

ABS730X service manual

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Chapter One About Maintenance

1.1 Safety precautions

1.1.1 Power supply

When maintenance personnel are repairing DVD players, he should pay special attention to the power board with 220V AC and 330V DC which will cause hurt and damage to persons!

1.1.2 Precautions for antistatic

Movement and friction will both bring static electricity which causes serious damages to integrated IC. Though static charge is little, when a limited quantity of electric charge is added to large-scale integrated IC, as the capacitance is very small in the meantime, now the integrated IC is very much easy to be struck through by static electricity or the performance will decrease. Thus static electricity prevention is of extraordinary importance. The following are several measures to prevent static electricity:

1. Use a piece of electric conduction metal with the length of about 2 metres to insert into the earth, and Fetch the lead wire from the top of the surplus metal and connect to the required static electricity device. The length and depth of the metal embedded under the earth should be determined according to the wettability of the local soil. For humid places, it may be shorter, and longer and deeper for dry places. If possible, it can be distributed and layed in terms of “#” shape.

2. On operating table-board, the antistatic table cushion should be covered and grounded.

3. All devices and equipments should be placed on the antistatic table cushion and grounded.

4. Maintenance personnel should wear antistatic wrist ring which should be grounded.

5. Places around the operating position should also be covered with electric conduction cushion or Painted with antistatic paint.

1.1.3 Precautions for laser head

1. Do not stare at laser head directly, for laser emission will occur when laser head is working, which will Hurt your eyes!

2. Do not use wiping water or alcohol to clean laser head, and you may use cotton swab.

1.1.4 About placement position

1. Never place DVD player in positions with high temperature and humidity.
2. Avoid placing near high magnetic fields, such as loudspeaker or magnet.
3. Positions for placement should be stable and secure.

1.2 Maintenance method

1.2.1 Visualized method

Directly view whether abnormalities of collision, lack of element, joint welding, shedding welding, rosin joint, copper foil turning up, lead wire disconnection and elements burning up among pins of elements appear. Check power supply of the machine and then use hands to touch the casing of part of elements and check whether they are hot to judge the trouble spot. You should pay more attention when using this method to check in high voltage parts.

1.2.2 Electric resistance method

Set the multimeter in resistance position and test whether the numerical value of resistance of each point in the circuit has difference from the normal value to judge the trouble spot. But in the circuit the tested numerical value of resistance is not accurate, and the tested numerical value of integrated IC's pins can only be used for reference, so the elements should be broken down for test.

1.2.3 Voltage method

Voltage method is relatively convenient, quick and accurate. Set the multimeter in voltage position and test power supply voltage of the player and voltage of a certain point to judge the trouble spot according to the tested voltage variation.

1.2.4 Current method

Set the multimeter in current position and test current of the player of a certain point to judge the trouble spot. But when testing in current method, the multimeter should be series connected in the circuit, which makes this method too trivial and troublesome, so it is less frequently used in reality.

1.2.5 Cutting method

Cutting method should be combined with electric resistance method and voltage method to use. This method is mainly used in phenomena of short circuit and current leakage of the circuit. When cutting the input terminal voltage of a certain level, if voltage of the player rises again, it means that the trouble lies in this level.

1.2.6 Element substitution method

When some elements cannot be judged good or bad, substitution method may be adopted directly.

1.2.7 Comparison method

A same good PC board is usually used to test the correct voltage and waveform. Compared these data with those tested through fault PC board, the cause of troubles may be found.

Through the above maintenance method, theoretical knowledge and maintenance experience, all difficulties and troubles will be readily solved.

1.3 Required device for maintenance

- ◆ Digital oscillograph ($\geq 100\text{MHz}$)
- ◆ TV set
- ◆ SMD rework station
- ◆ Multimeter
- ◆ Soldering iron
- ◆ Pointed-nose pincers
- ◆ Cutting nippers
- ◆ Forceps
- ◆ Electric screw driver
- ◆ Terminal connecting cord
- ◆ Headphone
- ◆ Microphone

Chapter Two Functions and Operation Instructions

2.1 Features

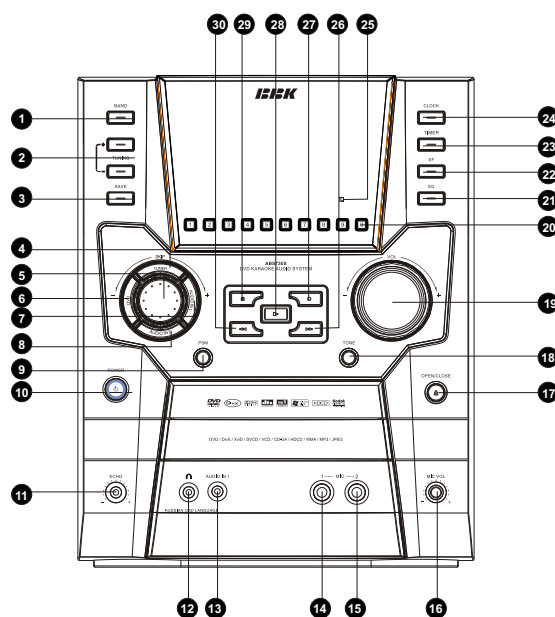
- ◆ Song dedication by singers, words or numbers to full enjoy the pleasure of personalized operations.*
- ◆ All kinds of singing methods such as song dedication, open challenge and dual meet to offer you wider performance stage.*
- ◆ Automatic scoring function to serve as an entertainment co-worker.
- ◆ Compatible MPEG 4 format discs to produce wonderful pictures
- ◆ Realsonic super sound effect.
- ◆ Progressive scanning output to produce steadier and clearer pictures without flicker.
- ◆ Built-in Dolby Digital/DTS decoder, separate 2CH outputs
- ◆ Optical and coaxial output for Dolby Digital, DTS and LPCM digital audio.
- ◆ Computer-style pop-up menu to make tour operating more convenient and comfortable.
- ◆ Component video output to produce clearer pictures.
- ◆ Fully compatible with DVD, SVCD, VCD and CD, smoothly read MP3, CD-R/RW and Kodak Picture CD.
- ◆ Multiple dubbings, angles and subtitles for selection.
- ◆ Parental lock function to prevent children from watching discs with unsuitable contents.
- ◆ Dust-shielded design.
- ◆ FM/AM digital tuning function, capable of storing (memorizing) 20 FM/AM broadcasting stations respectively
- ◆ Real-time clock (hour, minute, second) display, timing power on/off function
- ◆ 2-way separate audio input function
- ◆ Built-in digital power amplifier

*It is effective to KVD disc only.

Super compatible with SVCD, VCD, CD, Mp3, HDCD and Kodak Picture CD, etc.

2.2 Control Button Locations and Explanations

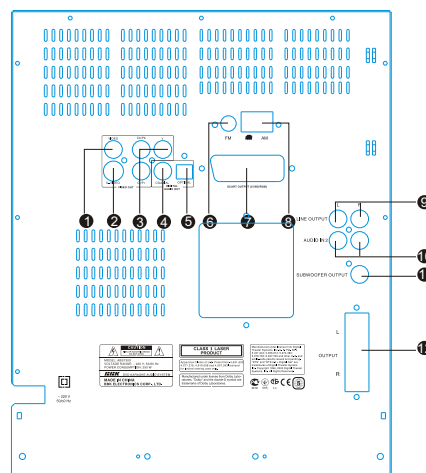
2.2.1 Front Panel Illustration



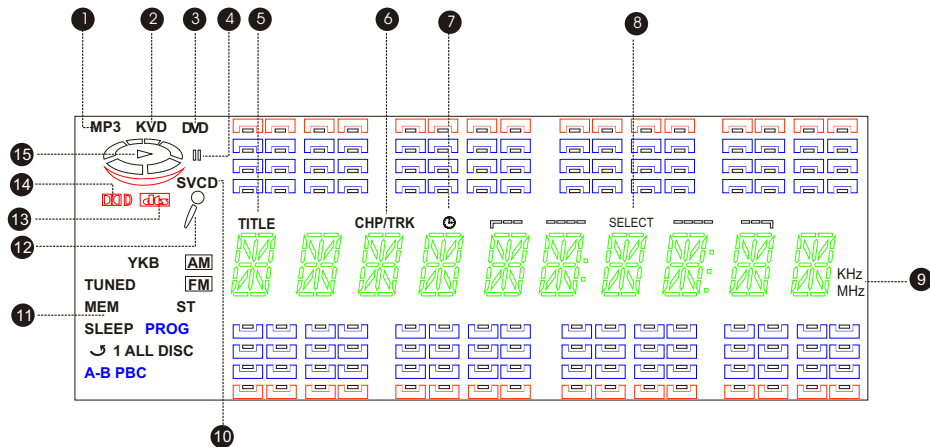
- | | | |
|---------------------|----------------------|-----------------|
| ❶ BAND switch | ❶❶ Echo button | ❶❶ EQ button |
| ❷ TUNING+ - | ❶❷ Headphone jack | ❶❷ SF button |
| ❸ SAVE button | ❶❸ Audio in 1 | ❶❸ TIMER button |
| ❹ TUNER button | ❶❹ MIC 1 jack | ❶❹ CLOCK button |
| ❺ SKIP knob | ❶❺ MIC 2 jack | ❶❺ IR sensor |
| ❻ DVD button | ❶❻ MIC VOL knob | ❶❻ FW D button |
| ❼ AUDIO IN 1 button | ❶❼ OPEN/CLOSE button | ❶❼ STOP button |
| ❽ AUDIO IN 2 button | ❶❽ TONE button | ❶❽ PLAY button |
| ❾ PSM button | ❶❾ VOL +/- button | ❶❾ PAUSE button |
| ❿ Power switch | ❶❿ Number buttons | ❶❿ REW button |

2.2.2 Rear Panel Illustration

- ❶ Video Out jack
- ❷ S-Video
- ❸ Video Component/Y Pb Pr Out jacks
- ❹ Digital Audio Coaxial Out jack
- ❺ Digital Audio Optical Out jack
- ❻ FM Antenna jack
- ❼ SCART out jack
- ❽ AM Antenna jack
- ❾ Line output
- ❿ Audio input
- ❶❶ Subwoofer output
- ❶❷ Power amplifier output

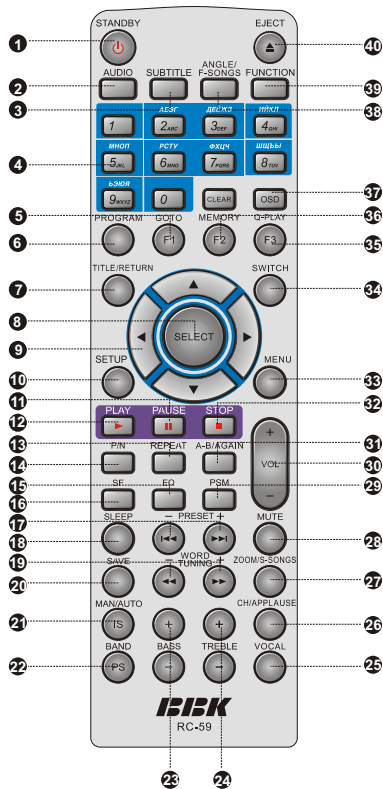


2.2.3 VFD Display Window Illustration



- | | | |
|-------------------|------------------------|-----------------------------|
| ① Mp3 disc | ⑥ CHP/TRK indicator | ⑩ SVCD disc |
| ② KVD disc | ⑦ Timing power-on | ⑪ State illustration |
| ③ DVD disc | ⑧ Select track | ⑫ Microphone |
| ④ Pause | ⑨ Radio frequency unit | ⑬ DTS |
| ⑤ Title indicator | indicator | ⑭ DOLBY DIGITAL |
| | | ⑮ Playback status indicator |

2.2.4 Remote Control illustration



- ① STANDBY Button
Press once to stand by, Press twice to play.
- ② AUDIO Button
Change the audio language or audio channel.
- ③ SUBTITLE Button
Change subtitle language.
- ④ NUMBER Button
Input numbers.
Input letters when playing KVD disc.
- ⑤ GOTO Button
Play from the desired location.
- ⑥ PROGRAM Button
Function Button F1.
Program playback.
- ⑦ TITLE/RETURN Button
DVD title menu/Return to the previous menu when playing VCD or KVD disc.
- ⑧ SELECT Button
- ⑨ CURSOR Buttons
- ⑩ SETUP Button
Function setup.
- ⑪ PAUSE Button
Pause play.
- ⑫ PLAY Button
Normal playback.
- ⑬ REPEAT Button
Repeat play.
- ⑭ P/N Button
Switch the TV system between PAL, NTSC and AUTO.
- ⑮ EQ Button
Adjusting equalization effects.
- ⑯ SF Button
Adjusting sound field effects.
- ⑰ PRESET Button
NEXT Button
Skip forward.
PREV Button
Skip backward.
- ⑱ SLEEP Button
Sleep timer function.

- ⑩ **WORD TUNING Button**
Word - button
Press to move down according the alphabet of the song name when playing KVD disc.
Word + button
Press to move up according the alphabet of the song name when playing KVD disc.
FWD Button
Fast forward play.
REV Button
Fast backward play.
- ⑪ **SAVE Button**
Stations saving button.
- ⑫ **MAN/AUTO Button**
Manual/automatic tuning.
IS Button
Switch video output to the interlacing mode.
- ⑬ **BAND Button**
FM/AM switch.
PS Button
Switch video to the progressive mode.
- ⑭ **BASS Button**
Adjust bass.
- ⑮ **TREBLE Button**
Adjust treble.
- ⑯ **VOCALB utton**
Switch auto partner when playing DVD, VCD Discs/Turn off or turn on the voice singing when Playing KVD songs with voice singing.
- ⑰ **CH/APPOUSE Button**
Switch channels of VCD disc/Capable of simulating applause when playing KVD disc.
- ⑱ **ZOOM/S-SONGS Button**
Zoom in the displayed frame/Selected songs.When Playing KVD disc.
- ⑲ **MUTE Button**
Press once to mute, twice to unmute.
- ⑳ **PSM Button**
PSM function
- ㉑ **VOLUME-**
Decrease volume.
- ㉒ **A-B/AGAIN Button**
Restart the select when playing KVD disc.
- ㉓ **STOP Button**
Stop playback.
- ㉔ **MENU Button**
Display DVD/KVD menu or open/close PBC.
- ㉕ **SWITCH Button**
Switch volume, rhythm, speed, tone and original vocal singing when playing KVD disc .
- ㉖ **Q-PLAY Button**
Skip the advertisement/warning and play DVD directly.
Function Button F3.
- ㉗ **MEM Button**
Save the playing point or jump to the saved point.
Function Button F2.
- ㉘ **OSD Button**
Display or hide disc information.
- ㉙ **ANGLE/F- SONGS Button**
1. When playing specially-made KVD disc songs,the currently played song may be collected into the favourite ones.
2. Switch angles when playing DVD disc and rotate pictures when playing JPEG disc.
- ㉚ **FUNCTION Button**
Switch between DVD player and tuner mode.
- ㉛ **EJECT Button**
Disc in or out.

2.2.5 Accessories

AUDIO/VIDEO CORD	1PCS
REMOTE CONTROL	1PCS
AAA SIZE BATTERIES	2PCS
WARRANTY CARD	1PCS
USER MANUAL	1PCS

2.3 BASIC OPERATION

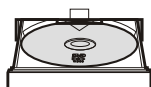
2.3.1 Playback



1.Press **STANDBY** switch to turn on the power supply.

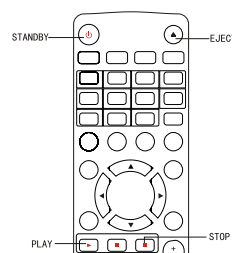
2.Press **EJECT** button.

- ◆ Disc tray ejects automatically, then place the Disc and the label side should face up.



3、 Press **EJECT** button again, disc tray retracts

- ◆ Playback automatically read disc information



4.Press **PLAY** button and playback automatically starts.

5.Press the **STOP** button to stop playing.

- ◆ Press the **STOP** button when playing a MP3 disc,this player enters the stop mode directly.

6.When finishing playback, press **POWER SWITCH** or **STANDBY** to enter the standby mode. Please pull out the plug from the power

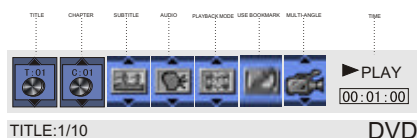
Source outlet if you do not intend to use this player for an extended period of time.

2.3.2 Screen Navigation Menu

You may know the currently played disc information through screen navigation menu, and also may operated the played contents conveniently. For the title, chapter, subtitle, audio playback mode (A-B, title repeat, chapter repeat, standard program playback, random playback), angle and time (title time, title elapsed time, chapter time, chapter elapsed time) information, etc. During disc playing, use left/right direction button to move cursor.

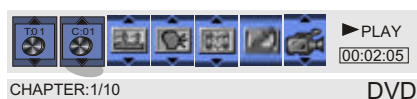
When the cursor stays in a certain icon, you may use up/down direction button to switch the displayed items in the icon. For instance, when playing DVD disc:

1. During normal playing, press OSD button and TV screen displays:



2. Press left/right direction button to select the desired item. Pressing up/down direction button may select the contents of this item upwards or downwards.

Eg 1: press left/right direction button to select “CHAPTER”. Pressing up/down direction button may selected the desired contents and the TV screen displays:



Eg 2: press left/right direction button to move the cursor to time display position and press

Up/down direction button to switch the displayed time. Press number buttons to input the desired time to realize time display and search function.

3. Press OSD button to exit screen navigation menu interface.

NOTE

- ◆ Only when playing disc may you use screen navigation menu to operate.
- ◆ Only when disc includes the corresponding information may you select the corresponding function to play.
- ◆ When the icon displays grey, it indicates that the discs does not include the information that this function needs.

2.3.3 Progressive/Interlacing Output Mode



- ◆ You may adjust the video output mode of this player according to the TV setup.

1. Press PS button for about three seconds, this player will switch video to YPbPr mode of progressive output.
2. Press IS button for about three seconds, this player will switch video to interlacing output mode.

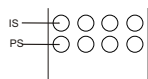
- ◆ You may select S-VIDEO or YUV output mode if you turn on interlacing video output in the setup menu.

NOTES

- ◆ Please change your TV setup at the same time, and connect according to the indication of “System Connection”.
- ◆ Composite video has output when in whatever output mode.
- ◆ If you find that the display screen works normally but has no audio and video output after

Power on or above-mentioned operations, please make sure the correspondence of this player's output mode and TV set's video input mode.

- ◆ The progressive scanning output of this player does not support the old 100Hz colour TV set.
- ◆ The selection items of interlacing video output can only be adjusted in interlacing mode.
- ◆ Interlacing mode and progressive mode cannot be switched when playing disc, but can be switched when in stop or no disc state.

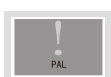


2.3.4 System Selection



- ◆ Set the system of this player to make it corresponding with that of the TV set according to the color system of the connected TV set.

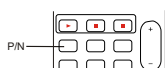
1.If the TV system is PAL, press P/N button to select PAL system and TV screen displays:



2.If the TV system is NTSC, press P/N button to select NTSC system and TV screen displays:



3.When using multi-system TV set, press P/N button to select AUTO system and TV screen



NOTE

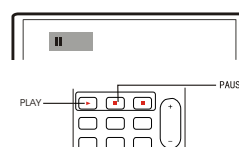
- ◆ When playing in different systems, part of the functions of some discs cannot realize perfectly in a certain system.
- ◆ You are suggested to set the system of TV set and this player to “AUTO”.
- ◆ The system cannot be switched when playing discs, and can be switched in stop or no disc state.

2.3.5 Pause/Step Playback



1.Press PAUSE button when in playing state.

- ◆ Pause playing and TV screen displays:



2.Press PLAY button to restore playing.

3.When in pause playing to DVD, VCD discs, pressing PAUSE button may go forward step by step; and pressing FF button may forward play slowly.

4.To DVD disc, pressing REV button may backward play slowly when in pause playing; and pressing REV button may goes backward step by step when goes forward step by step.

NOTE

- ◆ If you set screen saver in “ON”, when this player does not play or in static picture state, it will enter screen saver after 2.5 minutes.

2.3.6 Volume Control



1.Press VOLUME button on TV set or Amplifier to adjust volume.



2. Press [TONE] button on the front panel control to select bass, treble, main volume or left/right channel.

3. Press VOLUME button on the remote control of this unit.

◆ Press VOL+ button to increase volume.

◆ Press VOL- button to decrease volume.

4. Rotate volume adjustment knob on the front panel.

◆ Rotate rightwards to increase volume

◆ Rotate leftwards to decrease volume

◆ The adjustment range of main volume is 0 to 40

NOTE

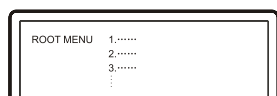
◆ Please try to press VOL+ button when this player has no sound output. Volume of line out and scart out cannot be adjusted.

2.3.7 DVD Menu Playback

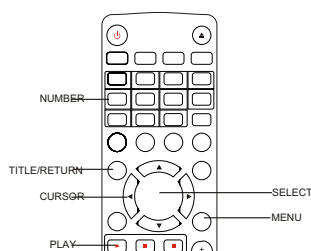


◆ Some DVD discs are made with title menu or chapter menu function.

1. Press MENU button to display menu on TV screen for selection, operate according to the hint of menu and Press NUMBER buttons to select.



2. Press CURSOR button to select track you desired, then Press PLAY button or SELECT button.



NOTES

◆ Press TITLE button to return to title menu.

◆ Press MENU button to return to initial menu.

◆ The return location varies with discs.

2.3.8 PBC Playback



◆ Enjoy PBC alternate function when playing Super VCD, VCD2.0 disc with PBC function.

For example: play VCD2.0 disc.

1. Main menu displays on TV screen A:



◆ Press NUMBER button to select. For example: Select main menu 1. The TV screen as show in B:



2. Submenu displays on TV screen after enter into main menu 1.



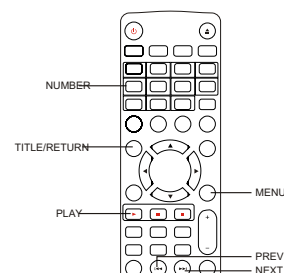
3. Press NEXT or PREV button to turn to adjacent page.

4. Press NUMBER buttons to select in submenu. For instance, Press number 5, the player begin playback with track 5.



5. Press RETURN button to submenu. Press again to return to main menu.

6. Press the MENU button to shut off the PBC and start the sequence playback function.



2.3.9 Direct Selection Playback Function by Number Buttons

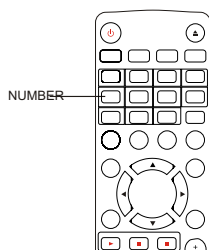


1. After placing disc, finishing disc read and entering normal playback, pressing number buttons may directly select track to play.

- ◆ If track number less than 10, press number buttons 1 to 9 to select directly. For instance, select the 7th track:



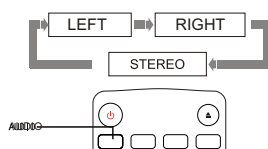
- ◆ If track number equals to or more than 10, press tens digit number firstly and then numbers in ones places. For instance, select the 16th track:



2.3.10 Language /AUDIO Channel Selection



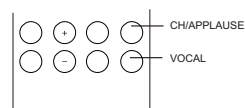
1. When playing discs, you may press [AUDIO] button to select output means of stereo, left channel and right channel, etc. For instance, to VCD disc, left channel records dubbings, right channel records songs, so you may select left channel to enjoy dubbings. VCD, CD discs:



2. For DVD with multiple languages, when playing, you may press [AUDIO] button to set your desired language in audio items of screen navigation menu.

NOTE

- ◆ Language type varies with different disc recordings. When playing some DVD discs, language switch may cause to play the current track from the initial one.
- ◆ As for VCD story discs with dual-language, you may press CH/APPLAUSE button to select the desired language.
- ◆ When playing some DVD discs, pressing AUDIO button to switch language may cause to play the current track from the first one.



2.3.11 MUTE



- ◆ Press MUTE button in playback mode to switch off the audio output.

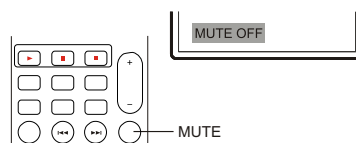
1. MUTE

- ◆ Press the MUTE button and the word of MUTE is displayed on TV screen.



2. Resume audio output.

- ◆ Press MUTE button again to unmute.



NOTE

- ◆ Press MUTE button when it is no audio output.

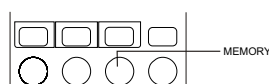
2.3.12 Memory



- 1.If you cannot continue enjoying disc, you may press MEM button to save the currently played time point and then turn off power.
- 2.During next time disc reading, when the player recognises the disc is the one saved last time, it will remind you this disc has been saved. Now you may press MEM button and the player skips to the time point saved last time to play. Press other buttons and the player will play from the beginning. If you do not press any button during a period of time, the player will automatically play from the beginning.

NOTE

- ◆ This player may save three for DVD discs, and one for SVCD and VCD disc. When saving new discs, the former saved disc information will be cleared.



2.3.13 Direct Playback



- 1.Press DIRECT PLAY button and the player plays discs directly.
- ◆ When playing story discs, the advertisement and warnings may be skipped and play the movie directly.

NOTE

- ◆ According to different disc quality and recording state, direct play function may invalid to some discs.



2.3.14 Sound Field / EQ Adjustment



When playing discs, you may adjust sound field or EQ mode according to your own likes to get different sound effects.

- 1.Pres SF button to adjust sound field mode.

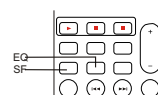
- ◆ The optional settings: Normal、Vocal Concert、Training Room、Living Room、Studio、Odeum、Square and Opera House.

- 2.Press EQ button to adjust EQ mode.

- ◆ Optional settings: Normal、Rock、Pop、Live、Dance、Techno、Classice、Soft and User Setting.
- ◆ You may set personalised EQ mode in "User Equalizer" of the setup menu. Please refer to page 28 for details.

NOTE

When playing some discs, selecting some EQ or sound field modes may produce some uncomfortable sounds. So please select other EQ or sound field modes to enjoy.



2.3.15 Repeat Playback



- ◆ The repeat function enables a title/chapter/track/disc repeated.
- Each Press of REPEAT button displays on TV screen:

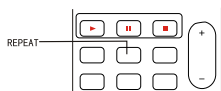
- ◆ DVD disc:



NOTE

- ◆ The repeat playback mode is related to disc content.

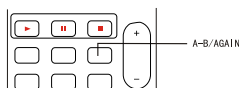
- ◆ The repeat playback can be performed to Super VCD or VCD2.0 only when the PBC is off and to VCD 1.0 or CD whether the PBC is on or off.



2.3.16 Repeat the Selected Section



- ◆ When playing discs, you may press [A-B] button to enjoy your desired segment of content repeatedly.
1. When playing normally, press [A-B] button and screen will display navigation menu, playback mode icon is lightened, now “LAY MODE: STANDARD” display under menu. Press [A-B] button again in beginning point (point A) of the segment that you want to play repeatedly and now “repeat mode: a-b press ok to set B point” display, waiting for you to confirm the ending point (point B).
 2. When playing normally, if navigation menu displays “repeat mode: a-b press ok to set B point” (if navigation menu has disappeared, you may press [A-B] button To display it), press [A-B] button or [SELECT] button to select the ending point (point B) of the segment that you want to play repeatedly. The unit returns to point A automatically, and starts to play the selected segment (A-B) repeatedly.
 3. Press [A-B] button to switch to PLAY MODE: STANDARD.
- The unit resumes normal playback.



NOTE

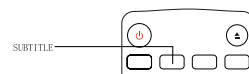
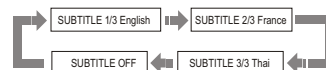
- ◆ A-B repeat function may be invalid to some discs.
- ◆ A-B repeat function is invalid when in menu playback state.

2.3.17 Subtitle Selection



1. Press SUBTITLE button.

- ◆ When playing DVD discs recorded with subtitles of several languages, it is possible to select subtitle of different languages.
- ◆ Each press of SUBTITLE button change one subtitle language, and the TV set screen displays.



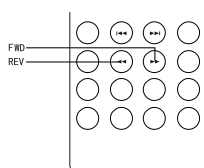
- ◆ The number of the selected subtitle languages is up to 32 for DVD disc, but it also depends on the contents of the disc.

2.3.18 Fast Playback



- ◆ You can select forward, backward playback to search certain point you desire when playback.
1. Press FWD button and the player begins fast playback.
- ◆ Press FWD button once, and the playback speed of disc picks up in turn.
 - ◆ This player may realize 5-speed fast forward function.
2. Press REV button and the player begins fast playback.
- ◆ Press REV button once, and the playback speed of disc picks up in turn.

- ◆ This player may realize 5-speed fast backward function.



2.3.19 ck from The Desired Position



During the course of playing, press GOTO or OSD button to pop up the screen navigation menu. You can search the desired position to start playing according to the corresponding indication.

2.3.20 Zooming the Displayed



- ◆ You may magnify to enjoy a certain dynamic of static frame.

1. When playing discs, press ZOOM button and TV screen displays:



- ◆ The frame is magnified.

2. Press ZOOM button again and TV screen displays:



- ◆ The frame is magnified again.

3. Press ZOOM button once again and TV screen displays:

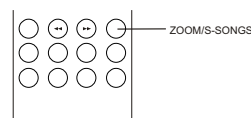


- ◆ The frame is magnified for the third time.

4. Press ZOOM button for the fourth time and TV screen displays:



5. Press ZOOM button again and the frame restores to normal size.



NOTE

This player has 5-level zooming at most.

Because of different video signal sources, some pictures are less than 5-level zooming.

2.3.21 Bookmark



- ◆ Bookmark function may mark a certain point of disc even when the disc is in the tray, and then directly returns to this point to play. This player supports to set 12 bookmarks.



- ◆ Set/Clear/Use Bookmark

1. When playing DVD disc, press OSD button to open screen navigation menu; move the cursor to the bookmark point and press SELECT button to open bookmark menu.

2. Set bookmark: Select the bookmark icon which is not set in the bookmark menu. When the disc plays to the point that you want to set, press SELECT button.

3. Clear bookmark: If you want to clear bookmark, select the wastebin on the left side of the bookmark and press SELECT button.

4. Use bookmark: If you want to play at a certain point of the bookmark, please select the play icon on the left side of the bookmark and press SELECT button.

5. Press OSD button to close bookmark menu.

◆ If the disc is out or the player power off, the bookmark will be cleared automatically.

2.3.22 Program Playback



1. When playing DVD disc, press PROGRAM button and the title selection program interface appears. Here you may press UP/DOWN direction button to move cursor to select a certain title, and press SELECT button to program play all contents of this title. You may also press right direction button to open the title selection chapter, and press SELECT button to program the selected chapter. After program finishes, press PROGRAM button into program playback. During the course of program, you may press CLEAR button to clear the playback contents

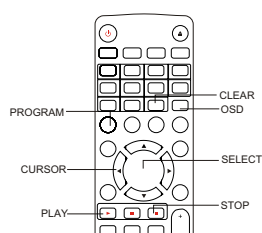
That you programmed from back to front.

2. You may program to each track of disc as for SVCD, CD and VCD discs. The program playback is available only when PBC is off to SVCD and VCD discs.

3. You may program to the Mp3 file or file directory as for Mp3 disc.

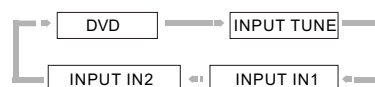
4. During the course of program playback, you may press OSD button to open the screen navigation operation menu and switch other playback mode that you desire in playback mode.

◆ If the disc is out or the player power off, the program will be cleared automatically.



2.3.23 Function switch

1. Pressing [FUNCTION] may switch in 3 modes of DVD, tuning and external input.



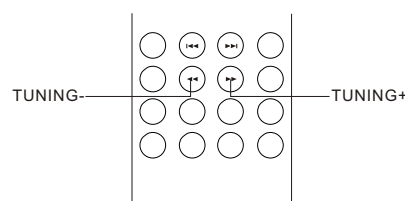
2. In the middle part of left side of the unit's front panel, there are 4 round buttons of [DVD], [TUNER], [AUDIO IN 1] and [AUDIO IN 2], and you may press the button directly to switch to the corresponding mode.

2.3.24 Radio reception enjoying

Before receiving radio stations, insert AM and FM antennae into "Am antenna input" port and "FM antenna input" port according to system connections in page 9.

1. Switch to tuning state according to the means in "Function switch", and press [BAND] button to select "FM" or "AM".

2. Manual tuning: press [TUNING+], [TUNING-] button or rotate the knob in the middle part of the left side of front panel, and the tuner increases/decreases upwards or downwards one frequency to search radio station.



3. Auto tuning: press [TUNING+] or [TUNING-] button on the front panel for two seconds, and the tuner will search radio station automatically upwards or downwards. When receiving radio station, the player stops searching, as shown in the figure, FM band searches a certain radio station. If you want to listen to the next radio station, please repeat the above operation.

4. During the course of auto tuning, pressing [MAN/AUTO] or [MAN/AUTO] button will stop tuning.
5. You can select “10K STEP” or “9K STEP” to search AM station. In AM state, pressing [PLAY] button may switch in “9K STEP” and “10K STEP”. But once you change the search step, you should search the AM station again.

2.3.25 Storage of radio station

This player may pre-store 20 FM and 20 AM radio stations. Pre-store radio station:

1. According to the above operations of tuning radio station, if you have searched a favorite radio station in AM frequency band (as in the figure) and want to store it, please press [SAVE] button. When screen displays “SAVE AM 0” press the corresponding number button of the position where you want to save, for instance 8, and you may save this radio station to the position of “8”.
For the position number more than 9, press two numbers continuously. Take “8” for instance, press and continuously.
2. If you want to save more radio stations, please repeat the above operations. When the number of the position where you want to save is more than 20, screen will indicate “ERROR” so please operate again. Listen to the saved radio station: If you want to listen to the saved radio station, please directly input the number of the position that the radio station is in. For instance, if you want to listen to the save radio station 8 input and continuously.

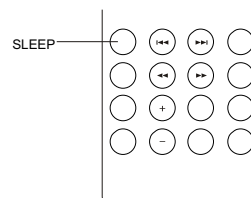
2.3.26 External audio input amplifying function

1. Connect audio output terminal of external signal to the corresponding “Audio line input” Terminal of this player according to the illustration of system connections (for instance, digital sound recorder, video recorder, DVD player, portable DVD player, tape unit, CD player and MP3 player, etc).
2. According to connections of “Audio line input” press “INPUT IN 1”, “INPUT IN 2” button on the front panel or [FUNCTION] button on the remote control to switch to INPUT IN 1 or INPUT IN 2 state, and now VFD screen on the front panel display as in the illustration:
3. When external signal source works normally and after the signal enters this player correctly, the external signal may be amplified, and the volume may also be adjusted through remote control.

2.3.27 Sleep power-off time setup

You may set sleep power-off time when the player works. When the sleep power-off time that you set is coming, the player will enter standby state automatically.

1. Press [SLEEP] button on the remote control.



Press [SLEEP] button each time to switch to a kind of sleep power-off state, and VFD screen on the front panel displays: SLEEP 15----» SLEEP 30-----» SLEEP 45 -----» SLEEP 60 ----» SLEEP 75 -----» SLEEP 90 -----» SLEEP OFF

2.3.28 Real-time display

1. When the player is in standby state, VFD screen on the front panel will display information of hour, minute and second. For instance:
2. When the player is in normal working state, press [CLOCK] button on the front panel and VFD screen will display information of hour, minute and second for 5 seconds.
3. In normal working state, press [CLOCK] button twice to enter clock modifying state. The flashing number on VFD screen on the front panel indicates that this position may be modified, so please input the number that you want to modify through number buttons. After modification finishes, press [SELECT] button to save clock information and quit modifying state.

2.3.29 Timing power-on setup

In normal working state, you may set the time of timing power-on. When the timing power-on time that you set is coming, the player will start up automatically.

1. In normal working state, press [TIMER] button to enter timing power-on setup state and VFD screen on the front panel display as follows:
2. The flashing number of VFD screen on the front panel indicates that this position may be modified, and input the number that you want to modify through number buttons. After modification finishes, press [SELECT] button to save and quit timing power-on setup.

The image shows a VFD display with the text "ALM" followed by a colon and the time "08:00:00". The colon and the first zero of the minutes are flashing.

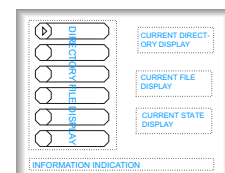
2.3.30 MPEG4, Mp3 and JPEG File Playing

MPEG4 is the audio standard publicized by MPEG (Moving Pictures Experts Group) in November, 1998. As the discrepant parts between frames of picture are only processed and the same parts are deleted, the data number are greatly decreased. The most distinct feature of MPEG4 is the high compression and clear imaging. Furthermore, MPEG4 provides elastic specifications to adjust the stream according to the used requirements. The larger stream can be used when collecting private films; and the small stream can be used in network transferring, which make MPEG4 use widely.

MP3 utilizes the third layer audio compression mode of the international standard MPEG with the compression ration as 12: 1. Employing MP3, one disc can record 600-minute music or 170 songs and the sound quality is the same as CD

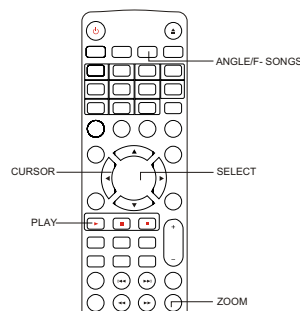
JPEG (Joint Photographic Experts Group) is the most widely used picture compression and storage format today. Utilizing the high efficiency compression algorithm, JPEG compresses the original picture 15 to 20 times with very excellent picture quality. JPEG is featuring small size data, convenient application and supported by most picture processing software, so it is very fit to store photos.

The strong decode ability of this player makes it play the above format files. In the course of playing, an operation menu will appear and its structure is shown as the following figure.



After the player read discs, the directory file display area display the directory and file under this disc's root directory. Pressing right direction button may enter the next layer subdirectory and pressing left direction button may return to the previous previous content directory. Pressing up/down direction button may select directory and file. Press SELECT button to start playing.

When playing JPEG files, press ZOOM button to magnify frame, and press ANGLE/F-SONGS button to rotate frame. During the course of frame magnifying and rotating, the player pauses playing and you may enjoy carefully. After enjoying, press PLAY button to continue playing.



2.3.31 Preparations of KVD

According to system connection requirements, after well connecting system (Please adopt composite audio output means to connect the player. When playing KVDdisc, 5.1CH and coaxial/optical digital audio have no output, so please do not use 5.1CH and coaxial/optical digital audio output means), turn on the power of TV set and switch in AV status. If power amplifier is connected, turn on the power of the amplifier at the same time.

1. Press STANDBY button to turn on the power and the VFD screen is lightened. TV screen displays power-on image and the player starts to search discs automatically.
2. Press EJECT button to pop up the disc tray and place the KVD disc in the tray.

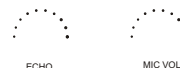
3. Press EJECT button to close the door, the playback starts and the player automatically enters the image of song dedication by numbers.

2.3.32 Preparation of Singing

1. Adjust the microphone volume of DVD player to minimum and then insert the microphones into the MIC jacks separately in the player.



2. Set the microphone switch at ON position, and rotate the volume knob to adjust the microphone volume. Rotate echo knob to adjust proper echo.

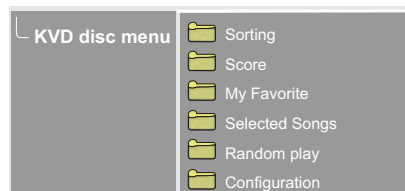


- ◆ In the course of singing, the speaker will produce whistles sometimes. You may keep the microphone far away from the speaker or decrease its volume to cancel whistles. Do not make the microphone face to the speaker.
- ◆ After the singing finishes, set the microphone switch at "OFF" position and then unplug the microphone.

2.4 KVD DISC PLAYBACK

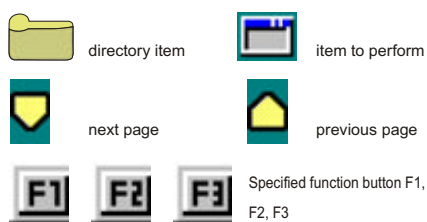
2.4.1 General steps of KVD disc Playback

1. Press [MENU] button and the screen displays main menu of KVD disc.



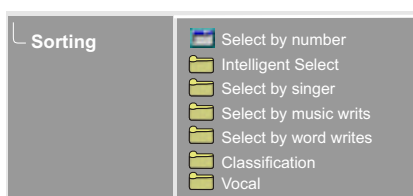
2. Press [UP/DOWN] button to select the menu that you need to enter, and press [SELECT] button to enter its submenu picture. If you want to select other menu, you may press

[TITLE/RETURN] button to return to the previous menu and select again.If you want to quit KVD menu, please press [MENU] button.



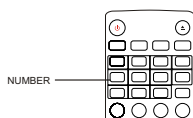
2.4.2 Sorting

[SORTING] menu provides six kinds of song selection method.You may select freely according to your demand.



T9 input method:

This system provides one T9 input method to facilitate you to select songs。 Number buttons on the remote control are also letter input buttons at the same time, shown as the following figure:



For number buttons [2] to [9], each button corresponds with 4 letters in sequence, for instance, [2] corresponds with Л, Ъ, В and Г, When song selection state of T9 input is supplied, if you want to input Г, please press button [2] four times continuously, meanwhile the corresponding position on the screen also will indicate your currently selected letter to Facilitate you to make decision.According to

thus Operation, you may input other letters.

1.Select by Number

Select by number: directly select song according to its serial number.You may select your desired track number in the attached song selection book .

◆According to track number in the song selection book, after selecting track number in KVD disc main menu interface, song selection prompt appears on the upper part of TV screen.Press number button to input track number, and then press [SELECT] button to confirm this song selection.

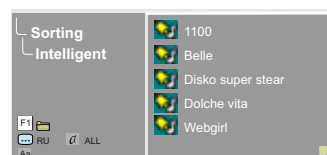
◆When playing KVD songs, you may also input track number directly, and press [SELECT] button or [PROGRAM] button to add this track into the selected songs.

◆When inputting invalid track number or the input is incorrect, you may press [CLEAR] button to cancel it, and then press number buttons to input other track number again.

◆In the state of song selection by number, if you do not select songs in a long period of time, the player will enter automatic playback。 The screen will automatically display some popular songs at random, and now you may directly press [PLAY] button to play.During the course of playing, press [STOP] button to stop the song playing currently.

2.Intelligent Select

In [SORTING] menu, select intelligent selection items to enter intelligent selection menu interface, shown as the following figure:



Intelligent select: a kind of intelligent song selection method searched according to multiple information. You may perform overlapping search to select songs according to the language type and name of songs.

In intelligent select interface, pressing [LANGUAGE] button may switch in songs that display different language types.

In intelligent select interface, use the above-mentioned T9 input method to directly input letters of song's name in sequence, and system will automatically search and then list the matched song's name.

For instance: you want to select song “BEPHNCA*” : Press [AUDIO] button to switch to Russian songs display. Input letter “B” , and screen menu lists out all songs that the first letter of the Song’ s name is B;Then input letter “e” , and screen menu lists out all songs that the first two letters of the song’ s name are B e;Input letter “p” again, and screen menu lists out all songs that the first three letters of the song’ s name are B e
p

You may input letters of song’ s name according to the above-said method. Until the song “BEPHNCA*” displays on the screen menu, press [SELECT] button to select. At the same time of the above operation, you may also press [UP/DOWN] button to search song “BEPHNCA*” directly in the listed songs.

3.Select by Singer

This menu lists out the name of singers of all collected songs in this KVD disc. According to picture prompt, press [UP/DOWN] button to move cursor to the singer that you want to select. After pressing [SELECT] button to

Select, enter the songs menu of this singer and select your desired song according to this menu. You may also search the name or song’ s name of the singer through T9 input method according to the picture prompt.

4.Select by Music Write

This menu lists out the name of music writer of all collected songs in this KVD disc. According to picture prompt, press [UP/DOWN] button to move cursor to the music writer’ s name that you want to select. After pressing [SELECT] button to select, enter the songs menu of this music writer and select your desired song according to this menu. You may also search the name or song’ s name of this music writer through T9 input method according to picture prompt.

5.Select by Word Writer

This menu lists out the name of lyrics writer of all collected songs in this KVD disc. According to picture prompt, press [UP/DOWN] button to move cursor to the lyrics writer’ s name that you want to select. After pressing [SELECT] button to select, enter the songs menu of this lyrics writer and select your desired song according to this menu. You may also search the name or song’ s name of this lyrics writer through T9 input method according to picture prompt.

6.Classification

(The explanation of this section copies the former version. Pay attention that CHILDREN is changed into CHILDREN SONGS, and HOURS item is deleted.)

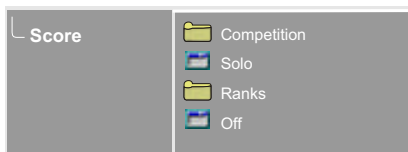
7.Vocal

This menu lists out the name of all songs with vocal singing.You may search song’ s name through T9 input method according to picture

prompt.

2.4.3 SCORE

In main menu of KVD disc, select “SCORE” item to enter SCORE interface. Here you may get along with dual meet, arena, and system will automatically score for your singing and record to the ranks list. Of course, you may also select to turn off these functions.



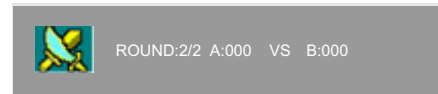
Select submenu of “Competition” to enter dual meet interface. Here you may select the round number to perform dual meet competition (such as 5 Rounds), and then enter dual meet competition state after selecting. The screen display as the following figure after song selection:



Your singing competitor and you may select songs of group A and B to compete through the song selection methods listed out in “SORTING” menu. After Karaoke competition finishes, the screen will display the round number that you compete and will automatically give the corresponding score after you have finished singing a song.

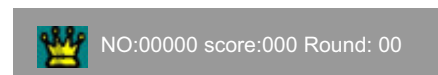
1. Enter submenu of dual meet competition, select the round number to perform the competition and then enter that competition

state. The screen displays as the following figure after song selection:



Users may adopt intelligent select and select by number. After song selection of dual meet competition of group A and B finishes, it is Karaoke dual meet competition.

2. Select submenu of “SOLO” to enter arena competition state. The screen displays as the following figure after song selection:



You may select the songs to compete through the song selection methods listed out in SORTING menu. The screen menu will display the current winner and his score. Only when your singing score exceeds that of the current winner, your code and score can display. At the same time, the screen menu will also display total competition times.

3. Select submenu of [Ranks] and you may inquire singing score record.

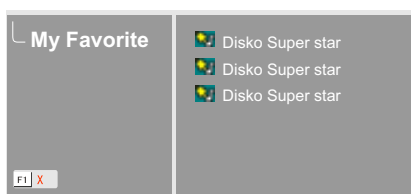


After you have finished singing a song of KVD disc completely, system will automatically score for your singing and record it into ranks list, which lists out song's name, song's serial number and singing score which are ranked from high score to low score.

4. Select “OFF” item and you may turn off all competition states.

2.4.4 My Favourite

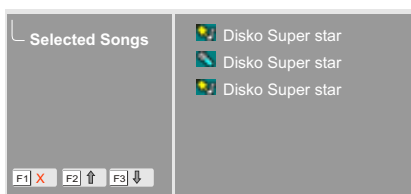
In main menu interface of KVD disc, select “My Favourite” item and enter its interface, shown as the following figure:



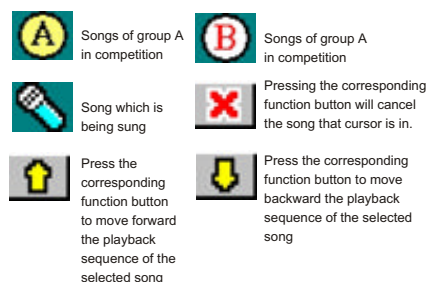
1. In interface of My Favourite, you may press [F1] button to clear the track that cursor is in from my favourite according to picture prompt.
2. When playing KVD songs, you may press [ANGLE/F-SONGS] button to add the track playing currently into My Favourite.
3. In the interface of intelligent select and select by singer, you may press the corresponding function button to add the track that cursor is in into My Favourite.

2.4.5 Selected songs

In main menu interface of KVD disc, select “Selected songs” item to enter its menu interface. You may also press [ZOOM/S-SONGS] button to enter interface of selected songs when playing KVD disc, shown as the following figure:

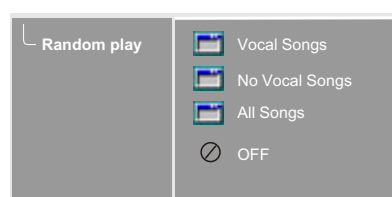


The corresponding explanation of icons in selected songs menu:



2.4.6 Random play

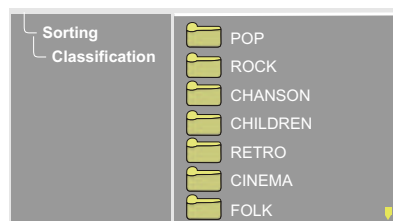
In main menu interface of KVD disc, select “andom play” item to enter random playback of the corresponding type of songs.



- ◆ Random singing does not have auto scoring function.

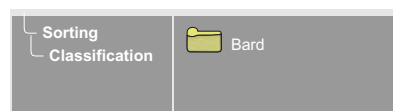
2.4.7 Classification

In main menu interface of KVD disc, select “Classification” item to enter its menu interface, shown as the following figure:

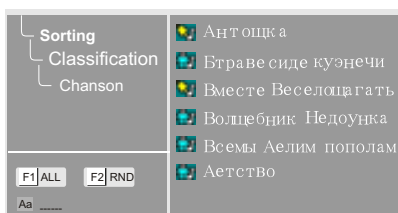


Press DOWN direction button or RIGHT direction button continuously to turn pages downwards.

The next page is shown as following:



1. According to picture prompt of classification, you may select all kinds of songs in classification. For instance, select songs in Chanson, shown as the following figure:



- ◆ In Chanson songs interface, move cursor to select your desired song, and then press [SELECT] button to play.
 - ◆ In Chanson songs interface, press [F1] button to continuously play all Chanson songs; and press [F2] button to random play all songs.
- 2.As for operation steps of other items in classification, you may refer to the above method.

