LG

Internal Use Only

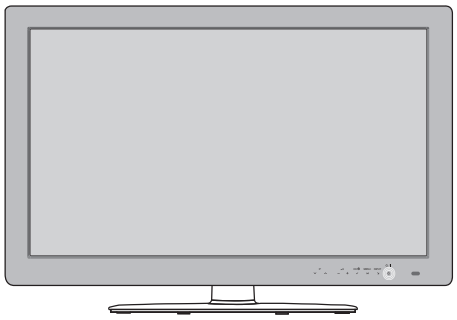
North/Latin America http://aic.lgservice.com
Europe/Africa http://eic.lgservice.com
Asia/Oceania http://biz.lgservice.com

LED LCD TV
SERVICE MANUAL

CHASSIS : LD03D

MODEL: 32LE7500/750N 32LE7500/750N-ZA
32LE7800/7900 32LE7800/7900-ZA
32LE7510/7910 32LE7510/7910-ZB

CAUTION
BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



P/NO : MFL62863013 (1005-REV00)

Printed in Korea

CONTENTS

CONTENTS 2

PRODUCT SAFETY 3

SPECIFICATION 4

ADJUSTMENT INSTRUCTION 7

BLOCK DIAGRAM.....14

EXPLODED VIEW 15

SCHEMATIC CIRCUIT DIAGRAM .....

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Exploded View.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1 W), keep the resistor 10 mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

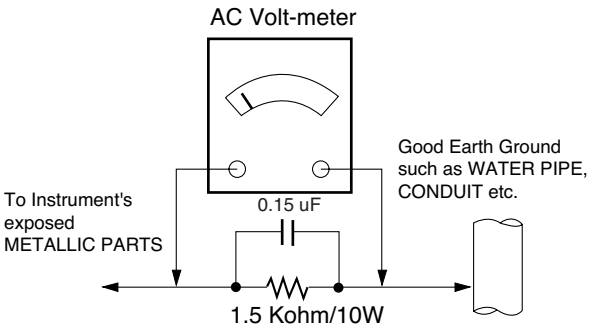
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1 MΩ and 5.2 MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5 mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



When 25A is impressed between Earth and 2nd Ground for 1 second, Resistance must be less than 0.1 Ω
*Base on Adjustment standard

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application range

This specification is applied to the LCD TV used LD03D chassis.

2. Requirement for Test

Each part is tested as below without special appointment.

1) Temperature: 25 ºC ± 5 ºC(77 ºF ± 9 ºF), CST: 40 ºC ± 5 ºC
2) Relative Humidity : 65 % ± 10 %
3) Power Voltage
   : Standard input voltage (AC 100-240 V~ 50 / 60 Hz)
   * Standard Voltage of each products is marked by models.
4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
5) The receiver must be operated for about 5 minutes prior to the adjustment.

3. Test method

1) Performance: LGE TV test method followed
2) Demanded other specification
   - Safety : CE, IEC specification
   - EMC :CE, IEC

4. Module General Specification

No.	Item	Specification		Remark
1	Display Screen Device	80 cm(32 inch) wide color display module		LCD
2	Aspect Ratio	16:9		
3	LCD Module	80 cm(32 inch) TFT LCD FHD		
4	Operating Environment	Temp. : 0 deg ~ 50 deg		
		Humidity : 20 % ~ 90 %		
5	Storage Environment	Temp. : -20 deg ~ 60 deg		
		Humidity : 10 ~ 90 %		
6	Input Voltage	AC 100-240V~, 50 / 60Hz		
7	Power Consumption	Power on (White)		
		LGD	Typ : 78	LCD (Module) + Backlight(EDGE LED)
8	Module Size	741.0(H) x 435.8(V) x 10.8 mm(D)		With inverter
8	Pixel Pitch	0.36375 (H) x 0.36375 (V)		
9	Back Light	LED(EDGE)		
10	Display Colors	1.06 B(true) colors		
11	Coating	3H		

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

5. Module optical specification

No.	Item	Specification		Min.	Typ.	Max.	Remark
1.	Viewing Angle<CR>10>	Right/Left/Up/Down		89/89/89/89			CR > 10
2.	Luminance	Luminance (cd/m^2)		400	450		
		Variation				1.3	MAX /MIN
3.	Contrast Ratio	CR		900	1300		All white/ All black
4.	CIE Color Coordinates	White	Wx	Typ. -0.03	0.279	Typ. +0.03	
			Wy		0.292		
		RED	Xr		0.638		
			Yr		0.334		
		Green	Xg		0.291		
			Yg		0.607		
		Blue	Xb		0.145		
			Yb		0.062		

1) Stable for approximately 30 minutes in a dark environment at 25 ºC ± 2 ºC.
2) Operating Ambient Humidity: Min 10, Max 90 %RH
3) Suppl Voltage: 24 V
4) Frame Frequency: 120 Hz

6. Component Video Input (Y, C_B/P_B, C_R/P_R)

No.	Specification				Remark
	Resolution	H-freq(kHz)	V-freq(Hz)		
1.	720x480	15.73	60.00	SDTV,DVD 480i	
2.	720x480	15.63	59.94	SDTV,DVD 480i	
3.	720x480	31.47	59.94	480p	
4.	720x480	31.50	60.00	480p	
5.	720x576	15.625	50.00	SDTV,DVD 625 Line	
6.	720x576	31.25	50.00	HDTV 576p	
7.	1280x720	45.00	50.00	HDTV 720p	
8.	1280x720	44.96	59.94	HDTV 720p	
9.	1280x720	45.00	60.00	HDTV 720p	
10.	1920x1080	31.25	50.00	HDTV 1080i	
11.	1920x1080	33.75	60.00	HDTV 1080i	
12.	1920x1080	33.72	59.94	HDTV 1080i	
13.	1920x1080	56.250	50	HDTV 1080p	
14.	1920x1080	67.5	60	HDTV 1080p	

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

7. RGB (PC)

No.	Specification				Proposed	Remarks
	Resolution	H-freq(kHz)	V-freq(Hz)	Pixel Clock(MHz)		
1.	720*400	31.468	70.08	28.321		For only DOS mode
2.	640*480	31.469	59.94	25.17	VESA	Input 848*480 60 Hz, 852*480 60 Hz -> 640*480 60 Hz Display
3.	800*600	37.879	60.31	40.00	VESA	
4.	1024*768	48.363	60.00	65.00	VESA(XGA)	
5.	1280*768	47.78	59.87	79.5	WXGA	
6.	1360*768	47.72	59.8	84.75	WXGA	
7.	1280*1024	63.595	60.0	108.875	SXGA	FHD model
8.	1920*1080	66.587	59.93	138.625	WUXGA	FHD model

8. HDMI Input

(1) DTV Mode

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1.	720*480	31.469 /31.5	59.94 /60	27.00/27.03	SDTV 480P	
2.	720*576	31.25	50	54	SDTV 576P	
3.	1280*720	37.500	50	74.25	HDTV 720P	
4.	1280*720	44.96 /45	59.94 /60	74.17/74.25	HDTV 720P	
5.	1920*1080	33.72 /33.75	59.94 /60	74.17/74.25	HDTV 1080I	
6.	1920*1080	28.125	50.00	74.25	HDTV 1080I	
7.	1920*1080	26.97 /27	23.97 /24	74.17/74.25	HDTV 1080P	
8.	1920*1080	33.716 /33.75	29.976 /30.00	74.25	HDTV 1080P	
9.	1920*1080	56.250	50	148.5	HDTV 1080P	
10.	1920*1080	67.43 /67.5	59.94 /60	148.35/148.50	HDTV 1080P	

(2) PC Mode

No.	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remark
1.	720*400	31.468	70.08	28.321		HDCP
2.	640*480	31.469	59.94	25.17	VESA	HDCP
3.	800*600	37.879	60.31	40.00	VESA	HDCP
4.	1024*768	48.363	60.00	65.00	VESA(XGA)	HDCP
5.	1280*768	47.78	59.87	79.5	WXGA	HDCP
6.	1360*768	47.72	59.8	84.75	WXGA	HDCP
7.	1280*1024	63.595	60.0	108.875	SXGA	HDCP/FHD model
8.	1920*1080	67.5	60.00	138.625	WUXGA	HDCP/FHD model

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

ADJUSTMENT INSTRUCTION

1. Application Range

This specification sheet is applied to all of the LCD TV with LD03D chassis.

2. Designation

(1) Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument.
(2) Adjustment must be done in the correct order.
(3) The adjustment must be performed in the circumstance of 25 ºC ± 5 ºC of temperature and 65 % ±10 % of relative humidity if there is no specific designation.
(4) The input voltage of the receiver must keep AC 100-240 V~ 50 / 60Hz.
(5) The receiver must be operated for about 5 minutes prior to the adjustment when module is in the circumstance of over 15.

In case of keeping module is in the circumstance of 0 °C, it should be placed in the circumstance of above 15 °C for 2 hours

In case of keeping module is in the circumstance of below -20 °C, it should be placed in the circumstance of above 15 °C for 3 hours.

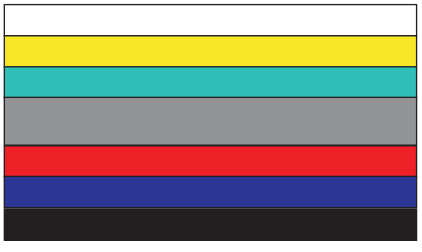
[Caution]
When still image is displayed for a period of 20 minutes or longer (especially where W/B scale is strong. Digital pattern 13ch and/or Cross hatch pattern 09ch), there can some afterimage in the black level area.

3. Automatic Adjustment

3.1. ADC Adjustment

(1) Overview
ADC adjustment is needed to find the optimum black level and gain in Analog-to-Digital device and to compensate RGB deviation.

(2) Equipment & Condition
1) Jig (RS-232C protocol)
2) MSPG-925 Series Pattern Generator(MSPG-925FA, pattern - 65)
- Resolution : 480i Comp1
1080P Comp1
1920*1080 RGB
- Pattern : Horizontal 100% Color Bar Pattern
- Pattern level : 0.7±0.1 Vp-p
- Image



(3) Adjustment
1) Adjustment method
- Using RS-232, adjust items listed in 3.1 in the other shown in “3.1.(3).3)”

2) Adj. protocol

Protocol	Command	Set ACK
Enter adj. mode	aa 00 00	a 00 OK00x
Source change	xb 00 40	b 00 OK40x (Adjust 480i Comp1)
	xb 00 60	b 00 OK60x (Adjust 1024*768 RGB)
Begin adj.	ad 00 10	
Return adj. result		OKx (Case of Success)
		NGx (Case of Fail)
Read adj. data	(main)	(main)
	ad 00 20	00000000000000000000000007c007b006dx
	(sub)	(Sub)
	ad 00 21	00000007000000000000000007c00830077x
Confirm adj.	ad 00 99	NG 03 00x (Fail)
		NG 03 01x (Fail)
		NG 03 02x (Fail)
		OK 03 03x (Success)
End adj.	aa 00 90	a 00 OK90x

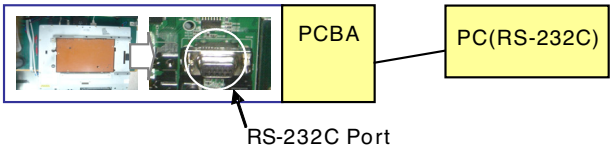
Ref.) ADC Adj. RS232C Protocol_Ver1.0

3) Adj. order
- aa 00 00 [Enter ADC adj. mode]
- xb 00 40 [Change input source to Component1(480i)]
- ad 00 10 [Adjust 480i Comp1]
- xb 00 60 [Change input source to RGB(1024*768)]
- ad 00 10 [Adjust 1024*768 RGB]
- ad 00 90 End adj.

3.2. MAC Address

(1) Equipment & Condition
- Play file: Serial.exe
- MAC Address edit
- Input Start / End MAC address

(2) Download method
1) Communication Prot connection

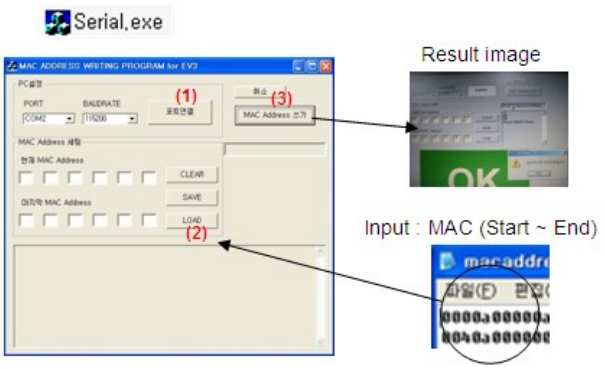


Connect: PCBA Jig-> RS-232C Port== PC-> RS-232C Port

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

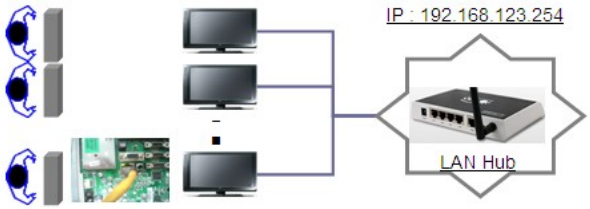
2) MAC Address Download
- Com 1,2,3,4 and 115200(Baud rate)
- Port connection button click(1)



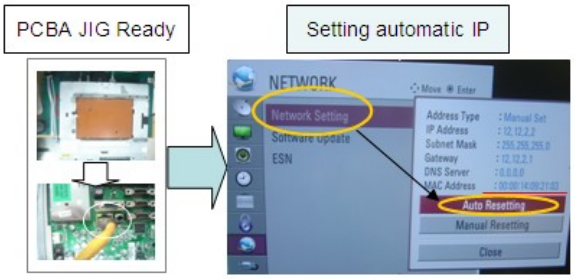
- Load button click(2) for MAC Address write.
- Start MAC Address write button(3)
- Check the OK Or NG

3.3. LAN

(1) Equipment & Condition
■ Each other connection to LAN Port of IP Hub and Jig



(2) LAN inspection solution
■ LAN Port connection with PCB
■ Network setting at MENU Mode of TV
■ setting automatic IP
■ Setting state confirmation
-> If automatic setting is finished, you confirm IP and MAC Address.



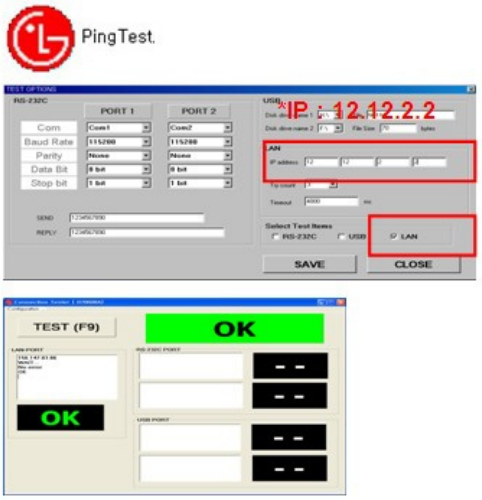
3.4. LAN PORT INSPECTION(PING TEST)

Connect SET -> LAN port == PC -> LAN Port



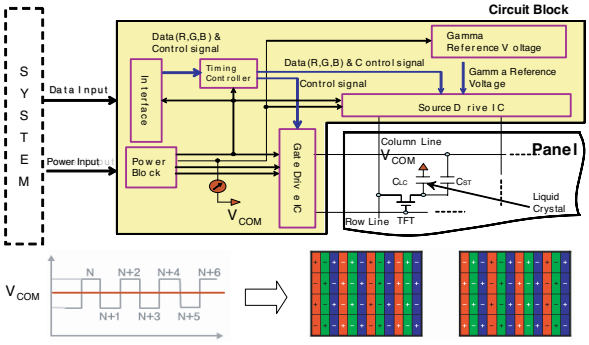
(1) Equipment setting
1) Play the LAN Port Test PROGRAM.
2) Input IP set up for an inspection to Test Program.
*IP Number : 12.12.2.2

(2) LAN PORT inspection (PING TEST)
1) Play the LAN Port Test Program.
2) Connect each other LAN Port Jack.
3) Play Test (F9) button and confirm OK Message.
4) Remove LAN CABLE



3.5. V-COM Adjust(Only LGD(M+S) Module)

- Why need Vcom adjustment?
■ The Vcom (Common Voltage) is a Reference Voltage of Liquid Crystal Driving.
-> Liquid Crystal need for Polarity Change with every frame.



Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

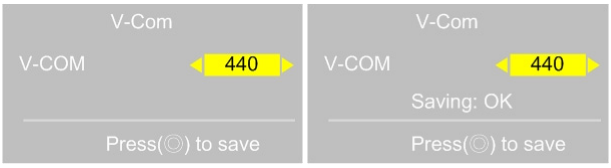
- Adjust sequence

■ Press the PIP key of the ADJ remote controller. (This PIP key is hot key to enter the VCOM adjusting mode)
(Or After enter Service Mode by pushing “ADJ” key, then Enter V-Com Adjust mode by pushing “►” key at “10. V-Com”)

■ As pushing the right or the left button on the remote controller, And find the V-COM value Which is no or minimized the Flicker.
(If there is no flicker at default value, Press the exit key and finish the VCOM adjustment.)

■ Push the OK key to store value. Then the message “Saving OK” is pop.

■ Press the exit key to finish VCOM adjustment.



[Visual Adjust and control the Voltage level]

3.6. Model name & serial number download

(1) Model name & Serial number D/L

■ Press “Power on” key of service remocon.(Baud rate : 115200 bps)

■ Connect RS232 Signal Cable to RS-232 Jack.

■ Write Serial number by use RS-232.

■ Must check the serial number at Instart menu.

(2) Method & notice

A. Serial number D/L is using of scan equipment.

B. Setting of scan equipment operated by Manufacturing Technology Group.

C.Serial number D/L must be conformed when it is produced in production line, because serial number D/L is mandatory by D-book 4.0

* Manual Download (Model Name and Serial Number)

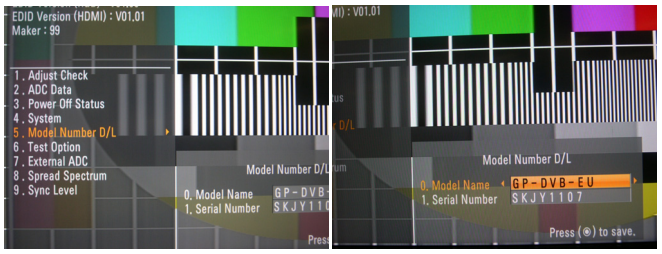
If the TV set is downloaded by OTA or service man, sometimes model name or serial number is initialized.(Not always)

There is impossible to download by bar code scan, so It need Manual download.

a. Press the ‘instart’ key of ADJ remote control.

b. Go to the menu ‘5.Model Number D/L’ like below photo.

c. Input the Factory model name(ex 42LD450-ZA) or Serial number like photo.



d. Check the model name Instart menu ‡ Factory name displayed (ex 42LE7500-ZA)

e. Check the Diagnostics (DTV country only) ‡ Buyer model displayed (ex 42LE7500-ZA)

3.7. CI+ Key Download method

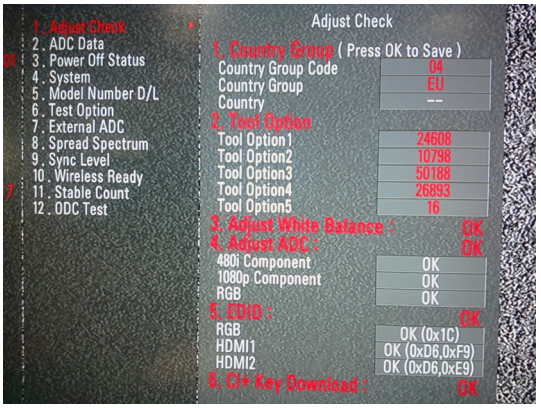
(1) Download Procedure

1) Press "Power on" button of a service R/C.(Baud rate : 115200 bps)

2) Connect RS232-C Signal Cable.

3) Write CI+ Key through RS-232-C.

4) Check whether the key was downloaded or not at ‘In Start’ menu. (Refer to below).



=> Check the Download to CI+ Key value in LGset.

1. check the method of CI+ Key value

a. check the method on Instart menu

b. check the method of RS232C Command

1) into the main ass’y mode (RS232 : aa 00 00)

CMD 1	CMD 2	Data 0	
A	A	0	0

2) check the key download for transmitted command (RS232 : ci 00 10)

CMD 1	CMD 2	Data 0	
C	I	1	0

3) result value

- normally status for download : OKx
- abnormally status for download : NGx

2. Check the method of CI+ Key value (RS232)

1) into the main ass’y mode (RS232 : aa 00 00)

CMD 1	CMD 2	Data 0	
A	A	0	0

2) Check the method of CI+ key by command (RS232 : ci 00 20)

CMD 1	CMD 2	Data 0	
C	I	2	0

3) Result value

i 01 OK 1d1852d21c1ed5dcx

CI+ key Value

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

4. Manual Adjustment

4.1. ADC(GP2) Adjustment

4.1.1. Overview

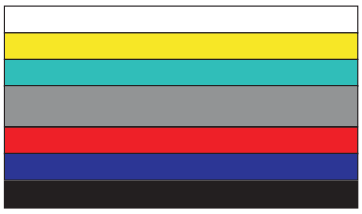
ADC adjustment is needed to find the optimum black level and gain in Analog-to-Digital device and to compensate RGB deviation.

4.1.2. Equipment & Condition

(1) Adjust Remocon

(2) 801GF(802B, 802F, 802R) or MSPG925FA Pattern Generator

- Resolution :
  480i, 720*480 (MSPG-925FA -> Model: 209, Pattern: 65) - 480i
  1080p, 1920*1080 (MSPG-925FA -> Model: 225, Pattern: 65) - 1080p
- Pattern : Horizontal 100% Color Bar Pattern
- Pattern level: 0.7 ± 0.1 Vp-p
- Image



(3) Must use standard cable

4.1.3. Adjust method

(1) ADC 480i, 1080p Comp1

1) Check connected condition of Comp1 cable to the equipment
2) Give a 480i, 1080p Mode, Horizontal 100% Color Bar Pattern to Comp1.
   (MSPG-925FA -> Model: 209, Pattern: 65) - 480i
   (MSPG-925FA -> Model: 225, Pattern: 65) - 1080p
3) Change input mode as Component1 and picture mode as “Standard”
4) Press the In-start Key on the ADJ remote after at least 1 min of signal reception. Then, select 7. External ADC -> 1. COMP 1080p on the menu. Press enter key. The adjustment will start automatically.
5) If ADC calibration is successful, “ADC RGB Success” is displayed.
   If ADC calibration is failure, “ADC RGB Fail” is displayed.
6) If ADC calibration is failure, after recheck ADC pattern or condition retry calibration Error message refer to 5).

(2) ADC 1920*1080 RGB

1) Check connected condition of Component & RGB cable to the equipment
2) Give a 1920*1080 Mode, 100 % Horizontal Color Bar Pattern to RGB port.
   (MSPG-925 Series -> model:126 , pattern:65)
3) Change input mode as RGB and picture mode as “Standard”.
4) Press the In-start Key on the ADJ remote after at least 1 min of signal reception. Then, select 7. External ADC -> 1. COMP 1080p on the menu. Press enter key. The adjustment will start automatically.
5) If ADC calibration is successful, “ADC RGB Success” is displayed.
   If ADC calibration is failure, “ADC RGB Fail” is displayed.
6) If ADC calibration is failure, after recheck ADC pattern or condition retry calibration Error message refer to 5).

4.2. EDID(The Extended Display Identification Data)/DDC(Display Data Channel) download

(1) Overview

It is a VESA regulation. A PC or a MNT will display an optimal resolution through information sharing without any necessity of user input. It is a realization of “Plug and Play”.

(2) Equipment

- Adjust remote control
- Since embedded EDID data is used, EDID download JIG, HDMI cable and D-sub cable are not need.

