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LCD TV

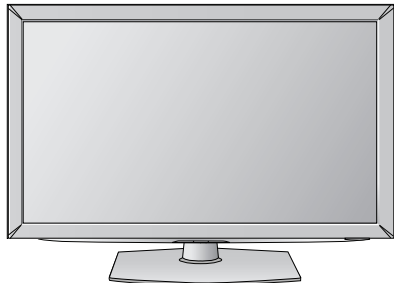
SERVICE MANUAL

CHASSIS : LA01B

MODEL : 37LD450 37LD450-UA

CAUTION

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



P/NO : MFL63260803 (1001-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  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 1W), keep the resistor 10mm 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 $1M\Omega$ and $5.2M\Omega$.

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.

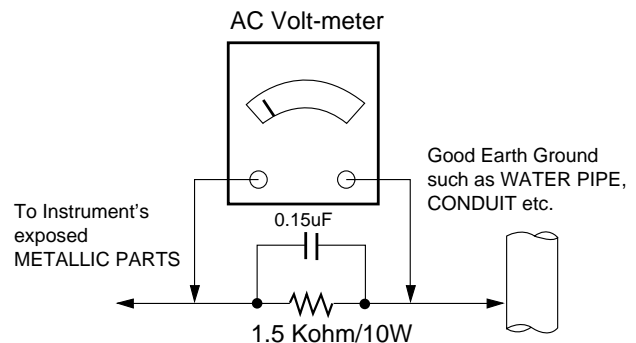
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

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 0.5mA.

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



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 1.25cm) 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 spec sheet is applied all of the 32", 37", 42", 47" LCD TV with LA01B chassis.

2. Requirement for Test

Each part is tested as below without special appointment.

- 1) Temperature: 25±5°C, (77°±9°F), CST: 40±5°C
- 2) Relative Humidity: 65±10%
- 3) Power Voltage : Standard input voltage(100-240V~, 50/60Hz)
* Standard Voltage of each product 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 20 minutes prior to the adjustment.

3. Test method

- 1) Performance: LGE TV test method followed
- 2) Demanded other specification
 - Safety : UL, CSA, IEC specification
 - EMC: FCC, ICES, IEC specification

Model	Market	Appliance
19LD350-UB 22LD350-UB 26LD350-UB 32LD350-UB	North America	Safety : UL1492, CSA C22.2.No.1, EMC : FCC Class B, IEC Class B

4. General Specification(TV)

No	Item	Specification		Remark
1	Receivable System	1) ATSC / NTSC-M		
2	Available Channel	VHF : 02 ~ 13 UHF : 14 ~ 69 DTV : 02 ~ 69 CATV : 01 ~ 135 CADTV : 01 ~ 135		
3	Input Voltage	1) AC 100 ~ 240V 50/60Hz		
4	Market	North America		
5	Screen Size	47 inch Wide 42 inch Wide 37 inch Wide 32 inch Wide	FHD FHD FHD FHD	47LD450-UA 42LD450-UA 37LD450-UA 32LD450-UA
6	Aspect Ratio	16:9		
7	Tuning System	FS		
8	LCD Module	LC470WUG-SCA1 LC420WUG-SCA1 V420H2-L02 T420HW06-V0 T370HW03-VB LC370WUG-SCA1 T315HW04-V8 LC320WUG-SCA1	LGD LGD CMO AUO AUO LGD AUO LGD	47LD450-UA 42LD450-UA 37LD450-UA 32LD450-UA
9	Operating Environment	Temp : 0 ~ 40 deg Humidity : ~ 80 %		
10	Storage Environment	Temp : -20 ~ 60 deg Humidity : -85 %		

5. Chrominance & Luminance

5.1. 37LD450-UA-T370HW03-VB(AUO)

No.	Item			Min	Typ	Max	Unit	Remarks
1	Max Luminance (Center 1-point / Full White Pattern)			360	450		cd/m²	
2	Luminance uniformity					1.3		5point
3	Color coordinate (Default)	RED	X	Typ. -0.03	0.640	Typ. +0.03		
			Y		0.330			
		GREEN	X		0.29			
			Y		0.6			
		BLUE	X		0.144			
			Y		0.06			
		WHITE	X		0.280			
			Y		0.290			
4	Contrast ratio			4000	5000			
6	Color Temperature	Cool		Typ.	0.269	Typ.		The W/B Tolerance is ±0.015 for Adjustment
				-0.015	0.273	+0.015		
		Medium		Typ.	0.285	Typ.		
				-0.015	0.293	+0.015		
		Warm		Typ.	0.313	Typ.		
				-0.015	0.329	+0.015		

5.2. 37LD450-UA-LC370WUG-SCA1(LGD)

No.	Item			Min	Typ	Max	Unit	Remarks
1	Max Luminance (Center 1-point / Full White Pattern)			400	500		cd/m²	
2	Luminance uniformity					1.3		5point
3	Color coordinate (Default)	RED	X	Typ. -0.03	0.639	Typ. +0.03		
			Y		0.334			
		GREEN	X		0.289			
			Y		0.606			
		BLUE	X		0.145			
			Y		0.065			
		WHITE	X		0.279			
			Y		0.292			
4	Contrast ratio			1100	1500			
6	Color Temperature	Cool		Typ.	0.269	Typ.		The W/B Tolerance is ±0.015 for Adjustment
				-0.015	0.273	+0.015		
		Medium		Typ.	0.285	Typ.		
				-0.015	0.293	+0.015		
		Warm		Typ.	0.313	Typ.		
				-0.015	0.329	+0.015		

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

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

7. 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	66.587	59.934	148.5	HDTV 1080P	O

8. 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	

5. Manual Adjustment

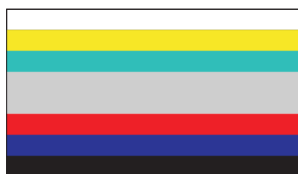
5.1. ADC Adjustment

(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) Adjust Remocon
- 2) 801GF(802B, 802F, 802R) or MSPG925FA Pattern Generator
 - Resolution: 480i Comp1(MSPG-925FA: Model-209, Pattern-65)
 - Resolution: 1024*768 RGB(Inner Pattern)
 - Pattern : Horizontal 100% Color Bar Pattern
 - Pattern level: 0.7±0.1 Vp-p
 - Image



3) Must use standard cable

(3) Adjust method

- ADC 480i/1080p Comp1, RGB
 - 1) Check connected condition of Comp1 cable to the equipment
 - 2) Give a 480i Mode, Horizontal 100% Color Bar Pattern to Comp1.
(MSPG-925FA -> Model: 209, Pattern: 65)
 - 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 5.ADC Calibration. And Press OK Button on the menu "Start". The adjustment will start automatically.
 - 5) If ADC Comp 480i is successful, "ADC Component Success" is displayed and Comp480i/1080p is completed.
If ADC calibration is failure, "ADC Component Fail" is displayed.
 - 6) If ADC calibration is failure, after rechecking ADC pattern or condition, retry calibration
 - 7) After completing ADC Component, input mode will be changed to RGB automatically.
 - 8) If ADC calibration is successful, "ADC RGB Success" is displayed. If ADC calibration is failure, "ADC RGB Fail" is displayed.
 - 9) If ADC calibration is failure, after recheck ADC pattern or condition, retry calibration

5.2 EDID/DDC 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 remocon.
- 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,
- 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 is failure, NG is displayed.
- 5) If Download is failure, Re-try downloads.

•Caution) When EDID Download, must remove RGB/HDMI Cable.

(4) EDID DATA

- 1)LD450 Tool(FHD)
 - HDMI I EDID Table

EDID Block 0 table =

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	02	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	A9	40	81	80	61	40	45	40	31	40
0030	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0040	45	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	52	10	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	1C
0080	02	03	1C	F1	47	10	22	20	05	84	03	02	23	09	07	07
0090	67	03	0C	00	10	00	B8	2D	E3	05	03	01	02	3A	80	18
00A0	71	38	2D	40	58	2C	04	05	7E	8A	42	00	00	1E	01	1D
00B0	80	18	71	1C	16	20	58	2C	25	00	7E	8A	42	00	00	9E
00C0	01	1D	00	72	51	D0	1E	20	6E	28	55	00	7E	8A	42	00
00D0	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00	7E	8A
00E0	42	00	00	18	26	36	80	A0	70	38	1F	40	30	20	25	00
00F0	7E	8A	42	00	00	1A	00	00	00	00	00	00	00	00	00	3C

• HDMI II EDID Table

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	02	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	A9	40	81	80	61	40	45	40	31	40
0030	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0040	45	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	52	10	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	1C
0080	02	03	1C	F1	47	10	22	20	05	84	03	02	23	09	07	07
0090	67	03	0C	00	20	00	B8	2D	E3	05	03	01	02	3A	80	18
00A0	71	38	2D	40	58	2C	04	05	7E	8A	42	00	00	1E	01	1D
00B0	80	18	71	1C	16	20	58	2C	25	00	7E	8A	42	00	00	9E
00C0	01	1D	00	72	51	D0	1E	20	6E	28	55	00	7E	8A	42	00
00D0	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00	7E	8A
00E0	42	00	00	18	26	36	80	A0	70	38	1F	40	30	20	25	00
00F0	7E	8A	42	00	00	1A	00	00	00	00	00	00	00	00	00	2C

• Analog RGB EDID Table

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	02	00	01	01	01	01
0010	01	14	01	03	68	73	41	78	0A	CF	74	A3	57	4C	B0	23
0020	09	48	4C	A1	08	00	A9	40	81	80	61	40	45	40	31	40
0030	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
0040	45	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	52	10	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	00	35

5.3. White Balance Adjustment

(1) Overview

• W/B adj. Objective & How-it-works

- Objective: To reduce each Panel's W/B deviation
- 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.

- Adj. condition : normal temperature

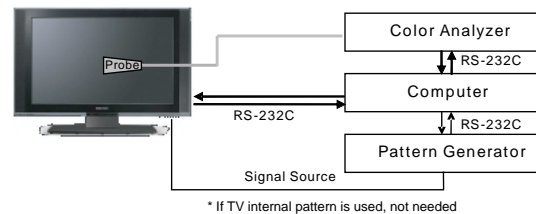
- 1) Surrounding Temperature: 25±5°C
- 2) Warm-up time: About 5 Min
- 3) Surrounding Humidity: 20% ~ 80%

(2) Equipment

- 1) Color Analyzer: CA-210 (NCG: CH 9 / WCG: CH12)
- 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

(3) Equipment connection MAP



Connection Diagram of Automatic Adjustment

(4) Adj. Command (Protocol)

1) RS-232C Command used during auto-adj.

RS-232C COMMAND			Meaning
[CMD]	ID	DATA	
wb	00	00	Begin White Balance adj.
wb	00	ff	End White Balance adj.(Internal pattern disappeared)

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. complete

*(wb 00 20(start), wb 00 2f(end)) -> Off-set adj.

wb 00 ff -> End white balance auto adj.

2) Adjustment Map

Applied Model : 32LD450-UA, 37LD450-UA, 42LD450-UA, 47LD450-UA

	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					

(5) Adj. method

• 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 adj.
- 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

• 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 > 6. White-Balance then press the cursor to the right (KEY_G). (When KEY_G) 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 6.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
- LCD: 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.

(6) Reference (White Balance Adj. coordinate and color temperature)

- Luminance: 216 Gray
- Standard color coordinate and temperature using CS-1000

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

- Standard color coordinate and temperature using CA-210

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

5.4. HDCP SETTING

- HDCP setting is not necessary in Saturn5 model.

5.5 Option selection per country

- (1) Overview
 - Option selection is only done for models in Non-USA North America due to rating
 - Applied model: LA92A Chassis applied None USA model(CANADA, MEXICO)
- (2) Method
 - 1) Press ADJ key on the Adj. R/C, then select Country Group Menu
 - 2) Depending on destination, select KR or US, then on the lower Country option, select US, CA, MX. Selection is done using +, - KEY

5.6. 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	Tool5	Menu
32LD450(AUO)	16424	10770	52228	2317	33	2 HDMI
32LD450(Sharp)						2 HDMI
32LD450(LGD)						2HDMI
37LD450(AUO)	20520	10770	52228	2317	32	2 HDMI
37LD450(LGD)						2HDMI
42LD450(LGD)	24608	10770	52228	2317	32	2 HDMI
42LD450(CMO)						2 HDMI
42LD450(AUO)						2 HDMI
47LD450(LGD)	32800	10770	52228	2317	32	2 HDMI

5.7. 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.

6. GND and Internal Pressure check

6.1. Method

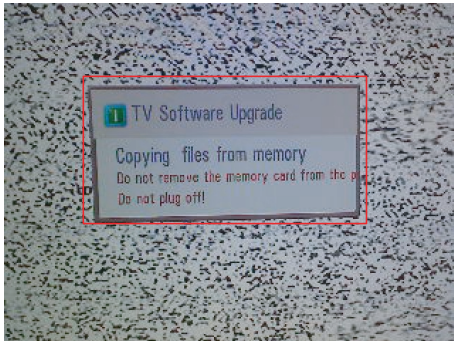
- 1) GND & Internal Pressure auto-check preparation
 - Check that Power Cord is fully inserted to the SET.
(If loose, re-insert)
- 2) Perform GND & Internal Pressure auto-check
 - Unit fully inserted Power cord, Antenna cable and A/V arrive to the auto-check process.
 - Connect D-terminal to AV JACK 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.

6.2. Checkpoint

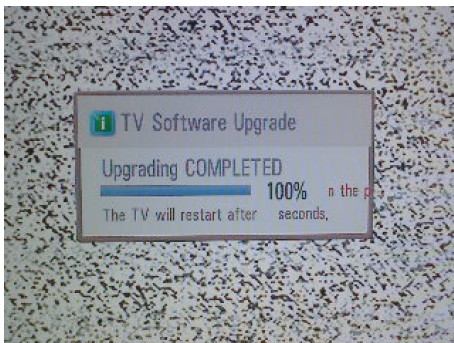
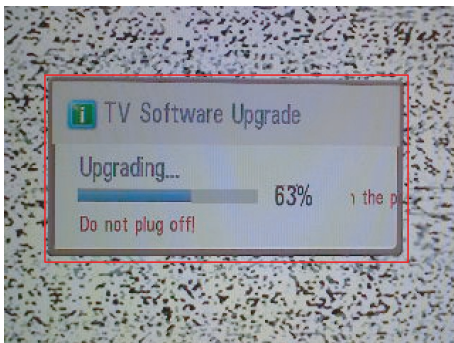
- TEST voltage
 - GND: 1.5KV/min at 100mA
 - SIGNAL: 3KV/min at 100mA
- TEST time: 1 second
- TEST POINT
 - GND TEST = POWER CORD GND & SIGNAL CABLE METAL GND
 - Internal Pressure TEST = POWER CORD GND & LIVE & NEUTRAL
- LEAKAGE CURRENT: At 0.5mArms

7. USB S/W Download (option)

- (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.

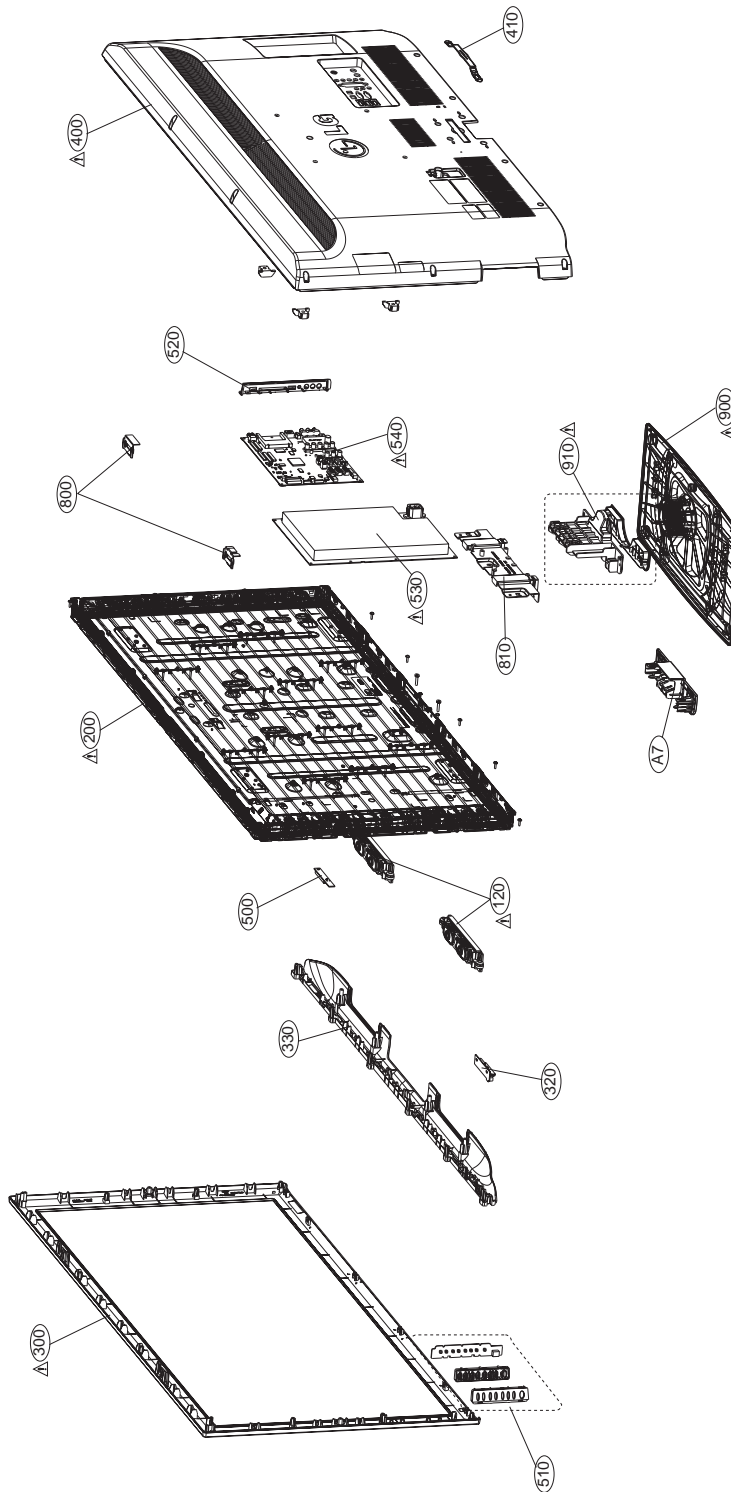


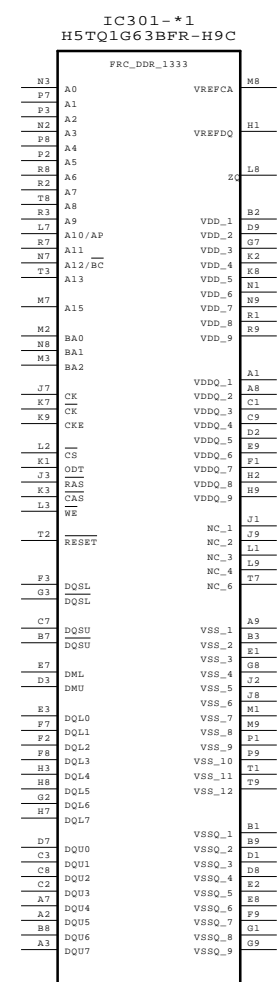
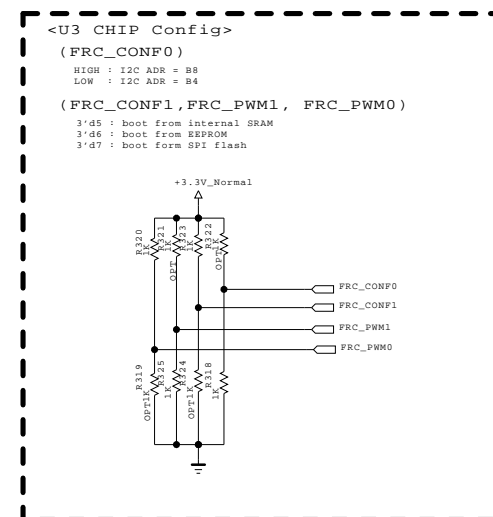
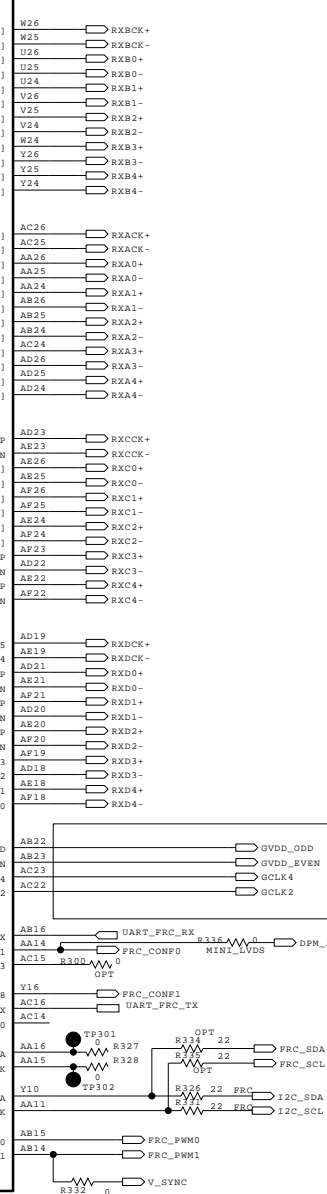
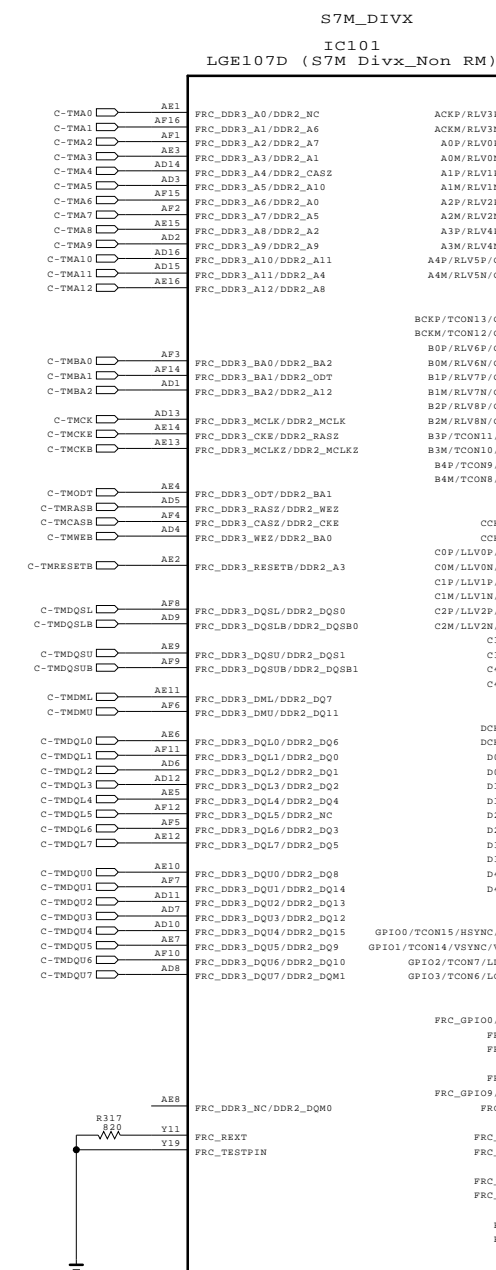
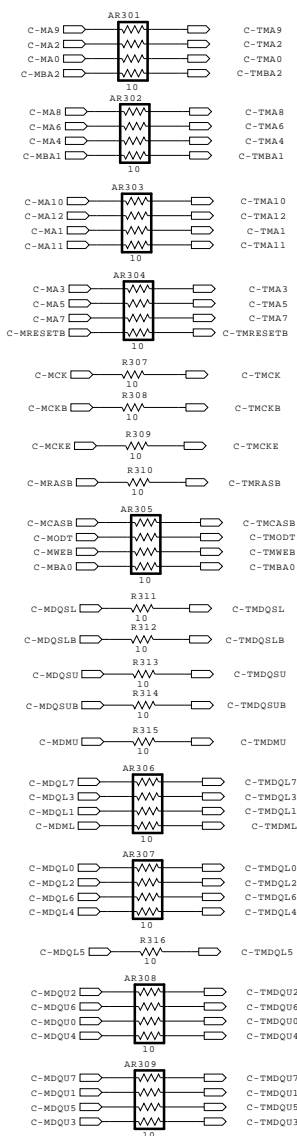
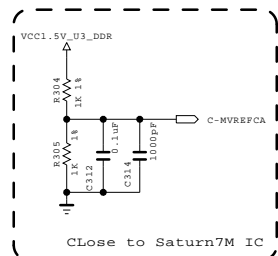
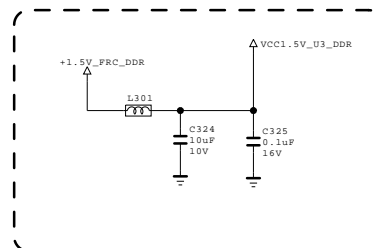
- (5) Updating Completed, The TV will restart automatically
 - (6) If your TV is turned on, check your updated version and Tool option. (explain the Tool option, next stage)
 - * If downloading version is more high than your TV have, TV can lost all channel data. In this case, you have to channel recover. 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 controller.
 - 2) Select "Tool Option 1" and Push "OK" button.
 - 3) Punch in the number. (Each model has their number.)

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.





