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LCD TV

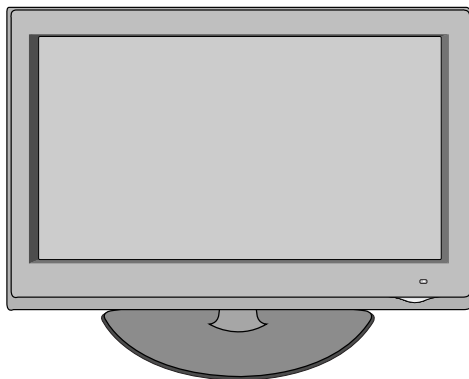
SERVICE MANUAL

CHASSIS : LJ01B

MODEL : 32LD420 32LD420-SA

CAUTION

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



P/NO : MFL62886916 (1007-REV00)

Printed in Korea

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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by $\triangle$ 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 its 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 M Ω and 5.2 M Ω .

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.

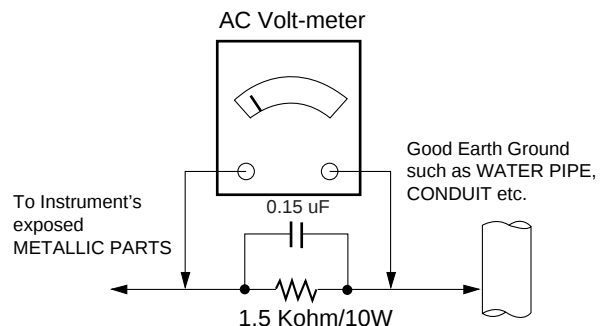
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 μ F capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

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 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

SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the *SAFETY PRECAUTIONS* on page 3 of this publication.

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
 - a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
 - b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
 - c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.

CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".
3. Do not spray chemicals on or near this receiver or any of its assemblies.

4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10 % (by volume) Acetone and 90 % (by volume) isopropyl alcohol (90 % - 99 % strength)

CAUTION: This is a flammable mixture.

Unless specified otherwise in this service manual, lubrication of contacts is not required.

5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.

Always remove the test receiver ground lead last.

8. Use with this receiver only the test fixtures specified in this service manual.

CAUTION: Do not connect the test fixture ground strap to any heat sink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices*. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500 °F to 600 °F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
 - a. Allow the soldering iron tip to reach normal temperature. (500 °F to 600 °F)
 - b. Heat the component lead until the solder melts.
 - c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
CAUTION: Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique.
 - a. Allow the soldering iron tip to reach a normal temperature (500 °F to 600 °F)
 - b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
 - c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
CAUTION: Work quickly to avoid overheating the circuit board printed foil.
 - d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor

Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device

Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor

Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.

CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side.

Carefully crimp and solder the connections.

CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

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 LJ01A/B chassis.

2. Requirement for Test

Each part is tested as below without special appointment.

- 1) Temperature
: $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ($77^{\circ}\text{F} \pm 9^{\circ}\text{F}$), CST : $40^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- 2) Relative Humidity : $65\% \pm 10\%$
- 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. General Specification(TV)

No	Item	Specification		Remark
1	Receivable System	1) SBTVD / NTSC / PAL-M / PAL-N		
2	Available Channel	VHF : 02 ~ 13 UHF : 14 ~ 69 DTV : 07 ~ 69 CATV : 01 ~ 135		
3	Input Voltage	1) AC 100 ~ 240V 50/60Hz		
4	Market	Central and South AMERICA		
5	Screen Size	22 inch Wide (1366 x 768) 26 inch Wide (1366 x 768) 32 inch Wide (1366 x 768) 32 inch Wide (1920 x 1080) 37 inch Wide (1920 x 1080) 42 inch Wide (1920 x 1080) 47 inch Wide (1920 x 1080) 55 inch Wide (1920 x 1080)		22LE5300-SA 26LE5300-SA 32LD350-SB/32LE5300-SA 32LD460-SA 37LD460-SA/37LE5300-SA 42LD460-SA/42LE5300-SA 47LD460-SA/47LE5300-SA 55LE5300-SA
6	Aspect Ratio	16:9		
7	Tuning System	FS		
8	LCD Module	LC320WXE-SCA1 LC216EXN-SCA1 LC260EXN-SCA1 N/A LC370EUH-SCA1 LC420EUH-SCA1 LC470EUH-SCA1 LC550EUB-SCA1 LC320WUG-SCA1 LC370WUG-SCA1 LC420WUG-SCA1 LC470WUG-SCA1	LGD LGD LGD AUO LGD LGD LGD LGD LGD LGD LGD LGD	32LD350-SB 22LE5300-SA 26LE5300-SA 32LE5300-SA 37LE5300-SA 42LE5300-SA 47LE5300-SA 55LE5300-SA 32LD460-SA 37LD460-SA 42LD460-SA 47LD460-SA
9	Operating Environment	Temp : 0 ~ 40 deg Humidity : ~ 80 %		
10	Storage Environment	Temp : -20 ~ 60 deg Humidity : -85 %		

6. DCR/RT specification

Classification	Model	Freq.	DCR		RT
			min	Typ	
Edge LED	32/37/42/47/55LE5300	120Hz	2,400,000	3,000,000	2.4ms
	22/26LE5300	HD 60Hz	800,000	1,000,000	5ms
	LE4600	120Hz	2,400,000	3,000,000	2.4ms
	LE6500	FHD 60Hz	1,600,000	2,000,000	4ms
CCFL	LD460	FHD 60Hz	45,000	60,000	4ms
	LD350	HD 60Hz	40,000	50,000	5ms

7. Component Video Input (Y, Cb/Pb, Cr/Pr)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock	Proposed
1.	720*480	15.73	60	13.5135	SDTV ,DVD 480I
2.	720*480	15.73	59.94	13.5	SDTV ,DVD 480I
3.	720*480	31.50	60	27.027	SDTV
4.	720*480	31.47	59.94	27.0	SDTV
5.	1280*720	45.00	60.00	74.25	HDTV
6.	1280*720	44.96	59.94	74.176	HDTV
7.	1920*1080	33.75	60.00	74.25	HDTV
8.	1920*1080	33.72	59.94	74.176	HDTV
9.	1920*1080	67.500	60	148.50	HDTV
10.	1920*1080	67.432	59.94	148.352	HDTV
11.	1920*1080	27.000	24.000	74.25	HDTV
12.	1920*1080	26.97	23.976	74.176	HDTV
13.	1920*1080	33.75	30.000	74.25	HDTV
14.	1920*1080	33.71	29.97	74.176	HDTV

8. RGB Input (PC)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock	Proposed	
	PC				DDC	
1.	640*350	31.468	70.09	25.17	EGA	X
2.	720*400	31.469	70.08	28.32	DOS	O
3.	640*480	31.469	59.94	25.17	VESA(VGA)	O
4.	800*600	37.879	60.31	40.00	VESA(SVGA)	O
5.	1024*768	48.363	60.00	65.00	VESA(XGA)	O
6.	1280*768	47.776	59.87	79.50	CVT(WXGA)	X
7.	1360*768	47.712	60.015	85.50	VESA(WXGA)	X
8.	1280*1024	63.981	60.020	108.00	VESA(SXGA)	O
9.	1600*1200	75.00	60.00	162	VESA(UXGA)	O
10.	1920*1080	66.50	60	148.5	HDTV 1080P	O

- RGB PC Monitor Range Limits
 - Min Vertical Freq - 56 Hz
 - Max Vertical Freq - 62 Hz
 - Min Horiz. Freq - 30 kHz
 - Max Horiz. Freq - 80 kHz
 - Pixel Clock - 170 MHz

9. HDMI input (PC/DTV)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock	Proposed	
	PC					DDC
1.	640*350	31.468	70.09	25.17	EGA	X
2.	720*400	31.469	70.08	28.32	DOS	O
3.	640*480	31.469	59.94	25.17	VESA(VGA)	O
4 .	800*600	37.879	60.31	40.00	VESA(SVGA)	O
5.	1024*768	48.363	60.00	65.00	VESA(XGA)	O
6.	1280*768	47.776	59.870	79.50	CVT(WXGA)	X
7.	1360*768	47.712	60.015	85.50	VESA(WXGA)	X
8.	1280*1024	63.981	60.020	108.00	VESA(SXGA)	O
9.	1600*1200	75.00	60.00	162	VESA(UXGA)	O
10.	1920*1080	67.5	60	148.5	HDTV 1080P	O
	DTV					
1	720*480	31.5	60	27.027	SDTV 480P	
2	720*480	31.47	59.94	27.00	SDTV 480P	
3	1280*720	45.00	60.00	74.25	HDTV 720P	
4	1280*720	44.96	59.94	74.176	HDTV 720P	
5	1920*1080	33.75	60.00	74.25	HDTV 1080I	
6	1920*1080	33.72	59.94	74.176	HDTV 1080I	
7	1920*1080	67.500	60	148.50	HDTV 1080P	
8	1920*1080	67.432	59.939	148.352	HDTV 1080P	
9	1920*1080	27.000	24.000	74.25	HDTV 1080P	
10	1920*1080	26.97	23.976	74.176	HDTV 1080P	
11	1920*1080	33.75	30.000	74.25	HDTV 1080P	
12	1920*1080	33.71	29.97	74.176	HDTV 1080P	

- HDMI Monitor Range Limits

Min Vertical Freq - 56 Hz

Min Horiz. Freq - 30 kHz

Pixel Clock - 170 MHz

Max Vertical Freq - 62 Hz

Max Horiz. Freq - 80 kHz

ADJUSTMENT INSTRUCTION

1. Application Range

This specification sheet is applied to all of the LCD TV with LJ01A/LJ01B/LJ01D/LJ01G chassis.

2. Designation

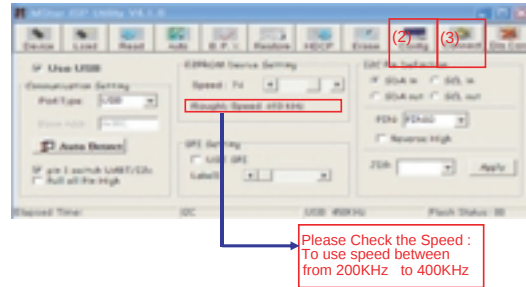
- 1) The adjustment is according to the order which is designated and which must be followed, according to the plan which can be changed only on agreeing.
- 2) Power Adjustment: Free Voltage
- 3) Magnetic Field Condition: Nil.
- 4) Input signal Unit: Product Specification Standard
- 5) Reserve after operation: Above 5 Minutes (Heat Run)
Temperature : at $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
Relative humidity : $65\% \pm 10\%$
Input voltage : $100 \sim 220\text{ V}$, 50/60 Hz
- 6) Adjustment equipments: Color Analyzer(CA-210 or CA-110), DDC Adjustment Jig equipment, Service remote control.
- 7) Push the "IN STOP" key - For memory initialization.

Case1 : Software version up

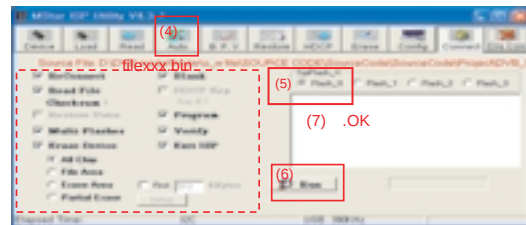
1. After downloading S/W by USB, TV set will reboot automatically
2. Push "In-stop" key
3. Push "Power on" key
4. Function inspection
5. After function inspection, Push "In-stop" key.

Case2 : Function check at the assembly line

1. When TV set is entering on the assembly line, Push "In-stop" key at first.
2. Push "Power on" key for turning it on.
-> If you push "Power on" key, TV set will recover channel information by itself.
3. After function inspection, Push "In-stop" key.

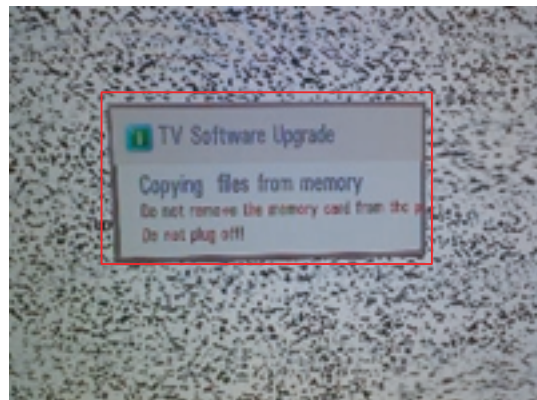


- 5) Click "Auto" tab and set as below
- 6) Click "Run".
- 7) After downloading, check "OK" message.



* USB DOWNLOAD

- 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"

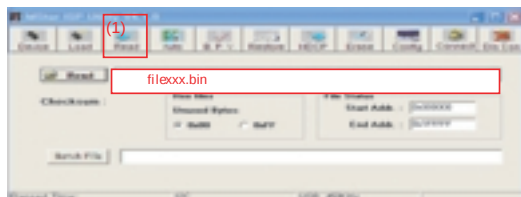


3. Main PCB check process

* APC - After Manual-Insult, executing APC

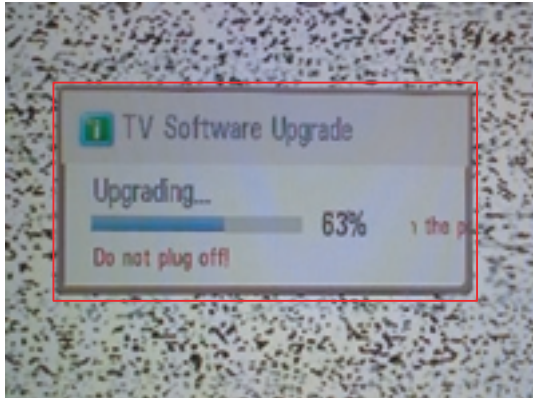
* Boot file Download

- 1) Execute ISP program "Mstar ISP Utility" and then click "Config" tab.



- 2) Set as below, and then click "Auto Detect" and check "OK" message
If "Error" is displayed, Check connection between computer, jig, and set.
- 3) Click "Read" tab, and then load download file (XXXX.bin) by clicking "Read"
- 4) Click "Connect" tab. If "Can't" is displayed, check connection between computer, jig, and set.

4) Updating is starting.



- 5) Uploading 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.

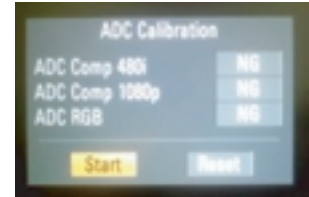
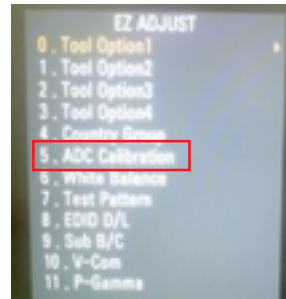
*** After downloading, have to adjust Tool Option again.**

- 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)
- 4) Completed selecting Tool option.

3.1. ADC Process

(1) ADC

- Enter Service Mode by pushing "ADJ" key,
- Enter Internal ADC mode by pushing "G" key at "5. ADC Calibration"



<Caution> Using 'power on' button of the Adjustment R/C, power on TV.

*** ADC Calibration Protocol (RS232)**

No	Item	CMD1	CMD2	Data0	
Enter Adjust Mode	Adjust 'Mode In'	A	A	0 0	When transfer the 'Mode In', Carry the command.
ADC adjust	ADC Adjust	A	D	1 0	Automatically adjustment (The use of a internal pattern)

Adjust Sequence

- aa 00 00 [Enter Adjust Mode]
- xb 00 40 [Component1 Input (480i)]
- ad 00 10 [Adjust 480i Comp1]
- xb 00 60 [RGB Input (1024*768)]
- ad 00 10 [Adjust 1024*768 RGB]
- aa 00 90 End Adjust mode

* Required equipment : Adjustment R/C.

3.2. Function Check

*** Check display and sound**

- Check Input and Signal items. (cf. work instructions)

- 1) TV
- 2) AV (SCART1/SCART2/ CVBS)
- 3) COMPONENT (480i)
- 4) RGB (PC : 1024 x 768 @ 60hz)
- 5) HDMI
- 6) PC Audio In

* Display and Sound check is executed by Remote control.

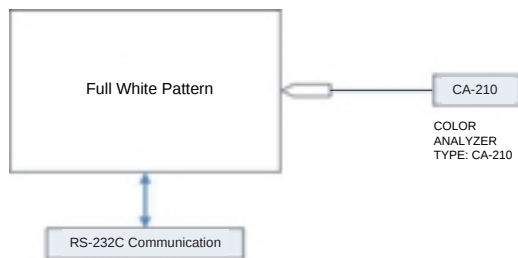
4. Total Assembly line process

4.1. Adjustment Preparation

- W/B Equipment condition
CA210 : CH 9, Test signal : Inner pattern (85IRE)
- Above 5 minutes H/run in the inner pattern. ("power on" key of adjust remote control)

Cool	13,000	K	X=0.269(±0.002)	<Test Signal> Inner pattern (216gray,85IRE)
			Y=0.273(±0.002)	
Medium	9,300	K	X=0.285(±0.002)	
			Y=0.293(±0.002)	
Warm	6,500	K	X=0.313(±0.002)	
			Y=0.329(±0.002)	

- Connecting picture of the measuring instrument
(On Automatic control)
Inside PATTERN is used when W/B is controlled. Connect to auto controller or push Adjustment R/C POWER ON -> Enter the mode of White-Balance, the pattern will come out.



- Auto-control interface and directions
 - Adjust in the place where the influx of light like floodlight around is blocked. (illumination is less than 10 lux).
 - Adhere closely the Color Analyzer (CA210) to the module less than 10 cm distance, keep it with the surface of the Module and Color Analyzer's probe vertically. (80° ~ 100°).
 - Aging time
 - After aging start, keep the power on (no suspension of power supply) and heat-run over 5 minutes.
 - Using 'no signal' or 'full white pattern' or the others, check the back light on.

- Auto adjustment Map(RS-232C)

RS-232C COMMAND

[CMD ID DATA]

Wb 00 00 White Balance Start
Wb 00 ff White Balance End

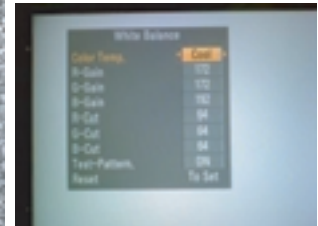
	RS-232C COMMAND [CMD ID DATA]			MIN	CENTER (DEFAULT)			MAX
	Cool	Mid	Warm			Cool	Mid	
R Gain	jg	Ja	jd	00	172	192	192	192
G Gain	jh	Jb	je	00	172	192	192	192
B Gain	ji	Jc	jf	00	192	192	172	192
R Cut					64	64	64	128
G Cut					64	64	64	128
B Cut					64	64	64	128

<Caution>

Color Temperature : COOL, Medium, Warm.

One of R Gain/G Gain/ B Gain should be kept on 0xC0, and adjust other two lower than C0.
(when R/G/B Gain are all C0, it is the FULL Dynamic Range of Module)

- Manual W/B process using adjusts Remote control.
 - After enter Service Mode by pushing "ADJ" key,
 - Enter White Balance by pushing "G" key at "6. White Balance".



