

Haier SERVICE MANUAL

LED TV



Model No. LE40K6000SF

MSD3663 **Chassis**



WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Chapter 1: General Information

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1-2. General Guidelines

When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.

After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.

After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

- 1) Leakage Current Cold Check
- 2) Leakage Current Hot Check
- 3) Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive

1-3. Important Notice

1-3-1. Follow the regulations and warnings

Most important thing is to list up the potential hazard or risk for the service personnel to open the units and disassemble the units. For example, we need to describe properly how to avoid the possibility to get electrical shock from the live power supply or charged electrical parts (even the power is off).

This symbol indicates that high voltage is present inside. It is dangerous to make any kind of contact with any inside part of this product.

This symbol indicates that there are important operating and maintenance instructions in the literature accompanying the appliance.

1-3-2. Be careful to the electrical shock

To prevent damage which might result in electric shock or fire, do not expose this TV set to rain or excessive moisture. This TV must not be exposed to dripping or splashing water, and objects filled with liquid, such as vases, must not be placed on top of or above the TV.

1-3-3. Electro static discharge (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1-3-4. About lead free solder (PbF)

This product is manufactured using lead-free solder as a part of a movement within the consumer products industry at large to be environmentally responsible. Lead-free solder must be used in the servicing and repairing of this product.

1-3-5. Use the genewing parts (specified parts)

Special parts which have purposes of fire retardant (resistors), high-quality sound (capacitors), low noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

Safety Component

- Components identified by mark have special characteristics important for safety.

1-3-6 Safety Check after Repairment

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the positions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

General Servicing Precautions

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

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

2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe.

Do not test high voltage by "drawing an arc".

3. Do not spray chemicals on or near this receiver or any of its assemblies.
4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength).

CAUTION: This is a flammable mixture.

Unless specified otherwise in this service manual, lubrication of contacts is not required. Capacitors may result in an explosion hazard.

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. Capacitors may result in an explosion hazard.

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.

9. Remove the antenna terminal on TV and turn on the TV.
10. Insulation resistance between the cord plug terminals and the external exposure metal should be more than Mohm by using the 500V insulation resistance meter.
11. If the insulation resistance is less than M ohm, the inspection repair should be required. If you have not the 500V insulation resistance meter, use a Tester. External exposure metal: Antenna terminal Headphone jack

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.)

1-3-7. Ordering Spare Parts

Please include the following informations when you order parts. (Particularly the Version letter)

1. Model number, Serial number and Software Version

The model number and Serial number can be found on the back of each product and the Software Version can be found at the Spare Parts List.

2. Spare Part No. and Description

You can find them in the Spare Parts List

1-3-8. Photo used in this manual

The illustration and photos used in this Manual may not base on the final design of products, which may differ from your products in some way.

1-4. How to Read this Service Manual

Using Icons:

Icons are used to attract the attention of the reader to specific information. The meaning of each icon is described in the table below:

Note:

A “note” provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.

Caution:

A “caution” is used when there is danger that the reader, through incorrect manipulation, may damage equipment, loose data, get an unexpected result or has to restart(part of) a procedure.

Warning:

A “warning” is used when there is danger of personal injury.

Reference:

A “reference” guides the reader to other places in this binder or in this manual, where he/she will find additional information on a specific topic.

2. Specifications

Model	LE40K6000SF
Screen Size	40 inch
Aspect Ratio	16:9
Resolution	1366*768
Response Time (ms)	6.5 (GRAY TO GRAY)
Angel of View	176o
Color Display	16.7M
No. of Preset Channels	100(ATV)
OSD Language	English
Color System	PAL/NTSC/SECAM
Audio System	DK, BG, I, M, L, L'
Audio Output Power (Built-in) (W)	2×8W
Audio Output Power (outer) (W)	No
Total Power Input (W)	45W
Voltage Range (V)	AC 100-240V
Power Frequency (Hz)	50~60Hz
Net Weight (KG)	4.7
Gross Weight (KG)	6.2
Net Dimension (MM)	733x200x473mm
Packaged Dimension (MM)	802x137x505mm

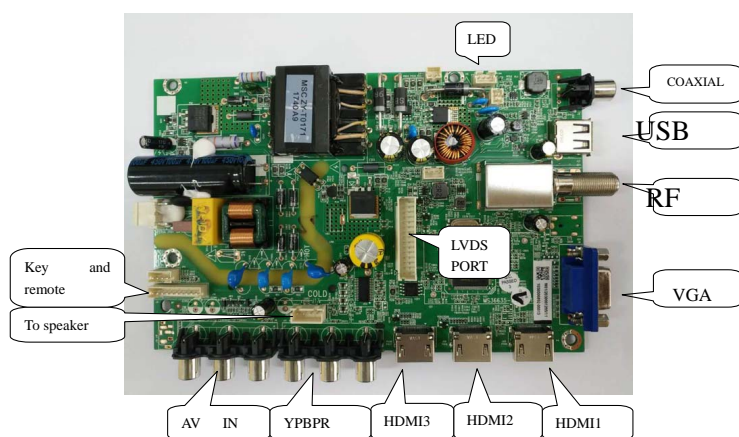
3. Location of Controls and Components

3-1 Board Location



No.	Description
A Board	Mainboard
B Board	Power Supply

3-2 Main Board



LVDS Port (J1)

3-2-1 Function Description:

Main Board

Process signal which incept from exterior equipment then translate into signal that panel can display.

3-2-2 Connector definition

Main board connector

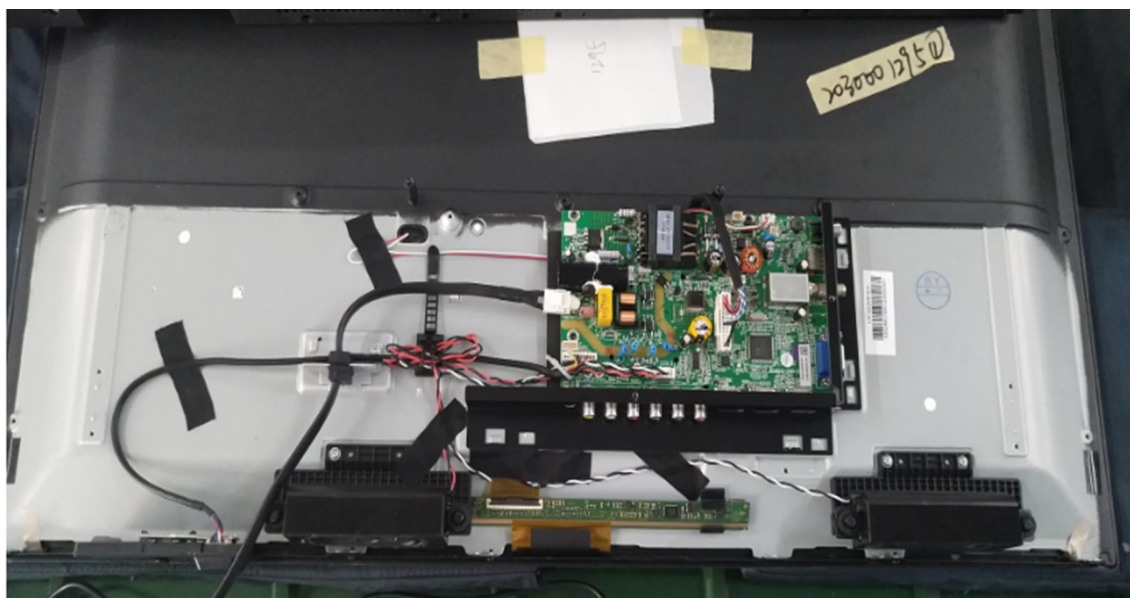
Keypad and remote connector (CN508)

Pin number	Signal name	Description
1	GND	
2	KEY1	
3	KEY0	
4	NC	
5	5V	POWER FOR REMOTE
6	GND	GND
7	IR	REMOTE CONTROL
8	STANDBY	
9	LED_G	LAMP GREEN
10	LED_R	LAMP RED

Speaker connector (CN601)

Pin number	Signal name	Description
1	RSPK+	RSPK+
2	RSPK-	RSPK-
3	LSPK-	LSPK-
4	LSPK+	LSPK+

3-4. LED Panel



CMI:V400HJ6-PE1/

3-4-1.Connector de finition

Mated LVDS transmitter: THC63LVDM83R (THine) or equivalent device

Pin No.	Symbol	Function	Remark
1	VCC	+12V Power Supply	
2	VCC	+12V Power Supply	
3	VCC	+12V Power Supply	
4	VCC	+12V Power Supply	
5	GND	Ground	
6	GND	Ground	
7	GND	Ground	
8	GND	Ground	
9	SELLVDS	Select LVDS data order [Note 1]	Default Pull down (L:GND) [Note 2]
10	Reserved	Not Available	
11	GND	Ground	
12	RIN0-	Negative (-) LVDS differential data input	LVDS
13	RIN0+	Positive (+) LVDS differential data input	LVDS
14	GND	Ground	
15	RIN1-	Negative (-) LVDS differential data input	LVDS
16	RIN1+	Positive (+) LVDS differential data input	LVDS
17	GND	Ground	
18	RIN2-	Negative (-) LVDS differential data input	LVDS
19	RIN2+	Positive (+) LVDS differential data input	LVDS
20	GND	Ground	
21	CLKIN-	Clock Signal(-)	LVDS
22	CLKIN+	Clock Signal(+)	LVDS
23	GND	Ground	
24	RIN3-	Negative (-) LVDS differential data input	LVDS
25	RIN3+	Positive (+) LVDS differential data input	LVDS
26	GND	Ground	
27	Reserved	Not Available	
28	Reserved	Not Available	
29	Reserved	Not Available	
30	Reserved	Not Available	

[Note] GND of a liquid crystal panel drive part has connected with a module chassis.

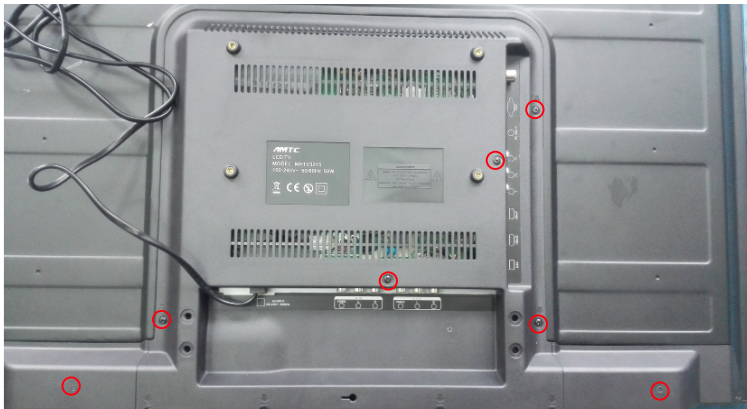
4. Disassemble and assemble

4-1 Remove the Pedestal



- ☐ Lay down the unit so that rear cover faces upward
- ☐ Remove the screw from the rear cover indicated with ○
- ☐ Then remove the pedestal

4-2 Remove the Back Cover



- ☐ Remove these screw indicated on figure above by ○
- ☐ Then remove the back cover from the unit.