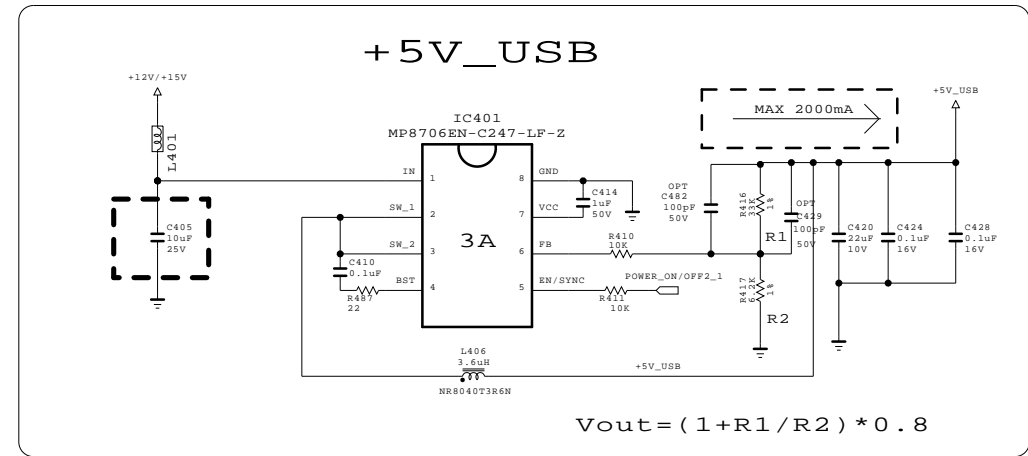
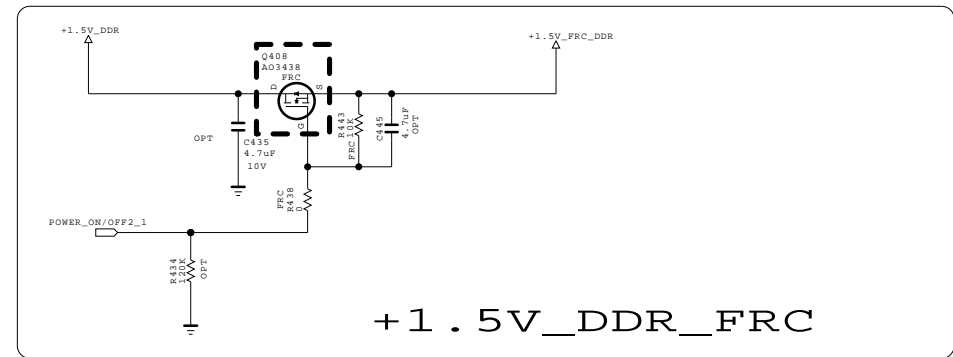
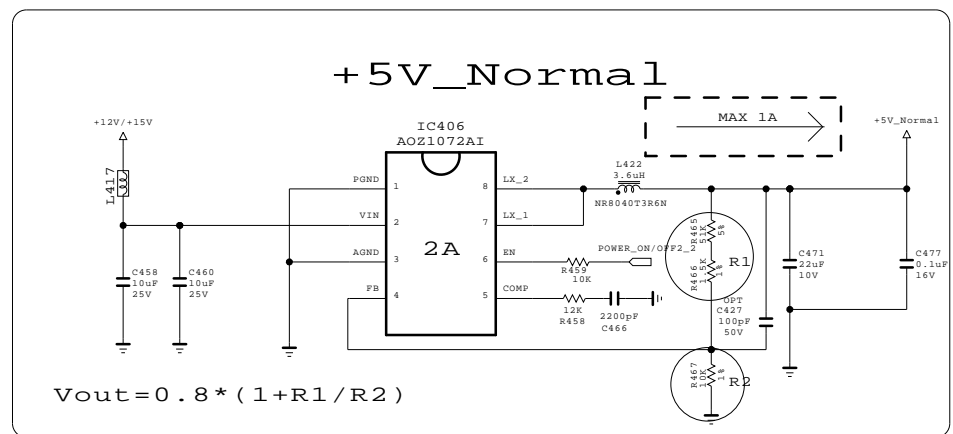
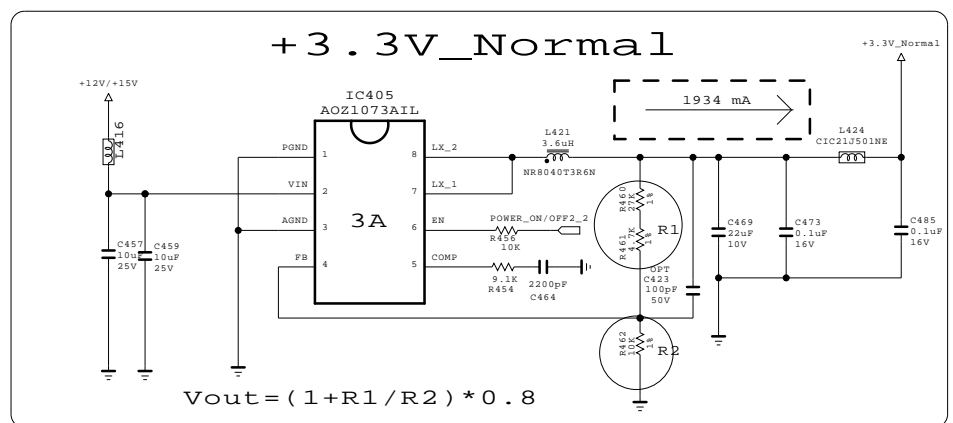
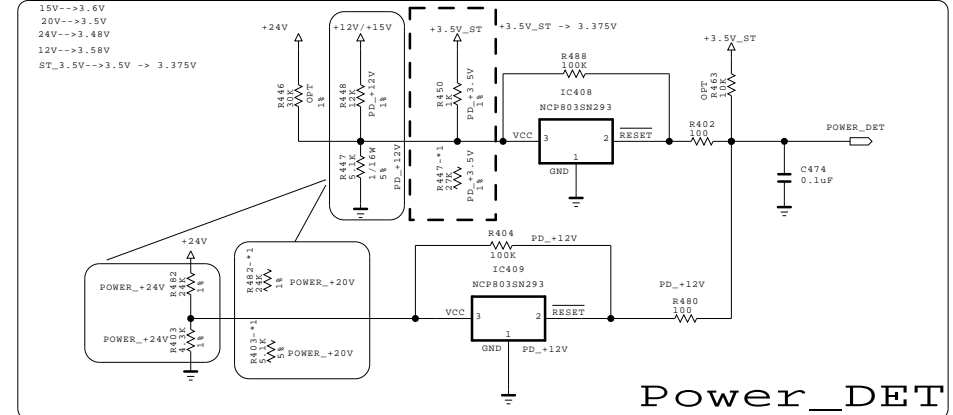
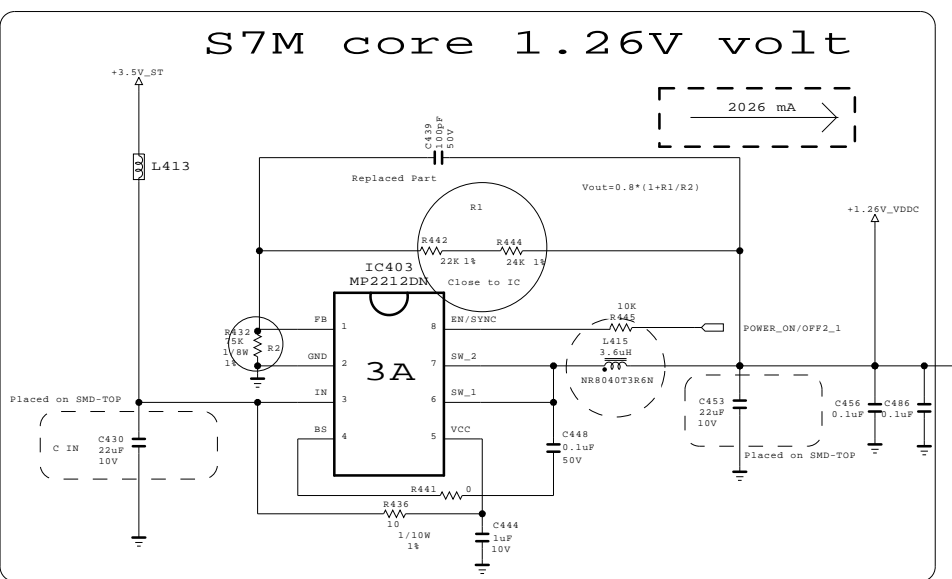
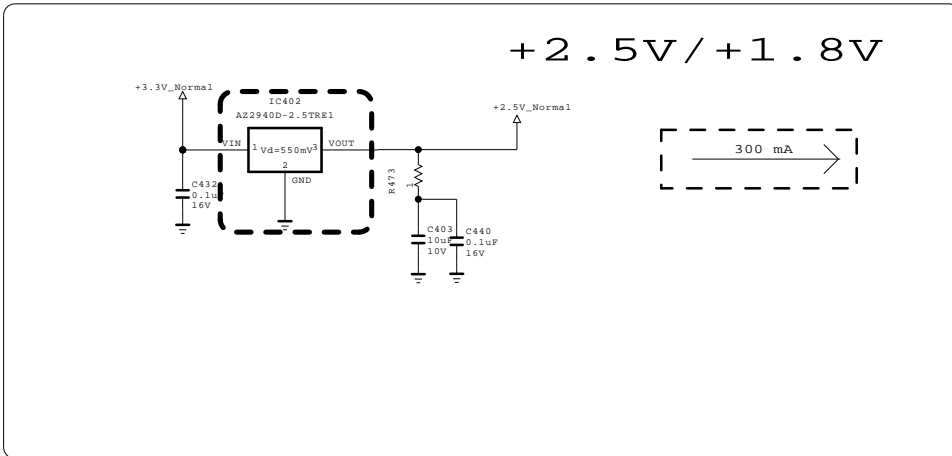
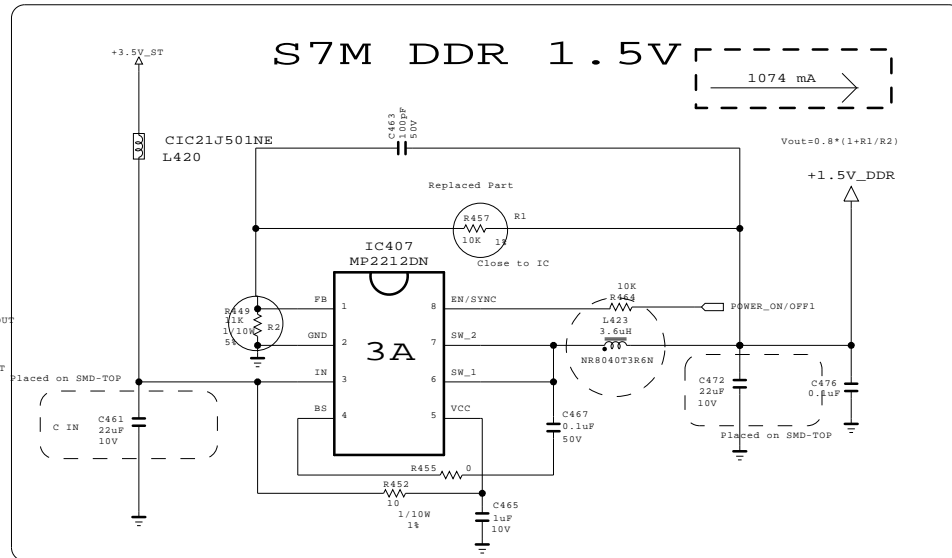
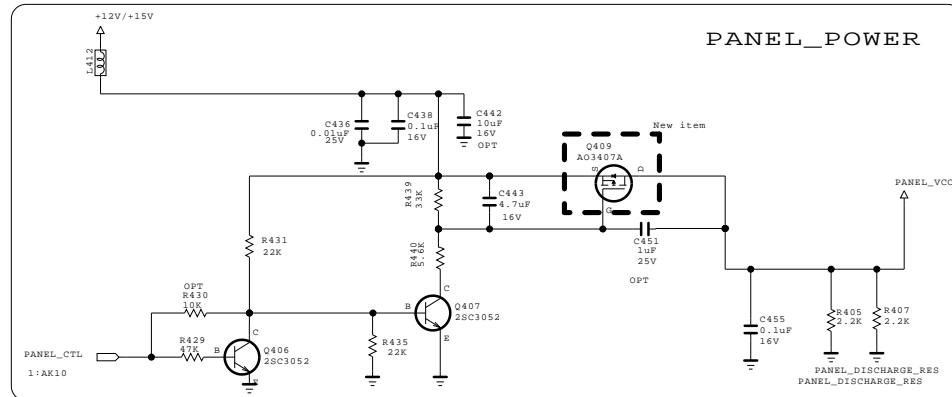
SECRET
LGElectronics



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

FROM LIPS & POWER B/D

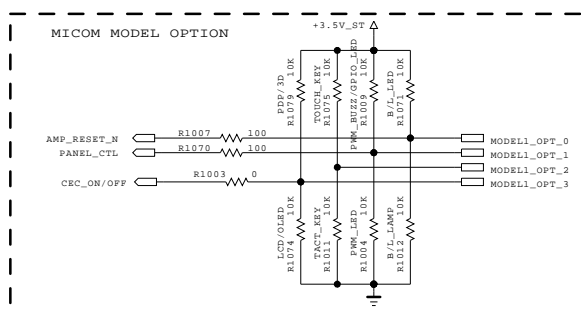
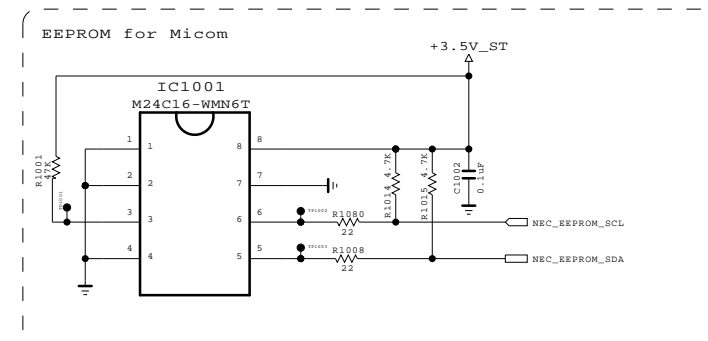
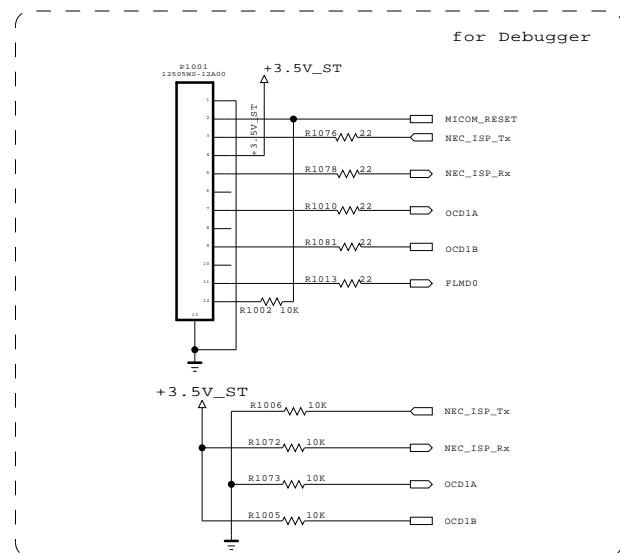
PIN No	LGD	CMO (09)	AUO	SHARP	L_DIM
18	INV_ON	A-DIM	INV_ON	INV_ON	
20	VBR-A	NC	Err_out	Err_out	SCLK
22	PWM_DIM	PWM_DIM	NC	PWM_DIM	
24	Err_out	INV_ON	PWM_DIM	GND	
23					MOSIN



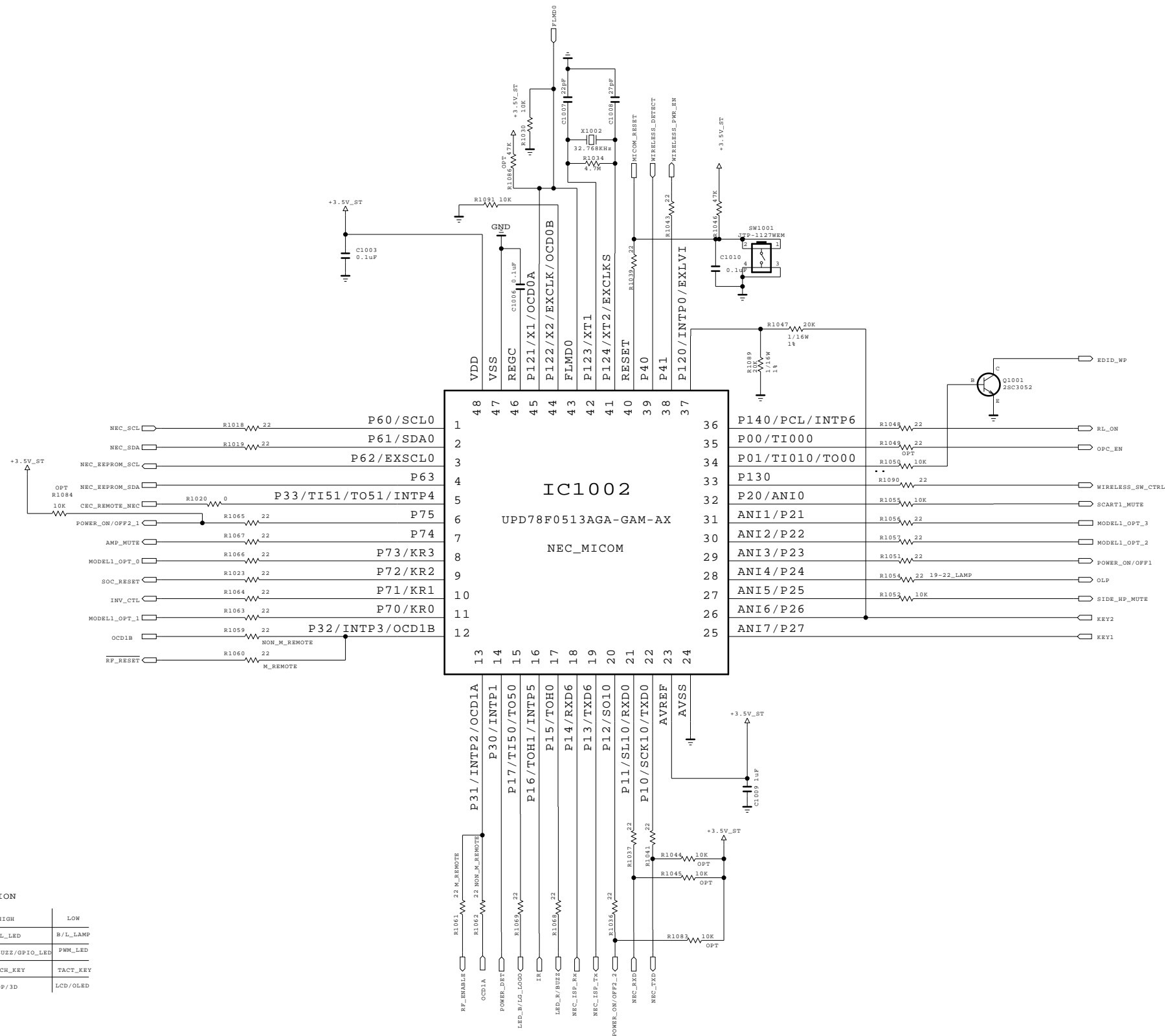
SECRET
LG Electronics





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/GPIO_LED	PWM_LED
MODEL_OPT_2	30	TOUCH_KEY	TACT_KEY
MODEL_OPT_3	31	PDP/3D	LCD/OLED



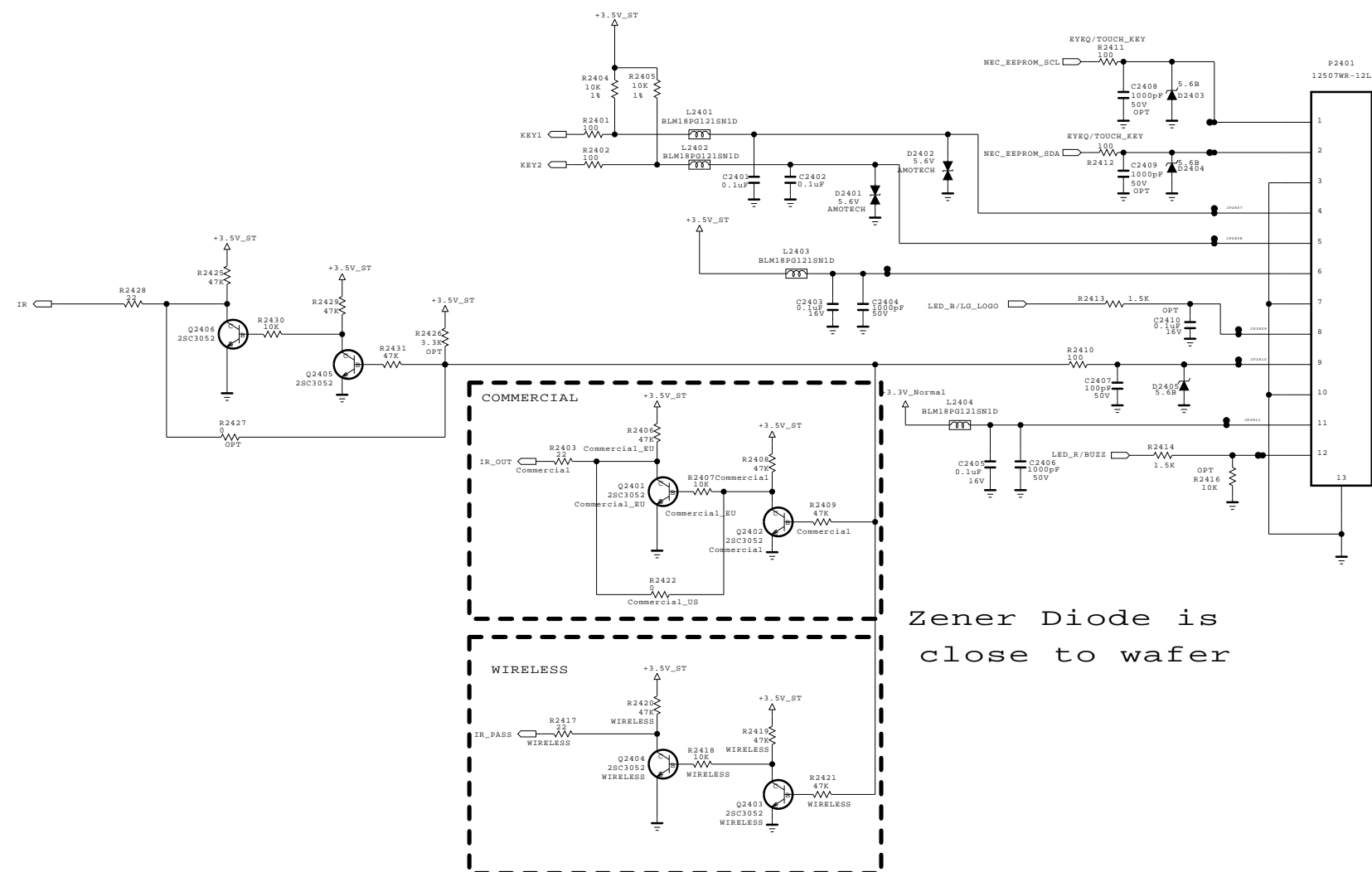
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

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LG ELECTRONICS

MODEL	GP2_Saturn7M	DATE	Ver. 1.4
BLOCK	MICOM	SHEET	5

CONTROL
IR & LED



Zener Diode is
close to wafer

THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILTRE 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. 1.2
BLOCK	IR & LED	SHEET	6 /

[LEVEL Shift Block]

The diagram illustrates a Level Shift Block circuit centered around the IC602 MAX17119DS. The circuit includes several input and output buffers, a voltage divider for VDD_ODD, and a -5V supply. Key components include resistors R625, R632, R626, R618, R630, R633, R624, R622, R623, R621, R620, R619, R618, R617, R616, R615, R614, R613, R612, R611, R610, R609, R608, R607, R606, R605, R604, R603, R602, R601, R600, R599, R598, R597, R596, R595, R594, R593, R592, R591, R590, R589, R588, R587, R586, R585, R584, R583, R582, R581, R580, R579, R578, R577, R576, R575, R574, R573, R572, R571, R570, R569, R568, R567, R566, R565, R564, R563, R562, R561, R560, R559, R558, R557, R556, R555, R554, R553, R552, R551, R550, R549, R548, R547, R546, R545, R544, R543, R542, R541, R540, R539, R538, R537, R536, R535, R534, R533, R532, R531, R530, R529, R528, R527, R526, R525, R524, R523, R522, R521, R520, R519, R518, R517, R516, R515, R514, R513, R512, R511, R510, R509, R508, R507, R506, R505, R504, R503, R502, R501, R500, R499, R498, R497, R496, R495, R494, R493, R492, R491, R490, R489, R488, R487, R486, R485, R484, R483, R482, R481, R480, R479, R478, R477, R476, R475, R474, R473, R472, R471, R470, R469, R468, R467, R466, R465, R464, R463, R462, R461, R460, R459, R458, R457, R456, R455, R454, R453, R452, R451, R450, R449, R448, R447, R446, R445, R

