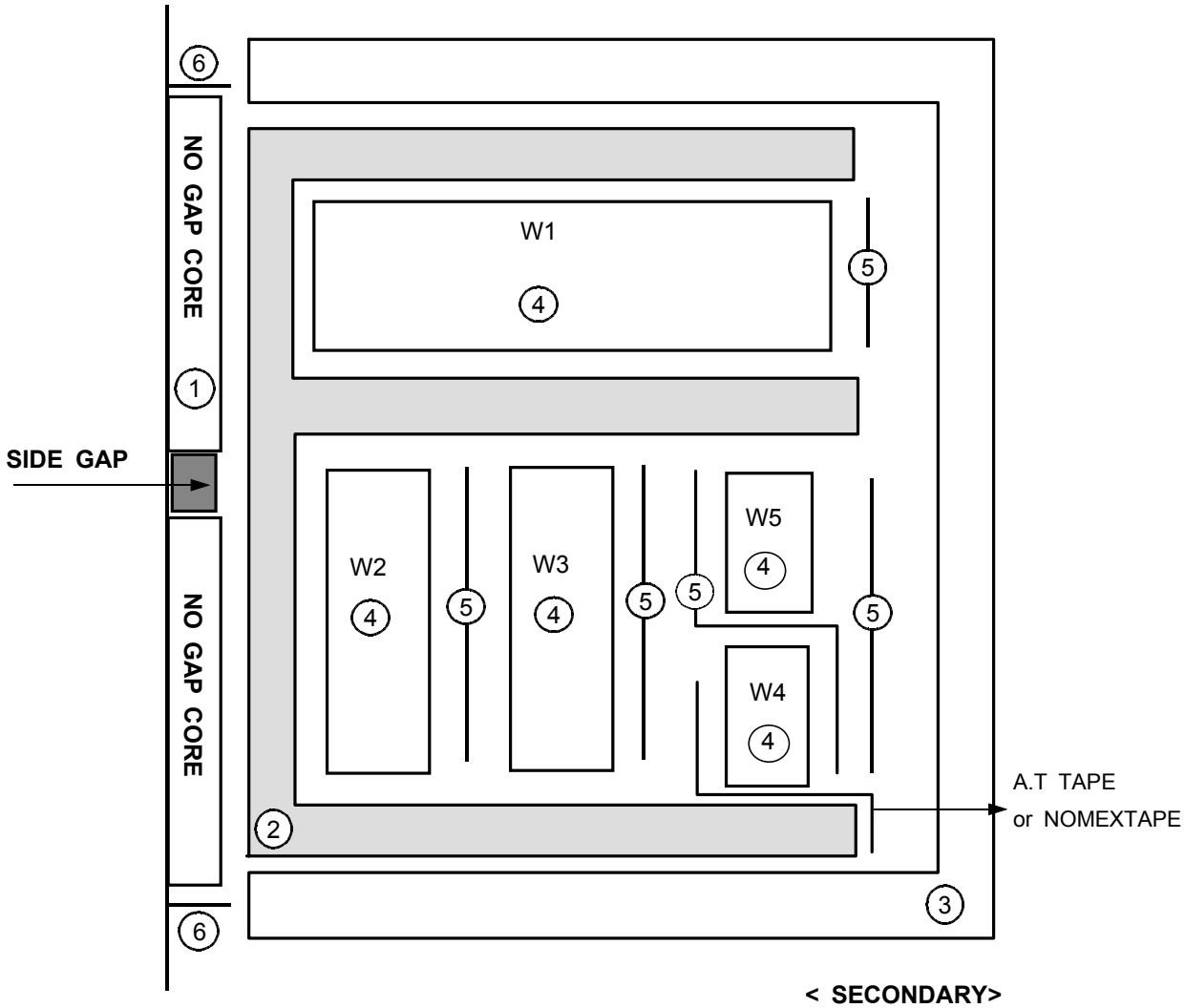
CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

safety

## 7. SECTION DIAGRAM

< PRIMARY >




< SECONDARY>

* GAP : SIDE GAP ≒ P.S FILM 0.1T

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 7 / 20 |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | Eun | | | | |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 8. MATERIAL LIST

safety

| NO. | COMPONENT | NAME OF MATERIAL | MANUFACTURE COMPONENT | MATERIAL COLOR | UL FILE NO. |
|---|---|---|---|---|---|
| 1 | CORE | FERRITE<br>ETD 3435K PM7 | TODA ISU CORPORATION. | BLACK | |
| | | FERRITE<br>EER 3535S PL-7 | SAM WHA ELECTRONICS CO., LTD. | | |
| | | FERRITE<br>EC34-1 HE4 | RUYUAN DONGYANGGUANG MAGNETIC MATERIALS CO.,LTD | | |
| 2 | BOBBIN | 94V-0 PHENOL RESIN<br>PM9820 12PIN | SUMITOMO BAKELITE CO., LTD.<br>(DAE HEUNG , HO SUNG , HO JINN) | BLACK | E41429 |
| 3 | CAP | P.B.T(1500GN-30)<br>EFD 3435K | SAM YANG CO.,LTD | BLACK | E41938 |
| 4 | WIRE | POLYURETHANE<br>USTC 0.10ΦX20P<br>USTC 0.10ΦX40P<br>USTC 0.10ΦX60P | DONG YANG ELECTRONICS CO., LTD.<br>CNI CABLE CO., LTD. | BRASS YELLOW | E102761<br>E210918 |
| 5 | INSULATION TAPE | POLYESTER FILM TAPE<br>0.025mm × 6.0mm (White)<br>0.025mm × 7.5mm (Yellow) | METAL LINE CO., LTD<br>(Cat No. 800a) | WHITE<br>YELLOW | E162848 |
| 6 | CORE FIXING TAPE | POLYESTER FILM TAPE<br>0.025mm × 10.0mm (Yellow) | DUCK SUNG HITECH CO., LTD.<br>(Cat No. DTS-204) | YELLOW | E105147 |
| 7 | INSULATION TAPE | ACETAPE TAPE | DUCK SUNG HITECH CO., LTD.<br>( Cat No. DTS-230) | YELLOW | E105147 |
| 8 | SIDE GAP | POLYESTER FILM<br>(SR55) 0.1T | SKC CO., LTD. | TRANSPARENCY | E74359 |
| 9 | VARNISH | SR-337A, SR-337B | SE KYE CHEMICAL CO., LTD. | TRANSPARENCY | E257443 |
| | | DVB-2085 | NOROO PAINT & COATINGS CO., LTD. | | E258023 |
| 10 | SOLDER | LFC2.0-BAR, Sn-2Cu | SEOUL ALLOY METAL CO., LTD. | SILVER | |
| 11 | FLUX | JS-7000S-1 | KOKI SANEI KOREA CO., LTD. | LEMON YELLOW | |
| 12 | MARKING | INK & LABEL | TAE CHU COMPANY CO., LTD | BLACK | |

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

**9. UL - LIST**

**NAMYANG ELECTRONICS CO LTD** **E140149**
(DUKSAN INDUSTRIAL ZONE) #808-4. DUKSAN-RI,
SAMJUK-MYUN, ANSUNG-SI, KYUNGKI-DO, KOREA
**Class 130 (B) transformer insulation system,** designated NYB-001, maximum 600V.
**Class 130 (B) transformer insulation system,** designated NYB-002, maximum 600V.
**Class 130 (B) transformer insulation system,** designated NYB-003, maximum 600V.
Marking : Company name or trademark and system designation.

**BOBBIN**

**SUMITOMO BAKELITE CO LTD** **E41429**
5-8 HIGASHI-SHINAGAWA 2-CHOME
SHINAGAWA-KU
TOKYO, 140-0002 JAPAN

| Material Dsg | Color | Min. Thk mm | Flame Class | HWI | HAI | RTI Elec | RTI Mech Imp | RTI Mech Str | HVTR | D495 | CTI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Phenolic (PF), "Sumikon", furnished as pellets, granular material.** | | | | | | | | | | | |
| **PM-9820** | BK | 0.16 | V-0 | - | - | 150 | 150 | 150 | 0 | 5 | 3 |
| | | 0.51 | V-0 | 3 | 1 | 150 | 150 | 150 | | | |
| | BN | 0.18 | V-0 | - | - | 150 | 150 | 150 | | | |
| | | 0.70 | V-0 | 1 | 2 | 150 | 150 | 150 | | | |
| | | 1.5 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | | 3.0 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |

Marking: Company name or tradename "PERMAFLOW" , "SPIDAX" , "SUMIFLEX" , "SUMIKON" , "SUMILITE" , "SUMIMAC" or trademark パーマフロー , スミライト® , スミコン® , 住友ベークライト株式会社 , スパイダックス , スミフレックス® , スミマック , スミガウス® , "SUMIGAUSS®" , スミガウス , SUMIKON ® EME and material designation on container, wrapper or finished part.

Last Updated on 2007-12-12

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

**UL - LIST**

**CAP**

**SAMYANG CORPORATION** **E121254**

407 3-GA PALBOK-DONG, CHEONJU CHEONBUK 560-200 KR

1500GN-30

Polybutylene/Polyethylene Terephthalate (PBT/PET), "TRIBIT, Sam Yang's Co. Ltd. PBT", furnished as pellets

| | Min Thk | Flame | | | RTI | RTI | RTI |
|---|---|---|---|---|---|---|---|
| Color | (mm) | Class | HWI | HAI | Elec | Imp | Str |
| ALL | 0.75 | V-0 | 3 | 0 | 130 | 130 | 140 |
| | 1.5 | V-0 | 2 | 0 | 130 | 130 | 140 |
| | 3.0 | V-0 | 2 | 0 | 130 | 130 | 140 |

Marking: Company name and material designation on container, wrapper or finished part.

Last Updated on 2008-05-07

**WIRE**

**DONG YANG ELECTRONICS IND CO LTD** **E102761**
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ BC | OC | ANSI Type | TI |
|---|---|---|---|---|
| NY-PEW | Polyester | Polyamide | MW24 | 155 |
| NY-PEW(F) | Polyester | Polyamide | MW24 | 155 |
| NY-UEW | Polyurethane | Polyamide | MW80, MW28# | 155, 130 |
| UEW(F) | Polyurethane | — | MW79, | 155, |
| UEW(B) | Polyurethane | — | MW75# | 130 |
| UAL | Polyurethane | — | @ | 155 |
| PEW | Polyester | — | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.
#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

Marking: Company name or "E102761" and material designation or marked designation on package or reel .

Last Updated on 2007-01-08

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

**UL - LIST**

**WIRE** **CNICABLE CO LTD** **E210918**

312-16 DEUKSAN-DONG
ASAN-SI, CHUNGCHEONGNAM-DO 336-120 REPUBLIC OF KOREA

| Mtl Dsg | Mark Dsg | Coat Type BC | Coat Type OC | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| DSUEW-100 | (1) | Polyurethane | — | MW75C | 130# |
| UEW | (1) | Polyurethane | None | MW79 | 155 |
| | | | | MW75 | 130# |
| PEW | (1) | Polyester | None | MW30 | 180 |
| | | | | MW5 | 155# |
| AAI-EIW | (1) | Polyesterimide | Polyamide-imide | — | 200 |
| AI-EIW(R) | (1) | Polyesterimide | Polyamide-imide | @ | 220 |
| AI-EIW(SL) | (1) | Polyesterimide | Polyamide-imide (self-lubricating) | @ | 220 |
| AIW | (1) | Polyesterimide | Polyamide-imide | — | 200 |
| AL-UEW | (1) | Polyurethane | — | — | 155 |
| EIW | (1) | Polyesterimide | — | — | 200 |
| HSRW | (1) | Polyesterimide | Polyamide-imide | MW73C,MW35C | 200 |
| MW35 | (1) | Polyesterimide | Polyamide-imide | MW73C,MW35C | 200 |
| MW35A | (1) | Polyesterimide | Polyamide-imide | MW35A | 220 |
| NPW | (1) | Polyester | Polyamide | MW76 | 180 |
| | | | | MW24 | 155 |
| PEW | (1) | Polyester | — | MW5 | 155 |
| UEW | (1) | Polyurethane | — | MW79 | 155 |
| NUW | (1) | Polyurethane | Polyamide | MW83, | 180 |
| | | | | MW80 | 155 |

@ - Non-ANSI Type
(1) - Marked designations are the same as the material designations.
# - This wire may perform better than its temperature rating reflects. Hence, it may not be suitable to use in an insulation system thermal aging program.

Marking: Company name, material designation or marked designation on package or reel.
Last Updated on 2006-10-20

**TAPE** **METAL LINE CO., LTD** **E162848**

330-1 BUHANG-RI SILCHON-EUP
GWANGJU-SI, GYEONGGI-DO 464-874 REPUBLIC OF KOREA

**Reinforced polyester (PET) tape with acrylic adhesive**, Cat. No. 800BT, rated 130C.
**Polyester (PET) tape with acrylic adhesive**, Cat. No. 800(a), rated 130 C.
**Polyester (PET) tape with acrylic adhesive**, Cat. No. 8000, rated 130 C.
**Flame Retardant Al foil tape with acrylic adhesive** , Cat. No. HD-110$.
**Flame Retardant Ni coated woven polyester fiber tape with acrylic adhesive** , Cat. No. HD-14$.
(a) May be marked: "Film side CTI Performance Level Category PLC=0, Voltage 600+, per UL 746A/ASTM D 3638" and/or "Film side CTI 600 + per IEC112, First Edition (1979), CTI Material Group I" or equivalent.
$ - Markings shall include "Flame Retardant".

Marking: Company name or file number "E162848",catalog designation and temperature rating printed on carton, wrapper or core.
Last Updated on 2009-05-09

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

**UL - LIST**

**TAPE**

**DUCK SUNG HITECH CO LTD** **E105147**
DAESUNG BLDG
677 JAYANG-DONG
KWANG JIN-KU
SEOUL, 133-190 REPUBLIC OF KOREA

**Polyester film insulating tape, acrylic adhesive**, Cat. No. DTS-204(a), rated 130 C.
**Acetate cloth insulating tape, acrylic adhesive**, Cat. No. 231*, rated 105 C.
**Glass cloth insulating tape, rubber adhesive**, Cat. No. 220-B, rated 130 C.
**Glass cloth insulating tape, silicone adhesive**, Cat. No. 221H*, rated 180 C.
**Acetate cloth insulating tape, rubber adhesive**, Cat. No. DTS-230, rated 105 C.
**Nomex (Aramid fiber) film insulating tape with non-woven polyester fiber reinforcement, acrylic adhesive**, Cat. No. DTS-241*, rated 130 C.
**Polyester film insulating tape, acrylic adhesive**, Cat. No. DTS-280*, rated 130 C.

* - Complies with flame retardant requirements when so marked.

(a) - May be marked: "Film side CTI Performance Level Category PLC=2 Voltage 270, per UL 746A/ASTM D 3638", and/or "Adhesive side CTI Performance Level Category PLC=0 Voltage 600+, per UL 746A/ASTM D 3638" or equivalent.

Marking: Company name or trademark or file number "E105147" and catalog designation printed on carton, wrapper or core.

Last Updated on 2007-07-10

**INSULATOR**

**SKC CO LTD** **E74359**
PLANT MANAGEMENT TEAM
633 CHONGJA-DONG
CHANGAN-GU
SUWON-SHI, KYONGGI-DO 440-840 REPUBLIC OF KOREA

| Material Dsg | Color | Min. Thk mm | Flame Class | H W I | H A I | RTI Elec | RTI Mech Imp | RTI Mech Str | HVTR | D495 | CTI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Polyethylene Terephthalate (PET), film, "Skyrol", furnished as sheets or rolls.** | | | | | | | | | | | |
| **SR55** | NC | 0.075 | VTM-2 | - | - | 130 | 105 | 130 | | | |
| | | 0.25~0.27 | V-2 | - | - | 130 | 105 | 130 | | | |

## - Represents a numeric suffix from "00" to "99" except 01, 50, 53, 55, 70, 72 for grade SR##.
@ - Represents alphabetical suffix from "A" to "Z" (Second @ may be omitted).

Marking: Company name or tradename "SKC" and material designation on container, wrapper or finished part.

Last Updated on 2008-01-20

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | Eun | | | | 12 / 20 |

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

**UL - LIST**

**VARNISH**

**SE KYE CHEMICAL CO LTD** **E257443**
360 GUIJEON-RI
TONGJIN-EUP
KIMPO-SI, KYUNGGI-DO 415-862 REPUBLIC OF KOREA

| Varnish Dsg | ANSI Magnet Wire Type | Varnish Thermal Class C TP | HC | CE |
|---|---|---|---|---|
| SR-337(#) | MW75 | 130 | 130 | — |

# - May be followed by 1 or 2 suffix numeric and /or alpha characters to denote viscosity change accomplished via solvents due to production tolerance.

Marking: Company name and varnish designation on shipping container.

Last Updated on 2006-06-28

**VARNISH**

**NOROO PAINT & COATINGS CO LTD** **E258023**
615 PAKDAL-DONG
ANYANG-SHI, KYONGGI-DO 430-030 REPUBLIC OF KOREA

| System Component | System Dsg | System Temp Class |
|---|---|---|
| DVB-2085 (*) | SBI4.2-DPI | 130 (B) |

(*) - Followed by one or two numbers and/or letters.
(#) - May be replaced by a number from 0 - 30 to denote the percent silica.

Marking: Company name and system component designation.

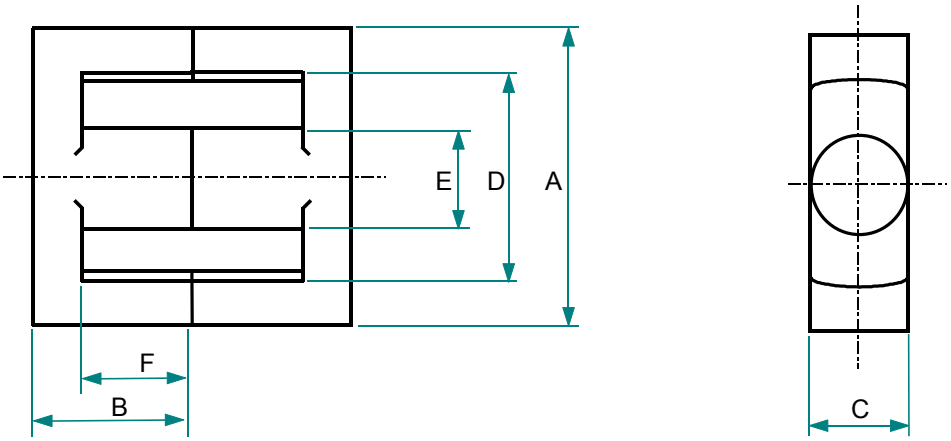
Last Updated on 2007-09-21

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | Eun | | | | 13 / 20 |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 10. CORE DIMENSION



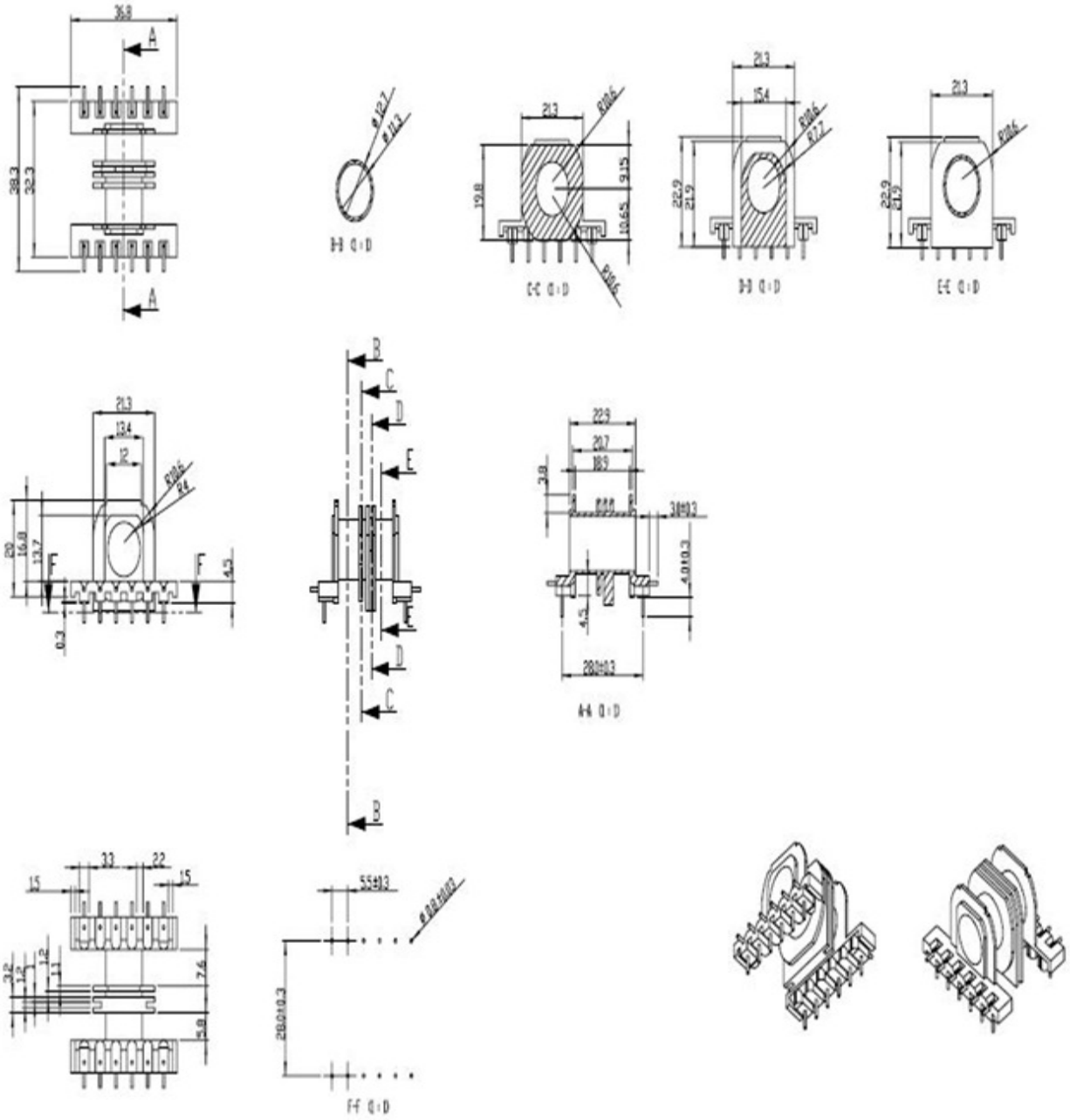

| TYPE | DIMENSIONS IN MM | | | | | | EFFECTIVE PARAMETERS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | le(mm) | Ae(mm²) | Ve(mm³) | |
| EER3535S | 35.20 ±0.80 | 17.40 ±0.20 | 10.80 +0.2 −0.3 | 27.30 ±0.70 | 10.80 ±0.30 | 12.20 ±0.30 | 80.1 | 97.1 | 7780 | SAM WHA |
| ETD3435K | 35.20 ±0.80 | 17.40 ±0.20 | 10.80 +0.2 −0.3 | 27.30 ±0.70 | 10.80 ±0.30 | 12.20 ±0.30 | 80.1 | 97.1 | 7780 | TODA ISU |
| EC34-1 (EER3435K) | 35.20 ±0.80 | 17.40 ±0.20 | 10.80 +0.2 −0.3 | 27.30 ±0.70 | 10.80 ±0.30 | 12.20 ±0.30 | 80.03 | 96.30 | 7706 | DONG YANG GUANG |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | Eun | | | | 14 / 20 |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

**11. BOBBIN DIMENSION**

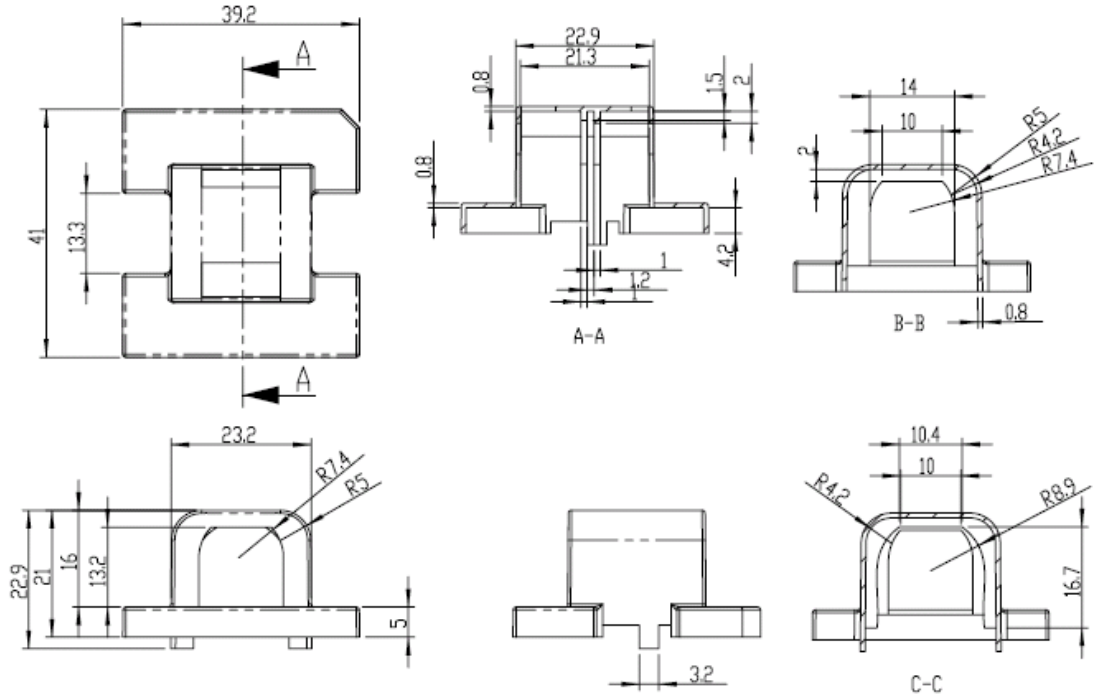


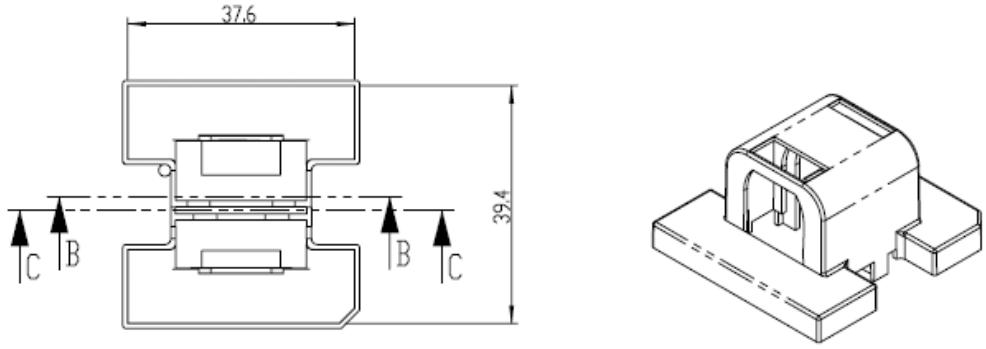
| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 15 / 20 |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | | | | | |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

**12. CAP DIMENSION**




| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 16 / 20 |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | Eun | | | | |

## 13. 품 명 : TRANS MULTI



| 공정 번호 | 공 정 SUB 공정 | 공 정 MAIN 공정 | 소요자재 | 공 정 명 | 관 리 항 목 | 관 리 기 준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | | | BOBBIN<br>COIL<br>P/E TAPE | 1-N차 권선 | * COIL의 굵기와 종류<br>*권선턴수,권선상태<br>*결선상태, 절연상태 | | 2회 1일 | SAMPLING<br>LOT당 5EA | *MICRO METER | 생산 | 성적서 |
| 02 | | | SOLDER<br>FLUX | 배선,납땜 | *납조기 온도: 430℃±10℃<br>*납땜시간 : 2.0초±0.5초 | 납땜작업표준서 | 2회 1일 | 전수 | *납조기<br>*온도계 | 생산 | 온도체크 시트 |
| 03 | | | CAP | CAP 조립 | *CAP의 종류<br>*조립상태 CAP SIZE | CAP 조립 작업표준서 | 2회 1일 | SAMPLING | *MICRO METER | 생산 | |
| 03 | | | CORE<br>GAP<br>P/E TAPE | CORE 조립 | *CORE의 종류<br>*조립상태 GAP SIZE<br>*TAPING TURNS및 TAPING상태 | CORE 조립 작업표준서 | 2회 1일 | SAMPLING | *MICRO METER | 생산 | |
| 04 | | | KEY-BASE | KEY 조립 | *KEY의 종류<br>*조립상태 KEY SIZE | KEY 조립 작업표준서 | 2회 1일 | SAMPLING | *MICRO METER | 생산 | |
| 05 | | | | 1차 검사 | *전기적특성 (L값 TURNS)<br>*결선, 납땜상태 | 1차 검사 기준서 | 전수 | 전수검사 | *TURNS METER<br>*LCR-METER | 생산 | 1차검사 일보 |
| 06 | | | VARNISH | 진공함침 | *VARNISH 배합상태 *함침시간<br>*함침부위 * VARNISH 점도 | 함침작업 표준서 | 매 LOT | SAMPLING | *진공함침기<br>*점도계 *시계 | 생산 | 점도체크 시트 |
| 07 | | | | 건조 | *건조시간 : 3Hr<br>*건조기 온도 : 120℃ | 건조작업 표준서 | 2회 1일 | SAMPLING | *건조기 *시계<br>*온도계 | 생산 | 온도체크 시트 |
| 08 | | | 불멸잉크 | MARKING | *MARKING 방향,위치,선명도<br>LOT No. | MARKING 작업표준서 | 전수 | 전수검사 | *MARKING 도장 | 생산 | |
| 09 | | | | PIN교정 | * 핀휨, 핀교정상태 | PIN교정 작업표준서 | 전수 | 전수검사 | *PIN교정JIG | 생산 | |
| 10 | | | | 2차 검사 | *전기적특성(L값,LEAKAGE)<br>*위상,TURNS *내전압 절연상태 | 2차 검사 기준서 | 전수 | 전수검사 | *TURNS METER<br>*LCR-METER,*내압기 | 생산 | 2차 검사 일보 |
| 11 | | | | 외관검사 | *BOBBIN파손, 납땜상태,PIN상태<br>*기타 | 외관검사 기준서 | 전수 | 전수검사 | | 생산 | 외관검사 일보 |
| 12 | | | PAPER BOX<br>OUT BOX | 포장 | *PIN TO PIN 간격<br>*BOX규격,외관,포장상태 | 포장작업 기준서 | 전수 | | | 생산 | |
| 13 | | | | 출하검사 | *전기적특성 (L값 절연저항 내전압)<br>*치수,구조,외관,수량 | 출하검사 기준서 | SAMPLING | SAMPLING | *LCR *내압기<br>*절연저항기 | 품질관리 | 출하검사 성적서 |
| 14 | | | | 창고입고 | *수량, 제품명, 포장상태,<br>*입.출고 재고관리 | 창고적재 표준서 | | | | 영업 | 입고전표 수불장부 |
| 15 | | | | 출 하 | *제품명, 수량 | | | | | 영업 | 출하전표 |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 14. PACKING

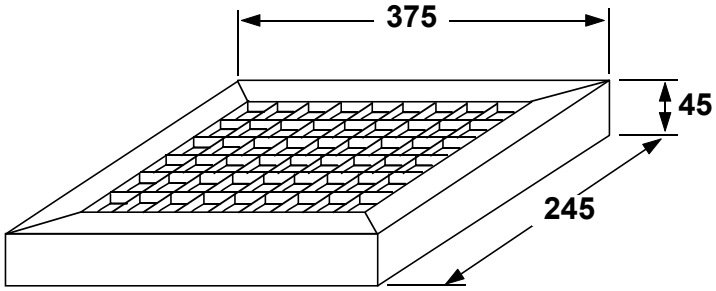
(UNIT : m/m)

** INNER BOX (PAPER BOX)

6 PCS × 9 EA = 54 PCS

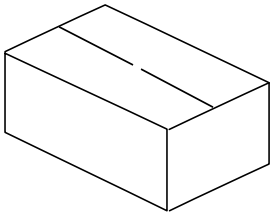
** OUT BOX (CARTON)

54 PCS × 4 EA = 216 PCS




** BOX CARTON DECLARATION

| QUANTITY | WEIGHT APPROX.(Kg) |
|---|---|
| PART No. | |
| P/O No. | |
| LOT No. | |
| P/DATE | |
| Q'TY | |
| C/NO | |
| MADE IN KOREA | |



| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | |
|---|---|---|---|---|---|
| NAM YANG ELECTRONICS CO., LTD. | Eun | | | | 18 / 20 |

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| **PART NAME** | TRANS MULTI | **PART No.** | **EBJ60711106** |

# 15. INSPECTION DATA

| **ITEM** | TRANS MULTI | **MODEL** | 26"32" PSU | **LOT SIZE** | 10 PCS |
|---|---|---|---|---|---|
| **OBJ** | | **LOT No** | NY091109 | **TEST Q'TY** | 10 PCS |

| No | ITEM | TERMINAL | SPEC' | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | INDUCTANCE <100KHz,1.0V> | 5 - 2 | 1.40 mH ± 15% | 1.35 | 1.39 | 1.38 | 1.37 | 1.39 | 1.35 | 1.39 | 1.37 | 1.38 | 1.39 |
| 2 | | 9 - 11 | 19.6 uH ± 30% | 19.7 | 19.6 | 19.8 | 19.6 | 19.7 | 19.7 | 19.6 | 19.6 | 19.8 | 19.8 |
| 3 | | 11 - 10 | 19.6 uH ± 30% | 19.5 | 19.4 | 19.7 | 19.4 | 19.7 | 19.6 | 19.5 | 19.7 | 19.8 | 19.7 |
| 4 | | 8 - 12 | 5.10 uH ± 30% | 5.06 | 5.07 | 5.06 | 5.04 | 5.07 | 5.06 | 5.07 | 5.07 | 5.06 | 5.06 |
| 5 | | 12 - 7 | 4.80 uH ± 30% | 4.83 | 4.82 | 4.81 | 4.82 | 4.83 | 4.82 | 4.83 | 4.82 | 4.83 | 4.82 |
| 6 | LEAKAGE <100KHz,1.0V> | 5 - 2 | 230 uH MAX | 171 | 183 | 178 | 181 | 176 | 180 | 179 | 181 | 176 | 178 |
| 7 | Rdc | 5 - 2 | 0.45 Ω MAX | 0.292 | 0.300 | 0.292 | 0.300 | 0.301 | 0.292 | 0.292 | 0.291 | 0.301 | 0.300 |
| 8 | | 9 - 11 | 0.03 Ω MAX | 0.013 | 0.013 | 0.013 | 0.014 | 0.013 | 0.013 | 0.013 | 0.012 | 0.013 | 0.013 |
| 9 | | 11 - 10 | 0.03 Ω MAX | 0.014 | 0.014 | 0.014 | 0.014 | 0.013 | 0.013 | 0.013 | 0.014 | 0.014 | 0.014 |
| 10 | | 8 - 12 | 0.03 Ω MAX | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.014 | 0.013 | 0.013 |
| 11 | | 12 - 7 | 0.03 Ω MAX | 0.012 | 0.012 | 0.012 | 0.013 | 0.012 | 0.012 | 0.013 | 0.012 | 0.013 | 0.013 |
| 12 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 3.0 KV rms (1 MINUTE) | 6.3KV | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 13 | | P COIL - CORE | AC 1.5 KV rms (1 MINUTE) | 6.3KV | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 14 | | S COIL - CORE | AC 1.5 KV rms (1 MINUTE) | 5.5KV | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 15 | INSULATION RESISTANCE | COIL - COIL | 100M ohm MIN at DC 500V | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ |
| 16 | D.C OVERLAP (0.7A) | 5 - 2 | MORE THAN 90% at INITIAL INDUCTANCE | 1.32 | 1.35 | 1.35 | 1.34 | 1.35 | 1.34 | 1.35 | 1.36 | 1.35 | 1.37 |
| | | | | 98% | 97% | 98% | 98% | 97% | 99% | 97% | 99% | 98% | 99% |
| 17 | Q <100KHz, 1V> | 5 - 2 | 130 MIN | 340 | 346 | 345 | 341 | 347 | 350 | 349 | 342 | 349 | 344 |
| 18 | LAYER SHORT TEST | 5 - 2 | AC 1.5 KV Pulse 4 Times | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | |
|---|---|---|---|---|---|
| **NAM YANG ELECTRONICS CO., LTD.** | Eun | | | | 19 / 20 |

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 09. |
|---|---|---|---|
| **PART NAME** | TRANS MULTI | **PART No.** | **EBJ60711106** |

## 16. ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.
2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.
3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.
4) WIRE BUNDLE METHOD.
   * CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2MM.
   * TOP SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2 MM.
   * SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER-SOLENOID IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
   * SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM. ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
   * SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2.
     IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.
5) PERFORMANCE OF THIS DRAWING IS REQUITED TO MEET PART NUMBER EBJ60711106
6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE. BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | |
|---|---|---|---|---|---|
| **NAM YANG ELECTRONICS CO., LTD.** | Eun | | | | **20 / 20** |

# 폴리 우레탄 동선 (1UEW)

| 치 수 | | | | 절연파괴 전 압 (V) ↑ | 내마모 파괴하중 | | 최대도체 저 항 (Ω/㎞) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성 외 경 (mm) ↑ | 최대완성 외 경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| **0.100** | **±0.003** | **0.118** | **0.140** | **2000** | **-** | **-** | **2647** | **15** |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.224 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.686 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

SAFETY

# ( YUYANG D & U ) SPECIFICATIONS

CUSTOMER : YUYANG D & U CO., LTD.

M O D E L : 10P 26",32"

I T E M : MULTI TRANSFORMER

PART NO : LPM-101

DATE : 2009. 10. 10.

| MANUFACTURE | CLOVER Hi-Tech CO.,LTD. | |
|---|---|---|
| ADDRESS | HEAD OFFICE : 224-10, JAYANG-DONG,KWANGJIN-KU, SEOUL, KOREA. | TEL) 02-453-0488<br>FAX) 02-453-8858 |
| | FACTORY 1 : 322, SINDU-RI, GONGDO-EUP, ANSEONG-SI, GYEONGGI-DO, KOREA. | TEL) 031-654-9300<br>FAX) 031-654-9400 |
| | FACTORY 2 : 62, SHENZHEN ROAD, MANSANZHEN, WENDING SHI,SHANDONG, CHINA. | TEL) 86-631-854-5420<br>FAX) 86-631-854-5330 |
| | FACTORY 3 : CHANG FA MANAGEMENT AREA FU SHAN LIAO BU TOWN, DONG GUAN CITY, GUANG DONG P.R. CHINA. | TEL) 86-769-328-1822<br>FAX) 86-769-328-3162 |

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 1. REVISION RECORD

| REV.NO | REASON | CONTENTS | DATE OF APPROVAL | CHECKED | REMARKS |
|---|---|---|---|---|---|
| | | | | | |

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 2. INDEX

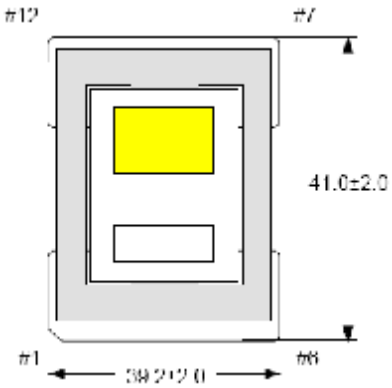

PAGE NO. : 1/21 1. REVISION RECORD
: 2/21 2. INDEX
: 3/21 3. DIMENSION
: 4/21 4. SCHEMATIC DIAGRAM
: 5/21 5. WINDING SPECIFICATION
: 6/21 6. ELECTRICAL CHARACTERISTICS
: 7/21 7. ENVIRONMENTAL CHARACTERISTICS
: 8/21 8. MECHANICAL CHARACTERISTICS
: 9/21 9. SECTION DIAGRAM
: 10/21 10. MATERIAL LIST
: 11/21 11. WIRE SPECIFICATION
: 12/21 11. WIRE SPECIFICATION
: 13/21 12. UL LIST
: 14/21 12. UL LIST
: 15/21 13. CORE DIMENSION
: 16/21 14. BOBBIN DIMENSION
: 17/21 15. PROCESS FLOW
: 18/21 16. PACKING
: 19/21 17. INSPECTION DATA
: 20/21 18. ASSIGNMENT
: 21/21 19. CHEMICAL ANALYSIS REPORT FOR CP-WIRE

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 3. DIMENSION (UNIT:mm) SAFETY

TOP VIEW




☆ MARKING (BLACK) ☆

LPM-101 SC-03B
SC-AABBCCD
<= LGE P/N

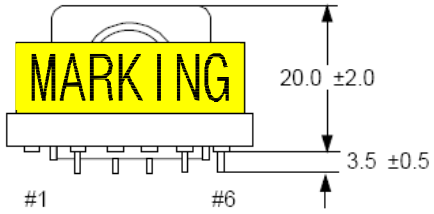
*. SC-03B -- INSULATION SYSTEM MARKING
*. SC-AABBCCD --- LOT NO.

PRODUCT CODE
DATE
MONTH
YEAR
MAKER

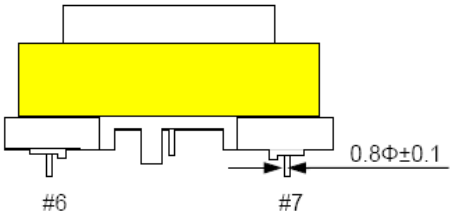
LOT NO

| YEAR(AA) | MONTH(BB) | DATE(CC) | PRODUCT CODE(D) |
|---|---|---|---|
| 2007Y→07<br>2008Y→08<br>2009Y→09 | JAN→01, FEB→02,<br>:<br>NOV→11, DEC→12 | DATE→01<br>:<br>DATE→31 | A:KOREA PRODUCT<br>C:CHINA(WENDING)<br>D:CHINA(DONGGUAN) |

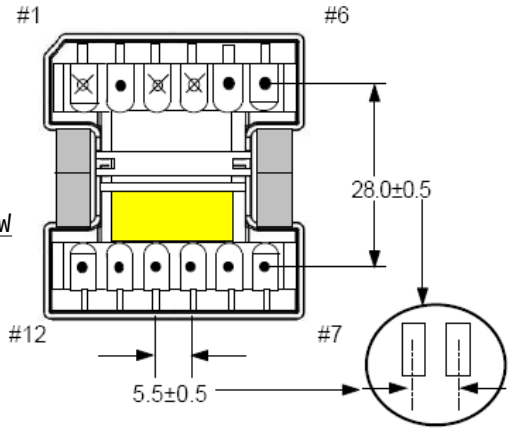
FRONT VIEW




SIDE VIEW




BOTTOM VIEW



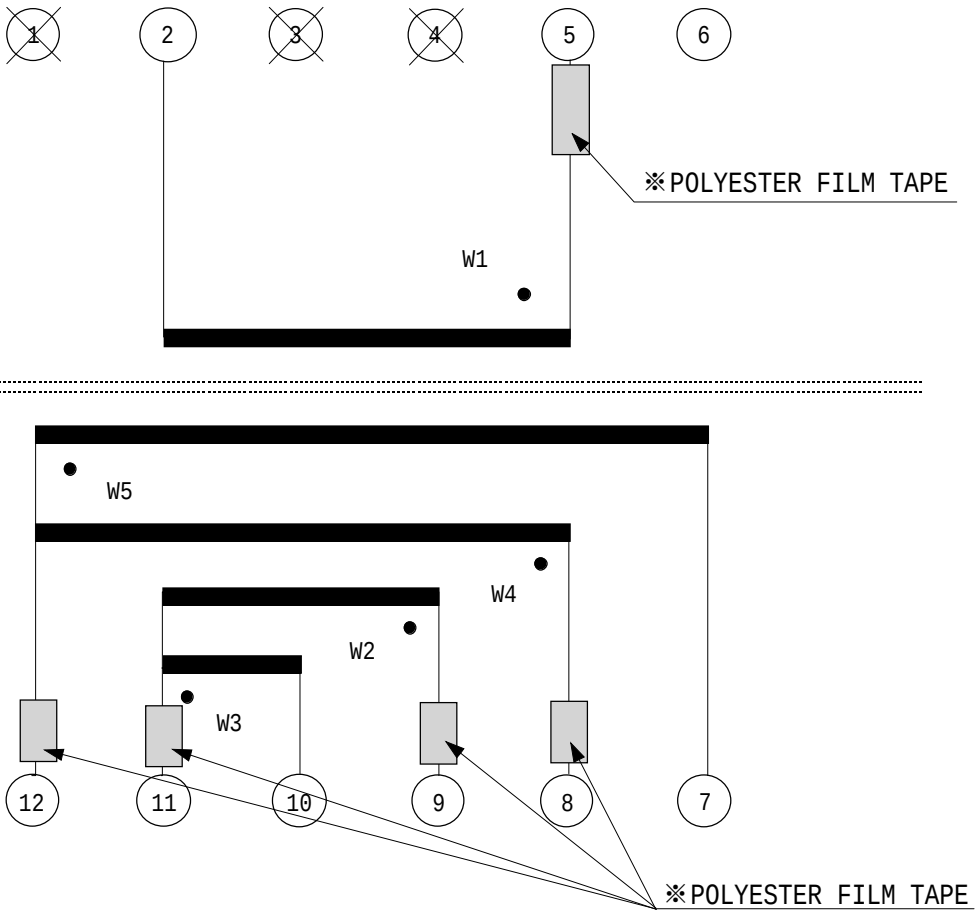

☆ PIN NO. 1, 3, 4 : REMOVED.
☆ SIDE GAP : 0.1T

| CLOVER Hi-Tech CO.,LTD. | DESIGN | CHECK | APPROVAL | PAGE |
|---|---|---|---|---|
| | 裵玹慶 09.10.10 技術部 | 車暎澔 09.10.10 技術部 | 劉成宰 09.10.10 技術部 | 3/21 |

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 4. SCHEMATIC DIAGRAM




| CLOVER Hi-Tech CO.,LTD. | DESIGN | CHECK | APPROVAL | PAGE |
|---|---|---|---|---|
| | 裴玹慶 09.10.10 技術部 | 車暎澔 09.10.10 技術部 | 劉成宰 09.10.10 技術部 | 4/21 |

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 5. WINDING SPECIFICATION

| NO | TERMINAL | | WIRE | TURNS | LAYERS | WINDING METHOD | INSULATION | | |
|---|---|---|---|---|---|---|---|---|---|
| | S | F | | | | | MATERIAL | T/W(mm) | TURNS |
| W1 | 5 | 2 | USTC 0.1 × 20 | 50 | 7 | SOLENOID | P.E. TAPE | 0.025/6.0 (WHITE) | 2 |
| W2 | 9 | 11 | USTC 0.1 × 60 | 6 | 1 | SOLENOID | P.E. TAPE | 0.025/7.5 (YELLOW) | 1 |
| W3 | 11 | 10 | USTC 0.1 × 60 | 6 | 1 | SOLENOID | P.E. TAPE | 0.025/7.5 (YELLOW) | 1 |
| W4 | 8 | 12 | USTC 0.1 × 40 | 3 | 1/2 | SOLENOID | P.E. TAPE | 0.025/7.5 (YELLOW) | 1 |
| W5 | 12 | 7 | USTC 0.1 × 40 | 3 | 1/2 | W4 AFTER SOLENOID | P.E. TAPE | 0.025/7.5 (YELLOW) | 2 |
| CORE FIXING | | | | | | | P.E. TAPE | 0.025/10 (YELLOW) | 3 |

☆ WINDING DIRECTION : SECONDARY VIEW C.C.W.

☆ [ ] MARK : POLYESTER FILM TAPE

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 6. ELECTRICAL CHARACTERISTICS

| NO | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 6-1 | INDUCTANCE | PIN : 5 - 2 | 1.40mH ±15% | HP-4284A<br>at 100KHz, 1V<br>(at 25 ±5℃) |
| | | PIN : 9 - 11 | 19.6uH ±30% | |
| | | PIN : 11 - 10 | 19.6uH ±30% | |
| | | PIN : 8 - 12 | 5.10uH ±30% | |
| | | PIN : 12 - 7 | 4.80uH ±30% | |
| 6-2 | LEAKAGE INDUCTANCE | PIN : 5 - 2 | 230uH MAX | |
| 6-3 | DC RESISTANCE | PIN : 5 - 2 | 0.45Ω MAX | HIOKI 3540 |
| | | PIN : 9 - 11 | 0.03Ω MAX | |
| | | PIN : 11 - 10 | 0.03Ω MAX | |
| | | PIN : 8 - 12 | 0.03Ω MAX | |
| | | PIN : 12 - 7 | 0.03Ω MAX | |
| 6-4 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 3,000Vrms, 1 MIN. | SAFETY<br>TOS-8850<br>CUT OFF<br>CURRENT 5mA |
| | | P COIL - CORE | AC 1,500Vrms, 1 MIN. | |
| | | S COIL - CORE | AC 1,500Vrms, 1 MIN. | |
| 6-5 | INSULATION RESISTANCE | COIL - CORE | 100 Mohm MIN<br>at DC 500V. | SAFETY<br>TOS-8850 |
| 6-6 | LAYER SHORT | PIN : 5 - 2 | AC 1.5KV<br>PULSE 4 TIMES | SAFETY<br>TF-6815<br>IMPULSE TESTER |
| 6-7 | DC OVER LAP | PIN : 5 - 2 | MORE THAN 90% OF INITIAL INDUCTANCE | 0.7A (TEST CURRENT)<br>NORMAL TEMPERATURE |
| 6-8 | QUALITY FACTOR | PIN : 5 - 2 | 130 MIN | HP-4284A<br>at 100KHz, 1Vrms |

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 7. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃±15℃ HUMIDITY 65%±20%
IF WHEN ANY OBJECTION IS SUGESTED. THE TEST CAN BE OPERATED AT 20℃±2℃, 65%±5% RH

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>7-1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>7-2</td><td>KEEPING TEMPERATURE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>7-3</td><td>HIGH TEMPERATURE RESISTANT</td><td rowspan="4">MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER ±5% OF THE INITIAL VALUE<br>(IT SHOULD BE MANAGED BY ±10% UNDER 10uH.)</td><td>+105±2℃, 96Hr MEASURE AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>7-4</td><td>LOW TEMPERATURE RESISTANT</td><td>-25℃±2℃, 96Hr MEASURE AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>7-5</td><td>HUMIDITY RESISTANT</td><td>+95%RH±5% (40℃±5℃), 96Hr MEASURE AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>7-6</td><td>TEMPERATURE CYCLE</td><td>
<table>
<tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr>
<tr><td>1</td><td>-25±2℃</td><td>30 MIN</td></tr>
<tr><td>2</td><td>+20±2℃</td><td>10 MIN</td></tr>
<tr><td>3</td><td>+105±2℃</td><td>30 MIN</td></tr>
<tr><td>4</td><td>+20±2℃</td><td>10 MIN</td></tr>
</table>
REPEAT 5 TIMES FROM STEP 1 AND TEST AFTER 2 Hr AT ROOM TEMP.
</td></tr>
<tr><td>7-7</td><td>HEAT SHOCK-RESISTANT</td><td></td><td>2 HR AT -20℃ → 2HR AT 70℃ :10 CYCLE</td></tr>
</table>

# 8. MECHANICAL CHARACTERISTICS

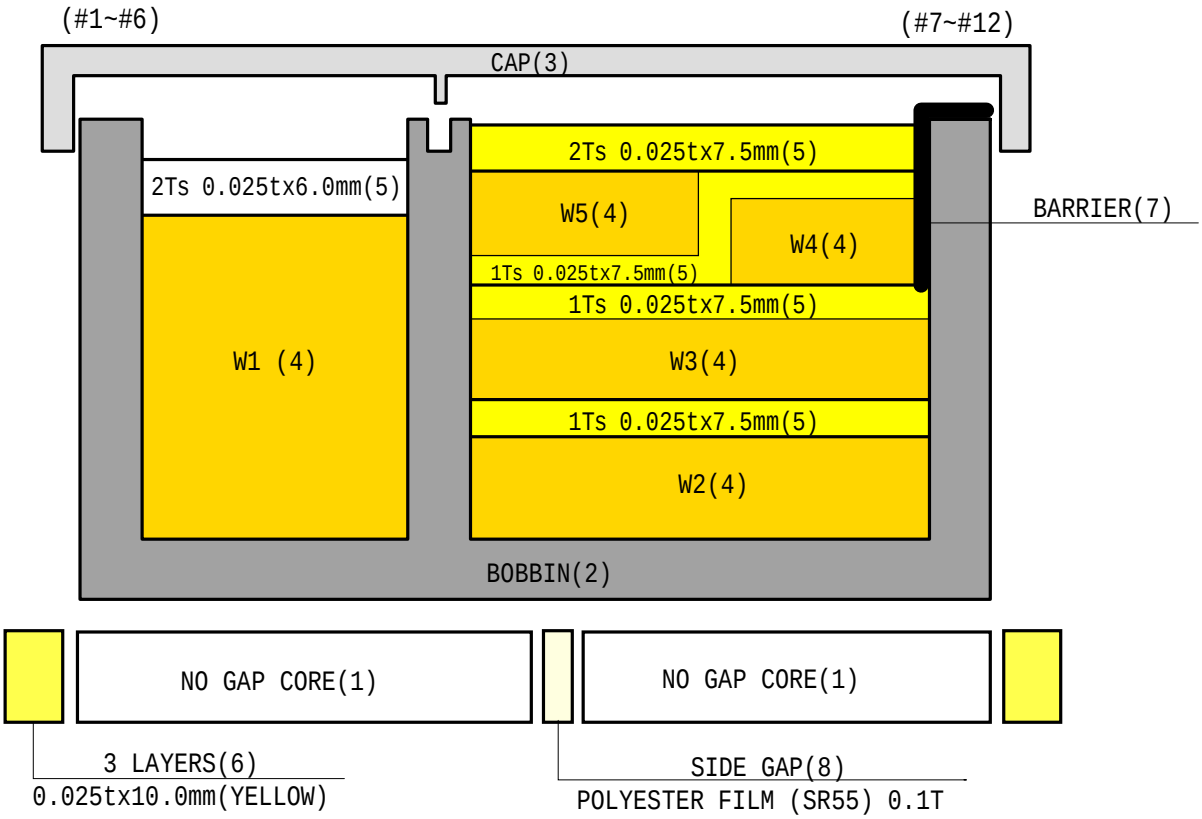
| NO | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 8-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 8-2 | SOLDER HEAT RESISTANCE | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER ±5% OF THE INITIAL VALUE (IT SHOULD BE MANAGED BY ±10% UNDER 10uH.) | DIP THE TERMINAL IN SOLDER AT 260+5℃ FOR 10±0.5 SECONDS MEASURE AFTER 1 Hr AT ROOM TEMP. SOLDERING IRON(80W) TERMINAL AT 360±2℃ FOR 5±1 SECONDS MEASURE AFTER 2 Hr AT ROOM TEMP. |
| 8-3 | SOLDER -ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 240-245℃ FOR 3 SECONDS |
| 8-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED TO INITIAL VALUE | PULL THE PIN WITH 2.5Kgf DURING 30±5 SEC |

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
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# 9. SECTION DIAGRAM

SAFETY




| CLOVER Hi-Tech CO.,LTD. | DESIGN | CHECK | APPROVAL | PAGE |
|---|---|---|---|---|
| | 裴玹慶 09.10.10 技術部 | 車暎澔 09.10.10 技術部 | 劉成宰 09.10.10 技術部 | 9/21 |

CUSTOMER : YUYANG D & U CO., LTD.