4-3. Remove the adhesive tape



Remove the adhesive tape indicated on the figure above

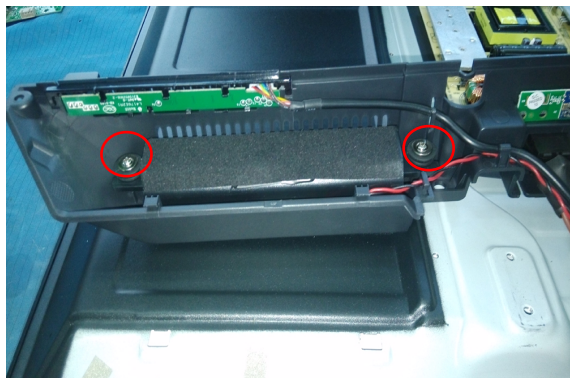
4-4 Remove the Main board



☐ Disconnected the coupler

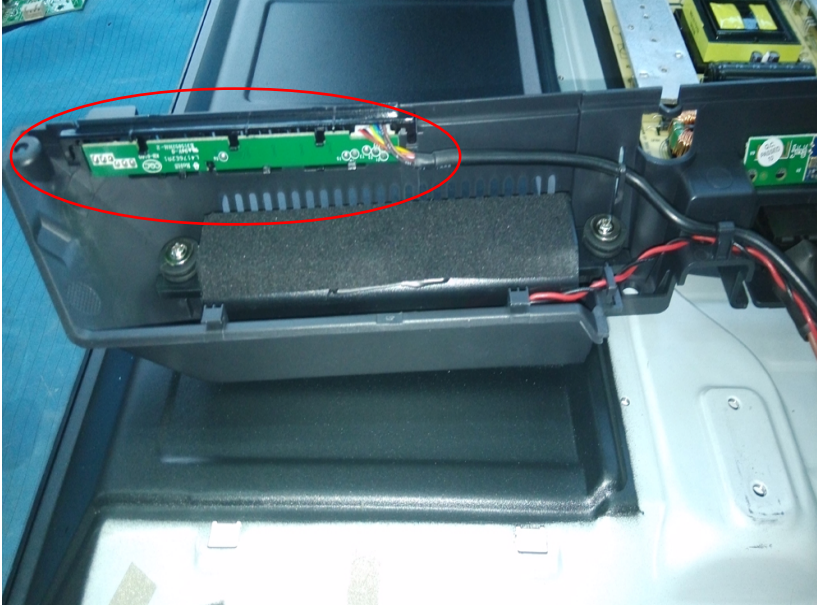
☐ Remove the Main board

4-5 Remove the speaker



Take out the speaker

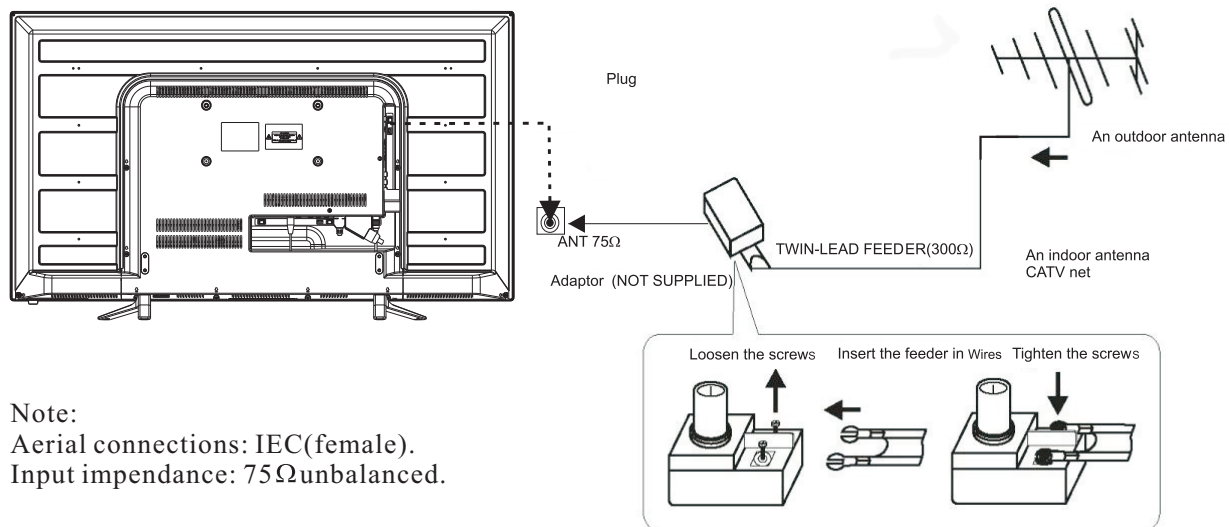
4-6 Remove the remote control



take out the remote controlboard

ANTENNA

* The TV appearance subject to material object.



Note:
Aerial connections: IEC(female).
Input impedance: 75Ω unbalanced.

PC

STEPS:

Be sure both the TV and computer are Power off.

- 1.Connect VGA and audio cable
- 2.Connect power cord
- 3.Power on the TV, switch to PC mode
- 4.Power on the PC

This sequence is very important.

5-2 HDMI Connections

When the source device(DVD player or Set Top Box) supports HDM How To Connect

1. Connect the source device to HDMI port of this TV with an HDMI cable(not supplied with this product).
2. No separated audio connection is necessary.

How To Use

If the source device supports Auto HDMI function, the output resolution of the source device will be automatically set to 1280x720p.

If the source device does not support Auto HDMI, you need to set the output resolution appropriately.

To get the best picture quality, adjust the output resolution of the source device to 1280x720p.

Select HDMI input source in input source option of Select Main source menu.

When the source device(DVD player or Set Top Box) supports DVI

How To Connect

1. Connect the source device to HDMI port of this TV with a HDMI-to-DVI cable(not supplied with this product).
2. A separated audio connection is necessary.
3. If the source device has an analog audio output connector, connect the source device audio output to DVI Audio In port located on the PC port.

How To Use

If the source device supports Auto DVI function, the output resolution of the source device will be automatically set to 1280x720p.




If the source device does not support Auto DVI, you need to set the output resolution appropriately.

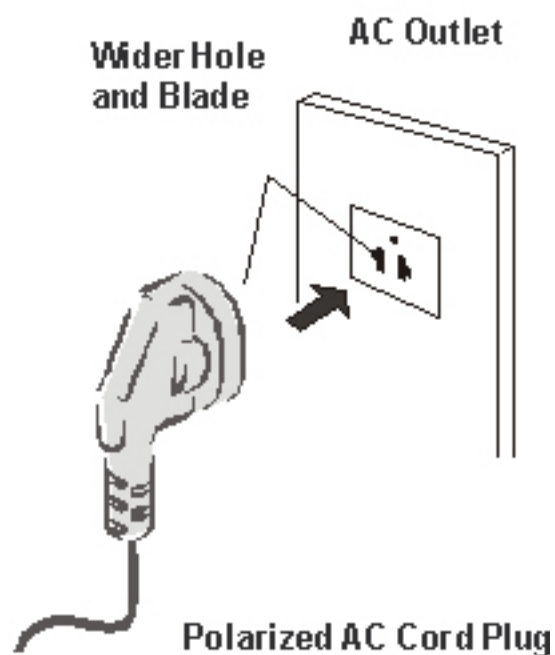
To get the best picture quality, adjust the output resolution of the source device to 1280x720p.

Press the INPUT button to select HDMI input source in input source option of Select Main source menu.

Installation

Cable sample

	<p>HDMI Cable (not supplied with the product)</p>
	<p>HDMI to DVI Cable (not supplied with the product)</p>
	<p>Analog Audio Cable (Stereo to RCA type) (not supplied with the product)</p>



Power source

TO USE AC POWER SOURCE

Use the AC polarized line cord provided for operation on AC.

Insert the AC cord plug into a standard polarized AC outlet.

NOTES:

- Never connect the AC line cord plug to other than the specified voltage.

Use the attached power cord only.

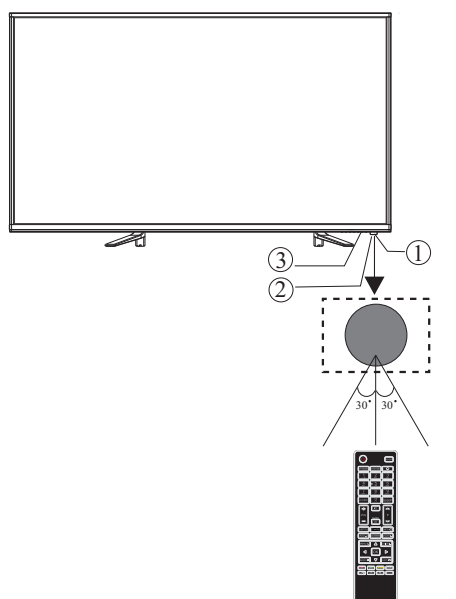
- If the polarized AC cord does not fit into a non-polarized AC outlet, do not attempt to file or cut the blade. It is the user's responsibility to have an electrician replace the obsolete outlet.

- If you cause a static discharge when touching the unit and the unit fails to function, simply unplug the unit from the AC outlet and plug it back in. The unit should return to normal operation.

6. Operation Instructions

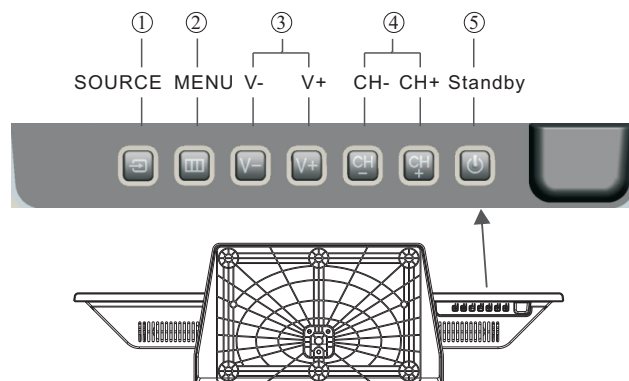
6-1 Front panel controls

Front panel



- 1: Remote control sensor.
- 2: Indicator LED: RED ● STANDBY.
- 3: Key board



KEYBOARD



- 1. **SOURCE:**
Display the input source menu.
- 2. **MENU:**
Display main MENU.
- 3. **V-/V+**
Adjust sound level.
In MENU mode, press “V+” or “V-” to adjust the item that you selected.
- 4. **CH-/CH+**
In TV mode, press “CH+” or “CH-” to change the channel up and down.
In MENU mode, press “CH+” or “CH-” to select items.
- 5. **STANDBY**
Press this button to turn the unit ON from STANDBY mode.
Press it again to turn the set back to STANDBY.