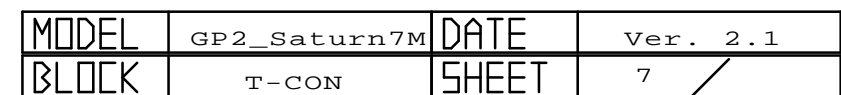
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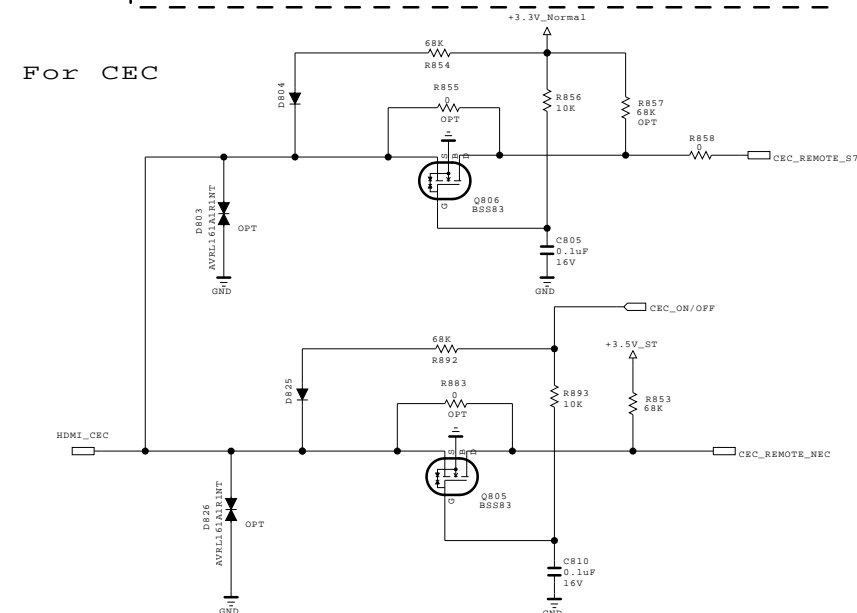
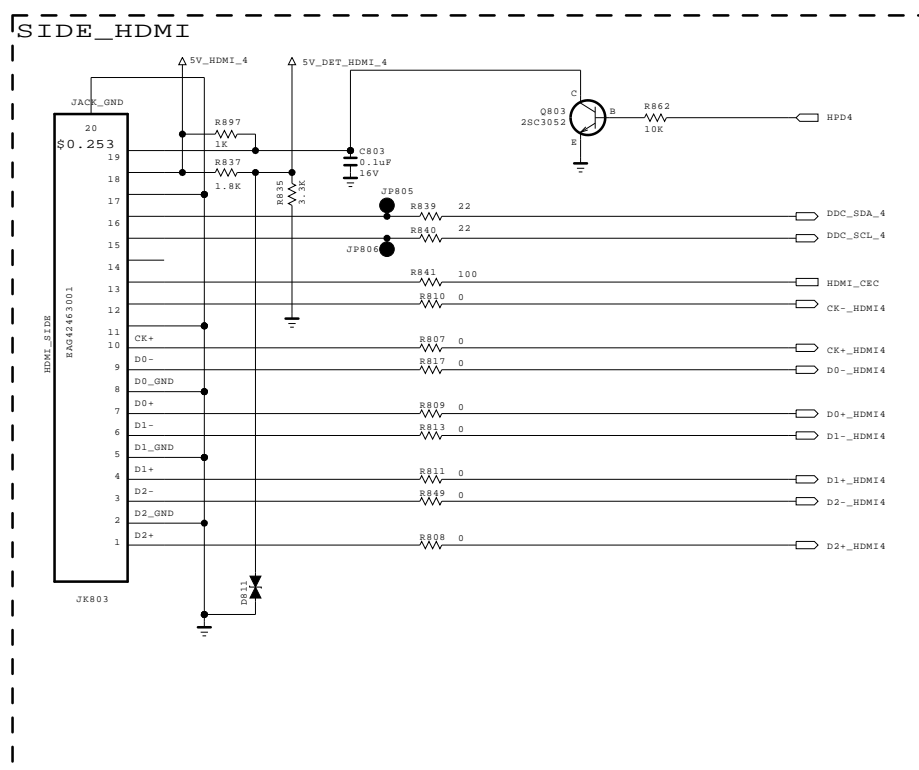
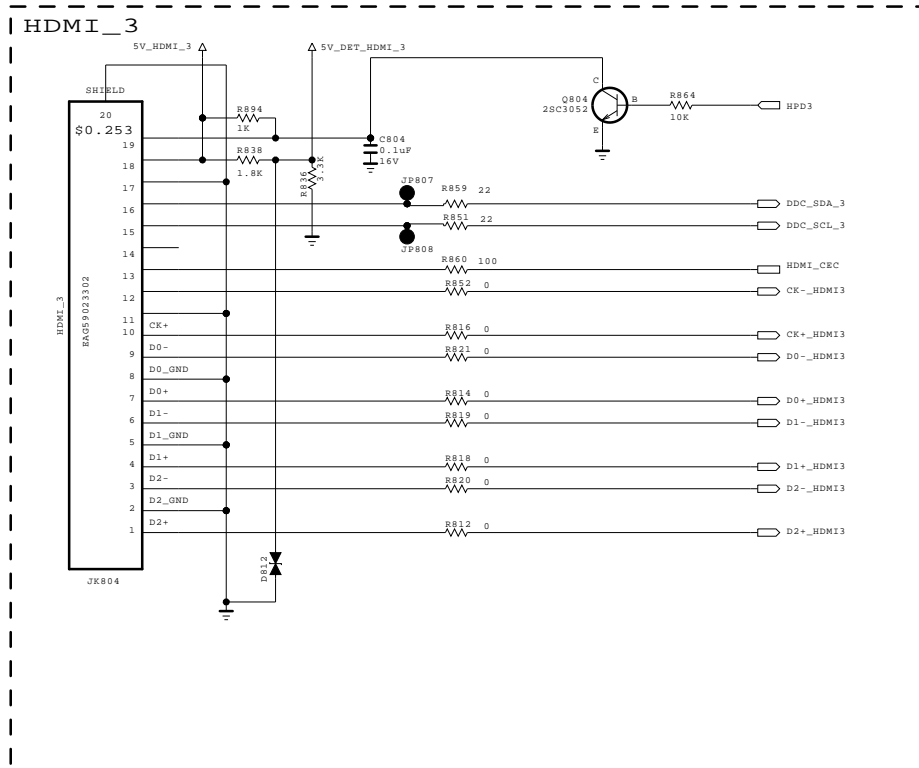
The schematic diagram illustrates the RXD3-RXD4 and GSP/GVST_I interface circuit. It includes the following components and connections:

- VCC_LCM (+3.3V)** supply connected to **R628** (3.3K GIP) and **C605** (15pF 50V NON_GIP).
- RXA3-** connected to **R604** (10 NON_GIP) and **FLK**.
- RXD3** connected to **R659** (0) and **GSP/GVST_I**.
- RXD3** connected to **R685** (0 NON_GIP) and **GSP_R**.
- VCC_LCM (+3.3V)** supply connected to **R673** (3.3K NON_GIP) and **C667** (15pF 50V NON_GIP).
- RXDCK** connected to **R665** (0) and **GORE/GCLK1_I**.
- RXDCK** connected to **R671** (4.7K GIP) and **C675** (15pF 50V NON_GIP).
- RXDCK** connected to **R662** (0) and **GSC/GCLK3_I**.
- RXDCK** connected to **C672** (15pF 50V NON_GIP).
- GVDD_ODD** connected to **R653** (0 GIP) and **GVDD_ODD_I**.
- GVDD_ODD** connected to **C669** (15pF 50V OPT).
- GVDD_EVEN** connected to **R646** (0 GIP) and **GVDD_EVEN_I**.
- GVDD_EVEN** connected to **C668** (15pF 50V OPT).
- RXD4-** connected to **R660** (0) and **POL**.
- RXD4-** connected to **C665** (15pF 50V).
- RXD4-** connected to **R661** (0) and **SOR**.
- RXD4-** connected to **C666** (15pF 50V).
- VGH (+25V)** connected to **R614** (0 GIP) and **VGI_P**.
- VGL (-5V)** connected to **R615** (0 GIP) and **VGI_N**.
- VGL (-5V)** connected to **R617** (0) and **R645** (0 OPT).
- DISCHG** connected to **R645** (0 OPT) and **VGL_I**.
- GCLK2** connected to **R667** (0 GIP) and **GCLK2_I**.
- GCLK2** connected to **C670** (15pF 50V OPT).
- GCLK4** connected to **R663** (0 GIP) and **GCLK4_I**.
- GCLK4** connected to **C673** (15pF 50V OPT).
- RXA4-** connected to **R664** (0 GIP) and **GCLK5_I**.
- RXA4-** connected to **C674** (15pF 50V OPT).
- RXA4-** connected to **R666** (0 GIP) and **GCLK6_I**.
- RXA4-** connected to **C671** (15pF 50V OPT).
- VCC_LCM (+3.3V)** supply connected to **R636** (0) and **R6267** (0).
- R636** (0) connected to **MINI_LVDS**.
- R6267** (0) connected to **H_CONV**.

The circuit is labeled "For GOE Masking".

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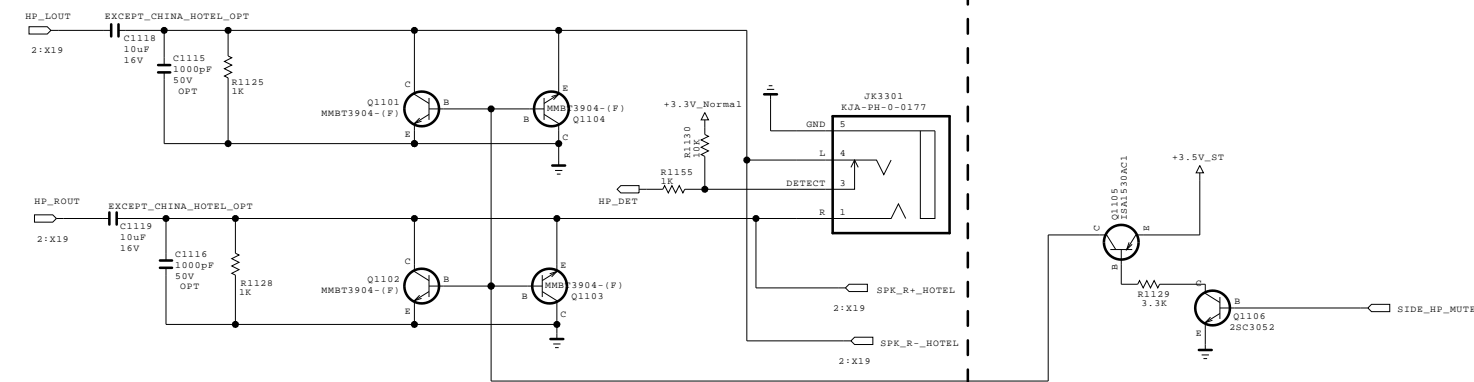




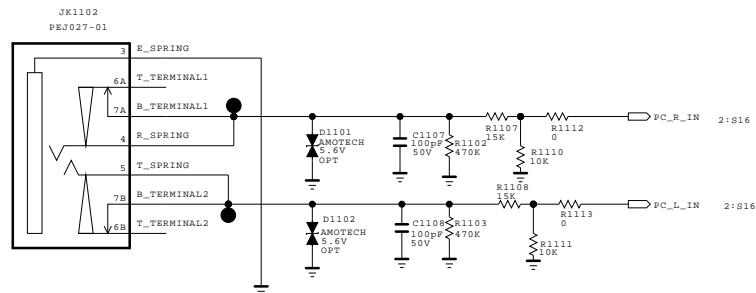
MODEL	GP2_Saturn7M	DATE	Ver. 1.2
BLOCK	HDMI	SHEET	8 /

COMMON AREA

New Item Development
EARPHONE BLOCK

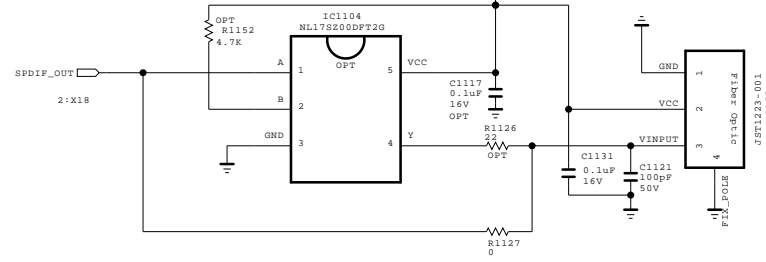


PC AUDIO

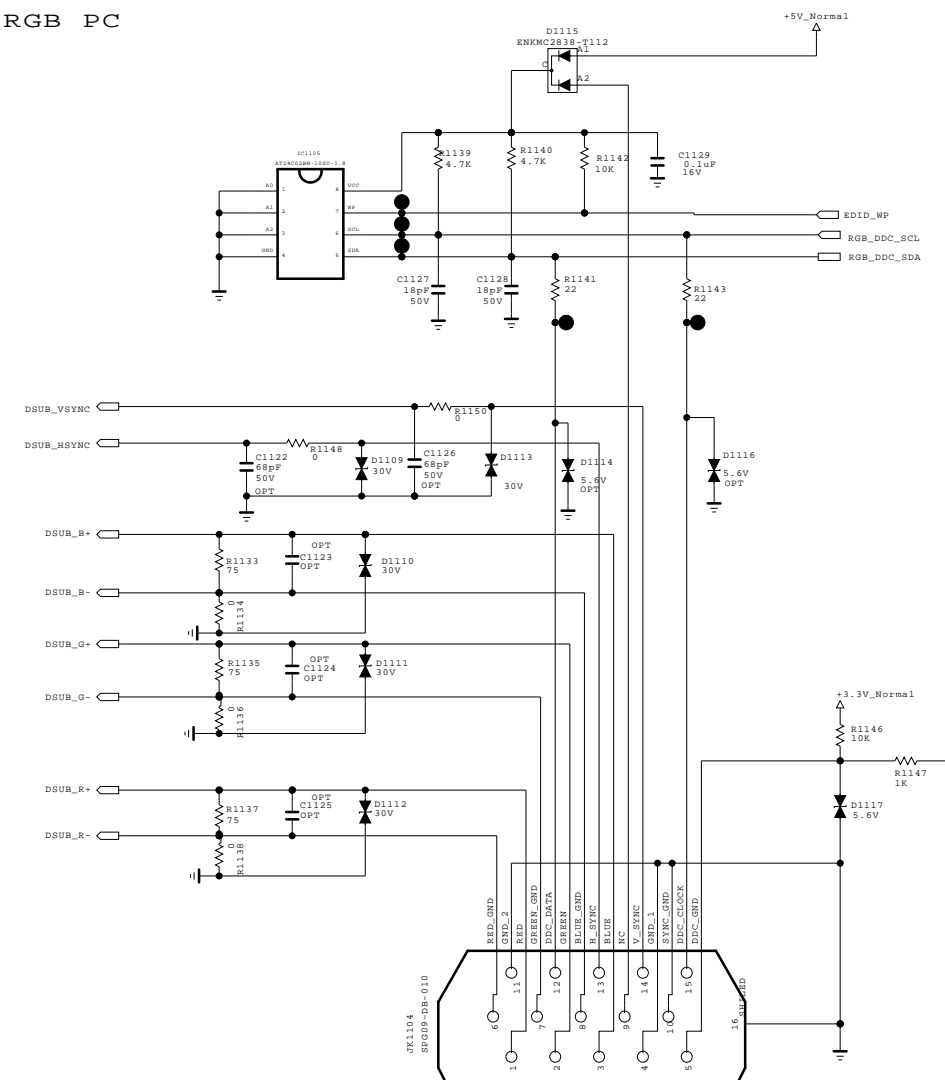




SPDIF OPTIC JACK

5.15 Mstar Circuit Application



RGB PC



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

LG Electronics



MODEL

GP2_Saturn7M

BLOCK

COMMON AREA

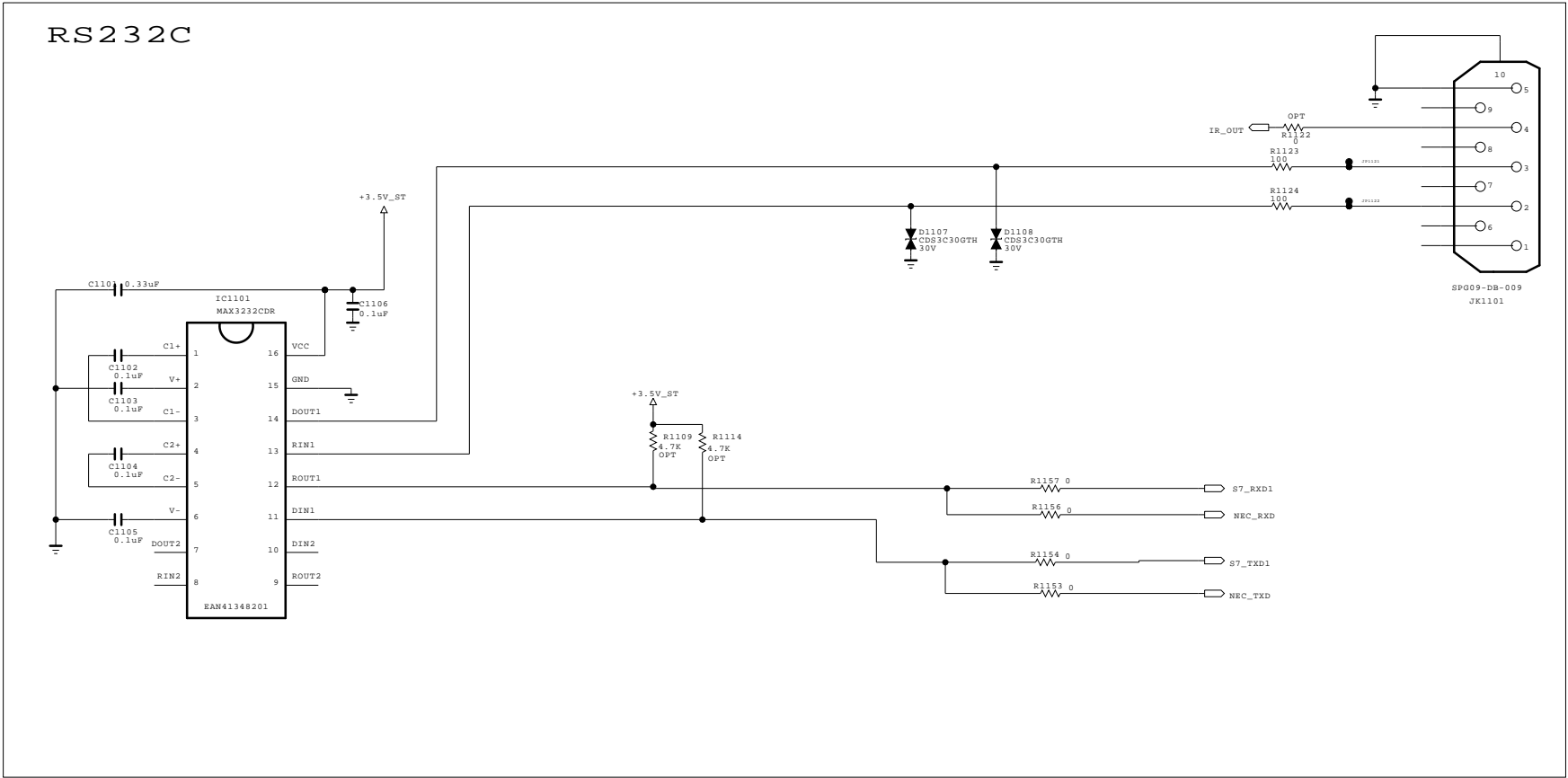
DATE _____



SHEET

Ver. 1.0

9 /

RS232C

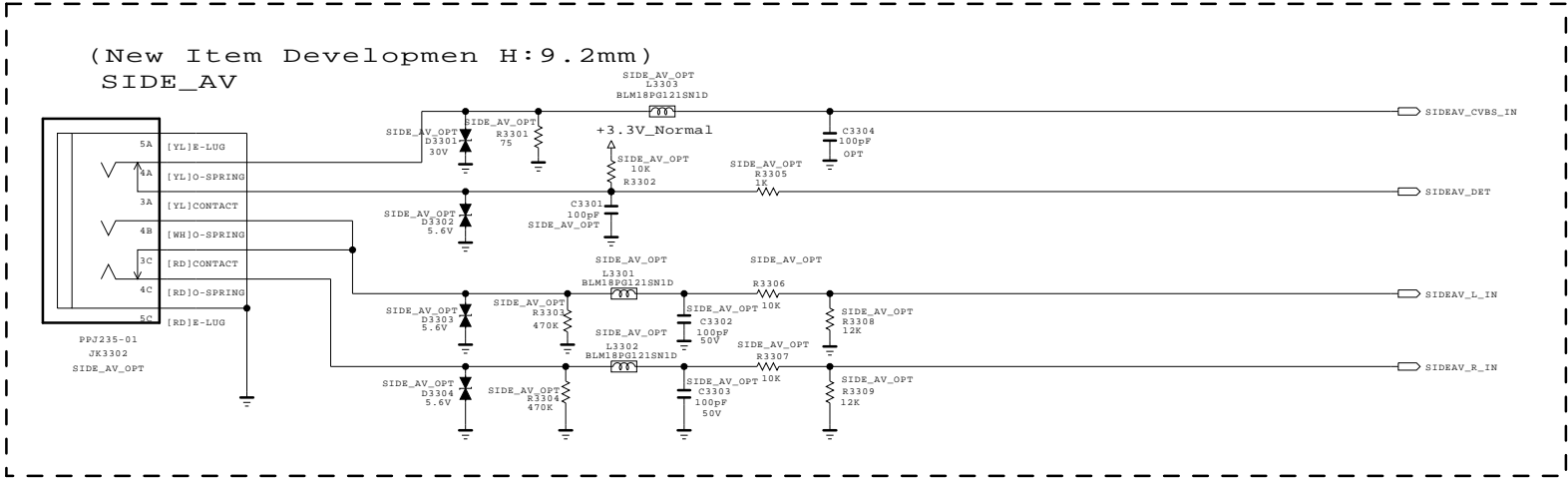




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SECRET
LGElectronics



MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	RS232C 9PIN	SHEET	10 /



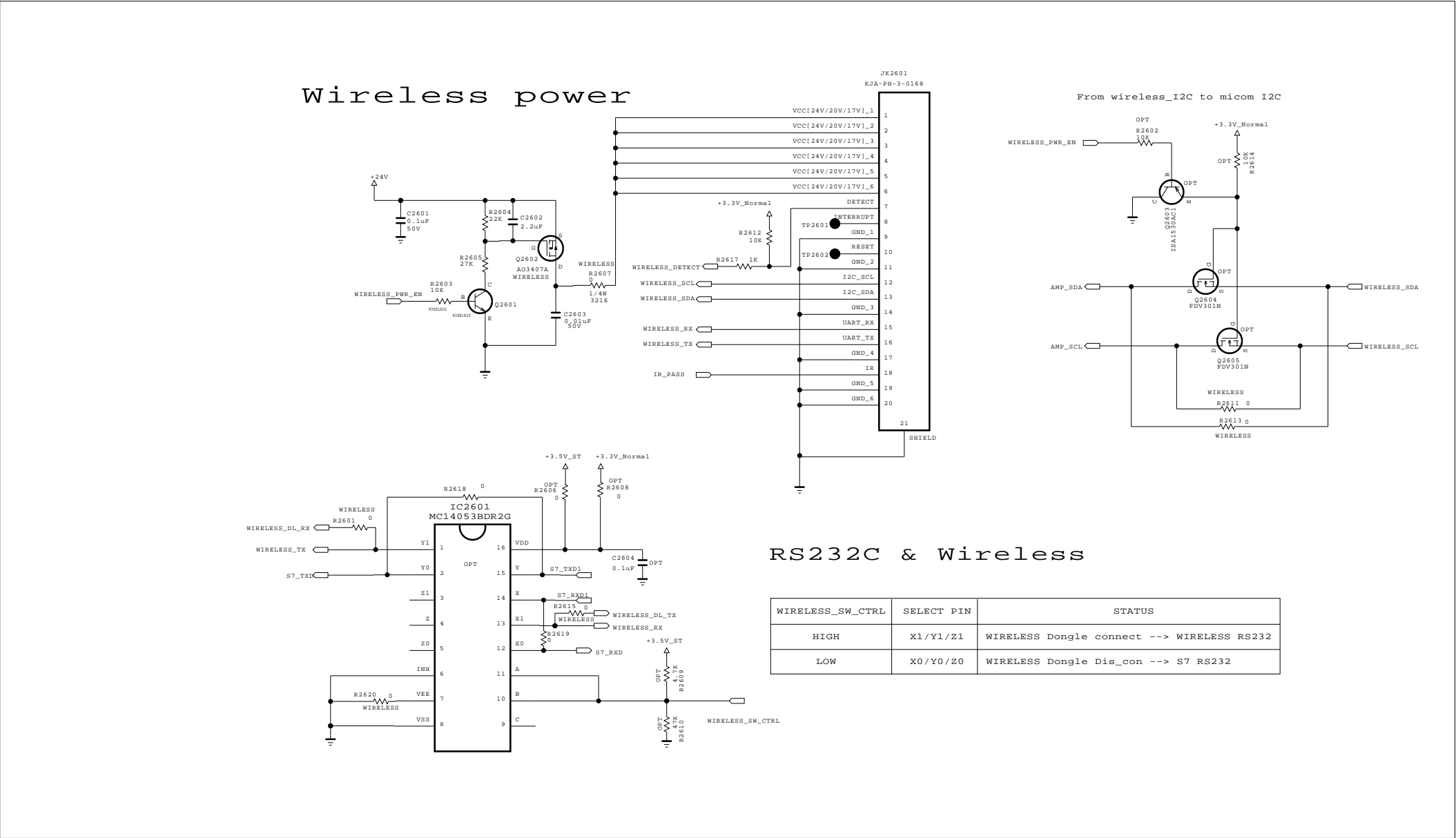
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics





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

WIRELESS READY MODEL



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

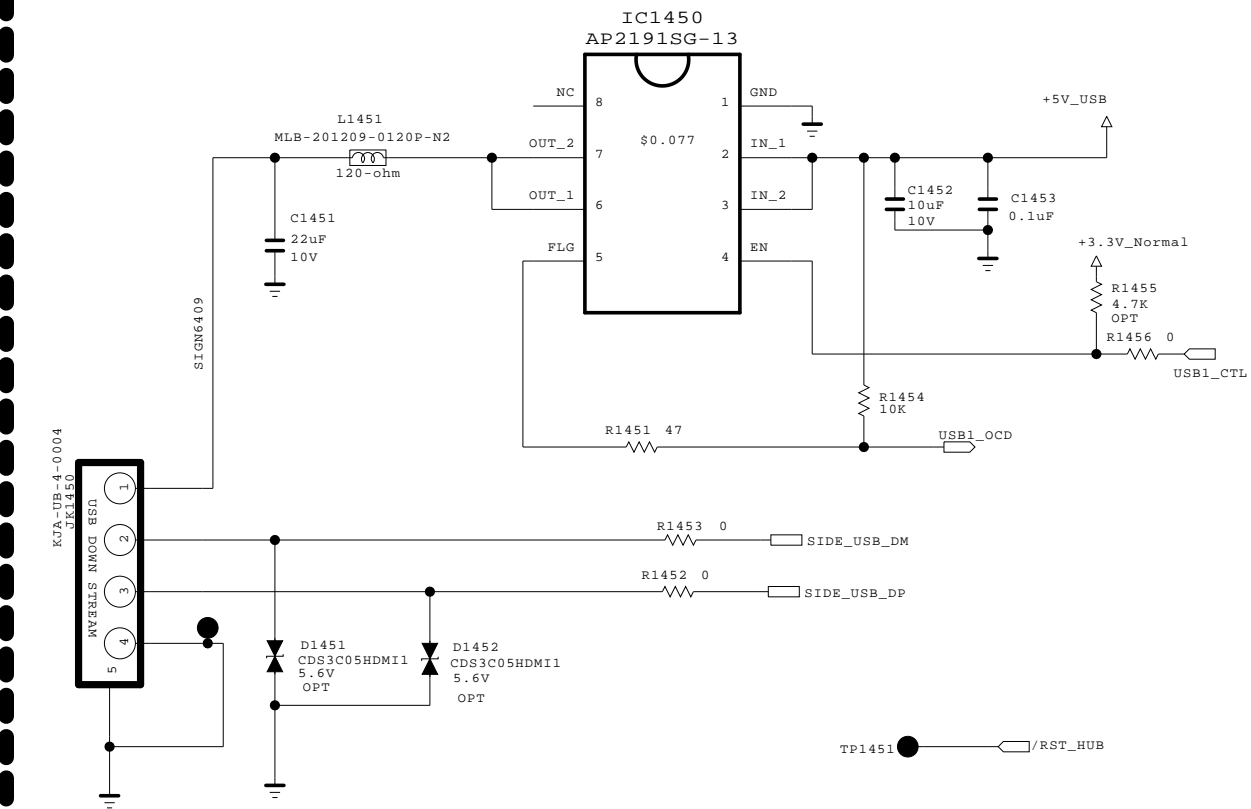
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.



