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LCD TV
SERVICE MANUAL

CHASSIS : LC12C

MODEL : 32LW5500 32LW5500-CA
42LW5500 42LW5500-CA
47LW5500 47LW5500-CA

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

P/NO : MFL67002332 (1109-REV00)

Printed in China

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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 it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

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

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 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,

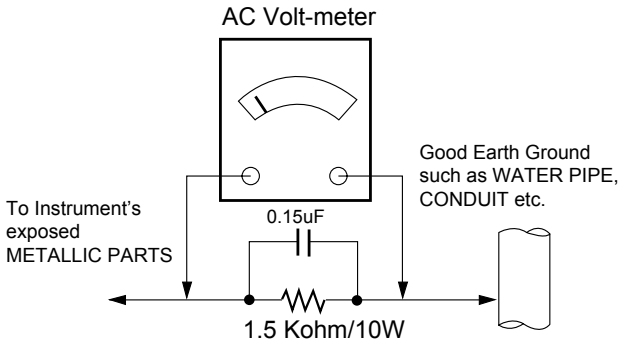
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

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 1MΩ and 5.2MΩ.
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 is 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



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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 in 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.

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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.

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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 LC12C chassis.

2. Requirement for Test

Each part is tested as below without special appointment.

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

3. Test method

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

4. Module General Specification

No.	Item	Specification		Remark
1	Display Screen Device	32,42,47Wide Color Display Module		LCD
2	Aspect Ratio	16:9		
3	LCD Module	LC320EUF-SDF3		32LW5500-CA
		LC420EUF-SDF1/ LC420EUF-SDF2		42LW5500-CA
		LC470EUF-SDF1/ LC470EUF-SDF2		47LW5500-CA
4	Operating Environment	Temp. : 0 deg ~ 50 deg		
		Humidity : 20 % ~ 90 %		
5	Storage Environment	Temp. : -20 deg ~ 60 deg		
		Humidity : 10 ~ 90 %		
6	Input Voltage	AC 100-240V~, 50 / 60Hz		
7	Power Consumption	Power on (White)		
		32LGD	Typ : 69.7W	
		42LGD	Typ : 90.5W	
		47LGD	Typ : 90W	
8	Outline Dimension	32LGD	698.40(H) x 392.85 (V) x 10.8(B) / 24.0 mm (D)	
		42LGD	968.4(H) x 564.0(V) x 10.8(B) / 22.9mm(D)	
		47LGD	1078.6(H) x 626.0(V) x 10.8(B) / 22.9mm (D)	
8	Pixel Pitch	32LGD	0.36375 mm x 0.36375 mm x RGB	
		42LGD	0.4845 mm x 0.4845 mm x RGB	
		47LGD	0.5415 mm x 0.5415 mm x RGB	
9	Back Light	Edge LED		
10	Color depth	10Bit(D), 1.06 Billion colors		
11	Surface treatment	Hard coating(2H), Anti-glare treatment of the front polarizer (Haze 10%)		

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5. Component Video Input (Y, CB/PB, CR/PR)

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

6. RGB (PC)

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

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7. HDMI Input

(1) DTV Mode

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

(2) PC Mode

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

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ADJUSTMENT INSTRUCTION

1. Application range

Chassis	Model Name	Module type	Local dimming		Remark
LC12C	32/42/47LW5500-CA	Edge LED	O		1 point W/B adjustment

1.1 This spec sheet is applied all of the LCD TV with LC12C chassis.

1.2 Main manufacturing type

- ▪SET (o)
- ▪CKD (o)
- ▪SKD (o)

2. Specification

2.1 Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument.

2.2 Adjustment must be done in the correct order.

2.3 The adjustment must be performed in the circumstance of 25 ±5 **°C** of temperature and 65±10% of relative humidity if there is no specific designation.

2.4 The input voltage of the receiver must keep 100~240V, 50/60Hz.

2.5 At first worker must turn on the SET by using Power Only Key.

2.6 The receiver must be operated for about **5 minutes** prior to the adjustment when module is in the circumstance of over 15

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

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

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

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3. Adjustment items

3.1 Main PCB check process

- MAC Address Download
- Adjust 480i Comp1
- Adjust 1920*1080p Comp1, RGB
- EDID/DDC download

Above adjustment items can be also performed in Final Assembly if needed. Both Board-level and Final assembly adjustment items can be check using In-Star Menu 1.ADJUST CHECK.

3.2 Final assembly adjustment

- White Balance adjustment
- RS-232C functionality check
- PING Test
- Local Dimming Function Check
- Factory Option setting per destination
- Ship-out mode setting (In-Stop)

3.3 Etc

- Ship-out mode
- Service Option Default
- USB Download(S/W Update, Option, Service only)
- ISP Download (Option)

4. Automatic Adjustment

4.1 MAC Address

4.1.1 Equipment & Condition

- Play file: Serial.exe
- MAC Address edit
- Input Start / End MAC address

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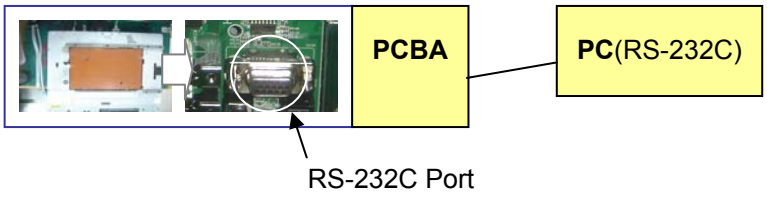
4.1.2 Download method

4.1.2.1 Communication Port connection

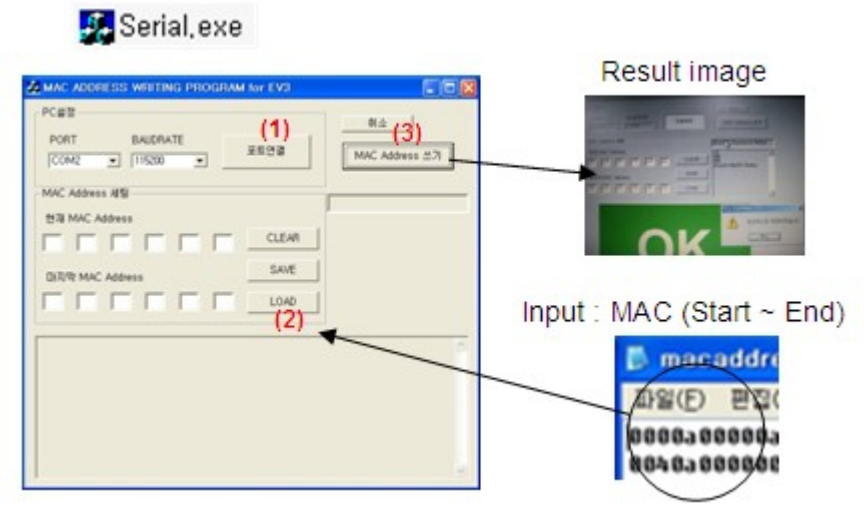


Connect: PCBA Jig-> RS-232C Port== PC-> RS-232C Port

4.1.2.2 MAC Address Download

▪ Com 1,2,3,4 and 115200(Baudrate)

▪ Port connection button click(1)



▪ Load button click(2) for MAC Address write.

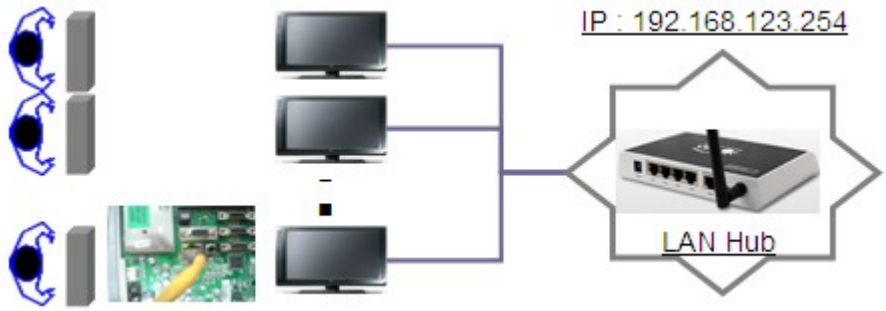
▪ Start MAC Address write button(3)

▪ Check the OK Or NG

4.2 LAN PORT (Automatic IP)

4.2.1 Equipment & Condition

▪ Each other connection to LAN Port of IP Hub and Jig



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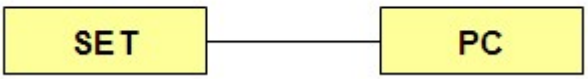
Connect: SET-> LAN Port == PC-> LAN Port



4.3.1. Equipment setting

1) Play the LAN Port Test PROGRAM.

2) Input IP set up for an inspection to Test Program.

***IP Number : 12.12.2.2**

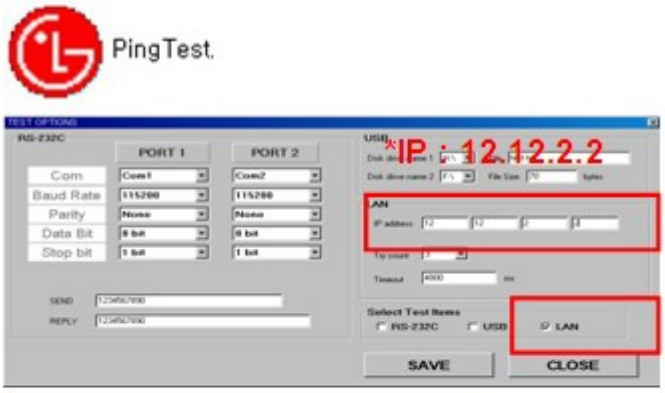
4.3.2. LAN PORT inspection (PING TEST)

1) Play the LAN Port Test Program.

2) connect each other LAN Port Jack.

3) Play Test (F9) button and confirm OK Message.

4) remove LAN CABLE



4.4 Model name & Serial number Download

4.4.1 Model name & Serial number D/L

- Press “Power on” key of service remocon.(Baud rate : 115200 bps)
- Connect RS232 Signal Cable to RS-232 Jack.
- Write Serial number by use RS-232.

■ Must check the serial number at Instart menu.

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5. Manual Adjustment

5.1 White Balance Adjustment

5.1.1 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

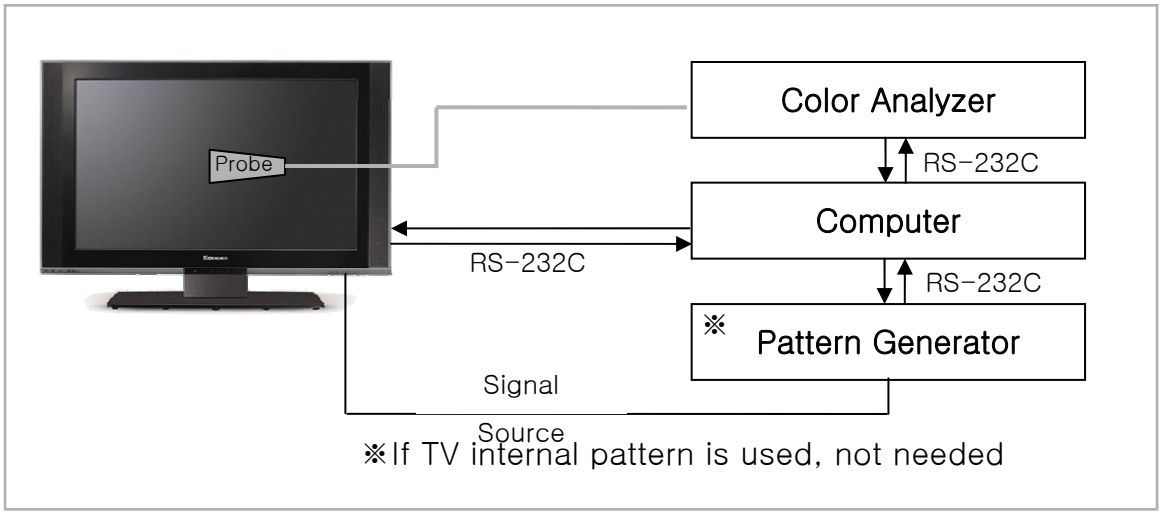
1) Surrounding Temperature: 25±5℃
2) Warm-up time: About 5 Min
3) Surrounding Humidity: 20% ~ 80%

5.1.2 Equipment

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

▪Color Analyzer Matrix should be calibrated using CS-1000

5.1.3 Equipment connection MAP



5.1.4 Adj. Command (Protocol)

<Command Format>

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

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

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

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

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

Ex) **wb 00 00** -> Begin white balance auto-adj.

wb 00 10 -> Gain adj.

ja 00 ff -> Adj. data

jb 00 c0

...

...

wb 00 1f -> Gain adj. complete

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

wb 00 ff ->End white balance auto adj.

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▪Adj. Map

	Adj. item	Command (lower caseASCII)		Data Range (Hex.)		Default (Decimal)	Details
		CMD1	CMD2	MIN	MAX		
Cool	R Gain	j	g	00	C0	TBD	
	G Gain	j	h	00	C0	TBD	
	B Gain	j	i	00	C0	TBD	
	R Cut					TBD	
	G Cut					TBD	
	B Cut					TBD	
Medium	R Gain	j	a	00	C0	TBD	
	G Gain	j	b	00	C0	TBD	
	B Gain	j	c	00	C0	TBD	
	R Cut					TBD	
	G Cut					TBD	
	B Cut					TBD	
Warm	R Gain	j	d	00	C0	TBD	
	G Gain	j	e	00	C0	TBD	
	B Gain	j	f	00	C0	TBD	
	R Cut					TBD	
	G Cut					TBD	

5.1.5 Adj. method

5.1.5.1 Auto adj. method

1) Set TV in adj. mode using ADJ 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

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5.1.5.2 Manual adj. method

1) Set TV in Adj. mode using ADJ key

2) Zero Calibrate the probe of Color Analyzer, then place it on the center of LCD module within 10cm of the surface..

3) Press ADJ key → EZ adjust using adj. R/C → 7. White-Balance then press the cursor to the right (KEY□).

(When KEY(□) is pressed 216 Gray internal pattern will be displayed)

4) One of R Gain / G Gain / B Gain should be fixed at 192, and the rest will be lowered to meet the desired value.

5) Adj. is performed in COOL, MEDIUM, WARM 3 modes of color temperature.

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

▪ Adj. condition and cautionary items

1) Lighting condition in surrounding area

Surrounding lighting should be lower 10 lux. Try to isolate adj. area into dark surrounding.

2) Probe location

- PDP: Color Analyzer (CA-100, CA-100+, CA210) probe should be firmly attached to the Module

- 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.

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

▪ Luminance: 216 Gray

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

Mode	Coordinate		Temp	△uv
	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(CH 14)**

Mode	Coordinate		Temp	△uv
	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

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1) Edge LED Models : LV5500/LV4500/LW6500/LW5500/LV2500

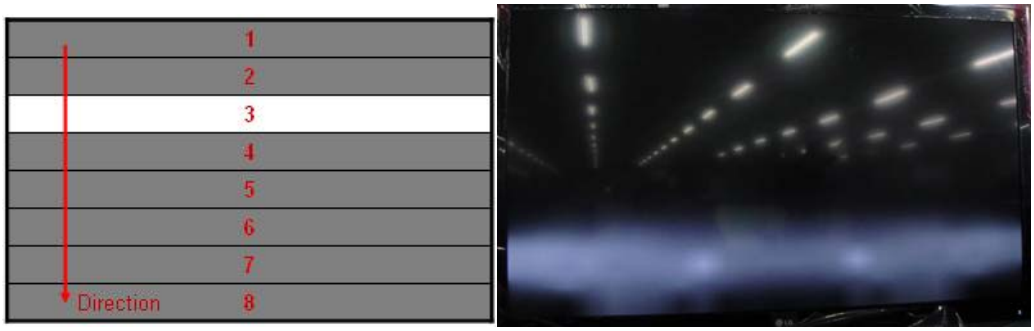
GP3	Aging time (Min)	Cool		Medium		Warm	
		x	y	x	y	x	y
		269	273	285	293	313	329
1	0-2	279	288	295	308	319	338
2	3-5	278	286	294	306	318	336
3	6-9	277	285	293	305	317	335
4	10-19	276	283	292	303	316	333
5	20-35	274	280	290	300	314	330
6	36-49	272	277	288	297	312	327
7	50-79	271	275	287	295	311	325
8	80-149	270	274	286	294	310	324
9	Over 150	269	273	285	293	309	323

5.1.7 Local Dimming Inspection (Optional)

Edge LED models with local dimming

1) Press 'TILT" key of the Adj. R/C and check moving patterns. The black bar patterns moves from bottom to top.

If local dimming function does not work, a whole screen shows full white.



5.2 EYE-Q function check

Step 1) Turn on TV

Step 2) Press EYE key of Adj. R/C

Step 3) Cover the Eye Q II sensor on the front of the using your hand and wait for 6 seconds

Step 4) Confirm that R/G/B value is lower than 10 of the "Raw Data (Sensor data, Back light)" . If after 6 seconds, R/G/B value is not lower than 10, replace Eye Q II sensor

Step 5) Remove your hand from the Eye Q II sensor and wait for 6 seconds

Step 6) Confirm that "ok" pop up.

If change is not seen, replace Eye Q II sensor

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5.3 Option selection per country

5.3.1 Overview

▪ Option selection is only done for models in Non-USA North America due to rating

▪ Applied model: LC12C Chassis applied None USA model (CHINA ,HONGKONG)

5.3.2 Method

1) Press ADJ key on the Adj. R/C, then select Country Group Menu(TBD)

2) Depending on destination, select KR or US, then on the lower Country option, select US, CA, MX. Selection is done using +, - KEY(TBD)

5.4 Tool Option selection

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

Model	Tool 1	Tool 2	Tool 3	Tool 4	Tool 5	Tool 6
42LW6500-CA(HK)	33030	5461	3327	17577	47701	729
47LW6500-CA(HK)	33032	5461	3327	17577	47701	729
55LW6500-CA(HK)	33035	5461	3327	17577	47701	729
47LW6500-CA(CN)	33032	5461	3263	17569	48721	729
55LW6500-CA(CN)	33035	5461	3263	17569	48721	729

Model	Tool 1	Tool 2	Tool 3	Tool 4	Tool 5	Tool 6
42LW5500-CA(CN)	33014	5461	3263	17569	15953	729
47LW5500-CA(CN)	33016	5461	3263	17569	15953	729
55LW5500-CA(CN)	33019	5461	3263	17569	15953	729
32LW5500-CA(HK)	33012	5461	3327	17577	14933	729
42LW5500-CA(HK)	33014	5461	3327	17577	14933	729
47LW5500-CA(HK)	33016	5461	3327	17577	14933	729
55LW5500-CA(HK)	33019	5461	3327	17577	14933	729

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)

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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. Audio

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

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Measurement condition:

1. RF input: Mono, 1KHz sine wave signal, 100% Modulation

2. CVBS, Component: 1KHz sine wave signal 0.5Vrms

3. RGB PC: 1KHz sine wave signal 0.7Vrms

-----<<<8. Magic Romocon Test

- Equipment: RF-Remote Controller for Test, IR-KEY-CODE Remote Controller for Test.

- should have enough Battery Power of RF-Remote Controller before test.

(Recommend: changing new Battery for each LOT.)

- Test Method

a) Push “Mute (Start Key)” on the controller to pair the TV SET.

b) Push “OK Key” on the controller, check whether the cursor appears on the screen.

c) Push “Vol+(STOP) on the controller, cancel the paring.

>>>>>----

9. 3D Function test

(Pattern Generator MSHG-600 or MSPG-6100 HDMI 1.4 Supported Equipment , HDMI mode No. 872 , pattern No. 83)

1) Input 3D test pattern.
(HDMI mode No. 872, Pattern No. 83)

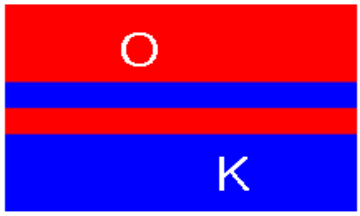

Fig.1
<HDMI Mode 872번 , Pattern No. 83>

2) After automatically display 3D OSD, push the OK Key.

Fig.3
<OK Key>

3) Check the pattern such as in the following Fig2 without having to wear glasses.

Fig.2
<3D Mode 진입 후 화면>
* 안경을 착용하지 않은 상태임.

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9. Ship-out mode check (In-stop) (Not Fixed)

▪ After final inspection, press In-Stop key of the Adj. R/C and check that the unit goes to Stand-by mode.

10. Ship-out condition

No	Item				Condition	Remark
1	Channel	Auto Tuning			Quick	
		Manual Tuning			DTV	
		Programe Edit			DTV	
		Cable DTV Setting				
2	Picture	Aspect Ratio			16:9	
		Picture Wizard				
		Energy saving			Off	
		Picture Mode			Vivid	
			Backlight		100	
			Contrast		95	
			Brightness		50	
			Sharpness		70	
			Color		70	
			Tint		0	
			Colour Temp		C50	
			Advanced Control	Dynamic Contrast	High	
				Dynamic Colour	High	
				Clear White	High	
				Skin Colour	0	
				Noise Reduction	Medium	
				Digital Noise Reduction	Medium	
				Gamma	Medium	
				Black Level	Auto	
				Eye Care	Low	
				Real Cinema	On	
				Color Gamut	Wide	

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No	Item				Condition	Remark
				xvYCC	Off	
			Picture Reset			
		TrueMotion	Low			
		Screen	Resolution		Differ according to resolution.	
			Auto Config			
			Position			
			Size		Vary with the result from doing Auto Config	
			Phase		Vary with the result from doing Auto Config	
			Reset			
		LED Local Dimming	On			
3	Audio	Auto Volume			Off	Auto Volume
		Clear Voice II			Off	Clear Voice
		Balance			0	Balance
		Sound Mode			Standard	Sound Mode
			Infinite Sound(Off)			
			Treble		50	
			Bass		50	
			Reset			
		Digital Audio Out	PCM			
		TV Speaker	On			
		DTV Audio Setting			Auto	
4	Time	Clock			Manual	

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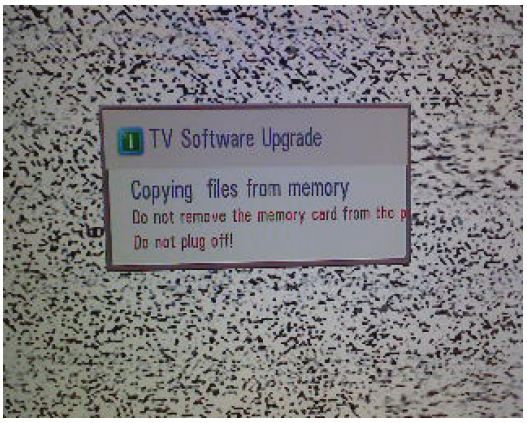
11. USB S/W Download (option, Service only)

1. Put the USB Stick to the USB socket
2. Automatically detecting update file in USB Stick

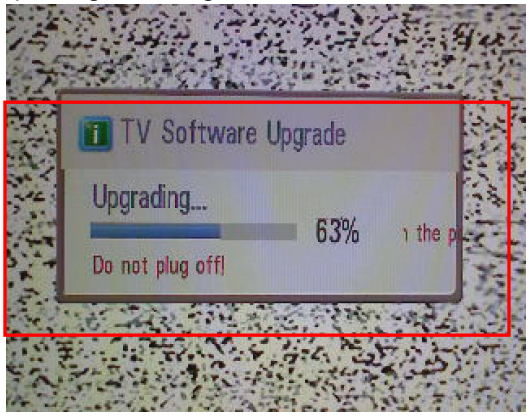
- If your downloaded program version in USB Stick is Low, it didn't work.

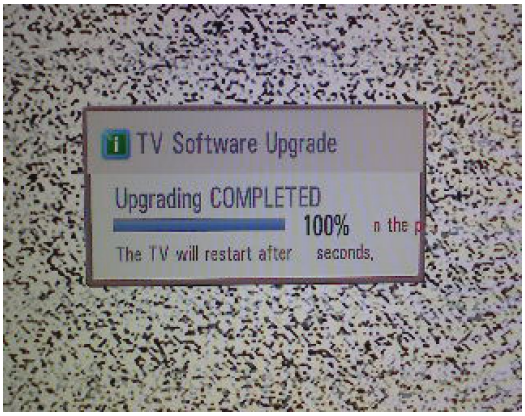
But your downloaded version is High, USB data is automatically detecting

3. Show the message "Copying files from memory"



4. Updating is staring.





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.)