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|---|---|---|---|
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# 10. MATERIAL LIST SAFETY

| NO | COMPONENT | NAME OF MATERIAL | MANUFACTURER OF MATERIAL | MATERIAL COLOR | UL FILE NO |
|---|---|---|---|---|---|
| 1 | CORE | HE4, ETD3435<br>PM7, ETD3435 | RUYUAN DONGYANGGUANG MAGNETIC MATERIAS CO., LTD.<br>TODA ISU CO.,LTD. | BLACK | |
| 2 | BOBBIN | PHENOLIC 94V-0<br>H"TYPE 공진형/<br>12PIN<br>TERMINAL:Sn100% 4u | SUMITOMO BAKELITE CO., LTD. (PM-9820)<br>(DAE HEUNG CO.,LTD)<br>IL-KWANG ELECTRONIC MATERIALS CO., LTD. | BLACK | E41429 |
| 3 | CAP | P.B.T 94V-0<br>CAP BASE | CHANG CHUN PLASTICS CO., LTD. (PBT-4130) | BLACK | E59481 |
| 4 | WIRE | USTC 0.1Φ×20<br>USTC 0.1Φ×40<br>USTC 0.1Φ×60 | DONGYANG ELECTRONICS IND CO., LTD. (UEW MW75) | NATURAL | E102761(S) |
| 5 | INSULATION TAPE | POLYESTER FILM TAPE<br>0.025T × 6.0mm<br>(WHITE)<br>0.025T × 7.5mm<br>(YELLOW) | METAL LINE CO., LTD. (Cat. NO. 800(a))<br>JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD. (Cat. NO. PZ) | WHITE<br>YELLOW | E162848(S)<br>E165111 |
| 6 | CORE FIXING TAPE | POLYESTER FILM TAPE (YELLOW)<br>0.025T × 11mm | METAL LINE CO., LTD. (Cat. NO. 800(a))<br>JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD. (Cat. NO. PZ) | YELLOW | E162848(S)<br>E165111 |
| 7 | BARRIER | P.N.W (BUSIKPO) | A-TECH CO., LTD. (Cat. No. BK-402)<br>TAEHWA INDUSTRIAL CO., LTD. (Cat.No. H-5673)<br>JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD. (Cat. NO. WF) | WHITE | E142633<br>E92677(S)<br>E165111 |
| 8 | SIDE GAP | POLYESTER FILM (SR55) 0.1T | SKC LTD. | TRANSPARENCY | E74359(S) |
| 9 | VARNISH | DVB-2085 | NOROO PAINT & COATINGS CO., LTD. | LEMON YELLOW | E93947 |
| 10 | SOLDER | Sn98Cu2 | SEOUL ALLOY METAL CO., LTD.<br>or equiv. | SILVER | |
| 11 | FLUX | KS-PBF-G<br>or equiv. | KOKI SANEI KOREA CO., LTD.<br>or equiv. | LEMON YELLOW | |
| 12 | INK | JP-K33<br>or equiv. | HITACHI CHEMICAL CO., LTD.<br>or equiv. | BLACK | |

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 11. WIRE SPECIFICATION

POLYURETHANE ENAMELED WIRE (1UEW)

| 치수 | | | | 절연파괴 전압 (V) ↑ | 내마모 파괴하중 | | 최대도체 저항 (Ω/km) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도체 | | 최소피막 두께 (mm) ↑ | 최대완성 외경 (mm) ↑ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지름 (mm) | 허용차 (mm) | | | | | | | |
| 0.060 | ±0.003 | 0.008 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.008 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.009 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.009 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.009 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.009 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.010 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.010 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.010 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.011 | 0.180 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.011 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.011 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.012 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.012 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.012 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.012 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.012 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.013 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.013 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.016 | 0.288 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.013 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.013 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.013 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.013 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.014 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.014 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.014 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.014 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.014 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.014 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.014 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.014 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.015 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.015 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.015 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.410 | ±0.005 | 0.015 | 0.466 | 2800 | 4.16(425) | 3.52(360) | 133.8 | 20 |
| 0.420 | ±0.005 | 0.015 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.440 | ±0.005 | 0.016 | 0.496 | 2800 | 4.16(425) | 3.52(360) | 116.0 | 20 |
| 0.450 | ±0.006 | 0.016 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.017 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.017 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.017 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.018 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.019 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.020 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.021 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.022 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.023 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.024 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 0.025 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |

CUSTOMER : YUYANG D & U CO., LTD.

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# 11. WIRE SPECIFICATION

POLYURETHANE ENAMELED WIRE (2UEW)

| 치수 | | | | 절연파괴전압 (V) ↑ | 내마모 파괴하중 | | 최대도체저항 (Ω/km) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도체 | | 최소피막두께 (mm) ↑ | 최대완성외경 (mm) ↑ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.002 | 0.003 | 0.056 | 200 | - | - | 15670 | 7 |
| 0.050 | ±0.003 | 0.004 | 0.069 | 950 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.004 | 0.081 | 950 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.004 | 0.091 | 950 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.005 | 0.103 | 1100 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.005 | 0.113 | 1100 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.007 | 0.120 | 1100 | - | - | 2381 | 15 |
| 0.110 | ±0.003 | 0.005 | 0.135 | 1100 | - | - | 1957 | 15 |
| 0.120 | ±0.003 | 0.0065 | 0.139 | 1300 | - | - | 1636 | 15 |
| 0.130 | ±0.003 | 0.006 | 0.157 | 1300 | - | - | 1389 | 15 |
| 0.140 | ±0.003 | 0.006 | 0.167 | 1300 | - | - | 1193 | 15 |
| 0.150 | ±0.003 | 0.006 | 0.177 | 1300 | - | - | 1037 | 15 |
| 0.160 | ±0.003 | 0.007 | 0.189 | 1300 | - | - | 908.8 | 15 |
| 0.170 | ±0.003 | 0.007 | 0.199 | 1300 | - | - | 803.2 | 15 |
| 0.180 | ±0.003 | 0.008 | 0.211 | 1600 | - | - | 715.0 | 15 |
| 0.190 | ±0.003 | 0.008 | 0.221 | 1600 | - | - | 640.6 | 15 |
| 0.200 | ±0.003 | 0.008 | 0.231 | 1600 | - | - | 577.2 | 15 |
| 0.210 | ±0.003 | 0.008 | 0.241 | 1600 | - | - | 552.8 | 15 |
| 0.220 | ±0.004 | 0.008 | 0.252 | 1600 | - | - | 480.1 | 15 |
| 0.230 | ±0.004 | 0.009 | 0.264 | 1600 | - | - | 438.6 | 15 |
| 0.240 | ±0.004 | 0.009 | 0.274 | 1600 | - | - | 402.2 | 15 |
| 0.250 | ±0.004 | 0.009 | 0.284 | 1600 | - | - | 370.2 | 15 |
| 0.260 | ±0.004 | 0.009 | 0.294 | 1600 | 2.35(240) | 1.96(200) | 341.8 | 15 |
| 0.270 | ±0.004 | 0.009 | 0.304 | 1600 | 2.35(240) | 2.00(205) | 316.6 | 15 |
| 0.280 | ±0.004 | 0.009 | 0.314 | 1600 | 2.35(240) | 2.00(205) | 294.1 | 15 |
| 0.290 | ±0.004 | 0.009 | 0.324 | 1600 | 2.35(240) | 2.00(205) | 273.9 | 20 |
| 0.300 | ±0.005 | 0.010 | 0.337 | 2000 | 2.64(270) | 2.25(230) | 254.0 | 20 |
| 0.310 | ±0.005 | 0.010 | 0.347 | 2000 | 2.64(270) | 2.25(230) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.010 | 0.357 | 2000 | 2.69(275) | 2.25(230) | 222.8 | 20 |
| 0.340 | ±0.005 | 0.010 | 0.377 | 2000 | 2.69(275) | 2.25(230) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.010 | 0.387 | 2000 | 2.74(280) | 2.30(235) | 185.7 | 20 |
| 0.360 | ±0.005 | 0.010 | 0.397 | 2000 | 2.74(280) | 2.30(235) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.010 | 0.407 | 2000 | 2.74(280) | 2.30(235) | 165.9 | 20 |
| 0.380 | ±0.005 | 0.010 | 0.417 | 2000 | 2.74(280) | 2.30(235) | 156.1 | 20 |
| 0.400 | ±0.005 | 0.011 | 0.439 | 2000 | 3.03(310) | 2.59(265) | 141.7 | 20 |
| 0.420 | ±0.005 | 0.011 | 0.459 | 2000 | 3.03(310) | 2.59(265) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.011 | 0.490 | 2000 | 3.13(320) | 2.64(270) | 112.1 | 20 |
| 0.500 | ±0.006 | 0.012 | 0.542 | 2150 | 3.47(355) | 2.94(300) | 89.95 | 20 |
| 0.550 | ±0.006 | 0.012 | 0.592 | 2150 | 3.52(360) | 2.94(300) | 74.18 | 20 |
| 0.600 | ±0.006 | 0.012 | 0.644 | 2150 | 3.52(360) | 2.98(305) | 62.64 | 20 |
| 0.650 | ±0.008 | 0.012 | 0.694 | 2150 | 3.57(385) | 3.03(310) | 53.26 | 20 |
| 0.700 | ±0.008 | 0.013 | 0.746 | 2150 | 3.92(400) | 3.33(340) | 45.84 | 20 |
| 0.750 | ±0.008 | 0.014 | 0.798 | 2400 | 4.26(435) | 3.62(370) | 39.87 | 20 |
| 0.800 | ±0.010 | 0.015 | 0.852 | 2400 | 4.65(475) | 3.92(400) | 35.17 | 25 |
| 0.850 | ±0.010 | 0.015 | 0.904 | 2400 | 4.65(475) | 3.92(400) | 31.11 | 25 |
| 0.900 | ±0.010 | 0.016 | 0.956 | 2400 | 5.04(515) | 4.21(430) | 27.71 | 25 |
| 0.950 | ±0.010 | 0.017 | 1.008 | 2400 | 5.39(550) | 4.50(460) | 24.84 | 25 |
| 1.000 | ±0.012 | 0.017 | 1.062 | 2400 | 5.43(555) | 4.55(465) | 22.49 | 25 |

# 12. UL LIST

CLOVER HI-TECH CO LTD E167514 (M)
224-10 JAYANG-DONG SUNGDONG-KU, SEOUL
133-190 KOREA
Class 130 (B) insulation system, Designated SC-01B, maximum 600V.
Class 130 (B) insulation system, Designated SC-02B, maximum 600V.
Class 130 (B) insulation system, Designated SC-03B, maximum 600V.

SUMITOMO BAKELITE CO LTD E209189
2100 TAKAYANAGI FUJIEDA-SHI SHIZUOKA
426-0041, JAPAN

| System Component | System Dsg | System Temp Class | System Max V |
|---|---|---|---|
| PM-9630, PM9750, PM9820, PM9850 | SBI4.2 | 130(B) | 600 |

SUMITOMO BAKELITE CO LTD E41429
5-8 HIGASHI-SHINAGAWA 2-CHOME SHINAGAWA-KU
TOKYO 140-0002, JAPAN

| Material Dsg | Color | Min. Thk mm | Flame Class | H W I | H A I | RTI Elec | RTI Mech | RTI Imp | RTI Str | H V R | D 4 9 5 | C T I |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenolic (PF), designated "SUMIKON" furnished as pellet or granular. | | | | | | | | | | | | |
| PM-9820 | BK | 0.51 | V-0 | 3 | 1 | 150 | 150 | 150 | - | - | - | |

CHANG CHUN PLASTICS CO.,LTD E59481
7TH/FL 301 SONGKIANG RD, TAIPEI TAIWAN

| Mtl Dsg | Col | Min Thk mm | Flame Class | H W I | H A I | RTI Elec | RTI Mech | RTI Imp | RTI Str | H V R | D 4 5 | C T I |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Polybutylene Terephthalate (PBT), glass reinforced, "LONGLITE", furnished as pellets. | | | | | | | | | | | | |
| PBT-4130(a) | ALL | 0.74 | V-0 | 4 | 0 | 120 | 120 | 140 | 4 | 7 | 2 | |

(a) - Ball pressure temperature of 210 C in accordance with IEC.695.10.2 and IEC 950.5.4.10

DONG YANG ELECTRONICS IND CO LTD E102761 (S)

| | | | (B-cont. from A card) | |
|---|---|---|---|---|
| UEW | Polyurethane | -- | MW75 | 130 |

METAL LINE CO LTD E162848 (S)
330-1 BUHANG-RI SILCHON-EUP
GWANGJU-SI, GYEONGGI-DO 464-874 REPUBLIC OF KOREA

Polyester tape with acrylic adhesive, Cat. No. 800 for use at temperatures not exceeding 130℃.

JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD E165111
SOUTHWEST AROUND RD JINGJIANG
JIANGSU 214500, CHINA
Nonwoven cloth/polyethylene terepthalate film tape, Cat. No. WF with suffixes, rated 130 C*(a).
Polyethylene terephthalate film tape, Cat. No. PZ with additional suffixes, rated 130 C*(b).

A TECH CO LTD E142633
443 KA CHANG-RI BAKAM-MYUN YONGIN-SHI
KYONGGI-DO 449-860, KOREA
Polyester insulating tape, natural rubber with petro resin, Cat. No. BK-402, rated 130 C, white color.

TAE HWA INDUSTRIAL CO LTD E92677 (S)
323-80 GUNHA-RI KIMPO-KUN WOLGOT-MYUN,
KYONGGI-DO 415-870 KOREA
Polyester film insulating tape with acrylic adhesive , Cat. No. H-5673@, rated 130C
Flame retardant copper foil tape with conductive acrylic adhesive, Cat. No. E-3338#.

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 12. UL LIST

NOROO PAINT & COATINGS CO LTD E93947
615 PAKDAL-DONG
ANYANG-SHI, KYONGGI-DO 430-030 REPUBLIC OF KOREA

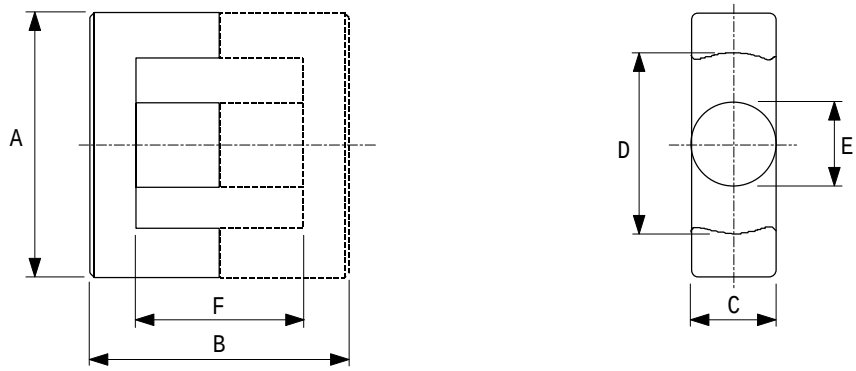
| Varnish Dsg | ANSI Magnet Wire Type | Varnish Thermal Class C TP | HC | CE |
|---|---|---|---|---|
| DVB-2085(*) | MW28 | 130 | 130 | - |

| CLOVER Hi-Tech CO.,LTD. | DESIGN | CHECK | APPROVAL | PAGE |
|---|---|---|---|---|
| | 裵玹慶 09.10.10 技術部 | 車暎澔 09.10.10 技術部 | 劉成宰 09.10.10 技術部 | 14/21 |

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 13. CORE DIMENSION




1) DIMENSION (UNIT:mm)

| TYPE | DIMENSION (mm) | | | | | | REMARK |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| ETD 3435 | 34.20 ±0.80 | 34.60 ±0.40 | 10.88 ±0.38 | 26.3 +0.7,-0.6 | 10.8 ±0.30 | 24.2 +0.60,-0.4 | ISU |
| ETD 3435 | 34.20 ±0.80 | 34.60 ±0.40 | 10.80 ±0.30 | 26.0 MIN | 10.8 ±0.30 | 24.2 ±0.60 | DONGYANGGUANG |

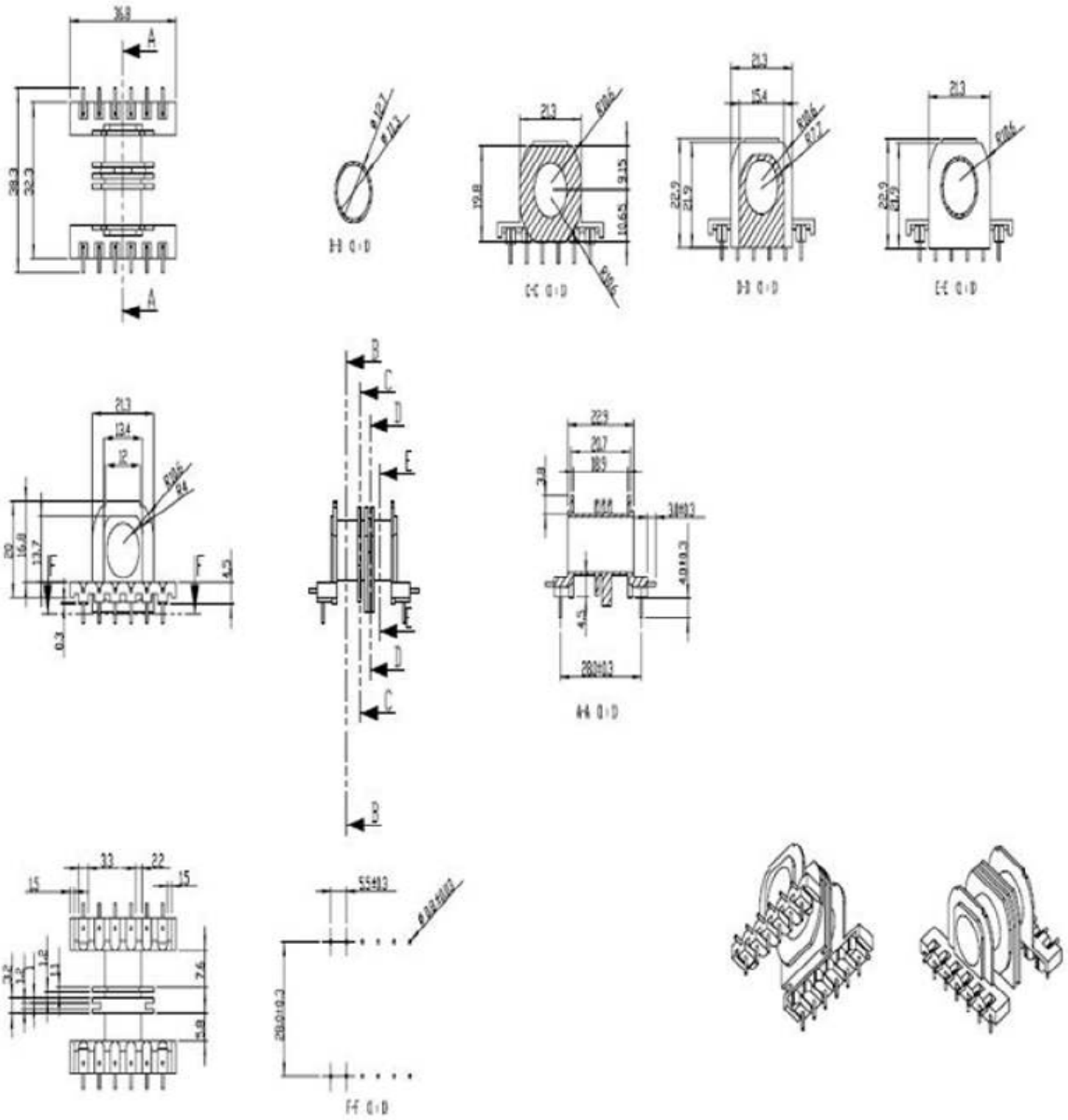
2) EFFECTIVE PARAMETERS

| TYPE | Effective Parameters | | | REMARK |
|---|---|---|---|---|
| | Le (㎜) | Ae (㎟) | Ve (㎣) | |
| ETD 3435 | 78.64 | 97.13 | 7638 | ISU |
| ETD 3435 | 79.20 | 94.80 | 7514 | DONGYANGGUANG |

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 14. BOBBIN DIMENSION

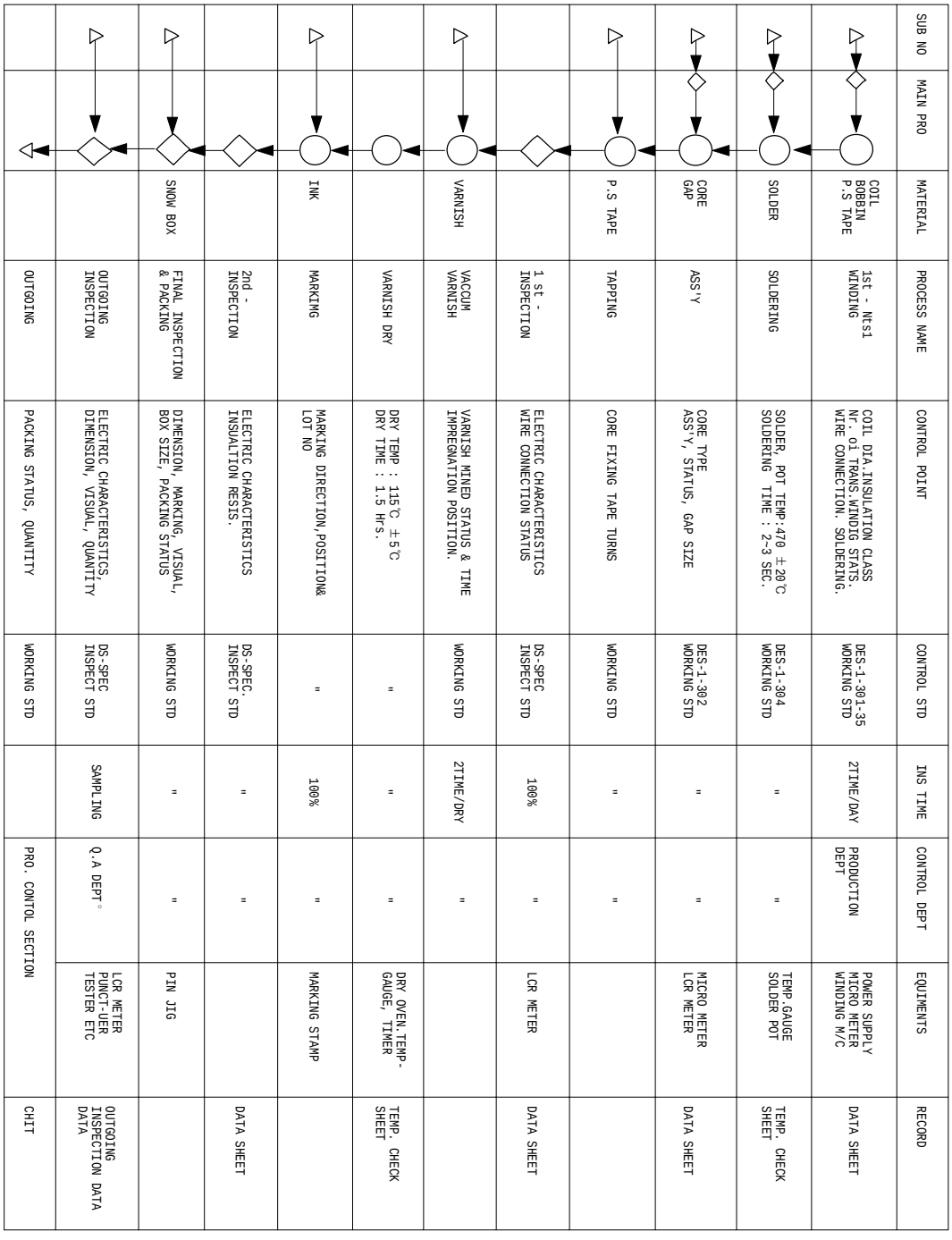


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CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 15. PROCESS FLOW



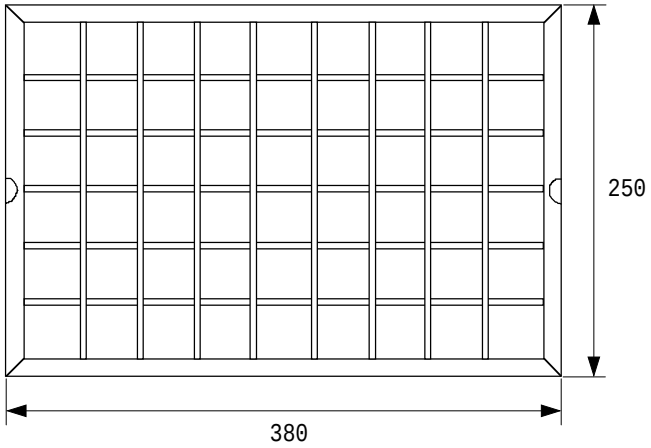
| SUB NO | MAIN PRO | MATERIAL | PROCESS NAME | CONTROL POINT | CONTROL STD | INS TIME | CONTROL DEPT | EQUIMENTS | RECORD |
|---|---|---|---|---|---|---|---|---|---|
| | | COIL<br>BOBBIN<br>P.S TAPE | 1st - Nts1<br>WINDING | COIL DIA.INSULATION CLASS<br>Nr. of TRANS.WINDIG STATS.<br>WIRE CONNECTION. SOLDERING. | DES-1-301-35<br>WORKING STD | 2TIME/DAY | PRODUCTION<br>DEPT | POWER SUPPLY<br>MICRO METER<br>WINDING M/C | DATA SHEET |
| | | SOLDER | SOLDERING | SOLDER, POT TEMP:470 ±20℃<br>SOLDERING TIME : 2~3 SEC. | DES-1-304<br>WORKING STD | " | " | TEMP.GAUGE<br>SOLDER POT | TEMP. CHECK<br>SHEET |
| | | CORE<br>GAP | ASS'Y | CORE TYPE<br>ASS'Y, STATUS, GAP SIZE | DES-1-302<br>WORKING STD | " | " | MICRO METER<br>LCR METER | DATA SHEET |
| | | P.S TAPE | TAPPING | CORE FIXING TAPE TURNS | WORKING STD | " | " | | |
| | | | 1 st -<br>INSPECTION | ELECTRIC CHARACTERISTICS<br>WIRE CONNECTION STATUS | DS-SPEC<br>INSPECT STD | 100% | " | LCR METER | DATA SHEET |
| | | VARNISH | VACCUM<br>VARNISH | VARNISH MINED STATUS & TIME<br>IMPREGNATION POSITION. | WORKING STD | 2TIME/DRY | " | | |
| | | | VARNISH DRY | DRY TEMP : 115℃ ±5℃<br>DRY TIME : 1.5 Hrs. | " | " | " | DRY OVEN.TEMP-<br>GAUGE, TIMER | TEMP. CHECK<br>SHEET |
| | | INK | MARKIMG | MARKING DIRECTION,POSITION& | " | 100% | " | MARKING STAMP | |
| | | | 2nd -<br>INSPECTION | ELECTRIC CHARACTERISTICS<br>INSUALTION RESIS. | DS-SPEC.<br>INSPECT STD | " | " | | DATA SHEET |
| | | SNOW BOX | FINAL INSPECTION<br>& PACKING | DIMENSION, MARKING, VISUAL,<br>BOX SIZE, PACKING STATUS | WORKING STD | " | " | PIN JIG | |
| | | | OUTGOING<br>INSPECTION | ELECTRIC CHARACTERISTICS,<br>DIMENSION, VISUAL, QUANTITY | DS-SPEC<br>INSPECT STD | SAMPLING | Q.A DEPT. | LCR METER<br>PUNCT-UER<br>TESTER ETC | OUTGOING<br>INSPECTION DATA<br>DATA |
| | | | OUTGOING | PACKING STATUS, QUANTITY | WORKING STD | | PRO. CONTOL SECTION | | CHIT |

CUSTOMER : YUYANG D & U CO., LTD.

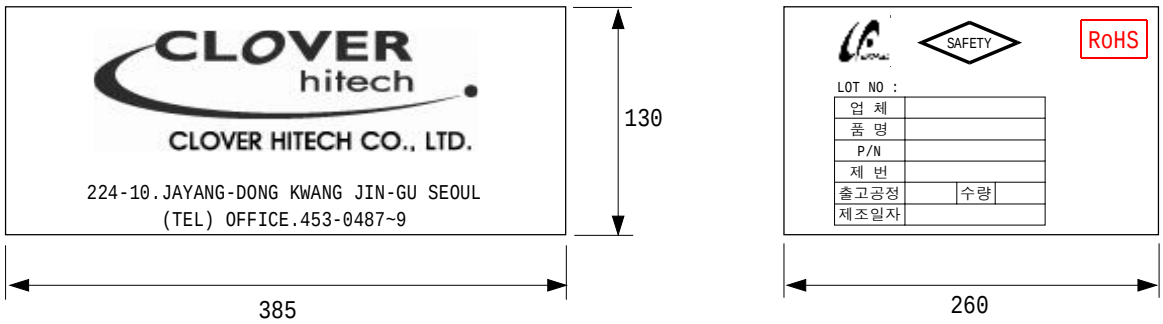
| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 16. PACKING

☆ INNER BOX (PAPER BOX) : 6 PCS x 9 PCS = 54 PCS




☆ OUT BOX (CARTON) : 54 PCS x 3 PCS = 162 PCS - 2 PCS = 160 PCS




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CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 17. INSPECTION REPORT

| ITEM | MULTI TRANS | MODEL | 10L MODEL | SAMPLE 생산처 : 중국 (문등) |
|---|---|---|---|---|
| | | TEST INSTRUMENT | LCR METER | H/P 4284A (100KHz, 1V) |
| PART NO | | | WITHSTANDING VOLTAGE TESTER | TOS-8850 |
| LOT NO | | | INSULATION TESTER | TOS-8850 |
| LOT SIZE | 5 pcs | | DCR METER | HIOKI 3540 |
| CUSTOMER | LG ELECTRONICS | | LAYER SHORT TESTER | TF-6815 |

| NO | ITEM | TERMINAL | SPEC | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | INDUCTANCE | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | LEAKAGE INDUCTANCE | | | | | | | | | | | | |
| 8 | D.C.R | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | WITHSTANDING VOLTAGE | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |
| 17 | INSULATION RESISTANCE | | | | | | | | | | | | |
| 18 | LAYER SHORT TEST | | | | | | | | | | | | |
| 19 | DC OVER LAP (2.0A) | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 20 | Q (at 100KHz, 1V) | | | | | | | | | | | | |

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# 18. ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.
2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.
3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.
4) WIRE BUNDLE METHOD.
   * CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2 MM.
   * PIN SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TOP SOLENOID : ERROR BETWEEN THE TOP BARRIER TAPE AND LAST WIRE IS REQUIRED TO BE SMALLER THAN 2 MM.
   * SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER-SOLENOID IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
   * SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
   * SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2. IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.
5) PERFORMANCE OF THIS DRAWING IS REQUIRED TO MEET PART NUMBER .
6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE.BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

CUSTOMER : YUYANG D & U CO., LTD.

| S P E C I F I C A T I O N S | | DATE | 2009.10.10 |
|---|---|---|---|
| PART NAME | MULTI TRANSFORMER | PART NO | LPM-101 |

# 19. CHEMICAL ANALYSIS REPORT FOR CP-WIRE



제 품 증 명 서 ( MATERIALS CERTIFICATE )

2006. 02. 15

* 용융성형(R)

* Round Wire ( ETFOS / Sn100% )

1.제품 구성된 [MATERIALS COMPOSITION] (Weight %)

| 선 경 [Size] | Plating Thickness(Sn) | Iron (Fe) | Copper (Cu) | Tin (Sn) | REMARK |
|---|---|---|---|---|---|
| 0.4mm | 5±1 ㎛ | Balance | 15.62% | 2.61 ~ 5.39% | |
| 0.5mm | | Balance | 15.75% | 2.69 ~ 4.32% | |
| 0.6mm | | Balance | 15.77% | 2.41 ~ 3.61% | |
| 0.7mm | | Balance | 15.78% | 2.07 ~ 3.10% | |
| 0.8mm | | Balance | 15.85% | 1.81 ~ 2.71% | |
| 1.0mm | | Balance | 15.87% | 1.45 ~ 2.17% | |

2.제품재질 분석성분 [BASE MATERIALS CHEMICAL COMPOSITION] (Weight %)

| Steel Wire (SWRH-62A) | Fe | C | Si | Mn | P | S | Sol-Al | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Balance | 0.06 | 0.04 | 0.35 | 0.013 | 0.006 | 0.032 | - | - | - | - |
| Electro Copper | Cu | As | Sb | Bi | Pb | S | Fe | Ag | - | - | - |
| | 99.99↑ | 0.3 | 0.02 | 0.1 | 1.0 | 5.3 | 5.2 | 5.2 | - | - | - |
| Tin Ingot | Sn | Sb | As | Pb | Bi | Cu | Fe | Al | Cd | Zn | |
| | 99.99↑ | 0.001 | 0.0001 | 0.001 | 0.0008 | 0.0005 | 0.0005 | 0.0000 | 0.0000 | 0.0006 | (%) |

3.제품의 표면 및 단면 (TIN PLATED COMPOSITION) (Weight %)




We certify that this paper is the certificate of our products to inspection and materials

Quality Assurance Manager

Approved Kong. Kook

IL-KWANG ELECTRONIC MATERIALS CO., LTD.

Head Office & Factory: #155-9 Wonshi-dong, Danwon-gu, Ansan-city, Kyunggi-do, Korea
Phone 82-31-495-1971~3 Fax 82-31-495-1974
e-mail : ilkwang@ilkwang.com Homepage : http://www.ilkwang.com

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RoHS safety

# APPROVAL SHEET

## CUSTOMER : LG Electronics Co., Ltd.

MODEL NO : LPM-101

ITEM : TRANS MULTI

PART NO : EBJ60711106

DESCRIPTION : ALL

DATE : 2009. 11. 07.

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | FEELUX ELECTRONICS CO., LTD. ( KOREA FACTORY ) | TEL | 070-7780-8421 |
| | | FAX | 070-7780-8421 |
| SALES TEAM GENERAL MANAGER | Jong il Park | TEL | 011-799-4581 |
| | E-MAIL: kever321@feelux.com | | |
| QUALITY ASSURANCE TEAM DEPUTY GENERAL MANAGER | Kwang Hoon Cho | TEL | 016-706-2463 |
| | E-MAIL: khcho@feelux.com | | |

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | YANG JU FEELUX ELECTRONICS CO., LTD. ( HEAD OFFICE FACTORY ) | TEL | 070-7780-8000 |
| | | FAX | 070-7780-8109 |
| ADDRESS | 624-8, Seoku-Ry Kwangjeok-Myun, Yangju-Kun Kyunggi-Do Korea | | |
| REQUEST CUSTOMER | Chungkye FEELUX ELECTRONICS CO., LTD. ( SEOUL OFFICE FACTORY ) | TEL | 070-7780-8420 |
| | | FAX | 070-7780-8409 |
| ADDRESS | RM 401, Chungkye-jae 1 Kangdan, 511-2 Chungkye-3 Dong, Nowon-Ku Seoul, Korea | | |
| REQUEST CUSTOMER | WHEHAI FEELUX ELECTRONICS CO., LTD. ( CHINA FACTORY ) | TEL | 0086-631-786-7903 |
| | | FAX | 0086-631-786-7900 |
| ADDRESS | NO.166 FUYUAN(M) ROAD ROAD.GANGXL TOWN RONGCHENG CITY SHANDONG PROVICE CHINA | | |

FEELUX 주식회사 필 룩 스

# RECORD OF REVISION

| P/N : EBJ60711106 | MAKER SPEC. : TRANS MULTI |
|---|---|

| REV. No. | REASON | CONTENTS | DATE OF APPROVAL | CHECKED | REMARKS |
|---|---|---|---|---|---|
| 0 | | -. 신규제정. | | | |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

# I N D E X


FILE No. 1/20 : INDEX
2/20 : 1. DIMENSION
3/20 : 2. SCHEMATIC DIAGRAM
3. WINDING SPECIFICATION
4/20 : 4. ELECTRICAL CHARACTERISTICS
5/20 : 5. ENVIRONMENTAL CHARACTERISTICS
6/20 6. MECHANICAL CHARACTERISTICS
7/20 : 7. SECTION DIAGRAM
8/20 8. MATERIAL LIST
9/20 : 9. UL-LIST
10/20 : UL-LIST
11/20 : UL-LIST
12/20 : UL-LIST
13/20 : UL-LIST
14/20 : 10. CORE DIMENSION
15/20 : 11. BOBBIN DIMENSION
16/20 : 12. CAP DIMENSION
17/20 : 13. PROCESS FLOW
18/20 : 14. PACKING
19/20 : 15. INSPECTION DATA
20/20 : 16. ASSIGNMENTS

CUSTOMER : L.G ELECTRONICS INC.

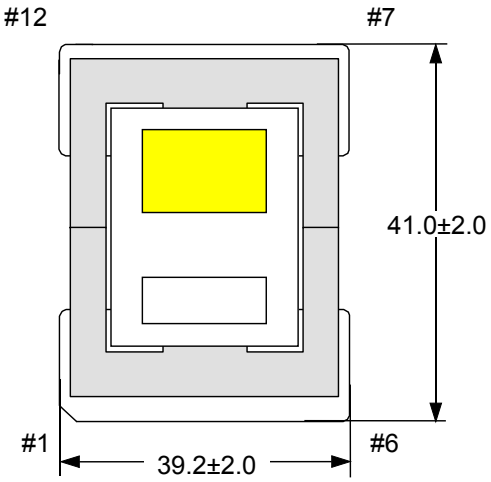
| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 1. MECHANICAL ASSEMBLY (UNIT : mm)

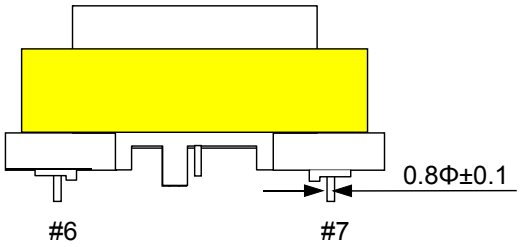
* PIN REMOVED : #1 , #3 , #4

safety

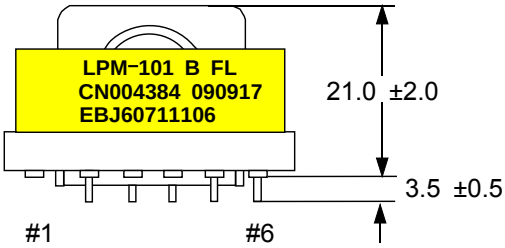
<< TOP VIEW >>




<< SIDE VIEW >>

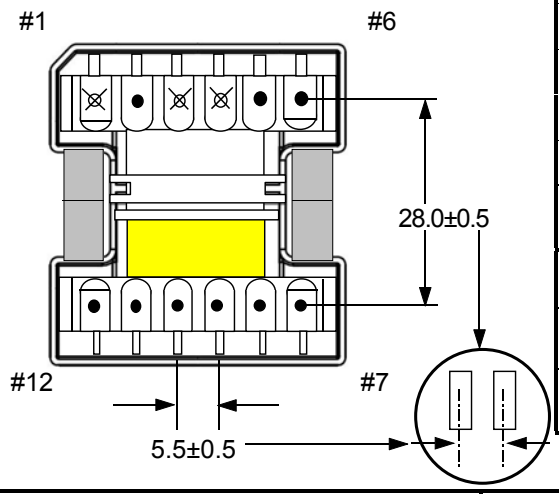



<< FRONT VIEW >>




** GAP : (SIDE) POLYESTER FILM ≒ 0.1T

<< BOTTOM VIEW >>

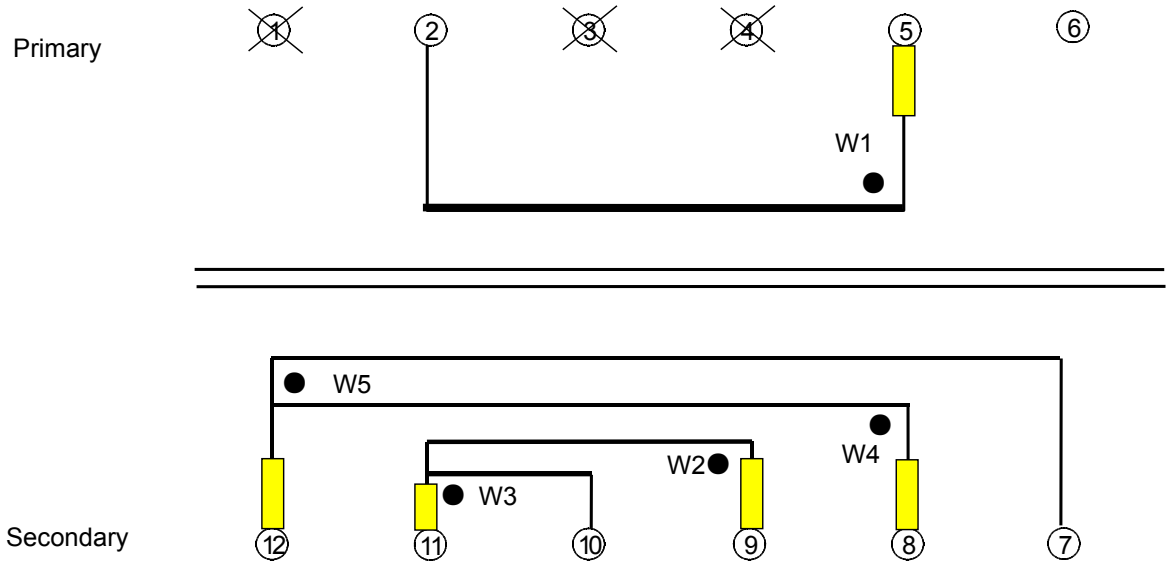



| Marking Spec | | |
|---|---|---|
| PART NO | LPM-101 | |
| B | FEELUX ELECTRONIC 'CLASS B' SYSTEM | |
| CN004384 | CHINA DONGGUAN FACTORY ID | |
| FL | MARKER | |
| Lot No | 090917 | |
| LGE P/NO. | EBJ60711106 | |
| 09 | Year | 2007 : 07<br>2008 : 08... |
| 09 | Month | January : 01<br>February : 02... |
| 17 | Date | First Date : 01<br>Second Date : 02... |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 2. SCHEMATIC DIAGRAM




* ▭ MARK : P.E TAPE or A.T TAPE

## 3. WINDING SPECIFICATION.

| No. | TERMINAL ( S - F ) | WIRE | TURNS | WINDING METHOD (7-12 ViEW) C.C.W | LAYER |
|---|---|---|---|---|---|
| W1 | 5 - 2 | USTC 0.10X20P | 50 | SOLENOID WINDING | 7 |
| W2 | 9 - 11 | USTC 0.10X60P | 6 | SOLENOID WINDING | 1 |
| W3 | 11 - 10 | USTC 0.10X60P | 6 | SOLENOID WINDING | 1 |
| W4 | 8 - 12 | USTC 0.10X40P | 3 | SOLENOID WINDING | 1/2 |
| W5 | 12 - 7 | USTC 0.10X40P | 3 | W4 AFTER SOLENOID | W4 AFTER 1/2 |
| CORE FIXING TAPE | | | | | |

| INSULATION | | |
|---|---|---|
| MATERIAL | T/W (mm) | TURNS |
| P/E TAPE (WHITE) | 0.025×6.0 (WHITE) | 2 |
| P/E TAPE (YELLOW) | 0.025×7.5 (YELLOW) | 1 |
| P/E TAPE (YELLOW) | 0.025×7.5 (YELLOW) | 1 |
| P/E TAPE (YELLOW) | 0.025×7.5 (YELLOW) | 1 |
| P/E TAPE (YELLOW) | 0.025×7.5 (YELLOW) | 2 |
| P/E TAPE (YELLOW) | 0.025×10.0 (YELLOW) | 3 |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 4. ELECTRICAL CHARACTERISTICS

| NO | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 4-1 | INDUCTANCE | 5 - 2<br>9 - 11<br>11 - 10<br>8 - 12<br>12 - 7 | 1.40 mH ± 15%<br>19.6 uH ± 30%<br>19.6 uH ± 30%<br>5.10 uH ± 30%<br>4.80 uH ± 30% | HP-4284A<br>LCR-METER<br><br>at 100 KHz, 1.0 V |
| 4-2 | LEAKAGE INDUCTANCE | 5 - 2<br>(SECONDARY SHORT) | 230 uH MAX | |
| 4-3 | DC RESISTANCE | 5 - 2<br>9 - 11<br>11 - 10<br>8 - 12<br>12 - 7 | 0.45 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX | DC MILLI-OHM METER GOM-802 |
| 4-4 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 3.0 KV r.m.s (1 MINUTE) | TOS-8850 safety<br><br>CUT OFF CURRENT : 5 mA |
| | | P COIL - CORE | AC 1.5 KV r.m.s (1 MINUTE) | |
| | | S COIL - CORE | AC 1.5 KV r.m.s (1 MINUTE) | |
| 4-5 | INSULATION RESISTANCE | COIL - COIL | 100 M ohm MIN<br>at DC 500V | TOS-8850 safety |
| 4-6 | D.C OVERLAP | 5 - 2 | MORE THAN 90% OF INITIAL INDUCTANCE | TEST CURRENT : 0.7A<br>NORMAL TEMPERATURE |
| 4-7 | Q | 5 - 2 | 130 MIN | at 100 KHz, 1.0 V |
| 4-8 | LAYER SHORT | 5 - 2 | AC 1.5 KV Pulse 4 Times | DWX-05 safety<br>IMPULSE TESTER |

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| **PART NAME** | TRANS MULTI | **PART No.** | **EBJ60711106** |

## 5. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃ ± 15℃ HUMIDITY 65% ± 20%
IF WHEN ANY OBJECTION IS SUGESTED. THE TEST CAN BE OPERATED AT 20℃ ± 2℃, 65% ± 5% RH

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>5-1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>5-2</td><td>KEEPING TEMPERATURE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>5-3</td><td>LOW TEMPERATURE RESISTANT</td><td rowspan="5">MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE (IT SHOULD BE MANAGED BY 10% UNDER 10uH)</td><td>-25℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>5-4</td><td>HIGH TEMPERATURE RESISTANT</td><td>+105℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>5-5</td><td>HUMIDITY RESISTANT</td><td>+95%RH ± 5% (40℃ ± 5℃) 96Hr<br>MEASURE AFTER 2Hr AT ROOM TEMP
<table>
<tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr>
<tr><td>1</td><td>-25℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>2</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
<tr><td>3</td><td>+105℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>4</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
</table>
REPEAT 5 TIME FROM STEP 1 AND<br>TEST AFTER 2 Hr. AT ROOM TEMP.</td></tr>
<tr><td>5-6</td><td>TEMPERATURE CYCLE</td><td></td></tr>
<tr><td>5-7</td><td>HEAT SHOCK-RESISTANT</td><td>2 HR AT-20℃ →2 HR AT 70℃<br>: 10 CYCLE</td></tr>
</table>

## 6. MECHANICAL CHARACTERISTICS

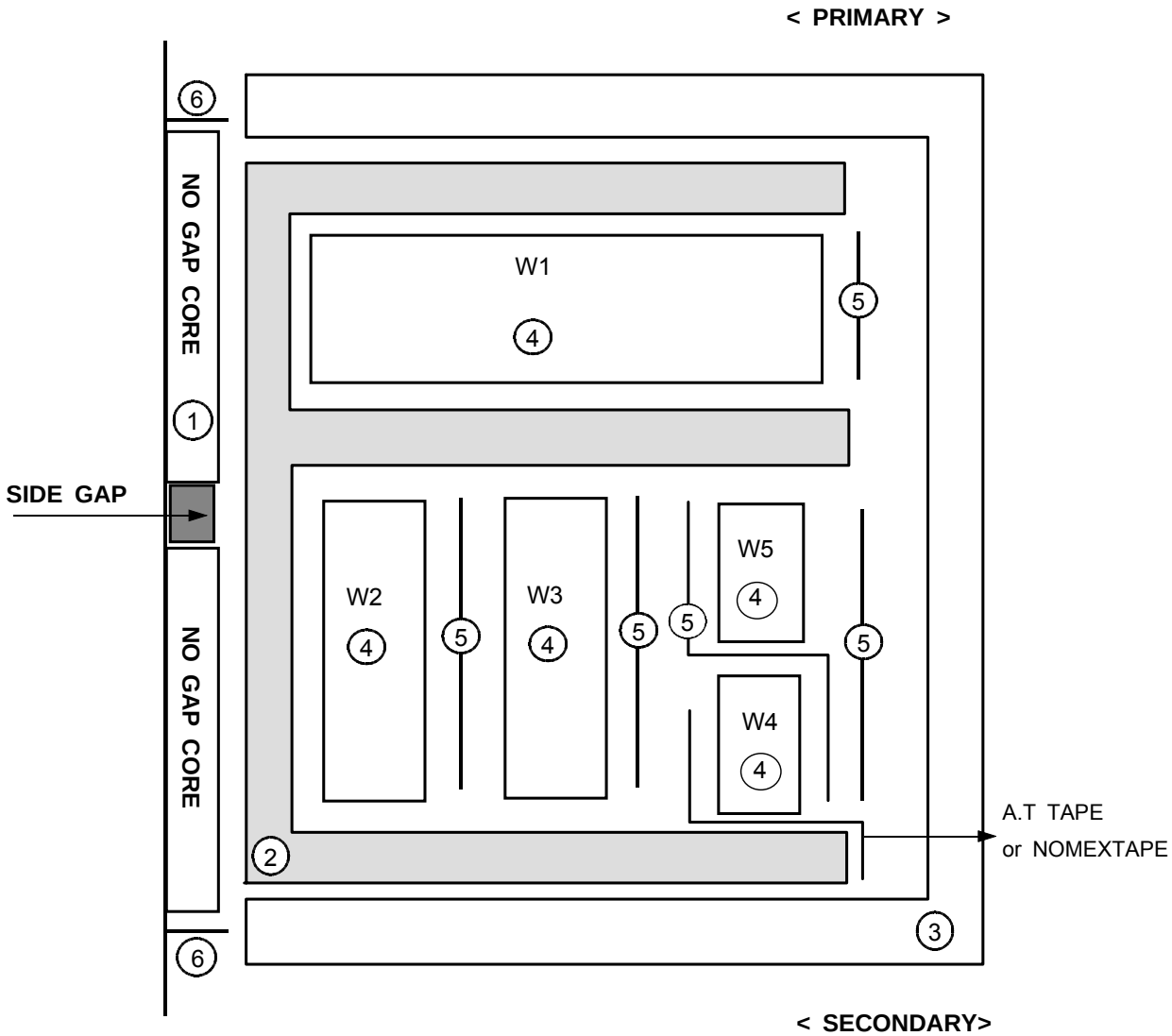
| NO | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 6-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 6-2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER POT AT 260 +5℃ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 6-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245℃ -5℃ FOR 3 SECONDS |
| 6-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5Kgf DURING 30 ± 5 SEC |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

safety

## 7. SECTION DIAGRAM




* GAP : SIDE GAP ≒ P.S FILM 0.1T

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 7 / 20 |
|---|---|---|---|---|---|
| FEELUX | | | | | |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 8. MATERIAL LIST

safety

| NO. | COMPONENT | NAME OF MATERIAL | MANUFACTURE COMPONENT | MATERIAL COLOR | UL FILE NO. |
|---|---|---|---|---|---|
| 1 | CORE | FERRITE<br>EER 3435 J2C | FEELUX CO., LTD. | BLACK | |
| | | FERRITE<br>EER 3435K PM7 | TODA ISU CORPORATION. | | |
| 2 | BOBBIN | 94V-0 PHENOL RESIN<br>PM9820 12PIN<br>TERMINAL : Sn100%, 4μ | **SUMITOMO BAKELITE CO., LTD.**<br>(SHENZHEN HOIDJINN ELETRONICS CO., LTD<br>BOO KYOUNG BOBBIN CO.,LTD ) | BLACK | E41429 |
| 3 | CAP | (94V-0) P.B.T (FR530)<br>EFD 3435K | EI DUPONT DE NEMOURS & CO IND | BLACK | E41938 |
| 4 | WIRE | POLYURETHANE<br>USTC 0.10ΦX20P<br>USTC 0.10ΦX40P<br>USTC 0.10ΦX60P | DONG YANG ELECTRONICS CO., LTD.<br>JIANGSU DARTONG M&E CO.,LTD<br>NINGBO HONGRUN PLASTICS ELECTRIC APPLIANCE CO.,LTD | BRASS YELLOW | E102761<br>**E237377**<br>**E197317** |
| 5 | INSULATION TAPE | POLYESTER FILM TAPE<br>0.025mm × 6.0mm (White)<br>0.025mm × 7.5mm (Yellow) | METAL LINE CO., LTD<br>(Cat No. 800a)<br>YAHUA PRESSURE SENSITIVE | WHITE<br>YELLOW | E162848<br>E16511 |
| 6 | CORE FIXING TAPE | POLYESTER FILM TAPE<br>0.025mm × 10.0mm (Yellow) | | YELLOW | |
| 7 | INSULATION TAPE | ACETATE TAPE | METAL LINE CO., LTD | YELLOW | E162848 |
| 8 | SIDE GAP | POLYESTER FILM<br>(SR55) 0.1T | SKC CO., LTD. | TRANSPARENCY | E74359 |
| 9 | VARNISH | SR-337A, SR-337B | SE KYE CHEMICAL CO., LTD. | TRANSPARENCY | E257443 |
| | | DVB-2085 | NOROO PAINT & COATINGS CO., LTD. | | E258023 |
| 10 | SOLDER | HLFC2.0-BAR, Sn-2Cu | HEESUNG MATERIAL CO.,LTD | SILVER | |
| 11 | FLUX | JS-7000S-1 | JIANGYIN CITY DENGFENG ELECRICAL MATERIL CO.,LTD | LEMON YELLOW | |
| 12 | MARKING | INK & LABEL | BON MARQUE | BLACK | |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 9. UL - LIST

**FEELUX CO LTD** E302847
CHUNGKYE JAE 1 KONGDAN, ROOM 401
511-2 CHUNGKYE 3-DONG
NOWON-KU
SEOUL, 139-223 REPUBLIC OF KOREA

**Class 130 (B) insulation system**, designated B.

Marking: Company name or tradename "FL" and system designation.

Last Updated on 2009-05-08

**BOBBIN** **SUMITOMO BAKELITE CO LTD** **E41429**
5-8 HIGASHI-SHINAGAWA 2-CHOME
SHINAGAWA-KU
TOKYO, 140-0002 JAPAN

| Material Dsg | Color | Min. Thk mm | Flame Class | HWI | HAI | RTI Elec | RTI Mech Imp | RTI Mech Str | HVTR | D495 | CTI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Phenolic (PF), "Sumikon", furnished as pellets, granular material.** | | | | | | | | | | | |
| **PM-9820** | BK | 0.16 | V-0 | - | - | 150 | 150 | 150 | 0 | 5 | 3 |
| | | 0.51 | V-0 | 3 | 1 | 150 | 150 | 150 | | | |
| | BN | 0.18 | V-0 | - | - | 150 | 150 | 150 | | | |
| | | 0.70 | V-0 | 1 | 2 | 150 | 150 | 150 | | | |
| | | 1.5 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | | 3.0 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |

Marking: Company name or tradename "PERMAFLOW" , "SPIDAX" , "SUMIFLEX" , "SUMIKON" , "SUMILITE" , "SUMIMAC" or trademark パーマフロー , スミライト® , スミコン® , 住友ベークライト株式会社 , スパイダックス , スミフレックス® , スミマック , スミガウス® , "SUMIGAUSS®" , スミガウス , SUMIKON ® EME and material designation on container, wrapper or finished part.

Last Updated on 2007-12-12

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 9 / 20 |
|---|---|---|---|---|---|
| FEELUX | | | | | |

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| **PART NAME** | TRANS MULTI | **PART No.** | **EBJ60711106** |

**UL - LIST**

**CAP**

**E I DUPONT DE NEMOURS & CO INC** **E41938**
ENGINEERING POLYMERS
CHESTNUT RUN PLAZA
PO BOX 80713
WILMINGTON, DE 19880 USA

| Material Dsg | Color | Min. Thk mm | Flame Class | HWI | HAI | RTI Elec | RTI Mech Imp | RTI Mech Str | HVTR | D495 | CTI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Polyethylene Terephthalate (PET), glass reinforced, flame retardant, "Rynite", furnished as pellets.** | | | | | | | | | | | |
| **FR530 (l) (+)(F1), FR530L (l) (+) (f1)** | | | | | | | | | | | |
| | NC, BK | 0.35 | V-0 | 3 | 1 | 155 | - | - | 1 | 6 | 2 |
| | ALL | 0.75 | V-0 | 2 | 1 | 155 | 155 | 155 | | | |
| | NC | 0.9 | 5VA | 2 | 1 | 155 | 155 | 155 | | | |
| | NC, BK | 1.5 | 5VA | 0 | 1 | 155 | 155 | 155 | | | |
| | ALL | 2.0 | 5VA | 0 | 1 | 155 | 155 | 155 | | | |
| | | 3.0 | 5VA | 0 | 1 | 155 | 155 | 155 | | | |

(+) - Virgin and regrind up to 50% by weight inclusive, have the same basic material characteristics.
(f1) - Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.
(l) - Recognized ground insulation component at 0.4 mm with MW79 in UL1446 Class 155 electrical insulation system designated R201N (File E69939).
NOTE - (1) Material designations that are color pigmented may be followed by suffix letters and numbers. (2) Material designations may be prefixed by "ZYT" or "MIN" or "ZEN" or "DEL" or "CRA" or "RYN".

Marking: Company name or tradename "CRASTIN" , "DELRIN" , "MINLON" , "RYNITE" , "Thermx" , "ZENITE" , "ZYTEL" and material designation on container, wrapper or finished part.

Last Updated on 2007-12-10

**WIRE**

**DONG YANG ELECTRONICS IND CO LTD** **E102761**
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ BC | OC | ANSI Type | TI |
|---|---|---|---|---|
| NY-PEW | Polyester | Polyamide | MW24 | 155 |
| NY-PEW(F) | Polyester | Polyamide | MW24 | 155 |
| NY-UEW | Polyurethane | Polyamide | MW80, MW28# | 155, 130 |
| UEW(F) | Polyurethane | — | MW79, | 155, |
| UEW(B) | Polyurethane | — | MW75# | 130 |
| UAL | Polyurethane | — | @ | 155 |
| PEW | Polyester | — | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.
#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

Marking: Company name or "E102761" and material designation or marked designation on package or reel .