SECRET
LGElectronics

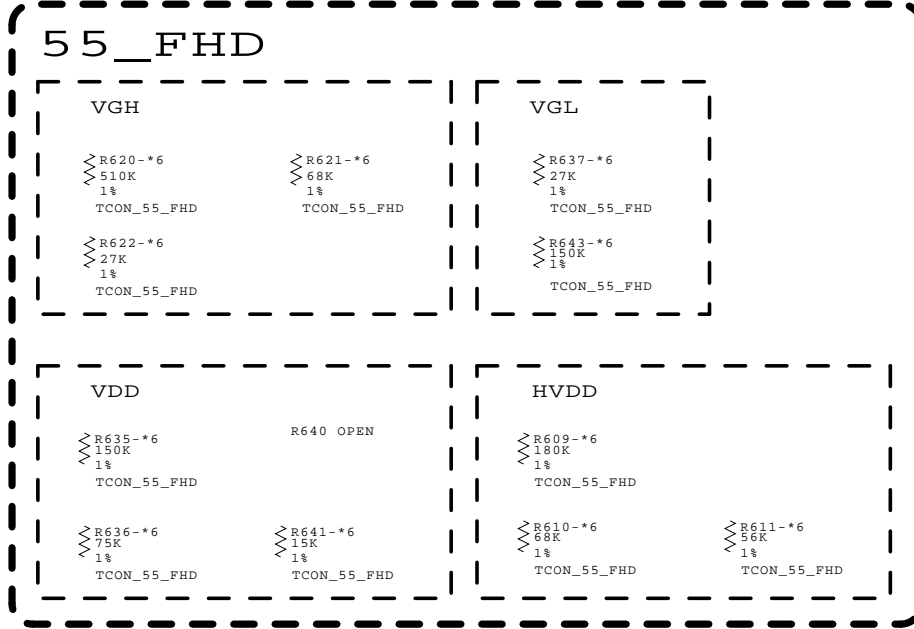
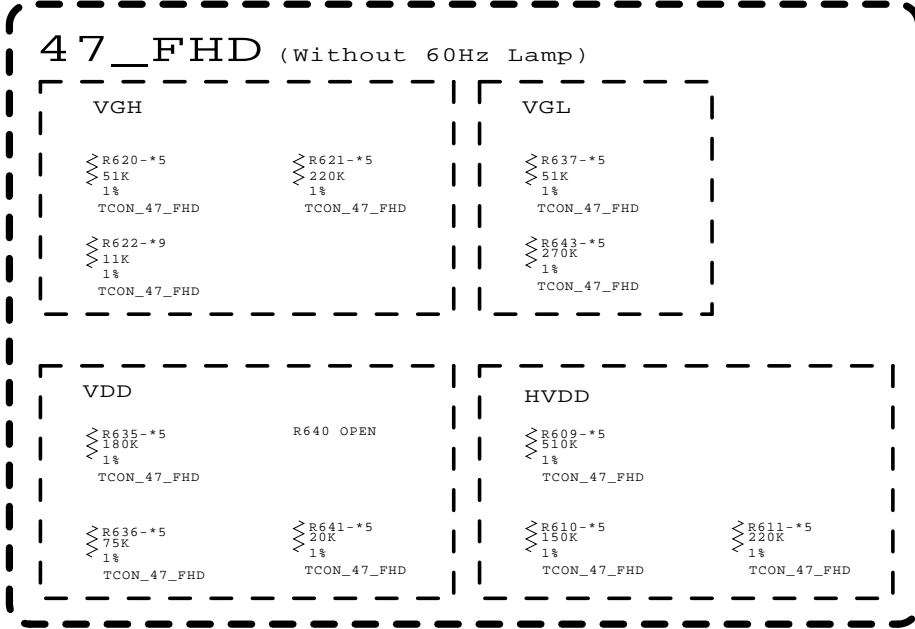
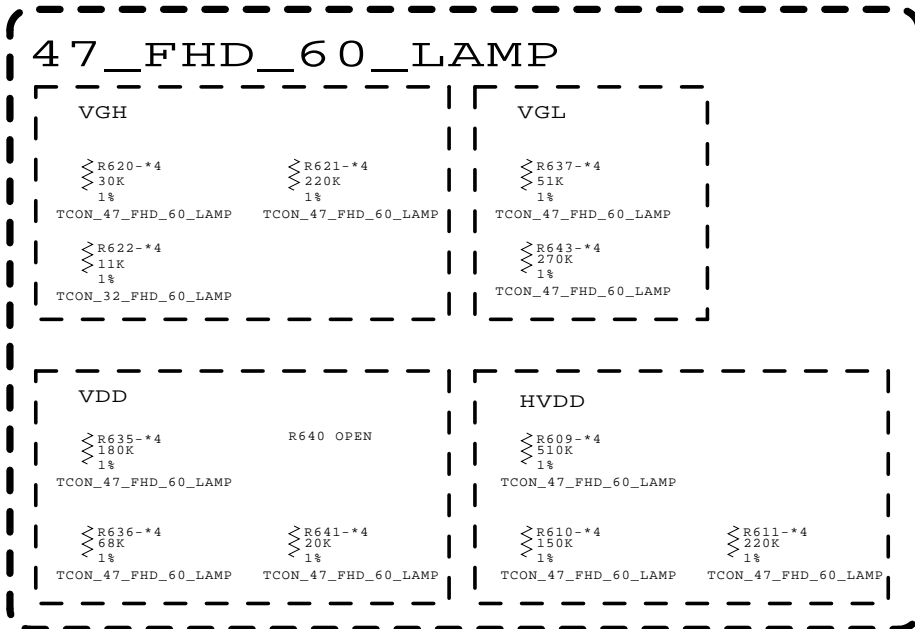
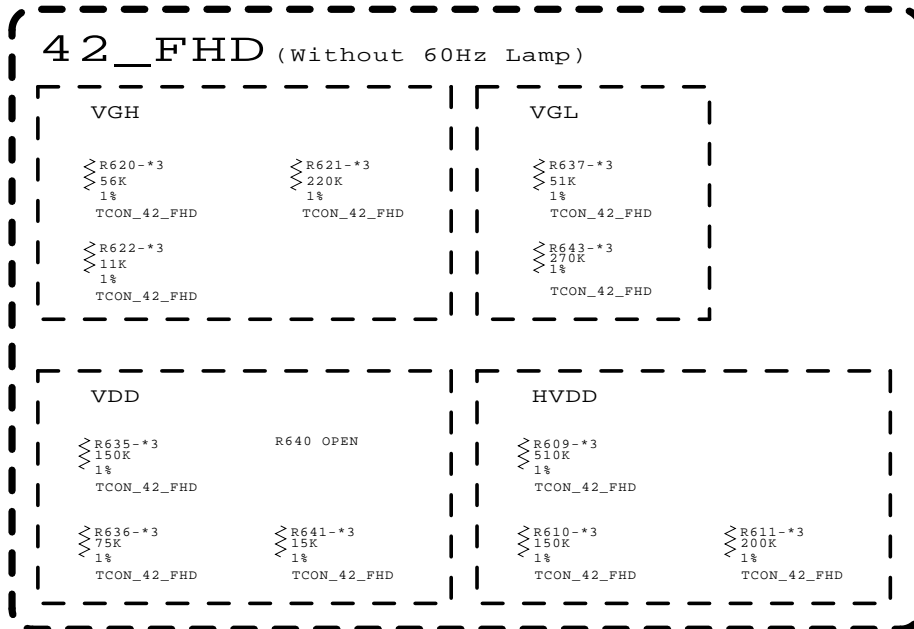
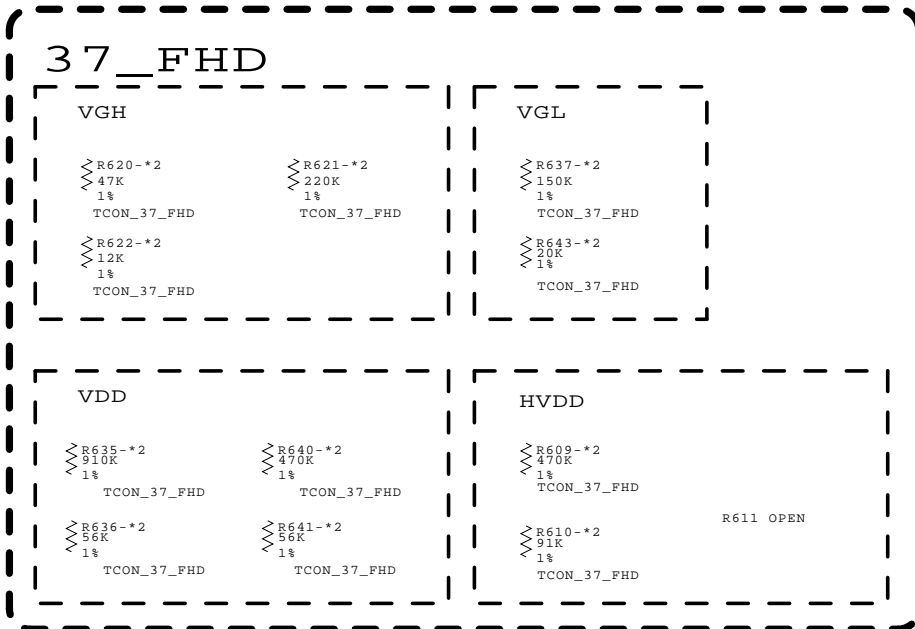
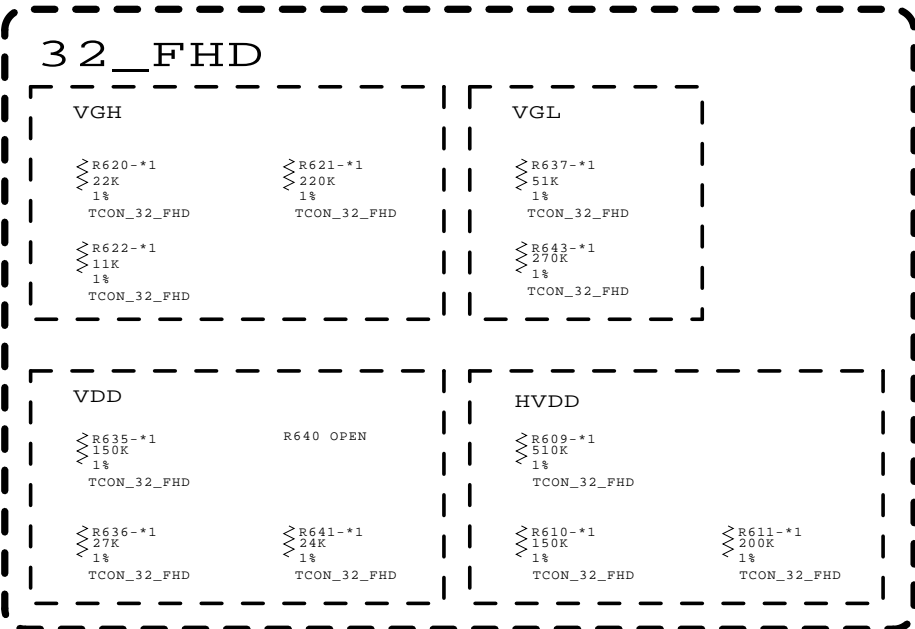




MODEL	GP2_Saturn7M	DATE	Ver. 1.3
BLOCK	Wireless ready	SHEET	12 /

USB_DIODES



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 SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMETIC.



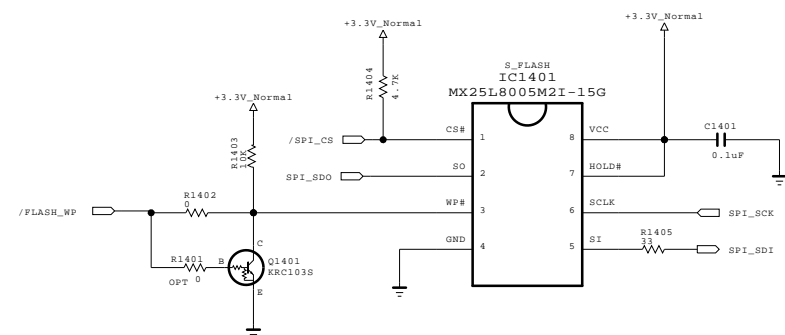
THE  SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMETIC.



SECRET

LGElectronics

 LG ELECTRONICS

MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	T-CON Power Table	SHEET	71 /



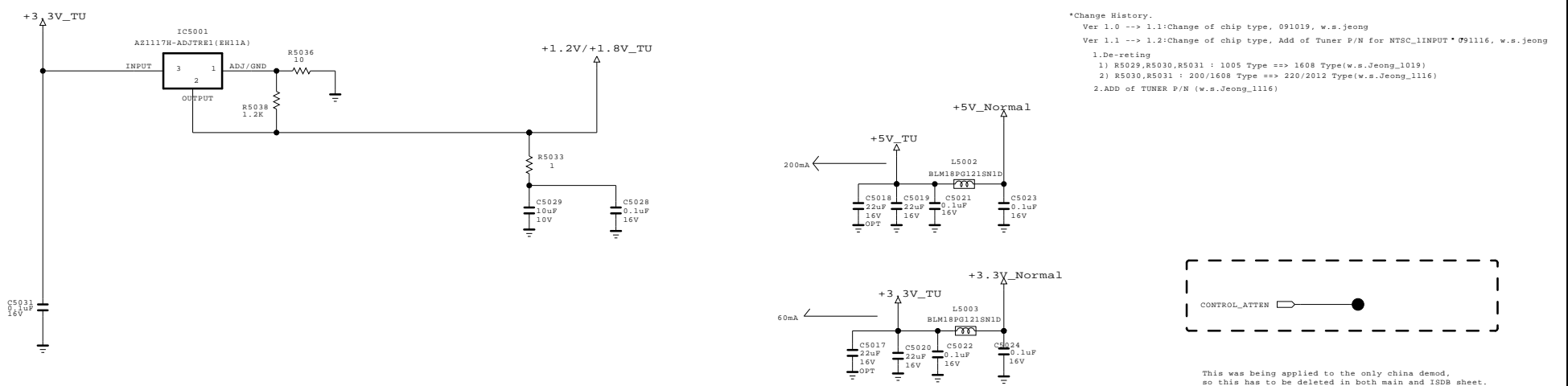
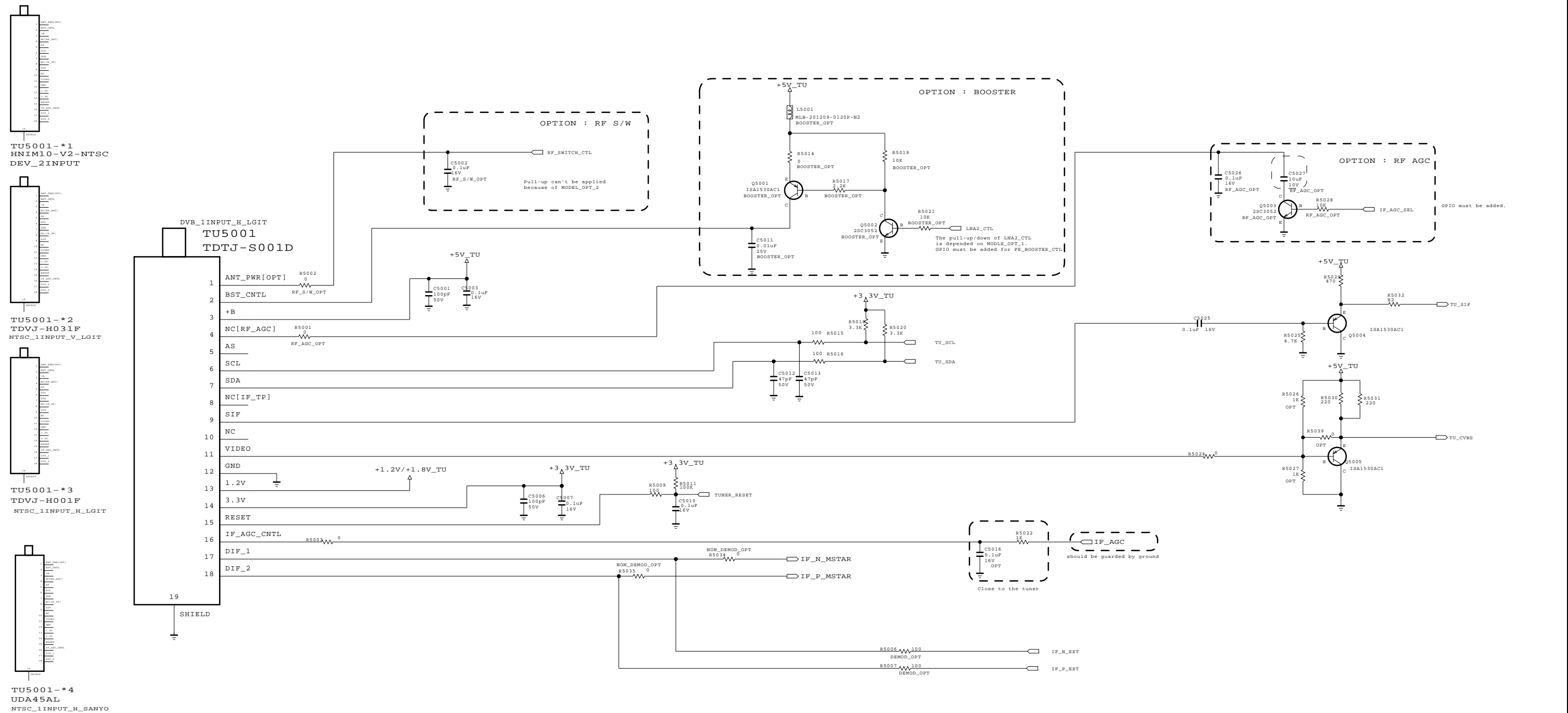
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.



SECRET
LGElectronics



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

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



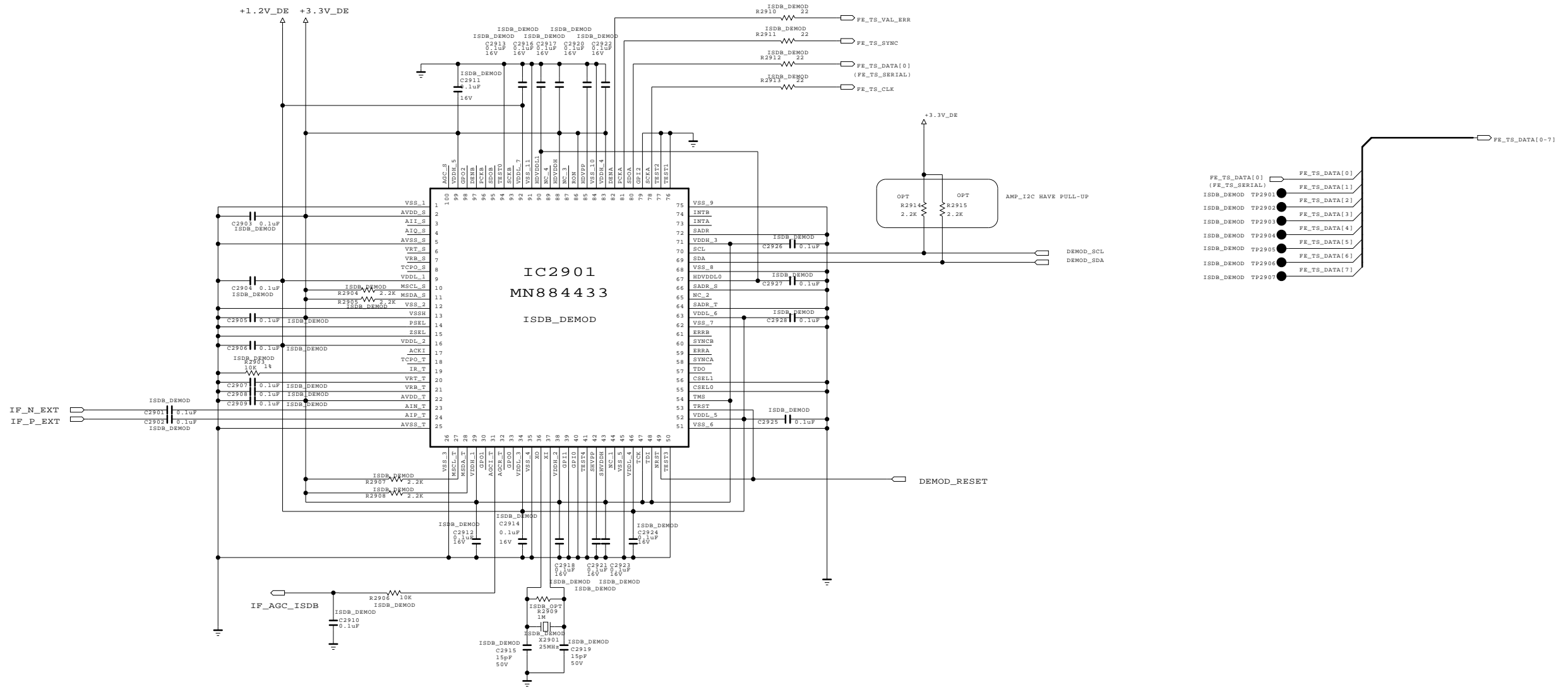
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.



SECRET
LGElectronics



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

PANASONIC (ISDB-T)
MN884433



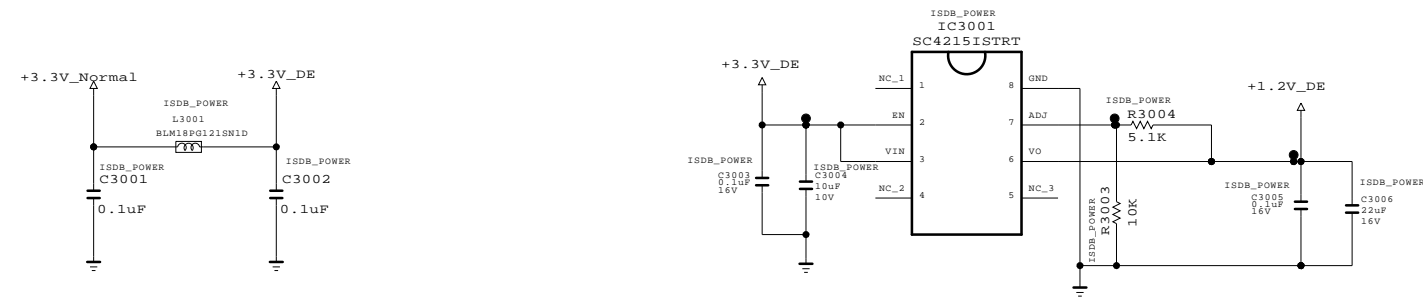
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SECRET
LGElectronics

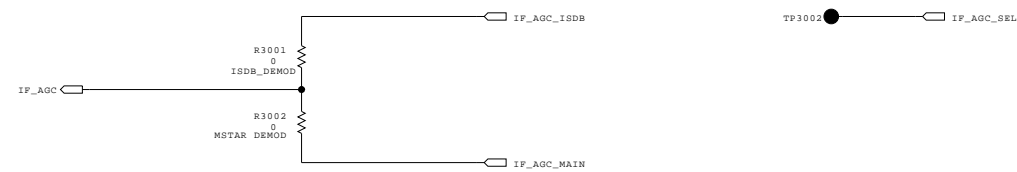




MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	ISDB-T Demodulator	SHEET	28 /

Panasonic Demodulator Power (3.3V, 1.2V)



IF AGC SELECTION



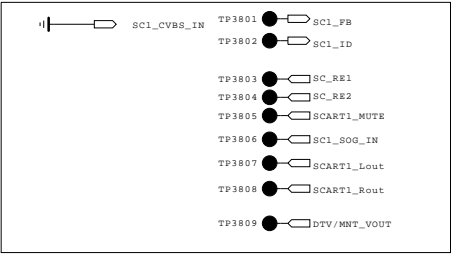
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SECRET
LGElectronics