(3)Download method

1) Press Adj. key on the Adj. R/C, then select “10.EDID D/L”, By pressing Enter key, enter EDID D/L menu.
2) Select [Start] button by pressing Enter key, HDMI1 / HDMI2 / HDMI3 / HDMI4 / RGB are Writing and display OK or NG.

For Analog EDID	For HDMI EDID
D-sub to D-sub	DVI-D to HDMI or HDMI to HDMI
	 

(4) EDID DATA

■ HDMI

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	ⓐ		ⓑ			
0x01	ⓒ		01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0x02	0F	50	54	A1	08	00	71	4F	81	80	01	01	01	01	01	01
0x03	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0x04	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0x05	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0x06	3E	1E	53	10	00	0A	20	20	20	20	20	20	ⓓ			
0x07	ⓓ														01	ⓔ
0x00	02	03	26	F1	4E	10	1F	84	13	05	14	03	02	12	20	21
0x01	22	15	01	26	15	07	50	09	57	07	67	ⓕ				
0x02	ⓕ		E3	05	03	01	01	1D	80	18	71	1C	16	20	58	2C
0x03	25	00	A0	5A	00	00	00	9E	01	1D	00	80	51	D0	0C	20
0x04	40	80	35	00	A0	5A	00	00	00	1E	02	3A	80	18	71	38
0x05	2D	40	58	2C	45	00	A0	5A	00	00	00	1E	66	21	50	B0
0x06	51	00	1B	30	40	70	36	00	A0	5A	00	00	00	1E	00	00
0x07	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	ⓔ

■ RGB

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	ⓐ		ⓑ			
0x01	ⓒ		01	03	68	10	09	78	0A	EE	91	A3	54	4C	99	26
0x02	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
0x03	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0x04	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0x05	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0x06	3E	1E	53	10	00	0A	20	20	20	20	20	20	ⓓ			
0x07	ⓓ														00	ⓔ

■ Reference

- HDMI1 ~ HDMI4 / RGB
- In the data of EDID, bellows may be different by S/W or Input mode.

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

ⓐ Product ID

Model Name	HEX	EDID Table	DDC Function
FHD Model	0001	01 00	Analog
FHD Model	0001	01 00	Digital

ⓑ Serial No. : Controlled on product line

ⓒ Month, Year: Controlled on production line:
ex) Monthly : '01' -> '01'
Year : '2010' -> '14'

ⓓ Model Name(Hex):

MODEL	MODEL NAME(HEX)
all	00 00 00 FC 00 4C 47 20 54 56 0A 20 20 20 20 20 20 20

ⓔ Checksum: Changeable by total EDID data.

ⓕ Vendor Specific(HDMI)

INPUT	MODEL NAME(HEX)
HDMI1	67 03 0C 00 10 00 B8 2D
HDMI2	67 03 0C 00 20 00 B8 2D
HDMI3	67 03 0C 00 30 00 B8 2D
HDMI4	67 03 0C 00 40 00 B8 2D
HDMI5	67 03 0C 00 50 00 B8 2D

4.3. White Balance Adjustment

4.3.1 Overview

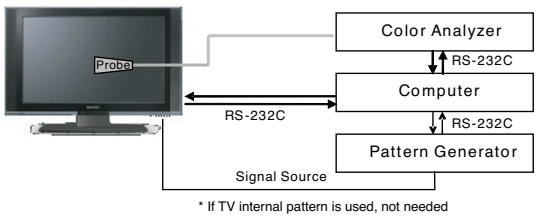
(1) W/B adj. Objective & How-it-works
(2) Objective: To reduce each Panel's W/B deviation
(3) How-it-works : When R/G/B gain in the OSD is at 192, it means the panel is at its Full Dynamic Range. In order to prevent saturation of Full Dynamic range and data, one of R/G/B is fixed at 192, and the other two is lowered to find the desired value.
(4) Adj. condition : normal temperature
1) Surrounding Temperature : 25 ºC ± 5 ºC
2) Warm-up time: About 5 Min
3) Surrounding Humidity : 20 % ~ 80 %

4.3.2 Equipment

1) Color Analyzer: CA-210 (LED Module : CH 14)
2) Adj. Computer(During auto adj., RS-232C protocol is needed)
3) Adjust Remocon
4) Video Signal Generator MSPG-925F 720p/216-Gray (Model:217, Pattern:78)
-> Only when internal pattern is not available

■ Color Analyzer Matrix should be calibrated using CS-1000

4.3.3. Equipment connection MAP



* If TV internal pattern is used, not needed

4.3.4. Adj. Command (Protocol)

<Command Format>

START | 6E | A | 50 | A | LEN | A | 03 | A | CMD | A | 00 | A | VAL | A | CS | A | STOP

- LEN: Number of Data Byte to be sent
- CMD: Command
- VAL: FOS Data value
- CS: Checksum of sent data
- A: Acknowledge

Ex) [Send: JA_00_DD] / [Ack: A_00_okDDX]

■ RS-232C Command used during auto-adj.

RS-232C COMMAND [CMD	ID	DATA]	Explanation
wb	00	00	Begin White Balance adj.
wb	00	10	Gain adj.(internal white pattern)
wb	00	1f	Gain adj. completed
wb	00	20	Offset adj.(internal white pattern)
wb	00	2f	Offset adj. completed
wb	00	ff	End White Balance adj.(Internal pattern disappears)

Ex) wb 00 00 -> Begin white balance auto-adj.
wb 00 10 -> Gain adj.
ja 00 ff -> Adj. data
jb 00 c0
...
...
wb 00 1f -> Gain adj. completed
*(wb 00 20(Start), wb 00 2f(completed)) -> Off-set adj.
wb 00 ff -> End white balance auto-adj.

■ Adj. Map

	ITEM	Command		Data Range (Hex.)		Default (Decimal)
		Cmd 1	Cmd 2	Min	Max	
Cool	R-Gain	j	g	00	C0	
	G-Gain	j	h	00	C0	
	B-Gain	j	i	00	C0	
	R-Cut					
	G-Cut					
	B-Cut					
Medium	R-Gain	j	a	00	C0	
	G-Gain	j	b	00	C0	
	B-Gain	j	c	00	C0	
	R-Cut					
	G-Cut					
	B-Cut					
Warm	R-Gain	j	d	00	C0	
	G-Gain	j	e	00	C0	
	B-Gain	j	f	00	C0	
	R-Cut					
	G-Cut					

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

4.3.5. Adj. method

(1) Auto adj. method

1) Set TV in adj. mode using POWER ON key.
2) Zero calibrate probe then place it on the center of the Display.
3) Connect Cable (RS-232C)
4) Select mode in adj. Program and begin adjustment.
5) When adj. is complete (OK Sing), check adj. status pre mode. (Warm, Medium, Cool)
6) Remove probe and RS-232C cable to complete adj.

■ W/B Adj. must begin as start command “wb 00 00” , and finish as end command “wb 00 ff”, and Adj. offset if need.

(2) Manual adj. method

1) Set TV in Adj. mode using POWER ON
2) Zero Calibrate the probe of Color Analyzer, then place it on the center of LCD module within 10cm of the surface.
3) Press ADJ key -> EZ adjust using adj. R/C -> 7. White-Balance then press the cursor to the right (KEY ►).
(When KEY(►) is pressed 216 Gray internal pattern will be displayed)
4) One of R Gain / G Gain / B Gain should be fixed at 192, and the rest will be lowered to meet the desired value.
5) Adj. is performed in COOL, MEDIUM, WARM 3 modes of color temperature.

■ If internal pattern is not available, use RF input. In EZ Adj. menu 7.White Balance, you can select one of 2 Test-pattern: ON, OFF. Default is inner(ON). By selecting OFF, you can adjust using RF signal in 216 Gray pattern.

■ Adj. condition and cautionary items

1) Lighting condition in surrounding area
Surrounding lighting should be lower 10 lux. Try to isolate adj. area into dark surrounding.
2) Probe location
: Color Analyzer (CA-210) probe should be within 10cm and perpendicular of the module surface (80°~ 100°)
3) Aging time
- After Aging Start, Keep the Power ON status during 5 Minutes.
- In case of LCD, Back-light on should be checked using no signal or Full-white pattern.

4.3.6. Reference (White Balance Adj. coordinate and temperature)

■ Luminance : 216 Gray

■ Standard color coordinate and temperature using CS-1000 (over 26 inch)

Mode	Color Coordination		Temp	ΔUV
	x	y		
COOL	0.269	0.273	13000 K	0.0000
MEDIUM	0.285	0.293	9300 K	0.0000
WARM	0.313	0.329	6500 K	0.0000

■ Standard color coordinate and temperature using CA-210(CH 9)

Mode	Color Coordination		Temp	ΔUV
	x	y		
COOL	0.269 ± 0.002	0.273 ± 0.002	13000 K	0.0000
MEDIUM	0.285 ± 0.002	0.293 ± 0.002	9300 K	0.0000
WARM	0.313 ± 0.002	0.329 ± 0.002	6500 K	0.0000

4.4. EYE-Q function check

Step 1) Turn on TV
Step 2) Press EYE key of Adj. R/C
Step 3) Cover the Eye Q II sensor on the front of the using your hand and wait for 6 seconds
Step 4) Confirm that R/G/B value is lower than 10 of the “Raw Data (Sensor data, Back light)”. If after 6 seconds, R/G/B value is not lower than 10, replace Eye Q II sensor.
Step 5) Remove your hand from the Eye Q II sensor and wait for 6 seconds.
Step 6) Confirm that “ok” pop up. If change is not seen, replace Eye Q II sensor.



4.5. Local Dimming Function Check

Step 1) Turn on TV.
Step 2) Press Tilt key of Adj. R/C.
Step 3) Confirm under the screen.



Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

4.6. Option selection per country

(1) Overview
- Option selection is only done for models in Non-EU
- Applied model: LD03D/03E Chassis applied EU model

(2) Method
1) Press ADJ key on the Adj. R/C, then select Country Group Menu
2) Depending on destination, select Country Group Code 04 or Country Group EU then on the lower Country option, select US, CA, MX. Selection is done using +, - or ▶◀ KEY.

4.7. Tool Option selection

- Method : Press Adj. key on the Adj. R/C, then select Tool option.

MODEL	Tool 1	Tool 2	Tool 3	Tool 4	Tool 5
32LE7xxx	16672	31795	64556	22830	2066

4.8. Ship-out mode check(In-stop)

After final inspection, press IN-STOP key of the Adj. R/C and check that the unit goes to Stand-by mode.
After final inspection, Always turn on the Mechanical S/W.

5. GND and Internal Pressure check

5.1. Method

1) GND & Internal Pressure auto-check preparation
- Check that Power Cord is fully inserted to the SET. (If loose, re-insert)

2) Perform GND & Internal Pressure auto-check
- Unit fully inserted Power cord, Antenna cable and A/V arrive to the auto-check process.
- Connect D-terminal to AV JACK TESTER
- Auto CONTROLLER(GWS103-4) ON
- Perform GND TEST
- If NG, Buzzer will sound to inform the operator.
- If OK, changeover to I/P check automatically. (Remove CORD, A/V form AV JACK BOX)
- Perform I/P test
- If NG, Buzzer will sound to inform the operator.
- If OK, Good lamp will lit up and the stopper will allow the pallet to move on to next process.

5.2. Checkpoint

- TEST voltage
  - GND: 1.5KV/min at 100mA
  - SIGNAL: 3KV/min at 100mA
- TEST time: 1 second
- TEST POINT
  - GND TEST = POWER CORD GND & SIGNAL CABLE METAL GND
  - Internal Pressure TEST = POWER CORD GND & LIVE & NEUTRAL
- LEAKAGE CURRENT: At 0.5 mArms

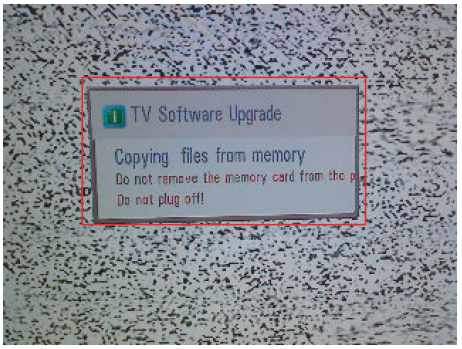
6. Audio

No.	Item	Min.	Typ.	Max.	Unit	
1.	Audio practical max Output, L/R	9.0	10.0	12.0	W	EQ Off AVL Off
	(Distortion=10% max Output)	8.5	8.9	9.8	Vrms	Clear Voice Off
2.	Speaker (8Ω Impedance)		10.0	15.0	W	EQ On AVL On Clear Voice On

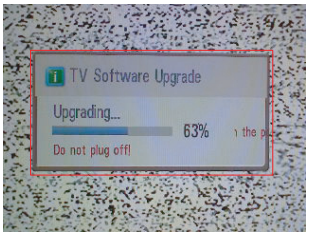
Measurement condition:
1. RF input: Mono, 1 KHz sine wave signal, 100 % Modulation
2. CVBS, Component: 1 KHz sine wave signal 0.4 Vrms
3. RGB PC: 1 KHz sine wave signal 0.7 Vrms

7. USB S/W Download (option, Service only)

1) Put the USB Stick to the USB socket
2) Automatically detecting update file in USB Stick
   - If your downloaded program version in USB Stick is Low, it didn't work. But your downloaded version is High, USB data is automatically detecting
3) Show the message "Copying files from memory"



4) Updating is starting.





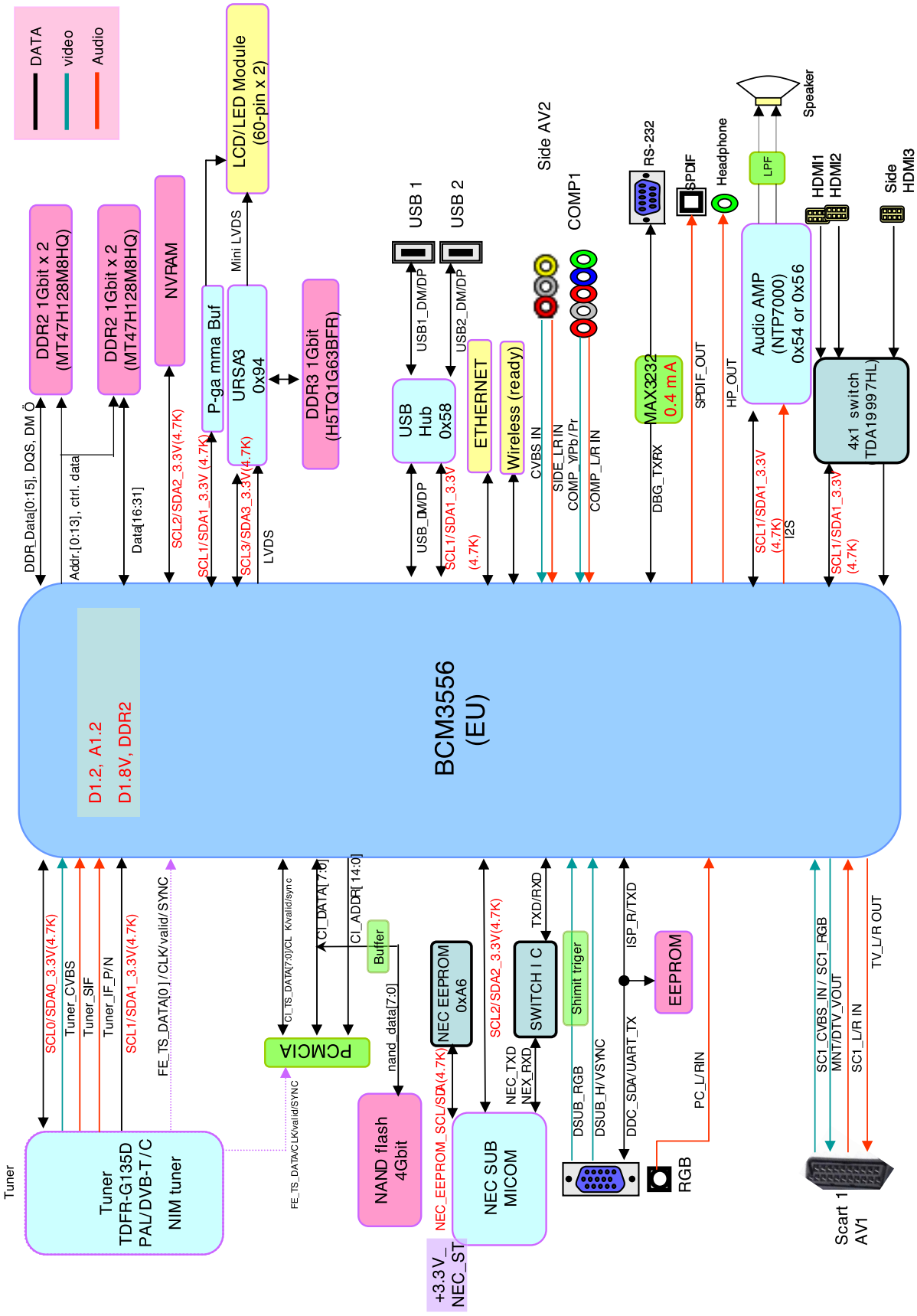
5) Updating Completed, The TV will restart automatically
6) If your TV is turned on, check your updated version and Tool option. (explain the Tool option, next stage)
   * If downloading version is more high than your TV have, TV can lost all channel data. In this case, you have to channel recover. if all channel data is cleared, you didn't have a DTV/ATV test on production line.

* After downloading, have to adjust TOOL OPTION again.
1. Push "IN-START" key in service remote control.
2. Select "Tool Option 1" and Push "OK" button.
3. Punch in the number. (Each model has their number.)

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

BLOCK DIAGRAM



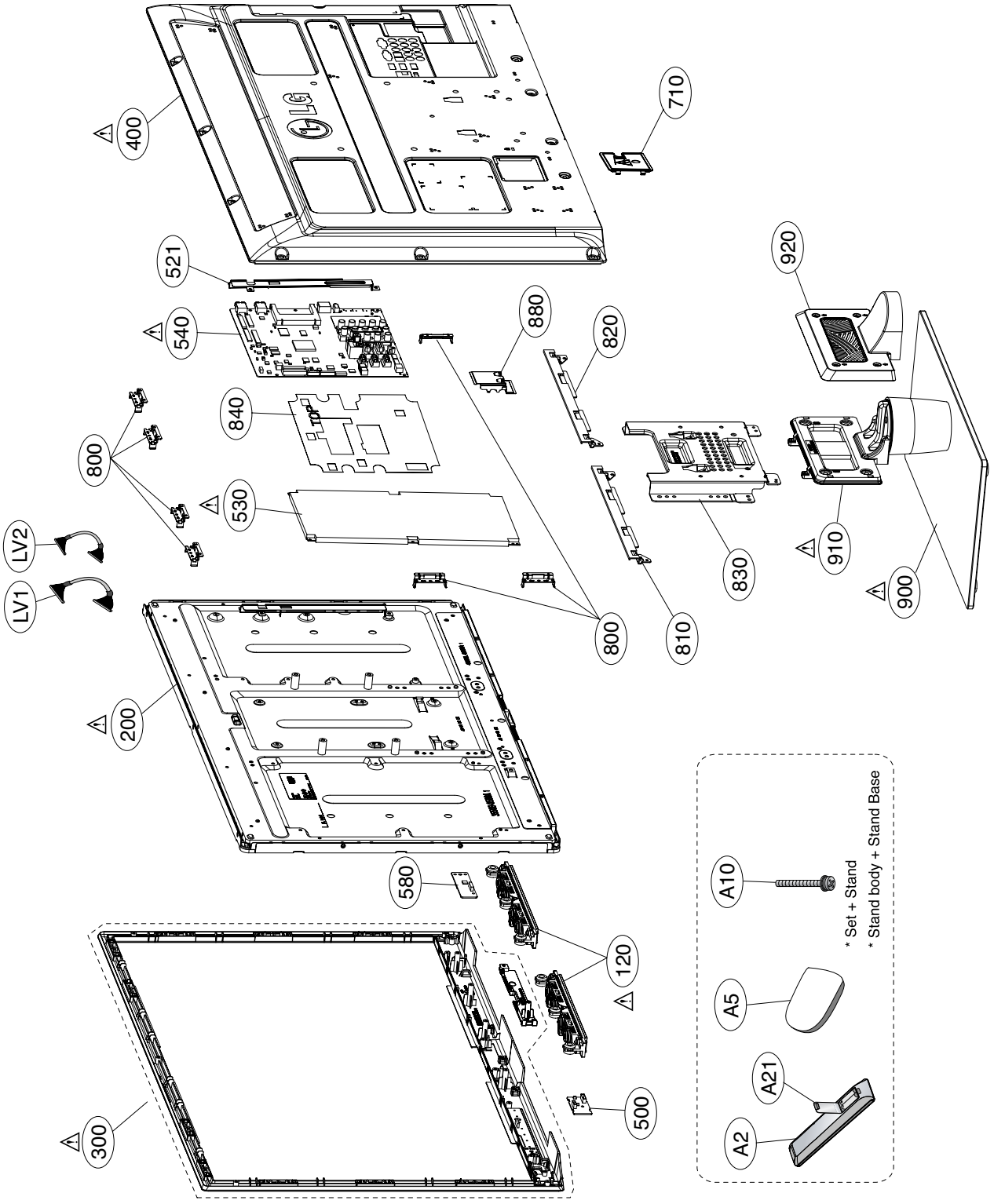
Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and EXPLODED VIEW.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.