2.4.8 Volume/Melody/tempo/Key/Voice

When playing KVD disc songs, pressing SWITCH button may adjust all kinds of musical effect.

- 1.Press SWITCH button and the TV screen may display volume adjustment.



- ◆ Press LEFT/RIGHT direction button to adjust
- 2.Press SWITCH button and the TV screen may display melody adjustment.



- ◆ Press LEFT/RIGHT direction button to adjust.
 - ◆ The melody adjustment is valid only when “Melody” item of “KVD Setup” is set in “ON” .
- 3.Press SWITCH button and the TV screen may display tempo adjustment.



- ◆ Press LEFT/RIGHT direction button to adjust.
- 4.Press SWITCH button and the TV screen may display key adjustment.



- ◆ Press LEFT/RIGHT direction button to adjust.
- 5.Press SWITCH button and the TV screen may display voice adjustment.



- ◆ Press LEFT/RIGHT direction button to adjust.
- NOTE
- ◆ When playing songs with voice, the voice may be adjusted, but tempo and key may not be adjusted.

2.4.9 Voice-cut When Singing

When playing the songs with voice singing, press VOCAL button each time and the screen displays:



- ◆ VOICE/OFF: turn off voice singing.
- ◆ VOICE/AUTO: auto voice changing.
- ◆ VOICE/ON: turn on voice singing.
- ◆ When in auto voice changing, the voice of the first sentence is small and this is normal.

2.4.10 Playback Functions

- 1.Applouse playback

- ◆ During the course of playing, pressing CH/APPLOUSE button may hear the sound effect similar to applouse to strengthen Karaoke singing atmosphere.

- 2.Pause playback

- ◆ If you want to pause playing, pressing PAUSE button may enter the pause state. Pressing PAUSE button again may restore to normal playback.

- ◆ When in pause playback, the song is paused but the image will continue playing.

3.Repeat playback

- ◆ When playing songs, press REPEAT button to repeat play the current track. Press this button again to cancel repeat playback.
- ◆ In the state of open challenge, dual meet, continuous playback and random playback, pressing REPEAT button is invalid.

4.Program playback

- ◆ When in the playing of song dedication by numbers, after pressing number button, press PROGRAM button to confirm. The inputted tracks display in sequence on the top left corner of TV screen. Repeating the above two steps may input more tracks, thus you can add more songs into the selected song directory.
- ◆ Pressing REW and RWD button may move the cursor on the program track (that is, the track with cursor is lightened, meanwhile the second line displays the name of the lightened track); pressing PREV and NEXT button may browse the inputted tracks. If you want to cancel the track with cursor, press CLEAR button; if you want to play the track with cursor in priority, you may press PLAY button.
- ◆ After the former track finishes playing, it will play the inputted tracks in sequence. If you want to stop playing the current track, you may press STOP button. Press PLAY button again and the player plays the next program track.
- ◆ If the inputted track number does not exist, press PROGRAM button or PLAY button and the player cannot confirm. Press number button to input other track numbers again.

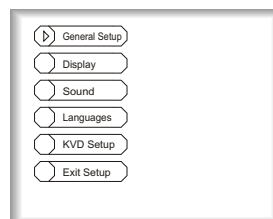
5.Singing scoring

- ◆ When the song dedication singing finishes, this player displays Karaoke singing score.

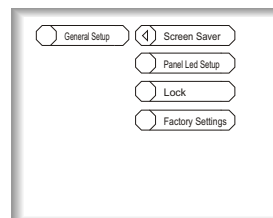
2.5 FUNCTION SETUP

2.5.1 Basic Steps of Function Setup

1. Press SETUP button and the screen displays function setup menu.

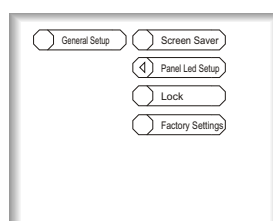


2. Press direction button to select the desired menu and press SELECT button to confirm. If you select "Exit Setup" menu, pressing SELECT button may exit the setup menu. For instance, you may select "General Setup" to start general settings and TV screen displays general setup page.



3. Press up/down direction button to select the desired setup items.

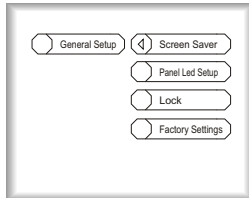
For instance, press up/down direction button to select "Panel Led Setup". Press SELECT button to confirm and TV screen displays panel led setup items.



4. Press left direction button to exit the current item group, or press SETUP button to exit setup menu.

◆ Pressing SETUP button is invalid when in disc reading.

2.5.2 General Setup



1. Screen Saver: this item is used to set whether screensaver is allowed.

◆ Optional settings: ON, OFF

◆ Default: ON

2. Panel Led Setup: this item is used to set whether the door indicator on the front panel is turned on.

◆ Optional settings: ON, OFF

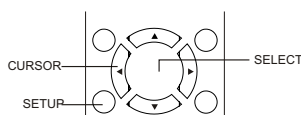
◆ Default: ON

3. LOCK: this item is used to set the age controlling rate to prevent children from watching unsuitable contents (need disc support).

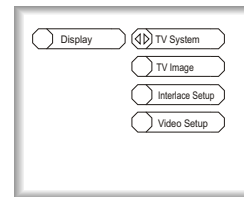
◆ After inputting default password 7890, you may change the password or set the controlling rate which has 8 rates for selection.

◆ Default: Lv8

4. Factory Settings: this item is used to restore the default value of all other setup items in the setup menu, except “Ratings Limits” and “PSD”.



2.5.3 Display Control



1. TV System: this item is used to set the video output system of the player.

◆ Optional settings: AUTO, NTSC, PAL

◆ Default: AUTO

2. TV Image: this item is used to set the output image ratio of the player.

◆ Optional settings: 4: 3 Letterbox, 4: 3 Standard, 16: 9 Wide screen

◆ Default: 4: 3 Letterbox

NOTE

◆ The playback effect is related to the disc recording ratio. Some discs cannot play according to your selected picture ratio.

◆ 16: 9 is only applicable to 16: 9 wide screen TV set.

◆ The picture ratio selection should be related to the actually-used TV screen ratio.

3. Interlace Setup: this item is used to set the interlacing video output mode of the player.

◆ Optional settings: S-VIDEO, YUV, RGB.

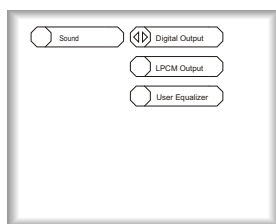
◆ Default: S-VIDEO

4. Video Setup: in this item, you may set to strengthen or weaken the brightness, contrast, chroma and saturation of image according to your own likes.

◆ Enter the video setup adjustment menu, and press left/right direction button to select the video parameter that you desire to adjust. Press up/down direction button again to increase or decrease this parameter.

◆ After the adjustment finishes, press SELECT button to exit this setup item.

2.5.4 Sound



1.Digital Out: this item is used to set the stream form of digital output. After press direction buttons to select Dolby Digital or DTS, press SELECT button to change the player whether Dolby Digital or DTS digital raw code signal is outputted. If selected, it means the digital raw code signal is outputted; if not selected, it means PCM signal is outputted.

◆Default: Selected

2.LPCM Output: this item may be used to set the output frequency of LPCM audio data to match with different power amplifier.

◆Optional settings: 48K, 96K

◆Default: 48K

◆The outputted frequency is related to the actual frequency of signal. The signal of 48K cannot output 96K.

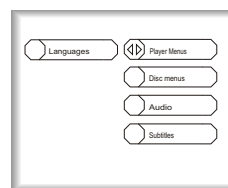
3.User Equalizer: in this item you may set to strengthen or weaken the treble, mediant and bass according to your own likes.

◆Enter user EQ setup menu, press left/right direction button to select the sound frequency you desire to adjust and press up/down direction to increase or decrease the sound strength of this frequency.

◆After the adjustment finishes, press SELECT button to exit this setup item.

◆After exiting setup, press EQ button to select the EQ mode in "PERSONAL" to enjoy the effect that you adjusted just now.

2.5.5 Languages



1.Player Menus: this item is used to set the indication information language that the player displays during the course of playing.

◆Optional settings: English, Russian.

◆Default: English.

2.Disc Menus: this item is used to set disc menu language adopted in priority during the course of playback.

◆Optional settings: English, Russian.

◆Default: English.

3.Audio: this item is used to set the audio language adopted in priority during the course of playing.

◆Optional settings: English, Russian.

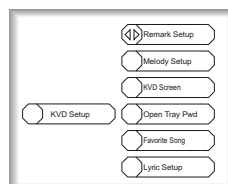
◆Default: English.

4.Subtitles: this item is used to set the subtitle language adopted in priority during the course of playing.

◆Optional settings: English, Russian, Off.

◆Default: Off.

2.5.6 KVD Setup



1.Remark SetupP: this item is used to set the scoring parameter of the player.

◆Optional settings of max score: 100, 99, 98, 97, 96;

Default: 100

- ◆Optional settings of min score: 0, 60, 70, 80, 90;
Default: 0
- ◆Optional settings of scoring rate: Easiest, Easy, Normal, Hard, Hardest.
- 2.Melody Setup: this item is used to set KVD music melody.
- ◆Optional settings: ON, OFF
- ◆Default: ON
- 3.KVD Screen: this item is used to the background image when the player is playing KVD disc.
- ◆Optional settings: DVD Screen, Blue screen

- ◆Default: DVD Screen.
- 4.Open Tray Pwd: this item is used to set the password needed in open operation when the player is playing KVD disc.
- ◆Default7890
- 5.Favorite Song: this item is used to edit favorite songs.Please refer to the favorite Songs editing in KVD disc operation for details.
- 6.Lyric Setup: this item is used to set lyrics mode.
- ◆Optional settings: Normal , Ahead, Off
- ◆Default: Normal.



2.6 Specifications

Disc Types	DVD VIDEO KVD MPEG4** SVCD*** VCD 1.0,1.1,2.0 version CD-DA MP3
input	2-group AUX IN FM antenna in ,AM antenna in
Output	Subwoofer output Digital audio output Coaxial audio output, Optical output Video output Progressive video output YPb Pr S-Video output Y,C SCART Output Component video output YCb Cr Stereo headphone Stereo out
Video Characteristics	Video amplitude 0Vp-p(75□) S-Video Output Amplitude Y:1.0Vp-p(75□),C:0.286Vp-p(75□) Component Video Output Amplitude Y:1.0Vp-p(75W),Cb/Cr:0.7Vp-p(75W)
FM tuning	Frequency range 64MHz~74MHz 87.5MHz~108MHz Separability >35dB
AM tuning	Frequency range 522KHz~1710KHz

Video Characteristics	Video amplitude 1.0Vp-p(75□) S-Video Output Amplitude Y:1.0Vp-p(75□),C:0.286Vp-p(75□) Component Video Output Amplitude Y :1.0Vp-p(75W),Cb/Cr:0.7Vp-p(75W)
FM tuning	Frequency range 64MHz~74MHz 87.5MHz~108MHz Separability>35dB
AM tuning	Frequency range 522KHz ~1710KHz

**Some discs labeled with MPEG4 on the market actually are*.rm/*.ram/*.rmm and others which are not compatible. Please take care when buying discs.

***This player cannot play part of SVCD discs with CVD format.

- ◆The design and explanation of this product are subject to change and renovate without notice.
- ◆We cannot ensure all discs are fluently read because of the differences of disc quality, disc make quality and format.
- ◆As for the special make of some discs, some functions cannot be realized when playing, which is not the malfunction of the unit.

2.6 Specifications

Rated power (total harmonic distortion for amplifier <10%)	ABS730X (L/R) 65W (6 Ω, 1KHz)
Rated load impedance	ABS730X (L/R) 6 Ω
System frequency Range (normal working condition)	ABS730X (L/R) 20Hz~20KHz
Input sensitivity (rated condition)	≤600mV
SNR	≥71Db
Total harmonic distortion plus noise (normal working condition)	<1%
General specifications	Power supply ~220V, 50/60Hz Max power consumption 250W Dimensions 368×250×309 (mm) Weight 10.5Kg

- ◆Speaker Unit: 6.5 “Woofer Speaker 1” tweeter Speaker
- Max. Output Power: 120W
- Nominal impedance: 6 Ω
- Frequency Response: 55Hz~20KHz
- ◆Speaker Dimensions: 220×353×305mm(L×W×H)

Chapter Three ABS730X Principle and Servicing

Section One Principle of playerABS730X

3.1.1 Brief introduction to ABS730X principle

This player includes the following parts: decode board, power amplifier board, power board, MIC board, AV board and panel. The signal flow chart is shown as the figure 3.1.1.1.

Decode board is mainly composed of three parts, that is, servo circuit, decode circuit and MIDI signal decode control circuit. Servo circuit is mainly composed of servo drive control circuit, disc identification circuit, main axis rotating speed control circuit, laser power control circuit and disc in/out control circuit. U201 (Vt7208) is the core control IC of servo circuit and it realizes the collection and output control to the above circuit signal. Servo drive U203 (D5954) realizes the focus, trace, main axis and feed control to loader. Decode circuit realizes the decode control, audio and video signal output to loader signal through U202 (AML3298). MIDI signal decode control circuit includes MIDI control CPU U209 (MK6000-B), MIDI signal encrypt IC U210 (EPM3032) and MIDI signal synthesis IC U211 (SAM2133), and this circuit will decode in-parallel MIDI signal into in-series audio data to output.

The main control CPU U204 (SM79164C25P) on amplifier board is the control centre of the whole system. Keyboard scanning, VFD display, LED display, spectrum display control, tuner control, I²C bus control and the communication with U202 (ALM3298) on decode board are all realized through this. Mixed left/right channel output, power amplifier left/right channel output, headphone left/right channel output, external post position output and external preposition are all realized on power amplifier board.

Power board supplies power for the whole system; MIC board mainly realizes input of MIC signal and output of headphone signal, including that echo generation IC U603 (SN1699) realizes the generation of MIC signal, and headphone drive IC U605 (TDA1308) realizes the drive output of headphone signal; AV board mainly realizes the output of video signal, coaxial signal, optical signal and SCART terminal signal; panel mainly concludes VFD display IC U402 (PT2399) and keyboard scanning IC U401 (PT6222) which realize VFD display and keyboard scanning function.

Main features of this player:

- ◆ Built-in Dolby digital decoder
- ◆ FM/AM digital tuning function
- ◆ karaoke function
- ◆ compatible with DIVX, MPEG4 format movies
- ◆ Power amplifier adopts high-performance large-power IC, with complete protection function and excellent sound quality.

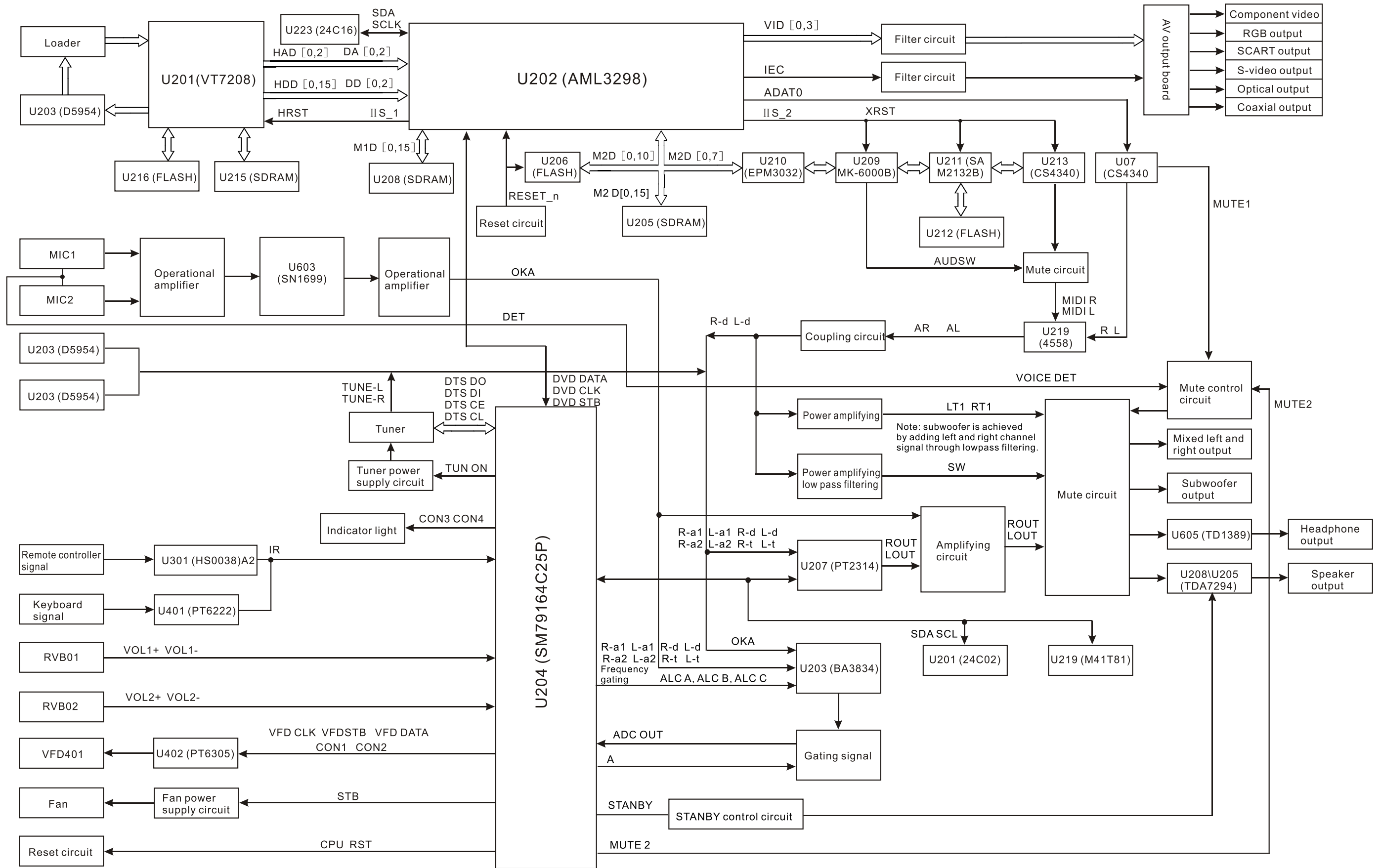


Figure 3.1.1.1 Whole player block diagram

3.1.2 AV signal flow chart

1. Coaxial output flow is shown as the following figure 3.1.2.1:

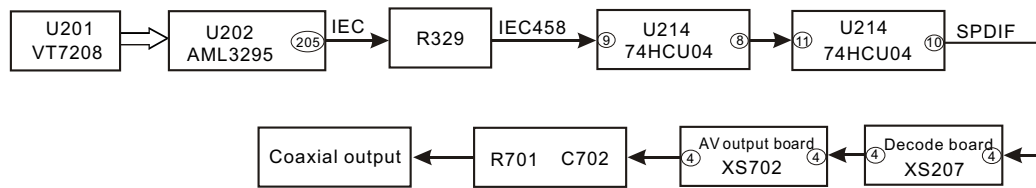


Figure 3.1.2.1 Coaxial output flow chart

2. Optical output flow is shown as the following figure 3.1.2.2:

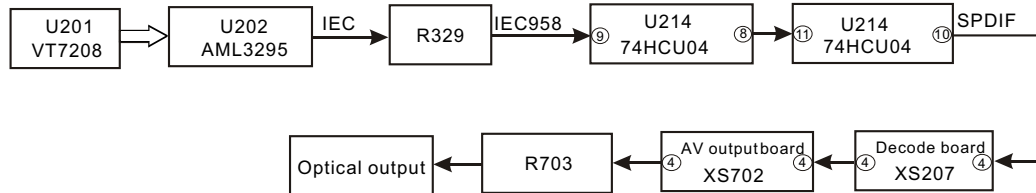


Figure 3.1.2.2 Optical output flow chart

3. Video signal output flow is shown as the following figure 3.1.2.3:

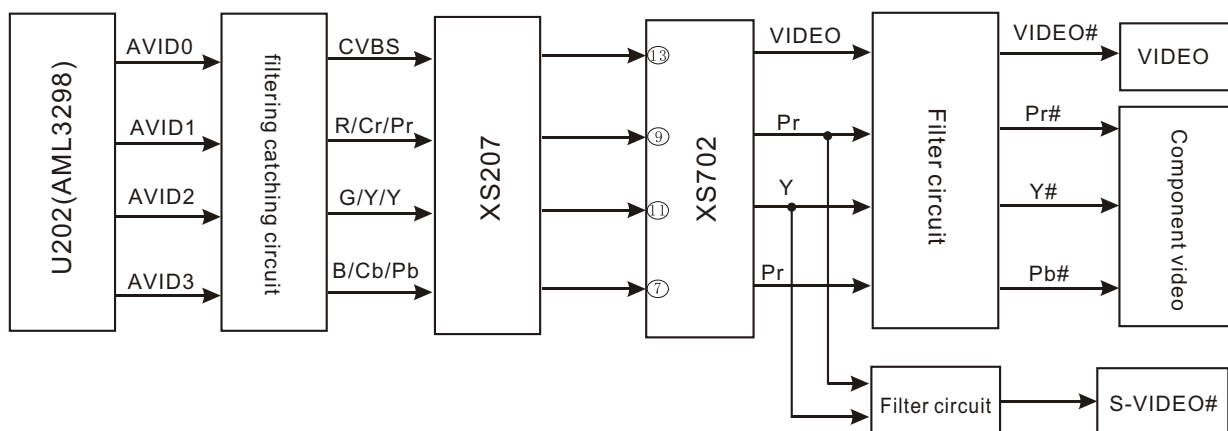
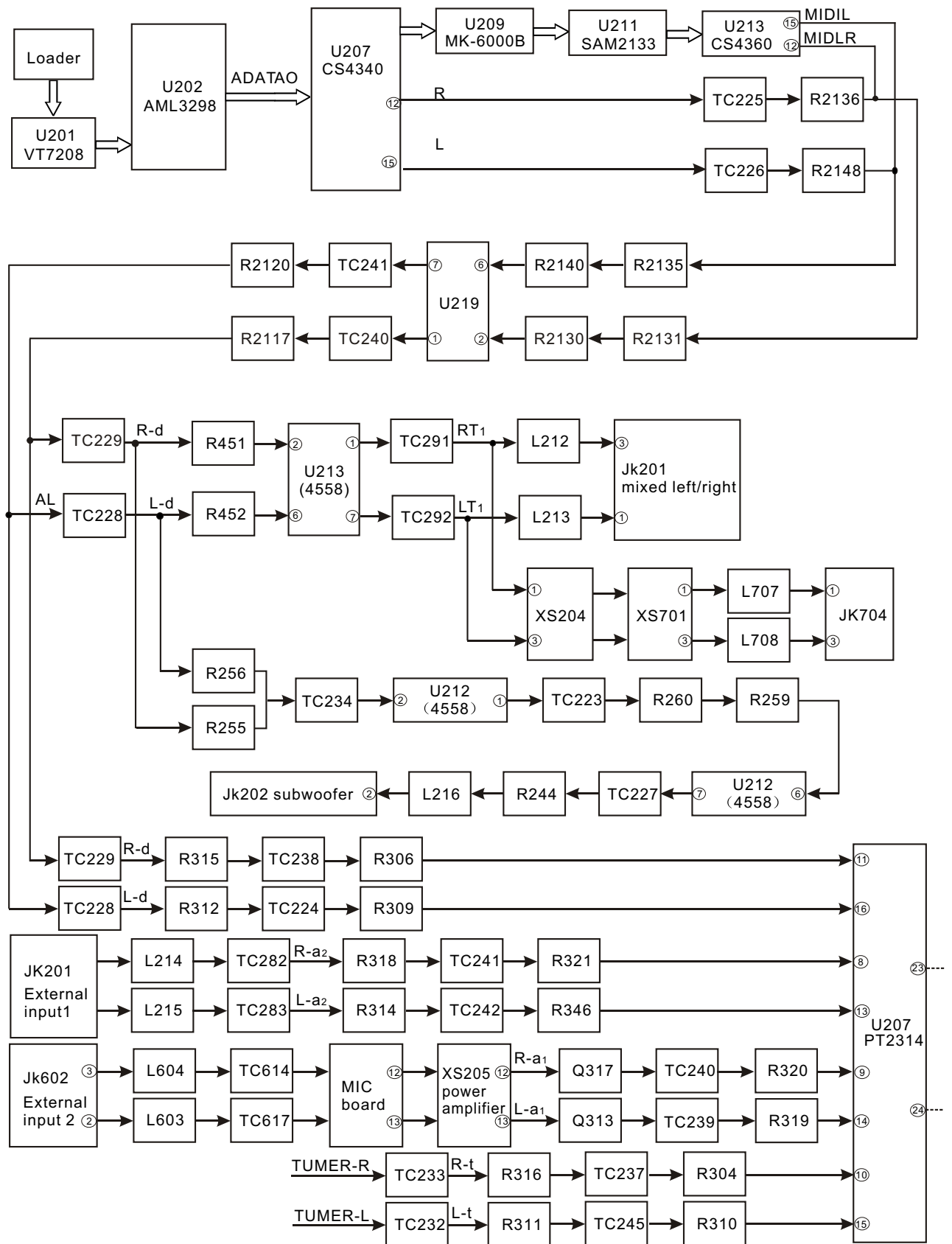


Figure 3.1.2.3 Video signal output flow chart

4. Audio signal output flow is shown as the following figure 3.1.2.4:



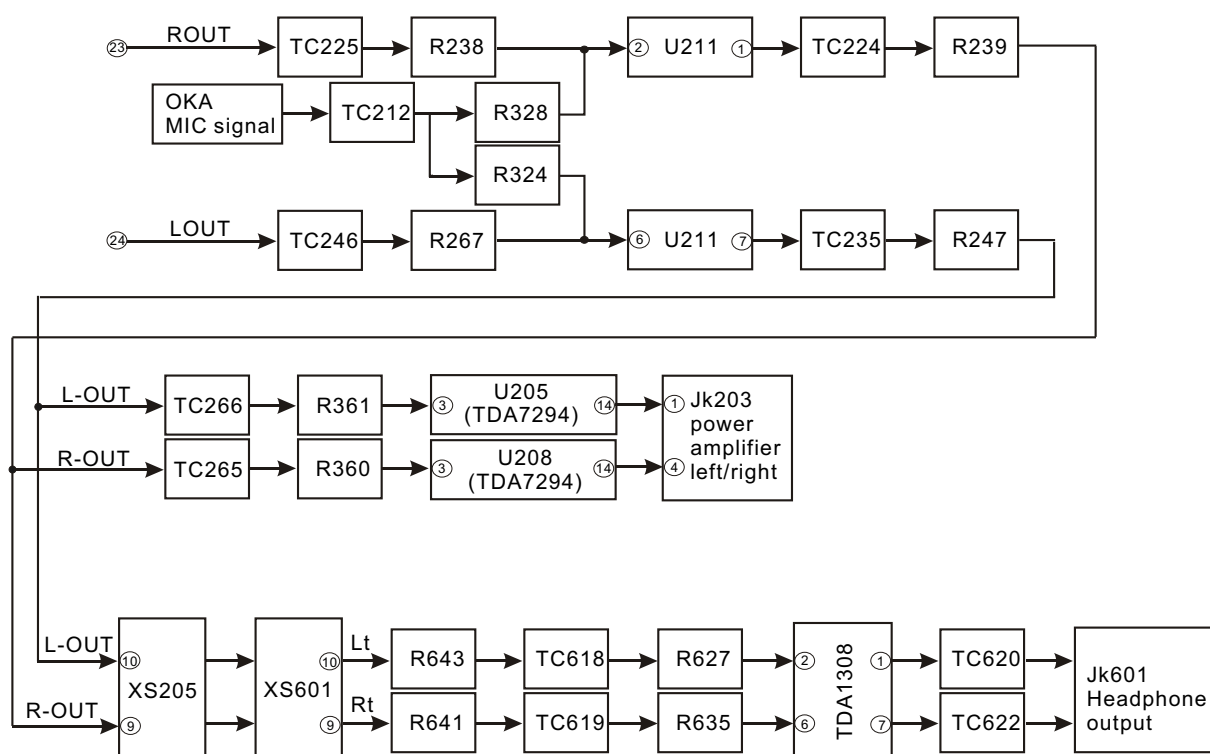


Figure 3.1.2.4 Audio signal outputflow chart

Section Two Unit circuit principle analysis

3.2.1 Power circuit

1. Power circuit analysis: power board adopts linear power circuit. Electromagnetic disturbance filtering circuit may filter all kinds of disturbance in 220V AC. 220V AC is sent to transformer T101 preliminary coil through filtering of electromagnetic disturbance filtering circuit; each voltage outputted by T101 secondary coil turns into DC through bridge rectification and supplies power for the player, shown as the following figure 3.2.1.1:

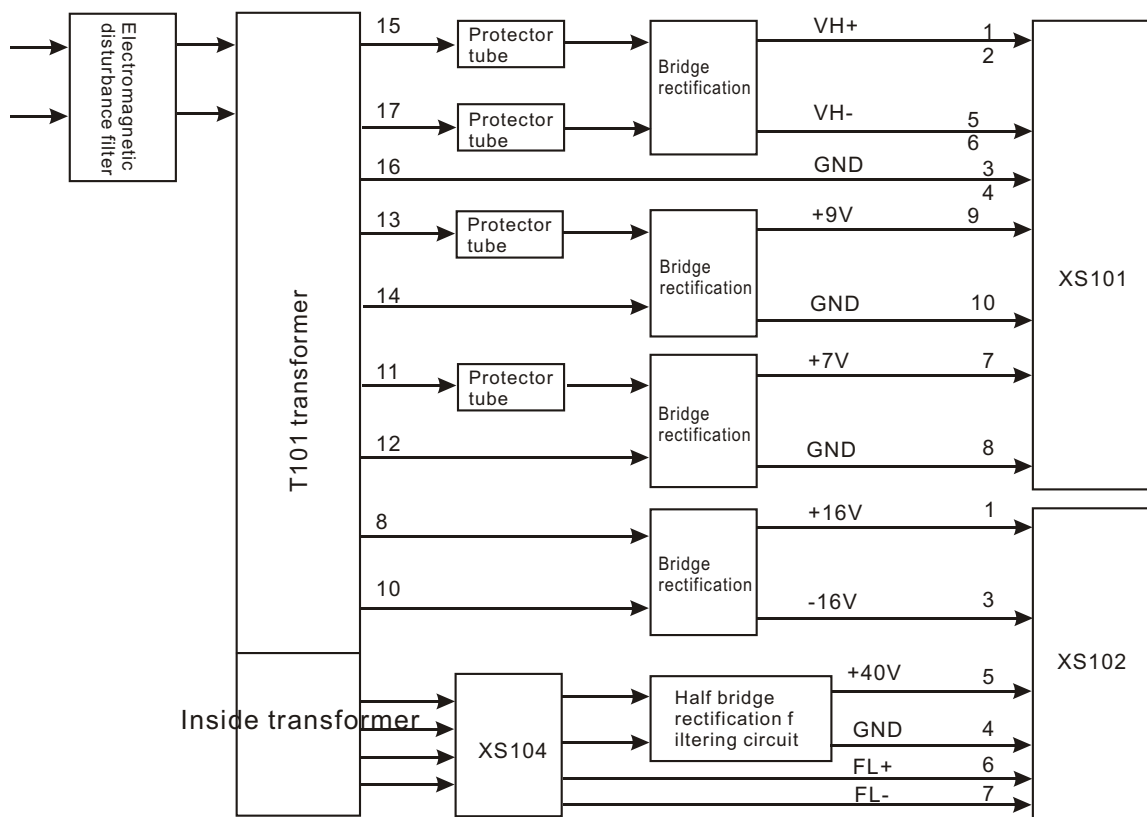


Figure 3.2.1.1 Power circuit block diagram

2. Troubleshooting flow chart is shown as the following figure 3.2.1.2:

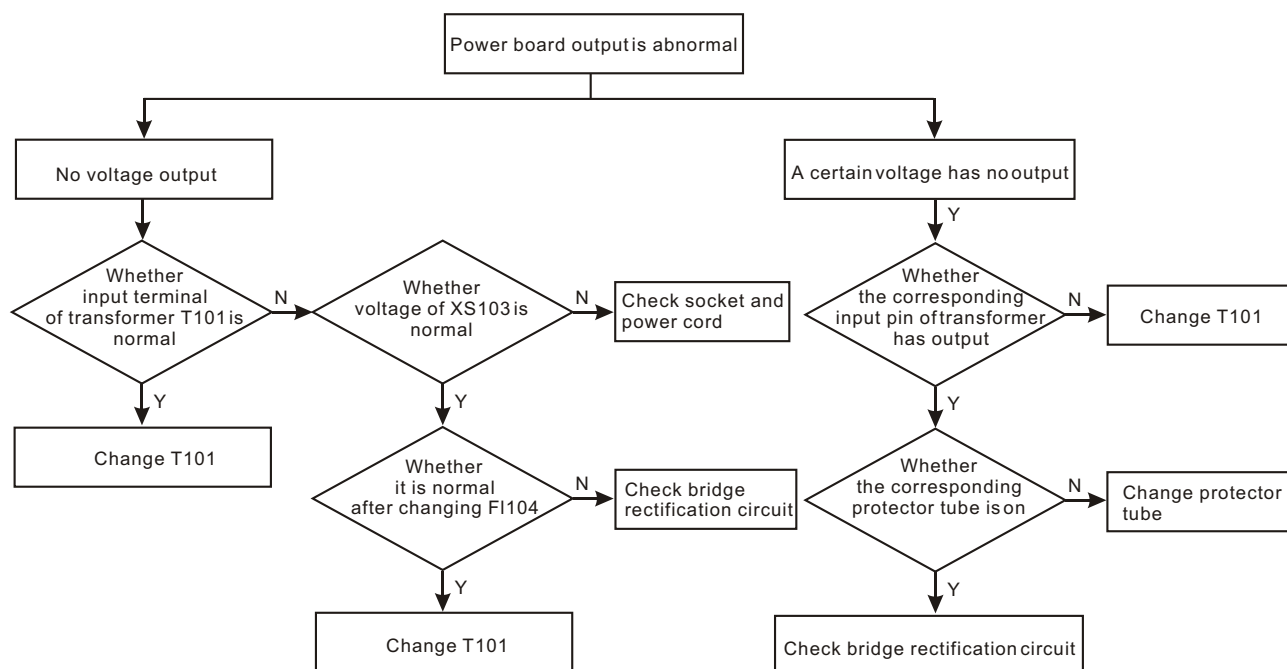


Figure 3.2.1.2 Troubleshooting flow chart for "power board output is abnormal"

Explanation:

- ① When measuring each output voltage, the voltage between this voltage output pin and its corresponding output ground must be measured. For instance, to measure +9V voltage, voltage between pin 9n and 10 of Xs101 must be measured, if that between pin 8 and 9 is measured, the correct voltage cannot be measured.
- ② VH+ voltage is about +22V, VH- voltage is about -22V and voltage between FL+ and FL- is AC4.5V.

3.2.2 Laser power control circuit

1. Laser power control circuit is shown as the following figure 3.2.2.1:

2. Working principle: pin 28 of VT7208 is VCD laser power detecting signal input pin, pin 27 is DVD laser power detecting signal input pin, pin 29 is VCD laser power drive control output pin and pin 30 is DVD laser power drive control output pin.

When reading VCD disc, if pin 28 detects that laser output power is too strong, through VT7208 internal circuit handling, pin 29 output voltage increases, "on" degree of Q201 decrease to make the voltage supplied to laser head decrease and light emitting of laser head become weak; if pin 28 detects that the power is too low, output voltage of pin 29 decreases, "on" degree of Q201 increases and light emitting of laser head become strong to reach the purpose of auto adjusting laser head output power.

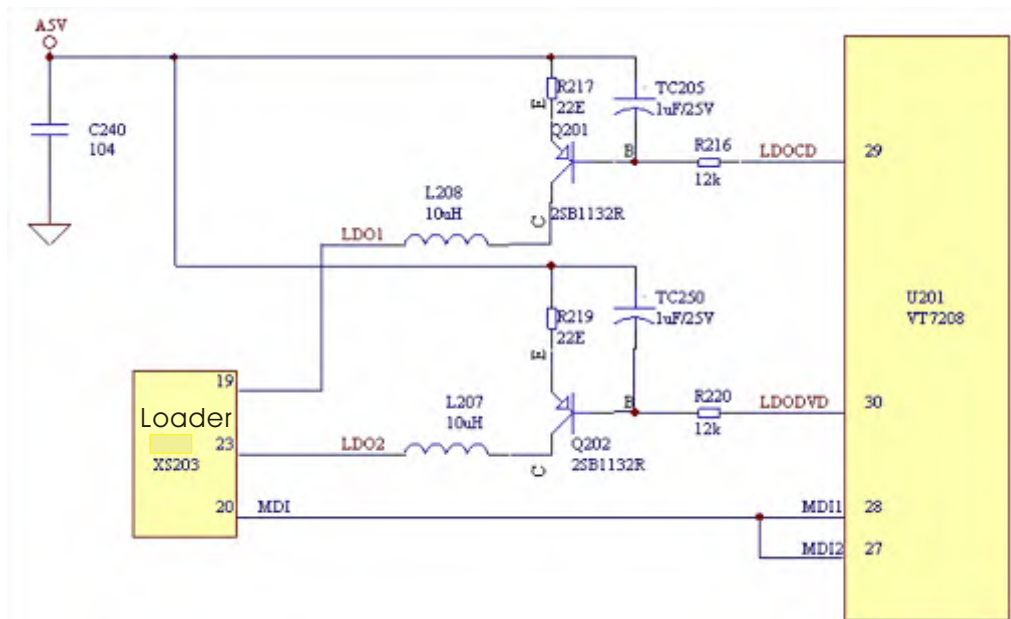


Figure 3.2.2.1 Laser power control circuit diagram

When reading DVD disc, pin 27 is detecting signal input pin, pin 30 is drive control output pin and the working principle is the same with that when playing VCD disc.

3.2.3 Servo circuit

1. DK1020S adopts SANYO 62 loader and VT7208+FLASH (16M) + SDRAM (64M). Its servo circuit is mainly composed of preposition signal processing, digital servo processing, digital signal processing IC Vt7208 and drive circuit D5954, shown as the following figure 3.2.3.1:

After loader reading disc information, A, B, C, D, E, F, RF signals are sent out to VT7208 (DVD only has A, B, C, D signals), and then inputted from pin 2~11, 18, 19 of VT7208. After being amplified and processed by the pre-amplifier inside VT7208, and then processed by digital servo signal circuit inside Vt7208, the corresponding servo control signal is produced. One part of signal outputs FOO, TRO, DMO, FMO digital servo control signals from pin 43, 42, pin 44, pin41 of VT7208 respectively, then change into analog servo control signal FOSO, TRSO, DMSO, FMSO through integration circuit composed by resistor capacitor, and send to driver circuit D5954 for amplification to bring along focus coil, trace coil, main axis electric machine and feed electric machine after drive amplification. Among these, focus and trace servo are used to correct objective position accurately; feed servo is used to bring along laser head to make radial large-scale move which belongs to the preliminary adjustment to pick-up position; and main axis servo is used to control main axis electric machine to make it read signals in means of constant linear velocity and bring along disc to rotate.

After processing of amplification by VGA voltage control amplifier and equalization frequency compensation inside VT7208, another part of signals are changed into digital signals through internal A/D converter and then sent to U202 (AML3298) for decode processing.

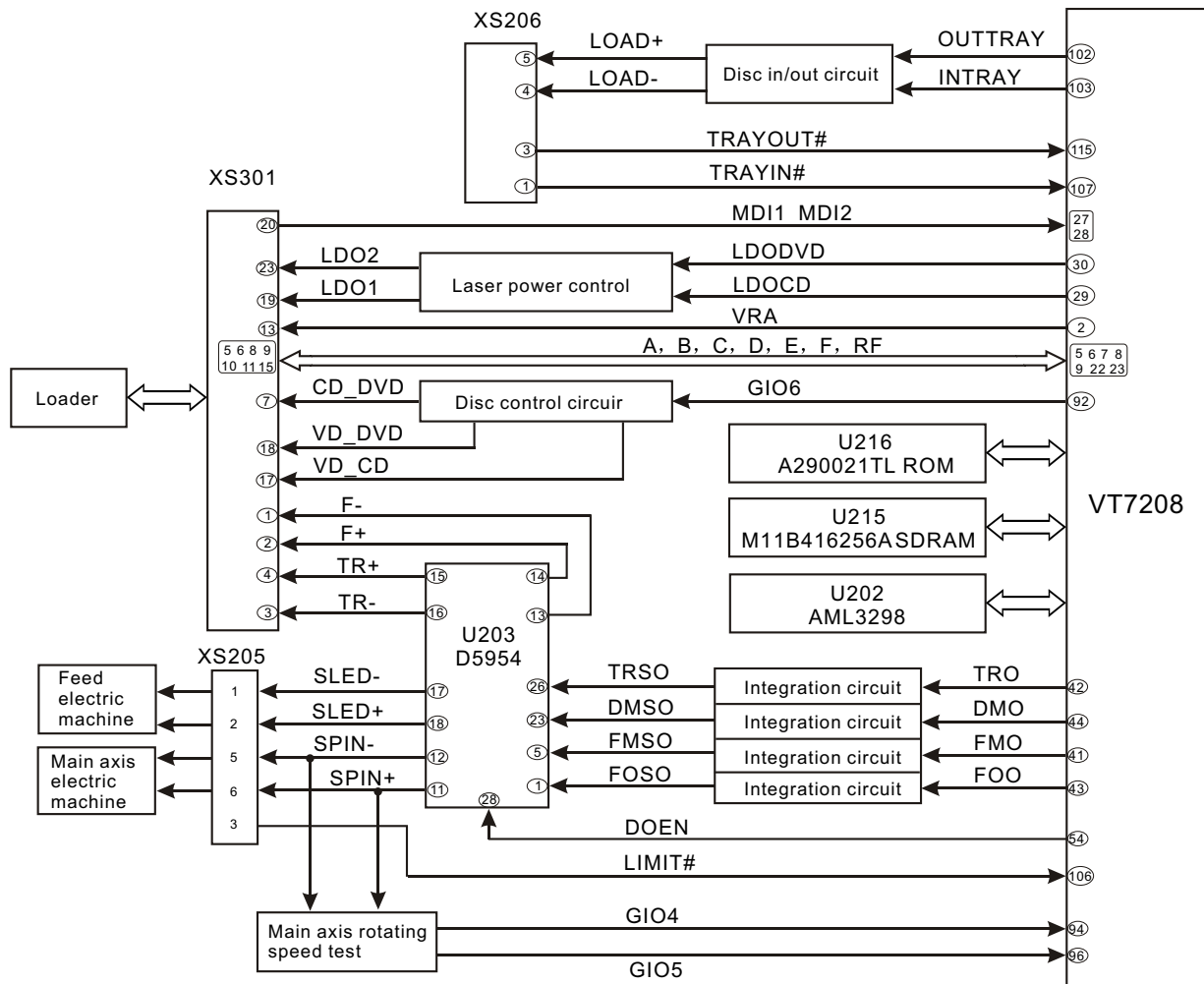


Figure 3.2.3.1 Servo circuit block diagram

The other part of servo is open/close disc tray circuit. After panel or remote controller emits open/close disc tray signal to VT7208, in usual conditions, INTRAY and OUTTRAY sent out by pin 102, 103 of VT7208 are both low level, when signal of “open” comes, after VT7208 makes disc stop rotating through main axis braking circuit, OUTTRAY is set high to make open/close electric machine on loader frame run to bring along disc tray to eject. After disc tray ejecting to proper position (TRAYOUT) is set high level (0V) through the detecting switch on loader frame, VT7208 pulls down OUTTRAY and open/close electric machine stop running. When VT7208 receiving “close” signal, INTRAY is set high level by VT7208, open/close electric machine turns conversely to bring along disc tray to close. After disc tray closing to proper position, signal of closing to proper position (TRAYIN#) is set low level through the detecting switch on loader frame, VT7208 pulls down INTRAY and electric machine stops running to finish “close” process.

3. Explanation to servo terms

FOO: when rotating, disc may probably move upwards or downwards slightly to make the focus of laser emitted by pick-up cannot justly fall on data pit of disc, so pick-up is required to move upwards or

Downwards to make focus aim at data pit justly. When pick-up is moving upwards or downwards, it means that pick-up is making focus acts.

TRO: data information is save in disc in form of tracks. The process when pick-up moves from one track to another one to read data is trace. In this process, it is objective, but the entire pick-up, that moves forwards or backwards, and the moving range is very small.

FMO: similar to acts of trace, the acts of feed are larger than those of trace. Feed conducts a large scale movement firstly, and then trace moves slightly in this range. Feed moves for a while, and does not move for another while; but trace moves all the time. Feed is rough adjustment and trace is fine.

DMO: it is the top that holds up disc. Its rotation speed decides that of disc. Its rotation is generated by an individual DC electric machine, in which rotation speed of DVD is twice over that of CD.

Hint: In order to observe these processes, you may take down upper cover of the machine, and then the loader cover board. When power on with no disc in or disc in after disc out, you may observe that pick-up returns to inner ring firstly and then springs back for a little distance, which is feed process. Then pick-up will emit light and you may notice the objective moves upwards and downwards, which is focus process. In face, in the same time of focus, the objective also moves upwards and backwards to make trace acts. Because the range is small, it is not easy to observe, and meanwhile DEMO disc tray also rotates slightly, which is DEMO acts.

4. Voltage of key point is shown as follows:

Disc	U222 (LM393)								Main axis signal	
	1	2	3	4	5	6	7	8	SPIN+	SPIN-
VCD disc	0.04	1	2.42	0.01	0.93	2.58	0.02	5.08	3.7	1.48
DVD disc	0.04	0.7	2.69	0.01	0.65	2.86	0.02	5.08	4.1	1.03

5. Loader signal explanation is shown as the following table:

Pin	Name	Signal flow direction	DVD disc	CD disc	No disc	Function description
1	F-	Input loader	2.52	2.34	0.46	Focus error signal is added to two sides of pick-up focus coil
2	F+	Input loader	2.49	2.49	0.93	
3	T+	Input loader	2.53	2.51	0.94	Trace error signal is added to two sides of pick-up trace coil
4	T-	Input loader	2.58	2.51	0.93	
5	C	Input MT1389	2.2	2.25	2.04	Disc data signal
6	D	Input MT1389	2.2	3.2	2.04	Disc data signal
7	IOA	Input MT1389	0.01	3.2	3.21	Disc identification signal, CD is 3.3V, DVD is 0V
8	RF	Input MT1389	2.21	2.53	1.28	The sum of disc data signal
9	A	Input MT1389	2.17	2.22	2.04	Disc data signal
10	B	Input MT1389	2.19	2.27	2.04	Disc data signal

Pin	Name	Signal flow direction	DVD disc	CD disc	No disc	Function description
11	F	Input MT1389	2.07	2.44	2.03	Supplementary signal used in trace
12	GND	Ground	0.01	0.01	0	Grounding
13	V20	Input loader	2.04	2.06	2.03	Reference voltage
14	Vcc	Input loader	5.04	5.04	5.02	Supply voltage for loader
15	E	Input MT1389	2.06	2.45	2.03	Disc data signal
16	Blanking	blanking in air	0.01	0	0	unused
17	VR-CD	Input loader	0.21	0.01	0	Through the handling inside loader, make sure MD11 is 180mV when reading CD
18	VR-DVD	Input loader	0.01	0.2	0	Through the handling inside loader, make sure MD11 is 180mV when reading DVD
19	LD-CD	Input loader	0.09	2.1	0	CD laser power control signal
20	MD11	Input MT1389	0.21	0.2	0	CD and DVD laser power monitoring signal
21	HFM	Input loader	5.04	5.04	5.02	High frequency overlapping signal produces laser with different wave length inside loader
22	Blanking	unused	0.01	0.1	0	
23	LD-DVD	Input loader	2.21	0.1	0	DVD laser power control signal
24	GND	unused	0.01	0.01	0	Grounding

Note: 1. When reading DVD, there are only A, B, C, D signals.

2. When reading CD, there are A, B, C, D, E, F signals.

3. $RFO = A + B + C + D$.

4. Focus error signal = $(A + C) - (B + D)$ Trace error signal = $E - F$.

3.2.4 Disc identification circuit

1. Disc identification circuit is shown as the following figure 3.2.4.1:

2. Working principle: the function of disc identification circuit is to identify the disc inserted to loader and judge whether the disc is CD or DVD to perform the corresponding control acts. When disc is inserted in, decode servo control IC (U201) VT7208 defaults disc to CD. Pin 92 of U201 (VT7208) outputs a low voltage signal, Q231 and Q203 are cut off, Q230 is on, laser receiver tube inside loader selects CD channel, now CD-DVD is high level input loader to make loader in the state of reading CD, through detecting laser power feedback signal, U201 (VT7208) analyses whether the preliminary judgment is correct (disc is defaulted CD). When detecting correct preliminary judgment, loader runs in the state of reading CD; when detecting incorrect preliminary judgment, U201 (VT7208) outputs a high voltage signal from its pin 92, Q231 and Q203 are on, Q230 is cut off, laser receiver tube inside loader selects DVD channel, now CD-DVD is low level input loader to make loader in the state of reading DVD.