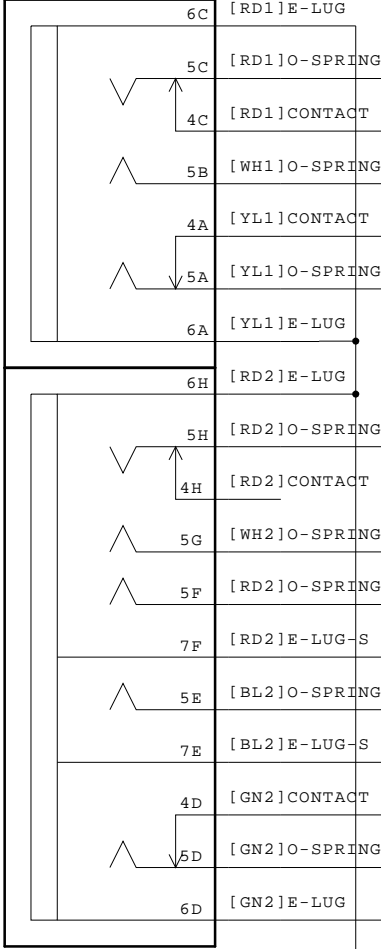


MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	Demodulator	SHEET	29 /

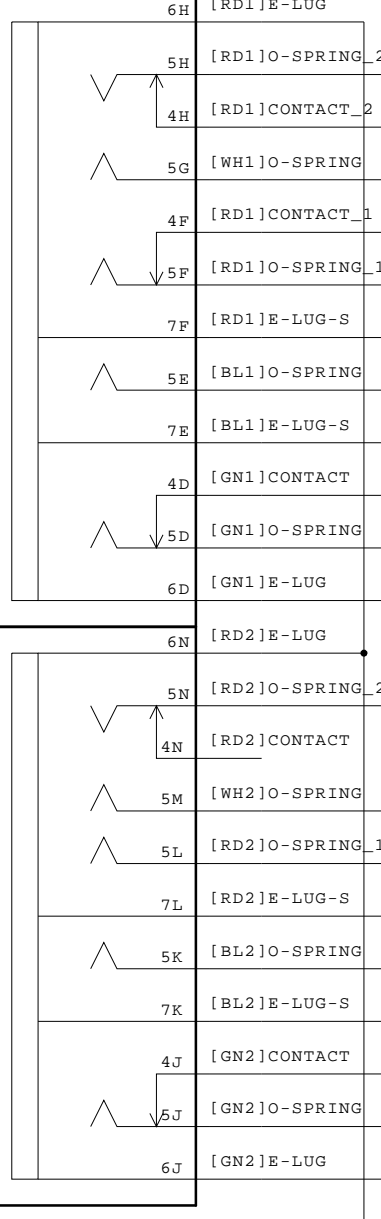
SCART OPTION BLOCK



JK3801
PPJ238-01
NON CI 30



JK3802
PPJ239-01
NON CI 4/5/60



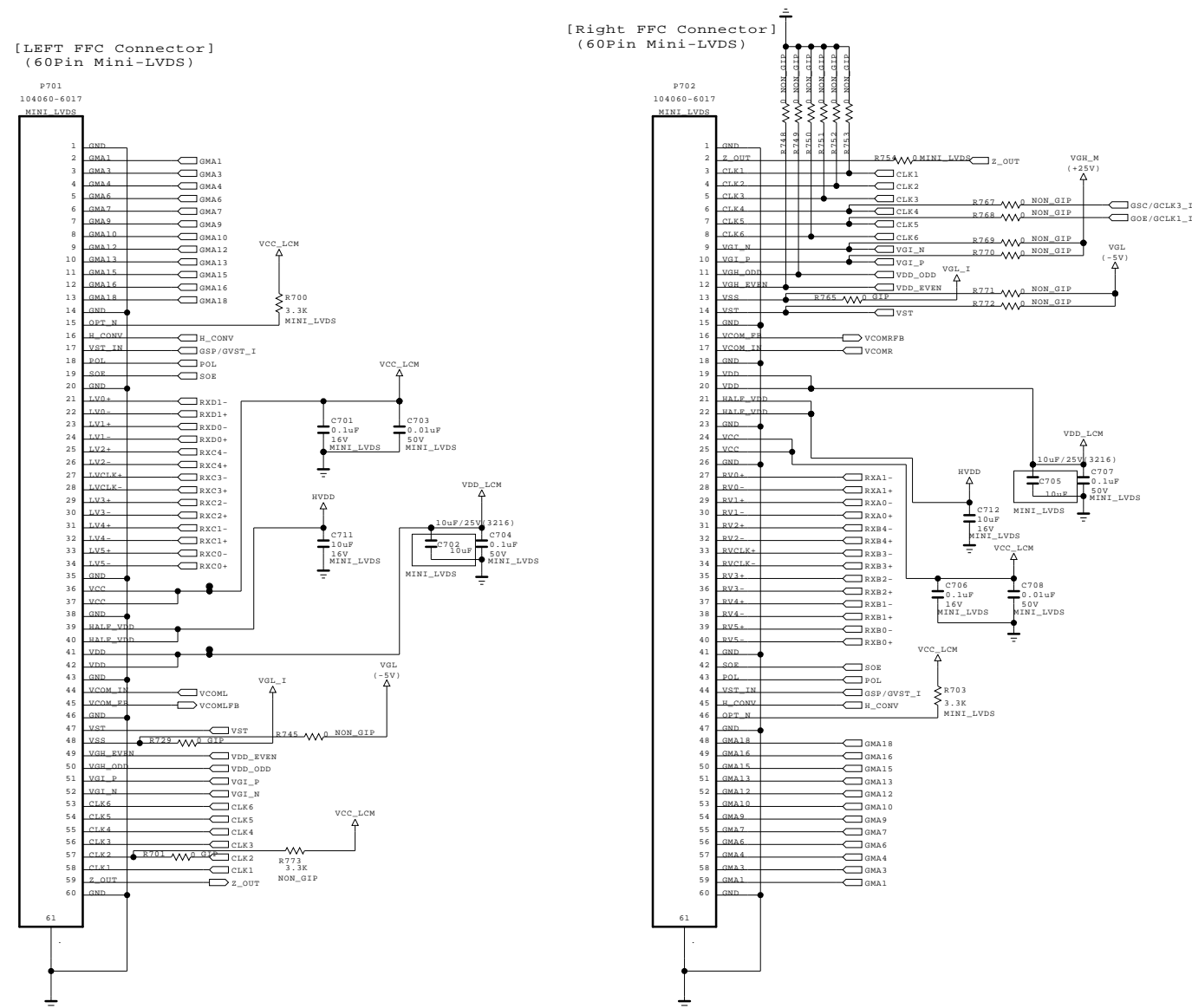
SC1/COMP1_DET	AV_CVBS_DET	RESULT
HIGH	HIGH	SC1/COMP1_DET
HIGH	LOW	SC1/COMP1_DET
LOW	HIGH	AV_CVBS_DET
LOW	LOW	

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 SPECIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.

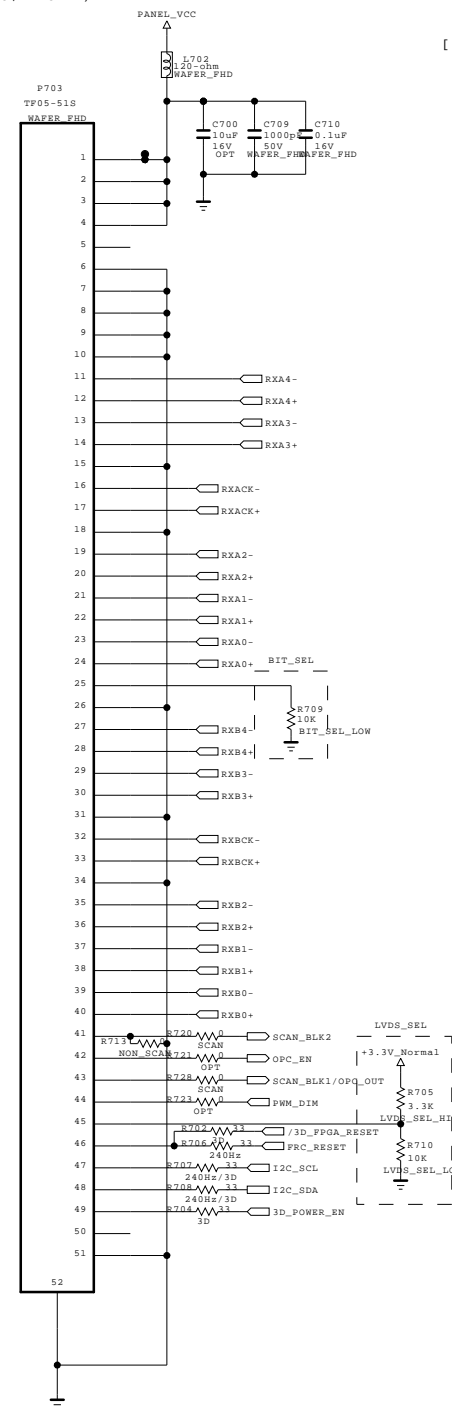
SECRET
LGElectronics



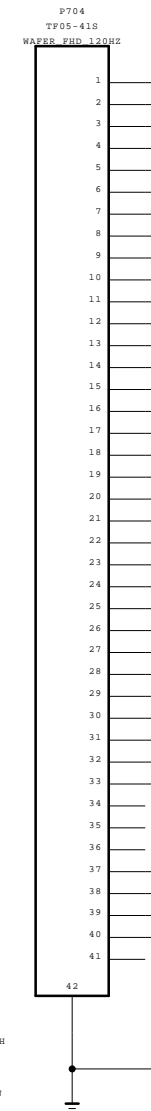
MODEL	GP2_Saturn7M	DATE	Ver. 1.1
BLOCK	NON CI LOW	SHEET	31



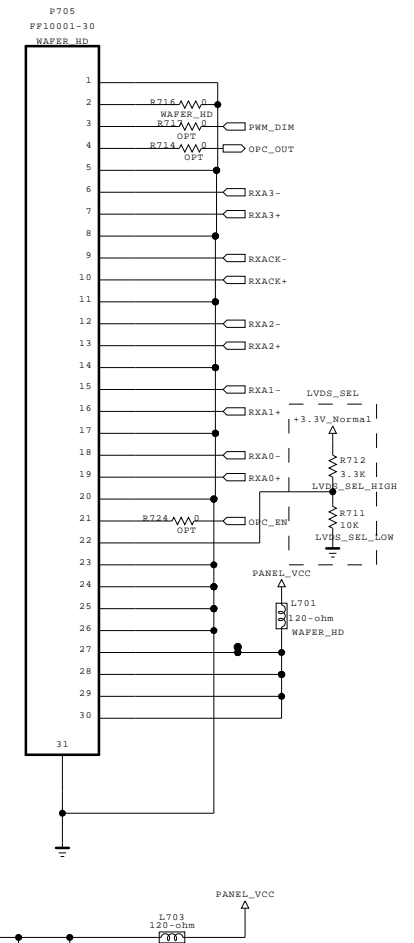
[51Pin LVDS Connector]
(For FHD 60/120Hz)





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



[30Pin LVDS Connector]
(For HD 60Hz_Normal)

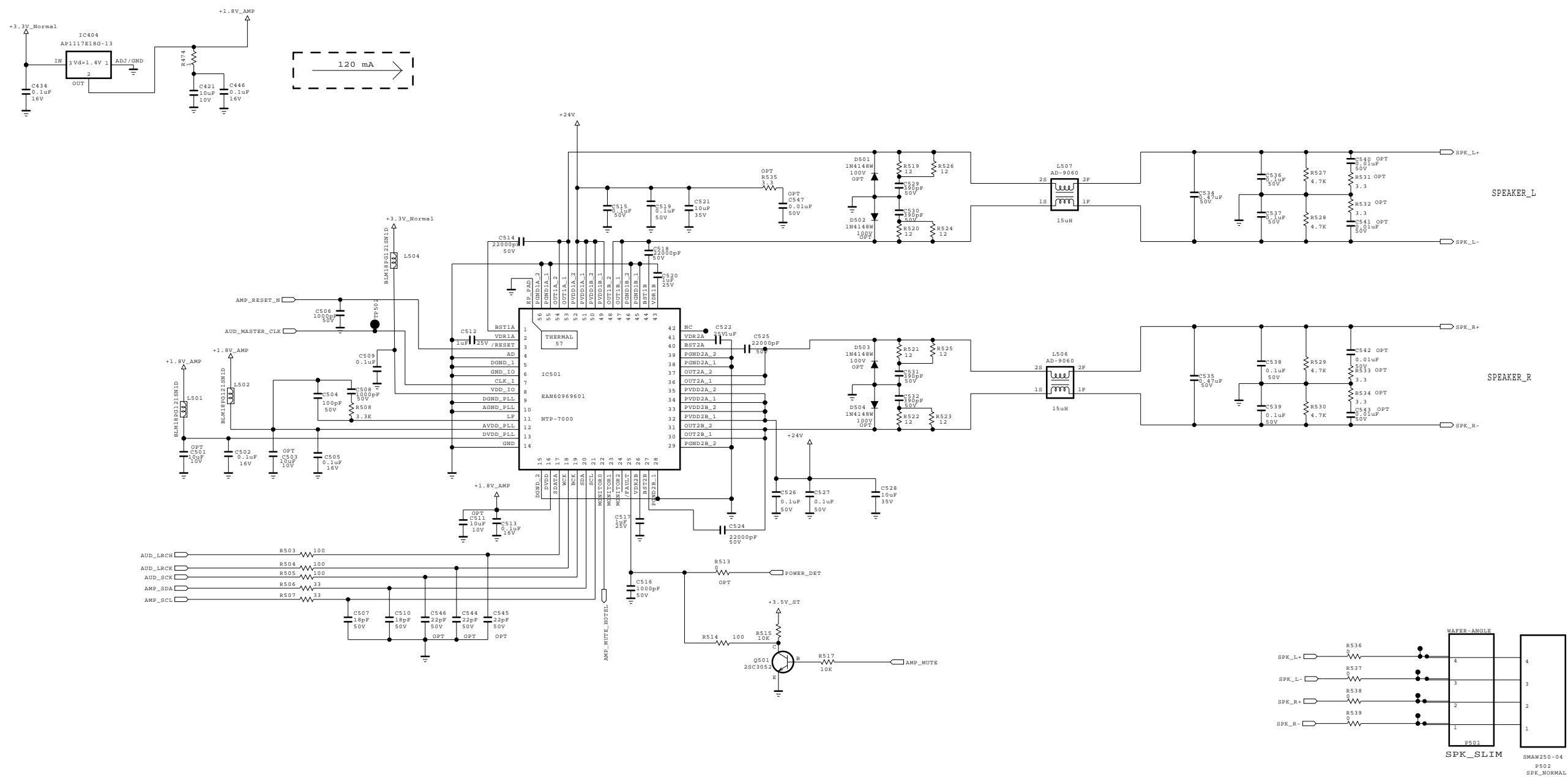




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SECRET
LGElectronics

 LG ELECTRONICS

MODEL	GP2_Saturn7M	DATE	Ver. 1.3
BLOCK	LVDS	SHEET	36



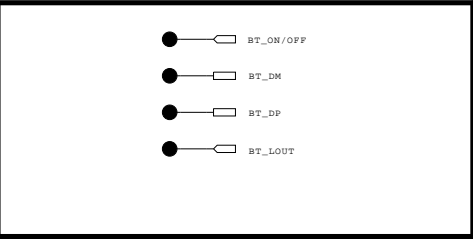
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.



SECRET
LGElectronics

LG ELECTRONICS

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

NOT USING B/T



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 SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMETIC.

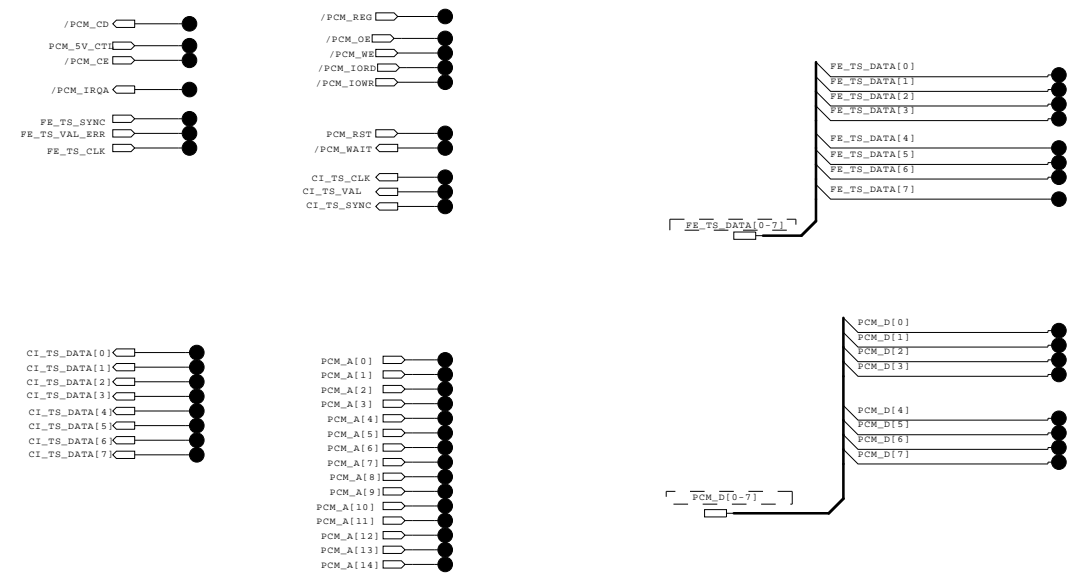
SECRET



LGElectronics



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

NON CI Region



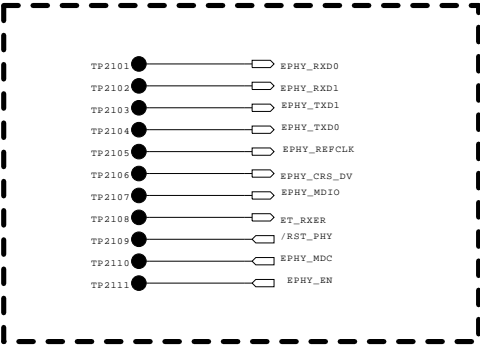
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics



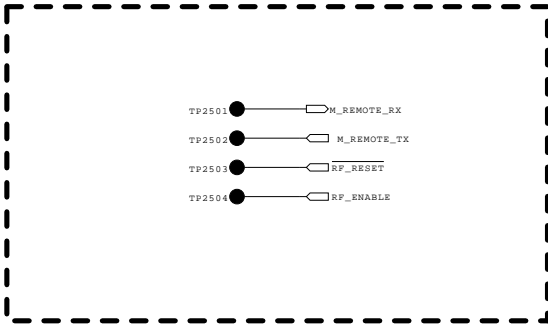
MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	PCMCI	SHEET	46 /



NON ETHERNET



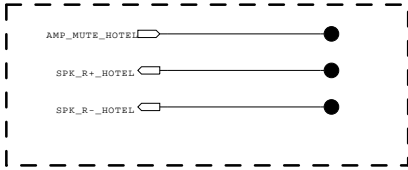
THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.



NON Motion Remocon Region



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NON CHINA HOTEL

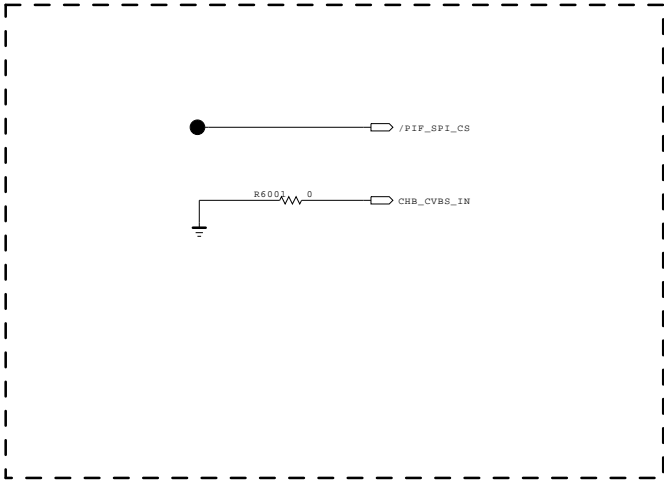




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SECRET
LGElectronics



MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	NON CHINA HOTEL	SHEET	52 /



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.

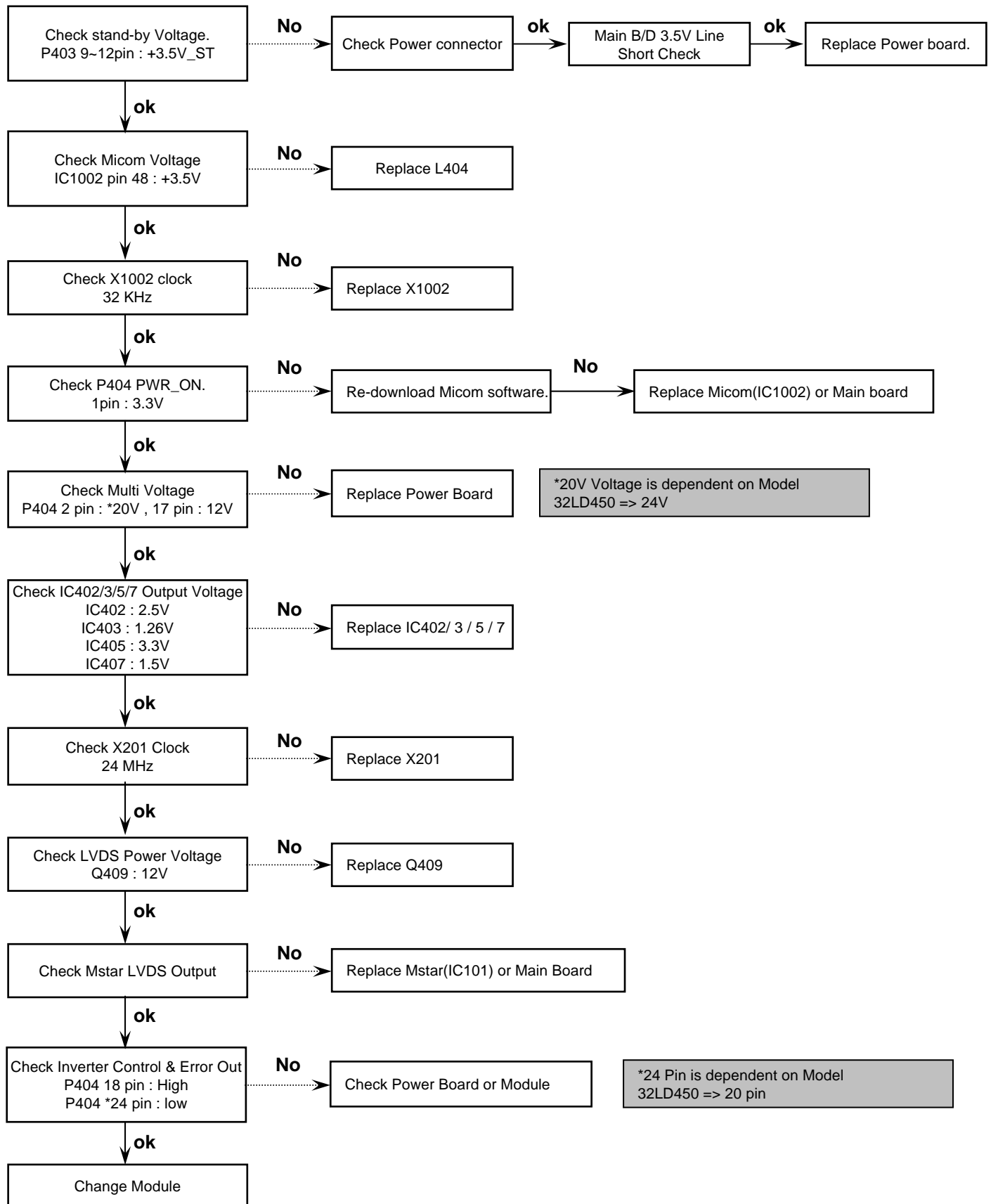
SECRET
LGElectronics



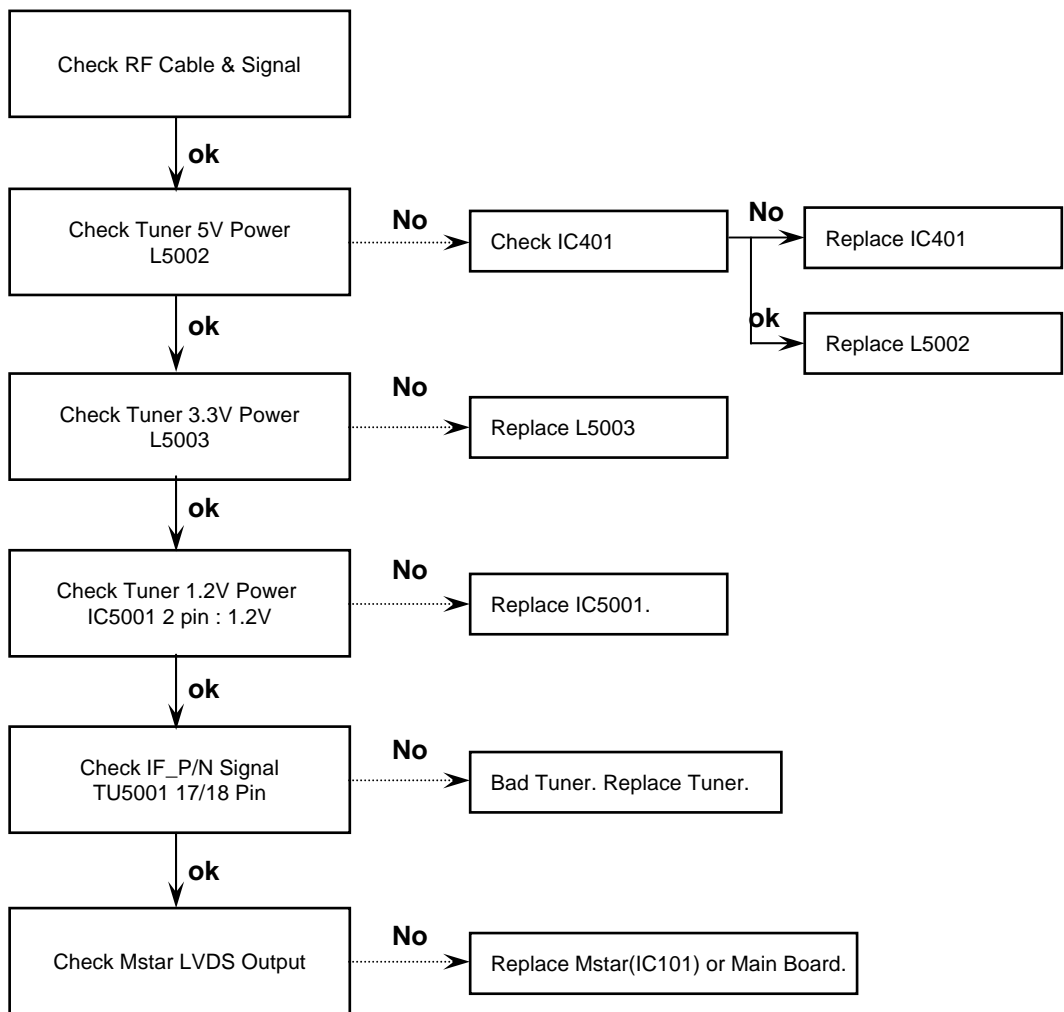
MODEL	GP2_Saturn7M	DATE	Ver. 1.0
BLOCK	NON CHB	SHEET	68 /