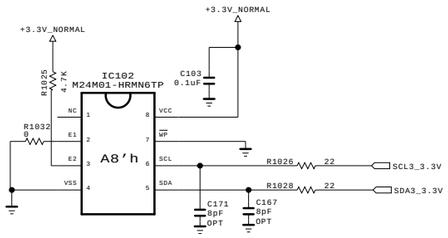
Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

RESET

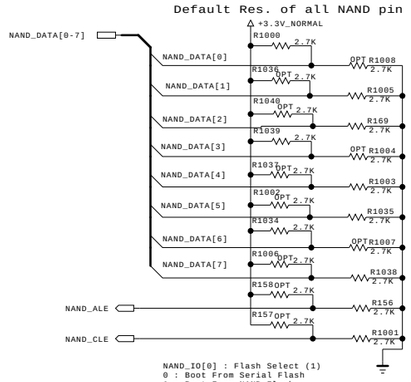


NVRAM



Boot Strap

Default Res. of all NAND pin is Pull-down



NAND_IO[0] : Flash Select (1)
0 : Boot From Serial Flash
1 : Boot From NAND Flash

NAND_IO[1] : NAND Block 0 Write (DNS)
0 : Enable Block 0 Write
1 : Disable Block 0 Write

NAND_IO[3:2] : NAND ECC (1, DNS)
00 : No ECC
01 : 1 ECC Bit
10 : 4 ECC Bit
11 : 8 ECC Bit

NAND_IO[4] : CPU Endian (0)
0 : Little Endian
1 : Big Endian

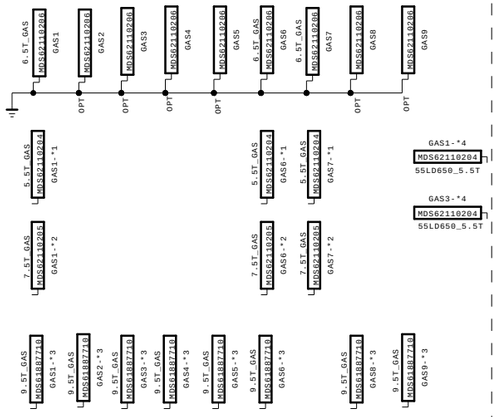
NAND_IO[6:5] : Xtal Bias Control (1, DNS)
00 : 1.2mA (Fundmental Recommand)
01 : 1.8mA
10 : 2.4mA (3rd over tune Recommand)
11 : 3.0mA

NAND_IO[7] : MIPS Frequency (DNS)
0 : 405MHz
1 : 378MHz

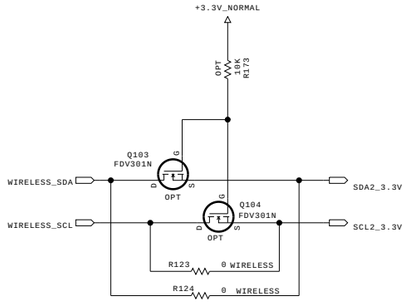
NAND_ALE : I2C Level (DNS)
0 : 3.3V Switching
1 : 5V Switching

NAND_CLE
0 : Enable D2CDIFF AC (DNS)
1 : Disabe D2CDIFF AC

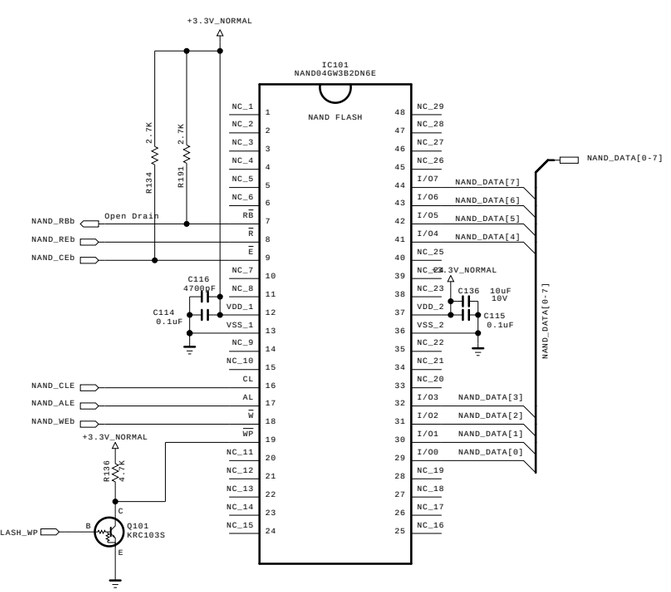
SMD GASKET



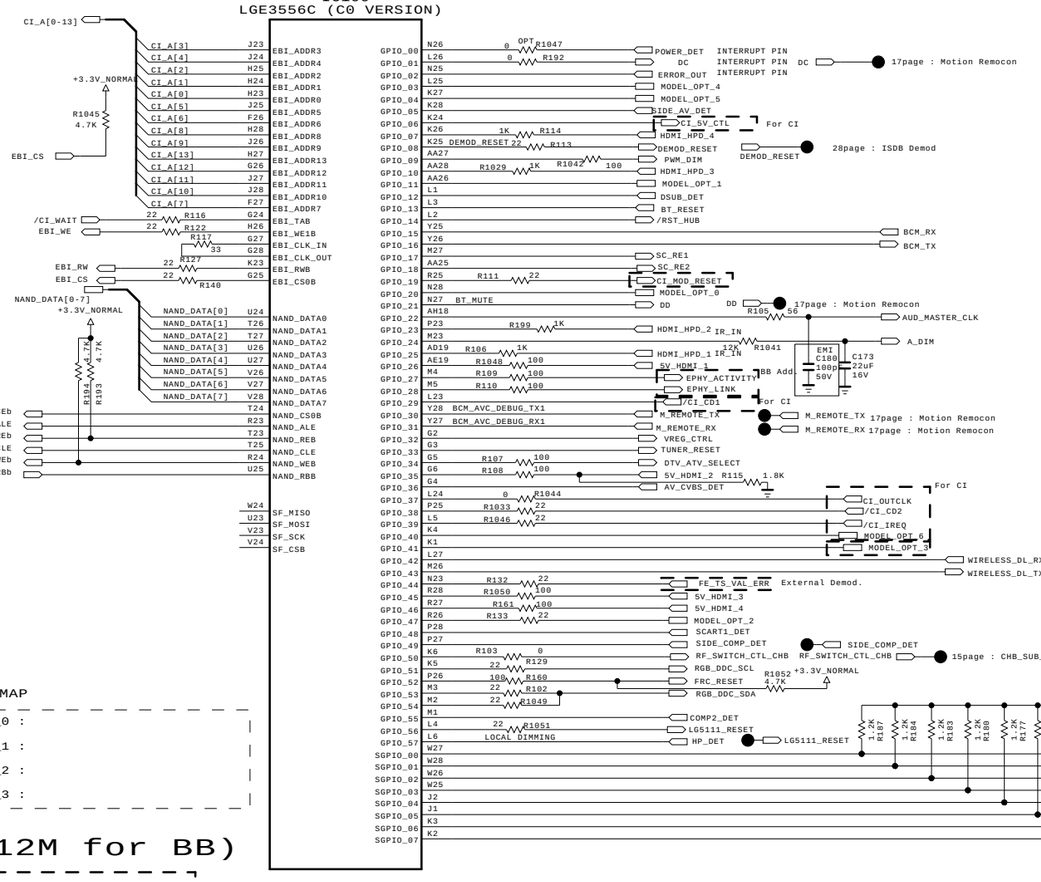
From wireless_I2C to micom I2C



NAND FLASH MEMORY 4Gbit (512M for BB)



IC100
LGE3556C (C0 VERSION)



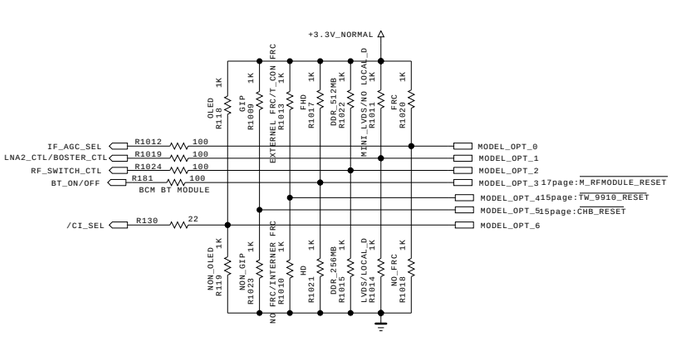
EXT IRQ
GPIO_00, GPIO_01, GPIO_02,
GPIO_11, GPIO_11, GPIO_39

IR_INT : GPIO_23
IR1_IN : GPIO_25
IR2_IN : GPIO_29
IR_OUT : GPIO_26

PWM0 : GPIO_24
PWM1 : GPIO_09

* I2C MAP

* I2C_0 :
* I2C_1 :
* I2C_2 :
* I2C_3 :



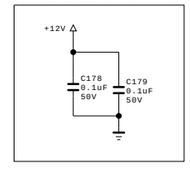
MODEL OPTION

PIN NAME	PIN NO.	HIGH	LOW
MODEL_OPT_0	N28	URSA3	NON_URSA3
MODEL_OPT_1	AA26	MAIN_MINI_LVDS	MAIN_LVDS
MODEL_OPT_2	R26	DDR-256M	DDR-512M
MODEL_OPT_3	K1	FHD	HD
MODEL_OPT_4	L25	FRC	NON_FRC
MODEL_OPT_5	K27	GIP	NON-GIP
MODEL_OPT_6	K4	OLED	NON_OLED

*MODEL_OPT_0 & MODEL_OPT_4
REFER TO THIS OPTION

MODEL_OPT_0	MODEL_OPT_4	
LOW	LOW	NO FRC
HIGH	LOW	URSA3 Internal
HIGH	HIGH	URSA3 External
LOW	HIGH	PWIZ Pannel T-con with LG FRC

FOR ESD 12V Pattern



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	BCM (EUROBBTV)	DATE	2009.06.18
BLOCK	BCM3556 & NAND FLASH	SHEET	1 /

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

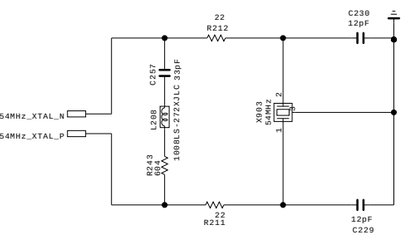
LGE Internal Use Only

VIDEO INCM

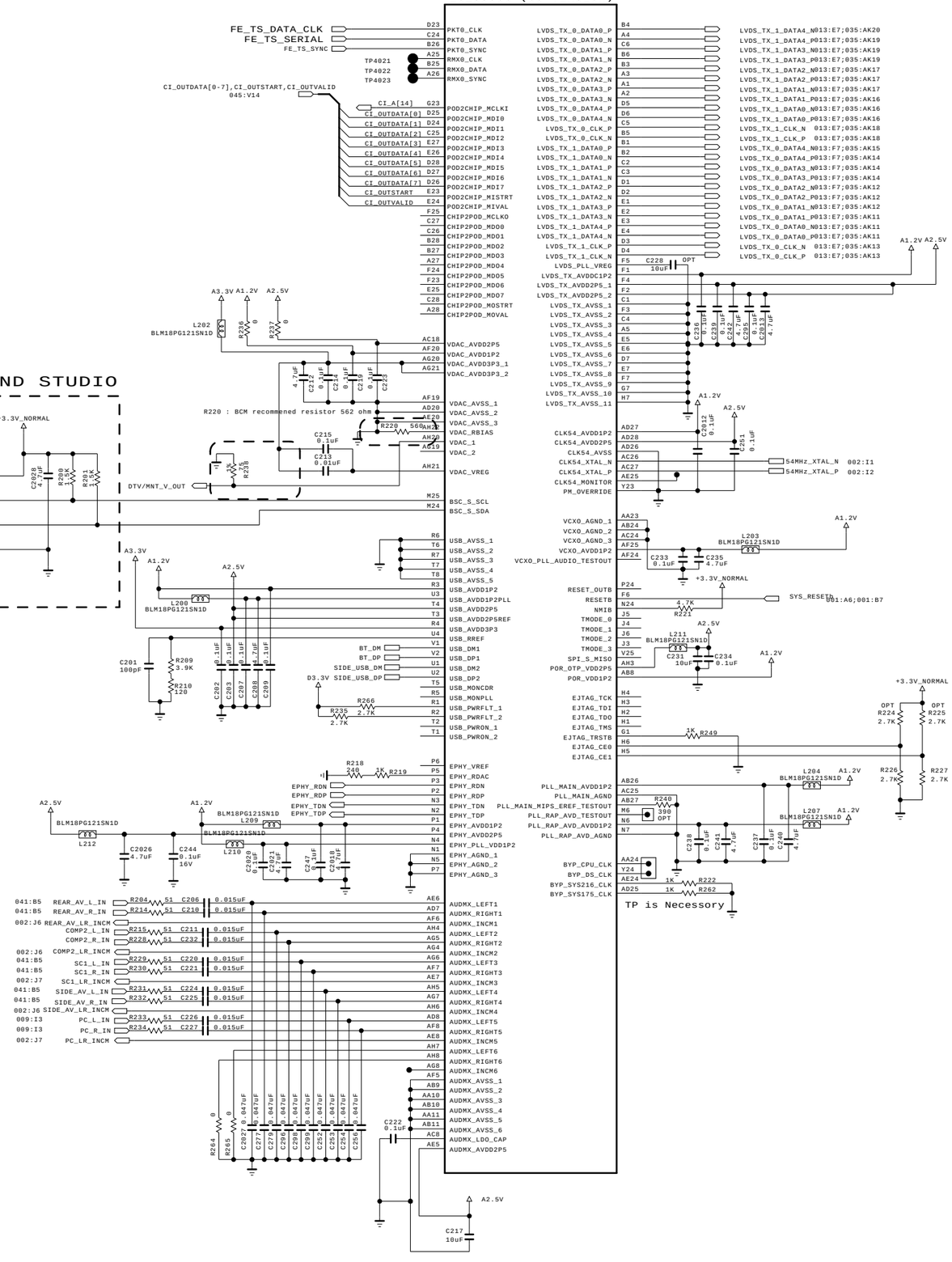
54MHz X-TAL

When usding FUNDMENTAl then series R = 0 ohm and CL = 8 pF

When usding Dip-type X-tal then series R = 22 ohm and CL = 12 pF



IC100
LGE3556C (C0 VERSION)



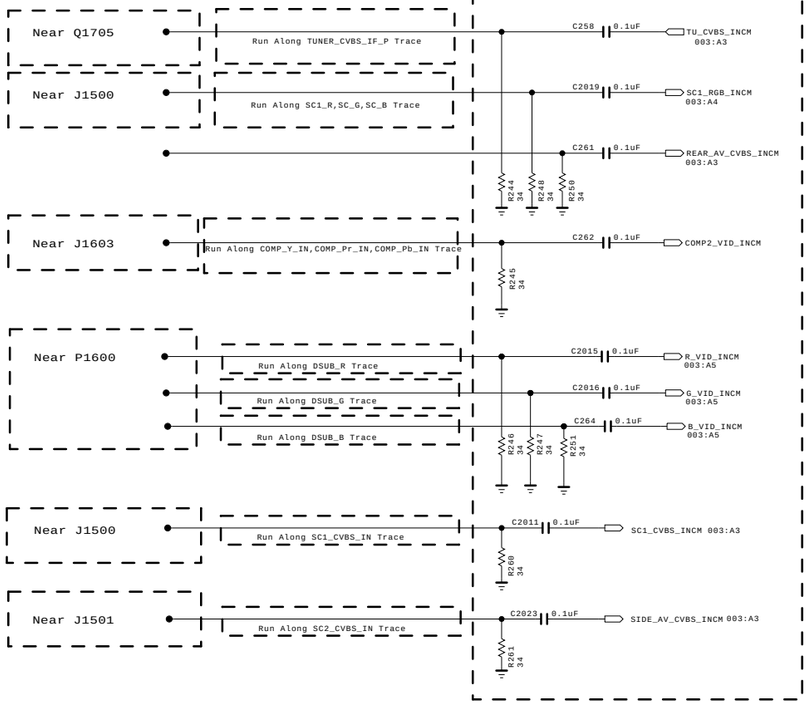
Route INCM between associated left and right signals of same channel

The INCM trace ends at the same point where the connector ground connects to the board ground (thru-hole connector pin).

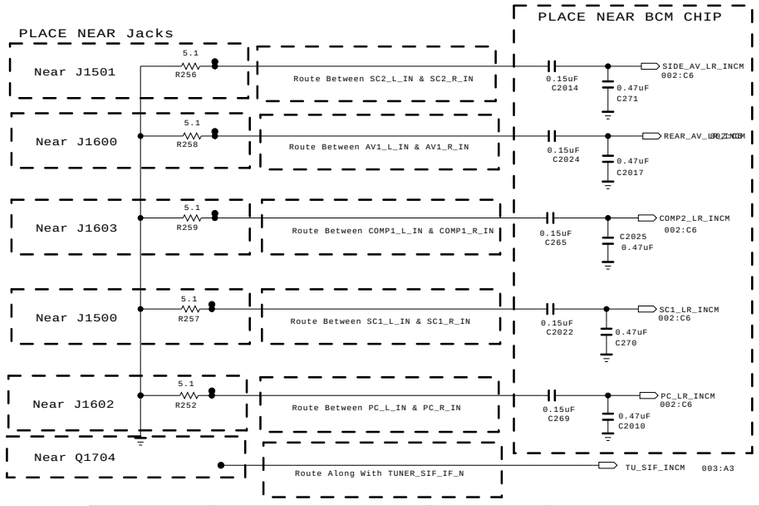
Place test points, resistors near audio connector. Connect the other side of the resistor to GND as close as possible to the ground connection of the associated audio connector.

BROAD BAND STUDIO

PLACE NEAR BCM CHIP



AUDIO INCM



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

LG ELECTRONICS

MODEL	BCM (EUROBBTV)	DATE	2009.06.18
BLOCK	BCM3556 AUD_IN/LVDS	SHEET	2

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

Place here for common circuit with ATSC

+1.8V_AMP +1.8V_HDMI

L111 BLM18PG121SN1D

C2008 0.1uF 16V

+3.3V_NORMAL A3.3V

L112 CIC21J501NE

C2007 0.1uF 16V

D1.2V

C243 0.1uF C249 4.7uF C250 1000pF C382 0.01uF C381 0.1uF C380 10uF C379 10uF C286 33uF C287 100uF FOR ESD

D1.2V

C383 1000pF C246 0.01uF C378 0.1uF C376 4.7uF C259 1000pF C374 0.01uF C366 0.1uF C266 4.7uF C288 1000pF C290 0.01uF

D3.3V

C245 4.7uF C255 1000pF C377 0.01uF C375 0.1uF C263 4.7uF C373 1000pF C267 0.01uF C289 0.1uF C291 10uF

D3.3V

C216 0.1uF C268 1000pF C371 0.01uF C370 0.1uF C369 4.7uF C292 1000pF C293 0.01uF C294 0.1uF

D1.8V

C274 0.1uF C272 0.1uF C275 0.1uF C276 0.1uF C278 4.7uF C280 4.7uF C297 4.7uF C2004 33uF

D1.8V

C248 1000pF C281 1000pF C282 1000pF C283 1000pF C284 0.01uF C285 0.01uF C2005 0.01uF C2006 0.01uF

D1.8V

C365 0.1uF 16V C364 0.1uF 16V C363 0.1uF 16V C357 10uF 16V C356 0.1uF 16V C348 0.1uF 16V C320 0.1uF 16V C319 0.1uF 16V C318 0.1uF 16V C304 0.1uF 16V

26page : TUNER(HALF NIM)

TU_IF_AGC_1

TU_IF_AGC_2

TU_IF_N_1

TU_IF_P_1

IC100
LGE3556C (C0 VERSION)

DS_AGCI_CTL DS_AGCT_CTL EDSAFE_AVSS_1 EDSAFE_AVSS_2 EDSAFE_AVSS_3 EDSAFE_AVSS_4 EDSAFE_AVSS_5 EDSAFE_AVDD2P5 EDSAFE_DVDD1P2 EDSAFE_IF_N EDSAFE_IF_P PLL_DS_AGND PLL_DS_AVDD1P2 PLL_DS_TESTOUT

SD_V5_AVDD1P2 SD_V5_AVDD2P5 SD_V5_AVSS SD_V1_AVDD1P2 SD_V1_AVDD2P5 SD_V1_AVSS_1 SD_V1_AVSS_2 SD_V2_AVDD1P2 SD_V2_AVDD2P5 SD_V2_AVSS_1 SD_V2_AVSS_2 SD_V2_AVSS_3 SD_V3_AVDD1P2 SD_V3_AVDD2P5 SD_V3_AVSS_1 SD_V3_AVSS_2 SD_V4_AVDD1P2 SD_V4_AVDD2P5 SD_V4_AVSS SD_R SD_INCM_R SD_G SD_INCM_G SD_B SD_INCM_B SD_Y1 SD_PR1 SD_PB1 SD_INCM_COMP1 SD_Y2 SD_PR2 SD_PB2 SD_INCM_COMP2 SD_Y3 SD_PR3 SD_PB3 SD_INCM_COMP3 SD_L1 SD_C1 SD_INCM_LC1 SD_L2 SD_C2 SD_INCM_LC2 SD_L3 SD_C3 SD_INCM_LC3 SD_CVBS1 SD_CVBS2 SD_CVBS3 SD_CVBS4 SD_INCM_CVBS1 SD_INCM_CVBS2 SD_INCM_CVBS3 SD_INCM_CVBS4 SD_SIF1 SD_INCM_SIF1 SD_FB SD_FS SD_FS2 PLL_VAFE_AVDD1P2 PLL_VAFE_AVSS PLL_VAFE_TESTOUT RGB_HSYNC RGB_VSYNC

I2S_CLK_IN I2S_CLK_OUT I2S_DATA_IN I2S_DATA_OUT I2S_LR_IN I2S_LR_OUT AUD_LEFT0_N AUD_LEFT0_P AUD_AVDD2P5_0 AUD_AVSS_0_1 AUD_AVSS_0_2 AUD_AVSS_0_3 AUD_AVSS_0_4 AUD_AVSS_0_5 AUD_RIGHT0_N AUD_RIGHT0_P AUD_LEFT1_N AUD_LEFT1_P AUD_RIGHT1_N AUD_RIGHT1_P AUD_AVDD2P5_1 AUD_AVSS_1_1 AUD_AVSS_1_2 AUD_AVSS_1_3 AUD_LEFT2_N AUD_LEFT2_P AUD_RIGHT2_N AUD_RIGHT2_P AUD_AVDD2P5_2 AUD_AVSS_2_1 AUD_AVSS_2_2 AUD_SPDIF SPDIF_AVDD2P5 SPDIF_AVSS SPDIF_IN_N SPDIF_IN_P

HDMI_RX_0_CEC_DAT HDMI_RX_0_HTPLG_IN HDMI_RX_0_HTPLG_OUT HDMI_RX_0_DDC_SCL HDMI_RX_0_DDC_SDA HDMI_RX_0_RESREF HDMI_RX_0_CLK_N HDMI_RX_0_CLK_P HDMI_RX_0_DATA0_N HDMI_RX_0_DATA0_P HDMI_RX_0_DATA1_N HDMI_RX_0_DATA1_P HDMI_RX_0_DATA2_N HDMI_RX_0_DATA2_P HDMI_RX_0_VDD3P3 HDMI_RX_0_VDD1P2 HDMI_RX_0_VDD2P5 HDMI_RX_0_AVSS_1 HDMI_RX_0_AVSS_2 HDMI_RX_0_AVSS_3 HDMI_RX_0_AVSS_4 HDMI_RX_0_AVSS_5 HDMI_RX_0_PLL_AVSS HDMI_RX_0_VDD1P2 HDMI_RX_0_VDD2P5 HDMI_RX_0_PLL_DVSS

HDMI_RX_1_CEC_DAT HDMI_RX_1_HTPLG_IN HDMI_RX_1_HTPLG_OUT HDMI_RX_1_DDC_SCL HDMI_RX_1_DDC_SDA HDMI_RX_1_RESREF HDMI_RX_1_CLK_N HDMI_RX_1_CLK_P HDMI_RX_1_DATA0_N HDMI_RX_1_DATA0_P HDMI_RX_1_DATA1_N HDMI_RX_1_DATA1_P HDMI_RX_1_DATA2_N HDMI_RX_1_DATA2_P HDMI_RX_1_VDD3P3 HDMI_RX_1_VDD1P2 HDMI_RX_1_VDD2P5 HDMI_RX_1_AVSS_1 HDMI_RX_1_AVSS_2 HDMI_RX_1_AVSS_3 HDMI_RX_1_AVSS_4 HDMI_RX_1_AVSS_5 HDMI_RX_1_AVSS_6 HDMI_RX_1_AVSS_7 HDMI_RX_1_AVSS_8 HDMI_RX_1_AVSS_9 HDMI_RX_1_PLL_AVSS HDMI_RX_1_PLL_DVDD1P2 HDMI_RX_1_PLL_DVSS

AUD_SCK AUD_LRCH AUD_LRCK HP_LOUT_N HP_LOUT_P HP_ROUT_N HP_ROUT_P BT_LOUT_N BT_LOUT_P BT_ROUT_N BT_ROUT_P SCART1_Lout_N SCART1_Lout_P SCART1_Rout_N SCART1_Rout_P SPDIF_OUT HDMI_SCL HDMI_SDA HDMI_CLK- HDMI_CLK+ HDMI_RX0- HDMI_RX0+ HDMI_RX1- HDMI_RX1+ HDMI_RX2- HDMI_RX2+

DSUB

DSUB_R R_VID_INCM DSUB_G G_VID_INCM DSUB_B B_VID_INCM

COMPONENT

COMP2_Y COMP2_Pr COMP2_Pb COMP2_VID_INCM

SC1_RGB(EU)/COMPNENT1[NON_EU]

COMP1_Y ==> SC1_G COMP1_Pr ==> SC1_R COMP1_Pb ==> SC1_B SC1_RGB_INCM

ONLY USE NON_EU FOR COMP 1

SIDE COMPONENT

SIDE_COMP_Y SIDE_COMP_Pr SIDE_COMP_Pb SIDE_COMP_INCM

CVBS

TU_CVBS REAR_AV_CVBS SC1_CVBS_IN SIDE_AV_CVBS TU_CVBS_INCM REAR_AV_CVBS_INCM SC1_CVBS_INCM SIDE_AV_CVBS_INCM

TU_SIF TU_SIF_INCM

CONNECT NEAR BCM CHIP SC1_FB

RGB_HSYNC RGB_VSYNC SC1_ID

IC100
LGE3556C (C0 VERSION)

