

Hisense

LCD Television

Service Manual

Chassis: MSD1309BT-

Product: LHD24K26AMN、LHD24K300AMN、LHD24N10AMN

Ver 1.0

Hisense Electric Co., Ltd.

March, 2013

Contents

Contents	- 2 -
Service Manual	- 3 -
1. Precautions and notices.....	- 3 -
1.1 Warning.....	- 4 -
1.2 Notes	- 7 -
2. Product Specifications:	- 10 -
2.1 Specification	- 12 -
2.2 Main Board	- 14 -
3. Factory/Service OSD Menu and Adjustment.....	- 16 -
3.1 To enter the Factory OSD Menu	- 16 -
3.2 Factory OSD Menu	- 16 -
4. Software Upgrading.....	- 18 -
4.1 Upgrading with the ISP_TOOL.....	- 18 -
4.2 Upgrading with the USB	- 21 -
5. Circuit instruction	- 22 -
5.1 Main board block diagram	- 22 -
5.2 Troubleshooting	- 23 -
6. Schematic circuit diagram	- 30 -
7. Explode View.....	- 30 -

Service Manual

1. Precautions and notices

BEFORE SERVICING THE LCD TV, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.

WHEN REPLACEMENT PARTS ARE REQUIRED, BE SURE TO USE REPLACEMENT PARTS SPECIFIED BY THE MANUFACTURER.

Proper service and repair is important to the safe, reliable operation of all Hisense Electric Co., Ltd Equipment. The service procedures recommended by Hisense and described in this Service Guide are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Hisense could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Hisense has not undertaken any such broad evaluation. Accordingly, a serviceman that uses a service procedure or tools,

which are not recommended by Hisense, must first satisfy himself thoroughly that neither his safety nor the safe of the equipment will be jeopardized by the service method selected.

Hereafter throughout this manual, Hisense Electric Co., Ltd will be referred to as Hisense.

1.1 Warning

1.1.1

Critical components having special safety characteristics are identified with a ▲ by the Ref. No. in the parts list. Use of substitute replacement parts, which do not have the same specified safety characteristics, may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Hisense. Hisense assumes no liability, express or implied, arising out of any unauthorized modification of design. Serviceman assumes all liability.

DANGER CAUTION

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE GUIDE.
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1.1.2.

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure

that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.

1. Never replace modules or other components while the unit is switched on.

2. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

1.1.3

To prevent electrical shock, do not use this polarized ac plug with an extension cord, receptacle, or the outlet unless the blades can be fully inserted to prevent blade exposure.

To prevent electrical shock, match wide blade or plug to wide slot, fully insert.

1.1.4

When replacement parts are required, be sure to use replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

1.1.5

Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points.

- Note: The wire trees should be routed correctly and fixed with the mounted cable clamps.

- The insulation of the mains lead should be checked for external damage.

1.1.6

- (1) Do not touch Signal and Power Connector while this product operates. Do not

touch EMI ground part and Heat Sink of Film Filter.

(2) Do not supply a voltage higher than that specified to this product. This may damage the product and may cause a fire.

(3) Do not use this product in locations where the humidity is extremely high, where it may be splashed with water, or where flammable materials surround it. Do not install or use the product in a location that does not satisfy the specified environmental conditions. This may damage the product and may cause a fire.

(4) If a foreign substance (such as water, metal, or liquid) gets inside the panel module, immediately turn off the power. Continuing to use the product may cause fire or electric shock.

(5) If the product emits smoke, and abnormal smell, or makes an abnormal sound, immediately turn off the power. Continuing to use the product, it may cause fire or electric shock.

(6) Do not disconnect or connect the connector while power to the product is on. It takes some time for the voltage to drop to a sufficiently low level after the power has been turned off. Confirm that the voltage has dropped to a safe level before disconnecting or connecting the connector.

(7) Do not pull out or insert the power cable from/to an outlet with wet hands. It may cause electric shock.

(8) Do not damage or modify the power cable. It may cause fire or electric shock.

(9) If the power cable is damaged, or if the connector is loose, do not use the product:

otherwise, this can lead to fire or electric shock.

(10) If the power connector or the connector of the power cable becomes dirty or dusty, wipe it with a dry cloth. Otherwise, this can lead to fire.

(11) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

1.2 Notes

Notes on Safe Handling of the LCD panel and during service

The work procedures shown with the Note indication are important for ensuring the safety of the product and the servicing work. Be sure to follow these instructions.

- Before starting the work, secure a sufficient working space.
- At all times other than when adjusting and checking the product, be sure to turn OFF the POWER Button and disconnect the power cable from the power source of the TV during servicing.
- To prevent electric shock and breakage of PC board, start the servicing work at least 30 seconds after the main power has been turned off. Especially when installing and removing the power board, start servicing at least 2 minutes after the main power has been turned off.
- While the main power is on, do not touch any parts or circuits other than the ones specified. If any connection other than the one specified is made between the measuring

equipment and the high voltage power supply block, it can result in electric shock or activation of the leakage-detection circuit breaker.

- When installing the LCD module in, and removing it from the packing carton, be sure to have at least two persons perform the work.
- When the surface of the panel comes into contact with the cushioning materials, be sure to confirm that there is no foreign matter on top of the cushioning materials before the surface of the panel comes into contact with the cushioning materials. Failure to observe this precaution may result in, the surface of the panel being scratched by foreign matter.
- When handling the circuit board, be sure to remove static electricity from your body before handling the circuit board.
- Be sure to handle the circuit board by holding the large parts as the heat sink or transformer. Failure to observe this precaution may result in the occurrence of an abnormality in the soldered areas.
- Do not stack the circuit boards. Failure to observe this precaution may result in problems resulting from scratches on the parts, the deformation of parts, and short-circuits due to residual electric charge.
- Routing of the wires and fixing them in position must be done in accordance with the original routing and fixing configuration when servicing is completed. All the wires are routed far away from the areas that become hot (such as the heat sink). These wires are fixed in position with the wire clamps so that the wires do not move, thereby ensuring

that they are not damaged and their materials do not deteriorate over long periods of time. Therefore, route the cables and fix the cables to the original position and states using the wire clamps.

- Perform a safety check when servicing is completed. Verify that the peripherals of the serviced points have not undergone any deterioration during servicing. Also verify that the screws, parts and cables removed for servicing purposes have all been returned to their proper locations in accordance with the original setup.



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

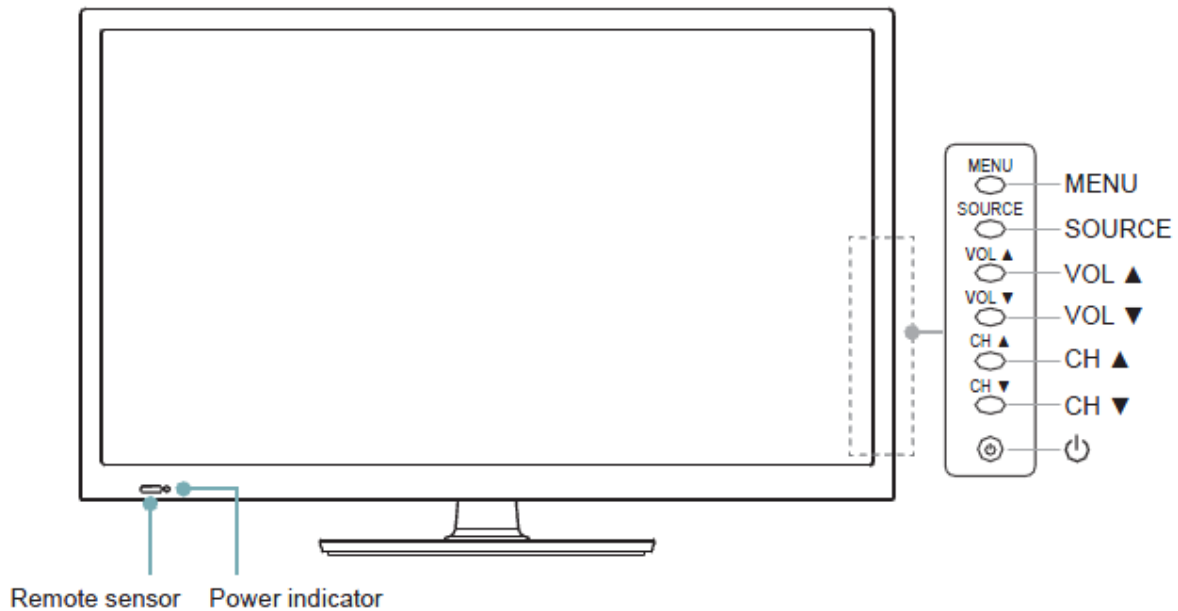


The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the set.

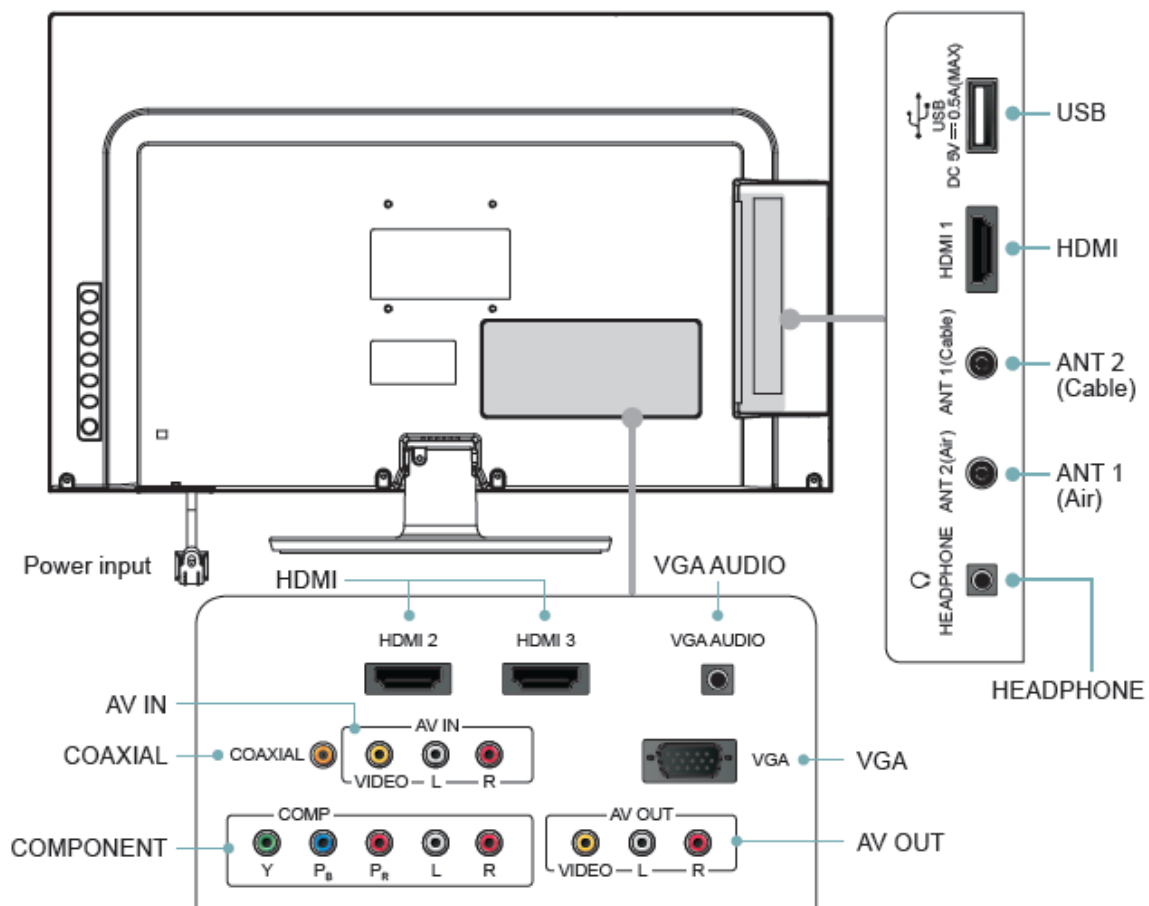
2. Product Specifications:

LHD24K300AMN:

Front Cover

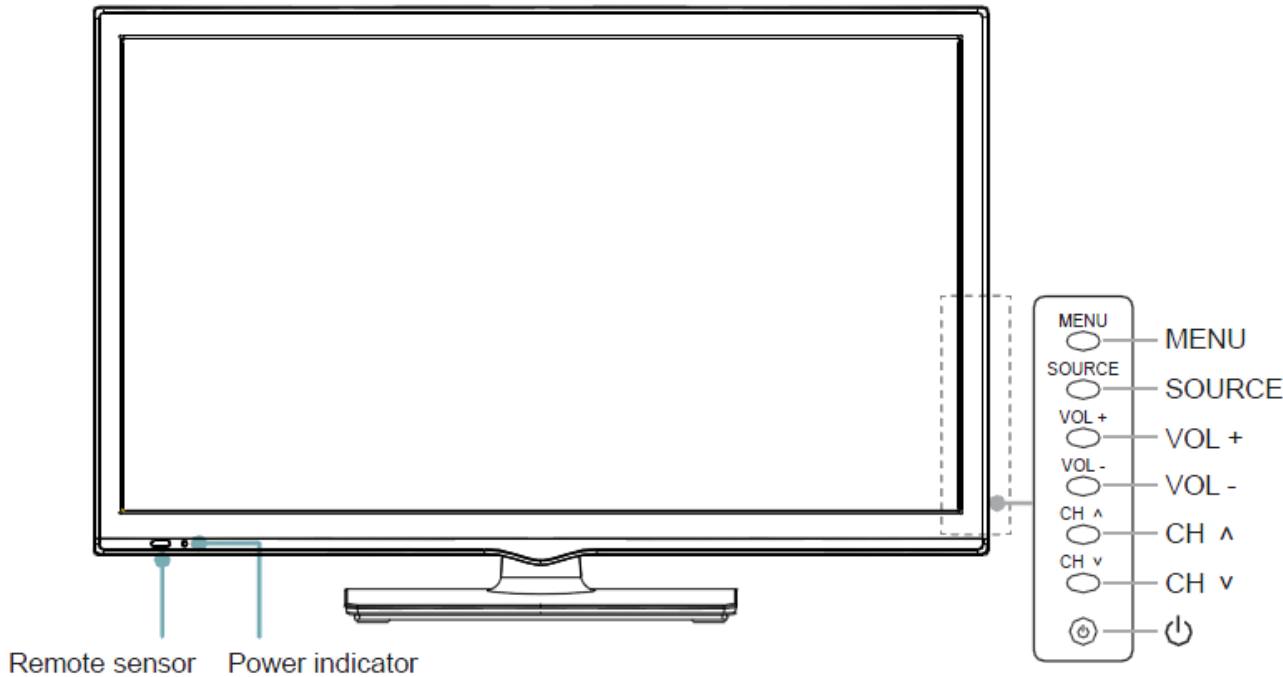


Rear Terminal

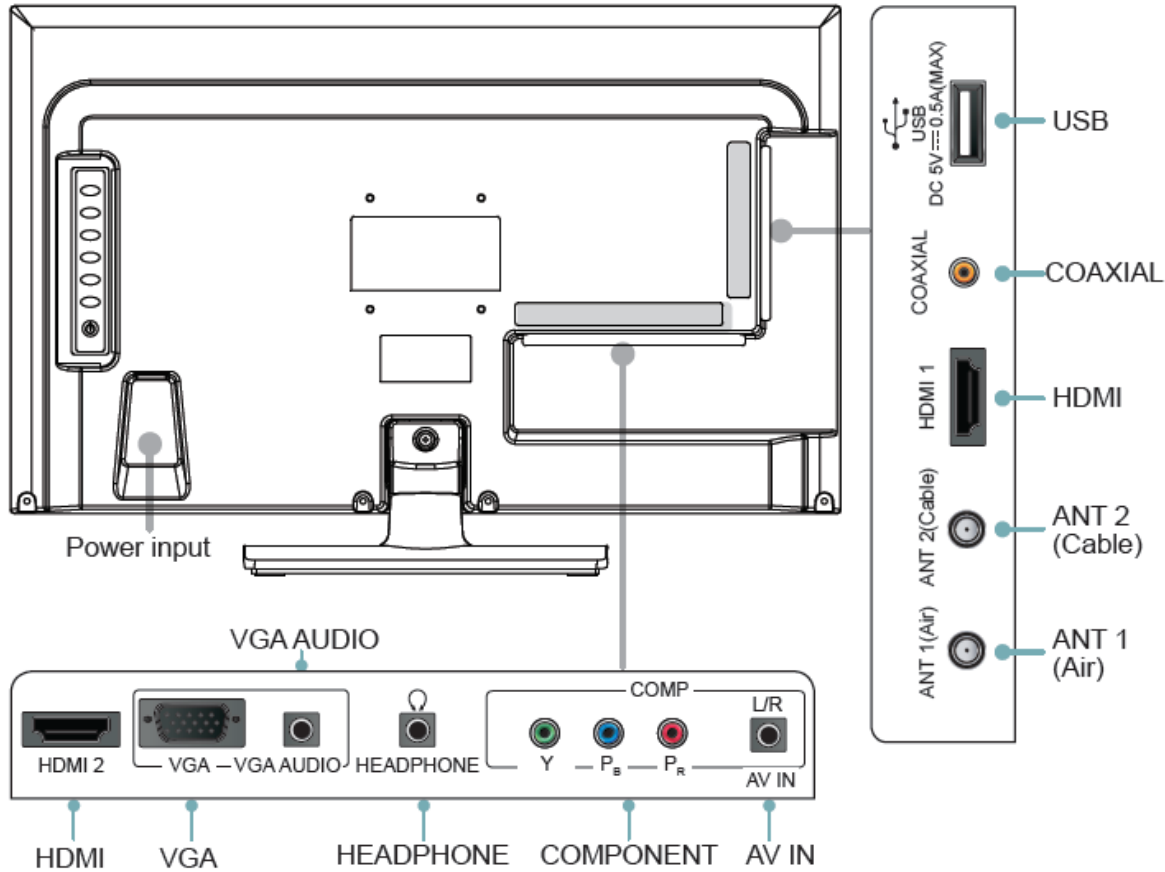


LHD24N10AMN:

Front Cover



Rear Terminal



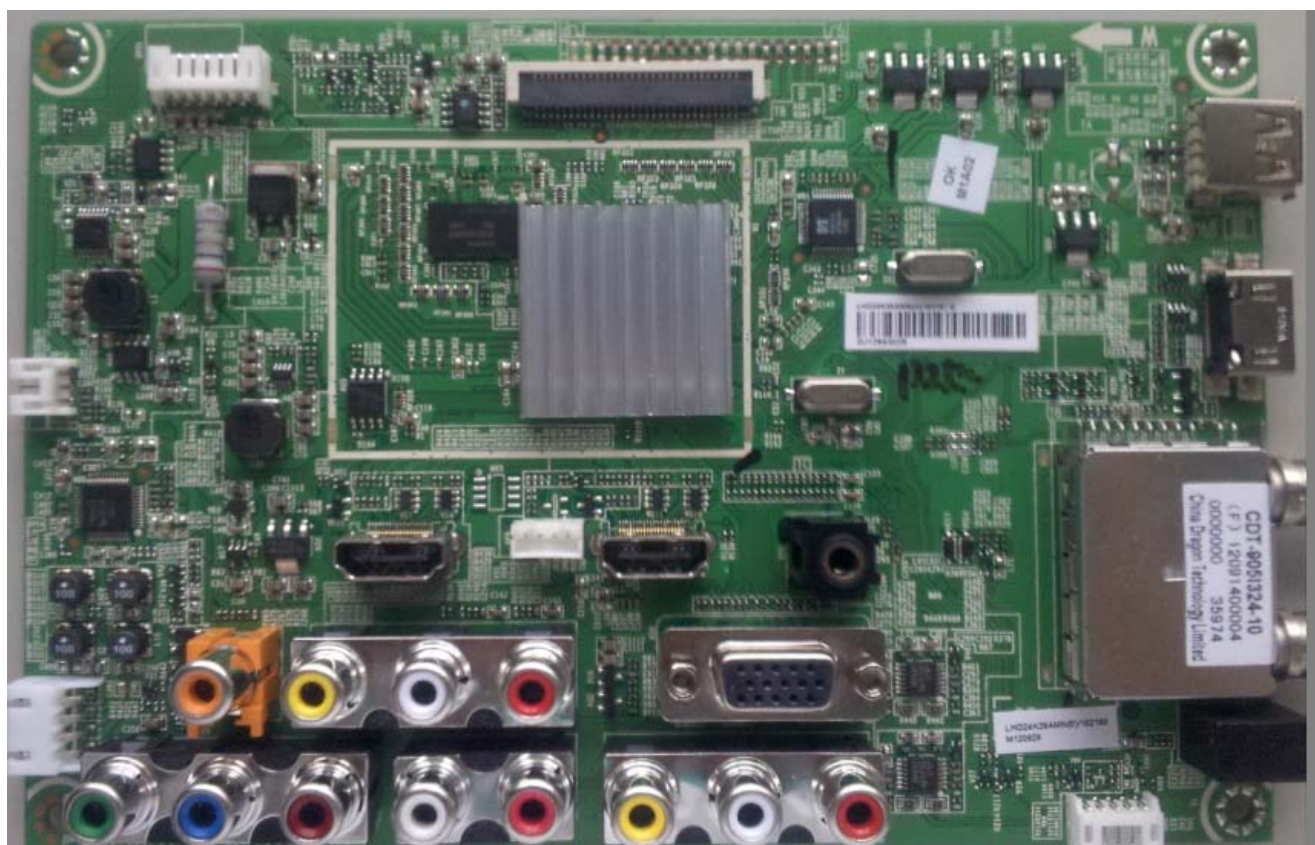
2.1 Specification

Model Name		LHD24K300AMN
Dimension	Without Stand	562.5 mm × 343.5 mm × 44 mm
	With Stand	562.5 mm × 389.5 mm × 150 mm
Weight	Without Stand	4.2 kg
	With Stand	4.4 kg
LCD Panel Minimum size (diagonal)		24 inches (60 cm)
Screen resolution		1366 × 768
Audio power		2 W + 2 W
Power consumption		35 W
Power supply		AC 100-240 V 50/60 Hz
Receiving systems	RF	PAL-M/N, NTSC, ISDB-T
	AV	PAL, NTSC
Environmental conditions		Temperature: 5°C - 45°C Humidity: 20% - 80% RH Atmospheric pressure: 86 kPa - 106 kPa
Component Input		480 I / 60 Hz, 480 P / 60 Hz, 720 P / 60 Hz, 1080 I / 60 Hz, 1080 P / 60 Hz
VGA Input		VGA (640×480 / 60 Hz), SVGA (800×600 / 60 Hz), XGA (1024×768 / 60 Hz)
HDMI Input		RGB / 60 Hz (640×480, 800×600, 1024×768) YUV / 60 Hz (480 I, 480 P, 720 P, 1080 I, 1080 P)

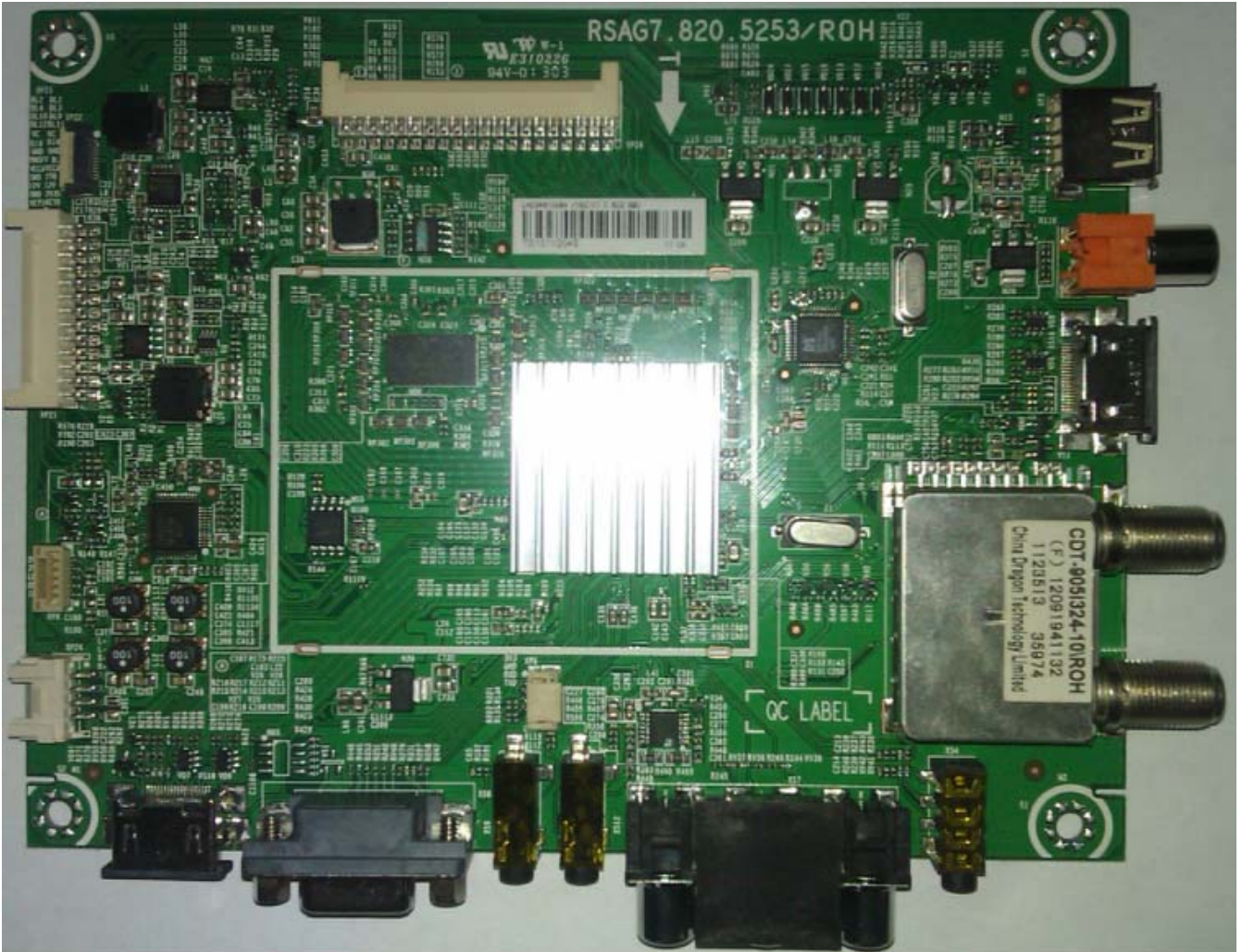
Model Name		LHD24N10AMN
Dimension	Without Stand	560 mm × 349 mm × 44 mm
	With Stand	560 mm × 385 mm × 150 mm
Weight	Without Stand	3.8 kg
	With Stand	4 kg
LCD Panel Minimum size (diagonal)		24 inches (60 cm)
Screen resolution		1366 × 768
Audio power		2 W + 2 W
Power consumption		35 W
Power supply		AC 100-240 V 50/60 Hz
Receiving systems	RF	PAL-M/N, NTSC, ISDB-T
	AV	PAL, NTSC
Environmental conditions		Temperature: 5°C - 45°C Humidity: 20% - 80% RH Atmospheric pressure: 86 kPa - 106 kPa
Component Input		480 I / 60 Hz, 480 P / 60 Hz, 720 P / 60 Hz, 1080 I / 60 Hz, 1080 P / 60 Hz
VGA Input		VGA (640×480 / 60 Hz), SVGA (800×600 / 60 Hz), XGA (1024×768 / 60 Hz)
HDMI Input		RGB / 60 Hz (640×480, 800×600, 1024×768) YUV / 60 Hz (480 I, 480 P, 720 P, 1080 I, 1080 P)

2.2 Main Board

5165 (LHD24K26AMN、LHD24K300AMN)



Main Board: 5253 (LHD24N10AMN)



Australia MSD1309BT Chassis Series includes model:

Model	Panel Mode	LVDS (Main-Panel)	Main board (PCB)
LHD24K26AMN	V236BJ1-LE1\JK\ROH	FFC-30-450-P\ROH	2RSAG7.820.5165\VER. C\ROH
LHD24K300AMN	V236BJ1-LE1 (C2) \ROH	FFC-30-450-P\ROH	2RSAG7.820.5165\VER. C\ROH

LHD24N10AMN	V236BJ1-LE1 (C2/C3) \JK\ROH	HX2-2×20KLB400-BOE\ROH	RSAG2. 908. 5253\ROH
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3. Factory/Service OSD Menu and Adjustment

3.1 To enter the Factory OSD Menu

a. With factory RC (remote control)

1. Press button “M” and enter factory mode.(Note1)
2. Press button “Menu” and enter factory OSD menu.
3. Press button “CH+”/“CH-” select the function menu, press “VOL+”/“VOL-” enter the selected function menu. Press “VOL+”/“VOL-” button adjust values in the menu.
4. Press button “M” exit factory mode in the factory OSD menu.

When TV exit factory mode, user can not enter factory OSD menu with Factory Remote

Note:

1. In the “Factory Menu”, item “Function”->”TOFAC” ,you can select “M” or “U”, default is “U”.
----M-Means you can enter factory mode with factory RC or user RC.
----U-Means you can enter factory mode only with user’s RC.
2. Mode “M” is only used for factory production.

b. With user’s RC

Power on the TV.

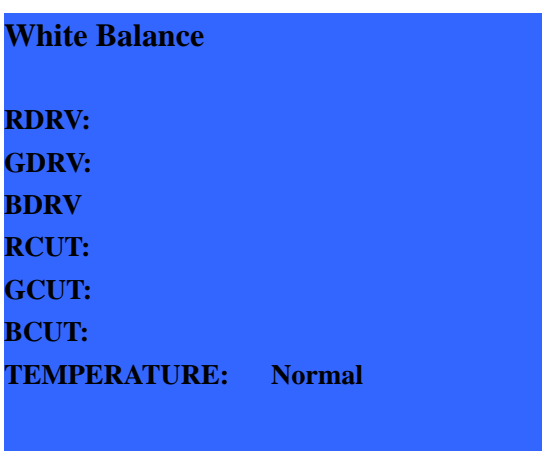
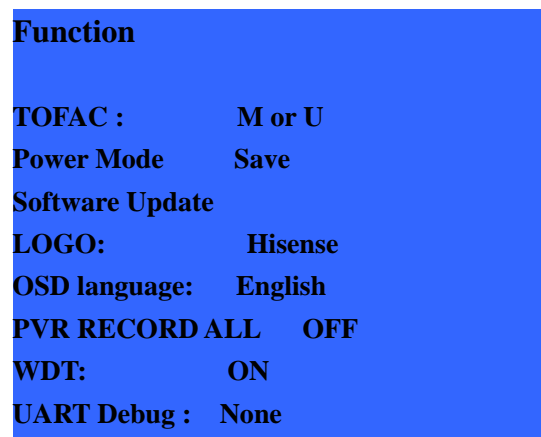
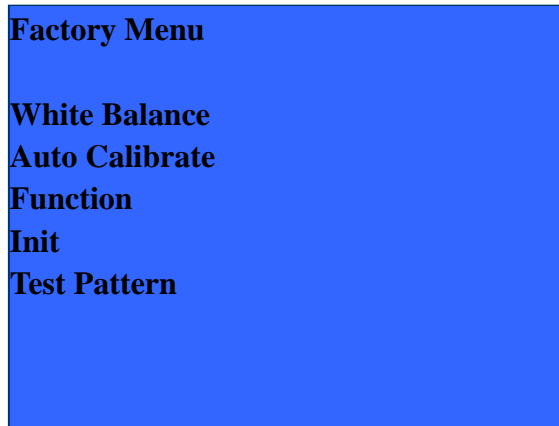
1. Press button “Menu” and call up User OSD Menu.
2. Select“ Sound” Menu-> “Balance” item.
3. Press number key 1->9->6 ->9 in sequence when “Balance” item is focused.
Note: If necessary, re-do number keys.
4. Factory OSD appears.