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12. Preset CH Information

If you turn on TV by pushing the 'POWER ON' or 'P-ONLY' key, TV catch the channel 10 DTV, 1 CADTV, 12 ATV and

2 CATV channels on line condition. Pr.2~4 of CADTV will be updated after changing channel to CADTV channel 1.

DTV Ch name is displayed below initially, but if you do channel tuning just one time, you can see DTV Ch name.

Total = 25(+3) Channels

□ DTV : MUX No. in '( )' is used for Hong Kong DTV.

MUX	Pr.	Name	CH information			Factory
15 (23)	1(82)	J2	SD	16 : 9	576i	P/T
	2(83)	Interactive Information	SD	16 : 9	576i	P/T
	3(85)	High Definition Jade	HD	16 : 9	1080i	P/T
16 (24)	4(900)	CCTV-1	SD	4 : 3	576i	P/T LGEND
	5(901)	CCTV-2	SD	4 : 3	576i	P/T LGEND
	6(902)	CCTV-少儿	SD	4 : 3	576i	P/T LGEND
	7(903)	CCTV-音乐	SD	4 : 3	576i	P/T LGEND
	8(904)	BTV-1	SD	4 : 3	576i	P/T LGEND
	9(905)	CETV-3	SD	4 : 3	576i	P/T LGEND
20 (28)	10(906)	CCTV–高清	HD	16 : 9	1080i	P/T LGEND

□ CADTV : MUX No. in '( )' is used for Hong Kong DTV.

MUX	Pr.	Name	CH information			Factory
55 (63)	1	CCTV-4	SD	4 : 3	576i	LGEND
	2	CCTV-9	SD	4 : 3	576i	LGEND
	3	CCTV F	SD	4 : 3	576i	LGEND
	4	CCTV E	SD	4 : 3	576i	LGEND

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(Pr.2~4 of CADTV will be updated automatically after changing channel to Pr.1)

□ ATV

Pr	System		Band	Name	CH	Freq.	Factory
1	NTSC	M	V/UHF	US-04	C 04	67.25	P/T LGEND
2	NTSC	M	CABLE	J-01	S 67	91.25	P/T LGEND
3	NTSC	M	V/UHF	US-13	C 13	211.25	P/T LGEND
4	NTSC	M	Cable	US-14	C 14	471.25	P/T LGEND
5	NTSC	M	V/UHF	US-63	C 63	765.25	P/T LGEND
6	NTSC	M	CABLE	-	S 15	127.25	LGEND
7	PAL	DK	V/UHF	D-10	C 10	200.25	P/T LGEND
8	PAL	DK	V/UHF	D-36	C 36	695.25	P/T LGEND
9					C34		
10	PAL	I	V/UHF	I-11	C 11	231.25	P/T
11	PAL	I	V/UHF	I-41	C 41	631.25	P/T
12					S39	807.25	

□ CATV

Pr	System		Band	Name	CH	Freq.	Factory
1	PAL	DK	V/UHF	-	C 02	57.75	LGEND

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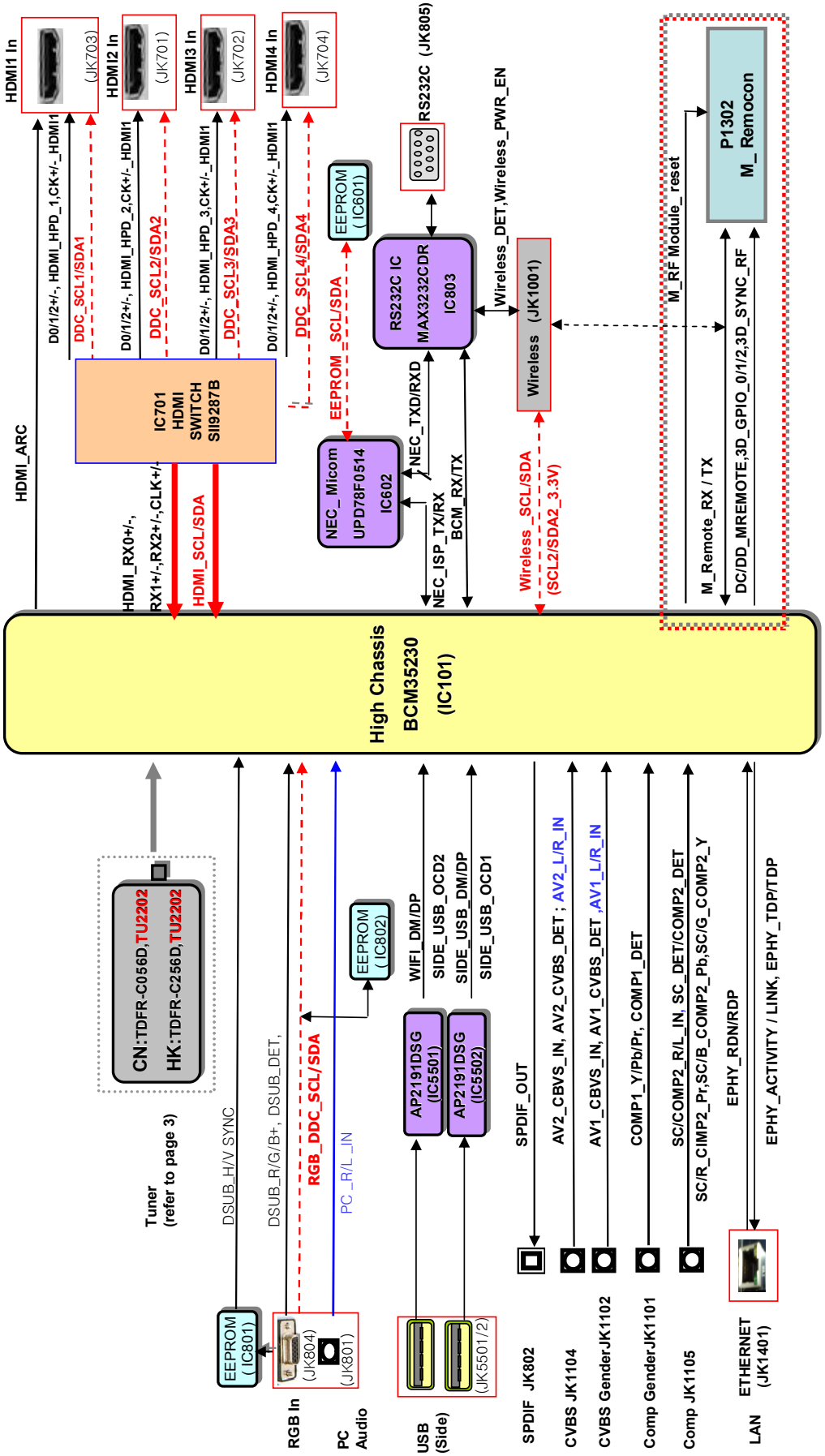
Block diagram for W5500 M/B_Input



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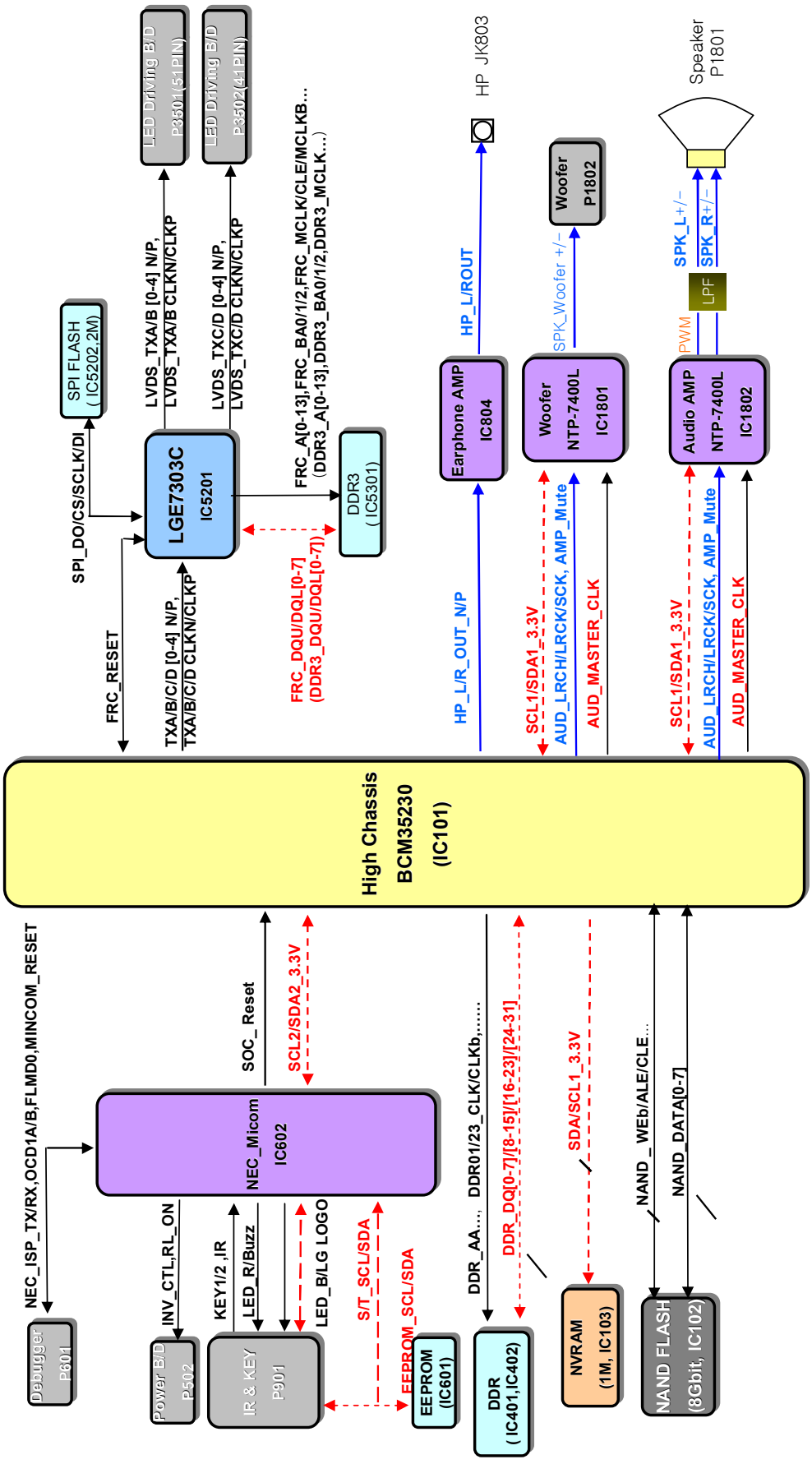
Block diagram for LW5500 M/B_Output



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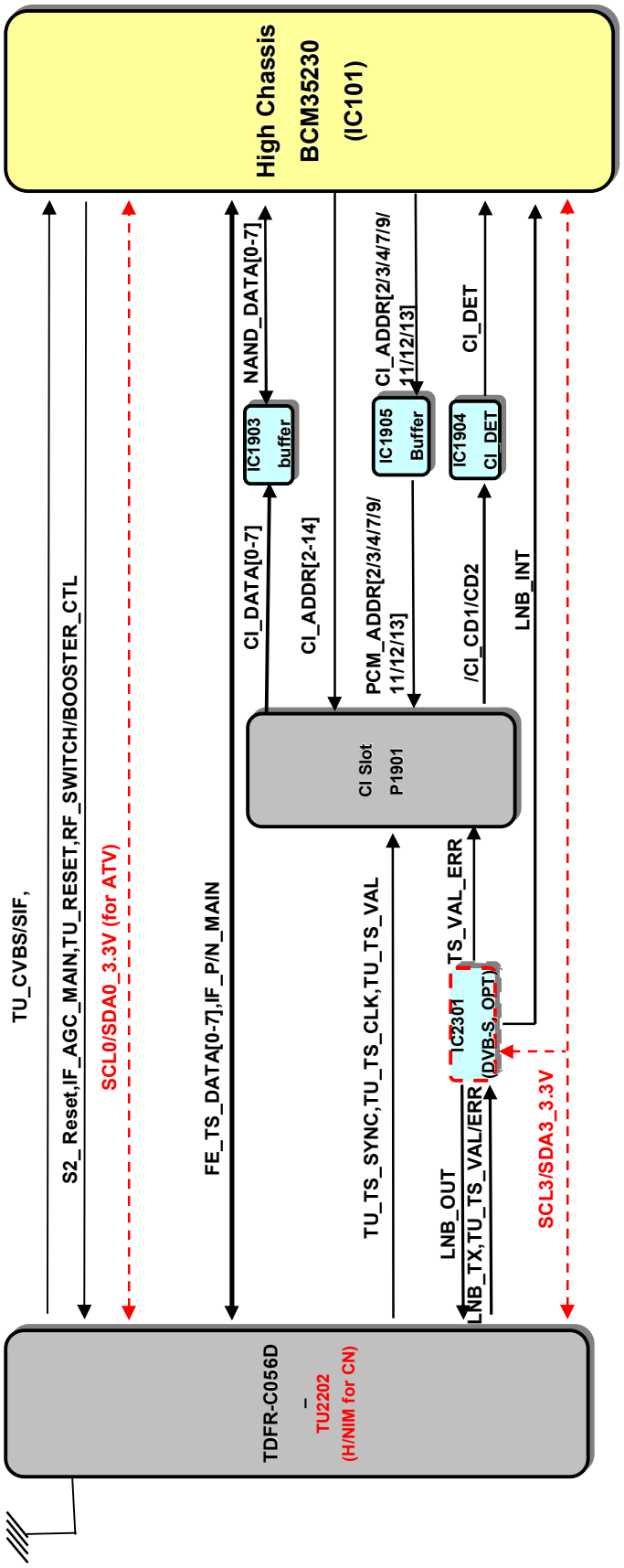
Block diagram –Tuner(GP3)



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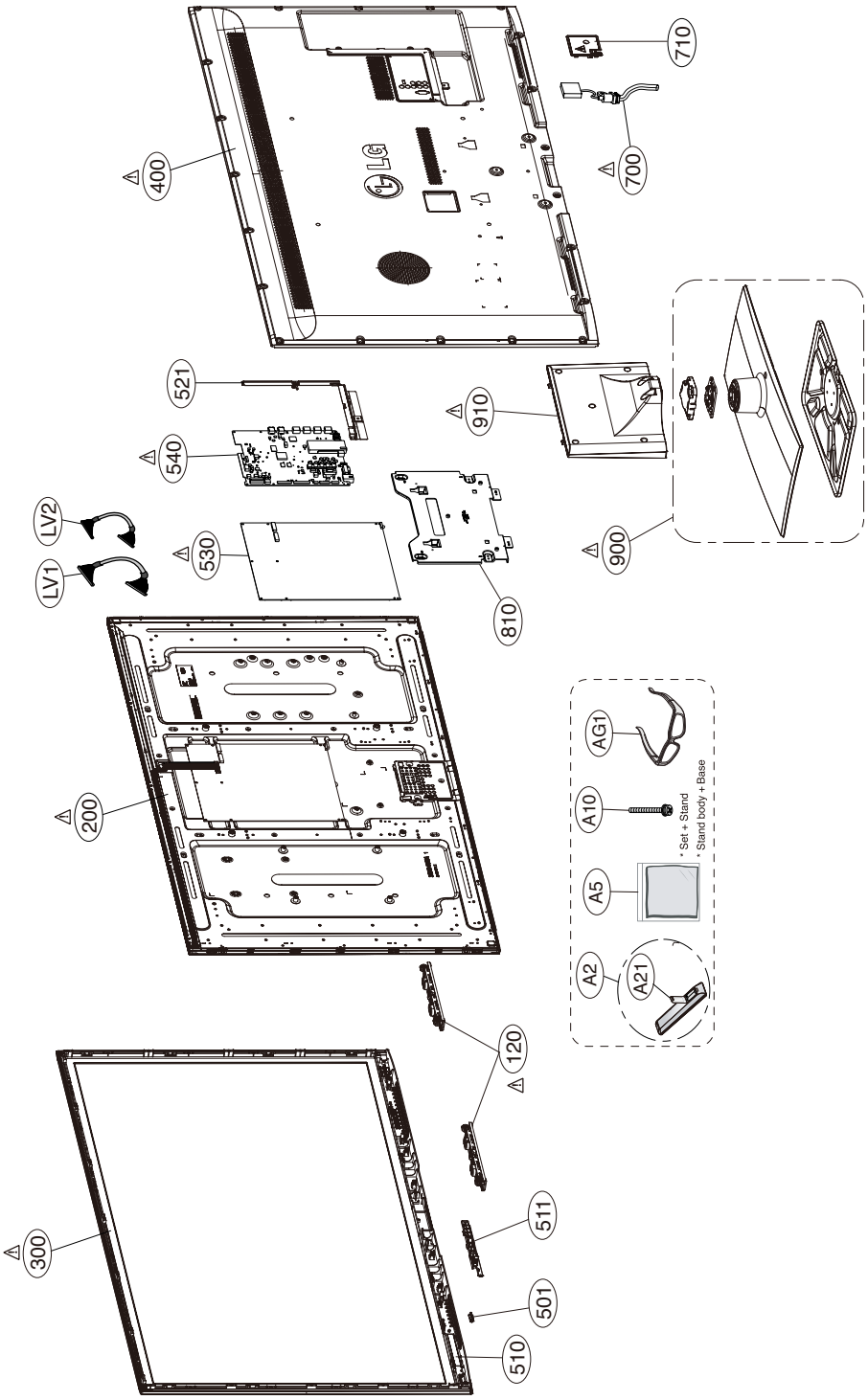
EXPLODED VIEW

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.



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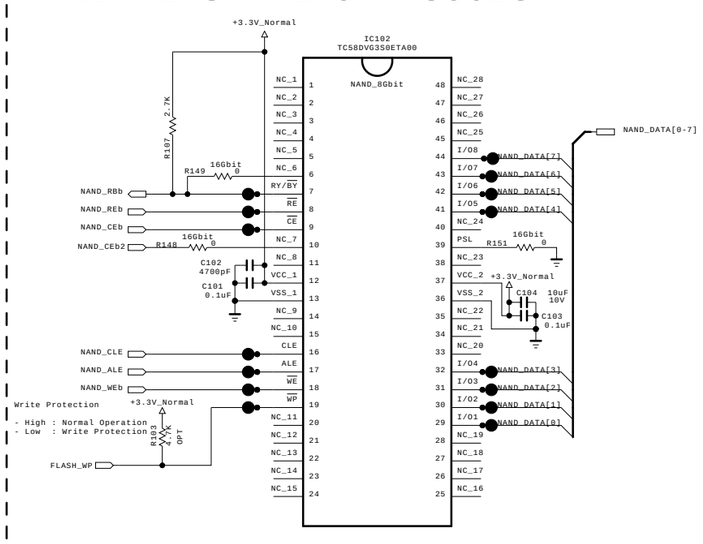
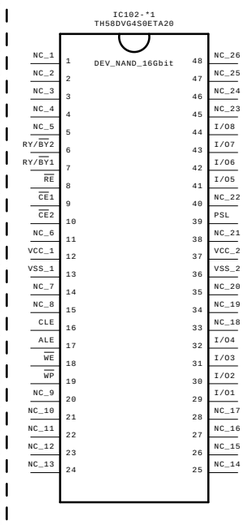
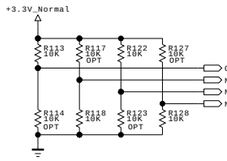
NAND FLASH MEMORY 8Gbit



16Gbit

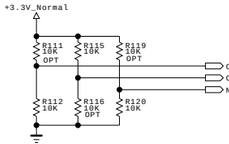


Boot ROM Device Select - (FA4,FAD7,FAD2,FAD1)



0000: ST Micro M25P or compatible Serial Flash
0010: 8-bit 512Mbit 512B page SLC NAND Flash devices
0100: 8-bit 128, 256Mbit 512B page SLC NAND Flash devices
0110: 8-bit 1Gbit 2KB page SLC NAND Flash devices
1000: 8-bit 2Gbit, 4Gbit, 8Gbit 2KB page SLC NAND Flash devices
1010: 8-bit 16Gbit, 32Gbit 4KB page SLC NAND Flash devices (O)
0001: 8-bit 8/16/32Gbit 2KB page MLC NAND Flash devices
0011: 8-bit 16/32Gbit 4KB page MLC NAND Flash devices
0101: 8-bit 32Gbit 8KB page MLC NAND Flash devices
0111: 3B dual IO Serial Flash
1001: BB dual IO Serial Flash
1011: fast Serial Flash > 50Mhz
1100: OneNAND Flash (always 16-bit)
1110: Reserved
1101, 1111: Reserved

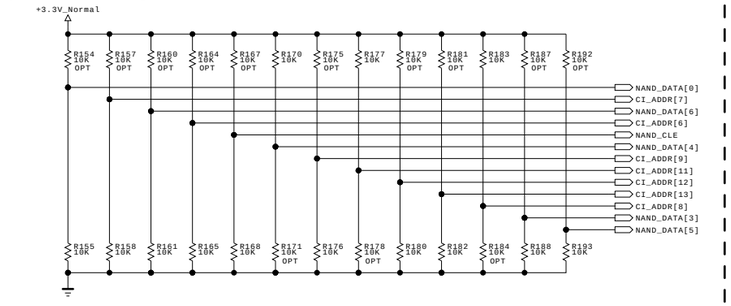
NAND ECC (FA3, FA2, FALE)



000 = ECC disabled
001 = ECC 1-bit repair
010 = ECC 4-bit BCH (O)
011 = ECC 8-bit BCH, 27 byte spare
100 = ECC 12-bit BCH, 27 byte spare
101 = ECC 8-bit BCH, 16 byte spare
110, 111 = Reserved

DUAL COMPONENT	
IC102	1ST : EAN61000101 2ND : T-TH58DVG4S0ETA20
IC102-*1	

Strap Setting



NAND_DATA[0]:
0: System is LITTLE endian (O)
1: System is BIG endian

CI_ADDR[7]:
0: Disable EDID automatic Downloading from Flash (O)
1: Enable EDID automatic Downloading from Flash

NAND_DATA[6] :
0: Disable OSC clock output on chip Pin (O)
1: Enable OSC clock output on chip pin.