- After done all adjustments, Press "In-start" button and compare Tool option and Area option value with its BOM, if it is correctly same then unplug the AC cable. If it is not same, then correct it same with BOM and unplug AC cable. For correct it to the model's module from factory Jig model.
- Push the "IN STOP" key after completing the function inspection. And Mechanical Power Switch must be set "ON".

4.2. DDC EDID Write (RGB 128Byte)

- Connect D-sub Signal Cable to D-sub Jack.
- Write EDID Data to EEPROM(24C02) by using DDC2B protocol.
- Check whether written EDID data is correct or not.
- For SVC main Assembly, EDID have to be downloaded to Insert Process in advance.

4.3. DDC EDID Write (HDMI 256Byte)

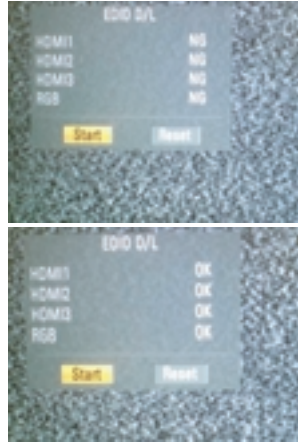
- Connect HDMI Signal Cable to HDMI Jack.
- Write EDID Data to EEPROM(24C02) by using DDC2B protocol.
- Check whether written EDID data is correct or not.
- For SVC main Assembly, EDID have to be downloaded to Insert Process in advance.

4.4. EDID DATA

- All Data : HEXA Value
- Changeable Data :
 - *: Serial No : Controlled / Data:01
 - ***: Month : Controlled / Data:00
 - ***:Year : Controlled
 - ****:Check sum

4.5. Auto Download

- 1) Press Adj. key on the Adj. Remote control.
- 2) Select EDID D/L menu.
- 3) By pressing Enter key, EDID download will begin
- 4) If Download is successful, OK is display, but If Download if failure, NG is displayed.
- 5) If Download is failure, Re-try downloads.



* Edid data and Model option download (RS232)

NO	Item	CMD1	CMD2	Data0	
Enter download Mode	Download 'Mode In'	A	A	0 0	When transfer the 'Mode In', Carry the command.
EDID data and Model option download	Download	A	E	00 10	Automatically Download (The use of a internal pattern)

- Manual Download

* Caution

- 1) Use the proper signal cable for EDID Download
 - Analog EDID : Pin3 exists
 - Digital EDID : Pin3 exists
- 2) Never connect HDMI & D-sub Cable at the same time.
- 3) Use the proper cables below for EDID Writing
- 4) Download HDMI1, HDMI2, separately because HDMI1 is different from HDMI2

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

Item	Condition	Data(Hex)
Manufacturer ID	GSM	1E6D
Version	Digital : 1	01
Revision	Digital : 3	03

1) FHD RGB EDID data(Check sum:1D)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	14	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
0030	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0040	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
0060	3F	1F	52	10	00	0A	20	20	20	20	20	20	20	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	00	1D

2) FHD HDMI EDID data

HDMI 1 (Check sum:04, 5A)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	14	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
0030	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0040	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	39
0060	3F	1F	52	10	00	0A	20	20	20	20	20	20	20	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	04
0080	02	03	1F	F1	47	10	22	20	05	84	03	02	26	15	07	50
0090	09	07	07	67	03	0C	00	10	00	B8	2D	E3	05	03	01	02
00A0	3A	80	18	71	38	2D	40	58	2C	04	05	A0	5A	00	00	00
00B0	1E	01	1D	00	18	71	1C	16	20	58	2C	25	00	A0	5A	00
00C0	00	00	9E	01	1D	00	72	51	D0	1E	20	6E	28	55	00	A0
00D0	5A	00	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96
00E0	00	A0	5A	00	00	00	18	26	36	80	A0	70	38	1F	40	30
00F0	20	25	00	A0	5A	00	00	00	1A	00	00	00	00	00	00	5A

HDMI 2 (Check sum:04, 4A)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	14	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
0030	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0040	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	39
0060	3F	1F	52	10	00	0A	20	20	20	20	20	20	20	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	04
0080	02	03	1F	F1	47	10	22	20	05	84	03	02	26	15	07	50
0090	09	07	07	67	03	0C	00	10	00	B8	2D	E3	05	03	01	02
00A0	3A	80	18	71	38	2D	40	58	2C	04	05	A0	5A	00	00	00
00B0	1E	01	1D	00	18	71	1C	16	20	58	2C	25	00	A0	5A	00
00C0	00	00	9E	01	1D	00	72	51	D0	1E	20	6E	28	55	00	A0
00D0	5A	00	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96
00E0	00	A0	5A	00	00	00	18	26	36	80	A0	70	38	1F	40	30
00F0	20	25	00	A0	5A	00	00	00	1A	00	00	00	00	00	00	4A

HDMI 3 (Check sum:04, 3A)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	14	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
0030	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0040	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	39
0060	3F	1F	52	10	00	0A	20	20	20	20	20	20	20	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	04
0080	02	03	1F	F1	47	10	22	20	05	84	03	02	26	15	07	50
0090	09	07	07	67	03	0C	00	10	00	B8	2D	E3	05	03	01	02
00A0	3A	80	18	71	38	2D	40	58	2C	04	05	A0	5A	00	00	00
00B0	1E	01	1D	00	18	71	1C	16	20	58	2C	25	00	A0	5A	00
00C0	00	00	9E	01	1D	00	72	51	D0	1E	20	6E	28	55	00	A0
00D0	5A	00	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96
00E0	00	A0	5A	00	00	00	18	26	36	80	A0	70	38	1F	40	30
00F0	20	25	00	A0	5A	00	00	00	1A	00	00	00	00	00	00	3A

HDMI 4 (Check sum:04, 2A)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	14	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
0020	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
0030	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0040	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	39
0060	3F	1F	52	10	00	0A	20	20	20	20	20	20	20	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	04
0080	02	03	1F	F1	47	10	22	20	05	84	03	02	26	15	07	50
0090	09	07	07	67	03	0C	00	40	00	B8	2D	E3	05	03	01	02
00A0	3A	80	18	71	38	2D	40	58	2C	04	05	A0	5A	00	00	00
00B0	1E	01	1D	80	18	71	1C	16	20	58	2C	25	00	A0	5A	00
00C0	00	00	9E	01	1D	00	72	51	D0	1E	20	6E	28	55	00	A0
00D0	5A	00	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96
00E0	00	A0	5A	00	00	00	19	26	36	80	A0	70	38	1F	40	30
00F0	20	25	00	A0	5A	00	00	00	1A	00	00	00	00	00	00	2A

3) HD RGB EDID data(Check sum:70)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	14	01	03	80	73	41	78	0A	CF	30	A3	57	4C	B0	23
0020	09	50	54	A1	08	00	81	C0	01	01	01	01	01	01	01	01
0030	01	01	01	01	01	01	66	21	50	B0	51	00	1B	30	40	70
0040	36	00	7E	8A	42	00	00	1E	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	7E	8A	42	00	00	1E	00	00	00	FD	00	39
0060	3F	1F	3C	09	00	0A	20	20	20	20	20	20	20	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	00	70

4) HD HDMI EDID data
HDMI 1 (Check sum:1C, BA)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	14	01	03	80	73	41	78	0A	CF	74	A3	57	4C	B0	23
0020	09	48	4C	A1	08	00	81	C0	01	01	01	01	01	01	01	01
0030	01	01	01	01	01	01	66	21	50	B0	51	00	1B	30	40	70
0040	36	00	7E	8A	42	00	00	1E	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	7E	8A	42	00	00	1E	00	00	00	FD	00	39
0060	3F	1F	3C	09	00	0A	20	20	20	20	20	20	20	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	1C
0080	02	03	1B	F1	47	10	22	20	05	84	03	02	26	15	07	50
0090	09	07	07	67	03	0C	00	10	00	B8	2D	02	3A	80	18	71
00A0	38	2D	40	58	2C	04	05	7E	8A	42	00	00	1E	01	1D	80
00B0	18	71	1C	16	20	58	2C	25	00	7E	8A	42	00	00	9E	01
00C0	1D	00	72	51	D0	1E	20	6E	28	55	00	7E	8A	42	00	00
00D0	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00	7E	8A	42
00E0	00	00	18	26	36	80	A0	70	38	1F	40	30	20	25	00	7E
00F0	8A	42	00	00	1A	00	00	00	00	00	00	00	00	00	00	BA

HDMI 2 (Check sum:1C, AA)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
0010	01	14	01	03	80	73	41	78	0A	CF	74	A3	57	4C	B0	23
0020	09	48	4C	A1	08	00	81	C0	01	01	01	01	01	01	01	01
0030	01	01	01	01	01	01	66	21	50	B0	51	00	1B	30	40	70
0040	36	00	7E	8A	42	00	00	1E	01	1D	00	72	51	D0	1E	20
0050	6E	28	55	00	7E	8A	42	00	00	1E	00	00	00	FD	00	39
0060	3F	1F	3C	09	00	0A	20	20	20	20	20	20	20	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	1C
0080	02	03	1B	F1	47	10	22	20	05	84	03	02	26	15	07	50
0090	09	07	07	67	03	0C	00	20	00	B8	2D	02	3A	80	18	71
00A0	38	2D	40	58	2C	04	05	7E	8A	42	00	00	1E	01	1D	80
00B0	18	71	1C	16	20	58	2C	25	00	7E	8A	42	00	00	9E	01
00C0	1D	00	72	51	D0	1E	20	6E	28	55	00	7E	8A	42	00	00
00D0	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00	7E	8A	42
00E0	00	00	18	26	36	80	A0	70	38	1F	40	30	20	25	00	7E
00F0	8A	42	00	00	1A	00	00	00	00	00	00	00	00	00	00	AA

- Model List

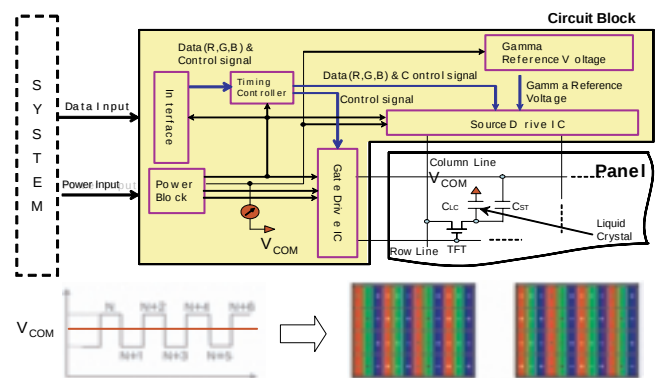
HD(CCFL)	FHD(CCFL)	HD(LED)	FHD Small(LED)	FHD(LED)
32LD350-SB	32LD460-SA	22LE5300-SA	22LE6500-SA	32LE4600-SA
	37LD460-SA	26LE5300-SA	26LE6500-SA	42LE4600-SA
	42LD460-SA			47LE4600-SA
	47LD460-SA			55LE4600-SA
	32LD420-SA			32LE5300-SA
	42LD420-SA			37LE5300-SA
				42LE5300-SA
				47LE5300-SA
				55LE5300-SA

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

- Why need Vcom adjustment?

A The Vcom (Common Voltage) is a Reference Voltage of Liquid Crystal Driving.

-> Liquid Crystal need for Polarity Change with every frame.



- Adjust sequence

· Press the PIP key of the ADJ remote control. (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 "G" key at "10. V-Com")

· As pushing the right or the left key on the remote control, 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)



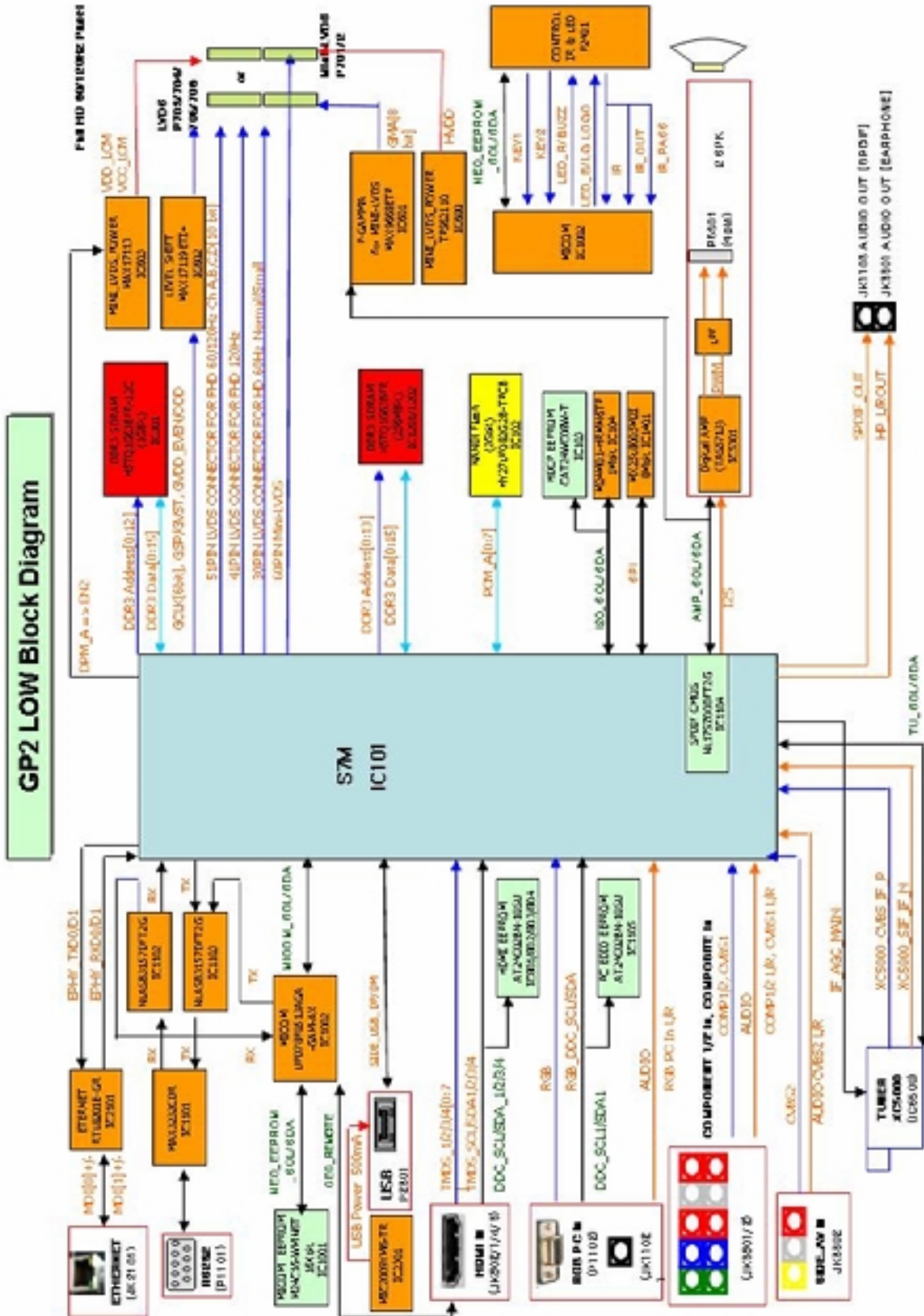
4.6. Outgoing condition Configuration

- When pressing IN-STOP key by SVC remote, Red LED are blinked alternatively. And then Automatically turn off. (Must not AC power OFF during blinking)

4.7. Internal pressure

Confirm whether is normal or not when between power board's ac block and GND is impacted on 1.5 kV(dc) or 2.2 kV(dc) for one second.