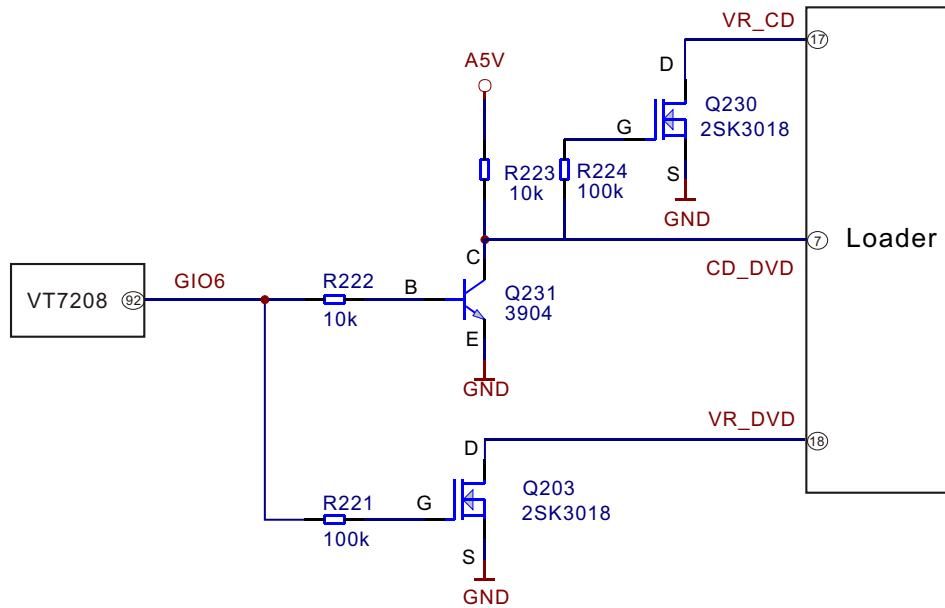


Figure 3.2.4.1 Disc identification circuit diagram

Whether the preliminarily defaulted disc is CD or DVD is set by U201 (VT7208) internal software.

Note: V303 and V304 are MOS tube.

3. Key point voltage (unit: V) is shown as the following table:

State	Q231			Q230			Q203			GIO6
	Base electrode B	Collector C	Emitter E	Grid electrode G	Drain electrode D	Source electrode S	G	D	S	
VCD disc	0	3.86	0	3.81	0	0	0	0.18	0	0
DVD disc	0.64	0	0	0	0.18	0	3.27	0	0	3.3
No disc	0	3.86	0	3.84	0	0	0	0	0	0

3.2.5 Disc in/out circuit

1. Disc in/out circuit is shown as the following figure 3.2.5.1:

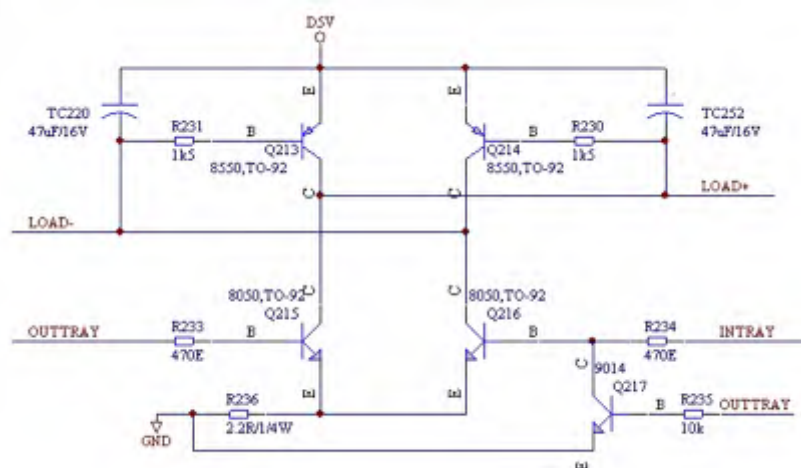


Figure 3.2.5.1 Disc in/out circuit diagram

2. Working principle: INTRAY, OUTTRAY are disc in/out control signals and are connected to pin 102, 103 of U201 (VT7208) respectively. LOAD+, LOAD- connect with two ends of electric machine to control. When users are performing disc out operation, servo control chip U201 (VT7208) sends out control signal through pin 102, 103 and changes level of LOAD+, LOAD- to change the rotation direction of electric machine to realize disc in/out function. The working process of disc in/out circuit is shown as follows:

Open disc tray: VCC→ Q213CE electrode on→ LOAD+ → Electric machine→ LOAD- → Q216CE electrode on→R236→Ground

When not opening disc tray, pin 102 and 103 of U201 (VT7208) are low level. When opening disc tray, pin102 of U201 (VT7208) sends a high level; Q216 is on; Q216 collector electrode changes into low level; LOAD- changes into low level; Q213 base electrode changes into low level; Q213 is on. Q213 collector electrode changes into high level and LOAD+ changes into high level.

Close disc tray: VCC→ Q214CE electrode on→ LOAD- → Electric machine→ LOAD+ → Q215CE electrode on→R236→Ground

When closing disc tray, pin 103 of U201 (VT7208) sends a high level; Q215 is on; collector electrode changes into low level; LOAD+ is low level; base electrode through R230 and Q214 is low level; Q214 is on; Q214 collector electrode changes into high level; LOAD- changes into high level.

The function of Q217 is interlock INTRAY and OUTTRAY signal to ensure the two are not high level at the same time. When the two are high level input, base electrode of Q216 is made to low level through Q217 on to ensure the normal working of disc in/out circuit. The function of electrolytic capacitor TC220 and TC252 is to avoid the sudden change of the voltage on two ends of disc in/out electric machine to make disc in/out acts smooth.

3. Key point voltage (unit: V) is shown as the following table:

State	Q213			Q214		
	Base electrode B	Collector C	Emittor E	Base electrode B	Collector C	Emittor E
Read disc	5.06	5	5.06	5.01	5.03	5.06
Open disc trayto proper position	4.79	4.77	5.06	4.77	4.79	5.06
Open disc tray	4.74→5.05→4.74	4.76→0.2→4.76	5.06	4.76→4.33→4.76	4.76→5.02→4.76	5.06
Close disc tray	4.74→4.33→4.74	4.76→5.05→4.76	5.06	4.76→5.03→4.76	4.79→0.2→4.79	5.06
State	Q215			Q216		
	Base electrode B	Collector C	Emittor E	Base electrode B	Collector C	Emittor E
Read disc	0	5	0	0	5.03	0
Open disc trayto proper position	0	4.77	0	0	4.79	0
Open disc tray	0→0.93→0	4.76→0.2→4.76	0	0	4.79→5.02→4.79	0
Close disc tray	0	4.76→5.05→4.76	0	0→0.93→0	4.79→0.2→4.79	0

State	Q217			OUT	IN
	Base electrode B	Collector C	Emittor E		
Read disc	0	0	0	0	0
Open disc tray to proper position	0	0	0	0	0
Open disc tray	0→0.63→0	0	0	0→3.12→0	0
Close disc tray	0	0→0.93→0	0	0	0→3.12→0

4. Troubleshooting process is shown as the following figure 3.2.5.2:

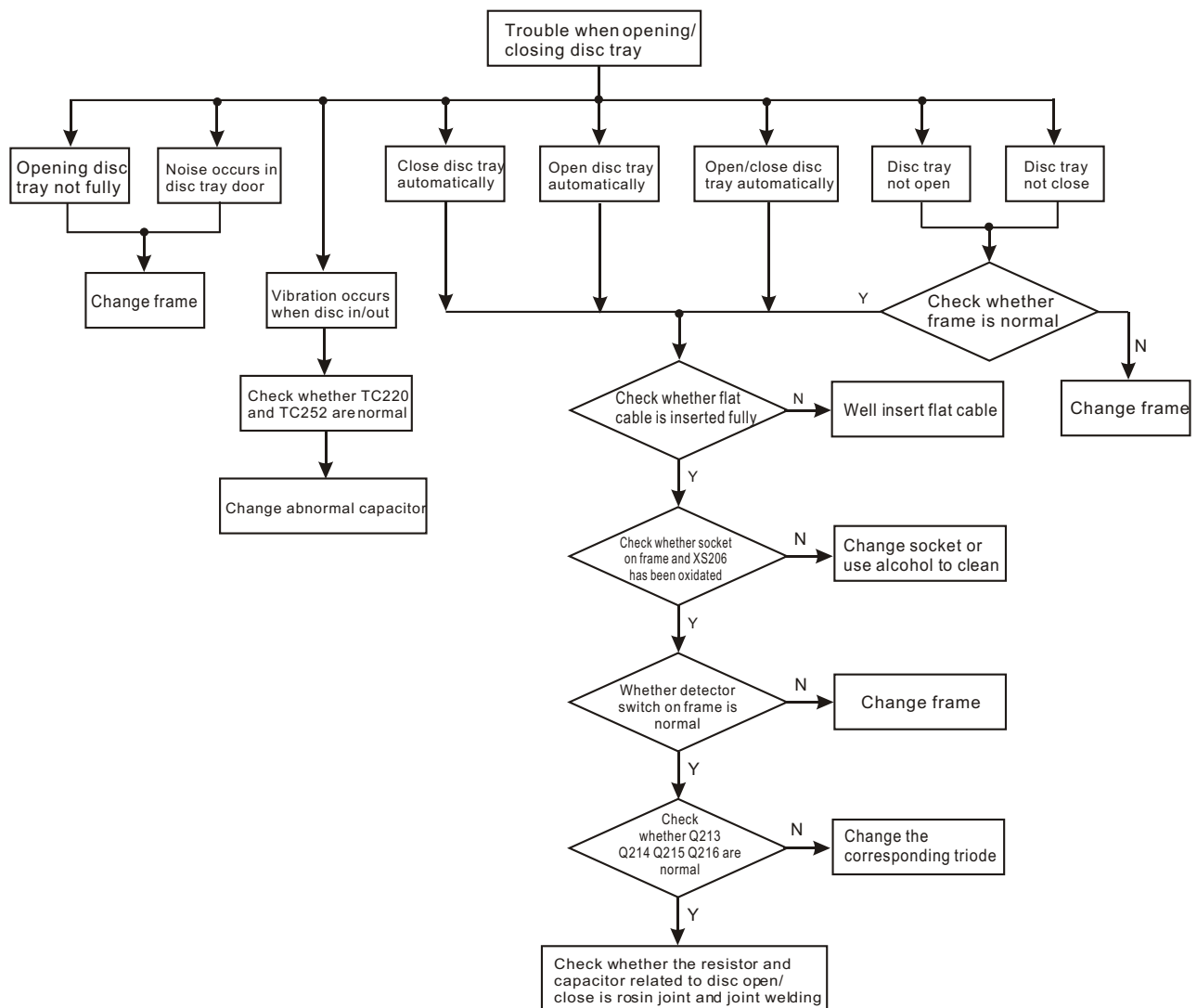


Figure 3.2.5.2 Troubleshooting flow chart for disc in/out

3.2.6 Reset circuit

1. Reset circuit one is shown as the following figure 3.2.6.1:

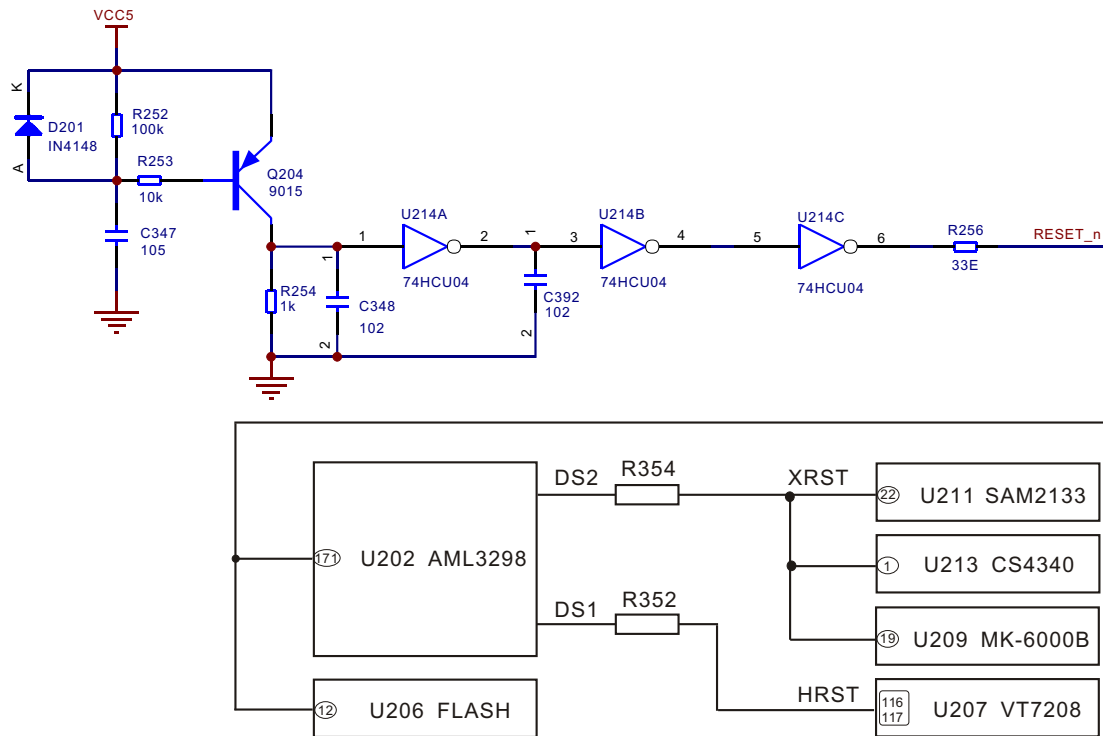


Figure 3.2.6.1 Reset circuit diagram

2. Working principle: The two ends voltage of capacitor C347 cannot change suddenly when power on, anode of the capacitor begins charging from 0V and now triode Q204 is on and performs reset to chip U202 and U206 through reversing and reshaping of inverter U214 (HCU04); when charge of the capacitor is close to 3.3V, triode Q204 cut off; phase inverter outputs high voltage from pin 6 and system reset finishes. In the course of system working, U202 may output reset signal to perform reset processing to U211, U213, U209 and U207.

3. Reset circuit two is shown as the following figure 3.2.6.2:

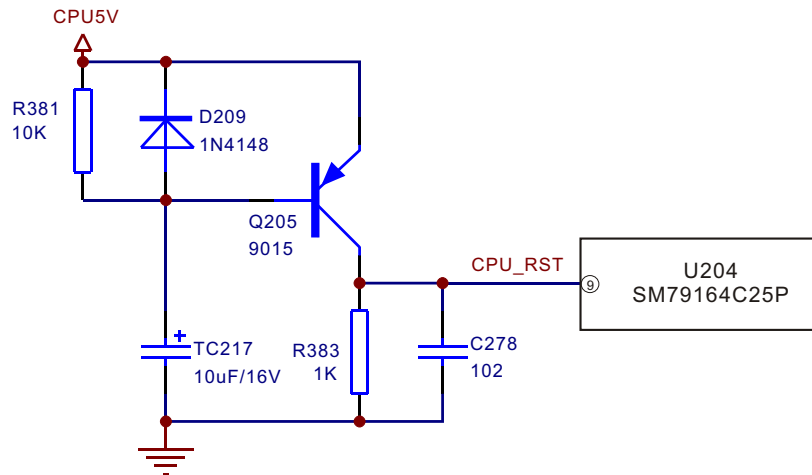


Figure 3.2.6.2 Reset circuit diagram

Reset circuit two is used to rest U204, and the working principle is the same with that of reset circuit one. Please refer to it.

4. Key point voltage (unit: V) is shown as the following table:

State	Q204			U214					
	Base electrode B	Collector C	Emitter E	1	2	3	4	5	6
Normal working	3.26	3.27	0	0	3.3	3.3	0	0	3.4
Standby	3.26	3.27	0	0	3.3	3.3	0	0	3.4

State	Q205			One end of R354		Two ends of R352	
	Base electrode B	Collector C	Emitter E				
Normal working	5.17	5.18	0	3.28		3.28/3.32	
Standby	5.17	5.18	0	3.28		3.28/3.32	

5. Troubleshooting process

(1) URST# is always low level troubleshooting process, shown in the following figure 3.2.6.3:

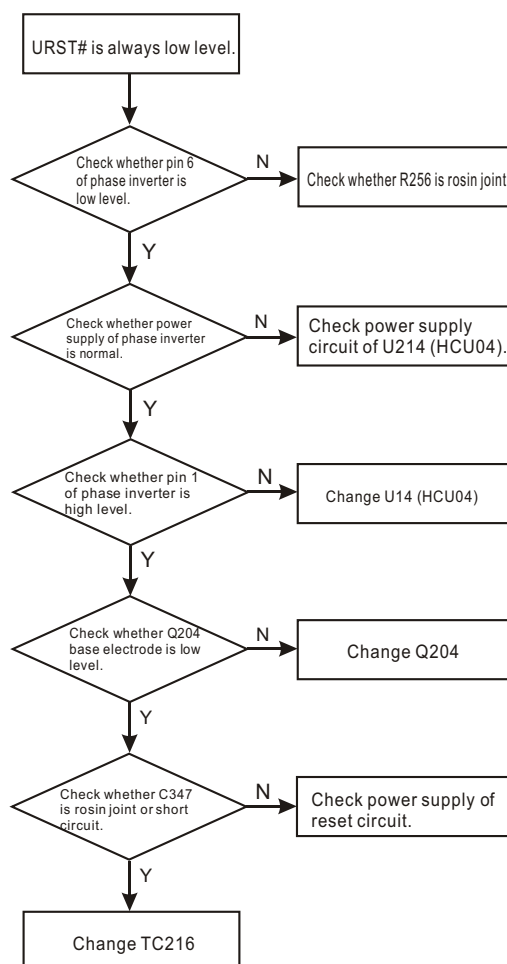


Figure 3.2.6.3 Troubleshooting flow chart when URST# is always low level

(2) URST# is always high level troubleshooting process, shown in the figure 3.2.6.4:

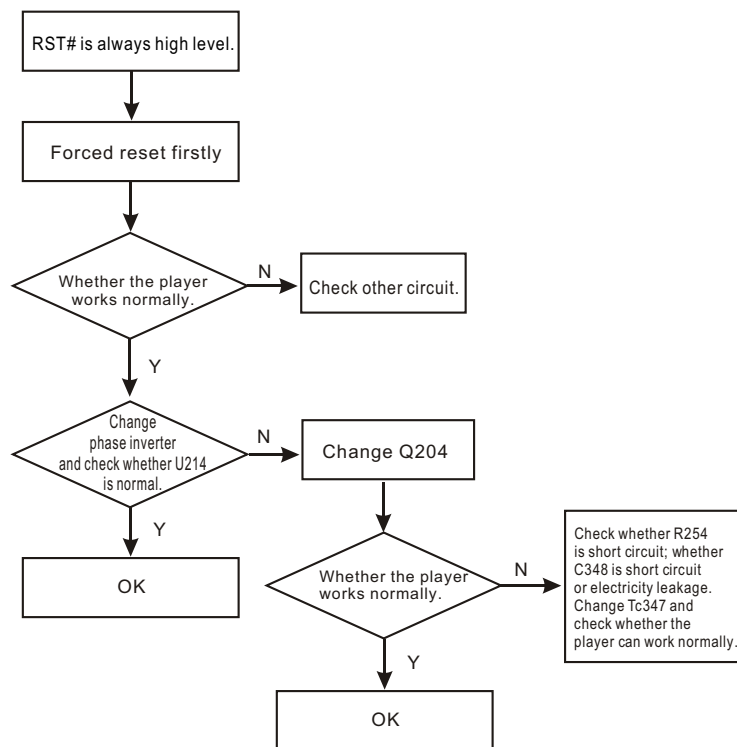


Figure 3.2.6.4 Troubleshooting flow chart when URST# is always high level

Note: Troubleshooting process of reset circuit one is the same with that of reset circuit two.

3.2.7 Mute circuit

1. Mixed left/right channel mute circuit and power-off quieting circuit

(1) Mixed left/right channel mute circuit and power-off quieting circuit is shown as the following figure 3.2.7.1:

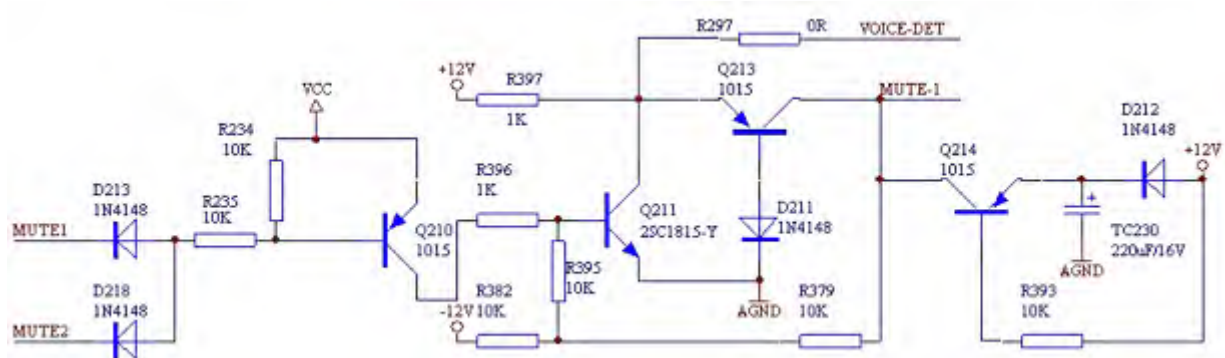


Figure 3.2.7.1 Mixed left/right channel mute circuit and power-off quieting circuit diagram

(2) Working principle: under the control of I²C to U202 (AML3298), CS4340 outputs MUTE1 from pin 16, pin 1 of U204 (SM79164C25P) on power amplifier board outputs MUTE2 and the two paths mute signals add to mixed left/right channel mute circuit. When MUTE1 and MUTE2 are high voltage at the same time, mute control signal MUTE-1 is produced through mute circuit and this signal is added to the base electrode of each switch pipe Q206, Q209, Q212, Q220 and Q221 of analog channel to make audio signal bypass to ground to realize the purpose of mute. VOICE-DET is from microphone jack of MIC board, when inserting microphone, VOICE-DET signal is short circuit to ground and this mute circuit loses mute control function. Even if MUTE button is pressed at this moment, MIC signal can also output from headphone and left/right power amplifier channel.

When working normally (playing discs), only one path of MUTE1, MUTE2 path signals changes into low level, Q210 is on, collector electrode of Q210 is high level, Q211 is also on and its collector electrode is low level, Q213 is cutoff, MUTE-1 is low level and sound output is normal.

When there is mute, MUTE1, MUTE2 both change into high level, now base electrode of Q210 is high level, Q210 is cutoff, Q211 is also cutoff, emitter electrode of Q213 changes into high level and is on, high level voltage is added to MUTE-1 through Emitter-Collector of Q213, output high level is added to the base electrode of switch pipe Q206, Q209, Q212, Q220 and Q221, switch pipe is on and sound is bypassed to ground.

Power-off quieting: when working normally, Q214 is in cutoff state for there is no positive bias; when switching off the player, +12V disappears, base electrode of Q214 changes into low level, its emitter is high level because of discharge of capacitor TC230, Q214 is on, the discharge of TC230 makes MUTE-1 output high level through Emitter-Collector of Q214 and add to each switch pipe to make switch pipes on, sound is bypassed to ground to realize power-off quieting function.

The function of -12V voltage in the figure is to make sure the reliable cutoff of each switch pipe when circuit is working normally.

(3) Key point voltage (unit: V) is shown as the following table:

State	Q210			Q211			Q213			Q214		
	B	C	E	B	C	E	B	C	E	B	C	E
Unmute	4.47	5.12	5.17	0.77	0.03	0	-0.14	-5.64	-0.03	11.98	-5.64	11.86
Mute	5.16	-5.31	5.17	-5.31	1.46	1.46	0.68	1.44	0	11.98	1.44	1.86

2. Mute circuit special for left/right power amplifier channel

(1) Mute circuit special for left/right power amplifier channel is shown as the following figure 3.2.7.2:(2) Working principle of mute circuit special for left/right power amplifier channel: when there is no mute, STANBY signal sent out from U204 (SM79164C25P) is low level, which makes Q219 cutoff, now VH+ charges TC286 to make the positive direction voltage high level and then make base electrode voltage of Q218 high level through the function of 12V voltage regulator tube D222, now Q218 is on; the function of 5V voltage regulator tube D203 makes emitter electrode of Q218 5V and connect with mute

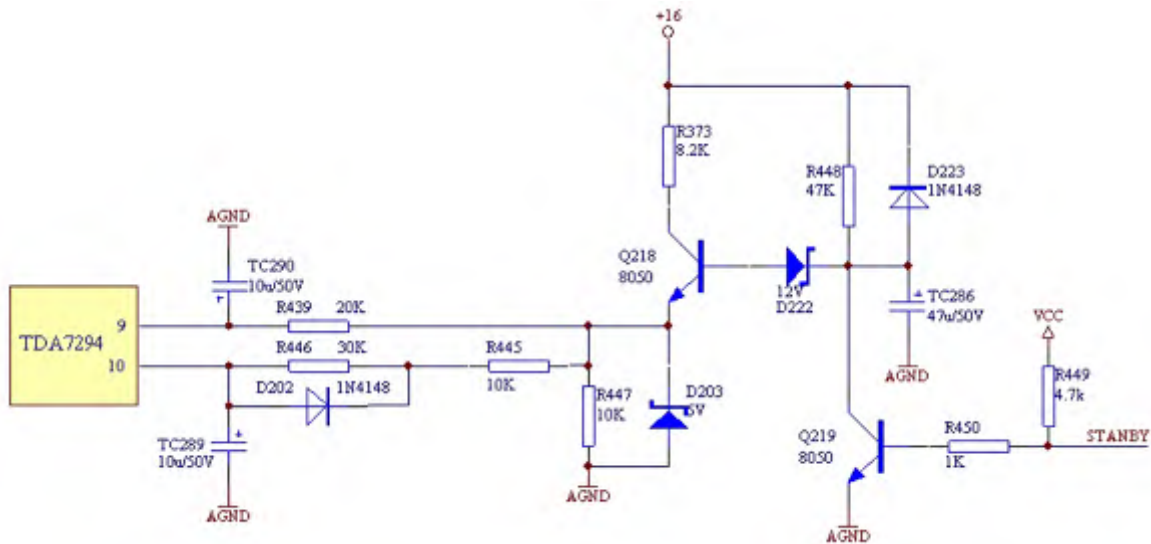


Figure 3.2.7.2 Left/right power amplifier channel mute circuit diagram

Signal control end pin 10 and enable end pin 9 of TDA7294, now power amplifying control IC TDA7294 works normally; when there is mute, STANBY is high level, Q219 is on, TC286 discharges through Q219 to make collector electrode of Q219 low level and make base electrode voltage of Q218 low level, Q218 is cutoff, now mute control end pin 10 and enable end pin 9 of TDA7294 is 0V input and TDA7294 has no output, which realizes mute function.

(3) Key point voltage (unit: V) is shown as the following table:

State	Q218			Q219		
	B	C	E	B	C	E
Unmute	5.75	5.13	5.1	0.04	14.55	0
Mute	-1.1	20.6	0	0.69	0	0

3. MIDI signal mute circuit

(1) MIDI signal mute circuit is shown as the following figure 3.2.7.3:

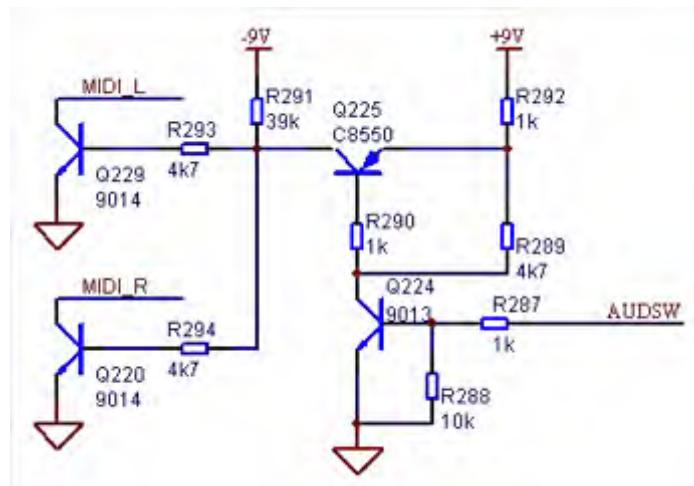


Figure 3.2.7.3 MIDI signal mute circuit diagram

(2) MIDI signal mute circuit working principle: when there is no mute, AUDSW signal sent out from MK-6000B control is low level, Q224, Q225 are cutoff, now base electrode of Q229 is -9V, Q229 is cutoff, MIDIL and MIDIR are outputted normally; when there is mute, AUDSW is high level, Q224, Q225 are on, now base electrode of Q229 is high level on, MIDIL and MIDIR inlay to about 0.3V to realize the mute control to MIDI signal.

4. Troubleshooting process

(1) Troubleshooting process for “Mixed left/right and subwoofer cannot mute” is shown as the following figure 3.2.7.4:

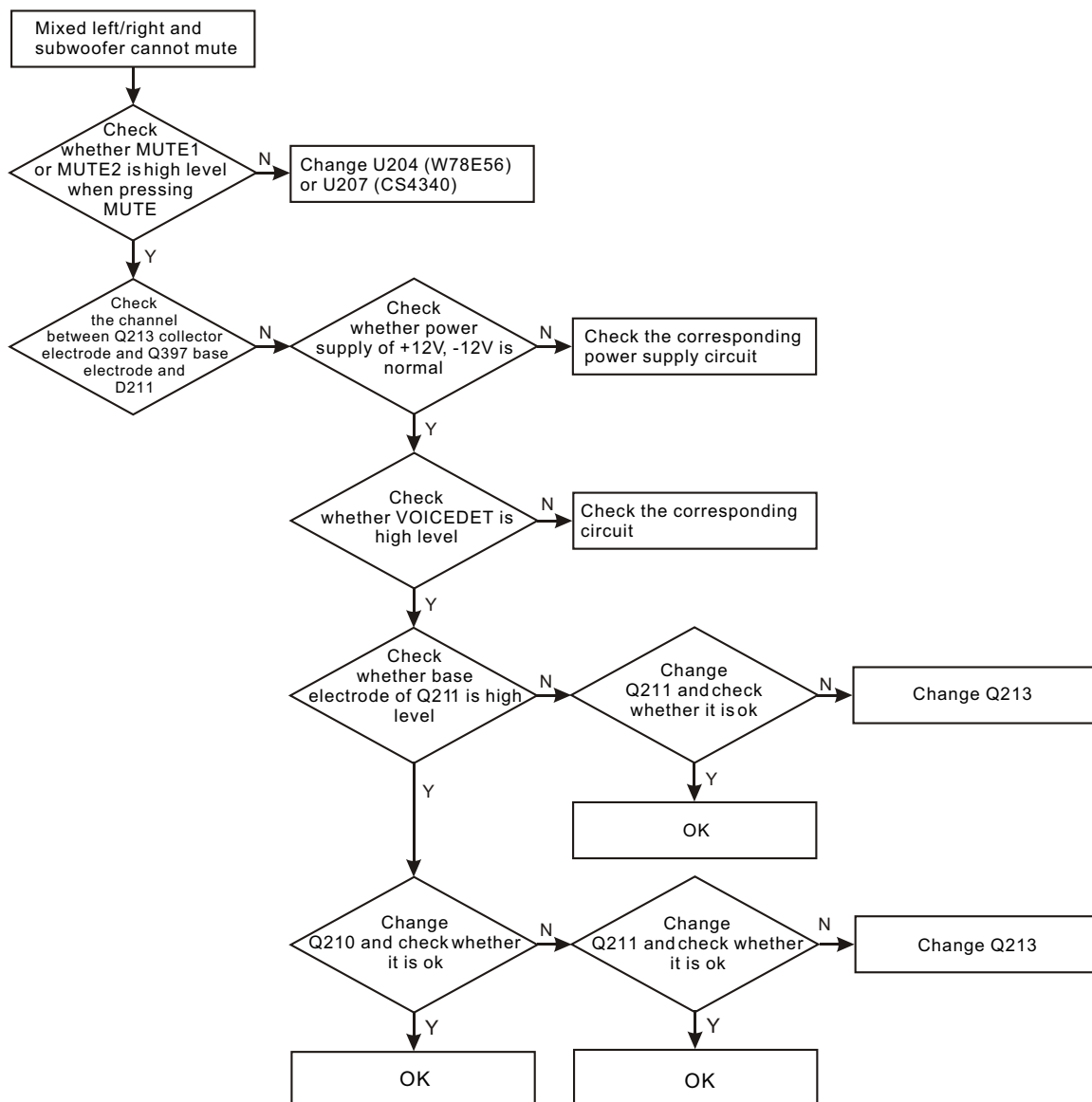


Figure 3.2.7.4 Troubleshooting flowchart for “Mixed left/right and subwoofer cannot mute”

(2) Troubleshooting process for "Power amplifier output mute circuit has no function" is shown as the following figure 3.2.7.5:

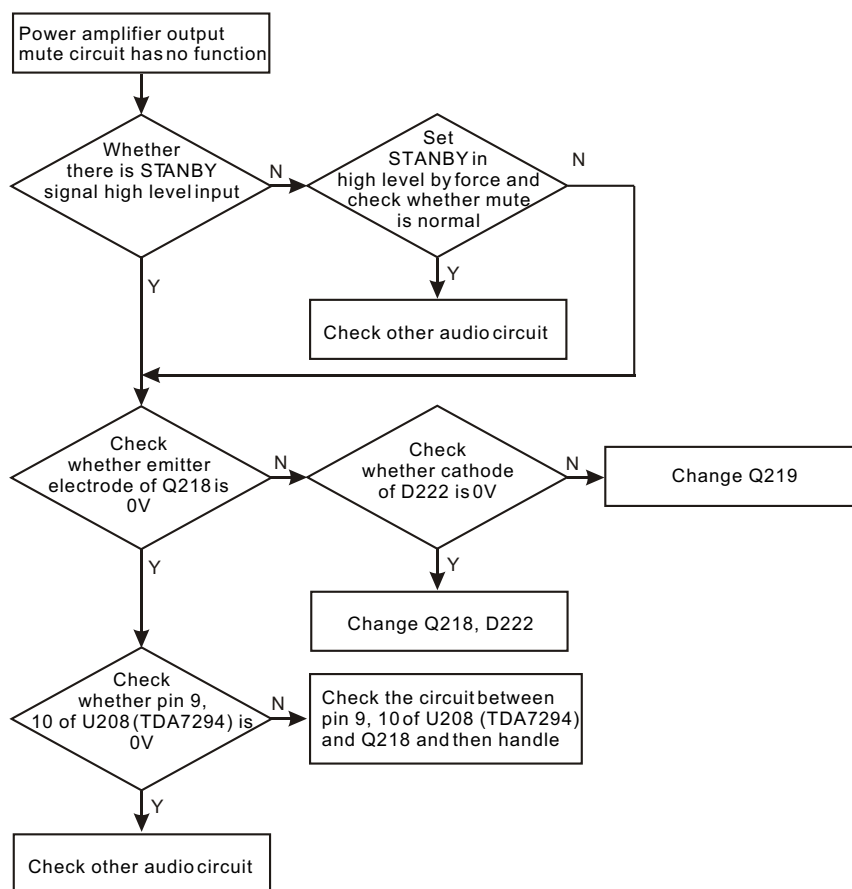


Figure 3.2.7.5 Troubleshooting flow chart for "Power amplifier output mute circuit has no function"

(3) Troubleshooting process for "MIDI mute circuit has no function" is shown as the following figure

3.2.7.6:

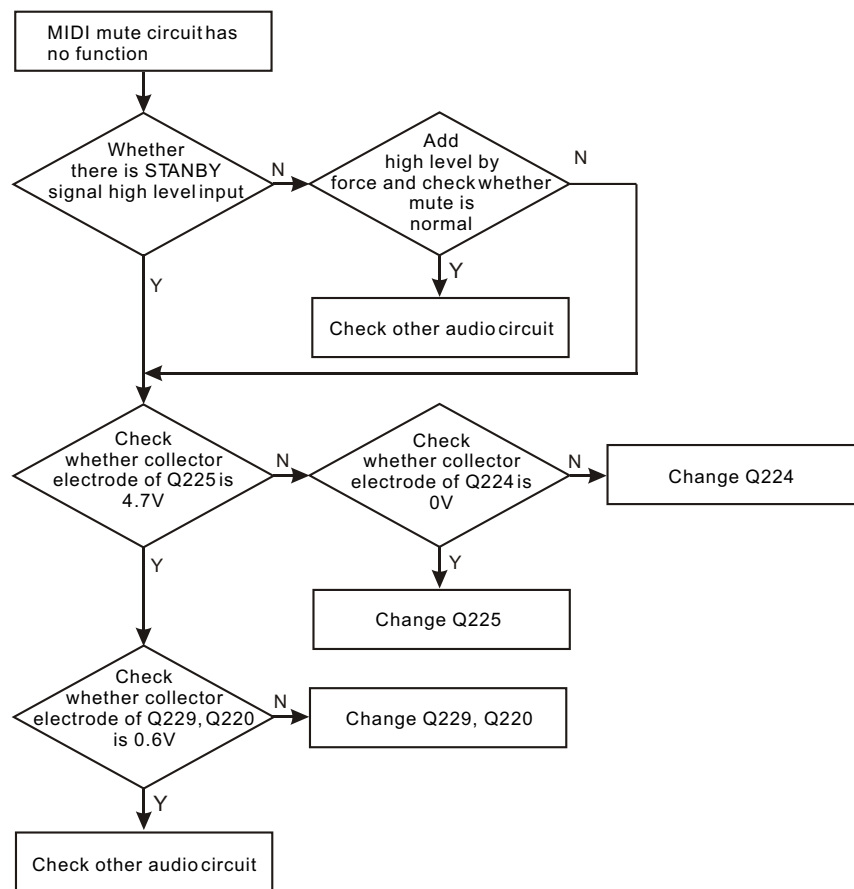


Figure 3.2.7.6 Troubleshooting flow chart for "MIDI mute circuit has no function"

3.2.8 MIC circuit

1. MIC circuit block diagram is shown as the following figure 3.2.8.1:

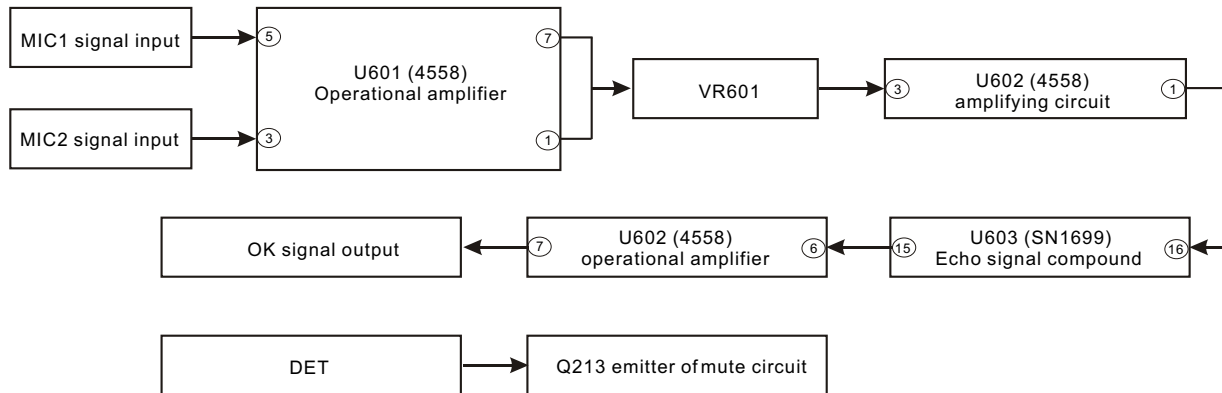


Figure 3.2.8.1 MIC circuit block diagram

2. Working principle: after operation amplification of U601 (4558), microphone signals MIC1 and MIC2 are superposed by operational amplifier U602 (4558) in terms of a certain proportion according to variable resistor U602 (4558). The microphone signals after being superposed input into U603 (SN1699) to produce echo output, and then send out OKA signal to power amplifier board and decode board through U602 (4558) operational amplifying. DET signal is connected to Q213 emitter electrode of mute circuit. When microphone is inserted, DET signal is short circuit to ground, this mute circuit loses mute control function, even though MUTE signal is pressed at this time, MIS signal can also output from headphone and left/right power amplifier channel.

3. Microphone DET signal voltage is shown as the following table:

Mute \ Insert microphone	Y	N
	0	1.07
Y	0	1.07
N	0	0

4. Troubleshooting process

(1) Troubleshooting process for “MIC-1 signal has no output” is shown as the following figure

3.2.8.2:

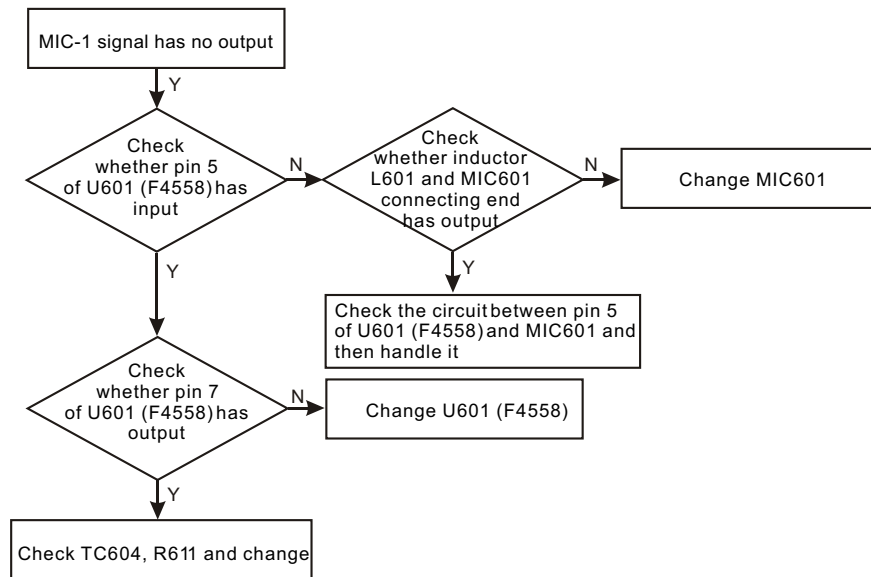


Figure 3.2.8.2 Troubleshooting flow chart fir “MIC-1 signal has no output”

Note: troubleshooting for “MIC-2 signal has no output” is carried out according to this process.

Microphone has no echo: check power supply of U603 (SN1699) and external matched resistor, capacitor, if there is no problem, change U603 (SN1699).

(2) Troubleshooting process for "MIC has no output" is shown as the following figure 3.2.8.2:

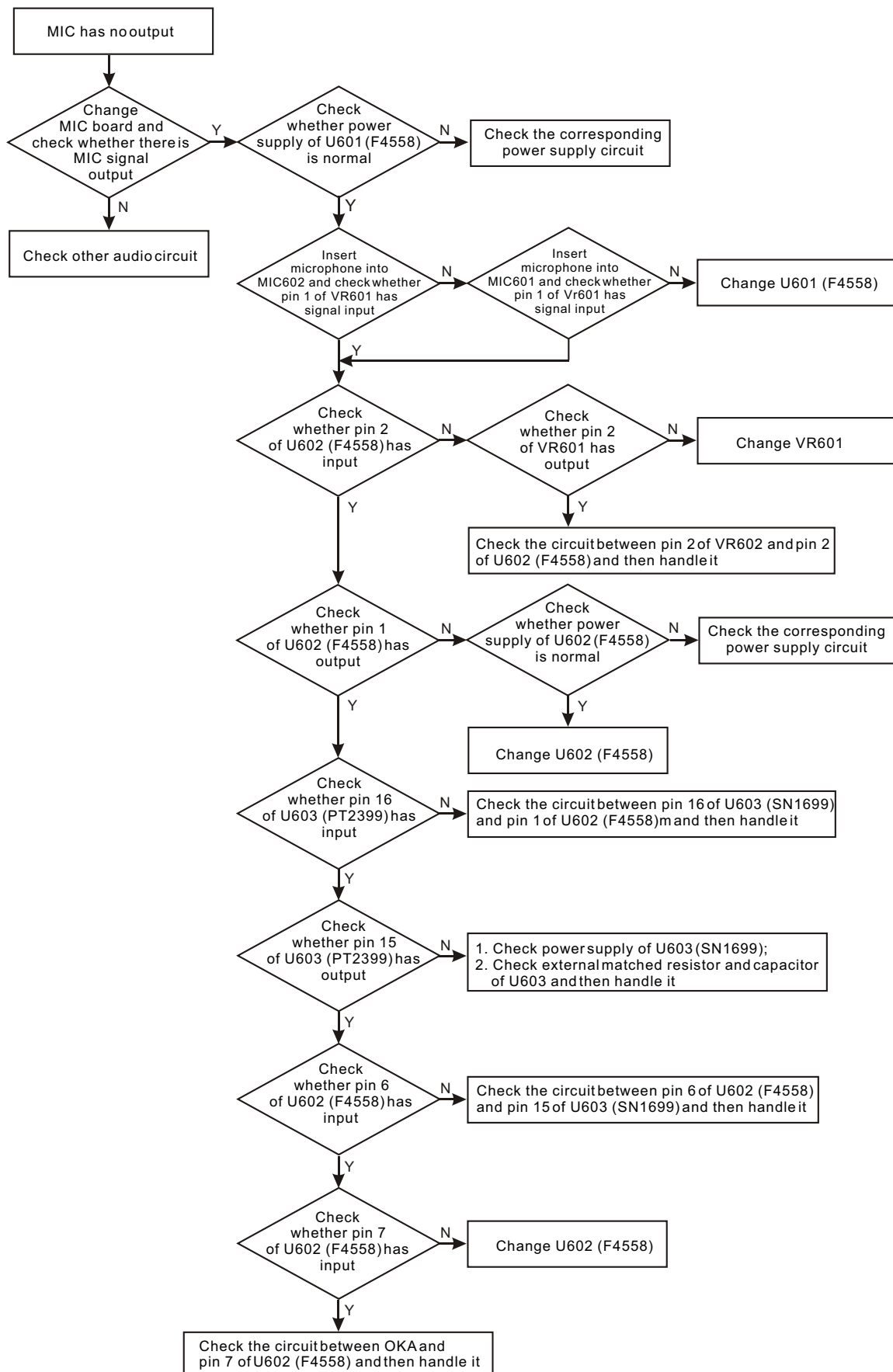


Figure 3.2.8.2 Troubleshooting flow chart for "MIC has no output"

3.2.9 Headphone signal circuit

1. Headphone signal circuit diagram is shown as the following figure 3.2.9.1:

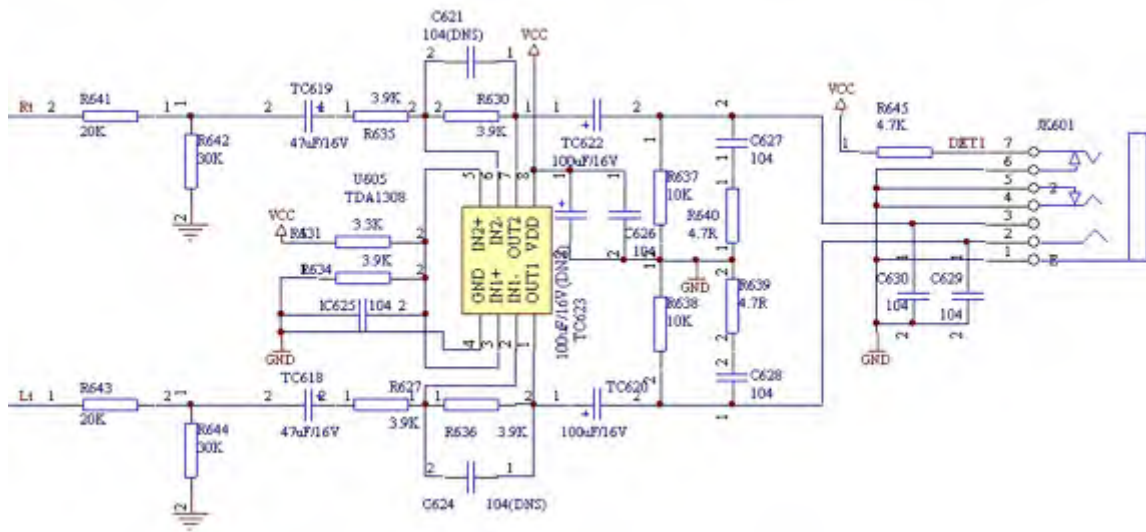


Figure 3.2.9.1 Headphone signal circuit diagram

2. Working principle: audio signals RT, LT outputted by power amplifier board, after partial pressure of R641, R642 and R643, R644 respectively and then coupling of TC618, TC619, are connected to pin 2 and 6 of headphone drive chip TDA1308, then outputted by pin 1 and 7 of TDA1308 through internal operational amplifying, through TC622, TC620 coupling and R637, C627, R640 filtering and R638, C628, R639 filtering, and finally outputted through C630 and C629 filtering. Headphone DET signal is low level 0V when headphone is inserted and is high level 4.2V when headphone is not inserted.

3. Troubleshooting process for left/right channel of headphone is shown as the following figure

3.2.9.2:



Figure 3.2.9.2 Troubleshooting flow chart for left/right channel of headphone

3.2.10 Video circuit

1. Video circuit block diagram is shown as the following figure 3.2.10.1:

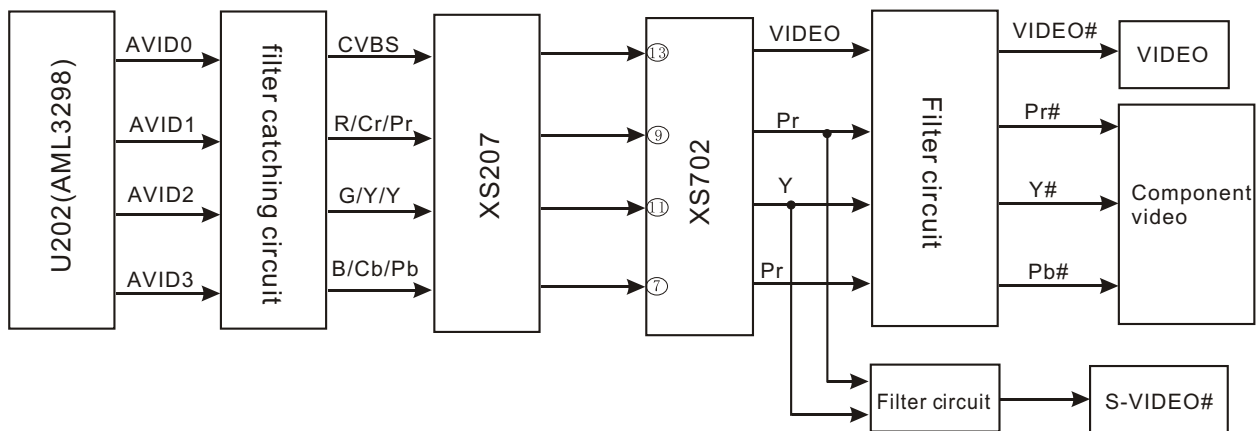


Figure 3.2.10.1 Video circuit block diagram

Video signals decoded by U202 (AML3298) are sent to the corresponding terminal through lowpass filtering and amplitude limiting to output. Take CVBS signal as an instance to explain the working principle of limiting circuit.