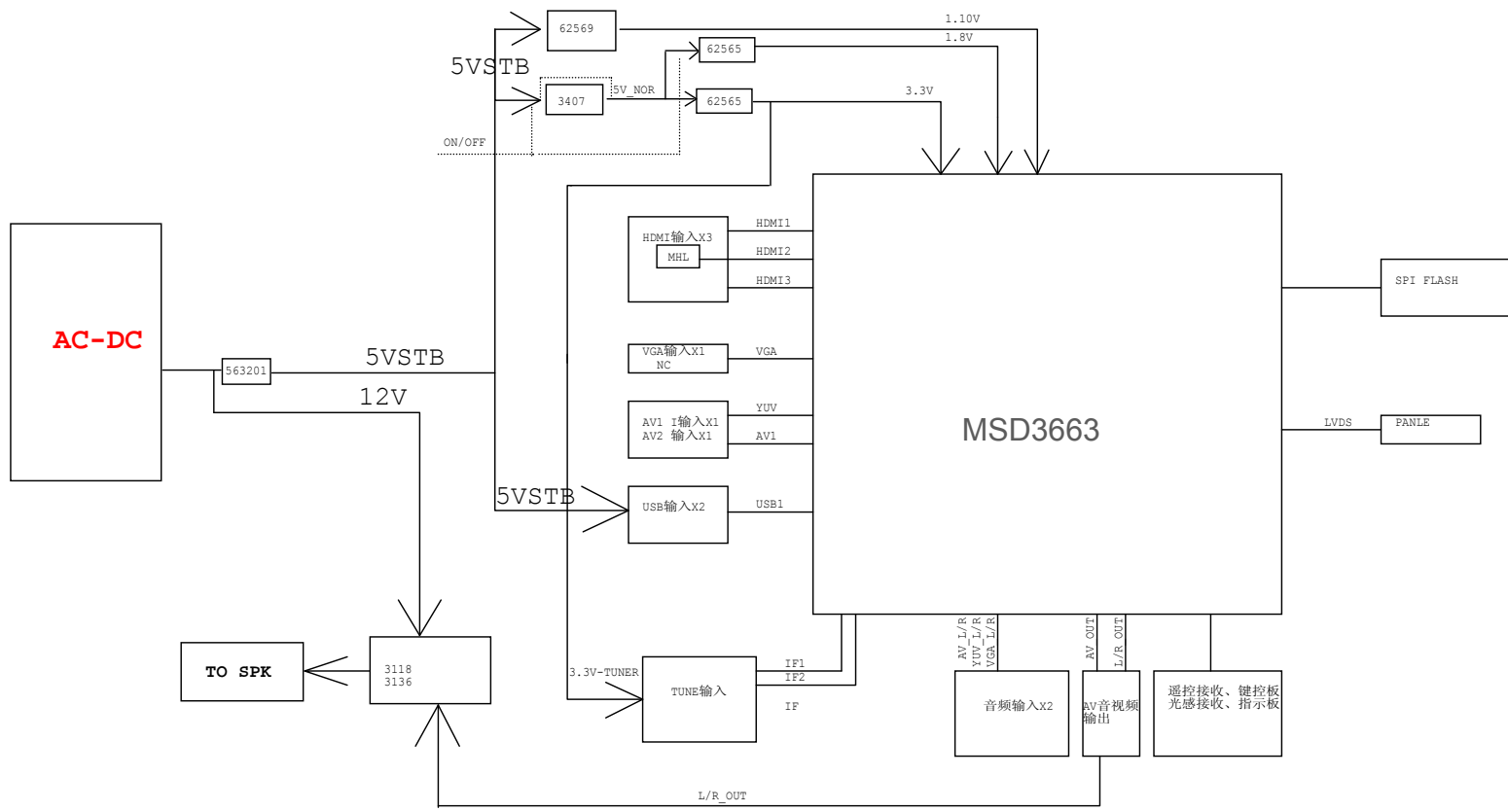
TELETEXT

Teletext is an information system broadcast by certain channels which can be consulted like a newspaper. It also offers access to subtitles for viewers with hearing problems or who are not familiar with the transmission language(cable networks, satellite channels, etc.)

Press:	You will obtain:
TEXT	This is used to call or exit teletext modes. The summary appears with a list of items that can be accessed. Each item has a corresponding 3 digit page number. If the channel selected does not broadcast teletext, the indication 100 will be displayed and the screen will remain blank (in this case, exit teletext and select another channel).
SELECTING A PAGE 	Enter the number of the page required using the 0 to 9 up/down. Example: page 120, enter 120. The number is displayed top left, the counter turns and then the page is displayed. Repeat this operation to view another page. If the counter continues to search, this means that the page is not transmitted. Select another number.
DIRECT ACCESS TO THE ITEMS 	Coloured are as are displayed at the bottom of the screen. The 4 coloured keys are used to access the items or corresponding pages. The coloured areas flash when the item or the page is not yet available.
INDEX	This returns to the contents page (usually page 100).
SUB PAGE	Certain pages contain sub-pages which are automatically displayed successively. This key is used to stop or resume sub-page acquisition. The indication appears top left.
HOLD	To freeze the page.
REVEAL	To display or hide the concealed information (games solutions).
MIX	Teletext,program,image are displayed together.
EXIT	Exit the teletext.
SIZE	Switch the image to top,bottom,full.

7. Electrical parts

7-1.Block Diagram



Title			Block Diagram
Size	Document Number	Rev	
B	MSD35531-YL01-01	A	
Date:	Thursday, March 08, 2018	Sheet	1 of 10

2013-5-11
长虹要求BMC 600余量
单独修改M29组件

2012-8-1
RV1位置DCN
统一改为561

2012-10-25
欧规组件统一改为450V耐压
2013-5-23
发国内市场改为400V耐压

2012-11-6
改善低电压100%不启动
D809由1N4007改为FR107

C1053跟公板BOM不对
公板BOM 10uF/50
C1056
C1053

32寸不上件
<32寸上

32寸不上件
<32寸上

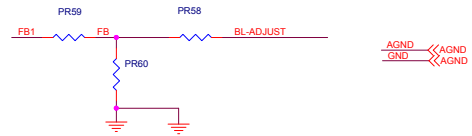
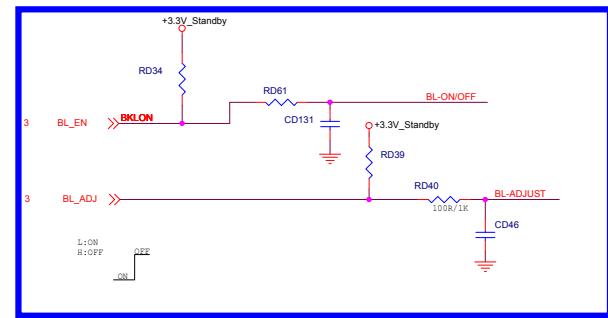
5V Max@DTV(with out CI,USB,DVD,panel) 490mA
5V Stb(with out ci card) 23mA
CI card module max 200mA

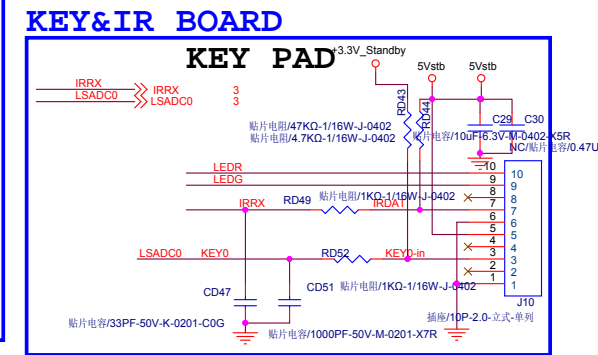
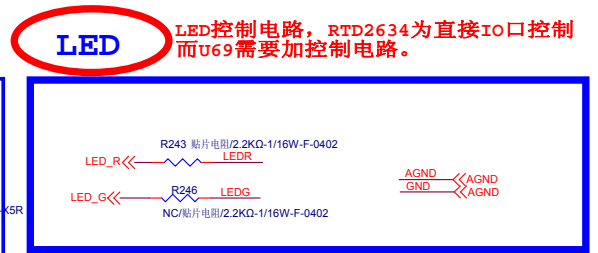
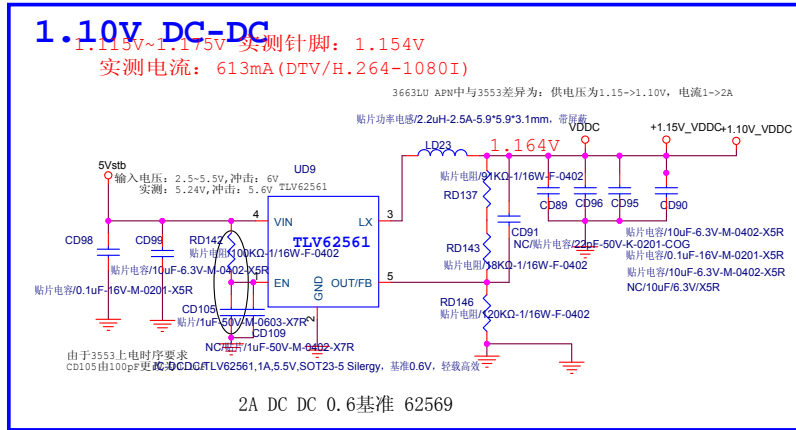
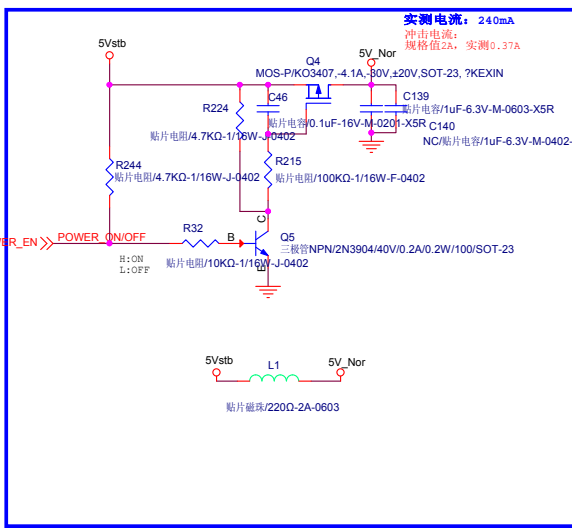
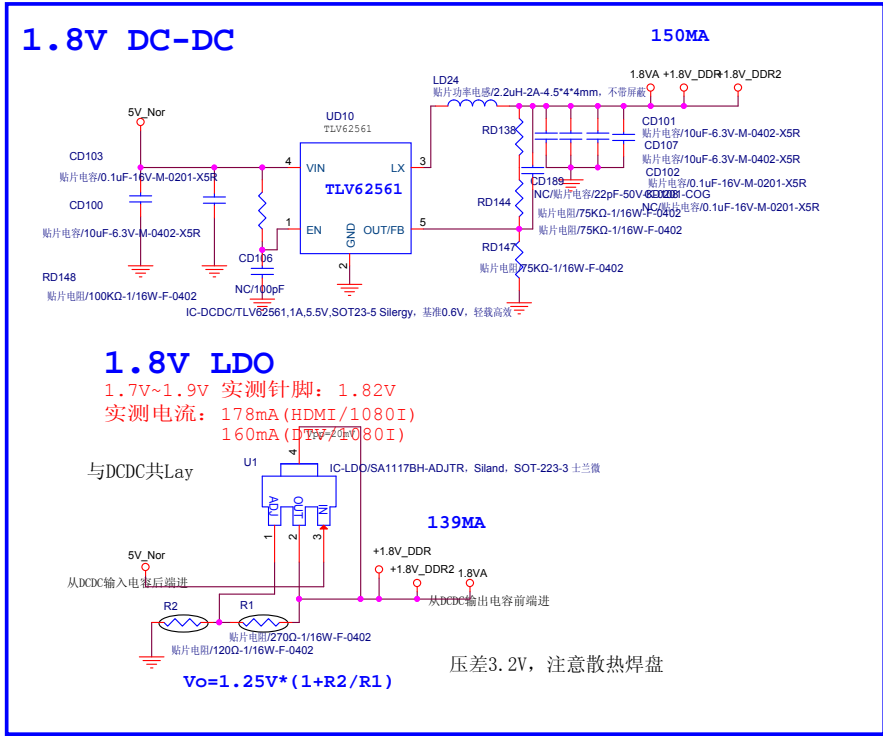
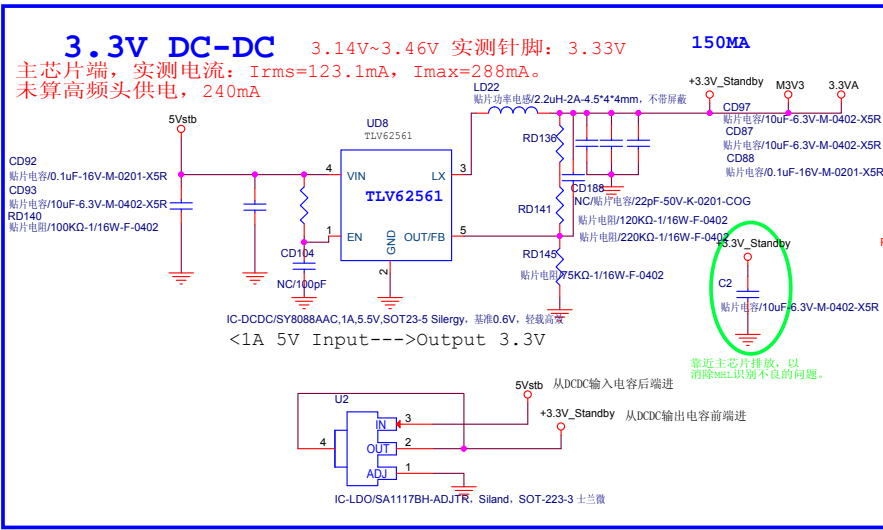
工作频率477kHz占空比43%工作电流1.1A, 实测电压5.16V, 纹波100mV