Note: Press the standby button then AC turn off and restart the TV, which can exit factory OSD menu.

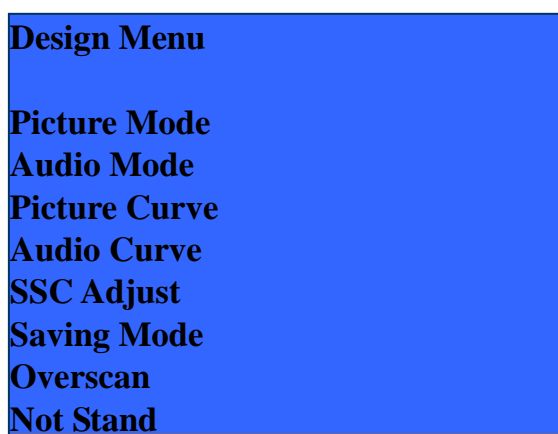
3.2 Factory OSD Menu

The Factory OSD Menu comprises Factory Menu and Design Menu .

3.2.1、 Factory Menu



3.2.2、Design Menu



Note:

The above “Factory/Service OSD Menu” is reference only, please refer to the actual units to determine the appearances.

4. Software Upgrading

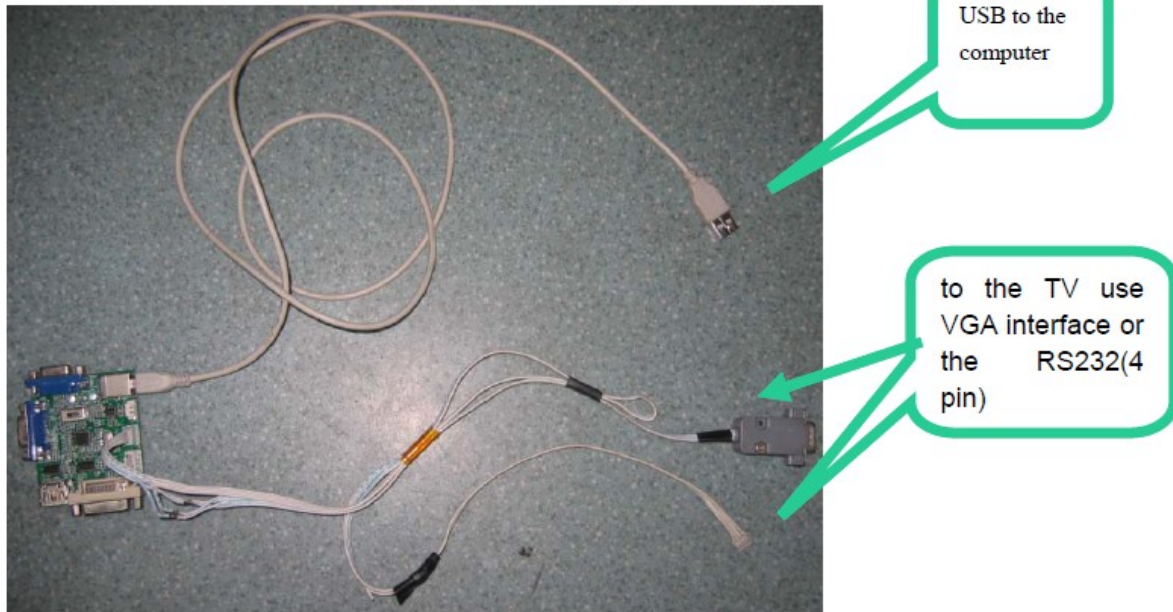
4.1 Upgrading with the ISP_TOOL

4.1.1 Hardware connecting

You can update the software through a special tool (as following)

Connect the Debug board to the TV use VGA interface or the RS232 (4 pin), the other USB port to the compute.

You can update the software through a special tool (as following)



4.1.2 Install the ISP_TOOL4.5.0.4-----only for the first time update.

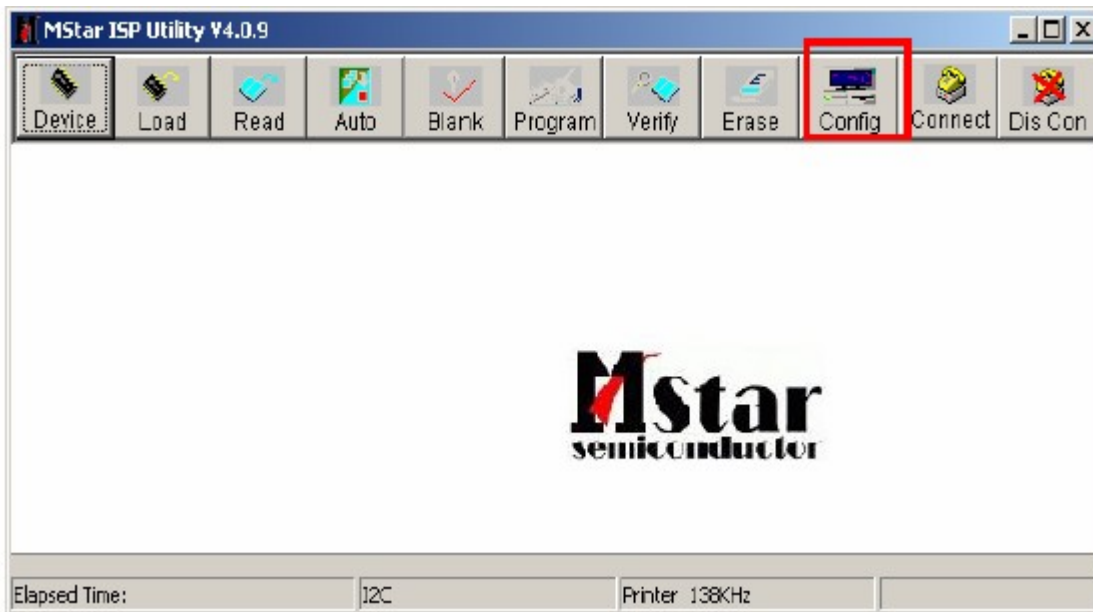
- 1、 The software is upgraded by a burning tool- ISP_TOOL.exe
- 2、 Find the folder where the ISP_TOOL4.5.0.4 lies in.



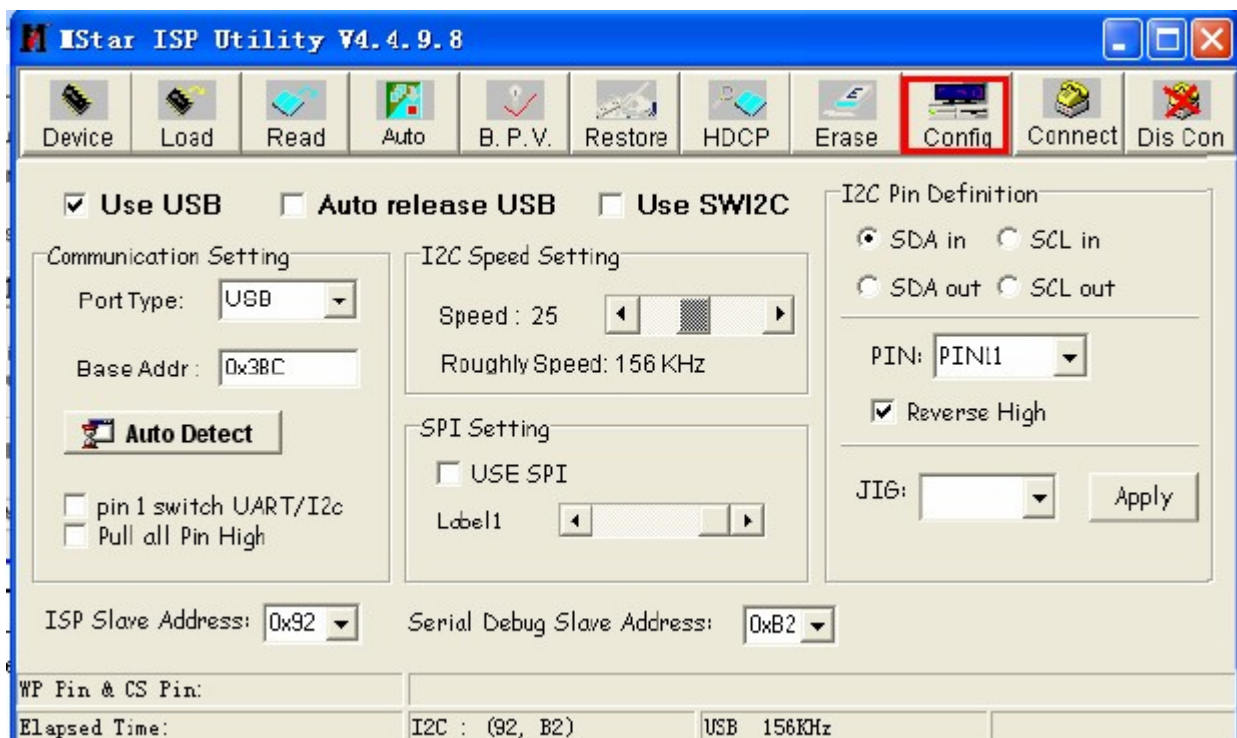
There are three folders/files in this folder together.

DLPORTIO.dll and FTD2XX.DLL must be in the same folder

3、Double click the ISP_TOOL4.5.0.4 icon, and then a dialog window will show as below.



4、Click the "Config" button. And then a dialog window will show as below.



Draw on the front of "Use USB"

Port Type setting is USB

Base Addr setting is 0x38C

ISP Slave Address choose 0x92

Serial Debug Slave Address choose 0xB2,

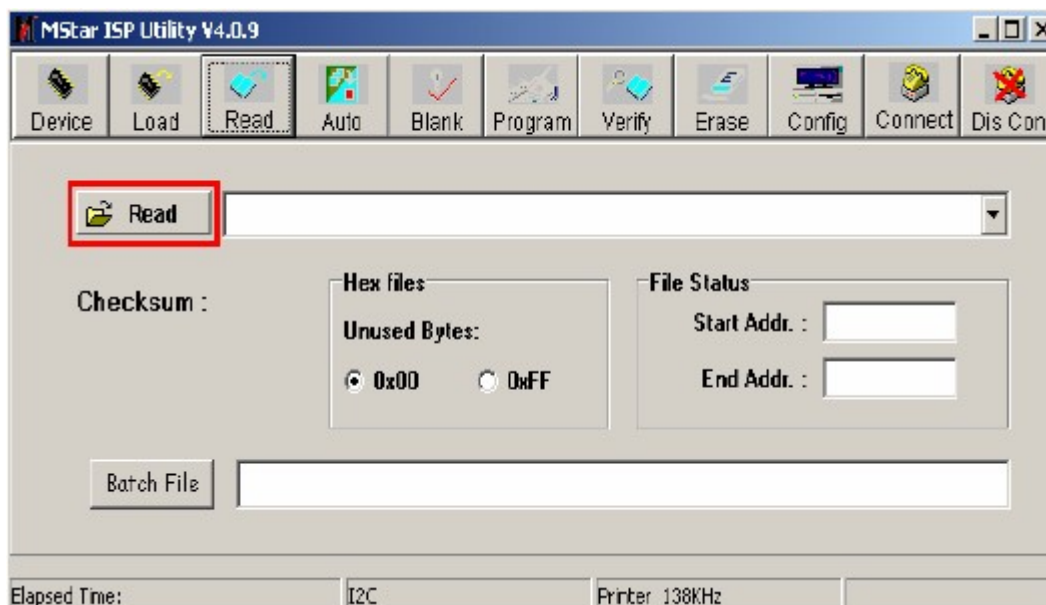
5、Click the “Connect” button, if appear the following figure, It indicates that the ISP_TOOL has connected.(According to the tv set,”Device Type” maybe different.)



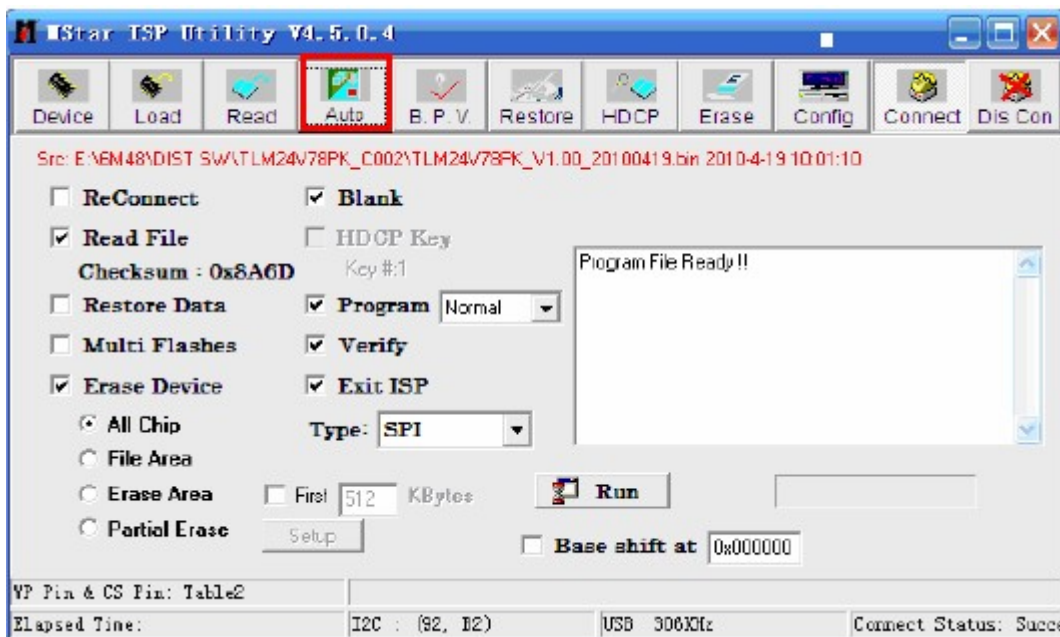
If appear the following figure, It indicates that the ISP_TOOL has not connected. Please click the “DisCon” button and “Connect” button to connect..



6、Click the “Read ” button, **Choose the correct update file。**



7、After the update file has been chosen successfully。
Click the “Auto” button and choose parameters as following。



8、Click the “Run” button and wait update end.