2. Video circuit is shown as the following figure 3.2.10.2:

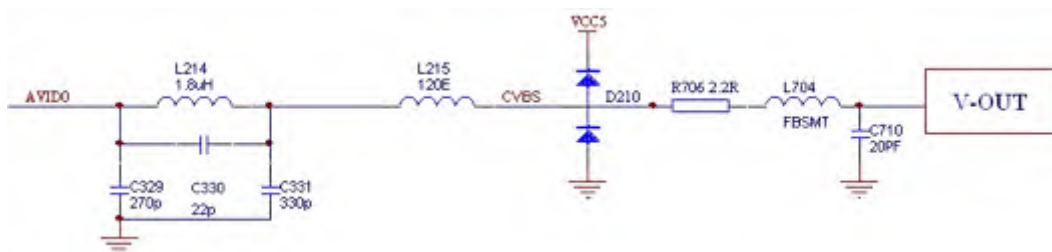


Figure 3.2.10.2 Video circuit diagram

3. Working principle: capacitors C329, C331, C330 and inductor L214 compose a lowpass filter to filter high frequency signal apart from useful signal; dual diode D210 composes a limiting circuit. Through features of diode, we know that the max amplitude limitation of composite video signal CVBS cannot exceed 5.7, and the min one cannot be less than -0.7, thus the high voltage signal from TV set can be prevented from burning down the player.

4. Key point voltage (unit: V) is shown as the following table:

Signal	Function	Causes	Voltage when no disc in
CVBS	Compound signal of component video	Composite video has no picture/picture is bright/picture is dark	0.74
Y1	Brightness signal of component video	Component video has no picture/picture is bright/picture is dark	0.76
Pb	Chroma signal of component video	Component video color distortion	1.46
Pr			1.75

Note: in actual measurement, voltage of CVBS, Y1, Pb, Pr will have a certain change, which is between two several tenths of a volt and one volte plus a bit generally, so the main troubleshooting method is to measure waveform of each signal during the course of playback.

5. Troubleshooting process

(1) Troubleshooting flow of “no output for composite video” is shown as the following figure 3.2.10.3:

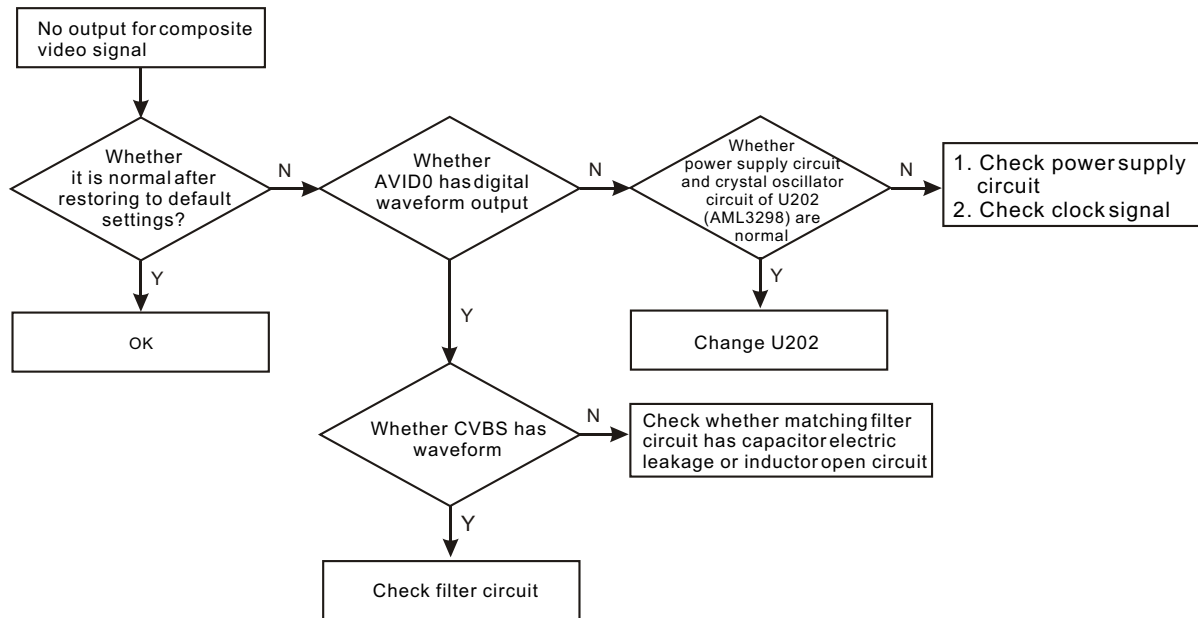


Figure 3.2.10.3 Troubleshooting flow chart for “No output for composite video”

(2) Troubleshooting flow chart for “picture mosaic when playing” is shown as the following figure 3.2.10.4:

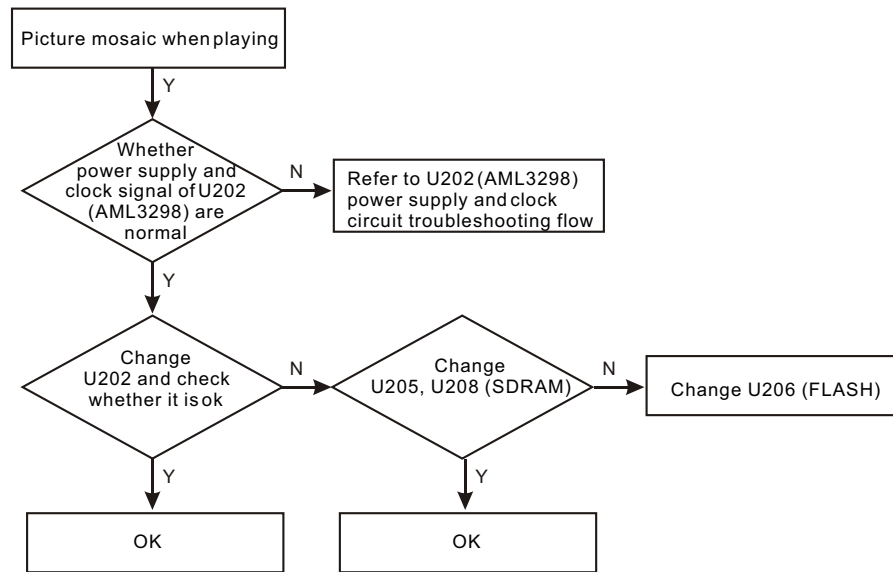


Figure 3.2.10.4 Troubleshooting flow chart for “picture mosaic when playing”

(3) Troubleshooting flow for “no colour for image” is shown as the following figure 3.2.10.5:

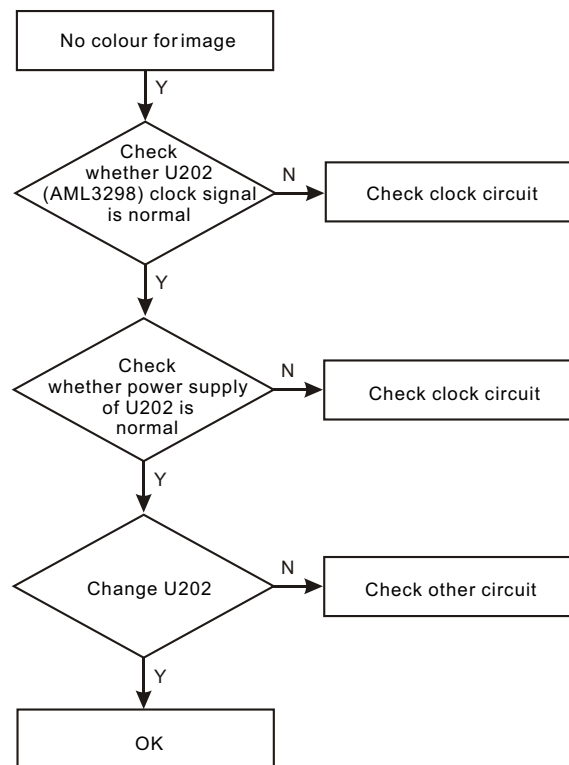


Figure 3.2.10.5 Troubleshooting flow chart for "no colour for image"

3.2.11 Audio power amplifying circuit

1. Audio power amplifying circuit block diagram is shown as the following figure 3.2.11.1:

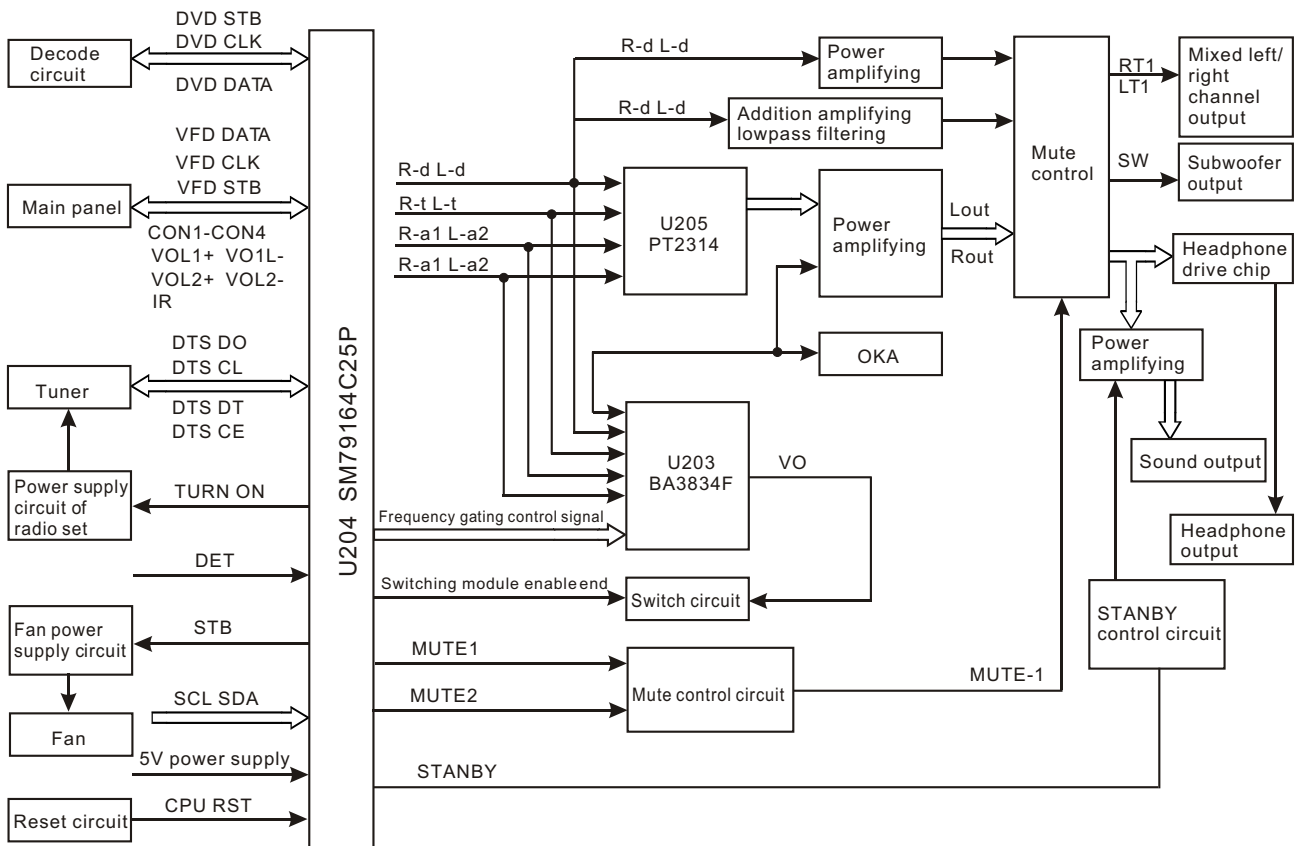


Figure 3.2.11.1 Audio power amplifying circuit block diagram

2. Working principle: main control CPU U204 (SM79164C25P) exists on power amplifier board. It may carry out data exchange with U202 (AML3298) on power amplifier board to fulfil the control to U202 (AML3298); may also receive remote controller information and keyboard scanning information sent out from panel and then output to VFD display on control signal drive panel; what's more, the control of tuner, 7-frequency band bandpass filtering U203 (BA3834F), mute circuit MUTE2 signal, external fan, power amplifier IC standby and I²C bus are all realized through it.

The amplifying handling of each channel audio signal is main function of power amplifier board. Disc audio signal (Rd, Ld), through amplification, changes into RT1, LT1 signal and provides output for mixed left/right terminal (LINE OUTPUT). Disc audio signal (Rd, Ld), external audio input (Ra1, La1, Ra2, La2), tuner audio signal (RT, LT), through U207 (PT2314) handling and power amplifying, provide output for headphone and speaker.

3. Troubleshooting flow

(1) Troubleshooting flow for “no sound for left/right channel of power amplifier board” is shown as the following figure 3.2.11.2:

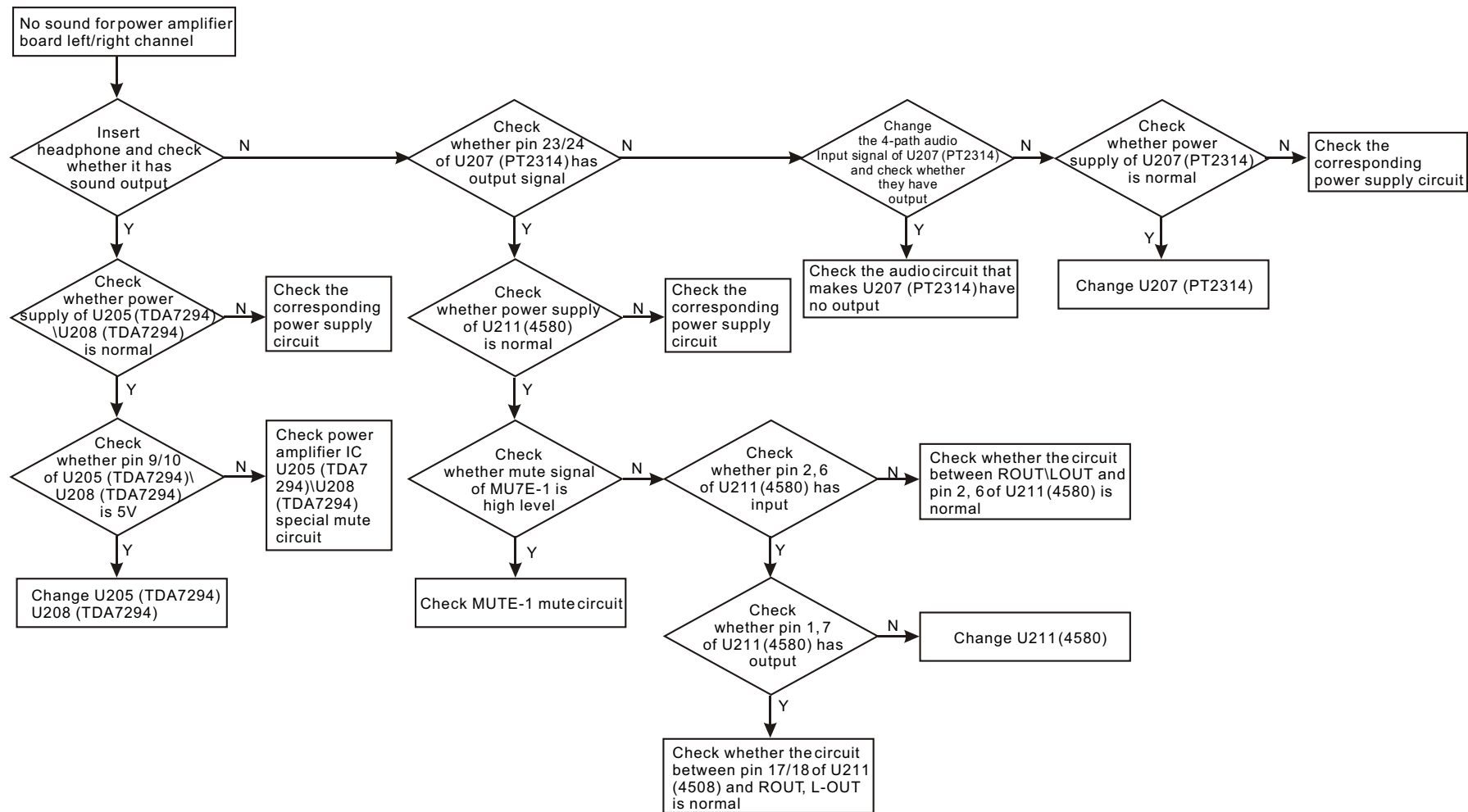


Figure 3.2.11.2 Troubleshooting flow chart for "no sound for no sound for power amplifier board left/right channel"

(2) Troubleshooting flow for "no sound for left channel of power amplifier board" is shown as the following figure 3.2.11.3:

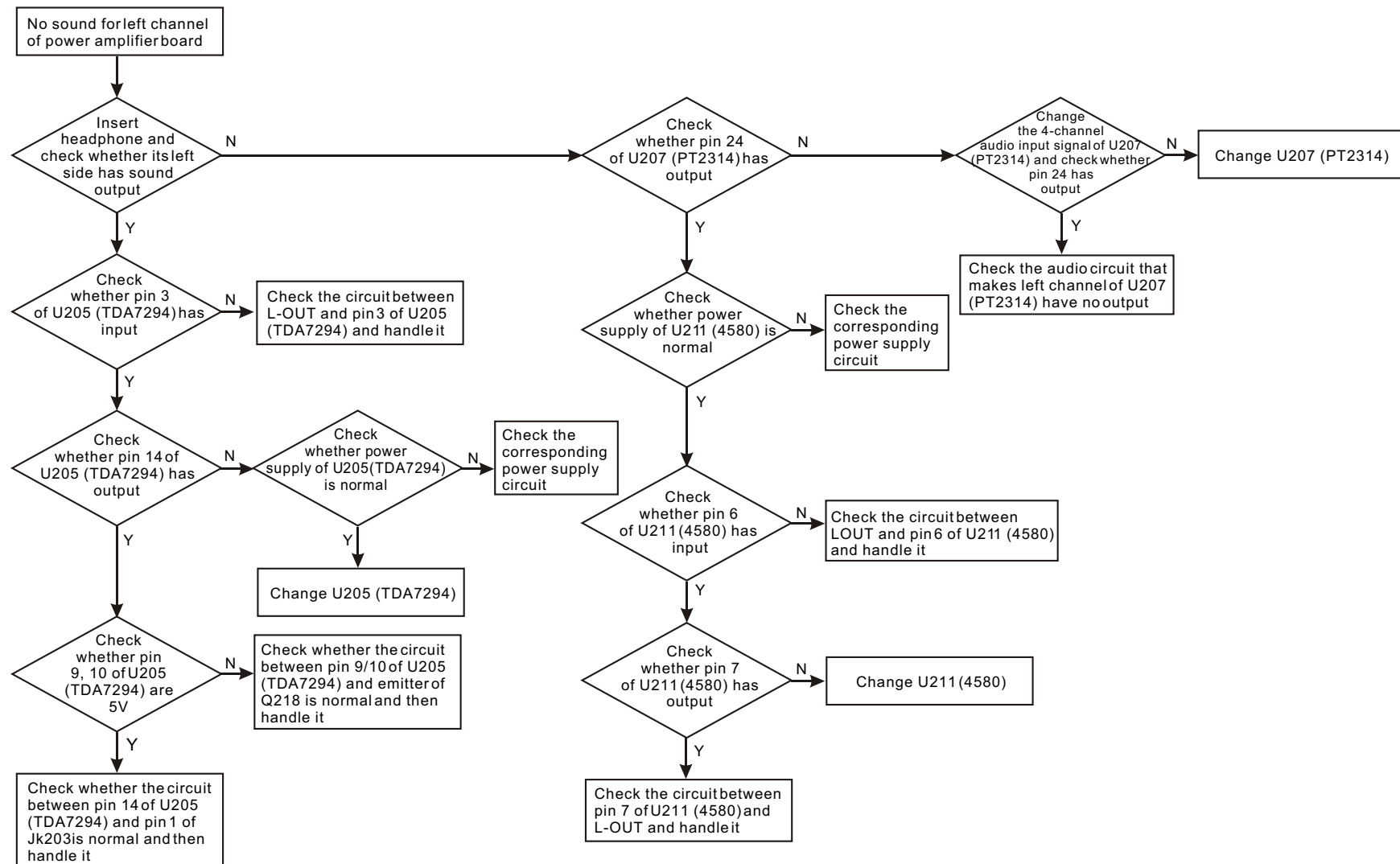


Figure 3.2.11.3 Troubleshooting flow chart for "no sound for left channel of power amplifier board"

3.2.12 Panel control circuit

1. Panel control circuit block diagram is shown in the following figure 3.2.12.1:

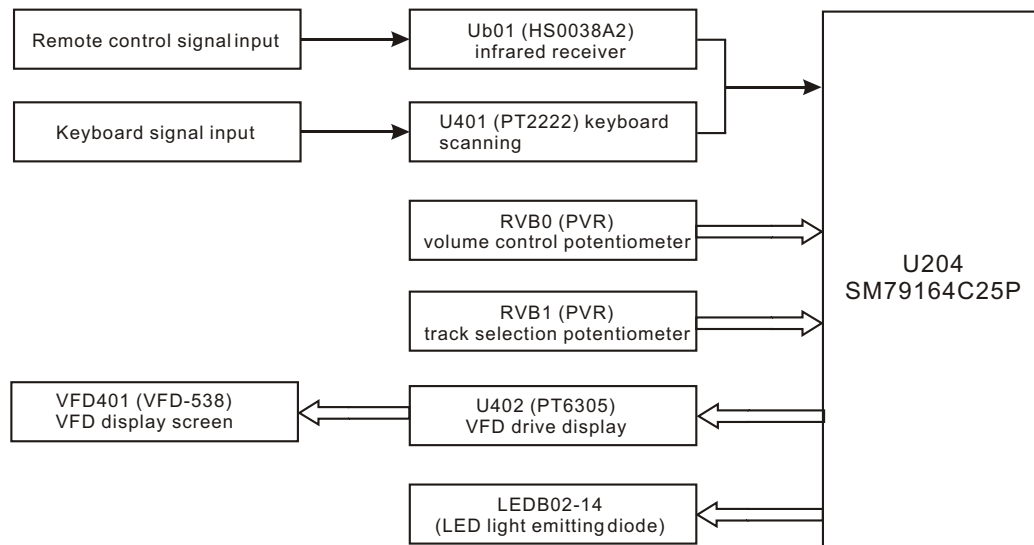


Figure 3.2.12.1 Panel control circuit block diagram

2. Working principle: UB01 (HS0038A2) is infrared receiver, which may receive remote control signals sent out by remote controller and then send them to main control CPU U204 (SM79164C25P) for identification to control the realization of relevant functions. When buttons on keyboard matrix are pressed, keyboard scanning IC U401 (PT2222) can identify button and converse it into corresponding code to send it to U204 (SM79164C25P) for identification to realize the corresponding function control. The adjustment to volume and selection of disc songs playback sequence can be realized through the control to RVB0 (RVP) volume control potentiometer and RVB1 (RVP) track selection potentiometer. U204 (SM79164C25P) displays the working state of system on VFD screen through the control to VFD display drive IC U402 (PT6305) and provides background light and display of system working state through the control to LED light emitting diode.

3.2.13 System time generation holding circuit

1. System time generation holding circuit is shown as the following figure 3.2.13.1:

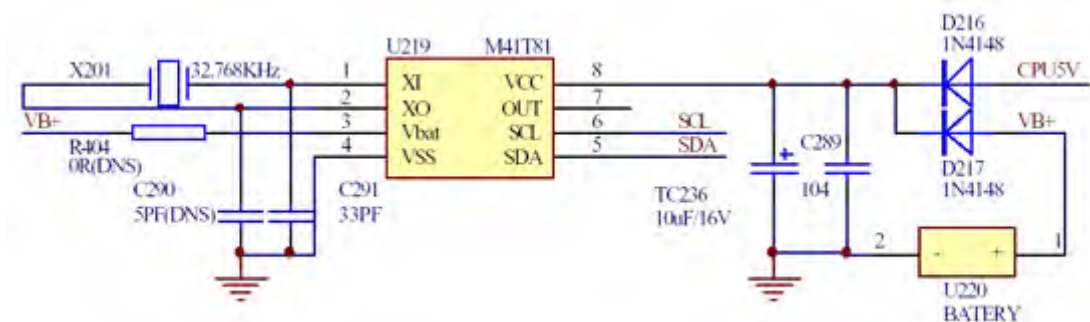


Figure 3.2.13.1 System time generation holding circuit diagram

2. Working principle: the main function of this circuit is to provide time information for system. U219 is a special time chip, and X201 provides U219 with 32.786KHz clock signal. When the player is working, CPU5V and VH+ supply power for U219, and U220 supplies power for U219 when power is off.

3.2.14 Main axis diversion judgement circuit

1. Main axis diversion judgement circuit is shown as the following figure 3.2.14.1:

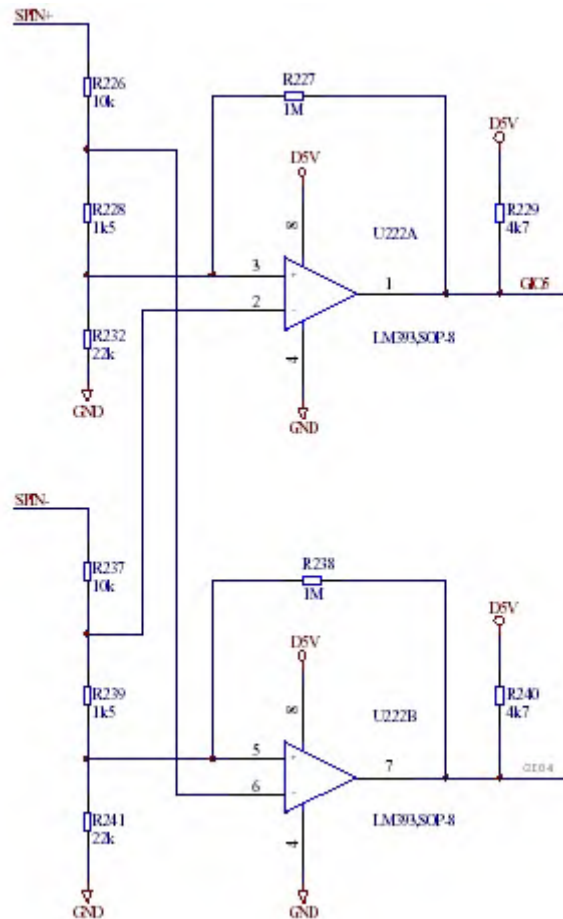


Figure 3.2.14.1 Main axis diversion judgement circuit diagram

2. Working principle: the main function of this circuit is to make judgement to main axis diversion: when voltage of SPIN+ is more than that of SPIN-, and the voltage difference reaches a certain value, GIO5 is high level and GIO4 is low level; when voltage of SPIN- is more than that of SPIN+, and the voltage difference reaches a certain value, GIO5 is low level and GIO4 is high level. U201 (VT7208) makes judgement to main axis diversion according to GIO4 and GIO5.

3.2.15 Spectrum signal switch control and matching circuit

1. Spectrum signal switch control and matching circuit is shown as the following figure 3.2.15.1:

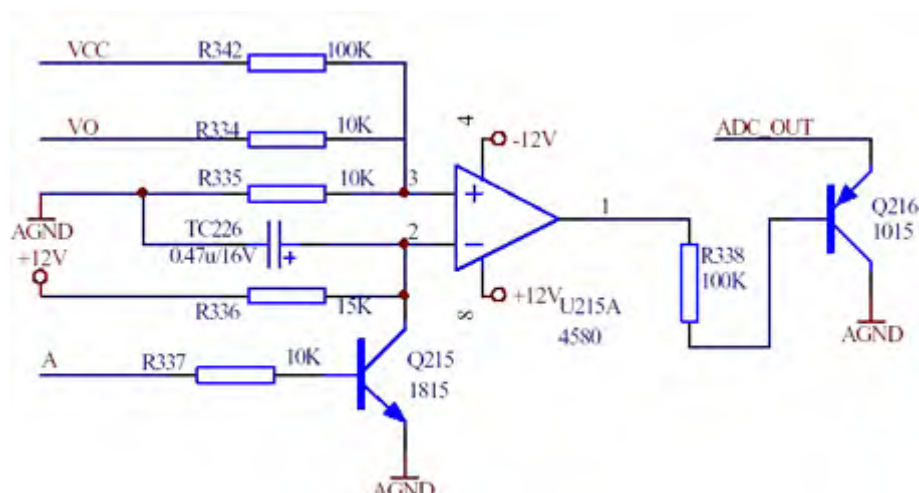


Figure 3.2.15.1 Spectrum signal switch control and matching circuit diagram

2. Working principle: one function of this circuit is to change the spectrum information VO provided by U203 into ADC OUT and provide it to U204. A is gating signal provided by U204; when A is high level, Q205 is on, pin 2 of U215 is low level and ADC OUT has output; when A is low level, Q205 is cutoff, pin 2 of U215 is high level and ADC OUT has no output.

Another function of this circuit is to perform voltage matching. The variable range of VO signal is different from U204 input signal range, so voltage matching is required. ADC OUT signal generated by VO signal after this circuit handling can be normally inputted into U204.

3.2.16 Graded detecting circuit

1. Graded detecting circuit is shown as the following figure 3.2.16.1:

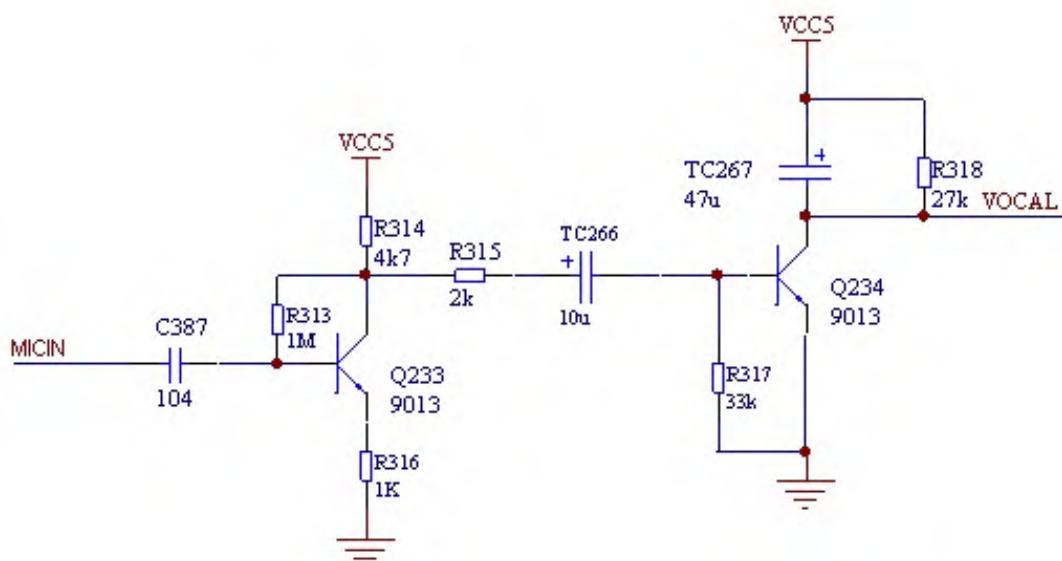


Figure 3.2.16.1 Graded detecting circuit diagram

2. Working principle: MICIN signal is amplified firstly through Q233 and then outputs through triode Q234. When there is no MIC signal input, MICIN is low level, triode Q233 is not on and VOCAL signal is high level after being affected by VCC5; when there is MIC signal input, MICIN is high level and makes triode Q233 on and then makes Q234 on after Tc266 filtering. After being on, it will make VOCAL connect with ground to make VOCAL signal change into low level. C387, TC266 and TC267 are filter capacitor and the function is to remove noises. Graded signal VOCAL is effective when in low level. VOCAL signal is 3.65V when in high level and 0V when in low level.

3.2.17 Tuner switch circuit

1. Tuner switch circuit is shown as the following figure 3.2.17.1:

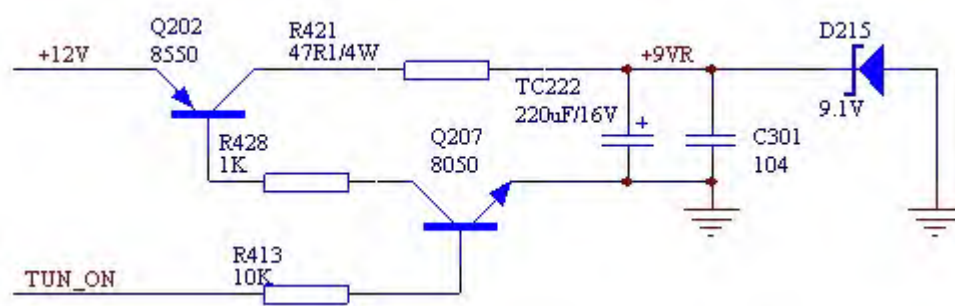


Figure 3.2.17.1 Tunerswitch circuit diagram

2. Working principle: when TUN ON is low level, Q207 cannot be on, +9VR is low level and tuner cannot work, when TUN ON is high level, Q207 is on and then connects with ground after being on to make the base electrode of Q202 low level and then make Q202 on, and supplies power for tuner after R421 partial pressure. D215 is +9V voltage regulator diode and the main function is to stabilize +9VR on +9V. TC222 and C301 are filter capacitor.

3. Key point voltage (unit: V) is shown as the following table:

State	Q202			Q207			D215 cathode	TUN ON
	Base electrode B	Collector C	Emitter E	Base electrode B	Collector C	Emitter E		
On	11.2	11.96	12.02	0.64	0.03	0	9.74	3.7
Off	11.48	8.91	12.03	0.03	11.58	0	8.89	0.03

3.2.18 Fan switch circuit

1. Fan switch circuit is shown as the following figure 3.2.18.1:

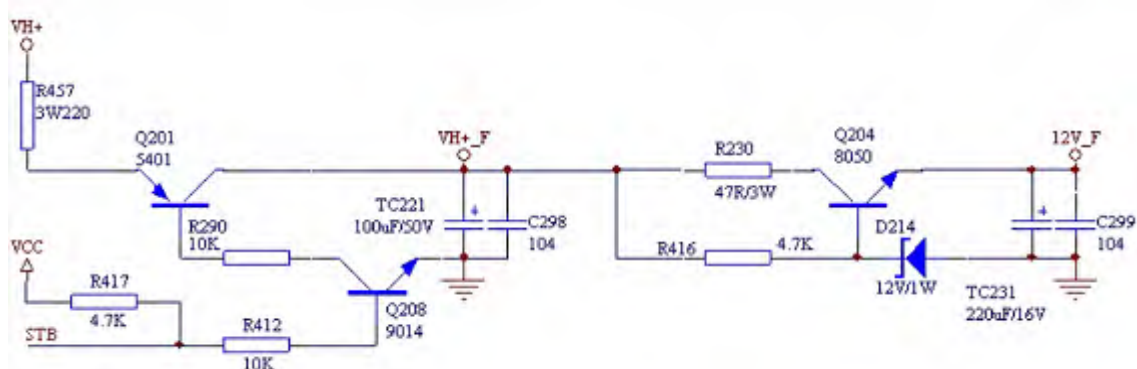


Figure 3.2.18.1 Fan switch circuit diagram

2. Working principle: when volume is adjusted to be high, STB signal sent out by U204 (W78E58) is high level and fan begins rotating; when volume is on low side, STB signal sent out by U204 is low level and fan stops rotating. The details are as follows:

When STB is high level, base electrode of Q208 is high level, Q208 is on; base electrode of Q290 is low level, Q290 is on and VH+ changes into VH+_F through capacitor voltage regulator filtering. Because of the function D214, base electrode of Q204 is 12V, Q204 is on, emitter voltage of Q204 changes into 12V_F after capacitor regulator filtering and is outputted by XS202 to supply power for fan.

When STB is low level, Q208 and Q290 are both cutoff, this circuit has no 12V_F output and fan stops rotating.

3. Key point voltage (unit: V) is shown as the following table:

State	Q201			Q208		
	Base electrode B	Collector C	Emitter E	Base electrode B	Collector C	Emitter E
Fan on	24.7	20.3	25.5	0.66	0.03	0
Fan off	34.8	0.9	35.6	0.04	34.8	0
State	Q204			STB		
	Base electrode B	Collector C	Emitter E			
Fan on	12	23.8	11.5	3.9		
Fan off	0.9	0.9	0.54	0		

3.2.19 Introduction to SCART terminal

1. Working principle: SCART terminal integrates video and audio all together and it may transmit video and audio signals at the same time. The operation is convenient, 21 pins in all and lies in the central part on the rear side of the player.

2. SCART terminal pin function is shown as the following table:

Pin	Name	Signal direction	Function description	Pin	Name	Signal direction	Function description
1	A(B)OUT	I	Audio right channel input	12	NC		Network communication data line 2
2	A(B)IN	O	Audio right channel output	13	RETURN		Pr signal ground
3	A(A)OUT	I	Audio left channel input	14	RETURN		Blanking signal ground
4	A-COM		Audio signal ground	15	RED I/O	I/O	Pr signal I/O port
5	RETURN		Pb signal ground	16	BLK I/O	I/O	Blanking signal I/O port ★
6	A(A)IN	O	Audio left channel output	17	RETURN		Blanking signal ground
7	BLUE I/O	I/O	Pb signal I/O port	18	TRTURN		Composite video signal ground
8	FUNCSW	I	Function selection jack	19	V-OUT	I	Composite video signal input
9	RETURN		Y1 signal ground	20	V-IN	O	Composite video signal output
10	CONT	I/O	Network communication data line 2	21	GND		Common
11	GREEN I/O	I/O	Y1 signal I/O port				

3. SCART terminal function selection is shown as the following table:

PDAT0	PDAT1	PDAT2	Pin 8 of SCART terminal	Function
0	×	0	10V	AV4:3
0	×	1	7.5V	AV16:9
1	×	0	0.90V	TV
1	×	1	0.85V	TV
×	0	×	×	CVBS MODE
×	1	×	×	RGB MODE

Note: PDAT0 and PDAT2 are used to control input voltage of pin 8 of SCART terminal; PDAT1 is used to control voltage change of pin 16 of SCART terminal and the voltage on pin 16 controls SCART terminal to select RGB mode or CVBS mode.

3.2.20 Introduction to tuner

1. Working principle: AM receiving range of tuner TAF11MFR is 520KHZ1710KHZ, step frequency is 10KHZ; PM receiving range is 87.50MHZ108.0MHZ, step frequency is 50KHZ; usage temperature range is -5℃+80℃.

2. Tuner output pin and function introduction is shown as the following table:

SN	Name	Function	Signal direction	SN	Name	Function	Signal direction
1	GND	Ground		7	GND	Ground	
2	FM DET	FM detecting wave		8	DO/ST、SD	Data output	O
3	VSM	Signal voltage	O	9	CL	Clock	I
4	RCH	Right channel	I	10	DI	Data input	I
5	VCC	Power	I	11	CE	Chip selection	I
6	LCH	Left channel	O				

Section Three Servicing Cases

3.3.1 Troubleshooting flow chart

1. Troubleshooting process for "Subwoofer has no output or has distortion" is shown as the following figure 3.3.1.1:

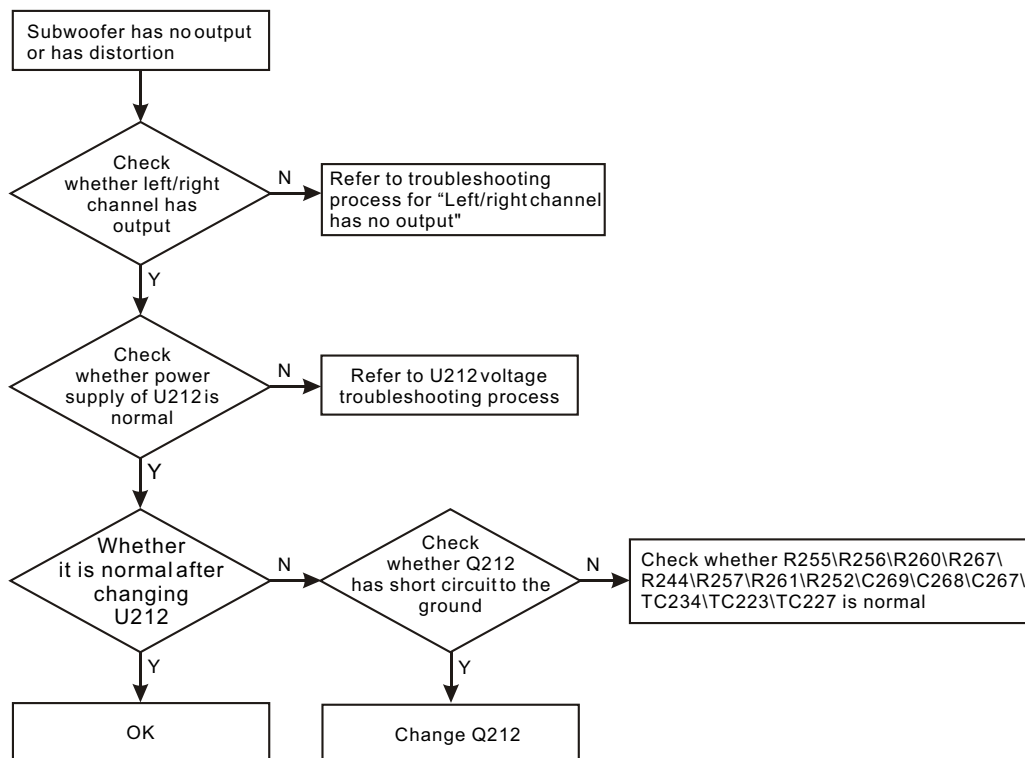


Figure 3.3.1.1 Troubleshooting flow chart for "Subwoofer has no output or has distortion"

2. Troubleshooting process for "left/right channel of power amplifier board has no sound" is shown as the following figure 3.3.1.2:

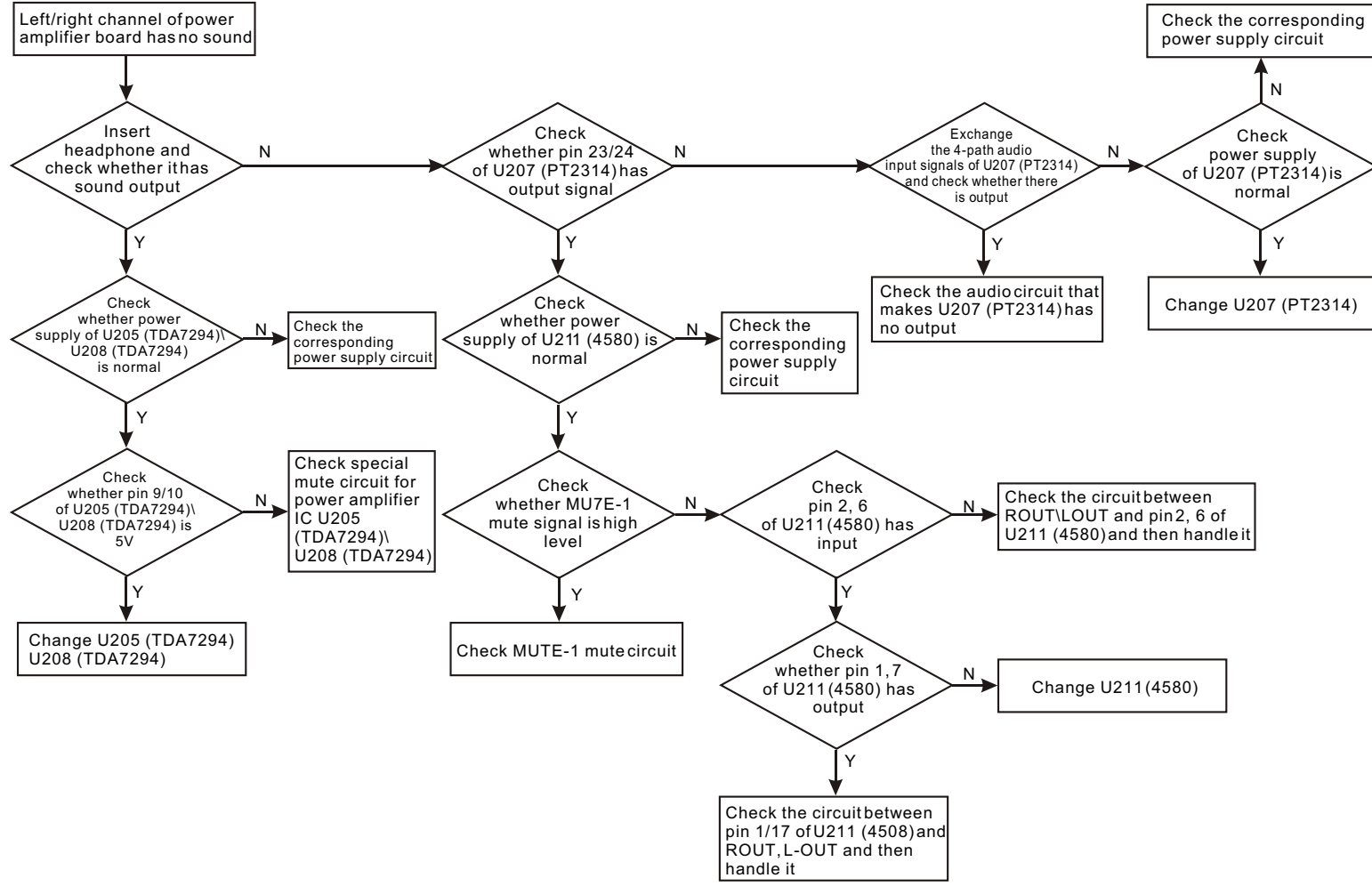


Figure 3.3.1.2 Troubleshooting flow chart for "Left/right channel of power amplifier board has no sound"

3. Troubleshooting process for "Left channel of power amplifier board has no sound" is shown as the following figure 3.3.1.3:

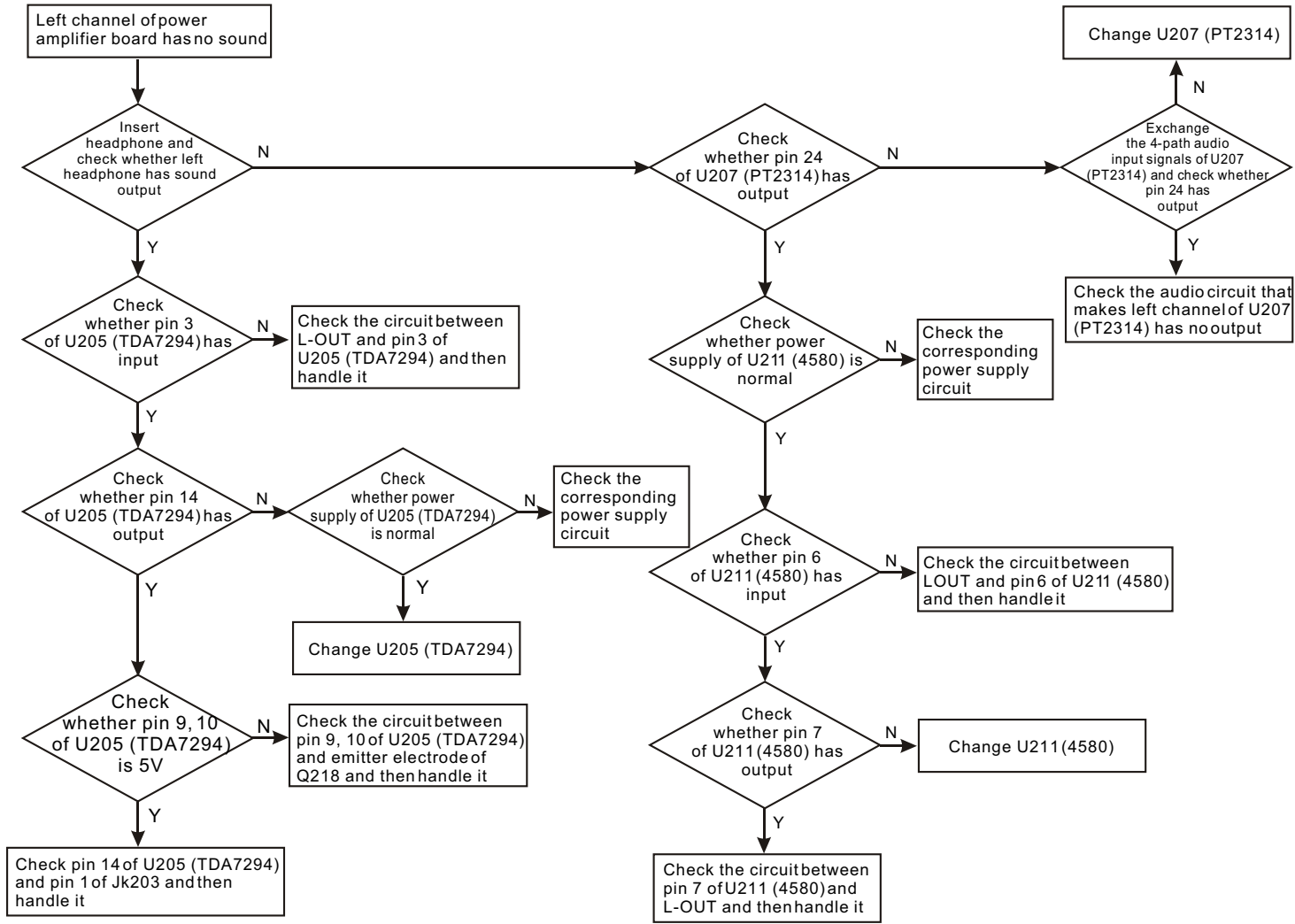


Figure 3.3.1.3 Troubleshooting flow chart for "Left channel of power amplifier board has no sound"