Last Updated on 2007-01-08

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

**UL - LIST**

**WIRE**

NINGBO JIANJIAN ELECTRICAL INDUSTRY CO LTD — E197317
SANBEI
XILIAN
CIXI, ZHEJIANG 315331 CHINA

| | | | | | |
|---|---|---|---|---|---|
| xUEW or QA-x/155 | (1) | Polyurethane | — | MW79 | 155 |
| xUEW or QA-x/130 | (1) | Polyurethane | — | MW75# | 130 |
| xXUEW(AL) or QA-x/155A | (1) | Polyurethane | — | @ | 155 |
| xXUEW(AL) or QA-x/130A | (1) | Polyurethane | — | @# | 130 |

JIANGSU DARTONG M & E CO LTD — E237377
1 DARTONG RD
HUAIAN ECONOMY DEVELOPMENT ZONE
HUAIAN, JIANGSU 223238 CHINA

| Mtl Dsg | Mark Dsg | Coat Type BC | Coat Type OC | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| &UEW | (1) | Polyurethane | — | MW 79-C | 155 |
| | | | | MW 75-C | 130 |
| &EIW | (1) | Polyester-imide | — | MW30# | 180 |
| | | | | @ | 200 |
| &UEW | UEW/180 | Polyurethane | — | MW82 | 180 |
| &EI/AIW | (1) | Polyester-imide | Polyamide-imide | MW35#, MW73# | 200 |
| | | | | MW37 | 220 |
| &EI/AIW-220 (Aluminium) | (1) | Polyester-imide | Polyamide-imide | MW35A | 220 |
| &EI/AIW-200 (Aluminium) | (1) | Polyester-imide | Polyamide-imide | @# | 200 |
| &PEW | (1) | Polyester | — | MW5# | 155 |
| &PEW/NY | (1) | Polyester | Polyamide | MW76 | 180 |
| | | | | MW24# | 155 |
| &UEW/NY | (1) | Polyurethane | Polyamide | MW80# | 155 |
| | | | | MW28# | 130 |

**TAPE**

**METAL LINE CO., LTD** — **E162848**
330-1 BUHANG-RI SILCHON-EUP
GWANGJU-SI, GYEONGGI-DO 464-874 REPUBLIC OF KOREA

**Reinforced polyester (PET) tape with acrylic adhesive**, Cat. No. 800BT, rated 130C.
**Polyester (PET) tape with acrylic adhesive**, Cat. No. 800(a), rated 130 C.
**Polyester (PET) tape with acrylic adhesive**, Cat. No. 8000, rated 130 C.
**Flame Retardant Al foil tape with acrylic adhesive** , Cat. No. HD-110$.
**Flame Retardant Ni coated woven polyester fiber tape with acrylic adhesive** , Cat. No. HD-14$.
(a) May be marked: "Film side CTI Performance Level Category PLC=0, Voltage 600+, per UL 746A/ASTM D 3638" and/or "Film side CTI 600 + per IEC112, First Edition (1979), CTI Material Group I" or equivalent.
$ - Markings shall include "Flame Retardant".

Marking: Company name or file number "E162848",catalog designation and temperature rating printed on carton, wrapper or core.

Last Updated on 2009-05-09

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

UL - LIST

**TAPE**

**INGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD**
**SOUTHWEST AROUND RD**
**JINGJIANG, JIANGSU 214500 CHINA**

**E165111**

Nonwoven cloth/polyethylene terepthalate film tape, Cat. No. WF with suffixes, rated 130 C*(a).
Polyethylene terephthalate film tape, Cat. No. CT with suffixes, rated 130 C*(c) (e) .
Polyethylene terephthalate film tape , Cat. No. CT with suffixes, rated 130 C(b)(f).
Polyethylene terephthalate film tape, Cat. No. PZ with additional suffixes, rated 130 C*(b).
Polimide film tape, Cat. No. PF with suffixes, rated 180 C* (d).

**INSULATOR**

**SKC CO LTD**
PLANT MANAGEMENT TEAM
633 CHONGJA-DONG
CHANGAN-GU
SUWON-SHI, KYONGGI-DO 440-840 REPUBLIC OF KOREA

**E74359**

| Material Dsg | Color | Min. Thk mm | Flame Class | HWI | HAI | RTI Elec | RTI Mech Imp | RTI Mech Str | HVTR | D495 | CTI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Polyethylene Terephthalate (PET), film, "Skyrol", furnished as sheets or rolls.** | | | | | | | | | | | |
| **SR55** | NC | 0.075 | VTM-2 | - | - | 130 | 105 | 130 | | | |
| | | 0.25~0.27 | V-2 | - | - | 130 | 105 | 130 | | | |

## - Represents a numeric suffix from "00" to "99" except 01, 50, 53, 55, 70, 72 for grade SR##.
@ - Represents alphabetical suffix from "A" to "Z" (Second @ may be omitted).

Marking: Company name or tradename "SKC" and material designation on container, wrapper or finished part.

Last Updated on 2008-01-20

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 12 / 20 |
|---|---|---|---|---|---|
| FEELUX | | | | | |

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| **PART NAME** | TRANS MULTI | **PART No.** | **EBJ60711106** |

**UL - LIST**

**VARNISH**

**SE KYE CHEMICAL CO LTD** **E257443**
360 GUIJEON-RI
TONGJIN-EUP
KIMPO-SI, KYUNGGI-DO 415-862 REPUBLIC OF KOREA

| Varnish Dsg | ANSI Magnet Wire Type | Varnish Thermal Class C | | |
|---|---|---|---|---|
| | | TP | HC | CE |
| SR-337(#) | MW75 | 130 | 130 | — |

# - May be followed by 1 or 2 suffix numeric and /or alpha characters to denote viscosity change accomplished via solvents due to production tolerance.

Marking: Company name and varnish designation on shipping container.

Last Updated on 2006-06-28

**VARNISH**

**NOROO PAINT & COATINGS CO LTD** **E258023**
615 PAKDAL-DONG
ANYANG-SHI, KYONGGI-DO 430-030 REPUBLIC OF KOREA

| System Component | System Dsg | System Temp Class |
|---|---|---|
| DVB-2085 (*) | SBI4.2-DPI | 130 (B) |

(*) - Followed by one or two numbers and/or letters.
(#) - May be replaced by a number from 0 - 30 to denote the percent silica.

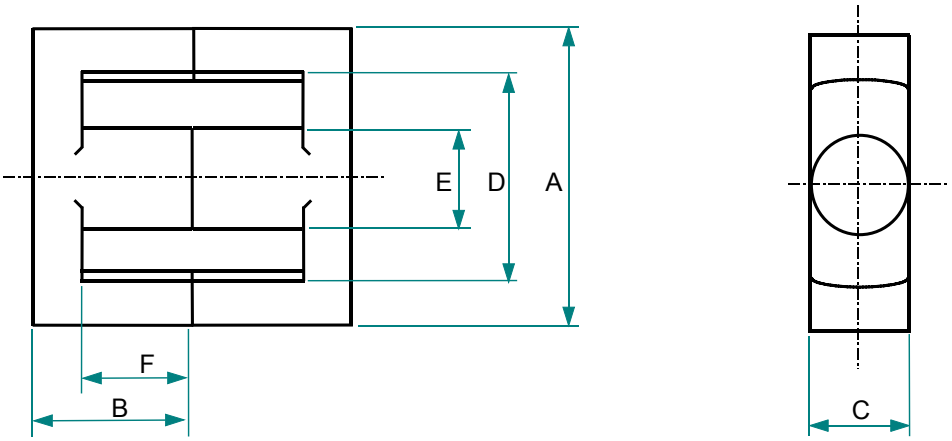
Marking: Company name and system component designation.

Last Updated on 2007-09-21

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 10. CORE DIMENSION

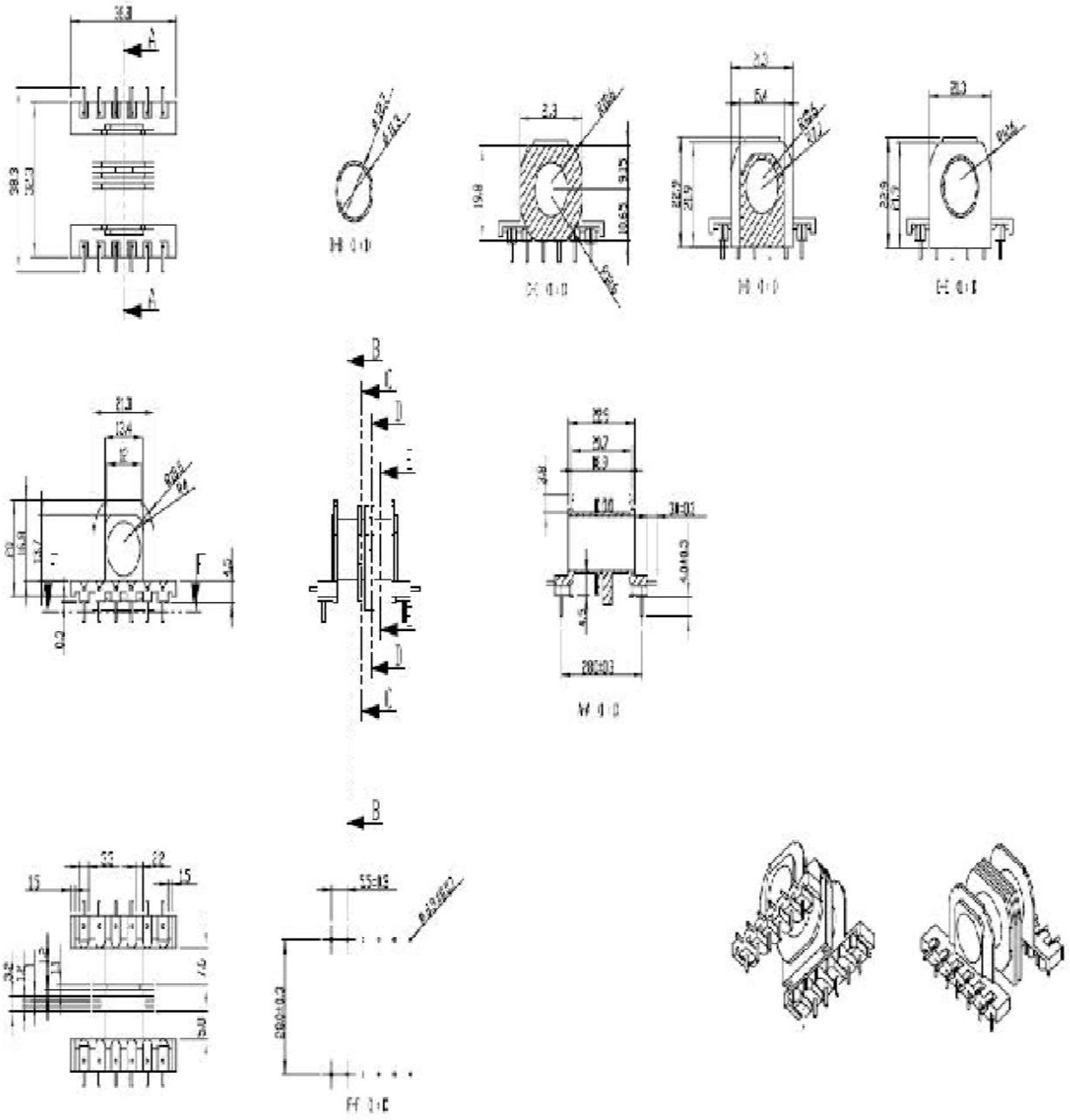



| TYPE | DIMENSIONS IN MM | | | | | | EFFECTIVE PARAMETERS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | le(mm) | Ae(mm²) | Ve(mm³) | |
| EER3435 | 35.20 ±0.80 | 17.30 ±0.20 | 10.80 ±0.30 | 27.30 ±0.70 | 10.80 ±0.30 | 12.10 ±0.30 | 80.1 | 97.1 | 7780 | FEELUX |
| ETD3435K | 35.20 ±0.80 | 17.30 ±0.20 | 10.80 ±0.30 | 27.30 ±0.70 | 10.80 ±0.30 | 12.10 ±0.30 | 80.1 | 97.1 | 7780 | TODA ISU |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 11. BOBBIN DIMENSION

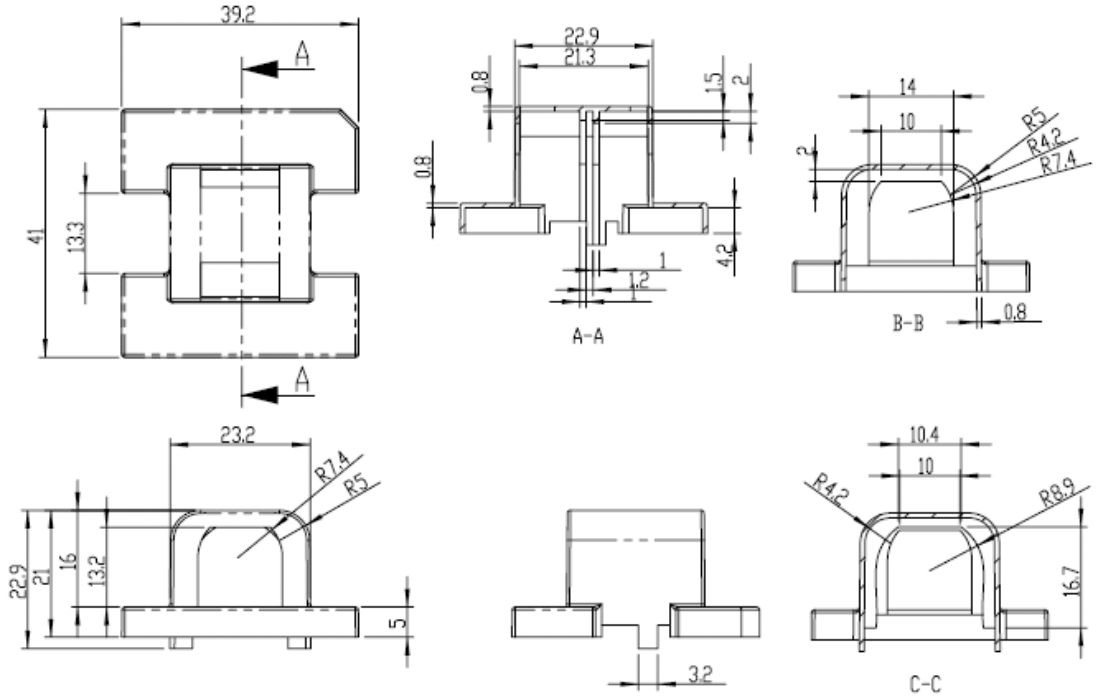


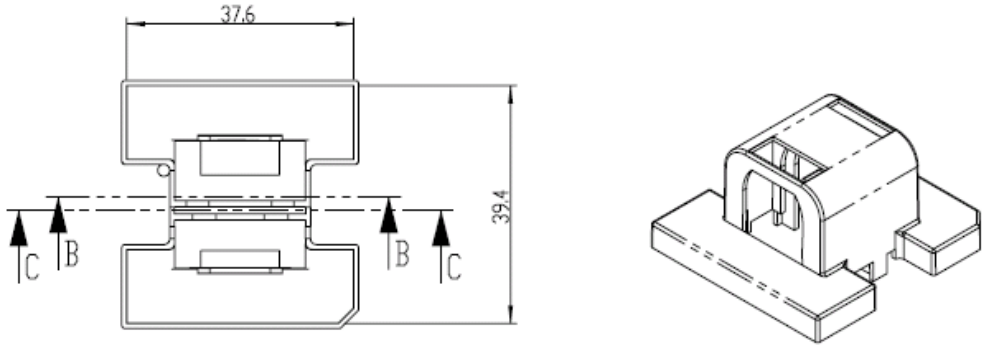
| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 15 / 20 |
|---|---|---|---|---|---|
| FEELUX | | | | | |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 12. CAP DIMENSION

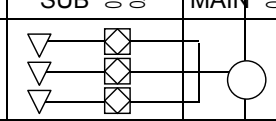





| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 16 / 20 |
|---|---|---|---|---|---|
| FEELUX | | | | | |

## 13. 품 명 : TRANS MULTI

| 공정 번호 | 공 정 | | 소요자재 | 공 정 명 | 관 리 항 목 | 관 리 기 준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | SUB 공정 | MAIN 공정 | | | | | | | | | |
| 01 |  | | BOBBIN<br>COIL<br>P/E TAPE | 1-N차 권선 | * COIL의 굵기와 종류<br>*권선턴수,권선상태<br>*결선상태, 절연상태 | | 2회 1일 | SAMPLING<br>LOT당 5EA | *MICRO METER | 생산 | 성적서 |
| 02 | | | SOLDER<br>FLUX | 배선,납땜 | *납조기 온도: 430℃±10℃<br>*납땜시간 : 2.0초±0.5초 | 납땜작업표준서 | 2회 1일 | 전수 | *납조기<br>*온도계 | 생산 | 온도체크<br>시트 |
| 03 | | | CAP | CAP 조립 | *CAP의 종류<br>*조립상태 CAP SIZE | CAP 조립<br>작업표준서 | 2회 1일 | SAMPLING | *MICRO METER | 생산 | |
| 03 | | | CORE<br>GAP<br>P/E TAPE | CORE 조립 | *CORE의 종류<br>*조립상태 GAP SIZE<br>*TAPING TURNS및 TAPING상태 | CORE 조립<br>작업표준서 | 2회 1일 | SAMPLING | *MICRO METER | 생산 | |
| 04 | | | KEY-BASE | KEY 조립 | *KEY의 종류<br>*조립상태 KEY SIZE | KEY 조립<br>작업표준서 | 2회 1일 | SAMPLING | *MICRO METER | 생산 | |
| 05 | | | | 1차 검사 | *전기적특성 (L값 TURNS)<br>*결선, 납땜상태 | 1차 검사 기준서 | 전수 | 전수검사 | *TURNS METER<br>*LCR-METER | 생산 | 1차검사<br>일보 |
| 06 | | | VARNISH | 진공함침 | *VARNISH 배합상태 *함침시간<br>*함침부위 * VARNISH 점도 | 함침작업 표준서 | 매 LOT | SAMPLING | *진공함침기<br>*점도계 *시계 | 생산 | 점도체크<br>시트 |
| 07 | | | | 건조 | *건조시간 : 3Hr<br>*건조기 온도 : 120℃ | 건조작업 표준서 | 2회 1일 | SAMPLING | *건조기 *시계<br>*온도계 | 생산 | 온도체크<br>시트 |
| 08 | | | 불멸잉크 | MARKING | *MARKING 방향,위치,선명도<br>LOT No. | MARKING<br>작업표준서 | 전수 | 전수검사 | *MARKING 도장 | 생산 | |
| 09 | | | | PIN교정 | * 핀휨, 핀교정상태 | PIN교정<br>작업표준서 | 전수 | 전수검사 | *PIN교정JIG | 생산 | |
| 10 | | | | 2차 검사 | *전기적특성(L값,LEAKAGE)<br>*위상,TURNS *내전압 절연상태 | 2차 검사 기준서 | 전수 | 전수검사 | *TURNS METER<br>*LCR-METER,*내압기 | 생산 | 2차 검사<br>일보 |
| 11 | | | | 외관검사 | *BOBBIN파손, 납땜상태,PIN상태<br>*기타 | 외관검사 기준서 | 전수 | 전수검사 | | 생산 | 외관검사<br>일보 |
| 12 | | | PAPER BOX<br>OUT BOX | 포장 | *PIN TO PIN 간격<br>*BOX규격,외관,포장상태 | 포장작업 기준서 | 전수 | | | 생산 | |
| 13 | | | | 출하검사 | *전기적특성 (L값 절연저항 내전압)<br>*치수,구조,외관,수량 | 출하검사 기준서 | SAMPLING | SAMPLING | *LCR *내압기<br>*절연저항기 | 품질관리 | 출하검사<br>성적서 |
| 14 | | | | 창고입고 | *수량, 제품명, 포장상태,<br>*입.출고 재고관리 | 창고적재 표준서 | | | | 영업 | 입고전표<br>수불장부 |
| 15 | | | | 출 하 | *제품명, 수량 | | | | | 영업 | 출하전표 |

CUSTOMER : L.G ELECTRONICS INC.

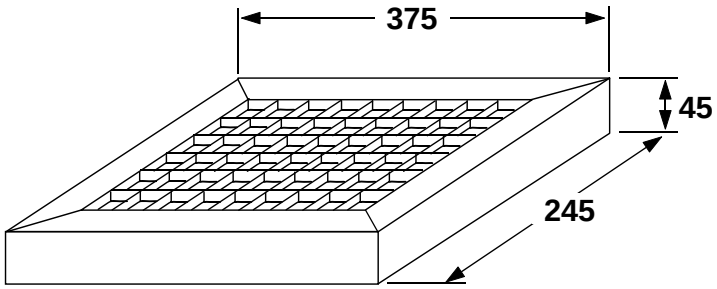
| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

## 14. PACKING

(UNIT : m/m)

** INNER BOX (PAPER BOX)

6 PCS × 9 EA = 54 PCS

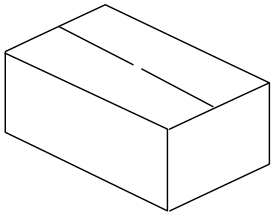



** OUT BOX (CARTON)

54 PCS × 4 EA = 216 PCS

** BOX CARTON DECLARATION

| QUANTITY | WEIGHT APPROX.(Kg) |
|---|---|
| PART No. | |
| P/O No. | |
| LOT No. | |
| P/DATE | |
| Q'TY | |
| C/NO | |
| MADE IN KOREA | |



| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 18 / 20 |
|---|---|---|---|---|---|
| FEELUX | | | | | |

CUSTOMER : L.G ELECTRONICS INC.

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| PART NAME | TRANS MULTI | PART No. | EBJ60711106 |

# 15. INSPECTION DATA

| ITEM | TRANS MULTI | MODEL | 26"32" PSU | LOT SIZE | 10 PCS |
|---|---|---|---|---|---|
| OBJ | | LOT No | FL0909017 | TEST Q'TY | 10 PCS |

| No | ITEM | TERMINAL | SPEC' | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | INDUCTANCE <100KHz,1.0V> | 5 - 2 | 1.40 mH ± 15% | 1.37 | 1.37 | 1.38 | 1.39 | 1.37 | 1.41 | 1.37 | 1.41 | 1.42 | 1.43 |
| 2 | | 9 - 11 | 19.6 uH ± 30% | 20.10 | 19.85 | 19.92 | 19.88 | 19.89 | 20.35 | 20.41 | 20.19 | 20.57 | 20.40 |
| 3 | | 11 - 10 | 19.6 uH ± 30% | 20.03 | 19.67 | 19.67 | 19.86 | 19.78 | 20.08 | 20.30 | 20.41 | 20.35 | 20.26 |
| 4 | | 8 - 12 | 5.10 uH ± 30% | 5.17 | 5.19 | 5.13 | 5.19 | 5.20 | 5.26 | 5.30 | 5.38 | 5.33 | 5.30 |
| 5 | | 12 - 7 | 4.80 uH ± 30% | 4.91 | 4.93 | 4.87 | 4.91 | 4.90 | 5.00 | 5.04 | 5.09 | 5.09 | 5.03 |
| 6 | LEAKAGE <100KHz,1.0V> | 5 - 2 | 230 uH MAX | 180.2 | 182.3 | 179.6 | 177.9 | 184.1 | 176.0 | 187.6 | 181.6 | 182.6 | 182.6 |
| 7 | Rdc | 5 - 2 | 0.45 Ω MAX | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| 8 | | 9 - 11 | 0.03 Ω MAX | 0.014 | 0.014 | 0.013 | 0.012 | 0.014 | 0.013 | 0.013 | 0.013 | 0.014 | 0.014 |
| 9 | | 11 - 10 | 0.03 Ω MAX | 0.015 | 0.015 | 0.014 | 0.014 | 0.014 | 0.016 | 0.015 | 0.015 | 0.015 | 0.014 |
| 10 | | 8 - 12 | 0.03 Ω MAX | 0.013 | 0.013 | 0.013 | 0.014 | 0.014 | 0.013 | 0.013 | 0.014 | 0.015 | 0.013 |
| 11 | | 12 - 7 | 0.03 Ω MAX | 0.013 | 0.013 | 0.013 | 0.014 | 0.014 | 0.013 | 0.013 | 0.015 | 0.015 | 0.014 |
| 12 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 3.0 KV rms (1 MINUTE) | 4.0kv | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 13 | | P COIL - CORE | AC 1.5 KV rms (1 MINUTE) | 3.5kv | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 14 | | S COIL - CORE | AC 1.5 KV rms (1 MINUTE) | 3.5kv | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 15 | INSULATION RESISTANCE | COIL - COIL | 100M ohm MIN at DC 500V | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ |
| 16 | D.C OVERLAP (0.7A) | 5 - 2 | MORE THAN 90% at INITIAL INDUCTANCE | 1.31 | 1.32 | 1.30 | 1.30 | 1.31 | 1.33 | 1.31 | 1.33 | 1.35 | 1.33 |
| | | | | 95.6 | 96.3 | 94.2 | 93.5 | 95.6 | 94.3 | 95.6 | 94.3 | 95 | 93 |
| 17 | Q <100KHz, 1V> | 5 - 2 | 130 MIN | 446 | 492 | 503 | 499 | 517 | 516 | 501 | 530 | 527 | 522 |
| 18 | LAYER SHORT TEST | 5 - 2 | AC 1.5 KV Pulse 4 Times | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ | ∝ |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE No. | 19 / 20 |
|---|---|---|---|---|---|
| FEELUX | | | | | |

**CUSTOMER : L.G ELECTRONICS INC.**

| SPECIFICATIONS | | DATE | 2009. 11. 07. |
|---|---|---|---|
| **PART NAME** | TRANS MULTI | **PART No.** | **EBJ60711106** |

## 16. ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.
2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.
3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.
4) WIRE BUNDLE METHOD.
   * CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2MM.
   * TOP SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2 MM.
   * SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER-SOLENOID IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
   * SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM. ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
   * SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2.
     IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.
5) PERFORMANCE OF THIS DRAWING IS REQUITED TO MEET PART NUMBER EBJ60711106
6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE. BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

# 폴리 우레탄 동선 (1UEW)

| 치 수 | | | | 절연파괴 전 압 (V) ↑ | 내마모 파괴하중 | | 최대도체 저 항 (Ω/㎞) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성 외 경 (mm) ↑ | 최대완성 외 경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| **0.100** | **±0.003** | **0.118** | **0.140** | **2000** | **-** | **-** | **2647** | **15** |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.224 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.686 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

ROHS safety

# APPROVAL SHEET

| | |
|---|---|
| CUSTOMER | : YUYANG D&U CO., LTD |
| MODEL | : 26INCH, 32INCH PSU |
| I T E M | : MULTI TRANS |
| PART NO | : EBJ60711106 (LPM-101) |
| KYUNG-IN SPEC NO | : KI069-36-0886-1 |

| APPROVAL: | REFERENCE: |
|---|---|
| | |

| < 각 부서별 담당자 > | |
|---|---|
| 품질보증팀 | 박승환 부장 |
| | 011-9881-8392 |
| | shpark@kitrans.com |
| 영업팀 | 김기호 부장 |
| | 017-228-9127 |
| | khkim@kitrans.com |
| 연구소 | 봉은종 차장 |
| | 010-8985-0682 |
| | core715@kitrans.com |


DONGYANG TELECOM CO.,LTD.
(구: KYUNG IN ELECTRONICS)

| | | |
|---|---|---|
| HEAD OFFICE & FACTORY | 942-5, Dohwa-Dong, Nam-gu, Incheon, korea | TEL : 032-584-0100<br>FAX : 032-584-0101 |
| China 1 Factory | Korea industrial Circles Beigong Street Office<br>Weicheng Weifang Shandong, CHINA | TEL : 86-536-895-0501<br>FAX : 86-536-895-7291 |
| China 2 Factory | No.28 Feng Huang Street, Weifang Shandong, CHINA | TEL : 86-536-790-2048<br>FAX : 86-536-760-2046 |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

# 1.REVISION

| REV NO. | DATE | PAGE | REVISED CLAUSE | REVISED CAUSE |
|---|---|---|---|---|
| 1 | 11.04.13 | ALL | 경인전자 → 동양텔레콤 회사명 변경 | 회사명 변경 |
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| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 1/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

# 2. I N D E X


| | |
|---|---|
| 1/19 | 1. REVISION |
| 2/19 | 2. INDEX |
| 3/19 | 3. DIMENSION |
| 4/19 | 4. SCHEMATIC DIAGRAM |
| 5/19 | 5. WINDING SPECIFICATION |
| 6/19 | 6. ELECTRICAL CHARACTERISTICS |
| 7/19 | 7. ENVIRONMENTAL CHARACTERISTICS |
| 8/19 | 8. MECHANICAL CHARACTERISTICS |
| 9/19 | 9. INTERNAL CONSTRUCTION |
| 10/19 | 10. MATERIAL LIST |
| 11/19 | 11. UL-LIST |
| 12/19 | UL-LIST |
| 13/19 | 12. CORE DIMENSION |
| 14/19 | 13. BOBBIN DIMENSION |
| 15/19 | 14. CAP DIMENSION |
| 16/19 | 15. PROCESS FLOW |
| 17/19 | 16. PACKING |
| 18/19 | 17. INSPECTION DATA |
| 19/19 | 18. ASSIGNMENTS |
| | |
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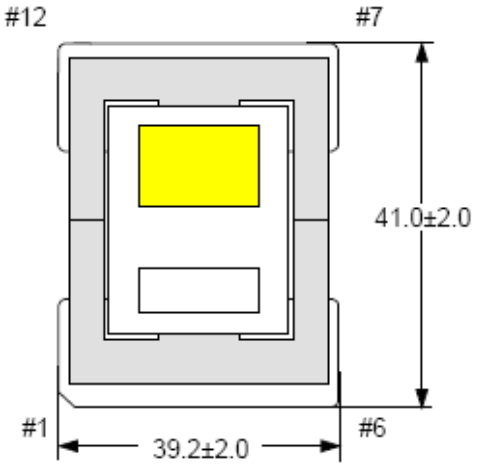

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 2/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 3. DIMENSION( UNIT : mm )

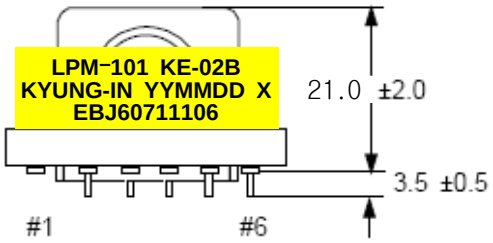
safety

<< TOP VIEW >>

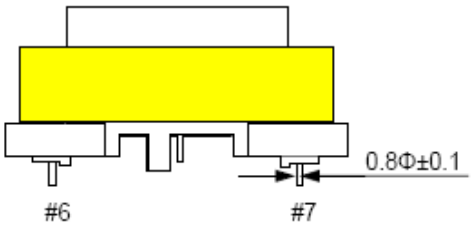



| MARKING SPEC | | | |
|---|---|---|---|
| PART NO | LPM-101 | | |
| KE-02B | INSULATION SYSTEM | | |
| KYUNG-IN | DONGYANG TELECOM | | |
| LG ELECTRONICS PART NO | EBJ60711106 | | |
| LOT NO | YYMMDD | | |
| YY | YEAR | 2008 : 08<br>2009 : 09 | |
| MM | MONTH | JANUARY : 01<br>FEBRUARY : 02 | |
| DD | DAY | | |
| X PRODUCT CODE | A | KOREA INCHEON FACTORY | |
| | B | CHINA 1 FACTORY | |

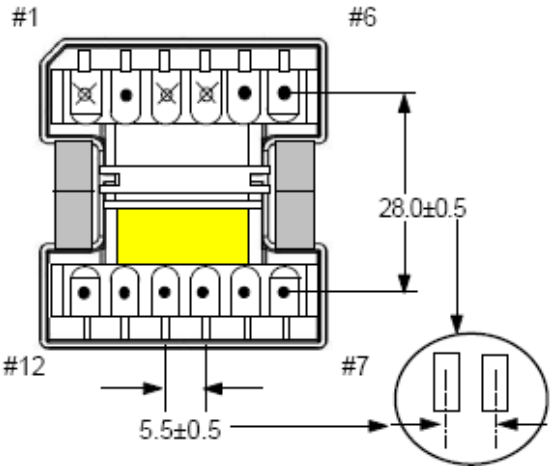
<< FRONT VIEW >>




<< SIDE VIEW >>




<< BOTTOM VIEW >>

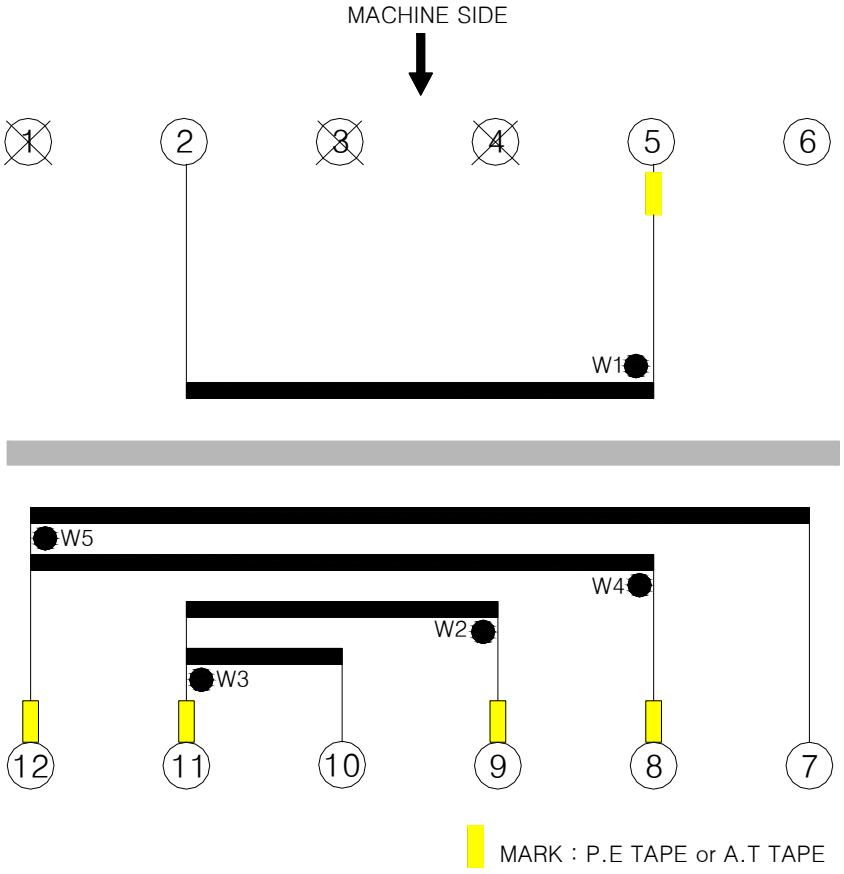



* GAP CORE : SIDE FILM GAP ≒ 0.1T
* PIN REMOVED : #1 , #3 , #4

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 3/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD | | | | | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 4. SCHEMATIC DIAGRAM




| | |
|---|---|
| CUTTING PIN | - |
| N.C PIN | #6 |
| REMOVE PIN | #1, 3, 4 |
| ●DOT MARK | START OF WINDING |
| GAP | FILM GAP ≒ 0.1T |
| GAP CORE | SIDE GAP |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 4/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 5. WINDING SPECIFICATION

| NO | TERMINAL | | WIRE | Ts | WINDING METHOD (C.C.W) | INSULATION | |
|---|---|---|---|---|---|---|---|
| | S | F | | | | MATERIAL ( t / mm ) | Ts |
| W1 | 5 | 2 | USTC 0.10Φ×20 | 50 | 7 LAYER SOLENOID | POLYESTER TAPE 0.025 × 6.0 (WHITE) | 2 |
| W2 | 9 | 11 | USTC 0.10Φ×60 | 6 | 1 LAYER SOLENOID | POLYESTER TAPE 0.025 × 7.5 (YELLOW) | 1 |
| W3 | 11 | 10 | USTC 0.10Φ×60 | 6 | 1 LAYER SOLENOID | POLYESTER TAPE 0.025 × 7.5 (YELLOW) | 1 |
| W4 | 8 | 12 | USTC 0.10Φ×40 | 3 | 1/2 LAYER SOLENOID | POLYESTER TAPE 0.025 × 7.5 (YELLOW) | 1 |
| W5 | 12 | 7 | USTC 0.10Φ×40 | 3 | W4 AFTER 1/2 SOLENOID | POLYESTER TAPE 0.025 × 7.5 (YELLOW) | 2 |
| CORE FIXING TAPE (YELLOW) | | | | | | POLYESTER TAPE 0.025t W=10.0mm (YELLOW) | 3 |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 5/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 6. ELECTRICAL CHARACTERISTICS

| NO | ITEM | TERMINAL | SPEC | REMARKS |
|---|---|---|---|---|
| 6-1 | INDUCTANCE | 5 - 2<br>9 - 11<br>11 - 10<br>8 - 12<br>12 - 7 | 1.40 mH ± 15%<br>19.6 uH ± 30%<br>19.6 uH ± 30%<br>5.10 uH ± 30%<br>4.80 uH ± 30% | HP-4284A or eqv<br>at 100KHz,1.0V |
| 6-2 | LEAKAGE INDUCTANCE | 5 - 2<br>(SECONDARY ALL SHORT) | 230 uH MAX | |
| 6-3 | DC RESISTANCE (20℃) | 5 - 2<br>9 - 11<br>11 - 10<br>8 - 12<br>12 - 7 | 0.45 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX<br>0.03 Ω MAX | WHEATSTONE BRIDGE<br>HIOKI 3540(mΩ METER) |
| 6-4 | WITHSTANDING VOLTAGE | P COIL - S COIL | AC 3.0 KV R.M.S 1 MINUTE. | safety<br>KIKUSUI TOS-8850<br>(CURRENT SESITIVE IS 5mA) |
| | | P COIL - CORE | AC 1.5 KV R.M.S 1 MINUTE. | |
| | | S COIL - CORE | AC 1.5 KV R.M.S 1 MINUTE. | |
| 6-5 | INSULATION RESISTANCE | P COIL - S COIL | 100 Mohm MIN at DC 500V | MEGOHM METER safety<br>(SM-5E) |
| 6-6 | DC OVER LAP | 5 - 2 | MORE THAN 90% OF INITIAL INDUCTANCE | 0.7A (TEST CURRENT)<br>NORMAL TEMPERATURE |
| 6-7 | QUALITY FACTOR | 5 - 2 | 130 MIN | HP-4284A<br>at 100KHz,1.0V |
| 6-8 | LAYER SHORT | 5 - 2 | AC 1.5 KV PULSE 4 TIMES | safety<br>DWX-05 & KT-905D |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 6/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

# 7. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃ ± 15℃ HUMIDITY 65% ± 20%
IF WHEN ANY OBJECTION IS SUGESTED. THE TEST CAN BE OPERATED AT 20℃ ± 2℃, 65% ± 5% RH

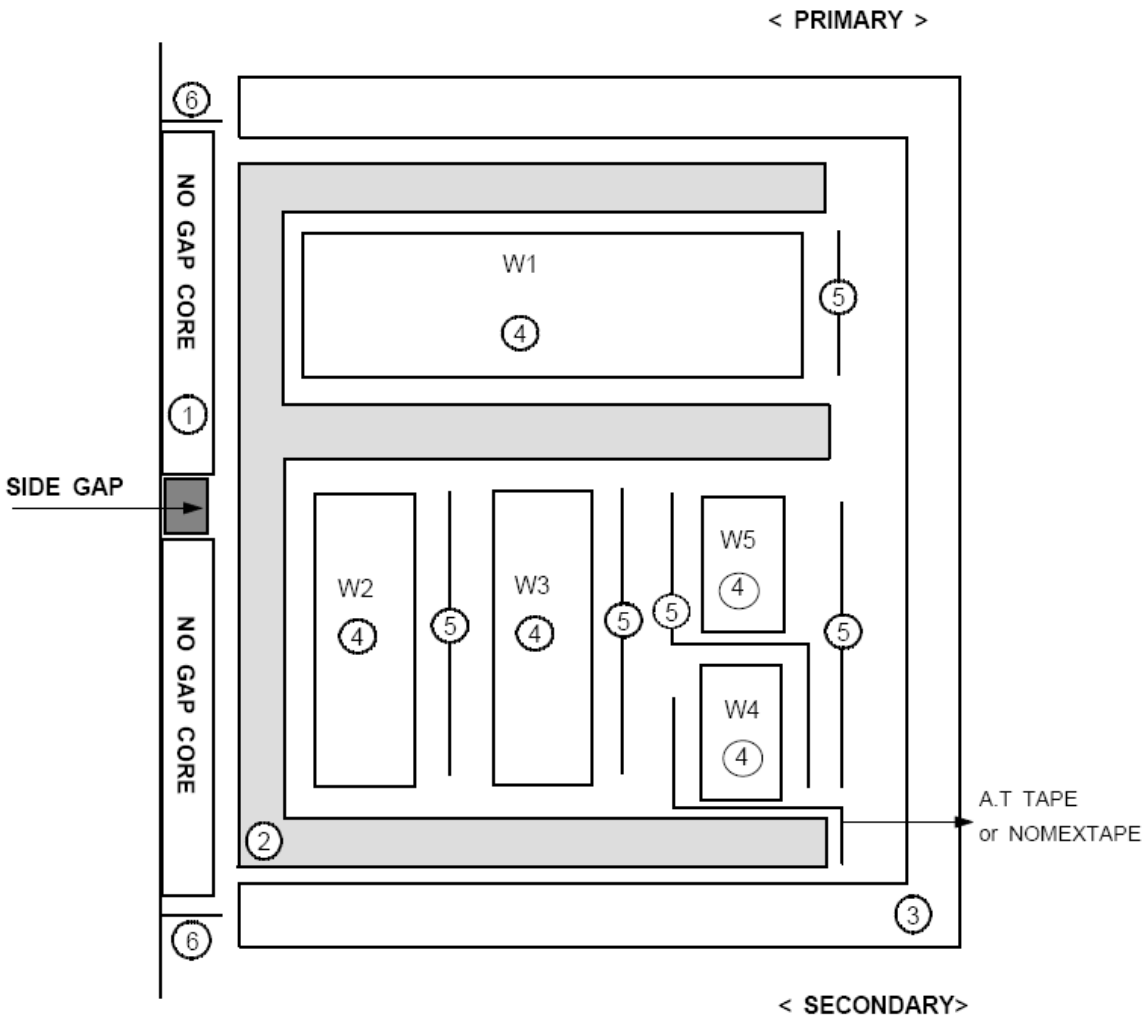
<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>7-1</td><td>USED<br>TEMPERATURE<br>RANGE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>7-2</td><td>KEEPING<br>TEMPERATURE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>7-3</td><td>LOW<br>TEMPERATURE<br>RESISTANT</td><td rowspan="5">MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE (IT SHOULD BE MANAGED BY 10% UNDER 10uH)</td><td>-25℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>7-4</td><td>HIGH<br>TEMPERATURE<br>RESISTANT</td><td>+105℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>7-5</td><td>HUMIDITY<br>RESISTANT</td><td>+95%RH ± 5% (40℃ ± 5℃) 96Hr<br>MEASURE AFTER 2Hr AT ROOM TEMP
<table>
<tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr>
<tr><td>1</td><td>-25℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>2</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
<tr><td>3</td><td>+105℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>4</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
</table>
REPEAT 5 TIME FROM STEP 1 AND<br>TEST AFTER 2 Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-6</td><td>TEMPERATURE<br>CYCLE</td><td></td></tr>
<tr><td>7-7</td><td>HEAT SHOCK-<br>RESISTANT</td><td>2 HR AT-20℃ →2 HR AT 70℃<br>: 10 CYCLE</td></tr>
</table>

## 8.MECHANICAL CHARACTERISTICS

| NO | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 8-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 8-2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 5% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER POT AT 260 +5℃ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 8-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245℃ -5℃ FOR 3 SECONDS |
| 8-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5Kgf DURING 30 ± 5 SEC |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
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## 9. INTERNAL CONSTRUCTION safety




* GAP : SIDE GAP ≒ P.S FILM 0.1T

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 9/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 10.MATERIAL LIST

safety

| NO | MATERIAL | ITEM | MANUFACTURE | MATERIAL COLOR | FILE NO. |
|---|---|---|---|---|---|
| 1 | CORE | EER 3535S PL-7<br>EER 3435K PM-7<br>EC34-1 HE-4 | SAM WHA ELECTRONICS CO., LTD.<br>TODA ISU COORPORATION.<br>RUYUAN DONG YANG GUANG<br>MAGNETIC MATERIAS CO., LTD. | BLACK | |
| 2 | BOBBIN | 94V-0 PHENOL RESIN<br>EER 3435 'H'TYPE-12P<br>(PM-9820) | SUMITOMO BAKELITE CO., LTD.<br>(DAE HEUNG , HO SUNG , HO JIN) | BLACK | E41429 |
| 3 | CAP | 94V-0 P.B.T<br>EER 3435K<br>(FR530) | EI DUPONT DE NEMOURS & CO IND. | BLACK | E41938 |
| 4 | WIRE | USTC 0.10Φ×20<br>USTC 0.10Φ×40<br>USTC 0.10Φ×60 | DONG YANG ELECTRONICS CO., LTD. | NATURAL LIGHT PINK | E102761 |
| 5 | INSULATION TAPE | POLYESTER FILM TAPE<br>0.025t×6.0mm<br>(WHITE) | DUCK SUNG HITECH., LTD.<br>(Cat No. DTS-204) | WHITE | E105147 |
| | | POLYESTER FILM TAPE<br>0.025t×7.5mm<br>(YELLOW) | | YELLOW | |
| 6 | CORE FIXING TAPE | POLYESTER FILM TAPE<br>0.025t×10.0mm<br>(YELLOW) | DUCK SUNG HITECH., LTD.<br>(Cat No. DTS-204) | YELLOW | E105147 |
| 7 | INSULATION TAPE | ACETATE TAPE | DUCK SUNG HITECH., LTD.<br>(Cat No. DTS-230) | YELLOW | E105147 |
| 8 | SIDE GAP | FILM ≒ 0.1mm | SKC CO., LTD. | WHITE | E74359 |
| 9 | VARNISH | DVB-2085<br>SR-337 | NOROO PAINT & COATINGS CO., LTD.<br>SEKYE CHEMICAL CO., LTD. | TRANSPPARENCY | E258023<br>E257443 |
| 10 | SOLDER | GM Bar 99307<br>LFC7 | GREEN METALS CO.,LTD.<br>SEOUL ALLOYMETAL CO.,LTD. | SILVER | |
| 11 | FLUX | EF9301 | ALPHA METAL CO., LTD. | TRANSPPARENCY | |
| 12 | MARKING | INK 9175 | IMAJE KOREA CO., LTD. | BLACK | |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 10/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 11.UL YELLOW CARD

### KE-02B

**DONG YANG TELECOM CO LTD** E238422
942-5 DOHWA-DONG NAM-GU
INCHON, 404-250 REPUBLIC OF KOREA

**Class 130 (B) electrical insulation systems**, designated KE-01B, KE-02B, KE-03B

**Class 155 (F) electrical insulation systems**, designated KE-01F

Marking: Company name or tradename "KYUNG-IN" and system designation.

Last Updated on 2011-04-08

### BOBBIN

**SUMITOMO BAKELITE CO LTD** E41429
5-8 HIGASHI-SHINAGAWA 2-CHOME
SHINAGAWA-KU
TOKYO, 140-0002 JAPAN

| | | Min. Thk | Flame | H W | H A | R T I Elec | R T I Mech | | H V T | D 4 9 | C T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PM-8375 | BK | 0.49 | V-0 | - | - | 150 | 150 | 150 | | | 3 |
| | | 3.0 | V-0 | - | - | 150 | 150 | 150 | | | |
| PM-9820 | BK | 0.16 | V-0 | - | - | 150 | 150 | 150 | 0 | 5 | 3 |
| | | 0.51 | V-0 | 3 | 1 | 150 | 150 | 150 | | | |
| PM-9630 | BK | 0.16 | V-0 | 4 | 0 | 150 | 150 | 150 | 0 | 4 | 3 |
| | | 0.32 | V-0 | 3 | 0 | 150 | 150 | 150 | | | |

Marking: Company name or tradename "PERMAFLOW" , "SPIDAX" , "SUMIFLEX" , "SUMIKON" , "SUMILITE" , "SUMIMAC" or trademark パーマフロー, スミライト®, スミコン®, 住友ベークライト株式会社, スパイダックス, スミフレックス®, スミマック, スミガウス®, "SUMIGAUSS®", スミガウス, SUMIKON ® EME and material designation on container, wrapper or finished part.

Last Updated on 2009-01-22

### CAP

**E I DUPONT DE NEMOURS & CO INC** E41938
ENGINEERING POLYMERS
CHESTNUT RUN PLAZA
PO BOX 80713
WILMINGTON, DE 19880 USA

| Mtl Dsg | Color | Min. Thk mm | Flame Class | H W I | H A I | H V A | R T I Elec | R T I Mech Imp | R T I Mech Str | C T I |
|---|---|---|---|---|---|---|---|---|---|---|
| FR530(I)(+)(f1), FR530L(I)(+)(f1) | | | | | | | | | | |
| | NC, BK | 0.35 | V-0 | 3 | 1 | 3 | 155 | - | - | 2 |
| | ALL | 0.75 | V-0 | 2 | 1 | 0 | 155 | 155 | 155 | |
| | NC | 0.9 | V-0, 5VA | 2 | 1 | 0 | 155 | 155 | 155 | |
| | NC, BK | 1.5 | V-0, 5VA | 0 | 1 | 0 | 155 | 155 | 155 | |
| | ALL | 2.0 | V-0, 5VA | 0 | 1 | 0 | 155 | 155 | 155 | |
| | | 3.0 | V-0, 5VA | 0 | 1 | 0 | 155 | 155 | 155 | |
| FR543 | NC, BK | 0.81 | V-0 | 0 | 1 | 0 | 155 | 155 | 155 | 2 |
| | | 1.5 | V-0, 5VA | 0 | 1 | 0 | 155 | 155 | 155 | |
| | | 3.0 | V-0, 5VA | 0 | 1 | 0 | 155 | 155 | 155 | |

(I) - Recognized ground insulation component at 0.4 mm with MW79 in UL1446 Class 155 electrical insulation system designated R201N (File E69939).
(+) - Virgin and regrind up to 50% by weight inclusive, have the same basic material characteristics.
(f1) - Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.
Marking: Company name or tradename "CRASTIN" , "DELRIN" , "MINLON" , "RYNITE" , "Thermx" , "ZENITE" , "ZYTEL" and material designation on container, wrapper or finished part.

Last Updated on 2009-03-26

### WIRE

**DONG YANG ELECTRONICS IND CO LTD** E102761
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ BC | Coat Typ OC | ANSI Type | TI |
|---|---|---|---|---|
| UEW(F) | Polyurethane | — | MW79, | 155, |
| UEW(B) | Polyurethane | — | MW75# | 130 |
| UAL | Polyurethane | — | @ | 155 |
| PEW | Polyester | — | @ | 180 |
| | | | MW5# | 155 |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 11/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD | | | | | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## P.E TAPE

**DUCK SUNG HITECH CO LTD** E105147
225-2 SHINNEUNG-RI SEOUN-MYEON
ANSEONG-SI, GYEONGGI-DO 456-850 REPUBLIC OF KOREA

**Polyester film insulating tape, acrylic adhesive**, Cat. No. DTS-204(a), rated 130 C.
**Acetate cloth insulating tape, rubber adhesive**, Cat. No. DTS-230, rated 105 C.
**Nomex (Aramid fiber) film insulating tape with non-woven polyester fiber reinforcement, acrylic adhesive**, Cat. No. DTS-241*, rated 130 C.
**Polyester film insulating tape, acrylic adhesive**, Cat. No. DTS-280*, rated 130 C.

## SIDE GAP

**SKC CO LTD** E74359
PLANT MANAGEMENT TEAM
633 CHONGJA-DONG
CHANGAN-GU
SUWON-SHI, KYONGGI-DO 440-840 REPUBLIC OF KOREA

| Material Dsg | Color | Min. Thk mm | Flame Class | H W I | H A I | RTI Elec | RTI Mech Imp | RTI Mech Str | HVTR | D49I | C T I |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SR55 | NC | 0.075 | VTM-2 | - | - | 130 | 105 | 130 | | | |
| | | 0.25~0.27 | V-2 | - | - | 130 | 105 | 130 | | | |
| IF## | NC | 0.0125-0.024 | V-0 | 3 | - | 220 | 130 | 200 | | | 4 |
| | | 0.025-0.074 | V-0 | 3 | - | 220 | 130 | 220 | | | |
| | | 0.075-0.077 | V-0 | 3 | - | 220 | 130 | 220 | | | |
| IN## | NC | 0.0125-0.024 | V-0 | 3 | - | 220 | 130 | 200 | | | 4 |
| | | 0.025-0.074 | V-0 | 3 | - | 220 | 130 | 220 | | | |
| | | 0.075-0.077 | V-0 | 3 | - | 220 | 130 | 220 | | | |

## - Represents a numeric suffix from "00" to "99" except 01, 50, 53, 55, 70, 72 for grade SR##.

(A) - Represents numeric suffix from "0000" to "9999".

@ - Represents alphabetical suffix from "A" to "Z" (Second @ may be omitted).

Marking: Company name or tradename "SKC" and material designation on container, wrapper or finished part.
Last Updated on 2008-12-08

## VARNISH

**NOROO PAINT & COATINGS CO LTD** E258023
615 PAKDAL-DONG, ANYANG-SHI, KYONGGI-DO 430-030 REPUBLIC OF KOREA

| System Component | System Dsg | System Temp Class |
|---|---|---|
| DVB-2085 (*) | SBI4.2-DPI | 130 (B) |

(*) - Followed by one or two numbers and/or letters.

Marking: Company name and system component designation.

## VARNISH

**SE KYE CHEMICAL CO LTD** **E257443**
**360 GUIJEON-RI**
**TONGJIN-EUP**
**KIMPO-SI, KYUNGGI-DO 415-862 REPUBLIC OF KOREA**

| Varnish Dsg | ANSI Magnet Wire Type | TP | Varnish Thermal Class C HC | CE |
|---|---|---|---|---|
| SR-337(#) | MW75 | 130 | 130 | - |

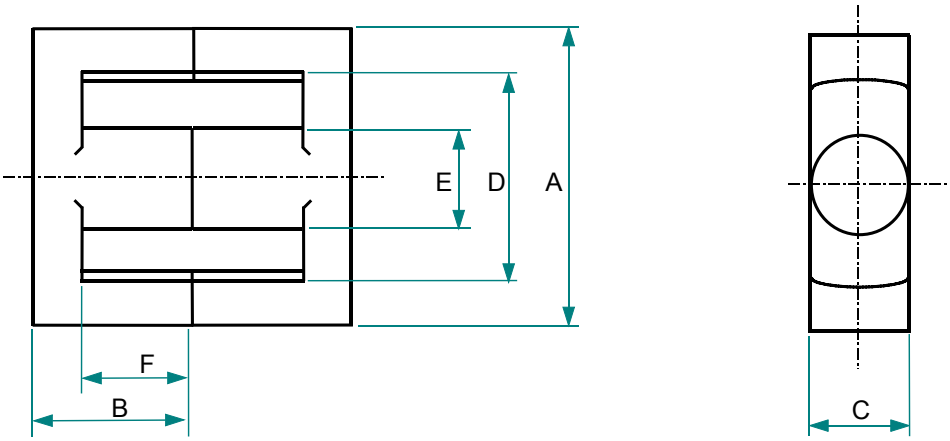
# - May be followed by 1 or 2 suffix numeric and /or alpha characters to denote viscosity change accomplished via solvents due to production tolerance.

Marking: Company name and varnish designation on shipping container.