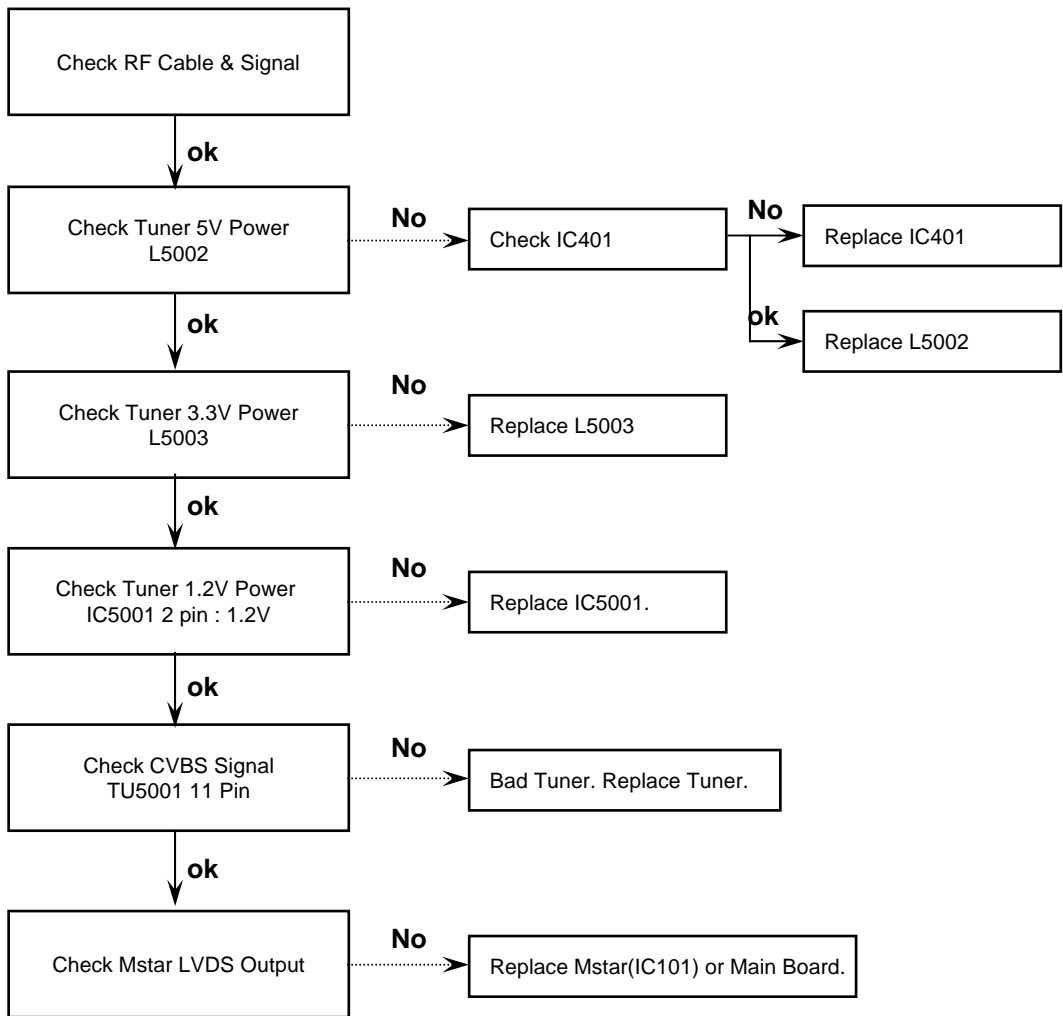
1. Power-up boot check



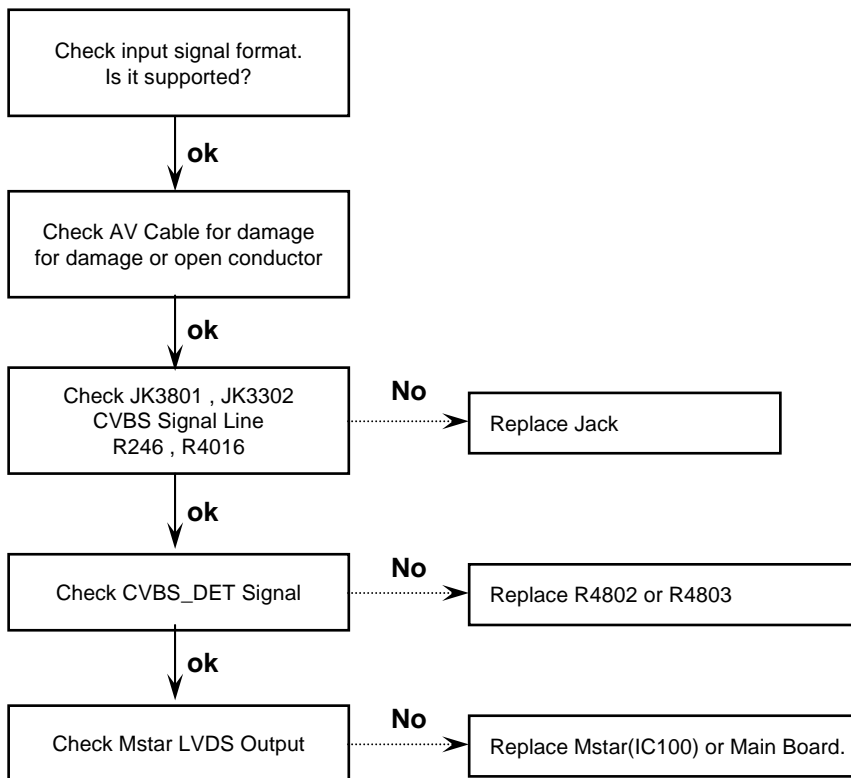
2. Digital TV Video



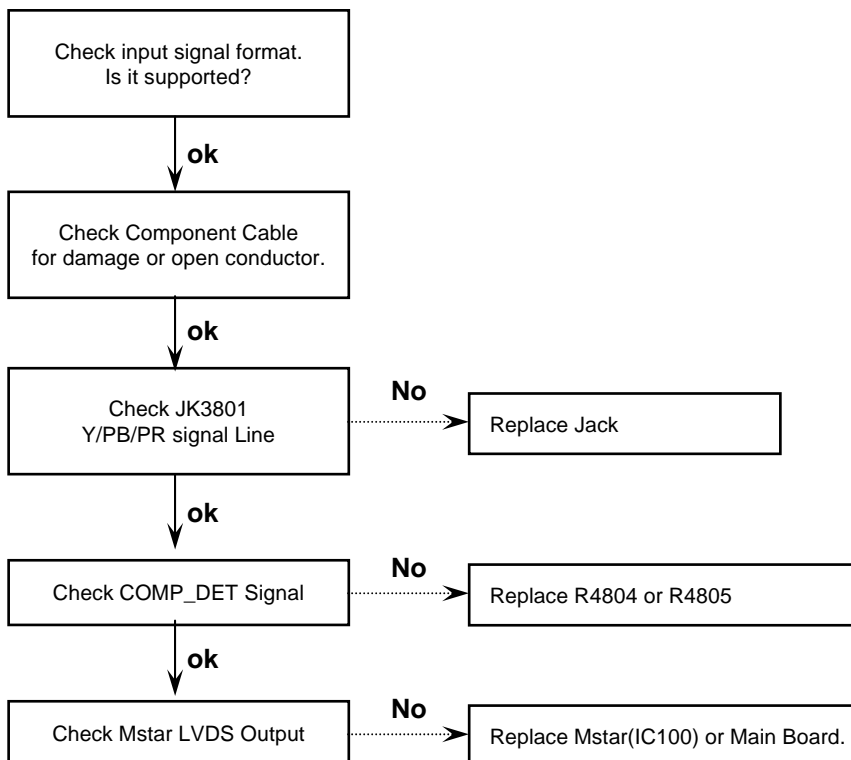
3. Analog TV Video



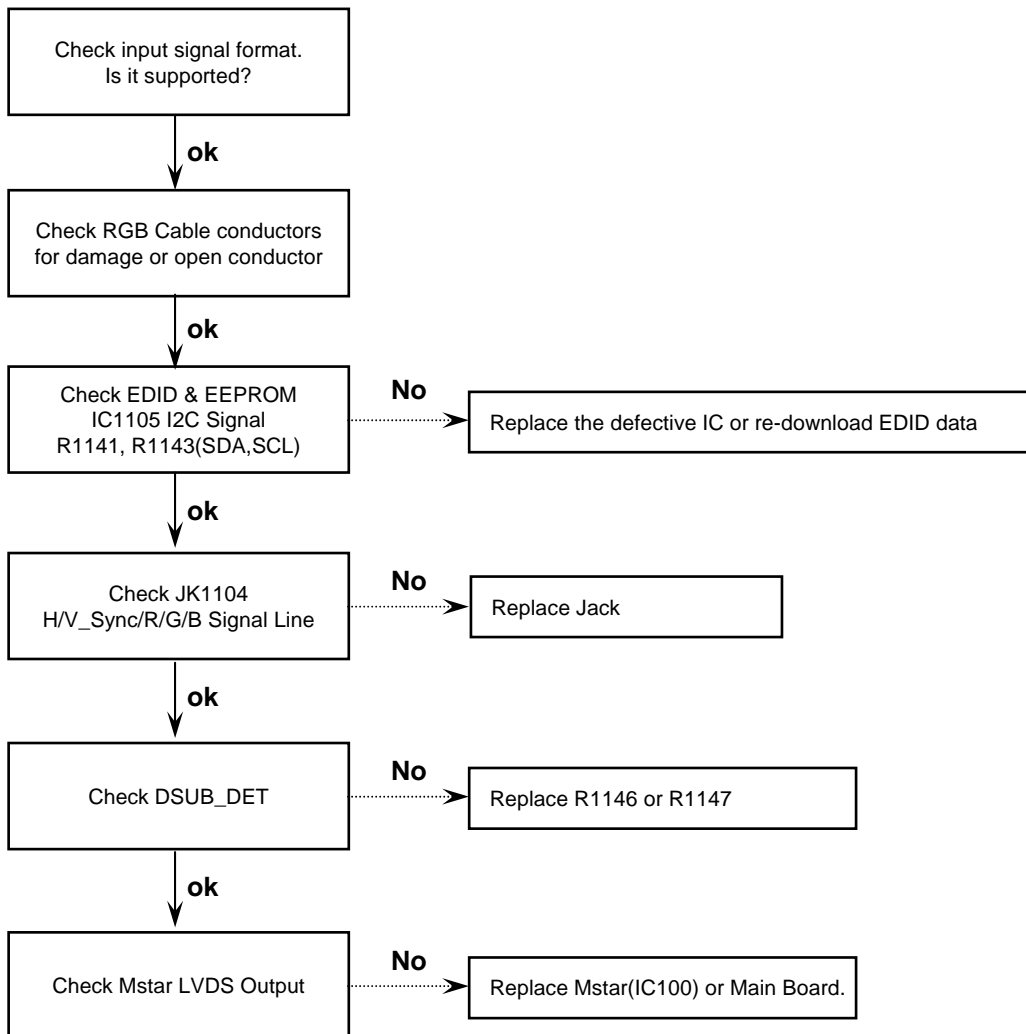
4. AV Video



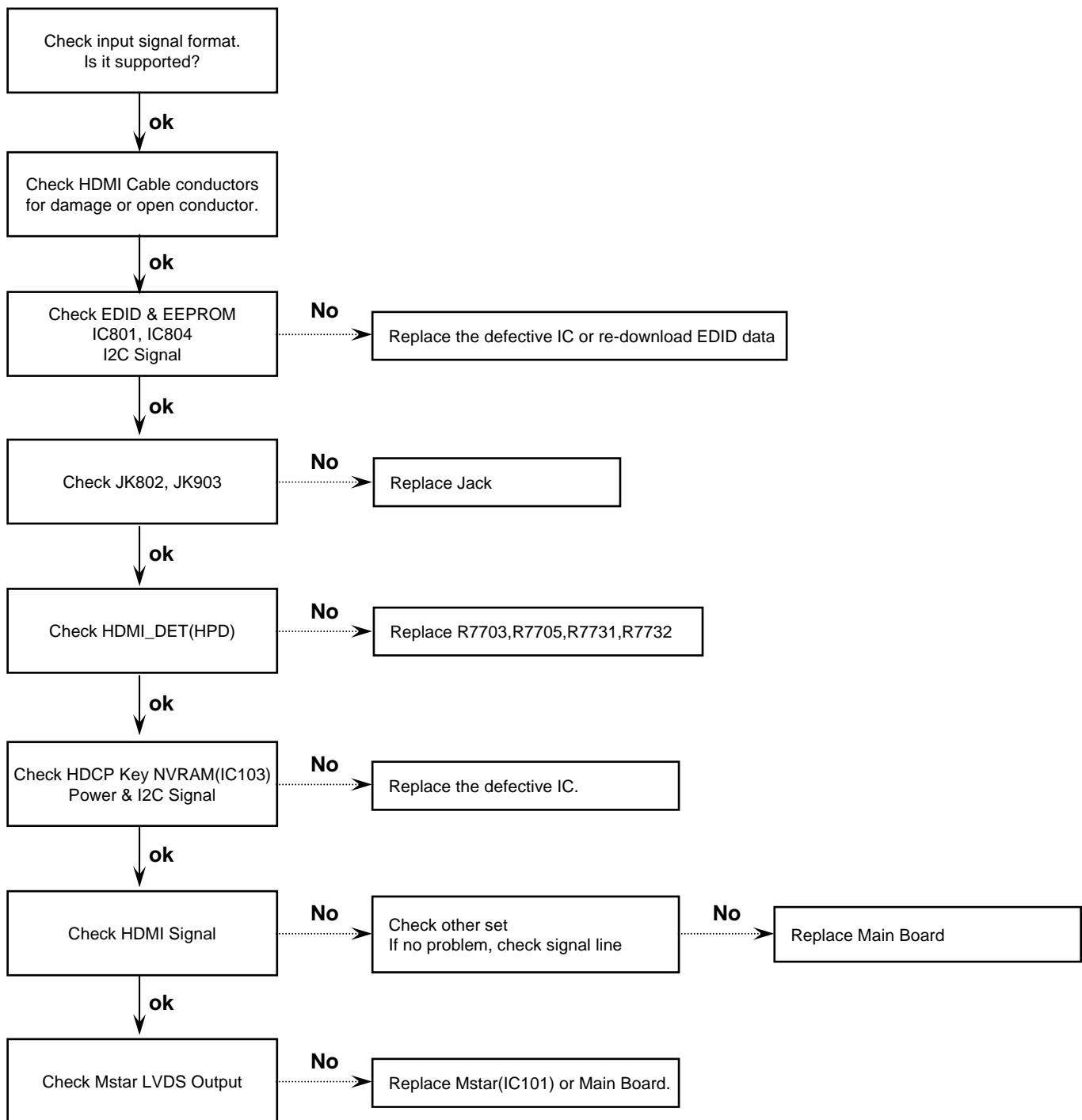
5. Component Video



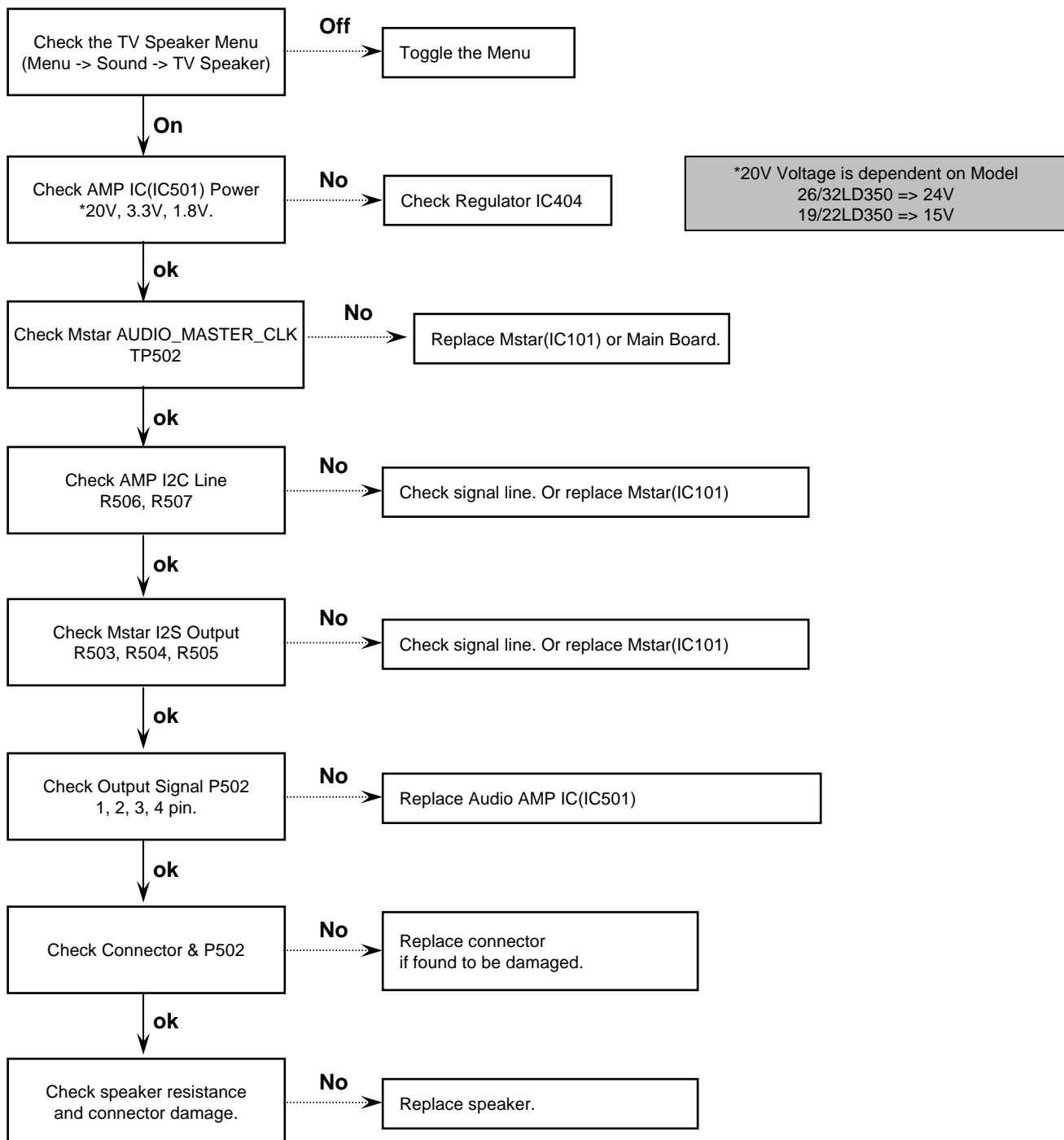
6. RGB Video



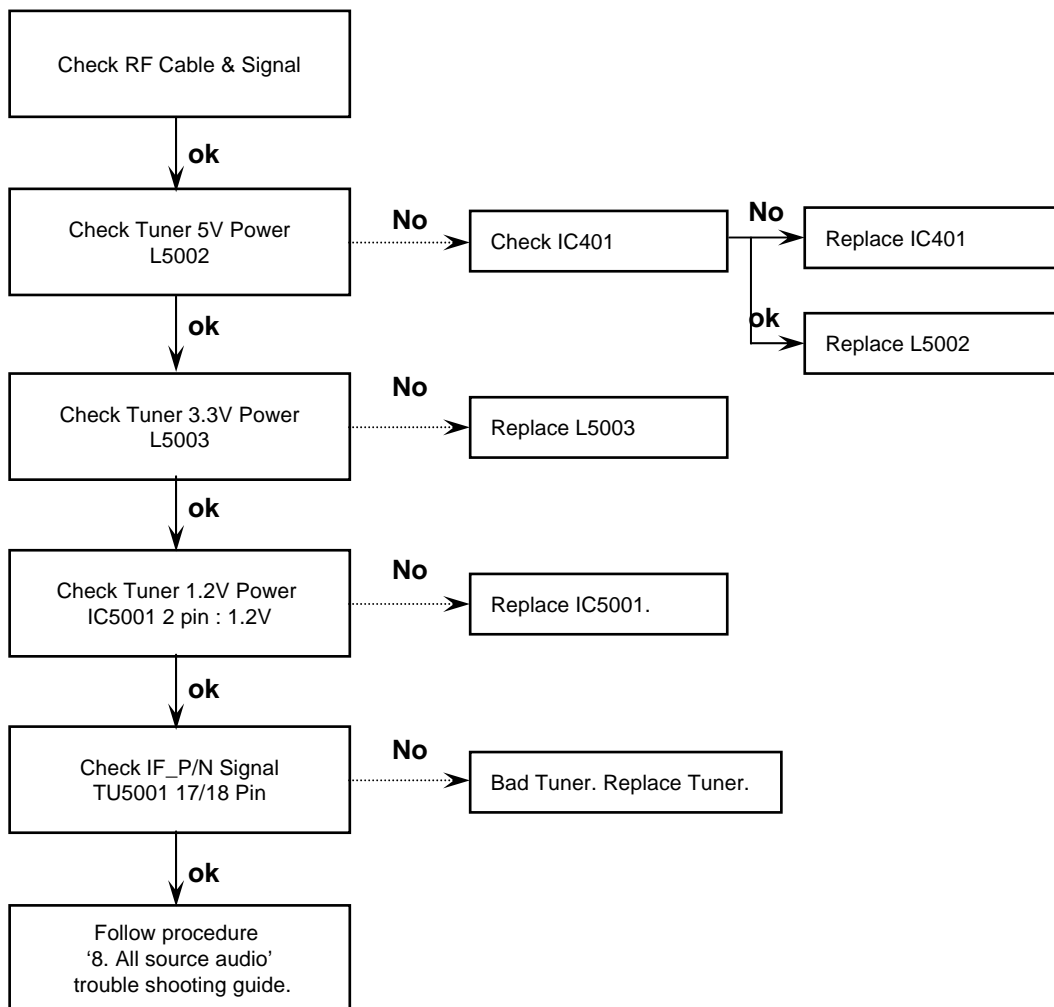
7. HDMI Video



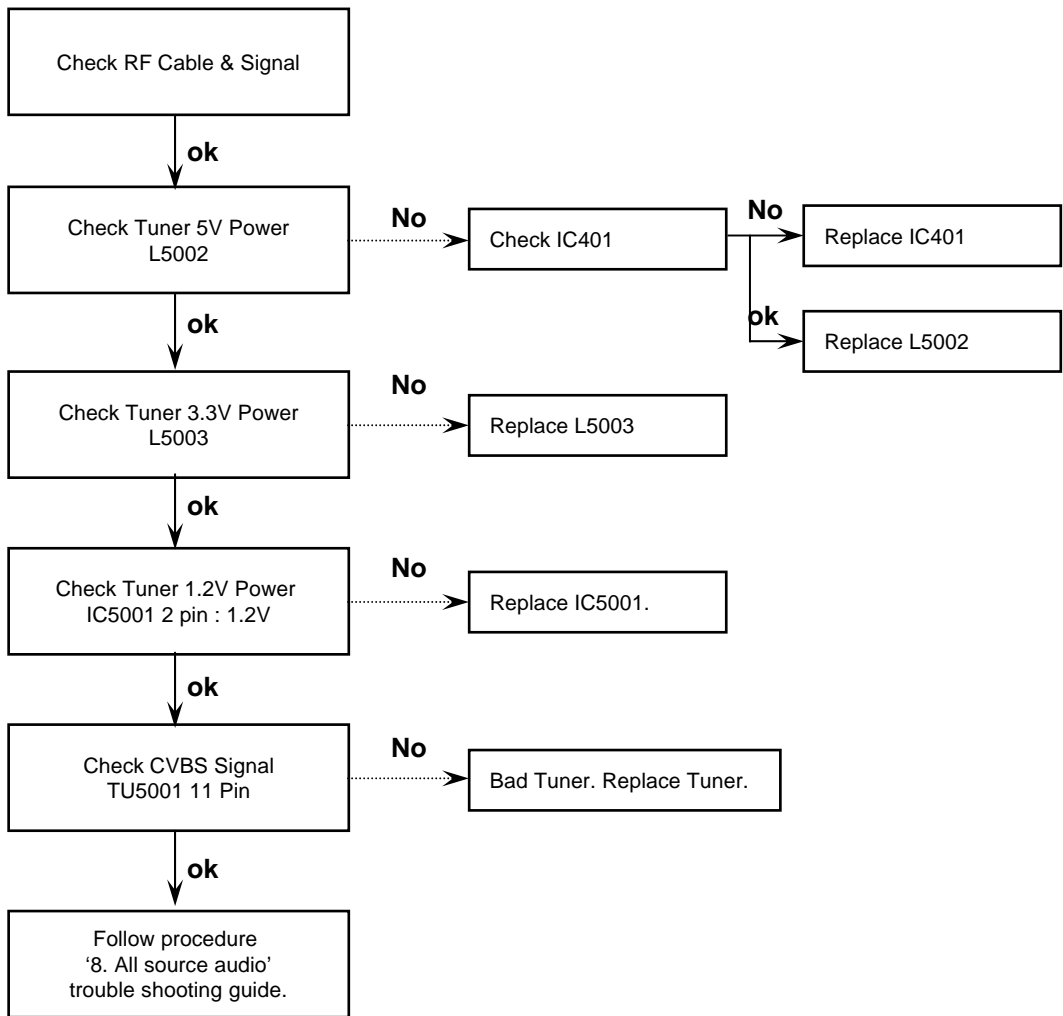
8. All Source Audio



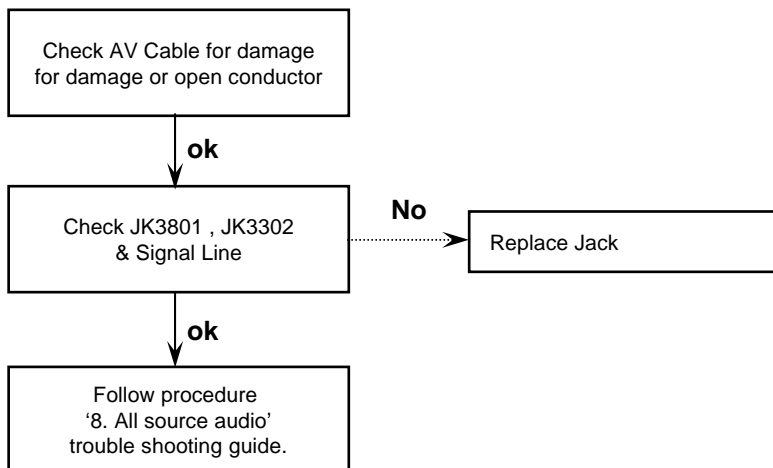
9. Digital TV Audio



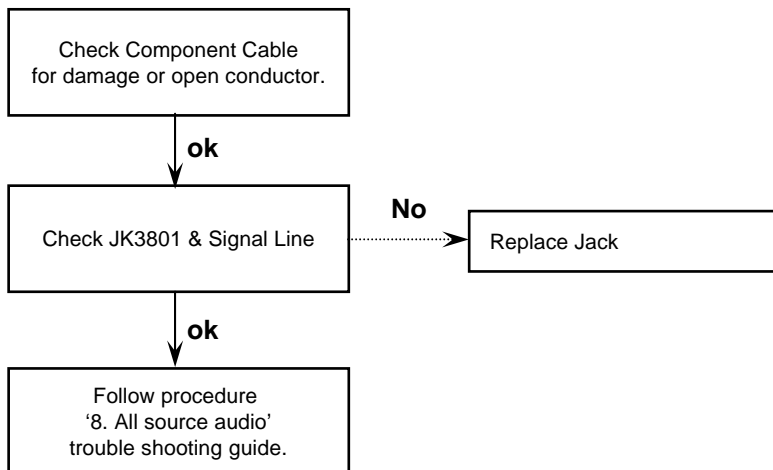
10. Analog TV Audio



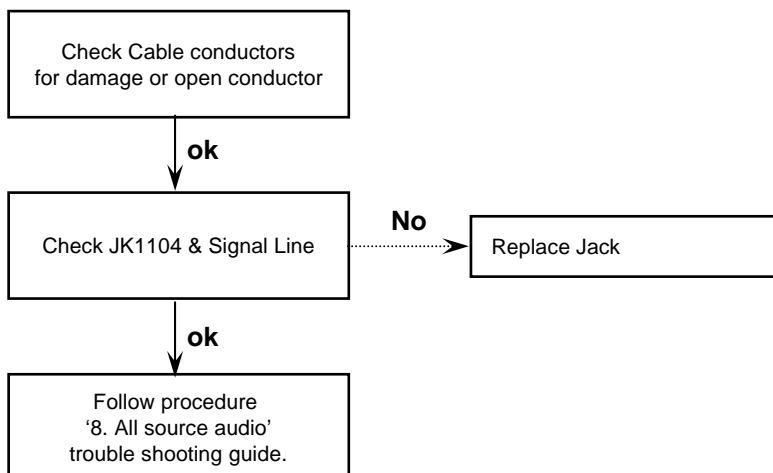