4. Troubleshooting process for "Left/right channel has no output" is shown as the following figure
3.3.1.4:

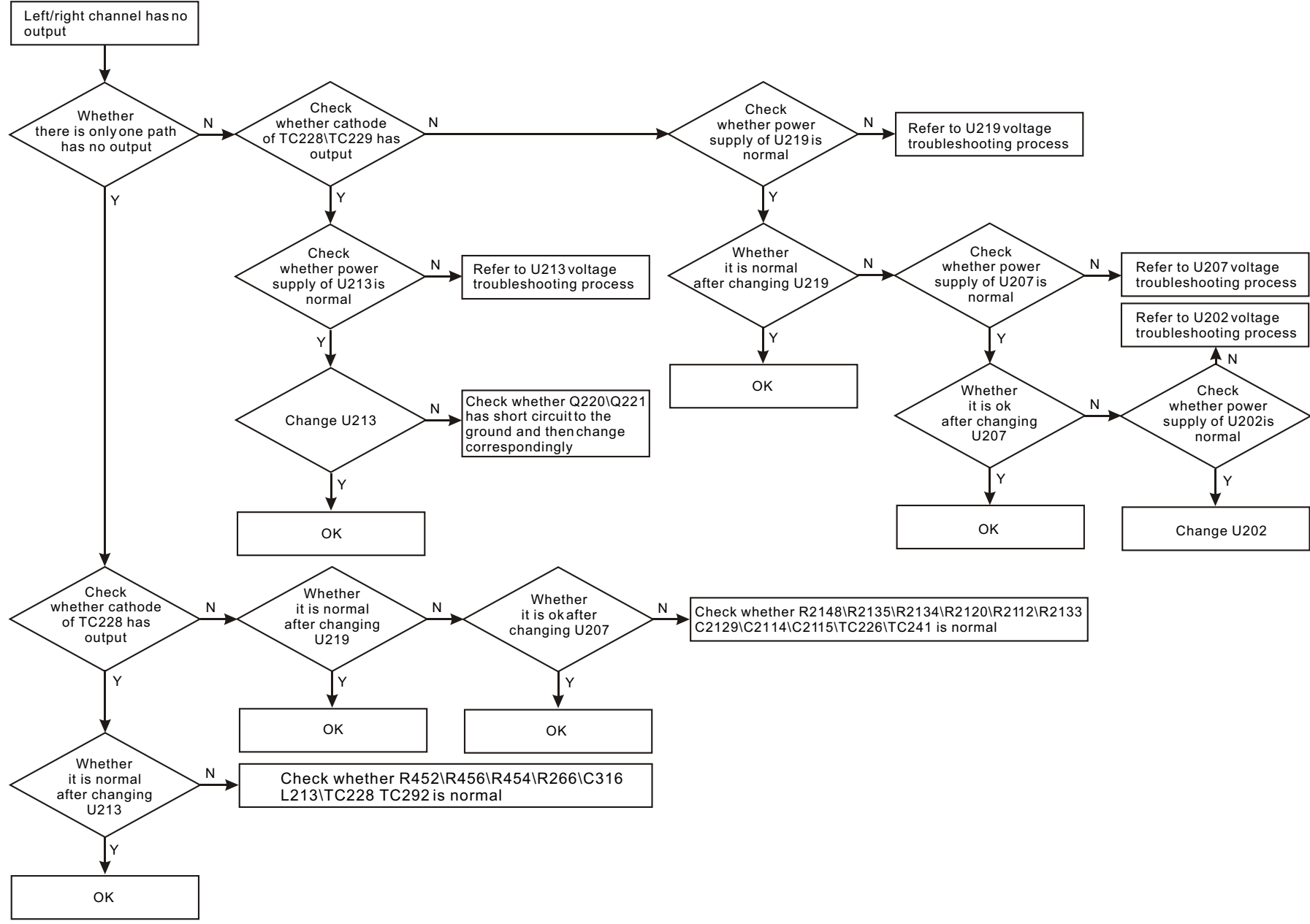
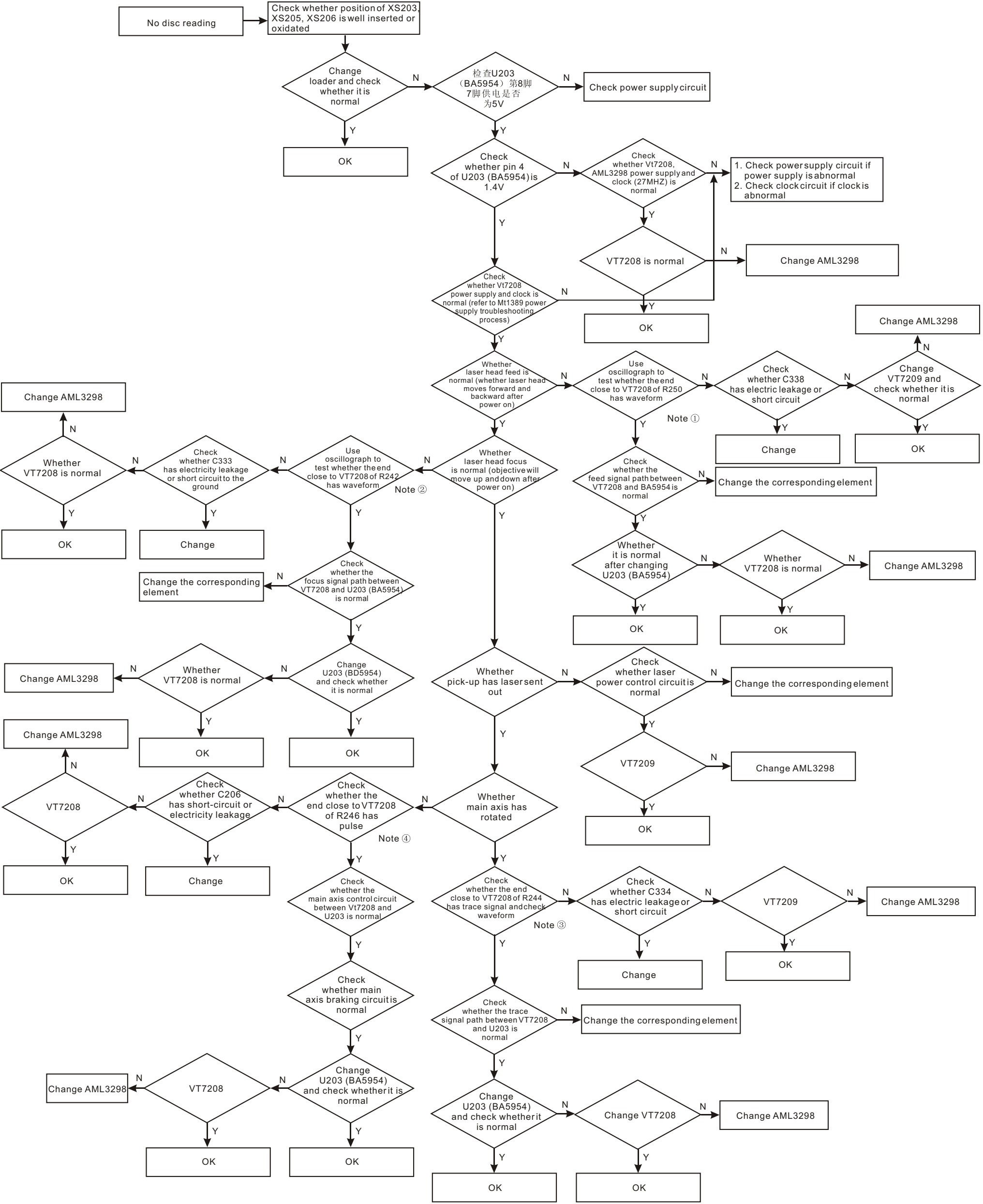


Figure 3.3.1.4 Troubleshooting flow chart for "Left/right channel has no output"

5. Troubleshooting process for "No disc reading" is shown as the following figure 3.3.1.5:



Note ①, ②, ③ and ④ are all tested when no disc in, disc in to proper position and laser head makes focus and feed action.

Figure 3.3.1.5 Troubleshooting flow chart for "No disc reading"

3.3.2 Power flow chart

1. +16V power flow is shown as the following figure 3.3.2.1:

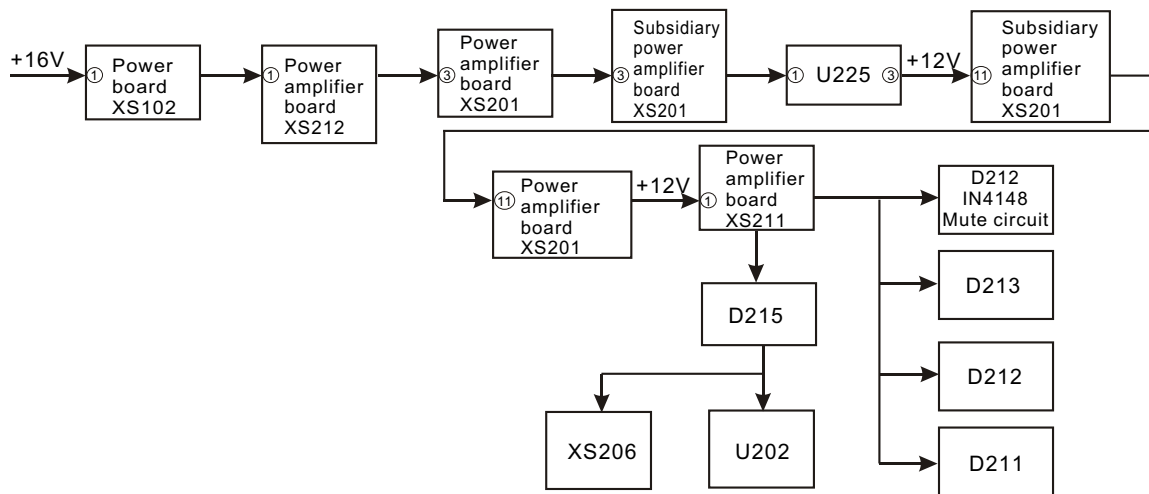


Figure 3.3.2.1 +16V power flow chart

2. +9V power flow is shown as the following figure 3.3.2.2:

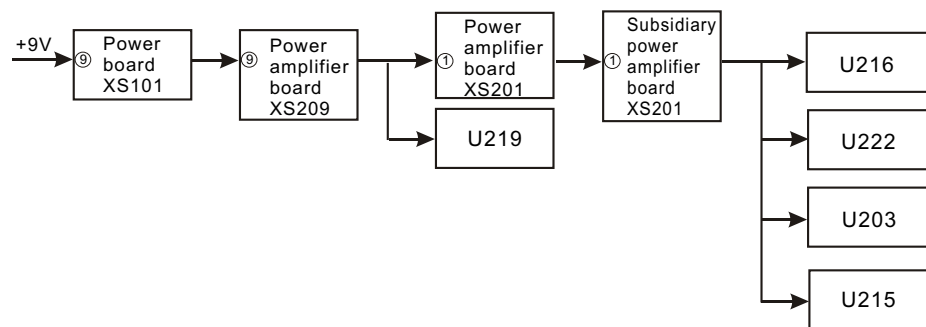


Figure 3.3.2.2 +9V power flow chart

3. +7V power flow is shown as the following figure 3.3.2.3:

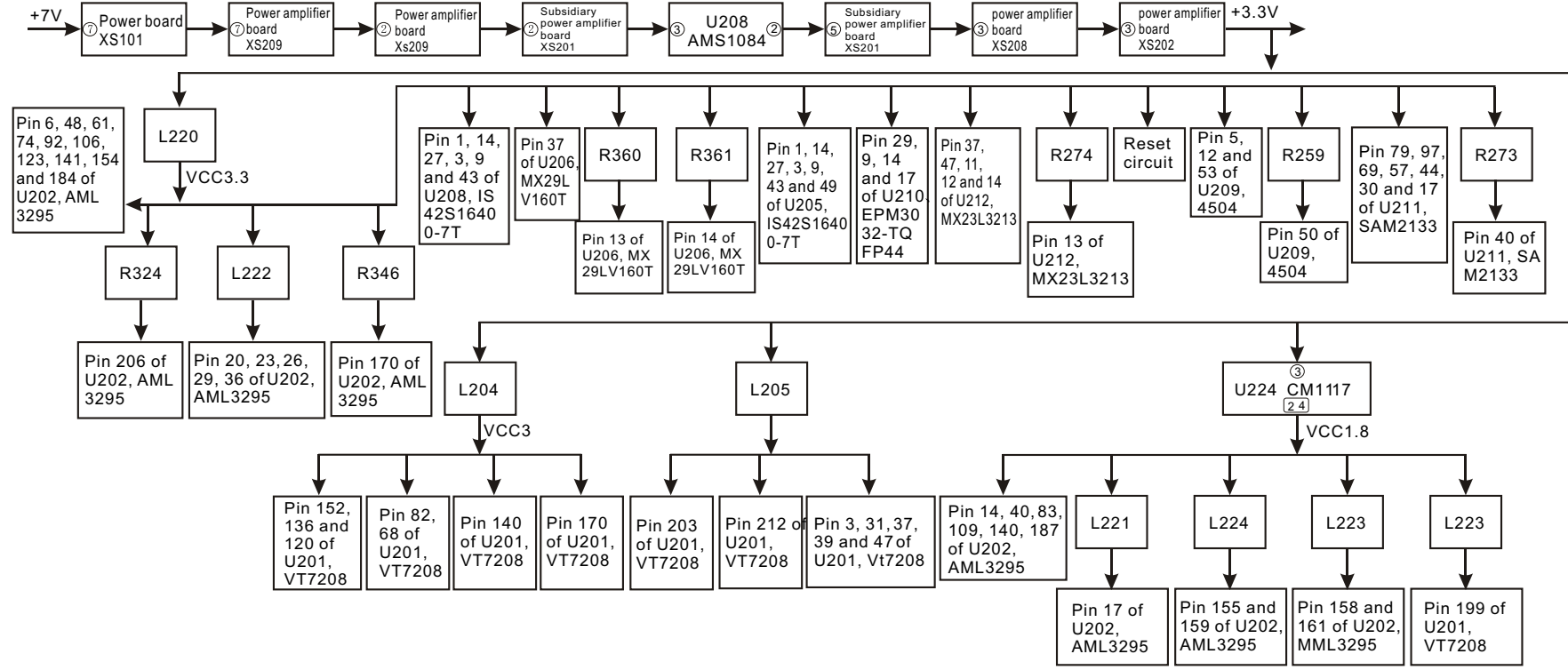


Figure 3.3.2.3 +7V power flow diagram

4. FL-, FL+, +40V power flow is shown as the following figure 3.3.2.4:

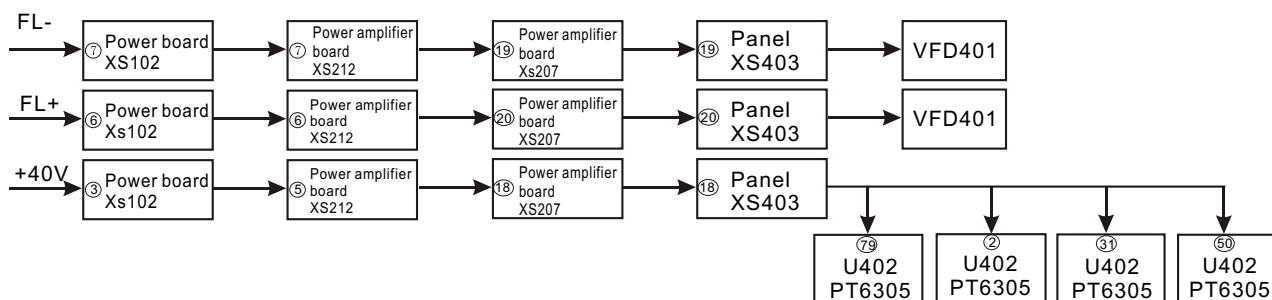


Figure 3.3.2.4 FL-, FL+, +40V powerflow chart

5. -16V power flow is shown as the following figure 3.3.2.5:

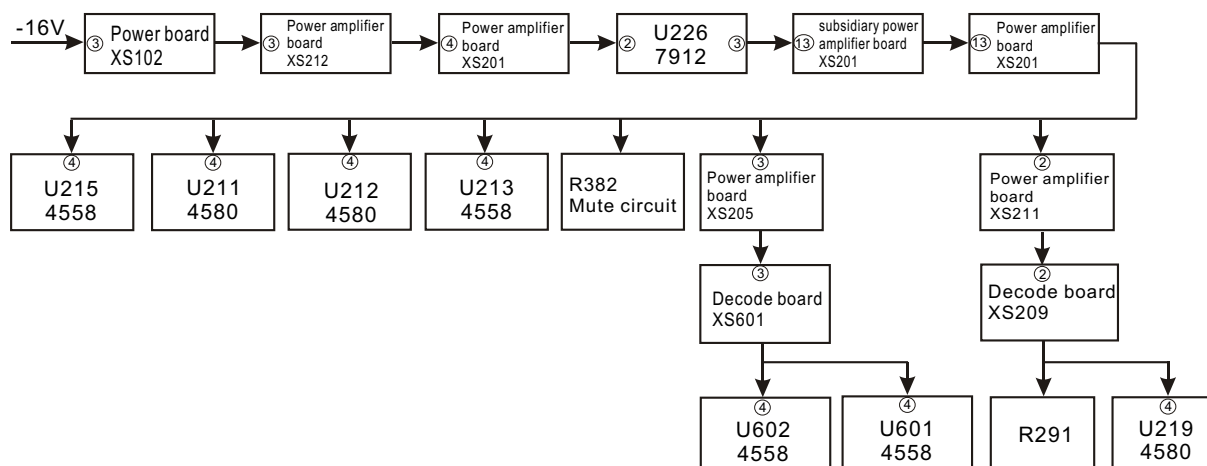


Figure 3.3.2.5 -16V power flow chart

6. VH+ powerflow is shown as the following figure 3.3.2.6:

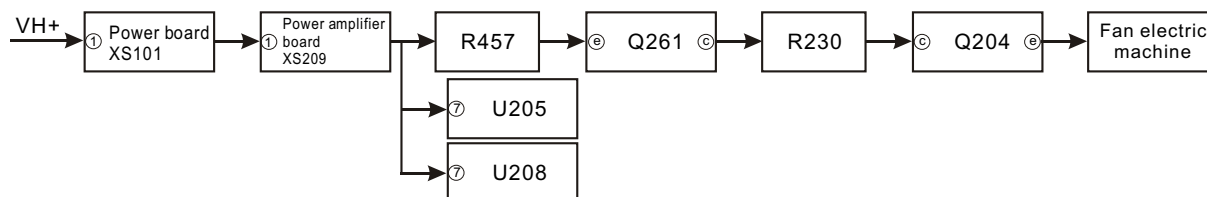


Figure 3.3.2.6 VH+ power flow chart

7. -16V power flow is shown as the following figure 3.3.2.7:

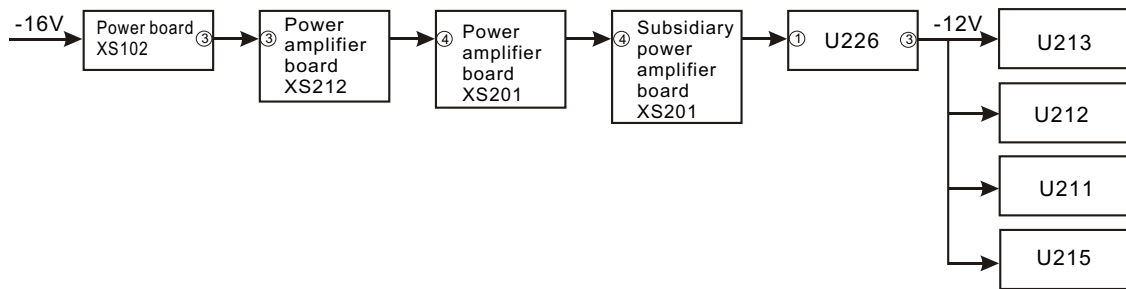


Figure 3.3.2.7 +16V power flow chart

8. VH- powerflow is shown as the following figure 3.3.2.8:

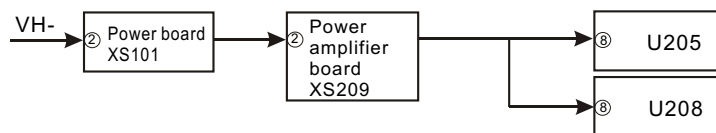


Figure 3.3.2.8 VH- power flow chart

9. +7V powerflow is shown as the following figure 3.3.2.9:

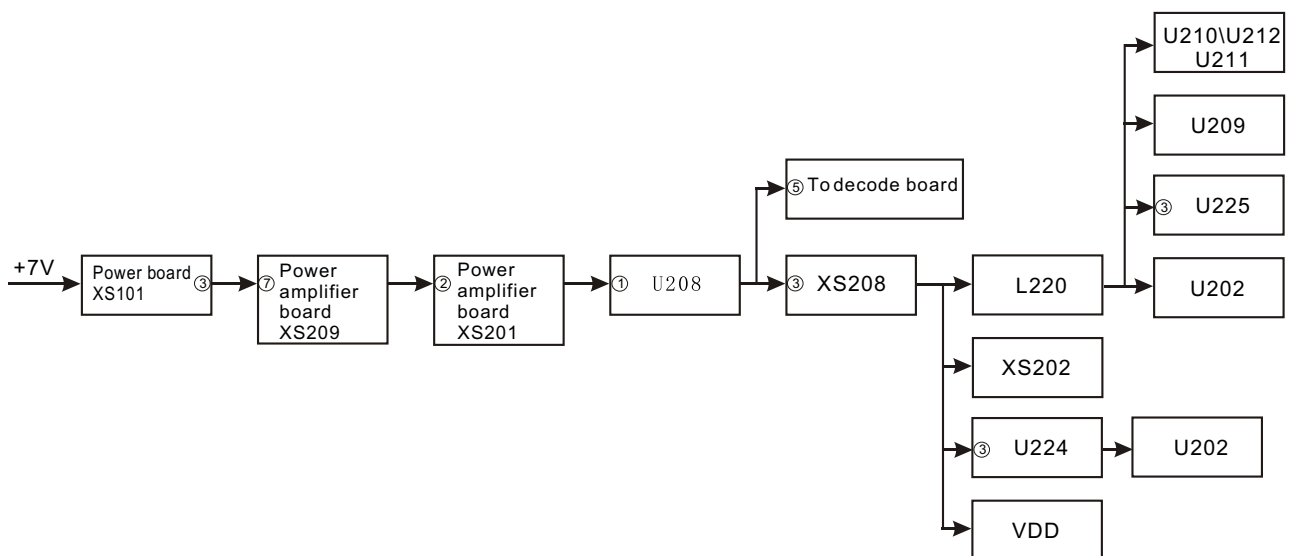


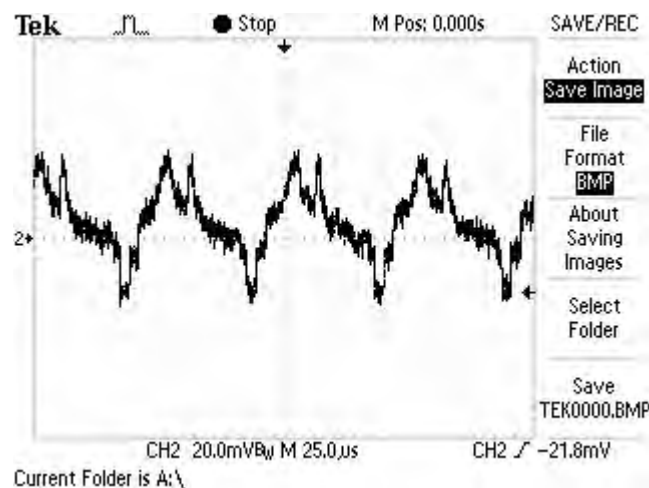
Figure 3.3.2.9 +7V power flow chart

Section Four Servicing Parameters

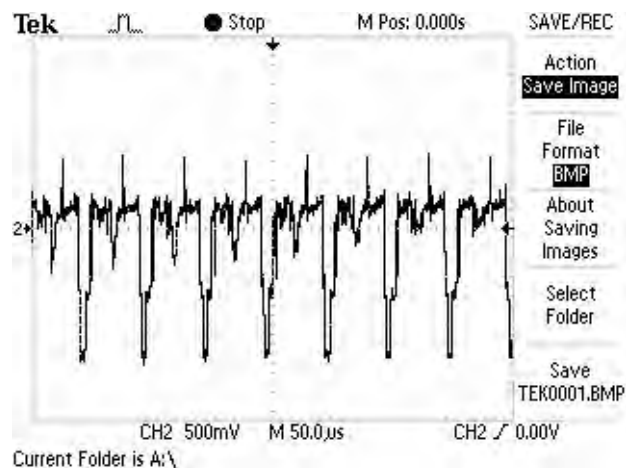
3.4.1 Signal waveform diagram

This section collects signal waveform diagram of audio, video and each unit circuit with the purpose to help servicing personnel to judge where trouble lies in accurately and quickly to improve servicing skills. For the difference of oscillograph's type, model and tuner, a certain difference may exist, so the servicing personnel are expected to pay more attention to check in daily operation.

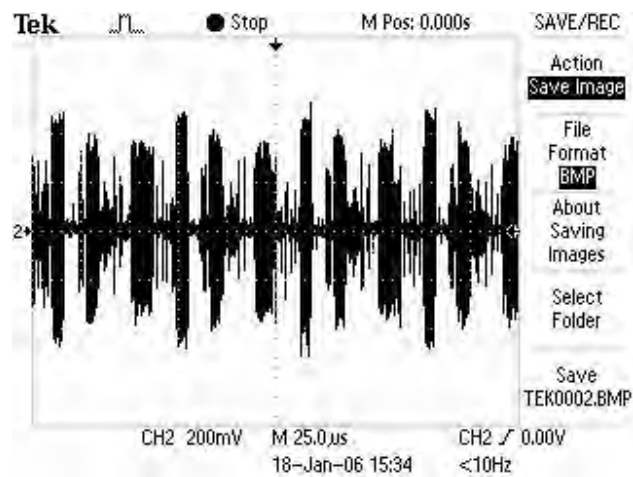
1. Video B Cb Pb signal waveform diagram:



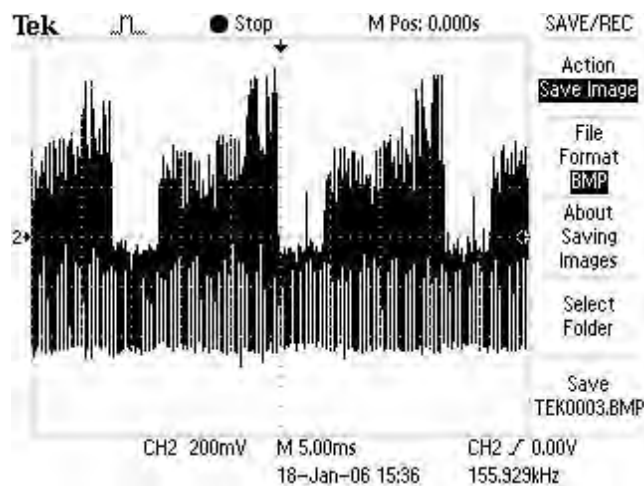
2. Video G YY signal waveform diagram:



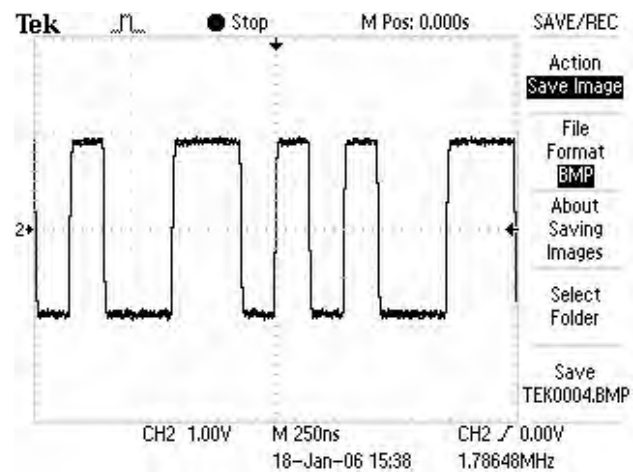
3. Video R Cr Pr signal waveform diagram:



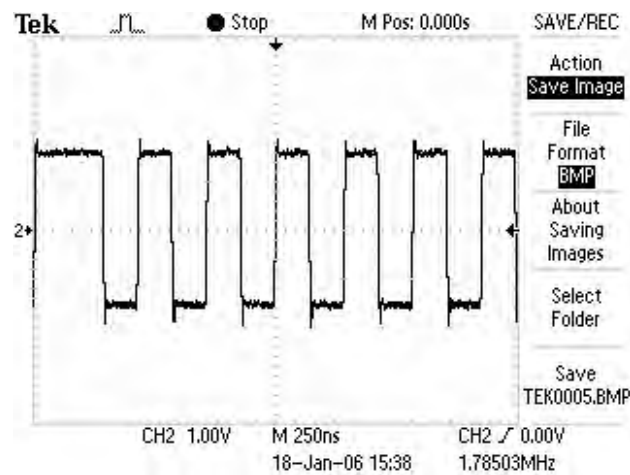
4. Video CVBS signal waveform diagram:



5. IEC958 signal waveform diagram:



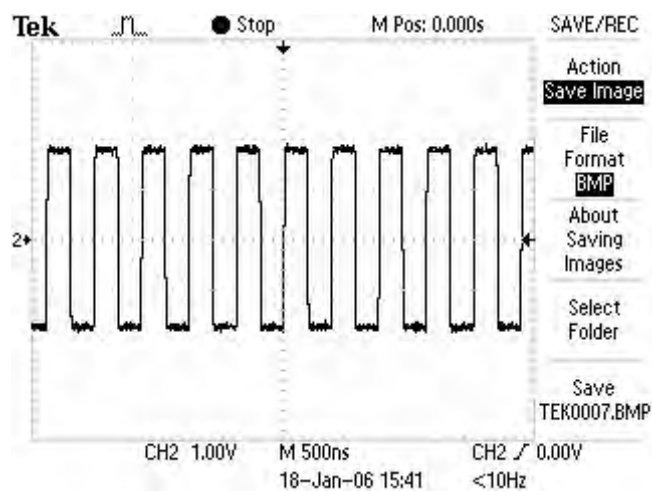
6. SPDIF signal waveform diagram:



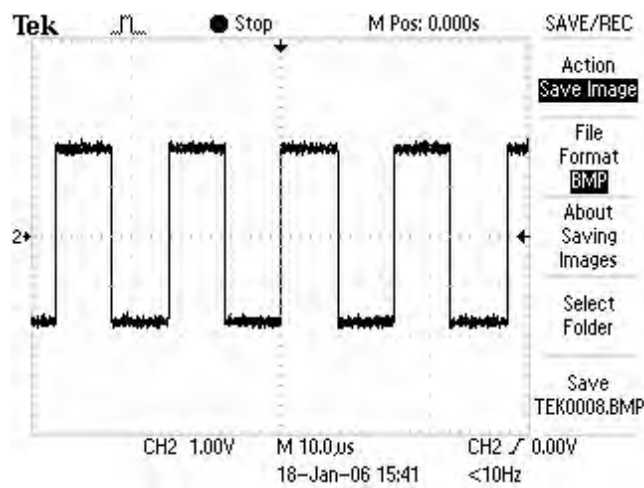
7. CS4340 pin 2 ADATA0 signal waveform diagram:



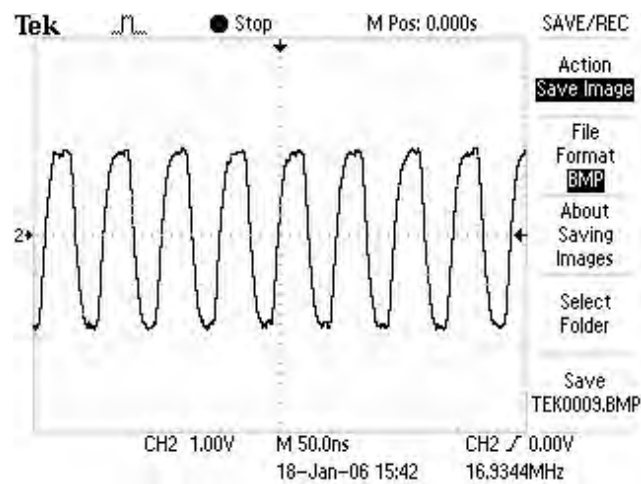
8. CS4340 pin 3 ABCLK signal waveform diagram:



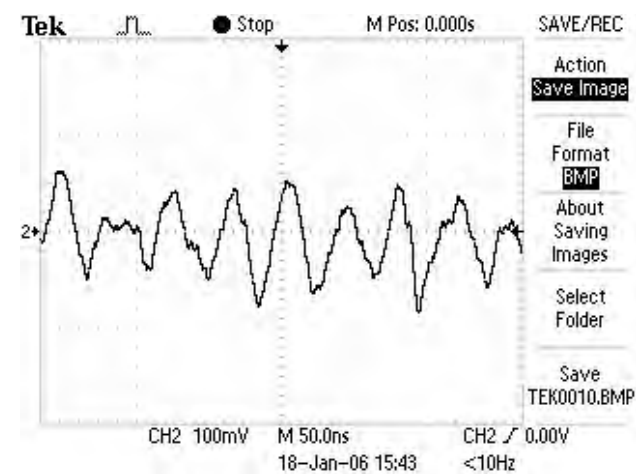
9. CS4340 pin 4 ALRCK signal waveform diagram:



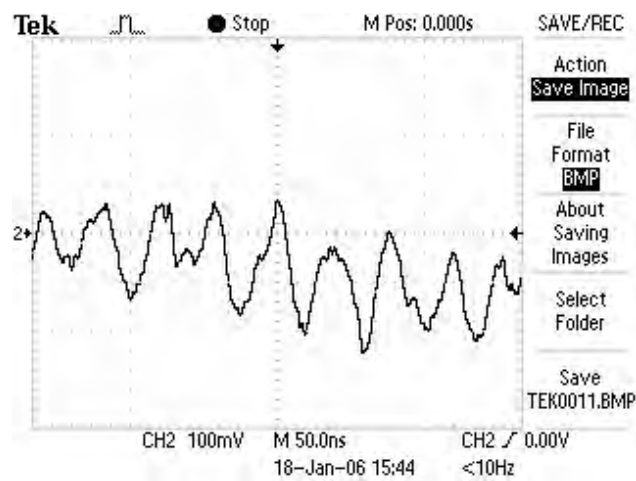
10. CS4340 pin 5 AMCLK signal waveform diagram:



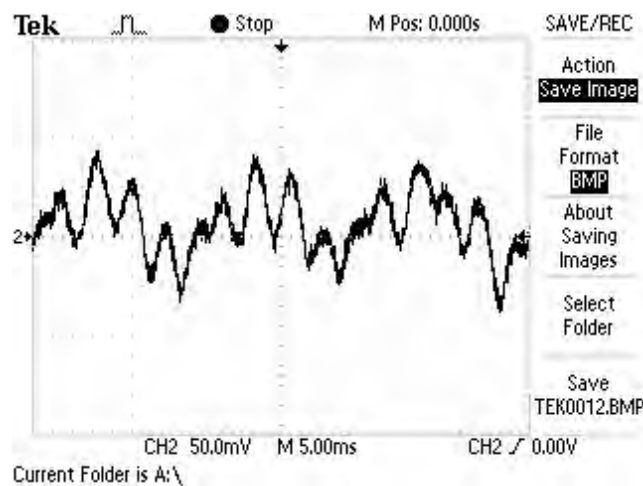
11. CS4340 pin 12 R signal waveform diagram:



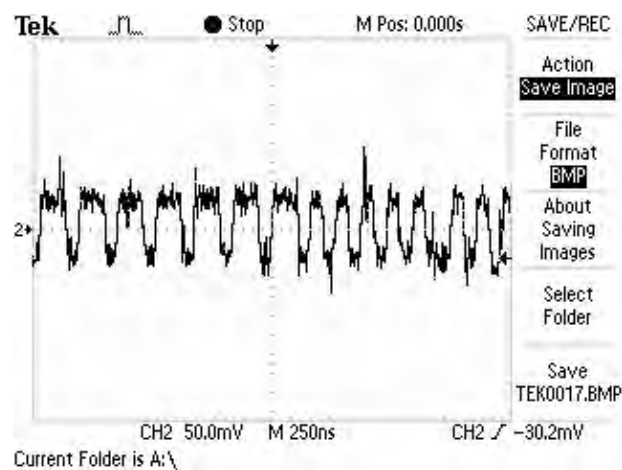
12. CS4340 pin 15 L signal waveform diagram:



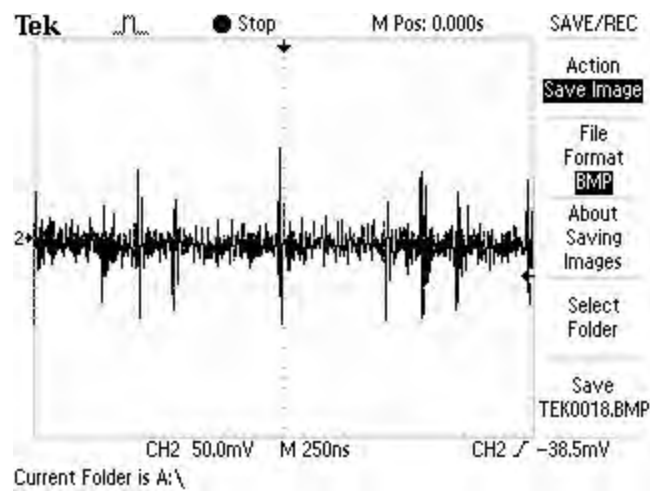
13. Audio LT1 signal waveform diagram:



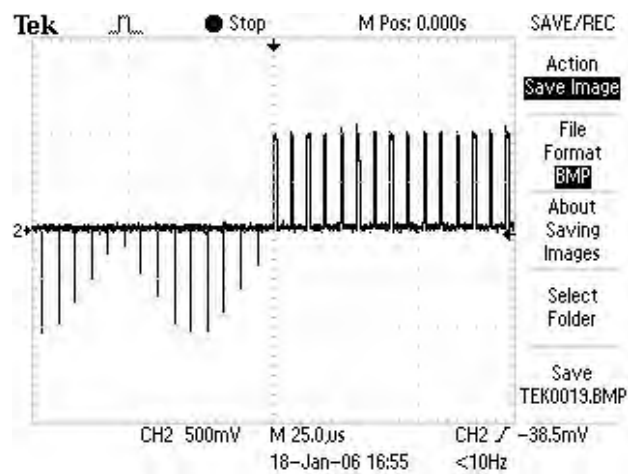
14. Focus FOO signal waveform diagram:



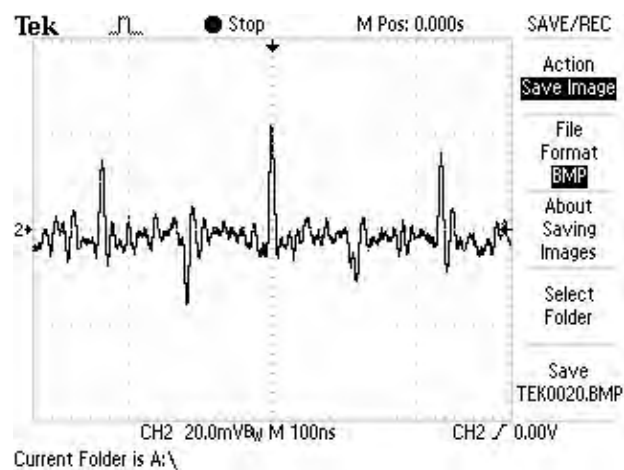
15. Focus FOSO signal waveform diagram:



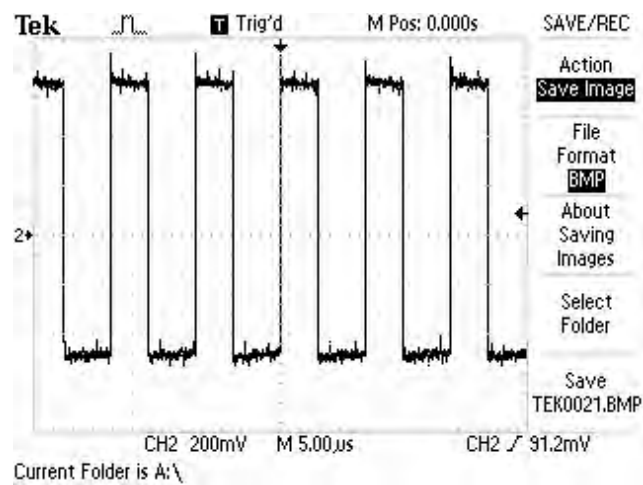
16. FMO signal waveform diagram:



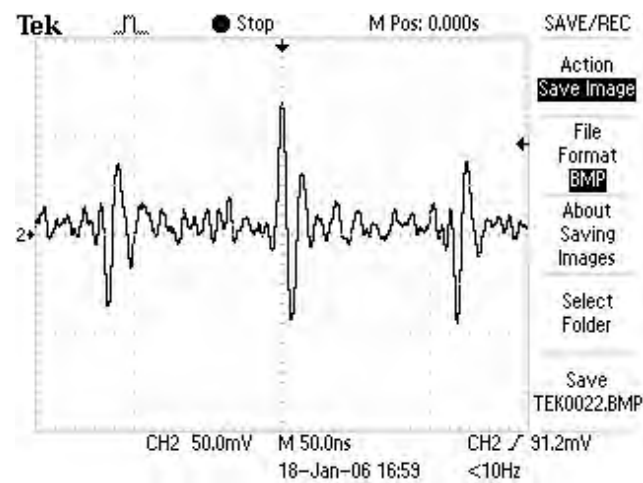
17. Main axis FMSO signal waveform diagram:



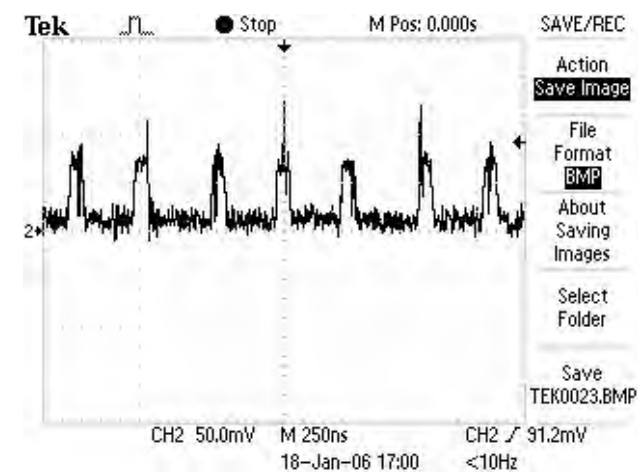
18. Feed DMO signal waveform diagram:



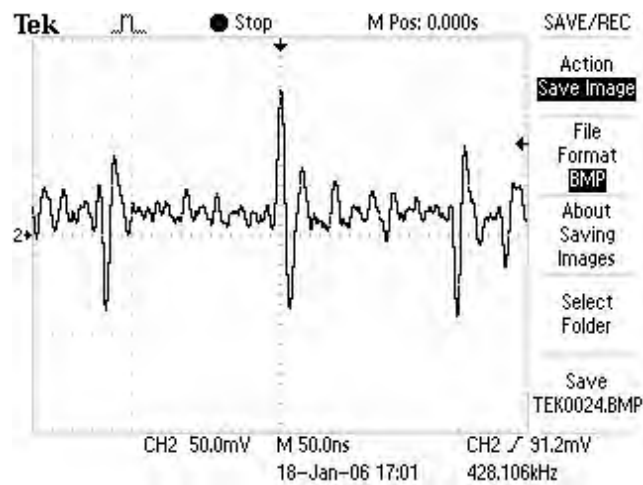
19. Feed DMSO signal waveform diagram:



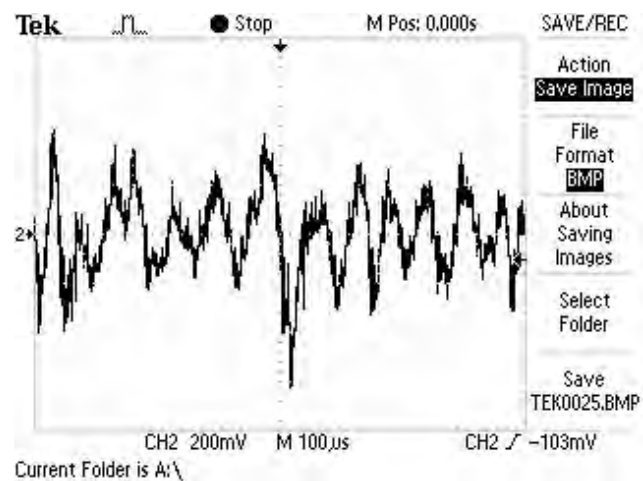
20. Trace TRO signal waveform diagram:



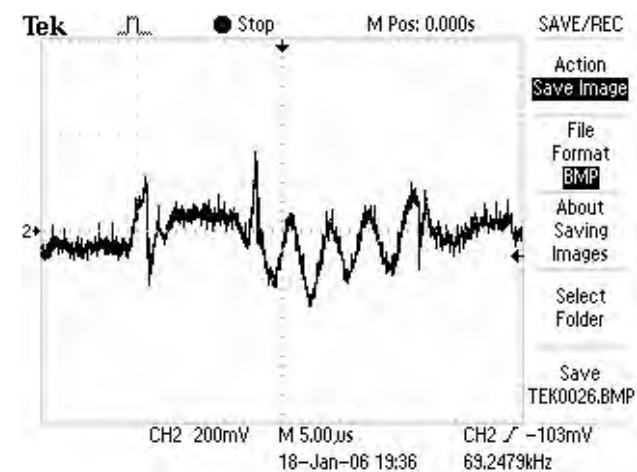
21. Trace TOSO signal waveform diagram:



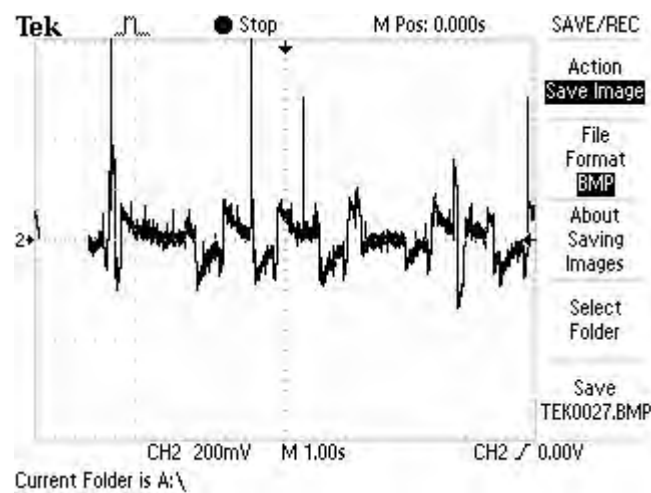
22. Focus F+ signal waveform diagram:



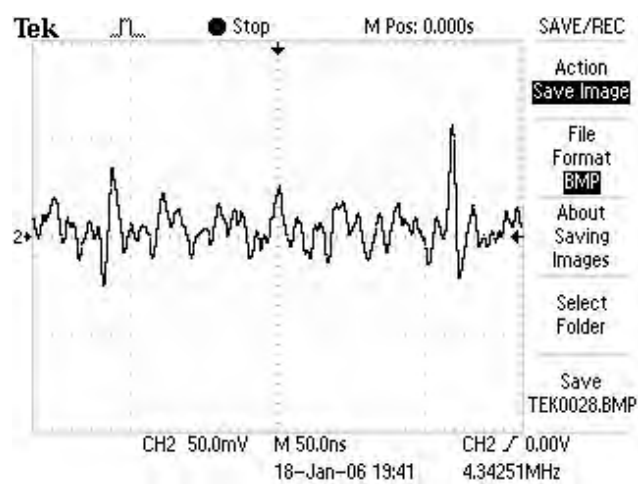
23. Trace TR+ signal waveform diagram:



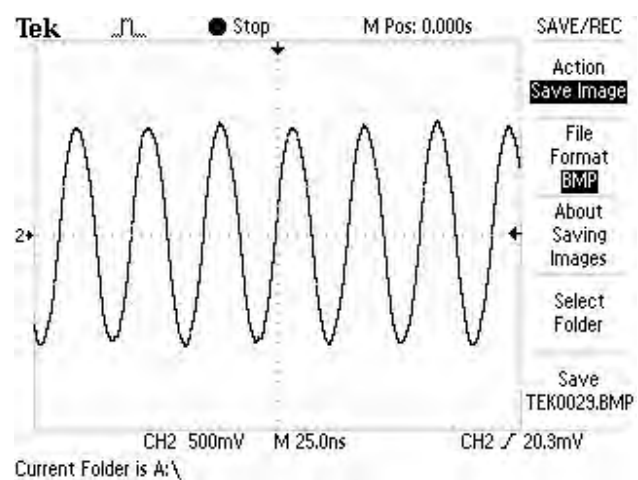
24. Feed SLED+ signal waveform diagram:



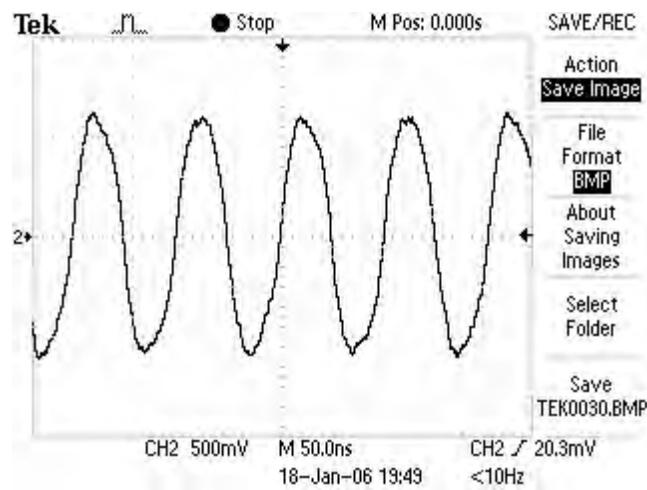
25. Main axis SPIN+ signal waveform diagram:



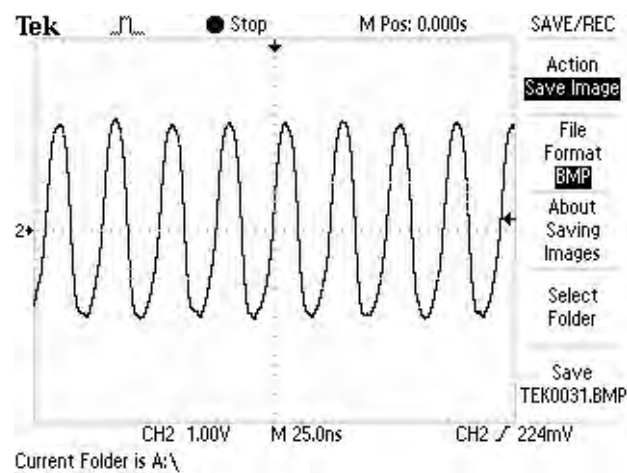
26. AML3298 crystal oscillator X203 waveform diagram:



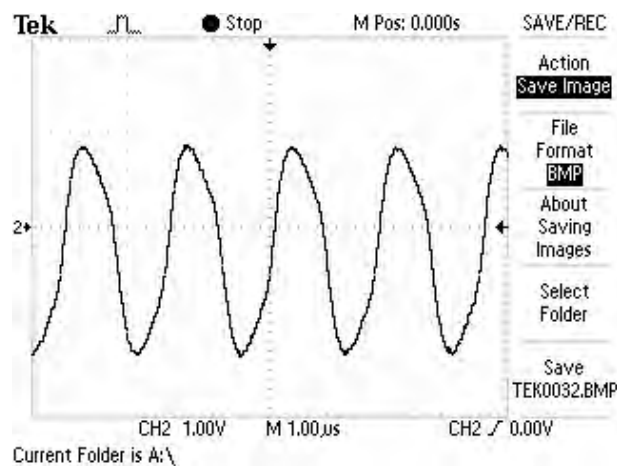
27. MK-6000B crystal oscillator X201 waveform diagram:



28. Crystal oscillator X202 waveform diagram:

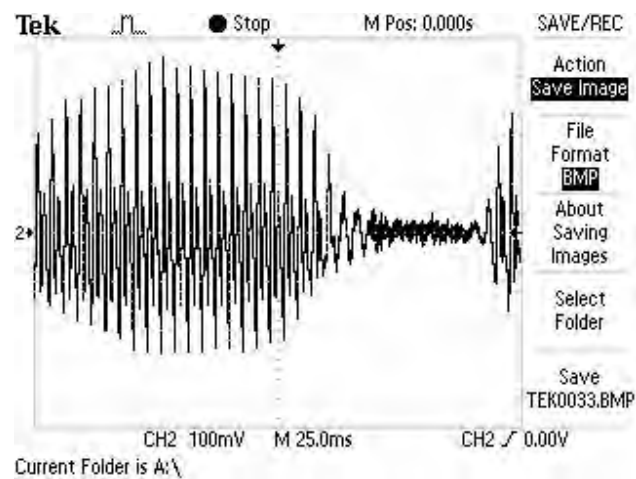


29. PT2222 crystal oscillator X401 waveform diagram:

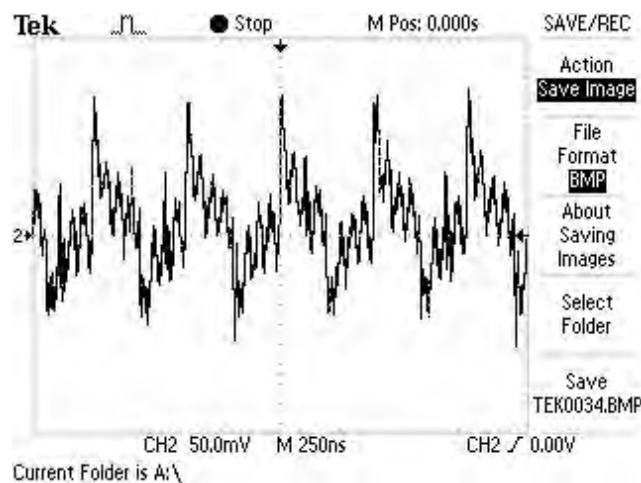


Note: only when a button controlled by PT2222 is pressed, this waveform can be detected.