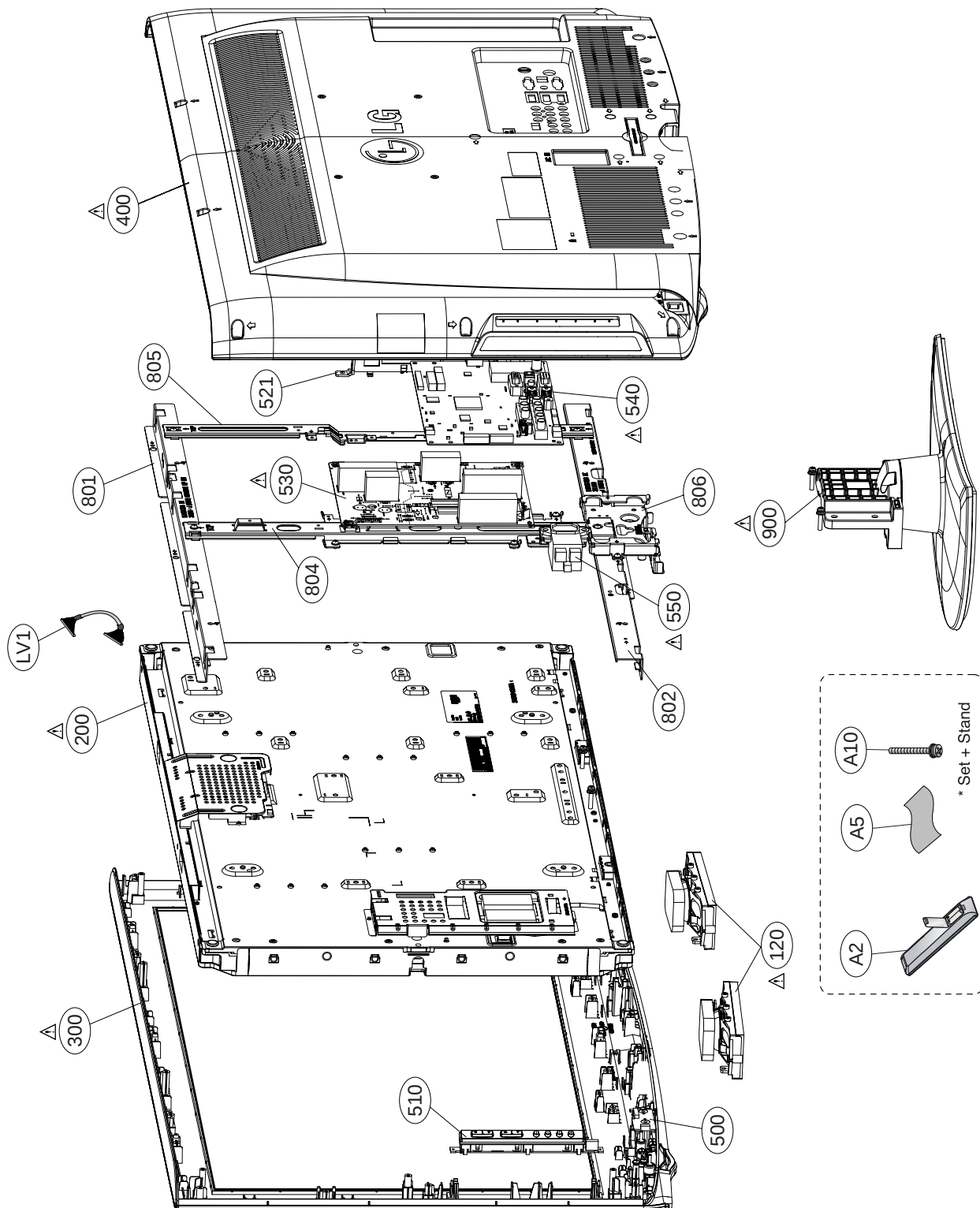
BLOCK DIAGRAM

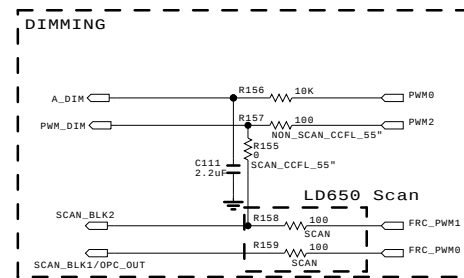
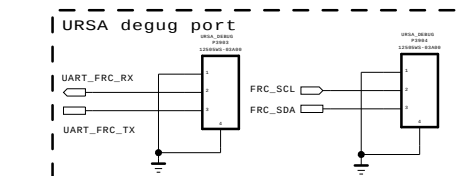
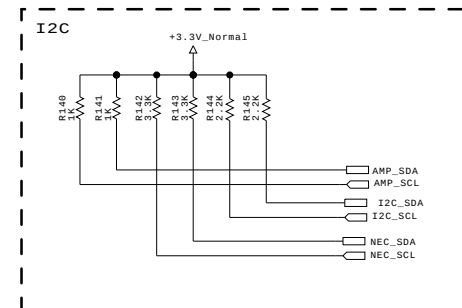
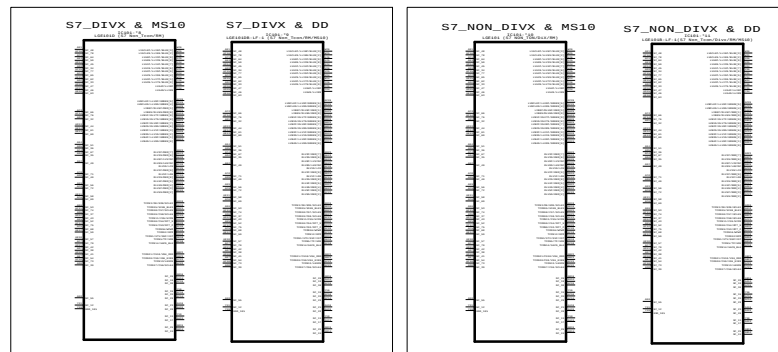
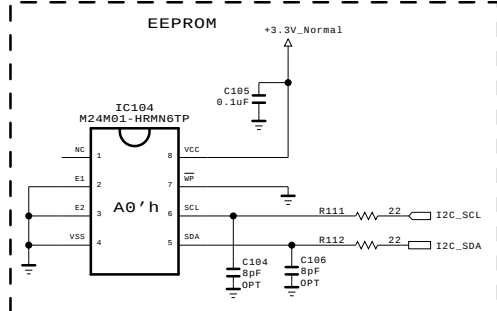
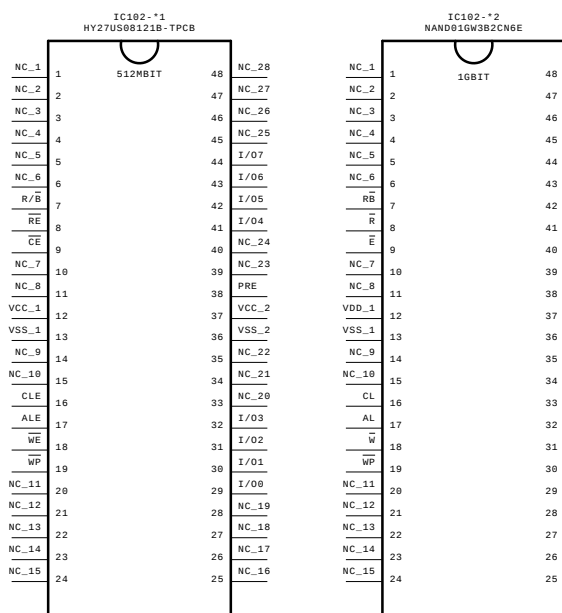
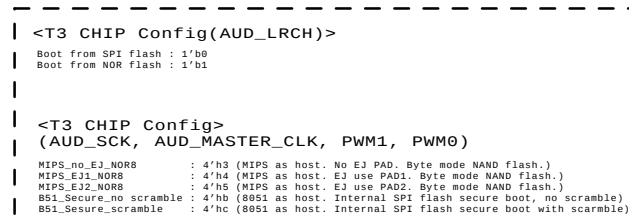


EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by Δ 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.



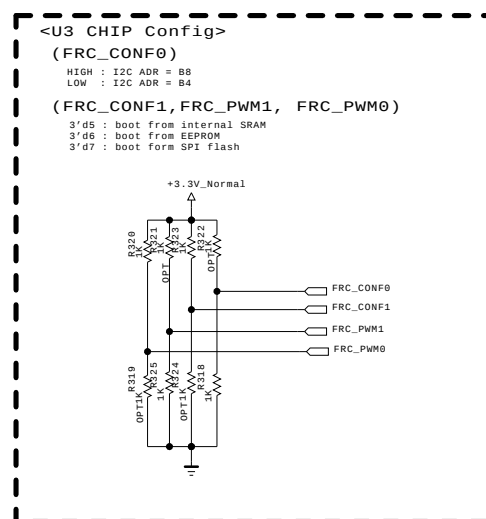
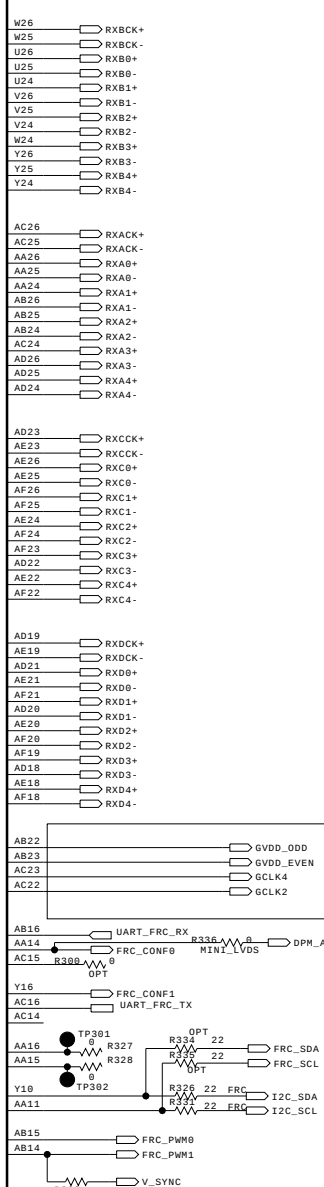
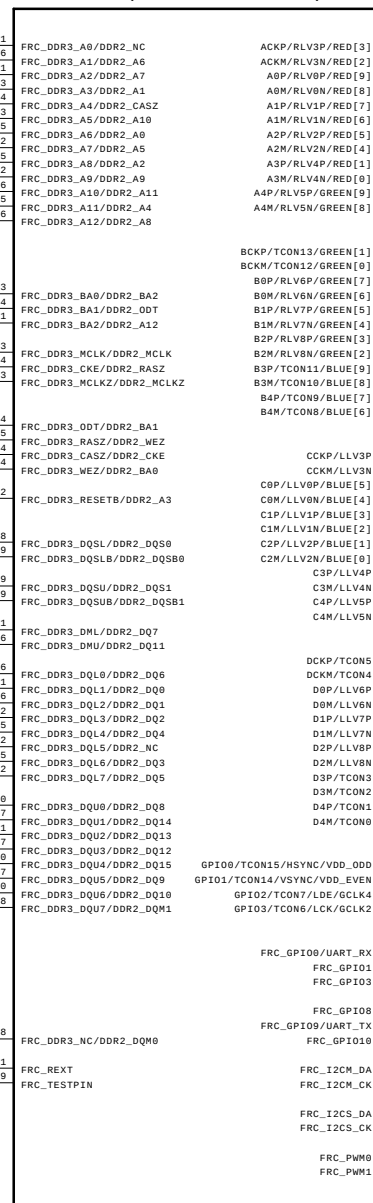
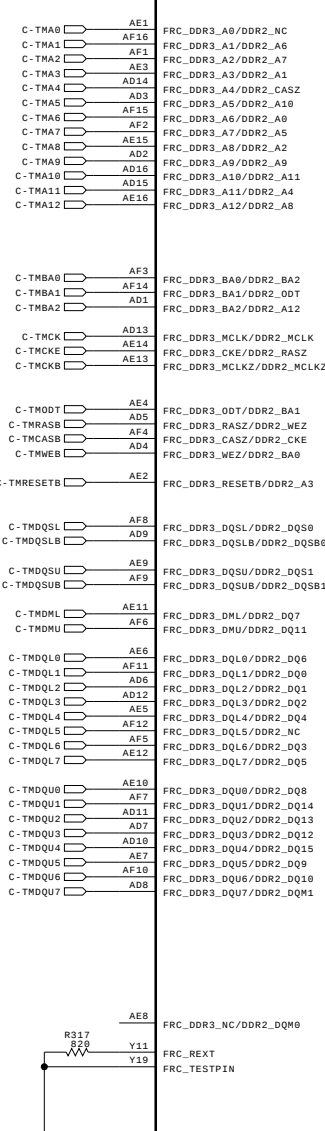
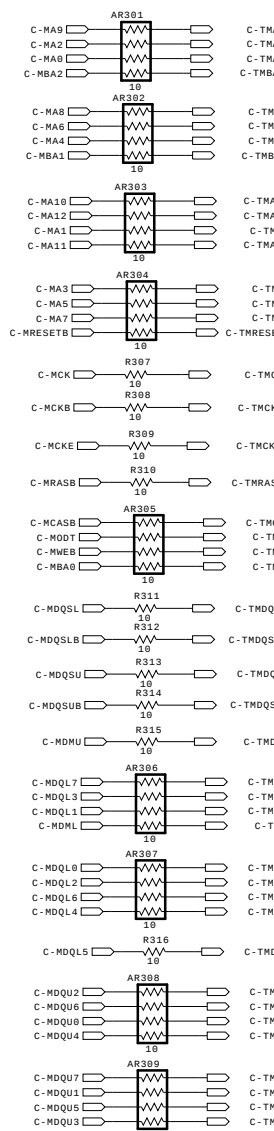
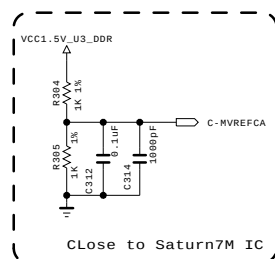
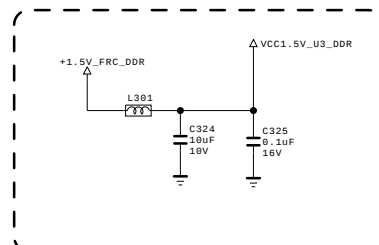


THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

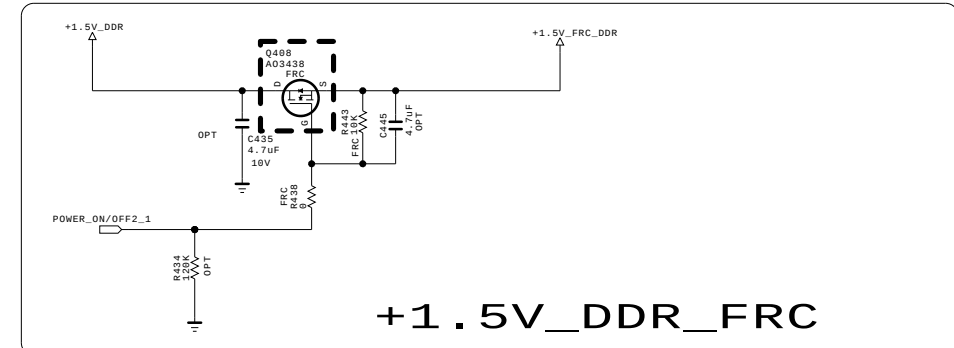
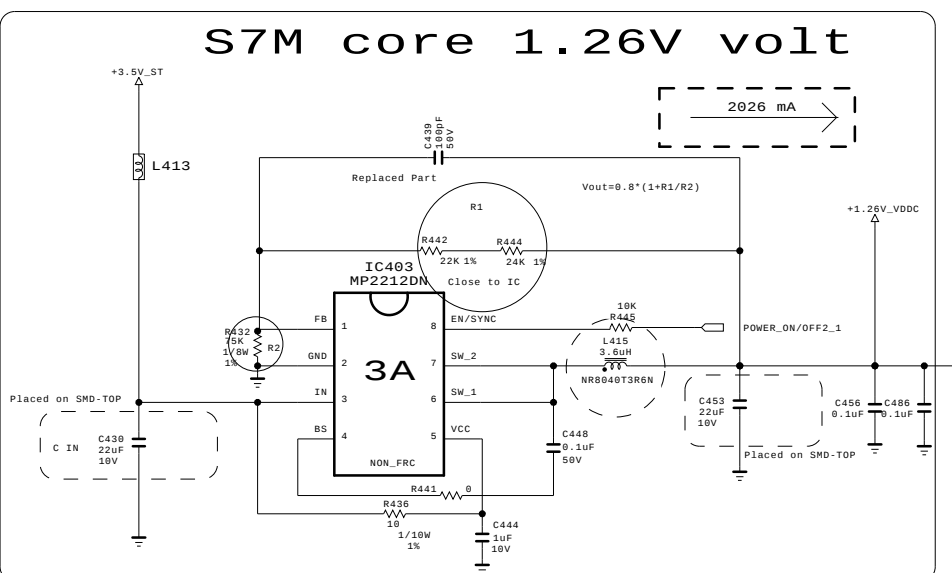
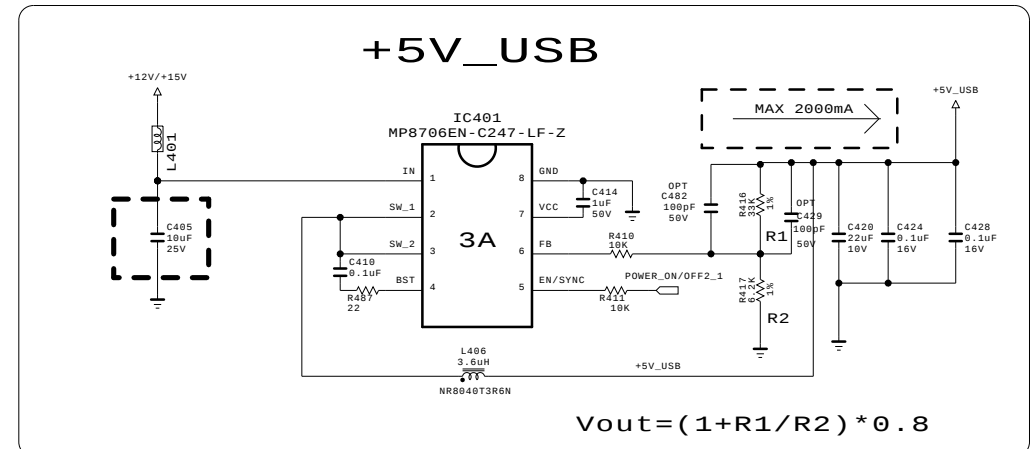
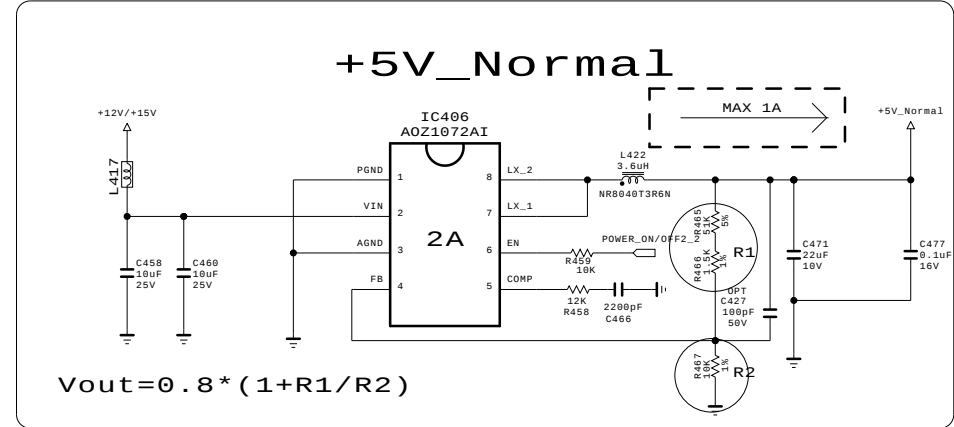
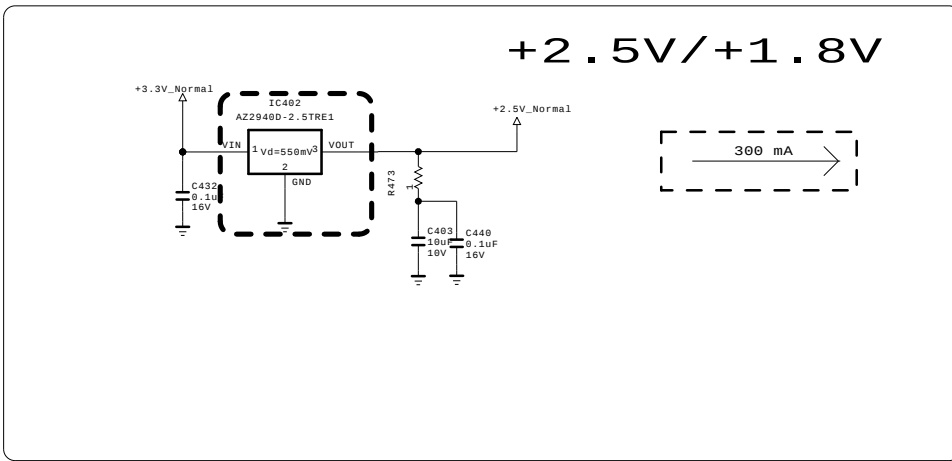
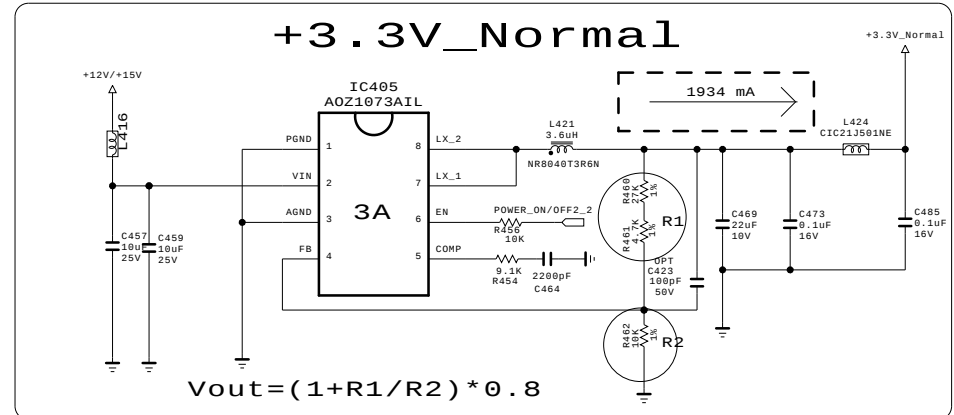
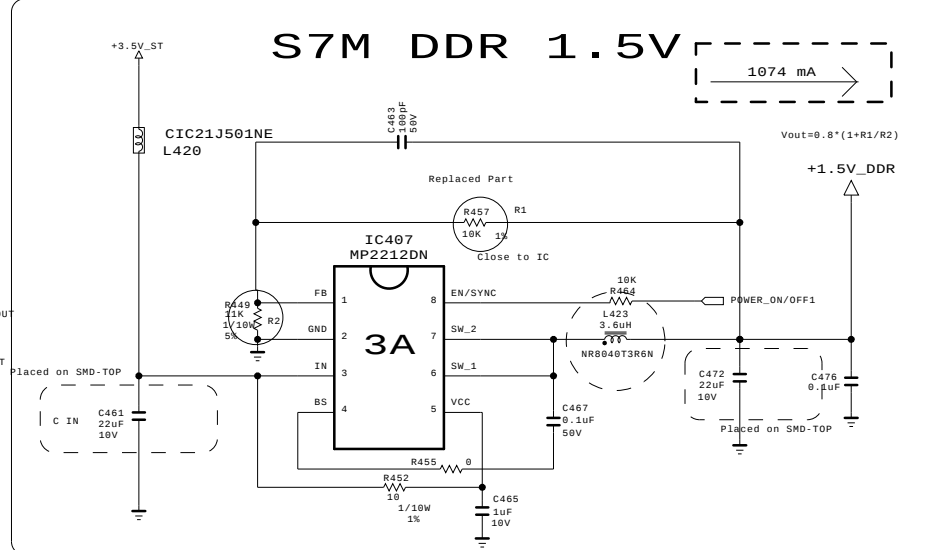
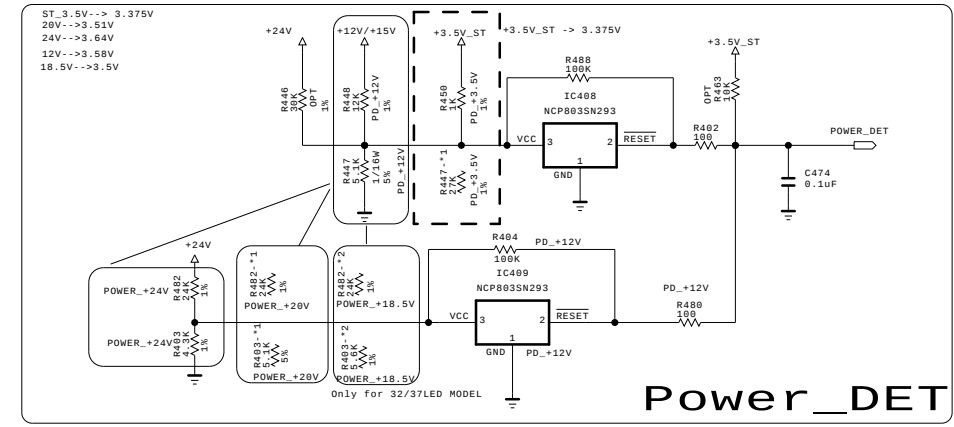
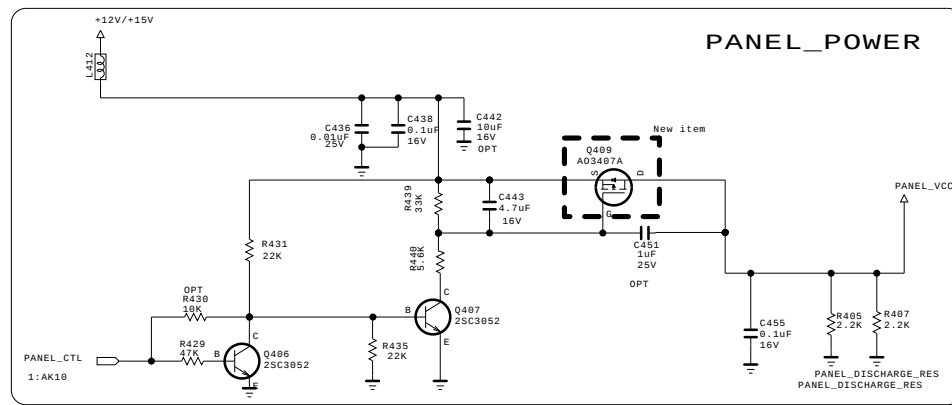
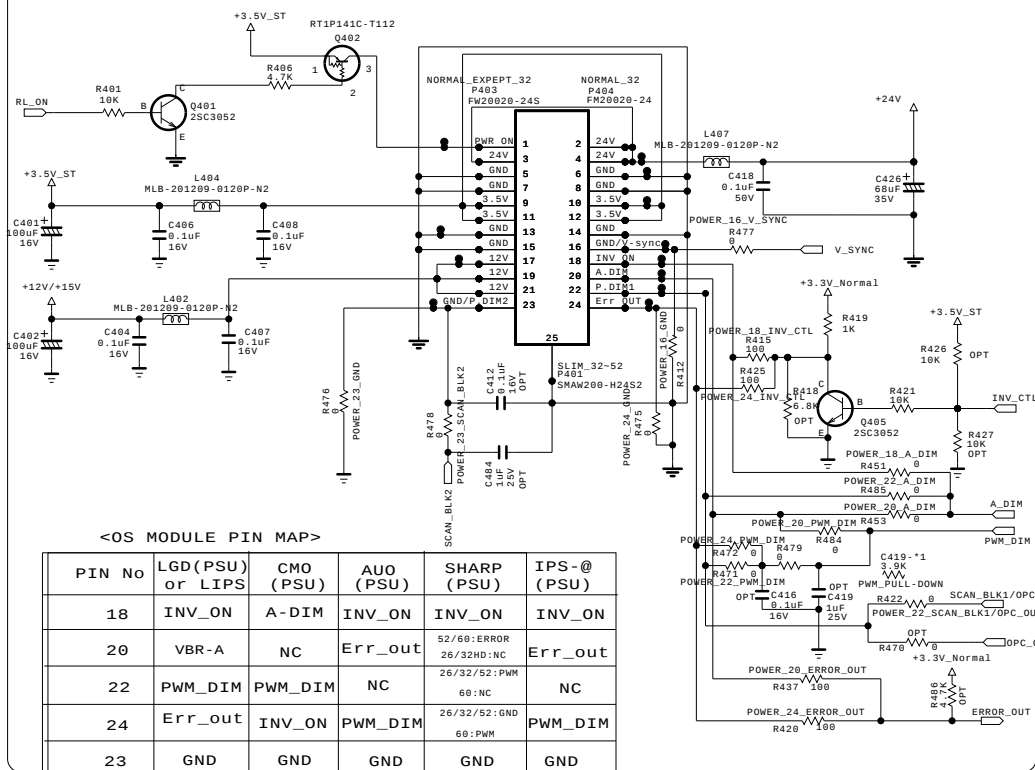