If show any error message , then do “Dis Con” >> “Connect”, and click the “Run” button again, till show the following dialog window。

4.2 Upgrading with the USB

Software can update with USB device:

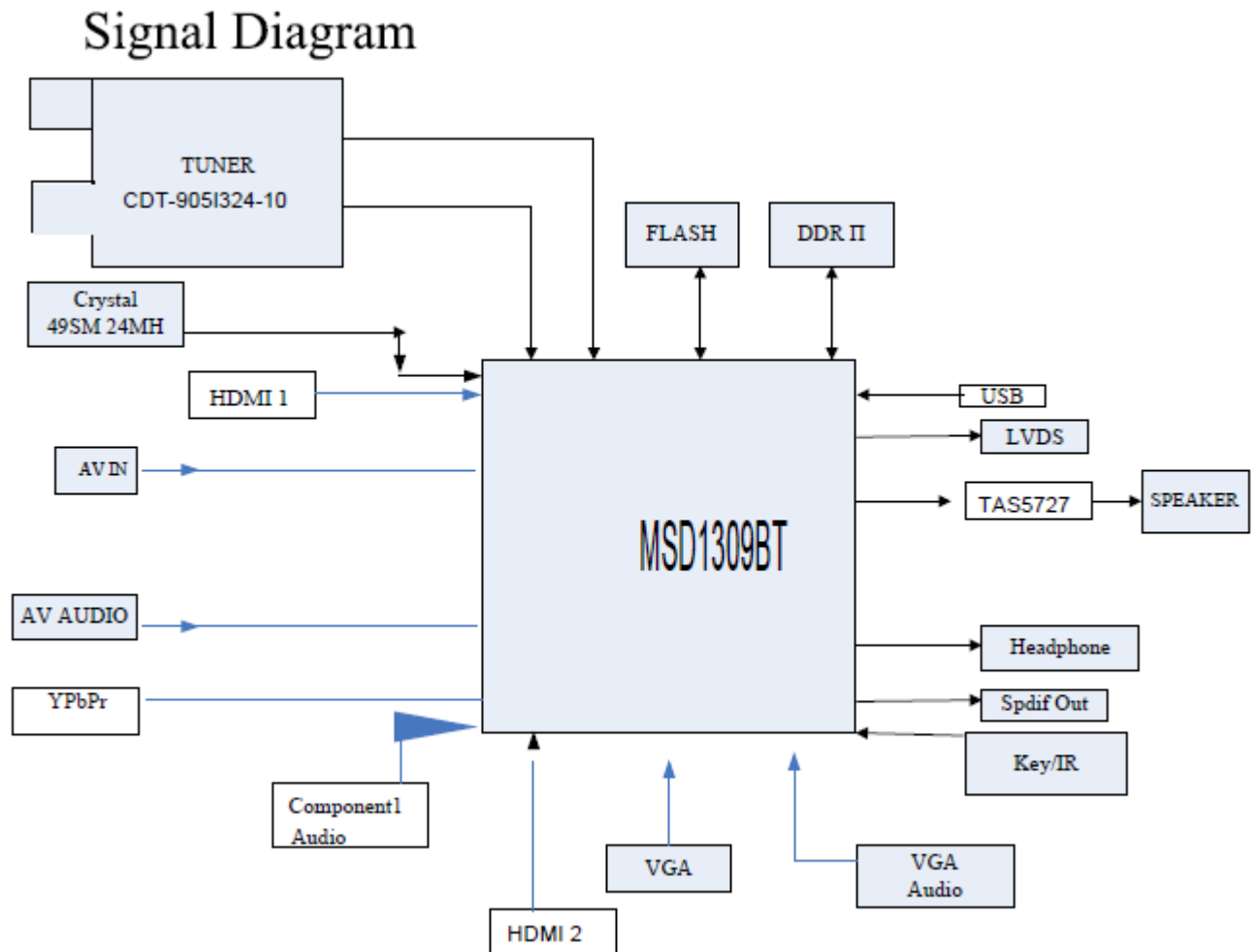
1. Copy the “*.BIN” file such as “MERGE.BIN” to the root directory of a USB disk.
2. Insert the USB disk into the USB slot of the TV SET.
3. Press “Menu” button and call up User OSD Menu, choose "Channel"->"Software Update(USB)" item. (Note 1)
4. Press “OK”, it will show a confirm message box, Press [◀] button to select “yes” in the confirm message box, to start automatic update.
5. Then it will update the software automatically, Please don't power off during the updating process.
6. After the software is successfully upgraded, TV SET will restart automatically.

Note:

1. In some TV SET, "Software Update(USB)" item maybe in “OPTION” menu.
2. After updating, you must confirm the software version in the “Factory Menu” and you'd better do " **UnProtected Clear**" in the “Factory Menu”.

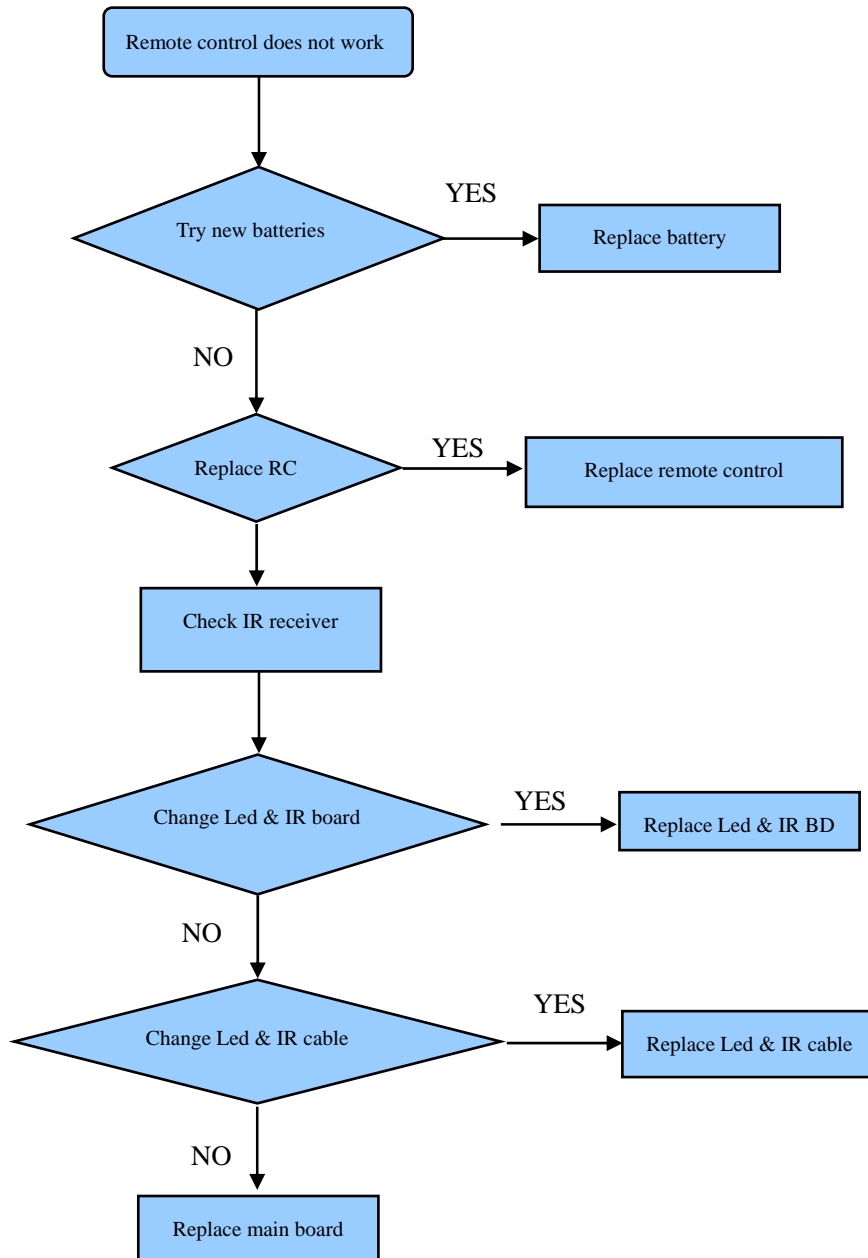
5. Circuit instruction

5.1 Main board block diagram

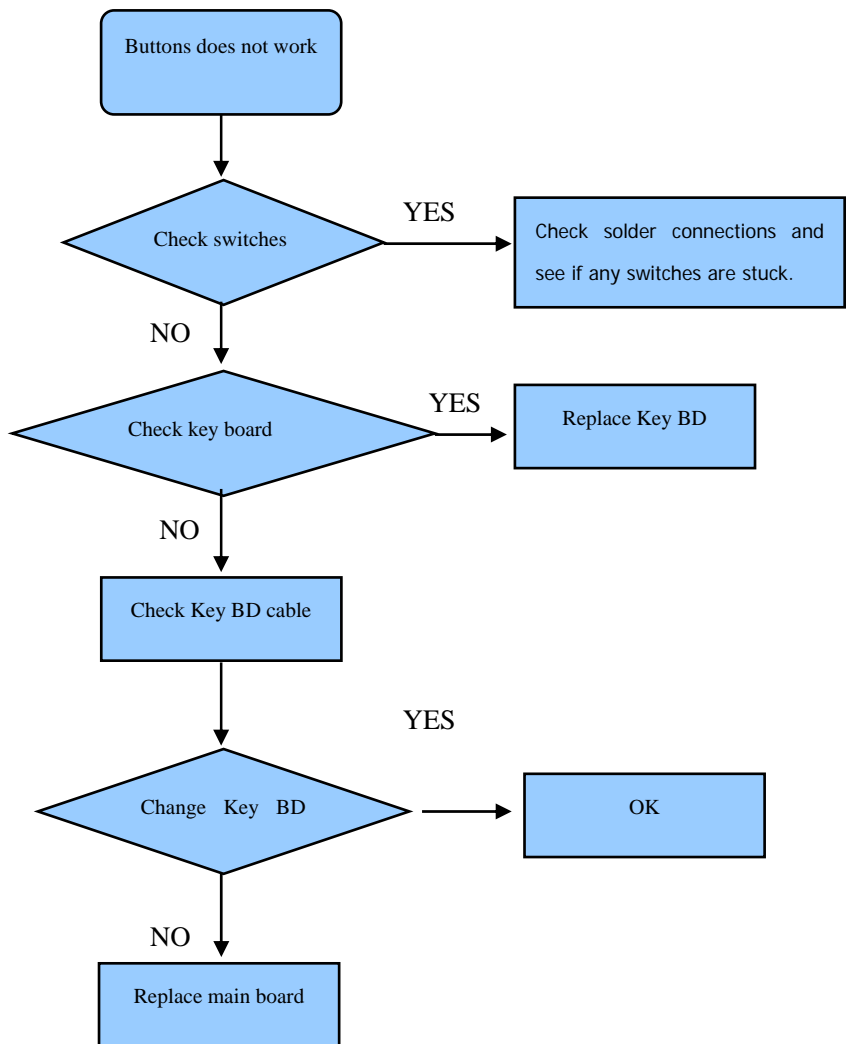


5.2 Troubleshooting

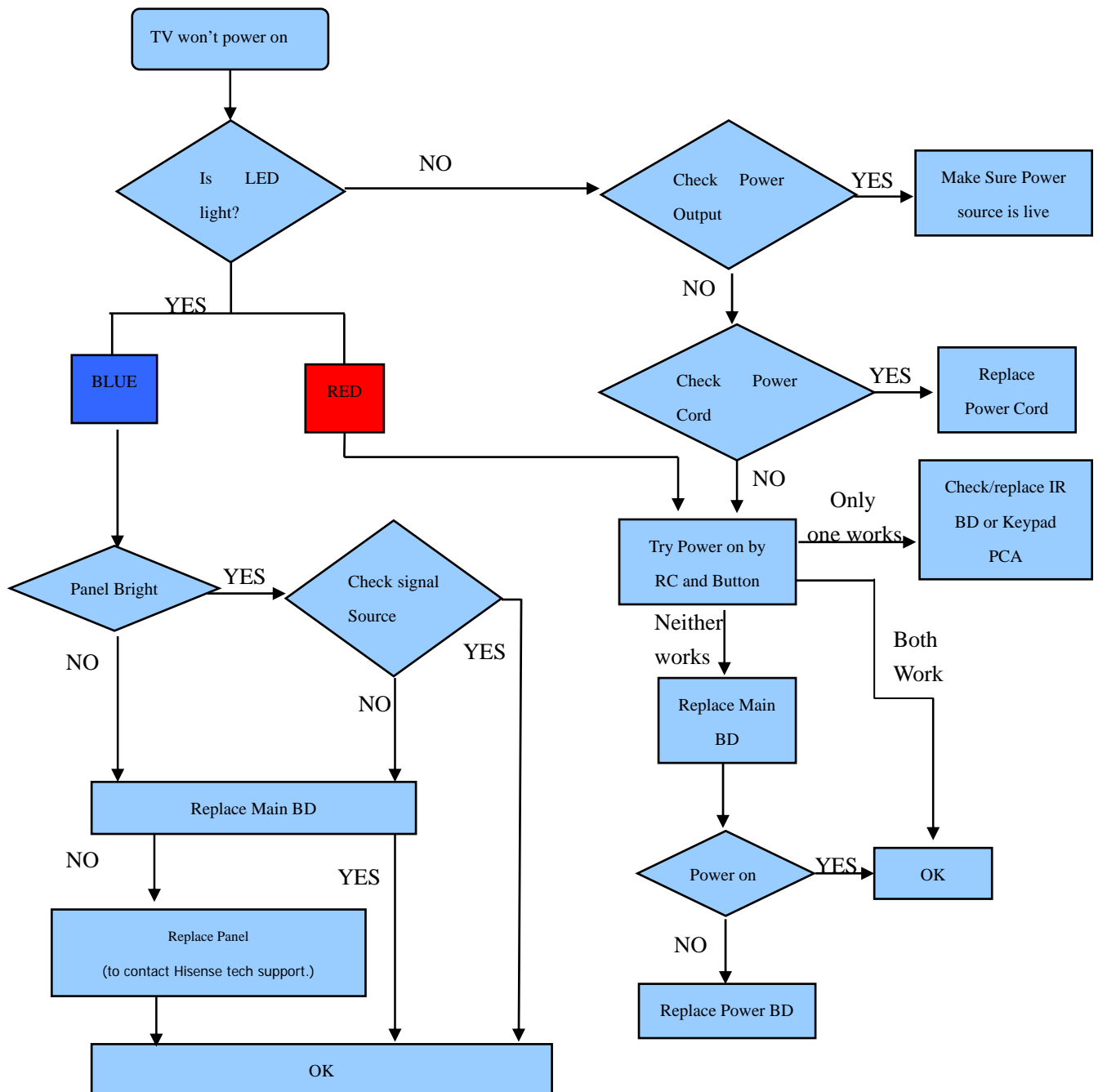
5.2.1 Troubleshooting for Remote Control