VDDC_1 VDDC_2 VDDC_3 VDDC_4 VDDC_5 VDDC_6 VDDC_7 VDDC_8 VDDC_9 VDDC_10 VDDC_11 VDDC_12 VDDC_13 VDDC_14 VDDC_15 VDDC_16 VDDC_17 VDDC_18 VDDC_19 VDDC_20 VDDC_21 VDDC_22 VDDC_23 VDDC_24 VDDC_25 VDDC_26 VDDC_27 VDDC_28 VDDC_29 VDDC_30 VDDC_31 VDDC_32 VDDC_33

AGC_VDDO

VDDO_1 VDDO_2 VDDO_3 VDDO_4 VDDO_5 VDDO_6 VDDO_7 VDDO_8

DDRV_1 DDRV_2 DDRV_3 DDRV_4 DDRV_5 DDRV_6 DDRV_7 DDRV_8 DDRV_9

IC100
LGE3556C (C0 VERSION)

DVSS_1 DVSS_2 DVSS_3 DVSS_4 DVSS_5 DVSS_6 DVSS_7 DVSS_8 DVSS_9 DVSS_10 DVSS_11 DVSS_12 DVSS_13 DVSS_14 DVSS_15 DVSS_16 DVSS_17 DVSS_18 DVSS_19 DVSS_20 DVSS_21 DVSS_22 DVSS_23 DVSS_24 DVSS_25 DVSS_26 DVSS_27 DVSS_28 DVSS_29 DVSS_30 DVSS_31 DVSS_32 DVSS_33 DVSS_34 DVSS_35 DVSS_36 DVSS_37 DVSS_38 DVSS_39 DVSS_40 DVSS_41 DVSS_42 DVSS_43 DVSS_44 DVSS_45 DVSS_46 DVSS_47 DVSS_48 DVSS_49 DVSS_50 DVSS_51 DVSS_52 DVSS_53 DVSS_54 DVSS_55 DVSS_56 DVSS_57 DVSS_58 DVSS_59 DVSS_60 DVSS_61

DVSS_62 DVSS_63 DVSS_64 DVSS_65 DVSS_66 DVSS_67 DVSS_68 DVSS_69 DVSS_70 DVSS_71 DVSS_72 DVSS_73 DVSS_74 DVSS_75 DVSS_76 DVSS_77 DVSS_78 DVSS_79 DVSS_80 DVSS_81 DVSS_82 DVSS_83 DVSS_84 DVSS_85 DVSS_86 DVSS_87 DVSS_88 DVSS_89 DVSS_90 DVSS_91 DVSS_92 DVSS_93 DVSS_94 DVSS_95 DVSS_96 DVSS_97 DVSS_98 DVSS_99 DVSS_100 DVSS_101 DVSS_102 DVSS_103 DVSS_104 DVSS_105 DVSS_106 DVSS_107 DVSS_108 DVSS_109 DVSS_110 DVSS_111 DVSS_112 DVSS_113 DVSS_114 DVSS_115 DVSS_116 DVSS_117

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

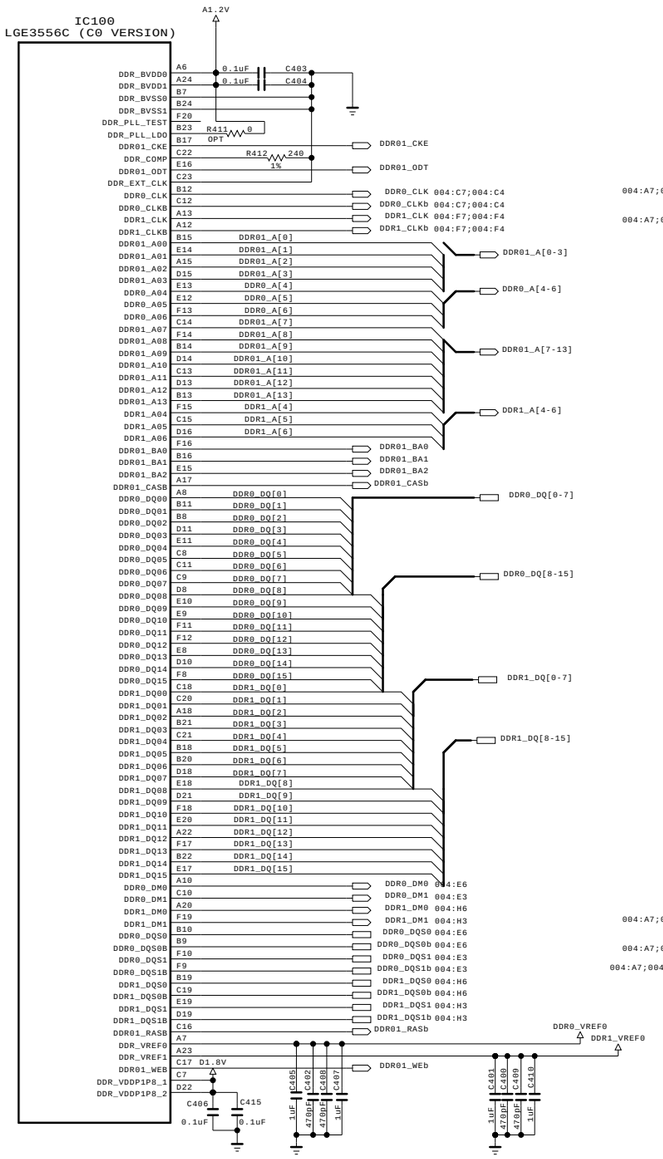
LGElectronics

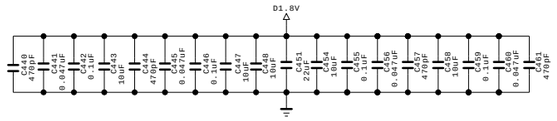
LG ELECTRONICS

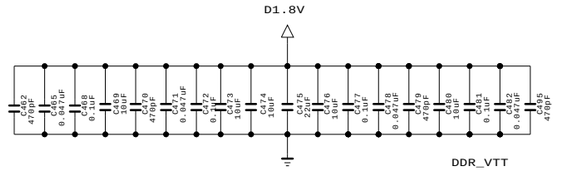
MODEL	EUROBBTV	DATE	2009.06.18
BLOCK	BCM3556 VIDEO IN	SHEET	3 /

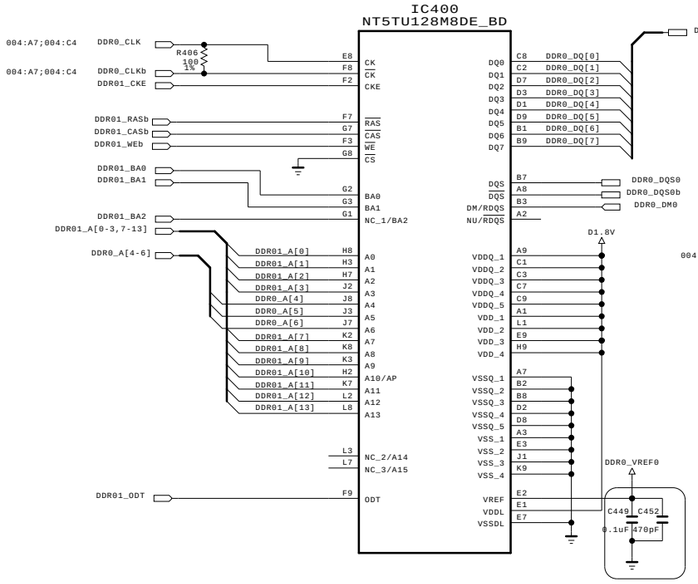
Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

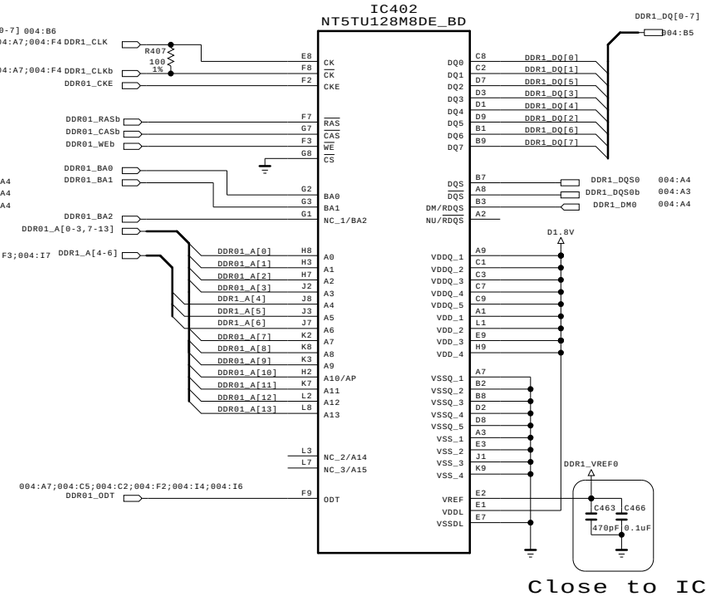
LGE Internal Use Only

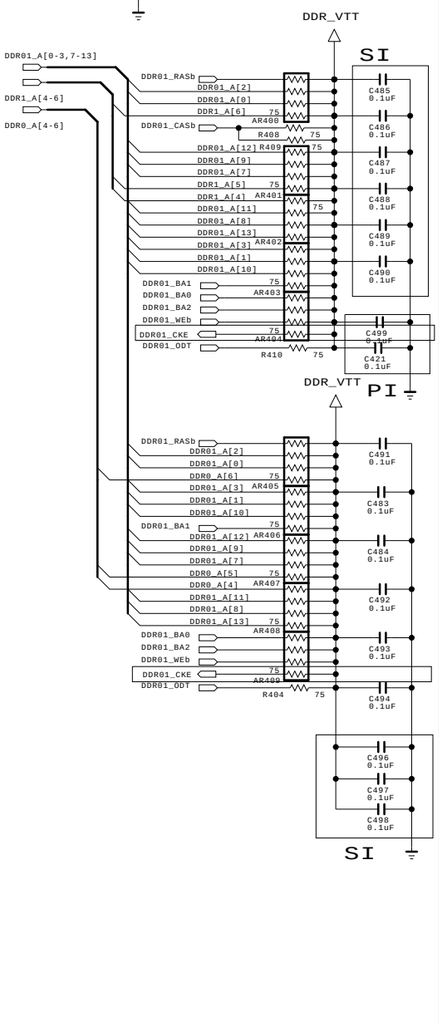


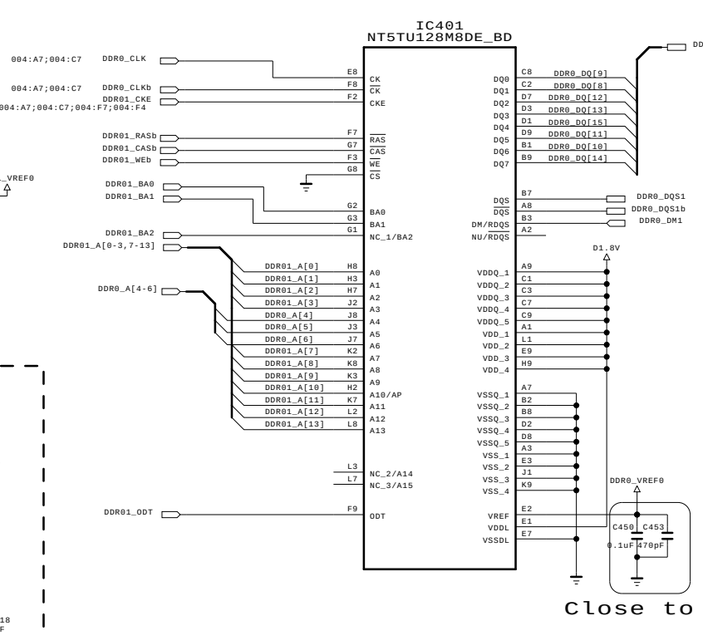


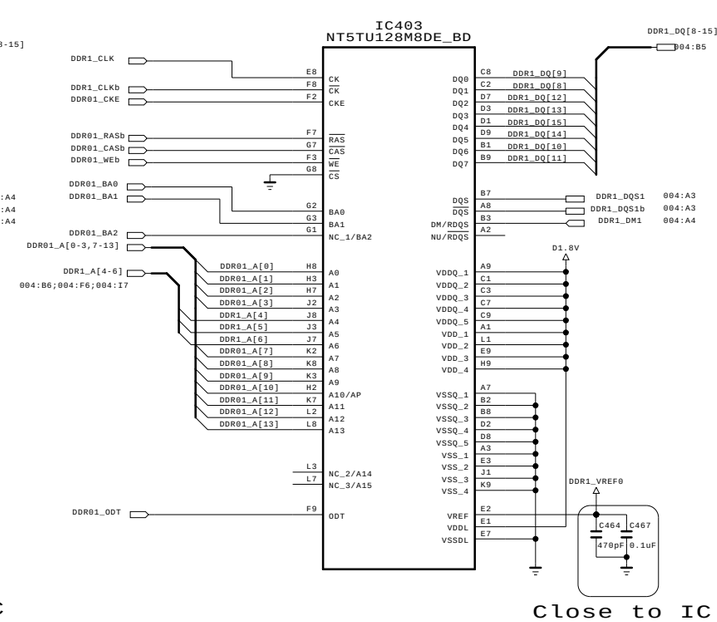


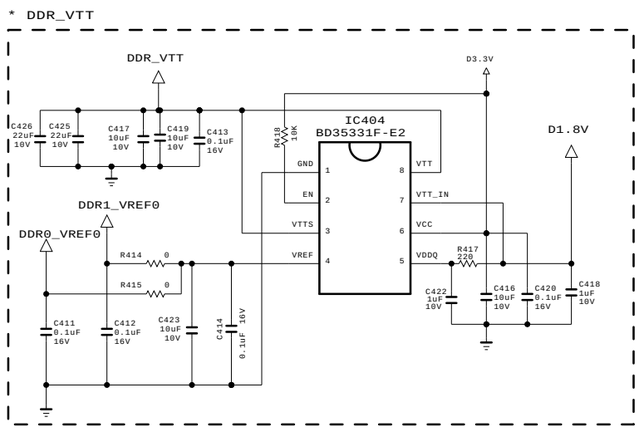












THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

HONG YEON HYUK

LG ELECTRONICS

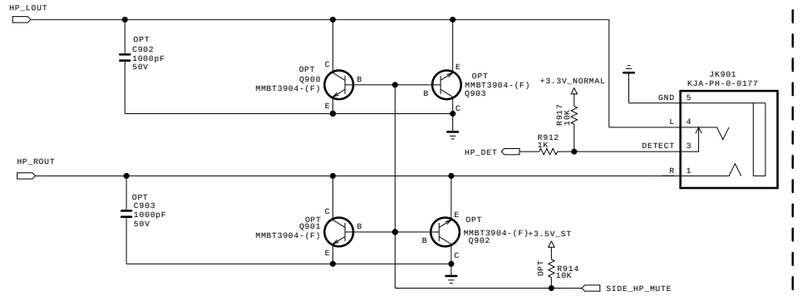
MODEL	BCM (EUROBBTV)	DATE	2009.06.18
BLOCK	DDR Memory	SHEET	4 /

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

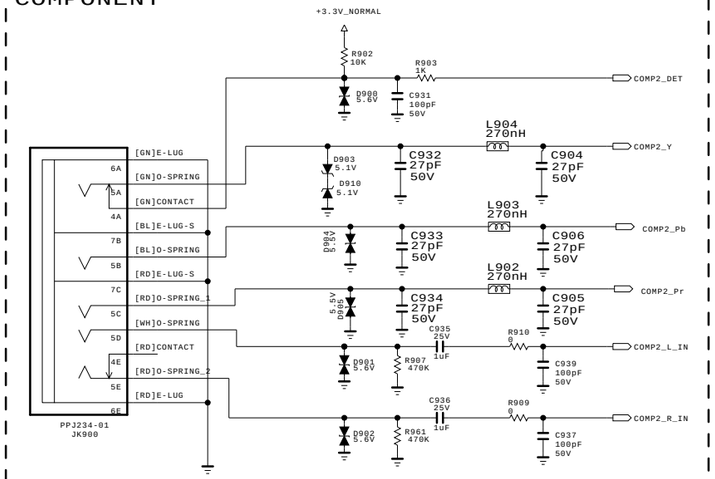
LGE Internal Use Only

New Item Development

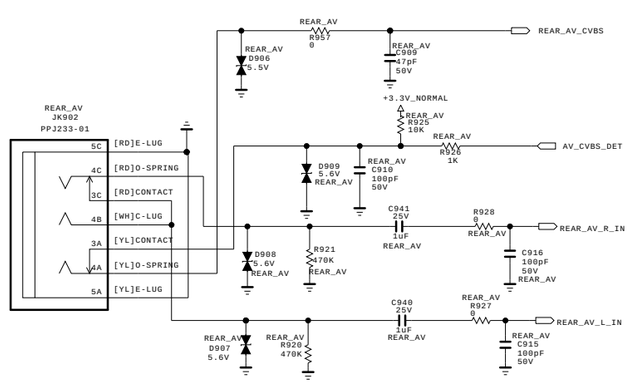
EARPHONE BLOCK



COMPONENT



Rear CVBS



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

LG ELECTRONICS

MODEL	EUROBBTV	DATE	2009.06.18
BLOCK	ETC SUB BOARD I/F	SHEET	9

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

CAN H-NIM/NIM TUNER for EU

TU2701-*1
TDFR-G155D

TU2701-*2
TDFR-C155D

TU2701-*3
TDFR-C135D

TU2701-*4
TDFR-G055D

TU2701-*5
TDFR-G035D

HORIZONTAL_NIM

TU2701
TDFR-G135D

close to TUNER

RF_S/W_CNTL
BST_CNTL
+B1[5V]
NC[RF_AGC]
AS
SCL[A_DEMOD]
SDA[A_DEMOD]
NC(IF_TP)
SIF
NC
VIDEO
GND
1.2V
3.3V
RESET
2.5V
SCL[D_DEMOD]
SDA[D_DEMOD]
ERR
SYNC
VALID
MCL
D0
D1
D2
D3
D4
D5
D6
D7
31
SHIELD

R2754 0 CN RF_SWITCH_CTL
R2728 0
R2700 0 OPT
R2701 0
R2726 33
R2727 33
R2728 33
R2729 33
R2722 0 CN
R2725 0 EU

C2700 100pF 50V
C2701 0.1uF 16V
C2702 0.1uF 16V close to TUNER
C2703 0.1uF 16V
C2704 100pF 50V
C2705 100pF 50V
C2706 0.1uF 16V
C2707 0.1uF 16V
C2708 0.1uF 16V OPT
C2709 10uF 10V OPT
C2710 0.1uF 16V
C2711 10pF 50V
C2712 10pF 50V
C2713 10pF 50V
C2714 10pF 50V
C2718 0.01uF 25V
C2733 0.1uF 16V

+5V_TU
+1.2V_TU
+3.3V_TU
+2.5V_TU

OPTION : RF AGC
Q2700 2SC3052 OPT
R2724 10K OPT
IF_AGC_SEL

L2700 BLM18PG121SN1D
R2738 0
Q2701 ISA1530AC1
R2740 2.2K
R2742 10K
Q2703 2SC3052
R2755 10K
LNA2_CTL/BOSTER_CTL

R2723 100K
R2721 100
C2710 0.1uF 16V
TUNER_RESET

SCL0_3.3V
SDA0_3.3V
SCL2_3.3V
SDA2_3.3V

EU R2757-*1 47
EU R2717-*1 47
EU R2716-*1 47
EU R2711-*1 47
EU R2709-*1 47
EU R2708-*1 47
EU R2707-*1 47
EU R2710-*1 47
EU R2705-*1 47
EU R2706-*1 47
EU R2704-*1 47
EU R2703-*1 47
CN R2757 0
CN R2717 0
CN R2716 0
CN R2711 0
CN R2709 0
CN R2708 0
CN R2707 0
CN R2710 0
CN R2705 0
CN R2706 0
CN R2704 0
CN R2703 0

Close to the tuner

FE_TS_ERR
FE_TS_SYNC
FE_TS_VAL
FE_TS_DATA_CLK
FE_TS_DATA[0-7]
FE_TS_DATA[0]
FE_TS_DATA[1]
FE_TS_DATA[2]
FE_TS_DATA[3]
FE_TS_DATA[4]
FE_TS_DATA[5]
FE_TS_DATA[6]
FE_TS_DATA[7]
FE_TS_SERIAL

R2746 470
R2749 82
R2743 4.7K
Q2704 ISA1S30AC1
TU_SIF

R2739 200
R2741 200
Q2702 ISA1530AC1
TU_CVBS

R2702 200
R2712 200
Q2705 ISA1530AC1
ATV_OUT

IC2702
NL17SZ08DFT2G
FE_TS_VAL
FE_TS_ERR
C2736 0.1uF 16V
R2758 47
FE_TS_VAL_ERR

CN	CN
R2731-*1	R2756-*1
0	30K
1/16W	1/10W
5%	1%

C2716 100pF 50V

IC2701
MP2212DN
Close to IC
3A
FB
GND
IN
BS
EN/SYNC
SW_2
SW_1
VCC

L2703
CIC21J501NE

CN R2713-*1 56K 1/8W 1%
EU R2713-*1 75K 1/8W 1%
R2 1%
EU R2731 1% 22K
R1 1%
EU R2756 16K 1%
10K R2732
POWER_ON/OFF2_2
L2704 3.6uH NR8040T3R6N
C2715 22uF 10V
C2720 0.1uF 16V
R2719 0
R2718 10 1/10W 1%
C2717 1uF 10V
Vout=0.8*(1+R1/R2)
C2730 22uF 10V
C2731 0.1uF
C2735 22uF 10V