MODEL	GP2_Saturn7M	DATE	Ver. 1.3
BLOCK	FLASH/EEPROM/GPIO	SHEET	1 /



MODEL	GP2_Saturn7M	DATE	Ver. 1.4
BLOCK	DDR3(FRC)	SHEET	3 /

FROM LIPS & POWER B/D

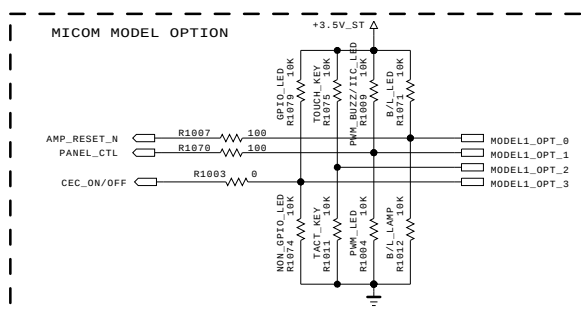


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SECRET
LGElectronics

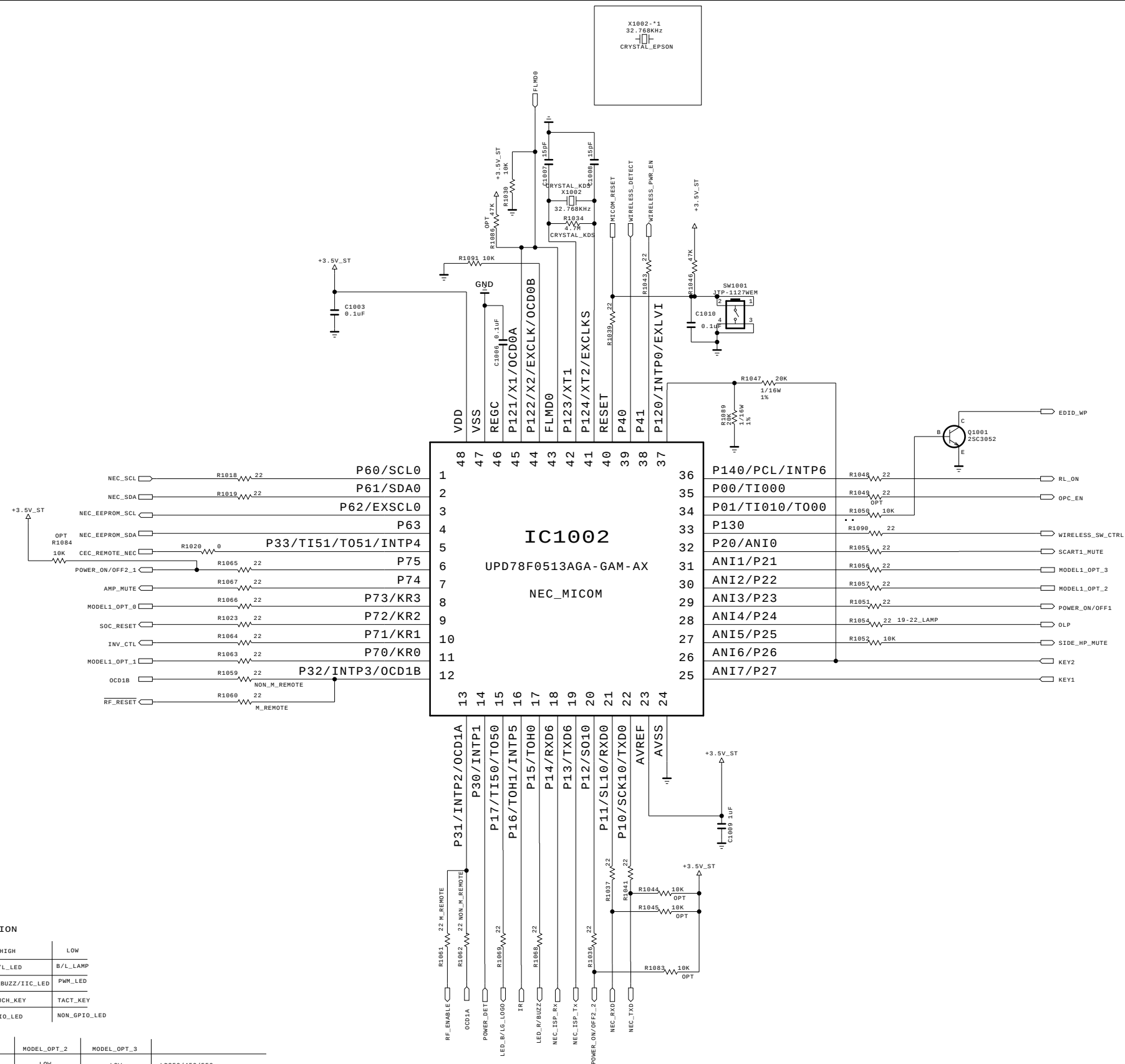
LG ELECTRONICS

MODEL	GP2_Saturn7M	DATE	Ver. 1.2
BLOCK	POWER	SHEET	4



MODEL OPTION			
PIN NAME	PIN NO.	HIGH	LOW
MODEL_OPT_0	8	B/L_LED	B/L_LAMP
MODEL_OPT_1	11	PWM_BUZZ/IIC_LED	PWM_LED
MODEL_OPT_2	30	TOUCH_KEY	TACT_KEY
MODEL_OPT_3	31	GPIO_LED	NON_GPIO_LED

MODEL_OPT_0	MODEL_OPT_1	MODEL_OPT_2	MODEL_OPT_3	
LOW	LOW	LOW	LOW	LD350/450/550
HIGH	LOW	HIGH	LOW	19/22/26LE3300(5500)
HIGH	HIGH	HIGH	LOW	32/37/42/47/55LE5300(10)
LOW	HIGH	LOW	LOW	LD420
HIGH	LOW	LOW	HIGH	LE7300
	HIGH		HIGH	TBD

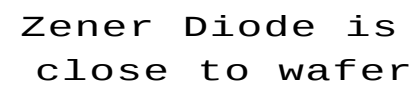


SECRET
LGElectronics



MODEL	GP2_Saturn7M	DATE	Ver. 1.4
BLOCK	MICOM	SHEET	5 /

CONTROL
IR & LED



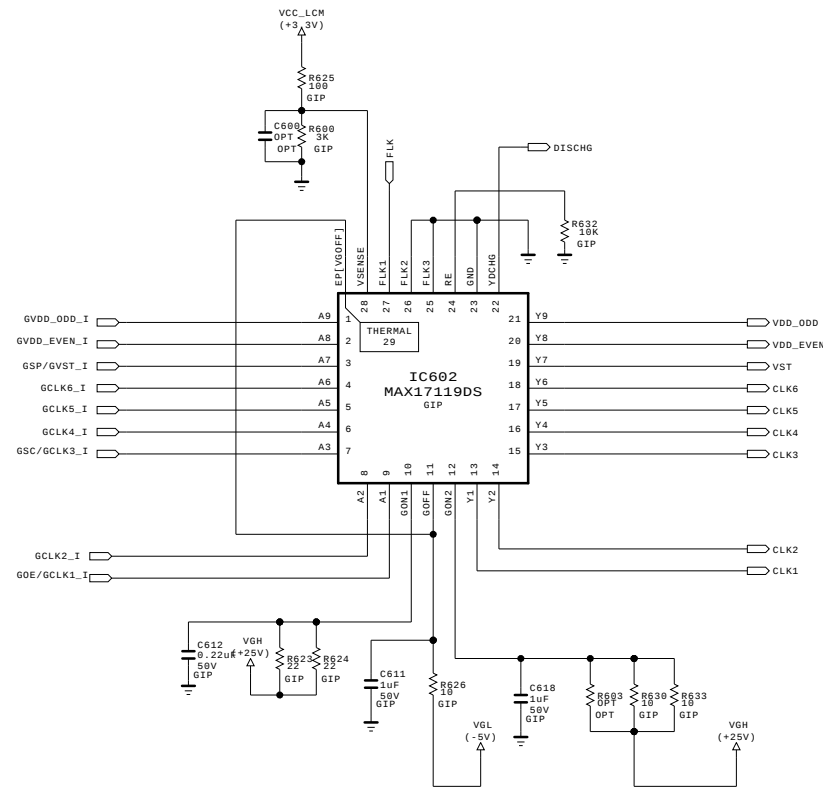
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SECRET
LGElectronics

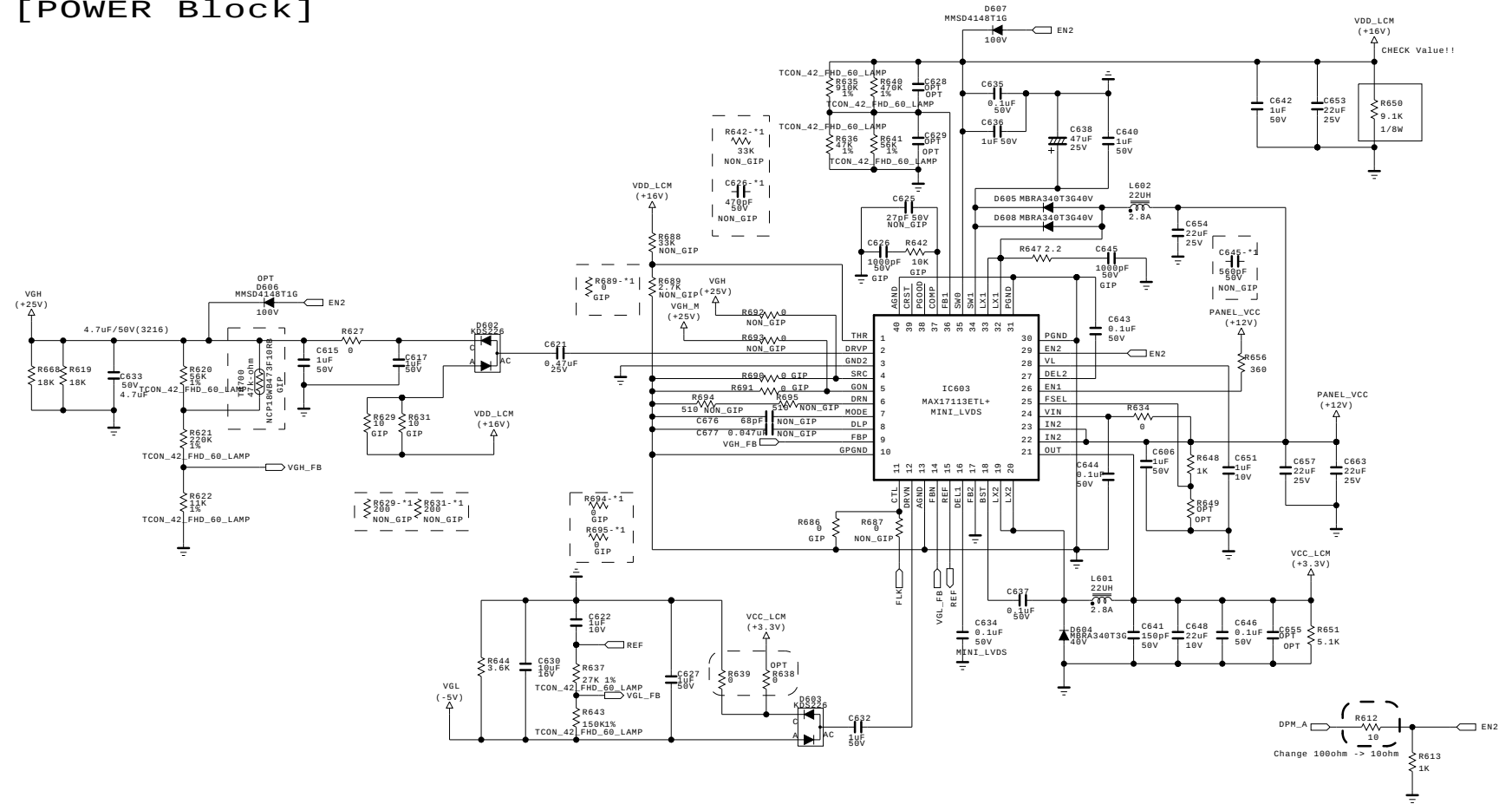


MODEL	GP2_Saturn7M	DATE	Ver. 1.2
BLOCK	IR & LED	SHEET	6 /

[LEVEL Shift Block]