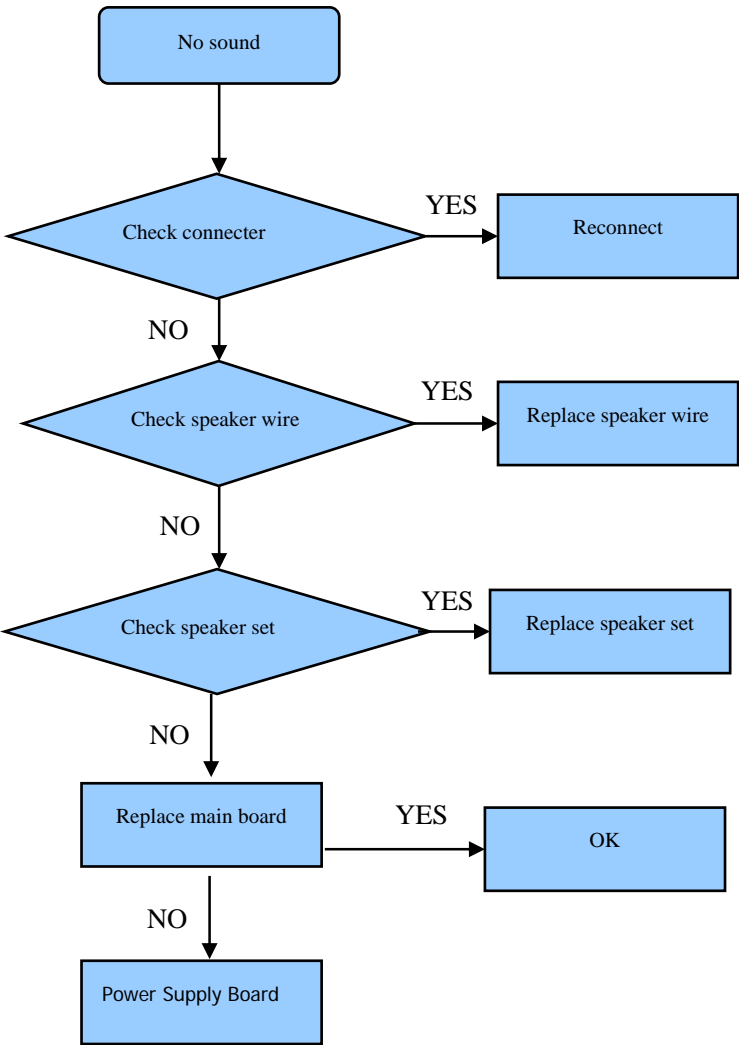
5.2.2 Troubleshooting for Function Key



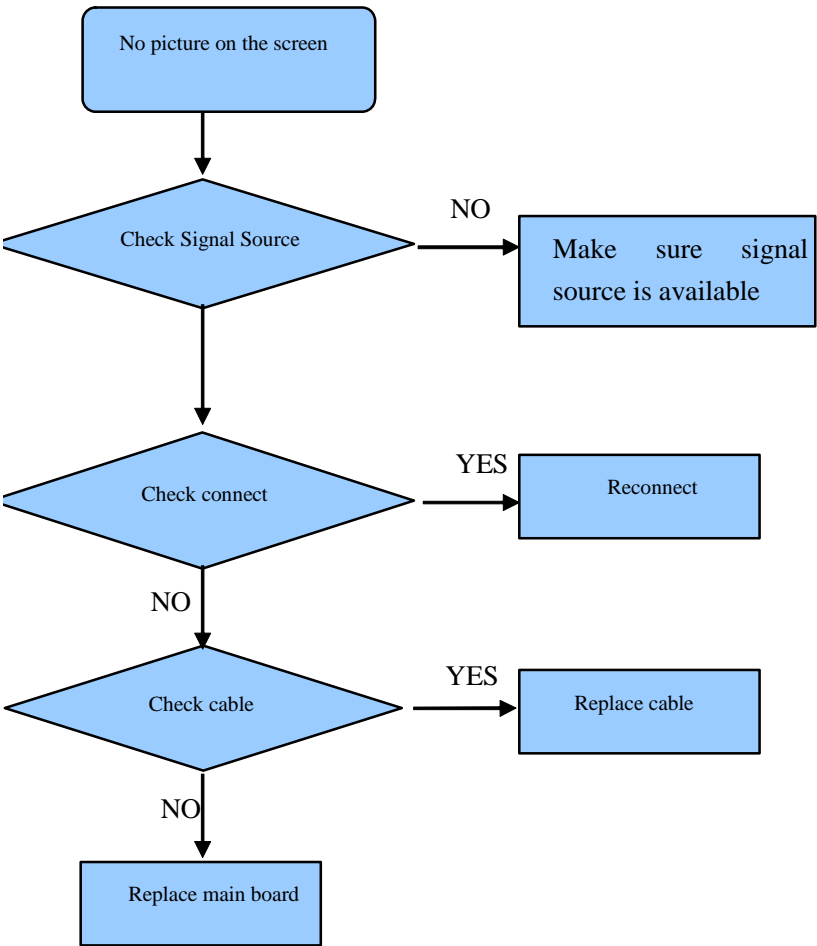
5.2.3 TV won't Power On



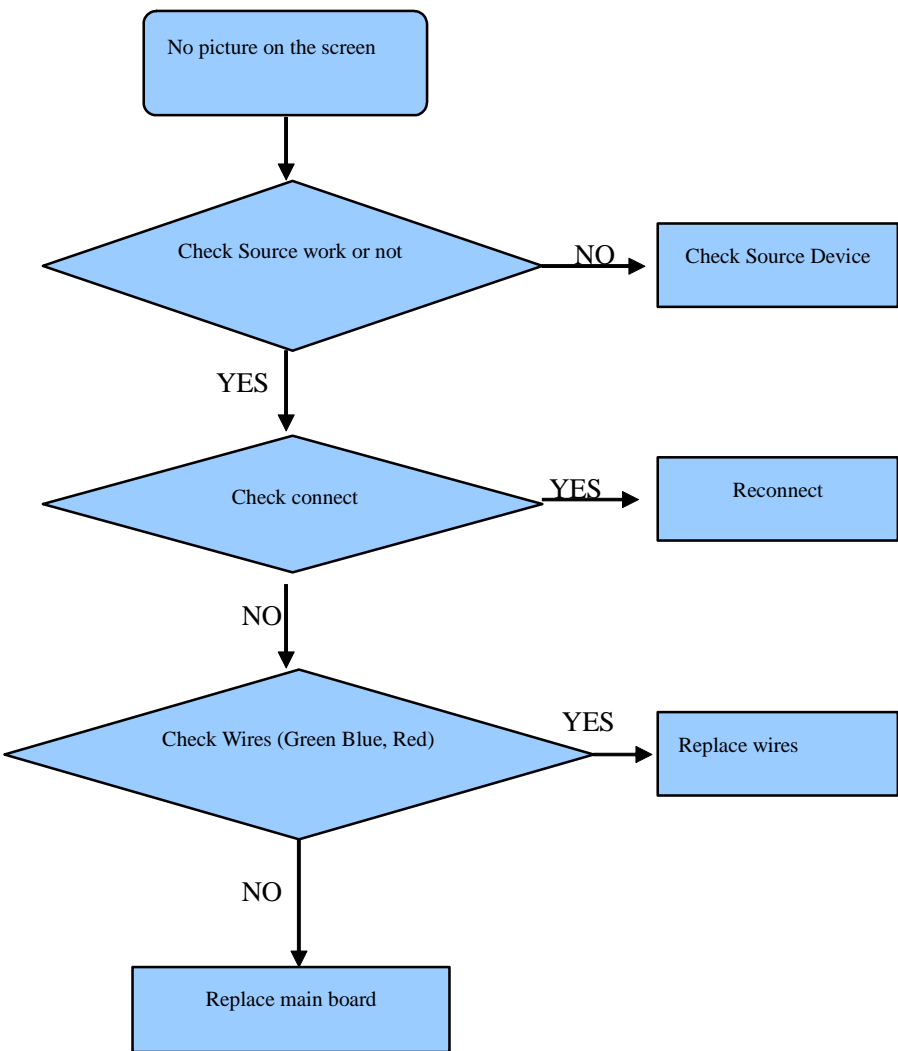
5.2.4 Troubleshooting for Audio



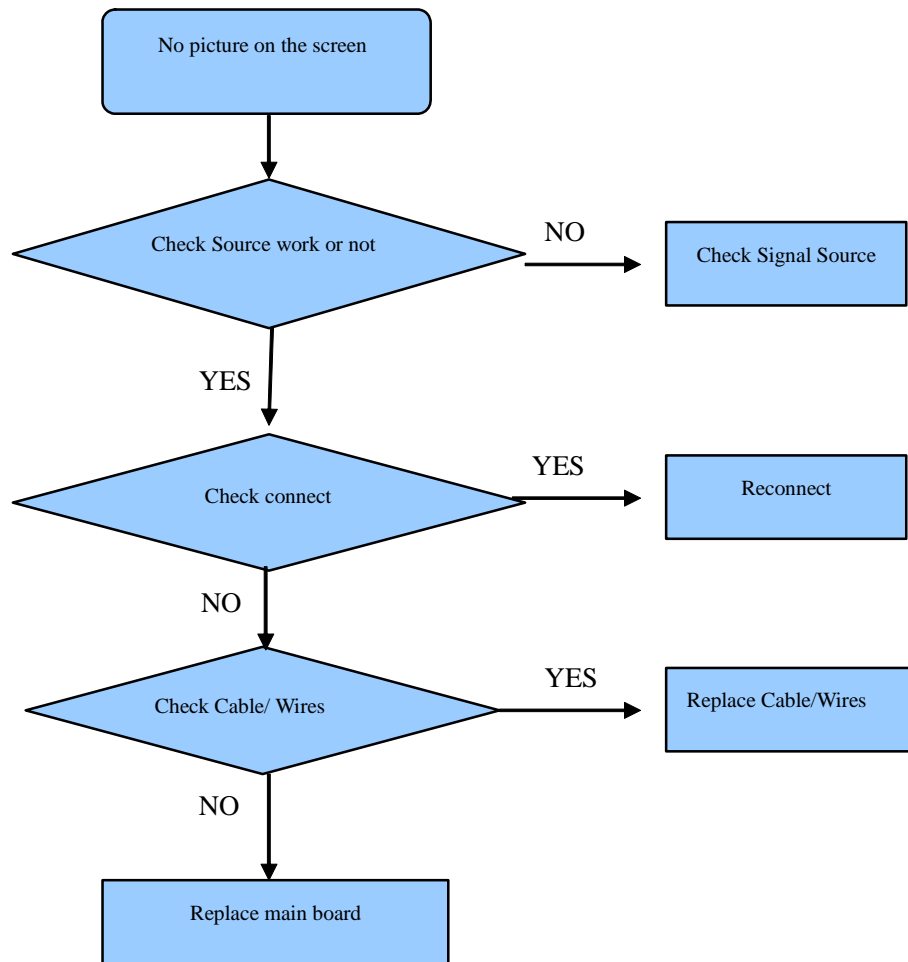
5.2.5 Troubleshooting for TV/VGA/HDMI input



5.2.6 Troubleshooting for YPbPr input

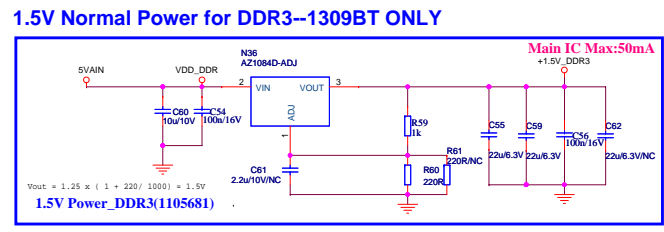
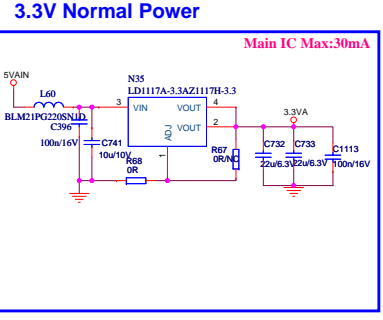
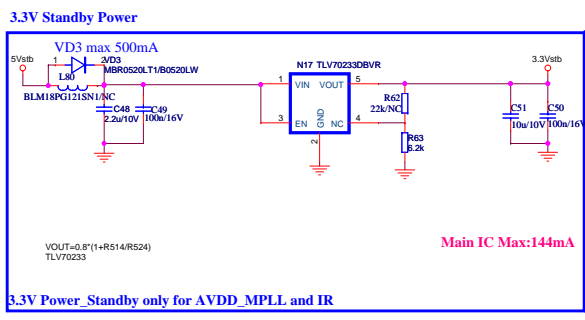
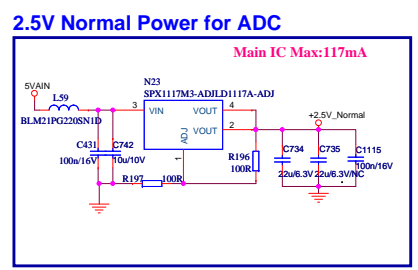
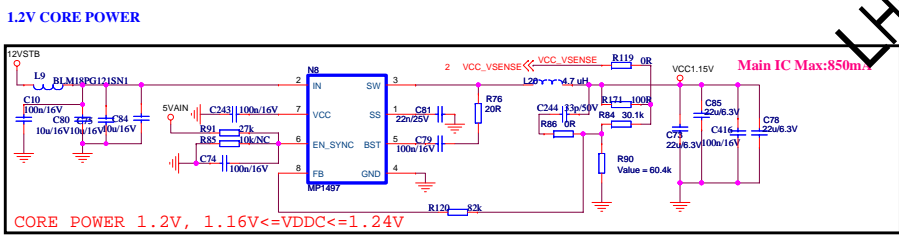
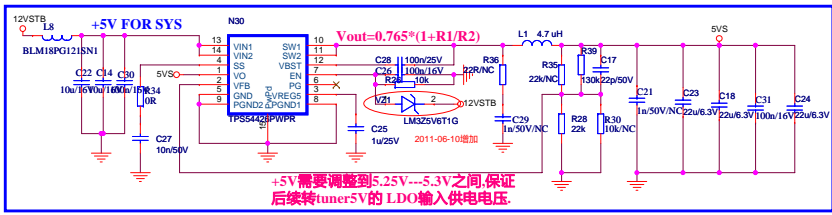
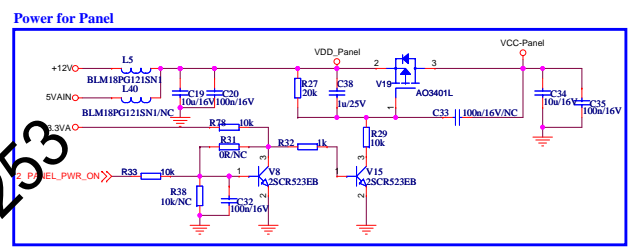
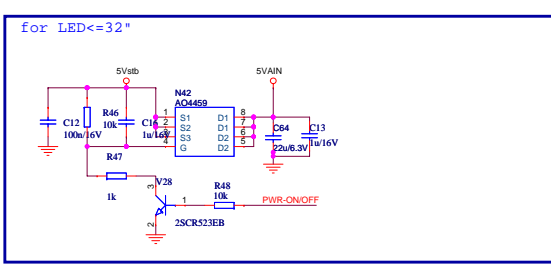
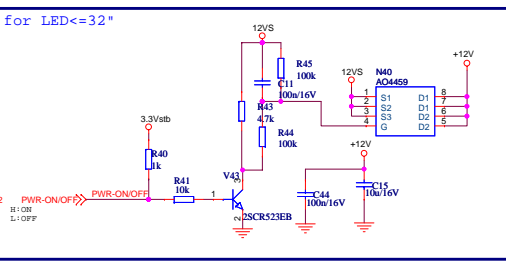
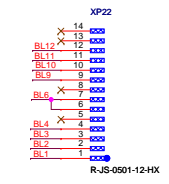
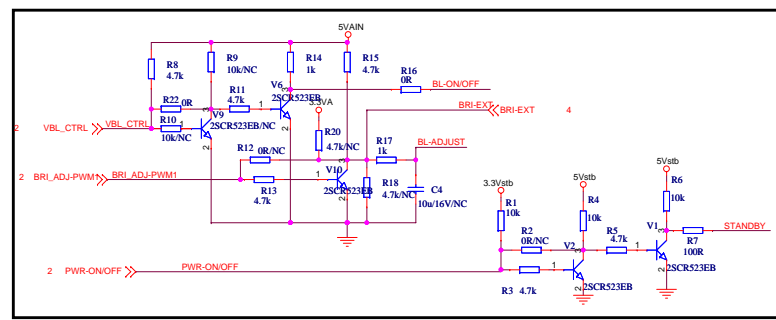
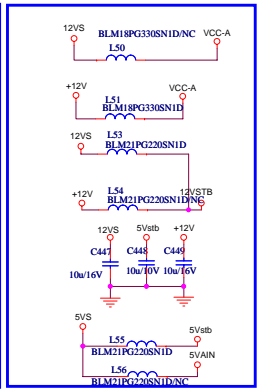
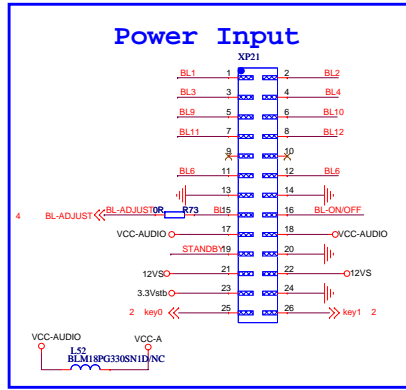