11. AV Audio



12. Component Audio



13. RGB Audio



LD450 Block Diagram

< Contents >

Overall Block Diagram

Video Signal Block

Audio Signal Block

Flash Block & Reset

I2C Block

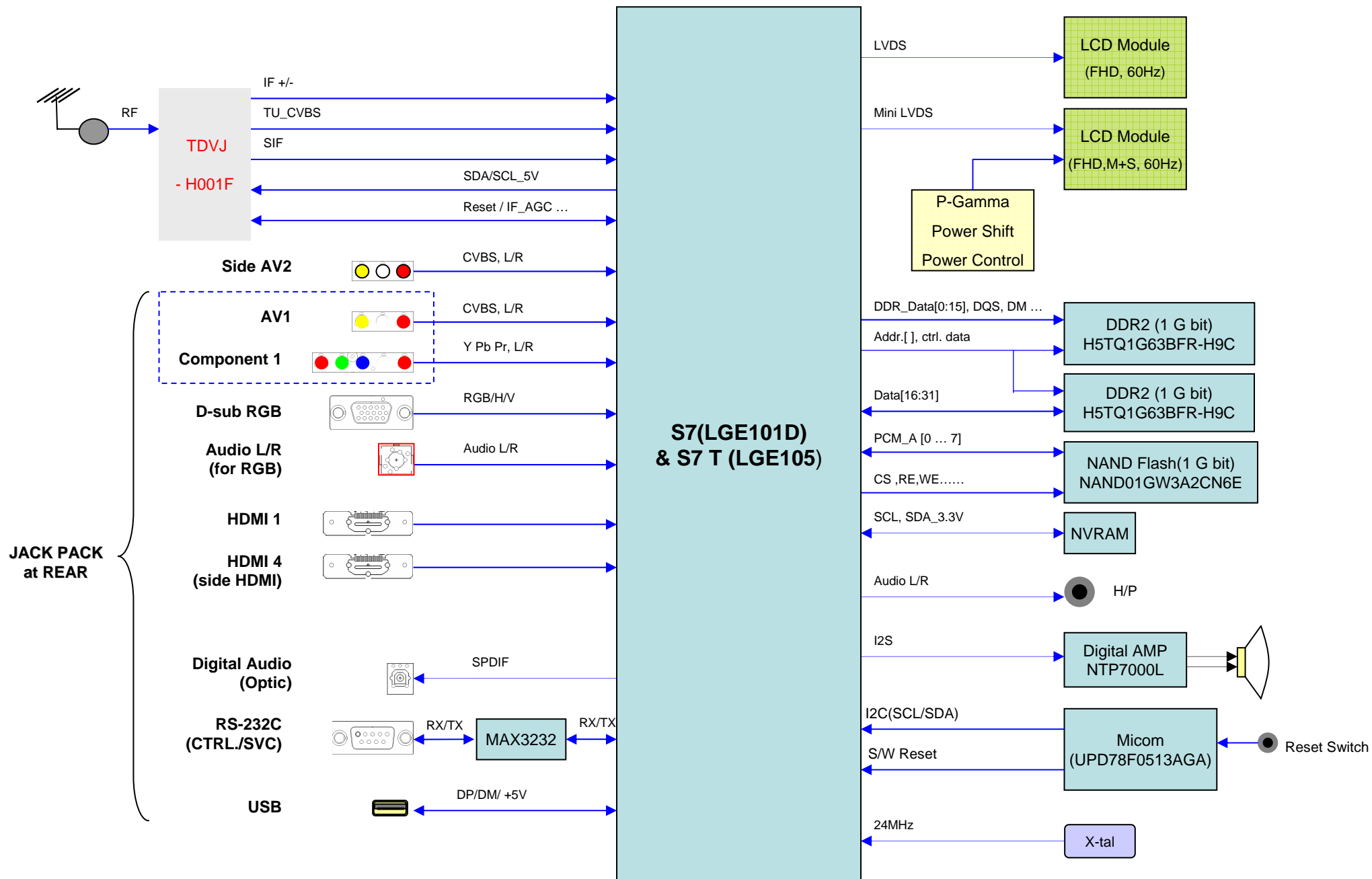
GPIO Block

LVDS 출력 Block

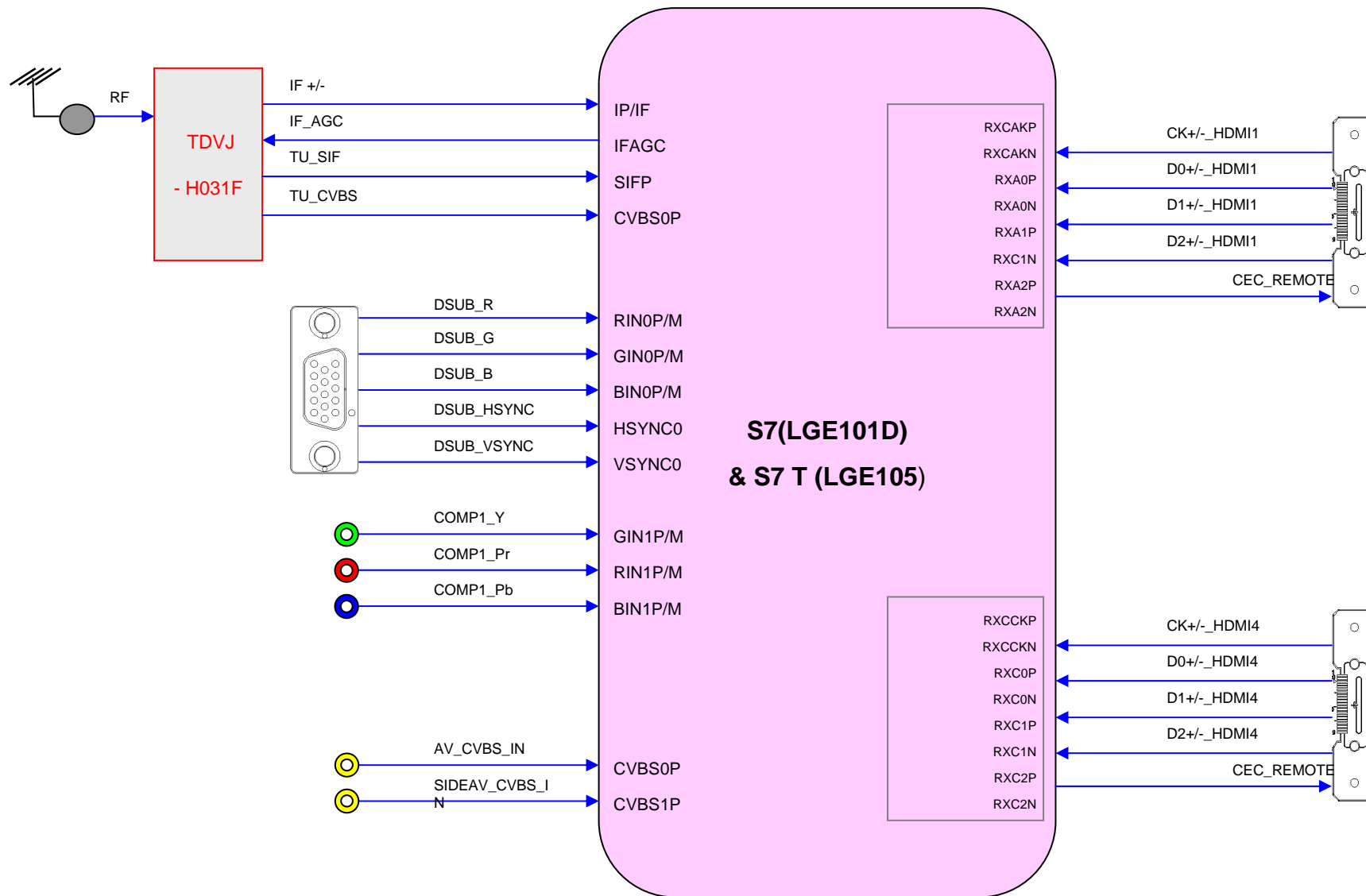
POWER Block



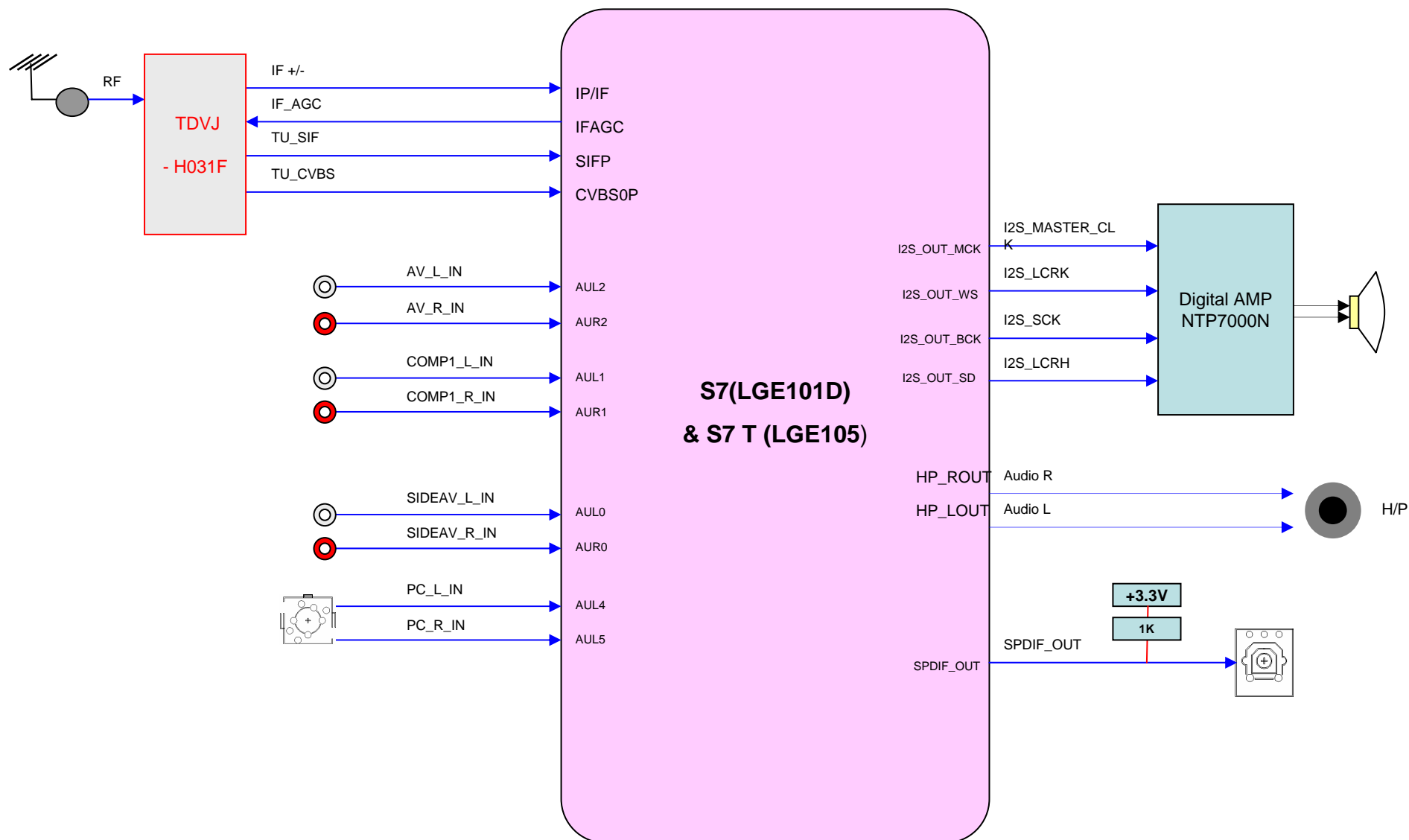
LG Electronics/ LCD TV Division
LCD TV Gr.



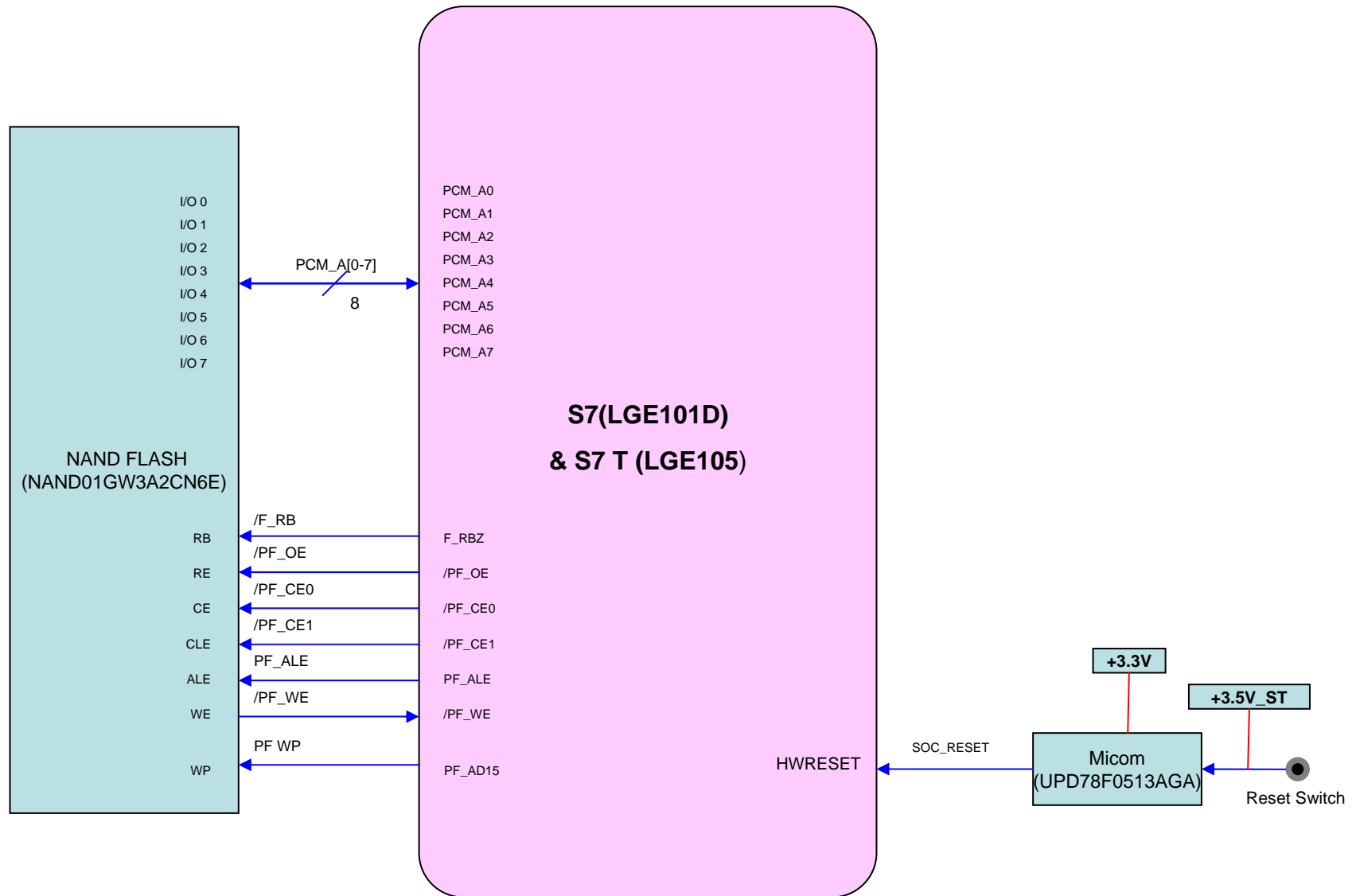
Video Signal Block



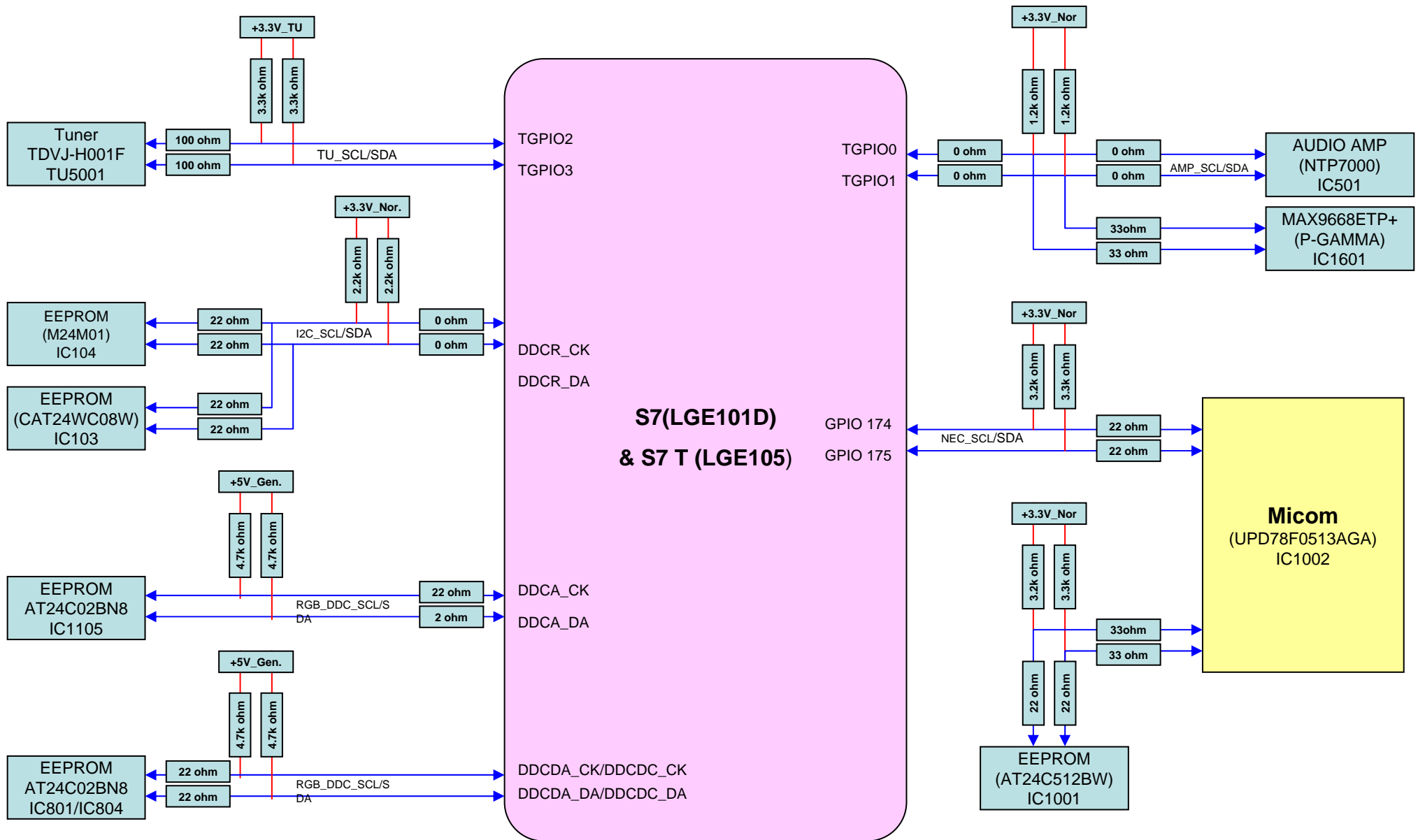
Audio Signal Block



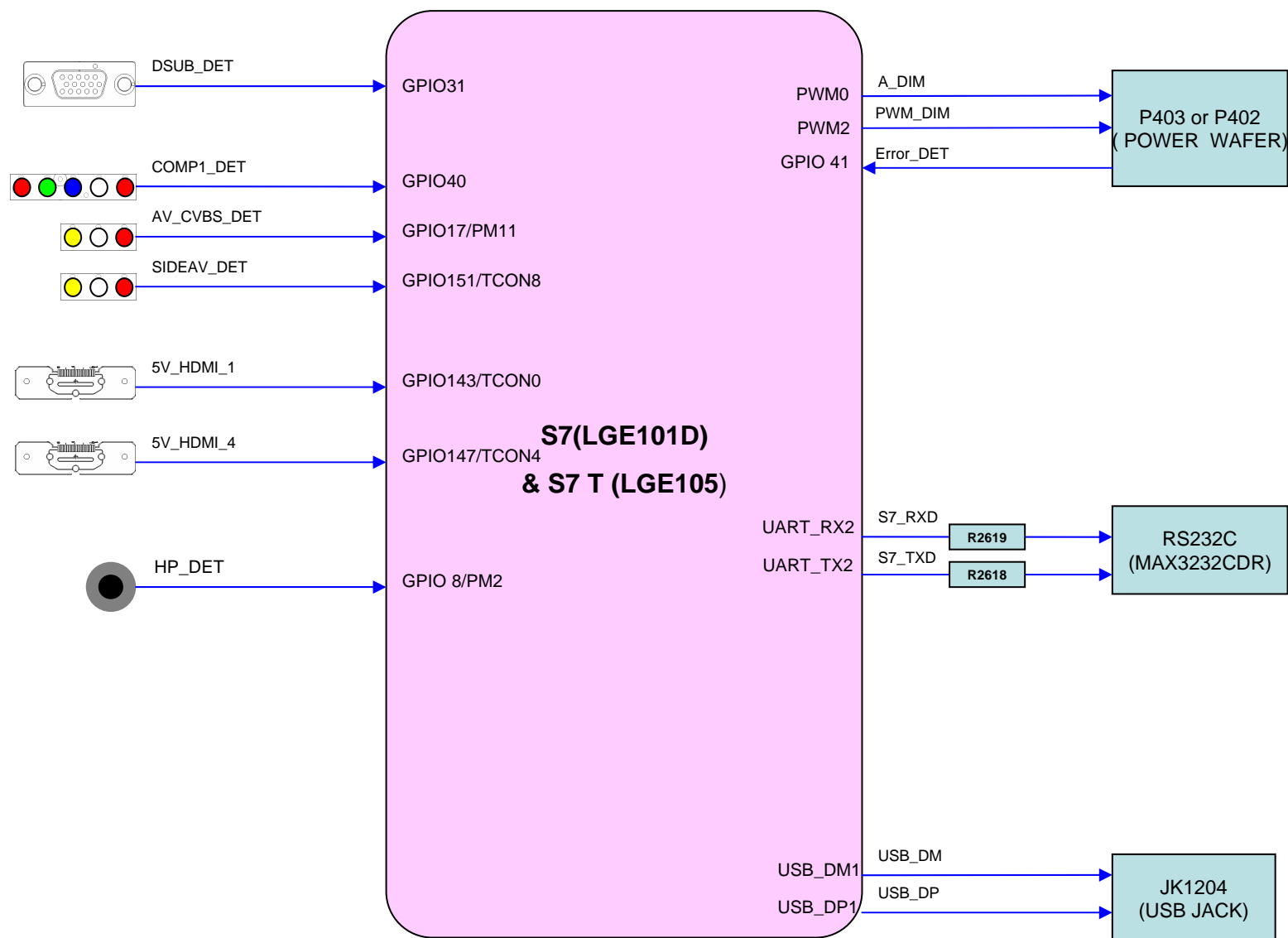
Flash & EJTAG Block



I2C Block



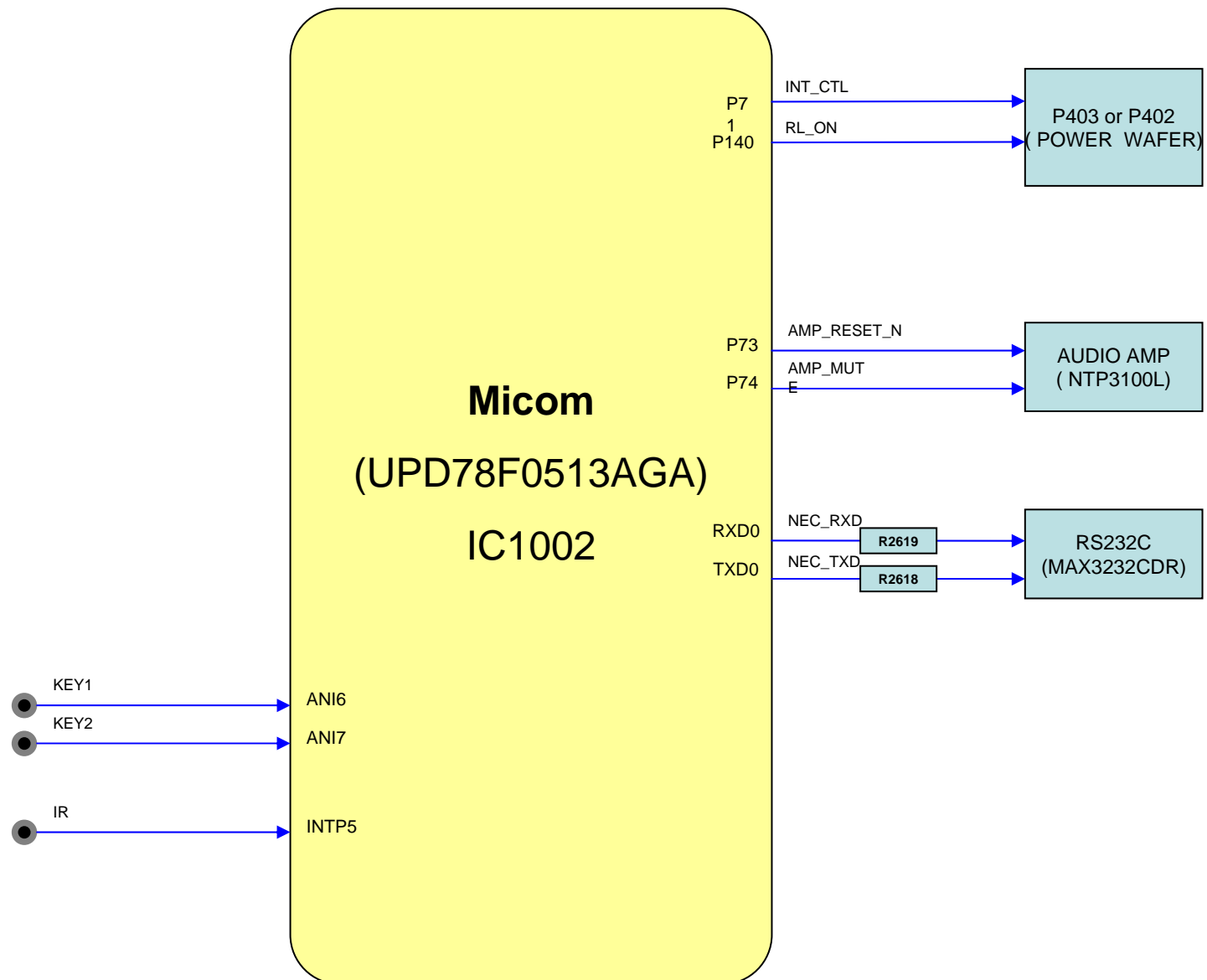
GPIO Block(S7 & S7 T)