新增

$$V_{out} = 0.768 \times (1 + \frac{R_{42}}{R_{39}})$$

$V_{out} = 2 \times (R_{45} + R_{47}) / R_{47}$
一般调整固定50%, 11%或94%,
否则会影响输出功率。





Title			DC-DC		
Size			Document Number		
			MSD35531-YL01-01		
Date:			Wednesday, January 31, 2018		
			Sheet 3 of 10		
			Rev A		

HDMIO_RX0N	HDMIO_RX0N
HDMIO_RX0P	HDMIO_RX0P
HDMIO_RX1N	HDMIO_RX1N
HDMIO_RX1P	HDMIO_RX1P
HDMIO_RX2N	HDMIO_RX2N
HDMIO_RX2P	HDMIO_RX2P
HDMIO_CLKN	HDMIO_CLKN
HDMIO_CLKP	HDMIO_CLKP
HDMIO_SCL	HDMIO_SCL
HDMIO_SDA	HDMIO_SDA
HDMIO_HPDIN	HDMIO_HPDIN
HDM1_RX0N	HDM1_RX0N
HDM1_RX0P	HDM1_RX0P
HDM1_RX1N	HDM1_RX1N
HDM1_RX1P	HDM1_RX1P
HDM1_RX2N	HDM1_RX2N
HDM1_RX2P	HDM1_RX2P
HDM1_CLKN	HDM1_CLKN
HDM1_CLKP	HDM1_CLKP
HDM1_SCL	HDM1_SCL
HDM1_SDA	HDM1_SDA
HDM1_HPDIN	HDM1_HPDIN
HDMI_ARC	HDMI_ARC
HDMI_CEC	HDMI_CEC
HDMI3_RX0N	HDMI3_RX0N
HDMI3_RX0P	HDMI3_RX0P
HDMI3_RX1N	HDMI3_RX1N
HDMI3_RX1P	HDMI3_RX1P
HDMI3_RX2N	HDMI3_RX2N
HDMI3_RX2P	HDMI3_RX2P
HDMI3_CLKN	HDMI3_CLKN
HDMI3_CLKP	HDMI3_CLKP
HDMI3_SCL	HDMI3_SCL
HDMI3_SDA	HDMI3_SDA
HDMI3_HPDIN	HDMI3_HPDIN

SPDIF_OUT

C235

NC/贴片电容/33PF-50V-K-0201-C0G

Close to MSTAR IC

其中AV2走的是VbPPr
的Vb通道，软件服
调可以开，但是做VbPPr
时需要调整阻值！

PCB layout diagram showing signal traces and components. A red oval highlights the "CVBS2Y" label. Various components like resistors (R213, R209, R205, R206, R218, R217), capacitors (C208, C212, C209, C210, C216, C217), and connectors (RIN1, BIN1, GIN1N, GIN1P, CVBSOP, VCOM) are shown. A note "AV1 CVBS*" points to a trace. A note "CVBS_OUT0 <- CVBS_OUT0 Close to MST IC with wide trace" is at the bottom.

片上电容/2.2uF-6.3V-M0402-X5R

AV1_IN_L >>> HD1_LIN C222 HD1_LIN
 AV1_IN_R >>> HD1_RIN C223 HD1_RIN
 YP6PR1_IN_L >>> HD2_LIN C224 HD2_LIN
 YP6PR1_IN_R >>> HD2_RIN C225 HD2_RIN

靠近mstar IC

NC/贴片电容/2.2uF-6.3V-NC/0402
 NC/贴片电容/2.2uF-6.3V-NC/0402

AV_AOOUTL1 << AV_AOOUTL0 AV_AOOUTL AV_AOOUTL1 << AV_AOOUTL0 AV_AOOUTL AV_AOOUTL1 << AV_AOOUTL0 AV_AOOUTL AV_AOOUTL1 << AV_AOOUTL0 AV_AOOUTL

AV_AOOUTR1 << AV_AOOUTR0 AV_AOOUTR AV_AOOUTR1 << AV_AOOUTR0 AV_AOOUTR AV_AOOUTR1 << AV_AOOUTR0 AV_AOOUTR AV_AOOUTR1 << AV_AOOUTR0 AV_AOOUTR

AMP-INL << AMP_AOOUTL0 AMP_AOOUTL AMP-INL << AMP_AOOUTL0 AMP_AOOUTL AMP-INL << AMP_AOOUTL0 AMP_AOOUTL AMP-INL << AMP_AOOUTL0 AMP_AOOUTL

AMP-INR << AMP_AOOUTR0 AMP_AOOUTR AMP-INR << AMP_AOOUTR0 AMP_AOOUTR AMP-INR << AMP_AOOUTR0 AMP_AOOUTR AMP-INR << AMP_AOOUTR0 AMP_AOOUTR

22k 220kQ-116W-J-0402 1000PF-50V-M-0201-X7R

C222 C228 C229 C230 C231

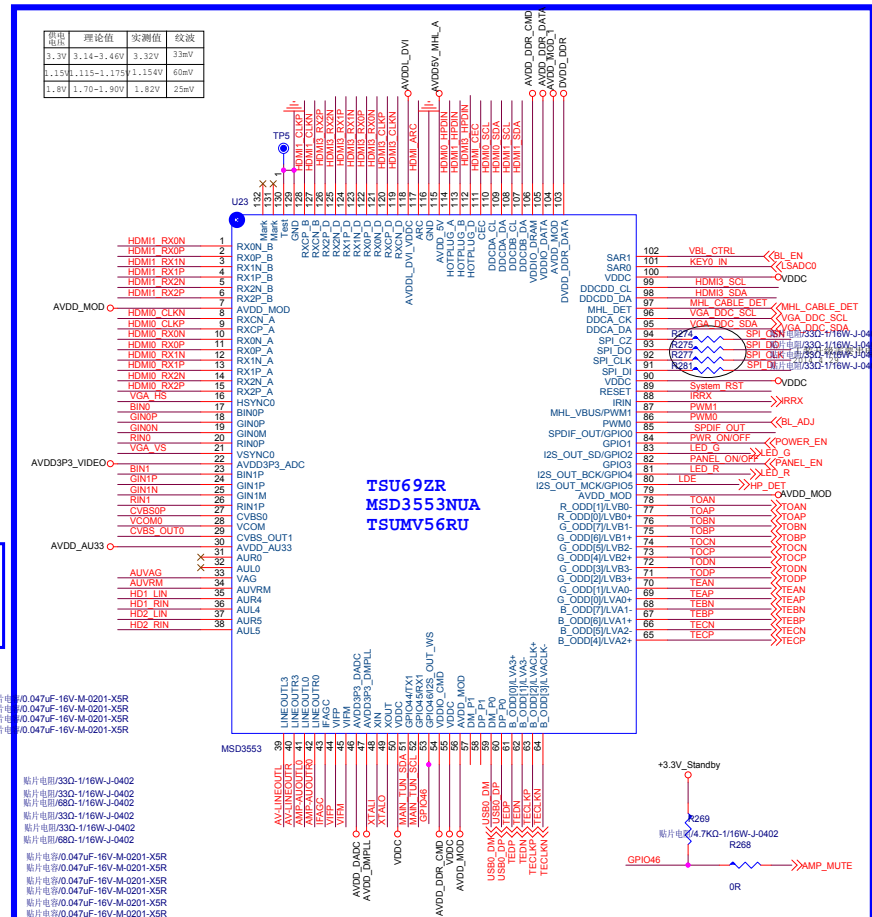


Figure 10 shows two examples of PCB layout for ICs with multiple pins. The left example shows a multi-pin IC (FB201) with a wide trace for the IC and a note about the capacitor value (0.1uF-16V4M4001-KSR). The right example shows a multi-pin IC (FB201) with a wide trace for the IC and a note about the capacitor value (0.1uF-16V4M4001-KSR).