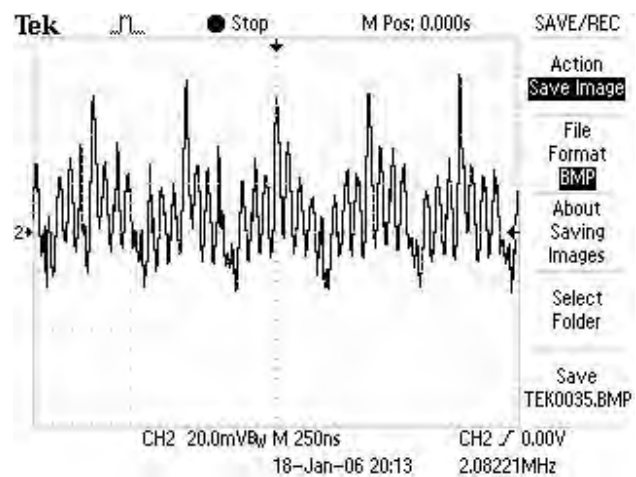
30. Microphone OKA signal waveform diagram:



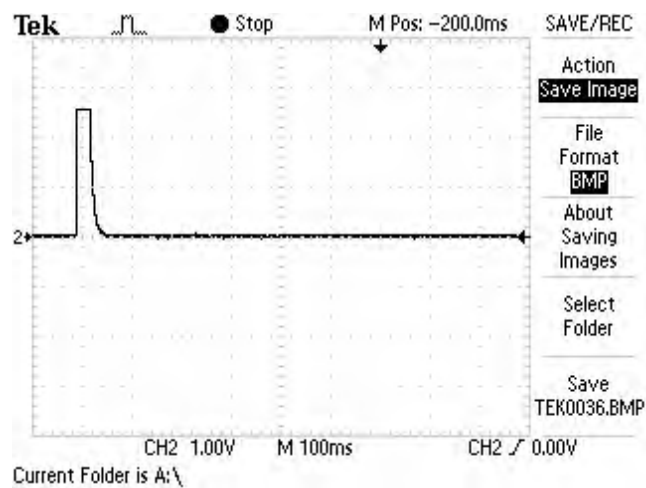
31. SDA signal waveform diagram:



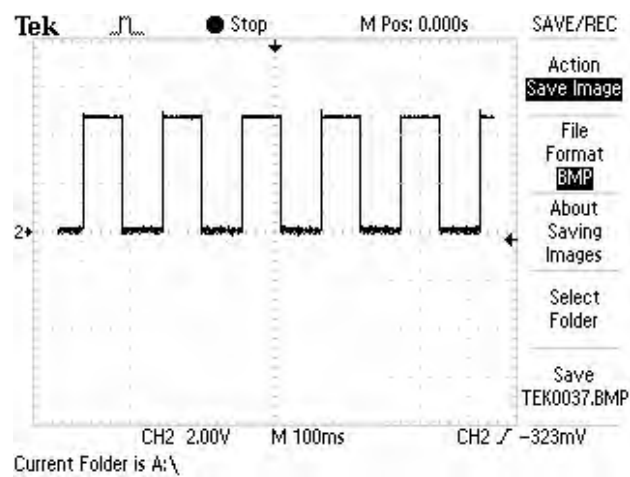
32. SCL signal waveform diagram:



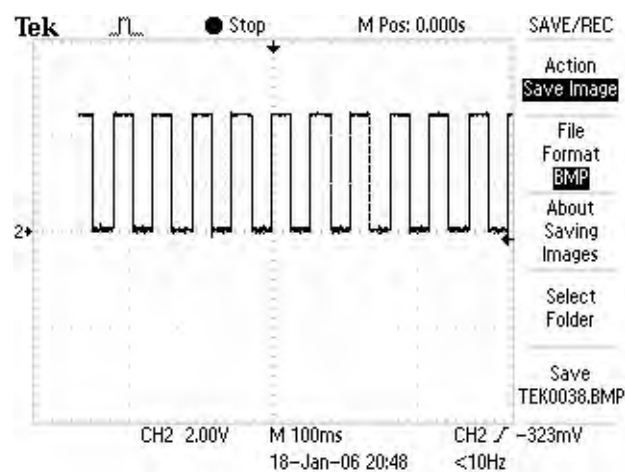
33. Reset CPU-RST signal waveform diagram:



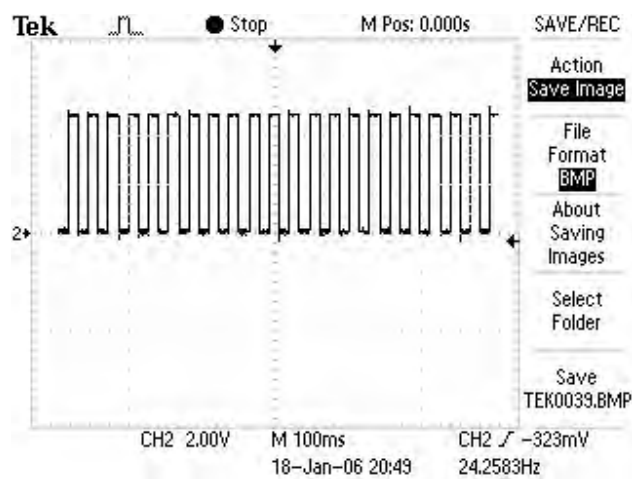
34. Spectrum ALC A signal waveform diagram:



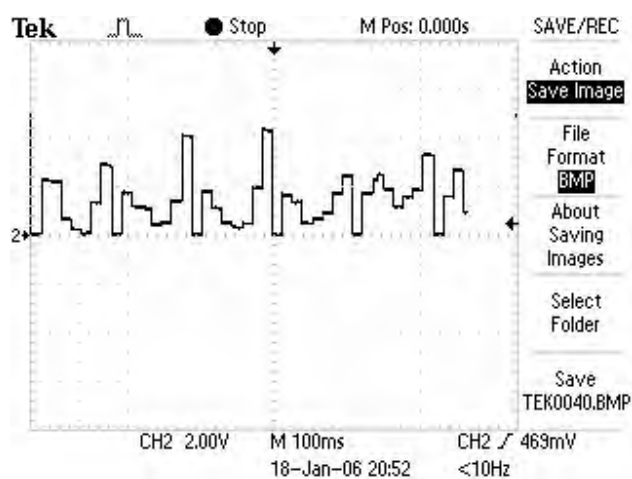
35. Spectrum ALC B signal waveform diagram:



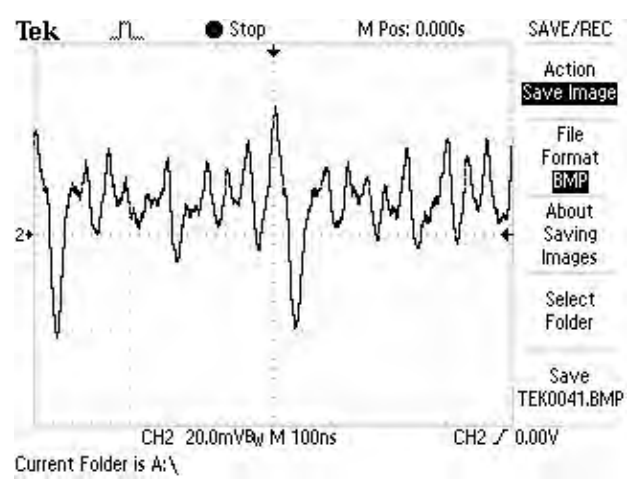
36. Spectrum ALC C signal waveform diagram:



37. Spectrum VO signal waveform diagram:



37. Spectrum ADC OUT signal waveform diagram:



3.4.2 Key point voltage

1. Disc identification circuit key point voltage (unit: V) is shown as the following table:

Pin State	Q231			Q230			Q203			GIO6
	B	C	E	G	D	S	G	D	S	
VCD disc	0	3.86	0	3.81	0	0	0	0.18	0	0
DVD disc	0.64	0	0	0	0.18	0	3.27	0	0	3.3
No disc	0	3.86	0	3.84	0	0	0	0	0	0

2. Disc in/out circuit key point voltage (unit: V) is shown as the following table:

Pin State	Q213			Q214		
	Base electrode B	Collector C	Emitter E	Base electrode B	Collector C	Emitter E
Disc reading	5.06	5	5.06	5.01	5.03	5.06
Disc tray open to proper position	4.79	4.77	5.06	4.77	4.79	5.06
Disc tray open	4.74→5.05→4.74	4.76→0.2→4.76	5.06	4.76→4.33→4.76	4.76→5.02→4.76	5.06
Disc tray close	4.74→4.33→4.74	4.76→5.05→4.76	5.06	4.76→5.03→4.76	4.79→0.2→4.79	5.06
Pin State	Q215			Q216		
	Base electrode B	Collector C	Emitter E	Base electrode B	Collector C	Emitter E
Disc reading	0	5	0	0	5.03	0
Disc tray open to proper position	0	4.77	0	0	4.79	0
Disc tray open	0→0.93→0	4.76→0.2→4.76	0	0	4.79→5.02→4.79	0
Disc tray close	0	4.76→5.05→4.76	0	0→0.93→0	4.79→0.2→4.79	0
Pin State	Q217			OUT	IN	
	Base electrode B	Collector C	Emitter E			
Disc reading	0	0	0	0	0	
Disc tray open to proper position	0	0	0	0	0	
Disc tray open	0→0.63→0	0	0	0→3.12→0	0	
Disc tray close	0	0→0.93→0	0	0	0→3.12→0	
Pin State	TRAYOUT#	TRAYIN#				
	Disc tray open to proper position	0				
Disc tray close to proper position	5.08	0				

3. Main axis circuit key point voltage (unit: V) is shown as the following table:

State \ Pin	U222								SPIN+	SPIN-
	1	2	3	4	5	6	7	8		
VCD disc	0.04	1	2.42	0	0.93	2.58	0.02	5.08	3.7	1.48
DVD disc	0.04	0.7	2.69	0	0.65	2.86	0.02	5.08	4.1	1.03

4. Fan circuit key point voltage (unit: V) is shown as the following table:

State \ Pin	Q201			Q208			Q204			STB
	B	C	E	B	C	E	B	C	E	
On	24.7	20.3	25.5	0.66	0.03	0	12	23.8	11.5	3.9
Off	34.8	0.9	35.6	0.04	34.8	0	0.9	0.9	0.54	0

5. Tuner key point voltage (unit: V) is shown as the following table:

State \ Pin	Q202			Q207			D215 cathode	TUN ON
	Base electrode B	Collector C	Emitter E	Base electrode B	Collector C	Emitter E		
On	11.2	11.96	12.02	0.64	0.03	0	9.74	3.7
Off	11.48	8.91	12.03	0.03	11.58	0	8.89	0.03

6. Power amplifier mute circuit key point voltage (unit: V) is shown as the following table:

State \ Pin	Q218			Q219		
	Base electrode B	Collector C	Emitter E	Base electrode B	Collector C	Emitter E
Unmute	5.75	5.13	5.1	0.04	14.55	0
Mute	-1.1	20.6	0	0.69	0	0

6. Power amplifier mute circuit key point voltage (unit: V) is shown as the following table:

State \ Pin	Q210			Q211		
	Base electrode B	Collector C	Emitter E	Base electrode B	Collector C	Emitter E
Unmute	4.47	5.12	5.17	0.77	0.03	0
Mute	5.16	-5.31	5.17	-5.31	1.46	1.46

State \ Pin	Q213			Q214		
	Base electrode B	Collector C	Emitter E	Base electrode B	Collector C	Emitter E
Unmute	-0.14	-5.64	-0.03	11.98	-5.64	11.86
Mute	0.68	1.44	0	11.98	1.44	1.86

8. MIDI mute circuit key point voltage (unit: V) is shown as the following table:

State \ Pin	Q224			Q225			Q229		
	B	C	E	B	C	E	B	C	E
Mute	0.63	0	0	4.04	4.74	4.74	0.06	0	0

9. Reset circuit 1 key point voltage (unit: V) is shown as the following table:

Q204			U214						one end of R354	two ends of R352
Base electrode B	Collector C	Emitter E	1	2	3	4	5	6		
3.26	3.27	0	0	3.27	3.27	0	0	3.42	3.28	3.28/3.32

10. Reset circuit 2 key point voltage (unit: V) is shown as the following table:

State \ Pin	Q205		
	Base electrode B	Collector C	Emitter E
Normal working	5.17	5.18	0
Standby	5.17	5.18	0

11. I²C key point voltage (unit: V) is shown as the following table:

I ² C	SCL	SDA
Voltage	4.32	4.32

12. Headphone DET key point voltage (unit: V) is shown as the following table:

headphone DET	Inserted	Not inserted
Voltage	0	4.2

13. Microphone DET key point voltage (unit: V) is shown as the following table:

Microphone DET	Microphone inserted and mute	Microphone inserted and unmute
Voltage	0	1.07

3.4.3 Trouble statistics

Symptom	Causes	Symptom	Causes
Noise when disc out	Loader: frame not good	OPEN/CLOSE button has no function	Panel: button not good
Hand cannot push disc tray in	Loader: frame not good	Disc out automatically	Frame door open/dose not good
Disc out automatically	Loader: frame not good	Disc tray not open	Loader: frame not good
Disc tray not open	Decode board: U206 (EN29L800AB) not good	Disc in automatically	Loader: frame not good
Disc tray not open	Decode board: U201 (VT7208) not good	Swing when disc in/out	Loader: frame not good
Not read CD disc	Loader 24P flat cable not good	DVD has no disc	Loader 24P flat cable not good
Not read DVD disc	Decode board: U206 (EN29L800AB) not good	Not read disc	Decode board: R215 falls off
Not read DVD disc	Decode board: Q203 rosin joint	Not read DVD disc	Main axis electric machine not good
Not read disc	Loader not good	No wave for AM	Tuner not good
Wave small for power amplifier right	Power amplifier board: U207 (PT2314) tin joint	No wave for power amplifier	Power amplifier board: U207 (PT2314) not good
No wave for power amplifier	Power amplifier board: D203 not good	No wave for power amplifier	Power board: FL101 not good
No wave for power amplifier	Power amplifier board: U205 (TDA7294) not good	No wave for power amplifier	Power amplifier board: U208 (TDA7294) not good
No sound for headphone	MIC board: headphone holder not good	No optical output	AV board: optical terminal not good
Sound small for headphone	MIC board: R634 tin joint	No wave for AV right	Power amplifier board: R451 rosin joint
AV wave abnormal	Power amplifier board: U203 (BA5954FP) not good	No sound for external input	Power amplifier board: XS205 not good
No wave for power amplifier	Power amplifier board: U204 (SM79164C25P) not good	External input not full	Power amplifier board: XS205 flat cable cut off
No wave for AV left	Power amplifier board: Q221 not good	Sound small for power amplifier	Power amplifier board: R267 not good
No wave for power amplifier	Power amplifier board: U207 (PT2314) not good	No sound for power amplifier when headphone is inserted	Power amplifier board: U204 (SM79164C25P) not good
Power amplifier right wave abnormal	Power amplifier board: Q206 not good	No sound for power amplifier when headphone is inserted	Power amplifier board: U204 (SM79164C25P) not good
Sound small for external input signal	Power amplifier board: U207 (PT2314) not good	Sound small for external input	Power amplifier board: U207 (PT2314) not good
No sound for external input	Power amplifier board: U207 (PT2314) not good	Power not on	Decode board: L230 not good
Power not on	Panel: ZDB02 not good	Power not on	Power board: protector tube not good
No sound for tuning	Tuner not good	Noise when tuning	Tuner not good

Symptom	Causes	Symptom	Causes
AM cannot save	Power amplifier board: U201 not good	Cannot search channel when tuning	Tuner not good
No sound for tuning	Tuning flat cable not good	No wave for AM	Tuner not good
Cannot search channel automatically when tuning	Power amplifier board: D215 not good	Cannot save channel when tuning	Power amplifier board: U209 (4504) not good
RGB has no conversion	AV board: XS702 flat cable not good	RGB has no conversion	AV board: R704 not good
No S output	AV board: terminal not good	No optical and coaxial output	AV board: XS702 flat cable not good
No optical output	AV board: terminal not good	No video output	Decode board: U202 (AM3295) not good
SCART disturbance	Decode board: U206 (EN29L800AB) rosin joint	Component color distortion	AV board: L701 not good
RGB color distortion	AV board: terminal not good	No S-video output	AV board: terminal not good
Component distortion	AV board: component terminal not good	No component output	AV board: C711 tin joint
Component color distortion	Decode board: XS207 joint welding	Component color distortion	AV board: X702 object exists in flat cable
No OSD	Panel: display screen VFD401 not good	Full screen	Power amplifier board: XS207 flat cable not good
OSD incomplete	Panel: U402 (PT6305) rosin joint	Full screen	Power amplifier board: U203 (BA3834F) tin joint
OSD has no change	Power amplifier board: U215 (4580) not good	Screen flicker	Panel: U402 (PT6305) not good
OSD flicker	Panel: ZD402 not good	Full screen	Power amplifier board: U204 (SM79164C25P) not good
No OSD	Panel: display screen VFD401 not good	Display more	Panel: U402 (PT6305) tin joint
No screen	Panel: U402 (PT6305)	Full screen	Power board: VD103 reverse
No OSD	Panel: flat cable X403 contact not good	Dark shadow	Power board: VD110 not good
Full screen	Power amplifier board: Q205 not good	No OSD	Power board: R102 not good
Full screen	Power amplifier board: C701 not good	Full screen	Power board: VD102 reverse inserted
Spectrum display incomplete	Panel: display screen VFD401 not good	Display more	Panel: U402 (PT6305) rosin joint
Screen dark	Panel: U402 (PT6305) not good	Dark shadow	Panel: ZD402 not good
Screen flicker when beating machine	Panel: U402 (PT6305) rosin joint	Cannot set time	Power amplifier board: U201 (24C02) not good
Disc rotation too fast	Decode board: U203 (BA5954) not good	Cannot set clock	Power amplifier board: C291 not good
No scoring	Decode board: TC266 and TC262 joint welding	No scoring	Decode board: Q234 not good
FF has no function	Panel: light touch switch not good	Number button has no function	Panel: light touch switch not good

Symptom	Causes	Symptom	Causes
Spectrum has no change	Power amplifier board: U201 (24C02) not good	PREV/NEXT knob has no function	Power amplifier board: U204 (SM79164C25P) not good
SF button has no function	Panel: light touch switch not good	PREV has no function	Power amplifier board: XS207 flat cable not good
FF has no function	Panel: light touch switch not good	TIMER has no function sometimes	Panel: light touch switch not good
Display more when pressing REPEAT	Panel: U402 (PT6305)	Knob has no function	Power amplifier board: U207 (PT2314) not good
Volume has no function	Power amplifier board: U207 (PT2314) not good	Spectrum button light touch has no function	Panel: light touch switch not good

Section Five IC Function Introduction

3.5.1 Function introduction to D5954

D5954 is a servo drive IC with 4-path drive circuit inside. The digital focus, trace, feed and main drive signals outputted by Vt7208 form analog signal through RC integration circuit, and then send to D5954 for amplification. The focus, trace, feed and main axis drive signals after being amplified through D5954 are sent to loader to complete the corresponding servo working. Pin function introduction is shown as the following table:

SN	Name	Function	SN	Name	Function
1	VNFC	Focus control signal input	15	VOTK+	Trace drive in-phase voltage output
2	CF1	External feedback loop	16	VOTK-	Trace drive reverse voltage output
3	CF2	External feedback loop	17	VOLD+	Feed drive in-phase voltage output
4	VNSL+	In=phase control input, connect to reference voltage	18	VOLD-	Feed drive reverse voltage output
5	VNSL-	Main axis control signal input	19	PGND	Ground
6	VOSL	External feedback resistor	20	VNFTK	Trace feedback signal input
7	VNFFC	Focus feedback signal input	21	PVCC2	5V power
8	VCC	5V power	22	PREGND	Ground
9	PVCC1	5V power	23	VNLD	Feed control signal input
10	PGND	Ground	24	CTK2	External feedback loop
11	VOSL-	Main axis drive reverse voltage output	25	CTK1	External feedback loop
12	VO2+	Main axis drive in-phase voltage output	26	VNTK	Trace control signal input
13	VOFC-	Focus drive reverse voltage output	27	BIAS	1.4V reference voltage input
14	VO2C+	Focus drive in-phase voltage output	28	STBY	Enable control signal

3.5.2 Function introduction to EN29LV800AB

EN29LV800AB (U206) is a 16M FLASH memorizer with working voltage range from 2.7V to 3.6V. In this player, U206 (FLASH), U205 (SDRAM) adopt time sharing multiplexing means and connect with U202 (AML3298) through address bus M2A [0, 11]. The internal memory of FLASH memorizer has U202 (AML3298) control program. After power-on, firstly reset circuit sends reset signal RESET n to pin 12

RESET n of PLASH to reset FLASH so that the program may carry out from the initial position. U202 performs addressing to FLASH through address line M2A[0, 11] to select the corresponding program to implement. The pin 11 write gating signal of U210 is provided by the pin 72 M2 WE n signal of U202 (AML3298) through RN201, R303 conversion. The pin 28 output gating signal is provided by pin 118 of U202 (AML3298), and pin 26 chip selection signal is provided by pin 14 of U210. Pin function introduction is shown as the following table:

Pin	Name	Signal flow	Function	Pin	Name	Function
1—8				47	BYTE/	8-bit/16-bit mode selection
9, 48	A0—A19	I	Address interface	12	RESET/	Reset signal
16—25				28	OE/	Output gating signal
29—36	Q0—Q14	I/O	Data interface	15	RY/BY/	Ready/busy signal
38—44				37	VCC	Power
45	Q15/A—1	I/O	Interface for data/address	27, 6	GND	Grounding
26	CE/		Chip selection signal	10, 13, 14	NC	Blank pin
11	WE/		Write gating signal			

3.5.3 Function introduction to AML3298

AML3298 is a audio/video decode chip and it supports MPEG1/2/4, VX3.X/4.X/5.X, DVD, VCD, SUPER VCD decoding with built-in 24bit RISC CPU, DOLBY AC3, 5.1CH, 2CH, DTS, HDCD, WAM audio playback.

In this player, AML3298 is used for audio and video decoding to disc signals. It achieves disc signal from servo chip VT7208, after decoding, the outputted video signal has AVID0, AVID1, AVID2, AVID3, and outputted audio signal has IEC958 (optical and coaxial outputted digital audio signal), ADATA0.

When the disc signal after reading includes MIDI format musical signal, through the 8 pins of M2 D0M2 D7, AML3298 transmits MIDI musical signal to EPM3032 and is processed by EPM3032, MK6000B. SAM2133. Pin function introduction is shown as the following table:

Module	Pin	Name	Signal flow	Function	Remark
POWER	14\40\83\ 109\140\187	VDD_18	P		
	13\41\82\ 108\139\186	VSS_18	G		
	6\48\61\74\92\106\ 123\141\154\184	VDD_33			
	4\47\60\73\91\105\ 122\136\153\185	VSS_33			
AUDIO	205	IEC958	O	Audio IEC958 signal output	Used as optical/coaxial signal in this player
	5	AMCLK	O	Audio main clock	

Module	Pin	Name	Signal flow	Function	Remark
AUDIO	3	ALRCLK	O	Audio left/right clock	
	208	AOCLK	O	Audio bit clock	
	206\207\1\2	ADATA0— ADATA3	I/O	Audio data input/output	
GPIO	52—59	VD_0—VD_7	I/O	Common input/output interface	VD_1 connects with pin 1 RST of U207(CS4340); VD_4 is connected with pin 6 SDL of U223(24C16); VD_5 is connected with pin 5 SDA of U223; others are unused
	15\16\37\38\39\51	NGP0—NGP5	I/O	Common input/output interface	Pin 16\38 is connected with pin 32/33 of U204 (W78E58), others are unused
	49	UART_RX	I/O	Serial input	
	50	UART_TX	I/O	Serial output	
	17	VDD_DAC18	P	Video DAC power (1.8V)	
	18	VSS_DAC18	G	Video DAC ground	
VIDEO _DAC	20\23\26\29\36	AVDD_DAC33	P	Video DAC power (3.3V)	
	21\24\27\30\35	AVSS_DAC33	G	Video DAC ground	
	31	COMP	I	Video DAC compensation	
	32	RSET	I	Video DAC current setup	
	33	VREF_OUT	O	Video DAC reference	
	34	VREF_IN	I	Video DAC reference	
	19, 28	IOX, IOR	O	Video DAC output	
	25, 22	IOG, IOB	O	Video DAC output	
ATAPI	7\8\9\180— 183\188—196	DD0—DD15	I/O	Data transmission data pin	Connected with servo chip U201(VT7208)
	10\11\12	DA0, DA1, DA2	O	Data transmission address pin	Connected with U201
	137	IRQ14	I	Video transmission intermit	unused
	138	DIORDY	I	Video transmission detecting	Used to detect MIC signal
	173	CSEL	O	Video transmission control	Used to control servo chip U201
	174	DMARQ	I	Video transmission control	
	175	CS1_n	O	Video transmission control	
	176	CS0_n	O	Video transmission control	
	177	DIOR_n	I/O	Video transmission control	
	178	DIOW_n	I/O	Video transmission control	
	179	DMACK_n	O	Video transmission control	

Module	Pin	Name	Signal flow	Function	Remark
AV BUS/G PIO	203	IIS_1	I/O	Common input/output interface	Connected with pin 116, 117 of U201
	202	IIS_2	I/O	Common input/output interface	Reset for U211 (SAM2133), U213(CS4340), U209 (MK-6000B)
	201	IIS_3	I/O	Common input/output interface	PDAT0, SCART output mode selection
	198	IIS_4	I/O	Common input/output interface	Connected with pin 32 of U204
	204\200	IIS_0, ISS_4	I/O	Common input/output interface	unused
	199\197	IIS_5, ISS_7	I/O	Common input/output interface	unused
CLOCK S	155	AVDD_PLL0	P	Phase-locked loop power	
	159	AVDD_PLL1	P	(1.8V)	
	158	DVDD_PLL0	P		
	161	DVDD_PLL1	P		
	156	AVSS_PLL0	G	Phase-locked loop grounding end	
	157	DVSS_PLL0	G		
	160	VSS_PLL0	G		
	162	SCLK_XIN	I	Clock signal input	
	163	SCLK_XOUT	O	Clock signal output	
	164	ALCLK_XIN	I	Clock signal input	Grounding in this player
	165	ALCLK_XOUT	O	Clock signal output	Grounding in this player
TEST	166	TMS	I/O	Test pin	
	167	TD1	I/O	Test pin	
	168	TCK	I/O	Test pin	
	169	TRST_n	I	Power allocation	
	170	TEST_n	I	Power allocation	
	171	RESET_n	I	Reset pin	
	172	TD0	I/O	Test pin	
MEMO RY#2	68—71\75\76\78\127—135	M2 D0—M2 D15	I/O	Data line	M2 D0—M2 D15 is connected to U205\M2 D0 —M2 D10 to U206\M2 D0 —M2 D7\M2 D11\M2 D12 to U210
	62\63\64\77, 79\80\119—121\124—126	M2 A0—M2 A11	O	Address line	Connected to U205, U206
	46	M2_SCS_N	O	Control pin	Control U205
	65	M2_RAS_N	O	Control pin	Connected to U205, U206

Module	Pin	Name	Signal flow	Function	Remark
MEMO RY#2	66	M2_CAS_N	O	Control pin	Connected to U205, U206
	72	M2_WE_N	O	Control pin	Connected to U205, U206, U210
	44	M2_BA1	O	Control pin	Connected to U205, U206
	45	M2_BA0	O	Control pin	Connected to U205, U206
	43	M2_DQM1	O	Control pin	Connected to U205, U206
	67	M2_DQM0	O	Control pin	Connected to U205, U206
	81	M2_ECS_N	O	Control pin	Connected to U210
	118	M2_EOE_N	O	Control pin	Connected to U206, U210
	42	M2_CLKO	I/O	SDRAM clock signal	Connected to U205
MEMO RY#1	93—102	M1 D0—M1 D15	I/O	Data line	Connected to U208
	85—90				
	110—115	M1 A0—M1 A11	O	Address line	Connected to U208
	147—152				
	117	M1_EOE_N	O	Control pin	PDAT2, that is SCART output mode selection
	84	M1_ECS_N	O	Control pin	PDAT1, that is SCART output mode selection
	104	M1_DQM0	O	Control pin	Connected to U208
	103	M1_DQM1	O	Control pin	Connected to U208
	107	M1_CLKO	I/O	SDRAM clock signal	Connected to U208
	145	M1_BA0	O	Control pin	Connected to U208
	146	M1_BA1	O	Control pin	Connected to U208
	116	M1_WE_N	O	Control pin	Connected to U208
	142	M1_CAS_N	O	Control pin	Connected to U208
	143	M1_RAS_N	O	Control pin	Connected to U208
	144	M1_SCS_N	O	Control pin	Connected to U208

3.5.4 Function introduction to CS4340

CS4340 is audio signal D/A conversion chip, which converts digital audio signal input into analog audio signal output. In the model ABS730X, CS4340 has two places to realize D/A conversion function:

① U213 (CS4340) converts MIDI digital audio signal outputted by SAM2133 into MIDI analog audio signal output; ② U207 (CS4340) converts the digital audio signal ADATA decoded by decode chip AML3298 into L/R channel analog audio signal. Pin function introduction is shown as the following table:

Pin	Name	Signal flow	Function description
1	RST/	I	Reset signal input end
2	SDATA	I	Serial audio data input end
3	SCLK/DEM1	I	Serial clock control input end
4	LRCK	I	Left/right clock control input end
5	MCLK	I	Main clock control input end
6	DIF1	I	Digital interface format selection bit
7	DIF0	I	Digital interface format selection bit
8	DEM0	I	Function selection bit
9	FILT+		Internal positive direction reference voltage
10	VQ		Internal static reference filtering voltage
11	REF_GND		Reference ground
12	AOUTR	O	Right channel analog signal output
13	AGND		Analog ground
14	VA		Analog power supply input end
15	AOUTL	O	Left channel analog signal output
16	MUTEC	O	Mute control output

3.5.5 Function introduction to 4558

4558 has two integrated operational amplifiers inside. Pin function introduction is shown as the following table:

Pin	Function	Signal flow	Pin	Function	Signal flow
1	Output of operational amplifier A	O	5	Output of operational amplifier B	O
2	Cathode input end of operational amplifier A	I	6	Cathode input end of operational amplifier B	I
3	Anode input end of operational amplifier A	I	7	Anode input end of operational amplifier B	I
4	Cathode voltage input	I	8	Anode voltage input	I

3.5.6 Function introduction to TDA1308

TDA1308 is a headphone drive chip. Pin function introduction is shown as the following table:

Pin	Name	Function	Signal flow	Pin	Name	Function	Signal flow
1	OUT1	Headphone right channel output	I	5	IN2+	Reference voltage input	I (2.3V)
2	IN1-	Right channel signal input	O	6	IN2-	Left channel signal input	I
3	IN1+	Reference voltage input	I (2.3V)	7	OUT2	Headphone left channel output	O
4	GND	Ground		8	VDD	5V power	

3.5.7 Function introduction to PT2314

PT2314 is a 4-path input digital audio processor by using CMOS technology, which includes volume, bass, treble and equalization compensation inside, meanwhile chip also has loudness function selection input gain function. It may use the fewest external elements and a high stability and high performance electronic audio processor. All functions of it are programmable. Pin function introduction is shown as the following table:

Pin	Name	Signal flow	Function	Remark
1	VDD		Power	Connect to 9V power
2	AGND		Analog ground	Grounding
3	TREB_L		Treble adjustment	Grounding through C275
4	TREB_R		Treble adjustment	Grounding through C273
5	RIN			
6	ROUT			
7	LOUD_R		Bass adjustment	Grounding through C285
8	RIN4	I	External post position audio input right	
9	RIN3	I	External preposition audio input right	
10	RIN2	I	Tuner audio input right	
11	RIN1	I	Mixed audio input right	
12	LOUD_L		Bass adjustment	Grounding through C282
13	LIN4	I	External post position audio input left	
14	LIN3	I	External preposition audio input left	
15	LIN2	I	Tuner audio input left	
16	LIN1	I	Mixed audio input right	
17	LIN	I		
18	LOUT	O		
19	BIN_L	I		
20	BOUT_L	O		
21	BIN_R	I		
22	BOUT_R	O		
23	OUT_R	O	Audio input right	
24	OUT_L	O	Audio input left	
25	DGND		Digital ground	
26	DATA	I	Serial control data input	
27	CLK	I	Serial control clock input	
28	REF		Reference input	

3.5.8 Function introduction to BA3834F

BA3834F is 7 frequency band and band filtering IC. This IC generates serial output when using microprocessor. For spectrum analysis display and peripheral element number required by minimization, add severeness and stability, all filtering capacitors are integrated inside the chip. Pin function introduction is shown as the following table:

Pin	Name	Signal flow	Function	Remark
1	BIASC		Deviation value adjustment end	Grounding through 100 μ F
2	VREFC		Internal reference voltage adjustment end	Grounding through 100 μ F
3	RREF		Frequency features adjustment resistor connecting end	Grounding through 100K resistor R356
4	NC		Blank pin	
5	DIF OUT	O	DIF signal output end	unused
6	NC		Blank pin	
7	CIN	I	Comparative audio input	Grounding through 100 μ F capacitor
8	AIN	I	Audio signal input	
9	VCC		Power supply voltage	
10	A	I	Gating frequency control interface A	Connect to pin 38 of U204
11	B	I	Gating frequency control interface B	Connect to pin 28 of U204
12	C	I	Gating frequency control interface C	Connect to pin 22 of U204
13	NC		Blank pin	
14	SEL	I	Chip enable end	Connect to VCC
15	NC		Blank pin	
16	TEST		Test pin	unused
17	AOUT	O	Frequency selection signal output	
18	GND		Common	

3.5.9 Function introduction to TDA7294

Pin function introduction is shown as the following table

Pin	Name	Signal flow	Function description	Remark
1	STAND-BY GND		Standby end	Grounding
2	IN-	I	Negative position input	Negative input connects with feedback loop
3	IN+	I	Positive position input	Signal input
4	SUR		Power filtering	Grounding
5	N.C		Blank pin	
6	BOOTSTRAP		Bootstrap end	Connect to bootstrap capacitor

Pin	Name	Signal flow	Function description	Remark
7	+VS(SIGNAL)		Signal processing power supply	Connect to VH+ (22V)
8	-VS(SIGNAL)		Signal processing power supply	Connect to VH- (-22V)
9	STAND-BY	I	Standby signal	Low level standby
10	MUTE		Mute signal	Low level mute
11	N.C		Blank pin	
12	N.C		Blank pin	
13	+VS(POWER)		Power supply	Connect to VH+ (22V)
14	OUT		Signal output end	Signal output
15	-VS(POWER)		Power supply	Connect to VH- (-22V)

3.5.10 Function introduction to SM79164C25P

This chip is a 8-bit microprocessor and it includes 4 double-direction data/address port, 3 16-bit counter/timer, 1 serial-port, 2 external intermit port and also 256M RAM and 32KB EEPROM storage space inside. Introduction to pin function is shown as the following table:

Pin	Name	Signal flow	Function	Remark
1	P1.0	O	I/O port, timer 2 external input	U205, U208 enable end
2	P1.1	O	I/O port, timer 2 trigger	Fan control signal
3	P1.2	O	I/O port	PT6305 chip control signal CON1
4	P1.3	I	I/O port	Digital potentiometer 1 (volume adjustment knob) pulse input
5	P1.4	O	I/O port	PT6305 chip control signal CON2 on panel
6	P1.5	O	I/O port	Number indicator light and volume indicator light control signal on panel
7	P1.6	O	I/O port	Standby indicator light control signal
8	P1.7	I	I/O port	Digital potentiometer 2 (channel selection knob) pulse input
9	RST	I	Reset signal input	High level effective
10	P3.0	I/O	I/O, serial-port	Data exchange with PT6305
11	P3.1	O	I/O, serial-port	Clock that provides data exchange for PT6305
12	P3.2	I	I/O port, external intermit 0	Remote control signal input
13	P3.3	I	I/O port, external intermit 1	Spectrum signal input
14	P3.4	I	I/O port, counter 0 input	Digital potentiometer 2 (channel selection knob) pulse input
15	P3.5	I	I/O port, counter 1 input	Disc data input
16	P3.6	I	I/O port, write enable	Digital potentiometer 1 (volume adjustment knob) pulse input
17	P3.7	O	I/O port, write enable	Enable signal that provides PT6305

Pin	Name	Signal flow	Function	Remark
18	XTAL2	O	Crystal oscillator input	Clock circuit that connects with 24MHZ
19	XTAL1	I	Crystal oscillator input	Clock circuit that connects with 24MHZ
20	VSS		Grounding	Grounding
21	P2.0	I	I/O, address line	Tuning data effective
22	P2.1	O	I/O, address line	U203 frequency gating control C
23	P2.2	I	I/O, address line	Tuner data
24	P2.3	O	I/O, address line	Tuner clock
25	P2.4	O	I/O, address line	Tuner data
26	P2.5	O	I/O, address line	Tuner chip selection
27	P2.6	O	I/O, address line	Output mute signal MUTE 2
28	P2.7	O	I/O, address line	U203 frequency gating control B
29	/PSEN		Program enable	Grounding
30	ALE/PR	O	Address latched enable	High level effective
31	/EA	I	Program memorizer selection	Connect to high level
32	P0.7	O	I/O port/address line	Disc signal data enable
33	P0.6	O	I/O port/address line	Disc signal data clock
34	P0.5	O	I/O port/address line	Tuner power switch
35	P0.4	I/O	I/O port/address line	I2C signal
36	P0.3	I/O	I/O port/address line	I2C signal
37	P0.2	I	I/O port/address line	Headphone DET
38	P0.1	O	I/O port/address line	U203 frequency gating control A
39	P0.0	O	I/O port/address line	A signal
40	VDD		+5V power supply	

Note: the function of pin 10 MUTE is designed to remove the noise appearing at the moment of on or off, MUTE pin and enable end (STANDBY) are connected with the same gating signal respectively through RC integration circuit. In MUTE pin integration circuit, the resistance value of resistor R is a little bit big, the delay time is a little bit long and the noise when on and off is removed.

3.5.11 Function introduction to PT2222

PT2222 is a kind of CMOS LSI (large scale integrated circuit) coder used in long distance control system, which can code 16-bit address code and 8-bit data code. Each address/data input can be set into two logic states, that is 0 and 1. PT2222, including 64-key. When one key of them is touched, the well-set instruction address and directing code are transmitted by IR(38KHZ) transmission media. Introduction to pin function is shown as the following table:

Pin	Name	Signal flow	Function	Remark
1~6	R3□ R8	I	Keyboard matrix row control	High level effective
7	REM	O	Serial data output pin	38KHZ load is used
8	VDD		3.3V power	
9	SEL	I	most important data bit coding setup	
10	OSCO	O	455KHZ oscillation output	
11	OSCO1	I	455KHZ oscillation input	
12	VSS		Grounding	
13	DREN/	O	Data nine's component output	
14□ 21	C8□ C1	I/O	Keyboard matrix line control	
22	CSS	I	Low byte data code input scanning	
23, 24	R1, R2	I	Keyboard matrix row control	High level effective

3.5.12 Function introduction to PT6305

PT6305 is a 48-bit high voltage display drive chip and it is specially designed for VFD display panel by using CMOS technology. It provides a 48-bit shift register and a high voltage CMOS driver. Drive part includes a high voltage output buffer with 80V highest voltage and 50mA largest current. Introduction of pin function is shown as the following table:

Pin	Name	Signal flow	Function	Remark
2\31\50\79	VDD		Power supply	40V power supply
5\34\47\76	VSS2		Grounding	Grounding
39	VSS1		Grounding	Grounding
42	VDD1		5V power supply	VFD_STB signal that connects to CPU
37	DI	I	Data input pin	VFD DATA signal that connects to pin 10 of U204
38	CLKB	I	Clock output pin	VFD CLK signal that connects to pin 11 of U204
43	LATB	I	Flip-latch gating input	VFD STB signal that connects to pin 43 of U204
44	PCB	I	Reversed polarity pin	CON1 signal that connects to pin 44 of U204
45	BK	I	Stand-by input pin	CON2 signal that connects to pin 45 of U204
51~68	SEG1— SEG8	O	VFD bit control pin	the detailedly displayed data control level
69~72\82~93	GRID1— GRID16	O	VFD segment control pin	the detailedly displayed data control level

3.5.13 Function introduction to AML3298

1. EPM3032 is programmable logic control chip. In this model unit, it realizes the encryption processing to MIDI signal through programming. The MIDI signal after being processed is sent to MIDI

Micro-processing chip U209 (MK6000B) to perform decryption processing. Moreover, U202 (AML3298) reralizes the selection to DATD BUS, U209 (MK6000B) chip selection, U206 (EN29LV800AB) chip selection and CPLD register through the control to pin 15 and 18 by A22, A21 signal, shown as the following table:

A22	A21	OUT
0	0	ROMCS
0	1	CPLD REG
1	0	MK—6000B CS
1	1	DATABUS

2. Pin function introduction is shown as the following table:

Pin	Name	Signal flow	Function description
1	TDI	I	Test data input
7	TMS	I	Test data input
32	TDO	O	Test data output
26	TCK	I	Test control clock
15	IO16	I	Working mode control bit
18	IO32	I	Working mode control bit
2	IO5	I/O	Connect with data bus M2 D0 of AML3298 communication
3	IO6	I/O	Connect with data bus M2 D1 of AML3298 communication
5	IO7	I/O	Connect with data bus M2 D2 of AML3298 communication
6	IO8	I/O	Connect with data bus M2 D3 of AML3298 communication
8	IO10	I/O	Connect with data bus M2 D4 of AML3298 communication
10	IO11	I/O	Connect with data bus M2 D5 of AML3298 communication
12	IO13	I/O	Connect with data bus M2 D6 of AML3298 communication
13	IO14	I/O	Connect with data bus M2 D7 of AML3298 communication
39	IN/GCLR	O	Read control signal M2 EOE n
40	IN/OE2	O	Write control signal
44	IO3	I	Chip selection signal M2 ECS n
42	IO1	I	AML3298 busy signal zone bit
43	IO2	I	MK—6000B busy signal zone bit
14	IO15	O	Internal memory chip selection control bit ROM CS

Pin	Name	Signal flow	Function description
35	IO17	O	MK-6000B write control signal bit
34	IO18	O	MK-6000B read control signal bit
38	IN/OE1	O	MK-6001B chip selection control bit
37	GCLK	I	27MHZ clock signal input
33	IO19	I/O	Data bus D0 bit that connects with MK-6000B communication
31	IO21	I/O	Data bus D0 bit that connects with MK-6001B communication
28	IO23	I/O	Data bus D0 bit that connects with MK-6002B communication
27	IO24	I/O	Data bus D0 bit that connects with MK-6003B communication
25	IO26	I/O	Data bus D0 bit that connects with MK-6004B communication
23	IO27	I/O	Data bus D0 bit that connects with MK-6005B communication
22	IO28	I/O	Data bus D0 bit that connects with MK-6006B communication
21	IO29	I/O	Data bus D0 bit that connects with MK-6007B communication
9\29	VCCIO	I	Internal I/O circuit power supply 3.3V
41\17	VCCINT	I	Intermit circuit power supply 3.3V
16\36	GNDINT	I	Intermit circuit ground
4\11	GNDIO	I	Internal IO circuit ground
24\30	GNDIO	I	Internal IO circuit ground
19	IO31	I/O	I/O interface
20	IO30	I/O	I/O interface

3.5.14 Function introduction to MK6000B

MK6000B chip is MIDI signal circuit main control chip. The MIDI signal decode circuit composed by U210 (EPM3032), U209 (MK6000B), U211 (SAM2133B) realizes the decode processing to MIDI signal, while U209 (MK6000B) is core of MIDI decode circuit, which controls the realization of the whole decode process. Pin function introduction is shown as the following table:

Pin	Name	Signal flow	Function description	Pin	Name	Signal flow	Function description
5	VLD		Power supply voltage 3.3V	31	P2.6	I	AML3298 busy signal input
53	VDD2		Power supply voltage 3.3V	3	RD	O	Read EPM3032 control
12	VDD1		Power supply voltage 3.3V	4	WR	O	Write EPM3032 control
50	AVREF		Analog reference voltage 3.3V	8	P4.7	I	Chip selection signal input
13	GND		Common	11	P4.4	O	Chip selection SAM2133 output

Pin	Name	Signal flow	Function description	Pin	Name	Signal flow	Function description
52	GND		Common	73	A8	O	SAM2133 register selection bit
16	EA			6	P5.1	O	MIDI signal mute control bit
19	RES	I	Reset signal input	57—64	D0—D7	I/O	MK—6000B data bus
15	XIN	I	Clock signal input	55	P0.1		Grounding
14	XOUT	O	Clock signal output	56	P0.0		Grounding
32	P2.5	O	MK—6000B busy signal output	43	P1.2		Grounding

Note: other pins are blank.