GPIO Block(S7 & S7 T)

	Pin Number	Pin Name	Signal Name			Pin Number	Pin Name	Signal Name
41	UART_TX2/GPIO65	M23	S7_TXD		90	GPIO18/PM12/INT4	F10	.
42	UART_RX2/GPIO64	N23	S7_RXD		91	GPIO17/PM11/INT3	G12	AV_CVBS_DET
					92	PM_SPL_CS2/GPIO16/PM10	D8	DEMOD_RESET
43	DDCR_DA/GPIO71	M22	I2C_SDA		93	GPIO15/PM9	F6	TUNER_RESET
44	DDCR_CK/GPIO72	N22	I2C_SCL		94	PM_SPL_WP2/GPIO14/PM8/INT2	F7	MODEL_OPT_2
					95	PM_SPL_WP1/GPIO13/PM7	E9	FLASH_WP
45	DDCA_DA/UART0_TX	A5	RGB_DDC_SDA		96	PM_SPL_CS1/GPIO12/PM6	E8	SPI_CS
46	DDCA_CK/UART0_RX	B5	RGB_DDC_SCL		97	GPIO11/PM5/PM_UART_RX/INT1	C5	MODEL_OPT_1
					98	GPIO10/PM4	F9	MODEL_OPT_6
47	PWM0/GPIO66	K23	PWM0		99	GPIO9/PM3	G9	CONTROL_ATTEN
48	PWM1/GPIO67	K22	PWM1		100	GPIO8/PM2	E11	HP_DET
49	PWM2/GPIO68	G23	PWM2		101	GPIO7/PM1/PM_UART_TX	D7	USB1_CTL
50	PWM3/GPIO69	G22	SC_RE2		102	GPIO6/PM0/INT0	E7	USB1_OCD
51	PWM4/GPIO70	G21	SC_RE1					
					103	GPIO51/UART1_TX	F19	M_REMOTE_TX
52	SAR0/GPIO31	C6	DSUB_DET		104	GPIO50/UART1_RX	F20	M_REMOTE_RX
53	SAR1/GPIO32	B6	MODEL_OPT_					
54	SAR2/GPIO33	C8	PCM_5V_CTL		105	GPIO42	G19	MODEL_OPT_0
55	SAR3/GPIO34	C7	RST_PHY		106	GPIO41	G20	ERROR_OUT
56	SAR4/GPIO35	A6	RST_HUB		107	GPIO40	M20	SC1/COMP1_DET
					108	GPIO39	L20	FRC_RESET
62	MPIF_CS_N	D14	PIF_SPI_CS		109	GPIO38	K20	ET_RXER
63	MPIF_CLK	D12	.		110	GPIO37/UART3_TX	L23	WIRELESS_DL_TX
					111	GPIO36/UART3_RX	K21	WIRELESS_DL_RX
86	PM_SPL_DO/GPIO3	D10	SPI_SDO		112	GPIO151/TCON8	P21	SIDEAV_DET
87	PM_SPL_DI/GPIO2	E10	SPI_SDI		113	GPIO149/TCON6	L21	5V_DET_HDMI_3
88	GPIO0/PM_SPL_CZ	D11	.		114	GPIO147/TCON4	L22	5V_DET_HDMI_4
89	PM_SPL_CK/GPIO1	D9	SPI_SCK		115	GPIO145/TCON2	M21	5V_DET_HDMI_2
					116	GPIO143/TCON0	N21	5V_DET_HDMI_1

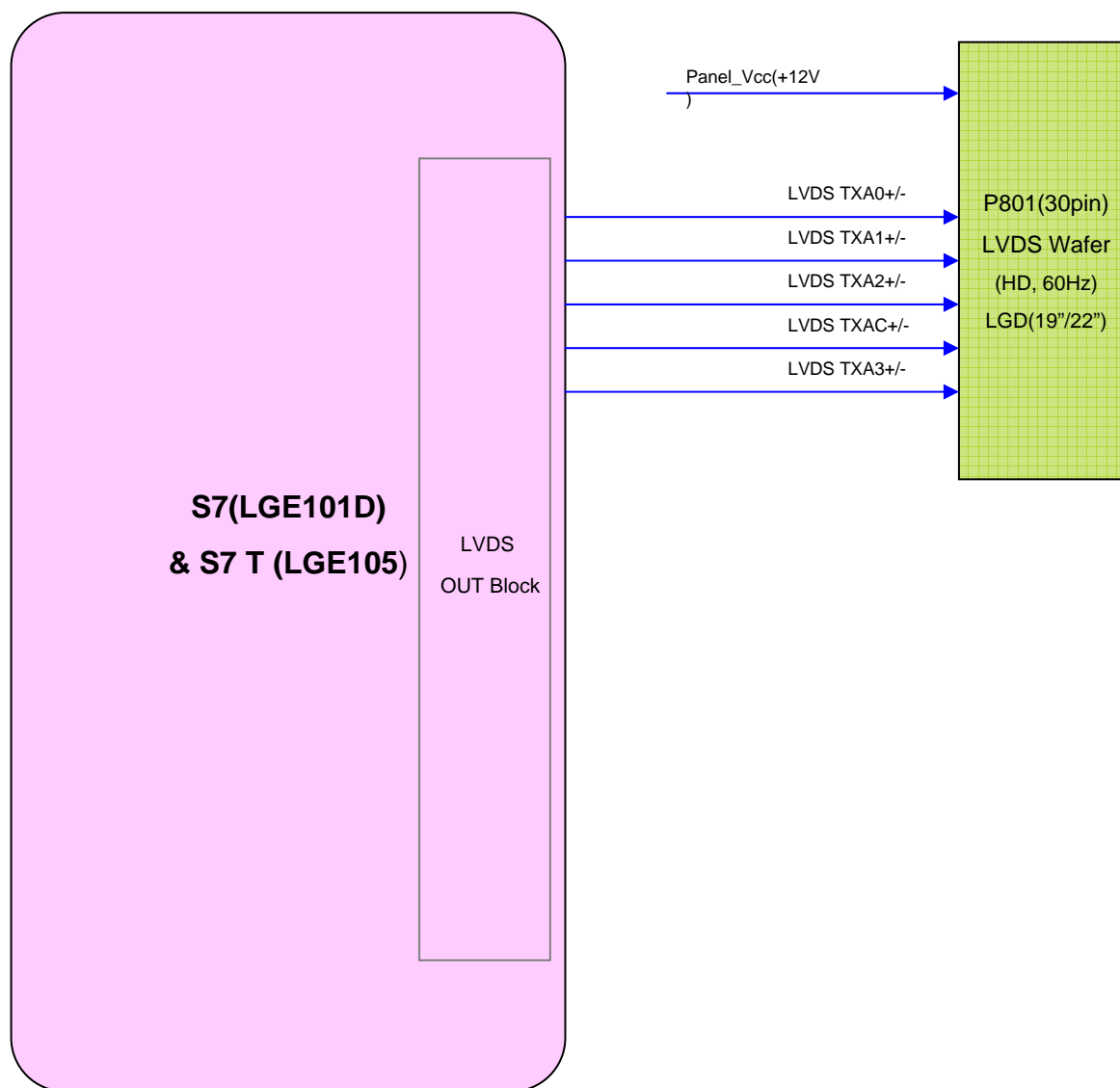
GPIO Block(MICOM)



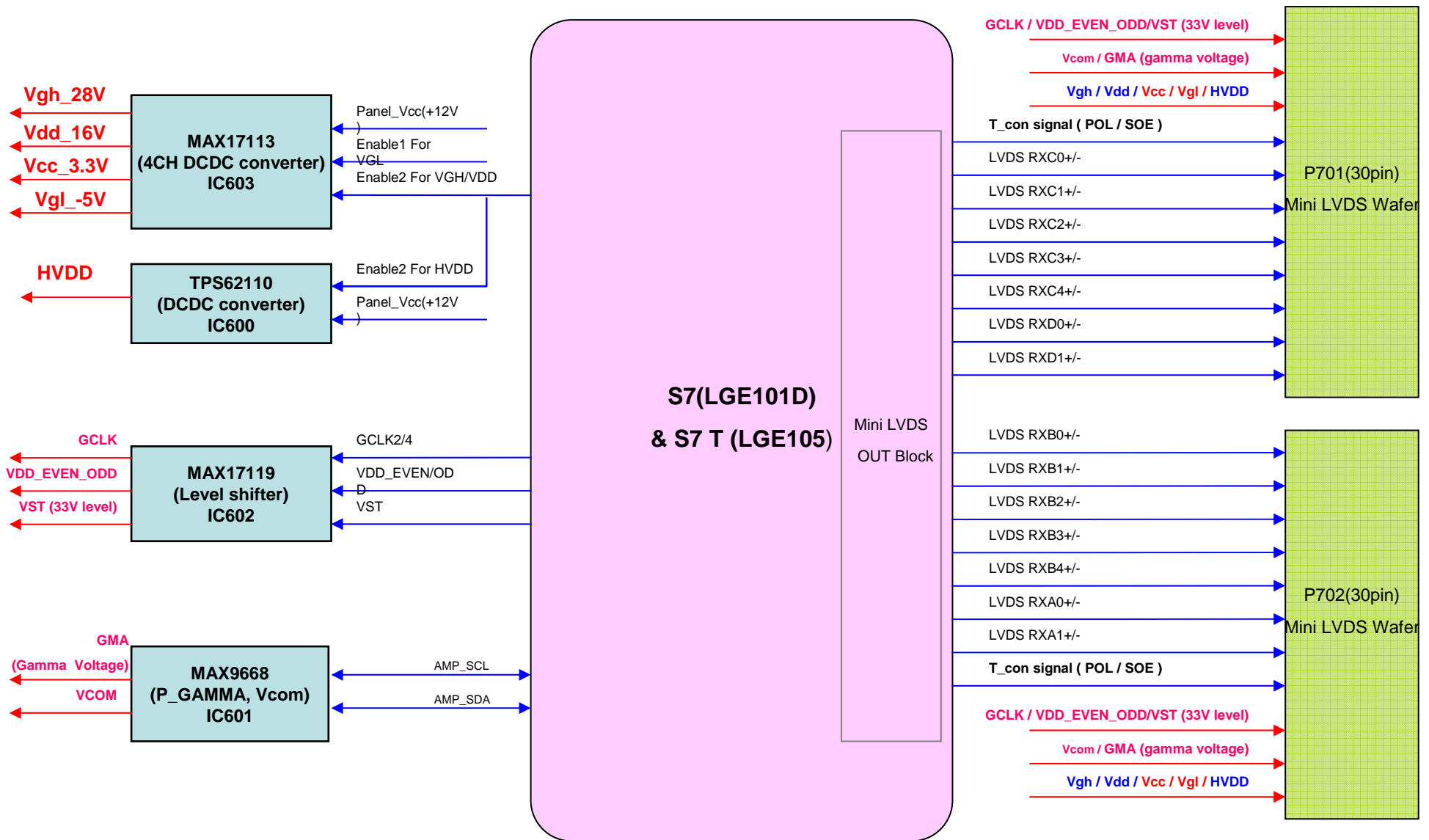
GPIO Block(MICOM)

Pin Number	Pin Name	Signal Name
1	P60/SCL0	NEC_SCL
2	P61/SDA0	NEC_SDA
3	P62/EXSCL0	NEC_EEPROM_SCL
4	P63	NEC_EEPROM_SDA
5	P33/TI51/TO51/INTP4	CEC_REMOTE_NEC
6	P75	POWER_ON/OFF2_1
7	P74	AMP_MUTE
8	P73/KR3	MODEL1_OPT_0
9	P72/KR2	SOC_RESET
10	P71/KR1	INV_CTL
11	P70/KR0	MODEL1_OPT_1
12	P32/INTP3/OCD1B	OCD1B_RF_RESET
13	P31/INTP2/OCD1A	RF_ENABLE_OCD1A
14	P30/INTP1	POWER_DET
15	P17/TI50/TO50	LED_B/LG_LOGO
16	P16/TOH1/INTP5	IR
17	P15/TOH0	LED_R/BUZZ
18	P14/RXD6	NEC_ISP_Rx
19	P13/TXD6	NEC_ISP_Tx
20	P12/SO10	POWER_ON/OFF2_2
21	P11/SL10/RXD0	NEC_RXD
22	P10/SCK10/TXD0	NEC_TXD
25	ANI7/P27	KEY1
26	ANI6/P26	KEY2
27	ANI5/P25	SIDE_HP_MUTE
28	ANI4/P24	OLP
29	ANI3/P23	POWER_ON/OFF1
30	ANI2/P22	MODEL1_OPT_2
31	ANI1/P21	MODEL1_OPT_3
32	P20/ANI0	SCART1_MUTE
33	P130	WIRELESS_SW_CTRL
34	P01/TI010/TO00	EDID_WP
35	P00/TI000	OPC_EN
36	P140/PCL/INTP6	RL_ON
37	P120/INTP0/EXLVI	KEY2
38	P41	WIRELESS_PWR_EN
39	P40	WIRELESS_DETECT
40	RESET	MICOM_RESET
43	FLMD0	FLMD0

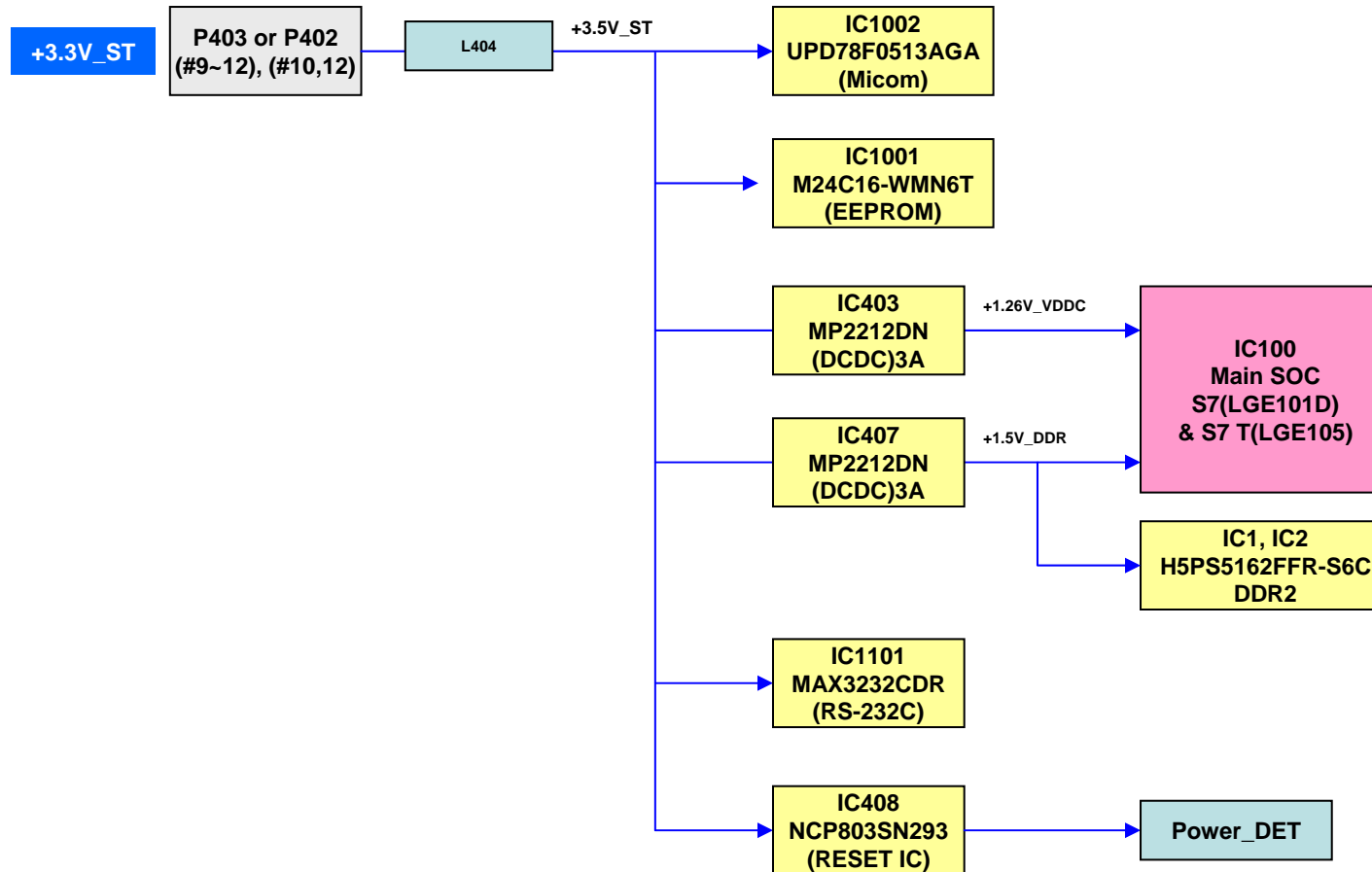
LVDS Output Block(32"/37")



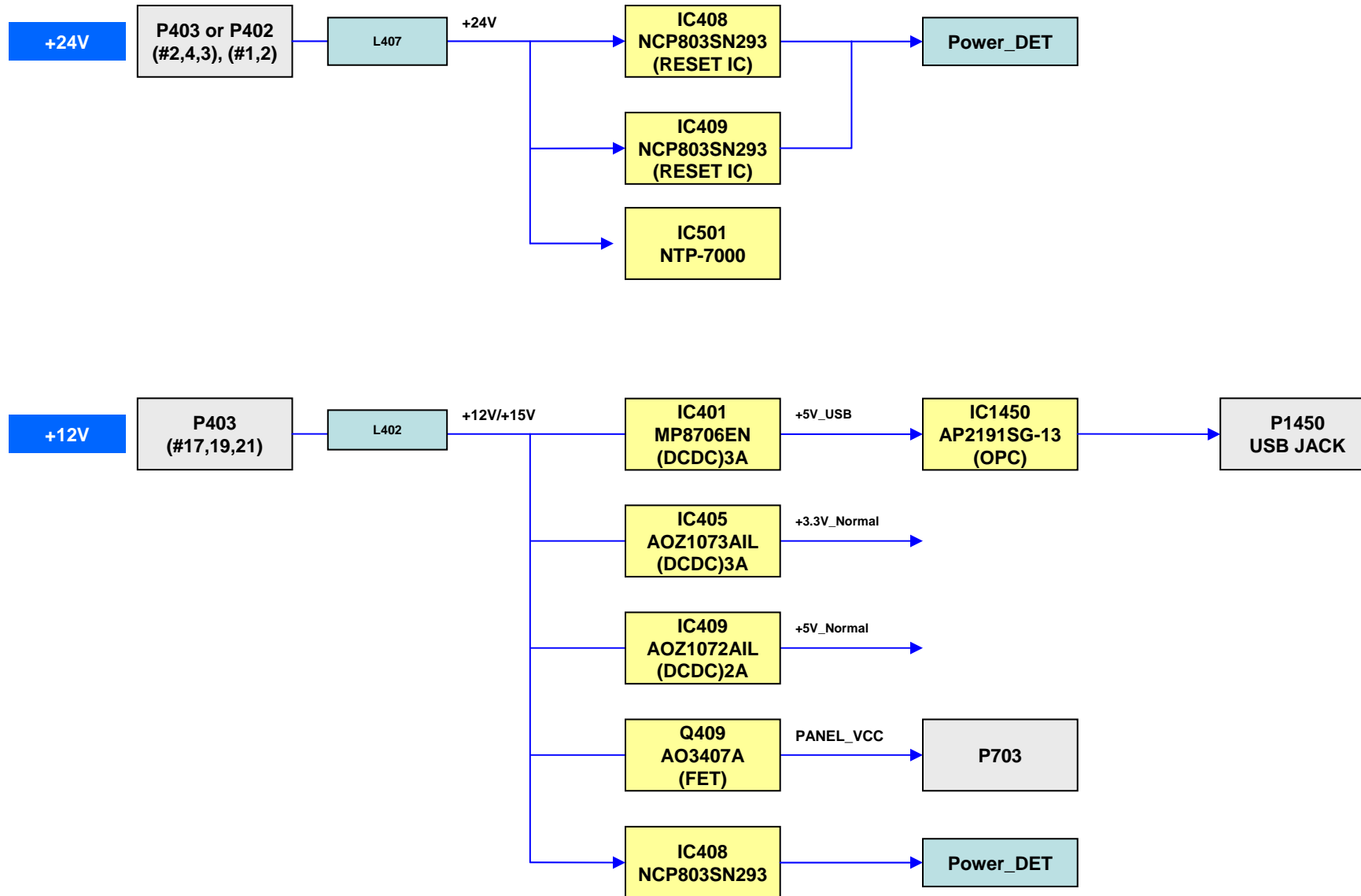
M+S Output Block(42"/47")



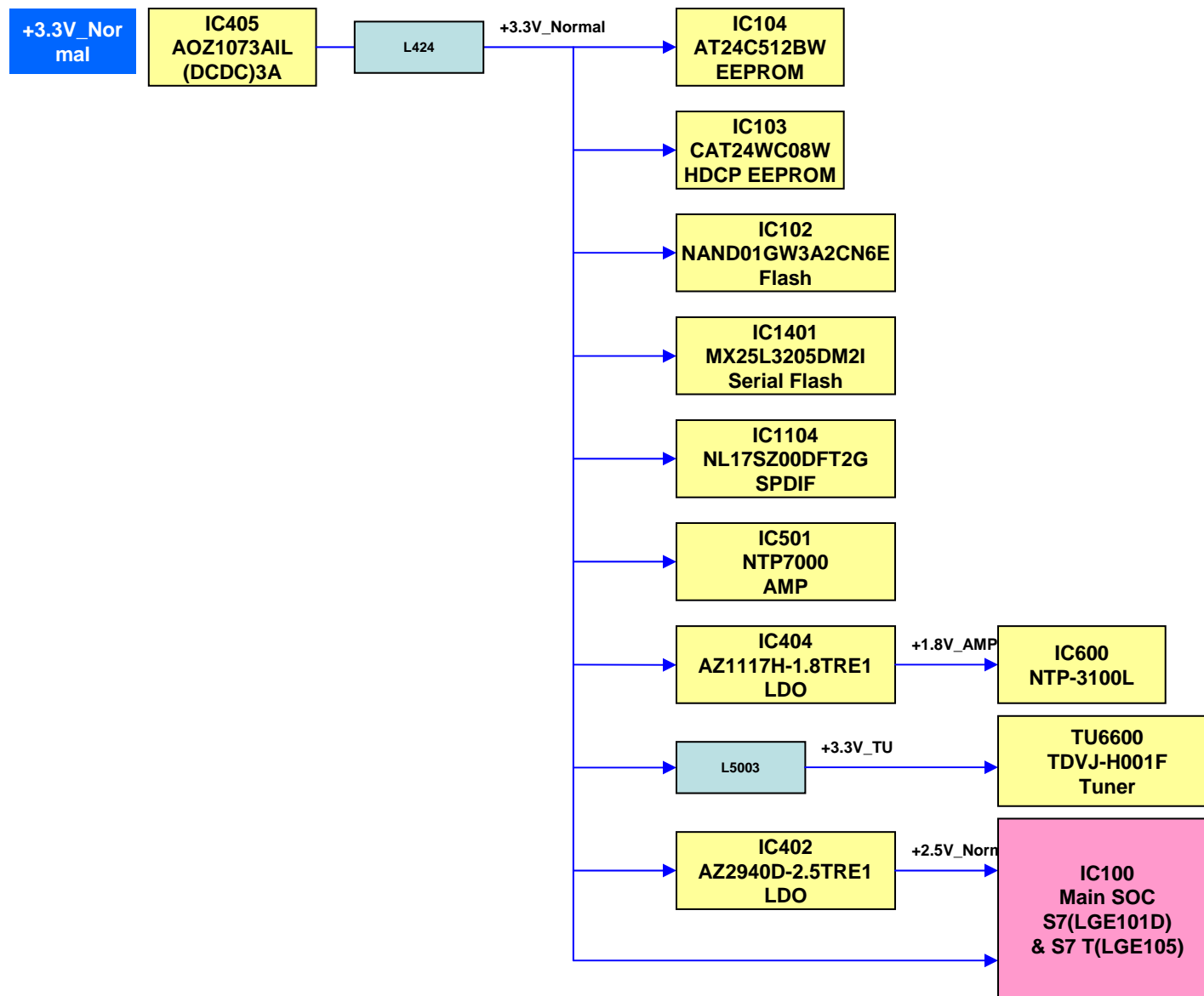
POWER Block (+3.5V_ST)



POWER Block (+24V & 12V)



POWER Block (+3.3V_Normal)



POWER Block (+5V_Normal)