XTALO

NOTE: 晶体频率需小于30pF
剔除1M电阻!

XTALI

贴片电容-精密/15PF-25V-J-0201-NPO
CS78

YS1

C1=2*2*2-C1-5

贴片晶振/24MHz-11P-20PPM-49SMD (-20~85°C)
CS77

贴片电容-精密/15PF-25V-J-0201-NPO
CS79

片选电阻/10KQ-1/16W-J-0402
R226

3.3V_TUNER

IFAGC

片选电阻/00-1/16W-J-0402
R229

C262

RF-AGC-T

片选电阻/0.022uF-16V-M-0201-XSR

C247 VIFM

C248

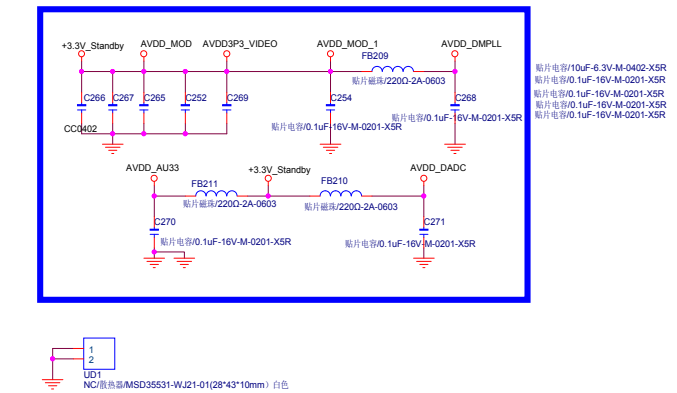
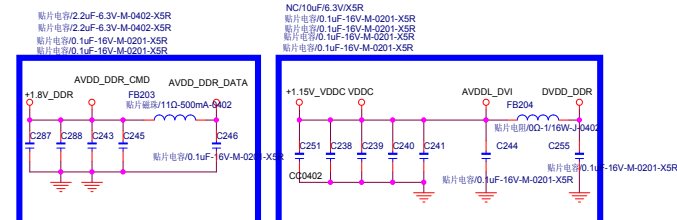
片选电阻/0-1/16V-M-0201-XSR

片选电阻/0.1uF-16V-M-0201-XSR

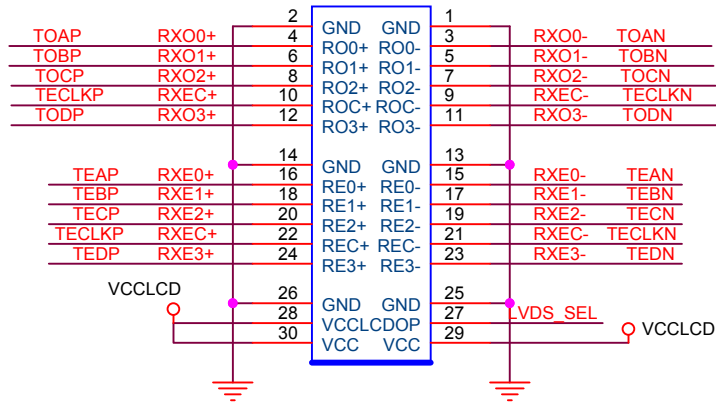
C249

MAIN_TUN_SDA

MAIN_TUN_SCL

[illegible][illegible]

LVDS CONNECTOR

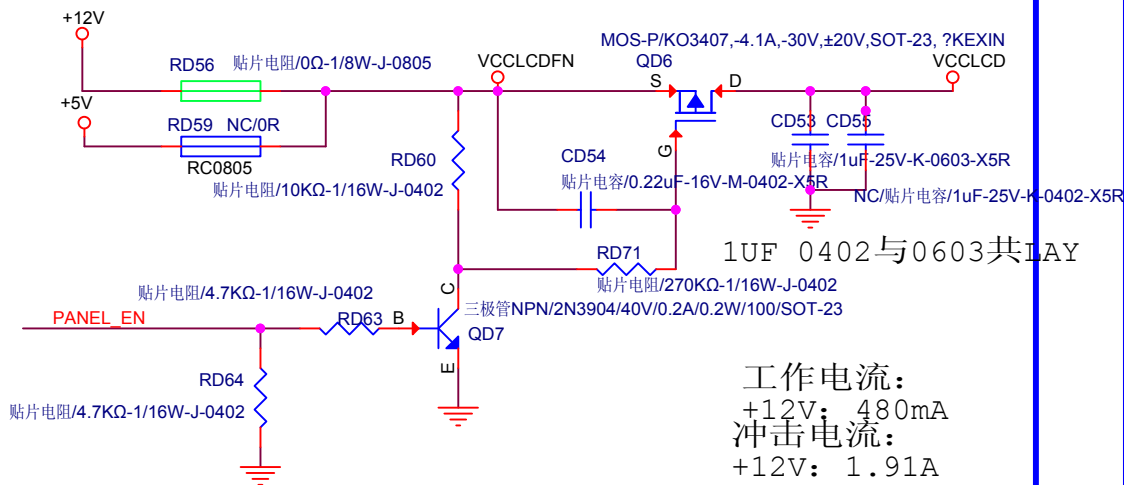


J1
插座/2*15P-2.0-立式-双列-带卡扣

3D_L/R:眼镜同步, 连到J15的PIN2

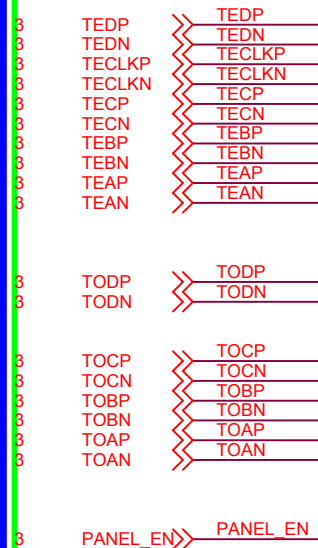
PWSWIN:玻璃3D功能控制, 连到J15的PIN8

PANEL POWER



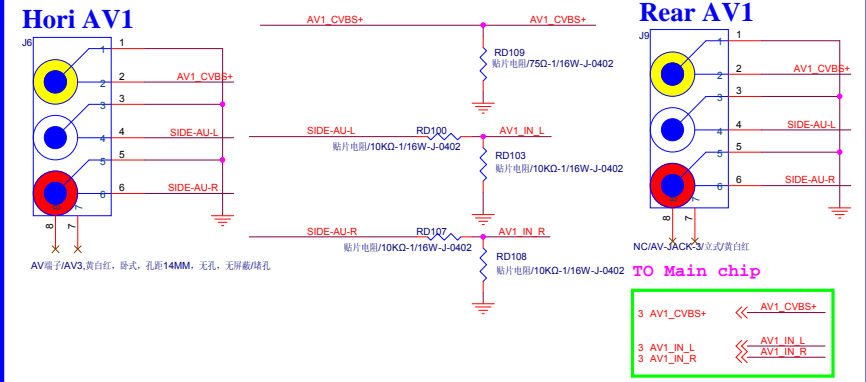
工作电流:
+12V: 480mA
冲击电流:
+12V: 1.91A

From Main Chip

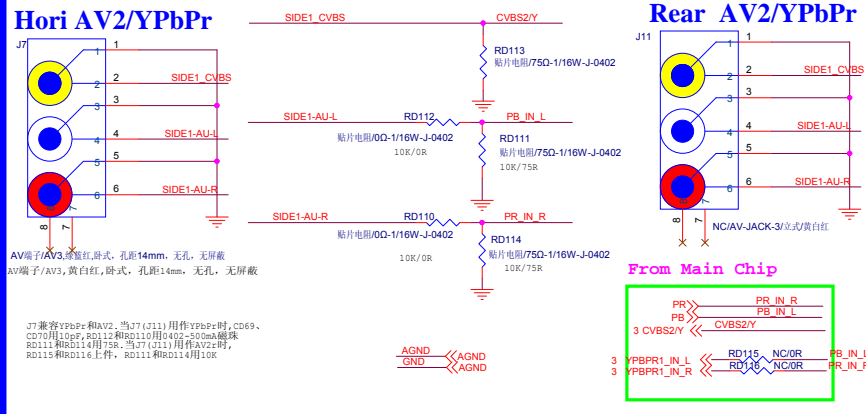


Title		
LVDS		
Size	Document Number	Rev
Custom	MSD35531-YL01-01	A
Date:	Friday, December 29, 2017	Sheet 5 of 10

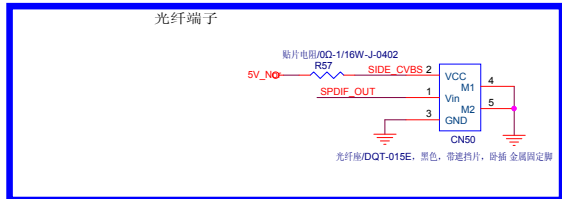
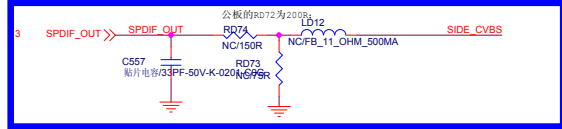
Hori AV1



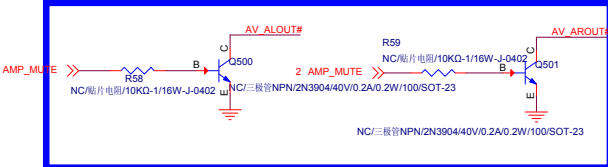
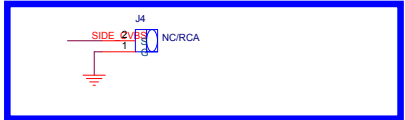
Hori AV2/YPbPr