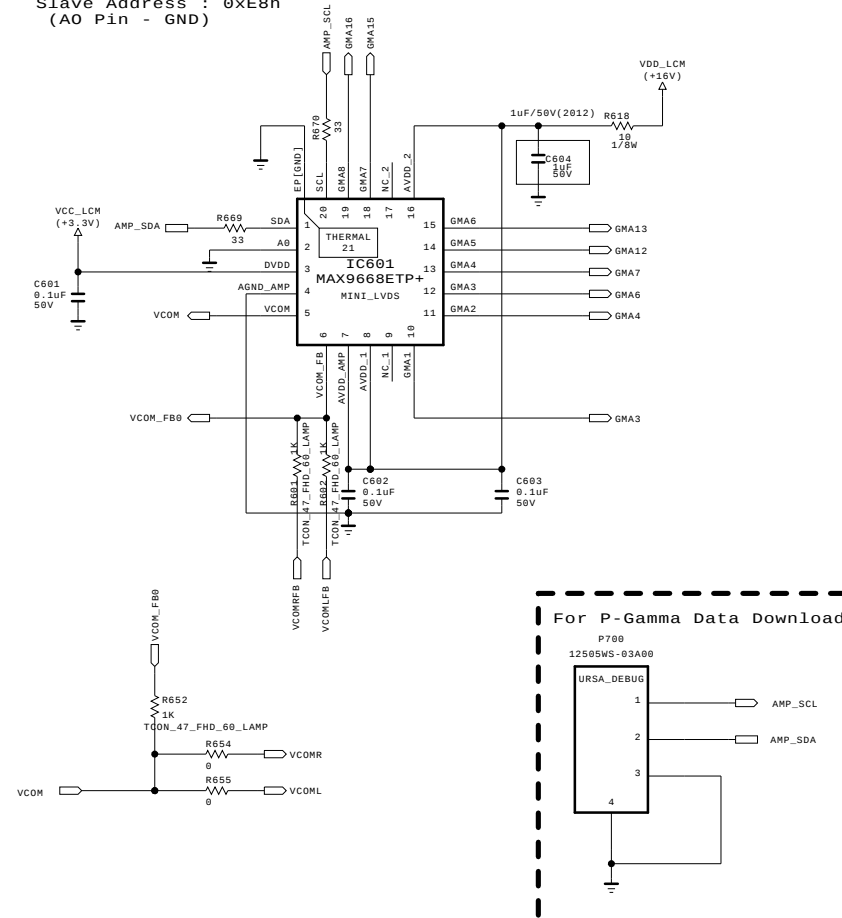


[POWER Block]

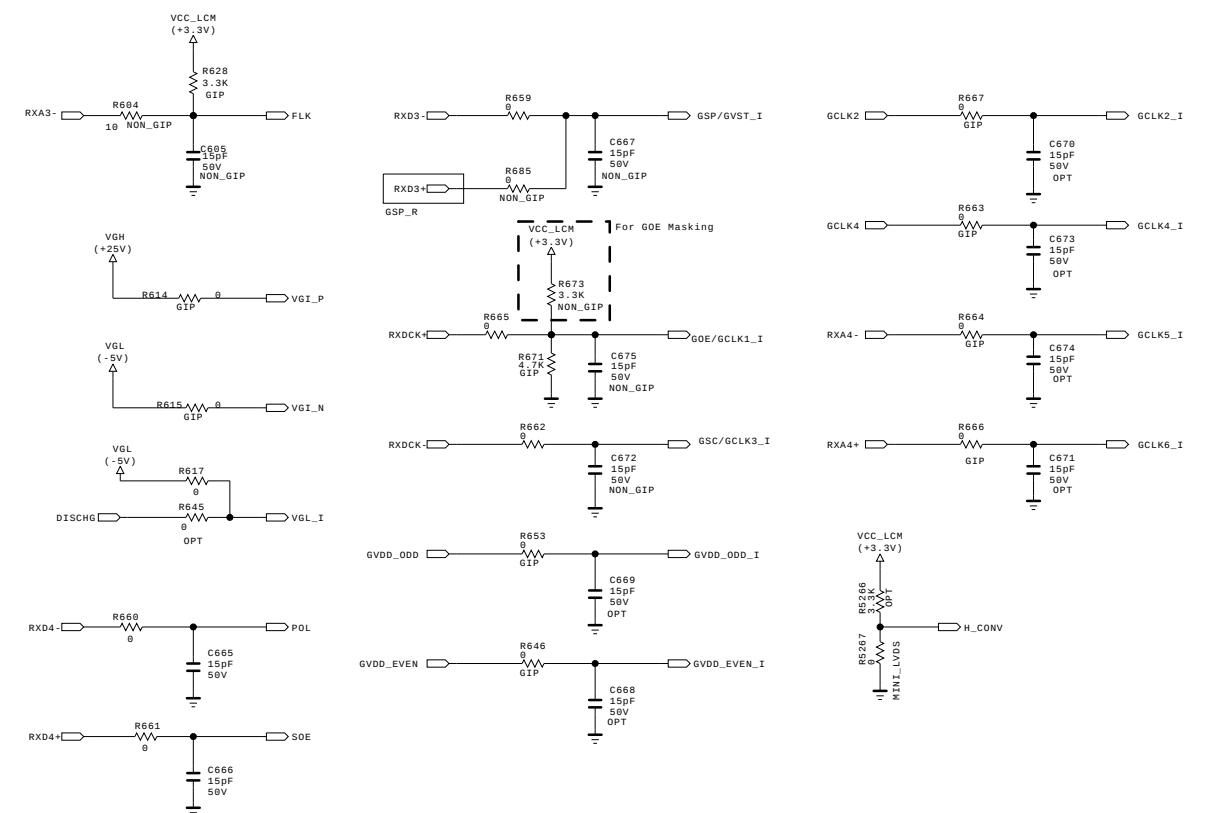
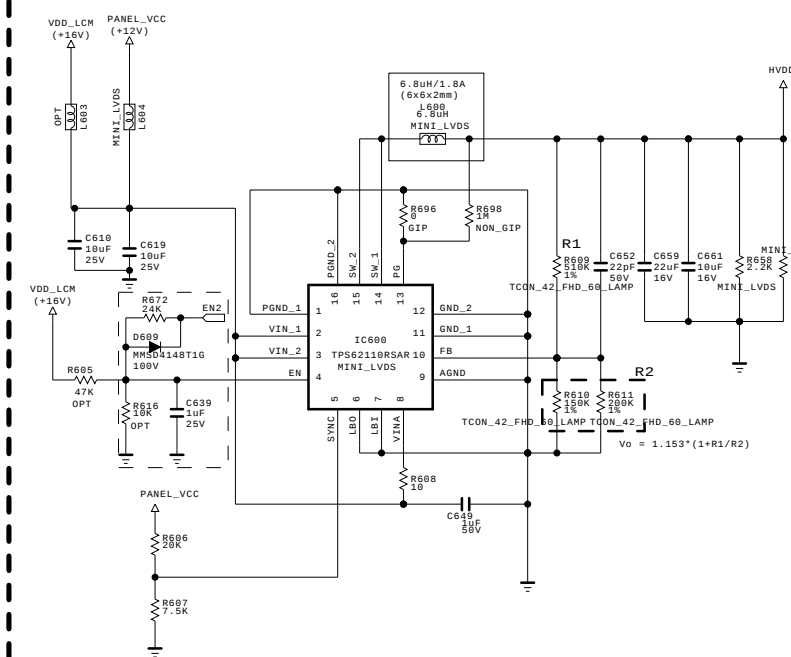


[P-GAMMA Block]

Slave Address : 0xE8h
(A0 Pin - GND)



[HVDD Block]

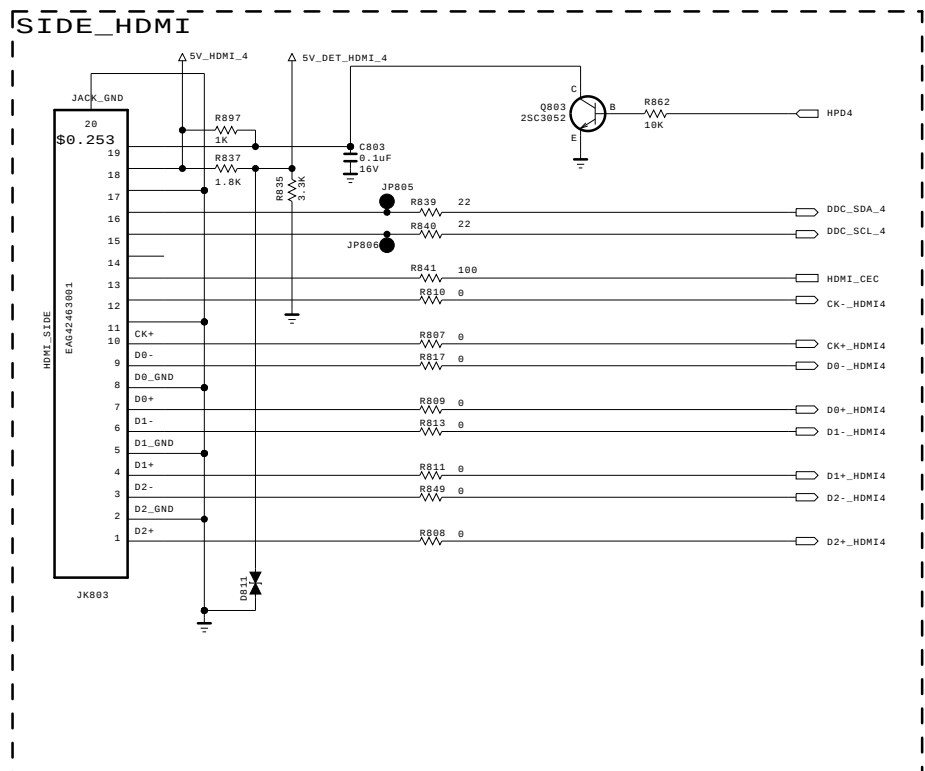
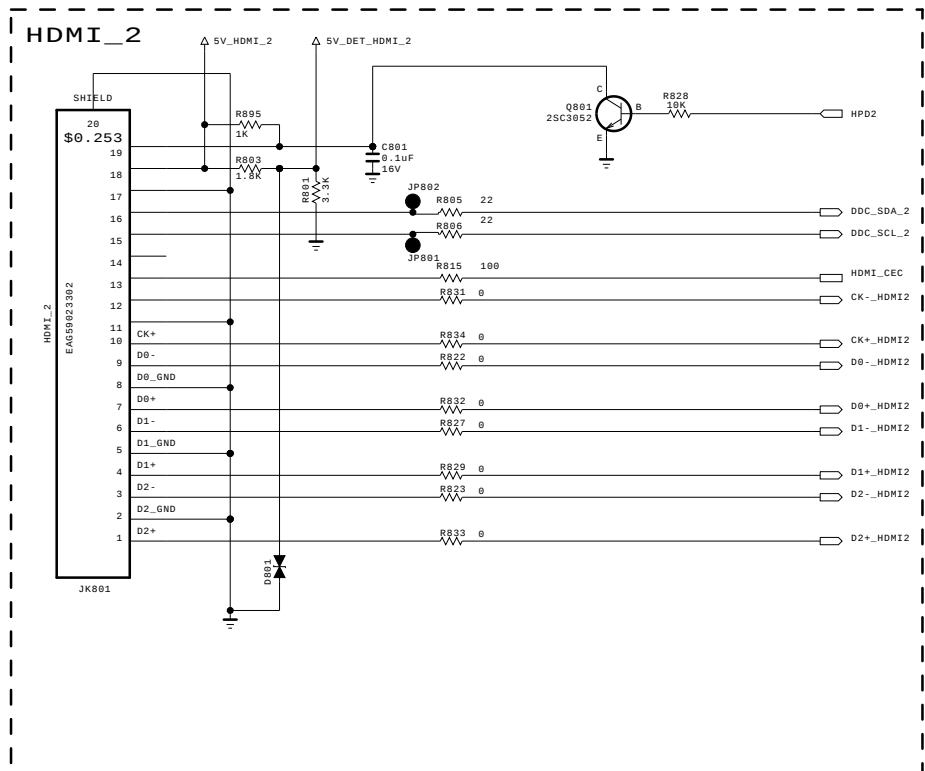
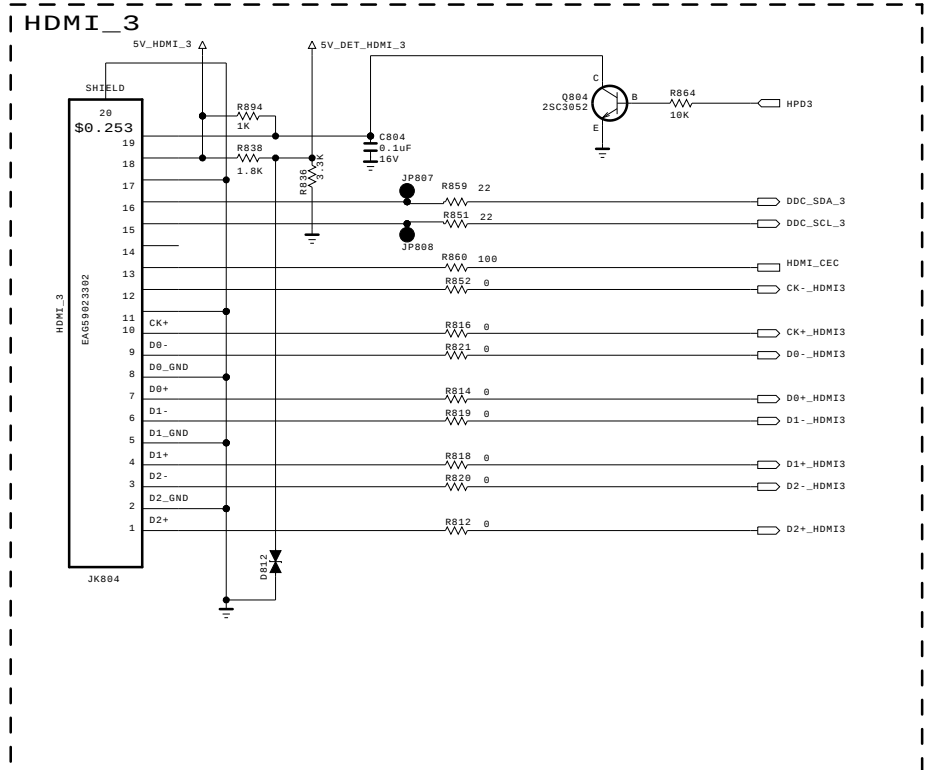
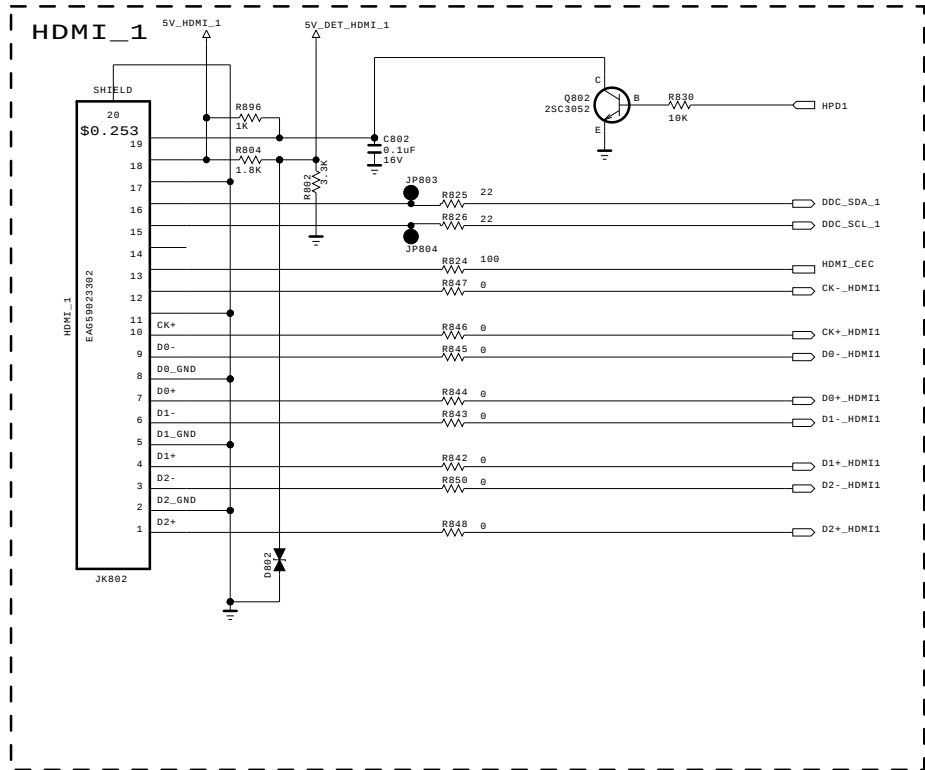


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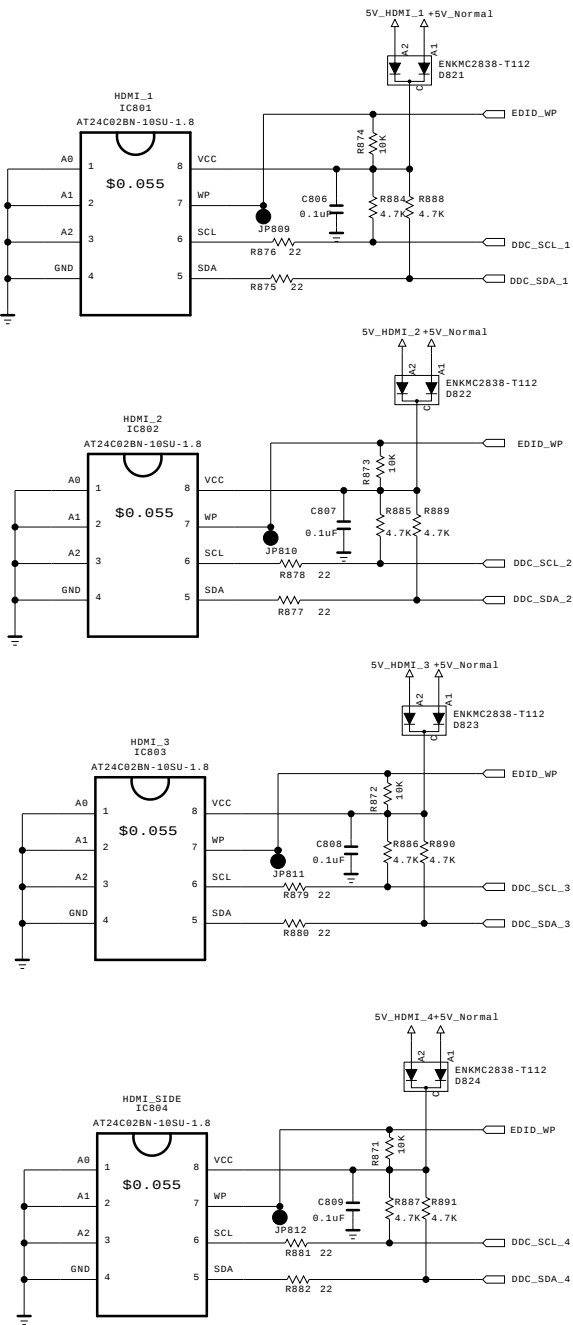
SECRET
LGElectronics