5.2.7 Troubleshooting for Video input

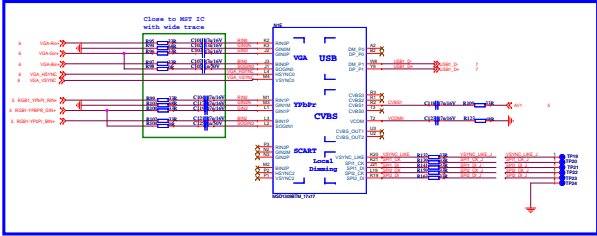


6. Schematic circuit diagram

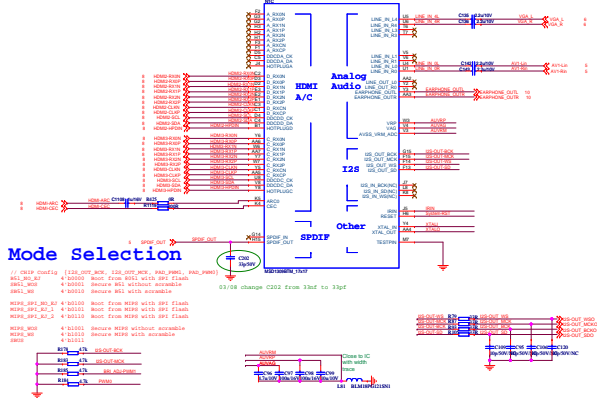
7. Explode View



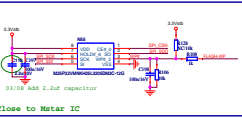
RGB & CVBS & USB



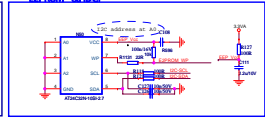
HDMI & Audio



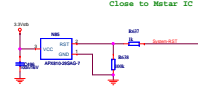
Boot Loader SPI Flash



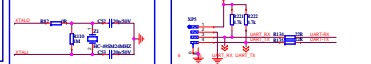
EEPROM & HDPC



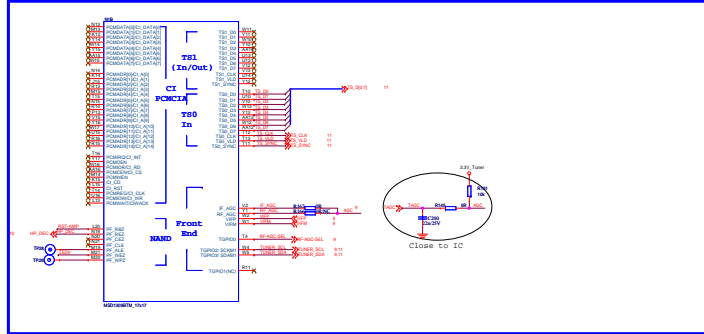
RESET



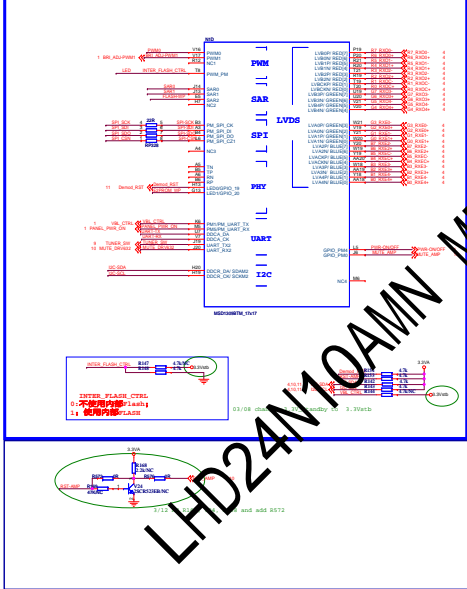
System XTAL



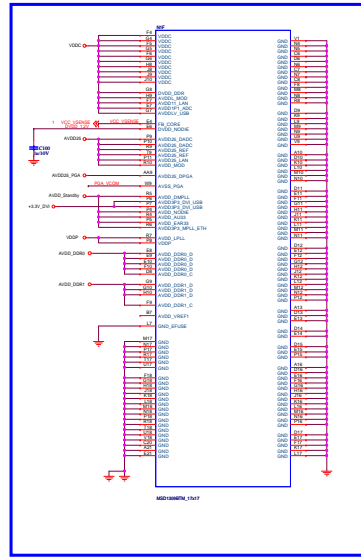
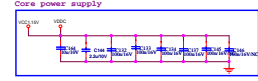
Front End



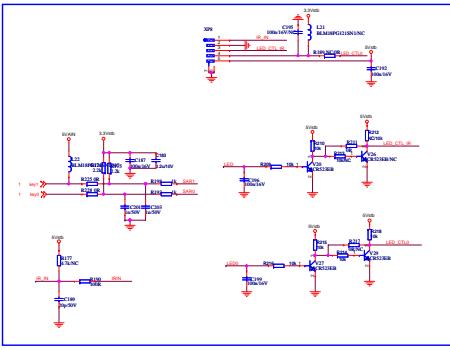
GPIO & LVDS



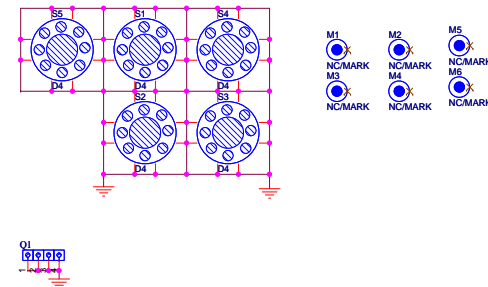
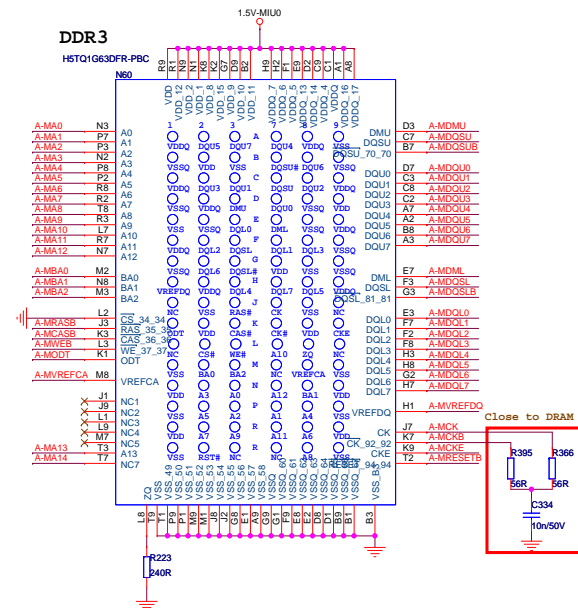
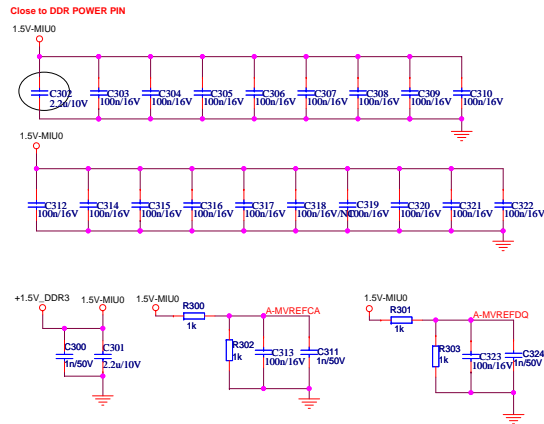
Decouple Capacitors Close to IC pins

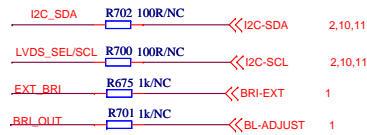
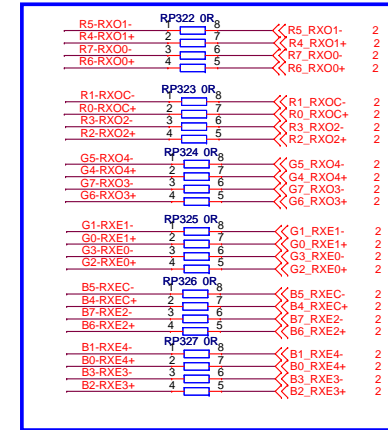
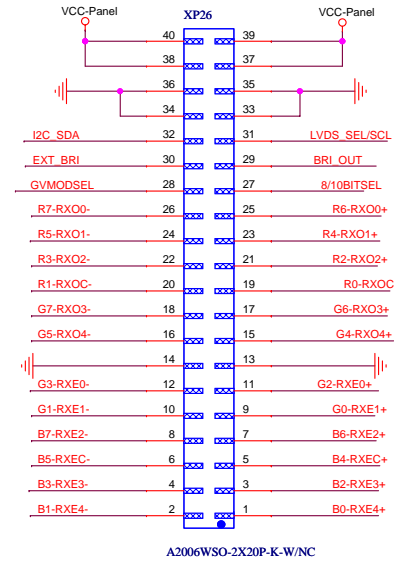


KEY PAD& IR

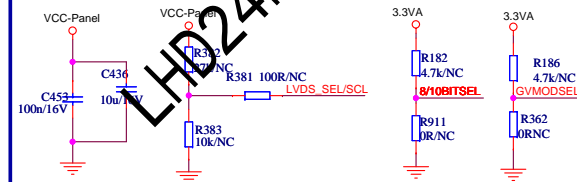


LHD24N10AMN MB:5253





Power decouple



Note: 靠近LVDS插座

XS13

SIGNAL1
SIGNAL3
GND

1
3
2

RV65

AVLC1880015

R375 10k

C267 100n/16V

R378 200R

R373 100R

C268 220p/50V/NC

SPIDF_OUT

SPIDF_OUT 2

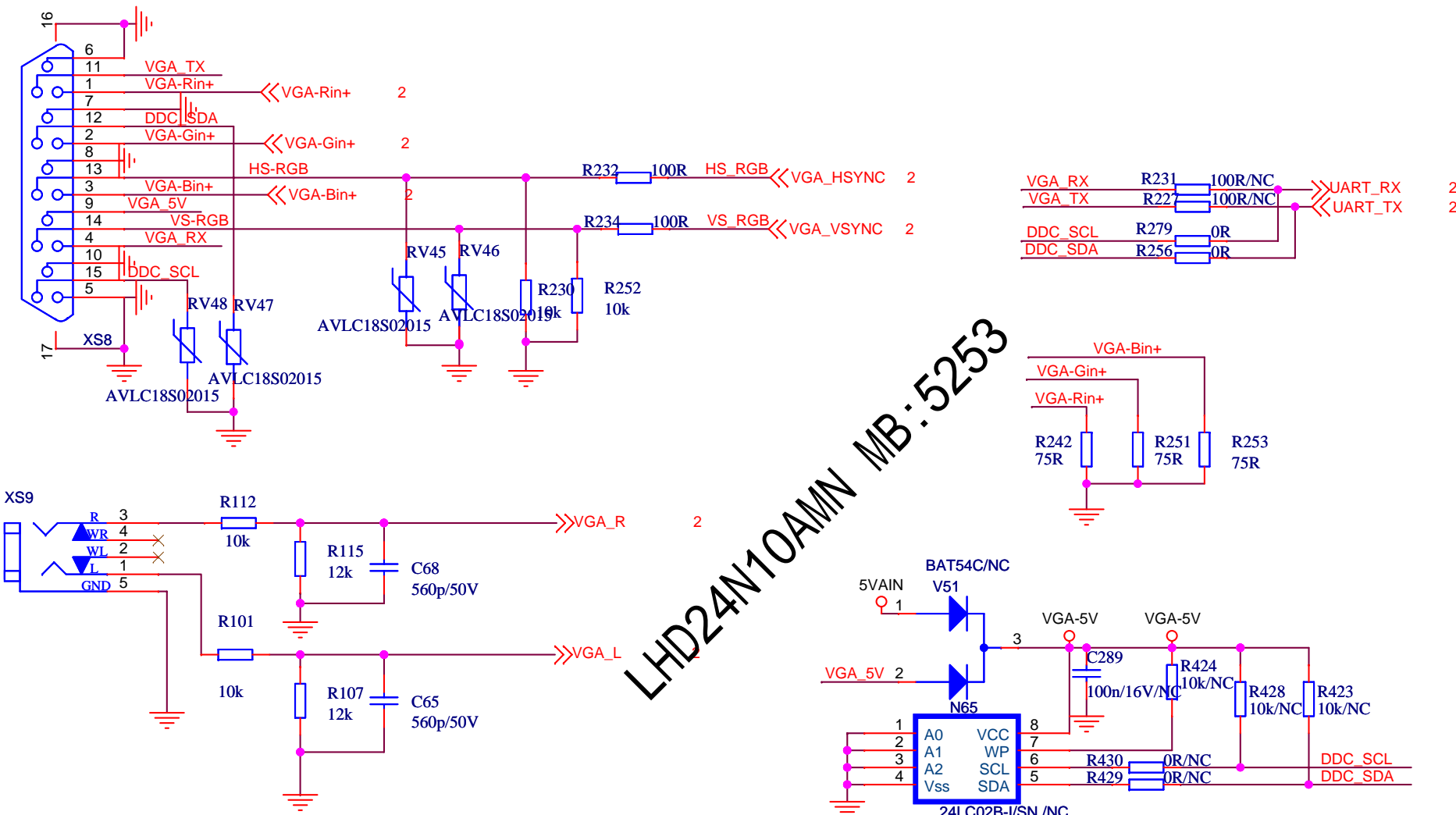
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AV1-Rin
AV1-Lin