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 12/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 12.CORE DIMENSION

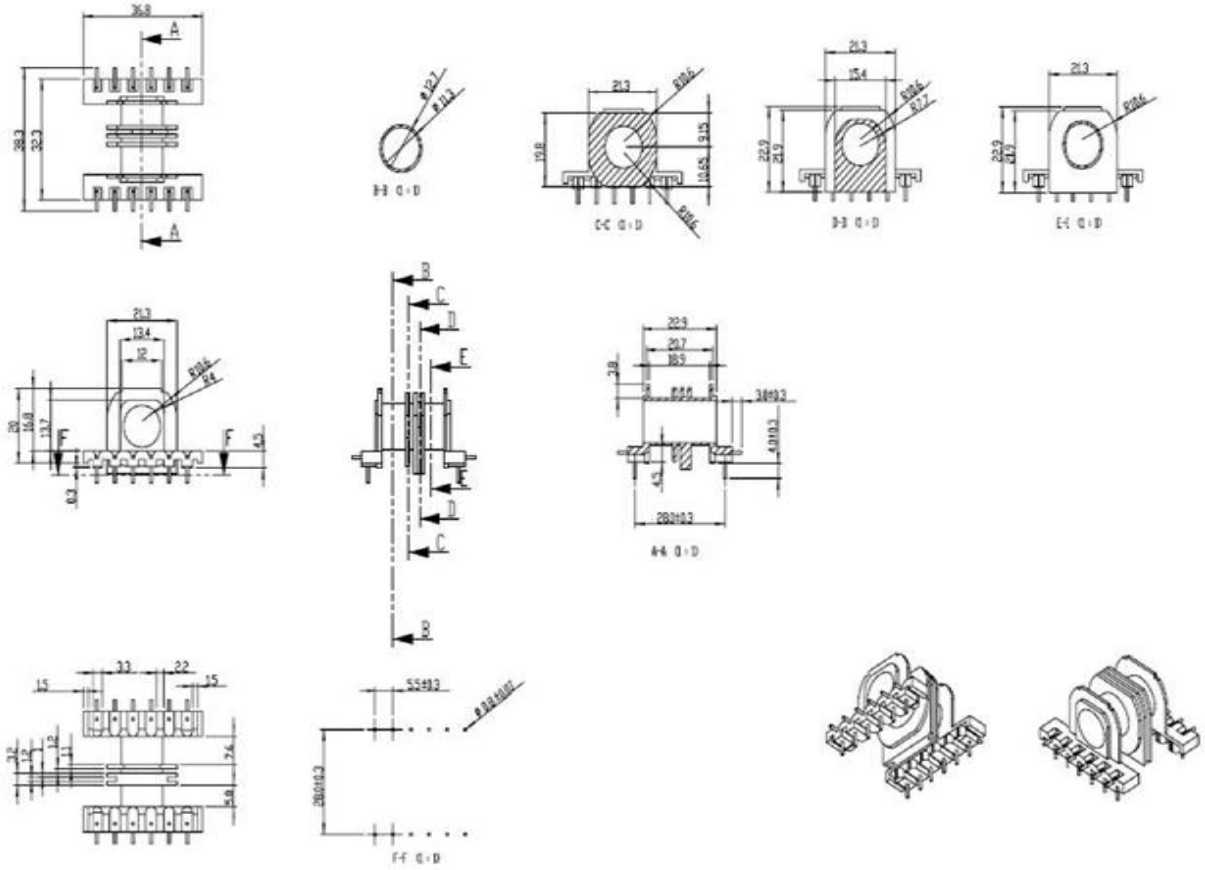



| TYPE | DIMENSIONS IN MM | | | | | | EFFECTIVE PARAMETERS | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | le(mm) | Ae(mm²) | Ve(mm³) | |
| EER3535S | 35.20 ±0.80 | 17.40 ±0.20 | 10.80 +0.2 −0.3 | 27.30 ±0.70 | 10.80 ±0.30 | 12.20 ±0.30 | 80.1 | 97.1 | 7780 | SAM WHA |
| ETD3435K | 35.20 ±0.80 | 17.40 ±0.20 | 10.80 +0.2 −0.3 | 27.30 ±0.70 | 10.80 ±0.30 | 12.20 ±0.30 | 80.1 | 97.1 | 7780 | TODA ISU |
| EC34-1 (EER3435K) | 35.20 ±0.80 | 17.40 ±0.20 | 10.80 +0.2 −0.3 | 27.30 ±0.70 | 10.80 ±0.30 | 12.20 ±0.30 | 80.03 | 96.30 | 7706 | DONG YANG GUANG |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 13/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

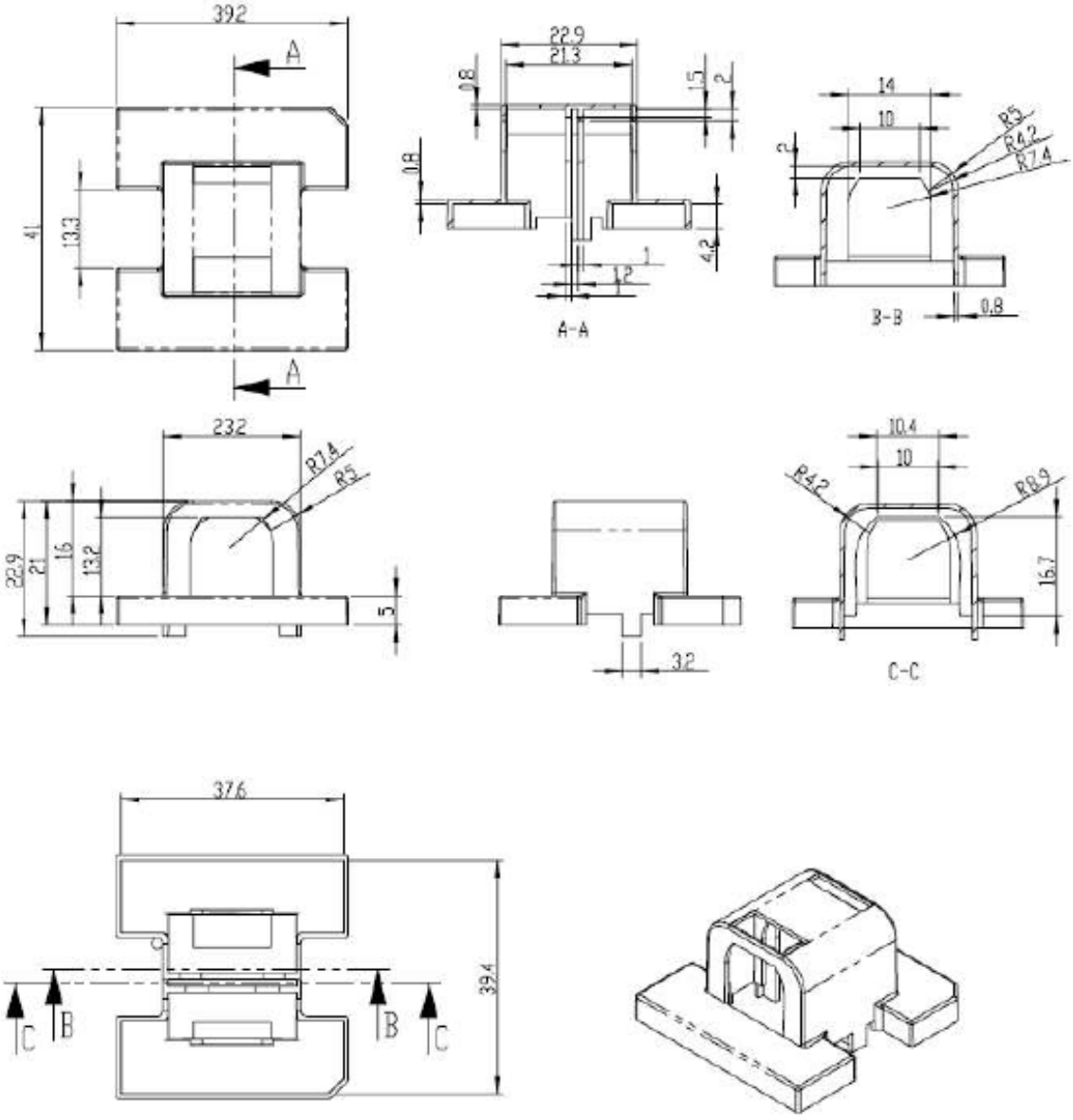
## 13.BOBBIN DIMENSION



| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 14/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 14. CAP DIMENSION




| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 15/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | LPM-101 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 15.PROCESS FLOW

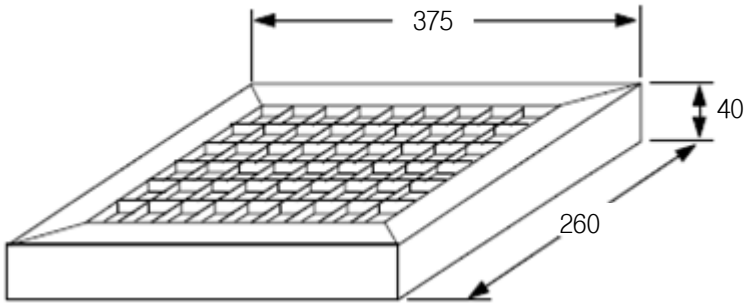
| 공정 | | 소요자재 | 공정명 | 관리항목 | 관리기준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|
| SUB 공정 | MAIN공정 | | | | | | | | | |
| △→◇<br>△→◇<br>△→◇ | → ○ | BOBBIN<br>COIL<br>P/S TAPE | 권선 | COIL회 굵기와 종류<br>턜수,권선상태<br>턜연상태,턜연상태 | | 2회/1일 | SAMPLING<br>LOT당5EA | MICRO METER | 생산 | 성적서 |
| △→◇<br>△<br>△ | → ○ | SOLDER<br>FLUX | 납땜 | 납조기온도: 420 ±10℃<br>납땜시간: 2~3SEC | 납땜작업표준서 | 2회/1일 | 전수검사 | 납조기<br>온도계 | 생산 | 온도체크시트 |
| | ○ | CORE<br>P/S TAPE | CORE조립 | CORE종류(GAP,NOGAP)<br>조립상태,GAP SIZE<br>TAPPING TURNS 및 TAPPING상태 | CORE조립/<br>작업표준서 | 2회/1일 | SAMPLING | MICRO METER | 생산 | |
| | ◇ | | 1차검사 | 전기적 특성(L값 TURNS)<br>턜선,납땜상태 | 1차검사기준서 | 전수 | 전수검사 | TURNS METER<br>LCR METER | 생산 | 1차검사 일보 |
| △→ | → ○ | VARNISH | 함침 | VANISH 배합상태,함침시간<br>함침부위,VANISH점도 | 함침작업표준서 | DAILOT | SAMPLING | 진공함침기<br>점도계,시계 | 생산 | 점도체크시트 |
| | ○ | | 건조 | 건조시간 : 2시간<br>건조온도 : 120℃ | 건조작업표준서 | 2회/1일 | SAMPLING | 건조기,시계<br>온도계 | 생산 | 온도체크시트 |
| △→ | → ○ | 볼펜잉크 | MARKING | MARKING 상태,위치,선명도<br>LOT NO | MARKING<br>작업표준서 | 전수 | 전수검사 | MARKING 도장<br>자동 MARKING기 | 생산 | |
| | ○ | | PIN고정 | 리톰, 핀고정 상태 | PIN고정<br>작업표준서 | 전수 | 전수검사 | PIN고정 JIG | 생산 | |
| | ◇ | | 2차검사 | 전기적 특성(L값 LEAKGE)<br>위상, TURNS,내전압,절연상태 | 2차 검사기준서 | 전수 | 전수검사 | TURNS METER<br>LCR METER<br>내압기 | 생산 | 2차검사일보 |
| | ◇ | | 외관검사 | BOBBIN파손,납땜상태,PIN상태<br>기타 | 외관검사기준서 | 전수 | 전수검사 | | 생산 | 외관검사일보 |
| △→◇<br>△→◇ | →<br>→ ○ | SNOW BOX<br>OUT BOX | 포장 | PIN TO PIN간격<br>BOX 규격,외관, 포장상태 | 포장작업표준서 | 전수 | 전수검사 | | 생산 | |
| | ◇ | | 출하검사 | 전기적특성(L값,절연저항,내전압)<br>치수,구조,외관,수량 | 출하검사기준서 | SAMPLING | SAMPLING | LCR-METER<br>내압기<br>절연저항기 | 품질보증 | 출하검사성적서 |
| | △ | | 창고입고 | 수량,제품명,포장상태<br>입출고 재고관리 | 창고적재표준서 | 2회/1일 | | | 영업 | 입고완료수불 장부 |
| | △ | | 출하 | 제품명, 수량 | | | | | 영업 | 출하전표 |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 16/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

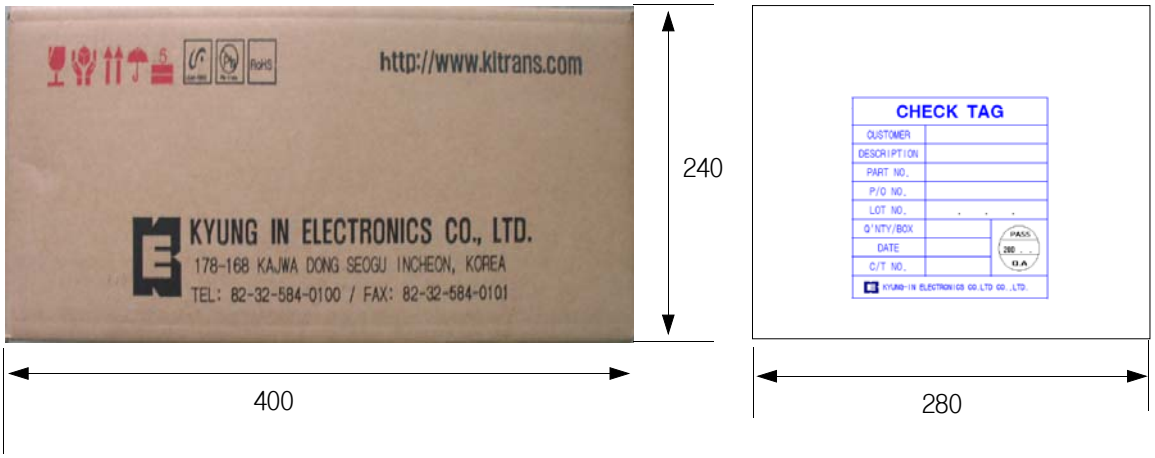
| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 16. PACKING

※INNER BOX(PAPER BOX) : 5PCS * 6PCS = 30PCS




OUT BOX (CARTON) : 30PCS X 5EA = 150PCS




| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 17/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 17. INSPECTION DATA

### INSPECTION DATA

| CUSTOMER | LG전자 | | DATE | 2009년 10월 23일 금요일 | | | INSPECTED BY | CHECKED BY | APROVED BY |
|---|---|---|---|---|---|---|---|---|---|
| ITEM | MULTI | | 적용 MODEL | 26"32 PSU | | TEMPERTURE | | | |
| PART NO. | EBJ60711102 | | LOT SIZE | 5/5 | EA | 19 ℃ | | | |

| 검사항목 | 시료수 / PIN NO & 규격치 | 시료 1 | 2 | 3 | 4 | 5 | | | | | | MIN | AVERAGE | MAX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INDUCTANCE | 5 - 2 ( 1.4mH ±15%) | 1.41 | 1.37 | 1.36 | 1.37 | 1.37 | | | | | | 1.36 | 1.38 | 1.41 |
| | 9 - 11 ( 19.6uH ±30% ) | 20.4 | 20.0 | 19.4 | 19.7 | 19.5 | | | | | | 19.4 | 19.8 | 20.4 |
| | 11 - 10 ( 19.6uH ±30% ) | 19.5 | 19.2 | 19.3 | 19.8 | 20.1 | | | | | | 19.2 | 19.6 | 20.1 |
| | 8 - 12 ( 5.1uH ±30% ) | 5.2 | 5.1 | 5.0 | 5.0 | 5.0 | | | | | | 5.0 | 5.1 | 5.2 |
| | 12 - 7 ( 4.8uH ±30% ) | 4.9 | 4.8 | 4.7 | 4.7 | 4.8 | | | | | | 4.7 | 4.8 | 4.9 |
| D.C OVERLAP(0.7A) | 5 - 2 (MORE THAN 90% OF INITIAL INDUCTANCE) | 1.37 | 1.34 | 1.33 | 1.34 | 1.34 | | | | | | 1.33 | 1.34 | 1.37 |
| | | 97% | 97% | 97% | 97% | 97% | | | | | | | | |
| LEAKAGE INDUCTANCE | 5 - 2 ( 230 uHMAX) (SEC.ALL SHORT) | 179 | 178 | 182 | 178 | 177 | | | | | | 177 | 179 | 182 |
| Q (100KHz,1V) | 5-2(130MIN) | 342 | 348 | 346 | 351 | 348 | | | | | | 342 | 347 | 351 |
| | | | | | | | | | | | | | | |
| D.C.R | 5 - 2 ( 0.45Ω MAX) | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | | | | | | 0.29 | 0.29 | 0.29 |
| | 9 - 11 ( 0.03Ω MAX) | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | | | | | | 0.013 | 0.013 | 0.013 |
| | 11- 10 ( 0.03Ω MAX) | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | | | | | | 0.014 | 0.014 | 0.014 |
| | 8 - 12 ( 0.03Ω MAX) | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | | | | | | 0.013 | 0.013 | 0.013 |
| | 12 - 7 ( 0.03Ω MAX) | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | | | | | | 0.013 | 0.013 | 0.013 |
| WITHSTANDING VOLTAGE | P COIL - S COIL AC 3.0KV r.m.s 1 MINUTE | 6.6 | OK | OK | OK | OK | | | | | | | | |
| | P COIL - CORE AC 1.5 KV r.m.s 1 MINUTE | 6.6 | OK | OK | OK | OK | | | | | | | | |
| | S COIL - CORE AC 1.5 KV r.m.s 1 MINUTE | 5.5 | OK | OK | OK | OK | | | | | | | | |
| INSULATION RESISTANCE | P COIL - S COIL 100 M ohm MIN at DC 500V | ∞ | ∞ | ∞ | ∞ | ∞ | | | | | | | | |
| LAYER SHORT TEST | 5 - 2(AC 1.5 KV Pusle 4 Times) | ∞ | ∞ | ∞ | ∞ | ∞ | | | | | | | | |
| | | | | | | | | | | | | | | |

비 고

| | | |
|---|---|---|
| TEST INSTRUMENTS | INDUCTANCE | HP-4284A PRECISION LCR METER at 100KHz,1.0Vrms |
| | DC RESISTANCE | HIOKI 3540 mΩ Hi TESTER |
| WINDING SPEC. | CORE | ER3435 PL-7 (SIDE GAP:0.1T) |
| | WIRE | USTC 0.1.0ΦX20 / USTC 0.1.0ΦX40 / USTC 0.1.0ΦX60 |
| | TURNS | |
| | REMARK | |

KYUNG-IN ELECTRONICS CO.,LTD. 모조지 210 X 297mm

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 18/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EBJ60711106 |
|---|---|---|---|
| PART NAME | MULTI TRANS | DATE | 2009. 11. 09. |

## 18. ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.
2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.
3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.
4) WIRE BUNDLE METHOD.
   * CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2 MM.
   * PIN SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TOP SOLENOID : ERROR BETWEEN THE TOP BARRIER TAPE AND LAST WIRE IS REQUIRED TO BE SMALLER THAN 2 MM.
   * SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER-SOLENOID IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
   * SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
   * SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2. IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.
5) PERFORMANCE OF THIS DRAWING IS REQUIRED TO MEET PART NUMBER EBJ60711106.
6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE.BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 19/19 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

# WIRE SPECIFICATION (2UEW)

| 치수 | | | | 절연파괴전압 | 내마모 파괴하중 | | 최대도체저항 | 신장율 |
|---|---|---|---|---|---|---|---|---|
| 도체 | | 최소완성외경 | 최대완성외경 | | 평균치 | 최소치 | | |
| 지름 (mm) | 허용차 (mm) | (mm) ↑ | (mm) ↓ | (V) ↑ | N(gf) ↑ | N(gf) ↑ | (Ω/km) ↓ | (%) ↑ |
| 0.080 | ±0.003 | 0.090 | 0.103 | 1100 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.100 | 0.113 | 1100 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.110 | 0.125 | 1100 | - | - | 2381 | 15 |
| 0.110 | ±0.003 | 0.120 | 0.135 | 1100 | - | - | 1957 | 15 |
| 0.120 | ±0.003 | 0.132 | 0.147 | 1300 | - | - | 1636 | 15 |
| 0.130 | ±0.003 | 0.142 | 0.157 | 1300 | - | - | 1389 | 15 |
| 0.140 | ±0.003 | 0.152 | 0.167 | 1300 | - | - | 1193 | 15 |
| 0.150 | ±0.003 | 0.162 | 0.177 | 1300 | - | - | 1037 | 15 |
| 0.160 | ±0.003 | 0.174 | 0.189 | 1300 | - | - | 908.8 | 15 |
| 0.170 | ±0.003 | 0.184 | 0.199 | 1300 | - | - | 803.2 | 15 |
| 0.180 | ±0.003 | 0.196 | 0.211 | 1600 | - | - | 715.0 | 15 |
| 0.190 | ±0.003 | 0.206 | 0.221 | 1600 | - | - | 640.6 | 15 |
| 0.200 | ±0.003 | 0.216 | 0.231 | 1600 | - | - | 577.2 | 15 |
| 0.210 | ±0.003 | 0.226 | 0.241 | 1600 | - | - | 552.8 | 15 |
| 0.220 | ±0.004 | 0.236 | 0.252 | 1600 | - | - | 480.1 | 15 |
| 0.230 | ±0.004 | 0.248 | 0.264 | 1600 | - | - | 438.6 | 15 |
| 0.240 | ±0.004 | 0.258 | 0.274 | 1600 | - | - | 402.2 | 15 |
| 0.250 | ±0.004 | 0.268 | 0.284 | 1600 | - | - | 370.2 | 15 |
| 0.260 | ±0.004 | 0.278 | 0.294 | 1600 | 2.35(240) | 1.96(200) | 341.8 | 15 |
| 0.270 | ±0.004 | 0.288 | 0.304 | 1600 | 2.35(240) | 2.00(205) | 316.6 | 15 |
| 0.280 | ±0.004 | 0.298 | 0.314 | 1600 | 2.35(240) | 2.00(205) | 294.1 | 15 |
| 0.290 | ±0.004 | 0.308 | 0.324 | 1600 | 2.35(240) | 2.00(205) | 273.9 | 20 |
| 0.300 | ±0.005 | 0.320 | 0.337 | 2000 | 2.64(270) | 2.25(230) | 254.0 | 20 |
| 0.310 | ±0.005 | 0.330 | 0.347 | 2000 | 2.64(270) | 2.25(230) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.340 | 0.357 | 2000 | 2.69(275) | 2.25(230) | 222.8 | 20 |
| 0.330 | ±0.005 | 0.350 | 0.367 | 2000 | 2.69(275) | 2.25(230) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.360 | 0.377 | 2000 | 2.69(275) | 2.25(230) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.370 | 0.387 | 2000 | 2.74(280) | 2.30(235) | 185.7 | 20 |
| 0.360 | ±0.005 | 0.380 | 0.397 | 2000 | 2.74(280) | 2.30(235) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.390 | 0.407 | 2000 | 2.74(280) | 2.30(235) | 165.9 | 20 |
| 0.380 | ±0.005 | 0.400 | 0.417 | 2000 | 2.74(280) | 2.30(235) | 156.1 | 20 |
| 0.400 | ±0.005 | 0.422 | 0.439 | 2000 | 3.03(310) | 2.59(265) | 141.7 | 20 |
| 0.420 | ±0.005 | 0.442 | 0.459 | 2000 | 3.03(310) | 2.59(265) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.472 | 0.490 | 2000 | 3.13(320) | 2.64(270) | 112.1 | 20 |
| 0.500 | ±0.006 | 0.524 | 0.542 | 2150 | 3.47(355) | 2.94(300) | 89.95 | 20 |
| 0.550 | ±0.006 | 0.574 | 0.592 | 2150 | 3.52(360) | 2.94(300) | 74.18 | 20 |
| 0.600 | ±0.006 | 0.624 | 0.644 | 2150 | 3.52(360) | 2.98(305) | 62.64 | 20 |
| 0.650 | ±0.008 | 0.674 | 0.694 | 2150 | 3.57(365) | 3.03(310) | 53.26 | 20 |
| 0.700 | ±0.008 | 0.726 | 0.746 | 2150 | 3.92(400) | 3.33(340) | 45.84 | 20 |
| 0.750 | ±0.008 | 0.778 | 0.798 | 2400 | 4.26(435) | 3.62(370) | 39.87 | 20 |
| 0.800 | ±0.010 | 0.830 | 0.852 | 2400 | 4.65(475) | 3.92(400) | 35.17 | 25 |
| 0.850 | ±0.010 | 0.880 | 0.904 | 2400 | 4.65(475) | 3.92(400) | 31.11 | 25 |
| 0.900 | ±0.010 | 0.936 | 0.956 | 2400 | 5.04(515) | 4.21(430) | 27.71 | 25 |
| 0.950 | ±0.010 | 0.984 | 1.008 | 2400 | 5.39(550) | 4.50(460) | 24.84 | 25 |
| 1.000 | ±0.010 | 1.034 | 1.062 | 2400 | 5.43(555) | 4.55(465) | 22.49 | 25 |
| 1.100 | ±0.010 | 1.136 | 1.164 | 2400 | 5.43(555) | 4.55(465) | 18.40 | 25 |
| 1.200 | ±0.010 | 1.236 | 1.264 | 2400 | 5.43(555) | 4.55(465) | 18.10 | 25 |
| 1.300 | ±0.010 | 1.338 | 1.364 | 2400 | 5.43(555) | 4.55(465) | 17.50 | 25 |
| 1.500 | ±0.010 | 1.540 | 1.564 | 2400 | 5.43(555) | 4.55(465) | 15.22 | 25 |

# LINE FILTER SPECIFICATION
# LF102

| NO | TC-A |
|---|---|

# SPECIFICATIONS

TO MESSRS : 유양D&U

CUSTOMERS MODEL :

CUSTOMERS PART NO :

ITEM : LINE FILTER

TNC SPEC NO. : CV620280SH(HF)

| APPROVED | REFERENCE |
|---|---|
| | |

DATE : 2010. 03. 30

TNC (株)TNC

#125 , WOLMUN-RI, PALTAN-MYEON, HWASEONG-SI
KYUNGGI-DO, KOREA 445-914
TEL : 82-31-354-3160
FAX : 82-31-354-3156

NOTICE : 승인원을 받으신 후 승인이 완료되면 승인원 1부를 회신하여 주시기 바랍니다. 최초의 주문일 까지 회신되지 않을 경우 본 승인원이 기준 승인원이 되며 최초의 주문일을 해당 제품의 승인일로 봅니다.

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2. ELECTRICAL CHARACTERISTIC
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12. L/Z CHARACTERISTIC CURVE
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16. UL . FILE

ATTACHED DATA

# 1. REVISION RECORD

| No | Reason | Contents | Date OF Approval | Before Alteration | After Alteration | Page |
|---|---|---|---|---|---|---|
| | | | | | | |

## 2. ELECTRICAL CHARACTERISTIC

| NO | ITEM | TERMINAL | SPECIFICATION | | | REMARKS |
|---|---|---|---|---|---|---|
| 1 | RATED VOLTAGE | LINE TO LINE | AC 250V | | | |
| 2 | RATED CURRENT | START-FINISH | 2.0A | | | |
| 3 | INDUCTANCE | START-FINISH | 16KHz | 28.0mH | +50%,-30% | HP-4194A 1V (20℃±5℃) |
| 4 | TEMPERATURE RISE | AT RATED CURRENT | 55.0℃ MAX | | | |
| 5 | DC RESISTANCE | START-FINISH | 200.0 mΩ MAX | | | HIOKI 3540 (20℃±5℃) |
| 6 | WITHSTANDING VOLTAGE | LINE TO LINE | AC 1,500V 1 MINUTE. | | | TOS-5101 CUT OFF CURRENT (5mA) |
| 7 | INSULATION RESISTANCE | LINE TO COVER | DC 500V, 300MΩ MIN. | | | TOS-8850 |

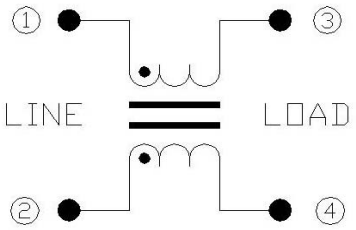
## 3. OPERATING TEMPERATURE RANGE

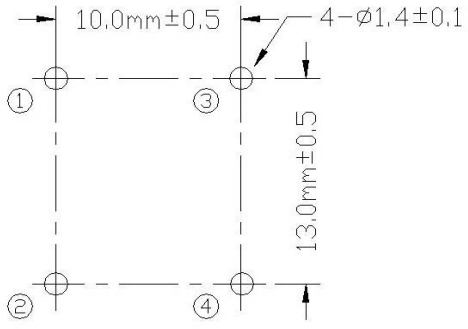
-25℃ TO +120℃ INCLUDING TEMPERATURE RISE.

## 4. KEEP TEMPERATURE RANGE

-10℃ ~ +60℃.

## 5. CIRCUIT DIAGRAM



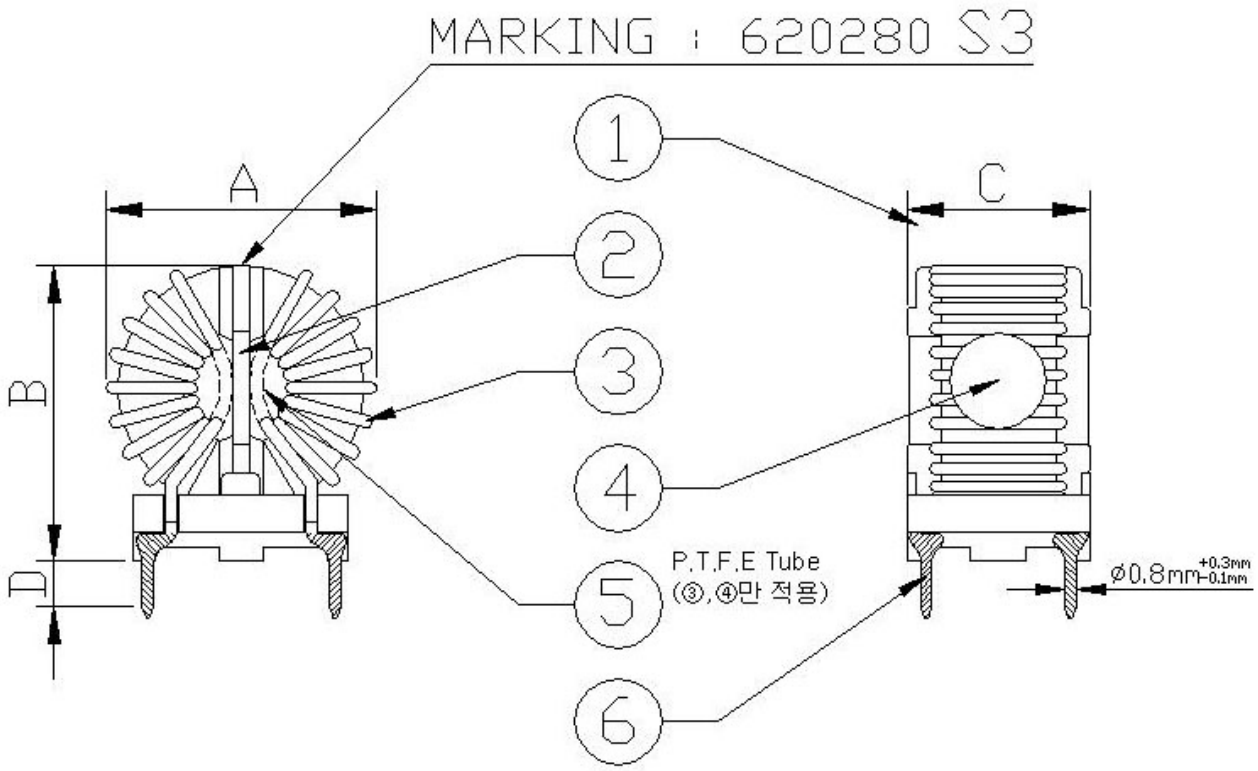




Minimum PCB Piercing HOLE

## 6. WINDING SPECIFICATION

| NO | TERMINAL | | WIRE | TURNS | WINDING METHOD | UNBALANCE SPECIFICATION |
|---|---|---|---|---|---|---|
| | START | FINISH | | | | |
| L1 | 1 | 3 | UEW 0.50Φ | 66 ±3Ts | HANDMADE | BETWEEN L1 AND L2 (0.9mH MAX) |
| L2 | 2 | 4 | | | | |

## 7. SHAPE AND DIMENSION




| DIMENSION | A | B | C | D |
|---|---|---|---|---|
| | 21.0mm MAX | 23.0mm MAX | 15.0mm MAX | 4.0±1.0mm |

## 8. MATERIAL LIST

| No. | NAME | SPECIFICATION | | MANUFACTURER | REMARK |
|---|---|---|---|---|---|
| 1 | Core Cover | PPS<br>1140A66 | | Poly Plastic | UL:E109088 |
| | | LCP<br>L304T40 | | TORAY Industries INC | UL:E41797 |
| | | LCP<br>KB40BM | | Samsung Fine Chemical | UL:E309188 |
| 2 | Coil Separator | PPS<br>1140A66 | | Poly Plastic | UL:E109088 |
| | | LCP<br>L304T40 | | TORAY Industries INC | UL:E41797 |
| | | LCP<br>KB40BM | | Samsung Fine Chemical | UL:E309188 |
| 3 | Enamel Wire | UEW 0.5Φ<br>/ 66 ±3Ts | UEW(B) | Dongyang Electronics<br>Ind Co.,Ltd | UL:E102761 |
| | | | UEW(B) | LS Cable | UL:E84441 |
| | | | NUW | Hwa Il Electronics Co.,Ltd | UL:E140246 |
| 4 | Ferrite Core | MA100 R-16-10-7<br>HM5A T 1607 | | JFE Ferrite Corp<br>TODA ISU Ceramics Co.,Ltd | |
| 5 | Insulation tube | P.T.F.E Tube (Teflon Tube)<br>TF 2021 PTFE | | Dyneon Gmbh & Co Kg | UL:E188957 |
| 6 | Coil Base | Bakelite Ag (PF2736),<br>UL 94 V-0 Class | | Hexion Specialty Chemical<br>Gmbh | UL:E61040 |

## 9. MARKING

| MODEL | LABEL |
|---|---|
| CV620280SH(HF) | 620280 S3 |

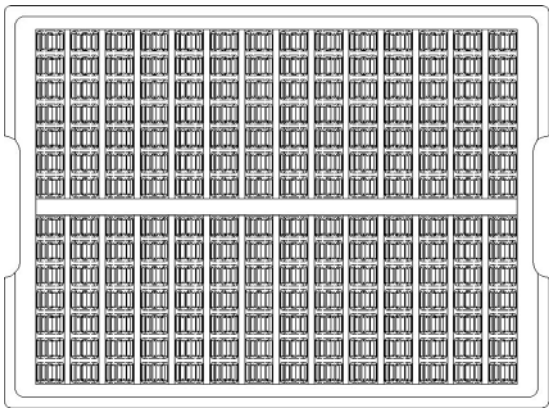
# 10. PACKING

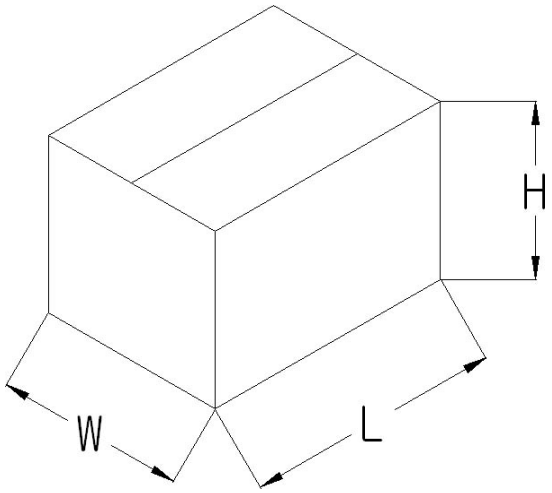
* Quantity & Weight

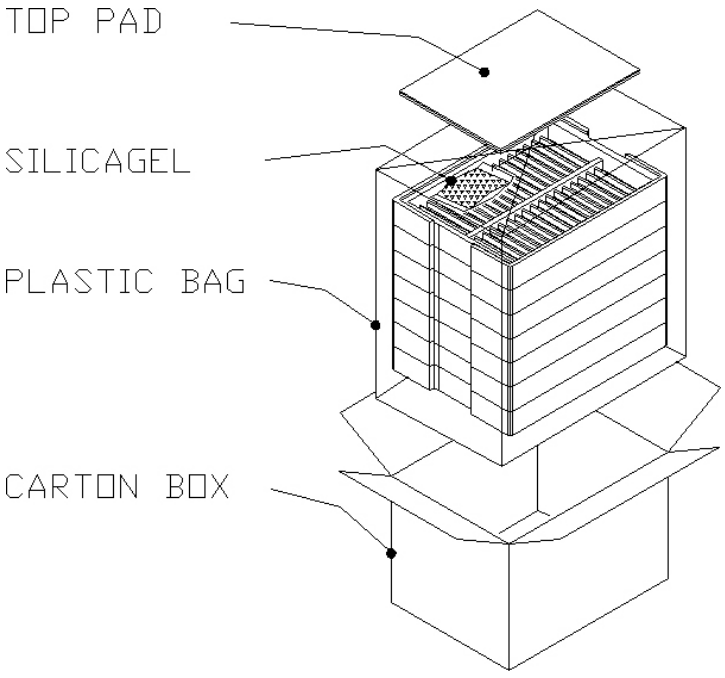
| Packing Case | Q'ty/1 Box | Gross Weight(kg) | Size (W×L×H mm) |
|---|---|---|---|
| Carton Box | 1,300pcs | 14.5Kg | 270 ×360 ×255 |

* Packing Case

| Packing Case | Q'ty | Material | Size (W×L×H mm) |
|---|---|---|---|
| Carton Box | 1pcs | DW A TYPE | 270 ×360 ×255 |
| Styrofoam Pad | 7pcs | Styrofoam | 255 ×344 ×38 |
| Top Pad | 1pcs | SW | 220 ×300 ×3.3 |





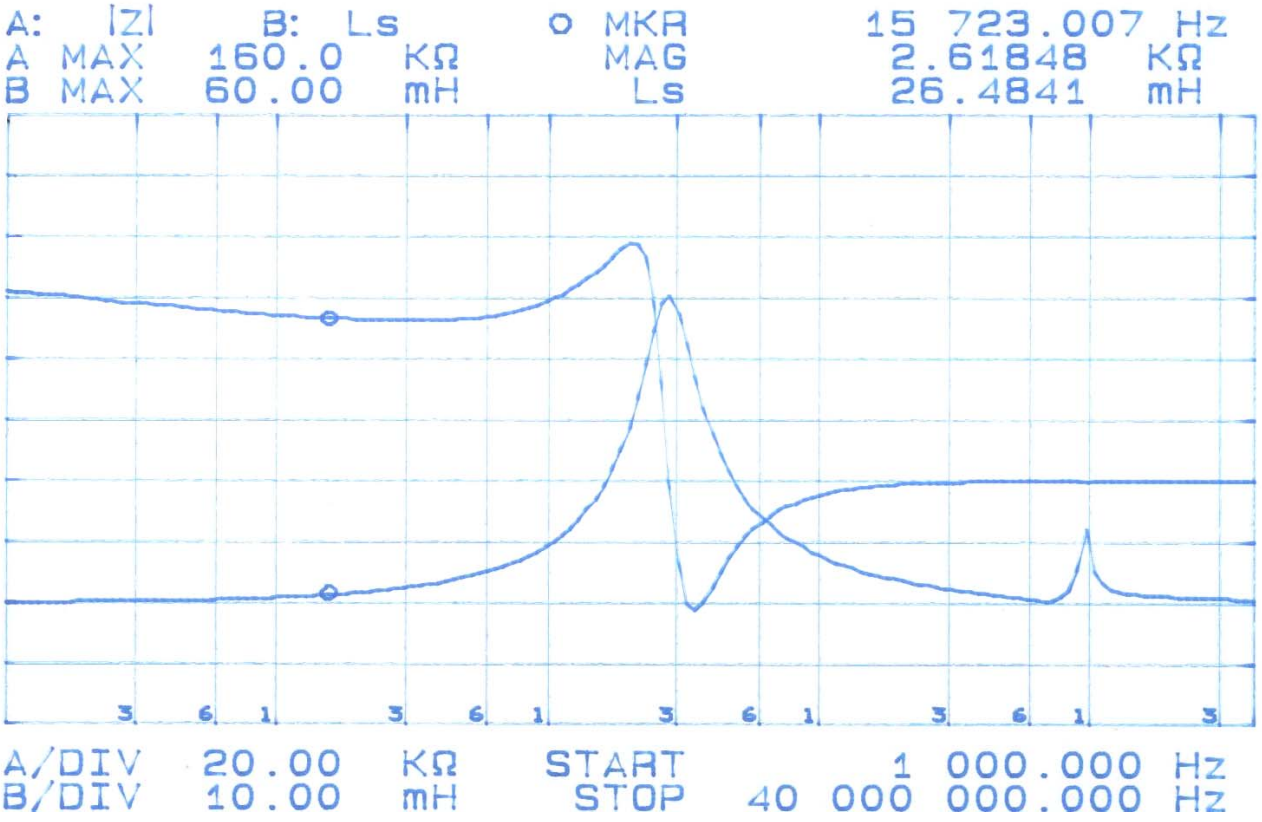




Styrofoam Pad
(196EA × 6) + (124EA × 1)
= 1176 + 124 = 1,300 PCS

## 11. GUARANTEED MINIMUM IMPEDANCE

| FREQUENCY (MHz) | 0.15 | 0.45 | 1 | 5 | 10 | 30 |
|---|---|---|---|---|---|---|
| IMPEDANCE (kΩ) | 16 | 24 | 7 | 0.5 | 0.1 | 0.01 |

## 12. L/Z CHARACTERISTIC CURVE



## 13. RELIABILITY TEST

| ITEM | TEST CONDITION | SPEC |
|---|---|---|
| HUMIDITY RESISTANCE | 40℃ 95%, 96Hr.<br>Measure after leave more than 24Hr, normal temperature(25℃ ±1℃) | L : Initial value ± 20% |
| HEAT RESISTANCE | 105℃±2℃, 96Hr.<br>Measure after leave more than 24Hr, normal temperature(25℃ ±1℃) | L : Initial value ± 20% |
| COLD RESISTANCE | -25℃, 96Hr.<br>Measure after leave more than 24Hr, normal temperature(25℃ ±1℃) | L : Initial value ± 20% |
| TEMPERATURE CYCLE | -25℃ 30min → 105℃ 30min, 100 CYCLE<br>Measure after leave more than 24Hr, normal temperature(25℃ ±1℃) | L : Initial value ± 20% |

## 14. ENDURANCE TEST

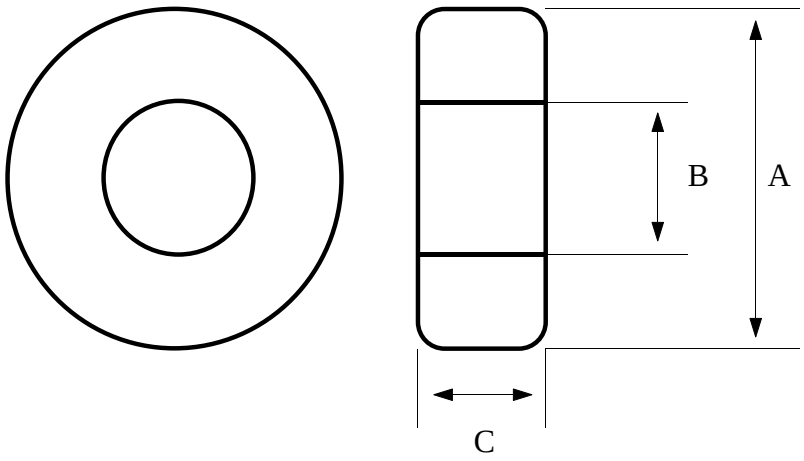
| ITEM | TEST CONDITION | SPEC |
|---|---|---|
| SOLDERING ADHESION | SOLDER POT ℃ : 245 +0, -5℃<br>SOLDERING HR : 3 ± 0.5 SEC | More than 95% |
| SOLDERING HEAT RESISTANCE | SOLDERING ℃ : 260 +5, -0℃<br>SOLDERING HR : 10 ± 0.5 SEC | L : Initial value ± 20% |

# 15. FERRITE CORE SPECIFICATION

- **Characteristics**

| Symbol | Unit | MA100 R-16/10/7 | HM5A T 1607 |
|---|---|---|---|
| μi | - | 10,000±30% | 10,000±30% |
| Bms | mT | 415 | 410 |
| Hcms | A/m | 3.0 | 3.0 |
| Brms | mT | 76 | 80 |
| Tc | ℃ | >115 | >115 |
| TANδ /μiac | $*10^{-6}$ | <1.9 | <6.0 |
| αμr | $*10^{-6}$ /℃ | -0.5~2.0 | -0.15~1.0 |
| ρ | Ω.m | 0.1 | 0.13 |
| d | g/㎤ | 5.0 | 4.9 |

- **Dimension**




**A: 16.0 ±0.35** **B: 10.0 ±0.3** **C: 7.0 ±0.3**

# 16. UL . FILE

## 1.1 CORE COVER - PPS 1140A66 (POLY PLASTIC CO,. LTD)
## 2.1 COIL SEPARATOR - PPS 1140A66 (POLY PLASTIC CO,. LTD)

Component - Plastics — E109088

POLYPLASTICS CO LTD

FORTRON DIV, 18-1 KONAN 2-HOME, MINATO-KU, TOKYO 108-8280 JP

**1140(a)(c)(n)**

Polyphenylene Sulfide (PPS), "Fortron", furnished as pellets

| Color | Min Thk (mm) | Flame Class | HWI | HAI | RTI Elec | RTI Imp | RTI Str |
|---|---|---|---|---|---|---|---|
| BK | 0.24 | V-0 | - | - | 130 | 130 | 130 |

Comparative Tracking Index (CTI): -
High-Voltage Arc Tracking Rate (HVTR): -
Dielectric Strength (kV/mm): -
Dimensional Stability (%): -
High Volt, Low Current Arc Resis (D495): -
Volume Resistivity ($10^X$ ohm-cm): -

(a) - May be followed by an A, B or L to indicate lubricity.
(c) - May be followed by the digit 6 to indicate molecular weight.
(n) - May be followed by digit 6 to indicate customer number.

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 1992-04-01
Last Revised: 2008-09-02
Underwriters Laboratories Inc®

## 1.2 CORE COVER - LCP L304T40 (TORAY Industries INC)
## 2.2 COIL SEPARATOR - LCP L304T40 (TORAY Industries INC)

Component - Plastics — E41797

TORAY INDUSTRIES INC

2 NIHONBASHI-MUROMACHI 2-CHOME, CHUO-KU, TOKYO 103-0022 JP

**L304T40**

Liquid Crystal Polymer (LCP), "SIVERAS", furnished as pellets

| Color | Min Thk (mm) | Flame Class | HWI | HAI | RTI Elec | RTI Imp | RTI Str |
|---|---|---|---|---|---|---|---|
| NC, BK | 0.38 | V-0 | - | - | 130 | 130 | 130 |

Comparative Tracking Index (CTI): -
High-Voltage Arc Tracking Rate (HVTR): -
Dielectric Strength (kV/mm): -
Dimensional Stability (%): -
High Volt, Low Current Arc Resis (D495): -
Volume Resistivity ($10^X$ ohm-cm): -

NOTE - Nylon grades may be prefixed with the letters CM and may employ hyphens in various locations. The designations of ECODEAR products may employ hyphens and/or spaces in various locations.

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 2007-08-14
Last Revised: 2007-08-09
Underwriters Laboratories Inc®

## 1.3 CORE COVER - LCP KB40BM (SAMSUNG FINE CHEMICALS CO LTD)
## 2.3 COIL SEPARATOR - LCP KB40BM (SAMSUNG FINE CHEMICALS CO LTD)

Component - Plastics — E309188

SAMSUNG FINE CHEMICALS CO LTD

190 YEOCHUN-DONG, NAM-KU, ULSAN 680-090 KR

**KB40M, KB40BM, KB40(+)**

Liquid Crystal Polymer (LCP), "SELCION", furnished as pellets

| Color | Min Thk (mm) | Flame Class | HWI | HAI | RTI Elec | RTI Imp | RTI Str |
|---|---|---|---|---|---|---|---|
| NC, BK | 0.29 | V-0 | 4 | 0 | 130 | 130 | 130 |
| | 3.0 | V-0 | - | - | 130 | 130 | 130 |

Comparative Tracking Index (CTI): 3
High-Voltage Arc Tracking Rate (HVTR): 4
Dielectric Strength (kV/mm): -
Dimensional Stability (%): -
High Volt, Low Current Arc Resis (D495): 5
Volume Resistivity ($10^X$ ohm-cm): -

(+) - Represented by one, two or three numbers or letters excluding the letter M, BM, BLM or LM

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 2006-12-13
Last Revised: 2009-04-08
Underwriters Laboratories Inc®

## 3.1 ENAMEL WIRE - UEW(B) (DONG YANG ELECTRONICS)

**DONG YANG ELECTRONICS IND CO LTD** E102761
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ | | ANSI Type | TI |
|---|---|---|---|---|
| | BC | OC | | |
| AI-EIW | Polyester-imide | Polyamide-imide | MW35 | 200 |
| DSB-EIA | Ester-imide | Polyamide | MW76 | 180 |
| DSB-EIA(S) | Solderable ester-imide | Polyamide | MW78 | 180 |
| EIW | Polyester-imide | | MW30 | 180 |
| NY-EIW | Polyester-amide-imide | Polyamide | MW76 | 180 |
| NY-PEW | Polyester | Polyamide | MW24 | 155 |
| NY-PEW(F) | Polyester | Polyamide | MW24 | 155 |
| NY-UEW | Polyurethane | Polyamide | MW80, | 155, |
| | | | MW28# | 130 |
| UEW(F) | Polyurethane | — | MW79, | 155, |
| UEW(B) | Polyurethane | — | MW75# | 130 |
| UAL | Polyurethane | — | @ | 155 |
| PEW | Polyester | — | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.
#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

Marking: Company name or "E102761" and material designation or marked designation on package or reel .

Last Updated on 2007-01-08

## 3.2 ENAMEL WIRE - UEW(B) (LS CABLE)

**LS CABLE LTD** E84441
ASEM TOWER, 19TH FL
159 SAMSUNG-DONG
GANGNAM-GU
SEOUL, 135-798 REPUBLIC OF KOREA

| | Mtl Dsg | Coat Typ BC | Coat Typ TC | ANSI Type * | TI |
|---|---|---|---|---|---|
| | **Magnet wire coatings.** | | | | |
| | EIW | Polyester-imide | — | MW-30 | 180# |
| | AIW, EXLW-C | Polyamide-imide | — | MW81 | 220 |
| | SBH-EIW | Polyester-imide | Phenoxy | — | 180 |
| | AI-EIW, SDDW, AMLW LZDW | Polyester-imide | Polyamide-imide | MW-35C | 200 |
| | PEW | Polyester | — | MW-5C | 155 |
| | UEW | Polyurethane | — | — | 105 |
| | EIW(F) | Polyester-imide | — | MW-5 | 155# |
| | UEW(F) | Polyurethane | — | MW-79 | 155 |
| ● | UEW(B) | Polyurethane | — | MW-75C | 130# |

(1)-Marked designations are the same as the material designations.
#-This wire may perform better than the rating reflects and hence may not be suitable to use in an insulation system thermal aging program.
Marking: Company name and material designation and Recognition marking symbol on packages or reels.

Last Updated on 2007-08-15

## 3.3 ENAMEL WIRE - NUW (HWA-IL ELECTRONICS)

**HWA-IL ELECTRONICS CO LTD** E140246
HWA IL BLDG SUITE 501
2-92 CHANG JEON DONG
MAPO-GU
SEOUL, REPUBLIC OF KOREA

| Mtl Dsg | Coat Type | | ANSI Type | Temp Class |
|---|---|---|---|---|
| | BC | OC | | |
| AI-EIW | Polyesterimide | Polyamide-imide | MW35C | 200 |
| HUW | Polyurethane | ?/TD> | MW79 | 155 |
| NPW | Polyester | Polyamide | MW76, MW24 | 180, @155 |
| NUW | Polyurethane | Polyamide | MW80, MW28 | 155, @130 |
| RNW | Modified Polyestet | Polyamide-imide | MW73 | 200 |
| RAW | Polyester-imide | Polyamide-imide | ?/TD> | 220 |

@ Additional consideration is needed before it is used in systems thermal aging.

Marking: Company name, material designation or marked designation on package or reel, and Recognized Component Mark.
Last Updated on 2002-01-17

## 5. TEFLON TUBE - TF 2021 PTFE (DYNEON GMBH & CO KG)

Component - Plastics E188957

DYNEON GMBH & CO KG
WERK GENDORF, BURGKIRCHEN 84504 DE

**TF 2021 PTFE**

Polytetrafluorethylene (PTFE), "Dyneon", furnished as granular, pellet or powder

| Color | Min Thk (mm) | Flame Class | HWI | HAI | RTI Elec | RTI Imp | RTI Str |
|---|---|---|---|---|---|---|---|
| NC | 1.5 | V-0 | - | - | 180 | 180 | 180 |

Comparative Tracking Index (CTI): -
High-Voltage Arc Tracking Rate (HVTR): -
Dielectric Strength (kV/mm): -
Dimensional Stability (%): -
High Volt, Low Current Arc Resis (D495): -
Volume Resistivity (10xohm-cm): -

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.

Report Date: 1998-02-13
Last Revised: 2003-10-24
Underwriters Laboratories Inc®

## 6. COIL BASE - PF2736 (HEXION SPECIALTY CHEMICALS GMBH)

Component - Plastics E61040

HEXION SPECIALTY CHEMICALS GMBH
POSTFACH 7154, ISERLOHN 58609 DE

**PF2736(a)(b)**

Phenolic (PF), "Bakelite "R""

| Color | Min Thk (mm) | Flame Class | HWI | HAI | RTI Elec | RTI Imp | RTI Str |
|---|---|---|---|---|---|---|---|
| BK | 0.46 | V-0 | - | - | 150 | 150 | 150 |
| ● NC, GN, BK | 0.81 | V-0 | 0 | 2 | 150 | 150 | 150 |
| ALL | 0.81 | V-1 | 0 | 2 | 150 | 150 | 150 |
| | 1.5 | V-0 | 0 | 2 | 150 | 150 | 150 |
| | 3.0 | V-0 | 0 | 2 | 150 | 150 | 150 |

Comparative Tracking Index (CTI): 3
High-Voltage Arc Tracking Rate (HVTR): 0
Dielectric Strength (kV/mm): -
Dimensional Stability (%): -
High Volt, Low Current Arc Resis (D495): 5
Volume Resistivity (10xohm-cm): -

(a) - Optional Suffix "H".
(b) - Grade designation may be followed by a four digit number representing color, P or S indicating type of molding, a single digit representing slight color variation.

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.

Report Date: 2004-03-26
Last Revised: 2008-01-09
Underwriters Laboratories Inc®

# APPROVAL SHEET

| | |
|---|---|
| CUSTOMER | : LG ELECTRONICS Inc. |
| MODEL | : LGP32-12P |
| I T E M | : LINE FILTER |
| PART NO | : EAM62450505 (LLF-124) |
| S.J SPEC NO | : LGLF-11-05 |

ROHS

Safety

APPROVED

DATE : 2011. 10. 28.

SOOJUNG ELECTRONICS IND. CO., LTD.


| | | | | | | |
|---|---|---|---|---|---|---|
| ADDRESS | Office & Factory | 35-1, HongJae4-Dong, Seodaemoon-Gu, 120-094, Seoul, KOREA | | | TEL<br>FAX | 02-737-2329<br>02-737-2525 |
| | Factory China 1 | Wendong Shuzheng Electronics,<br>Beijao, Wendeng City, shandong, China | | | TEL<br>FAX | 86-631-857-1392<br>86-631-857-1393 |
| | Factory China 2 | Dongguan Soojung Electronics,<br>Zhonghanqiao Industrial District, Wangniudun town,<br>Dongguan City, Ganding, China | | | TEL<br>FAX | 86-769-8851-3531<br>86-769-8851-3530 |
| | R&D Part | Jong Ho Kim | E-mail | jhkim@soojung.com | TEL | 010-4056-2623 |
| | Sales Part | Jong Won Lee | E-mail | ljw@soojung.com | TEL | 016-711-2443 |
| | Q.A Part | Doo Young Oh | E-mail | ody@soojung.com | TEL | 011-616-4864 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

# 1. RECORD OF REVISION

| REV NO. | REASON | CONTENTS | DATA OF APPROVAL | CHECKED | REMARKS |
|---|---|---|---|---|---|
| 0 | | - 신규제정. | 2011.10.28 | | |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

## 2. I N D E X

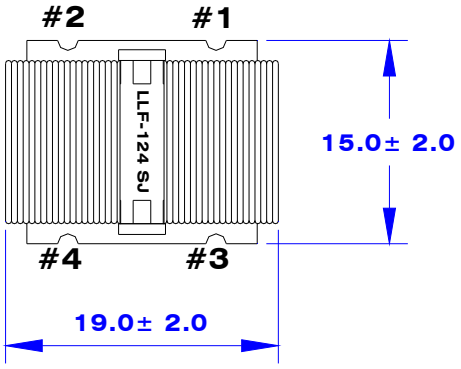

| | | |
|---|---|---|
| FILE NO | 1/15 | 1. RECORD OF REVISION |
| | 2/15 | 2. INDEX |
| | 3/15 | 3. DIMENSION |
| | 4/15 | 4. SCHEMATIC |
| | 4/15 | 5 WINDING SPECIFICATION |
| | 5/15 | 6. ELECTRICAL CHARACTERISTICS |
| | 6/15 | 7. GUARANTEED MINIMUM IMPEDANCE |
| | 6/15 | 8. L/Z CHARACTERISTIC CURVE |
| | 7/15 | 9. ENVIRONMENTAL CHARACTERISTICS |
| | 8/15 | 10. MECHANICAL CHARACTERISTICS |
| | 9/15 | 11. SECTION DIAGRAM |
| | 9/15 | 12. MATERIAL LIST |
| | 10/15 | 13. UL CARD |
| | 11/15 | UL CARD |
| | 12/15 | 14. CORE DIMENSION |
| | 13/15 | 15. PROCESS FLOW |
| | 14/15 | 16. PACKING |
| | 15/15 | 17. ASSIGNMENT |

CUSTOMER : LG ELECTRONICS Inc.