LG ELECTRONICS

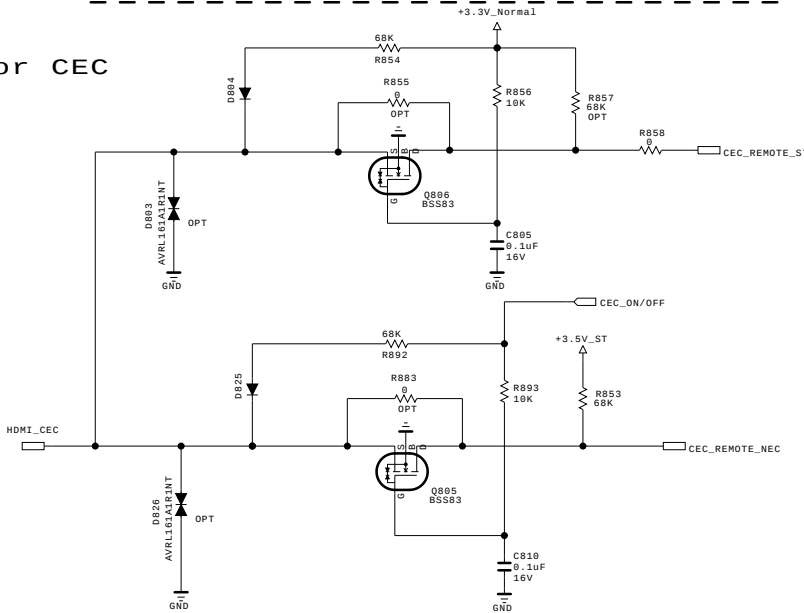
MODEL	GP2_Saturn7M	DATE	Ver. 2.1
BLOCK	T-CON	SHEET	7



HDMI EEPROM



For CEC



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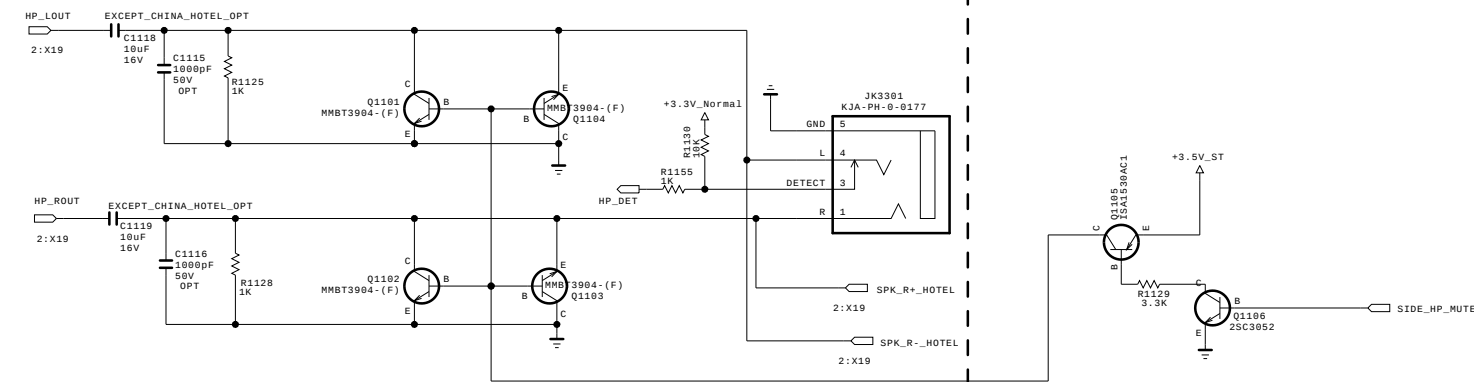


MODEL	GP2_Saturn7M	DATE	Ver. 1.2
BLOCK	HDMI	SHEET	8

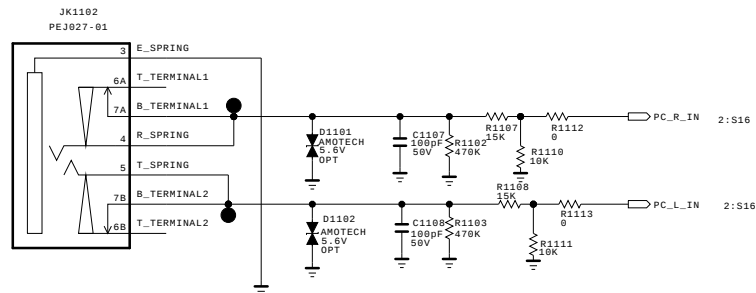
COMMON AREA

New Item Development

EARPHONE BLOCK

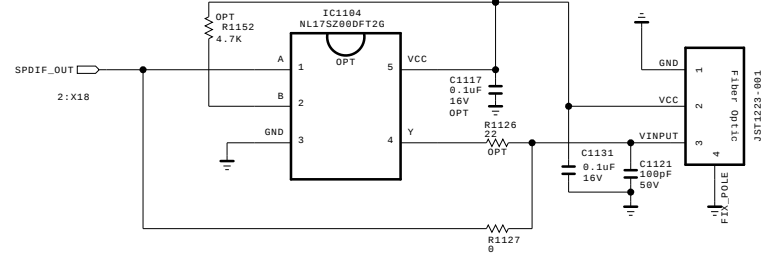


PC AUDIO

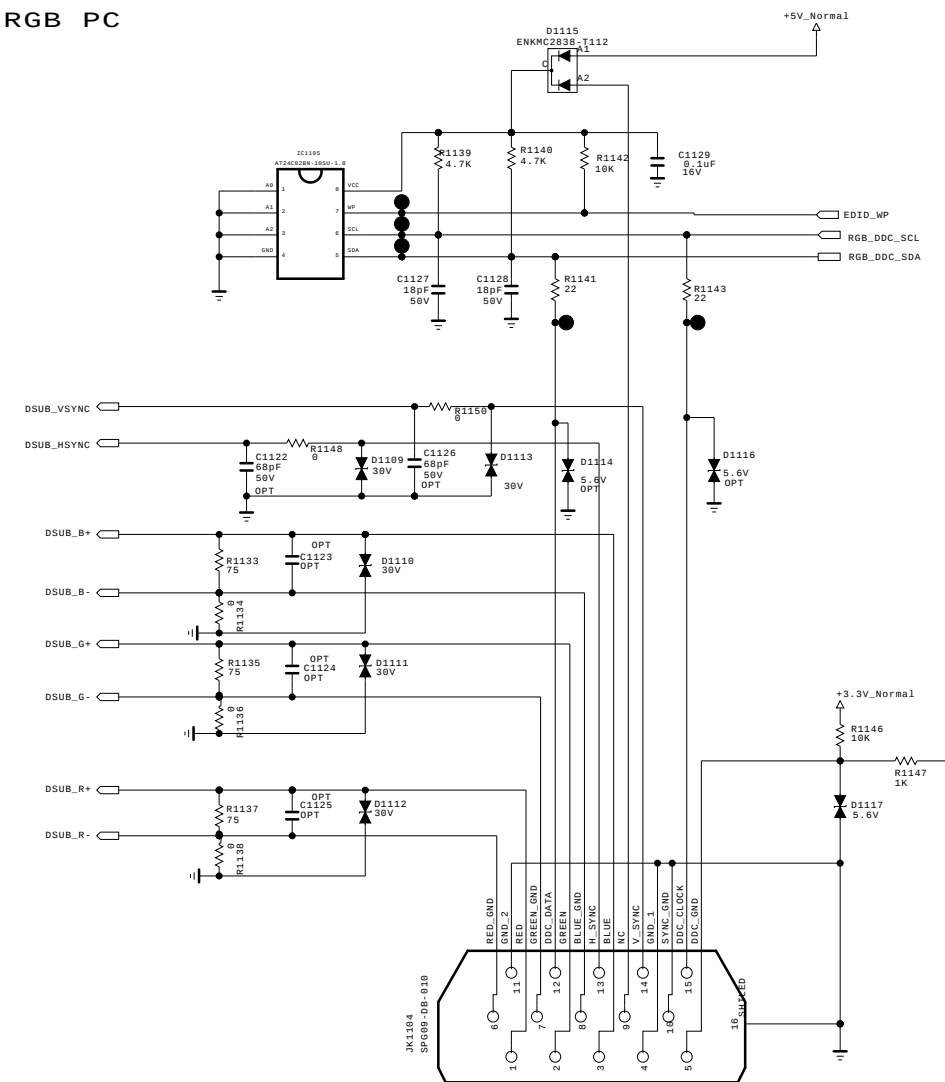


SPDIF OPTIC JACK

5.15 Mstar Circuit Application



RGB PC



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SECRET

LG Electronics



MODEL

GP2_Saturn7M

BLOCK

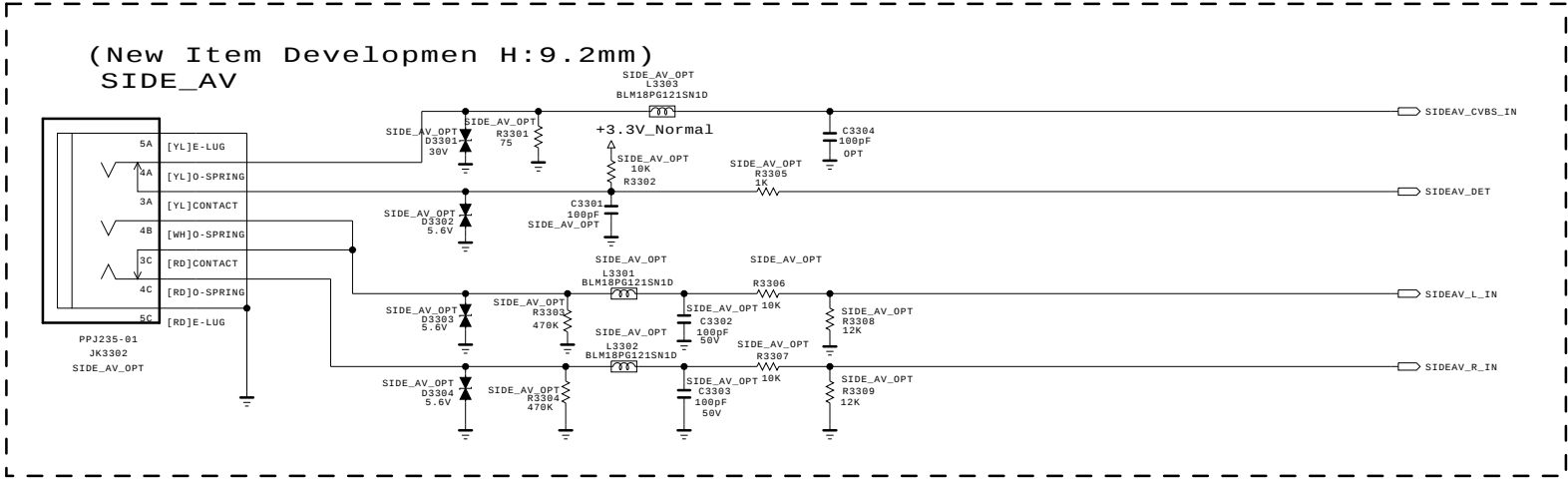
COMMON AREA

DATE _____

SHEET

Ver. 1.0

9 /



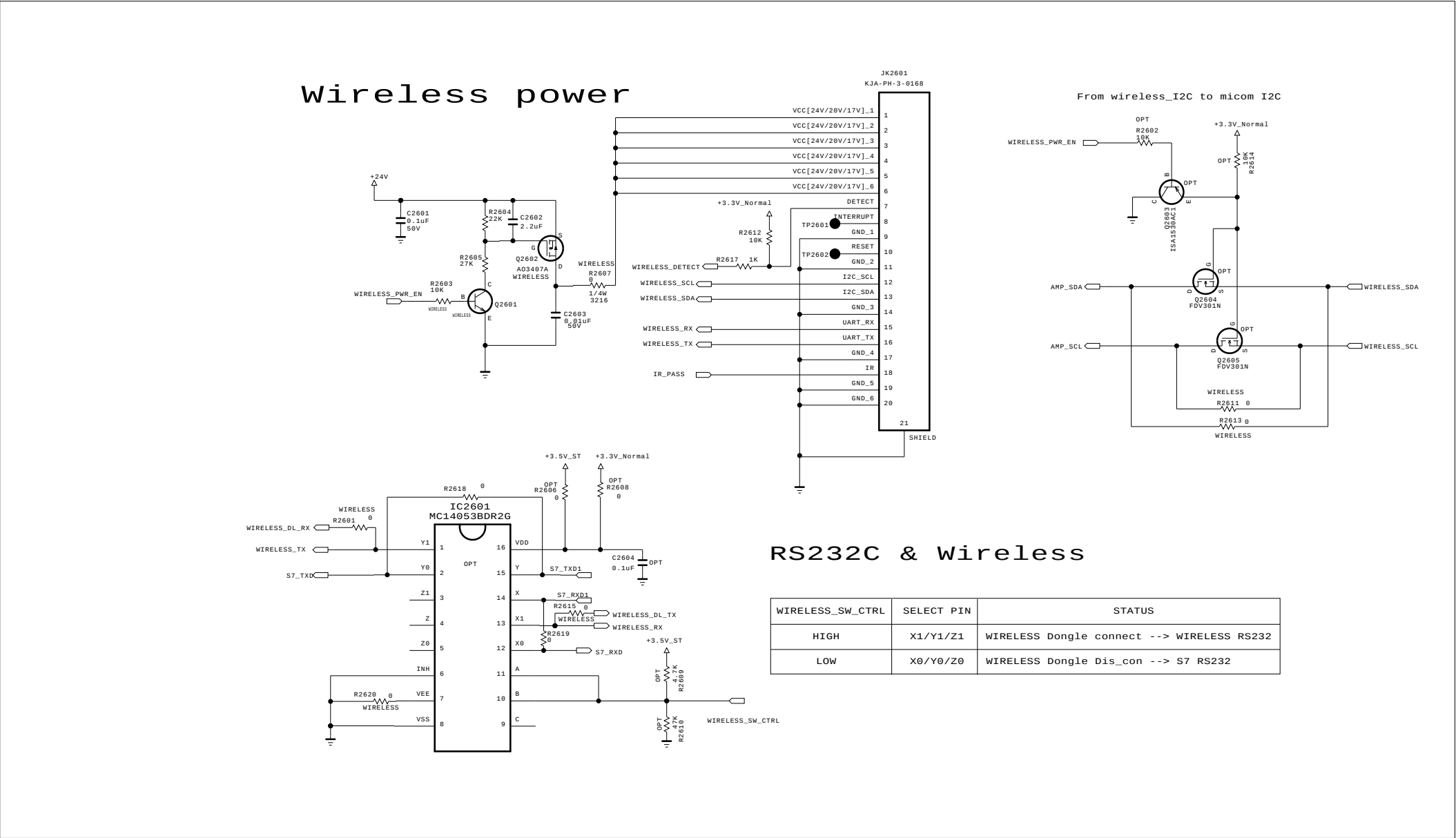
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MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	SIDE AV	SHEET	11 /

WIRELESS READY MODEL



Ver. 1.2 --> 1.3: wireless opt change, 090818, hongsu

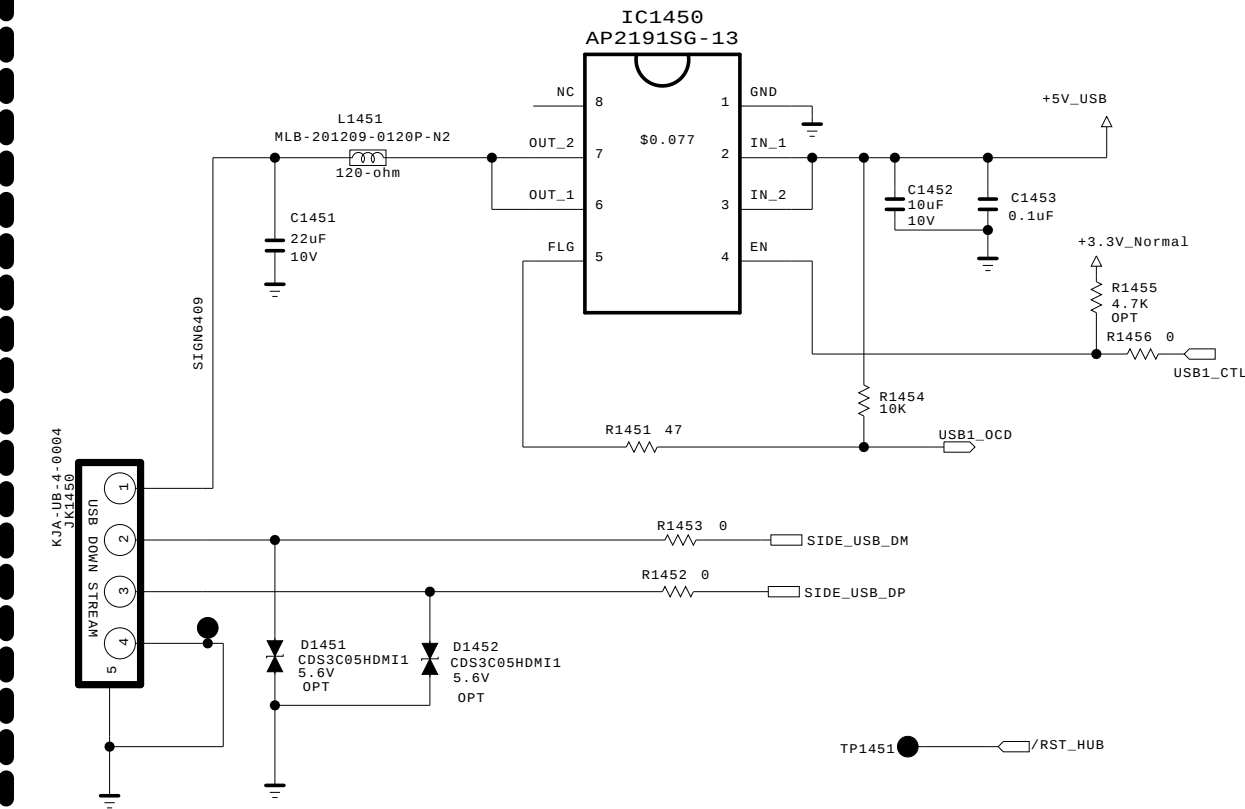
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MODEL	GP2_Saturn7M	DATE	Ver. 1.3
BLOCK	Wireless ready	SHEET	12 /