CI_ADDR[6]:
0: Host MIPS run at 500 MHz (O)
1: Host MIPS run at 250 MHz

NAND_CLE:
0: Differential Oscillators TVM not bypassed (O)
1: Differential Oscillators TVM bypassed

NAND_DATA[4]:
0: 27MHz TVM Crystal Frequency
1: 54MHz TVM Crystal Frequency (O)

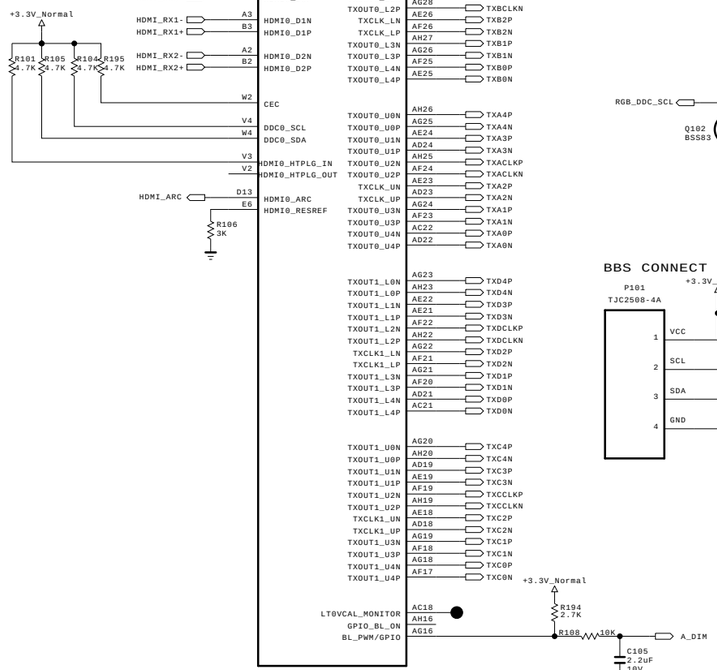
CI_ADDR[9],CI_ADDR[11],CI_ADDR[12],CI_ADDR[13]
TVM Crystal oscillator bias/gain control
0000: 210uA
0001: 390uA
0010: 570uA
0011: 730uA
0100: 890uA (O)
0111: 1290uA
1000: 1416uA
1111: 2196uA
0101, 0110, 1001, 1010, 1011, 1100, 1101, 1110: Reserved

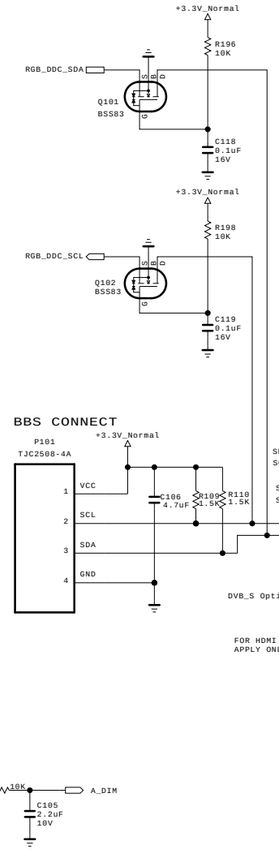
CI_ADDR[8]:
0: RESETOUTb (in On/Off only) stay asserted until software releases them.
1: Fix amount of delay for de-assertion on RESETOUTb (in On/IOff only) at end of RESETb pulse (O)

NAND_DATA[3]:
0: MIPS will boot from external flash (O)
1: MIPS will boot from ROM

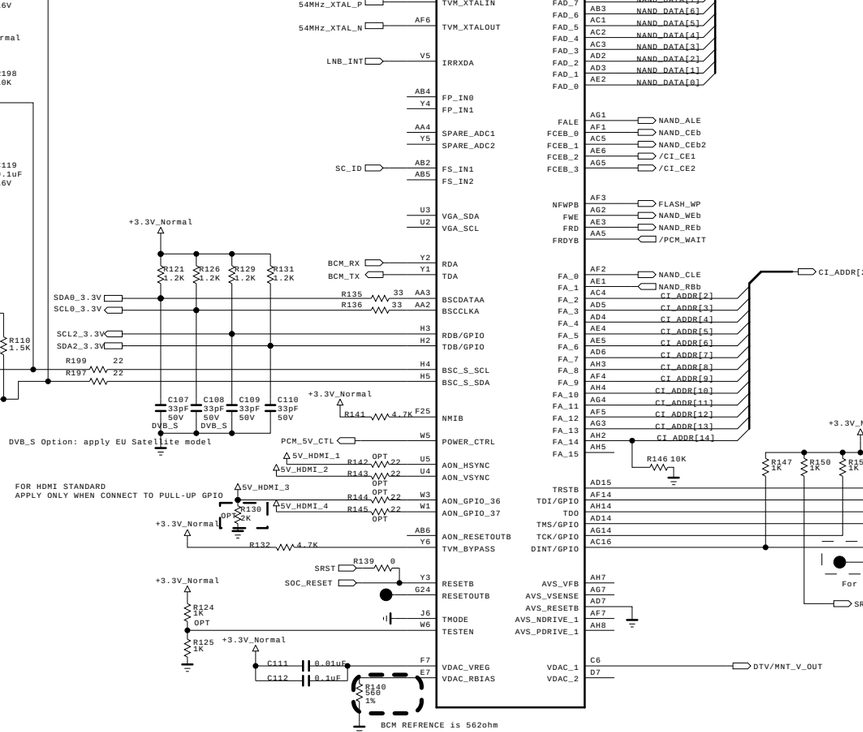
NAND_DATA[5]:
0: FLASH MODE (O)
1: BSC_SLAVE(BBS) MODE

IC101 LGE35230(BCM35230KFSBG)

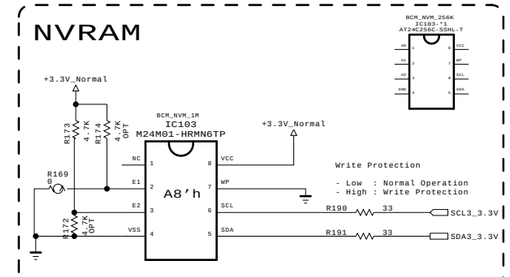




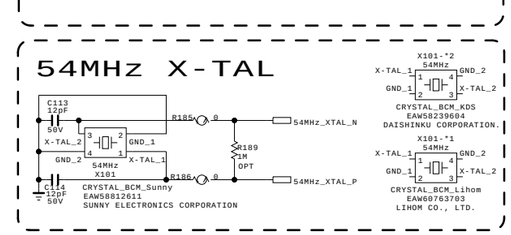
BBS CONNECT



NVRAM



54MHz X-TAL

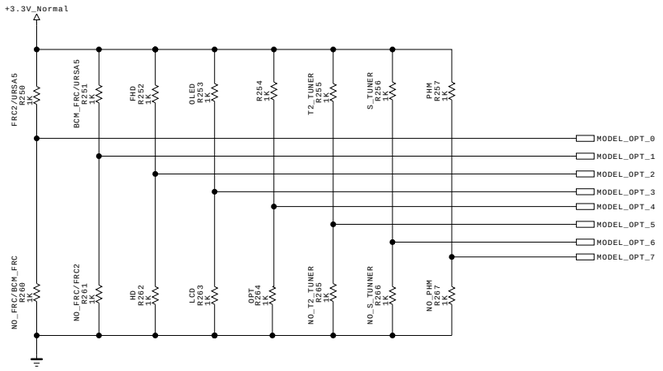


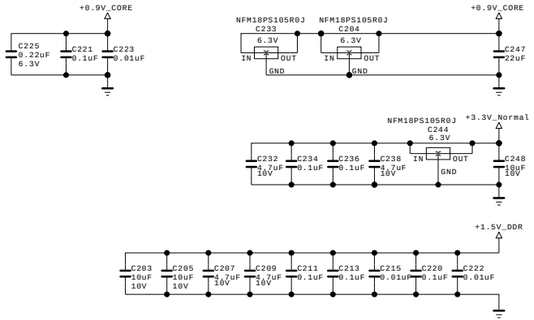
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

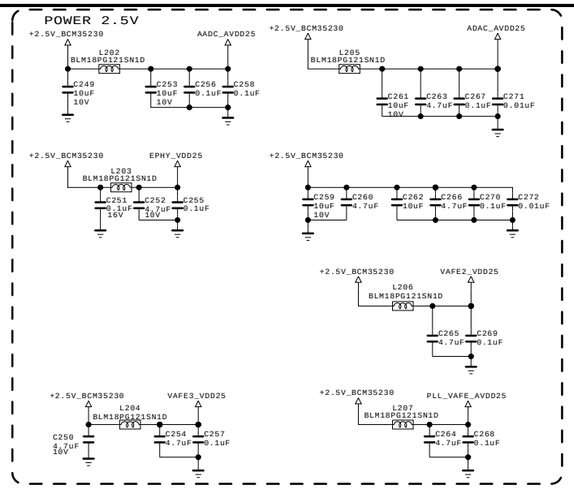
SECRET
LGElectronics

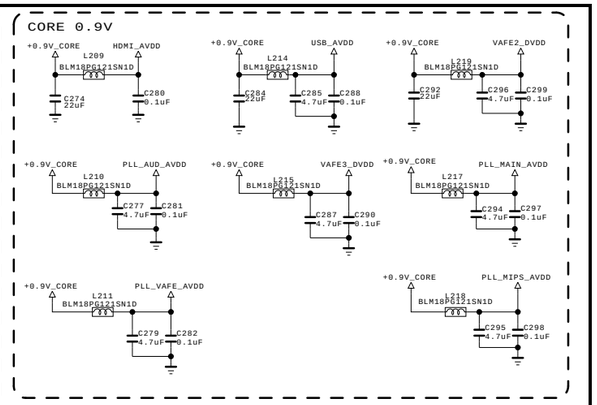
LG ELECTRONICS

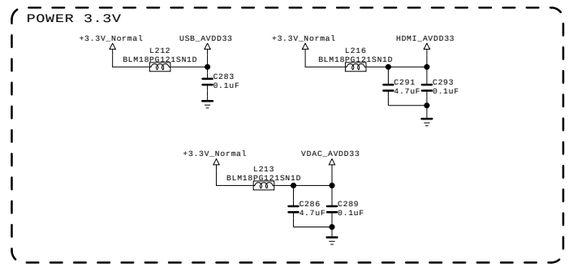
MODEL	BCM35230	DATE	2010.09.18
BLOCK	MAIN & NAND FLASH	SHEET	1 /







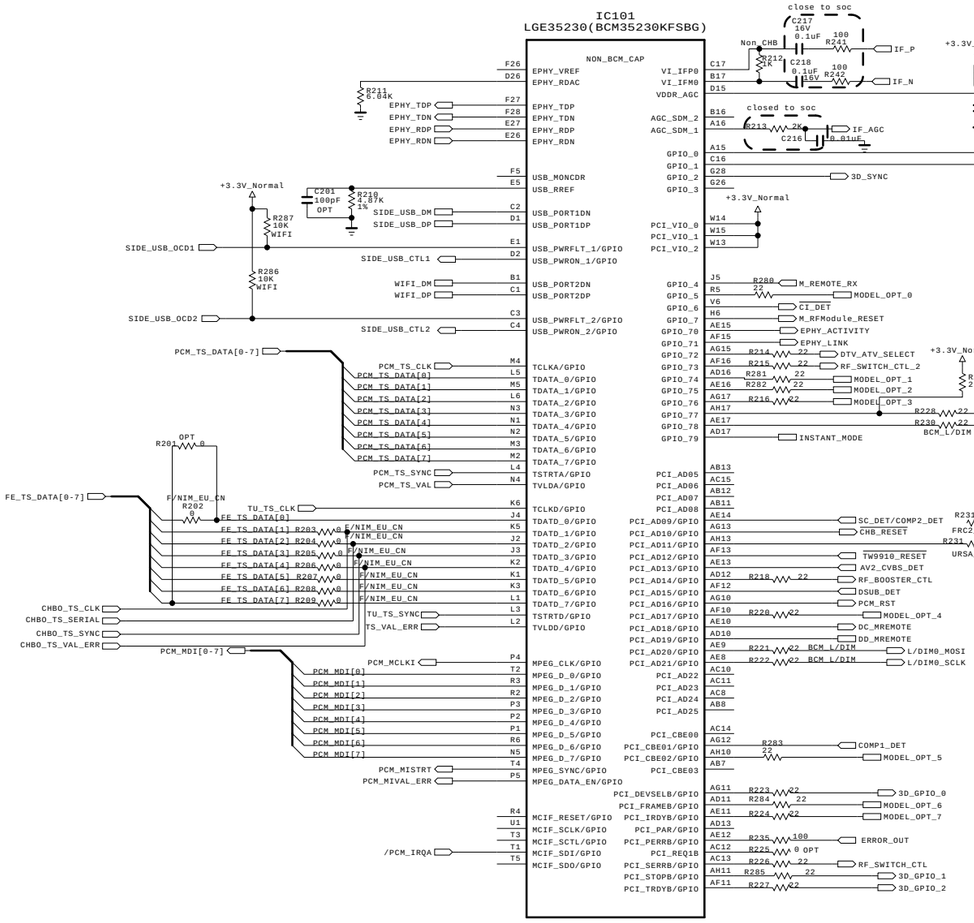


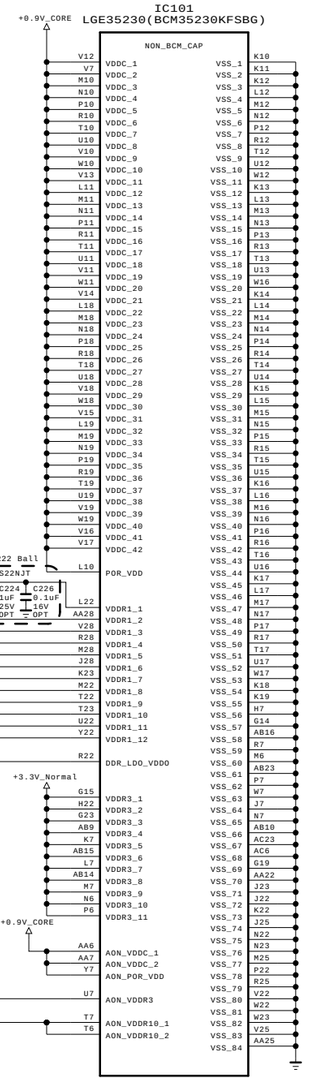


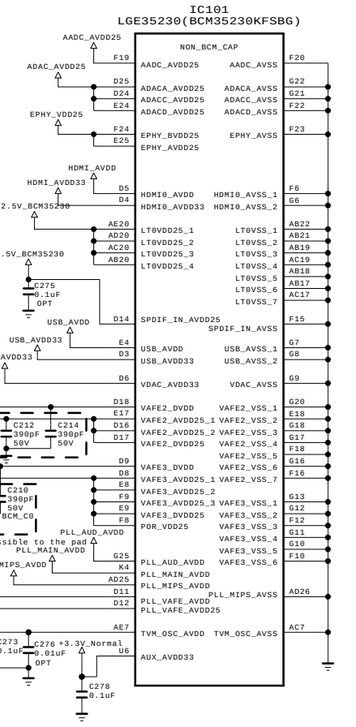
MODEL OPTION

	NO_FRC	BCM internal FRC	LG FRC2	external URSA5
MODEL_OPT_0	0	0	1	1
MODEL_OPT_1	0	1	0	1

		HIGH	LOW
MODEL_OPT_2		FHD	HD
MODEL_OPT_3		OLED	LCD
MODEL_OPT_4	DDR speed	1333	1600
MODEL_OPT_5	T2 Tuner	Support	Not Support
MODEL_OPT_6	S Tuner	Support	Not Support
MODEL_OPT_7	PHM	Enable	Disable







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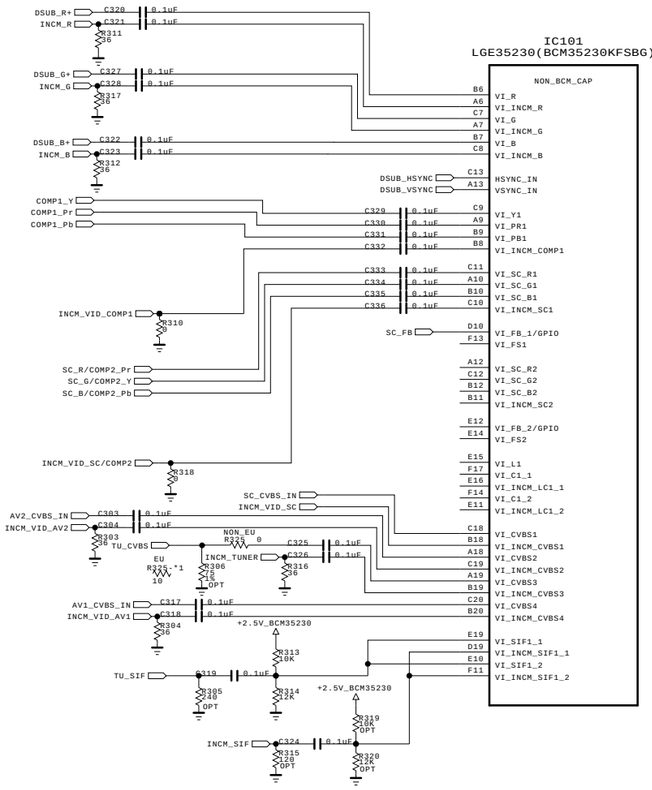
SECRET

LGElectronics

LG ELECTRONICS

MODEL	BCM35230	DATE	
BLOCK	MAIN POWER	SHEET	2 / 50



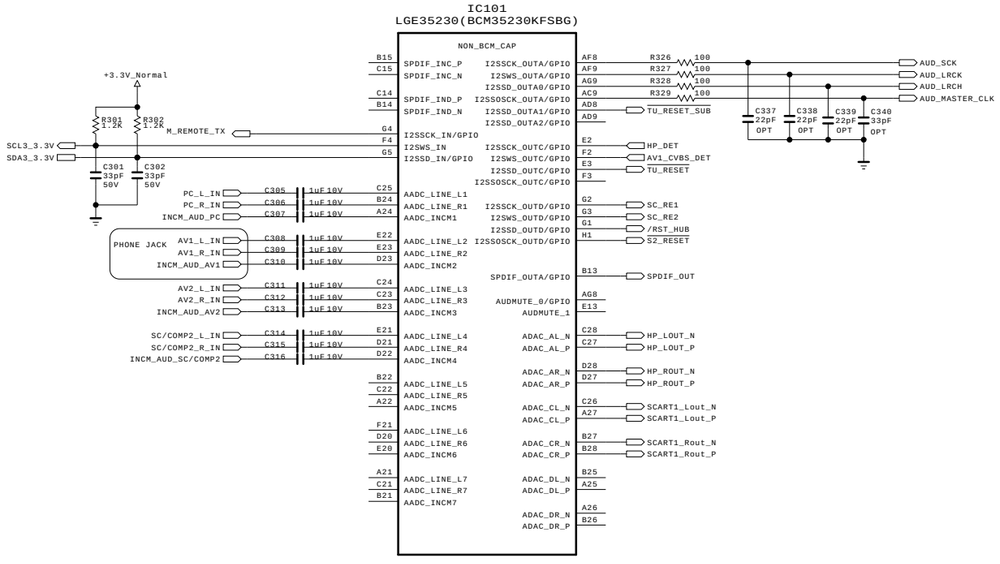
VIDEO INCM

Near P801	Run Along DSUB_R Trace	INCM_R
Near P801	Run Along DSUB_G Trace	INCM_G
Near P801	Run Along DSUB_B Trace	INCM_B
Near JK1101	Run Along COMP_Y_IN,COMP_Pr_IN,COMP_Pb_IN Trace	INCM_VID_COMP1
Near JK1104	Run Along AV2_CVBS Trace	INCM_VID_AV2
Near TU2101/2 TU2201/2/3	Run Along TUNER_CVBS_IF_P Trace	INCM_TUNER
Near JK1102	Run Along AV1_CVBS Trace	INCM_VID_AV1
Near JK1103 JK2501	Run Along COMP_Y_IN,COMP_Pr_IN,COMP_Pb_IN/SC_R,G,B Trace	INCM_VID_SC/COMP2

BCM35230_with_CAP_220pF

IC101-*1
LGE35230

NON_BCM_CAP
VI_R
VI_INCM_R
VI_G
VI_INCM_G
VI_B
VI_INCM_B
HSYNC_IN
VSYNC_IN
VI_Y1
VI_PR1
VI_PB1
VI_INCM_COMP1
VI_SC_R1
VI_SC_G1
VI_SC_B1
VI_INCM_SC1
VI_FB_1/GPIO
VI_FS1
VI_SC_R2
VI_SC_G2
VI_SC_B2
VI_INCM_SC2
VI_FB_2/GPIO
VI_FS2
VI_L1
VI_C1_1
VI_INCM_LC1_1
VI_C1_2
VI_INCM_LC1_2
VI_CVBS1
VI_INCM_CVBS1
VI_CVBS2
VI_INCM_CVBS2
VI_CVBS3
VI_INCM_CVBS3
VI_CVBS4
VI_INCM_CVBS4
VI_SIF1_1
VI_INCM_SIF1_1
VI_SIF1_2
VI_INCM_SIF1_2



AUDIO INCM

Near JK1102	R321 0	Route Between AV1_L_IN & AV1_R_IN Trace	INCM_AUD_AV1
Near JK1103 JK2501	R322 0	Route Between SC/COMP2_L_IN & SC/COMP2_R_IN Trace	INCM_AUD_SC/COMP2
Near JK1104	R323 0	Route Between AV2_L_IN & AV2_R_IN Trace	INCM_AUD_AV2
Near JK801	R324 0	Route Between PC_L_IN & PC_R_IN Trace	INCM_AUD_PC
Near TU2101/2 TU2201/2/3		Route Along With TUNER_SIF_IF_N	INCM_SIF

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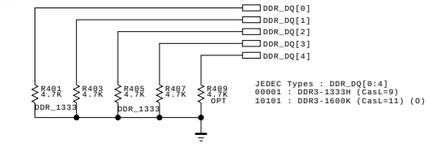
SECRET
LGElectronics

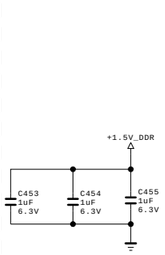
LG ELECTRONICS

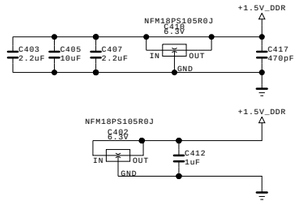
MODEL	BCM35230	DATE	
BLOCK	MAIN AUDIO/VIDEO	SHEET	3 / 50

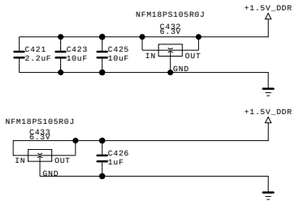
DUAL COMPONENT	
IC401,IC402	1ST : EAN61667501, 2ND : EAN61570701
IC401-*1 IC402-*1	1ST : T-K4B2G1646B_HCK0, 2ND : T-H5TQ2G63BFR-PBC

DDR STRAP

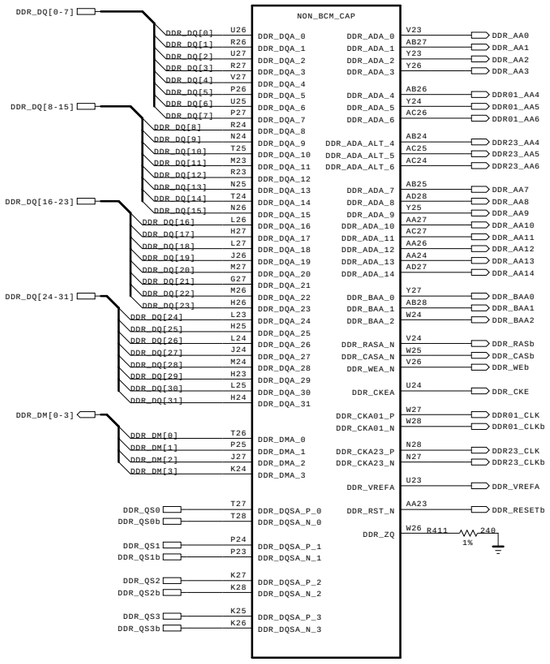




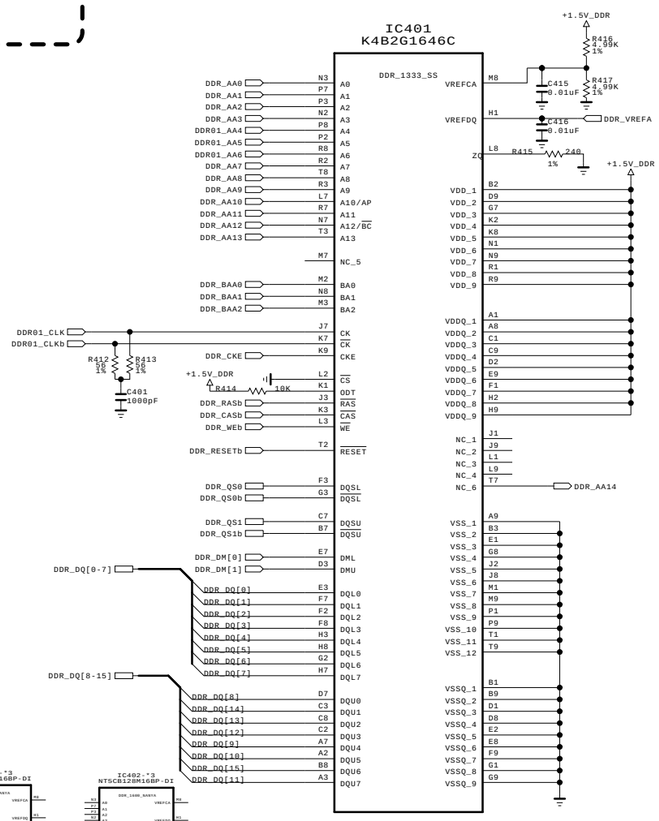




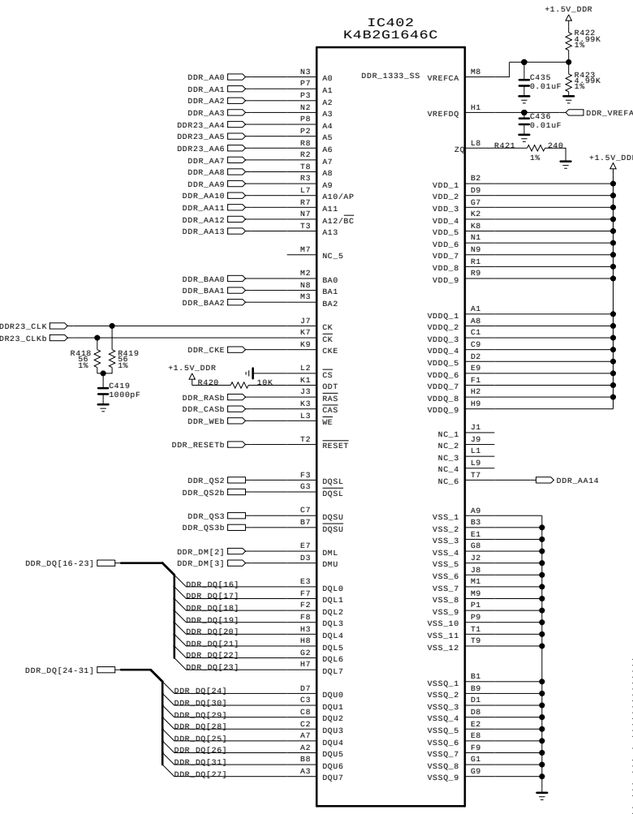
IC101
LGE35230(BCM35230KFSBG)