LHD24N10AMN MB:5253

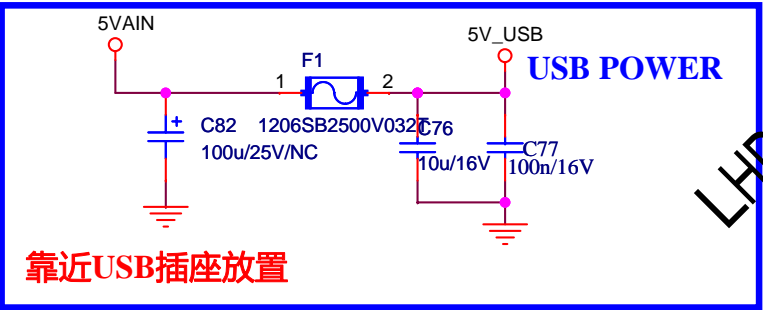
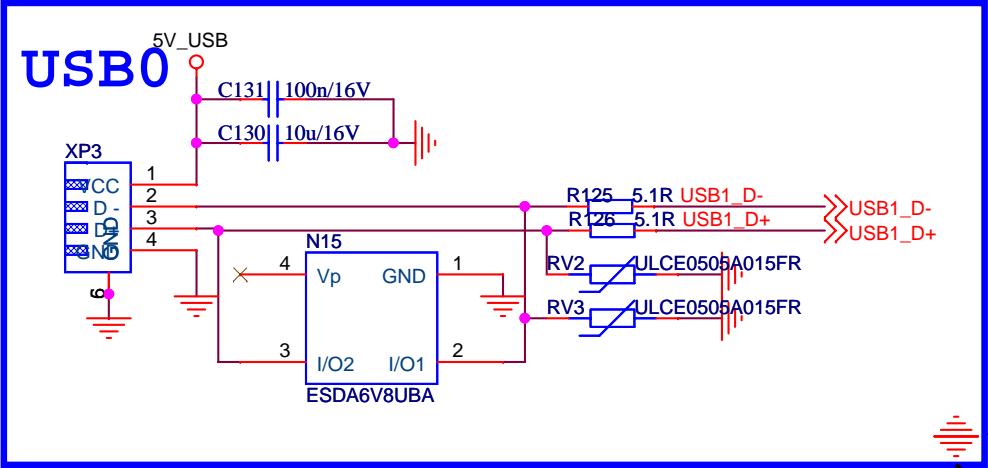
VGA



LHD24N10AMN MB:5253

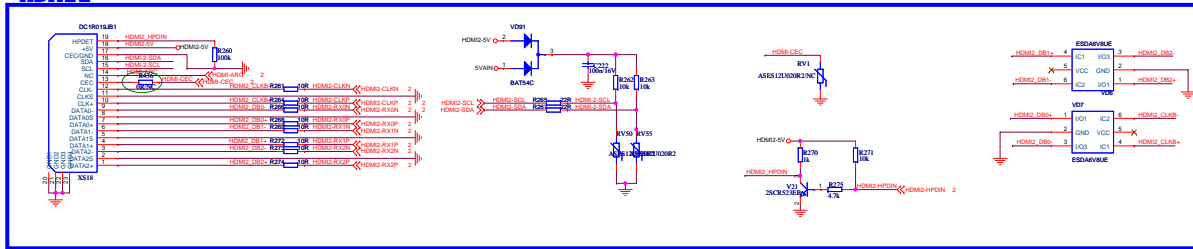
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		Title Hisense MSD30XBT	
Size	Schematic Name		Rev
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Date:	Friday, January 04, 2013		Sheet 6 of 11

USB INTERFACE

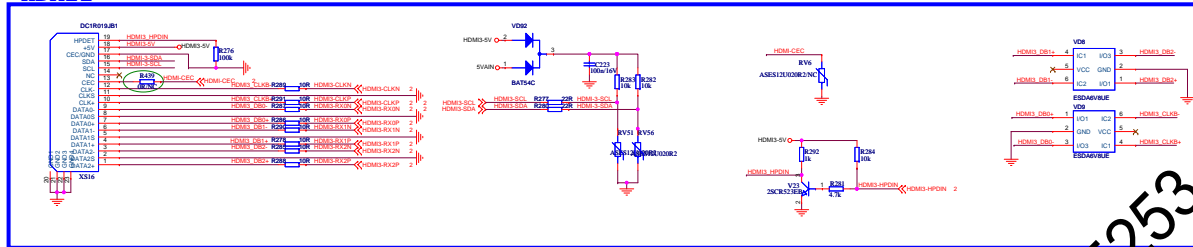


Hisense Electric Co.,Ltd. No.11,Jiangxi Road,Qingdao,China WWW.HISENSE.COM		
Title Hisense MSD30XBT		
Size	Schematic Name A <Doc>	Rev 1.0
Date:	Friday, January 04, 2013	Sheet 7 of 11

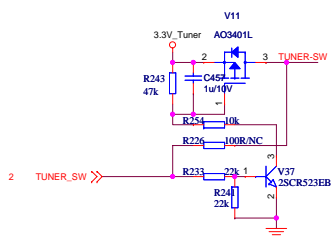
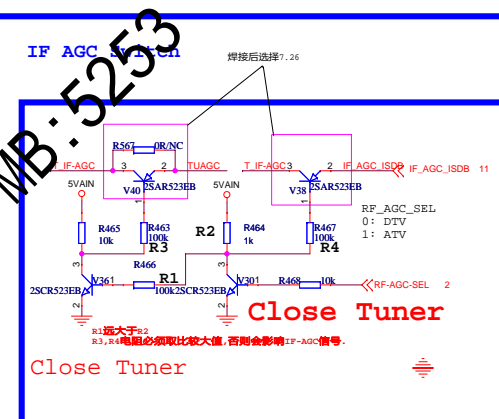
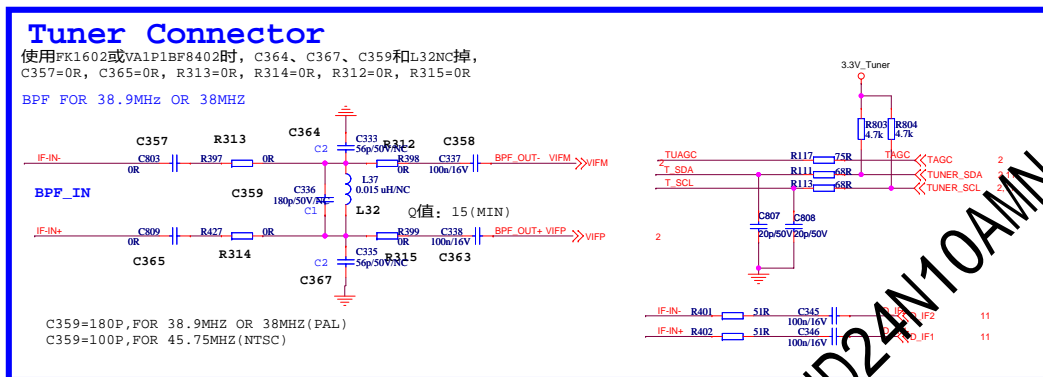
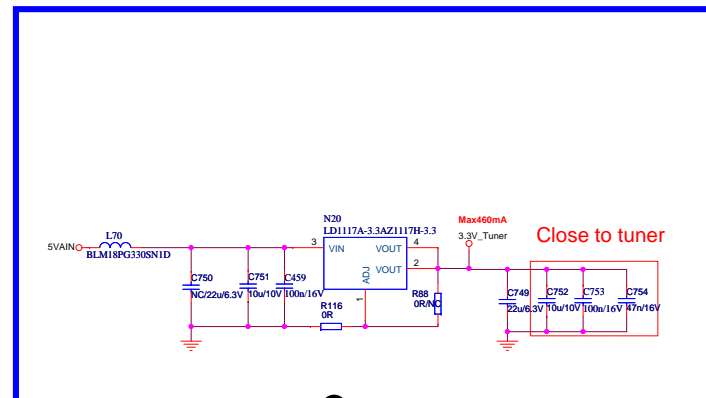
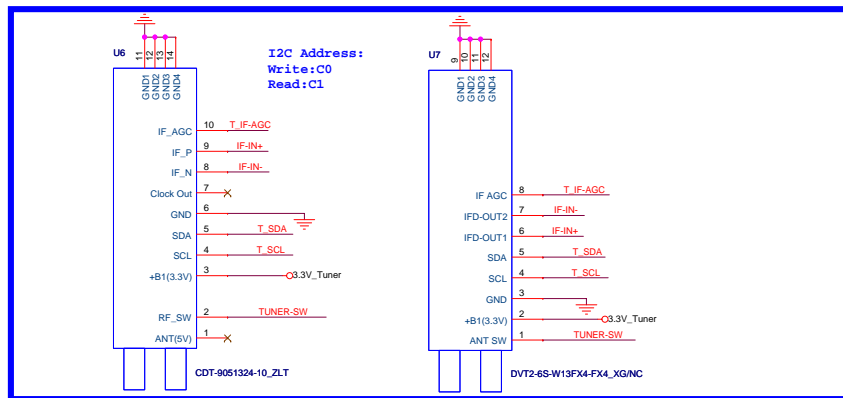
HDMI1



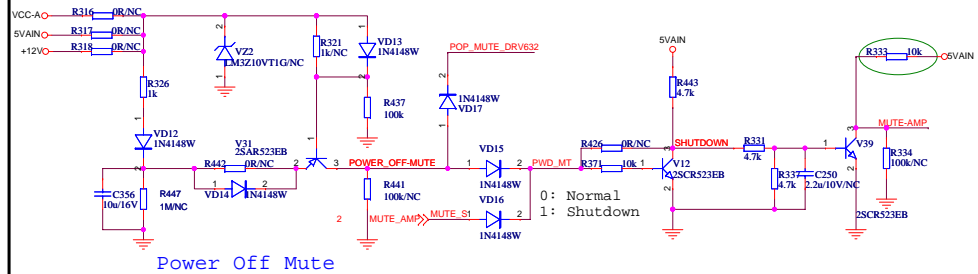
HDMI2



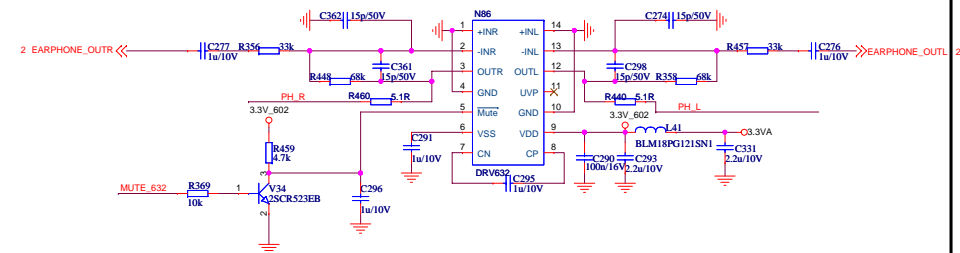
LHD24N10AMN MB:5253



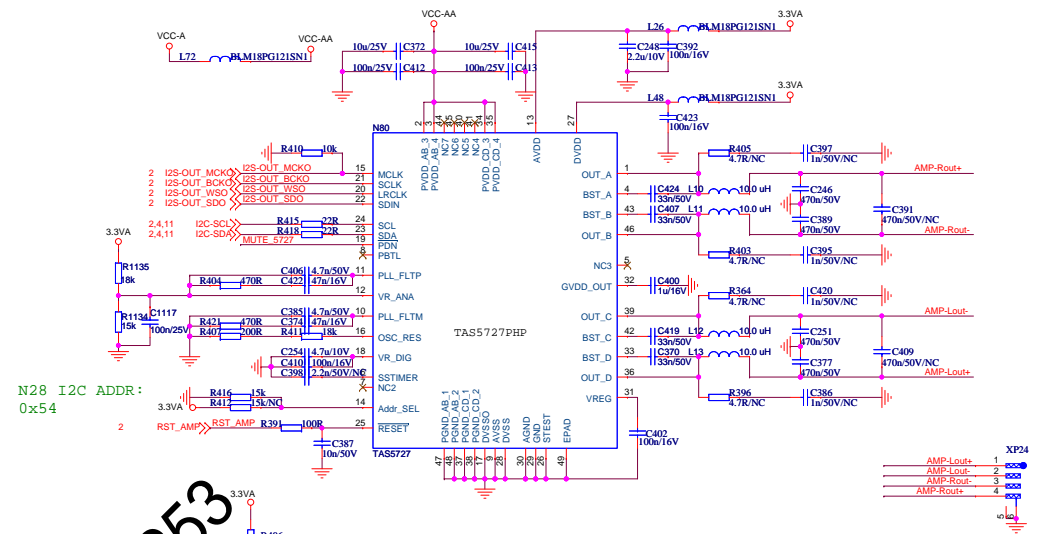
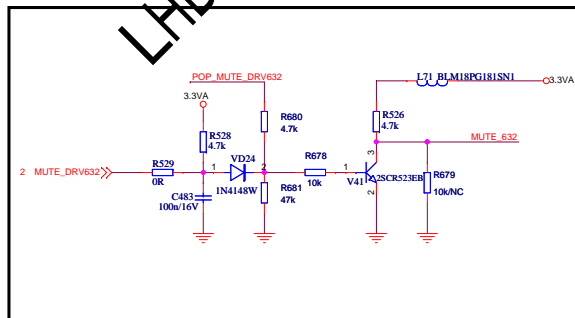
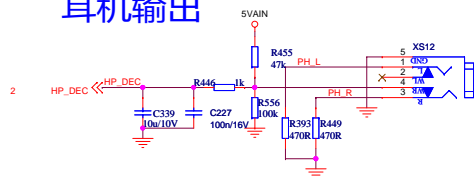
MUTE