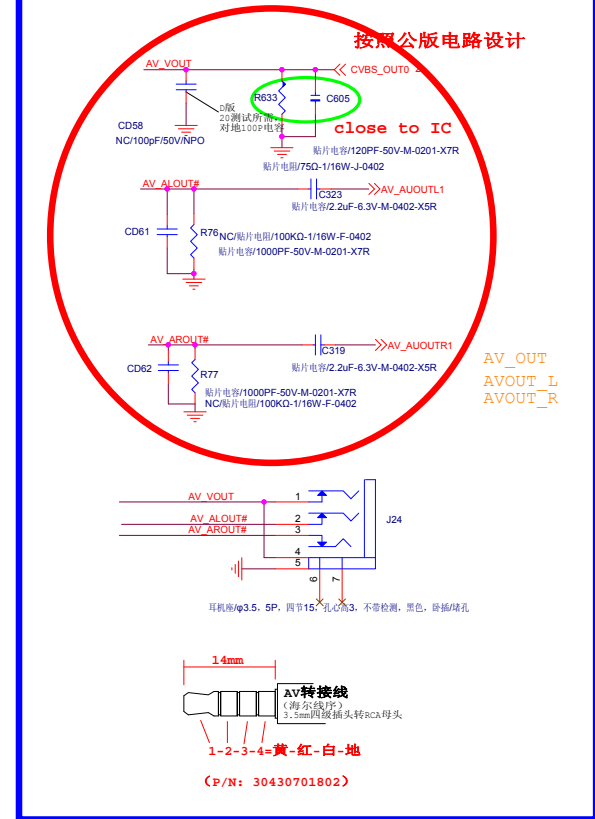
Optical Output



Audio Out mute



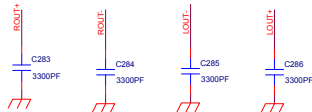
~~按照公版电路设计~~



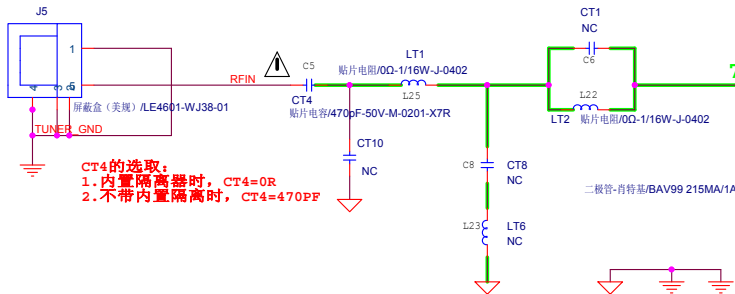
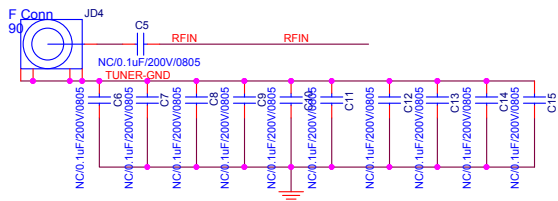
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AV			
Size	Document Number		Rev
Customer	MSD35531-YL01-01		A
Date:	Friday, December 29, 2017	Sheet	6 of 10



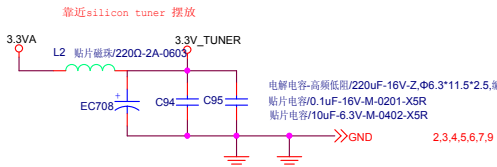
Head Phone	
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Title				
MSD3643GSA				
Size	Document Number			Rev
Custom	Change list			1.0
Date:	Friday, December 29, 2017	Sheet	7 of 9	

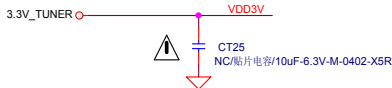


Application	
DTMB (S11<-8)	LT4=G21005D102CTF, LT3=68nH, CT4=470pF, LT1=6.8nH, CT8=LT6=CT1=NC, LT2=0R, CT10=1.8PF
ATV only, ATSC, ISDBT (S11>-8)	LT4=270nH, LT3=39nH, CT4=470pF, LT1=0R, CT8=LT6=CT1=NC, LT2=0R, CT10=NC.
DVB-T/T2 (with S1 filter for EN55020)	LT4=LT6=LT2=270nH, LT3=27nH, CT4=470pF, LT1=6.8nH, CT8=CT1=120pF, CT10=1.8PF.

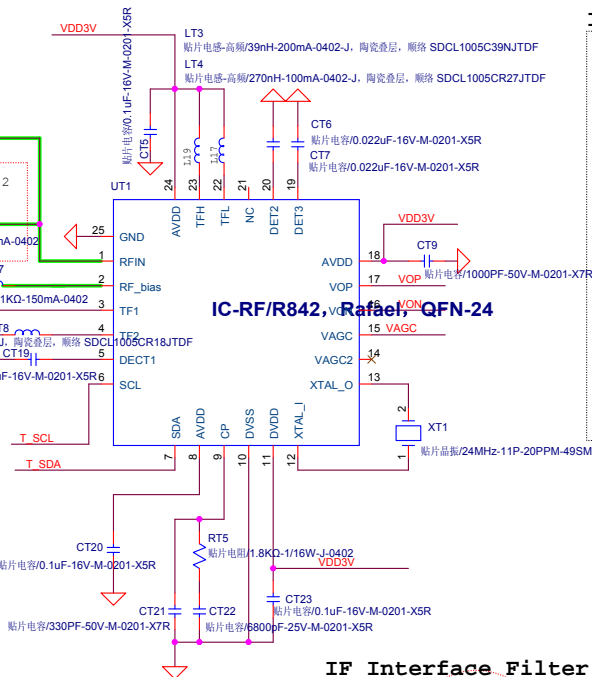


供电范围: 3.13~3.47V
实测电流: 240mA

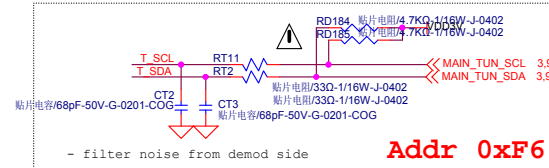
Bead (L21):
1k@100M &
400ohm@400M, 300mA



- (1) +VDD3V input voltage tolerance must be under +-5%
- (2) +VDD3V input ripple must be under 30mVpp
- (3) Using LDO for +VDD3V is recommended



I2C Interface Filter



- filter noise from demod side

Addr 0xF6

IFAGC Circuit

REFAR方案, AGC采用电流源输出, 电阻的不易过大. 其他方案, 可采用参考设计要求的10k.

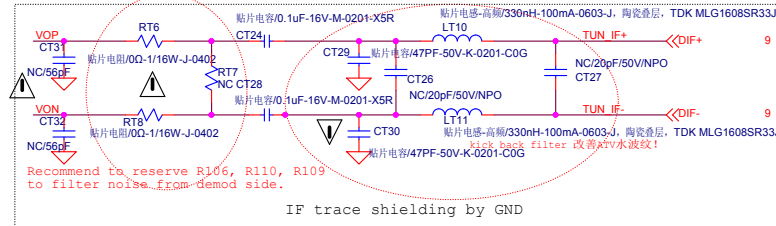


- R103 and R106 are related to Demod side's IFAGC design. Sometime need to fine tune for different Demod.
- Following IFAGC TBD table is common suggestion.

IFAGC TBD table	
Open drain	R103=100R
Push Pull	R103=10KR

AGND << AGND 2,3,4,5,6,7,9
GND << GND 2,3,4,5,6,7,9

IF Interface Filter

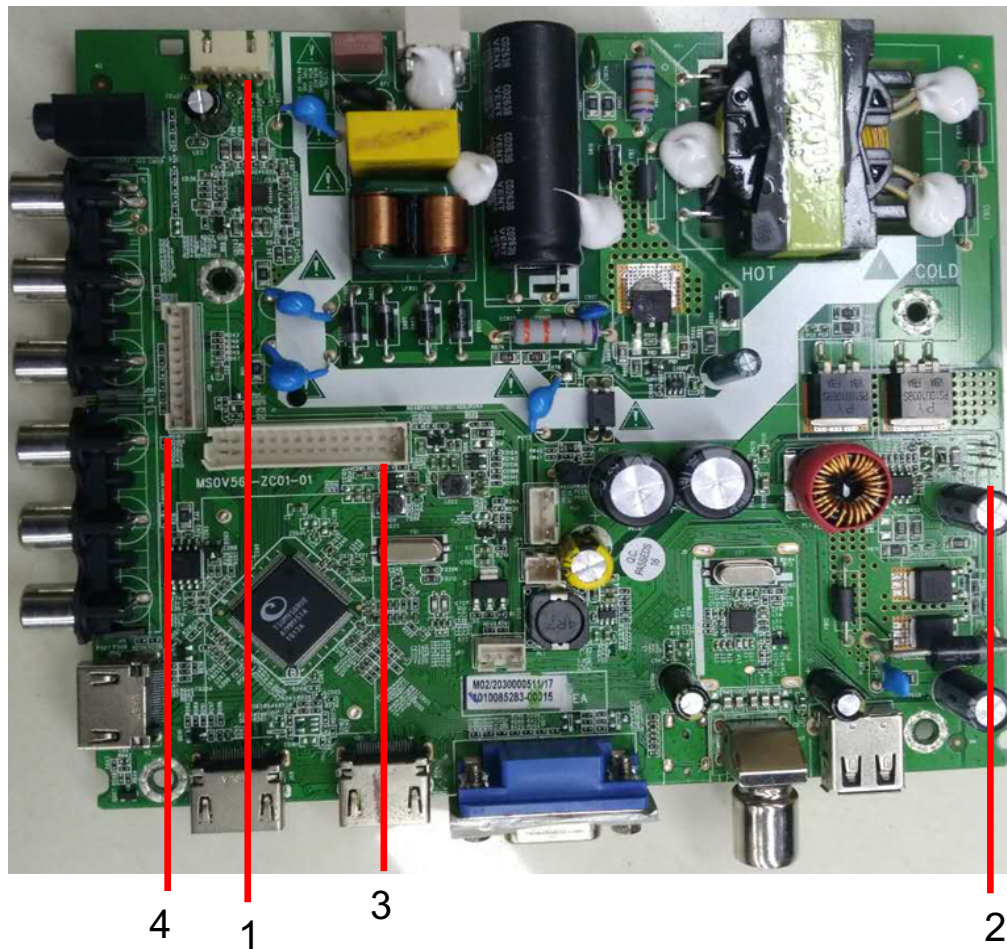


Recommend to reserve R106, R110, R109 to filter noise from demod side.