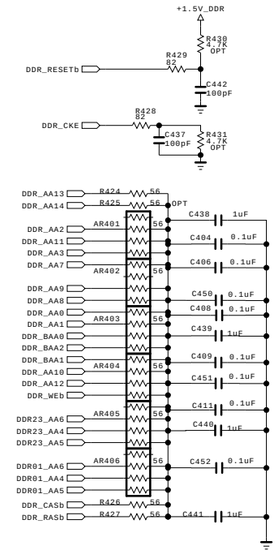


IC401
K4B2G1646C



IC402
K4B2G1646C



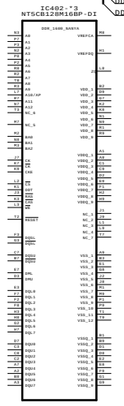


IC401-*2
NT5CB128M16BP-CG

IC402-*2
NT5CB128M16BP-CG

IC401-*3
NT5CB128M16BP-DI

IC402-*3
NT5CB128M16BP-DI



IC401-*1
K4B2G1646C-HCK0

IC402-*1
K4B2G1646C-HCK0

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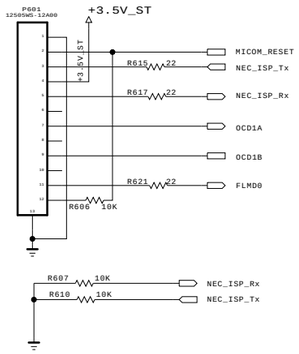
SECRET
LGElectronics

LG ELECTRONICS

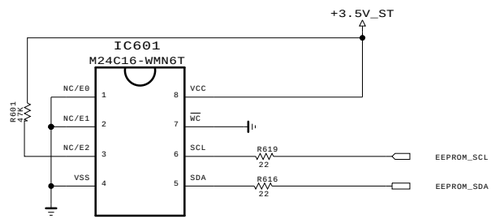
MODEL	BCM35230	DATE	
BLOCK	MAIN DDR	SHEET	4 / 50

NEC MICOM

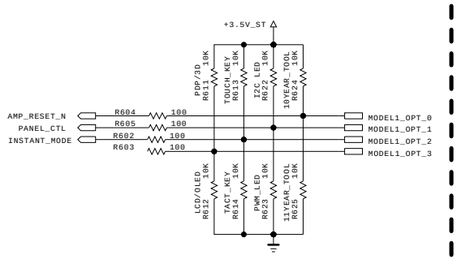
For Debug



EEPROM for Micom



MICOM MODEL OPTION

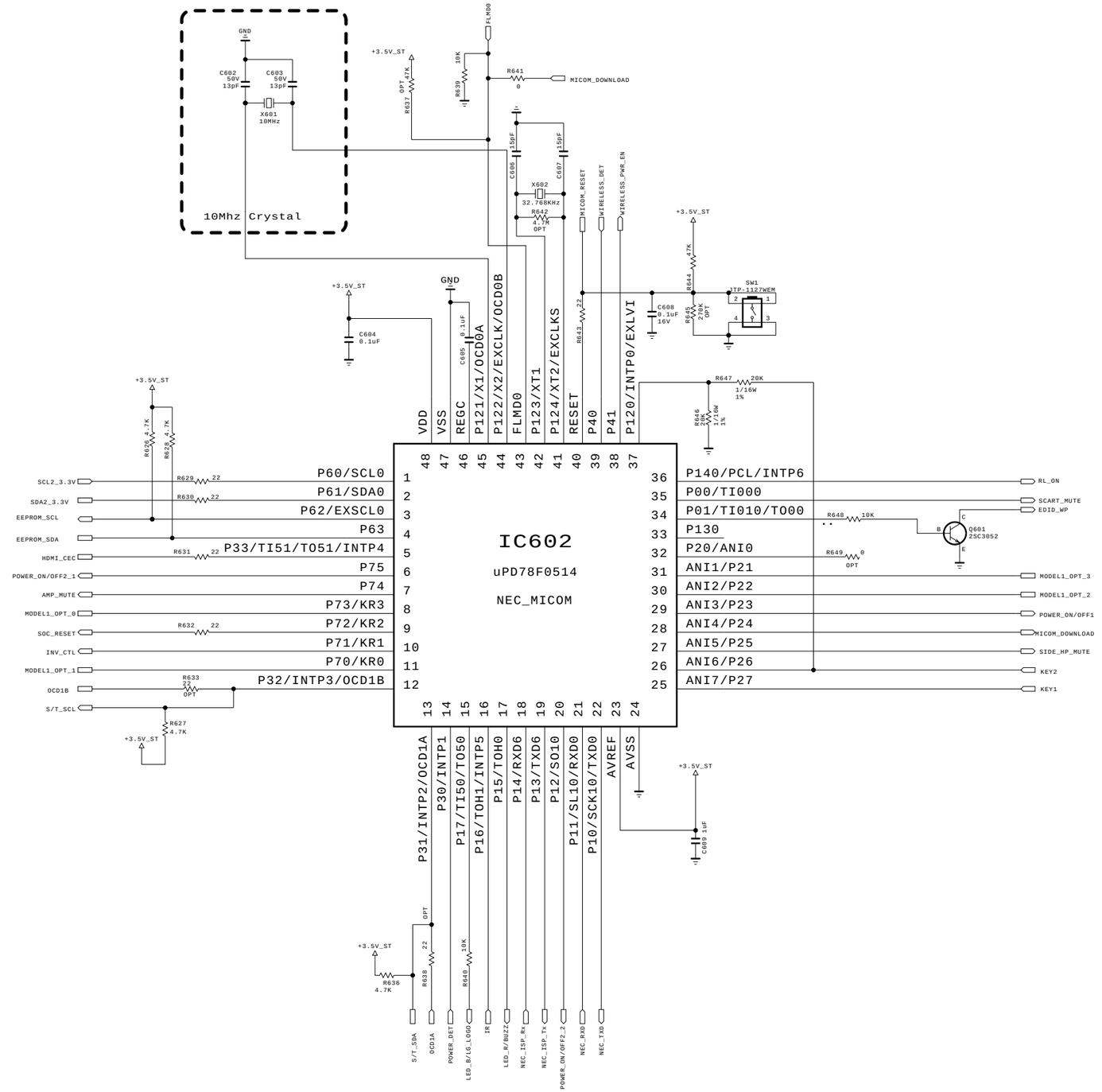


MODEL OPTION

PIN NAME	PIN NO.	HIGH	LOW
MODEL_OPT_0	8	10YEAR_TOOL (10 SENSOR)	11YEAR_TOOL (11 SENSOR)
MODEL_OPT_1	11	I2C_LED	PWM_LED
MODEL_OPT_2	30	TOUCH_KEY	TACT_KEY
MODEL_OPT_3	31	PDP/3D	LCD/OLED

	LCD	PDP	OLED	3D
MODEL_OPT_3	0	1	0	1

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



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SECRET

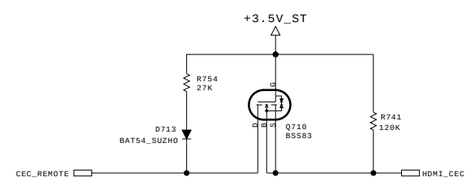
LGElectronics

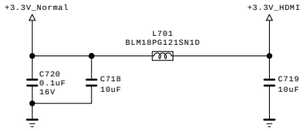
LG ELECTRONICS

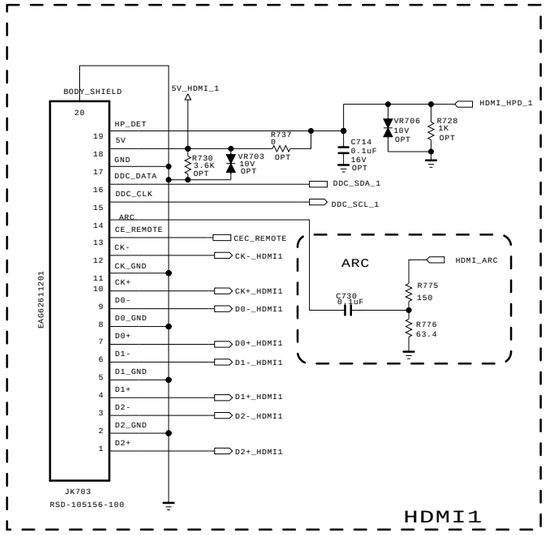
MODEL	BCM35230	DATE	
BLOCK	MICOM	SHEET	6 / 50

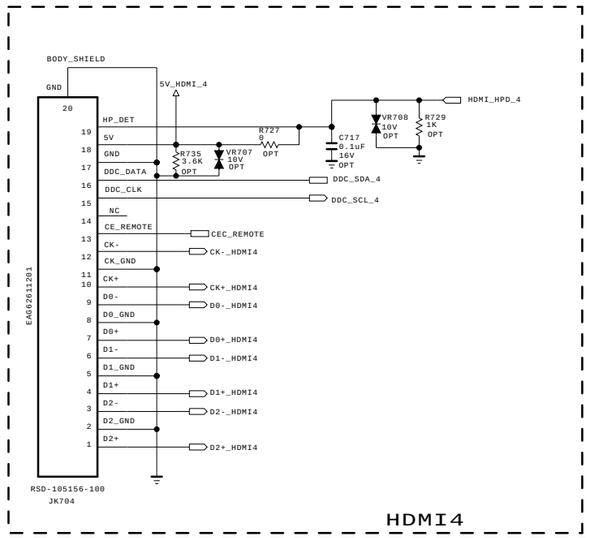
DUAL COMPONENT	
D707,D708 D710,D711	1ST : 0DD184009AA 2ND : 0DSIH00028A
D713	1ST : T-BAT54_SUZHO, 2ND : 0DSON00138A

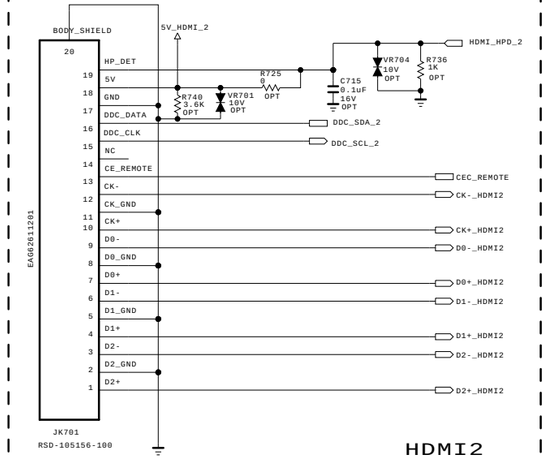
* HDMI CEC

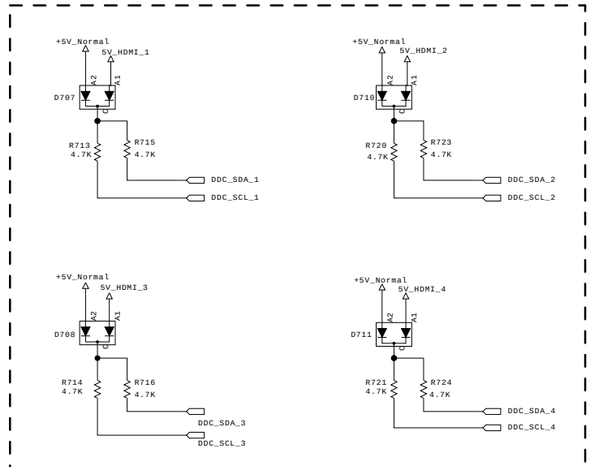


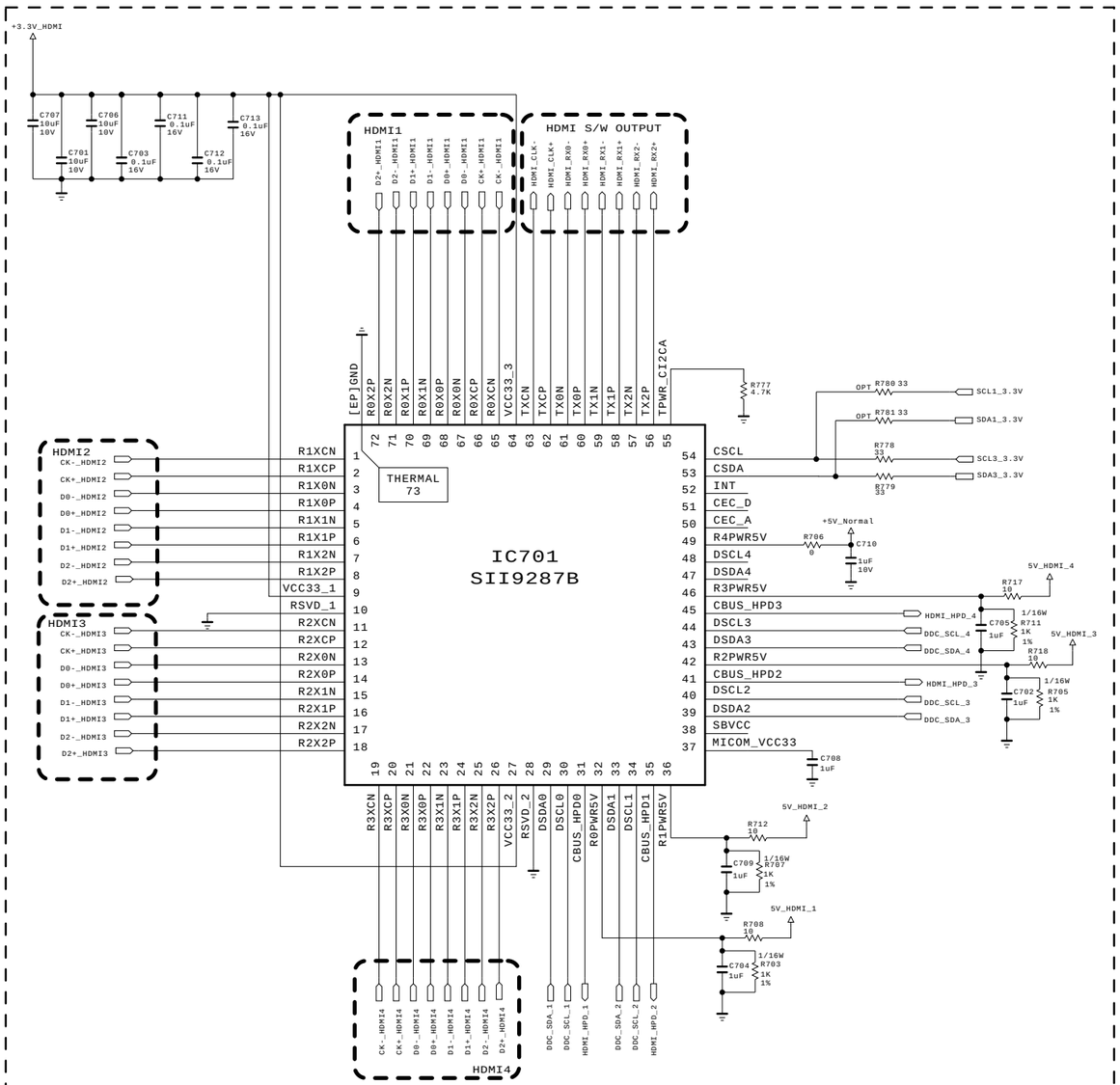












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SECRET

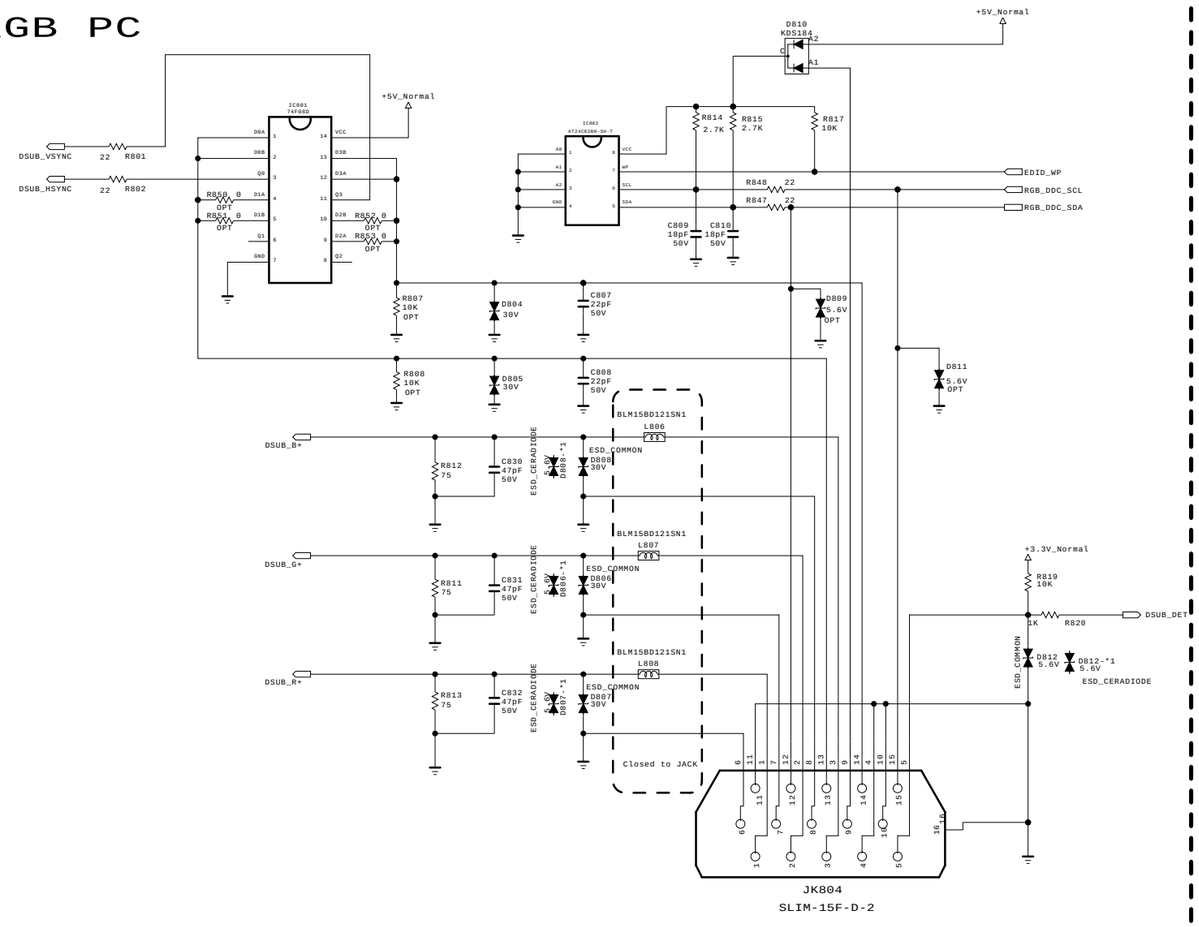
LGElectronics

LG ELECTRONICS

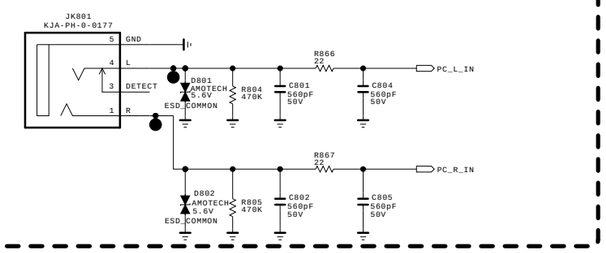
MODEL	BCM35230	DATE	
BLOCK	HDMI	SHEET	7 / 31

RGB/ PC AUDIO/ SPDIF/ EARPHONE/ RS232C

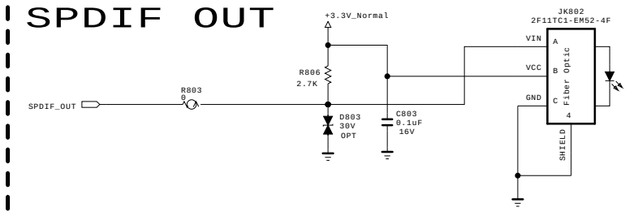
RGB PC



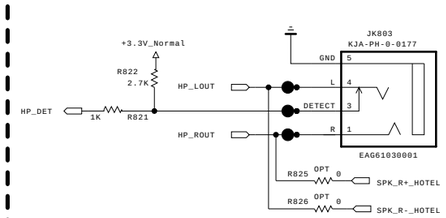
PC AUDIO



SPDIF OUT

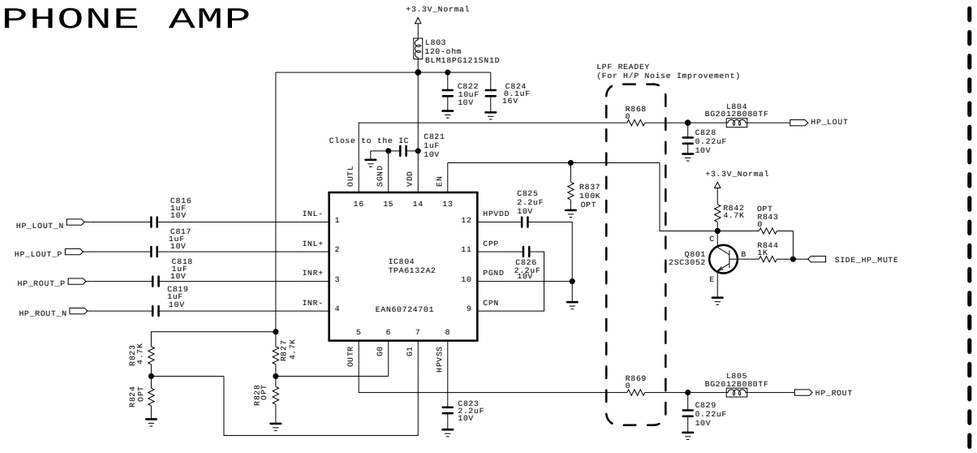


EARPHON JACK

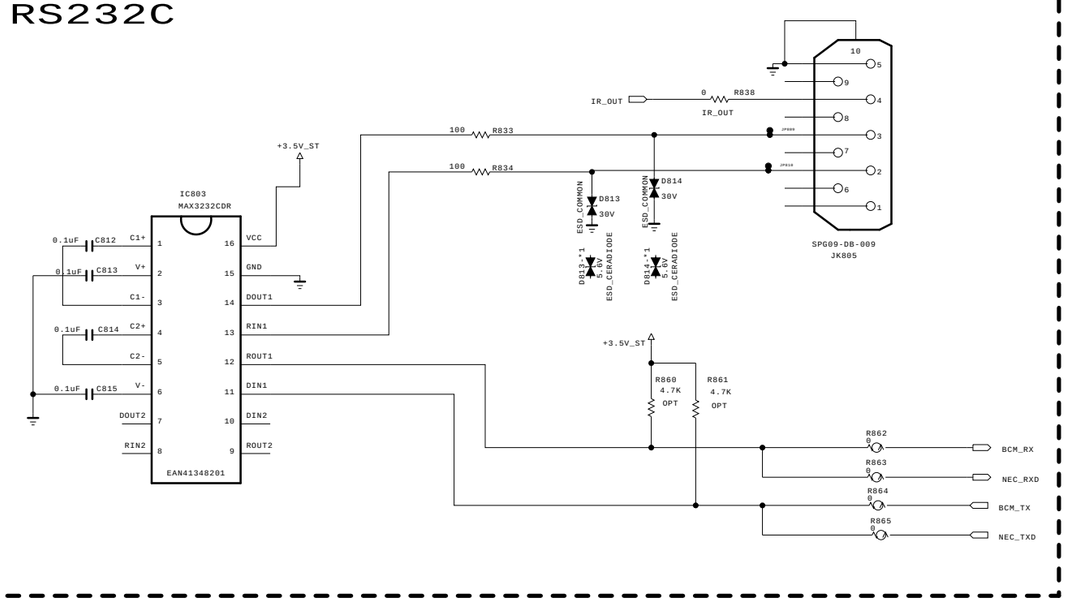


DUAL COMPONENT	
D804,D805,D806 D807,D808,D813 D814	1ST : EAH39491601, 2ND : EAH33945901
D810	1ST : 0DD184009AA, 2ND : 0DSIH00028A
Q801	1ST : 0TRIY80001A, 2ND : 0TR387500AA
IC805	1ST : EAN61151201, 2ND : EAN61130001