+3.3V_NORMAL
L2702 CIC21J501NE
C2722 0.1uF 16V
C2724 0.1uF 16V
C2728 22uF 10V
C2734 0.1uF 16V
60mA

+5V_NORMAL
L2701 BLM18PG121SN1D
C2723 0.1uF 16V
C2725 0.1uF 16V
C2727 22uF 10V
C2729 22uF 10V
200mA

IC2700
AZ2940D-2.5TRE1
VIN
VOUT
GND
$0.11
C2719 0.1uF 16V
R2744 1
C2723 10uF 10V
C2726 0.1uF 16V

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

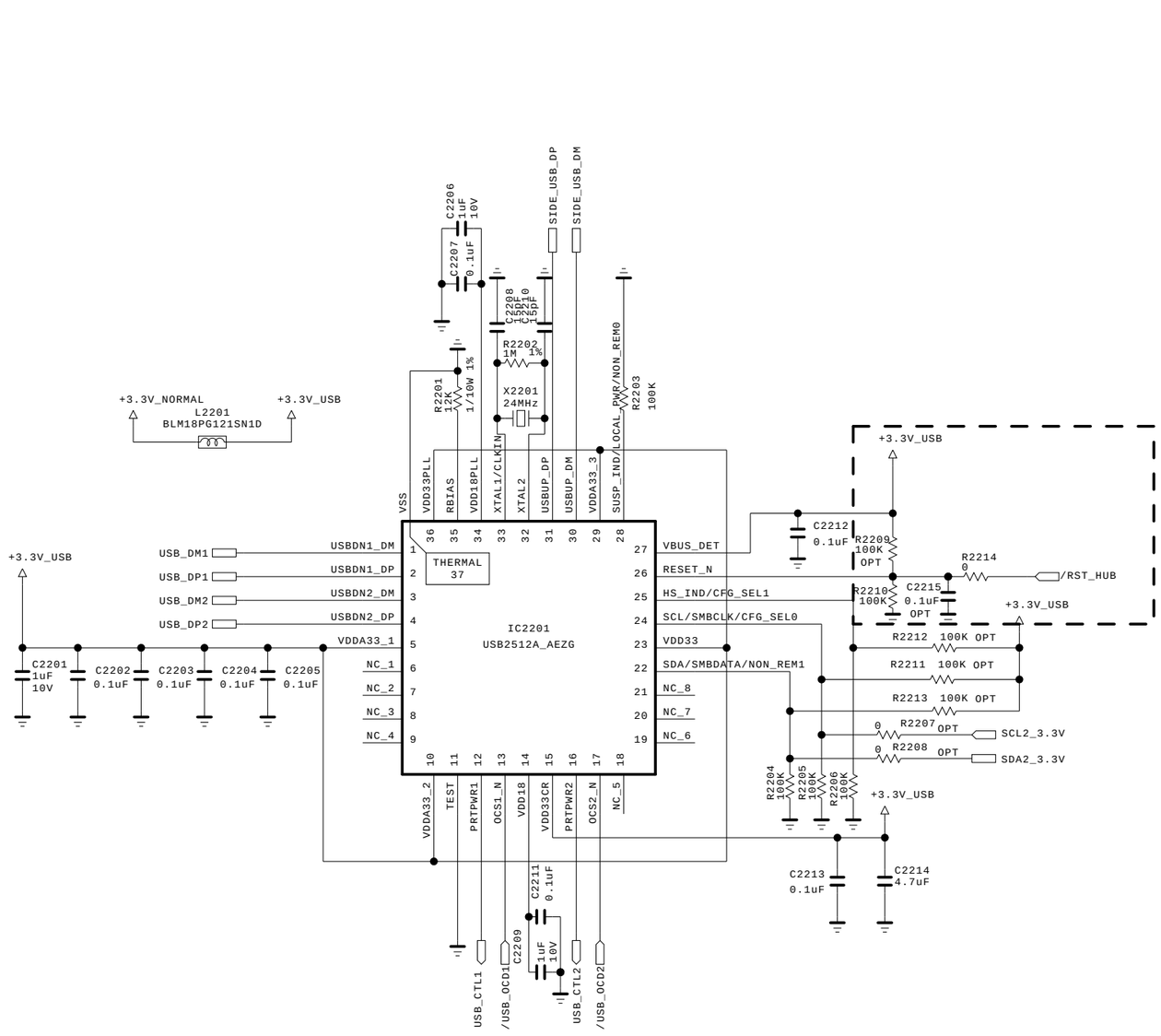
LG ELECTRONICS

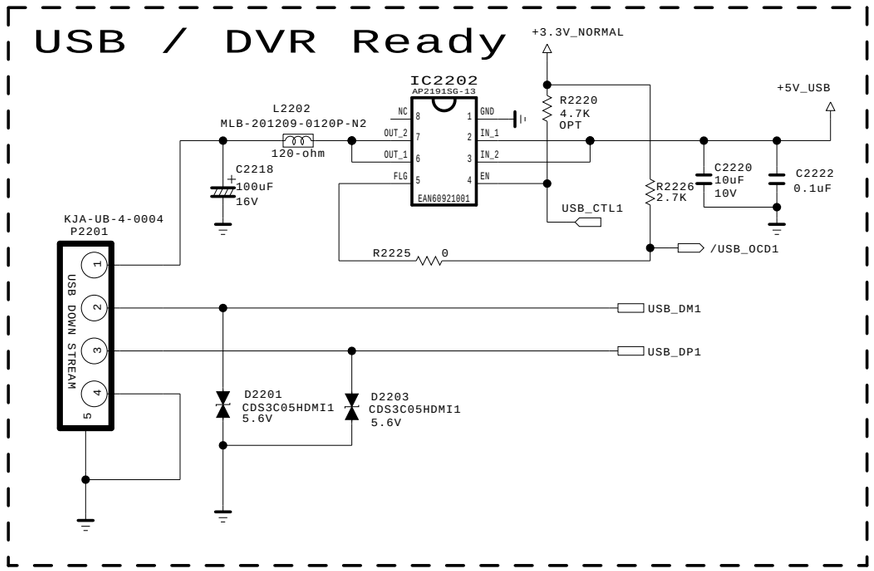
MODEL		DATE	
BLOCK		SHEET	27

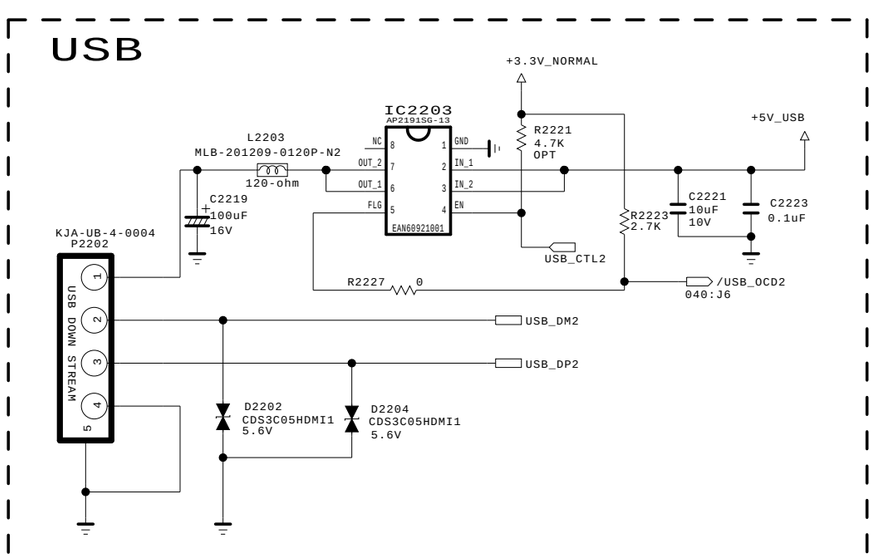
(Full Nim)

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

USB2 OPTION







THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

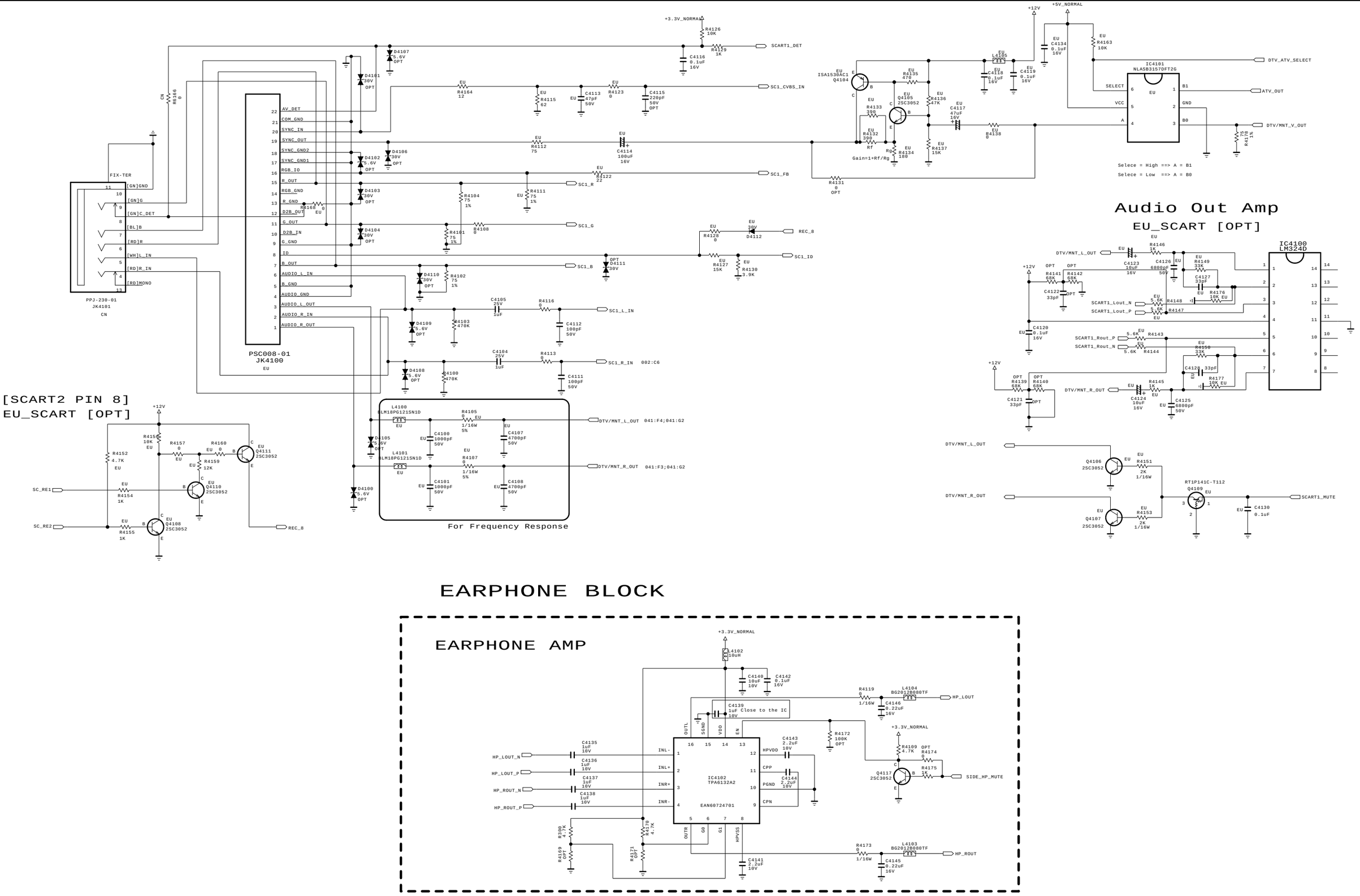
LG ELECTRONICS

MODEL		DATE	
BLOCK		SHEET	40

USB

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only



EARPHONE BLOCK

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

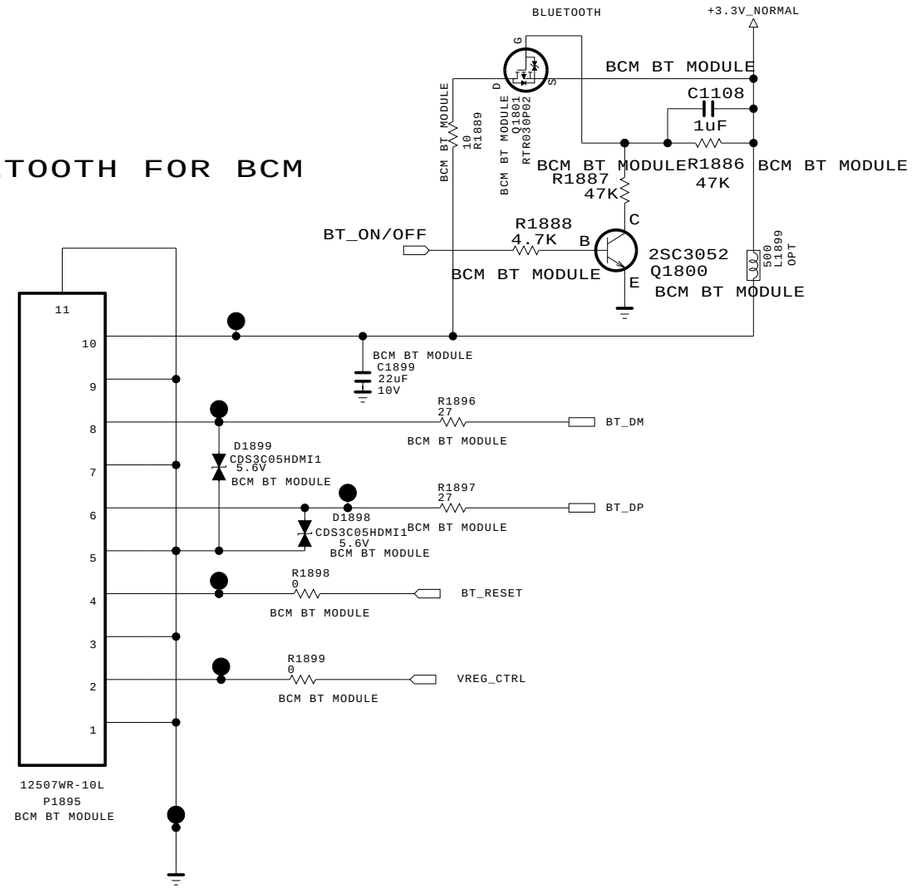
LG ELECTRONICS

MODEL	EUROBBTV	DATE	2009.06.18
BLOCK	ETC SUB BOARD I/F	SHEET	41

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

BLUETOOTH FOR BCM



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

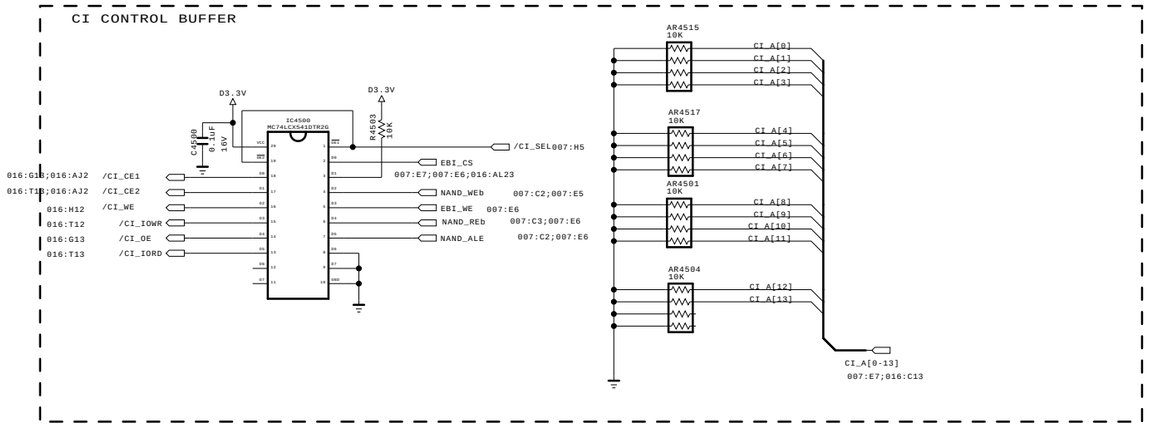
LG ELECTRONICS

MODEL		DATE	
BLOCK		SHEET	43

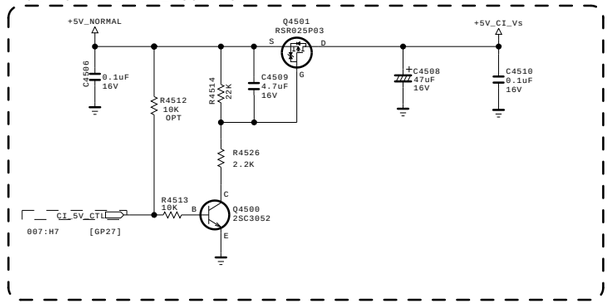
Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

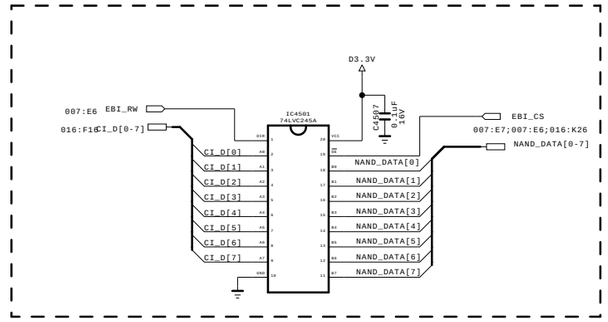
LGE Internal Use Only

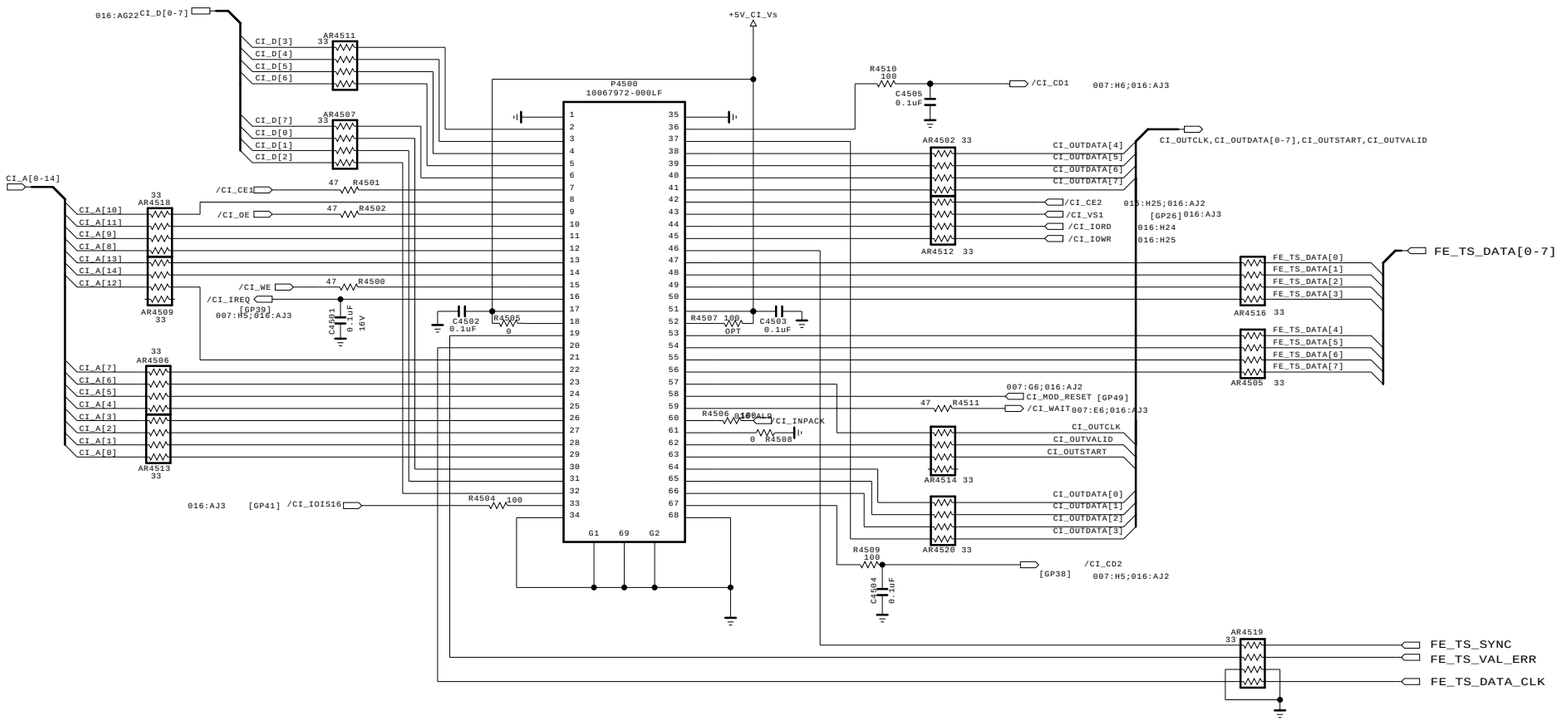
CI CONTROL BUFFER



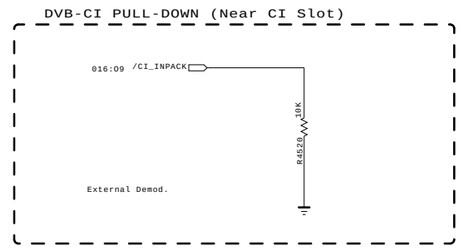
CI POWER ENABLE CONTROL



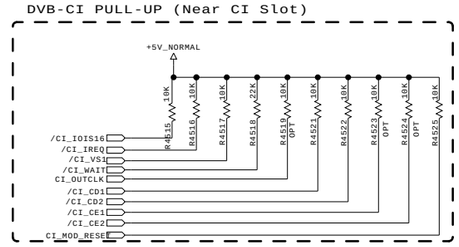




DVB-CI PULL-DOWN (Near CI Slot)



DVB-CI PULL-UP (Near CI Slot)



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

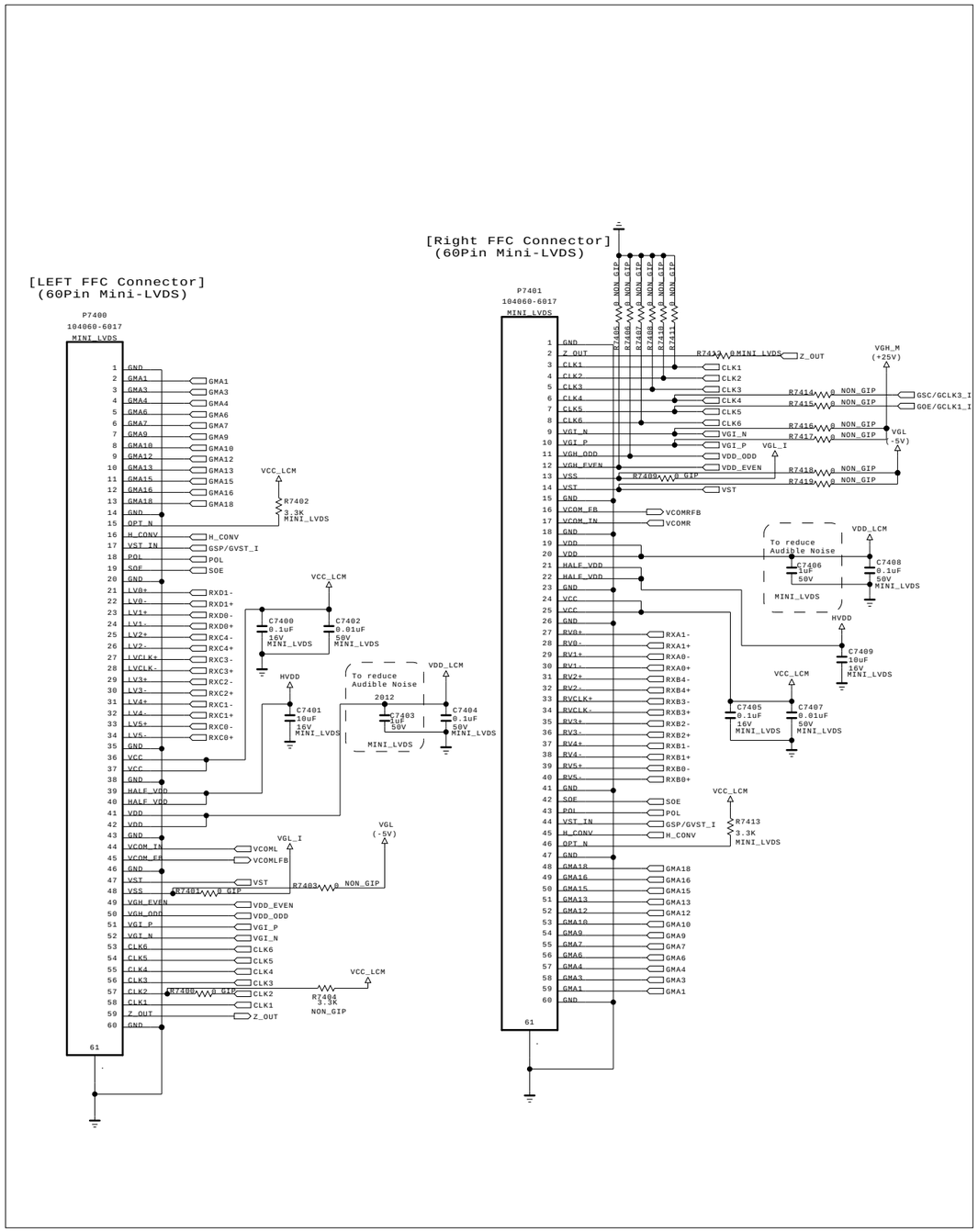
LG ELECTRONICS

MODEL	EUROBBTV	DATE	2009.06.18
BLOCK	CI	SHEET	45

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

Mini LVDS



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

LG ELECTRONICS

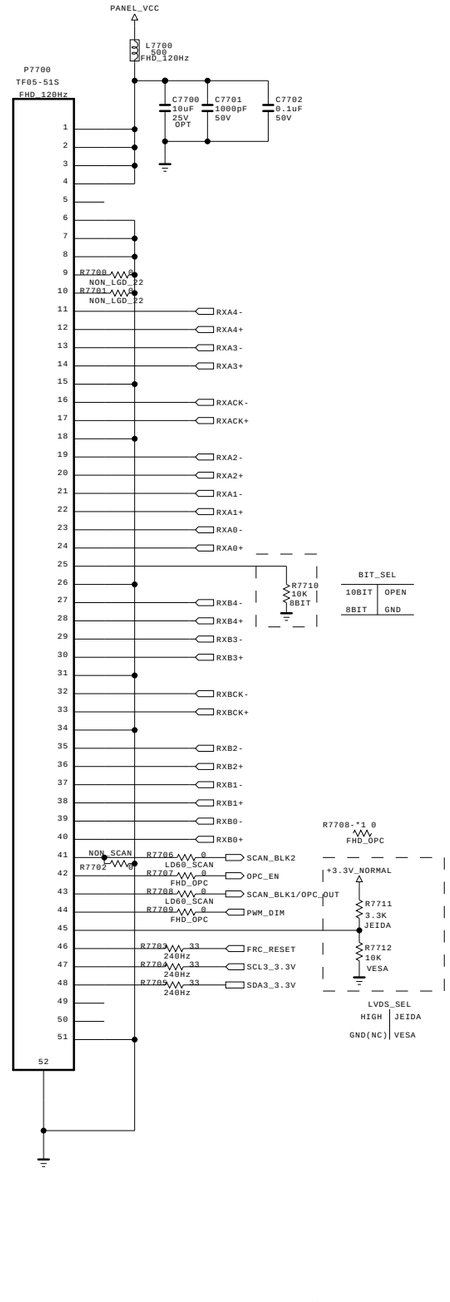
MODEL	COMMON	DATE	09/10/xx
BLOCK	URSA3 120Hz MINI_LVDS	SHEET	74