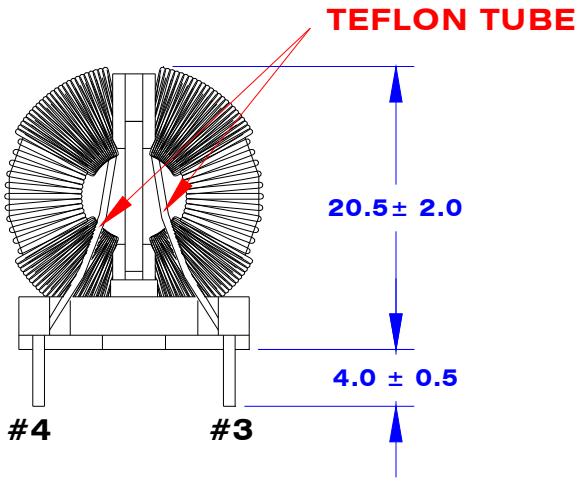
| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

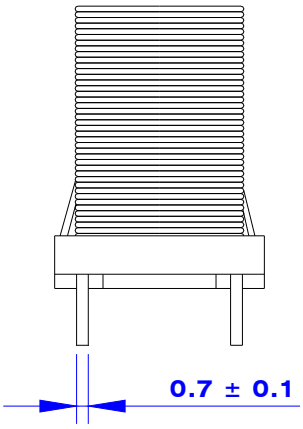
## 3. DIMENSION (UNIT:mm)

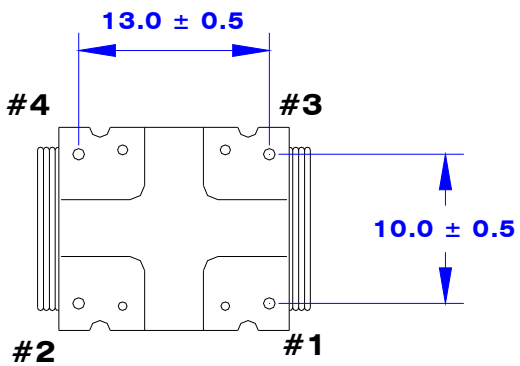
Safety




| Marking Spec. | |
|---|---|
| LLF-124 | Part No. |
| SJ | Maker |



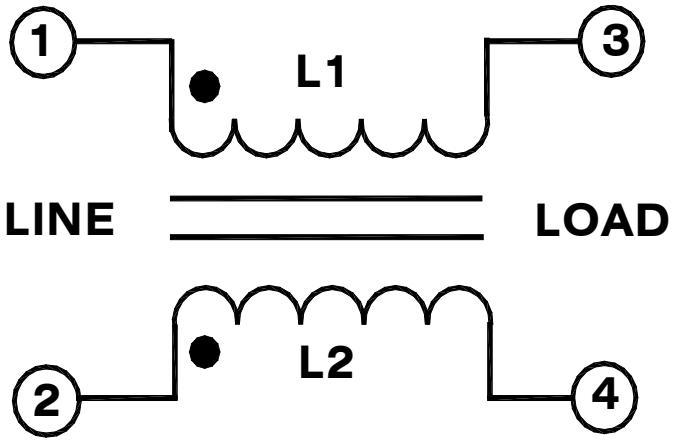




| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 3/15 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

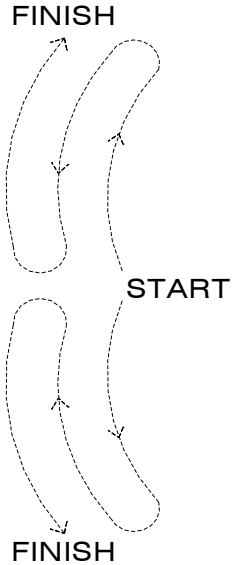
## 4. SCHEMATIC

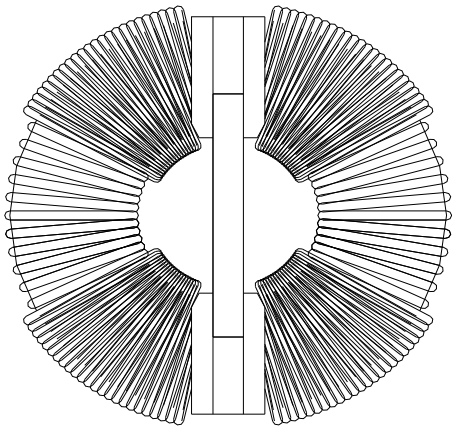



## 5. WINDING SPECIFICATION.

| No. | TERMINAL | | WIRE | TURNS | WINDING METHOD |
|---|---|---|---|---|---|
| | S | F | | | |
| L1 | 1 | 3 | 1UEW 0.50 ¢ | 66 ± 3 Ts | SOLENOID |
| L2 | 2 | 4 | 1UEW 0.50 ¢ | 66 ± 3 Ts | SOLENOID |

* PIN WIRING SPEC.: 0.7Ts Min.
* WIRE TOLERANCE : 0.50mm±0.006
* ORDER OF WINDING
  => ALTERNATION WINDING AFTER DIVISION



| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 4/15 |

| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

## 6. ELECTRICAL CHARACTERISTICS

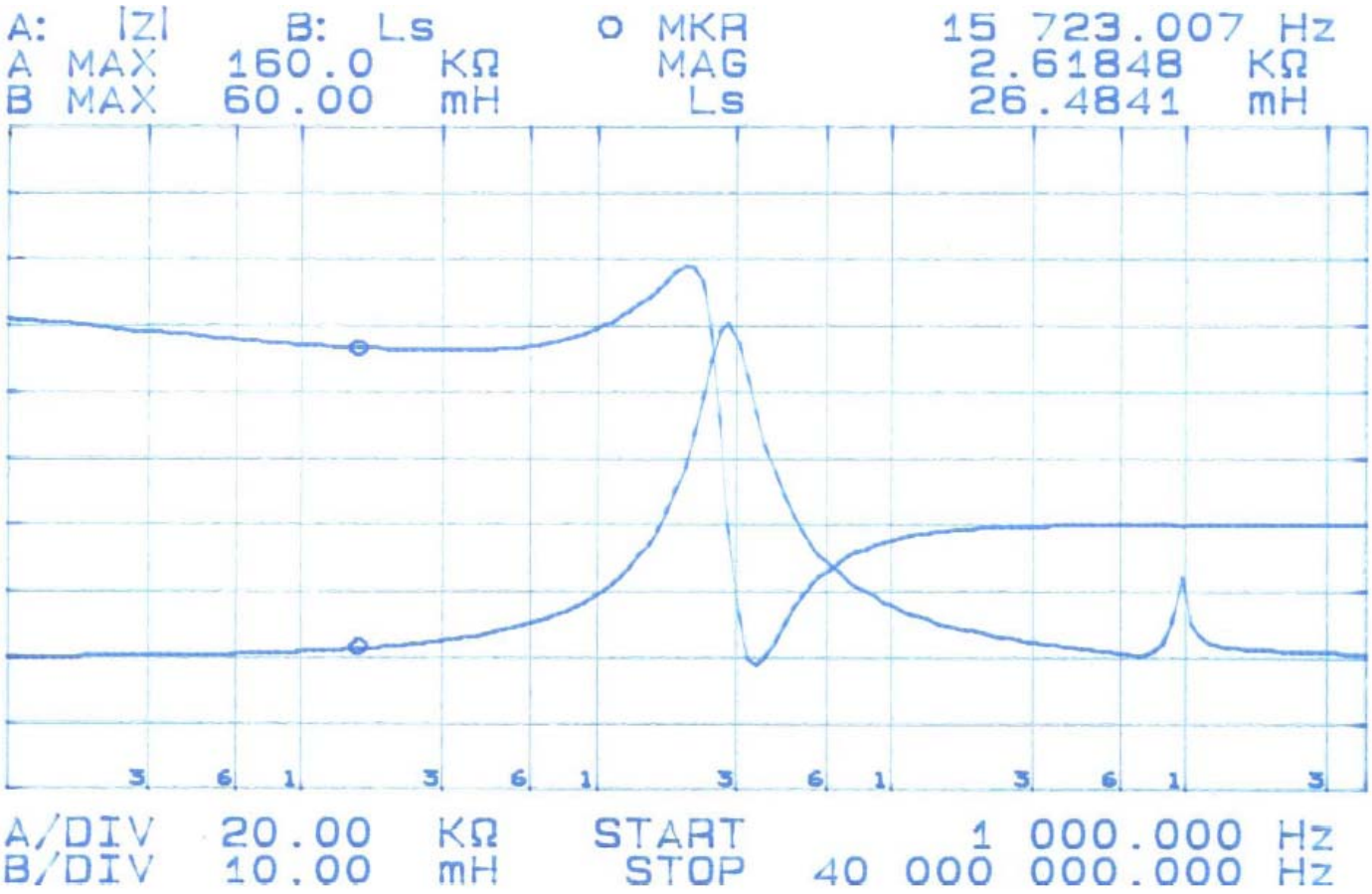
| No. | ITEM | TERMINAL | SPECIFICATION | | REMARKS |
|---|---|---|---|---|---|
| 6-1 | INDUCTANCE | 1 - 3<br>2 - 4 | 28.0 mH | +50%,-30% | LCR METER<br>HP-4284A<br>(at F:16KHz, V: 1.0V<br>25±5℃) |
| 6-2 | DEFLECTION INDUCTANCE | \| L1 - L2 \| | 0.7 mH MAX | | |
| 6-3 | D. C. RESISTANCE | 1 - 3<br>2 - 4 | 0.250 Ω MAX | | DC MILLI-OHM METER<br>GOM-802 |
| 6-4 | RATED CURRENT | 1 - 3<br>2 - 4 | 2.0A | | |
| 6-5 | WITHSTANDING VOLTAGE | COIL - COIL | AC 1.50KV (rms)<br>1MINUTE.<br>(Product : AC 1.80KV (rms)<br>3SEC.) | | Safety<br>TOS-8850<br>(CUT OFF<br>CURRENT 5mA) |
| 6-6 | INSULATION RESISTANCE | COIL - COVER | 300(M) Ohm MIN.<br>( AT DC 500V) | | Safety<br>TOS-8850 |

| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

## 7. GUARANTEED MINIMUM IMPEDANCE

| FREQUENCY (MHz) | 0.15 | 0.45 | 1 | 5 | 10 | 30 |
|---|---|---|---|---|---|---|
| IMPEDANCE (KΩ) | 16 | 24 | 7 | 0.5 | 0.1 | 0.01 |

## 8. L/Z CHARACTERISTIC CURVE



| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

## 9. ENVIRONMENTAL.

* STANDARD TEST CONDITION : TEMP. 20℃±15℃, HUMIDITY 65%±20%.
IF WHEN ANY OBJECTION IS SUGGESTED, THE TEST CAN BE OPERATED AT 20±2℃, 65±5%RH.

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>8-1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ - +105℃</td><td></td></tr>
<tr><td>8-2</td><td>KEEPING TEMPERATURE</td><td>-25℃ - +105℃</td><td></td></tr>
<tr><td>8-3</td><td>LOW TEMPERATURE RESISTANT</td><td rowspan="6">MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 10% OF THE INITIAL VALUE.<br>(IT SHOULD BE MANAGED BY 10% UNDER 10μH)</td><td>-25±2℃, 96Hr. MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>8-4</td><td>HIGH TEMPERATURE RESISTANT</td><td>+105±2℃, 96Hr. MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>8-5</td><td>HUMIDITY RESISTANT</td><td>95%RH ±5% (40℃±5℃) 96Hr MEASURE AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>8-6</td><td>TEMPERATURE CYCLE</td><td><table><tr><th>STEP</th><th>TEMP.</th><th>TIME</th></tr><tr><td>1</td><td>-25±2℃</td><td>30 MIN.</td></tr><tr><td>2</td><td>+25±2℃</td><td>10 MIN.</td></tr><tr><td>3</td><td>+105±2℃</td><td>30 MIN.</td></tr><tr><td>4</td><td>+25±2℃</td><td>10 MIN.</td></tr></table>REPEAT 5 TIME FROM STEP 1AND TEST AFTER 2 Hr. AT ROOM TEMP.</td></tr>
<tr><td>8-7</td><td>HEAT SHOCK TEST</td><td>2 Hr AT-20℃→ 2 Hr AT 70℃: 10 CYCLE</td></tr>
</table>

| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

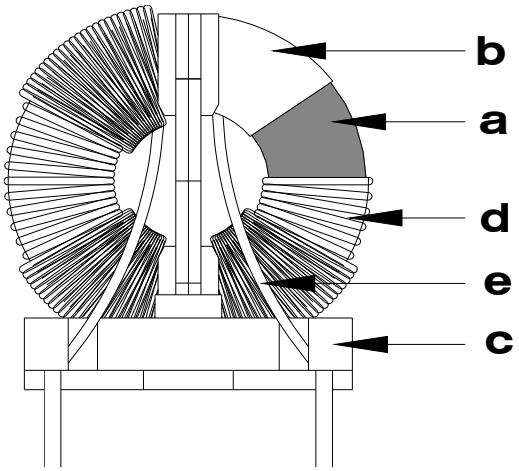
## 10. MECHANICAL CHARACTERISTICS.

| NO. | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 9-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AC 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION. |
| 9-2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 10% OF THE INITIAL VALUE. | DIP THE TERMINAL IN SOLDER AT 260℃+5℃ FOR 10 SECONDS. MEASURE AFTER 2 Hr. AT ROOM TEMP. |
| 9-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245℃-5℃ FOR 3 SECONDS. |
| 9-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED TO INITIAL VALUE. | PULL THE PIN WITH 2.5 Kg.f DURING 30 ±5 SEC. |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

## 11. SECTION DIAGRAM




## 12. MATERIAL LIST.

| NO | COMPONENT | NAME OF MATERIAL | MANUFACTURER COMPONENT | COLOR | UL FILE NO. |
|---|---|---|---|---|---|
| a | CORE | T1607 HM5A<br>OR16x7x10H SM-100 | TODA ISU CORPORATION<br>SAMWHA ELECTRONICS CO., LTD. | BLACK | |
| b | CAP & KEY | P.B.T (94V-0)<br>1500GN-30 (CAP) | SAMYANG CORPORATION | WHITE | E121254 |
| c | BASE | OR-16φ PHENOL<br>(94V-0) PF-2736 | MOMENTIVE SPECIALTY CHEMICALS GMBH | BLACK | E61040 |
| d | WIRE | POLYURETHANE<br>1UEW 0.50φ | DONGYANG ELECTRONICS CO., LTD.<br>CNI ELECTRONICS CO., LTD. | NATURAL | E102761<br>E210918 |
| e | TUBE | TEFLON TUBE<br>TFT | GREAT HOLDING INDUSTRIAL CO., LTD. | CLEAR | E156256 |
| f | SOLDER | HSE-09<br>(Sn:95.95%,Cu:4%,Ni:0.05%) | HEE SUNG METAL CO., LTD. | SILVER | |
| g | FLUX | PF-120L | SOLUX CO., LTD. | LEMON YELLOW | |
| h | MARKING | INK or LABEL | BON MARQUE | BLACK | |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 9/15 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

## 13. UL CARD.

* YELLOW CARD

**CAP & KEY**

SAMYANG CORPORATION E121254
407 3-GA PALBOK-DONG
CHEONJU, CHEONBUK 560-200 REPUBLIC OF KOREA

| | | Min. | | H | H | H | R T I | | | C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | V | Elec | Mech | | T |
| Mtl Dsg | Color | mm | Class | I | I | A | | Imp | Str | I |
| Polybutylene/Polyethylene Terephthalate (PBT/PET), "TRIBIT, Sam Yang's Co. Ltd. PBT", furnished as pellets. | | | | | | | | | | |
| 1500GN-30 | ALL | 0.75 | V-0 | 3 | 0 | 3 | 130 | 130 | 140 | 2 |
| | | 1.5 | V-0 | 2 | 0 | 2 | 130 | 130 | 140 | |
| | | 3.0 | V-0 | 2 | 0 | 3 | 130 | 130 | 140 | |

**BASE BOBBIN**

MOMENTIVE SPECIALTY CHEMICALS GMBH E61040
POSTFACH 7154
58609 ISERLOHN, GERMANY

| | | Min. | | H | H | H | R T I | | | C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | V | Elec | Mech | | T |
| Mtl Dsg | Color | mm | Class | I | I | A | | Imp | Str | I |
| Phenolic (PF), "Bakelite "R"". | | | | | | | | | | |
| PF 2736(a)(b) | | | | | | | | | | |
| | BK | 0.46 | V-0 | - | - | - | 150 | 150 | 150 | 3 |
| | ALL | 0.81 | V-1 | 0 | 2 | - | 150 | 150 | 150 | |
| | NC, GN, BK | 0.81 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |
| | ALL | 1.5 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |
| | | 3.0 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |

(a) - Optional Suffix "H".

(b) - Grade designation may be followed by a four digit number representing color, P or S indicating type of molding, a single digit representing slight color variation.

CUSTOMER : LG ELECTRONICS Inc.

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* YELLOW CARD

**TUBE**

GREAT HOLDING INDUSTRIAL CO LTD E156256
10TH FL
649-3 CHUNG CHENG RD
HSIN CHUNG
TAIPEI HSIEN, 242 TAIWAN

| Cat. No. | Max V | Max Temp C | Col Recognized | Max Temp Rated Oil Resistance,° C | VW-1 Rated # |
|---|---|---|---|---|---|
| Not heat-shrinkable polytetrafluoroethylene (PTFE) tubing. | | | | | |
| TFL | 150 | 200 | BL,NAT | - | Yes |
| TFT | 300 | 200 | BL,NAT | - | Yes |
| TFS | 600 | 200 | BL,NAT | - | Yes |

#- Tubing is considered to comply with the optional VW-1 flammability requirements only if so marked.

**WIRE**

DONG YANG ELECTRONICS IND CO LTD E102761
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ | | ANSI Type | TI |
|---|---|---|---|---|
| | BC | OC | | |
| UEW(F) | Polyurethane | - | MW79, | 155, |
| UEW(B) | Polyurethane | - | MW75# | 130 |
| UAL | Polyurethane | - | @ | 155 |
| PEW | Polyester | - | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.
#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

CNICABLE CO LTD E210918
312-16 DEUKSAN-DONG
ASAN-SI, CHUNGCHEONGNAM-DO 336-120 REPUBLIC OF KOREA

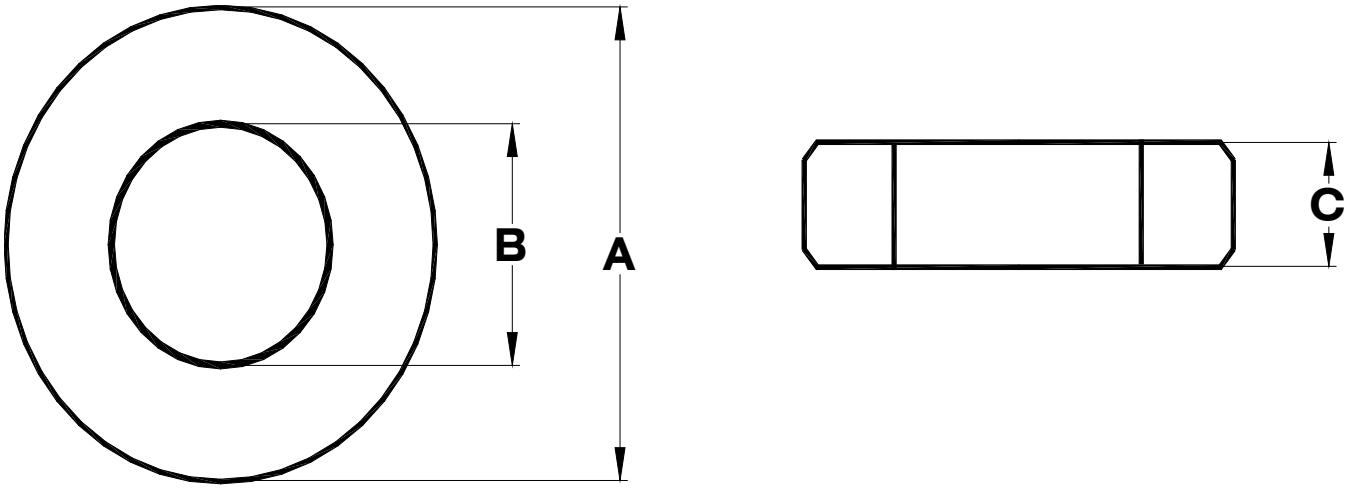
| Mtl Dsg | Mark Dsg | Coat Type | | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| | | BC | OC | | |
| DSUEW-100 | (1) | Polyurethane | - | MW75C | 130# |
| UEW | (1) | Polyurethane | None | MW79 | 155 |
| | | | | MW75 | 130# |
| PEW | (1) | Polyester | None | MW30 | 180 |
| | | | | MW5 | 155# |

@ - Non-ANSI Type
(1) - Marked designations are the same as the material designations.
# - This wire may perform better than its temperature rating reflects. Hence, it may not be suitable to use in an insulation system thermal aging program.

CUSTOMER : LG ELECTRONICS Inc.

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|---|---|---|---|
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## 14. CORE DIMENSION




** DIMENSION (UNIT: mm)

| TYPE | DIMENSION (m/m) | | | REMARKS |
|---|---|---|---|---|
| | A | B | C | |
| T1607 | 16.0 ± 0.35 | 10.0 ± 0.30 | 7.0 ± 0.30 | TODA ISU |
| OR16x7x10H | 16.0 ± 0.35 | 10.0 ± 0.30 | 7.0 ± 0.30 | SAMWHA |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

## 15. PROCESS FLOW

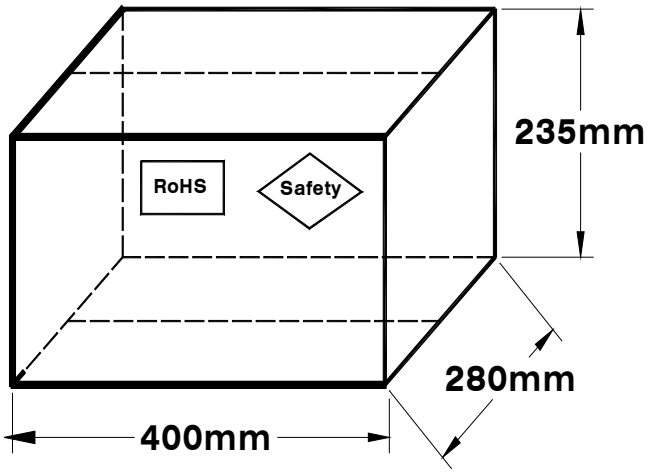
| NO | 공정 기호 | 공정명 | 사용설비 | 기능 | 관리항목 | 관리기준 | 검사방법 확인요령 | 검사방법 부서 | 표준 | 기록/양식 | 공정별 관련불량 및 비고 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | △ | 수입검사<br>- Bobbin<br>- CORE<br>- WIRE | 버니어켈 리퍼<br>마이크로 메터 | 수동 | 치수<br>핀홀<br>외관상태 | 이상<br>없을것 | SAMPLE | Q·C | 구매<br>사양서 | 수입<br>검사<br>성적서 | · 치수 불량<br>· 파손<br>· 핀홀<br>· WIRE 피복 벗겨짐 |
| 02 | ○ | 코아<br>조립 | | 수동 | CAP과<br>Core간 유동 | 〃 | 전수검사 | 생산팀 | 작업<br>지도서 | | · 코아유동 |
| 03 | ○ | 권 선 | 권선 JIG | 수동 | 권선수 | 〃 | 전수검사 | 생산팀 | 작업<br>지도서 | | · 권선 불량<br>· 분할권선 않됨 |
| 04 | ○ | BASE<br>조 립 | | 수동 | BASE 종류 | 이상<br>없을것 | 전수검사<br>SAMPLE<br>육안검사 | 〃 | 〃 | | · CAP과의 밀착 |
| 05 | ○ | 결 선<br>납 땜 | 니 퍼<br>납 조 | 수동 | 납땜온도<br>납땜시간 | 460℃<br>MAX.<br>0.2φ 이하:1.5Sec.<br>0.2φ 이상:2.5Sec. | 수회 / 일 | 〃 | 〃 | | · SHORT<br>· 미 결선,냉땜<br>· BASE 변형 |
| 06 | ◇ | 1차 검사 | LCR METER | 반자동 | INDUCTANCE<br>권선수 | 〃 | 전수검사 | 〃 | 〃 | | · L값 상.하 불량 |
| 07 | ○ | 핀 형 합 | 핀형합기 | 반자동 | 핀간거리 | 〃 | 전수검사 | 생산팀 | | | · 핀 형합 불량<br>· 베이스 변형<br>· 단자 이탈 |
| 08 | ◇ | 최종검사<br>Safety | LCR METER<br>내전압 TESTER | 수동 | INDUCTANCE<br>내전압<br>절연사항 | 〃 | 전수검사 | 〃 | 〃 | | · L값 상.하 불량<br>· 단자 이물<br>· 내전압 불량 |
| 09 | ○ | 마 킹 | 불멸 잉크 | 수동 | 마킹방향<br>마킹외관 | 〃 | 육안검사 | 〃 | 〃 | | · 역방향 마킹<br>· 외관불량 |
| 10 | ○ | 포 장 | | 수동 | 수량관리<br>포장상태 | 〃 | 육안검사 | 〃 | 〃 | | |
| 11 | ○ | 출하검사<br>Safety | LCR METER<br>내전압 TESTER | 수동 | INDUCTANCE<br>내전압<br>절연사항 | 〃 | SAMPLE | 품질<br>관리팀 | 승인원 | | |
| 12 | ▽ | 입 고 | | | | | | 영업팀 | 〃 | INSPEC-<br>TION<br>REPORT | |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M<br>KIM | J,H<br>KIM | K,S<br>KIM | 13/15 |

| SPECIFICATION | | DATE | 2011. 10. 28 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM62450505 |

## 16. PACKING

| | |
|---|---|
| NAME | |
| ITEM | |
| LOT NO. | |
| Q' TY | EA |
| SOOJUNG ELECTRONICS INC CO., LTD. | |




| PART | SPECIFICATION |
|---|---|
| BOX SIZE | 400mm × 280 mm × 235mm |
| OUT BOX MATERIAL | SK.3S.B (CARTON) |
| INNER BOX MATERIAL / QUANTITY | PET TRAY / 15PCS×10EA=150PCS |
| PACKING QUANTITY | 150PCS×7EA=1050PCS |

CUSTOMER : LG ELECTRONICS Inc.

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## 17. ASSIGNMENTS

1) Apply import inspection specification to the matters which are not given in drawing specification method.
2) Packing method follows specification approval.
3) If INDUCTANCE : ref is not satisfied with given specification. internal structure disassembly inspection should be necessary.
4) Wire bundle method.
   * CENTER SOLENOID: Error between the center of overall wire bundle area and the center of wire bundle is required to be smaller than 2 mm.
   * PIN SOLENOID : Error between the bottom barrier tape and winding start point is required to be smaller than 2 mm.
   * SOLENOID AFTER : Error between the last wire of the wire bundle and start wire of after-solenoid is required to be smaller than 2 mm.
   * TAB SOLENOID : Bundle should be continued from previous bundle. If bundle method is 2 layer, bundle should be done from top to bottom.
   * SPACE SOLENOID : The area between wires should be uniform. Error between start and start point of the wire bundle area is required to be smaller than 2mm. Error between end point and end point of the wire bundle area is required to be smaller than 2mm.
   * SOLENOID : No space is allowed between wires in bundling. The space between wire is required to be smaller than diameter of the wire*2. In same layer no cross is allowed between wires.

5) PERFORMANCE OF THIS DRAWING IS REQUITED TO MEET PART NUMBER EAM62450505

6) Auxiliary tape can be used in order to enhance. But it needs prior approval from design department.

# 4M QC 공정도

| 공정 번호 | 공정 흐름도 | 공정명 | 작업내용 | 4M | | | |
|---|---|---|---|---|---|---|---|
| | | | | Man(사람) | Machine(장비) | Material(재료) | Method(방법) |
| 1 |  | 원/부자재 수입검사 | 원자재 수입검사 | 황홍염 한옥결 | Vernier Calipers LCR Meter | CORE / BOBBIN / WIRE 외 | 수입검사 기준서 승인원 |
| 2 |  | 조립 | CAP 보빈에 CORE 조립 | 윤락미 | | CORE / CAP | CORE 조립작업지도서 |
| |  | | 공정검사(조립상태) | 하홍성 | 육안 | 조립 제품 | 조립상태: 코아 유동 |
| 3 |  | 권선 | CORE조립된 CAP에 WIRE 권선 | 기금화,원매 주위정,리쥔 | 권선기 , NIPPER 등 | BOBBIN / WIRE | 권선 작업지도서 |
| |  | | 공정검사(권,결선상태) | 진금화 임미령 | 육안 / V/C | 권선품 | 작업지도서 |
| 4 |  | 조립 | 권선품에 BASE 조립 | 근려쌍 | | 권선품 / BASE | BASE 조립작업지도서 |
| |  | | 공정검사(조립상태) | 왕증산 | 육안 / LUPE | 조립 완료 제품 | 작업지도서 |
| 5 |  | 납땜 (★CTQ) | 권선품 PIN 결선부위 납땜 | 왕옥산 임해도 | 자동솔더기 / 티밍 | 권선품 SOLDER / FLUX | 온도: 460℃ MAX 시간: 선경별 납땜시간 |
| |  | | 공정검사(납땜상태) | | 육안 / LUPE | 납땜 완료 권선품 | 냉납, 납땜 높이 |
| 6 |  | 1차 검사 | 특성(L값,턴수)검사 외관(납땜상태 등)검사 | 로쌍.고곤 | LCR METER (HP) TURNs METER(대화) 육안/LUPE | 조립 완료 제품 | 1차 검사 기준서 |
| 7 |  | 2차 검사 | 특성검사 | 왕화룡 주효군 | 종합계측기(TPNGHUI) / 내압기/ SURGE (TOS) | 건조 완료 제품 | 검사 기준서 승인원 특성 SPEC |
| | | | 외관 검사 | | 육안 / LUPE PIN JIG | 건조 완료 제품 | 검사 기준서 승인원 특성 SPEC |
| 8 |  | 마킹 | 마킹작업 | 장국근 | 자동 MARKING기 | 건조 완료 제품 INK | 마킹 작업 지도서 승인원 마킹 사양 |
| |  | | 공정검사(마킹상태) | 주해연 | 육안 | 마킹 완료 제품 | 마킹 사양 위치등 사양 |
| 9 |  | 포장 | 제품 포장 진행 | 정옥량 | TAPE 절단기 | 완제품 , 포장 BOX 포장 TAPE | 포장 작업 지도서 포장 규격 |
| 10 |  | 출하검사 | 출하검사 | 구려민 | LCR/ DCR/내압기 V/C / 육안 | 완제품 | 출하 검사 기준서 출하 검사 성적서 |
| 11 | | 출하 | 출하진행 | 왕애홍.총미령 | | | 출고 요청 수량 확인 |

* 작성방법

1. 공정번호 : 원자재 수입검사부터 완제품 출하까지 순차적 공정 No부여 (실제 공정 No와 일치해야함)
2. 공정흐름도 : 협력사에서 사용되는 기준에 따라 도형으로 표기
3. 공정명 : 해당공정 이름 (CTQ공정은 ★ 표기)
4. 작업내용 : 공정에 대한 작업내용
5. 사람 : CTQ공정에 한해 작업자 이름 (교대근무일경우 전/후 모두기입)
6. 장비 : 해당공정 사용장비명 및 회사명

ROHS safety

# APPROVAL SHEET

| | | |
|---|---|---|
| CUSTOMER | : | LG ELECTRONICS INC. |
| MODEL | : | LGP32-12P |
| ITEM | : | LINE FILTER |
| LG E. PART NO | : | EAM62450505 |
| PART NO | : | LLF-124 |
| DYT SPEC NO | : | DYT069-13-1149-0 |

| APPROVAL: | REFERENCE: |
|---|---|
| | |

DONGYANG TELECOM CO.,LTD.



| | | | |
|---|---|---|---|
| HEAD OFFICE & FACTORY | 942-5, Dohwa-Dong, Nam-gu, Incheon, korea | | TEL : 032-584-0100<br>FAX : 032-584-0101 |
| China 1 Factory | Korea industrial Circles Beigong Street Office<br>Weicheng Weifang Shandong, CHINA | | TEL : 86-536-895-0501<br>FAX : 86-536-895-7291 |
| China 2 Factory | No.28 Feng Huang Street, Weifang Shandong, CHINA | | TEL : 86-536-790-2048<br>FAX : 86-536-760-2046 |
| 연구소 | 봉은종차장 | core715@kitrans.com | 010-8985-0682 |
| 영업부 | 김기호부장 | khkim@kitrans.com | 017-228-9127 |
| 품질보증팀 | 박재규과장 | jkpark@kitrans.com | 010-6427-6121 |

| SPECIFICATIONS | | PART NO | EAM62450505 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## 2. REVISION

| REV NO. | DATE | PAGE | REVISED CLAUSE | REVISED CAUSE |
|---|---|---|---|---|
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|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONG YANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EAM62450505 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

# 3. INDEX

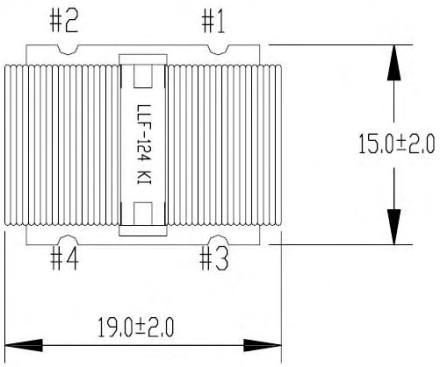

| | |
|---|---|
| 1 | 1. APPROVAL SHEET |
| 2 | 2. REVISION |
| 3 | 3. INDEX |
| 4 | 4. DIMENSION |
| 5 | 5. SCHEMATIC DIAGRAM |
| 6 | 6. WINDING SPECIFICATION |
| 7 | 7. ELECTRICAL CHARACTERISTICS |
| 8 | 8. GUARANTEED MINIMUM IMPEDANCE<br>9. L/Z CHARACTERISTIC CURVE |
| 9 | 10. ENVIRONMENTAL CHARACTERISTICS |
| 10 | 11. MECHANICAL CHARACTERISTICS |
| 11 | 12. INTERNAL CONSTRUCTION |
| 12 | 13. MATERIAL LIST |
| 13 | 14. UL-LIST |
| 14 | UL-LIST |
| 15 | 15. CORE DIMENSION |
| 16 | 16. PROCESS FLOW |
| 17 | 17. PACKING |
| 18 | 18. INSPECTION DATA |
| 19 | 19. ASSIGNMENT |
| 20 | 20. CP-WIRE |
| 21 | 21. WIRE |
| 22 | 22. 4M QC PROCESS FLOW |
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| | | | | DONG YANG TELECOM CO., LTD | | | |

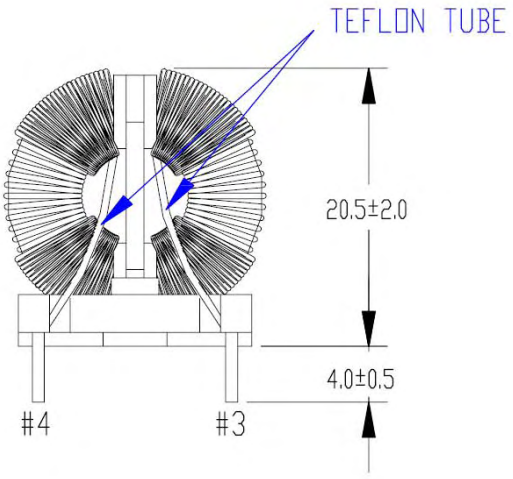
| SPECIFICATIONS | | PART NO | EAM62450505 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

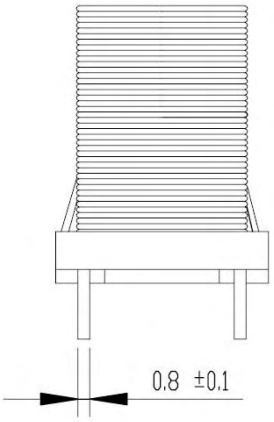
## 4. DIMENSION( UNIT : mm )

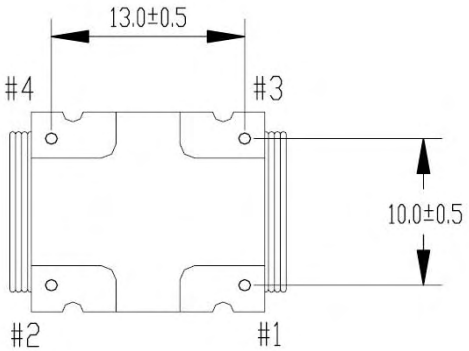
safety




| MARKING SPEC | |
|---|---|
| PART NO | LLF-124 |
| KI | DONG YANG TELECOM |



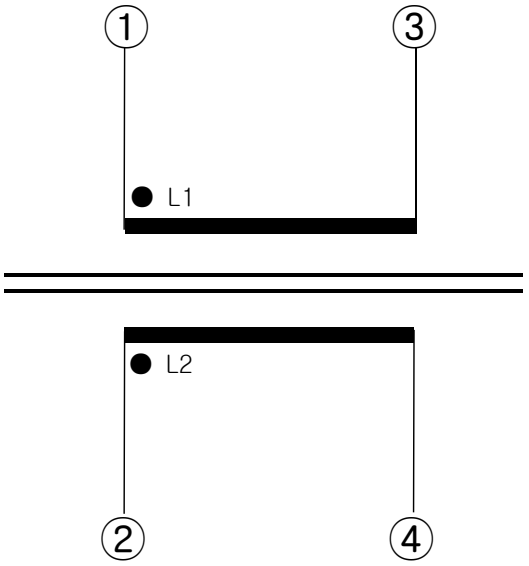




| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 4 |
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| | | | | UNIT | mm | | |
| DONG YANG TELECOM CO., LTD | | | | | | | |

| SPECIFICATIONS | | PART NO | EAM62450505 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## 5. SCHEMATIC DIAGRAM




| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 5 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
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| SPECIFICATIONS | | PART NO | EAM62450505 |
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| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

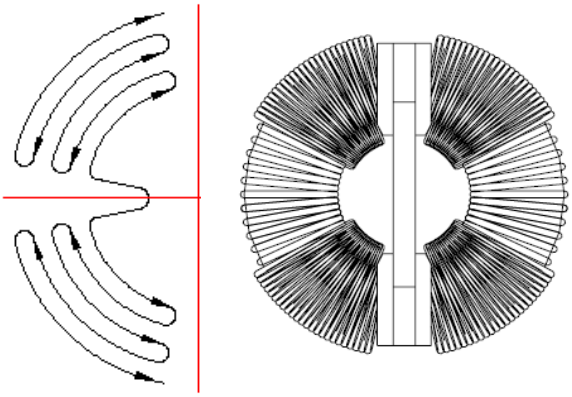
## 6. WINDING SPECIFICATION

| NO | TERMINAL | | WIRE | Ts | WINDING METHOD |
|---|---|---|---|---|---|
| | S | F | | | |
| L1 | 1 | 3 | 1UEW 0.50Φ | 66 ±3 Ts | SOLENOID |
| L2 | 2 | 4 | 1UEW 0.50Φ | 66 ±3 Ts | SOLENOID |

※ PIN WIRING SPEC : 0.7Ts MIN

※ WIRE TOLERANCE : 0.50mm±0.006

※ ORDER OF WINDING → ALTERNATION WINDING AFTER DIVISION



| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 6 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONG YANG TELECOM CO., LTD | | | | | | | |

| SPECIFICATIONS | | PART NO | EAM62450505 |
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| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## 7. ELECTRICAL CHARACTERISTICS

| NO | ITEM | TERMINAL | SPEC | REMARKS |
|---|---|---|---|---|
| 1 | INDUCTANCE | 1 - 3<br>2 - 4 | 28.0 mH +50% -30% | HP-4284A or eqv<br>at 16KHz, 1V (25±5℃) |
| 2 | INDUCTANCE DEFLECTION | \|L1 - L2\| | 0.7 mH MAX | |
| 3 | D.C RESISTANCE (20℃) | 1 - 3<br>2 - 4 | 0.250Ω MAX | WHEATSTONE BRIDGE<br>HIOKI 3540(mΩ METER)<br>(25±5℃) |
| 4 | RATED CURRENT | 1 - 3<br>2 - 4 | 2.0A | |
| 5 | WITHSTANDING VOLTAGE | COIL - COIL | AC 1.5 KV rms 1 MINUTE.<br>(M.P CONDITION<br>AC 1.8KV rms 2 SEC) | KIKUSUI TOS-8850 safety<br>(CURRENT SESITIVE IS 5mA) |
| 6 | INSULATION RESISTANCE | COIL - COVER | 300 Mohm MIN at DC 500V | MEGOHM METER safety<br>(SM-5E) |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 7 |
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## 8. GUARANTEED MINIMUM IMPEDANCE

| FREQUENCY (MHz) | 0.15 | 0.45 | 1 | 5 | 10 | 30 |
|---|---|---|---|---|---|---|
| IMPEDANCE (KΩ) | 16.0 | 24.0 | 7.0 | 0.5 | 0.1 | 0.01 |

## 9. L/Z CHARACTERISTIC CURVE




| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 8 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONG YANG TELECOM CO., LTD | | | |

## 10. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃ ± 15℃ HUMIDITY 65% ± 20%
IF WHEN ANY OBJECTION IS SUGESTED. THE TEST CAN BE OPERATED AT 20℃ ± 2℃,
65% ± 5% RH

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>1</td><td>USED<br>TEMPERATURE<br>RANGE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>2</td><td>KEEPING<br>TEMPERATURE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>3</td><td>LOW<br>TEMPERATURE<br>RESISTANT</td><td rowspan="6">MUST MEET THE ELECTRICAL<br>REQUIREMENTS AND HAS NOT ANY<br>DAMAGE ON THE APPEARANCE<br>AND THE INDUCTANCE VARIATION<br>CAN NOT OVER ±20% OF THE INITIAL<br>VALUE</td><td>-25℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>4</td><td>HIGH<br>TEMPERATURE<br>RESISTANT</td><td>+105℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>5</td><td>HUMIDITY<br>RESISTANT</td><td>+95%RH ± 5% (40℃ ± 5℃) 96Hr<br>MEASURE AFTER 2Hr AT ROOM TEMP
<table>
<tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr>
<tr><td>1</td><td>-25℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>2</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
<tr><td>3</td><td>+105℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>4</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
</table>
REPEAT 5 TIME FROM STEP 1 AND<br>TEST AFTER 2 Hr. AT ROOM TEMP.</td></tr>
<tr><td>6</td><td>TEMPERATURE<br>CYCLE</td><td></td></tr>
<tr><td>7</td><td>HEAT SHOCK-<br>RESISTANT</td><td>2 HR AT-20℃ →2 HR AT 70℃<br>: 10 CYCLE</td></tr>
</table>

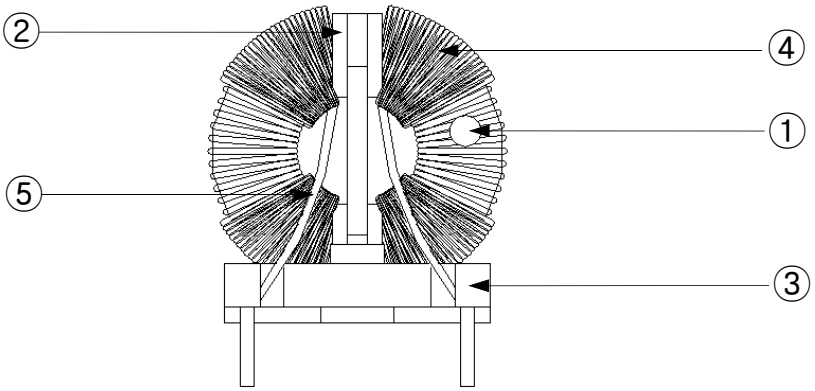
## 11. MECHANICAL CHARACTERISTICS

| NO | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER ±20% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER POT AT 260 +5℃ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245℃ -5℃ FOR 3 SECONDS |
| 4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5Kgf DURING 30 ± 5 SEC |

| SPECIFICATIONS | | PART NO | EAM62450505 |
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## 12. INTERNAL CONSTRUCTION

safety




| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 11 |
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| DONG YANG TELECOM CO., LTD | | | | | | | |

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| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## 13. MATERIAL LIST

safety

| NO | MATERIAL | ITEM | MANUFACTURE | MATERIAL COLOR | UL FILE NO. |
|---|---|---|---|---|---|
| 1 | CORE | T1607 HM-5A<br>OR16×7×10H SM-100 | TODA ISU CERAMICS CO., LTD.<br>SAMWHA ELECTRONICS CO., LTD | BLACK | - |
| 2 | CAP & KEY | 16Φ CAP (94V-0)<br>(1500GN-30) | SAMYANG CORPORATION | WHITE | E121254 |
| 3 | BASE | 16Φ BASE(94V-0)<br>(PF2736) PHENOL | MOMENTIVE SPECIALTY CHEMICALS GMBH | BLACK | E61040 |
| 4 | WIRE | 1UEW 0.50Φ | DONG YANG ELECTRONICS CO., LTD.(MW75)<br>TAIHAN COPPER TECH CO., LTD. | NATURAL LIGHT PINK | E102761<br>E231719 |
| 5 | TUBE | TEFLON TUBE | DAIKIN INDUSTRIES CO., LTD. | WHITE | E52460 |
| 6 | SOLDER | SCX07 | ALPHA METAL CO., LTD. | SILVER | - |
| 7 | FLUX | EF9301 | ALPHA METAL CO., LTD. | CLEAR | - |
| 8 | MARKING | INK or LABEL | BON MARQUE | BLACK<br>SILVER | - |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 12 |
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| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

# 14. UL YELLOW CARD

## CAP&KEY

**SAMYANG CORPORATION** E121254
407 3-GA PALBOK-DONG
CHEONJU, CHEONBUK 560-200 REPUBLIC OF KOREA

| | | Min. | | H | H | RTI | | | H | D | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | Elec | Mech | | V | 4 | C |
| Material Dsg | Color | mm | Class | I | I | | Imp | Str | T | 9 | T |
| | | | | | | | | | R | 5 | I |
| Acrylonitrile Butadiene Styrene/Polycarbonate (ABS/PC), "TRILOY", furnished as pellets. | | | | | | | | | | | |
| 1500GN-(I) | ALL | 0.75 | V-0 | - | - | 75 | 75 | 75 | | | |
| 1500GN-05 | ALL | 0.75 | V-0 | 4 | 0 | 140 | 130 | 140 | 2 | 6 | 3 |
| | | 1.5 | V-0 | 3 | 0 | 140 | 130 | 140 | | | |
| | | 3.0 | V-0 | 2 | 0 | 140 | 130 | 140 | | | |
| 1500GN-30 | ALL | 0.75 | V-0 | 3 | 0 | 130 | 130 | 140 | 1 | 6 | 2 |
| | | 1.5 | V-0 | 2 | 0 | 130 | 130 | 140 | | | |
| | | 3.0 | V-0 | 2 | 0 | 130 | 130 | 140 | | | |
| 1500GN-45 | ALL | 0.75 | V-0 | - | - | 75 | 75 | 75 | | | |

## BASE

**MOMENTIVE SPECIALTY CHEMICALS GMBH** E61040
POSTFACH 7154
58609 ISERLOHN, GERMANY

| | | Min. | | H | H | RTI | | | H | D | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | Elec | Mech | | V | 4 | C |
| Material Dsg | Color | mm | Class | I | I | | Imp | Str | T | 9 | T |
| | | | | | | | | | R | 5 | I |
| Epoxy Molding Compound (EP - Molding), "Bakelite, Rutaform", furnished as granul or powder. | | | | | | | | | | | |
| Phenolic (PF), "Bakelite "R"". | | | | | | | | | | | |
| PF2736(a)(b) | BK | 0.46 | V-0 | - | - | 150 | 150 | 150 | 0 | 5 | 3 |
| | NC, GN, BK | 0.81 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | ALL | 0.81 | V-1 | 0 | 2 | 150 | 150 | 150 | | | |
| | | 1.5 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |

(a) - Optional Suffix "H".

(b) - Grade designation may be followed by a four digit number representing color, P or S indicating type of molding, a single digit representing slight color variation.

Marking: Company name or tradename "BAKELITE" , "RUTAFORM" and material designation on container, wrapper or finished part.

Last Updated on 2011-02-01

## WIRE

**DONG YANG ELECTRONICS IND CO LTD** E102761
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ | | ANSI Type | TI |
|---|---|---|---|---|
| | BC | OC | | |
| EIW | Polyester-imide | | MW30 | 180 |
| NY-EIW | Polyester-amide-imide | Polyamide | MW76 | 180 |
| NY-PEW | Polyester | Polyamide | MW24 | 155 |
| NY-PEW(F) | Polyester | Polyamide | MW24 | 155 |
| NY-UEW | Polyurethane | Polyamide | MW80, | 155, |
| | | | MW28# | 130 |
| UEW(F) | Polyurethane | — | MW79, | 155, |
| UEW(B) | Polyurethane | — | MW75# | 130 |
| UAL | Polyurethane | — | @ | 155 |
| PEW | Polyester | — | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.

#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

Marking: Company name or "E102761" and material designation or marked designation on package or reel .

Last Updated on 2007-01-08

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 13 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONG YANG TELECOM CO., LTD | | | |

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| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## WIRE

**TAIHAN COPPER TECH CO LTD** E231719
60-2 HAKNAM-RI
ONSAN-EUP
ULJU-KUN
ULSAN, 689-892 REPUBLIC OF KOREA

| Mtl Dsg | Mark Dsg | Coat Type BC | Coat Type OC | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| EIW | (1) | Polyester-imide | — | MW30 | 180 |
| | | | | MW72 | 180 |
| AIW | (1) | Polyamide-imide | — | MW16 | 220 |
| EI-AIW | (1) | Polyester-imide | Polyamide-imide | — | 220 |
| | | | | MW35# | 200# |
| | | | | MW73# | 200# |
| **Magnet Wire.** | | | | | |
| EI-AIW(T) | (1) | Ester-imide | Polyamide- imide | MW35, 73 | 200 |
| EI-AIW (a) | (1) | Ester-imide | Polyamide-imide | MW35#, 73#, W37 | 200 |
| AL EI-AIW | (1) | Ester-imide | Polyamide- imide | MW@ | 240 |
| EIW(T) | (1) | Ester-imide | — | MW30, 72 | 180 |
| EIW (a) | (1) | Ester-imide | — | MW30, 72 | 180 |
| EIW-N | (1) | Ester-imide | Polyamide | MW76 | 180 |
| AIW(T) | (1) | Polyamide-imide | — | MW81 | 220 |
| AIW (a) | (1) | Polyamide-imide | — | — | 220 |
| PEW-N | (1) | Polyester | Polyamide | MW76 | 180 |
| SEIW | (1) | Solderable Polyester-imide | — | MW77 | 180 |
| UEW | (1) | Polyurethane | — | MW75# | 130 |
| UEW-N | (1) | Polyurethane | Polyamide | MW80 | 155 |
| EI-AIWR | (1) | Polyester-imide | Polyamide-imide | MW37 | 220 |
| PEW | (1) | Polyester | — | MW30, | 180 |
| | | | | MW5 | 155 |
| PE-AIW | (1) | Polyester | Polyamide-imide | MW35 | 200 |

@MW35A/MW73A construction, except rated 240 C.

(a)-These wires may or may not have a suffix of SW.

(1)-Marked designations are the same as the material designations.

# Additional consideration is needed before it is used in system's aging.

Marking: Company name, material designation or marked designation on package or reel, and Recognized Component Mark.

## TUBE

**DAIKIN INDUSTRIES LTD** E52460
YODOGAWA PLANT
CHEMICAL DIV, POLYMER PRODUCTION DEPT
1-1 NISHI-HITOTSUYA
SETTSU-SHI, OSAKA 566-8585 JAPAN

| Mtl Dsg | Color | Min. Thk mm | Flame Class | H W I | H A I | H V A | R T I Elec | R T I Mech Imp | R T I Mech Str | C T I |
|---|---|---|---|---|---|---|---|---|---|---|
| **Polytetrafluorethylene (PTFE), furnished as pellets.** | | | | | | | | | | |
| F-205 | NC | 0.84 | V-0 | - | - | - | 180 | 180 | 180 | |
| | | 1.5 | V-0 | - | - | - | 180 | 180 | 180 | |
| **Polytetrafluorethylene (PTFE), furnished as powder.** | | | | | | | | | | |
| F-201, F-202, F-203 | | | | | | | | | | |
| | NC | 0.81 | V-0 | - | 4 | - | 180 | 180 | 180 | 0 |
| | | 1.5 | V-0 | - | 4 | - | 180 | 180 | 180 | |

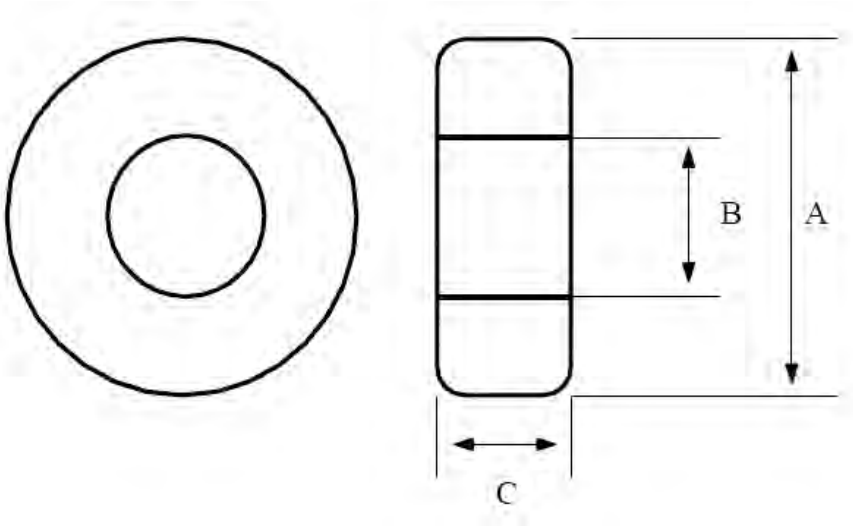
Marking: Company name and material designation, generic polymer identification, color number where appropriate and batch or lot number or date of manufacture on container, wrapper or molded on finished part.