USB_DIODES

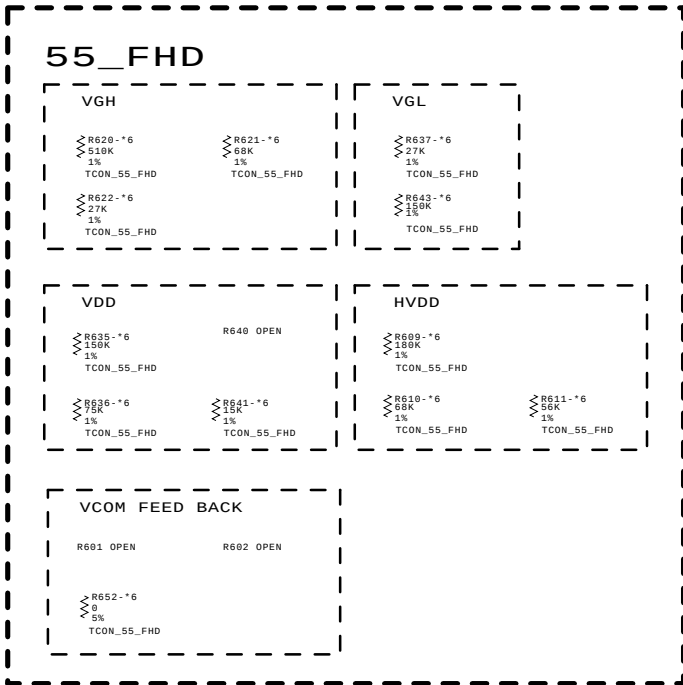
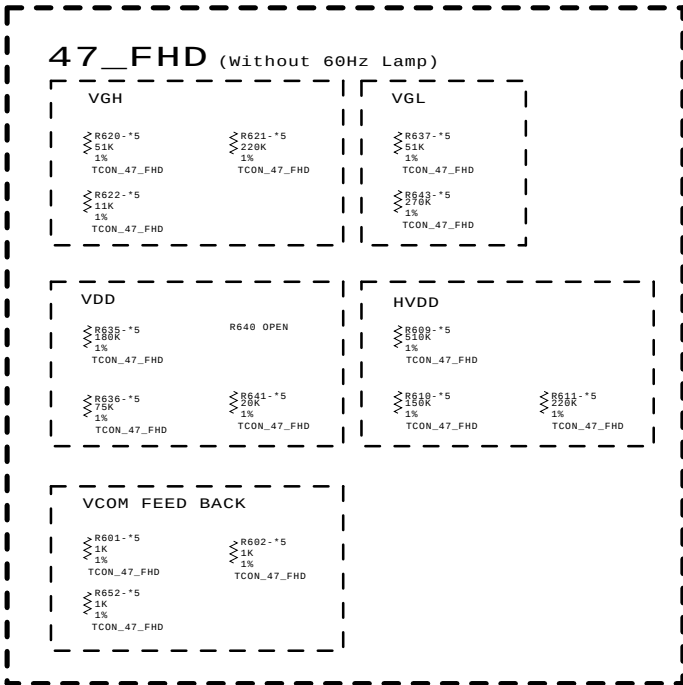
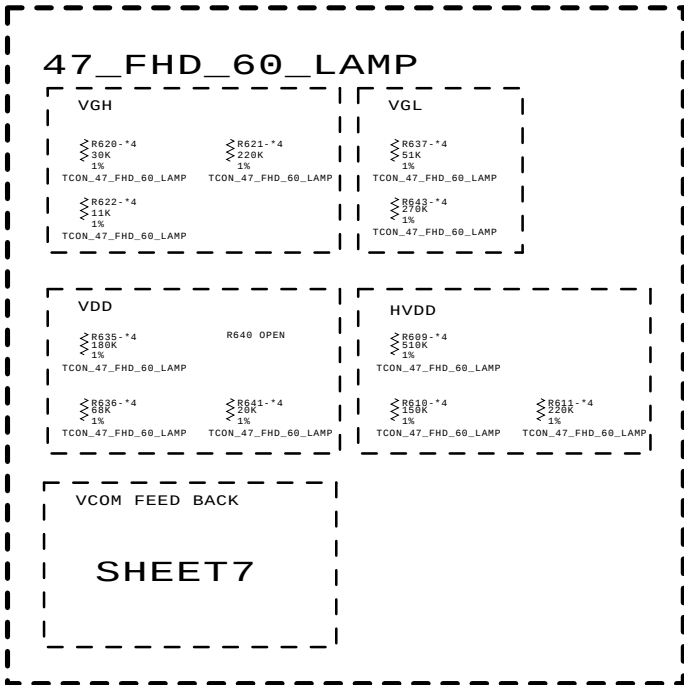
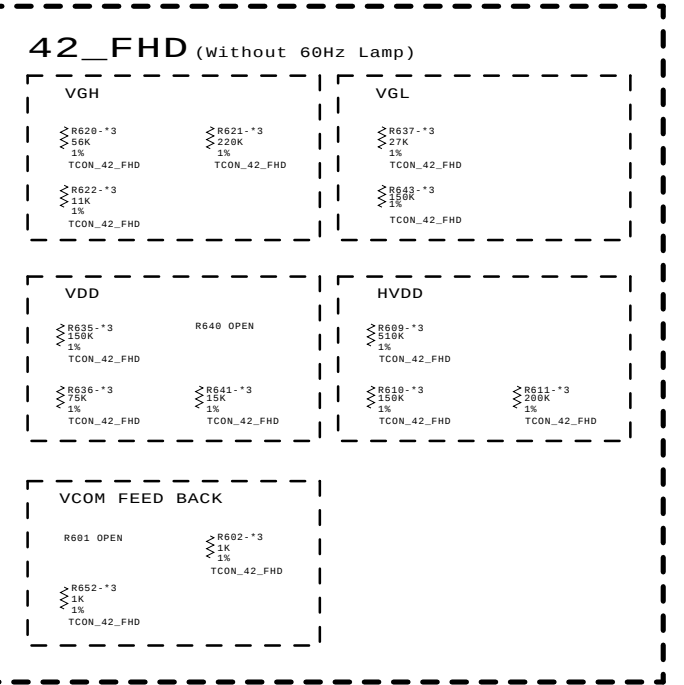
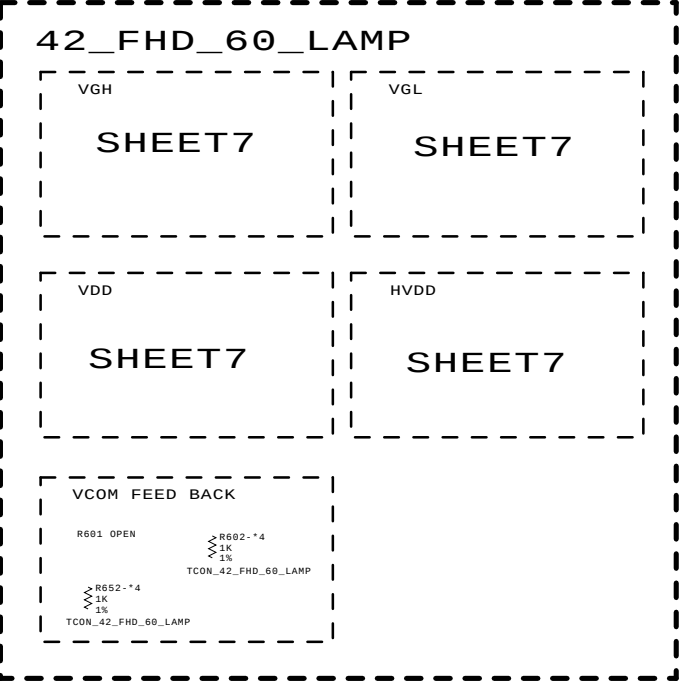
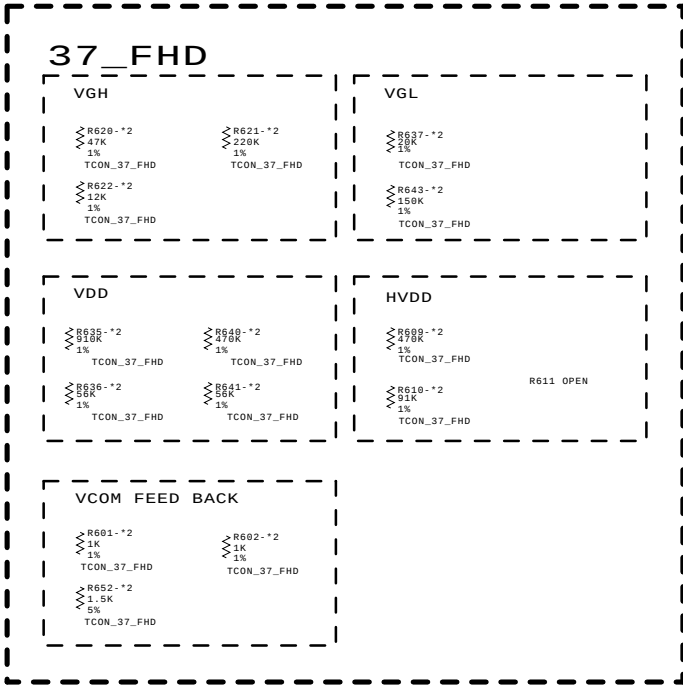
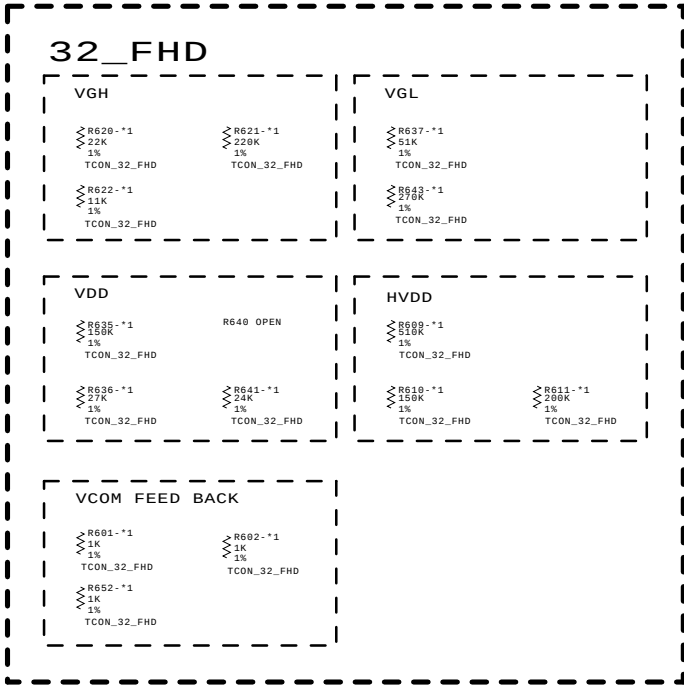


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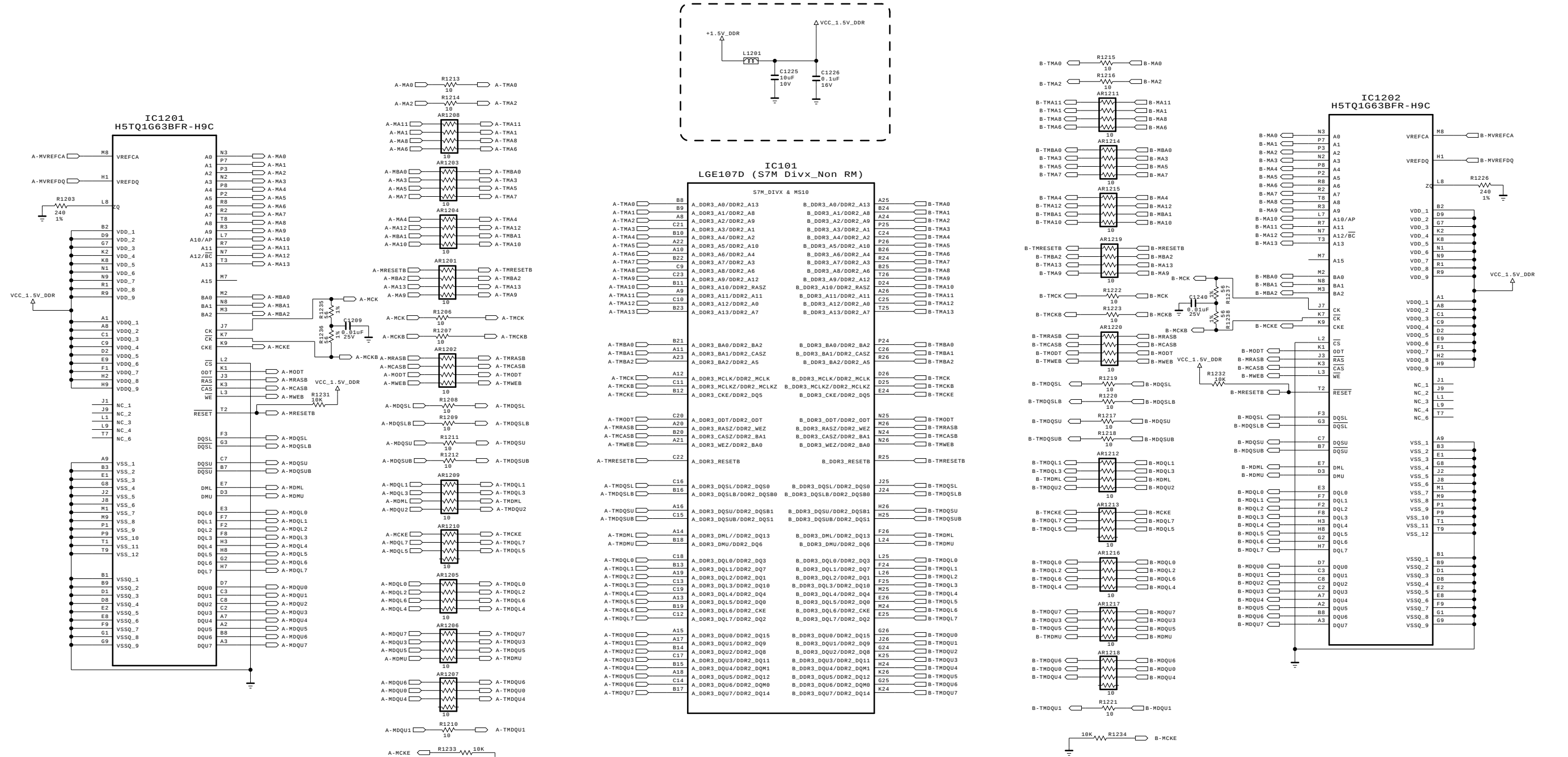
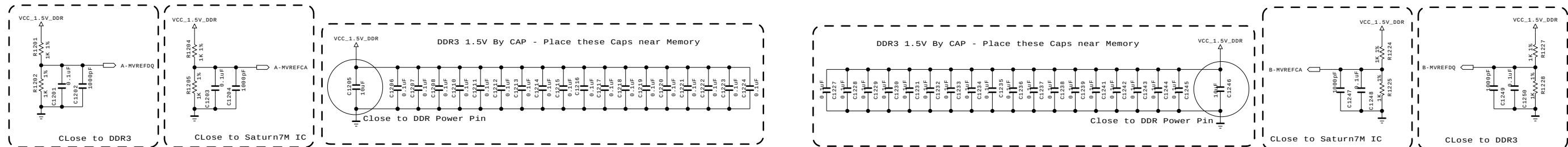
SECRET
LGElectronics



MODEL		DATE	
BLOCK		SHEET	/



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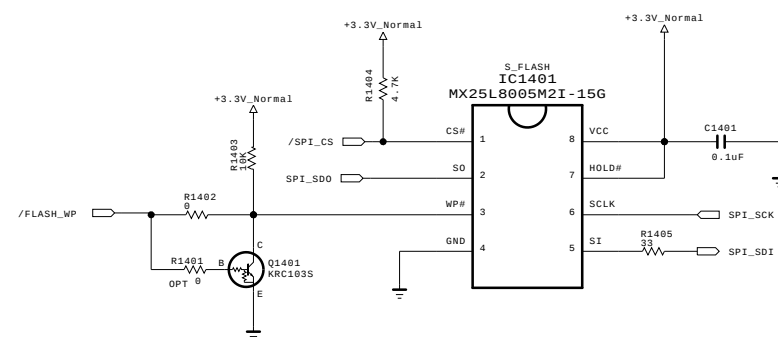


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LG ELECTRONICS

MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	DDR3 (256MB)	SHEET	21



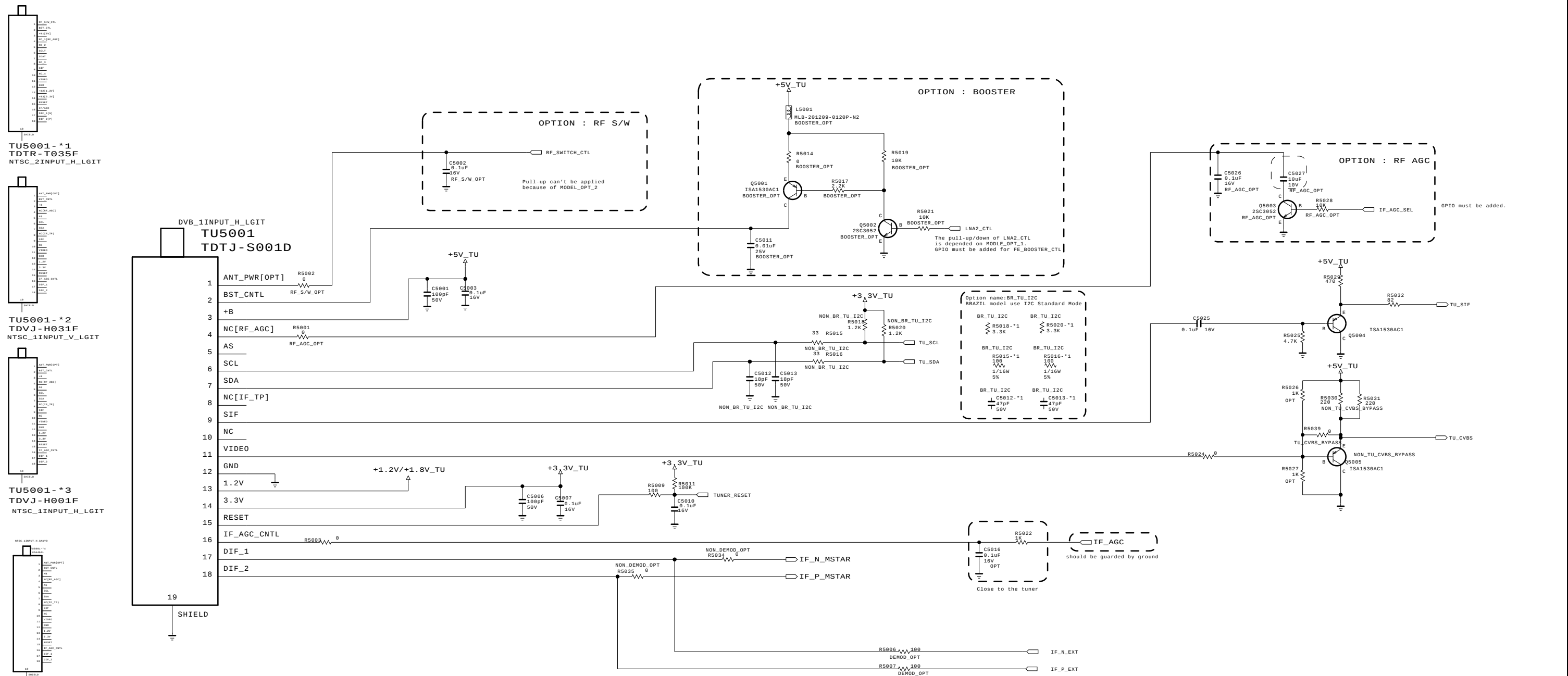
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LGElectronics