EARPHONE AMP



RS232C



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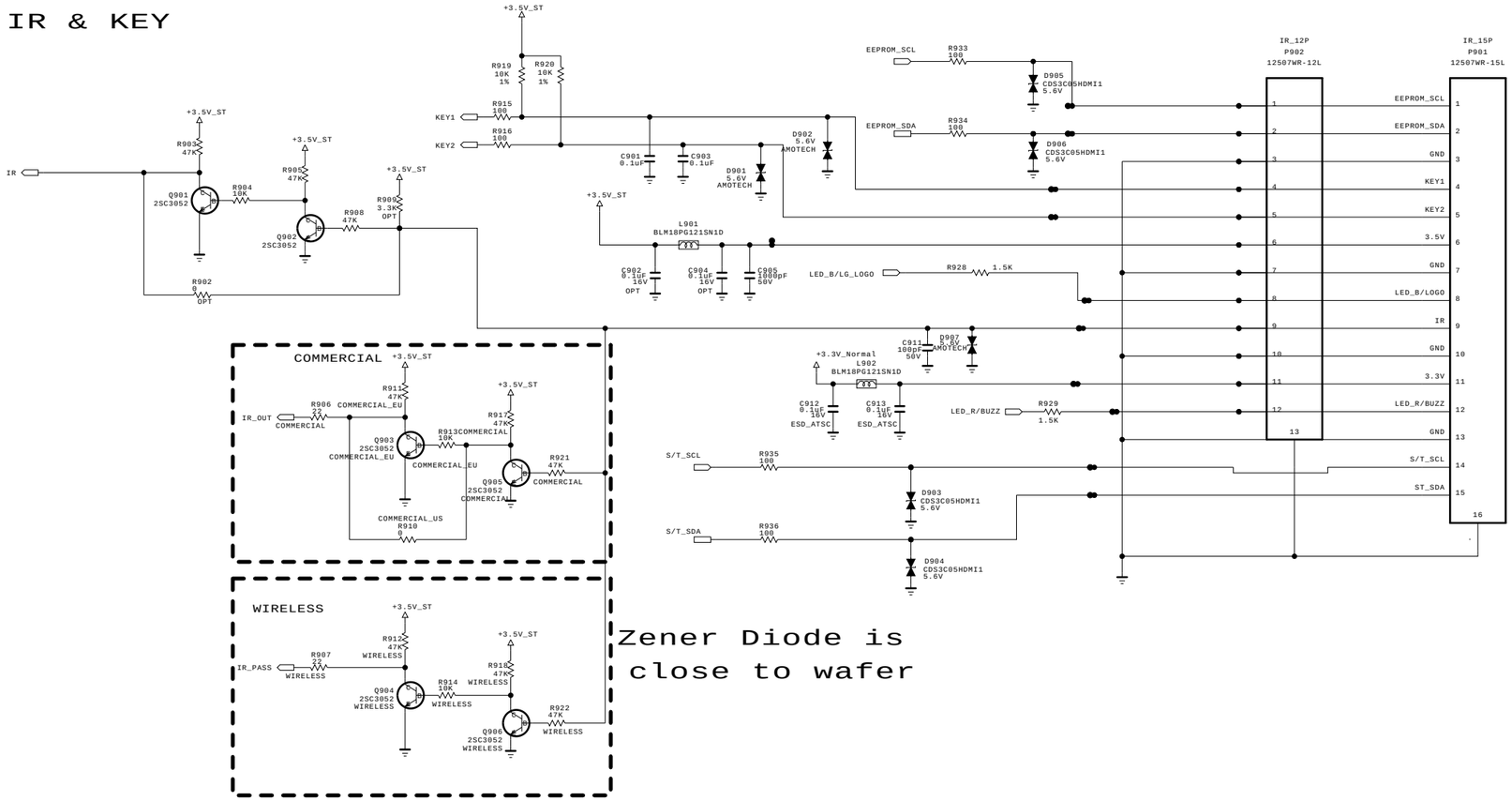
DUAL COMPONENT	
Q901,Q902,Q903 Q904,Q905,Q906	1ST : 0TRIY80001A 2ND : 0TR387500AA
D903,D904 D905,D906	1ST : EAH42720601, 2ND : EAH60994401

IR & KEY



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SECRET

LGElectronics

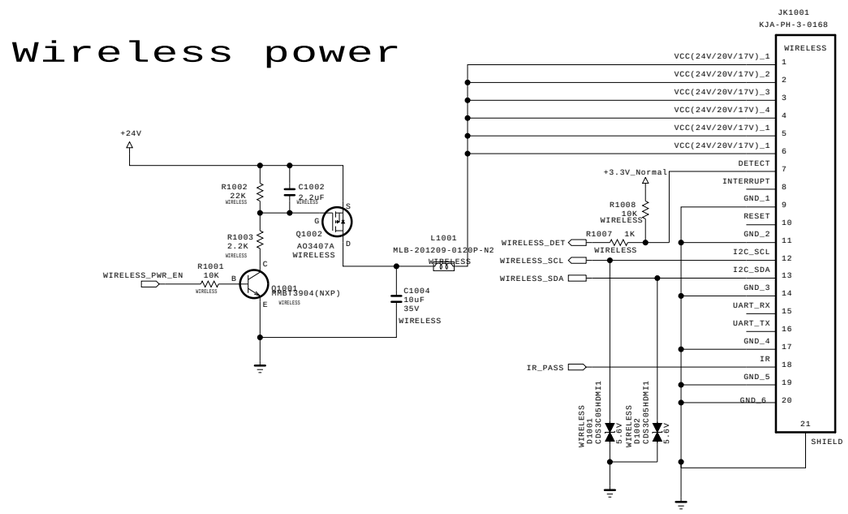
LG ELECTRONICS

MODEL	BCM35230	DATE	
BLOCK	IR/KEY	SHEET	9 / 50

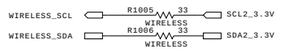
WIRELESS READY MODEL

DUAL COMPONENT	
D1001,D1002	1ST : EAH42720601 2ND : EAH60994401
Q1001	1ST : EBK61012601, 2ND : 0TRDI80002A
Q1002	1ST : EBK60752501, 2ND : EBK61011501

Wireless power



Wireless I2C connection with I2C_1
Address : 0X20



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

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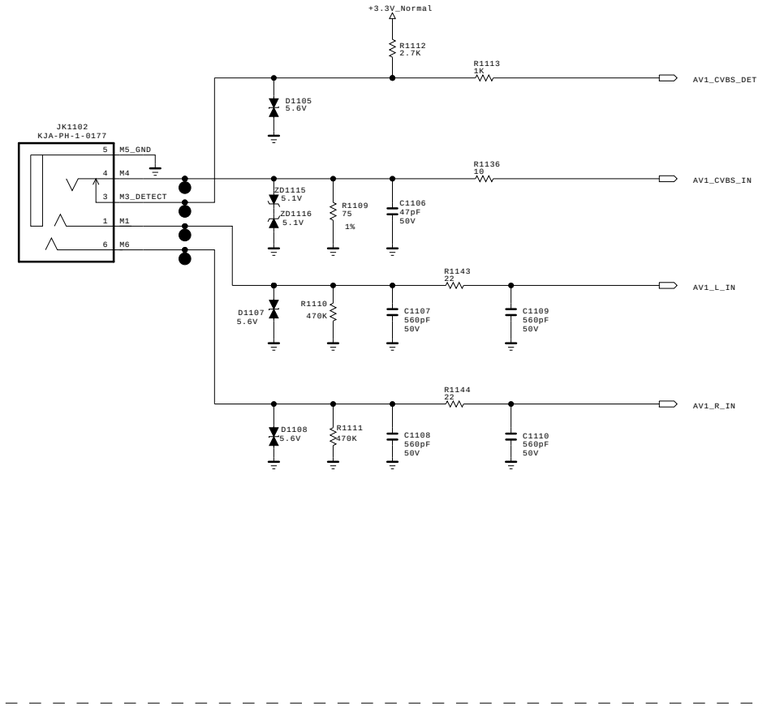
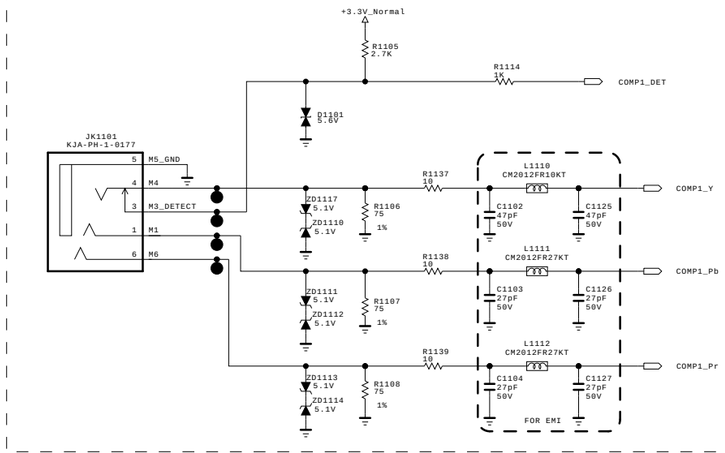
LG ELECTRONICS

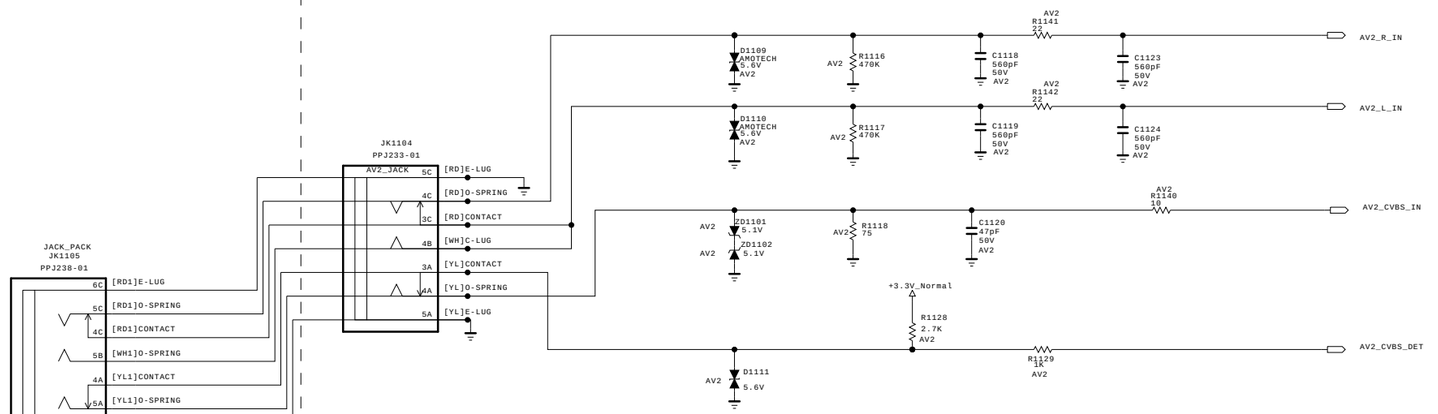
CVBS 1 PHONE JACK



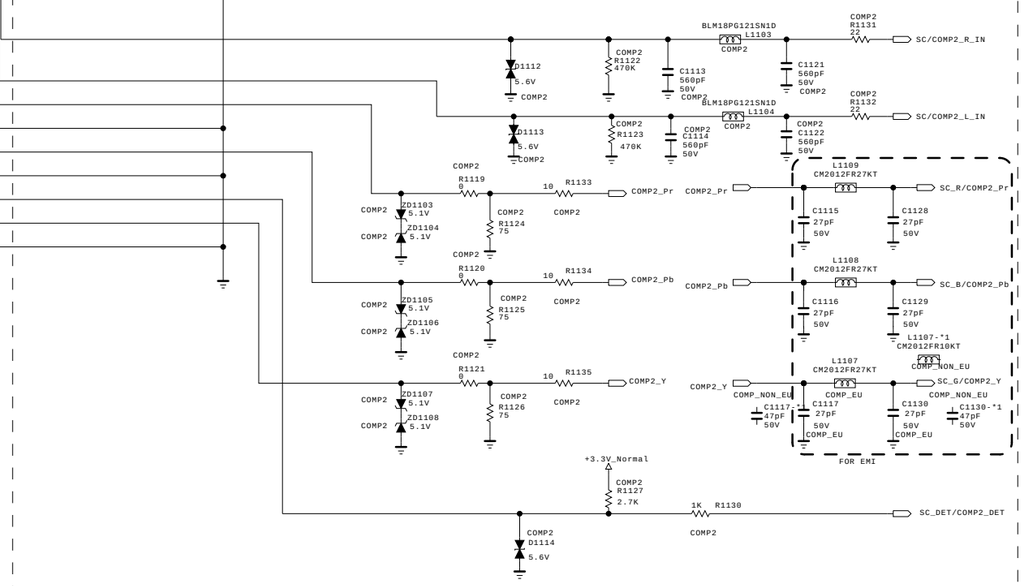
COMPONENT 1 PHONE JACK



CVBS2 REAR JACK



COMP2 REAR JACK



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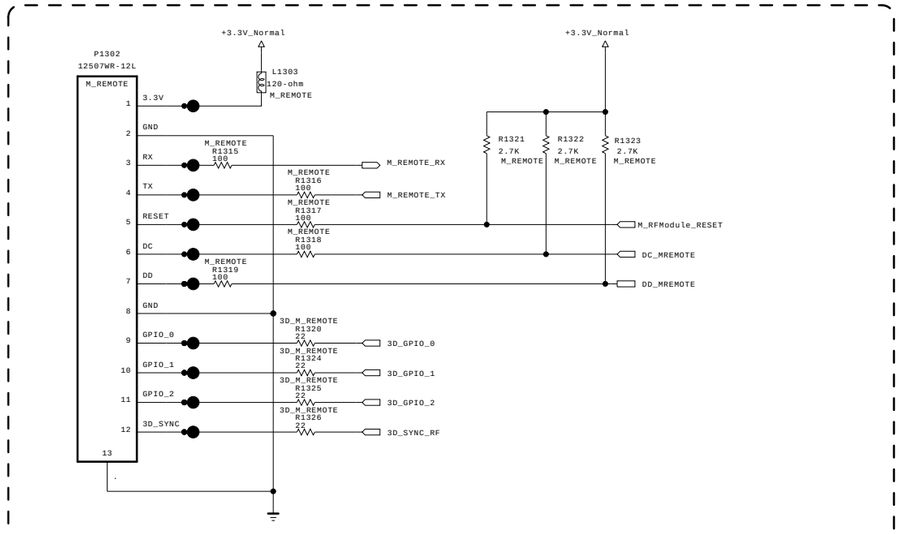
LG ELECTRONICS

MODEL	BCM35230	DATE	
BLOCK	COMP/AV	SHEET	11 / 50

TI solution M_REMOTE OPTION



ALL M_REMOTE OPTION

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
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FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
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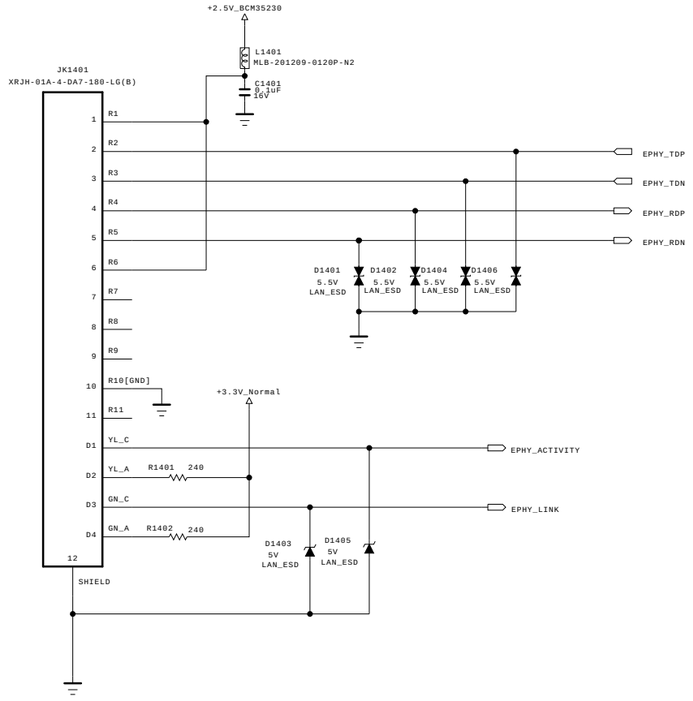
MODEL	BCM35230	DATE	
BLOCK	M_REMOCON	SHEET	13 / 50

Ethernet Block

DUAL COMPONENT	
D1401,D1402 D1403,D1404 D1405,D1406	1ST : EAH42720601 2ND : EAH60994401



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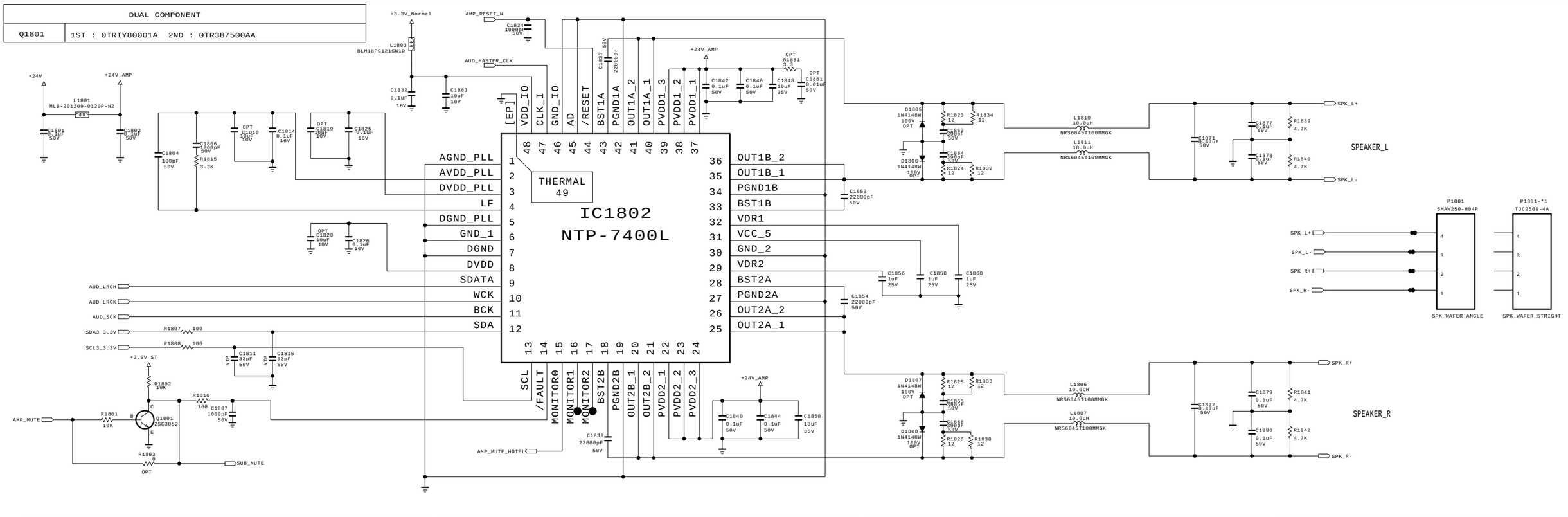
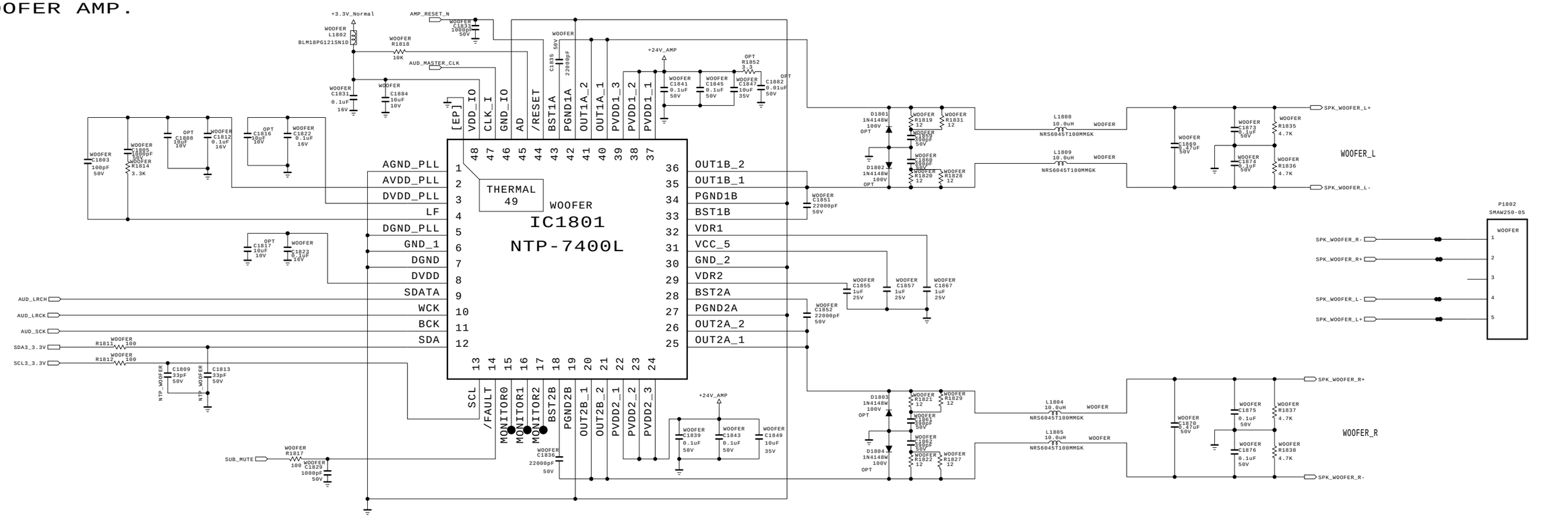
MODEL	BCM35230	DATE	
BLOCK	ETHERNET	SHEET	14 / 50

DUAL COMPONENT	
Q1801	1ST : 0TRIY80001A 2ND : 0TR387500AA



WOOFER AMP.