Last Updated on 2009-02-27

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 14 |
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| | | | | UNIT | mm | | |
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|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## 15. CORE DIMENSION

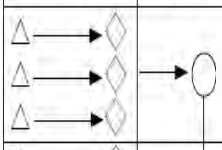
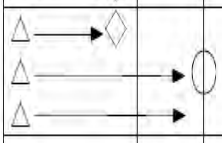
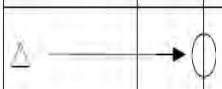
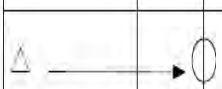
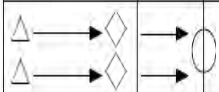



| TYPE | DIMENSION(m/m) | | | REMARKS |
|---|---|---|---|---|
| | A | B | C | |
| T1607 | 16.0±0.35 | 10.0±0.3 | 7.0±0.3 | TODA ISU |
| OR16×7×10H | 16.0±0.35 | 10.0±0.3 | 7.0±0.3 | SAMWHA |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 15 |
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| | | | | UNIT | mm | | |
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| SPECIFICATIONS | | PART NO | EAM62450505 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## 16. PROCESS FLOW

| 공정 | | 소요자재 | 공정명 | 관리항목 | 관리기준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|
| SUB 공정 | MAIN공정 | | | | | | | | | |
|  | | BOBBIN<br>COIL<br>P/S TAPE | 권선 | COIL의 굵기와 종류<br>권선턴수,권선상태<br>결선상태,절연상태 | | 2회/1일 | SAMPLING<br>LOT당5EA | MICRO METER | 생산 | 성적서 |
|  | | SOLDER<br>FLUX | 납땜 | 납조기온도: 460℃ MAX<br>0.2Φ이하 : 1.5SEC<br>0.2Φ이상 : 2.5SEC<br>USTC,TIW-M : 3~4SEC | 납땜작업표준서 | 2회/1일 | 전수검사 | 납조기<br>온도계 | 생산 | 온도체크시트 |
| | | CORE<br>P/S TAPE | CORE조립 | CORE종류(GAP,NOGAP)<br>조립상태,GAP SIZE<br>TAPPING TURNS 및 TAPPING상태 | CORE조립/<br>작업표준서 | 2회/1일 | SAMPLING | MICRO METER | 생산 | |
| | | | 1차검사 | 전기적 특성(L값 TURNS)<br>결선,납땜상태 | 1차검사기준서 | 전수 | 전수검사 | TURNS METER<br>LCR METER | 생산 | 1차검사 일보 |
|  | | | 건조 | 건조시간 : 1.5시간<br>건조온도 : 120℃ ±10℃ | 건조작업표준서 | 2회/1일 | SAMPLING | 건조기,시계<br>온도계 | 생산 | 온도체크시트 |
| | | 불멸잉크 | MARKING | MARKING 상태,위치,선명도<br>LOT NO | MARKING<br>작업표준서 | 전수 | 전수검사 | MARKING 도장<br>자동 MARKING기 | 생산 | |
|  | | | PIN교정 | 핀휨, 핀교정 상태 | PIN교정<br>작업표준서 | 전수 | 전수검사 | PIN교정 JIG | 생산 | |
| | | | 2차검사 | 전기적 특성(L값 LEAKGE)<br>위상,TURNS,내전압,절연상태 | 2차 검사기준서 | 전수 | 전수검사 | TURNS METER<br>LCR METER<br>내압기 | 생산 | 2차검사일보 |
| | | | 외관검사 | BOBBIN파손,납땜상태<br>PIN상태 기타 | 외관검사기준서 | 전수 | 전수검사 | | 생산 | 외관검사일보 |
| | | SNOW BOX<br>OUT BOX | 포장 | PIN TO PIN간격<br>BOX 규격,외관, 포장상태 | 포장작업표준서 | 전수 | 전수검사 | | 생산 | |
|  | | | 출하검사 | 전기적특성<br>(L값,절연저항,내전압)<br>치수,구조,외관,수량 | 출하검사기준서 | SAMPLING | SAMPLING | LCR-METER<br>내압기<br>절연저항기 | 품질보증 | 출하검사<br>성적서 |
| | | | 창고입고 | 수량,제품명,포장상태<br>입출고 재고관리 | 창고적재표준서 | 2회/1일 | | | 영업 | 입고완료<br>수불 장부 |
| | | | 출하 | 제품명, 수량 | | | | | 영업 | 출하전표 |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
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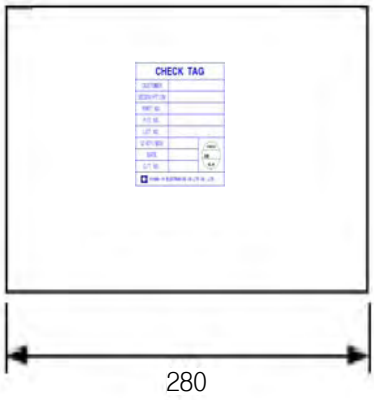
| SPECIFICATIONS | | PART NO | EAM62450505 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## 17. PACKING

| INNER BOX (TRAY BOX) |
|---|
| PCS × PCS = PCS |

| OUT BOX (CARTON) |
|---|
| PCS × EA = PCS |




| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 17 |
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|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## 18. INSPECTION DATA

| ITEM NAME | LINE FILTER | TEST DATE | 2011-10-28 |
|---|---|---|---|
| PART NO | EAM62450505 | INSTRUMENT | HP4284A LCR METER (16KHz 1V) |

| 시험항목 | PIN NO | SPEC | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INDUCTANCE | 1 - 3 | 28mH +50% -30% | 26.261 | 24.696 | 25.146 | 26.321 | 24.249 | | | | | | |
| | 2 - 4 | | 26.223 | 24.670 | 25.227 | 25.161 | 24.341 | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| DEFLECTION INDUCTANCE | L1/L2 | 0.7mH MAX | 0.016 | 0.048 | 0.037 | 0.016 | 0.092 | | | | | | |
| DCR (Ω) | 1 - 3 | 0.250Ω MAX | 0.172 | 0.182 | 0.181 | 0.175 | 0.178 | | | | | | |
| | 2 - 4 | 0.250Ω MAX | 0.171 | 0.176 | 0.182 | 0.177 | 0.177 | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 내전압 | COIL-COIL | 1.5KV 1MIN | OK | OK | OK | OK | OK | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 절연저항 | COIL-COVER | 300MΩ MIN | ∞ | ∞ | ∞ | ∞ | ∞ | | | | | | |
| 충첩 | | | | | | | | | | | | | |
| IMPULSE TEST | | | | | | | | | | | | | |
| QUALITY FACTOR | | | | | | | | | | | | | |
| 비 고 | | | | | | | | | | | | | |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 18 |
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| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## 19. ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.
2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.
3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.
4) WIRE BUNDLE METHOD.
   * CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2 MM.
   * PIN SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TOP SOLENOID : ERROR BETWEEN THE TOP BARRIER TAPE AND LAST WIRE IS REQUIRED TO BE SMALLER THAN 2 MM.
   * SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER-SOLENOID IS REQUIRED TO BE SMALLER THAN 2 MM.
   * TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
   * SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
   * SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2. IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.
5) PERFORMANCE OF THIS DRAWING IS REQUIRED TO MEET PART NUMBER EAM62450505
6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE.BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 19 |
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| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## 20. CHEMICAL ANALYSIS REPORT FOR CP-WIRE

*. 효성산업(주)

# 제 원 증 명 서 (MATERIALS CERTIFICATE)

2006. 02. 16

*. Round Wire ( ETP09 / Sn100% )

1.재료 구성비 (MATERIALS COMPOSITION) (Weight %)

| 환 경 (Item) | Plating Thickness(Sn) | Iron (Fe) | Copper (Cu) | Tin (Sn) | REMARK |
|---|---|---|---|---|---|
| 0.4mm | 5±1 ㎛ | Balance | 15.62% | 3.61 ~ 5.39% | |
| 0.5mm | | Balance | 15.75% | 2.89 ~ 4.32% | |
| 0.6mm | | Balance | 15.77% | 2.41 ~ 3.61% | |
| 0.7mm | | Balance | 15.78% | 2.07 ~ 3.10% | |
| 0.8mm | | Balance | 15.85% | 1.81 ~ 2.71% | |
| 1.0mm | | Balance | 15.87% | 1.45 ~ 2.17% | |

2.기초재료 화학성분 (BASE MATERIALS CHEMICAL COMPOSITION) (Weight %)

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Steel Wire (SWCH6A) | Fe | C | Si | Mn | P | S | Sol-Al | - | - | - | - | - | (%) |
| Balance | 0.06 | 0.04 | 0.30 | 0.013 | 0.008 | 0.052 | - | - | - | - | - | | |
| Eectro Copper | Cu | As | Sb | Bi | Pb | S | Fe | Ag | - | - | - | - | (ppm) |
| 99.99↑ | 0.3 | 0.02 | 0.1 | 1.0 | 6.3 | 5.2 | 8.2 | - | - | - | - | | |
| Tin Ingot | Sn | Sb | As | Fb | Bi | Cu | Fe | Al | Cd | Zn | | | |
| 99.99↑ | 0.001 | 0.0001 | 0.001 | 0.0008 | 0.0005 | 0.0005 | 0.0000 | 0.0000 | 0.0006 | (%) | | | |

3.석도금 조성 및 단면 (TIN PLATED COMPOSITION) (Weight %)




We certify that this paper is the cerificate of our products to inspection and materials

Quality Assurance Manager

Ikgoung Kwak

IKEM IL-KWANG ELECTRONIC MATERIALS CO., LTD.
Head Office & Factory: #795-9, Wonsi-dong, Danwon-gu, Ansan-city, Kyounggi-do, Korea.
Phone 82-31-495-1971~3 Fax 82-31-495-1974
e-mail - ikwang@cpleadwire.com Homepage - http://www.cpleadwire.com

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 20 |
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## 21. WIRE

POLYURETHANE ENAMELED WIRE (1UEW)

| 치 수 | | | | 절연파괴 전 압 (V) ↑ | 내마모 파괴하중 | | 최대도체 저 항 (Ω/km) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성 외 경 (mm) ↑ | 최대완성 외 경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.224 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.686 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 21 |
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| | | | | UNIT | mm | | |
| | | | | DONG YANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EAM62450505 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2011. 10. 28. |

## 22. 4M QC PROCESS FLOW

| 공정 번호 | 공정흐름도 | 공정명 | 작업내용 | 4M | | | |
|---|---|---|---|---|---|---|---|
| | | | | Man(사람) | Machine(장비) | Material(재료) | Method(방법) |
| 1 | ▽ | 원/부자재 수입검사 | 원자재 수입검사 | | Multi meter<br>V/C /LUPE<br>XRF(SHAMADZU) | CORE, BOBBIN<br>WIRE 외 | 수입검사 기준서<br>승인원 |
| 2 | ○ | 조립 | CAP에 CORE 조립 | | | CORE/CAP | CORE 조립작업지도서 |
| | ◇ | | 공정검사(조립상태) | | 육안 | 조립제품 | 조립상태 : CORE 유동 |
| 3 | ○ | 권선 | BOBBIN에 WIRE권선<br>및 PIN 결선 | | 권선기, NIPPER등 | BOBBIN/WIRE<br>INSULATION TAPE<br>BARRIER TAPE | 권선 작업지도서 |
| | ◇ | | 공정검사<br>(권선,결선상태) | | 육안/V/C<br>TURN METER | 권선품 | 작업지도서 |
| 4 | ○ | 조립 | 권선품에 BASE 조립 | | LCR METER<br>BONDING기 | 권선품 / BASE | BASE조립 작업지도서 |
| | ◇ | | 공정검사(조립상태) | | 육안 / V/C | 조립 완료제품 | 작업지도서 |
| 5 | ○ | 납땜<br>(★CTQ) | 권선품 PIN 결선<br>부위 납땜 | 첸씽샤 | DIPPING기<br>온도계/TIMER | 권선품<br>SOLDER/FLUX | 온도 : 460℃ MAX<br>선경별 납땜시간 |
| | ◇ | | 공정검사<br>(조립상태) | 육안 / LUPE | 납땜완료 권선품 | SHORT, 납땜깊이 | 공정검사<br>(조립상태) |
| 6 | ◇ | 1차 검사 | 특성(L값,턴수)검사<br>외관(납땜상태 등)검사 | | LCR METER(HIOKI)<br>TURNS METER<br>육안 / LUPE | 조립완료제품 | 1차 검사기준서 |
| 7 | ○ | 최종검사 | 특성검사 | | 종합계측기(TPNGHUI)<br>내압기/SURGE(TOS)<br>IMPULSE TESTER | 건조완료 제품 | 검사기준서 승인원<br>특성 SPEC |
| | ◇ | | 외관검사 | | | 육안/ LUPE<br>PIN JIG | 건조완료 제품 |
| 8 | ○ | 마킹 | 마킹작업 | | 자동 MARKING기 | 건조 완료 제품,INK | 마킹작업지도서<br>승인원 마킹 사양 |
| | ◇ | | 공정검사(마킹상태) | | 육안 | 마킹완료제품 | 마킹사양,위치등 사양 |
| 9 | ○ | 포장 | 제품 포장 진행 | | TAPE 절단기 | 완제품,포장BOX<br>포장 TAPE | 포장작업지도서<br>포장규격 |
| 10 | ◇ | 출하검사 | 출하검사 | | LCR/DCR/내압기<br>V/C /육안 | 완제품 | 출하검사기준서<br>출하검사 성적서 |
| 11 | | 출하 | 출하진행 | | | | 출고 요청 수량 확인 |

※ 작성방법

1.공정번호 : 원자재 수입검사부터 완제품 출하까지 순차적 공정 No부여(실제공정 No와 일치해야 함)

2.공정흐름도 : 협력사에서 사용되는 기준에 따라 도형으로 표기

3.공정명 : 해당공정 이름(CTQ공정은 ★ 표기)

4.작업내용 : 공정에 대한 작업내용

5.사람 : CTQ 공정에 한해 작업자 이름(교대 근무 일 경우 전/후 모두기입)

6.장비 : 해당공정 사용장비명 및 회사명

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 22 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONG YANG TELECOM CO., LTD | | | |

RoHS safety

# APPROVAL SHEET

## CUSTOMER : LG Electronics Co., Ltd.

**MODEL NO : LGP32-12P**

**ITEM : LINE FILTER**

**PART NO : EAM62450505**

**DESCRIPTION : LLF-124**

**DATE : 2011. 10. 21.**

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | FEELUX ELECTRONICS CO., LTD. ( KOREA FACTORY ) | TEL | 070-7780-8421 |
| | | FAX | 070-7780-8421 |
| SALES TEAM GENERAL MANAGER | Jong Il Park | TEL | 011-799-4581 |
| | E-MAIL: kever321@feelux.com | | |
| QUALITY ASSURANCE TEAM DEPUTY GENERAL MANAGER | Kwang Hoon Cho | TEL | 016-706-2463 |
| | E-MAIL: khcho@feelux.com | | |

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | YANG JU FEELUX ELECTRONICS CO., LTD. ( HEAD OFFICE FACTORY ) | TEL | 070-7780-8000 |
| | | FAX | 070-7780-8109 |
| ADDRESS | 624-8, Seoku-Ri Kwangjeok-Myun, Yangju-Kun Kyungi-Do Korea | | |
| REQUEST CUSTOMER | Chungkye FEELUX ELECTRONICS CO., LTD. ( SEOUL OFFICE FACTORY ) | TEL | 070-7780-8420 |
| | | FAX | 070-7780-8409 |
| ADDRESS | RM 401, Chungkye-Jae 1 Kangdan, 511-2 Chungkye-3 Dong, Nowon-Ku Seoul, Korea | | |
| REQUEST CUSTOMER | WHEHAI FEELUX ELECTRONICS CO., LTD. ( CHINA FACTORY ) | TEL | 0086-631-786-7903 |
| | | FAX | 0086-631-786-7900 |
| ADDRESS | NO.166 FUYUAN(M) ROAD ROAD,GANGOL TOWN RONGCHENG CITY SHANDONG PROVICE CHINA | | |

FEELUX 주식회사 필 룩 스

# RECORD OF REVISION

| LG P/N : **EAM62450505(LLF-124)** | | | MAKER SPEC : | | |
|---|---|---|---|---|---|
| REV. NO | REASON | CONTENTS | DATE OF APPROVAL | CHECKED | REMARKS |
| | | 신규재정 | | | |

# SPECIFICATION

| NO. 1 / 16 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변 경 사 항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

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1 / 18 : INDEX
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4 / 18 : 4. ELECTRICAL CHARACTERISTICS
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6 / 18 : 6. ENVIRONMENTAL CHARACTERISTICS
7 / 18 : 7. MECHANICAL CHARACTERISTICS
8 / 18 : 8. SECTION DIAGRAM
9. MATERIAL LIST
9 / 18 10. WIRE SPECIFICATION
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11 / 18 : UL-LIST
12 / 18 : 12. CORE DIMENSION
13 / 18 : 13. BASE DIMENSION
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17 / 18 : 17. INSPECTION DATA
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| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

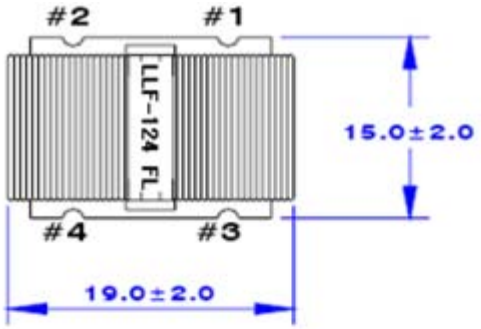
FEELUX

# SPECIFICATION

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|---|---|---|---|

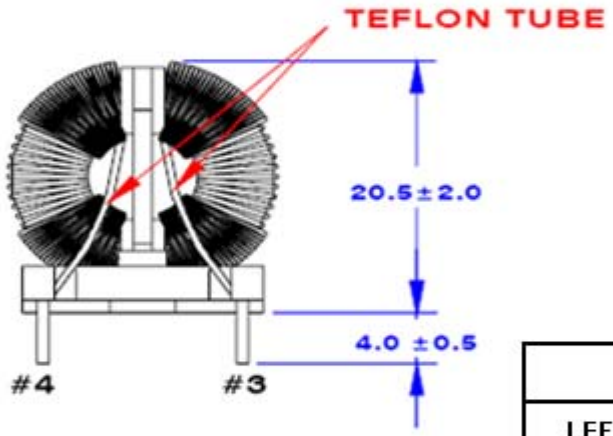
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| | (2) | | (4) | |

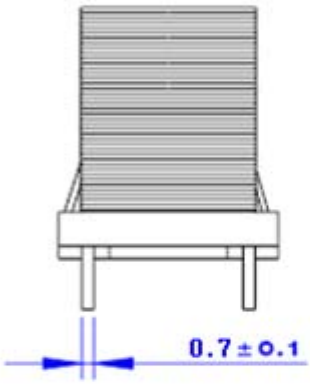
## 1. DIMENSION

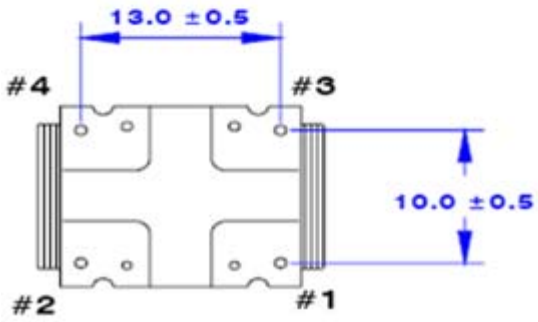


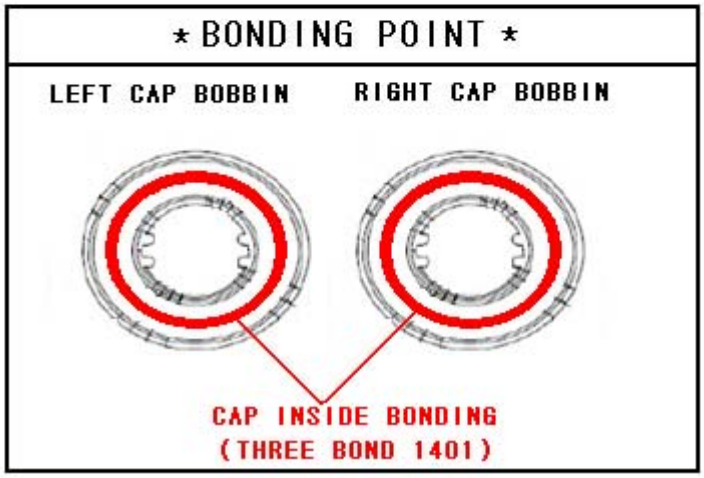

SAFETY

| MARKING | |
|---|---|
| LLF-124 FL | |
| LLF-124 | PART NO |
| FL | MARKER |




| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

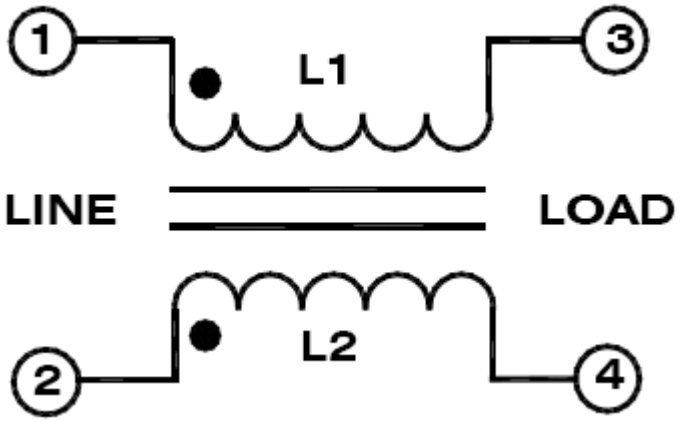
FEELUX

# SPECIFICATION

| NO. 3 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

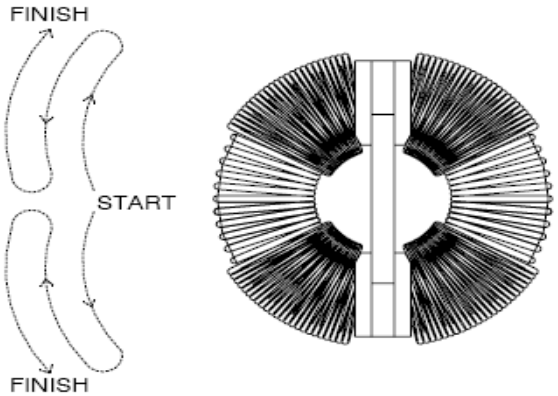
## 2. SCHEMATIC DIAGRAM




## 3.-1 WINDING SPEC

| NO | TERMINAL | | WIRE | TURNS | WINDING METHOD |
|---|---|---|---|---|---|
| | S | F | | | |
| L1 | 1 | 3 | 1UEW 0.5Ø | 66 ± 3 Ts | SOLENOID |
| L2 | 2 | 4 | 1UEW 0.5Ø | 66 ± 3 Ts | |

*PIN WINDING SPEC : 0.7Ts min
*WIRE TOLERANCE : 0.50mm ± 0.006
*Order of winding
=>Alternation winding after division




| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 4 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 4. ELECTRICAL CHARACTERISTICS

| NO | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 4-1 | INDUCTANCE | 1 - 3<br>2 - 4 | 28.0mH + 50%,-30% | HP-4284A<br>at 16KHz, 1V<br>(25±5℃) |
| 4-2 | DEFLECTION INDUCTANCE | I L1 - L2 I | 0.7mH MAX | HIOKI 3540 |
| 4-3 | DC RESISTANCE | 1 - 3<br>2 - 4 | 0.250Ω MAX | HIOKI 3540 |
| 4-4 | RATED CURRENT | 1 - 3<br>2 - 4 | 2.0 A | |
| 4-5 | WITHSTANDING VOLTAGE | COIL - COIL | AC 1,500V RMS,<br>1 MINUTE<br>(Product :AC<br>1.80KV RMS 3SEC) | SAFETY<br>TOS-8850<br>CUT OFF CURRENT 5mA |
| 4-6 | INSULATION RESISTANCE | COIL - COIL | 300 Mohm MIN<br>at DC 500V. | SAFETY<br>TOS-8850 |

| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

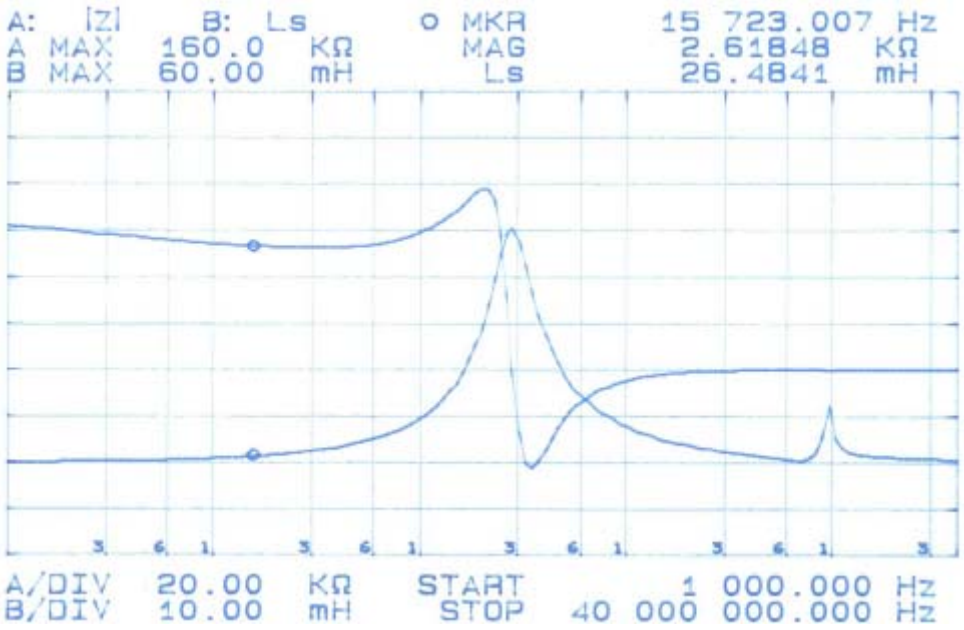
FEELUX

# SPECIFICATION

| NO. 5 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 5. L/Z CHARACTERISTIC CURVE




| FREQUENCY (MHz) | 0.15 | 0.45 | 1 | 5 | 10 | 30 |
|---|---|---|---|---|---|---|
| IMPEDANCE (KΩ | 16 | 24 | 7 | 0.5 | 0.1 | 0.01 |

| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 6 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 6. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃±15℃ HUMIDITY 65%±20%
IF WHEN ANY OBJECTION IS SUGESTED THE TEST CAN BE OPERATED AT 20℃±2℃ 65% ±5% RH

| NO. | ARTICLE | SPECIFCATION | TEST CONDITION |
|---|---|---|---|
| 6-1 | USED TEMPERATURE RANGE | -25℃ ~ +105℃ | |
| 6-2 | KEEPING TEMPERATURE | -25℃ ~ +105℃ | |
| 6-3 | LOW TEMPERATURE RESISTANT | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 20% OF THE INITAL VALUE | -25℃±2℃, 96Hr MEASURE AFTER 2Hr AT ROOM TEMP |
| 6-4 | HIGH TEMPERATURE RESISTANT | | +105℃±2℃, 96Hr MEASURE AFTER 2Hr AT ROOM TEMP |
| 6-5 | HUMIDITY RESISTANT | | +95%RH ±5% (40℃±5℃) 96Hr MEASURE AFTER 2Hr AT ROOM TEMP |
| 6-6 | TEMPERATURE CYCLE | | STEP / TEMP / TIME<br>1 / -25±2℃ / 30 MIN<br>2 / +25±2℃ / 10 MIN<br>3 / +105±2℃ / 30 MIN<br>4 / +25±2℃ / 10 MIN<br>REPEAT 5 TIME FROM STEP 1 AND TEST AFTER 2Hr. AT ROOM TEMP |
| 6-7 | HEAT SHOCK -RESISTANT | | 2HR AT -20℃->2HR AT 70℃ : 10 CYCLE |

| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 7 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변 경 사 항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 7. MECHANICAL CHARACTERISTICS

| NO. | ARTICLE | SPECIFCATION | TEST CONDITION |
|---|---|---|---|
| 7-1 | LAYER SHORT TEST | THREE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SUGGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 7-2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 20% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER POT AT 260℃ +5℃ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 7-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER POT 245℃ -5℃ FOR 3 SECONDS |
| 7-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5kgf DURING 30±5 SEC |

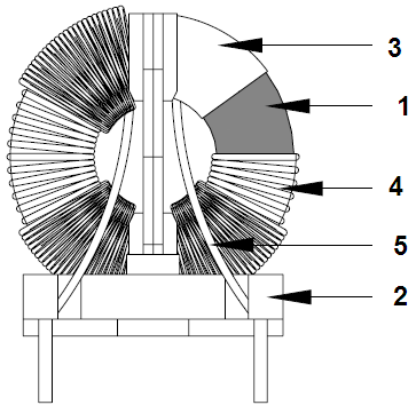
# SPECIFICATION

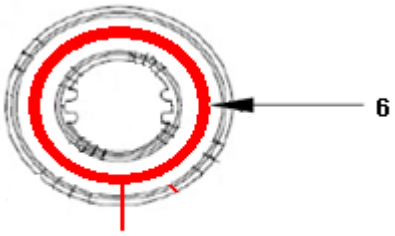
| NO. 8 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변 경 사 항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

SAFETY

## 8. SECTION DIAGRAM




SAFETY

## 9. MATERIAL LIST.

| NO | PART NAME | MATERIALS | MATERIAL COLOR | REMARKS | UL FILE NO |
|---|---|---|---|---|---|
| 1 | Ferrite CORE | T1607 JPH-10F TR16X10X7 HX-10K | BLACK | A-CORE HUAXING | |
| 2 | BASE | 94V-0 PHENOL RESIN PM9820 | BLACK | CHANG CHUN PLASTICS CO.,LTD<br>MONENTIVE SPECIALTY CHEMICALS GMBH | E59481<br>E61040 |
| 3 | KEY/CAP | P.B.T | WHITE | CHANG CHUN PLASTICS CO.,LTD | E59481 |
| 4 | WIRE | 1UEW 0.50¢ | NATURAL LIGHT PINK | HANGZHOU WEIFENG ELECTRONICS CO.,LTD | E229341 |
| | | | | JIANGSU DARTONG M&E CO.,LTD | E237377 |
| 5 | TUBE | TEFLON TUBE | CLEAR | GREAT HOLDING IDUSTRIAL CO.,LTD | E237516 |
| 6 | INSIDE BOND | BOND 1401 | TRANSPARENCY | THREE BOND CO., LTD | |
| 7 | SOLDER | Sn 99.3% cu 0.7% | SILVER | HEESUNG MATERIAL CO.,LTD<br>TIANJIN QINGHESCIENCE –TECH<br>Dalian Jin'an Welding Industry Co., Ltd | |
| 8 | FLUX | S-100 | LEMON YELLOW | TIANJIN CONGYONG ELECTRIC CO.,LTD | |
| 9 | MARKING | INK & LABEL | BLACK | BON MARQUE | |

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|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 9 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 10. WIRE SPECIFICATION

### 폴리 우레탄 동선 (1UEW)

| 치 수 | | | | 절연파괴압 (V) ↑ | 내마모 파괴하중 | | 최대도체저항 (Ω/km) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성외경 (mm) ↑ | 최대완성외경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.224 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| 0.650 | ±0.008 | 0.686 | 0.724 | 3050 | 5.39(550) | 4.55(465) | 55.31 | 20 |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| **0.750** | **±0.008** | **0.790** | **0.830** | **3400** | **6.12(625)** | **5.14(525)** | **41.19** | **20** |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.46(965) | 7.05(810) | 10.16 | 25 |

| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 10 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변 경 사 항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 11. UL CARD

### * YELLOW CARD

1. BASE

Component - Plastics E59481

**CHANG CHUN PLASTICS CO LTD**
7TH FL, 301 SONGKIANG RD, TAIPEI TW

**T375HF**
**Phenolic Molding Compound (PMC), "LONGLITE", furnished as pellets, granular material, or powder**

| Color | Min Thk (mm) | Flame Class | HWI | HAI | RTI Elec | RTI Imp | RTI Str |
|---|---|---|---|---|---|---|---|
| BK | 0.43 | V-0 | 0 | 0 | 150 | 150 | 150 |
| | 0.75 | V-0 | 0 | 0 | 150 | 150 | 150 |
| | 3.2 | V-0 | 0 | 0 | 150 | 150 | 150 |

Comparative Tracking Index (CTI): 4
High-Voltage Arc Tracking Rate (HVTR): 3
Dielectric Strength (kV/mm): 10
Dimensional Stability (%): -
High Volt, Low Current Arc Resis (D495): 4
Volume Resistivity ($10^x$ ohm-cm): 11

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 2008-03-29
Last Revised: 2008-08-28

Underwriters Laboratories Inc®

c UL us

Component - Plastics E61040

**MOMENTIVE SPECIALTY CHEMICALS GMBH**
POSTFACH 7154, ISERLOHN 58609 DE

**PF 2736(a)(b)**
**Phenolic (PF), "Rutaform, Bakelite", furnished as pellets, powder, granular material**

| Color | Min Thk (mm) | Flame Class | HWI | HAI | RTI Elec | RTI Imp | RTI Str |
|---|---|---|---|---|---|---|---|
| BK | 0.46 | V-0 | - | - | 150 | 150 | 150 |
| ALL | 0.81 | V-1 | 0 | 2 | 150 | 150 | 150 |
| NC, GN, BK | 0.81 | V-0 | 0 | 2 | 150 | 150 | 150 |
| ALL | 1.5 | V-0 | 0 | 2 | 150 | 150 | 150 |
| | 3.0 | V-0 | 0 | 2 | 150 | 150 | 150 |

Comparative Tracking Index (CTI): 3
Dielectric Strength (kV/mm): 20
High-Voltage Arc Tracking Rate (HVTR): 0
Dimensional Stability (%): 0.23
Inclined Plane Tracking (IPT): -
Volume Resistivity ($10^x$ ohm-cm): 10
High Volt, Low Current Arc Resis (D495): 5

(a) - Optional Suffix "H".
(b) - Grade designation may be followed by a four digit number representing color, P or S indicating type of molding, a single digit representing slight color variation.

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

2. KEY/ CAP

Component - Plastics E59481

**CHANG CHUN PLASTICS CO LTD**
7TH FL, 301 SONGKIANG RD, TAIPEI TW

**T375HF**
**Phenolic Molding Compound (PMC), "LONGLITE", furnished as pellets, granular material, or powder**

| Color | Min Thk (mm) | Flame Class | HWI | HAI | RTI Elec | RTI Imp | RTI Str |
|---|---|---|---|---|---|---|---|
| BK | 0.43 | V-0 | 0 | 0 | 150 | 150 | 150 |
| | 0.75 | V-0 | 0 | 0 | 150 | 150 | 150 |
| | 3.2 | V-0 | 0 | 0 | 150 | 150 | 150 |

Comparative Tracking Index (CTI): 4
High-Voltage Arc Tracking Rate (HVTR): 3
Dielectric Strength (kV/mm): 10
Dimensional Stability (%): -
High Volt, Low Current Arc Resis (D495): 4
Volume Resistivity ($10^x$ ohm-cm): 11

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 2008-03-29
Last Revised: 2008-08-28

Underwriters Laboratories Inc®

c UL us

| SPEC NO. | | DATE | 2009. 10. 23. | SHEET NO. | |
|---|---|---|---|---|---|

# SPECIFICATION

| NO.11 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## * YELLOW CARD

### 3. WIRE

HANGZHOU WEIFENG ELECTRONIC CO LTD E229341
DAICUN XIAOSHAN HANGZHOU,ZHEJIANG 311261 CHINA

| Mtl Dsg | Coat Type BC | Coat Type OC | ANSI Type | Temp Class |
|---|---|---|---|---|
| UEW | Polyurethane | - | MW75-C | 180 |
| | | - | MW79 | 155 |
| | | - | MW75# | 130 |
| | Polyurethane | Polyamide | MW83-C | 180 |
| | | Polyamide | MW80-C# | 155 |
| | | Polyamide | MW28-C# | 130 |

JIANGSU DARTONG M & E CO LTD E237377
1 DARTONG RD
HUAIAN ECONOMY DEVELOPMENT ZONE
HUAIAN, JIANGSU 223238 CHINA

| Mtl Dsg | Mark Dsg | Coat Type BC | Coat Type OC | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| UEW | (1) | Polyurethane | — | MW 79-C | 155 |
| | | | | MW 75-C | 130 |
| UEW | UEW/180 | Polyurethane | — | MW82 | 180 |
| UEW/NY | (1) | Polyurethane | Polyamide | MW80# | 155 |
| | | | | MW28# | 130 |

### 4. TUBE

GREAT LEOFLON INDUSTRIAL CO LTD E237516
10TH FL
649-6 CHUNG CHENG RD
HSIN CHUANG, TAIPEI HSIEN 242 TAIWAN

| System Component | System Dsg | System Temp Class |
|---|---|---|
| TFL, TFS, TFT, TRW(B), TRW(F) | GH-130 | 130(B) |
| TRW(B), TRW(F) | GH-155 | 155(F) |

**Note:** When the Great Leoflon triple insulated wires, item E, are used to produce a winding, no additional ground or interwinding insulation is required to separate this winding from another enameled magnet wire winding or between this winding and grounded or dead metal.

Marking: Company name and system component designation.

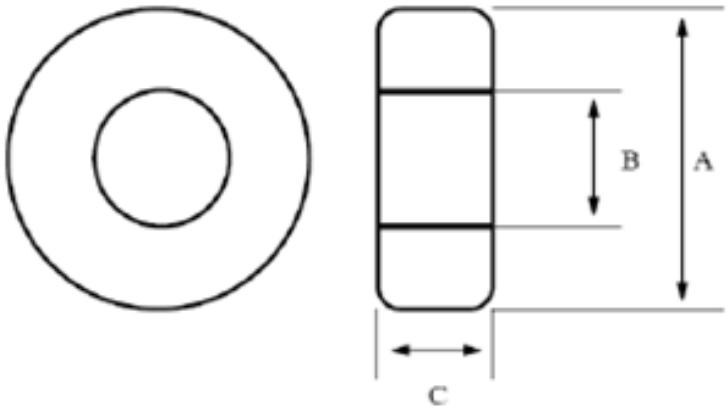
| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

# SPECIFICATION

| NO. 12 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 12.CORE DIMENSION




### ※DEMENSION

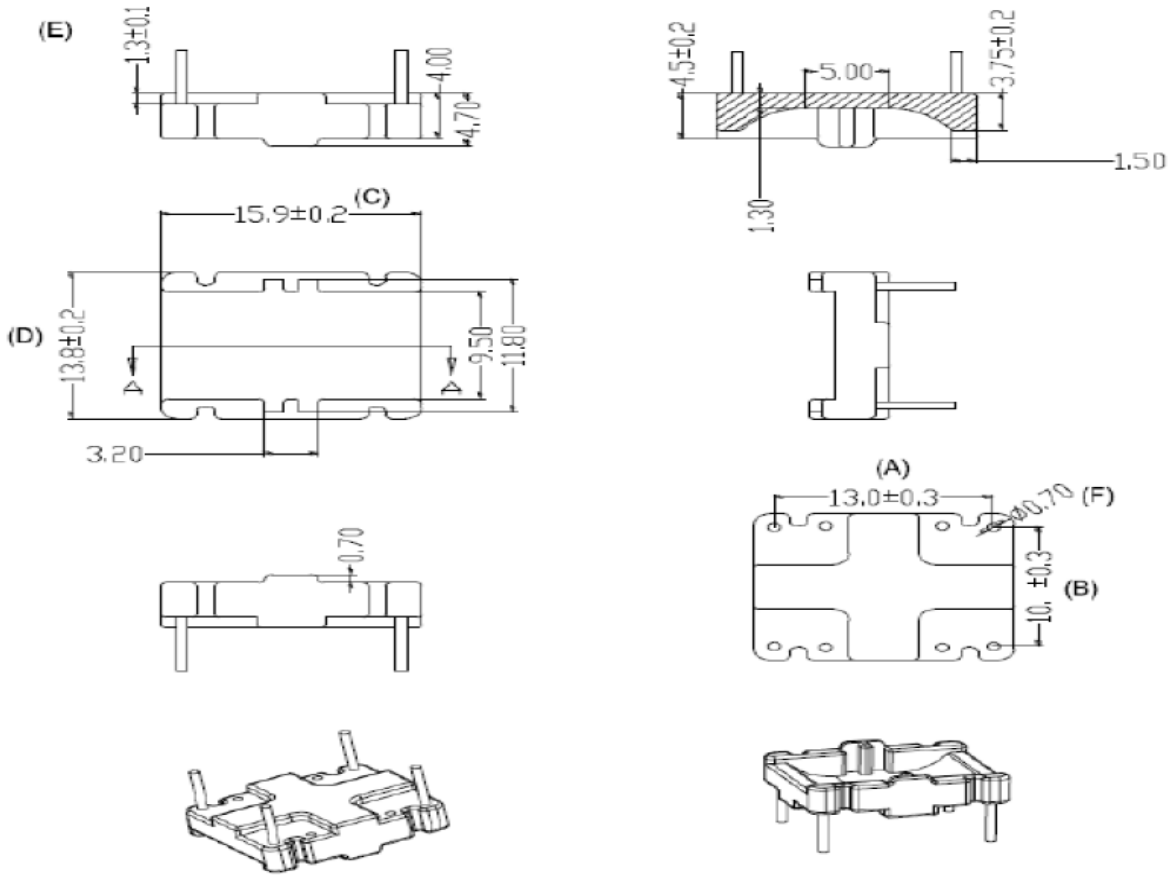
| TYPE | DEMENSION | | | REMARKS |
|---|---|---|---|---|
| | A | B | C | |
| T1607 | 16.0 ± 0.35 | 10.0 ± 0.30 | 7.0 ± 0.30 | A-CORE |
| TR16-10-7 | 16.0 ± 0.35 | 10.0 ± 0.30 | 7.0 ± 0.30 | HUAXING |

# SPECIFICATION

| NO. 13 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 13.BASE DIMENSION




| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

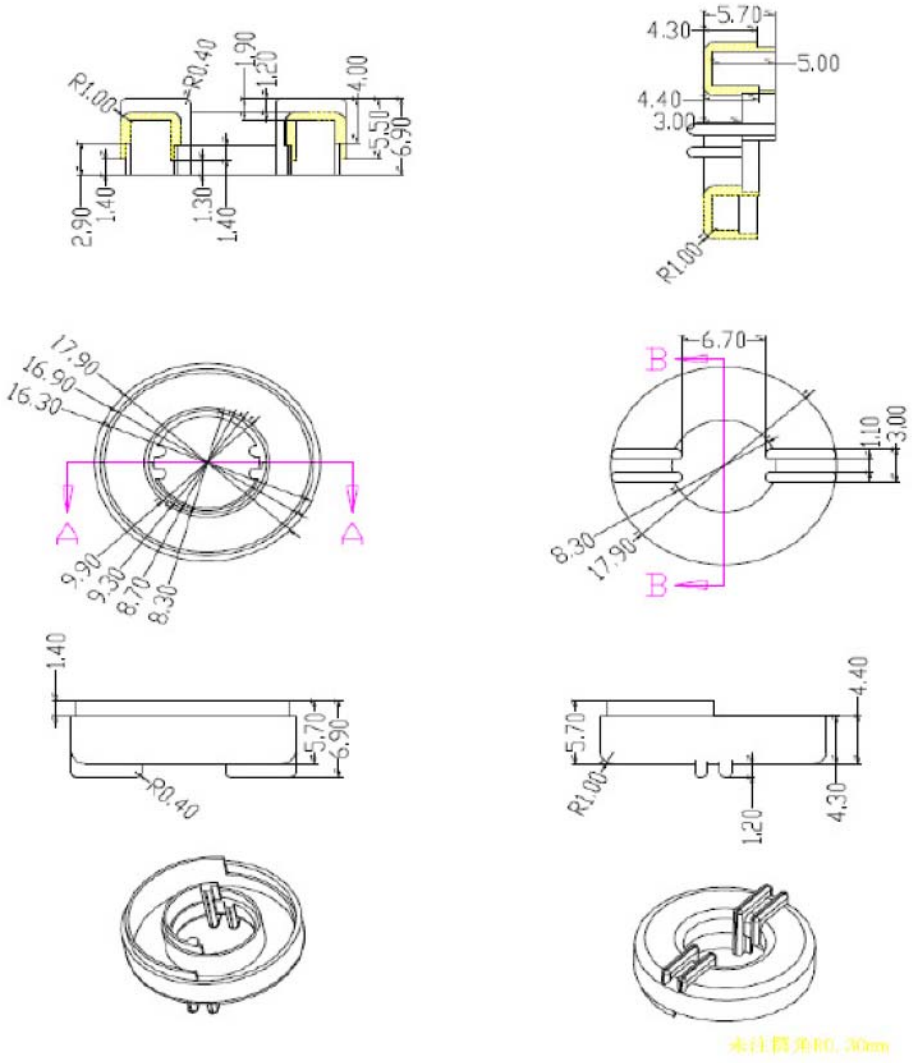
FELUX

# SPECIFICATION

| NO. 14 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 14.CAP DIMENSION




| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

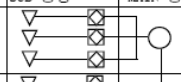
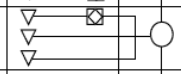
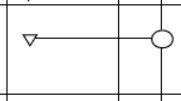
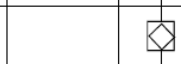
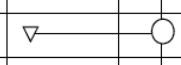
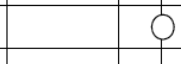
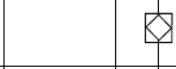
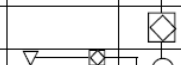
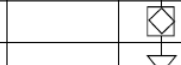
FEELUX

# SPECIFICATION

| NO. 15 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 15.PROCESS FLOW

| 공정번호 | 공정 SUB 공정 / MAIN 공정 | 사용자재 | 공정번호 | 관리항목 | 관리기준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 |  | CAP/ CORE WIRE | 1toN차 권선 | COIL 의 굵기와 종류,CAP/CORE 종류 확인<br>권선 턴수 ,권선 상태<br>결선 상태 | 권선 작업 지도서 | 2회/1일 | SAMPLING 5EA/LOT당 | Micro Meter | 생산 | 성적서 |
| 2 |  | BASE | BASE | 조립상태 | BASE 조립 작업표준서 | 2회/1일 | SAMPLING | Micro Meter | 생산 | |
| 3 |  | SOLDER<br>플럭스 | 납땜 | 납땜 시간 : 0.2ϕ 이하 : 1.5sec<br>0.2ϕ 이상 : 2.5sec<br>납땜 온도 : 460℃ MAX | 납땜 작업 표준서 | 2회/1일 | 전수 | 온도계<br>납조기 | 생산 | 온도 체크시트 |
| 4 |  | | 1차 검사 | 전기적 특성값 (L값,TURNs 등)<br>결선, 납땜상태 | 1차 검사 기준서 | 전수 | 전수검사 | TURNs Meter<br>LCR-Meter | 생산 | 1차검사 일보 |
| 5 |  | 불멸잉크 | 마킹 | 마킹방향,위치,선명도<br>LOT No. | 마킹 작업 표준서 | 전수 | 전수검사 | MARKING 도장 | 생산 | |
| 6 |  | | PIN 교정 | PIN 휨 , PIN 교정 상태 | PIN 교정 작업 표준서 | 전수 | 전수검사 | PIN 교정 JIG | 생산 | |
| 7 |  | | 2차 검사 | 전기적 특성값 (L값)<br>파형검사,TURNs,내전압, | 2차 검사 기준서 | 전수 | 전수검사 | TURNs Meter,<br>LCR-Meter,내압기<br>IMPULSE TESTER | 생산 | 2차검사 일보 |
| 8 |  | | 외관검사 | BOBBIN 파손, 납땜 상태<br>PIN상태 , 기타 | 외관검사 기준서 | 전수 | 전수검사 | | 생산 | 외관검사 일보 |
| 9 |  | PAPER BOX<br>OUT BOX | 포장 | BOX 규격 , 외관 ,포장상태<br>PIN to PIN 간격 | 포장작업 기준서 | 전수 | | | 생산 | |
| 10 |  | | 출하검사 | 전기적 특성값 (L값,절연저항,내전압)<br>치수, 구조, 외관, 수량 | 출하검사 기준서 | SAMPLING | SAMPLING | LCR-Meter<br>내압기, 절연저항기 | 품질관리 | 출하검사 성적서 |
| 11 |  | | 창고입고 | 수량, 제품명, 포장상태<br>입, 출고 재고관리 | 창고 적재 표준서 | | | | 영업 | 입고전표 수불장부 |
| 12 |  | | 출하 | 제품명, 수량 | | | | | 영업 | 출하전표 |

| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

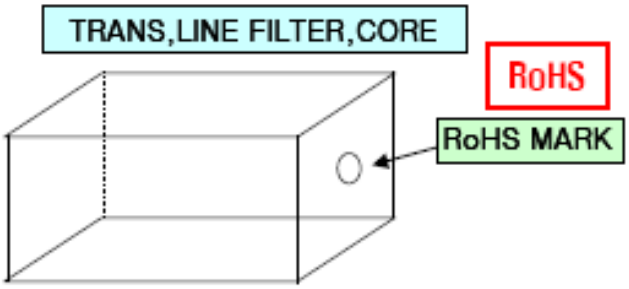
# SPECIFICATION

| NO. 16 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

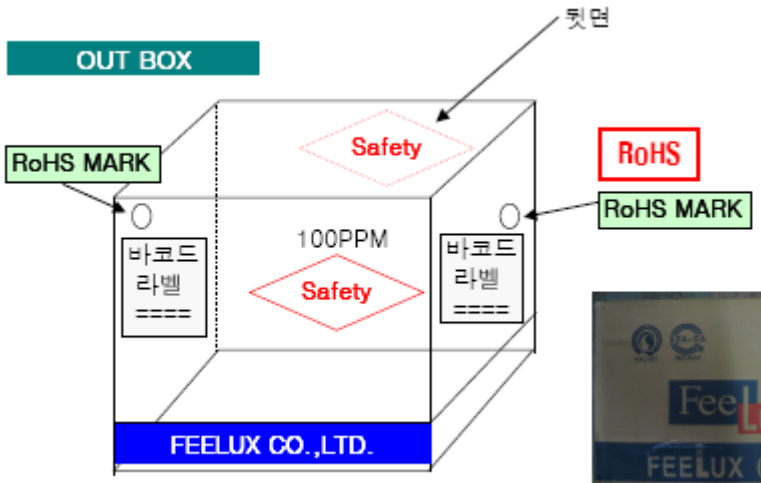
| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 16.PACKING

1. CARTON( PCS x PCS = PCS)




2. OUT BOX ( PCS x PCS = PCS)









| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 17 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 17.INSPECTION DATA

| ITEM | EAM62450505(LLF-124) | MODEL | 11S-PSU 32.37.42LLOW<br>LPB 42.47.55 | SAMPLE 생산처 : 중국 (위해) |
|---|---|---|---|---|
| | | TEST INSTRUMENT | LCR METER | H/P 4284A (10KHz, 1V) |
| PART NO | EAM62450505(LLF-124) | | WITHSTANDING VOLTAGE TESTER | TOS-8850 |
| LOT NO | FL-111117 | | INSULATION TESTER | TOS-8850 |
| LOT SIZE | 5 pcs | | DCR METER | HIOKI 3540 |
| CUSTOMER | LG ELECTRONICS | | LAYER SHORT TESTER | TF-6815 |

| NO | ITEM | TERMINAL | SPEC | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | INDUCTANCE | 1 - 3 | 28.0mH + 50%,-30% | 26.502 | 33.687 | 29.713 | 32.324 | 27.031 | | | | | |
| 2 | | 2 - 4 | 28.0mH + 50%,-30% | 26.498 | 33.684 | 29.725 | 32.312 | 27.048 | | | | | |
| 3 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | DEFLECTION INDUCTANCE | I L1 - L2 I | 0.7mH MAX | 0.004 | 0.003 | 0.012 | 0.012 | 0.012 | | | | | |
| 8 | D.C.R | 1 - 3 | 0.250mΩ MAX | 0.177 | 0.176 | 0.179 | 0.176 | 0.176 | | | | | |
| 9 | | 2 - 4 | 0.250mΩ MAX | 0.176 | 0.178 | 0.178 | 0.174 | 0.174 | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | WITHSTANDING VOLTAGE | COIL - COIL | AC 1,500V RMS, 1 MINUTE (Product :AC 1.80KV RMS 3SEC) | OK | OK | OK | OK | OK | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | INSULATION RESISTANCE | COIL - COIL | 300Mohm MIN at DC 500V | OK | OK | OK | OK | OK | | | | | |

| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 18 / 18 | LINE FILTER | P / N | EAM62450505(LLF-124) |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 18.ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.

2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.

3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.

4) WIRE BUNDLE METHOD.

* CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2MM.
* PIN SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2MM.
* TOP SOLENOID : ERROR BETWEEN THE TOP BARRIER TAPE AND LAST WIRE IS REQUIRED TO BE SMALLER THAN 2MM.
* SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER -SOLENOID IS REQUIRED TO BE SMALLER THAN 2MM.
* TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
* SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM. ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
* SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2.
IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.

5) PERFORMANCE OF THIS DRAWING IS REQUIRED TO MEET PART NUMBER **EAM62450505(LLF-124)**

6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE. BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

| SPEC NO. | | DATE | 2011. 10. 21. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

| 제/개정 | 일자 | 개정사유 | 개정No. |
|---|---|---|---|
| | 07월 15일 | 신규 제정 | QC-1 |
| | | | |
| | | | |
| | | | |

# 4M QC 공정도

<LINE FILTER>

| 작 성 | 검 토 | 승 인 |
|---|---|---|
| | | |
| 07월 15일 | / | 07월 15일 |

| 공정번호 | 공정 흐름도 | 공정명 | 작업내용 | 4M | | | |
|---|---|---|---|---|---|---|---|
| | | | | Man(사람) | Machine(장비) | Material(재료) | Method(방법) |
| 1 | ▽ | 원/부자재 수입검사 | 원자재 수입검사 | | Multi Meter (HP) V/C / LUPE XRF(SKYRAY) | CORE / BOBBIN / WIRE 외 | 수입검사 기준서 승인원 |
| 2 | ○ | 권선 | CORE에 WIRE 권선 | | 권선기 , NIPPER 등 | CORE / WIRE /BODING | 권선 작업지도서 |
| | ◇ | | 공정검사(권,결선상태) | | 육안 / V/C | 권선품 | 작업지도서 |
| 3 | ◇ | 1차 검사 | 특성검사 ,외관검사 | | LCR METER (HP) 육안/LUPE | 조립 완료 제품 | 1차 검사 기준서 |
| 4 | ○ | 납땜 (★CTQ) | 권선품 PIN 부위 납땜 | XU TAO / XIU ZHAO YANG | DIPPING기 온도계 / TIMER | 권선품 SOLDER / FLUX | 온도: 460℃MAX 시간: 선경별 납땜시간 |
| | ◇ | | 공정검사(납땜상태) | | 육안 / LUPE | 납땜 완료 권선품 | SHORT, 납땜 높이 |
| 5 | ◇ | 최종 검사 | 특성검사 | | 종합계측기(TPNGHUI) / 내압기/ SURGE (TOS)/I MPULSE TESTER | 건조 완료 제품 | 검사 기준서 승인원 특성 SPEC |
| | | | 외관 검사 | | 육안 / LUPE PIN JIG | 건조 완료 제품 | 검사 기준서 승인원 외관 SPEC |
| 6 | ○ | 마킹 | 마킹작업 | | 자동 MARKING기 | 건조 완료 제품 , INK | 마킹 작업 지도서 승인원 마킹 사양 |
| | ◇ | | 공정검사(마킹상태) | | 육안 | 마킹 완료 제품 | 마킹 사양 , 위치 등 사양 |
| 7 | ○ | 포장 | 제품 포장 진행 | | TAPE 절단기 | 완제품 , 포장 BOX 포장 TAPE | 포장 작업 지도서 포장 규격 |
| 8 | ◇ | 출하검사 | 출하검사 | | LCR/ DCR/내압기 V/C / 육안 | 완제품 | 출하 검사 기준서 출하 검사 성적서 |
| 9 | | 출하 | 출하진행 | | | | 출고 요청 수량 확인 |

*** 작성방법**

1. 공정번호 : 원자재 수입검사부터 완제품 출하까지 순차적 공정 No부여 (실제 공정 No와 일치해야함)
2. 공정흐름도 : 협력사에서 사용되는 기준에 따라 도형으로 표기
3. 공정명 : 해당공정 이름 (CTQ공정은 ★ 표기)
4. 작업내용 : 공정에 대한 작업내용
5. 사람 : CTQ공정에 한해 작업자 이름 (교대근무일경우 전/후 모두기입)
6. 장비 : 해당공정 사용장비명 및 회사명
7. 재료 : 생산 및 검사에 사용되는 원재료
8. 방법 : 생산 및 검사를 하기위한 조건(반드시 단위 및 Tolerance 기입)

| 4M | 4M 표준 분류 항목 | 세부항목 | 설명 | 1차 Vendor | | | 2차/3차 Vendor | | | 제출 서류 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 자체 승인 | LGE 승인 | | 1차 협) 자율 | LGE 승인 | | |
| | | | | | 단순 | 중요 | | 단순 | 중요 | |
| MAN | 일반 작업/검사자 변경 | | 최국인, 신입사원, 일용직 | O | | | O | | | 1. 교육결과 (자체) |
| | 중요 작업/검사자 변경 | | CTQ 공정 (중요공정) | | O | | O | | | 1. 4M 변경서<br>2. 교육결과<br>3. 인수인계서 (품질부서장 변경시) |
| | 살호 변경 | | | | O | | O | | | |
| | 품질책임자, 친환경 책임자 변경 | | 품질 부서장, 친환경 책임자 | | O | | O | | | |
| MACHINE | 생산설비 (In-Line) | 교정 / 수리 | | O | | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 설비점검자료<br>4. 변경 전/후 신뢰성 자료 (신규, 개조) |
| | | Spare Part 교환 | | O | | | O | | | |
| | | 신규 / 수정 | | | | O | | | O | |
| | (QA) 검사설비, Jig | 교정 / 수리 | | O | | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 설비점검자료<br>4. 변경 전/후 신뢰성 자료 (신규, 개조) |
| | | Spare Part 교환 | | O | | | O | | | |
| | | 신규/ 수정 | | | O | | O | | | |
| | 금형 | 이동 | 금형 타 업체 이동(이관) | | O | | | O | | 1. 4M 변경서<br>2. 변경 전/후 초기 검사성적서<br>3. 금형 점검자료<br>4. 변경 전/후 신뢰성 자료 (금형 신작) |
| | | 신작 | 금형 호기 추가 | | | O | | | O | |
| | | 수정 | 성형부 수정, 교환(Punch, Die, Core) | | | O | | | O | |
| | | 수리 | | O | | | O | | | |
| | Line | 신설,복수 | 사내 Line 증설 | | O | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 작업지도서<br>4. QC 공정도 |
| | | 이동 | 설비, Jig 변동 없음 | | | O | O | | | |
| MATERIAL | 원자재 | 재질/성분 변경 | 1. 재질변경시 : 사전 HSMS 등록 | | | O | | | O | 1. 4M 변경서<br>2. 변경 전/후 검사성적서,<br>3. 변경 전/후 신뢰성 자료<br>4. 유해물질 검사성적서<br>5. 변경 전/후 사양승인원 |
| | | 물성 변경 | | | | O | | | O | |
| | | 안료/도료 변경 | | | | O | | | O | |
| | | Scrap 사용 비율 변경 | | | | O | | | O | |
| | | 색상(Color) 변경 | | | | O | | | O | |
| | | 표면 처리, 도금, 도장 | | | | O | | | O | |
| | 부자재<br>세척제, 이형제,<br>보호비닐, 부직포<br>Gasket류, Rubber류 | 추가 | 1. 재질변경시 : 사전 HSMS 등록 | | | O | | | O | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 유해물질 검사성적서 (재질변경시)<br>4. 작업지도서 |
| | | 삭제 | | | | O | | | O | |
| | | 변경 | | | | O | | | O | |
| | 하위 부품 | 추가 | 1. 재질변경시 : 사전 HSMS 등록 | | | O | | | O | 1. 4M 변경서<br>2. 변경 전/후 검사성적서,<br>3. 변경 전/후 신뢰성 자료<br>4. 유해물질 성적서 (추가, 변경)<br>5. 변경 전/후 사양승인원<br>* 사전 HSMS에 등록<br>* 부품삭제의 경우에는 유해물질 성적서 제출 無 |
| | | 삭제 | | | | O | | | O | |
| | | 변경 | | | | O | | | O | |
| | 구조 변경 | 치수 변경 | | | | O | | | O | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 변경 전/후 신뢰성 자료 (단순 변경은 제외)<br>4. 변경 전/후 사양승인원 |
| | | 형상 변경 | | | | O | | | O | |
| METHOD | 생산지 | 추가 | | | | O | | | O | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 변경 전/후 신뢰성 자료<br>4. 유해물질 성적서<br>5. QC 공정도<br>6. 공장심사 자료<br>* 2, 3차 Vendor는 1차 Vendor 실시 자료 |
| | | 이동 | | | | O | | | O | |
| | 하위 Vendor | 추가 | | | | O | | | O | |
| | | 변경 | | | | O | | | O | |
| | 검사 기준 변경 | 수입검사 | | O | | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 검사 기준서 (또는 작업지시서)<br>4. 사양승인원 |
| | | 공정검사 | | O | | | O | | | |
| | | 출하검사 | | | O | | O | | | |
| | 공정 변경 | 작업방법 변경 | | O | | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 변경 전/후 신뢰성 자료 (단순 변경은 제외)<br>4. QC 공정도<br>5. 작업지도서 |
| | | 사출/성형 조건 | | | | O | | | O | |
| | | 후가공 변경 | | | | O | | | O | |
| | Label/Marking | | 규격 Label 변경 : 규격그룹 검토 | | O | | O | | | 1. 4M 변경서<br>2. 변경 전/후 사양승인원<br>3. 작업 지도서<br>4. 규격 승인 관련 자료 (규격 Label 변경 시) |
| | Packing 변경 | BOX, Tray | | | O | | O | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 변경 전/후 신뢰성 자료 (Packing 시험)<br>4. 사양승인원 |
| | ROM 변경 | ROM 버전 변경 | | | | O | | | | 1. 4M 변경서<br>2. 변경 전/후 검사성적서<br>3. 변경 전/후 신뢰성 자료<br>* PCB 단순 Version 변경 인 경우 신뢰성 자료 제외 가능<br>4. 사양승인원 |
| | S/W 변경 | S/W 버전 변경 | | | | O | | | O | |
| | PCB 변경 | 구조 변경 | PCB Hole, Pattern 변경 등 | | | O | | | O | |
| | | Version 변경 | 단순 Version 변경 | | O | | | O | O | |

1) 1차 Vendor : 제품을 조립하는 Maker

2) 2(3)차 Vendor : 1(2)차 Vendor에 공급하는 Maker

* 4M의 Vendor 정의 : 원재료를 생산 또는 조립하는 가공 업체, Agent 또는 공급권만 가지고는 있는 Supplier는 Vendor에서 제외함.