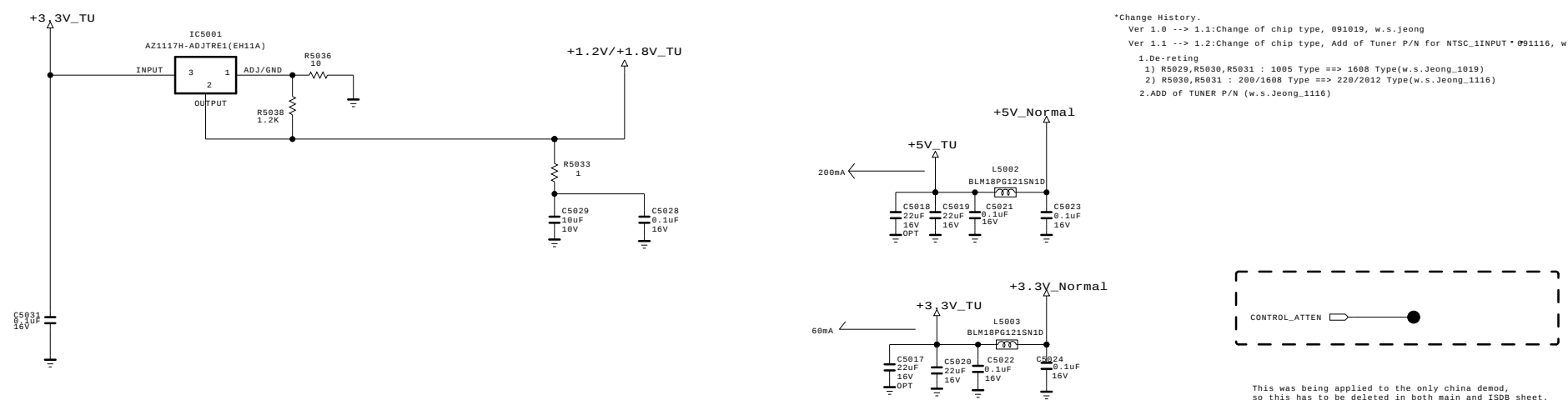
MODEL	GP2_Saturn7M	DATE	Ver. 1.2
BLOCK	S-Flash(1MB)	SHEET	23 /

LGIT CAN H/N TUNER for US&KOR&BRAZIL&TAIWAN&AUS



```
*Change History.
Ver 1.0 --> 1.1:Change of chip type, 091019, w.s.jeong
Ver 1.1 --> 1.2:Change of chip type, Add of Tuner P/N for NTSC_INPUT * 091116, w.s.jeong

1.De-retting
1) R5029, R5030, R5031 : 1005 Type ==> 1608 Type(w.s.Jeong_1019)
2) R5030, R5031 : 200/1608 Type ==> 220/2012 Type(w.s.Jeong_1116)
2.ADD of TUNER P/N (w.s.Jeong_1116)
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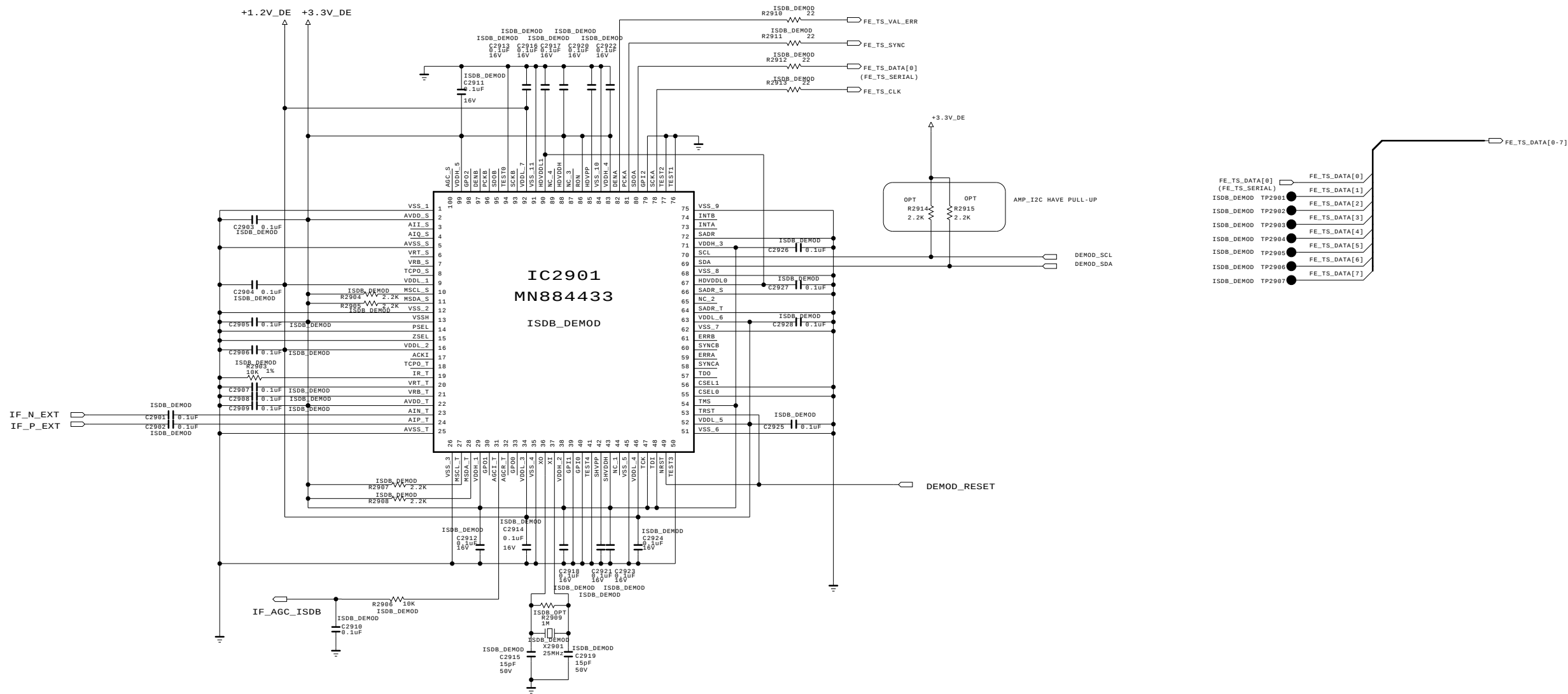
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LGElectronics



MODEL	GP2_Saturn7M	DATE	Ver. 1.1
BLOCK	ATSC CAN TUNER	SHEET	26 /

PANASONIC (ISDB-T)
MN884433



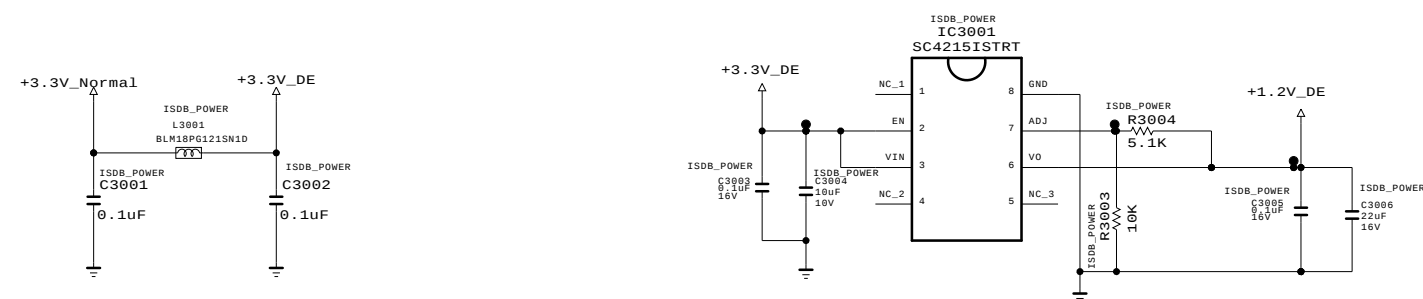
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LGElectronics

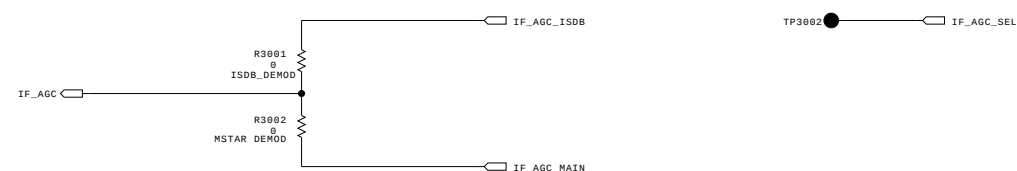


MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	ISDB-T Demodulator	SHEET	28 /

Panasonic Demodulator Power (3.3V, 1.2V)



IF AGC SELECTION



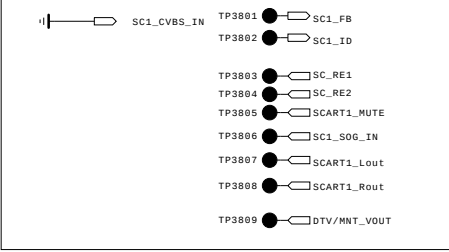
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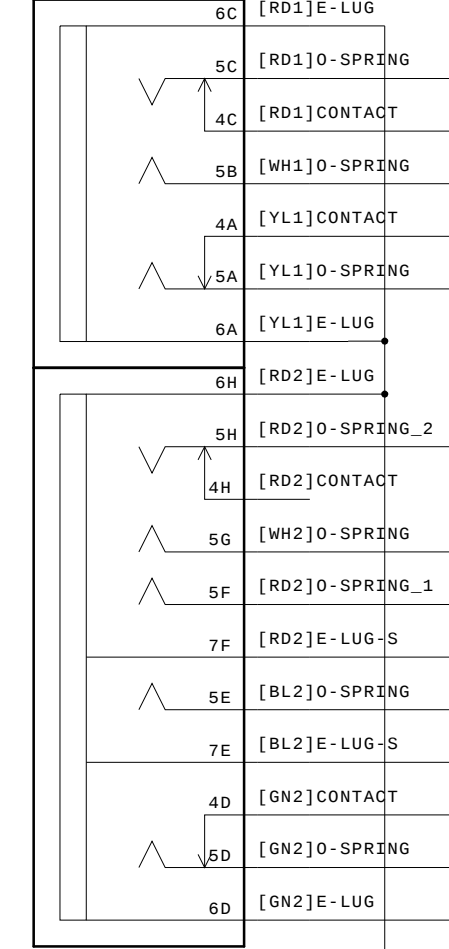


MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	Demodulator	SHEET	29 /

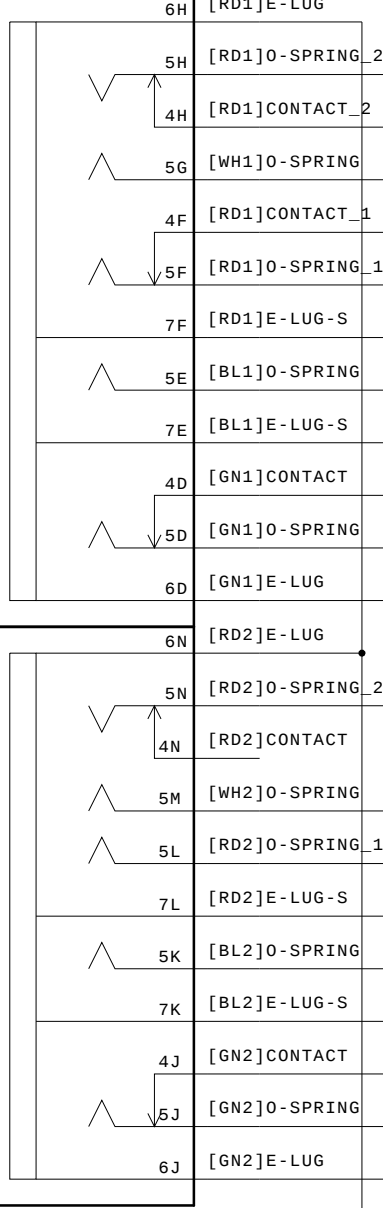
SCART OPTION BLOCK



JK3801
PPJ238-01
NON CI 30



JK3802
PPJ239-01
NON CI 4/5/60



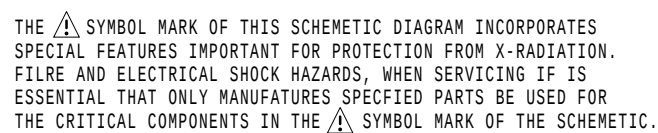
SC1/COMP1_DET	AV_CVBS_DET	RESULT
HIGH	HIGH	SC1/COMP1_DET
HIGH	LOW	SC1/COMP1_DET
LOW	HIGH	AV_CVBS_DET
LOW	LOW	

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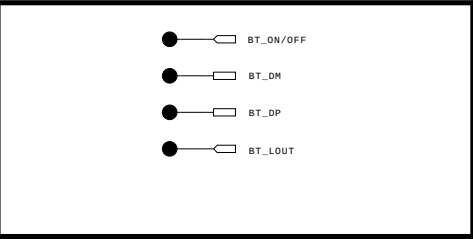


MODEL	GP2_Saturn7M	DATE	Ver. 1.1
BLOCK	NON CI LOW	SHEET	31



MODEL	GP2_Saturn7M	DATE	Ver. 1.1
BLOCK	AUDIO[NTP]	SHEET	38 /

NOT USING B/T



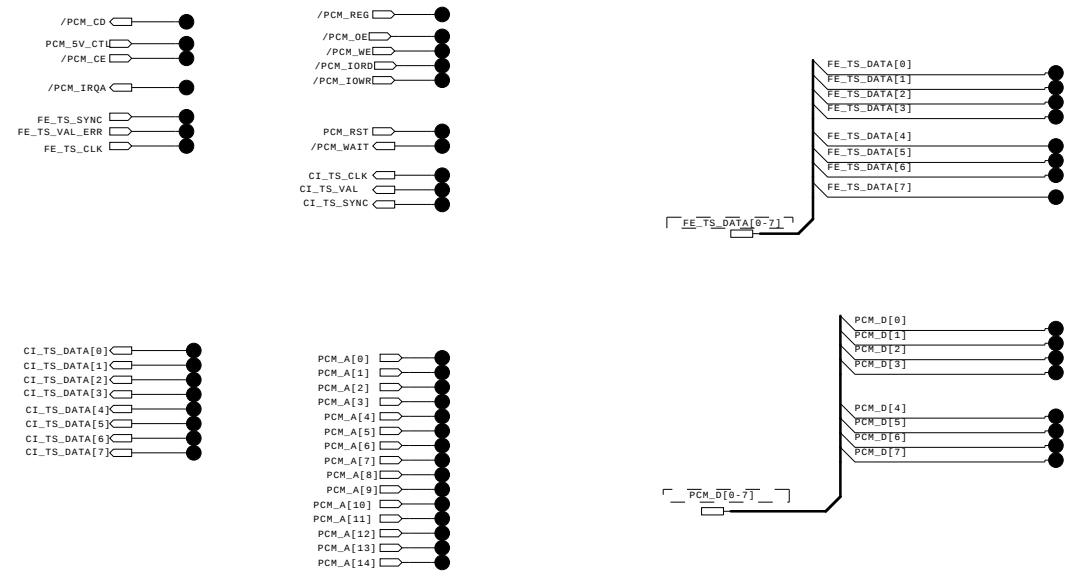
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MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	NON B/T	SHEET	44 /

NON CI Region



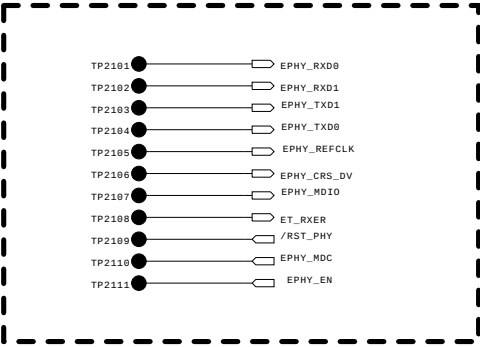
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics



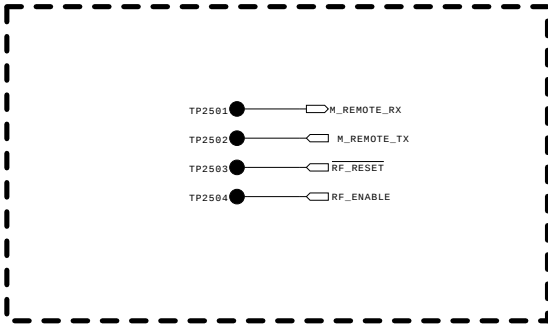
MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	PCMCI	SHEET	46 /

NON ETHERNET



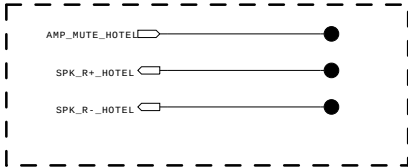
THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.

NON Motion Remocon Region

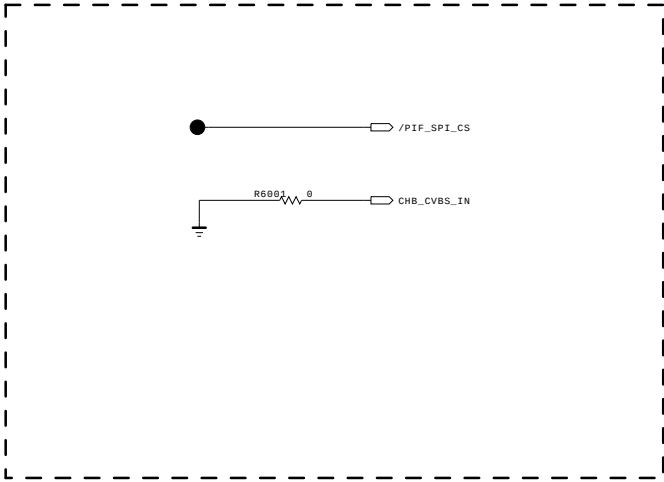


THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.

NON CHINA HOTEL



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SECRET
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MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	NON CHB	SHEET	68 /