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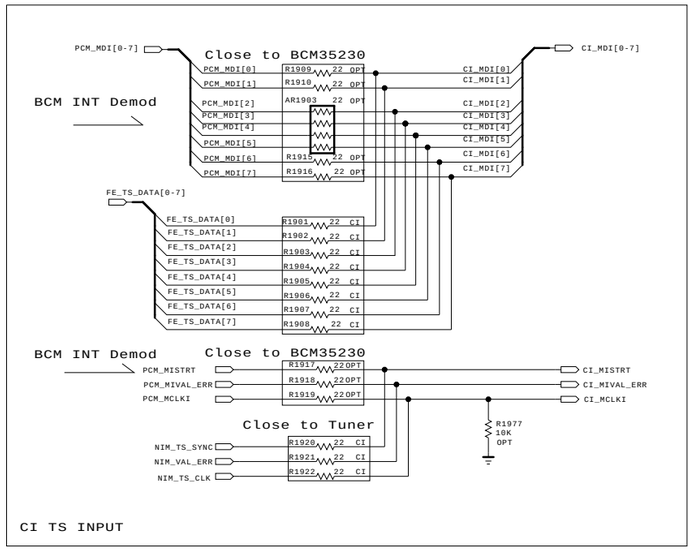
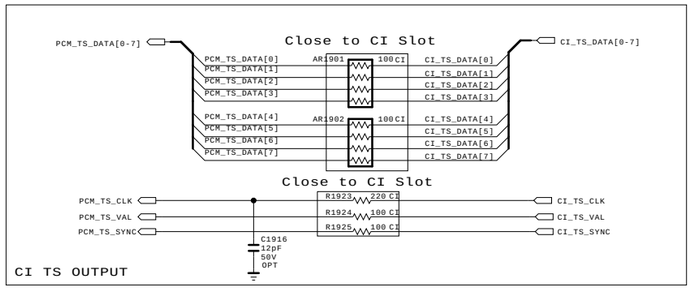
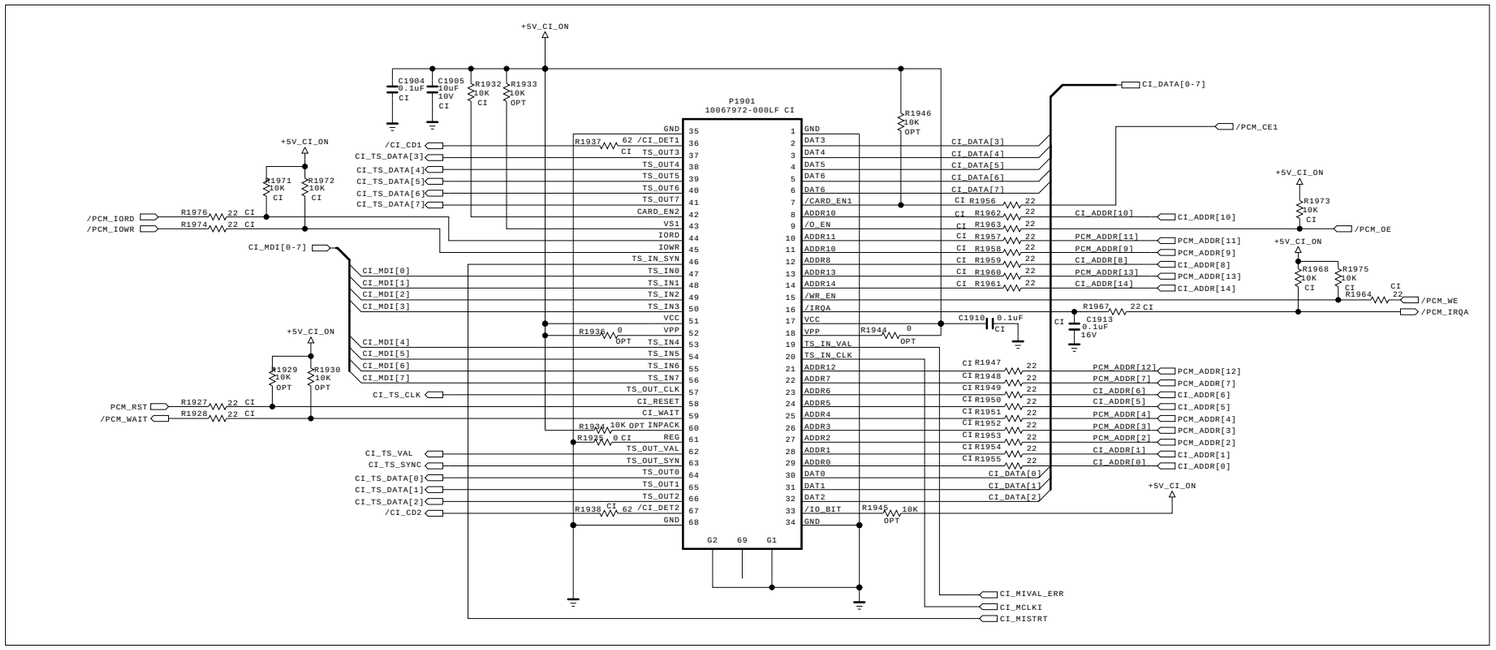
LG ELECTRONICS

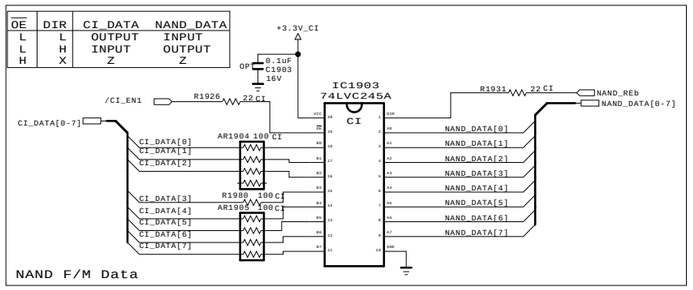
MODEL	BCM35230	DATE	
BLOCK	AUDIO[NEO]	SHEET	18 / 50

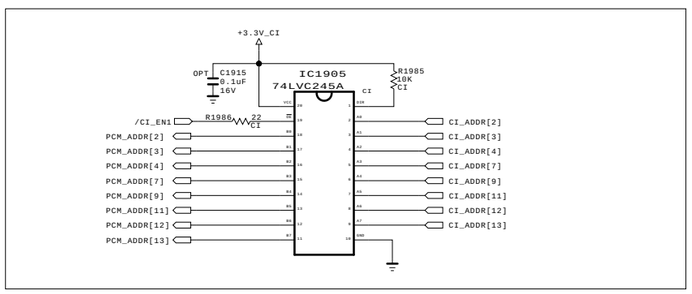
DUAL COMPONENT	
Q1901	1ST : 0TRIY80001A 2ND : 0TR387500AA
Q1902	1ST : EBK60752501, 2ND : EBK61011501
IC1904	1ST : 0ISTLPH062A, 2ND : EAN40055001

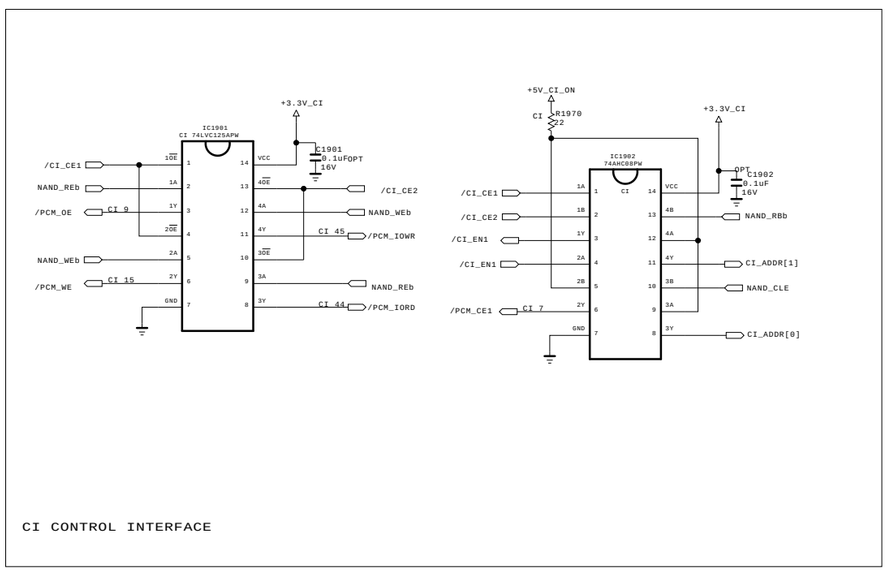


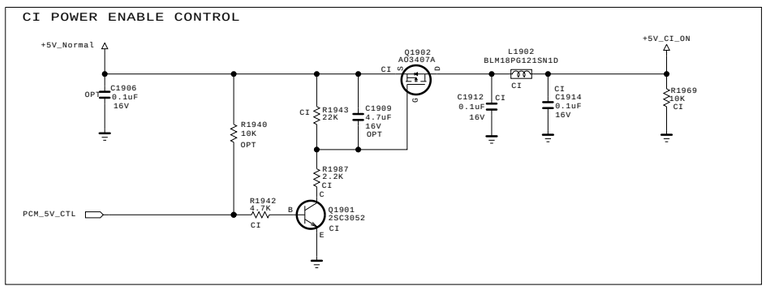


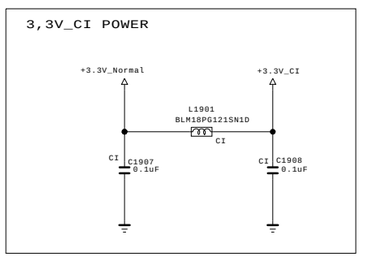




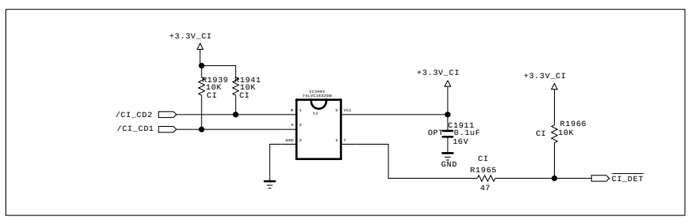








CI DETECT



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LG ELECTRONICS

MODEL	BCM35230	DATE	2010.11.11
BLOCK	CI	SHEET	19 / 58

H/NIM & F/NIM & T/C/S2 Combo Tuner

OPTION TABLE

H/NIM (EU)	H/NIM (AU,Latin)	H/NIM (Brazil,Taiwan)	F/NIM_T/C	F/NIM_T2	F/NIM_CN (China)	F/NIM_Brazil (Brazil)	DVB-T/C/S2 (Eu,Aisa)
Non_DVB_S	Non_DVB_S	Non_DVB_S	Non_DVB_S	Non_DVB_S	Non_DVB_S	Non_DVB_S	DVB_S
H/NIM	H/NIM	H/NIM	F/NIM	F/NIM	F/NIM	F/NIM	F/NIM
BOOSTER	BOOSTER	BOOSTER	BOOSTER	BOOSTER	BOOSTER	BOOSTER	SCART
		RF_SW_CTL			RF_SW_CTL	RF_SW_CTL	
SCART			SCART	SCART	CN		
			EU_F/NIM	EU_F/NIM			
			TC_S_F/NIM	TC_S_F/NIM	CN_F/NIM_BR	CN_F/NIM_BR	TC_S_F/NIM

DUAL COMPONENT	
IC2204	1ST:T-AP2114H(EAN61573601) / 2ND:T-TJ3940S (EAN61573501)

NON_DVB_S: use H/NIM and F/NIM
DVB_S: use DVB-T/C/S2 combo Tuner
H/NIM: use H/NIM
F/NIM: use F/NIM and DVB-T/C/S2 combo Tuner
SCART: use Scart Jack
CN : use China F/NIM
BOOSTER: use BOOSTER_CTL
RF_SW_CTL: use RF_SWITCH_CTL
TC_S_F/NIM: use EU_DVB-T/C F/NIM
CN_F/NIM_BR: use F/NIM(China, BRZIL)
EU_F/NIM: use EU_F/NIM

AU_ASIA_TUNER_V
TU2201
TDTJ-S131D

EU_F/NIM_DVB_TC_V
TU2202
TDFR-G156D

EU_F/NIM_DVB_TCS_V
TU2203
TDFQ-G031D

	AU_ASIA_TUNER_V	EU_F/NIM_DVB_TC_V	EU_F/NIM_DVB_TCS_V
1	ANT_PWR	NC_1	NC_1
2	NC_1	BST_CNTL	NC_2
3	+B1[5V]	+B1[5V]	NC_3
4	RF_AGC	NC_2[RF_AGC]	S2_TU[3.3V]
5	MOPLL_AS	NC_3	NC_4
6	SCL	SCLT	TU_SCL
7	SDA	SDAT	TU_SDA
8	NC_2	NC_4	T_1.8V
9	SIF	SIF	T_SIF
10	NC_3	NC_5	NC_5
11	VIDEO	VIDEO	T_CVBS
12	GND	GND	GND_1
13	+B2[1.2V]	+B2[1.2V]	TD_1.2V
14	+B3[3.3V]	+B3[3.3V]	T_3.3V
15	RESET	RESET	T_TU_RESET
16	IF_AGC_CNTL	+B4[2.5V]	NC_6
17	DIF_1[N]	SCL	TD_SCL
18	DIF_2[P]	SDA	TD_SDA
19		ERR	T/C/S2_ERROR
		SYNC	T/C/S2_SYNC
		VALID	T/C/S2_VALID
		MCL	T/C/S2_MCL
		D0	T/C/S2_D0
		D1	T/C/S2_D1
		D2	T/C/S2_D2
		D3	T/C/S2_D3
		D4	T/C/S2_D4
		D5	T/C/S2_D5
		D6	T/C/S2_D6
		D7	T/C/S2_D7
		31	S2_1.25V
			S2_RESET
			S2_3.3V
			S2_F22
			S2_SCL
			S2_SDA
			GND_2
			S2_LNB
			39

SHIELD

TU2201-*1 TDTH-T056F
TU2201-*2 TDVJ-H031F
TU2201-*3 TDTJ-S101D
TU2202-*1 TDFR-G256D
TU2202-*2 TDFR-C256D
TU2202-*3 TDFR-C236D
TU2202-*4 TDFR-C056D
TU2202-*5 TDFR-C036D
TU2203-*1 TDVQ-G001F

+5V_TU
BOOSTER L2201 BLM18PG121SN1D
BOOSTER R2231 0
BOOSTER R2242 10K
Q2202 MMBT3906(NXP) BOOSTER
R2235 2.2K BOOSTER
Q2203 2SC3052 BOOSTER
R2246 10K BOOSTER
RF_BOOSTER_CTL
C2234 0.01uF 50V BOOSTER
close to TUNER

R2209 0 RF_SW_CTL
RF_SW_CTL
C2203 0.1uF 16V close to TUNER

L2205 1uH NON_DVB_S
C2222 100pF 50V NON_DVB_S
C2225 0.1uF 16V NON_DVB_S
+3.3V_S2_TU
C2284 100pF 50V DVB_S
C2285 0.1uF 16V DVB_S
C2286 10uF 6.3V DVB_S
close to TUNER

BOOSTER R2206 0
DVB_S R2277 0
C2201 0.1uF 16V OPT
close to TUNER

L2206-*1 DVB_S 0
L2210-*1 DVB_S 0
L2208 270nH NON_DVB_S
L2210 270nH NON_DVB_S
SCL0_3.3V
SDA0_3.3V
C2219 62pF 50V NON_DVB_S
C2221 62pF 50V NON_DVB_S
C2202 20pF 50V NON_DVB_S
C2211 20pF 50V NON_DVB_S
close to TUNER

+1.8V_TU
C2204 100pF 50V DVB_S
C2208 0.1uF 16V DVB_S

R2291 75 OPT
close to TUNER

+5V_TU
R2234 470 DVB_S
R2237 0 DVB_S
C2235 0.1uF 16V DVB_S
R2230 4.7K DVB_S
Q2201 MMBT3906(NXP) DVB_S
TU_SIF
R2243 0 NON_DVB_S
+5V_TU
R2250 1K OPT
R2252 220
R2253 220
TU_CVBS
OPT 0
R2248 0
R2249 1K OPT
Q2204 MMBT3906(NXP)
R2247 0 SCART
+5V_TU
R2254 560 SCART
R2255 750 SCART
ATV_OUT
Q2205 MMBT3906(NXP) SCART
OPTION:SCART

+1.25V_TU
C2215 10uF 16V CN
C2205 100pF 50V
C2220 1000pF 50V CN
C2218 4700pF 50V CN
C2210 0.1uF 16V
C2214 100uF 16V CN
+3.3V_TU
C2217 10uF 16V CN
C2227 100pF 50V
C2231 0.1uF 16V
+3.3V_TU
R2229 100
R2233 100R
C2238 0.1uF 16V
TU_RESET
+2.5V_TU
EU_F/NIM 0
R2249
H/NIM 0
R2244
IF_AGC

C2213 0.1uF 16V EU_F/NIM close to Tuner
F/NIM R2204 0
F/NIM R2205 0
H/NIM R2293 0
R2292 0
close to IF line

close to TUNER
C2237 18pF 50V OPT
C2241 18pF 50V OPT
R2215 22 SCL1_3.3V
R2216 22 SDA1_3.3V
IF_N
IF_P

AR2200 47 EU_F/NIM
AR2201 47 EU_F/NIM
AR2202 47 EU_F/NIM
R2226 47 EU_F/NIM
TU_TS_ERR
TU_TS_SYNC
TU_TS_VAL
TU_TS_CLK
FE_TS_DATA[0-7]
FE_TS_DATA[1]
FE_TS_DATA[0]
FE_TS_DATA[3]
FE_TS_DATA[2]
FE_TS_DATA[5]
FE_TS_DATA[4]
FE_TS_DATA[6]
FE_TS_DATA[7]
AR2200-*1 0 CN
AR2200-*2 33 DVB_S
AR2201-*1 0 CN
AR2201-*2 33 DVB_S
AR2202-*1 0 CN
AR2202-*2 33 DVB_S
R2226-*1 0 CN
R2226-*2 33 DVB_S
Close to the tuner

L2209 BLM18PG121SN1D 120-OHM DVB_S
+1.25V_TU
C2223 100pF 50V DVB_S
C2226 0.1uF 16V DVB_S
C2230 10uF 10V DVB_S
+3.3V_S2_LNB
R2208 2.2K DVB_S
C2207 0.1uF DVB_S
S2_RESET
R2202 51 1/16W DVB_S
LNB_TX
R2283 0 DVB_S
R2284 0 DVB_S
+3.3V_S2_DE
C2224 100pF 50V DVB_S
C2228 0.1uF 16V DVB_S
C2232 10uF 10V DVB_S

Close to Tuner #38 pin
Surge protectioin
C2206 1000pF 50V DVB_S
C2209 33pF OPT
C2212 33pF DVB_S
D2201 3.0SMCJ20A(suzhougrande) DVB_S
R2207 2.2K DVB_S 6432
LNB_OUT

CHBO_TS_CLK
CHBO_TS_SERIAL
CHBO_TS_SYNC
CHBO_TS_VAL_ERR
TU_RESET_SUB
RF_SWITCH_CTL_2
TW9910_RESET

ERROR & VALID PIN
<EU, China, Brazil,S2>
R2263 0 DVB_T2/CN_F/NIM_BR
IC2203 NL17SZ08DFT2G
TU_TS_VAL
R2258 0 DVB_TC/TCS_F/NIM
IN_B
TU_TS_ERR
IN_A
GND
VCC
OUT_Y
+3.3V_TU
C2271 0.1uF 16V OPT
R2269 0 DVB_TC/TCS_F/NIM
TS_VAL_ERR
DVB_TC/TCS_F/NIM

Tuner to CI Slot
R2266 0 TS_VAL_ERR NIM_VAL_ERR
R2267 0 TU_TS_SYNC NIM_TS_SYNC
R2268 0 TU_TS_CLK NIM_TS_CLK

Max 1.5A
+1.25V_TU (EU)
+1.23V_TU (CN)
+3.3V_TU
IC2208
AP2132MP-2.5TRG1 [EP]
POWER_ON/OFF2_1
R2210 10K
C2289 10uF 16V
+5V_Normal
C2291 0.1uF OPT
R2211 0 OPT
C2292 1uF OPT
PG
EN
VIN
VCTRL
GND
ADJ
VOUT
NC
THERMAL
2A
EAN61387601
R2212 20K 1%
R2213 11K 1%
R2214 11K 1%
R2214-*1 100 1/16W 1% CN
R2 R1
C2290 10uF 16V
Vout=0.6*(1+R1/R2)

+3.3V_TU
IC2204
AP2114H-2.5TRG1
VIN
VOUT
GND
C2268 0.1uF 16V OPT
R2270 1 EU_F/NIM
C2276 10uF 16V EU_F/NIM
C2279 0.1uF 16V EU_F/NIM
+2.5V_TU

Max 217mA
+3.3V_TU
IC2202
AZ1117BH-1.8TRE1
IN
DVB_S
OUT
ADJ/GND
+1.8V_TU
R2298 1 DVB_S
C2287 10uF 10V DVB_S
C2288 0.1uF 16V DVB_S

+3.3V_TU
+3.3V_S2_LNB
L2204 MLB-201209-0120P-N2
C2242 0.1uF OPT
DVB_S
C2245 10uF 10V DVB_S
C2248 0.1uF DVB_S
+3.3V_S2_DE
L2202 MLB-201209-0120P-N2
C2243 10uF 10V DVB_S
+3.3V_S2_TU
C2246 0.1uF DVB_S
L2203 MLB-201209-0120P-N2
C2244 10uF 10V DVB_S
C2247 0.1uF 16V DVB_S

+5V_Normal
+5V_TU
L2208 MLB-201209-0120P-N2
C2258 22uF 16V
C2252 0.1uF 16V
C2260 22uF 16V
C2262 0.1uF 16V
+3.3V_Normal
+3.3V_TU
L2207 MLB-201209-0120P-N2
C2216 22uF 16V CN
C2249 0.1uF 16V
C2255 22uF 16V
C2259 0.1uF 16V
C2261 0.1uF 16V

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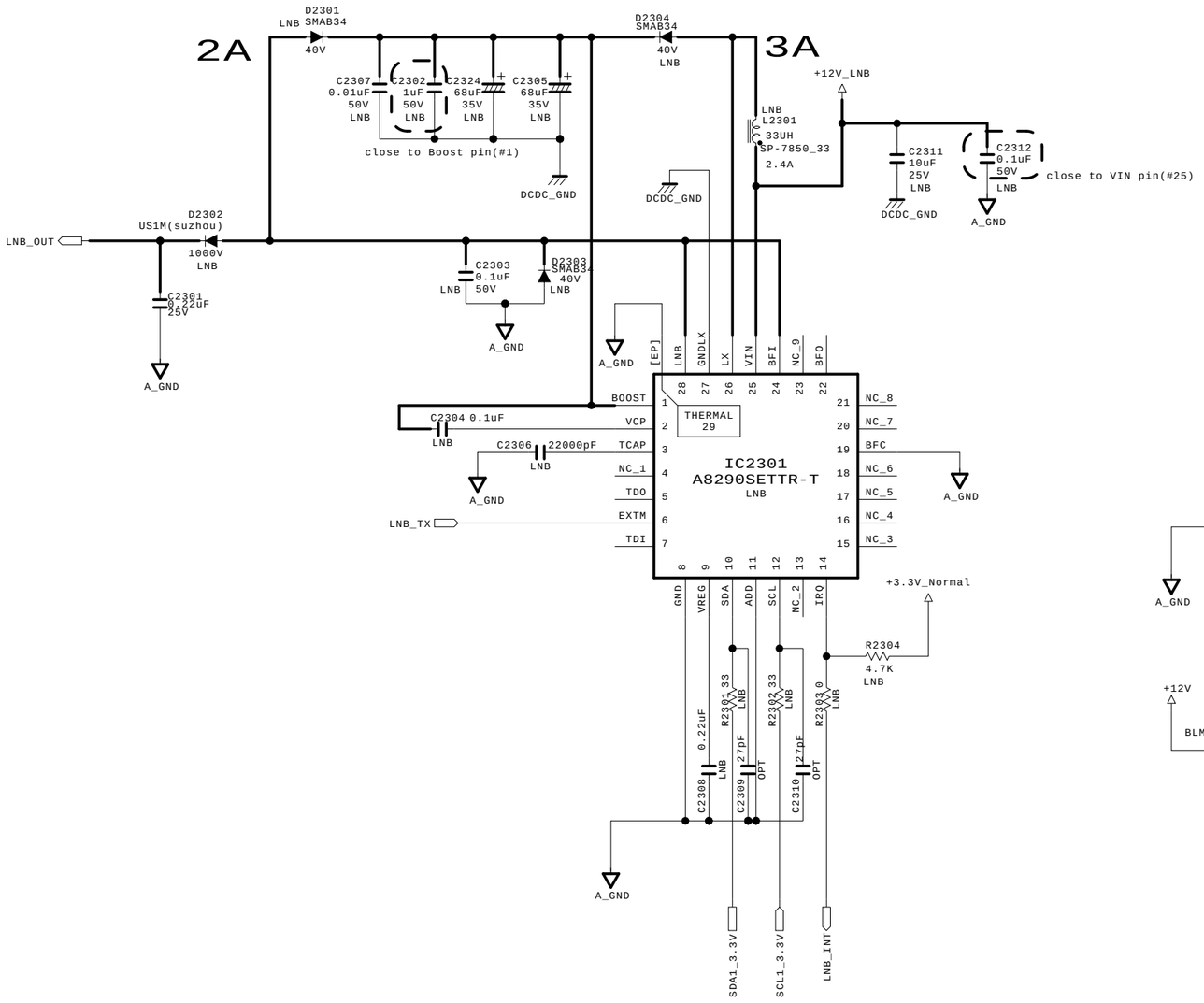
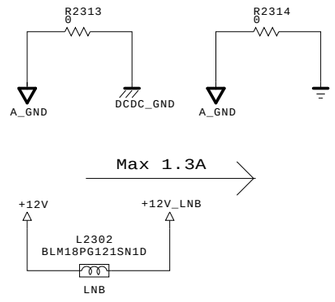
MODEL	BCM35230	DATE	
BLOCK	TUNER SINGLE	SHEET	22