3.5.15 Function introduction to SAM2133B

SAM2133B is audio signal synthesizer. In the model ABS730X, it makes the externally inputted 8-path MIDI signal output 1 path digital audio signal WDAT after internal synthesis processing this players also attaches a U212 (MX23L3213) to act as the external extension of ROM. Pin function introduction is shown as the following table:

Pin	Name	Signal flow	Function description	Remark
10, 16, 31, 36	GND	I	Common	
45, 56, 68, 76	GND	I	Common	
80, 84, 96	GND	I	Common	
11, 37, 83	VC2	I	Inner core power supply +2.5V□10%	
86, 87	VC2	I	Inner core power supply +2.5V□10%	
17, 30, 44	VC3	I	Peripheral power supply +2.25V□ 3.7V	
57, 69, 97	VC3	I	Peripheral power supply +2.25V□ 3.7V	
77	PWRIN	I	Power switch input 2.25V□ 2.95V	
78	PWROUT	I	Power switch outputs 2.5V to VC2	
6—9, 12—15	D0—D7	I/O	8-bit data bus	
2	/CS	I	Chip selection signal input	Low level effective
4	/WR	I	Write control signal input	
3	/RD	I	Read control signal input	
5	A0	I	Internal register selection bit	
1	IRQ	O	Tri-state gate output high level effective	unused
22	/RESET	I	Reset signal input	Low level effective
81, 82	X1, X2	I/O	Supply clock signal	
88	CKOUT	O	Audio data main clock output	

Pin	Name	Signal flow	Function description	Remark
93	DABD0	O	Serial audio data output interface 0	
92	DABD1	O	Serial audio data output interface 1	unused
94	CLBD	O	Audio data bit clock output	
95	WSBD	O	Audio data main control clock output	
98	DAAD	I	Serial audio data input	unused
18—21	P0—P3	I/O	Common programmable I/O interface	unused
90	DBCLK	I	Debug clock is often connected to VC3	
91	DBDATA	I/O	Debug data signal	unused
89	DBACK	O	Debug to confirm output	unused
100	MIDI IN	I	MIDI IN input	unused
99	MIDI OUT	O	MIDI OUT output	unused
24—29, 32—35	WA0—WA9	O	External ROM/FLASH address interface	
38—43, 46—52	WA10—WA20	O	External ROM/FLASH address interface	51, 52 unused
58—67, 70—75	WD0—WD15	I/O	External ROM/FLASH data interface	
53	/WCS	O	External ROM/FLASH chip selection bit	
55	/WWE	O	External ROM/FLASH write enable bit	unused
54	/WOE	O	External ROM/FLASH output enable bit	
85	LFT	I/O	PLL low pass filtering pin	
23	TEST	I	Test pin	unused
79	/PDWN	I	Power failure control pin	

3.5.16 Function introduction to SDRAM

U205, U208 are 64M 16-bit memorizer SDRAM with the player and the working clock frequency is 166/143MHZ. The function of 16SDRAM in DVD players is to memorizer the program of AML3298 taken out from FLASH and information of image and sound taken out from disc to form buffer, add the stability of information output and add anti-shaking effect of player. Pin function introduction is shown as the following table:

Pin	Name	Function	Signal flow	Pin	Name	Function	Signal flow
1	VDD	3.3V power supply		28	VSS	Ground	
2	DQ0	Data bus	I/O	29	MA4	Address bus	I
3	VDDQ	3.3V power supply	I/O	30	MA5	Address bus	I
4	DQ1	Data bus	I/O	31	MA6	Address bus	I
5	DQ2	Data bus	I/O	32	MA7	Address bus	I
6	VSSQ	Ground		33	MA8	Address bus	I

Pin	Name	Function	Signal flow	Pin	Name	Function	Signal flow
7	DQ3	Data bus	I/O	34	MA9	Address bus	I
8	DQ4	Data bus	I/O	35	MA11	Address bus	I
9	VDDQ	3.3V power supply		36	NC	Blank	
10	DQ5	Data bus	I/O	37	CKE	Clock enable signal	I
11	DQ6	Data bus	I/O	38	CLK	System clock input	I
12	VSSQ	Ground		39	UDQM	Data input/output screen-shielded signal	I
13	DQ7	Data bus	I/O	40	NC	Blank	
14	VDD	3.3V power supply		41	VSS	Ground	
15	LDQM	Data input/output screen-shielded signal	I	42	DQ8	Data bus	I/O
16	WE	Write control signal	I	43	VDDQ	3.3V power supply	
17	CAS	Line address gating signal	I	44	DQ9	Data bus	I/O
18	RAS	Row address gating signal	I	45	DQ10	Data bus	I/O
19	CS	Chip selection signal	I	46	VSSQ	Ground	
20	SD-BS0	Segmanr address 0 gating signal	I	47	DQ11	Data bus	I/O
21	SD-BS1	Segmanr address 1 gating signal	I	48	DQ12	Data bus	I/O
22	MA10	Address bus	I	49	VDDQ	3.3V power supply	
23	MA0	Address bus	I	50	DQ13	Data bus	I/O
24	MA1	Address bus	I	51	DQ14	Data bus	I/O
25	MA2	Address bus	I	52	VSSQ	Ground	
26	MA3	Address bus	I	53	DQ15	Data bus	I/O
27	VDD	3.3V power supply		54	VSS	Ground	

3.5.17 Function introduction to VT7208

VT7208 is a chip with strong function, which includes therefore preposition amplifying, SSP and DSP processing, etc. Pin function introduction is shown as the following table:

Pin	Name	Signal flow	Function	Remark
Main unit interface (IDE)				
118, 119	IDE [15: 0]	I/O	IDE data bus [15: 0]/MPEG program flow	Connect to U202 (AML3298) ATAPI data pin
121, 126				
128, 130				
132, 135				
137, 138				
148	DA[2: 0]	I	Driver address [2: 0]	U202 (AML3298) ATAPI address
150, 151				

Pin	Name	Signal flow	Function	Remark
141	DIORD/HDMARDY	I	IDE data bus write allowable/main DMA ready signal	U202 (AML3298) ATAPI control
410	DIOWR#/STOP	I	IDE data bus write allowable/stop (UDMA) mode	U202 (AML3298) ATAPI control
153	CS1FX#	I	Driver chip selection signal 0	U202 (AML3298) ATAPI control
154	CS3FX#	I	Driver chip selection signal 1	U202 (AML3298) ATAPI control
155	DASP#	I/O	Driver activation	Blank pin
156	CSEL	I	Cable selection	Grounding
144	DMAACK#	I	DMA data acknowledge signal	U202 (AML3298) ATAPI control
139	DMARQ	I/O	DMA request signal	U202 (AML3298) ATAPI control
142	IORDY/DDMARDY	I/O	Data bus ready signal	Blank pin
146	INTRQ	I/O	Driver intermit	U202 (AML3298) ATAPI control
147	HRST#	I	Hardware reset signal input	Grounding
149	PDIAG#	I/O	Transmission data diagnosis	Blank pin
Other interfaces				
54	DMOEN	O	Main axis electric machine initiating signal	Output DMOEN to D5954, enable end
52	FGIN	I	Main axis frequency generator signal input	Blank pin
32	TEZILP	O	Trace error signal zero passage cross talk clipping output	through 0.1MF capacitor grounding
18	IDSUBT	I	RF and signal capacitor	
19	IDSUBO	O	RF and signal capacitor	
208	AGFR	O	AGC capacitor	
114	NC		NC	
206,207	AGFU,AGFI			
Micro controller interface				
189 191: 197	ADL [7: 0]	I/O	Micro processor address/data bus [7: 0]	U216 data line (A290011L)
157	ALE	I/O	Micro processor address latched signal	Blank pin
183	AH8/ROMA8	I/O	Micro processor port 2.0/ROM address 8	U216 (A290011L) address 8
185	AH9/ROMA9	I/O	Micro processor port 2.1/ROM address 9	U216 (A290011L) address 9
188	AH10/ROMA10	I/O	Micro processor port 2.2/ROM address 10	U216 (A290011L) address 10
186	AH11/ROMA11	I/O	Micro processor port 2.3/ROM address 11	U216 (A290011L) address 11
175	AH12/ROMA12	I/O	Micro processor port 2.4/ROM address 12	U216 (A290011L) address 12
181	AH13/ROMA13	I/O	Micro processor port 2.5/ROM address 13	U216 (A290011L) address 13
180	AH14/ROMA14	I/O	Micro processor port 2.6/ROM address 14	U216 (A290011L) address 14
176	AH15/ROMA15	I/O	Micro processor port 2.7/ROM address 15	U216 (A290011L) address 15

Pin	Name	Signal flow	Function	Remark
166	P10/ROMA0	I/O	Micro processor port 1.0/ROM address 0	U216 (A290011L) address 0
167	P11/ROMA1	I/O	Micro processor port 1.1/ROM address 1	U216 (A290011L) address 1
168	P12/ROMA2	I/O	Micro processor port 1.2/ROM address 2	U216 (A290011L) address 2
169	P13/ROMA3	I/O	Micro processor port 1.3/ROM address 3	U216 (A290011L) address 3
171	P14/ROMA4	I/O	Micro processor port 1.4/ROM address 4	U216 (A290011L) address 4
172	P15/ROMA5	I/O	Micro processor port 1.5/ROM address 5	U216 (A290011L) address 5
173	P16/ROMA6	I/O	Micro processor port 1.6/ROM address 6	U216 (A290011L) address 6
174	P17/ROMA7	I/O	Micro processor port 1.7/ROM address 7	U216 (A290011L) address 7
159	P30	I/O	Micro processor port 3.0	Blank pin
160	P31	I/O	Micro processor port 3.1	Blank pin
164	P34	I/O	Micro processor port 3.4/ROM address 16	U216 (A290011L) address 16
178	P35/ROMA16	I/O	Micro processor port 3.5	Blank pin
187	PSEN#	I/O	Micro processor ROM read order	Connect to U216 (A290011L) chip enable end
165	RD#	I/O	Micro processor I/O bus read allowable	Blank pin
158	WR#	I/O	Micro processor I/O bus write allowable	Blank pin
162	INT0#	I/O	Micro processor external intermit signal input 0	Through 10K resistor R207 connects to VCC3
163	INT1#	I/O	Micro processor external intermit signal input 1	Through 10K resistor R206 connects to VCC3
177	ROMWE#	I/O	Flash ROM write allowable	Blank pin
Dynamic memorizer interface (SDRAM)				
79, 80, 81	MA[8: 0]	O	Dynamic memorizer address bus [8: 0]	U215 (M11 B416 256A) address bus [8: 0]
83, 88				
74	CASH#	O	Dynamic memorizer line high position address U215 (M11B416256A) line high position gating	U215 (M11 B416 256A) line high position gating
73	CASL#	O	Dynamic memorizer line low position address	U215 (M11 B416 256A) line low position gating
55, 60	MD [15: 0]	I/O	Dynamic memorizer data bus [15: 0]	U215 (M11 B416 256A) data bus [15: 0]
62, 67				
69				
70,73				
76	WE#	O	Dynamic memorizer write allowable	U215 (M11 B416 256A) write allowable
77	OE#	O	Dynamic memorizer read allowable	U215 (M11 B416 256A) read allowable
78	RAS#	O	Dynamic memorizer row address	U215 (M11 B416 256A) row address gating
Common debug output interface				
49	XTALO	O	33.868MHZ crystal oscillator signal output	

Pin	Name	Signal flow	Function	Remark
50	XTALI	I	33.686MHZ crystal oscillator signal input	
90	GIO0	I/O	Common input/output interface 0/debug output	Through 10K resistor R208 grounding
91	GIO1	I/O	Common input/output interface 1/debug output	Through 330 Ω resistor grounding
92	GIO6	I/O	Common input/output interface 6/debug output	Connect with disc identification circuit
93	GIO7	I/O	Common input/output interface 7/debug output	Through 330 Ω resistor grounding
94	GIO4/MA9	I/O	Common input/output interface 4/debug output/DRAM address 9	Main axis electric machine rotation checking
96	GIO5	I/O	Common input/output interface 5/debug output	Main axis electric machine rotation checking
98	GIO2	I/O	Common input/output interface 2/debug output	Grounding
100	GIO3	I/O	Common input/output interface 3/debug output	Blank pin
116	PRST	I	RC power-on reset signal input	HRST
Other interfaces				
101	LED	O	Indicator light signal output	Blank pin
102	INTRAY	O	Disc in control signal output	Connect to disc in/out control circuit
103	OUTTRAY	O	Disc out control signal output	Connect to disc in/out control circuit
104	PLAY#	I	Playback signal input	Blank pin
105	EJECT#	I	Disc out signal input	Blank pin
106	LIMIT	I	Most inner position of laser head signal input	Connect to feed to position detect signal
107	TRAYIN#	I	Disc in to position signal input	
115	TRYAOUT#	I	Disc out to position signal input	
Auto laser power control interface				
28	MDI1	I	Laser power monitoring signal input 1	Connect to laser power control circuit
27	MDI2	I	Laser power monitoring signal input 2	Connect to laser power control circuit
29	LDO1	O	Laser diode current control output	Control VCD laser power
30	LDO2	O	Laser diode current control output	Control DVD laser power
Servo control interface				
25	CSO	O	Centre servo signal output	Blank pin
22	TNI	I	Tri beam trace reverse input	Loader F signal
21	TPI	I	Tri beam trace in-phase input	Loader E signal
23	FEO	O	Focus error signal output	Blank pin
33	TEO	O	Trace error signal output	Blank pin

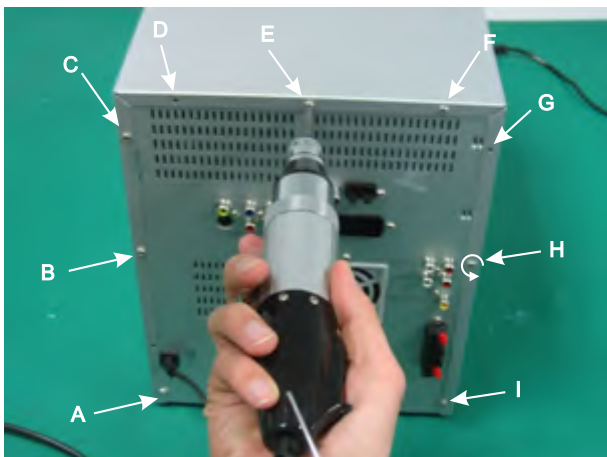
Pin	Name	Signal flow	Function	Remark
15	RFPSLV	O	RF signal zero passage cross talk clipping output	Blank pin
PDM/PWM control				
45	ADBG1	O	Pulse width modulate DAC output 1	Blank pin
46	ADBG2	O	Pulse width modulate DAC output 2	Blank pin
43	FOO	O	Focus servo PDM modulate signal output	
42	TRO	O	Trace servo PDM modulate signal output	
41	FMO	O	Feed servo PWM modulate signal output	
44	DMO	O	Main axis servo PWM modulate signal output	
RF data path interface				
201	JITFO	O	RF signal jitter checking	Grounding through 1000PF capacitor
204	RFDSLVL	O	RF signal clipping output	Grounding through 10MF capacitor
205	SCO	O	Analog clipping current output	Grounding through 200PF capacitor
213	RFOP	O	In-phase RF signal output	Blank pin
214	RFON	O	Reverse RF signal output	Blank pin
4	DVDRFIN	I	DVD RF signal reverse input	Grounding through 1MF capacitor
5	DVDRFIP	I	DVD RF signal in-phase input	
6	DVDINA	I	DVD photoelectric detector A input	
7	DVDINB	I	DVD photoelectric detector B input	
8	DVDINC	I	DVD photoelectric detector C input	
9	DVDIND	I	DVD photoelectric detector D input	
10	CDC/SC/T1	I	CD photoelectric detector C/supplementary light detector C/trace T1 input	Blank pin
11	CDD/SD/T2	I	CD photoelectric detector C/supplementary light detector C/trace T2 input	Blank pin
12	CDA/SA/F1	I	CD photoelectric detector A/supplementary light detector A/focus F1 input	Blank pin
13	CDB/SB/F2	I	CD photoelectric detector B/supplementary light detector B/focus F2 input	Blank pin
14	PEAKS	O	RF peak value hold signal output	Blank pin
16	RFRPDC	O	RF ripple signal DC output	
17	RFRPAC	I	RF ripple signal AC input	
24	FLVL	O	RF non invert signal output	Blank pin
Analog test interface				
36	DPD1	I/O	Phase difference analog test input 1	Blank pin
35	DPD2	I/O	Phase difference analog test input 2	Blank pin

Pin	Name	Signal flow	Function	Remark
Capacitor filter interface				
26	CEC	O	Centre servo error low pass filter capacitor	Connect to VRD through 3300PF capacitor
202	LPFO	O	Digital PLL ring circuit filter capacitor	Grounding through 10MF capacitor
210	OSP	I/O	Ocular lens offset compensation capacitor	
211	OSN	I/O	Ocular lens offset compensation capacitor	
Reference voltage interface				
216	IREF	I	Reference current input	Grounding through resistor
2	VRA	I/O	Reference voltage output 1	
1	VRD	I/O	Reference voltage output 2	
111	DACVREF	O	DAC reference voltage output	Blank pin
Analog power interface				
3, 31	AVCC [6: 1]	—	Analog circuit power	Connect to 3.3V analog power
37, 47				
203, 212				
20, 34	AVSS [6: 1]	—	Analog circuit power ground	
40, 200				
209, 215				
39	DPDVCC	—	DPD circuit power	Connect to 3.3V analog power
38	DPDVSS	—	DPD circuit power ground	
199	PLLVCC	—	Digital PLL circuit power	Connect to 1.8V analog power
198	PLLVSS	—	Digital PLL circuit power ground	
113	DACVCC	—	Audio DAC circuit power	Connect to 3.3V analog power
109	DACVSS	—	Audio DAC circuit power ground	Blank pin
Digital circuit power interface				
68, 82	VCC [8: 1]	—	Digital circuit 3.3V power	
99, 120				
136, 152				
170, 190				
61, 75	VSS [8: 1]	—	Digital circuit 3.3V power	
89, 108				
127, 413				
161, 179				
97, 129	VDD [4: 1]	—	Inner core 2.0V power	Provide by voltage regulator U224 through L226
145, 182				
95, 131	GND [4: 1]	—	Inner core 2.1V power	
147, 184				
48	XTALVSS	—	Crystal oscillator circuit power ground	
51	XTALVCC	—	Crystal oscillator circuit power ground	Connect to 3.3V power

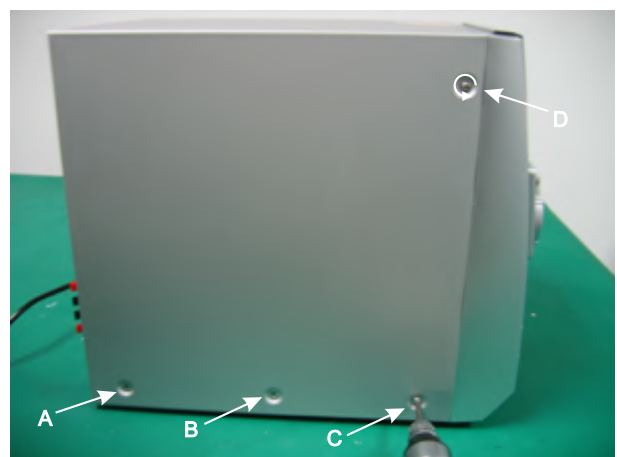
Chapter Four Disassembly and Assembly Process

In order to know the structure of DVD player DK1020S easily, visibly and quickly, now each key link of the disassembly and assembly process of the player is presented in means of pictures to prevent users from incorrect operating and damaging elements. This player is divided into: the unit, loader, loader components, control panel components, power amplifier board components, decode control components, power board components, MIC board components, AV board components and remote controller. You are suggested to operate according to illustrations strictly. This chapter will introduce the former 5 elements, and refer to “DK1005S Service Manual” for details of the latter four elements.

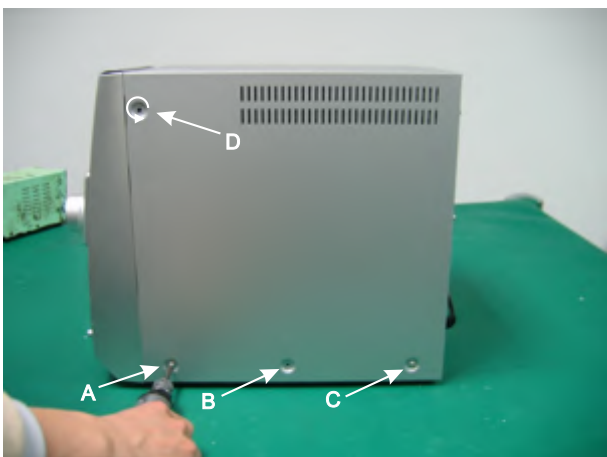
1. Disassembly and assembly process for the unit



(1) Use electric screwdriver or “+”-shaped screwdriver to unfix the screw A~I in the joint position of upper cover and rear cover.



(2) Use electric screwdriver or “+”-shaped screwdriver to unfix screws A, B, C and D in the upper cover on left hand side.



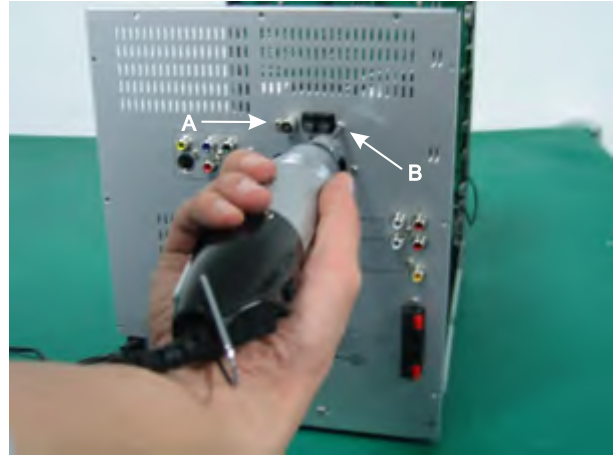
(3) Use electric screwdriver or “+”-shaped screwdriver to unfix screws A, B, C and D in the upper cover on left hand side.



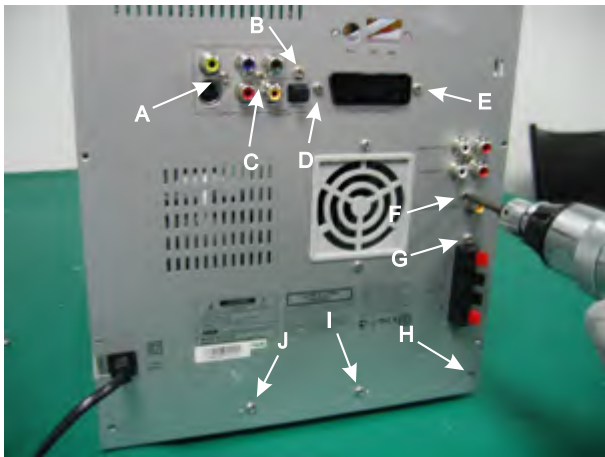
(4) Take down uppercasing.



(5) Remove flat cable of tuner.



(6) Use electric screwdriver or "+"-shaped screwdriver to unfix screws A and B of tuner.



(7) Use electric screwdriver or "+"-shaped screwdriver to unfix screws A~J in rear cover.



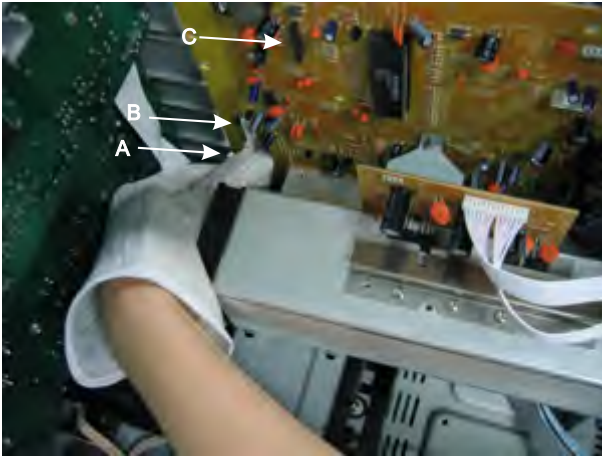
(8) Take down power cord.



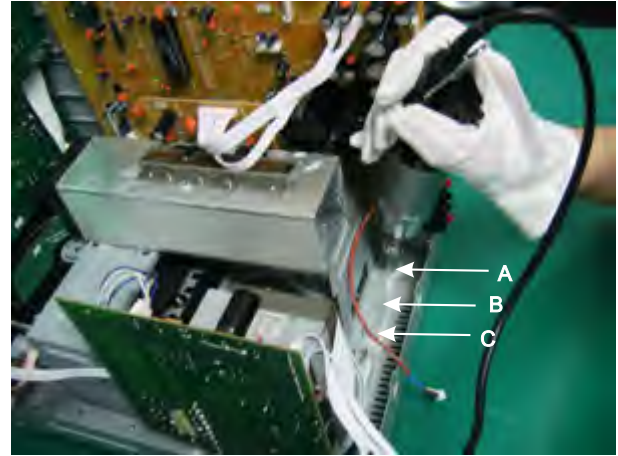
(9) Remove all flat cable on AV board.



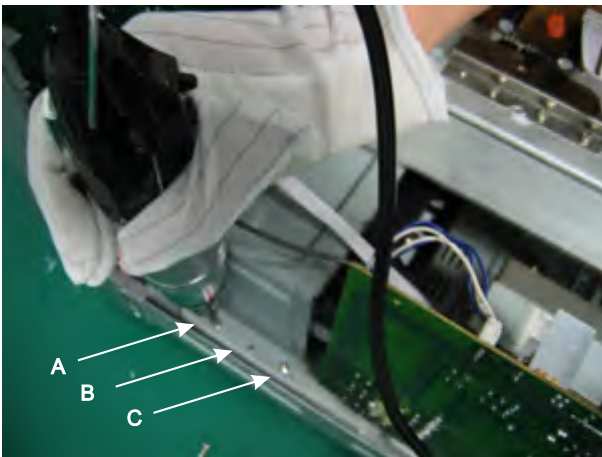
(10) Take down rear cover, and remove flat cable on power amplifier board.



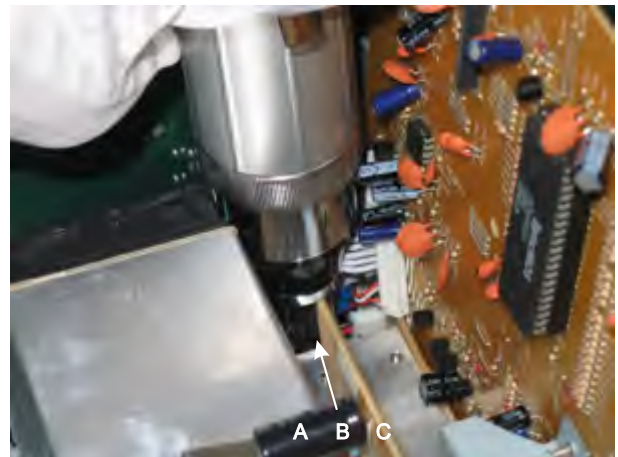
(11) Remove flat cable A, B, C on power amplifier board.



(12) Use electric screwdriver or "+"-shaped screwdriver to unfix screws A, B, C of heat radiator bracket.



(13) Use electric screwdriver or "+"-shaped screwdriver to unfix screws A, B, C of heat radiator bracket.



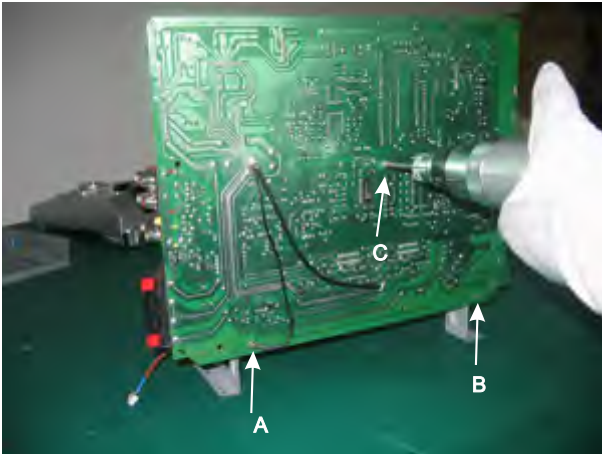
(14) Use electric screwdriver or "+"-shaped screwdriver to unfix screws A, B, C of heat radiator bracket.



(15) Hold the heat radiator and take it out outwards.



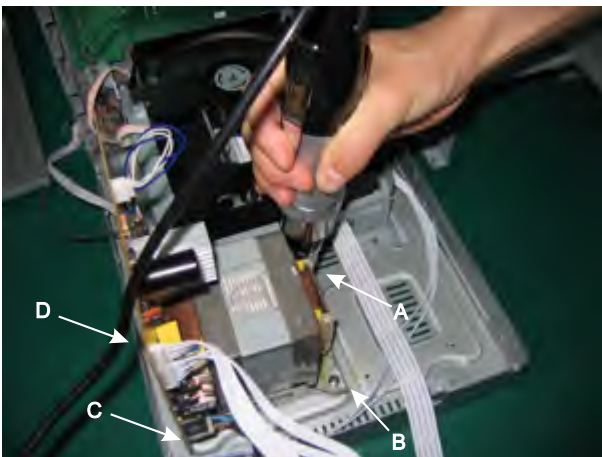
(16) Take down heat radiator (power amplifier board and heat radiator are in one)



(17) Use electric screwdriver or "+"-shaped screwdriver to unfix screws A, B, C of power amplifier board.



(18) Use electric screwdriver or "+"-shaped screwdriver to unfix screws A, B of power amplifier board.



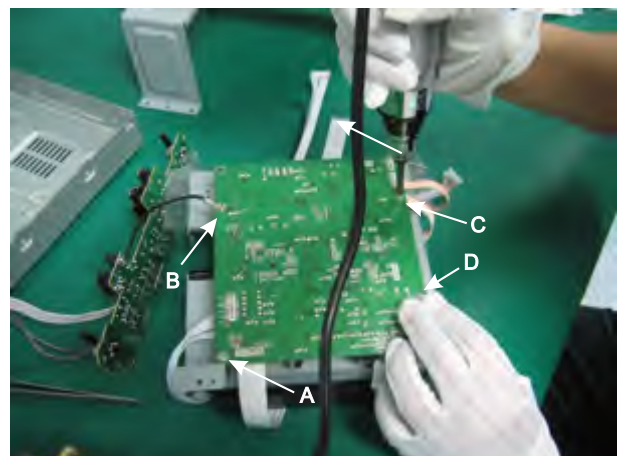
(19) Use electric screwdriver or "+"-shaped screwdriver to unfix screws A, B, C and D of transformer bracket. .



(20) Use electric screwdriver or "+"-shaped screwdriver to unfix screws A, B, C and D of loader components.



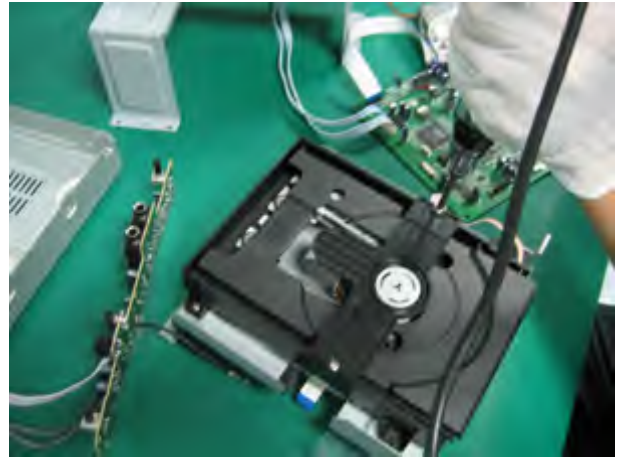
(21) Take out loader components, MIC board comes off automatically and take it out.



(22) Use electric screwdriver or "+"-shaped screwdriver to unfix screws A, B, C and D of decode board.



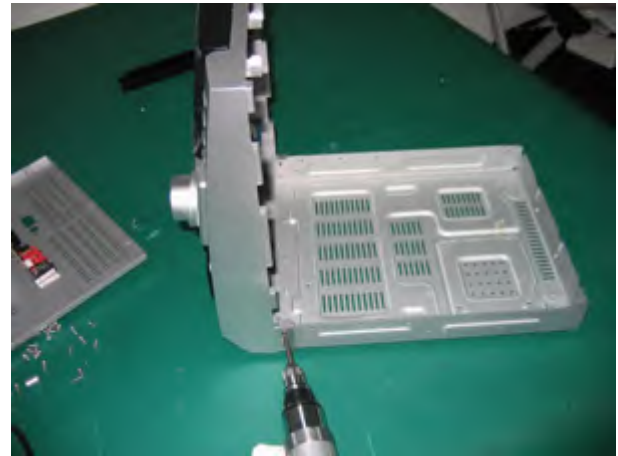
(23) Remove flat cable on decode board.



(24) For loader components disassembly and assembly, please refer to chapter 4 of "DK1005S Service Manual".



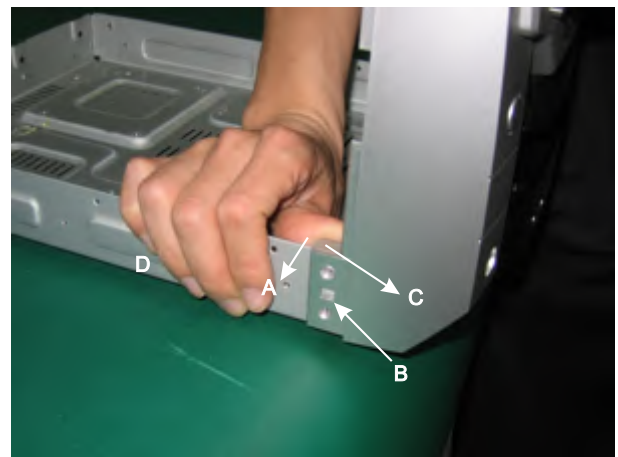
(25) Several main components have been removed, and now the panel components are required to remove.



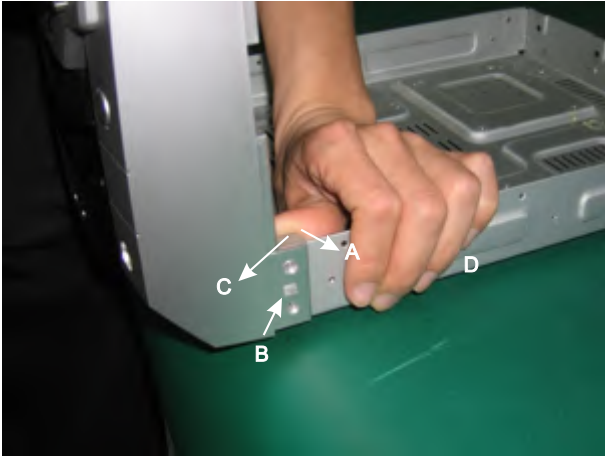
(26) Use electric screwdriver or "+"-shaped screwdriver to unfix screws in two sides of the panel.



(27) Use electric screwdriver or "+"-shaped screwdriver to unfix screws A, B and C in the bottom part of panel.



(28) Control the panel by left hand, press the bottom casing with four fingers of right hand, press the panel button bracket C with thumb of right hand and exert strength towards direction of arrow A (outwards), until panel and bottom casing button fall off, exert strength towards direction of arrow C and the panel on left hand side falls off from bottom casing.



(29) Control the panel by right hand, press the bottom casing D with four fingers of left hand, press the panel button bracket C with thumb of left hand and exert strength towards direction of arrow A (outwards), until panel and bottom casing button fall off, exert strength towards direction of arrow C and the panel on right hand side falls off from bottom casing.

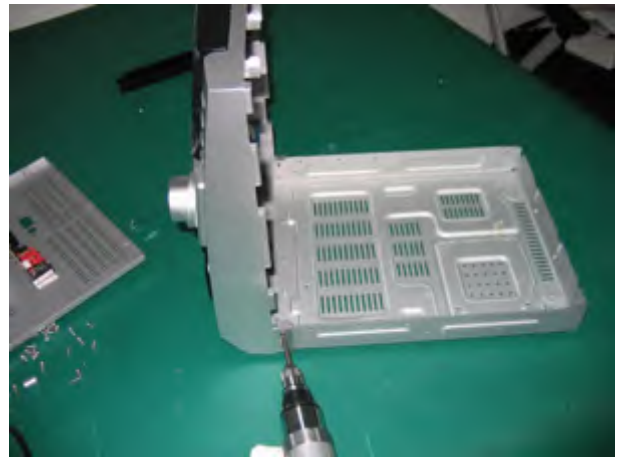


(30) Use electric screwdriver or "+"-shaped screwdriver to unfix all screws in panel, and then take down PCB board.

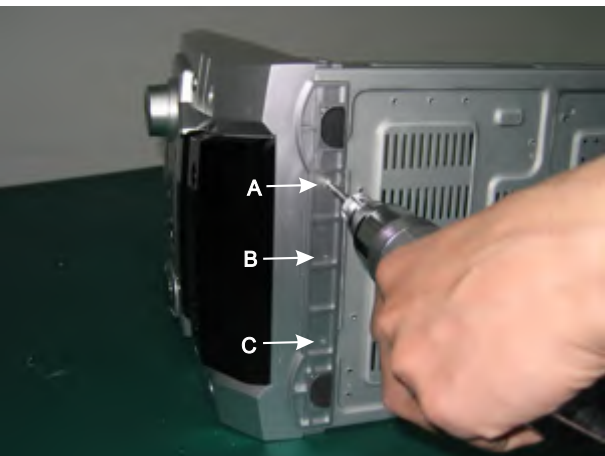
2. Assembly process for whole unit



(1) Install PCB board and then Use electric screwdriver or "+"-shaped screwdriver to fix all screws in the panel.



(2) Close panel and bottom casing, and then fix screws on two sides of the panel.



(3) Use electric screwdriver or "+"-shaped screwdriver to fix screws A, B, C in bottom part of panel.



(4) Insert the flat cable between decode board and loader components and then fix screws.



(5) Put MIC board into card slot, insert panel and flat cable from MIC board to decode board.



(6) Put loader in and make it press against MIC board.



(7) Use electric screwdriver or "+"-shaped screwdriver to fix screws A, B, C, D of loader components.



(8) Use electric screwdriver or "+"-shaped screwdriver to fix screws A, B, C, D of transformer.



(9) Use electric screwdriver or "+"-shaped screwdriver to fix screws in power amplifier board and heat radiator.
Note: position A in the figure is mica piece with the function of separation, so please do not damage or lose it.



(10) Install power amplifier board and insert flat cable of power amplifier board.



(11) Use electric screwdriver or "+"-shaped screwdriver to fix screws in heat radiator bracket.



(12) Insert flat cable on AV board.



(13) Use electric screwdriver or "+"-shaped screwdriver to fix screw A~J in rear cover.



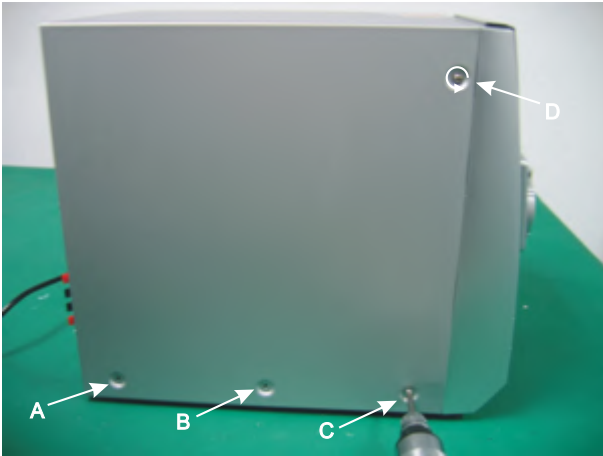
(14) Use electric screwdriver or "+"-shaped screwdriver to fix screws A, B of tuner.



(15) Insert flat cable of tuner and check whether the flat cable of the unit is fully inserted or to proper position.



(16) Use electric screwdriver or "+"-shaped screwdriver to fix screw A~I in the joint position of upper cover and rear cover.



(17) Use electric screwdriver or “+”-shaped screwdriver to fix screws A, B, C and D in upper cover on left and right hand sides..



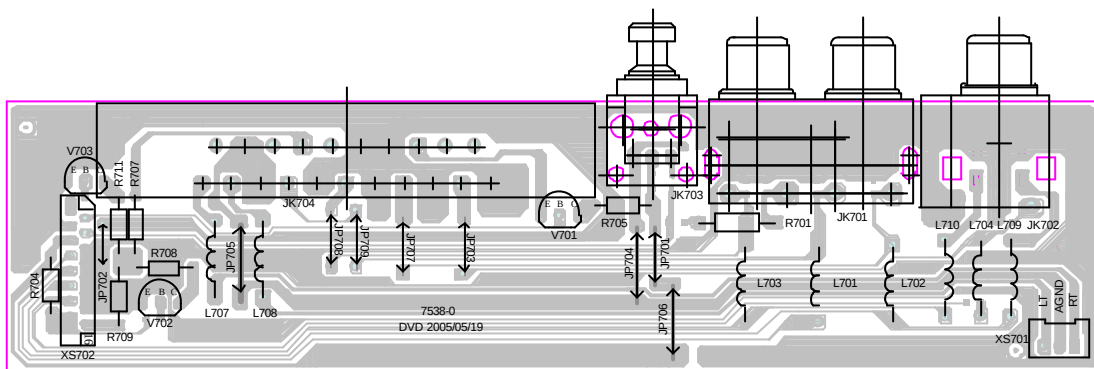
(18) Test the player and all are normal.