3) 단순 : 단순 4M으로 관련자료를 기준으로 LGE QA에서 접수/승인함

4) 중요 : 관련부서 (연구소, 부품개발, 규격, 인정시험, 제품 Event)등 검토 후 승인함.

# LINE FILTER SPECIFICATION
# LF103

ROHS safety

# APPROVAL SHEET

| | |
|---|---|
| CUSTOMER | : 유양D&U |
| MODEL | : 10L 32INCH |
| I T E M | : LINE FILTER |
| LG E. PART NO | : EAM60991401(LLF-100) |
| KYUNG-IN SPEC NO | : KI069-13-0879-1 |

| APPROVAL: | REFERENCE: |
|---|---|
| | |

| < 각 부서별 담당자 > | |
|---|---|
| 품질보증팀 | 박승환 부장 |
| | 011-9881-8392 |
| | shpark@kitrans.com |
| 영업팀 | 김기호 부장 |
| | 017-228-9127 |
| | khkim@kitrans.com |
| 연구소 | 봉은종 차장 |
| | 010-8985-0682 |
| | hjpark@kitrans.com |


DONGYANG TELECOM CO.,LTD.
(구: KYUNG IN ELECTRONICS)

| | | |
|---|---|---|
| HEAD OFFICE & FACTORY | 942-5, Dohwa-Dong, Nam-gu, Incheon, korea | TEL : 032-584-0100<br>FAX : 032-584-0101 |
| China 1 Factory | Korea industrial Circles Beigong Street Office<br>Weicheng Weifang Shandong, CHINA | TEL : 86-536-895-0501<br>FAX : 86-536-895-7291 |
| China 2 Factory | No.28 Feng Huang Street, Weifang Shandong, CHINA | TEL : 86-536-790-2048<br>FAX : 86-536-760-2046 |

| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

# 1.REVISION

| REV NO. | DATE | PAGE | REVISED CLAUSE | REVISED CAUSE |
|---|---|---|---|---|
| 1 | 11.04.13 | ALL | 경인전자 → 동양텔레콤 회사명 변경 | 회사명 변경 |
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| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 1/16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

# 2. I N D E X


| | |
|---|---|
| 1/16 | 1. REVISION |
| 2/16 | 2. INDEX |
| 3/16 | 3. DIMENSION |
| 4/16 | 4. SCHEMATIC DIAGRAM |
| 4/16 | 5. WINDING SPECIFICATION |
| 5/16 | 6. ELECTRICAL CHARACTERISTICS |
| 6/16 | 7. ENVIRONMENTAL CHARACTERISTICS |
| 7/16 | 8. MECHANICAL CHARACTERISTICS |
| 8/16 | 9. INTERNAL CONSTRUCTION |
| 9/16 | 10. MATERIAL LIST |
| 10/16 | 11. UL-LIST |
| 11/16 | 12. CORE DIMENSION |
| 12/16 | 13. BOBBIN DIMENSION |
| 13/16 | 14. PROCESS FLOW |
| 14/16 | 15. PACKING |
| 15/16 | 16. INSPECTION DATA |
| 16/16 | 17. ASSIGNMENTS |

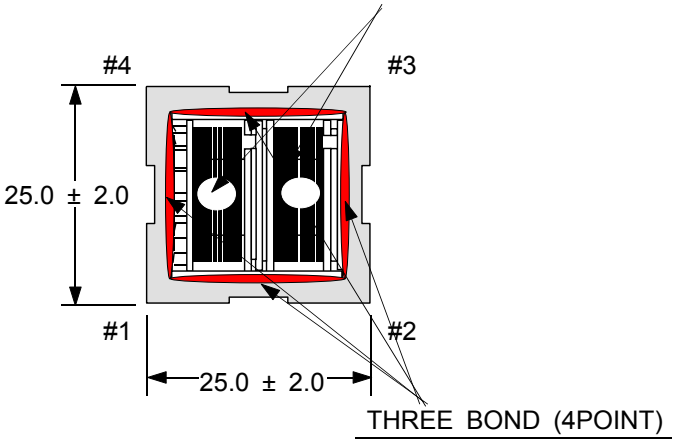

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 2/16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

## 3. DIMENSION( UNIT : mm )

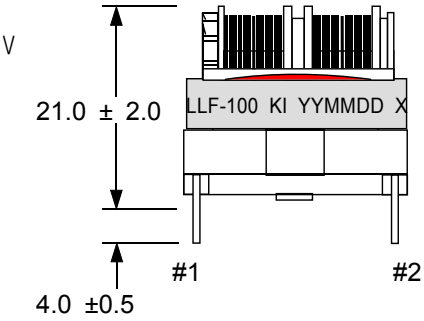
safety

**<< TOP VIEW >>** MAGIC SOLDER #10 (2POINT)

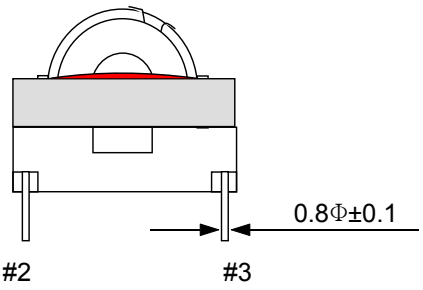



| MARKING SPEC | | | |
|---|---|---|---|
| PART NO | | LLF-100 | |
| KI | | DONGYANG TELECOM | |
| LG ELECTRONICS PART NO | | EAM60991401 | |
| LOT NO | | YYMMDD | |
| YY | | YEAR | 2008 : 08<br>2009 : 09 |
| MM | | MONTH | JANUARY : 01<br>FEBRUARY : 02 |
| DD | | DAY | |
| X | PRODUCT CODE | A | KOREA INCHEON FACTORY |
| | | B | CHINA 1 FACTORY |

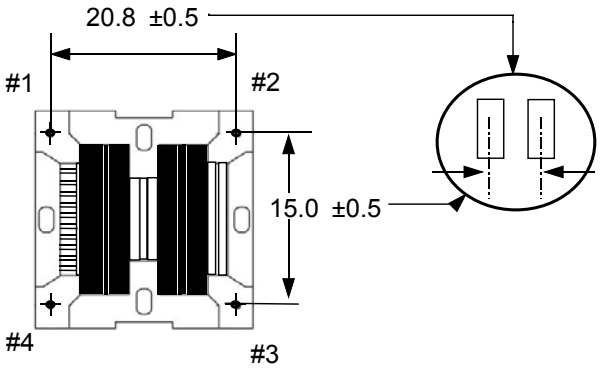
**<< FRONT VIEW >>**




**<< SIDE VIEW >>**



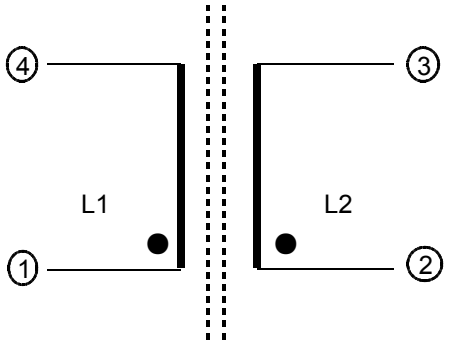

**<< BOTTOM VIEW >>**




| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 3/16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| DONGYANG TELECOM CO., LTD | | | | | | | |

| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

## 4. SCHEMATIC DIAGRAM




## 5. WINDING SPECIFICATION

| NO | TERMINAL | | WIRE | Ts | WINDING METHOD |
|---|---|---|---|---|---|
| | S | F | | | |
| L1 | 1 | 4 | 1UEW 0.65Φ | 48 ±3 | SOLENOID |
| L2 | 2 | 3 | 1UEW 0.65Φ | 48 ±3 | SOLENOID |

* WINDING DIRECTION : # 1, #4 PIN VIEW C.C.W

| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

## 6. ELECTRICAL CHARACTERISTICS

| NO | ITEM | TERMINAL | SPEC | REMARKS |
|---|---|---|---|---|
| 6-1 | INDUCTANCE | 1 - 4<br>2 - 3 | 7.7 mH MIN<br>7.7 mH MIN | HP-4284A or eqv<br>at 1KHz,1V |
| 6-2 | INDUCTANCE DEFLECTION | \|L1 - L2\| | 0.60 mH MAX | WHEATSTONE BRIDGE<br>HIOKI 3540(mΩ METER) |
| 6-2 | D.C RESISTANCE (20℃) | 1 - 4<br>2 - 3 | 0.15 Ω MAX<br>0.15 Ω MAX | WHEATSTONE BRIDGE<br>HIOKI 3540(mΩ METER) |
| 6-3 | WITHSTANDING VOLTAGE | COIL - COIL | AC 1.5 KV R.M.S 1 MINUTE. | safety<br>KIKUSUI TOS-8850<br>(CURRENT SESITIVE IS 5mA) |
| | | COIL - CORE | AC 1.5 KV R.M.S 1 MINUTE. | |
| 6-4 | INSULATION RESISTANCE | COIL - CORE | 100 Mohm MIN at DC 500V | MEGOHM METER safety<br>(SM-5E) |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 5/16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

# 7. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃ ± 15℃ HUMIDITY 65% ± 20%
IF WHEN ANY OBJECTION IS SUGESTED. THE TEST CAN BE OPERATED AT 20℃ ± 2℃, 65% ± 5% RH

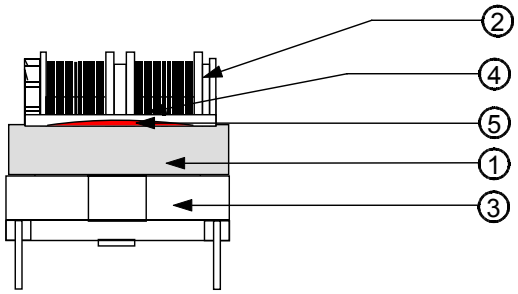
<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>7-1</td><td>USED<br>TEMPERATURE<br>RANGE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>7-2</td><td>KEEPING<br>TEMPERATURE</td><td>-25℃ ~ +105℃</td><td></td></tr>
<tr><td>7-3</td><td>LOW<br>TEMPERATURE<br>RESISTANT</td><td rowspan="5">MUST MEET THE ELECTRICAL REQUIREMENTS<br>AND HAS NOT ANY<br>DAMAGE ON THE APPEARANCE<br>AND THE INDUCTANCE VARIATION<br>CAN NOT OVER 10% OF THE INITIAL VALUE<br>(IT SHOULD BE MANAGED BY<br>10% UNDER 10uH)</td><td>-25℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>7-4</td><td>HIGH<br>TEMPERATURE<br>RESISTANT</td><td>+105℃ ± 2℃, 96Hr MEASURE<br>AFTER 2 Hr AT ROOM TEMP.</td></tr>
<tr><td>7-5</td><td>HUMIDITY<br>RESISTANT</td><td>+95%RH ± 5% (40℃ ± 5℃) 96Hr<br>MEASURE AFTER 2Hr AT ROOM TEMP
<table>
<tr><th>STEP</th><th>TEMP</th><th>TIME</th></tr>
<tr><td>1</td><td>-25℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>2</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
<tr><td>3</td><td>+105℃ ± 2℃</td><td>30 MINUTE</td></tr>
<tr><td>4</td><td>+25℃ ± 2℃</td><td>10 MINUTE</td></tr>
</table>
REPEAT 5 TIME FROM STEP 1 AND<br>TEST AFTER 2 Hr. AT ROOM TEMP.</td></tr>
<tr><td>7-6</td><td>TEMPERATURE<br>CYCLE</td><td></td></tr>
<tr><td>7-7</td><td>HEAT SHOCK-<br>RESISTANT</td><td>2 HR AT-20℃ →2 HR AT 70℃<br>: 10 CYCLE</td></tr>
</table>

## 8.MECHANICAL CHARACTERISTICS

| NO | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 8-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 8-2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 10% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER POT AT 260 +5℃ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 8-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245℃ -5℃ FOR 3 SECONDS |
| 8-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5Kgf DURING 30 ± 5 SEC |

| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

## 9.INTERNAL CONSTRUCTION safety




① : CORE ② : BOBBIN ③ : BASE ④ : WIRE ⑤ : ADHESIVE

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 8/16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

## 10.MATERIAL LIST

safety

| NO | MATERIAL | ITEM | MANUFACTURE | MATERIAL COLOR | FILE NO. |
|---|---|---|---|---|---|
| 1 | CORE | SQE2424S SM100<br>ESQ2424 HM5A<br>ET24 HL10 | SAMWHA ELECTRONICS CO., LTD<br>TODA ISU COORPORATION<br>RUYUAN DONGYANGGUANG<br>MAGNETIC MATERIAS CO., LTD. | BLACK | |
| 2 | BOBBIN | P.B.T (94V-0) | HEXION SPECIALTY CHEMICALS GMBH<br>(DAE HEUNG,HO SUNG,HO JIN) | WHITE | E121254 |
| 3 | BASE | 94V-0 (PF 2736)<br>PHENOL RESIGN | HEXION SPECIALTY CHEMICALS GMBH | BLACK | E61040 |
| 4 | WIRE | 1UEW 0.65Φ | DONG YANG ELECTRONICS CO.,LTD | NATURAL LIGHT PINK | E102761 |
| 5 | ADHESIVE | THREE BOND #1401<br>MAGIC SOLDER #10 | KOREA THREE BOND CO., LTD.<br>SUNG CHANG CO., LTD. | TRANSPPARENCY | |
| 6 | SOLDER | GM Bar 99307<br>LFC7 | GREEN METALS CO.,LTD.<br>SEOUL ALLOYMETAL CO.,LTD. | SILVER | |
| 7 | FLUX | EF9301 | ALPHA METAL CO., LTD | CLEAR | |
| 8 | MARKING | INK | BON MARQUE | BLACK | |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 9/16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

## 11.UL YELLOW CARD

BOBBIN

**SAMYANG CORPORATION** E121254
407 3-GA PALBOK-DONG
CHEONJU, CHEONBUK 560-200 REPUBLIC OF KOREA

| | | Min. | | H | H | R T I | | | H V | D 4 | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | Elec | Mech | | T | 9 | T |
| Material Dsg | Color | mm | Class | I | I | | Imp | Str | R | 5 | I |
| Acrylonitrile Butadiene Styrene/Polycarbonate (ABS/PC), "TRILOY", furnished as pellets. | | | | | | | | | | | |
| 1500GN-(I) | ALL | 0.75 | V-0 | - | - | 75 | 75 | 75 | | | |
| 1500GN-05 | ALL | 0.75 | V-0 | 4 | 0 | 140 | 130 | 140 | 2 | 6 | 3 |
| | | 1.5 | V-0 | 3 | 0 | 140 | 130 | 140 | | | |
| | | 3.0 | V-0 | 2 | 0 | 140 | 130 | 140 | | | |
| 1500GN-30 | ALL | 0.75 | V-0 | 3 | 0 | 130 | 130 | 140 | 1 | 6 | 2 |
| | | 1.5 | V-0 | 2 | 0 | 130 | 130 | 140 | | | |
| | | 3.0 | V-0 | 2 | 0 | 130 | 130 | 140 | | | |
| 1500GN-45 | ALL | 0.75 | V-0 | - | - | 75 | 75 | 75 | | | |

BASE

**HEXION SPECIALTY CHEMICALS GMBH** E61040
POSTFACH 7154
58609 ISERLOHN, GERMANY

| | | Min. | | H | H | R T I | | | H V | D 4 | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | Elec | Mech | | T | 9 | T |
| Material Dsg | Color | mm | Class | I | I | | Imp | Str | R | 5 | I |
| PF 2736(a)(b) | | | | | | | | | | | |
| | BK | 0.46 | V-0 | - | - | 150 | 150 | 150 | 0 | 5 | 3 |
| | ALL | 0.81 | V-1 | 0 | 2 | 150 | 150 | 150 | | | |
| | NC, GN, BK | 0.81 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | ALL | 1.5 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | | 3.0 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |

(a) - Optional Suffix "H".

(b) - Grade designation may be followed by a four digit number representing color, P or S indicating type of molding, a single digit representing slight color variation.

Marking: Company name or tradename "BAKELITE" , "RUTAFORM" and material designation on container, wrapper or finished part.

Last Updated on 2008-09-04

WIRE

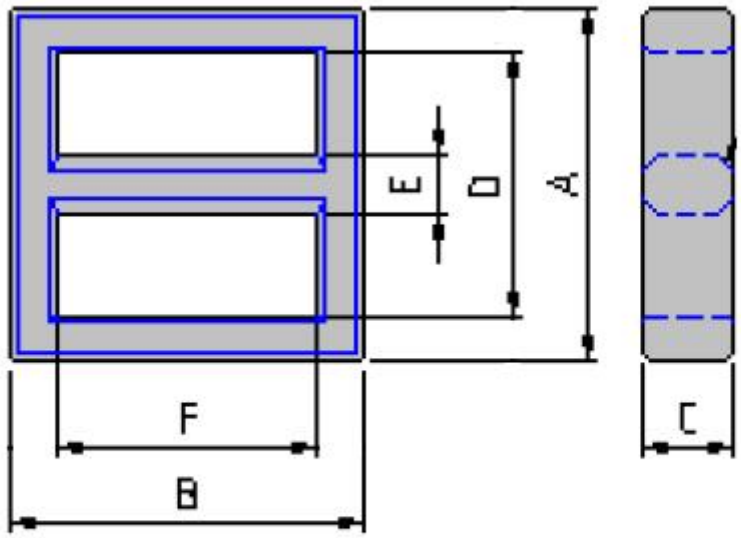
**DONG YANG ELECTRONICS IND CO LTD** E102761
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ | | ANSI Type | TI |
|---|---|---|---|---|
| | BC | OC | | |
| UEW(F) | Polyurethane | — | MW79, | 155, |
| UEW(B) | Polyurethane | — | MW75# | 130 |
| UAL | Polyurethane | — | @ | 155 |
| PEW | Polyester | — | @ | 180 |
| | | | MW5# | 155 |

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 10/16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

## 12.CORE DIMENSION

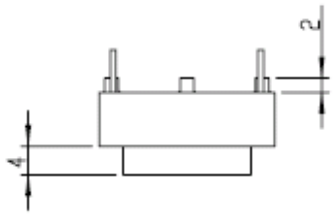


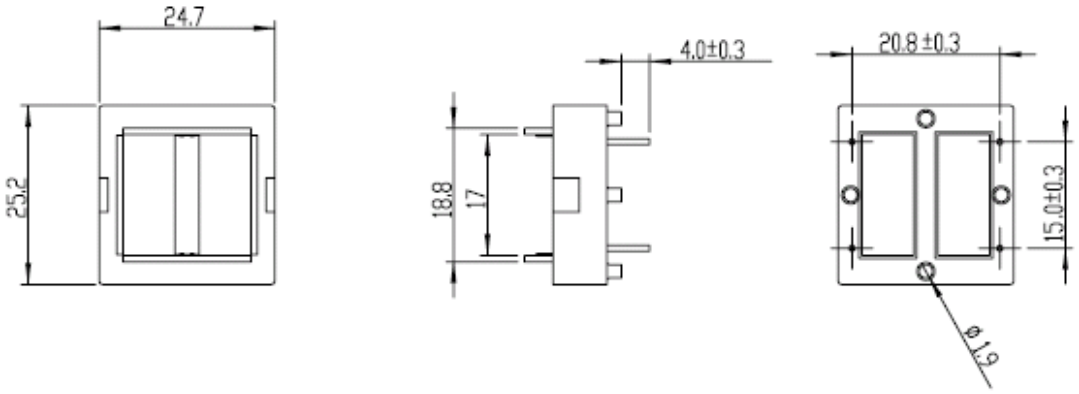

| TYPE | DIMENSION (m/m) | | | | | | Effective parameters | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | le(mm) | Ae(mm)$^2$ | Ve(mm)$^3$ | |
| ESQ2424 | 24.45 +0.45 −0.25 | 24.45 +0.45 −0.25 | 4.00 ±0.30 | 19.1 MIN | 4.00 ±0.30 | 19.1 MIN | 61.0 | 17.8 | 1090 | TODA ISU |
| SQE2424S | 24.45 +0.45 −0.25 | 24.45 +0.45 −0.25 | 4.00 ±0.30 | 19.1 MIN | 4.00 ±0.30 | 19.1 MIN | 60.8 | 17.5 | 1060 | SAM WHA |
| ET24 | 24.45 +0.45 −0.25 | 24.45 +0.45 −0.25 | 4.00 ±0.30 | 19.1 MIN | 4.00 ±0.30 | 19.1 MIN | 61.0 | 17.8 | 1090 | DONGYANG GUANG |

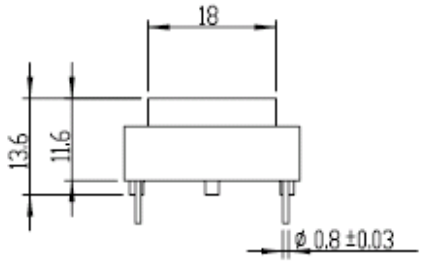
| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 11/16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

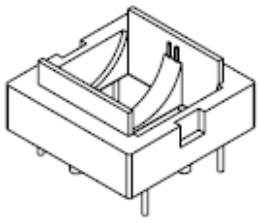
| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

## 13.BOBBIN DIMENSION



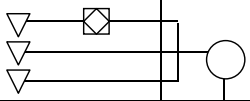
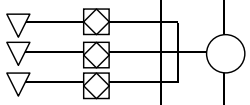
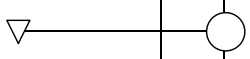
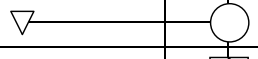
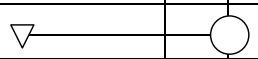
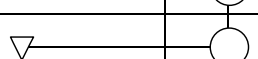
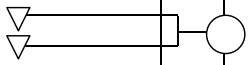



| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 12/16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

# 14.PROCESS FLOW



| 공 정 번 호 | 공 정 | | 소요자재 | 공 정 명 | 관리항목 | 관리기준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | SUB 공정 | MAIN공정 | | | | | | | | | |
| 01 |  | | CORE<br>BOBBIN | CORE<br>BOBBIN 조립 | *CORE 의 종류<br>*조립상태 | CORE, BOBBIN<br>조립 작업표준 | LOT당<br>5 EA | SAMPLING | | 생산 | |
| 02 |  | | BOBBIN<br>COIL<br>CORE | 1-N차 권선 | *COIL의 굵기, 종류<br>*권선 턴수, 권선 상태 | | LOT당<br>5 EA | SAMPLING | *MICRO METER | 생산 | 성적서 |
| 03 |  | | BASE | CORE<br>BASE 조립 | *CORE와 BASE의 조립상태 | CORE, BASE조립<br>작업표준 | 전수 | SAMPLING | | 생산 | |
| 04 |  | | 땜납 | 납땜 | *납조기 온도 : 430℃±10℃<br>*납 땜 시 간 : 2.0초±0.5초 | 납땜 작업표준 | 전수 | SAMPLING | *납조기, *시계<br>*온도계 | 생산 | 온도체크<br>시트 |
| 05 | |  | | 1차 검사 | *전기적 특성 (L값, Rdc값)<br>*납땜상태 | 1차 검사 기준 | 전수 | 전수검사 | *TURNS-METER<br>*LCR-METER | 생산 | 1차<br>검사일보 |
| 06 |  | | BOND | BONDING | *BASE 접착 *BONDING 상태,<br>*BOND 종류 *BOND 배합비율 | BONDING<br>작업표준 | 2회 1일 | SAMPLING | | 생산 | |
| 07 | |  | | 건조 | *건조기 온도 및 시간<br>(120℃/ 20분) | 건조 작업표준 | | | *건조기, *시계,<br>*온도계 | 생산 | 온도체크<br>시트 |
| 09 |  | | 불멸잉크 | MARKING | *MARKING 방향, 위치, 선명도,<br>LOT No. | MARKING<br>작업표준 | 전 수 | 전수검사 | *MARKING 도장 | 생산 | |
| 10 | |  | | PIN교정 | * 핀휨, 핀교정상태 | PIN교정<br>작업표준 | 전 수 | 전수검사 | *PIN교정 JIG | 생산 | |
| 11 | |  | | 2차 검사 | *전기적특성 (L값,Rdc값)<br>*위상, TURNS *내전압 절연상태 | 2차 검사 기준 | 전 수 | 전수검사 | *TURNS METER<br>*LCR-METER,*내압기 | 생산 | 2차 검사<br>일보 |
| 12 | |  | | 외관검사 | *BOBBIN파손, 납땜상태, PIN상태<br>*기타 | 외관검사 기준 | 전 수 | 전수검사 | | 생산 | 외관검사<br>일보 |
| 13 |  | | SNOW BOX<br>OUT BOX | 포 장 | *PIN TO PIN 간격<br>*BOX규격, 외관, 포장상태 | 포장작업 기준 | 전 수 | 전수검사 | | 생산 | |
| 14 | |  | | 출하검사 | *전기적특성 (L값 절연저항 내전압)<br>*치수, 구조, 외관, 수량 | 출하검사 기준 | 전 수 | SAMPLING | *LCR *내압기<br>*절연저항기 | 품질관리 | 출하검사<br>성적서 |
| 15 | |  | | 창고입고 | *수량, 제품명, 포장상태,<br>*입.출고 재고관리 | 창고적재 표준 | 전 수 | SAMPLING | | 영업 | 입고전표<br>수불장부 |
| 16 | |  | | 출 하 | *제품명, 수량 | | | | | 영업 | 출하전표 |

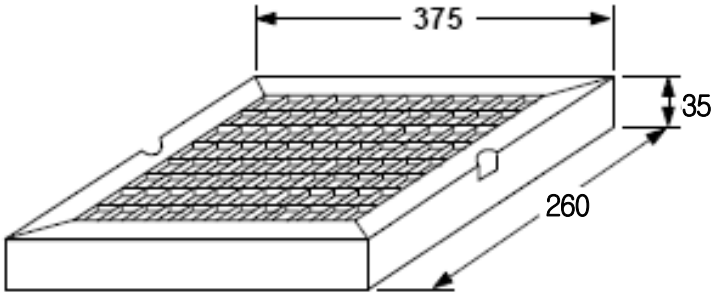
| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

## 15. PACKING

(UNIT : m/m)

** INNER BOX (PAPER BOX)

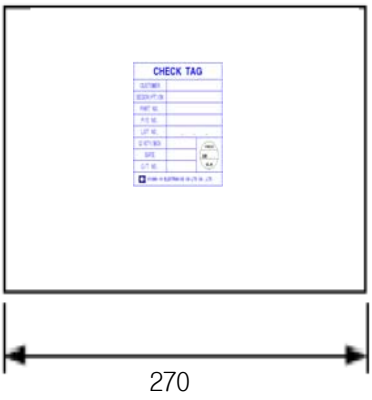
12 PCS × 7 EA = 84 PCS




** OUT BOX (CARTON)

84 PCS × 6 EA = 504 PCS



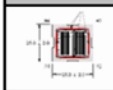
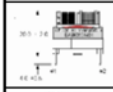
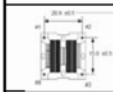

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 14/16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

| SPECIFICATIONS | | PART NO | EAM60991401 |
|---|---|---|---|
| PART NAME | LINE FILTER | DATE | 2009. 11. 07 |

## 16. INSPECTION DATA

### INSPECTION DATA

| CUSTOMER | LG 전자 | DATE | 2009년 9월 29일 화요일 | | INSPECTED BY | CHECKED BY | APROVED BY |
|---|---|---|---|---|---|---|---|
| ITEM | LINE FILTER | 적용 MODEL | 10L MODEL | TEMPERATURE | | | |
| PART NO. | LLF-100 (EAM60991401) | LOT SIZE | 12/12 EA | 19 ℃ | | | |

| 검사항목 | 시료수 / PIN NO & 규격치 | 삼화 CORE | | | | | | | | | | 미함침 | | MIN | AVERAGE | MAX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | |
| INDUCTANCE | 1 - 4 (7.7mH MIN) | 15.4 | 12.1 | 15.3 | 14.4 | 14.6 | 13.8 | 14.2 | 14.8 | 15.4 | 14.1 | 15.0 | 15.1 | 12.1 | 14.5 | 15.4 |
| | 2 - 3 (7.7mH MIN) | 15.5 | 12.0 | 15.3 | 14.4 | 14.6 | 13.9 | 14.3 | 14.8 | 15.4 | 14.2 | 15.0 | 15.1 | 12.0 | 14.5 | 15.5 |
| D.C.R | 1 - 4 (0.15 Ω MAX) | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 | 0.09 | 0.09 |
| | 2 - 3 (0.15 Ω MAX) | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |
| WITHSTANDING VOLTAGE | COIL - COIL AC 1.5KV r.m.s 1 MINUTE | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | | | |
| | COIL - CORE AC 1.5 KV r.m.s 1 MINUTE | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | | | |
| INSULATION RESISTANCE | COIL - CORE 100 M ohm MIN at DC 500V | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | | | |
| 치수 DATA | | | | | | | | | | | | | | | | |
|  | 25.0 ± 2.0 | 25.2 | 25.2 | 25.3 | 25.2 | 25.2 | 25.1 | 25.2 | 25.2 | 25.1 | 25.2 | 25.1 | 25.2 | 25.1 | 25.2 | 25.3 |
| | 25.0 ± 2.0 | 24.7 | 24.8 | 25.7 | 25.7 | 25.7 | 25.6 | 25.7 | 25.6 | 25.6 | 25.7 | 25.7 | 25.6 | 24.7 | 25.5 | 25.7 |
|  | 20.0 ± 2.0 | 20.1 | 20.6 | 20.3 | 20.2 | 20.5 | 20.0 | 20.2 | 20.2 | 20.4 | 20.2 | 20.2 | 20.3 | 20.0 | 20.3 | 20.6 |
| | 4.0 ± 0.5 | 3.89 | 3.89 | 3.96 | 3.97 | 4.08 | 4.15 | 4.00 | 3.91 | 4.21 | 3.93 | 4.15 | 4.18 | 3.89 | 4.03 | 4.21 |
|  | 20.8 ± 0.5 | 20.8 | 20.7 | 20.6 | 20.5 | 20.8 | 20.7 | 20.8 | 20.9 | 20.9 | 20.8 | 20.8 | 20.9 | 20.5 | 20.8 | 20.9 |
| | 15.0 ± 0.5 | 14.97 | 14.95 | 14.96 | 14.96 | 14.96 | 15.02 | 14.97 | 14.93 | 15.05 | 15.06 | 15.03 | 15.04 | 14.93 | 14.99 | 15.06 |
|  | 0.8Φ ± 0.1 | 0.78 | 0.77 | 0.77 | 0.79 | 0.80 | 0.76 | 0.78 | 0.77 | 0.77 | 0.77 | 0.77 | 0.76 | 0.76 | 0.77 | 0.80 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

비 고

| TEST INSTRUMENTS | INDUCTANCE | HP-4284A PRECISION LCR METER at 1KHz,1.0Vrms |
|---|---|---|
| | DC RESISTANCE | HIOKI 3540 mΩ Hi TESTER |
| WINDING SPEC. | CORE | SQE2424 SM-100 |
| | WIRE | 1UEW 0.65Φ |
| | TURNS | 48±3 |
| | REMARK | |

KYUNG-IN ELECTRONICS CO.,LTD. 모조지 210 X 297mm

| DRAWN | DESIGNED | CHECKED | APPROVED | SCALE | none | PAGE | 15/16 |
|---|---|---|---|---|---|---|---|
| | | | | UNIT | mm | | |
| | | | | DONGYANG TELECOM CO., LTD | | | |

## 17. ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.

2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.

3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.

4) WIRE BUNDLE METHOD.

* CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2 MM.
* PIN SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2 MM.
* TOP SOLENOID : ERROR BETWEEN THE TOP BARRIER TAPE AND LAST WIRE IS REQUIRED TO BE SMALLER THAN 2 MM.
* SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER-SOLENOID IS REQUIRED TO BE SMALLER THAN 2 MM.
* TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
* SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
* SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2. IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.

5) PERFORMANCE OF THIS DRAWING IS REQUIRED TO MEET PART NUMBER EAM60991401.

6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE.BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

# 폴리 우레탄 동선 (1UEW)

| 치 수 | | | | 절연파괴 전 압 (V) ↑ | 내마모 파괴하중 | | 최대도체 저 항 (Ω/㎞) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성 외 경 (mm) ↑ | 최대완성 외 경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.224 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| **0.650** | **±0.008** | **0.686** | **0.724** | **3050** | **5.39(550)** | **4.55(465)** | **55.31** | **20** |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

RoHS safety

# APPROVAL SHEET

## CUSTOMER : LG Electronics Co., Ltd.

MODEL NO : LLF-100

ITEM : LINE FILTER

PART NO : EAM60991401

DESCRIPTION : 32″

DATE : 2009. 11. 07.

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | FEELUX ELECTRONICS CO., LTD. ( KOREA FACTORY ) | TEL | 070-7780-8421 |
| | | FAX | 070-7780-8421 |
| SALES TEAM GENERAL MANAGER | Jong il Park | TEL | 011-799-4581 |
| | E-MAIL: kever321@feelux.com | | |
| QUALITY ASSURANCE TEAM DEPUTY GENERAL MANAGER | Kwang Hoon Cho | TEL | 016-706-2463 |
| | E-MAIL: khcho@feelux.com | | |

| | | | |
|---|---|---|---|
| REQUEST CUSTOMER | YANG JU FEELUX ELECTRONICS CO., LTD. ( HEAD OFFICE FACTORY ) | TEL | 070-7780-8000 |
| | | FAX | 070-7780-8109 |
| ADDRESS | 624-8, Seoku-Ry Kwangjeok-Myun, Yangju-Kun Kyunggi-Do Korea | | |
| REQUEST CUSTOMER | Chungkye FEELUX ELECTRONICS CO., LTD. ( SEOUL OFFICE FACTORY ) | TEL | 070-7780-8420 |
| | | FAX | 070-7780-8409 |
| ADDRESS | RM 401, Chungkye-jae 1 Kangdan, 511-2 Chungkye-3 Dong, Nowon-Ku Seoul, Korea | | |
| REQUEST CUSTOMER | WHEHAI FEELUX ELECTRONICS CO., LTD. ( CHINA FACTORY ) | TEL | 0086-631-786-7903 |
| | | FAX | 0086-631-786-7900 |
| ADDRESS | NO.166 FUYUAN(M) ROAD ROAD.GANGXL TOWN RONGCHENG CITY SHANDONG PROVICE CHINA | | |

FEELUX 주식회사 필 룩 스

# RECORD OF REVISION

| LG P/N : EAM60991401 | | | MAKER SPEC : LINE FILTER | | |
|---|---|---|---|---|---|
| REV. NO | REASON | CONTENTS | DATE OF APPROVAL | CHECKED | REMARKS |
| | | 신규재정 | | | |

# SPECIFICATION

| NO. 1 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## INDEX


1 / 15 : INDEX
2 / 15 : 1. DIMENSION
3 / 15 : 2. SCHEMATIC DIAGRAM
: 3. WINDING SPECIFICATION
4 / 15 : 4. ELECTRICAL CHARACTERISTICS
5 / 15 : 5. ENVIRONMENTAL CHARACTERISTICS
6 / 15 : 6. MECHANICAL CHARACTERISTICS
7 / 15 : 7. SECTION DIAGRAM
8. MATERIAL LIST
8 / 15 : 9. UL-LIST
9 / 15 : UL-LIST
10 / 15 : 10. CORE DIMENSION
11 / 15 : 11. BOBBIN DIMENTION
12 / 15 : 12. PROCESS FLOW
13 / 15 : 13. PACKING
14 / 15 : 14. INSPECTION DATA
15 / 15 : 15. ASSIGNMENT


| SPEC NO. | | DATE | 2009. 11. 07. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

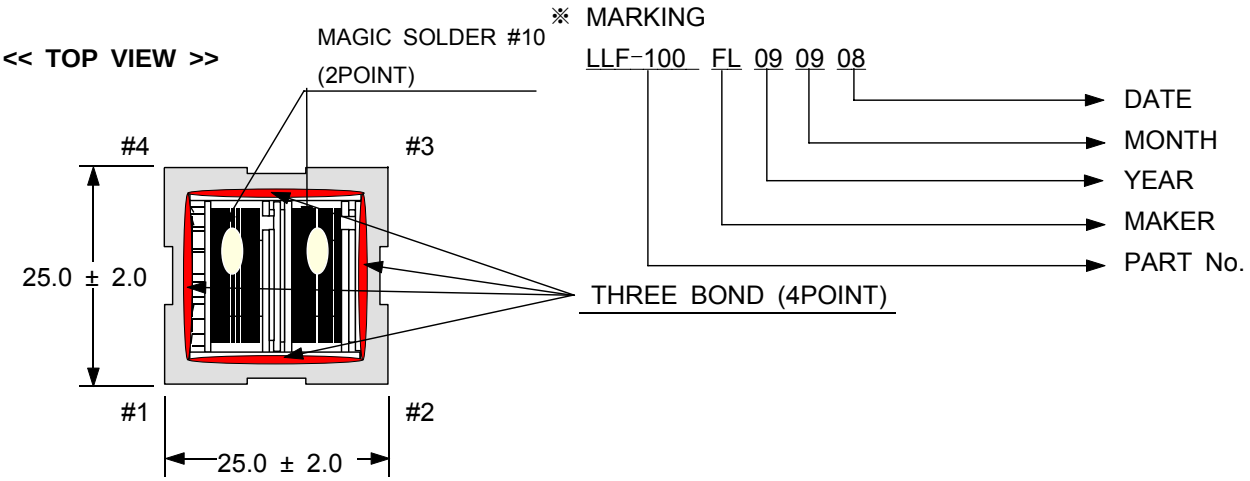
| NO. 2 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

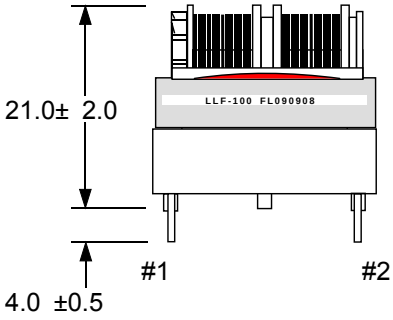
safety

**1. MECHANICAL ASSEMBLY** (UNIT : m/m)

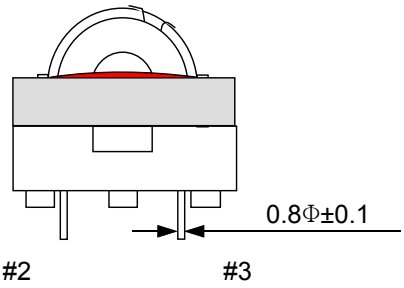
<< TOP VIEW >>



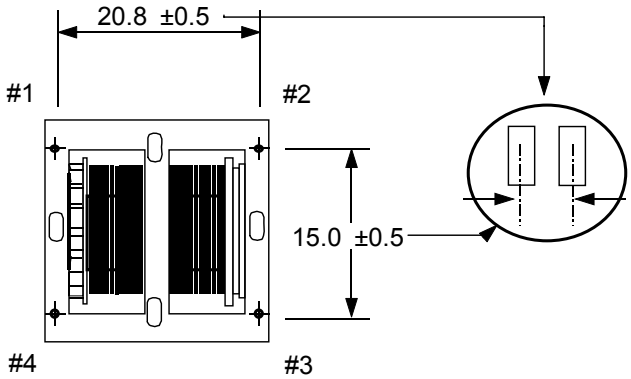

<< FRONT VIEW >>




<< SIDE VIEW >>




<< BOTTOM VIEW >>




| SPEC NO. | | DATE | 2009. 11. 07. | SHEET NO. | |
|---|---|---|---|---|---|

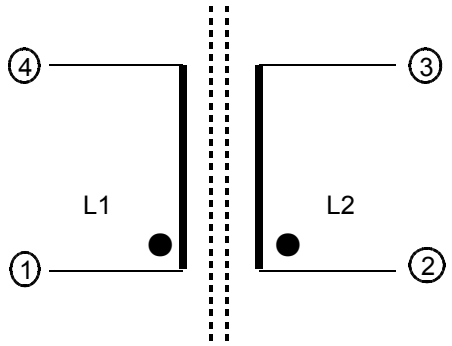
FEELUX

# SPECIFICATION

| NO. 3 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 2. SCHEMATIC DIAGRAM




## 3. WINDING SPEC

| COIL | TERMINAL NO. | WIRE | TURNS (±3) | WINDING METHOD |
|---|---|---|---|---|
| L1 | 1S - 4F | 1 UEW 0.65Φ | 48 | SOLENOID WINDING |
| L2 | 2S - 3F | 1 UEW 0.65Φ | 48 | SOLENOID WINDING |

* WINDING DIRECTION : #1, #4 PIN VIEW C.C.W

| SPEC NO. | | DATE | 2009. 11. 07. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 4 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 4. ELECTRICAL CHARACTERISTICS

| NO | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 4-1 | INDUCTANCE | 1 - 4<br>2 - 3 | 7.7 mH MIN<br>7.7 mH MIN | HP-4284A<br>LCR-METER<br>at 1 kHz, 1.0V<br>(at 25 ±5℃) |
| 4-2 | INDUCTANCE DEFLECTION | \| L1 - L2 \| | 0.60 mH MAX | |
| 4-3 | DC RESISTANCE | 1 - 4<br>2 - 3 | 0.15 Ω MAX<br>0.15 Ω MAX | DC MILLI-OHM METER GOM-802 |
| 4-4 | WITHSTANDING VOLTAGE | COIL - COIL | AC 1.5 KV r.m.s (1 MINUTE) | TOS-8850<br>CUT OFF CURRENT<br>: 5 mA<br>safety |
| | | COIL - CORE | AC 1.5 KV r.m.s (1 MINUTE) | |
| 4-5 | INSULATION RESISTANCE | COIL - COIL | 100 M ohm MIN<br>at DC 500V | TOS-8850<br>safety |

| SPEC NO. | | DATE | 2009. 11. 07. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 5 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 5. ENVIRONMENTAL CHARACTERISTICS

* STANDARD TEST CONDITION : TEMP 20℃±15℃ HUMIDITY 65%±20%
IF WHEN ANY OBJECTION IS SUGESTED THE TEST CAN BE OPERATED AT 20℃±2℃, 65% ±5% RH

| NO. | ARTICLE | SPECIFCATION | TEST CONDITION |
|---|---|---|---|
| 5-1 | USED TEMPERATURE RANGE | -25℃ ~ +105℃ | |
| 5-2 | KEEPING TEMPERATURE | -25℃ ~ +105℃ | |
| 5-3 | LOW TEMPERATURE RESISTANT | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 10% OF THE INITAL VALUE (IT SHOULD BE MANAGED BY10% UNDER 10uH) | -25℃±2℃, 96Hr MEASURE AFTER 2Hr AT ROOM TEMP |
| 5-4 | HIGH TEMPERATURE RESISTANT | | +105℃±2℃, 96Hr MEASURE AFTER 2Hr AT ROOM TEMP |
| 5-5 | HUMIDITY RESISTANT | | +95%RH ±5% (40℃±5℃) 96Hr MEASURE AFTER 2Hr AT ROOM TEMP |
| 5-6 | TEMPERATURE CYCLE | | STEP / TEMP / TIME<br>1 / -25±2℃ / 30 MIN<br>2 / +25±2℃ / 10 MIN<br>3 / +105±2℃ / 30 MIN<br>4 / +25±2℃ / 10 MIN<br>REPEAT 5 TIME FROM STEP 1 AND TEST AFTER 2Hr. AT ROOM TEMP |
| 5-7 | HEAT SHOCK -RESISTANT | | 2HR AT-20℃->2HR AT 70℃ : 10 CYCLE |

| SPEC NO. | | DATE | 2009. 11. 07. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION



| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 6. MECHANICAL CHARACTERISTICS

| NO. | ARTICLE | SPECIFCATION | TEST CONDITION |
|---|---|---|---|
| 6-1 | LAYER SHORT TEST | THREE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SUGGE VOLTAGE (AT 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION |
| 6-2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 10% OF THE INITIAL VALUE | DIP THE TERMINAL IN SOLDER POT AT 260℃±5℃ FOR 10 SECONDS MEASURE AFTER 2Hr AT ROOM TEMP. |
| 6-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER POT 245℃ -5℃ FOR 3 SECONDS |
| 6-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED INITIAL VALUE | PULL THE PIN WITH 2.5kgf DURING 30±5 SEC |

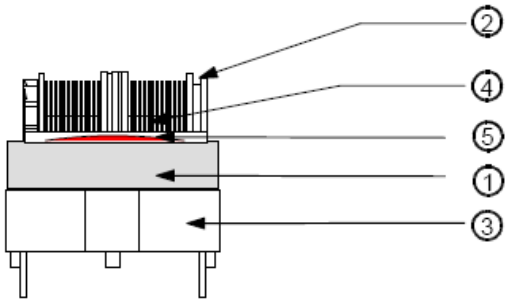
# SPECIFICATION

| NO. 7 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

safety

## 7. SECTION DIAGRAM




safety

## 8. MATERIAL LIST.

| NO | PART NAME | MATERIALS | MATERIAL COLOR | REMARKS | UL FILE NO |
|---|---|---|---|---|---|
| 1 | FERRITE CORE | ESQ 2424 HM5A | BLACK | TODA ISU CERAMIC CO.,LTD | |
| 2 | BOBBIN | POLYBUTYLENE(94V-0) CAT NO. 1500GN-30 | WHITE | CHANG CHUN PLASTICS CO.,LTD (SHENZHEN HOIDJINN ELETRONICS CO., LTD BOO KYOUNG BOBBIN CO.,LTD ) | E59481 |
| 3 | BASE | SQ24[4P] PHENOL(94V-0) | BLACK | HEXION SPECIALTY CHEMICALS GMBH | E61040 |
| | | | | CHANG CHUN PLASTICS CO.,LTD | E59481 |
| 4 | WIRE | 1UEW 0.65¢ | BRASS YELLOW | JIANGSU DARTONG M&E CO.,LTD | E237377 |
| | | | | DONG YANG ELECTRONICS CO.,LTD | E102761 (N) |
| | | | | NINGBO HONGRUN PLASTICS ELECTRIC APPLIANCE CO.,LTD | E197317 |
| 5 | ADHESIVE | BOND 1401 | TRANSPARENCY | THREE BOND CO., LTD | |
| 6 | SOLDER | HSE-09 | SILVER | HEESUNG MATERIAL CO.,LTD | |
| 7 | FLUX | 319-5F | LEMON YELLOW | JIANGYIN CITY DENGFENG ELECRICAL MATERAIL CO.,LTD | |
| 8 | MAFKING | INK | BLACK | BON MARQUE | |

| SPEC NO. | | DATE | 2009. 11. 07. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 8 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 9. UL CARD

### * YELLOW CARD

1. BASE

HEXION SPECIALTY CHEMICALS GMBH E61040
POSTFACH
58609 ISERLOHN, GERMANY

| Material Dsg | Color | Min. Thk mm | Flame Class | HWI | HAI | RTI Elec | RTI Mech Imp | RTI Mech Str | HVTR | D495 | CTI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenolic (PF), "Rutaform, Bakelite", furnished as pellets, powder, granular material. | | | | | | | | | | | |
| PF 2736(a)(b) | BK | 0.46 | V-0 | – | – | 150 | 150 | 150 | 0 | 5 | 3 |
| | ALL | 0.81 | V-1 | 0 | 2 | 150 | 150 | 150 | | | |
| | NC, GN, BK | 0.81 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | ALL | 1.5 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |
| | | 3 | V-0 | 0 | 2 | 150 | 150 | 150 | | | |

(a) - Optional Suffix "H".

(b) - Grade designation may be followed by a four digit number representing color, P or S indicating type of molding, a single digit representing slight color variation.

Marking: Company name or tradename "BAKELITE" , "RUTAFORM" and material designation on container, wrapper or finished part.

CHANG CHUN PLASTICS CO., LTD E59481

| Mll Dsg | Col | Min Thk Mm | UL94 Fiame Class | RTI Elec | RTI Mech With Imp | RTI Mech W/o Imp | HWI | HAI | HVTR | D495 | CTI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T-355J | BK | 0.62 | 94V-0 | | 150 | 150 | 150 | 1 | 0 | 2 | 6 | 3 |
| | | 0.80 | 94V-0 | | 150 | 150 | 150 | 1 | 0 | 2 | 6 | 3 |
| | | 1.00 | 94V-0 | | 150 | 150 | 150 | 1 | 0 | 2 | 6 | 3 |
| T-359J | BK,BN | 0.79 | 94HB | | 150 | 150 | 150 | 1 | 0 | 4 | 7 | 4 |
| | | 1.57 | 94HB | | 150 | 150 | 150 | 1 | 0 | 4 | 7 | 4 |
| | | 3.17 | 94HB | | 150 | 150 | 150 | 0 | 0 | 4 | 7 | 4 |
| T-373J | BK,BN | 1.00 | 94V-0 | | 150 | 150 | 150 | 2 | 0 | 3 | 6 | 4 |
| | NC | 1.00 | 94V-0 | | 150 | 150 | 150 | 2 | 0 | 3 | 6 | 4 |
| | | 2.00 | 94V-0 | | 150 | 150 | 150 | 1 | 0 | 4 | 6 | 4 |
| T-375J | BK,BN | 0.79 | 94V-0 | | 150 | 150 | 150 | 1 | 0 | 4 | 5 | 4 |
| | | 1.58 | 94V-0 | | 150 | 150 | 150 | 0 | 0 | 4 | 5 | 4 |
| | | 3.17 | 94V-0 | | 150 | 150 | 150 | 0 | 0 | 4 | 5 | 4 |
| T-375J | BK | 0.79 | 94HB | | 150 | 150 | 150 | 2 | 0 | 4 | 7 | 4 |
| | | 1.58 | 94HB | | 150 | 150 | 150 | 1 | 0 | 4 | 7 | 4 |
| | | 3.17 | 94HB | | 150 | 150 | 150 | 0 | 0 | 4 | 7 | 4 |

# SPECIFICATION

| NO. 9 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## * YELLOW CARD

2. WIRE

DONG YANG ELECTRONICS CO LTD E102761
660-1 BANWOL-RI TAIAN-EUB HWASUNG-GUN, KYUNGGI-DO KOREA

| | | | | |
|---|---|---|---|---|
| AI-EIW | Polyester-imide | polyamide-imide | MW35 | 200 |
| EIW | Polyester-imide | | MW30 | 180 |
| NY-EIW | Polyester-amide-imide | polyamide | MW76 | 180 |
| NY-PEW | Polyester | polyamide | MW24 | 155 |
| NY-PEW(F) | Polyester | polyamide | MW24 | 155 |
| NY-UEW | Polyurethane | polyamide | MW28 | 130 |
| UEW | Polyurethane | | MW75 | 130 |

Marking:Company name or "E102761" and material designation or marked designation on package or reel,and Recognized Component Mark.