DVB-S2 LNB Part Allegro

(Option:LNB)





DCDC_GND and A_GND are connected
DCDC_GND and A_GND are connected in pin#27
PCB_GND and A_GND are connected

Input trace widths should be sized to conduct at least 3A
Ouput trace widths should be sized to conduct at least 2A

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

SECRET

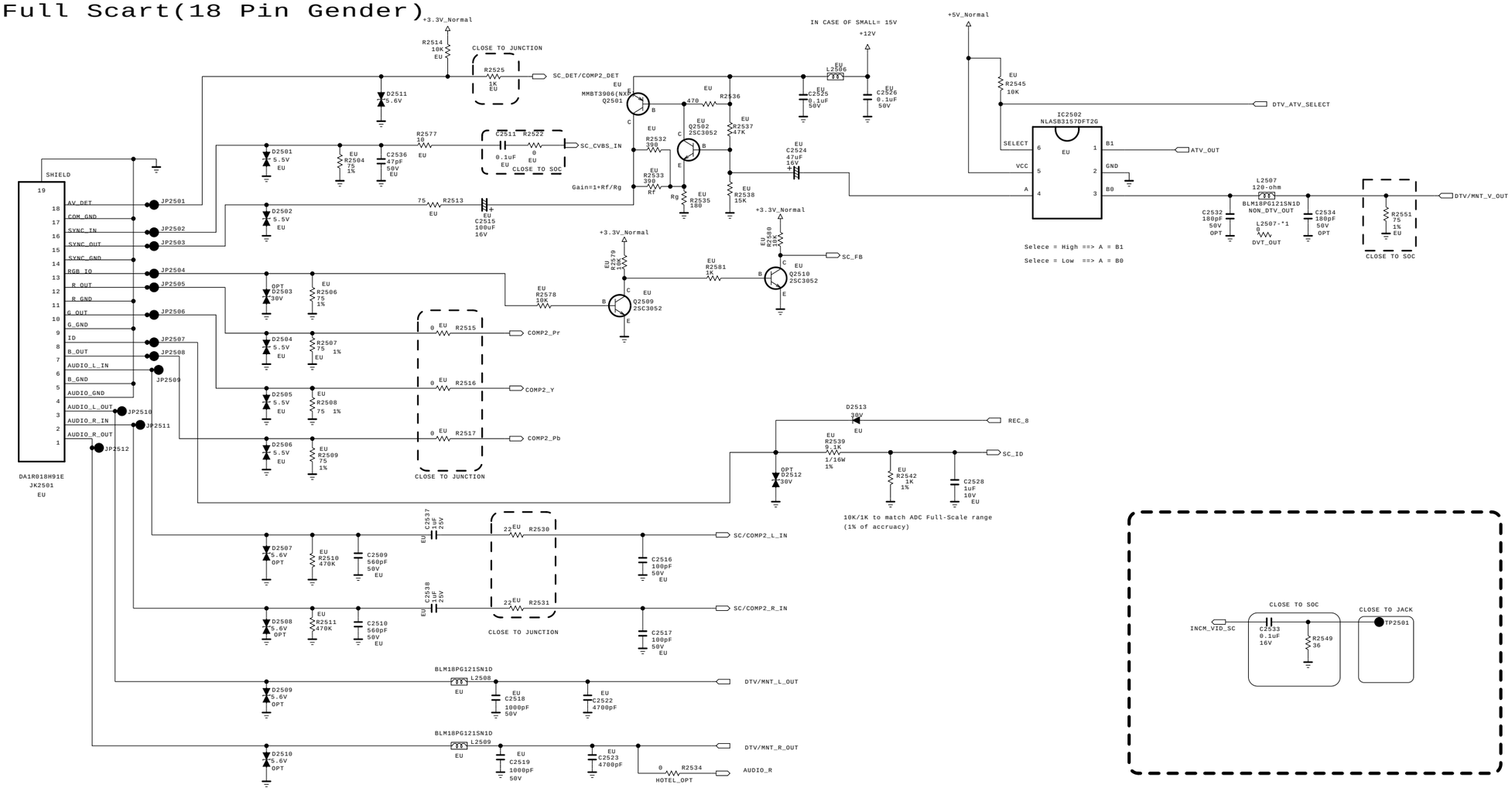
LGElectronics

LG ELECTRONICS

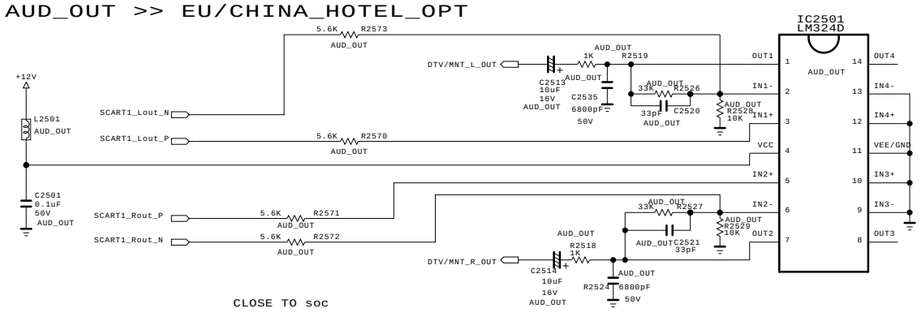
MODEL	BCM35230	DATE	2010.11.02
BLOCK	LNB	SHEET	23 / 57

DUAL COMPONENT	
Q2502,Q2503 Q2504,Q2506 Q2507,Q2508	1ST : 0TRIY80001A 2ND : 0TR387500AA
Q2501	1ST : EBK61012701, 2ND : EBK58172301
Q2505	1ST : 0TRIH80004A, 2ND : EBK61012501, 3RD : 0TR102009AM
D2513	1ST : T-BAT54_SUZHO, 2ND : 0DSON00138A

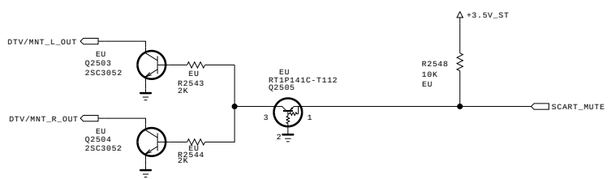
Full Scart(18 Pin Gender)



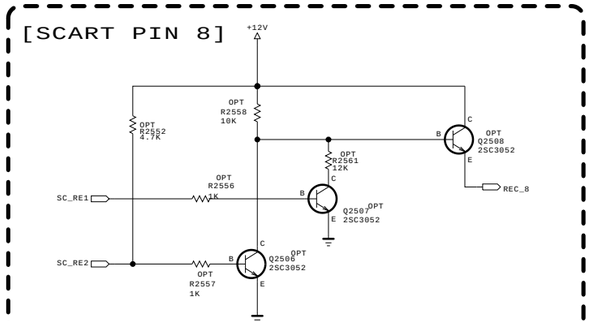
AUD_OUT >> EU/CHINA_HOTEL_OPT



[SCART AUDIO MUTE]



[SCART PIN 8]



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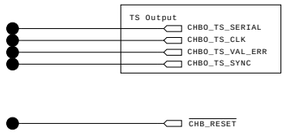
SECRET

LGElectronics

LG ELECTRONICS

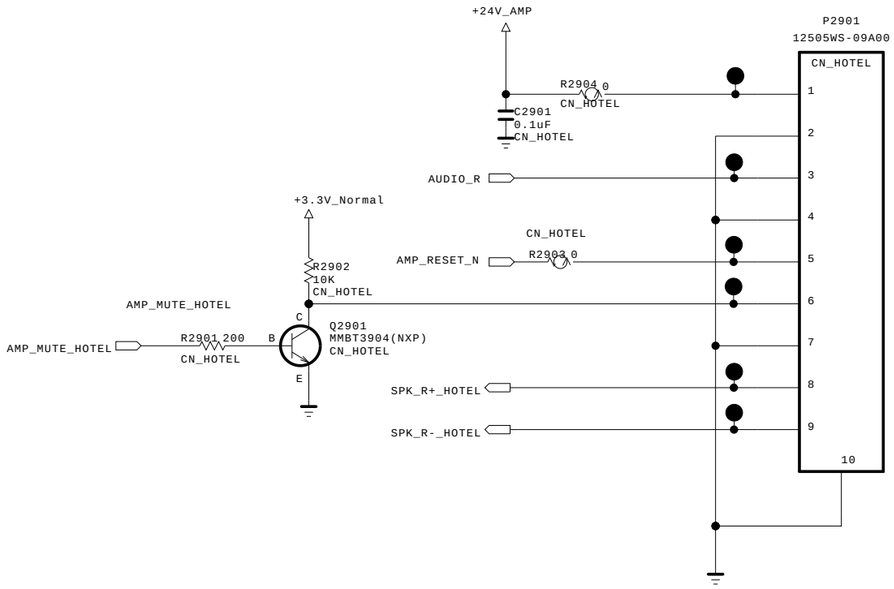
MODEL	BCM35230	DATE	
BLOCK	SCART	SHEET	25

NON CHB



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

China Hotel Option



DUAL COMPONENT	
Q2901	1ST : EBK61012601 2ND : 0TRDI80002A

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

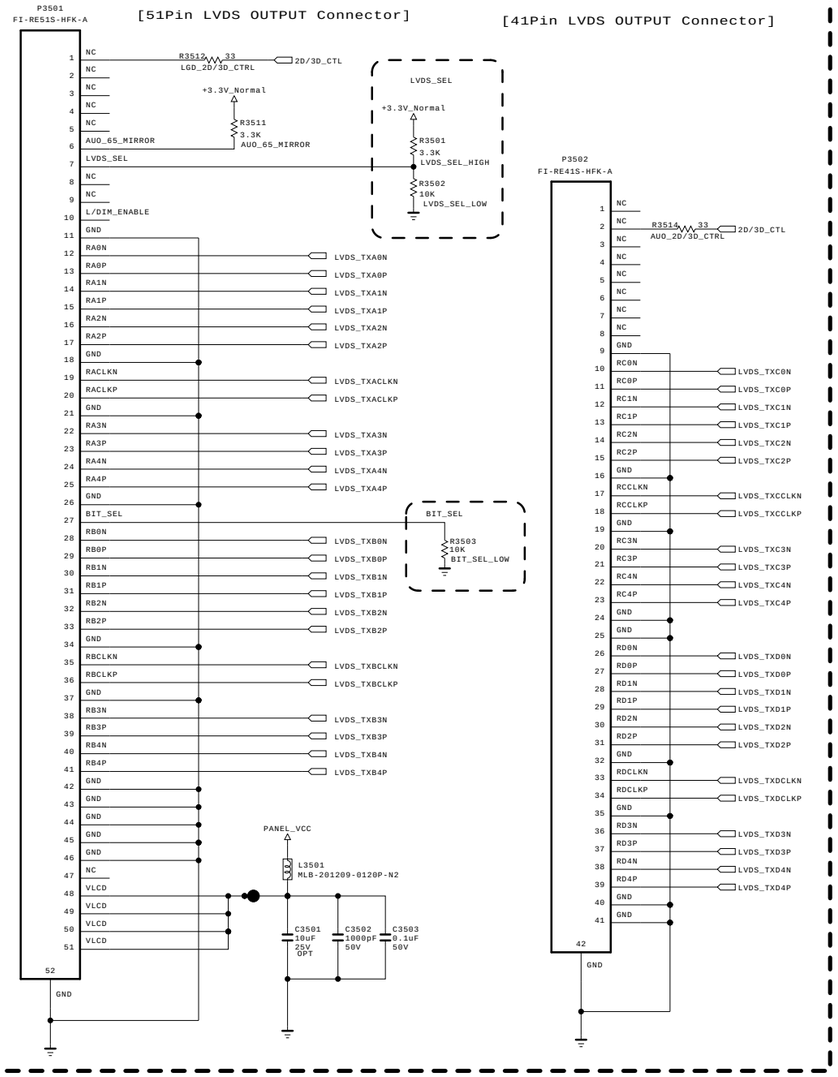
SECRET

LGElectronics

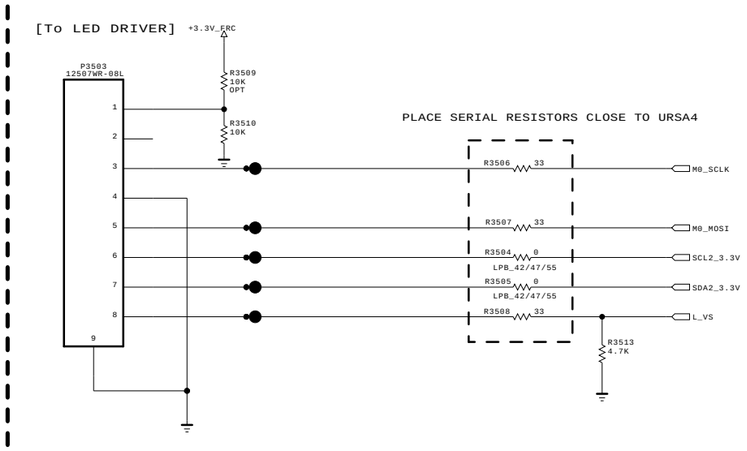
LG ELECTRONICS

MODEL	BCM35230	DATE	
BLOCK	CHINA HOTEL	SHEET	29

LVDS



LOCAL DIMMING



NON USED L/DIMMING (FOR EDGE_LED)

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SECRET
LGElectronics

LG ELECTRONICS

IC5201
LGE7303C

PLACE TERMINATION RESISTORS CLOSE TO URSA5

Place Close to Bead

GPIO1 : HI => B8/94, LOW => B4/98
CHIP_CONF : {GPIO8, PWM1, PWM0}
CHIP_CONF = 3'd5 : boot from interal SRAM
CHIP_CONF = 3'd6 : boot from EEPROM
CHIP_CONF = 3'd7 : boot from SPI Flash

URSA5 CONFIGURATION

URSA5 H/W OPTION

MODEL OPTION

PIN NAME	PIN NO.	HIGH	LOW
MODEL_OPT_0	D10	L/DIM_10BLOCK	L/DIM_16BLOCK
MODEL_OPT_1	D11	RESERVED	RESERVED
MODEL_OPT_2	D12	LVDS_EXT_URSA5	LVDS_STM_PLUS
MODEL_OPT_3	D13	RESERVED	RESERVED

Debugging for URSA5

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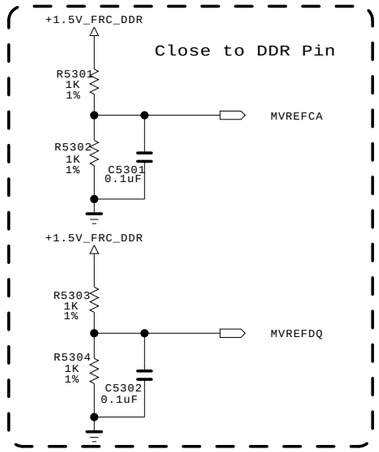
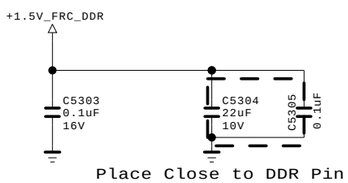
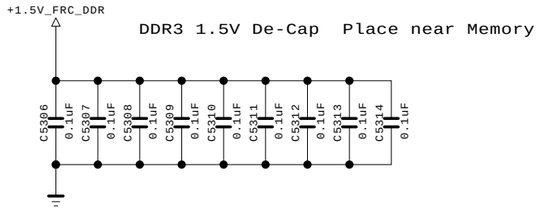
SECRET
LGElectronics

LG ELECTRONICS

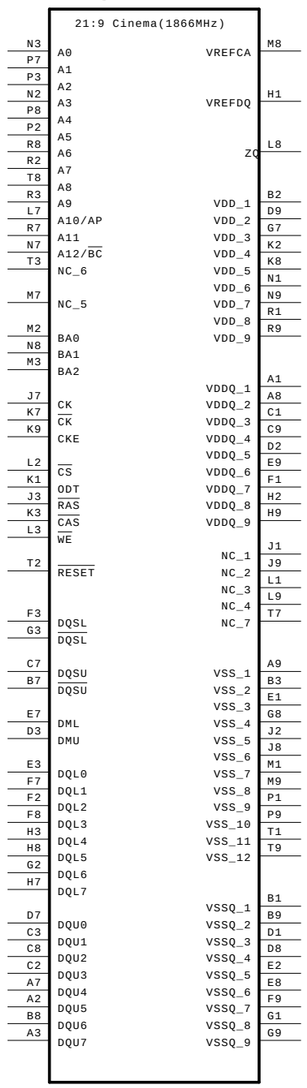
MODEL	MStar URSA5	DATE	2010. 08.18
BLOCK	FRC block	SHEET	52 / 55

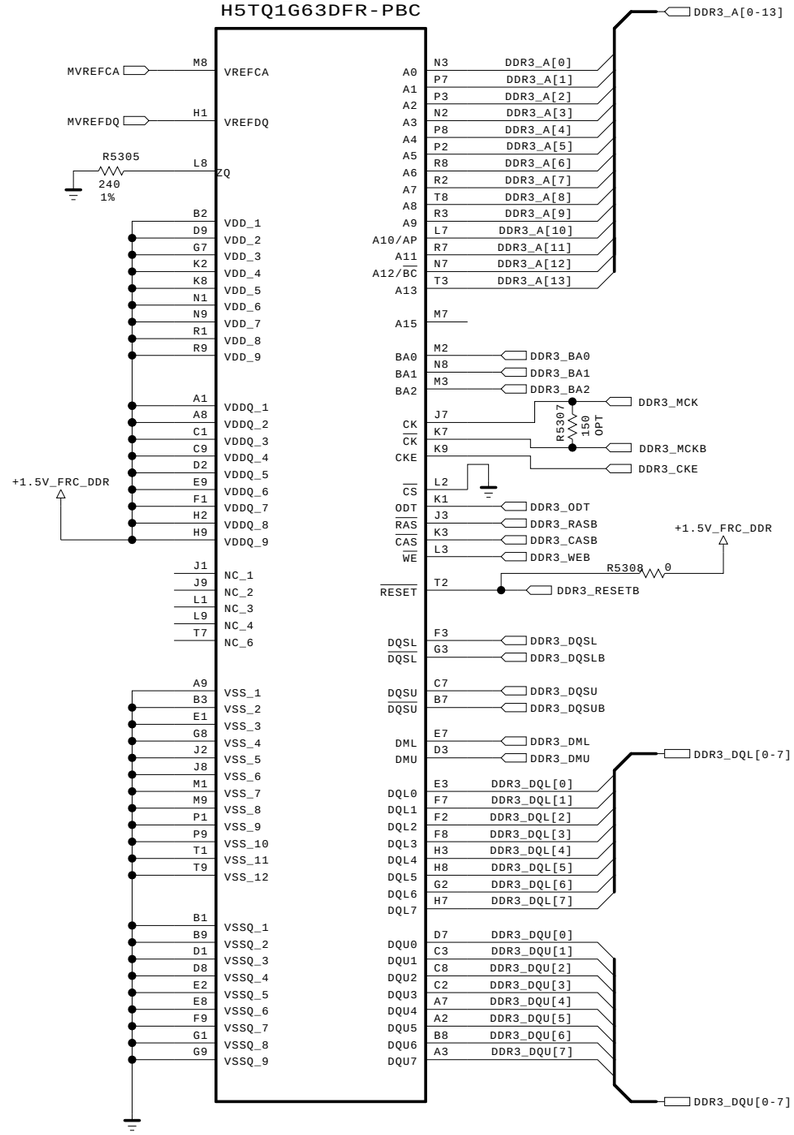


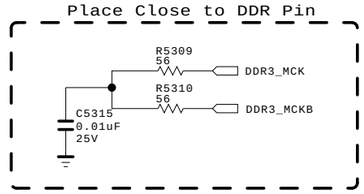




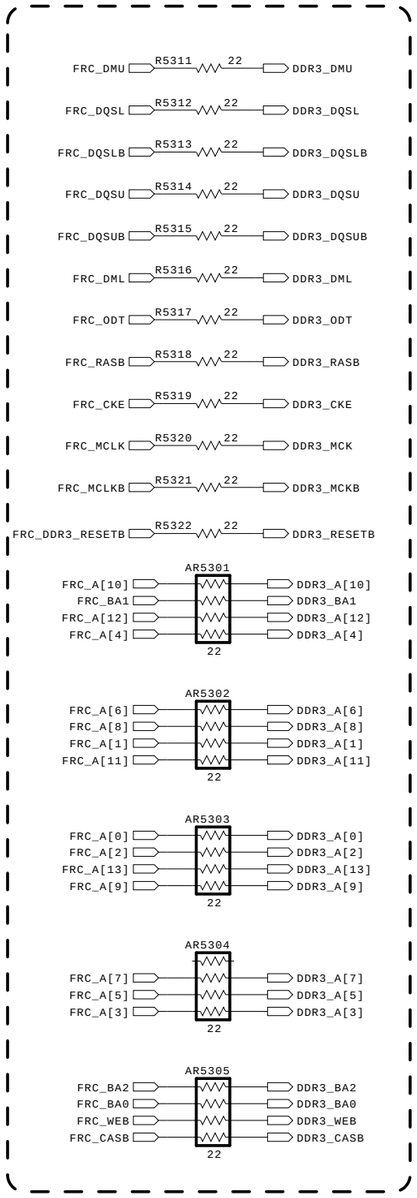
NON 21:9 Cinema(1600MHz)