audio pre. AMP



耳机输出



```
N28 I2C ADDR:
0x54
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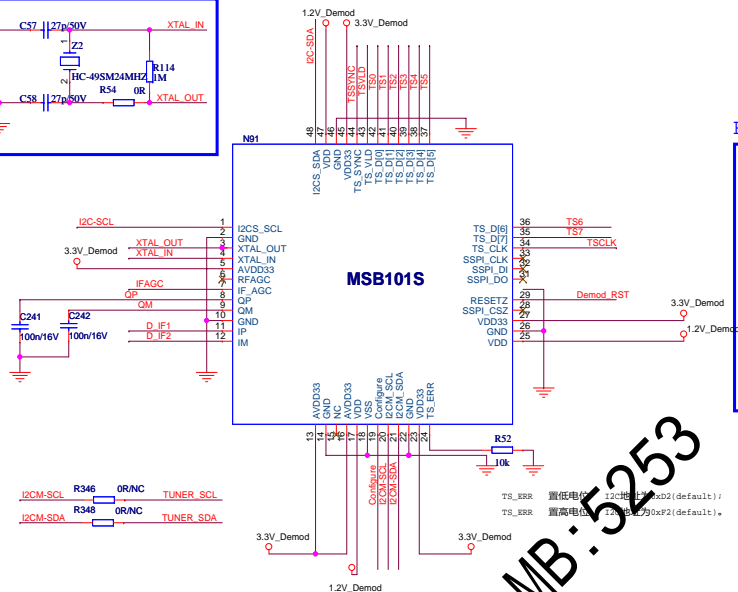
C276
 1u10V

EEARPHONE_OUTL 2

MULTIMETER 800V

47k1

LHD24N10AMN MB:5253

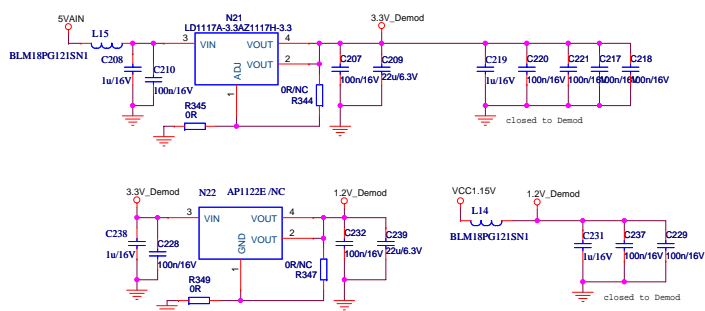
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3.3V Demod

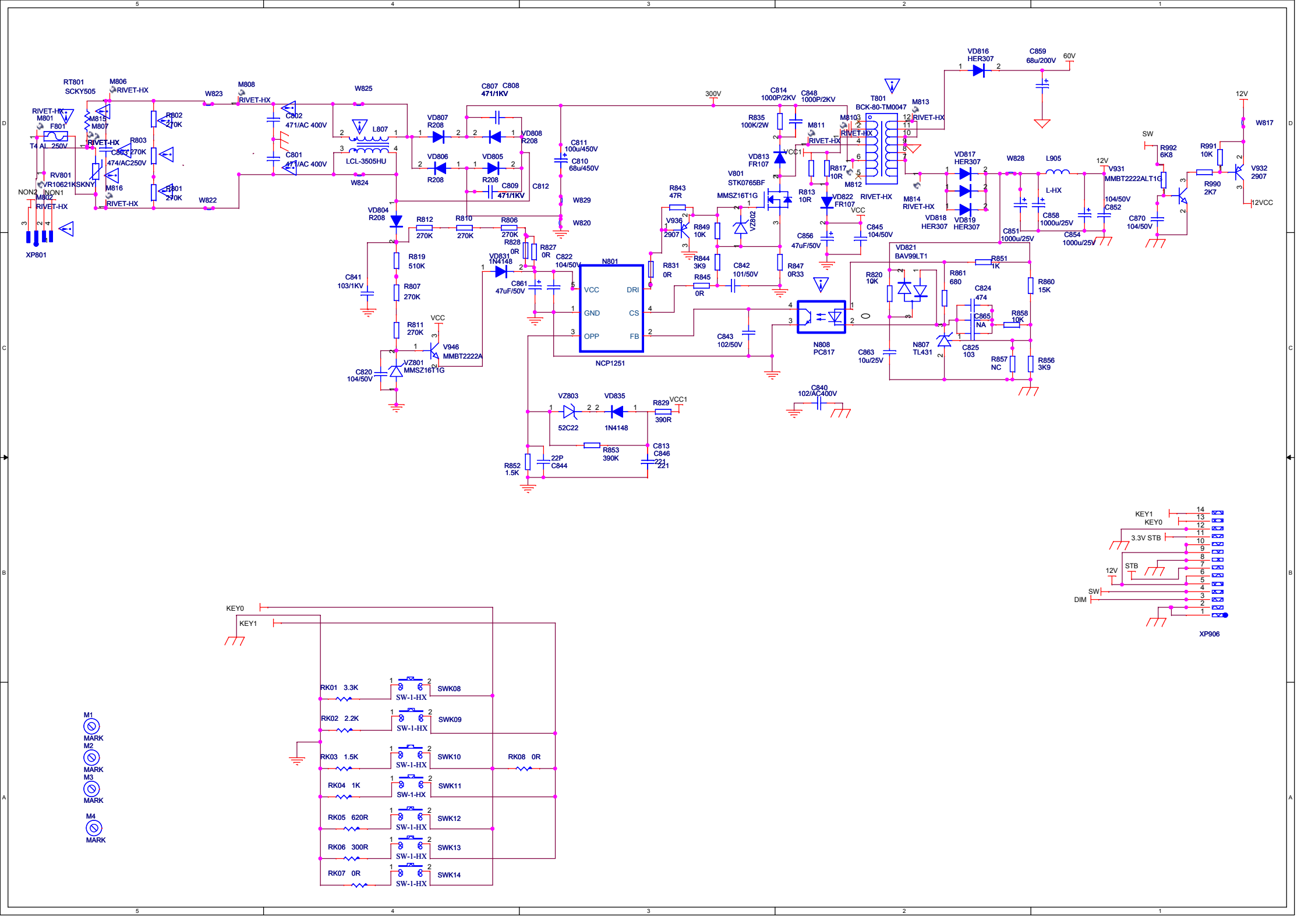
R53
10k

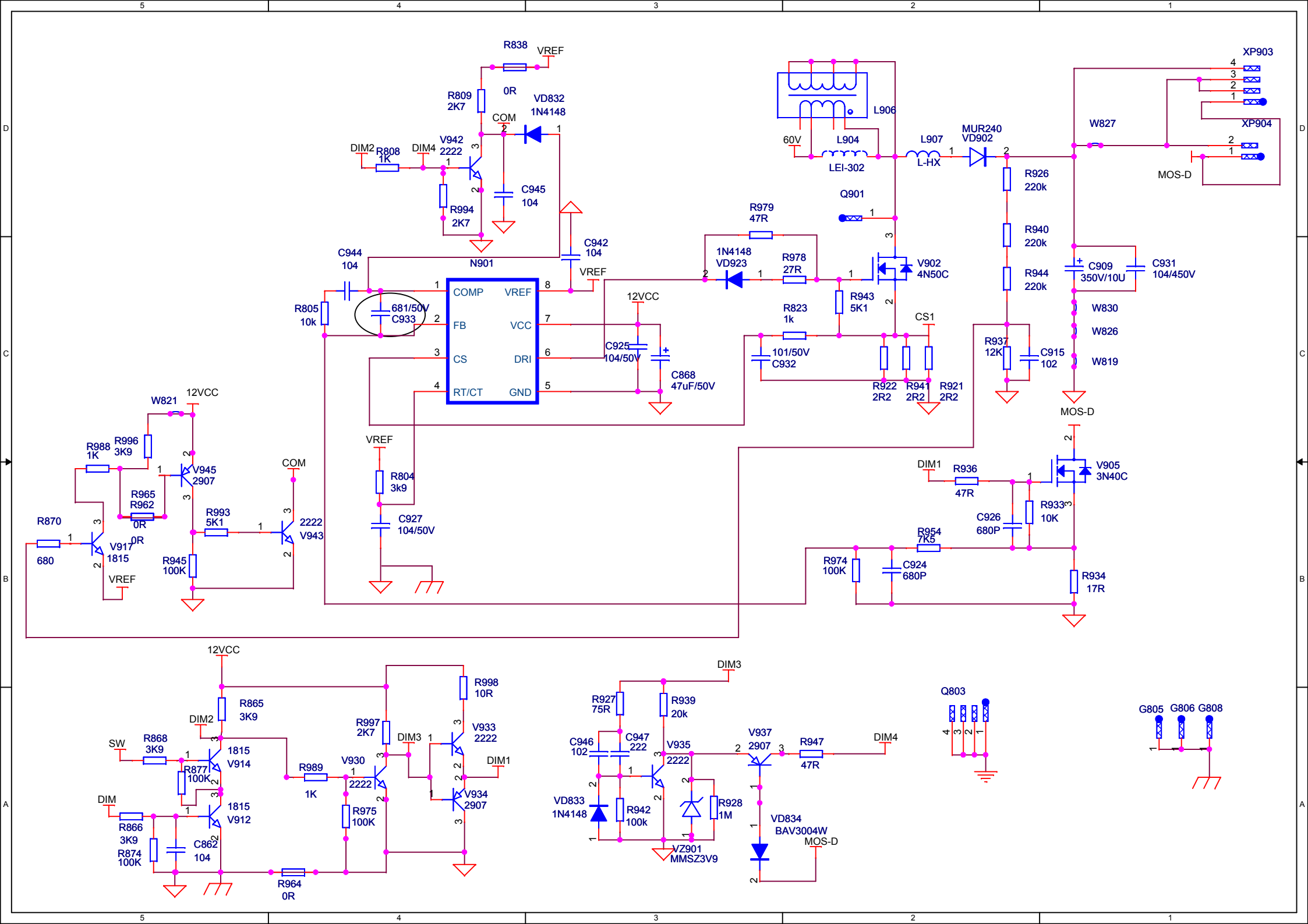
Demod_RST

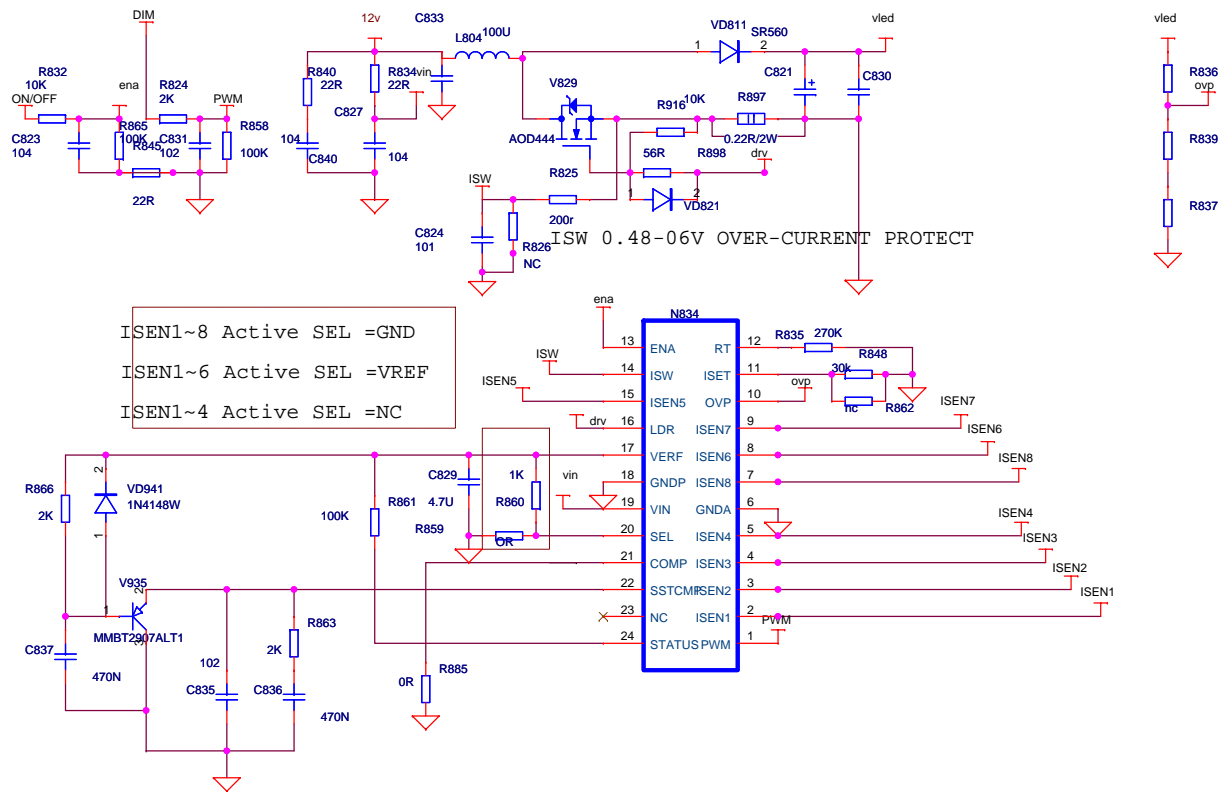
C340
2.2u/10V



The diagram shows the internal wiring of the LHD24N10AMN module. The T8_ERR pin is configured with a pull-up resistor R52 (10k) to the 3.3V_Demod supply. The pin is also connected to the 1.2V_Demod signal. The diagram includes labels for SCL, SDA, 3.3V_Demod, 1.2V_Demod, and T8_ERR. A large diagonal watermark 'LHD24N10AMN MB:5253' is overlaid on the image.

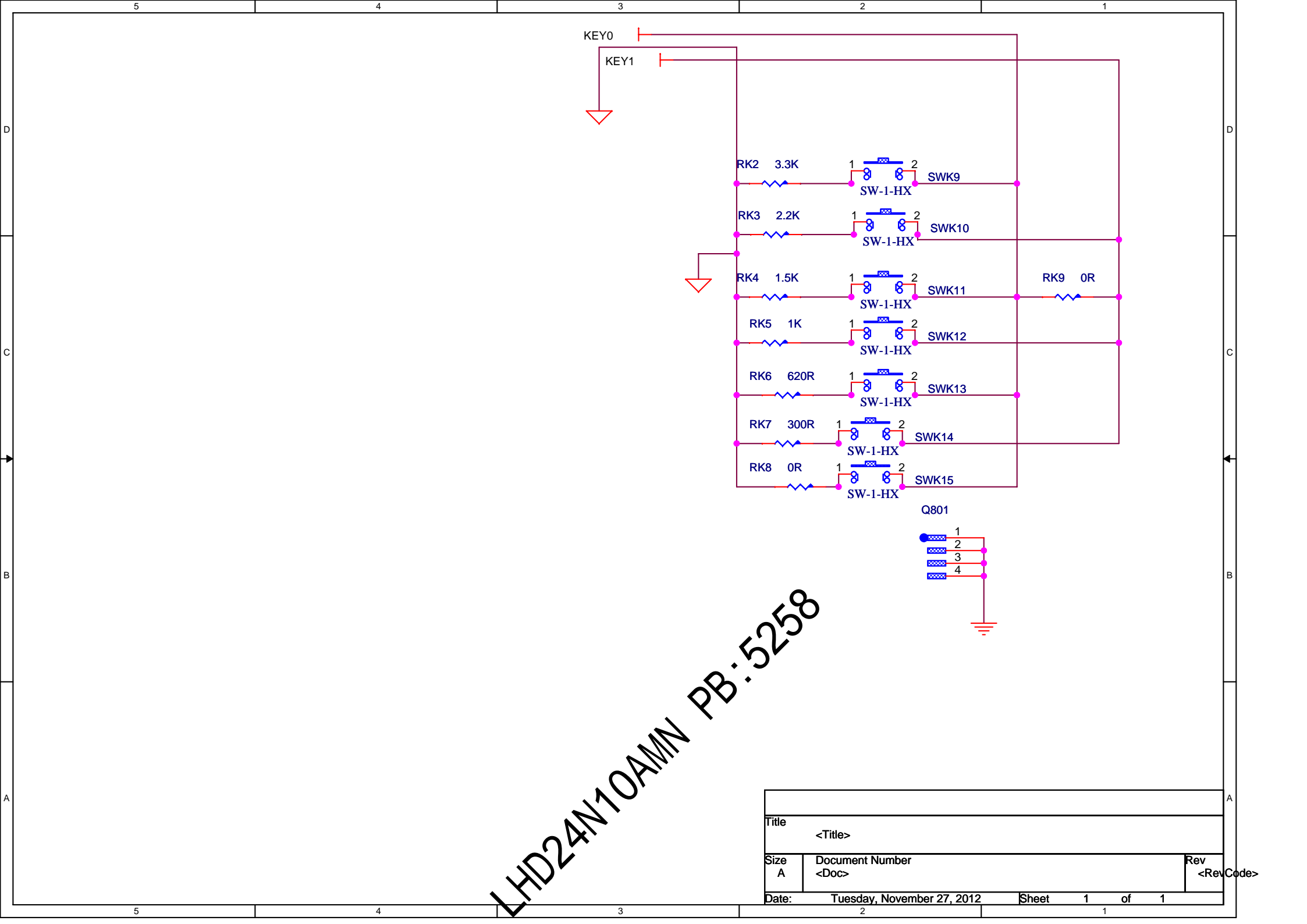






LHD24N10AMN PB:5258

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LHD24N10AMN PB:5258

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Date: Tuesday, November 27, 2012					Sheet 1 of 1

[illegible]

图底图号																			RSAG2. 025. 3754				
													explode view			阶段标记			质量	比例			
底图总号													更改标记 数量			更改单号			签名	日期			
													设计			别怀森							
													审核										
													工艺										
													标准化										
签 名													批准										
格式()	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	幅面: A2				