IF trace shielding by GND

Title			
Tuner			
Size	Document Number	Rev	
Custom	MSD35531-YL01-01	<RevCode>	
Date:	Friday, December 29, 2017	Sheet	10 of 10













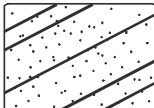



7-3 .Wiring Connection Diagram



NO.Name	
1	Connection Wire(For Speaker)
2	Connection Wire(Power For Panel)
3	LVDS Wire
4	Connection Wire(For Remote and Keyboard)

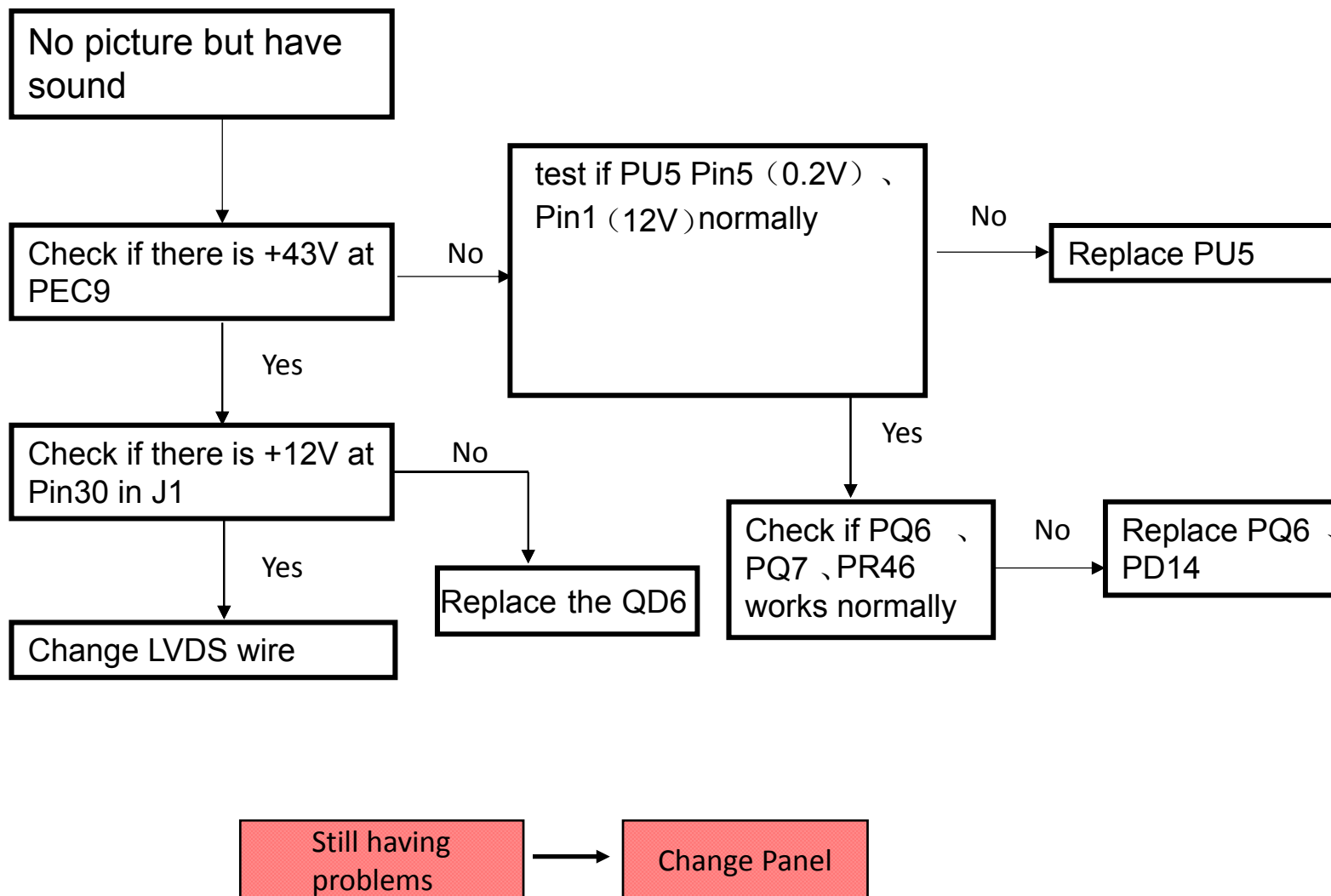
9. Trouble shooting

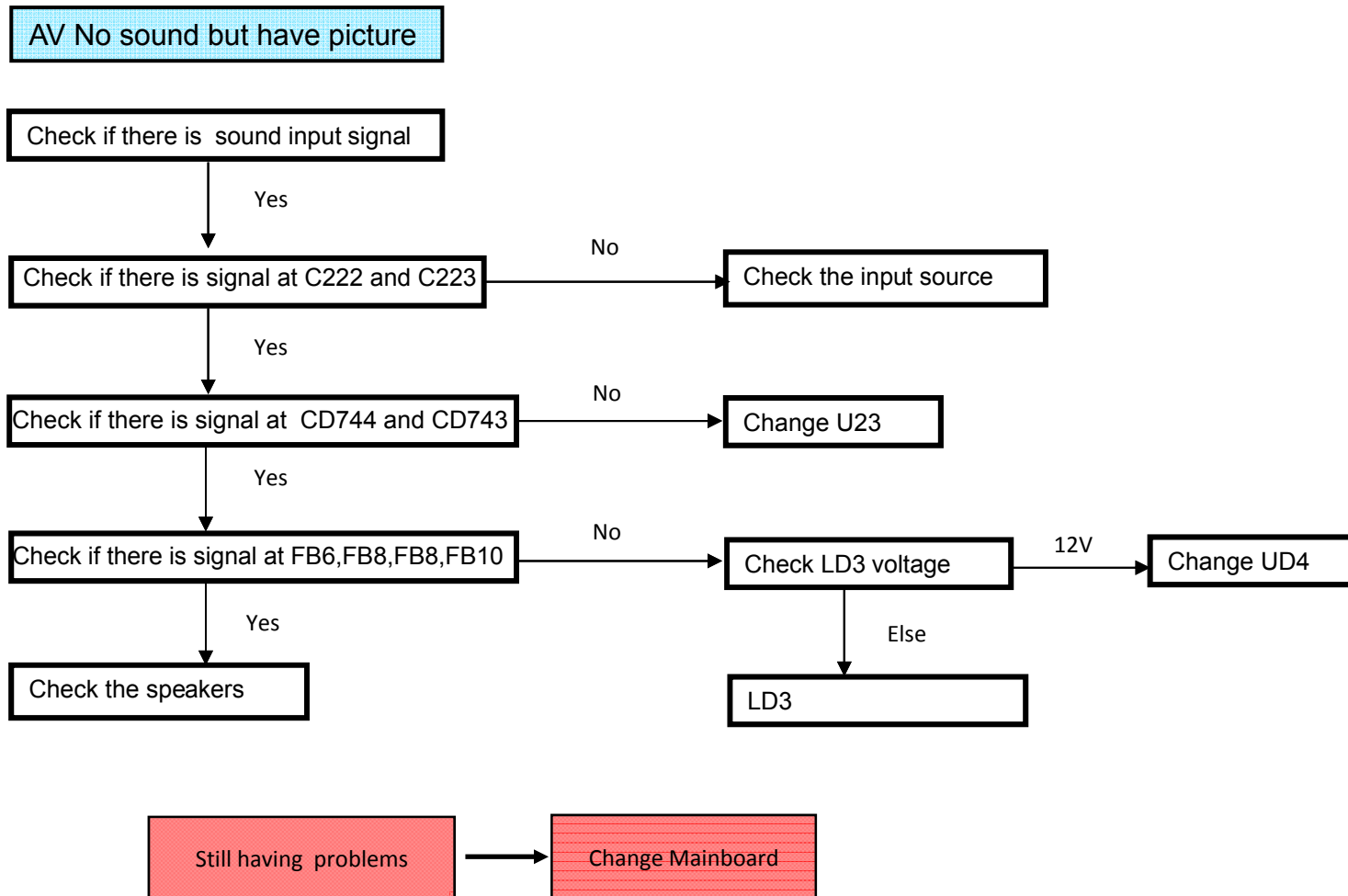
9-1. Simple check

Trouble phenomenon		Inspection
Picture	Audio	
 Snow	 Noise	antenna position, direction or connection
 Ghost	 Normal audio	antenna position, direction or connection
 Interfere	 Noise	electronic equipment, car/ motorcycle, fluorescent light
 Normal Picture	 Mute	Volume (inspect whether the mute function on the remote control are started, or audio system are correct or not)
 No picture	 Mute	Power cord is not inserted Power switch is not opened Contrast and brightness/volume setup Press standby key on the remote control for inspecting
 No color	 Normal audio	color control
 Scramble	 Normal audio or weak	retune channel
 No color	 Noise	Audio system

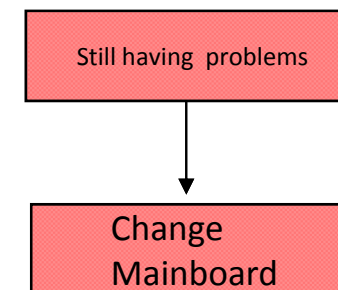
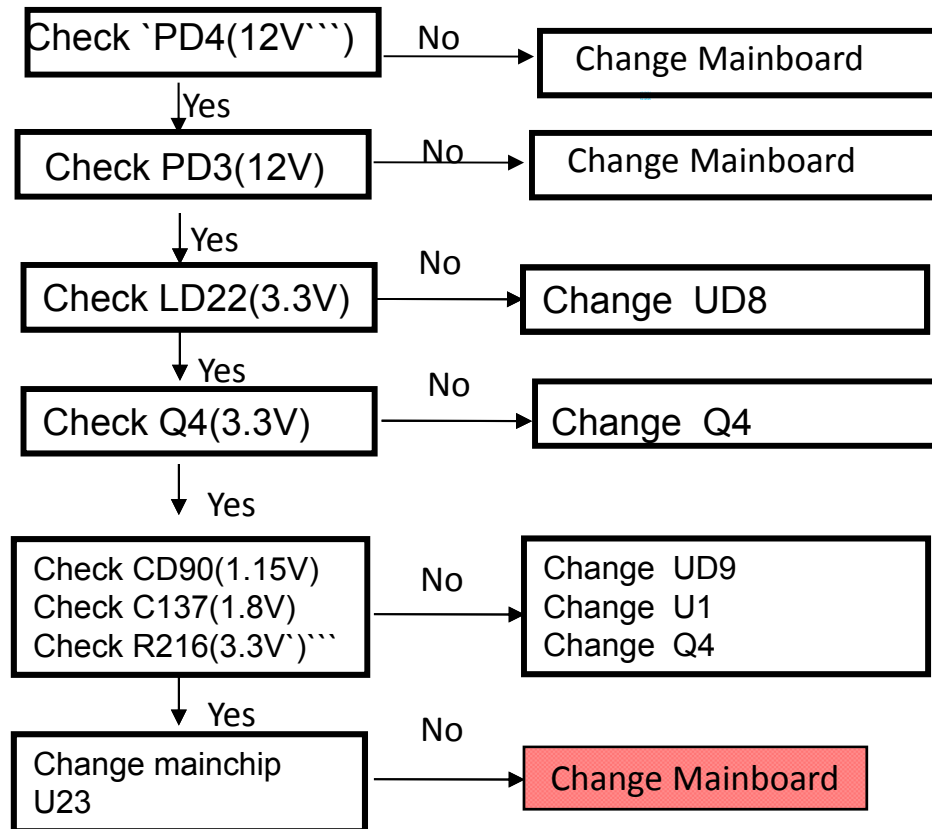
Special Explanation: The accessories such as remote control is not belongs to the guarantee.