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

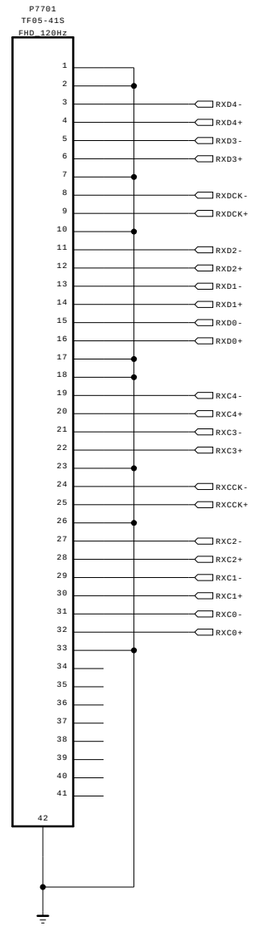
LGE Internal Use Only

LVDS

[51Pin LVDS Connector]
(For FHD 60/120Hz)



[41Pin LVDS Connector]
(For FHD 120Hz)



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

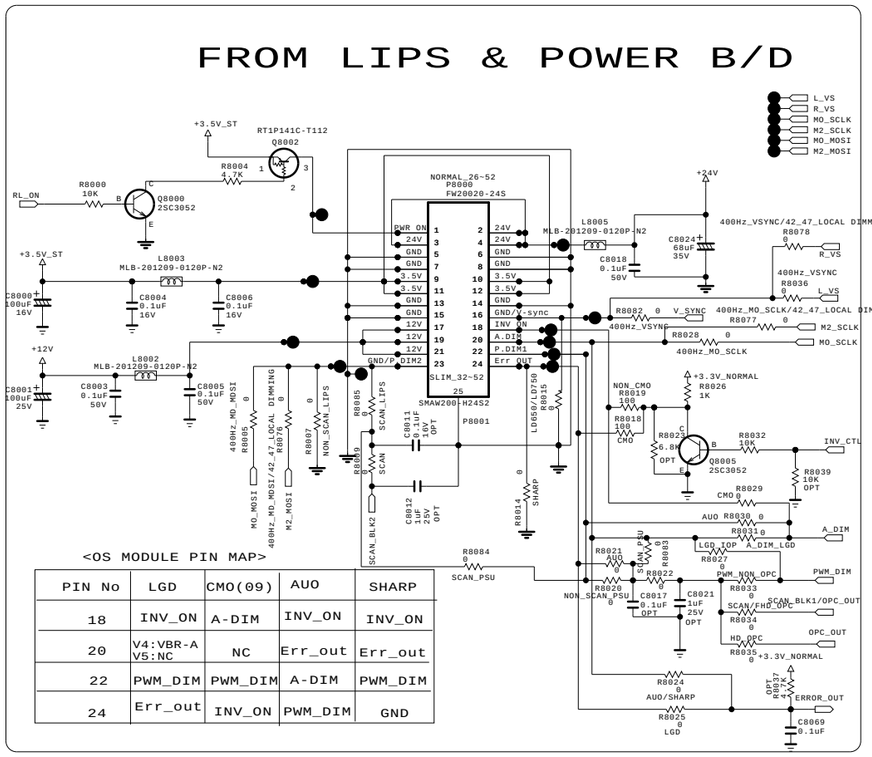
LG ELECTRONICS

MODEL		DATE	
BLOCK		SHEET	35

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

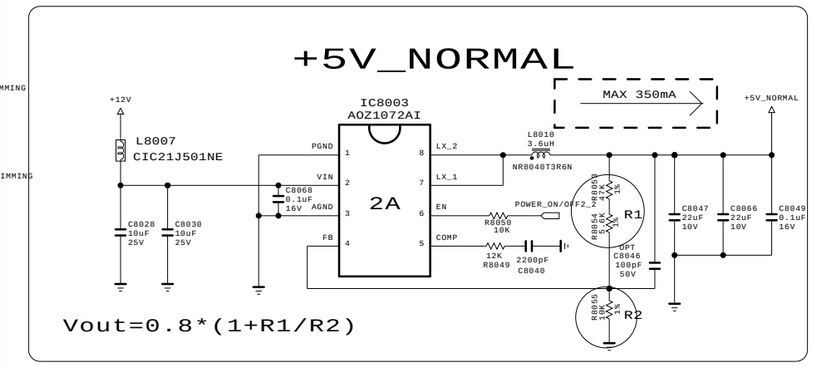
FROM LIPS & POWER B/D



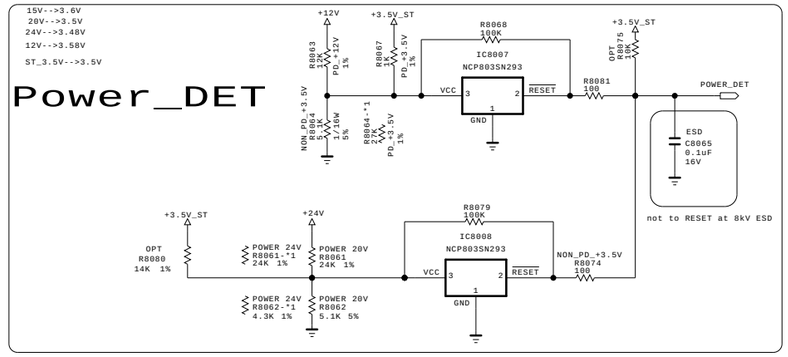
<OS MODULE PIN MAP>

PIN No	LGD	CMO(09)	AUO	SHARP
18	INV_ON	A-DIM	INV_ON	INV_ON
20	V4:VBR-A V5:NC	NC	Err_out	Err_out
22	PWM_DIM	PWM_DIM	A-DIM	PWM_DIM
24	Err_out	INV_ON	PWM_DIM	GND

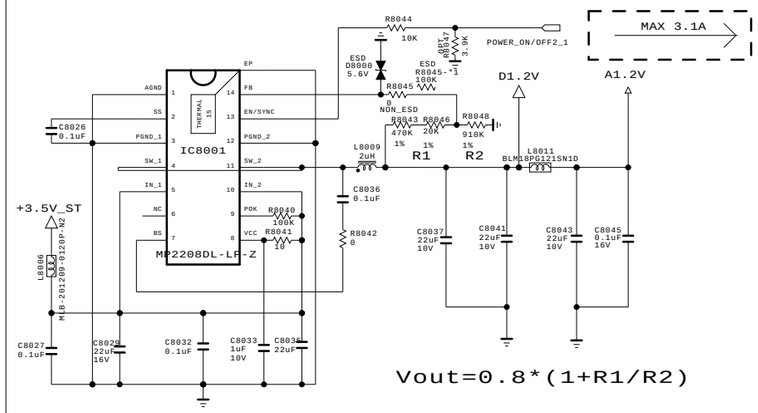
+5V_NORMAL



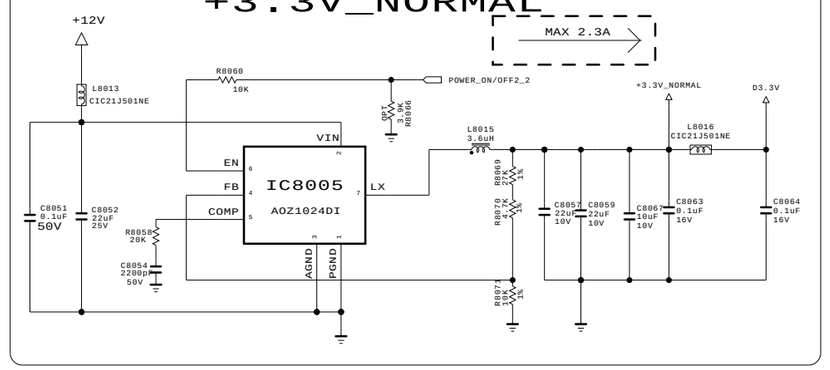
Power_DET



BCM core 1.2V volt

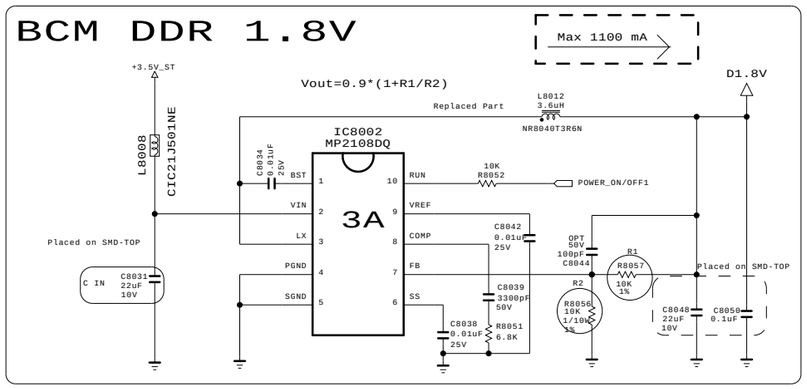


+3.3V_NORMAL

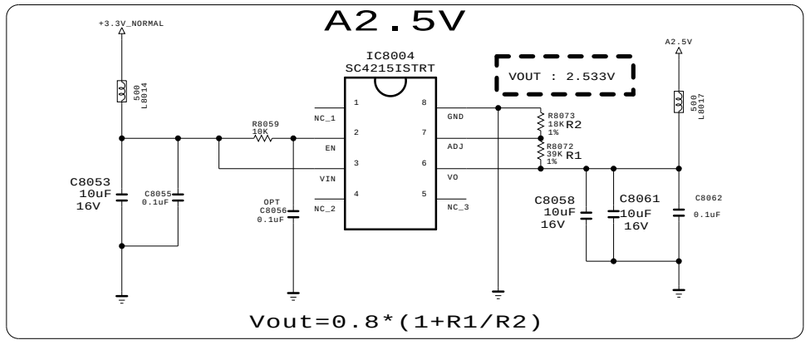


PANEL_POWER

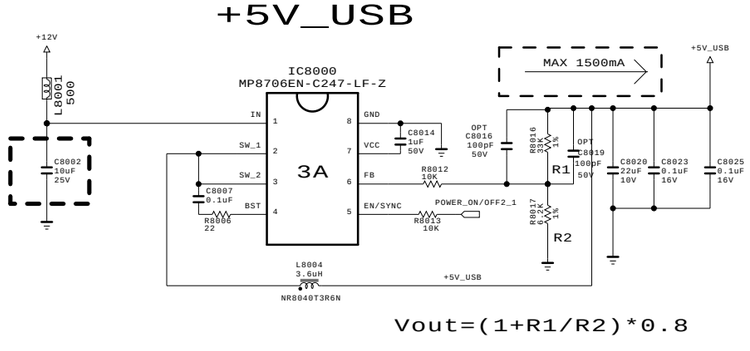
BCM DDR 1.8V



A2.5V



+5V_USB



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

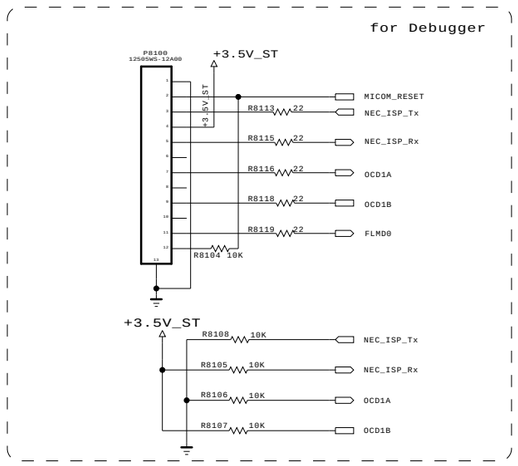
SECRET
LGElectronics

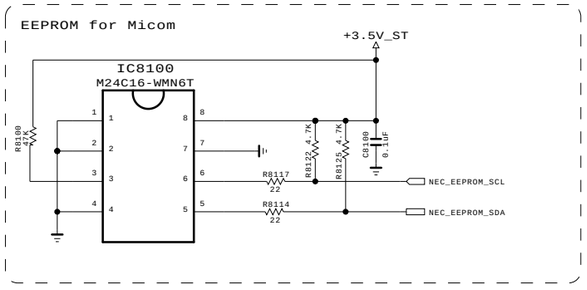
LG ELECTRONICS

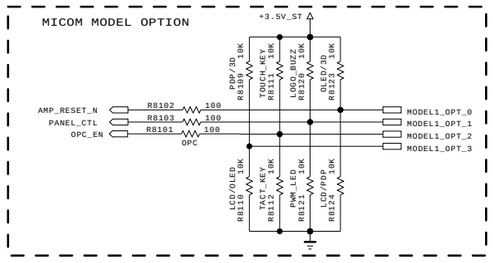
MODEL	BCM (EUROBBTV)	DATE	
BLOCK	POWER	SHEET	15

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only





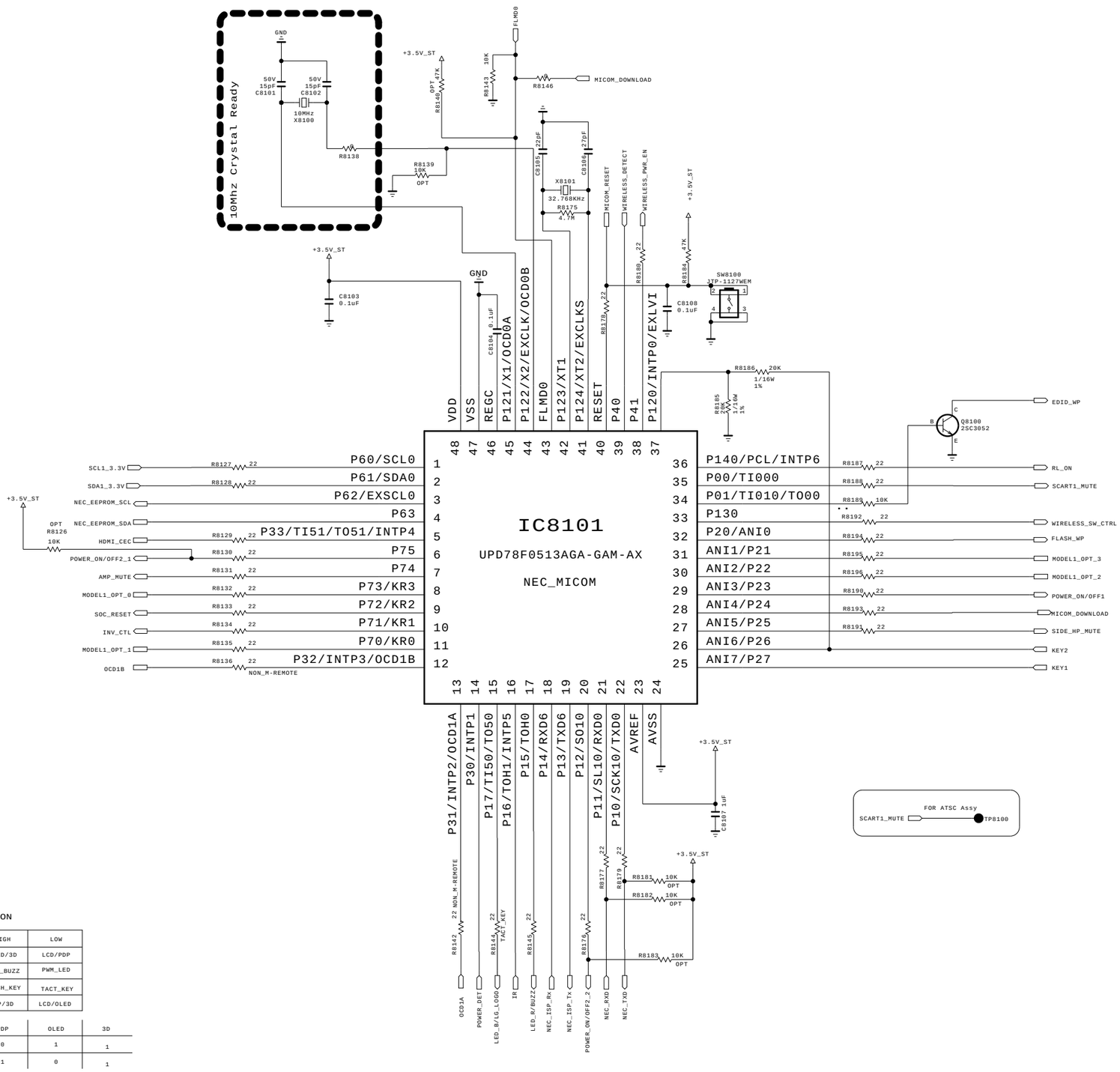


MODEL OPTION

PIN NAME	PIN NO.	HIGH	LOW
MODEL_OPT_0	8	OLED/3D	LCD/PDP
MODEL_OPT_1	11	LOGO_BUZZ	PWM_LED
MODEL_OPT_2	30	TOUCH_KEY	TACT_KEY
MODEL_OPT_3	31	PDP/3D	LCD/OLED

	LCD	PDP	OLED	3D
MODEL_OPT_0	0	0	1	1
MODEL_OPT_3	0	1	0	1

	LOW	LOW_SMALL	TBD	HIGH
MODEL_OPT_1	0	0	1	1
MODEL_OPT_2	0	1	0	1



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

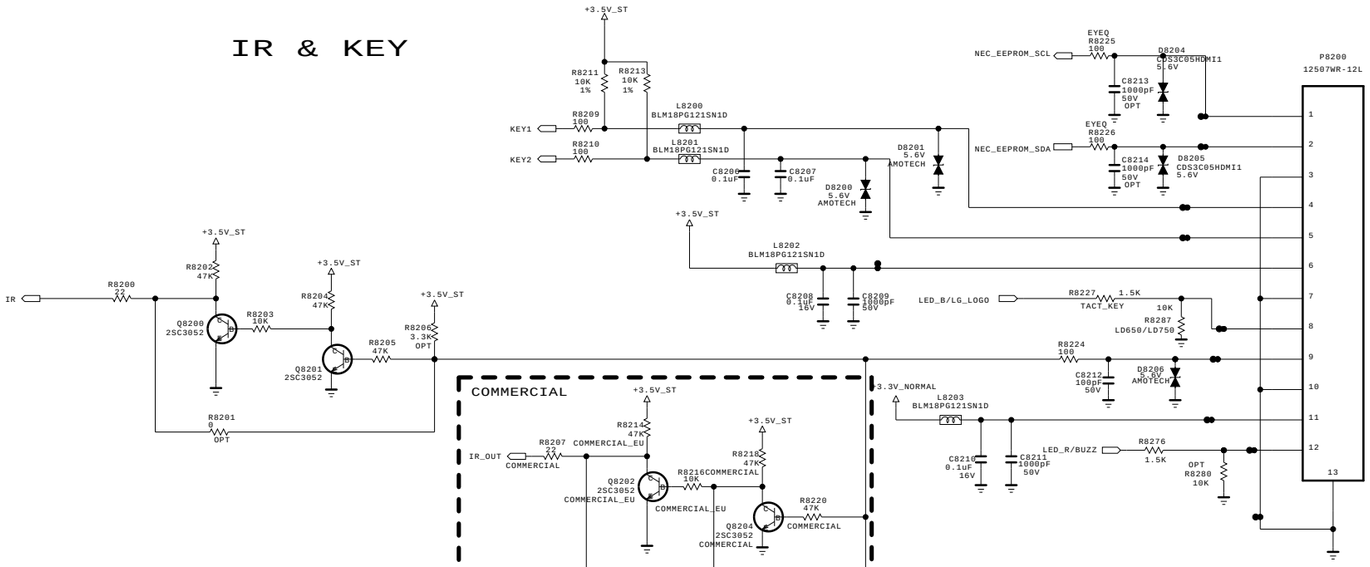
LG ELECTRONICS

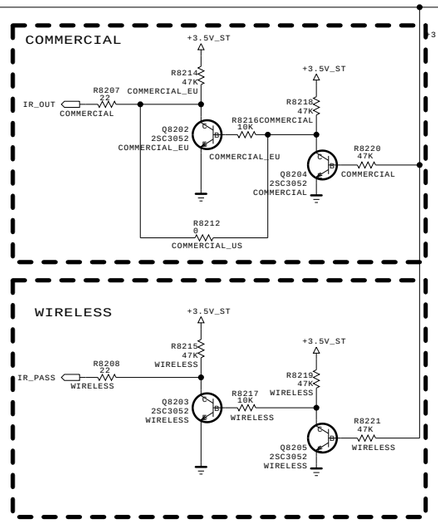
MODEL	GP2_Saturn7M	DATE	Ver. 1.4
BLOCK	MICOM	SHEET	5

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

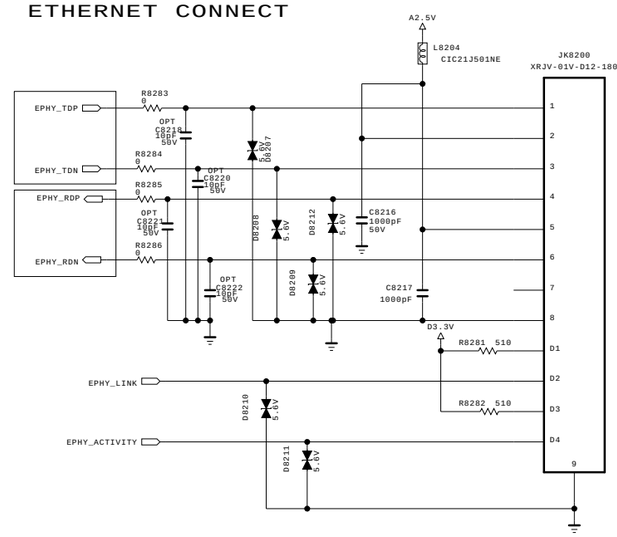
IR & KEY





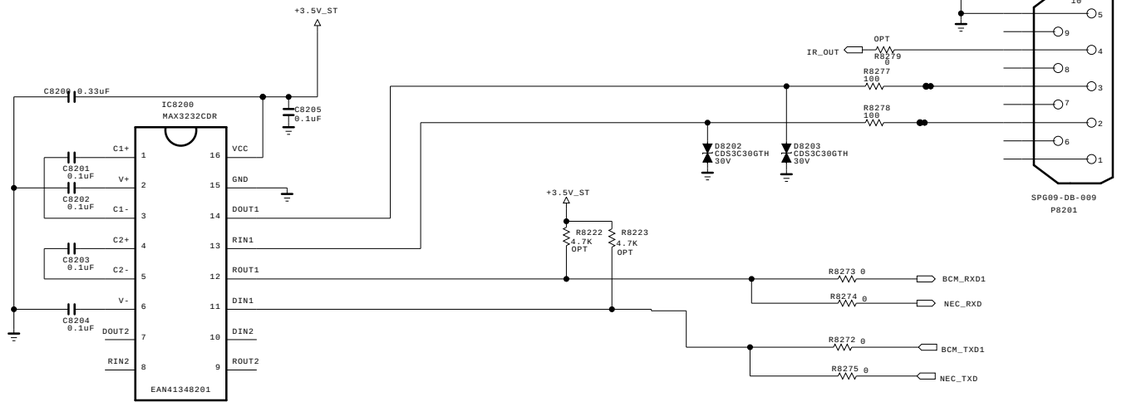
Zener Diode is close to wafer

ETHERNET CONNECT



Trace impedance : 100 ohm differenctial impedance to GND plane
5 mils trace width with 7 mils air gap on P/N pair.
Adjacent TX/RX differential pairs should be separated by more than 15 mils to each other