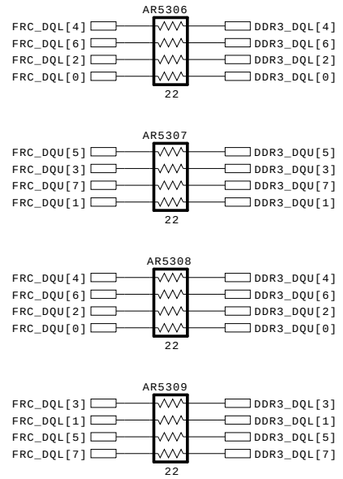






Place the serail damping resistors in the middle of DRAM pattern





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SECRET

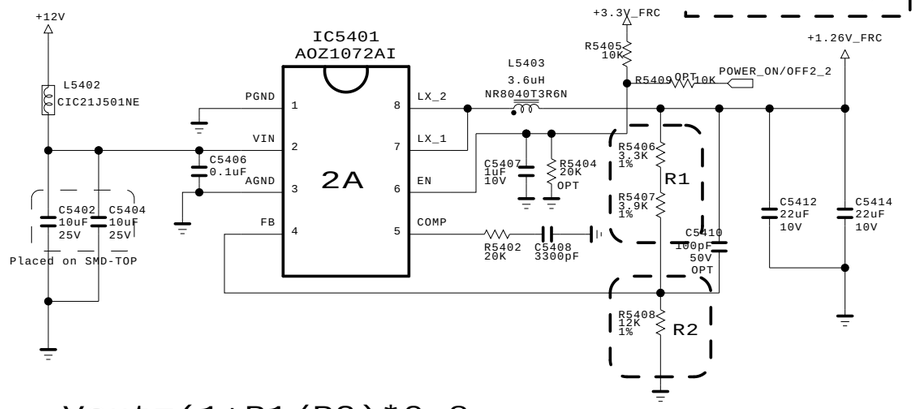
LGElectronics

LG ELECTRONICS

MODEL	MStar URSA5	DATE	2010. 08.18
BLOCK	DDR3 4Mbit	SHEET	53 / 55

CORE +1.26V_FRC

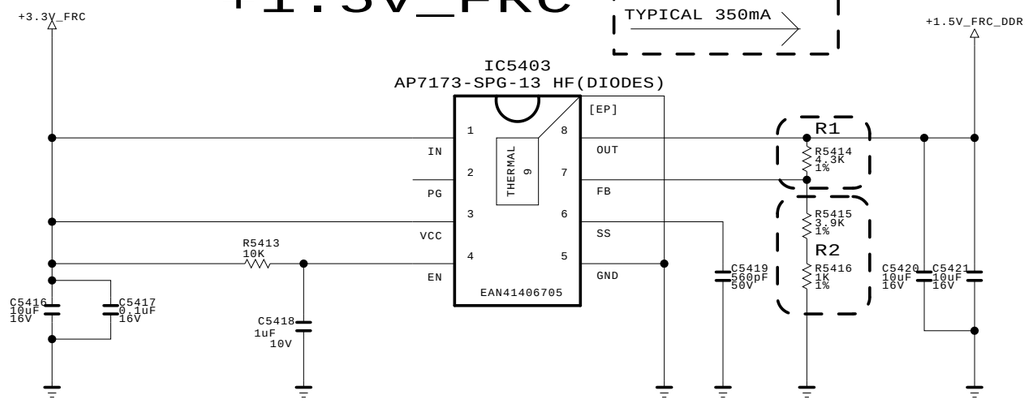
TYPICAL 980mA



Vout=(1+R1/R2)*0.8

+1.5V_FRC

TYPICAL 350mA

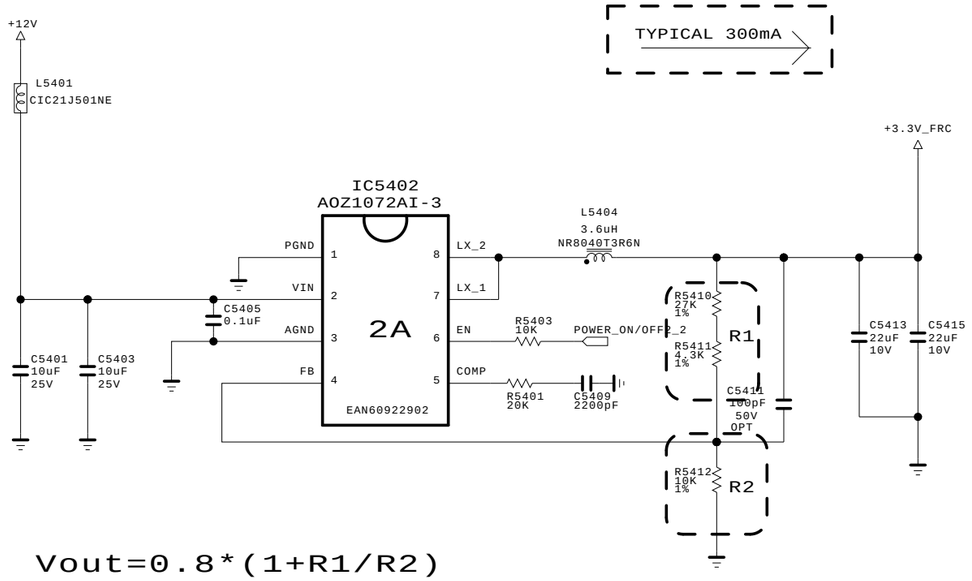


Vout=0.6*(1+R1/R2)

+1.5V of DDR&URSA5 uses same power line

+3.3V_FRC

TYPICAL 300mA



Vout=0.8*(1+R1/R2)

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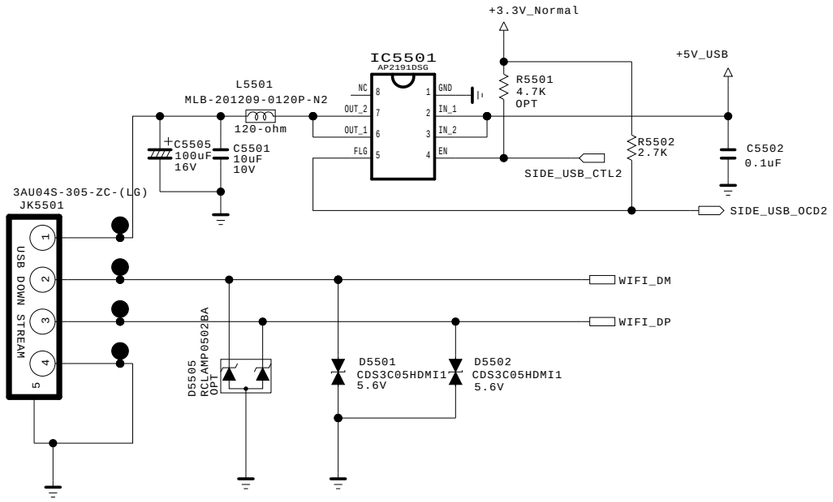
SECRET

LGElectronics

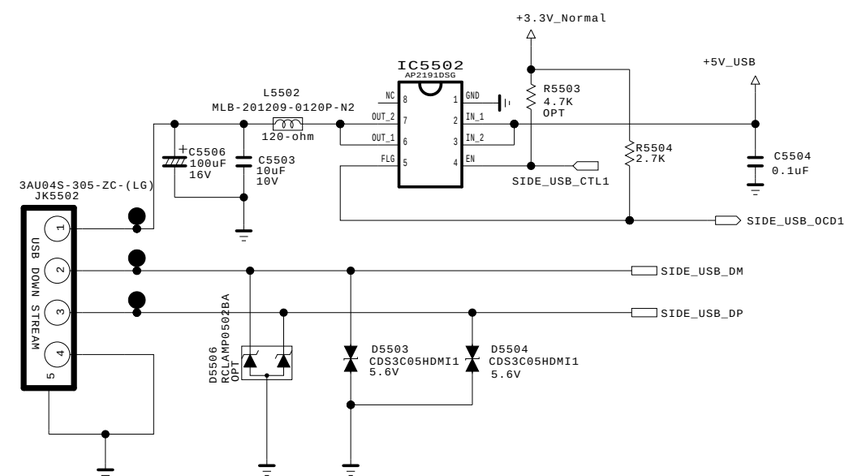
LG ELECTRONICS

MODEL	MStar URSA5	DATE	2010. 08.18
BLOCK	URSA5 Power Block	SHEET	54 / 55

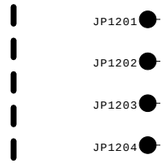
USB / DVR Ready



USB



COMMON JP FOR WIFI MODEL



/RST_HUB

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SECRET

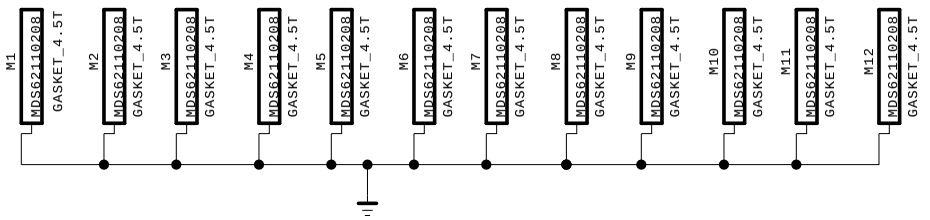
LGElectronics

LG ELECTRONICS

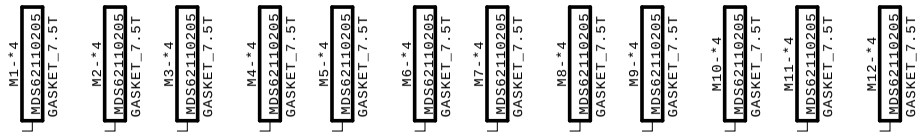
MODEL	BCM35230	DATE	2010. 10. 20
BLOCK	USB (NON WIFI)	SHEET	55

SMD GASKET

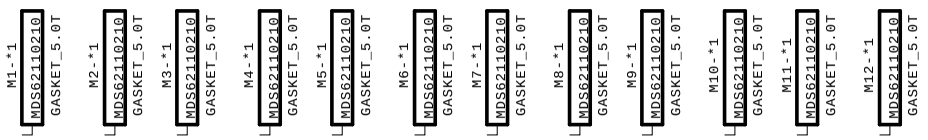
SMD GASKET 4.5T



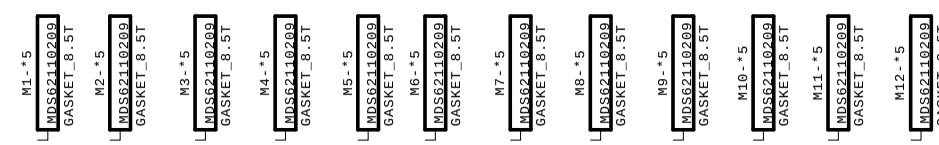
SMD GASKET 7.5T



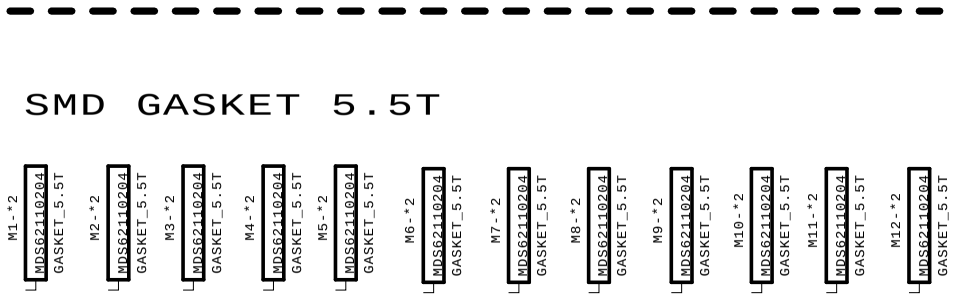
SMD GASKET 5.0T



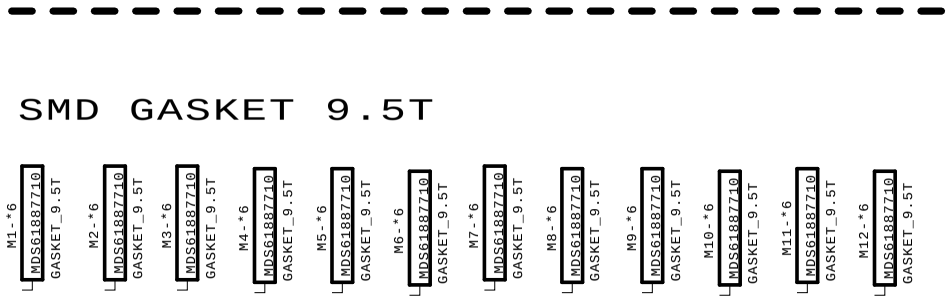
SMD GASKET 8.5T



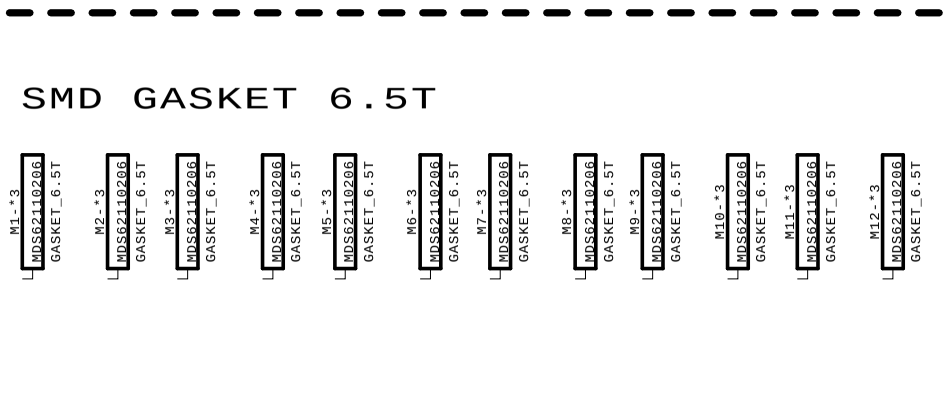
SMD GASKET 5.5T

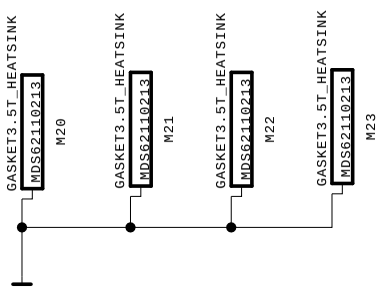


SMD GASKET 9.5T



SMD GASKET 6.5T





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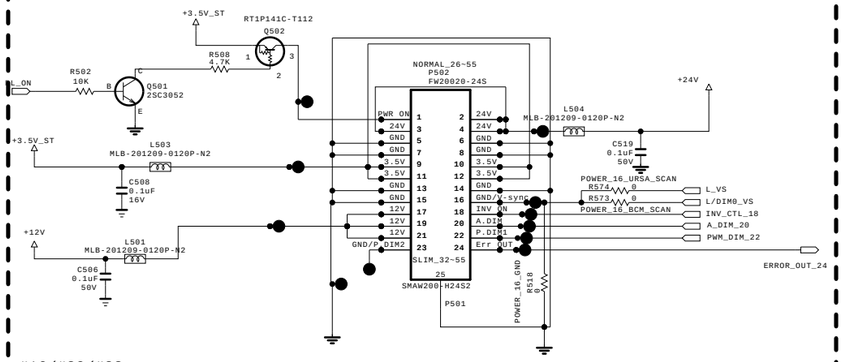
SECRET

LGElectronics

LG ELECTRONICS

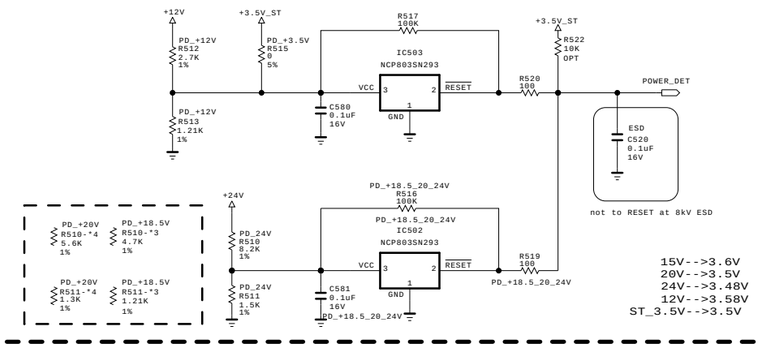
MODEL	BCM35230	DATE	2010. 09. 18
BLOCK	SMD GASKET	SHEET	56 / 56

FROM LIPS & POWER B/D



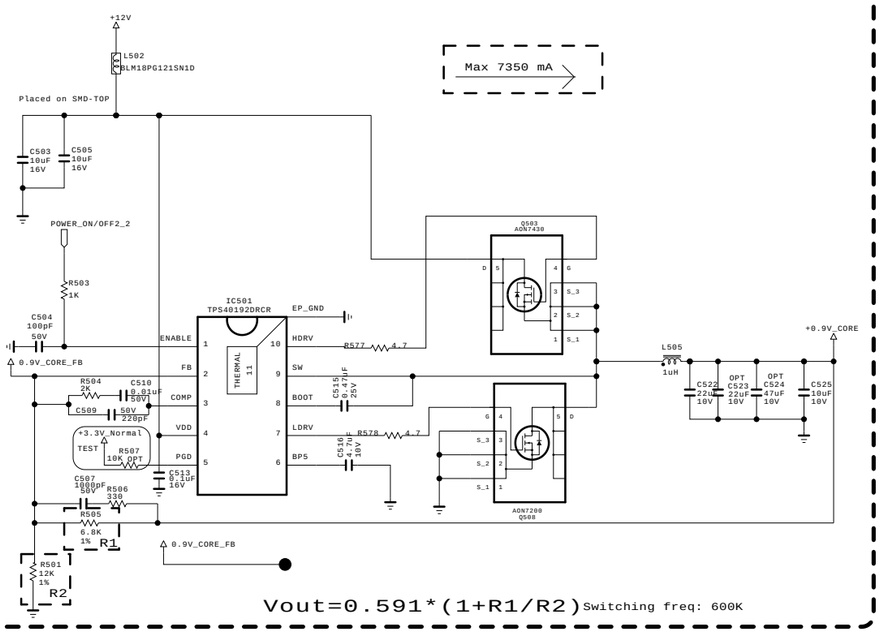
#16/#20/#23
LD - GND OR USE
LE(N.L.D.) - OPEN
LE(L.D.) - USE

Power_DET



15V-->3.6V
20V-->3.5V
24V-->3.48V
12V-->3.58V
ST_3.5V-->3.5V

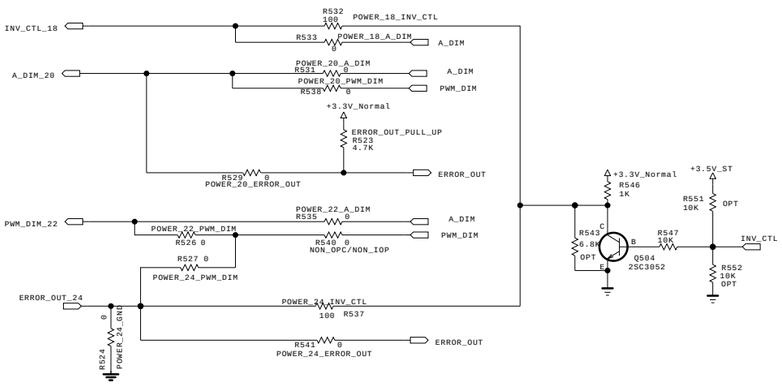
+0.9V_CORE_BCM35230



Vout=0.591*(1+R1/R2) Switching freq: 600K

DUAL COMPONENT	
Q501,Q504, Q505,Q506	1ST : 0TRIY80001A 2ND : 0TR387500AA
Q502	1ST : 0TRIH80004A, 2ND : EBK61012501, 3RD : 0TR102009AM
Q507	1ST : EBK60752501, 2ND : EBK61011501
IC502,IC503	1ST : EAN61151001, 2ND : EAN60670101

OS Module OPT



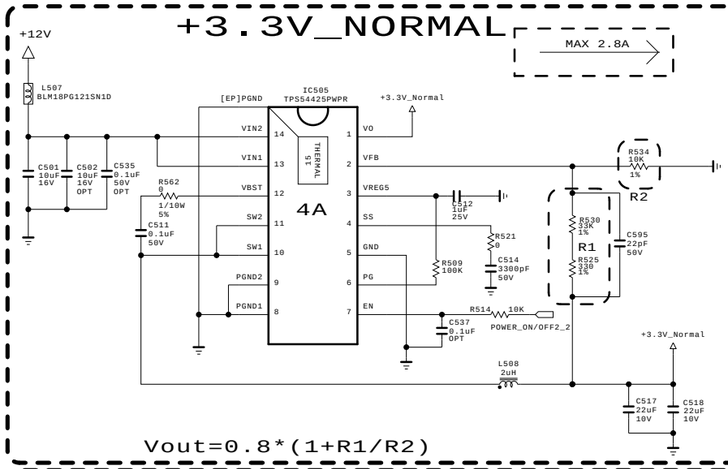
<OS MODULE PIN MAP>

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

CHECK PWR/MODULE PIN MAP

+3.3V_NORMAL

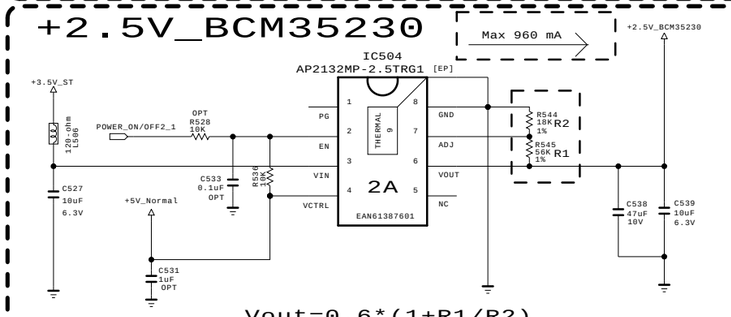
MAX 2.8A



Vout=0.8*(1+R1/R2)

+2.5V_BCM35230

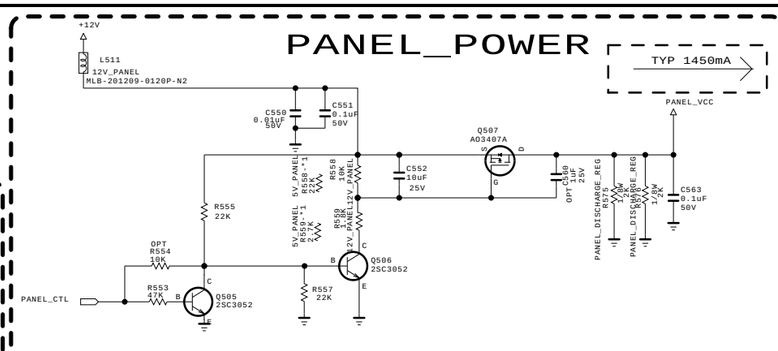
Max 960 mA



Vout=0.6*(1+R1/R2)

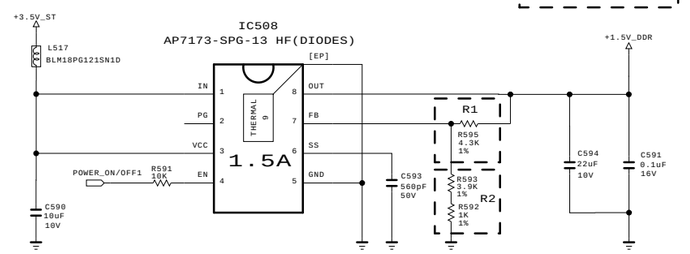
PANEL_POWER

TYP 1450mA



+1.5V_DDR

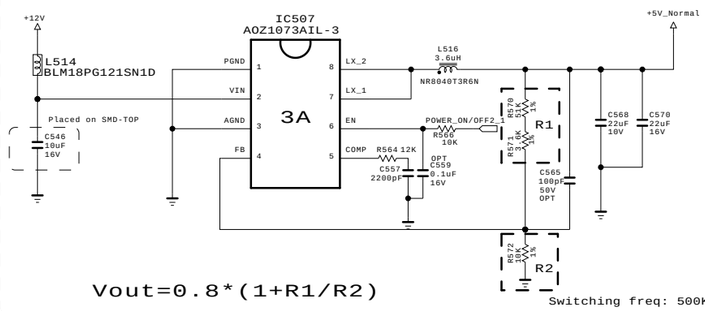
Max 800mA



Vout=0.8*(1+R1/R2)

+5V_Normal

MAX 1A

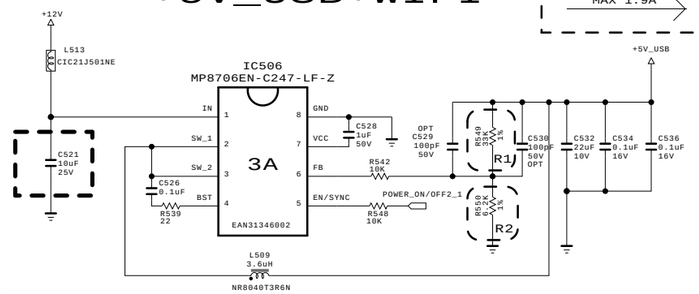


Vout=0.8*(1+R1/R2)

Switching freq: 500K

+5V_USB+WIFI

MAX 1.9A



Vout=(1+R1/R2)*0.8

Vout=0.8*(1+R1/R2)

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

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MODEL	BCM35230	DATE	
BLOCK	POWER	SHEET	5 / 58


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