9-2. Main board failure check

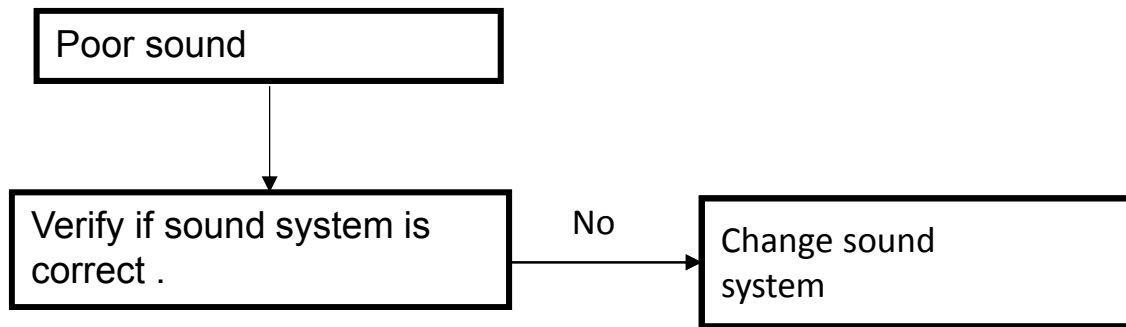




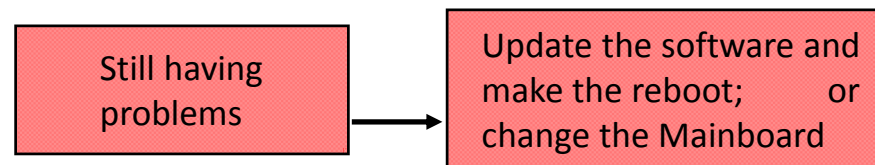
No sound No picture NO LED indicate



Poor sound



For ease of use, recommend that customer format the picture and sound settings in the automatic option.



No color for some channel program (black and white)

No color for some channel program (black and white)

Verify if the same problem exists in other channels

No

Check out of picture and sound system of this channel

Yes

check out of picture and sound system

No

Change the channel to the right sound system (PAL-M/N NTSC-M)

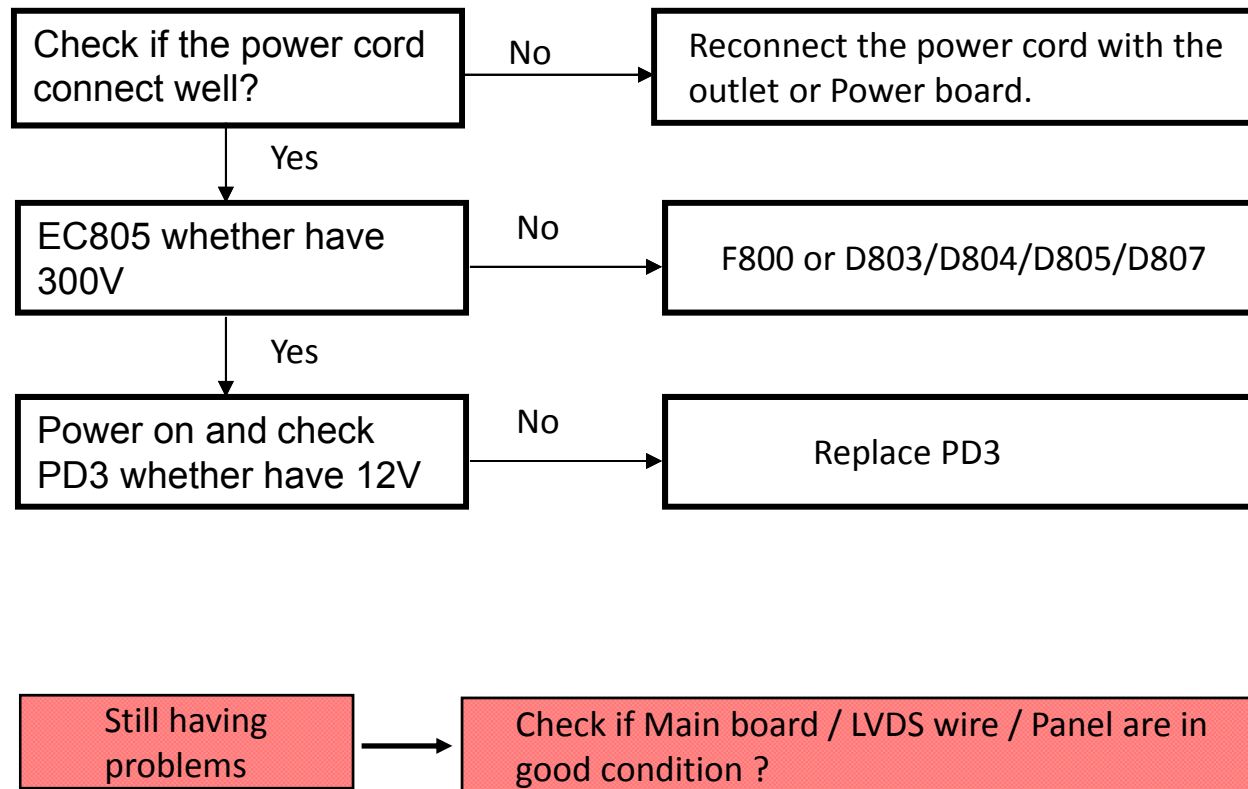
Yes

Refer to relative instructions in the Manual for color adjust

Still having problems

Update the software and make the reboot; or change the motherboard

How to know whether the Power board is broken?



Trouble Shooting



- Mainboard not work

- 1. check if there is +12V/+5V output on the power board
- 2. Verify if the DC/DC convertors have the right output (5V, 3.3V, 1.8V, 1.15V)
- 3. Verify if the Mainchip (MSV56), AudioAMP...solder well;
- 4. Verify if the U204) has the right software and work well;
- 5. Verify if the YS1 (Crystal) has the right frequency

- ❖ Panel not work

- ❖ 1. check if the voltage input and output of voltage boost IC of the backlight is OK.
- ❖ 2. Verify if the Mainboard output the right On/Off signal to power board;
- ❖ 3. Verify if the Mainboard output the LVDS signal to panel T-con board
- ❖ 4. Verify if the software is the right version of this model.
- ❖ 5. Change the LVDS wire to check if it's broken.

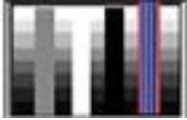

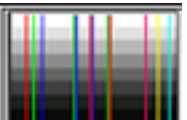

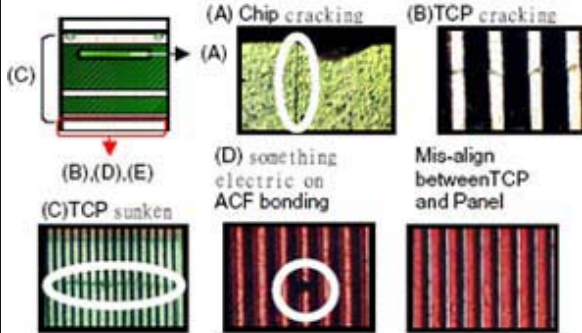


Trouble Shooting


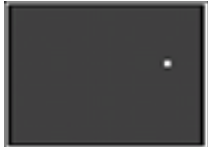
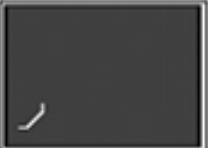


❖ Power board not work

- ❖ 1. Verify if the power cord connect well?
- 2. check if +5Vstandby of the power board part is functioning normally;
- 3. Check if voltage of the POWER ON/OFF of the power board part is on the high level voltage
- 4. +12V/+5V output ;check if there is +12V/+5V output on the power board.
- 5. Check if Main board / LVDS wire / Panel are in good condition ?





9-3. Pannel failure

Failure Mode





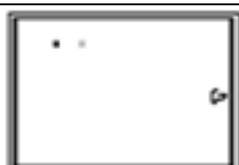
Part	Name	Description	Phenomena	Failure cause
TCP	V B/D	Vertical bar		Block Defect :TCP cracking or cracking Dim or L/D :TCP Sunken :TCP lead cracking :ACF bonding short :Awful environment and something electric enter into LCD :Mis-align between TCP and Panel :Panel failure :TCP failure
	V Dim	Vertal gray line		
	V L/D	Vertical color line(light or dark forever)		
	H B/D	Horizontal bar		
	H Dim	Horizontal gary line		
	H L/D	Horizontal line(light or dark forever)		

Part	Name	Description	Phenomena	Failure cause
Panel or Polarizer	Dot Defect	Bright dot dark dot in pannel		Incoming Inspection Standard
	Polarizer Bubble	Bladder in Polarizer		Bladder between Polarizer and top glass
	Polarizer Scratch	Polarizer Scratch		Tine or rigidity arose
	F / M inside Polarizer	Eyewinker inside Polarizer		Eyewinker inside Polarizer
Circuit	Abnormal Display	Abnormal Display		1.Chip lose action 2.IC ahort or jointiog bad 3.Pannel and vsc connect bad
	Flashing	Bright and dark display alternately		

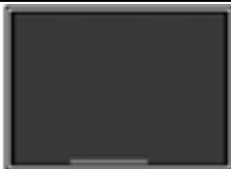

Failure Mode

Part	Name	Description	Phenomena	Failure cause
Circuit	White Screen	B/L normal, only white screen display		Maybe caused by surge current and EDS
	Black Screen	B/L normal, only Black screen display		
	Flicker	Crosstalk		LCD Vcom imbalance
	Abnormal Color	Only color abnormal		Capacitance improper bring crosstalk inside LCD pannel
	Abnormal Color	Only color abnormal		1.Chip lose action 2.IC short or jointment bad 3.Pannel and vsc connect bad

Failure Mode

Part	Name	Description	Phenomena	Failure cause
	Mechanical Noise	When turn panel, appear cacophony		Caused by Mechanical noise of backlight unit
	Ripple	Connectric circle		Caused by between mechanism and pannel
	B/L off	B/L lose action		*Connect badness between wire and electrode
	B/L dark	B/L brightness darker than normal		*Connect badness Short between wire and electrode
	B/L wire damaged	B/L wire damaged		Operation abnormal or systemic noise
	B/L wire open	Without backlight		Operation abnormal or systemic noise
	B/L shut down	B/L shutdown in sometime		Short between lamp housing and wire, Because consume power too much
	F/M	F/M in B/L , white, balck Rotundity or wirelike		F/M in B/L unit

Failure Mode

Part	Name	Description	Phenomena	Failure cause
Mechanical or B/L	Light leakage	Brightness at bottom of LCM brighter than normal		B/L unit badness
	Uniformity	B/L brightness asymmetric		Sheet in B/L unit is uneven
	Mount hole	Lack screw or screw damage		*Lack screw Screw damage

Sincere Forever



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266101, Qingdao, China
<http://www.haier.com>