RS232C



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

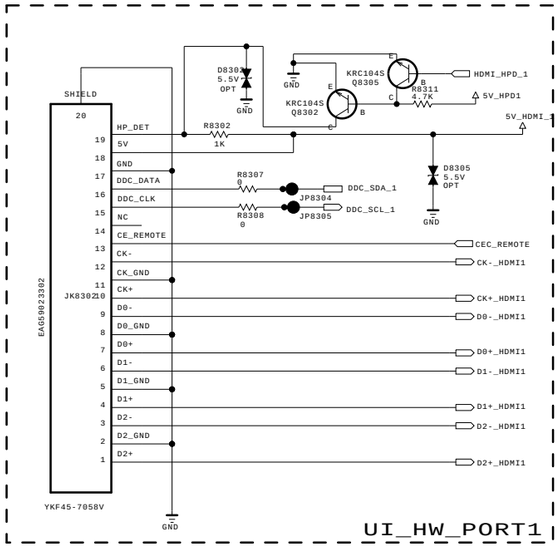
LGElectronics

LG ELECTRONICS

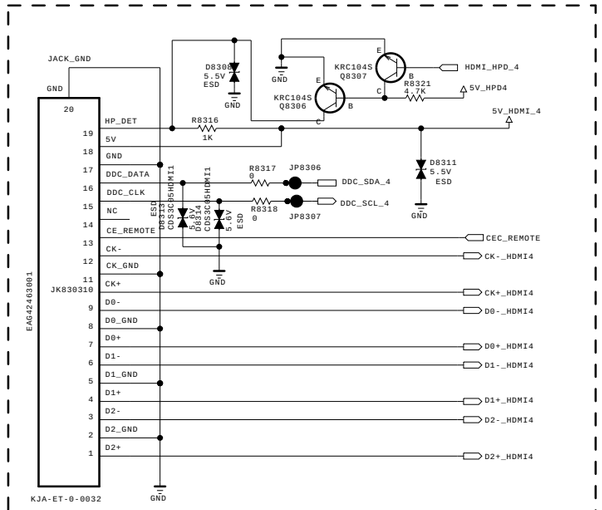
MODEL		DATE	
BLOCK		SHEET	/

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

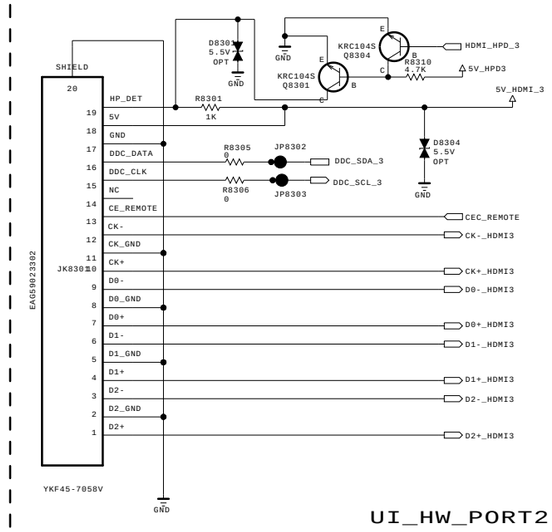
LGE Internal Use Only



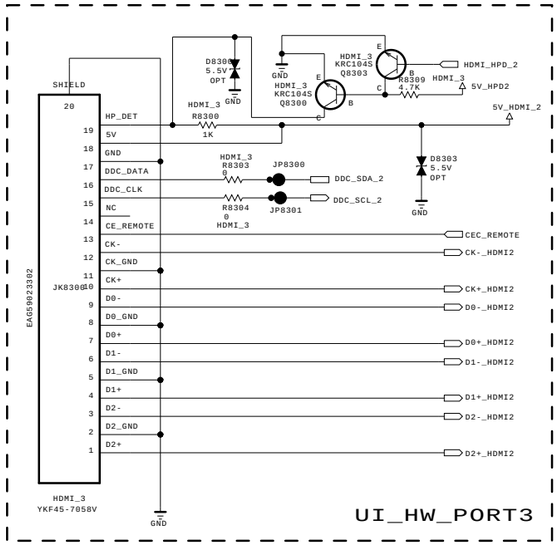
UI_HW_PORT1



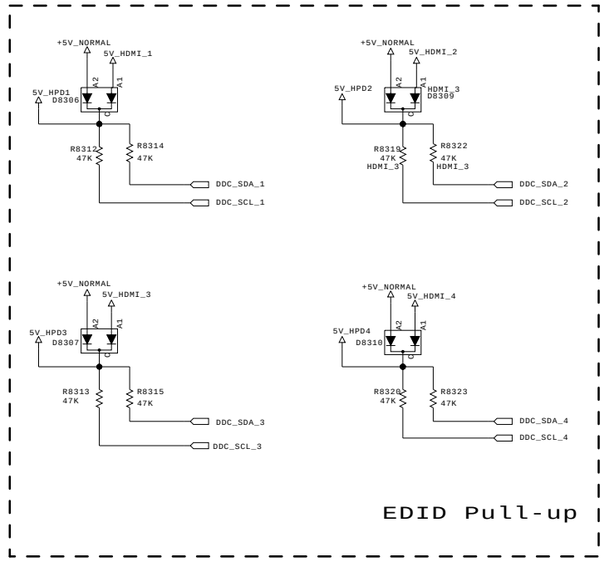
SIDE_HDMI_PORT4



UI_HW_PORT2

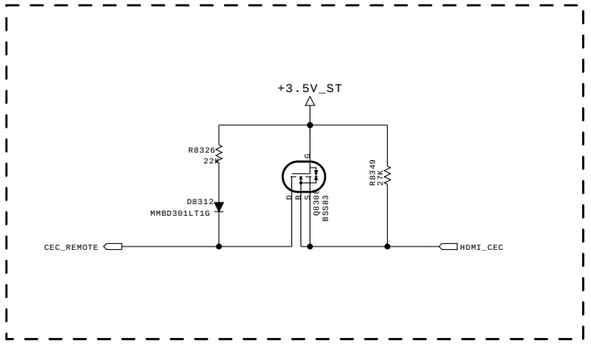


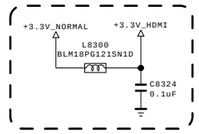
UI_HW_PORT3

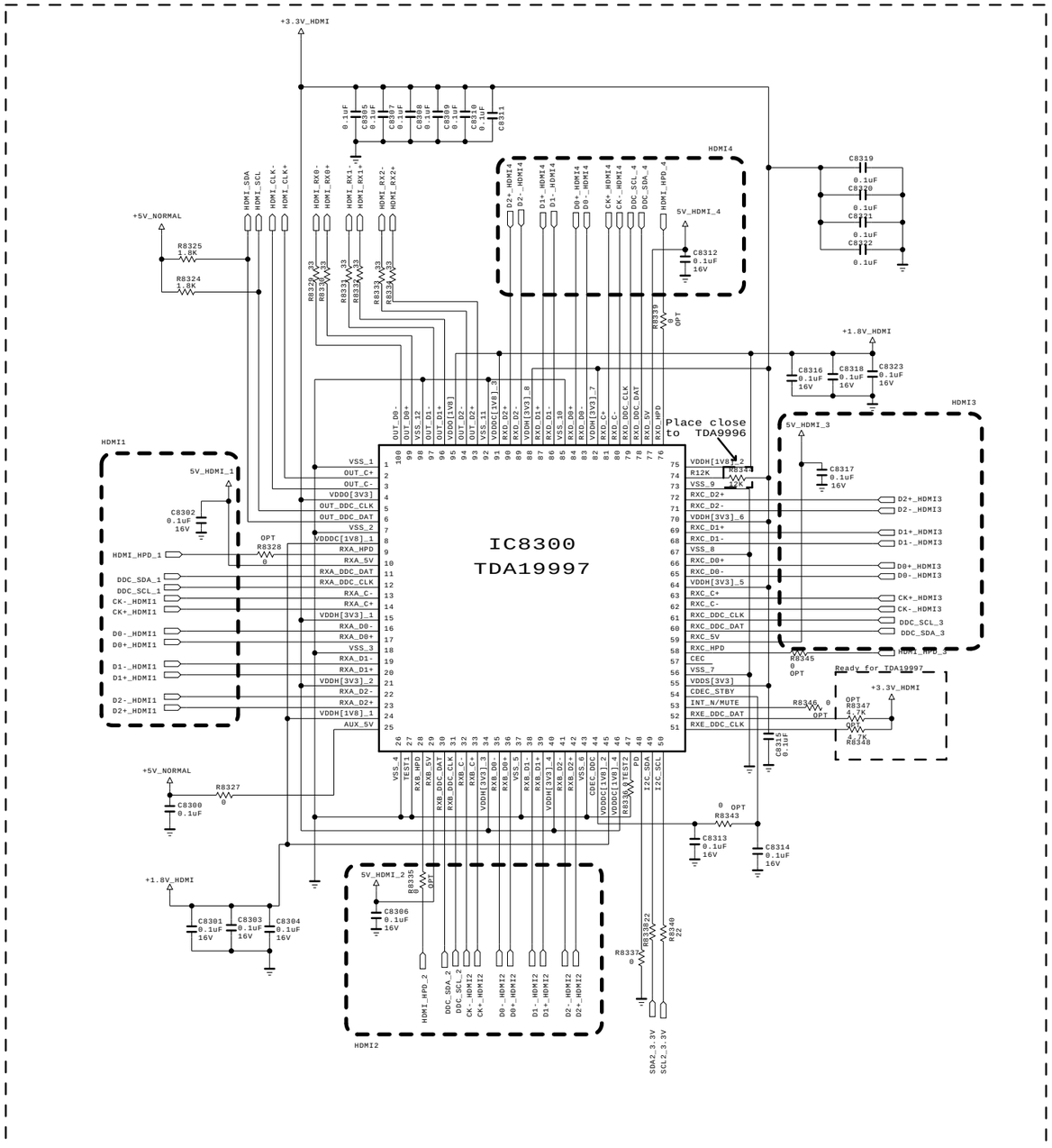


EDID Pull-up

* HDMI_CEC







THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

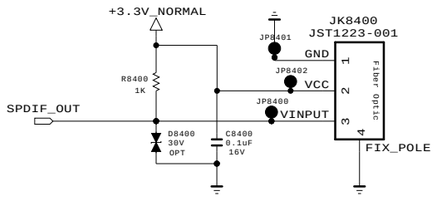
LEE GI YOUNG

LG ELECTRONICS

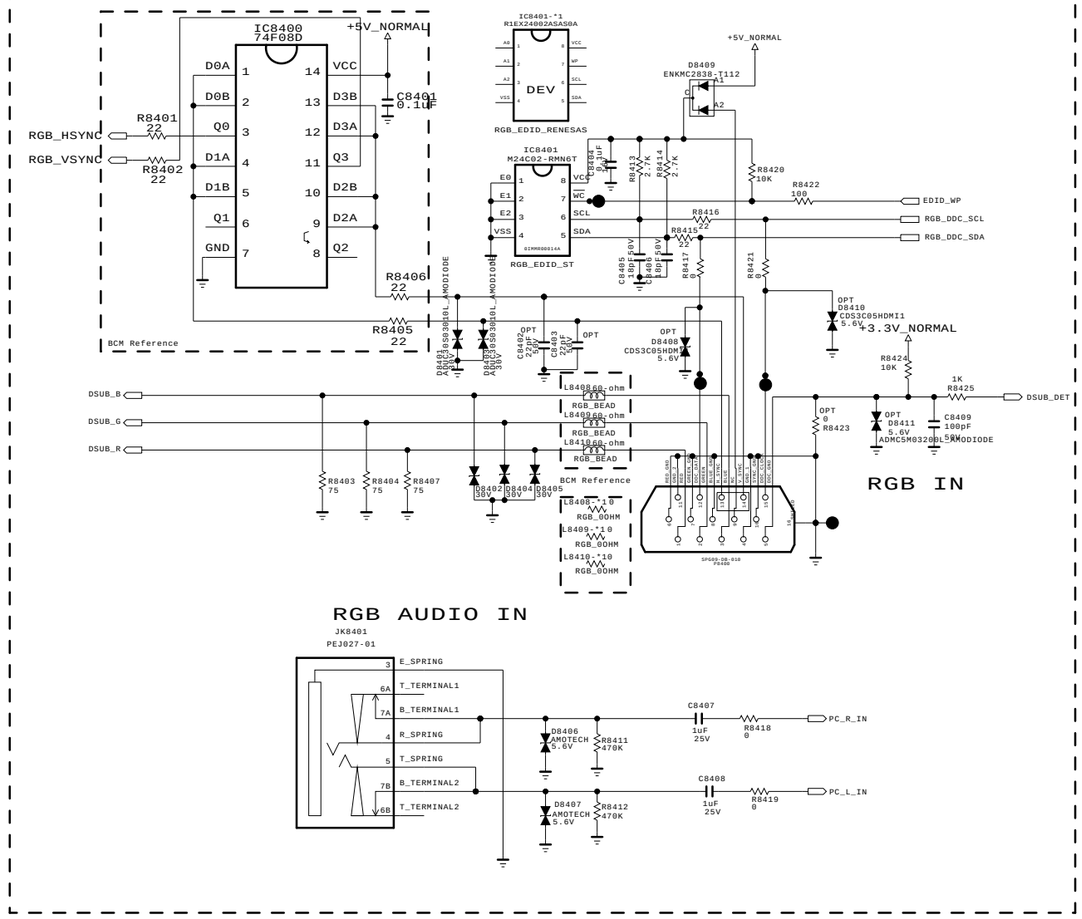
MODEL	BCM (EUROBBTV)	DATE	2009.06.18
BLOCK	HDMI	SHEET	8

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only



RGB_PC



RGB AUDIO IN

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

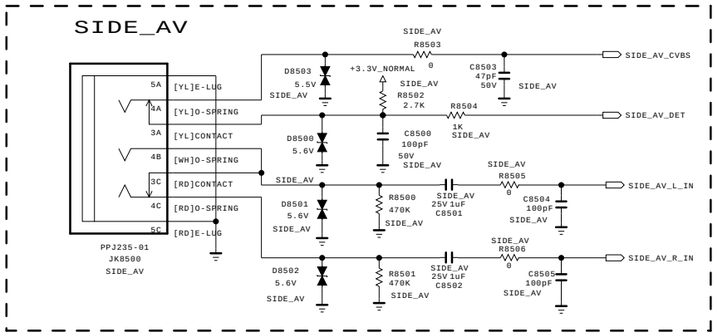
LG ELECTRONICS

MODEL	EUROBBTV	DATE	2009.06.18
BLOCK	ETC SUB BOARD I/F	SHEET	9

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

(New Item Developmen H:9.2mm)



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL		DATE	
BLOCK		SHEET	/

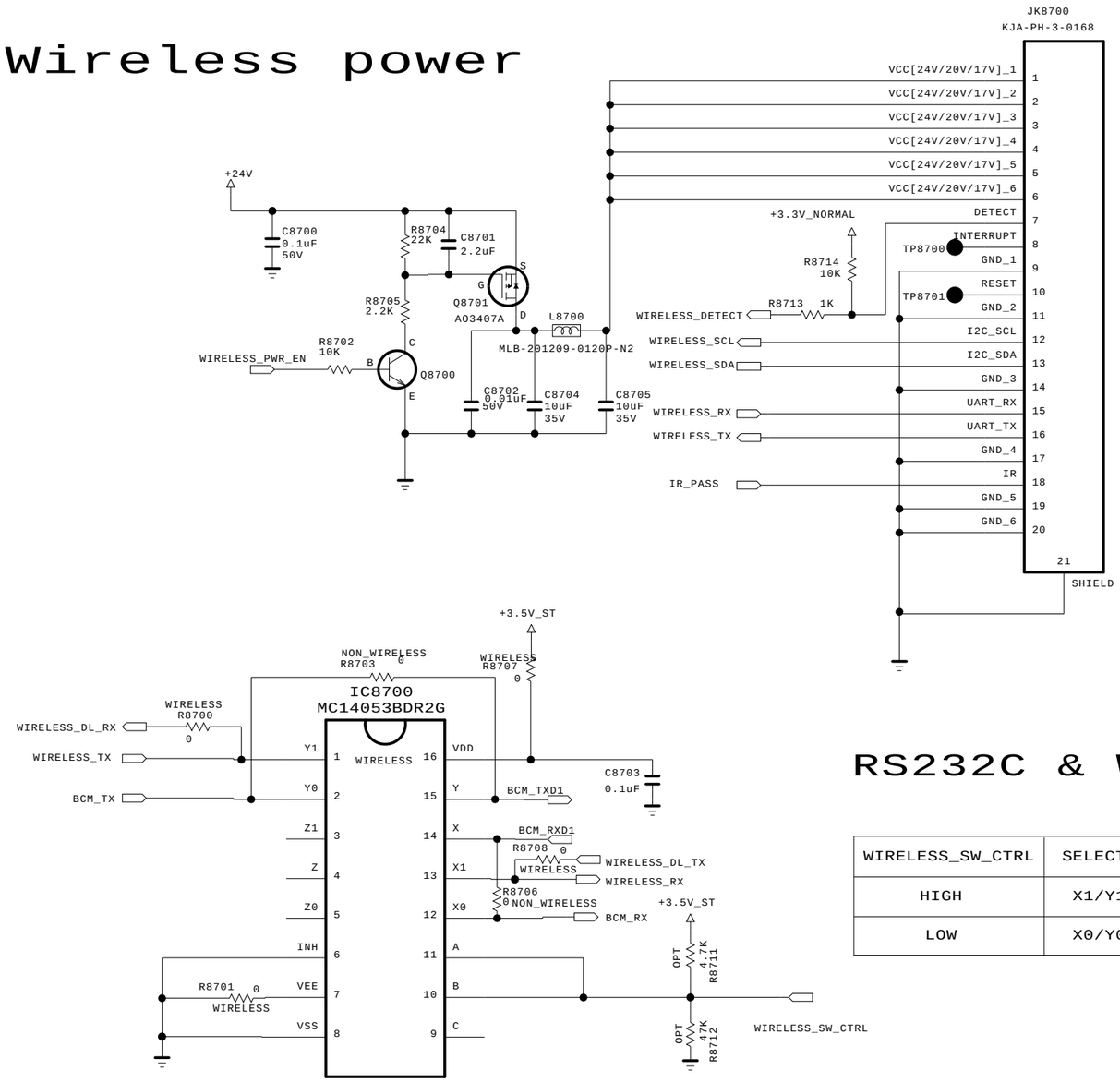
SIDE_AV

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

WIRELESS READY MODEL

Wireless power



RS232C & Wireless

WIRELESS_SW_CTRL	SELECT PIN	STATUS
HIGH	X1/Y1/Z1	WIRELESS Dongle connect --> WIRELESS RS232
LOW	X0/Y0/Z0	WIRELESS Dongle Dis_con --> S7 RS232

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

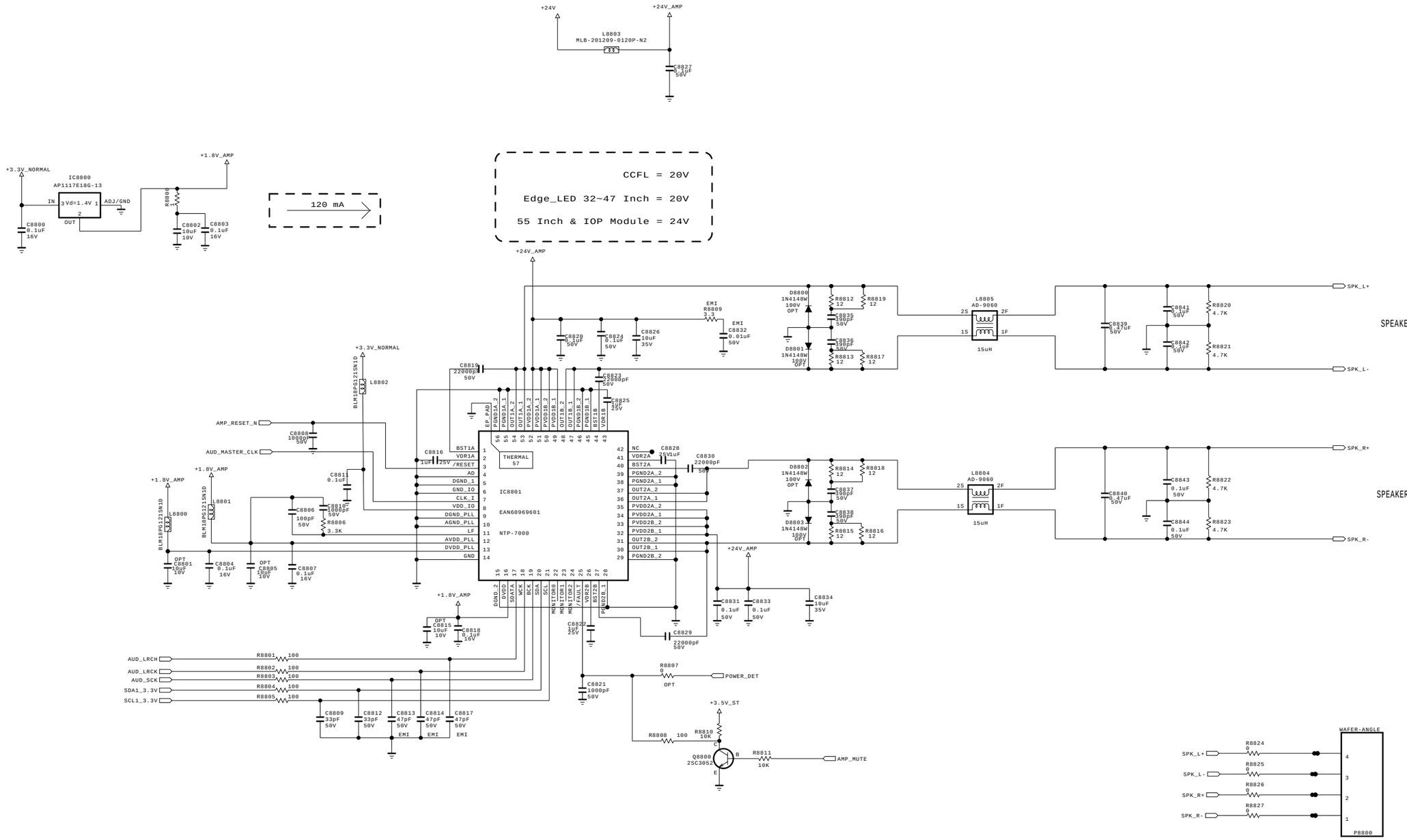
SECRET
LGElectronics

LG ELECTRONICS

MODEL		DATE	
BLOCK		SHEET	12

IRELESS

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

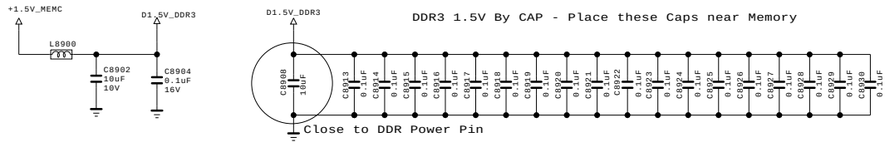
KIM JONG HYUN

LG ELECTRONICS

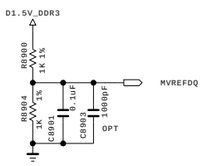
MODEL	BCM (EUROBBTV)	DATE	2009.06.18
BLOCK	NTP7000	SHEET	38