NINGBO JIANJIAN ELECTRICAL INDUSTRY CO LTD E197317
SANBEI
XILIAN
CIXI, ZHEJIANG 315331 CHINA

| | | | | | |
|---|---|---|---|---|---|
| xUEW or QA-x/155 | (1) | Polyurethane | — | MW79 | 155 |
| xUEW or QA-x/130 | (1) | Polyurethane | — | MW75# | 130 |
| xXUEW(AL) or QA-x/155A | (1) | Polyurethane | — | @ | 155 |
| xXUEW(AL) or QA-x/130A | (1) | Polyurethane | — | @# | 130 |

JIANGSU DARTONG M & E CO LTD E237377
1 DARTONG RD
HUAIAN ECONOMY DEVELOPMENT ZONE
HUAIAN, JIANGSU 223238 CHINA

| Mtl Dsg | Mark Dsg | Coat Type BC | Coat Type OC | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| &UEW | (1) | Polyurethane | — | MW 79-C | 155 |
| | | | | MW 75-C | 130 |
| &EIW | (1) | Polyester-imide | — | MW30# | 180 |
| | | | | @ | 200 |
| &UEW | UEW/180 | Polyurethane | — | MW82 | 180 |
| &EI/AIW | (1) | Polyester-imide | Polyamide-imide | MW35#, MW73# | 200 |
| | | | | MW37 | 220 |
| &EI/AIW-220 (Aluminium) | (1) | Polyester-imide | Polyamide-imide | MW35A | 220 |
| &EI/AIW-200 (Aluminium) | (1) | Polyester-imide | Polyamide-imide | @# | 200 |
| &PEW | (1) | Polyester | — | MW5# | 155 |
| &PEW/NY | (1) | Polyester | Polyamide | MW76 | 180 |
| | | | | MW24# | 155 |
| &UEW/NY | (1) | Polyurethane | Polyamide | MW80# | 155 |
| | | | | MW28# | 130 |

3. BOBBIN

Component - Plastics E59481

CHANG CHUN PLASTICS CO LTD
7TH FL, 301 SONGKIANG RD, TAIPEI 104 TW

4830
Polybutylene Terephthalate (PBT), glass reinforced, "LONGLITE", furnished as pellets

| Color | Min Thk (mm) | Flame Class | HWI | HAI | RTI Elec | RTI Imp | RTI Str |
|---|---|---|---|---|---|---|---|
| ALL | 3.0-3.2 | V-0 | 0 | 1 | 75 | 75 | 75 |

Comparative Tracking Index (CTI): 3
Dimensional Stability (%): -
High-Voltage Arc Tracking Rate (HVTR): 2
High Volt, Low Current Arc Resis (D495): 7
Dielectric Strength (kV/mm): -
Volume Resistivity ($10^x$ ohm-cm): -

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

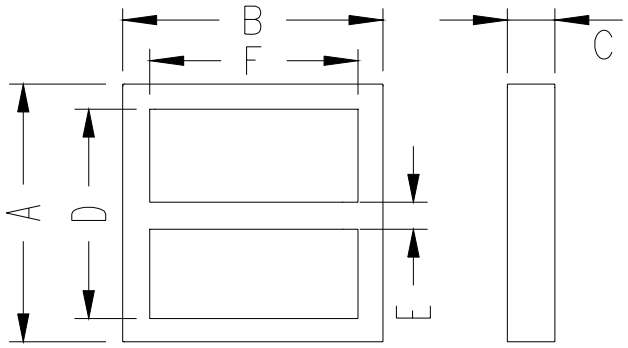
| SPEC NO. | | DATE | 2009. 11. 07. | SHEET NO. | |
|---|---|---|---|---|---|

# SPECIFICATION

| NO. 10 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 10.CORE DIMENSION




| TYPE | DIMENSIONS IN mm | | | | | | Effective parameters | | | Unit[mm] |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | le(mm) | Ae(mm)2 | Ve(mm)3 | |
| ESQ 2424 | 24.45 +0.45 −0.25 | 24.45 +0.45 −0.25 | 4.00 ±0.30 | 19.1 MIN | 4.00 ±0.30 | 19.1 MIN | 61 | 17.8 | 1090 | TODA ISU |

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|---|---|---|---|---|---|

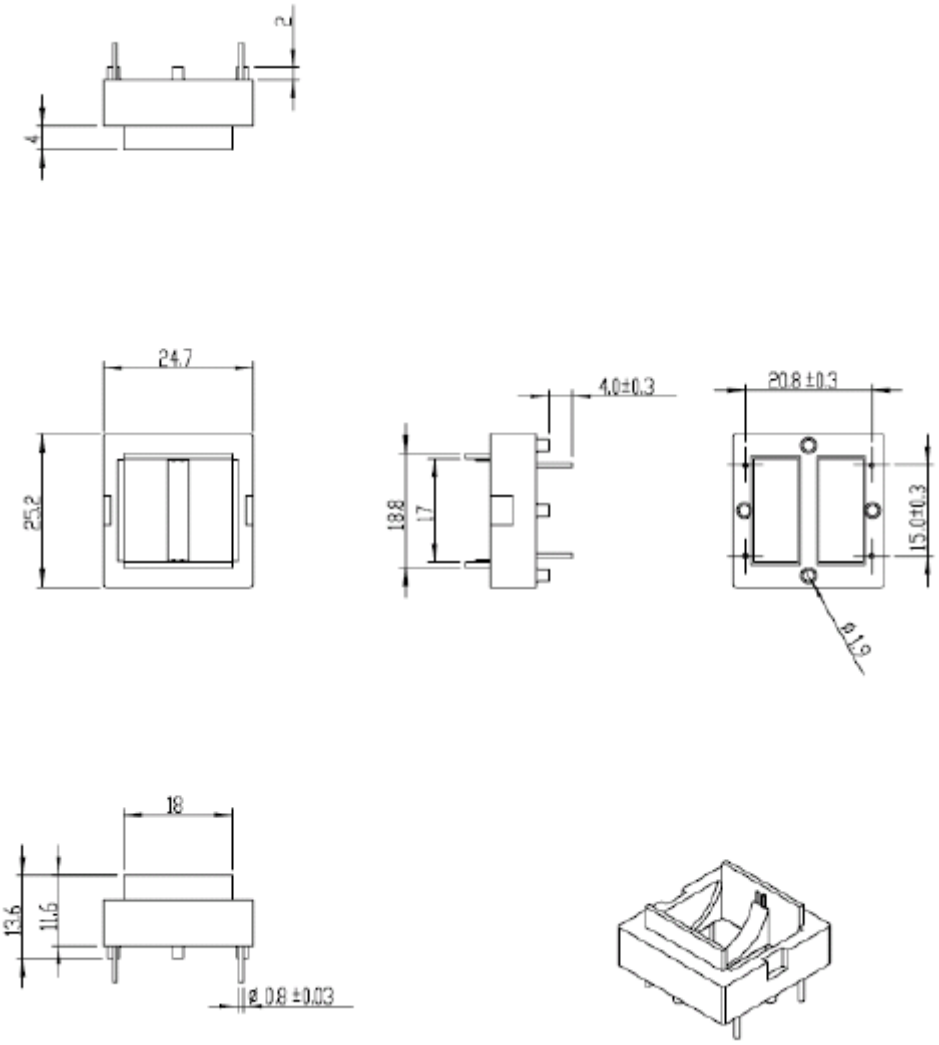
FEELUX

# SPECIFICATION

| NO. 11 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변 경 사 항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 11.BOBBIN DIMENSION




| SPEC NO. | | DATE | 2009. 11. 07. | SHEET NO. | |
|---|---|---|---|---|---|

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# SPECIFICATION

| NO. 12 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 12.PROCESS FLOW

| 공정번호 | 공정 SUB 공정 | 공정 MAIN공정 | 소요자재 | 공 정 명 | 관리항목 | 관리기준 | 검사빈도 | 검사방법 | 계측기 및 설비 | 담당부서 | 관리자료 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | ▽ ▽ ▽ | ◇ | CORE BOBBIN | CORE BOBBIN 조립 | *CORE 의 종류 *조립상태 | CORE, BOBBIN 조립 작업표준 | LOT당 5 EA | SAMPLING | | 생산 | |
| 02 | ▽ ▽ ▽ | ◇ ◇ ◇ | BOBBIN COIL CORE | 1-N차 권선 | *COIL의 굵기, 종류 *권선 턴수, 권선 상태 | | LOT당 5 EA | SAMPLING | *MICRO METER | 생산 | 성적서 |
| 03 | ▽ | | BASE | CORE BASE 조립 | *CORE와 BASE의 조립상태 | CORE, BASE조립 작업표준 | 전수 | SAMPLING | | 생산 | |
| 04 | ▽ | | 땜납 | 납땜 | *납조기 온도 : 430℃±10℃ *납 땜 시 간 : 2.0초±0.5초 | 납땜 작업표준 | 전수 | SAMPLING | *납조기, *시계 *온도계 | 생산 | 온도체크 시트 |
| 05 | | ◇ | | 1차 검사 | *전기적 특성 (L값, Rdc값) *납땜상태 | 1차 검사 기준 | 전수 | 전수검사 | *TURNS-METER *LCR-METER | 생산 | 1차 검사일보 |
| 06 | ▽ | | BOND | BONDING | *BASE 접착 *BONDING 상태 *BOND 종류 *BOND 배합비율 | BONDING 작업표준 | 2회 1일 | SAMPLING | | 생산 | |
| 07 | | | | 건조 | *건조기 온도 및 시간 (120℃/ 20분) | 건조 작업표준 | | | *건조기, *시계, *온도계 | 생산 | 온도체크 시트 |
| 09 | ▽ | | 불멸잉크 | MARKING | *MARKING 방향, 취치, 선명도, LOT No. | MARKING 작업표준 | 전 수 | 전수검사 | *MARKING 도장 | 생산 | |
| 10 | | | | PIN교정 | * 핀휨, 핀교정상태 | PIN교정 작업표준 | 전 수 | 전수검사 | *PIN교정 JIG | 생산 | |
| 11 | | ◇ | | 2차 검사 | *전기적특성 (L값,Rdc값) *취상, TURNS *내전압 절연상태 | 2차 검사 기준 | 전 수 | 전수검사 | *TURNS METER *LCR-METER,*내압기 | 생산 | 2차 검사 일보 |
| 12 | | ◇ | | 외관검사 | *BOBBIN파손, 납땜상태, PIN상태 *기타 | 외관검사 기준 | 전 수 | 전수검사 | | 생산 | 외관검사 일보 |
| 13 | ▽ ▽ | | SNOW BOX OUT BOX | 포 장 | *PIN TO PIN 간격 *BOX규격, 외관, 포장상태 | 포장작업 기준 | 전 수 | 전수검사 | | 생산 | |
| 14 | | ◇ | | 출하검사 | *전기적특성 (L값 절연저항 내전압) *치수, 구조, 외관, 수량 | 출하검사 기준 | 전 수 | SAMPLING | *LCR *내압기 *절연저항기 | 품질관리 | 출하검사 성적서 |
| 15 | | ▽ | | 창고입고 | *수량, 제품명, 포장상태, *입.출고 재고관리 | 창고적재 표준 | 전 수 | SAMPLING | | 영업 | 입고전표 수불장부 |
| 16 | | ▼ | | 출 하 | *제품명, 수량 | | | | | 영업 | 출하전표 |

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FEELUX

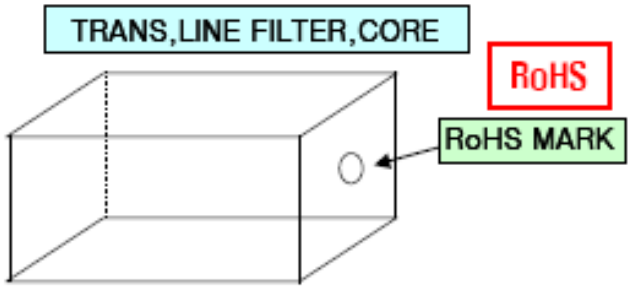
# SPECIFICATION

| NO. 13 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

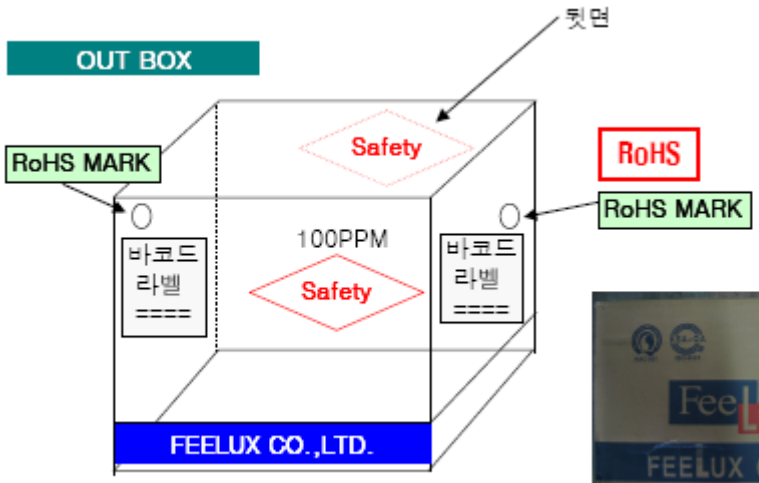
| 변경사항 CHANGE | (1) | | (3) | |
|---|---|---|---|---|
| | (2) | | (4) | |

## 13.PACKING

1. CARTON( 12 PCS × 8 EA = 96 PCS)




2. OUT BOX (96 PCS × 4 EA = 384 PCS)









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|---|---|---|---|---|---|

FEELUX

# SPECIFICATION

| NO. 14 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변경사항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 14. INSPECTION DATA

| ITEM NAME | | LINE FILTER | | | | | TEST DATE | | 2009-9-24 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PART NO. | | EAM60991401 | | | | | INSTRUMENT | | HP-4284A | | | | |
| 항목 | Terminal | Limit | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 | #10 | |
| L(uH) (1KHz 1V) | L1(1-4) | 7.7mH MIN | 12.7 | 12.5 | 12.3 | 12.2 | 11.8 | 10.8 | 11.8 | 12.5 | 12.9 | 12.8 | |
| | L2(2-3) | 7.7mH MIN | 12.7 | 12.5 | 12.3 | 12.2 | 11.8 | 10.8 | 11.8 | 12.5 | 12.9 | 12.8 | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| DCR (Ω) | L1(1-4) | 0.15Ω MAX | 0.09 | 0.089 | 0.091 | 0.092 | 0.092 | 0.091 | 0.091 | 0.089 | 0.083 | 0.091 | |
| | L2(2-3) | 0.15Ω MAX | 0.09 | 0.088 | 0.091 | 0.091 | 0.092 | 0.09 | 0.09 | 0.088 | 0.083 | 0.09 | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| DEFLECTION | L1-L2 | 0.06mH MAX | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0.1 | 0.1 | 0 | 0.1 | |
| WITHSTANDING VOLTAGE | COIL-COIL | AC 1.5 KV 1MIN | 5.4KV | OK | OK | OK | OK | OK | OK | OK | OK | OK | |
| | COIL-CORE | AC 1.5 KV 1MIN | 3.8KV | OK | OK | OK | OK | OK | OK | OK | OK | OK | |
| | | | | | | | | | | | | | |
| INSULATION RESISTANCE | COIL-COIL | 100MΩ MIN (AC. 500V) | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | |

| SPEC NO. | | DATE | 2009. 11. 07. | SHEET NO. | |
|---|---|---|---|---|---|

# SPECIFICATION

| NO. 15 / 15 | LINE FILTER | P / N | EAM60991401 |
|---|---|---|---|

| 변 경 사 항 CHANGE | | | | |
|---|---|---|---|---|
| | (1) | | (3) | |
| | (2) | | (4) | |

## 15.ASSIGNMENTS

1) APPLY IMPORT INSPECTION SPECIFICATION TO THE MATTERS WHICH ARE NOT GIVEN IN DRAWING SPECIFICATION METHOD.

2) PACKING METHOD FOLLOWS SPECIFICATION APPROVAL.

3) IF INDUCTANCE : REF IS NOT SATISFIED WITH GIVEN SPECIFICATION, INTERNAL STRUCTURE DISASSEMBLY INSPECTION SHOULD BE NECESSARY.

4) WIRE BUNDLE METHOD.

* CENTER SOLENOID : ERROR BETWEEN THE CENTER OF OVERALL WIRE BUNDLE AREA AND THE CENTER OF WIRE BUNDLE IS REQUIRED TO BE SMALLER THAN 2MM.
* PIN SOLENOID : ERROR BETWEEN THE BOTTOM BARRIER TAPE AND WINDING START POINT IS REQUIRED TO BE SMALLER THAN 2MM.
* TOP SOLENOID : ERROR BETWEEN THE TOP BARRIER TAPE AND LAST WIRE IS REQUIRED TO BE SMALLER THAN 2MM.
* SOLENOID AFTER : ERROR BETWEEN THE LAST WIRE OF THE WIRE BUNDLE AND START WIRE OF AFTER -SOLENOID IS REQUIRED TO BE SMALLER THAN 2MM.
* TAB SOLENOID : BUNDLE SHOULD BE CONTINUED FROM PREVIOUS BUNDLE. IF BUNDLE METHOD IS 2 LAYER, BUNDLE SHOULD BE DONE FROM TOP TO BOTTOM.
* SPACE SOLENOID : THE AREA BETWEEN WIRES SHOULD BE UNIFORM. ERROR BETWEEN START AND START POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM. ERROR BETWEEN END POINT AND END POINT OF THE WIRE BUNDLE AREA IS REQUIRED TO BE SMALLER THAN 2MM.
* SOLENOID : NO SPACE IS ALLOWED BETWEEN WIRES IN BUNDLING. THE SPACE BETWEEN WIRE IS REQUIRED TO BE SMALLER THAN DIAMETER OF THE WIRE*2.
IN SAME LAYER, NO CROSS IS ALLOWED BETWEEN WIRES.

5) PERFORMANCE OF THIS DRAWING IS REQUIRED TO MEET PART NUMBER EAM60991401

6) AUXILIARY TAPE CAN BE USED IN ORDER TO ENHANCE. BUT IT NEEDS PRIOR APPROVAL FROM DESIGN DEPARTMENT.

| SPEC NO. | | DATE | 2009. 11. 07. | SHEET NO. | |
|---|---|---|---|---|---|

FEELUX

# 폴리 우레탄 동선 (1UEW)

| 치 수 | | | | 절연파괴전압 (V) ↑ | 내마모 파괴하중 | | 최대도체저항 (Ω/㎞) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성외경 (mm) ↑ | 최대완성외경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.224 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| **0.650** | **±0.008** | **0.686** | **0.724** | **3050** | **5.39(550)** | **4.55(465)** | **55.31** | **20** |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

# APPROVAL SHEET

| | |
|---|---|
| CUSTOMER | : LG ELECTRONICS Inc. |
| MODEL | : 10L 32" |
| I T E M | : LINE FILTER |
| PART NO | : EAM60991401(LLF-100) |
| S.J SPEC NO | : LGLF-09-11 |

ROHS

Safety

APPROVED

DATE : 2009. 11. 07.

SOOJUNG ELECTRONICS IND. CO., LTD.


| | | | | | | |
|---|---|---|---|---|---|---|
| ADDRESS | Office & Factory | 35-1, HongJae4-Dong, Seodaemoon-Gu, 120-094, Seoul, KOREA | | | TEL<br>FAX | 02-737-2329<br>02-737-2525 |
| | Factory China 1 | Wendong Shuzheng Electronics,<br>Beijao, Wendeng City, shandong, China | | | TEL<br>FAX | 86-631-857-1392<br>86-631-857-1393 |
| | Factory China 2 | Dongguan Soojung Electronics,<br>Zhonghanqiao Industrial District, Wangniudun town,<br>Dongguan City, Ganding, China | | | TEL<br>FAX | 86-769-8851-3531<br>86-769-8851-3530 |
| | R&D Part | Jong Ho Kim | E-mail | jhkim@soojung.com | TEL | 010-4056-2623 |
| | Sales Part | Jong Won Lee | E-mail | ljw@soojung.com | TEL | 016-711-2443 |
| | Q.A Part | Doo Young Oh | E-mail | ody@soojung.com | TEL | 011-616-4864 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

# RECORD OF REVISION

| REV NO. | REASON | CONTENTS | DATA OF APPROVAL | CHECKED | REMARKS |
|---|---|---|---|---|---|
| 0 | | - 신규제정. | 2009.11.07 | | |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

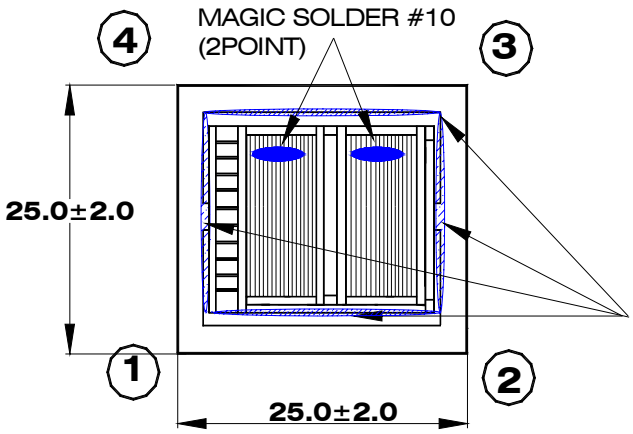
# I N D E X


| | | |
|---|---|---|
| FILE NO | 1/16 | INDEX |
| | 2/16 | 1. DIMENSION |
| | 3/16 | 2. SCHEMATIC |
| | 4/16 | 3 WINDING SPECIFICATION |
| | 4/16 | 4. ELECTRICAL CHARACTERISTICS |
| | 5/16 | 5. ENVIRONMENTAL CHARACTERISTICS |
| | 6/16 | 6. MECHANICAL CHARACTERISTICS |
| | 7/16 | 7. INTERNAL CONSTRUCTION |
| | 8/16 | 8. MATERIAL LIST |
| | 8/16 | 9. UL CARD |
| | 9/16 | UL CARD |
| | 10/16 | 10. CORE DIMENSION |
| | 11/16 | 11-1. BOBBIN DIMENSION |
| | 12/16 | 11-2. BASE DIMENSION |
| | 13/16 | 12. PROCESS FLOW |
| | 14/16 | 13. PACKING |
| | 15/16 | 14. INSPECTION DATA |
| | 16/16 | 15. ASSIGNMENT |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 1. DIMENSION (UNIT:mm)




* MARKING *

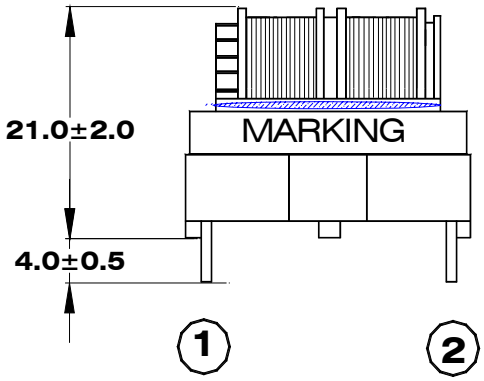
LLF-100 SJ 091107 — DATE

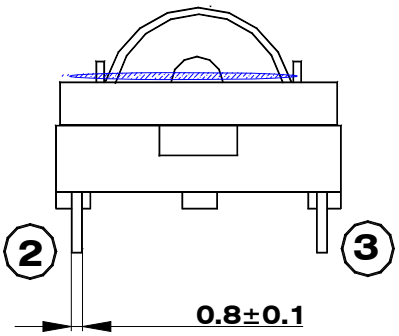
MONTH

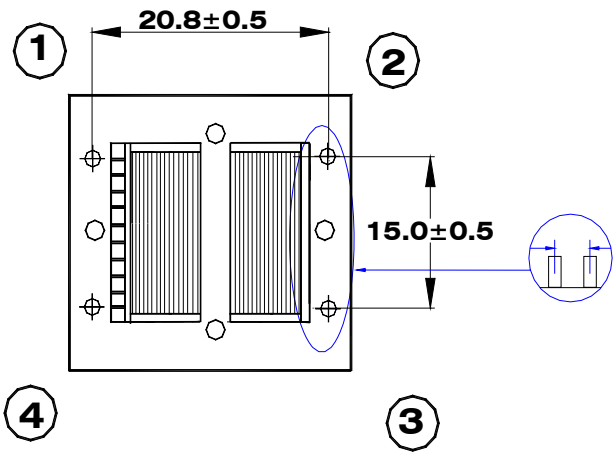
YEAR

MAKER

PART NO



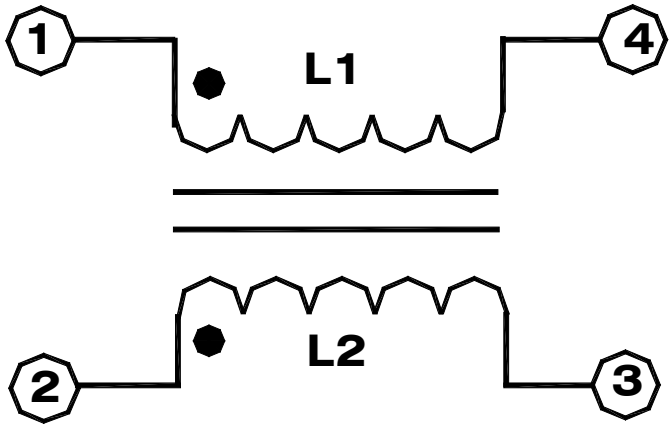




| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 2/16 |

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 2. SCHEMATIC




## 3. WINDING SPECIFICATION.

| No. | TERMINAL | | WIRE | TURNS | WINDING METHOD |
|---|---|---|---|---|---|
| | S | F | | | |
| L1 | 1 | 4 | 1UEW 0.65 ϕ | 48 ± 3 Ts | SOLENOID |
| L2 | 2 | 3 | 1UEW 0.65 ϕ | 48 ± 3 Ts | SOLENOID |

* WINDING DIRECTION : #1 ~ #4 PIN VIEW: C.C.W

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 4. ELECTRICAL CHARACTERISTICS

| No. | ITEM | TERMINAL | SPECIFICATION | REMARKS |
|---|---|---|---|---|
| 4-1 | INDUCTANCE | 1 - 4<br>2 - 3 | 7.7 mH MIN<br>7.7 mH MIN | LCR METER<br>HP-4284A<br>AT 1KHz/ 1.0V<br>(at 25 ±5℃) |
| 4-2 | DEFLECTION INDUCTANCE | \| L1 - L2 \| | 0.6 mH MAX | |
| 4-3 | D. C. RESISTANCE | 1 - 4<br>2 - 3 | 0.15 Ω MAX<br>0.15 Ω MAX | DC MILLI-OHM METER<br>GOM-802 |
| 4-4 | WITHSTANDING VOLTAGE | COIL - COIL | AC 1.5KV (rms)<br>1MINUTE. | Safety<br>TOS-8850<br>(CUT OFF CURRENT 5mA) |
| | | COIL - CORE | AC 1.50KV (rms)<br>1MINUTE. | |
| 4-5 | INSULATION RESISTANCE | COIL - COIL | 100(M) Ohm MIN.<br>( AT DC 500V) | Safety<br>TOS-8850 |

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 5. ENVIRONMENTAL.

* STANDARD TEST CONDITION : TEMP. 20℃±15℃, HUMIDITY 65%±20%.
IF WHEN ANY OBJECTION IS SUGGESTED, THE TEST CAN BE OPERATED AT 20±2℃, 65±5%RH.

<table>
<tr><th>NO</th><th>ARTICLE</th><th>SPECIFICATION</th><th>TEST CONDITION</th></tr>
<tr><td>5-1</td><td>USED TEMPERATURE RANGE</td><td>-25℃ - +105℃</td><td></td></tr>
<tr><td>5-2</td><td>KEEPING TEMPERATURE</td><td>-25℃ - +105℃</td><td></td></tr>
<tr><td>5-3</td><td>LOW TEMPERATURE RESISTANT</td><td rowspan="5">MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 10% OF THE INITIAL VALUE.<br>(IT SHOULD BE MANAGED BY 10% UNDER 10μH)</td><td>-25±2℃, 96Hr. MEASURE<br>AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>5-4</td><td>HIGH TEMPERATURE RESISTANT</td><td>+105±2℃, 96Hr. MEASURE<br>AFTER 2Hr. AT ROOM TEMP.</td></tr>
<tr><td>5-5</td><td>HUMIDITY RESISTANT</td><td>95%RH ±5% (40℃±5℃) 96Hr<br>MEASURE AFTER 2Hr.<br>AT ROOM TEMP.</td></tr>
<tr><td>5-6</td><td>TEMPERATURE CYCLE</td><td>
<table>
<tr><th>STEP</th><th>TEMP.</th><th>TIME</th></tr>
<tr><td>1</td><td>-25±2℃</td><td>30 MIN.</td></tr>
<tr><td>2</td><td>+25±2℃</td><td>10 MIN.</td></tr>
<tr><td>3</td><td>+105±2℃</td><td>30 MIN.</td></tr>
<tr><td>4</td><td>+25±2℃</td><td>10 MIN.</td></tr>
</table>
REPEAT 5 TIME FROM STEP 1AND<br>TEST AFTER 2 Hr. AT ROOM TEMP.
</td></tr>
<tr><td>5-7</td><td>HEAT SHOCK TEST</td><td>2 Hr AT-20℃→ 2 Hr AT 70℃:<br>10 CYCLE</td></tr>
</table>

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 6. MECHANICAL CHARACTERISTICS.

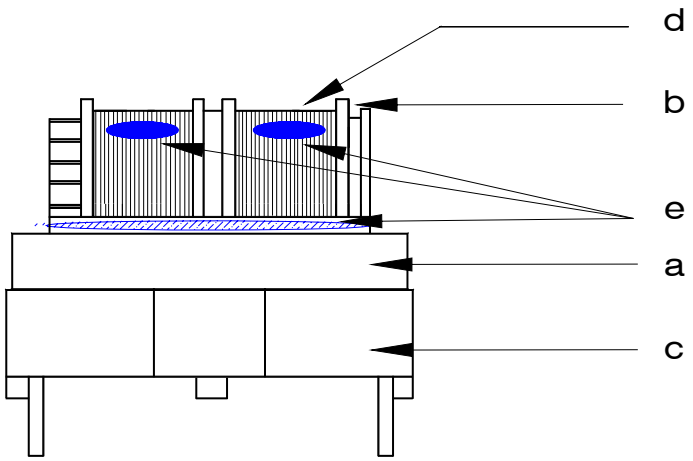
| NO. | ARTICLE | SPECIFICATION | TEST CONDITION |
|---|---|---|---|
| 6-1 | LAYER SHORT TEST | THERE IS NO DEFECT ON THE WIRE INSULATION COMPARE WITH STANDARD SAMPLE | SUPPLY SURGE VOLTAGE (AC 1.5KV) BETWEEN WIRE AND MEASURE THE WIRE INSULATION. |
| 6-2 | SOLDER HEAT TEST | MUST MEET THE ELECTRICAL REQUIREMENTS AND HAS NOT ANY DAMAGE ON THE APPEARANCE AND THE INDUCTANCE VARIATION CAN NOT OVER 10% OF THE INITIAL VALUE. | DIP THE TERMINAL IN SOLDER AT 260℃+5℃ FOR 10 SECONDS. MEASURE AFTER 2 Hr. AT ROOM TEMP. |
| 6-3 | SOLDER ABILITY | 95% MIN OF THE PIN OUT-DIA BE COVERED BY NEW SOLDER | DIP THE TERMINAL IN SOLDER AT 245℃-5℃ FOR 3 SECONDS. |
| 6-4 | TERMINAL PULL STRENGTH | THE PRODUCT HAS NOT ANY ABNORMALITY AND OPERATE PROPERLY SATISFIED TO INITIAL VALUE. | PULL THE PIN WITH 2.5 Kg.f DURING 30 ±5 SEC. |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 7. SECTION DIAGRAM

Safety




## 8. MATERIAL LIST.

Safety

| NO | COMPONENT | NAME OF MATERIAL | MANUFACTURER COMPONENT | COLOR | UL FILE NO. |
|---|---|---|---|---|---|
| a | CORE | ESQ 2424 HM5A<br>SQE 2424S SM100<br>ET 24 HL10 | TODA ISU CORPORATION<br>SAMWHA ELECTRONICS CO., LTD.<br>RUYUAN DONGYANGGUANG MAGNETIC MATERIALS CO.,LTD | BLACK | |
| b | BOBBIN | P.B.T (94V-0)<br>1500GN-30 | SAMYANG CORPORATION<br>(DAE HEUNG , HO SUNG , HO JINN) | WHITE | E121254 |
| c | BASE | (94V-0) PF2736<br>PHENOL RESIN | HEXION SPECIALTY CHEMICALS GMBH<br>(DAE HEUNG , HO SUNG , HO JINN) | BLACK | E61040 |
| d | WIRE | POLYURETHANE<br>1UEW 0.65 ϕ | DONGYANG ELECTRONICS CO., LTD.<br>CNI ELECTRONICS CO., LTD. | NATURAL | E102761<br>E210918 |
| e | ADHESIVE | THREE BOND #1401<br>MAGIC SOLDER #10 | KOREA THREE BOND., LTD.<br>SUNG CHANG CO., LTD. or eqv. | NATURAL | |
| f | SOLDER | HSE-09<br>(Sn:95.95%,Cu:4%,Ni:0.05%) | HEE SUNG METAL CO., LTD. | SILVER | |
| g | FLUX | PF-120L | SOLUX CO., LTD. | LEMON YELLOW | |
| h | MARKING | INK | BON MARQUE | BLACK | |

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 9. UL CARD.

* YELLOW CARD

**BASE BOBBIN**

HEXION SPECIALTY CHEMICALS GMBH E61040
POSTFACH 7154
58609 ISERLOHN, GERMANY

| | | Min. | | H | H | H | R T I | | | C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | V | Elec | Mech | | T |
| Mtl Dsg | Color | mm | Class | I | I | A | | Imp | Str | I |
| Phenolic (PF), "Rutaform, Bakelite", furnished as pellets, powder, granular material. | | | | | | | | | | |
| PF 2736(a)(b) | | | | | | | | | | |
| | BK | 0.46 | V-0 | - | - | - | 150 | 150 | 150 | 3 |
| | ALL | 0.81 | V-1 | 0 | 2 | - | 150 | 150 | 150 | |
| | NC, GN, BK | 0.81 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |
| | ALL | 1.5 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |
| | | 3.0 | V-0 | 0 | 2 | - | 150 | 150 | 150 | |

(a) - Optional Suffix "H".

(b) - Grade designation may be followed by a four digit number representing color, P or S indicating type of molding, a single digit representing slight color variation.

**GEAR BOBBIN**

SAMYANG CORPORATION E121254
407 3-GA PALBOK-DONG
CHEONJU, CHEONBUK 560-200 REPUBLIC OF KOREA

| | | Min. | | H | H | H | R T I | | | C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Thk | Flame | W | A | V | Elec | Mech | | T |
| Mtl Dsg | Color | mm | Class | I | I | A | | Imp | Str | I |
| Polybutylene/Polyethylene Terephthalate (PBT/PET), "TRIBIT, Sam Yang's Co. Ltd. PBT", furnished as pellets. | | | | | | | | | | |
| 1500GN-30 | ALL | 0.75 | V-0 | 3 | 0 | 3 | 130 | 130 | 140 | 2 |
| | | 1.5 | V-0 | 2 | 0 | 2 | 130 | 130 | 140 | |
| | | 3.0 | V-0 | 2 | 0 | 3 | 130 | 130 | 140 | |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

# UL CARD.

## * YELLOW CARD

### WIRE

DONG YANG ELECTRONICS IND CO LTD E102761
5-20 BANGYE-RI
MUNMAK-EUB
WONJU-SHI, KANGWON-DO 220-800 REPUBLIC OF KOREA

| Mtl Dsg | Coat Typ | | ANSI Type | TI |
|---|---|---|---|---|
| | BC | OC | | |
| UEW(F) | Polyurethane | - | MW79, | 155, |
| UEW(B) | Polyurethane | - | MW75# | 130 |
| UAL | Polyurethane | - | @ | 155 |
| PEW | Polyester | - | @ | 180 |
| | | | MW5# | 155 |

Note: UAL is the alternate aluminum grade designation of magnet wire designated UEW. @- Non-ANSI type.
#- The wire may perform better than the rating reflects and hence may not be suitable for insulation system testing.

CNICABLE CO LTD E210918
312-16 DEUKSAN-DONG
ASAN-SI, CHUNGCHEONGNAM-DO 336-120 REPUBLIC OF KOREA

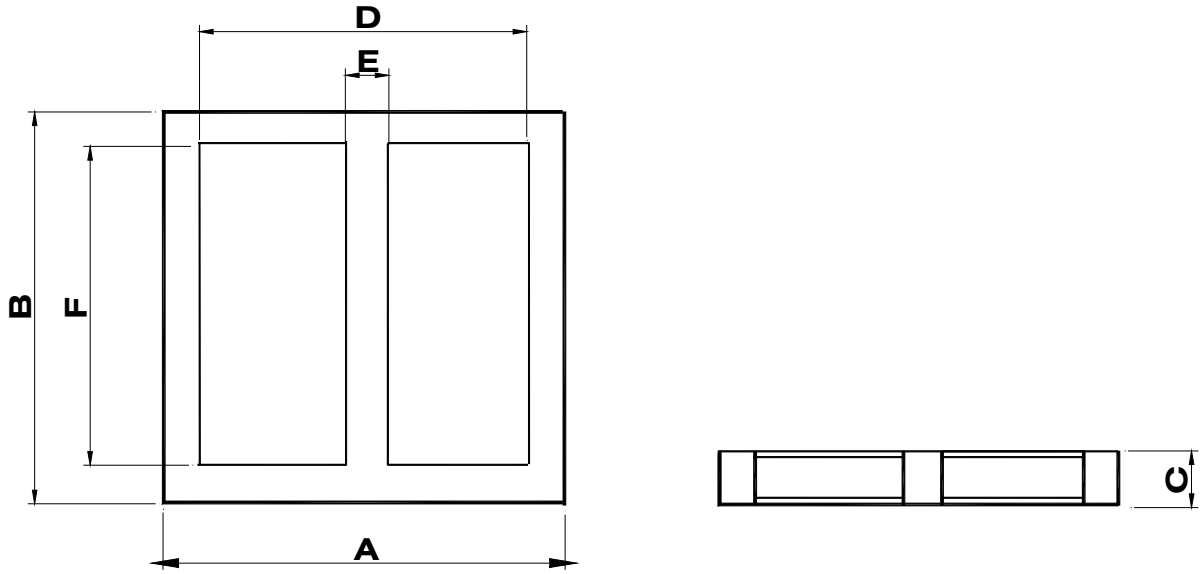
| Mtl Dsg | Mark Dsg | Coat Type | | ANSI Type | Temp Class |
|---|---|---|---|---|---|
| | | BC | OC | | |
| DSUEW-100 | (1) | Polyurethane | - | MW75C | 130# |
| UEW | (1) | Polyurethane | None | MW79 | 155 |
| | | | | MW75 | 130# |
| PEW | (1) | Polyester | None | MW30 | 180 |
| | | | | MW5 | 155# |

@ - Non-ANSI Type
(1) - Marked designations are the same as the material designations.
# - This wire may perform better than its temperature rating reflects. Hence, it may not be suitable to use in an insulation system thermal aging program.

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 10. CORE DIMENSION




** DIMENSION (UNIT: mm)

| TYPE | DIMENSION (m/m) | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | |
| ESQ 2424 | 24.45 +0.45 −0.25 | 24.45 +0.45 −0.25 | 4.0±0.3 | 19.1 MIN | 4.0±0.3 | 19.1 MIN | TODA ISU |
| SQE 2424S | 24.45 +0.45 −0.25 | 24.45 +0.45 −0.25 | 4.0±0.3 | 19.1 MIN | 4.0±0.3 | 19.1 MIN | SAMWHA |
| ET 24 | 24.45 +0.45 −0.25 | 24.45 +0.45 −0.25 | 4.0±0.3 | 19.1 MIN | 4.0±0.3 | 19.1 MIN | DONGYANG GUANG |

** EFFECTIVE PARAMETERS

| TYPE | EFFECTIVE PARAMETERS | | | REMARKS |
|---|---|---|---|---|
| | Le (mm) | Ae (㎟) | Ve (㎣) | |
| ESQ 2424 | 61.0 | 17.8 | 1090 | TODA ISU |
| SQE 2424S | 60.8 | 17.5 | 1060 | SAMWHA |
| ET 24 | 61.0 | 17.8 | 1090 | DONGYANG GUANG |

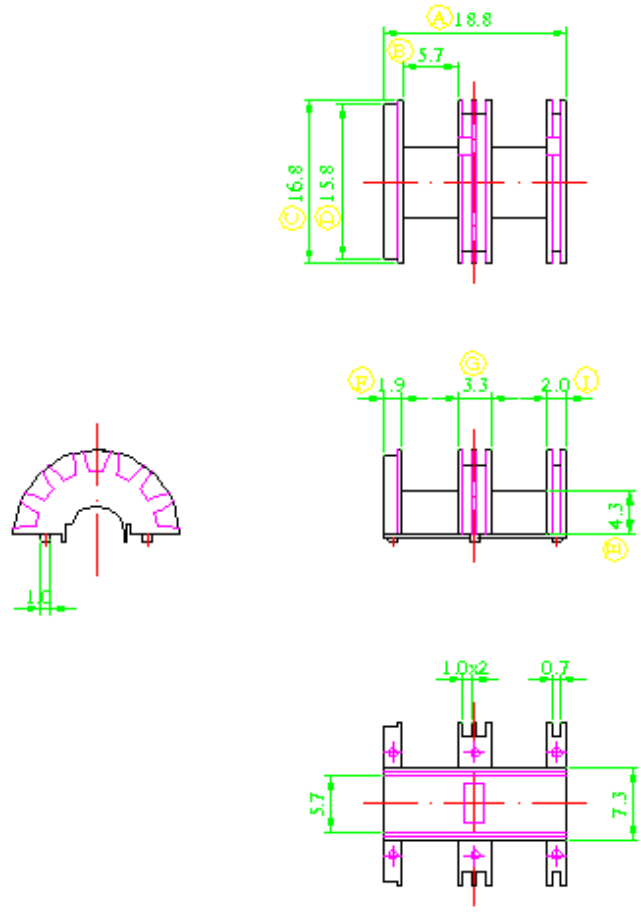
CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 11-1. BOBBIN DIMENSION

** DIMENSION (UNIT: mm)

| No. | REVISION NOTE | DATE | DRAWN | CHECKED | APPROVED |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |




| DRAWN | CHECKED | APPROVED | TOLERANCES | SCALE=2:1 | ITEM: SQ2424 "2F" GEAR | |
|---|---|---|---|---|---|---|
| D.M.KIM | S.KIM | I.O.JANG | ±0.2 | UNIT: mm | BOBBIN MATERIAL: PBT | UL REC: UL 94V-0 |
| HO SUNG INDUSTRIAL CO., LTD. | | | | ORIGIN:DG | PIN MATERIAL: C.P WIRE | PIN TENSION LOAD: 1.0 KG MIN |
| TEL : 031-953-8325 FAX : 031-954-0937 | | | | | DATE: 1999.03.15 | DRAWING No: HS-SQG-0008 |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 11/16 |

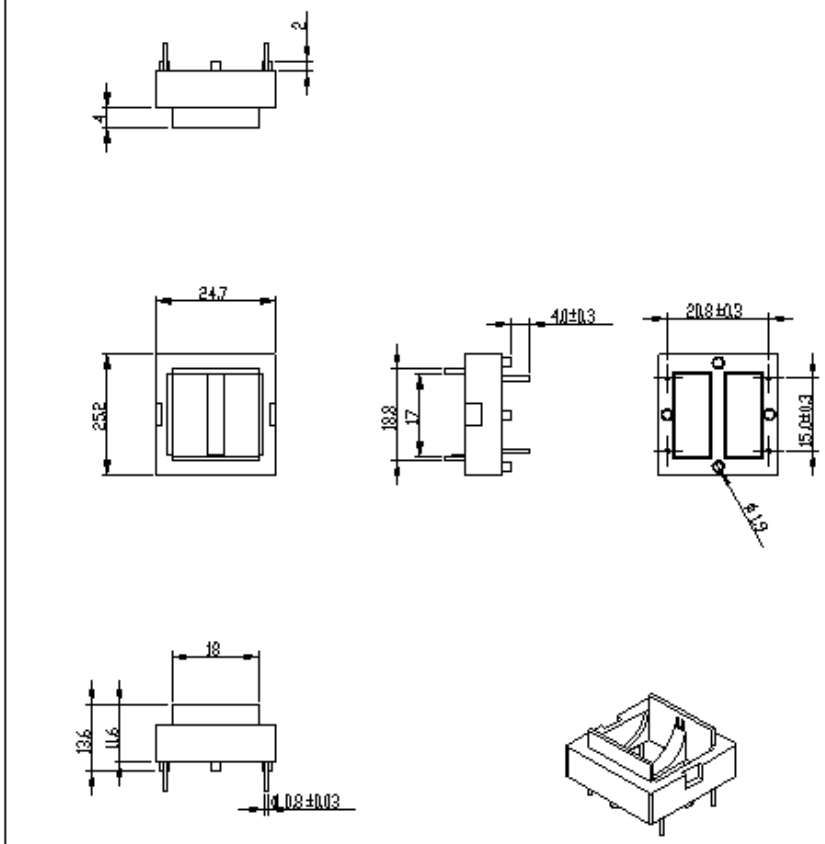
CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 11-2. BASE DIMENSION

** DIMENSION (UNIT: mm)

| No. | REVISION NOTE | DATE | DRAWN | CHECKED | APPROVED |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |




| DRAWN | CHECKED | APPROVED | TOLERANCES | SCALE 1/1 | TITLE : SQ 2424 H 4PIN | |
|---|---|---|---|---|---|---|
| INWON | S.KIM | J.D.JANG | ±0.2 | UNIT: mm | INSULATOR MATERIAL : PHENOL | UL 94V-0 |
| HO SUNG INDUSTRIAL CO., LTD. TEL : 82 - 31 - 953-8325 FAX : 82 - 31 - 954 - 0637 | | | | DRAWING | PIN MATERIAL : CP WIRE | 1.0 KG MIN |
| | | | | | DATE : 1995.11.21 | DRAWING No : HS-SQ-0014 |

CUSTOMER : HUMAN & ELECTRONICS CO., LTD.

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 12. PROCESS FLOW

| NO | 공정 기호 | 공정 공정명 | 공정 사용설비 | 기능 | 관리항목 | 관리기준 | 검사방법 확인요령 | 검사방법 부서 | 표준 | 기록/양식 | 공정별 관련불량 및 비고 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | △<br>◇ | 수입검사<br>- BASE<br>- CORE<br>- PS TAPE<br>- WIRE | 버니어켈 리퍼<br>마이크로 메터 | 수동 | 치수<br>핀홀<br>접착성<br>외관상태 | 이상<br>없을것 | SAMPLE | Q·C | 구매사양서 | 수입검사성적서 | · 치수 불량<br>· 파손· 핀홀<br>· WIRE 피복 벗겨짐<br>· BASE 단자 위치 바뀜<br>· 접착성 나쁨 |
| 02 | ○ | CORE조립 | | 수동 | CORE종류<br>보빈 종류 | 이상<br>없을것 | 전수검사<br>SAMPLE<br>육안검사 | 〃 | 〃 | | · |
| 03 | ○ | 권 선 | 권 선 기 | 반자동 | 절연상태<br>권선절연상태<br>권선수 | 〃 | 전수검사 | 생산팀 | 작업지도서 | | · 권선 및 절연수 불량<br>. 절연거리 미 확보<br>· 권선위치 불량 |
| 04 | ○ | BASE 조립 | | 수동 | BASE종류 | 이상<br>없을것 | 전수검사<br>SAMPLE<br>육안검사 | 〃 | 〃 | | · |
| 05 | ○ | 결 선<br>납 땜 | 니 퍼<br>납 조 | 수동 | 납땜온도<br>납땜시간 | 450℃<br>±30℃<br>2~4초 | 수회 / 일 | 〃 | 〃 | | · SHORT<br>· 미 결선,냉땜<br>· BASE 변형 |
| 06 | ◇ | 1차 검사 | LCD METER | 반자동 | INDUCTANCE<br>편차 | 〃 | 전수검사 | 〃 | 〃 | | · L값 상.하 불량<br>· L값 편차 |
| 07 | ○ | EPOXY 및<br>경 화 | 건 조 기 | 반자동 | 경화온도<br>경화시간 | 120℃<br>±10℃<br>20분 | SAMPLE | 〃 | 〃 | | · 미 경화 |
| 08 | ○ | 핀 형 합 | 핀형합기 | 반자동 | 핀간거리 | 〃 | 전수검사 | 생산팀 | | | · 핀 형합 불량<br>· 베이스 변형<br>· 단자 이탈 |
| 09 | ◇ | 최종검사 | LCR METER<br>내전압 TESTER | 수동 | INDUCTANCE<br>내전압<br>절연사항 | 〃 | 전수검사 | 〃 | 〃 | | · L값 상.하 불량<br>· 단자 이물<br>· 내전압 불량 |
| 10 | ○ | 마 킹 | 불멸 잉크 | 수동 | 마킹방향<br>마킹외관 | 〃 | 육안검사 | 〃 | 〃 | | · 역방향 마킹<br>· 외관불량 |
| 11 | ○ | 포 장 | | 수동 | 수량관리<br>포장상태 | 〃 | 육안검사 | 〃 | 〃 | | |
| 12 | ◇ | 출하검사 | LCR METER<br>내전압 TESTER | 수동 | INDUCTANCE<br>내전압<br>절연사항 | 〃 | SAMPLE | 품질관리팀 | 승인원 | | |
| 13 | ▽ | 출 고 | | | | | | 영업팀 | 〃 | INSPEC-TION REPORT | |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M<br>KIM | J,H<br>KIM | K,S<br>KIM | 13/16 |

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 13. PACKING

| | |
|---|---|
| NAME | |
| ITEM | |
| LOT NO. | |
| Q' TY | EA |
| SOOJUNG ELECTRONICS INC CO., LTD. | |

| PART | SPECIFICATION |
|---|---|
| BOX SIZE | 400mm × 280 mm × 235mm |
| OUT BOX MATERIAL | SK.3S.B (CARTON) |
| INNER BOX MATERIAL / QUANTITY | PET TRAY / 14PCS×9EA=126PCS |
| PACKING QUANTITY | 126PCS×7EA=882PCS |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 14. INSPECTION DATA

| ITEM NAME | LINE FILTER | TEST DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NO. | LLF-100 | INSTRUMENT | 4284A LCR METER(HP) (at 1KHz) |

| 시험 항목 | PIN NO. | SPEC | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | $\bar{x}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | L1 (1 - 4) | 7.7 mH MIN | 12.23 | 14.63 | 12.29 | 12.62 | 14.71 | 14.51 | 14.71 | 14.26 | 14.17 | 14.63 | |
| | L2 (2 - 3) | 7.7 mH MIN | 12.23 | 14.63 | 12.29 | 12.64 | 14.71 | 14.52 | 14.71 | 14.26 | 14.19 | 14.62 | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| DEFLECTION | L1 - L2 | 600μH MAX | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 0 | 20 | 10 | |
| DCR (mΩ) | L1 (1 - 4) | 150 mΩ MAX | 92.8 | 93.8 | 94.3 | 93.8 | 94.1 | 93.8 | 91.7 | 93.8 | 94.1 | 91.3 | |
| | L2 (2 - 3) | 150 mΩ MAX | 94.2 | 92.5 | 92.4 | 92.0 | 92.0 | 91.7 | 91.5 | 91.7 | 92.2 | 91.7 | |
| | | | | | | | | | | | | | |
| 내 전 압 | COIL- COIL | AC1.50KV 1분간 | 7.0KV | OK | OK | OK | OK | OK | OK | OK | OK | OK | |
| | COIL- CORE | AC1.50KV 1분간 | 4.0KV | OK | OK | OK | OK | OK | OK | OK | OK | OK | |
| | | | | | | | | | | | | | |
| 절연저항 | COIL - COIL | 100MΩ MIN. (AT DC500V) | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | |

| MAKER NAME | DESIGN | CHECK | APPROVAL | PAGE NO. |
|---|---|---|---|---|
| SOOJUNG ELECTRONICS IND. CO., LTD. | J,M KIM | J,H KIM | K,S KIM | 15/16 |

CUSTOMER : LG ELECTRONICS Inc.

| SPECIFICATION | | DATE | 2009. 11. 07 |
|---|---|---|---|
| PART NAME | LINE FILTER | PART NO. | EAM60991401 |

## 15. ASSIGNMENTS

1) Apply import inspection specification to the matters which are not given in drawing specification method.
2) Packing method follows specification approval.
3) If INDUCTANCE : ref is not satisfied with given specification. internal structure disassembly inspection should be necessary.
4) Wire bundle method.
   * CENTER SOLENOID: Error between the center of overall wire bundle area and the center of wire bundle is required to be smaller than 2 mm.
   * PIN SOLENOID : Error between the bottom barrier tape and winding start point is required to be smaller than 2 mm.
   * SOLENOID AFTER : Error between the last wire of the wire bundle and start wire of after-solenoid is required to be smaller than 2 mm.
   * TAB SOLENOID : Bundle should be continued from previous bundle. If bundle method is 2 layer, bundle should be done from top to bottom.
   * SPACE SOLENOID : The area between wires should be uniform. Error between start and start point of the wire bundle area is required to be smaller than 2mm. Error between end point and end point of the wire bundle area is required to be smaller than 2mm.
   * SOLENOID : No space is allowed between wires in bundling. The space between wire is required to be smaller than diameter of the wire*2. In same layer no cross is allowed between wires.
5) PERFORMANCE OF THIS DRAWING IS REQUITED TO MEET PART NUMBER EAM60991401
6) Auxiliary tape can be used in order to enhance. But it needs prior approval from design department.

# 폴리 우레탄 동선 (1UEW)

| 치 수 | | | | 절연파괴 전 압 (V) ↑ | 내마모 파괴하중 | | 최대도체 저 항 (Ω/㎞) ↓ | 신장율 (%) ↑ |
|---|---|---|---|---|---|---|---|---|
| 도 체 | | 최소완성 외 경 (mm) ↑ | 최대완성 외 경 (mm) ↓ | | 평균치 N(gf) ↑ | 최소치 N(gf) ↑ | | |
| 지 름 (mm) | 허용차 (mm) | | | | | | | |
| 0.040 | ±0.003 | 0.054 | 0.064 | 1400 | - | - | 15670 | 10 |
| 0.050 | ±0.003 | 0.066 | 0.074 | 1700 | - | - | 10240 | 10 |
| 0.060 | ±0.003 | 0.076 | 0.084 | 1700 | - | - | 6966 | 10 |
| 0.070 | ±0.003 | 0.086 | 0.093 | 1700 | - | - | 4990 | 10 |
| 0.080 | ±0.003 | 0.098 | 0.106 | 1700 | - | - | 3778 | 10 |
| 0.090 | ±0.003 | 0.108 | 0.116 | 2000 | - | - | 2959 | 10 |
| 0.100 | ±0.003 | 0.118 | 0.140 | 2000 | - | - | 2647 | 15 |
| 0.110 | ±0.003 | 0.128 | 0.150 | 2000 | - | - | 2153 | 15 |
| 0.120 | ±0.003 | 0.140 | 0.162 | 2200 | - | - | 1786 | 15 |
| 0.130 | ±0.003 | 0.150 | 0.172 | 2200 | - | - | 1505 | 15 |
| 0.140 | ±0.003 | 0.160 | 0.182 | 2200 | - | - | 1286 | 15 |
| 0.150 | ±0.003 | 0.170 | 0.192 | 2200 | - | - | 1111 | 15 |
| 0.160 | ±0.003 | 0.182 | 0.204 | 2200 | - | - | 969.5 | 15 |
| 0.170 | ±0.003 | 0.192 | 0.214 | 2200 | - | - | 853.5 | 15 |
| 0.180 | ±0.003 | 0.204 | 0.226 | 2400 | - | - | 757.2 | 15 |
| 0.190 | ±0.003 | 0.214 | 0.236 | 2400 | - | - | 676.2 | 15 |
| 0.200 | ±0.003 | 0.224 | 0.246 | 2400 | - | - | 607.6 | 15 |
| 0.210 | ±0.003 | 0.234 | 0.256 | 2400 | - | - | 549.0 | 15 |
| 0.220 | ±0.004 | 0.244 | 0.266 | 2400 | - | - | 498.4 | 15 |
| 0.230 | ±0.004 | 0.256 | 0.278 | 2400 | - | - | 454.5 | 15 |
| 0.240 | ±0.004 | 0.266 | 0.288 | 2400 | - | - | 416.2 | 15 |
| 0.250 | ±0.004 | 0.276 | 0.298 | 2400 | - | - | 382.5 | 15 |
| 0.260 | ±0.004 | 0.286 | 0.310 | 2400 | 3.38(345) | 2.89(295) | 358.4 | 15 |
| 0.270 | ±0.004 | 0.296 | 0.320 | 2400 | 3.38(345) | 2.89(295) | 331.4 | 15 |
| 0.280 | ±0.004 | 0.306 | 0.330 | 2400 | 3.43(350) | 2.89(295) | 307.3 | 15 |
| 0.290 | ±0.004 | 0.316 | 0.340 | 2400 | 3.43(350) | 2.94(300) | 285.7 | 20 |
| 0.300 | ±0.005 | 0.328 | 0.352 | 2800 | 3.72(380) | 3.13(320) | 262.9 | 20 |
| 0.310 | ±0.005 | 0.338 | 0.362 | 2800 | 3.72(380) | 3.13(320) | 235.9 | 20 |
| 0.320 | ±0.005 | 0.348 | 0.372 | 2800 | 3.77(385) | 3.18(325) | 230.0 | 20 |
| 0.330 | ±0.005 | 0.358 | 0.382 | 2800 | 3.77(385) | 3.18(325) | 207.8 | 20 |
| 0.340 | ±0.005 | 0.368 | 0.392 | 2800 | 3.77(385) | 3.18(325) | 195.6 | 20 |
| 0.350 | ±0.005 | 0.378 | 0.402 | 2800 | 3.82(390) | 3.23(330) | 191.2 | 20 |
| 0.360 | ±0.005 | 0.388 | 0.412 | 2800 | 3.82(390) | 3.23(330) | 174.1 | 20 |
| 0.370 | ±0.005 | 0.398 | 0.424 | 2800 | 3.87(395) | 3.28(335) | 170.6 | 20 |
| 0.380 | ±0.005 | 0.410 | 0.434 | 2800 | 3.87(395) | 3.28(335) | 156.1 | 20 |
| 0.390 | ±0.005 | 0.420 | 0.446 | 2800 | 3.87(395) | 3.28(335) | 148.0 | 20 |
| 0.400 | ±0.005 | 0.430 | 0.456 | 2800 | 4.16(425) | 3.52(360) | 145.3 | 20 |
| 0.420 | ±0.005 | 0.450 | 0.476 | 2800 | 4.16(425) | 3.52(360) | 127.4 | 20 |
| 0.450 | ±0.006 | 0.482 | 0.508 | 2800 | 4.55(465) | 3.82(390) | 114.2 | 20 |
| 0.500 | ±0.006 | 0.534 | 0.560 | 3050 | 4.90(500) | 4.16(425) | 91.43 | 20 |
| 0.550 | ±0.006 | 0.584 | 0.620 | 3050 | 4.99(510) | 4.21(430) | 78.15 | 20 |
| 0.600 | ±0.008 | 0.634 | 0.672 | 3050 | 5.04(515) | 4.26(435) | 65.26 | 20 |
| **0.650** | **±0.008** | **0.686** | **0.724** | **3050** | **5.39(550)** | **4.55(465)** | **55.31** | **20** |
| 0.700 | ±0.008 | 0.738 | 0.776 | 3050 | 5.78(590) | 4.85(495) | 47.47 | 20 |
| 0.750 | ±0.008 | 0.790 | 0.830 | 3400 | 6.12(625) | 5.14(525) | 41.19 | 20 |
| 0.800 | ±0.010 | 0.842 | 0.882 | 3400 | 6.51(665) | 5.48(560) | 36.08 | 25 |
| 0.850 | ±0.010 | 0.894 | 0.934 | 3400 | 6.86(700) | 5.78(590) | 31.87 | 25 |
| 0.900 | ±0.010 | 0.946 | 0.986 | 3400 | 7.25(740) | 6.07(620) | 28.35 | 25 |
| 0.950 | ±0.010 | 0.998 | 1.038 | 3400 | 7.59(775) | 6.41(655) | 25.38 | 25 |
| 1.000 | ±0.010 | 1.050 | 1.102 | 3400 | 7.98(815) | 6.71(685) | 23.33 | 25 |
| 1.100 | ±0.010 | 1.152 | 1.204 | 4150 | 8.42(860) | 7.05(720) | 19.17 | 25 |
| 1.200 | ±0.010 | 1.252 | 1.304 | 4150 | 8.42(860) | 7.05(720) | 16.04 | 25 |
| 1.300 | ±0.010 | 1.354 | 1.408 | 4150 | 8.91(910) | 7.49(765) | 13.61 | 25 |
| 1.500 | ±0.010 | 1.556 | 1.612 | 4150 | 9.45(965) | 7.05(810) | 10.16 | 25 |

# # Appendix 3.

# WARRANTY LETTER

# Non-use certificate

| | | | |
|---|---|---|---|
| Description | For approval / For mass prodution | Submitting date | 2012. 03. 23 |

| | | | | |
|---|---|---|---|---|
| Company name | YUYANG DNU CO.,LTD. | Approval | Person in charge | Head department |
| Contact | Tel : 82-31-350-7406 | Name | Kim Sang Ok | CEO |
| E-Mail | sokim@yuyang.co.kr | Signature | | YUYANG TELECOM CO.,LTD. PRESIDENT SANG OK KIM |

| | | | |
|---|---|---|---|
| LGE Part No. | LGD EAY62788701 | Part production date | Filling the sheet in case of production |
| Maker Part No. | LGD LGP37C-12HPC | Production plant | HWASUNG in KOREA |
| Part name | LGP37C-12HPC | | |

This is to certify that materials used and contained in the products and components that we supply to your company, meet the standards of the checked items listed

-below –

[V] We meet the standards of LG Electronics for six major substances (Pb, Pb, Cd, Cr6+, Hg, PBBs, PBDEs) as designated by RoHS for control.

• Records are requested if they are parts to be actually insalled on the PCB (Printed Cirvuit Board)
Soldering Type : [V] Flow [ ] Reflow (Requirement : 250℃/10sec)

[V] Pb-Free Soldering (all solder cream, Bar, Wires included) is available to apply.

**Note.**

1. All the contents written on these documents must be created on the basis of facts, and cooperating suppliers must submit the data immediately whenever LG Electronics requests.
2. In the case that these documents are used for approval purposes, cooperating suppliers must submit the sample on the request. For the purpose of mass production, it must be submitted at the time of delivering the first product.