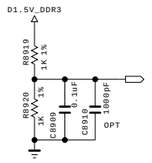
Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

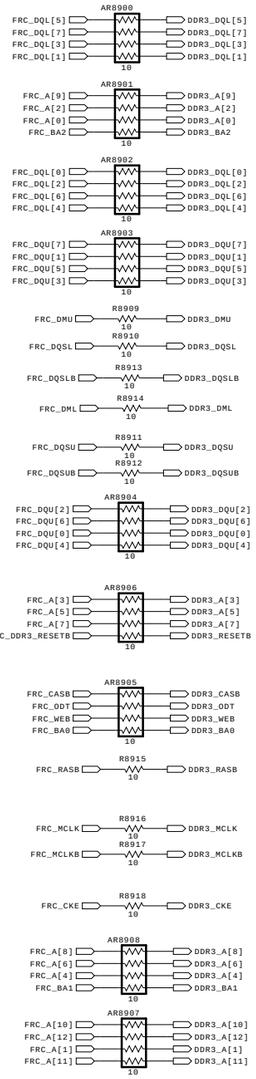
LGE Internal Use Only

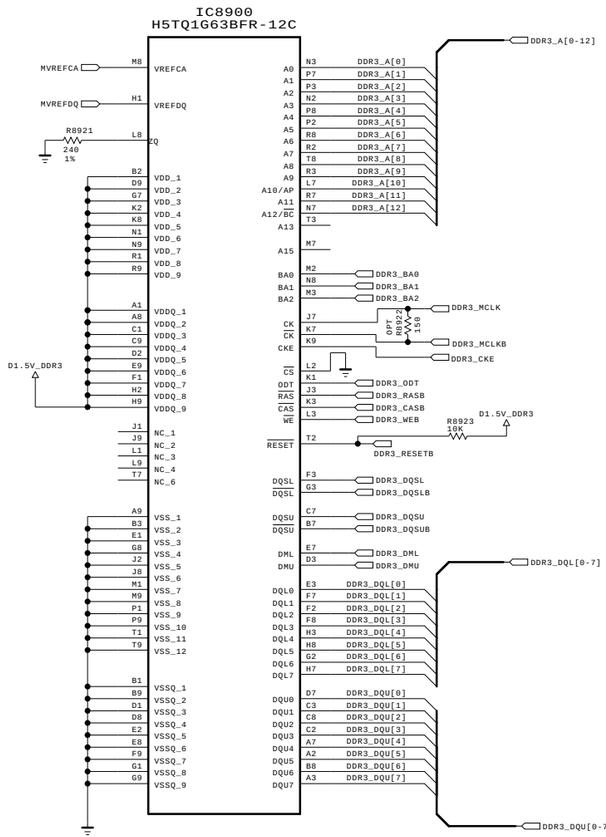


DDR3 1.5V By CAP - Place these Caps near Memory

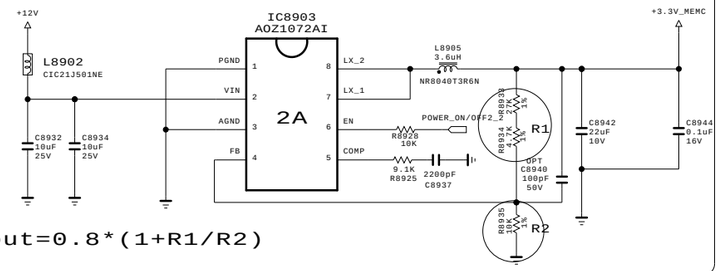






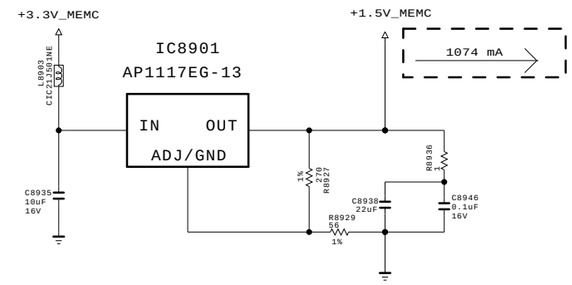


+3.3V_MEMC

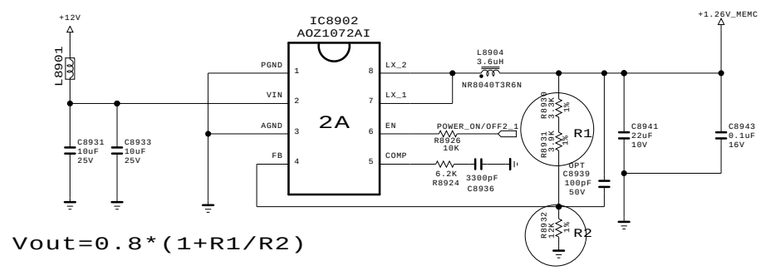


Vout=0.8*(1+R1/R2)

URSA3 DDR 1.5V



URSA3 CORE 1.26V



Vout=0.8*(1+R1/R2)

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

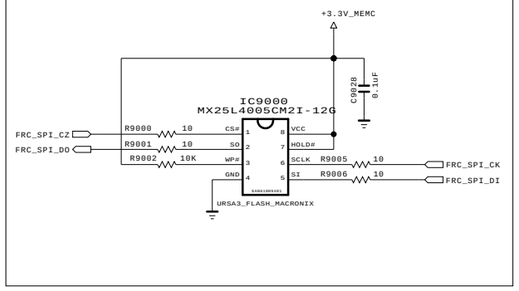
LGElectronics

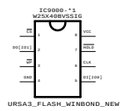
LG ELECTRONICS

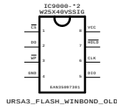
MODEL	COMMON	DATE	2009.09.11
BLOCK	URSA3 DDR & Power	SHEET	89

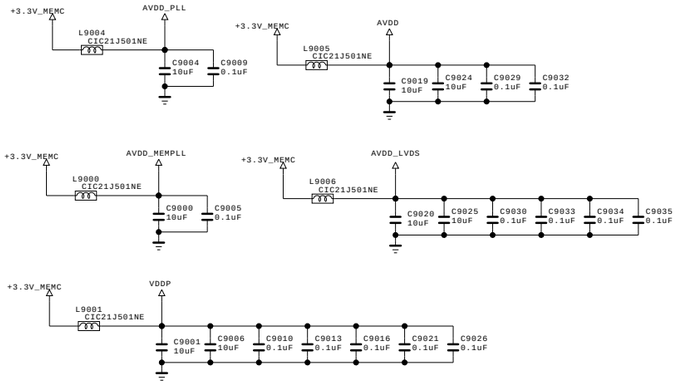
Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

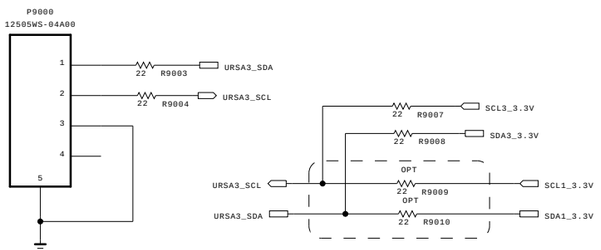
Serial Flash

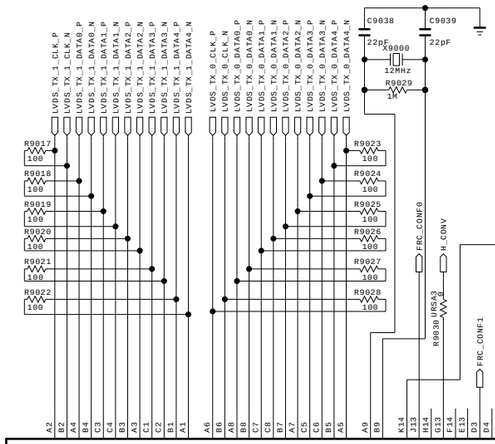












IC9001
LGE7378A[FRC_TCON_URSA3]
URSA3

FRC OPTION	LOW	HIGH
K14	NON_MIRROR	MIRROR
T10	LVDS	MINI_LVDS
R10	GIP	NON_GIP
R9	SCAN_OFF	SCAN_ON
U10	LD	NON_LD

Separate DVDD_DDR Power

I2C ADR: GPIO1: HI:B8 LOW:B4
CHIP_CONF: {GPIO8, PWM1, PWM0}
CHIP_CONF= 3'd5: boot from internal SRAM
CHIP_CONF= 3'd6: boot from EEPROM
CHIP_CONF= 3'd7: boot from SPI Flash

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

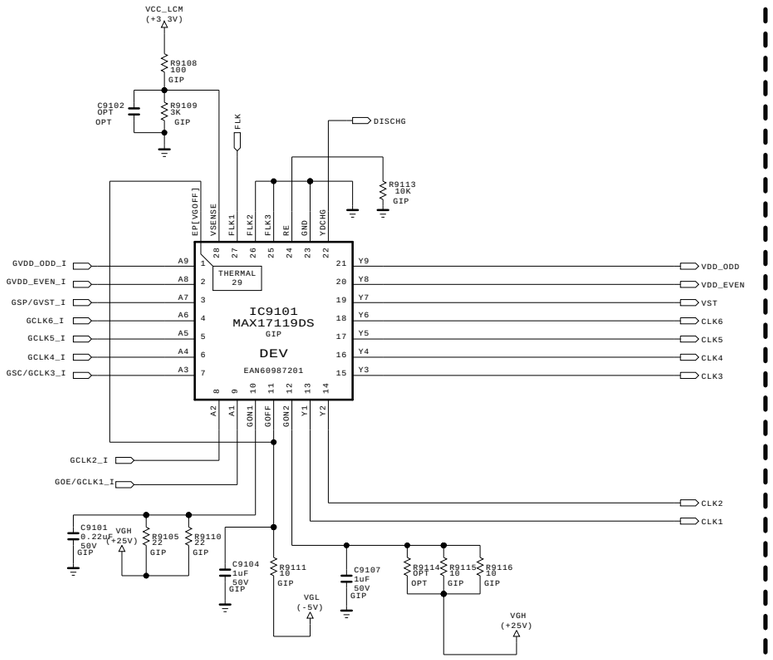
LG ELECTRONICS

MODEL	COMMON	DATE	2009.09.11
BLOCK	URSA3 (NO L.D.)	SHEET	90

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

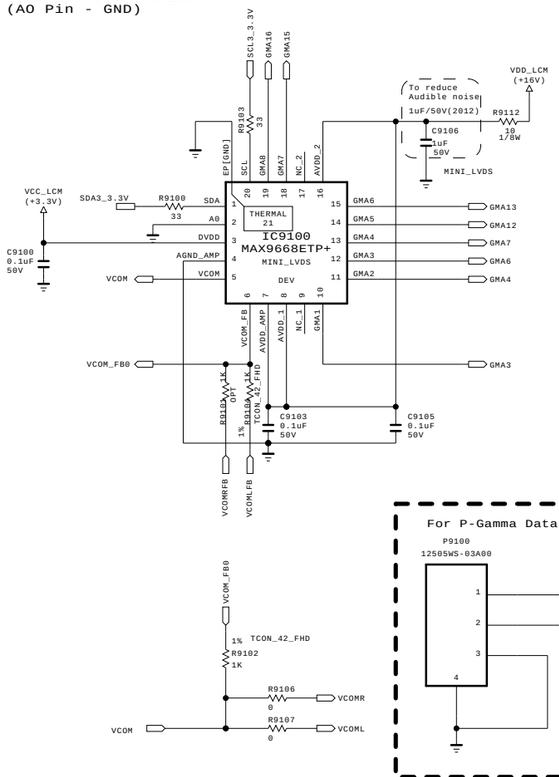
LGE Internal Use Only

[LEVEL Shift Block]

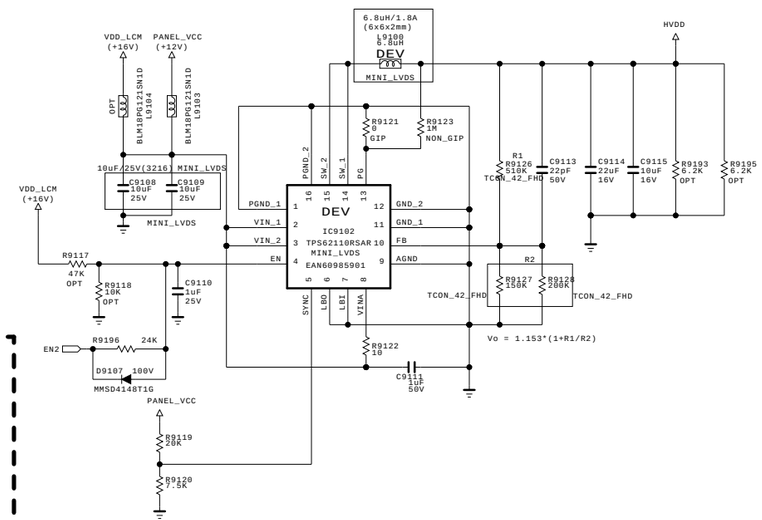


[P-GAMMA Block]

Slave Address : 0xE8h
(A0 Pin - GND)

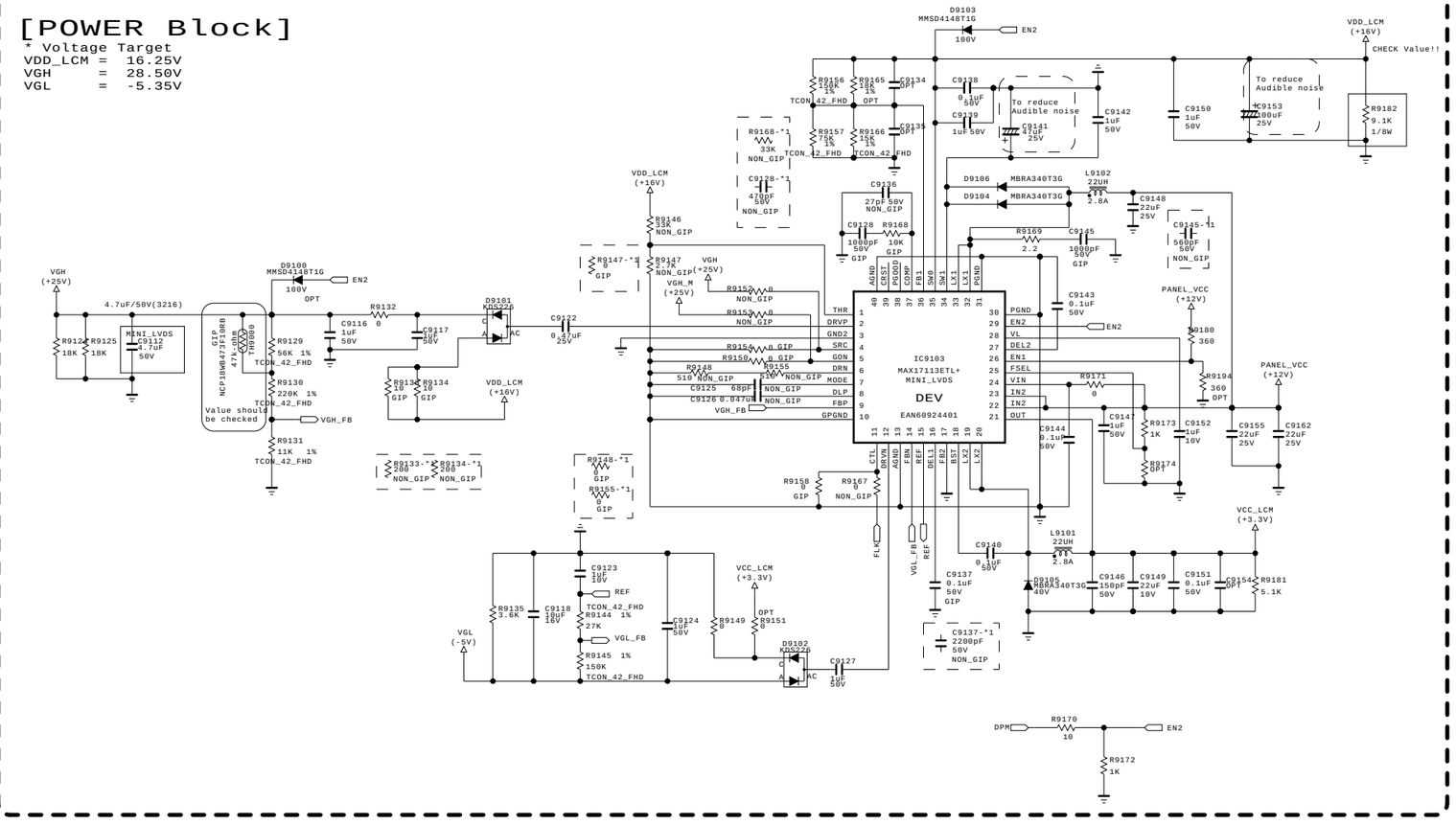


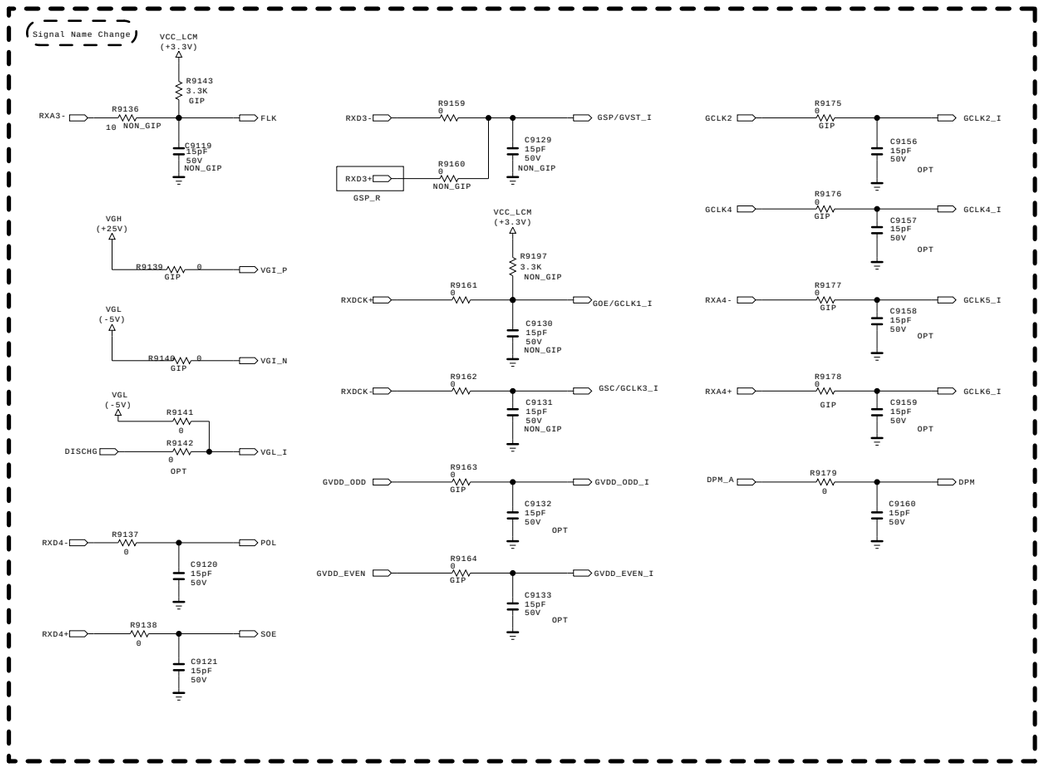
[HVDD Block]



[POWER Block]

* Voltage Target
VDD_LCM = 16.25V
VGH = 28.50V
VGL = -5.35V





THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	COMMON	DATE	09/09/10
BLOCK	T-Con (NO L.D.)	SHEET	91

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only

32_FHD

VGH

R9129-*1 22K 1% TCON_32_FHD

R9130-*1 220K 1% TCON_32_FHD

R9131-*1 11K 1% TCON_32_FHD

VGL

R9144-*1 51K 1% TCON_32_FHD

R9145-*1 270K 1% TCON_32_FHD

VDD

R9156-*1 150K 1% TCON_32_FHD

R9165 OPEN

R9157-*1 82K 1% TCON_32_FHD

R9166-*1 24K 1% TCON_32_FHD

HVDD

R9126-*1 510K 1% TCON_32_FHD

R9127-*1 150K 1% TCON_32_FHD

R9128-*1 300K 1% TCON_32_FHD

VCOM FEED BACK

R9101-*1 1K 1% TCON_32_FHD

R9104-*1 1K 1% TCON_32_FHD

R9102-*1 1K 1% TCON_32_FHD

37_FHD

VGH

R9129-*2 47K 1% TCON_37_FHD

R9130-*2 220K 1% TCON_37_FHD

R9131-*2 12K 1% TCON_37_FHD

VGL

R9144-*2 20K 1% TCON_37_FHD

R9145-*2 150K 1% TCON_37_FHD

VDD

R9156-*2 910K 1% TCON_37_FHD

R9165-*2 470K 1% TCON_37_FHD

R9157-*2 56K 1% TCON_37_FHD

R9166-*2 56K 1% TCON_37_FHD

HVDD

R9126-*2 470K 1% TCON_37_FHD

R9128 OPEN

R9127-*2 91K 1% TCON_37_FHD

VCOM FEED BACK

R9101-*2 1K 1% TCON_37_FHD

R9104-*2 1K 1% TCON_37_FHD

R9102-*2 1.5K 5% TCON_37_FHD

42_FHD

VGH

91 or 95 Sheet

VGL

91 or 95 Sheet

VDD

91 or 95 Sheet

HVDD

91 or 95 Sheet

VCOM FEED BACK

91 or 95 Sheet

47_FHD

VGH

R9129-*3 51K 1% TCON_47_FHD

R9130-*3 220K 1% TCON_47_FHD

R9131-*3 11K 1% TCON_47_FHD

VGL

R9144-*3 51K 1% TCON_47_FHD

R9145-*3 270K 1% TCON_47_FHD

VDD

R9156-*3 180K 1% TCON_47_FHD

R9165 OPEN

R9157-*3 15K 1% TCON_47_FHD

R9166-*3 20K 1% TCON_47_FHD

HVDD

R9126-*3 510K 1% TCON_47_FHD

R9127-*3 150K 1% TCON_47_FHD

R9128-*3 220K 1% TCON_47_FHD

VCOM FEED BACK

R9101-*3 1K 1% TCON_47_FHD

R9104-*3 1K 1% TCON_47_FHD

R9102-*3 1K 1% TCON_47_FHD

55_FHD

VGH

R9129-*4 510K 1% TCON_55_FHD

R9130-*4 68K 1% TCON_55_FHD

R9131-*4 27K 1% TCON_55_FHD

VGL

R9144-*4 27K 1% TCON_55_FHD

R9145-*4 150K 1% TCON_55_FHD

VDD

R9156-*4 150K 1% TCON_55_FHD

R9165 OPEN

R9157-*4 75K 1% TCON_55_FHD

R9166-*4 15K 1% TCON_55_FHD

HVDD

R9126-*4 180K 1% TCON_55_FHD

R9127-*4 68K 1% TCON_55_FHD

R9128-*4 56K 1% TCON_55_FHD

VCOM FEED BACK

R9101 OPEN

R9104 OPEN

R9102-*4 0 5% TCON_55_FHD

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

LG ELECTRONICS

MODEL	Common	DATE	09/12/15
BLOCK	T-Con Power Option	SHEET	98

Copyright © 2010 LG Electronics. Inc. All rights reserved.
Only for training and service purposes

LGE Internal Use Only


LG Electronics Inc.