Chapter Cinque

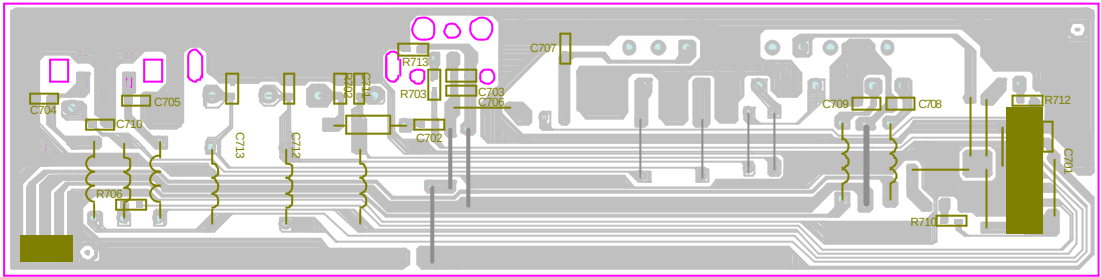
PCB board & Circuit diagram

Section One PCB board

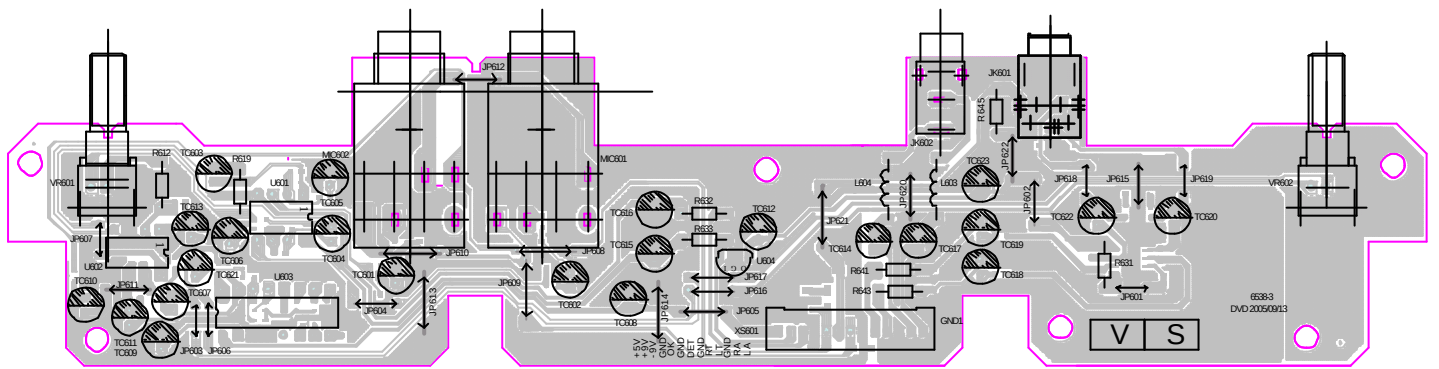
5.1.1 Surface layer of AV Output Board



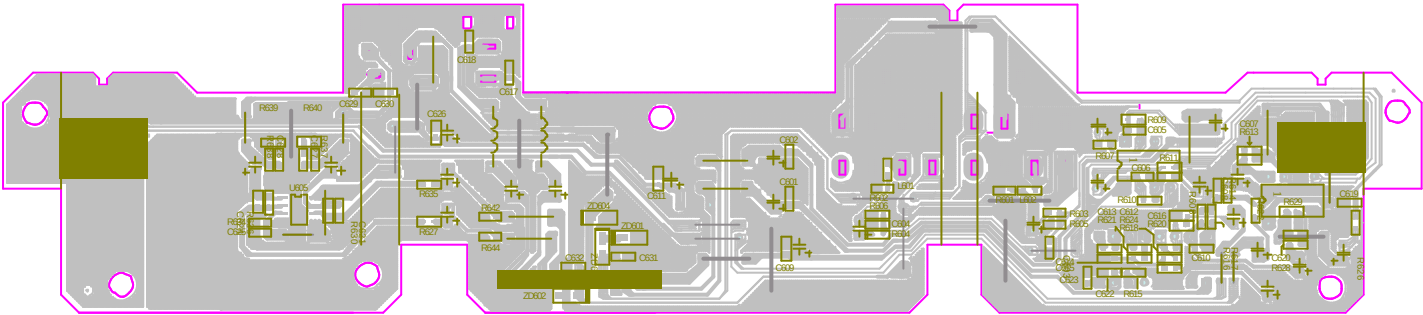
5.1.2 Bottom layer of AV Output Board



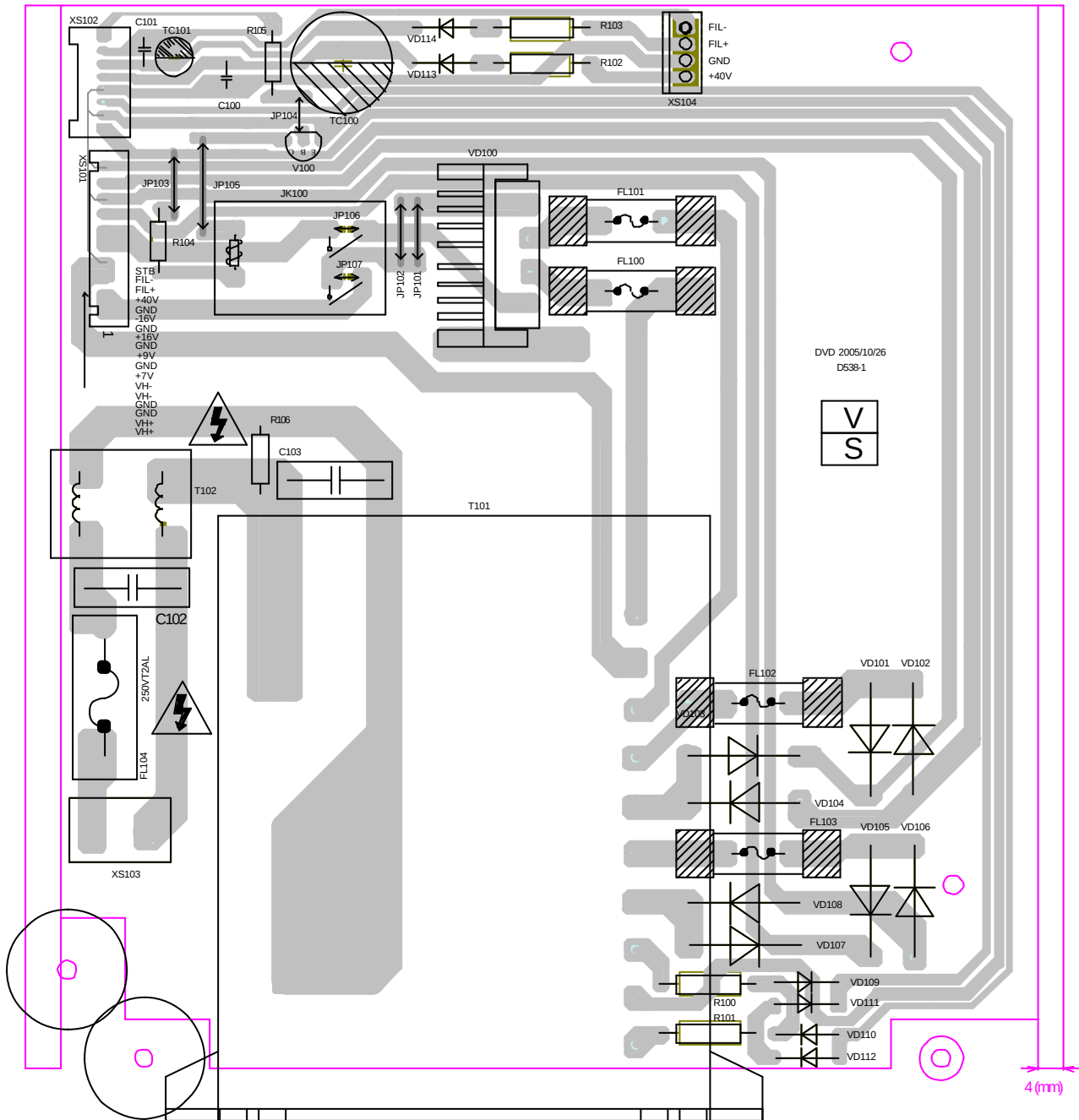
5.1.3 Surface layer of MIC Board



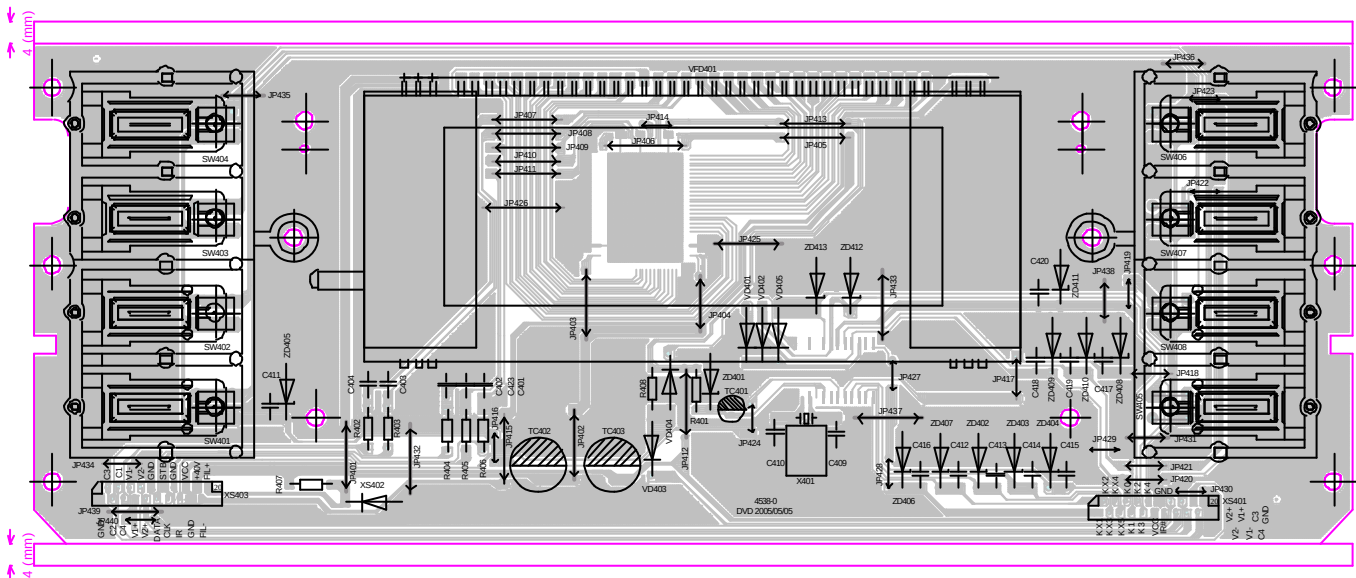
5.1.4 Bottom layer of MIC Board



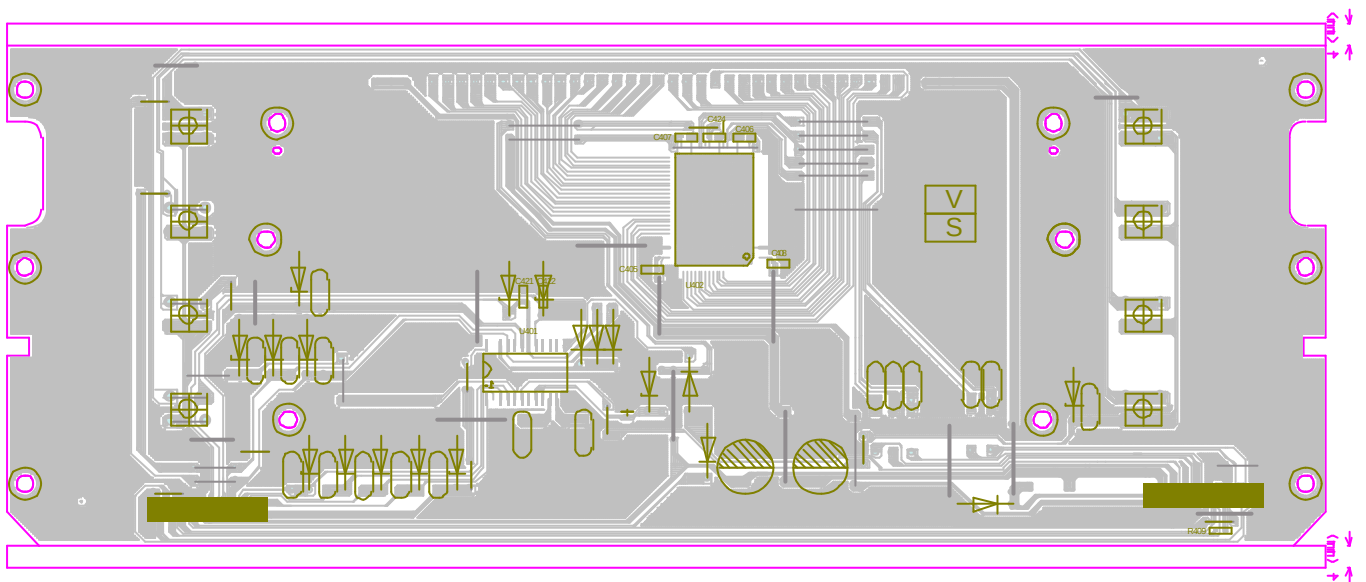
5.1.5 Power Board



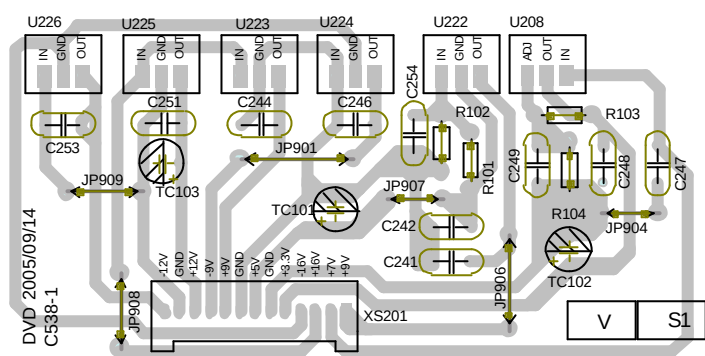
5.1.6 Surface layer of LCD Board



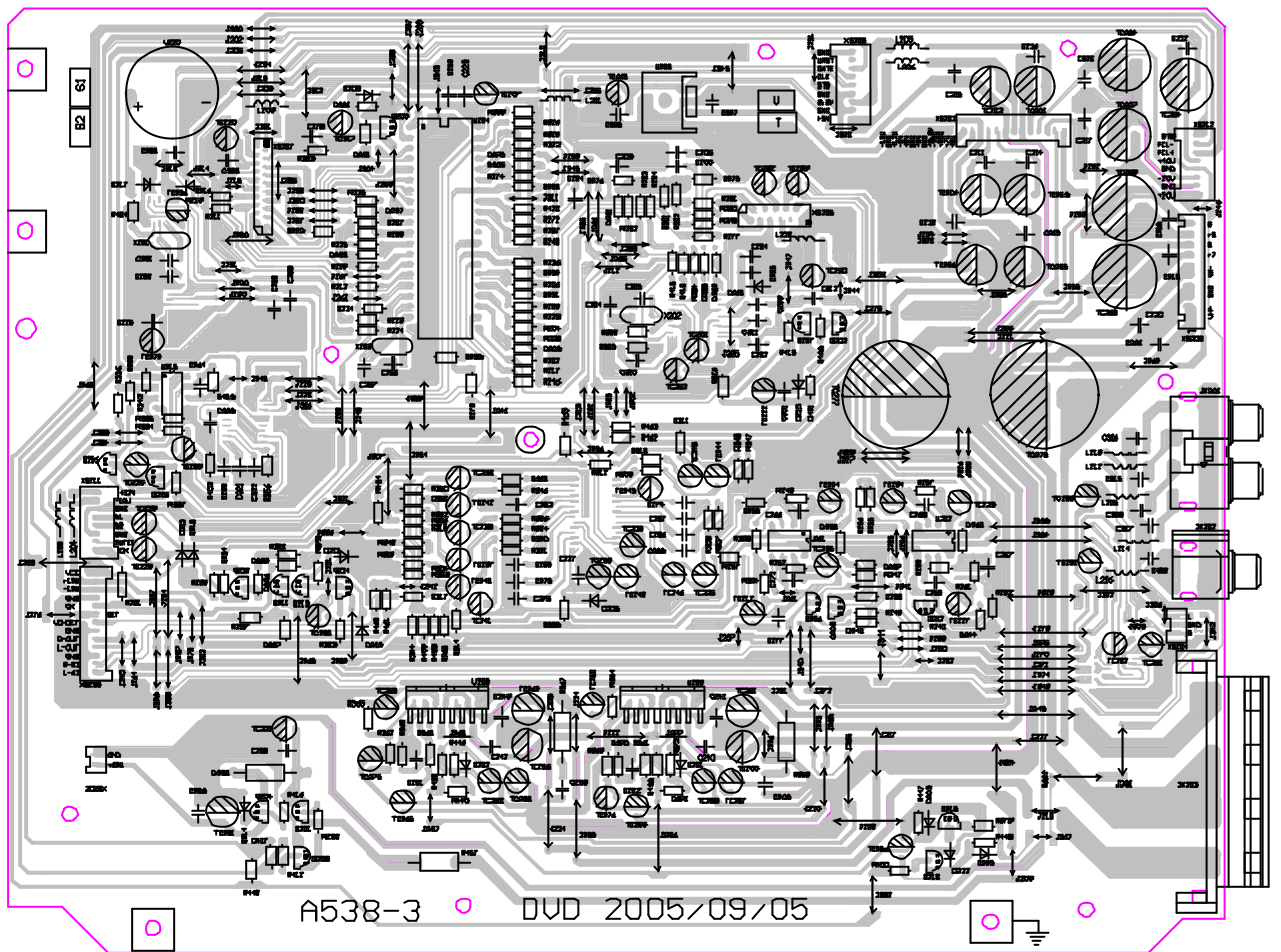
5.1.7 Bottom layer of LCD Board



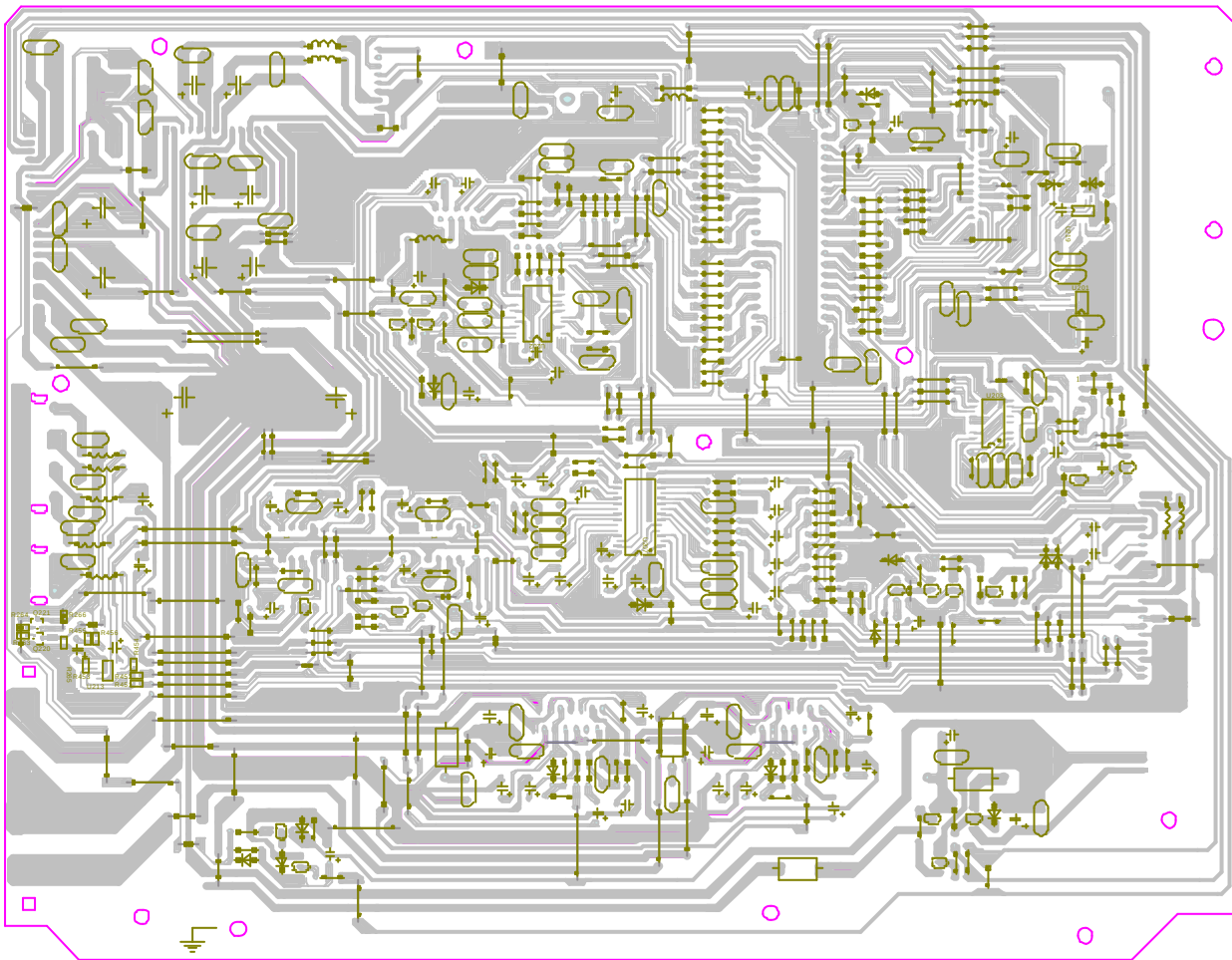
5.1.8 Connecting Board



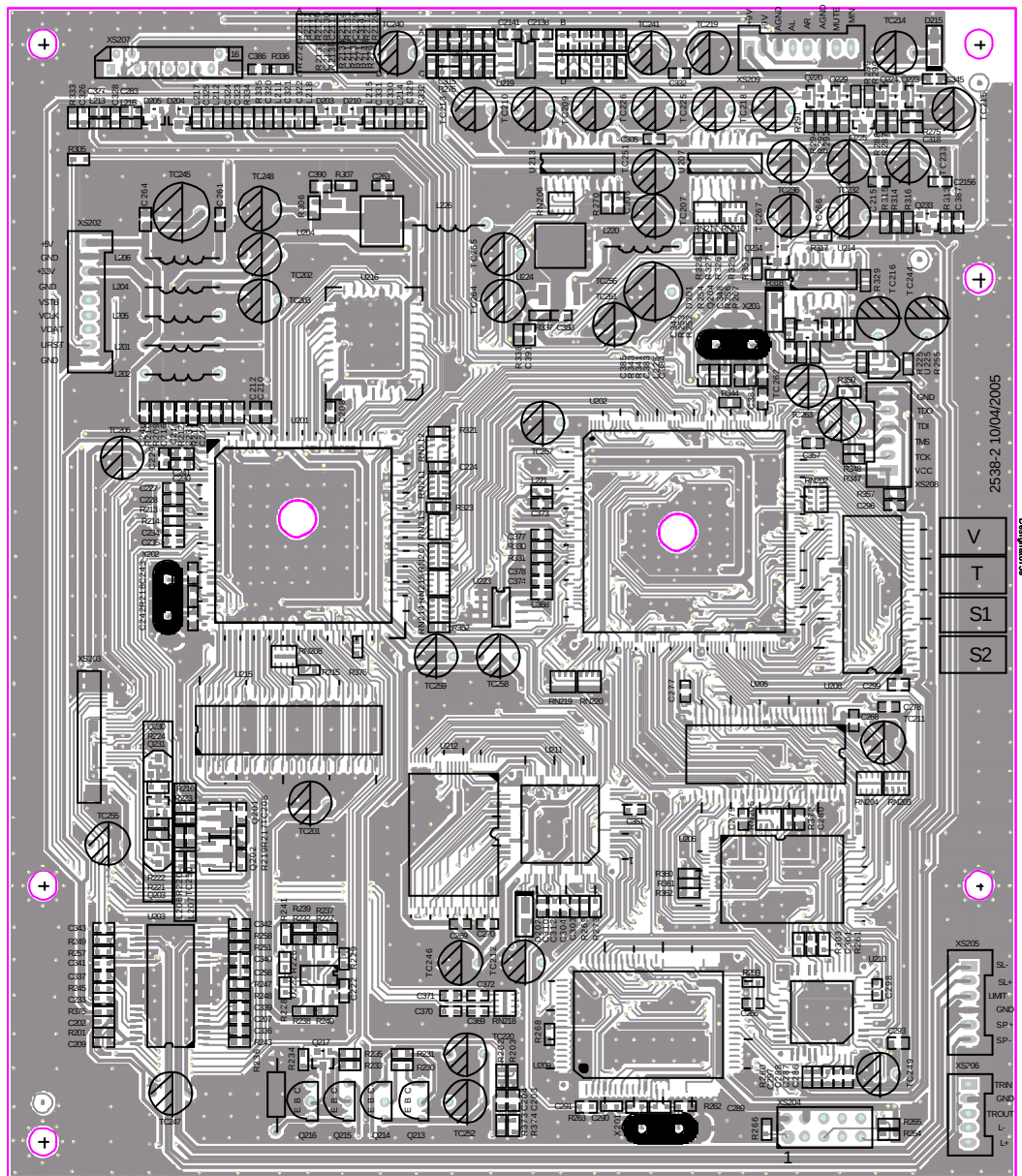
5.1.9 Surface layer of audio power amplifying Board



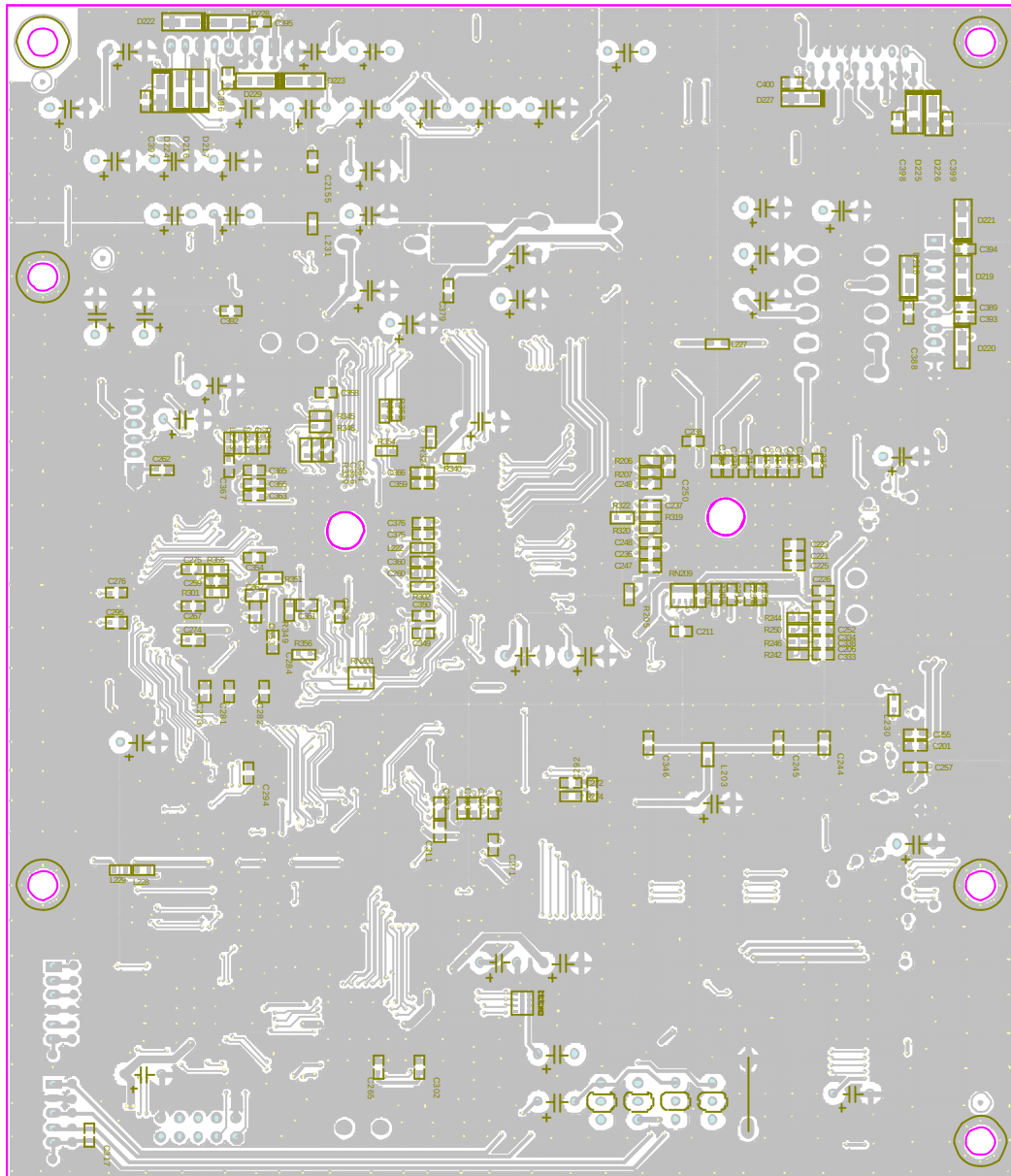
5.1.10 Bottom layer of audio power amplifying Board



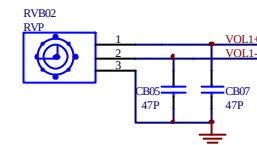
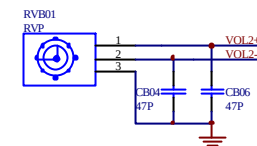
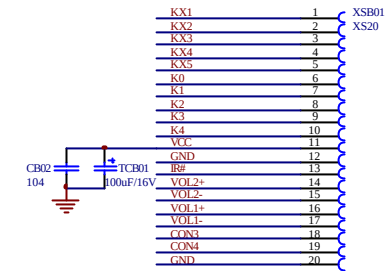
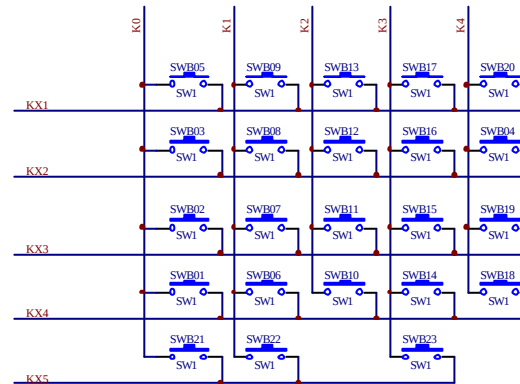
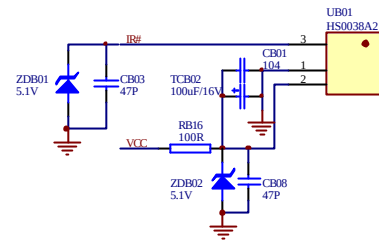
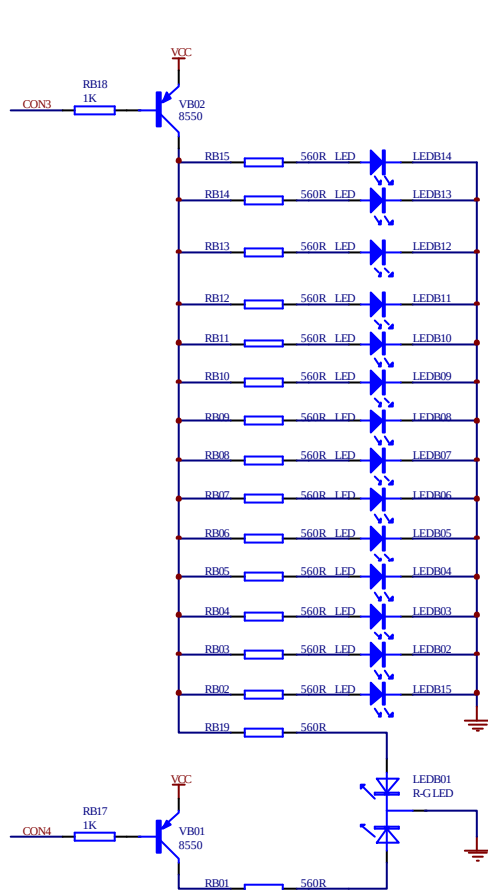
5.1.11 Surface layer of MPEG&SERVO Board



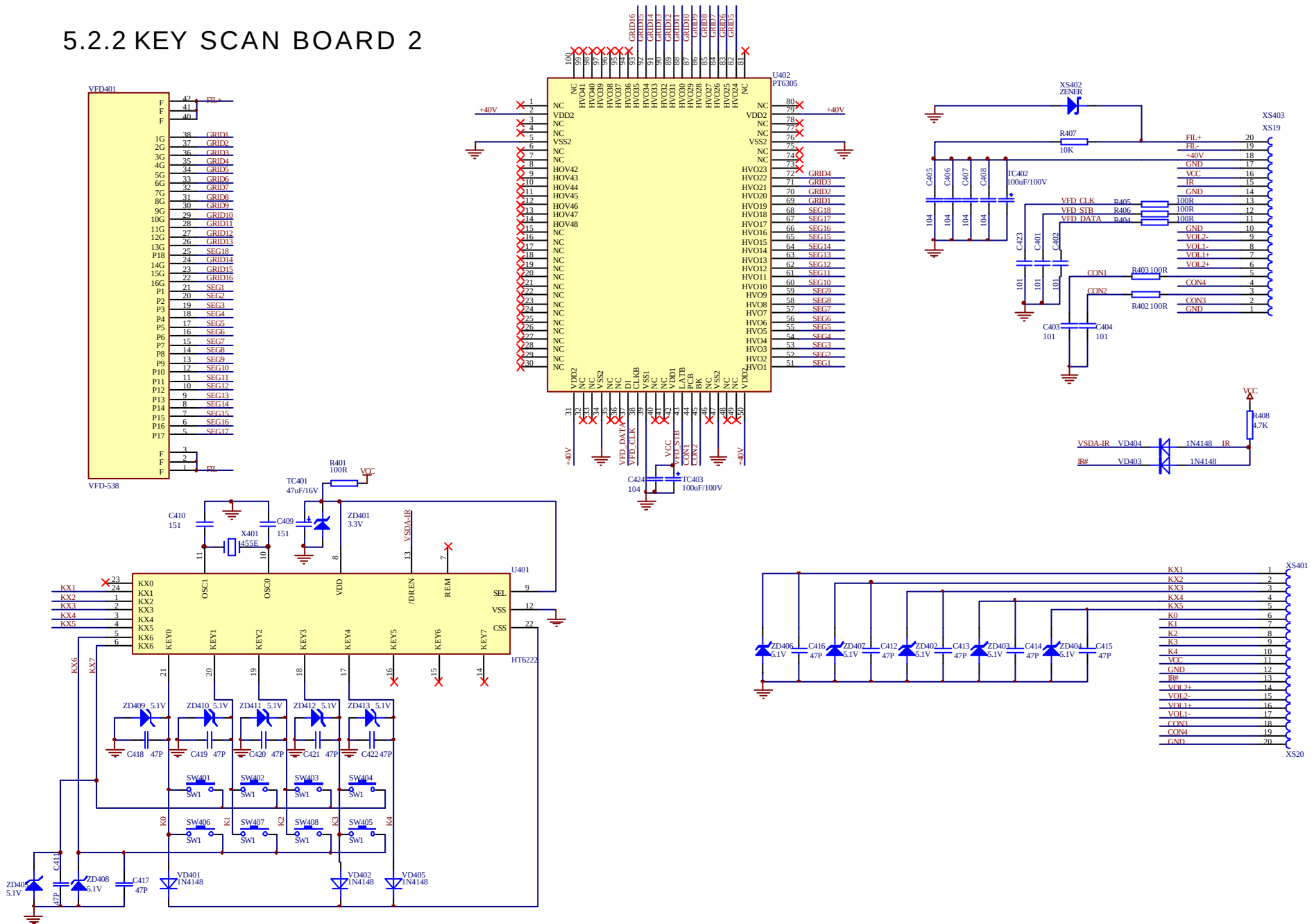
5.1.12 Bottom layer of MPEG&SERVO Board



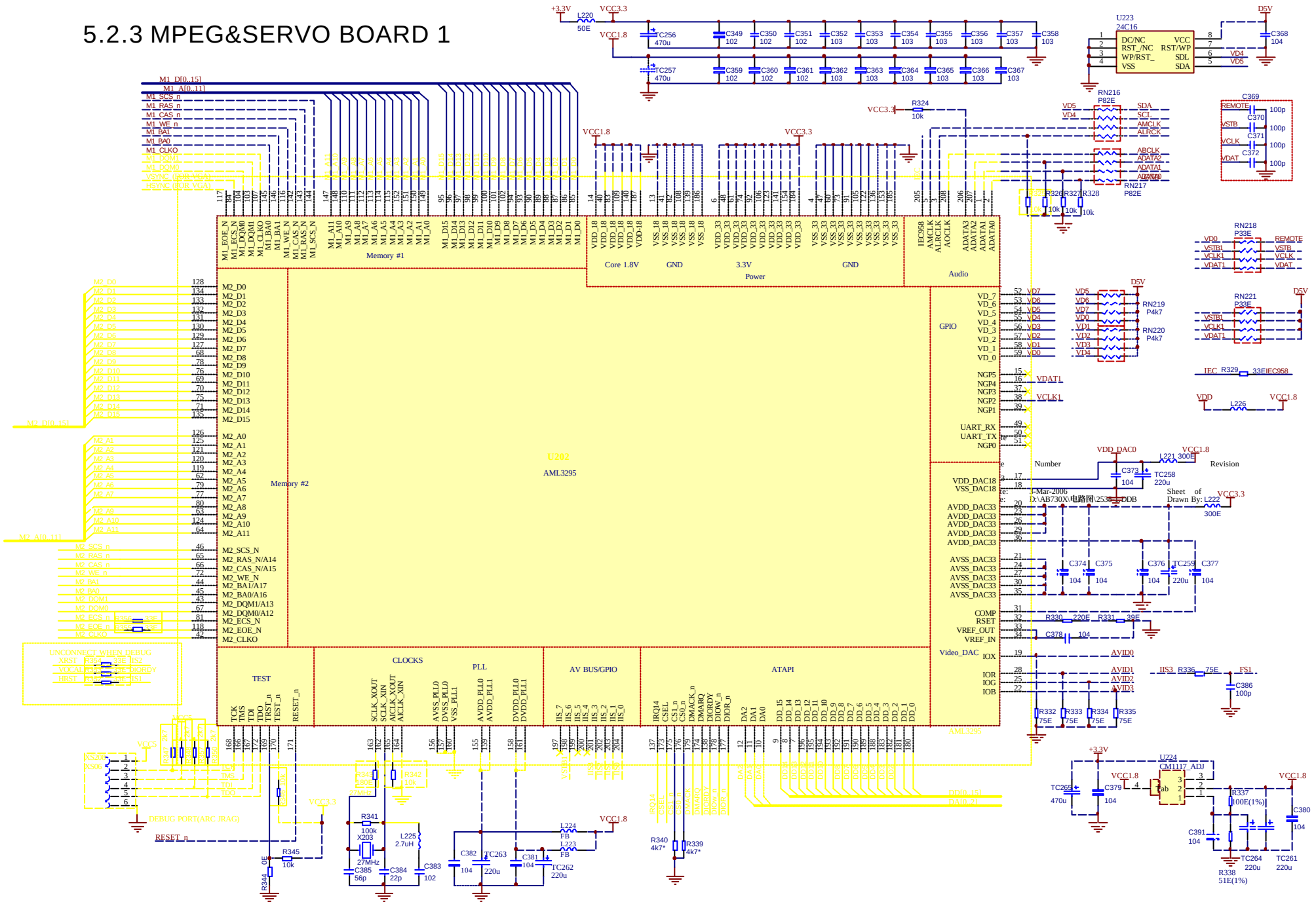
5.2.1 KEY SCAN BOARD 1



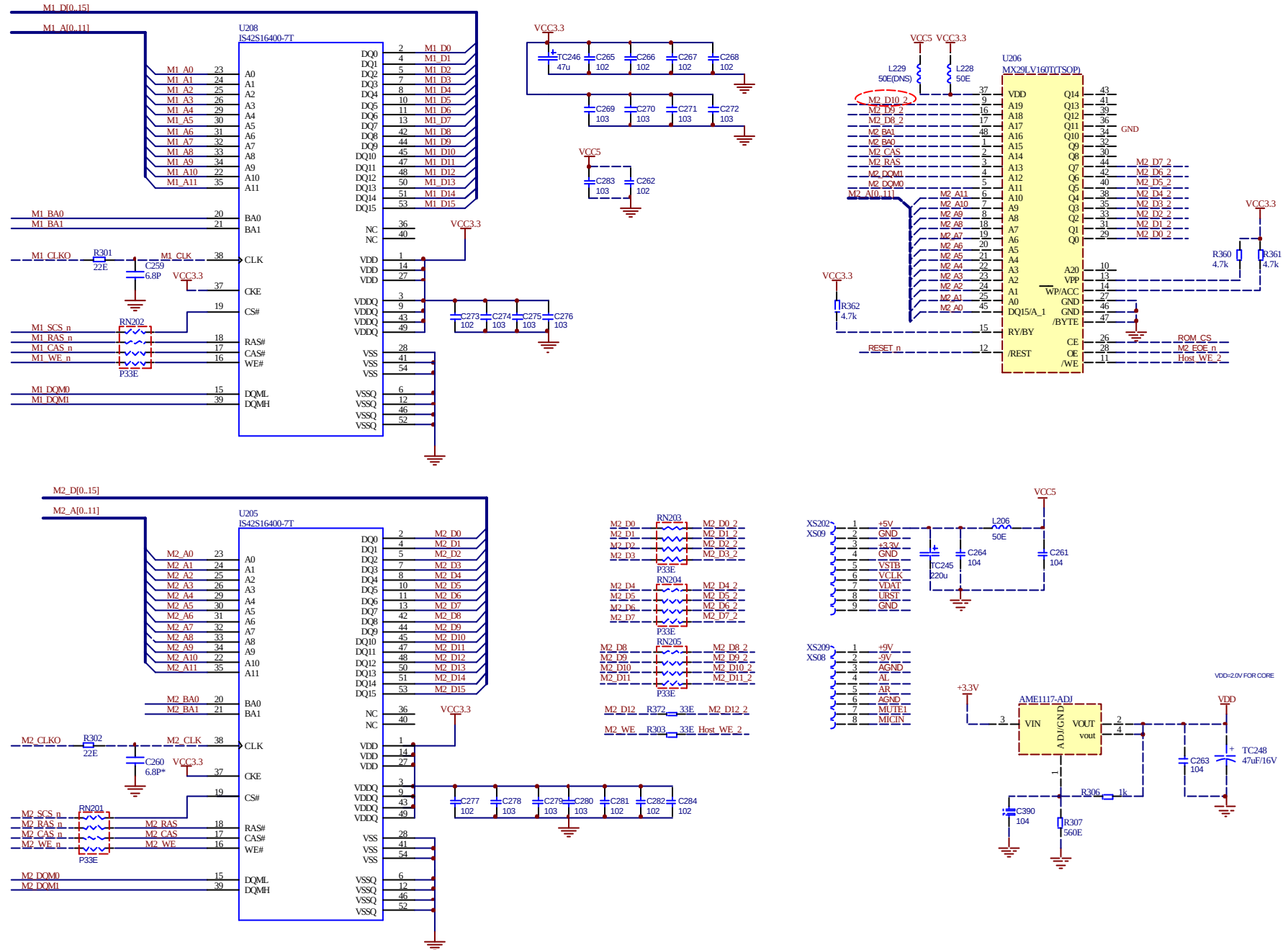
5.2.2 KEY SCAN BOARD 2



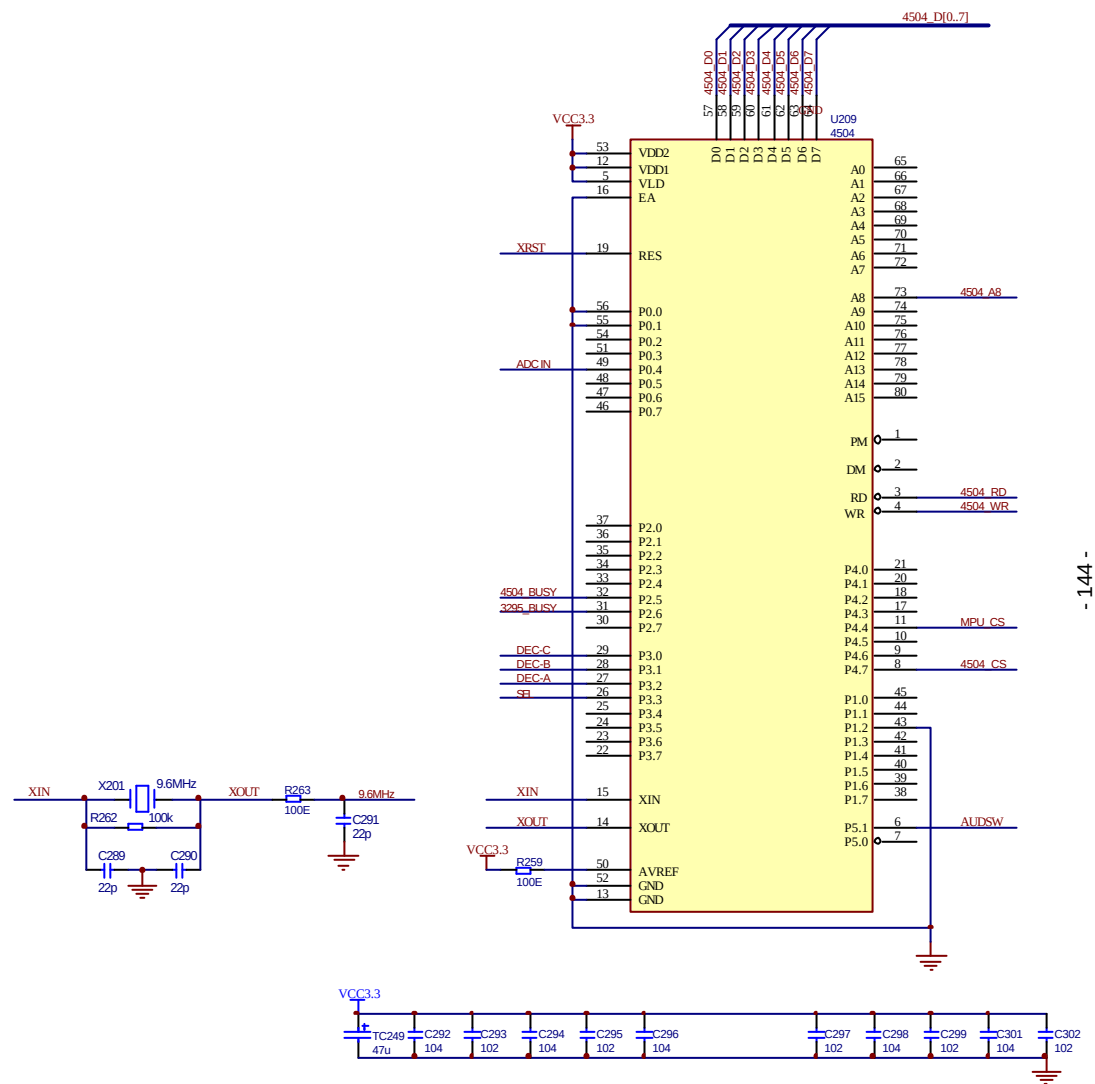
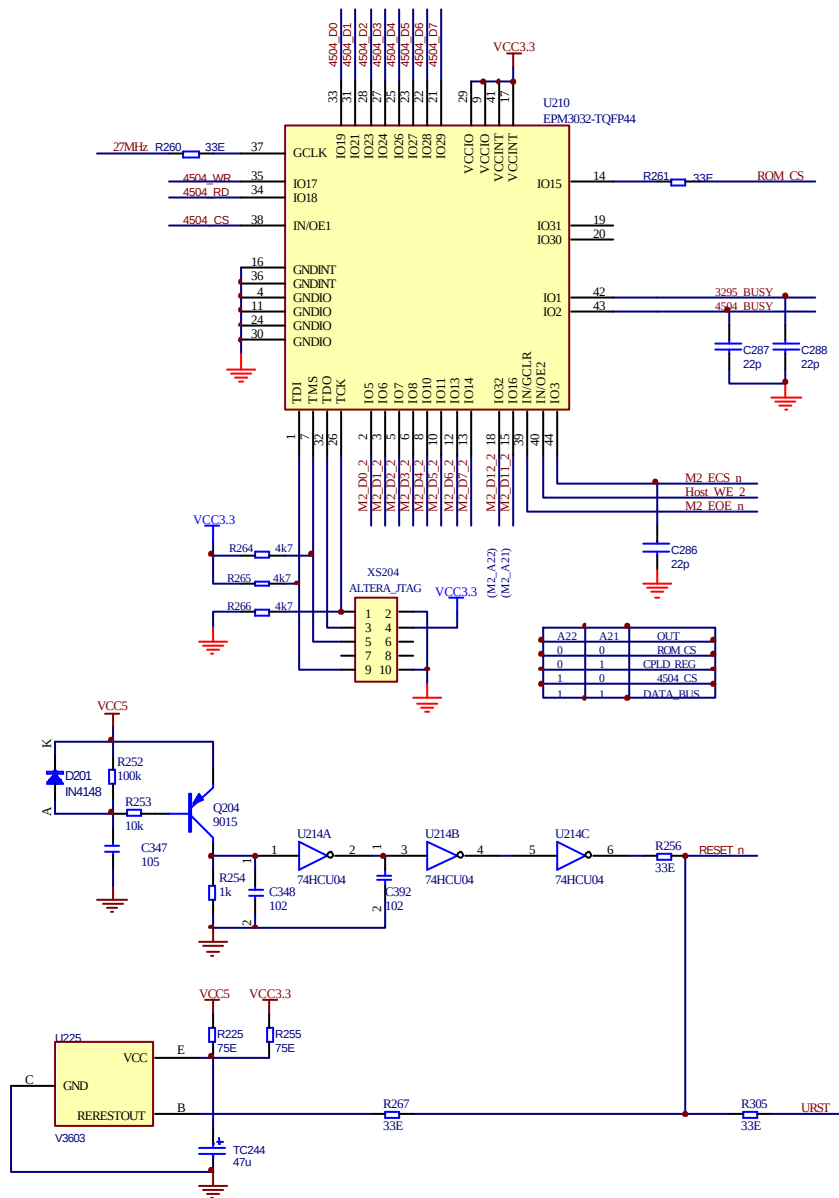
5.2.3 MPEG&SERVO BOARD 1



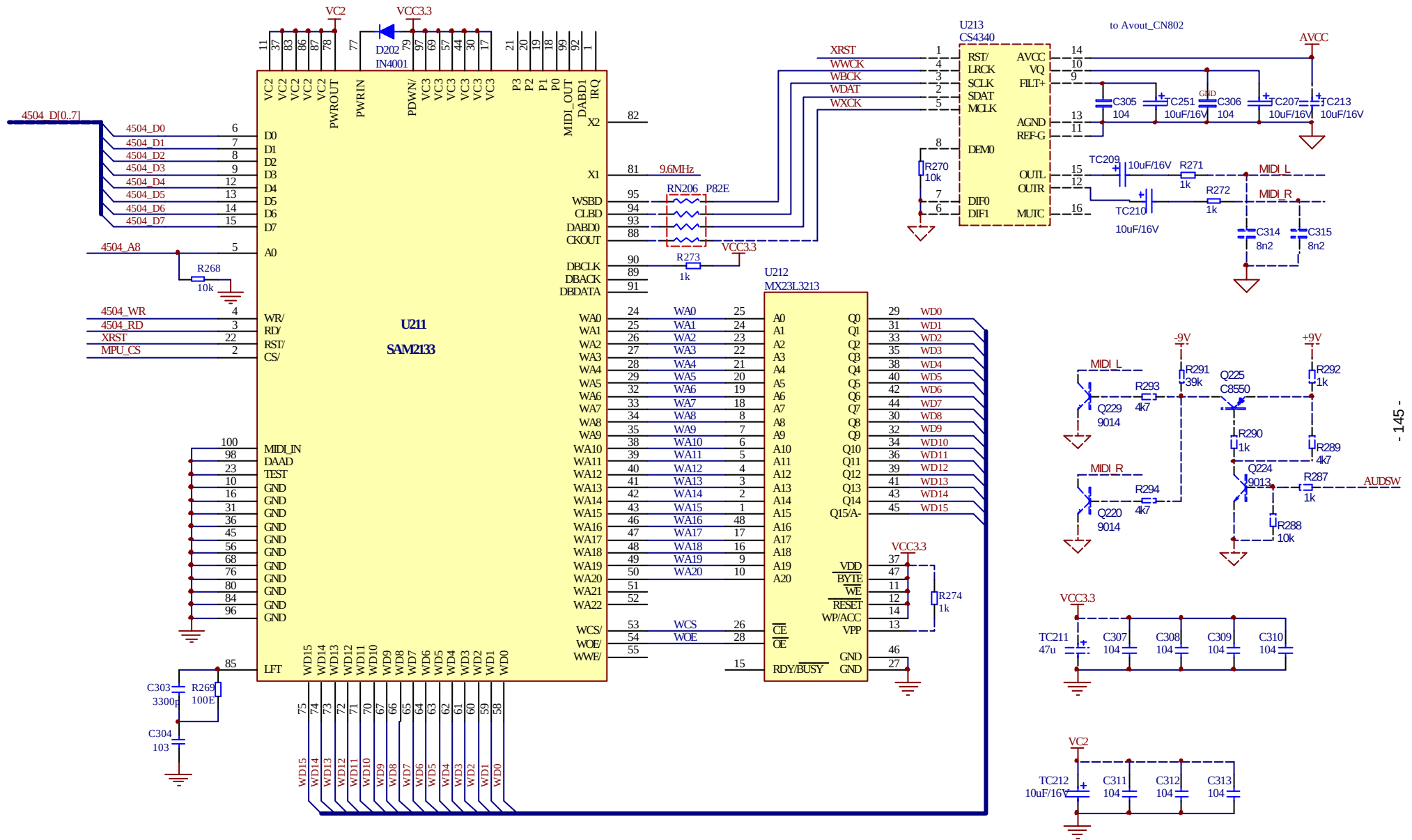
5.2.4 MPEG&SERVO BOARD 2



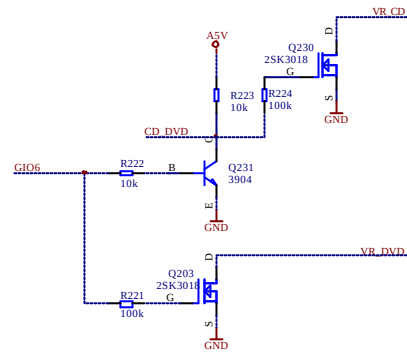
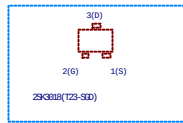
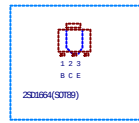
5.2.5 MPEG&SERVO BOARD 3



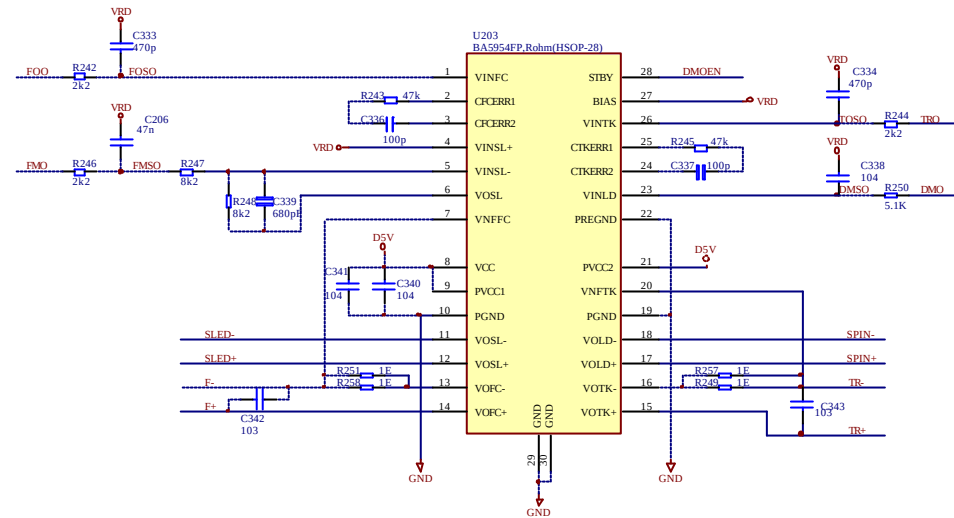
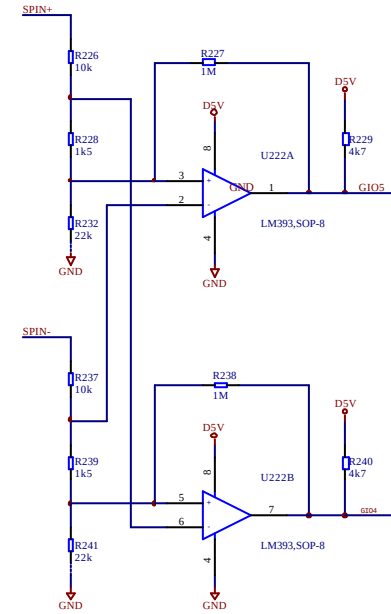
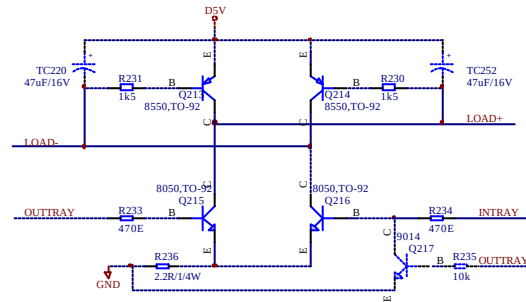
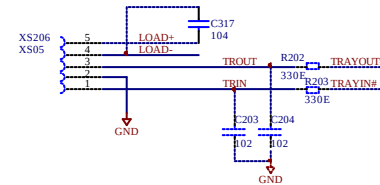
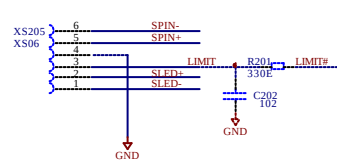
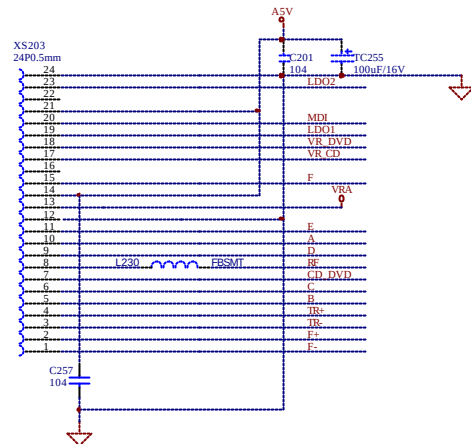
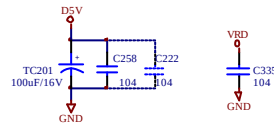
5.2.6 MPEG&SERVO BOARD 4



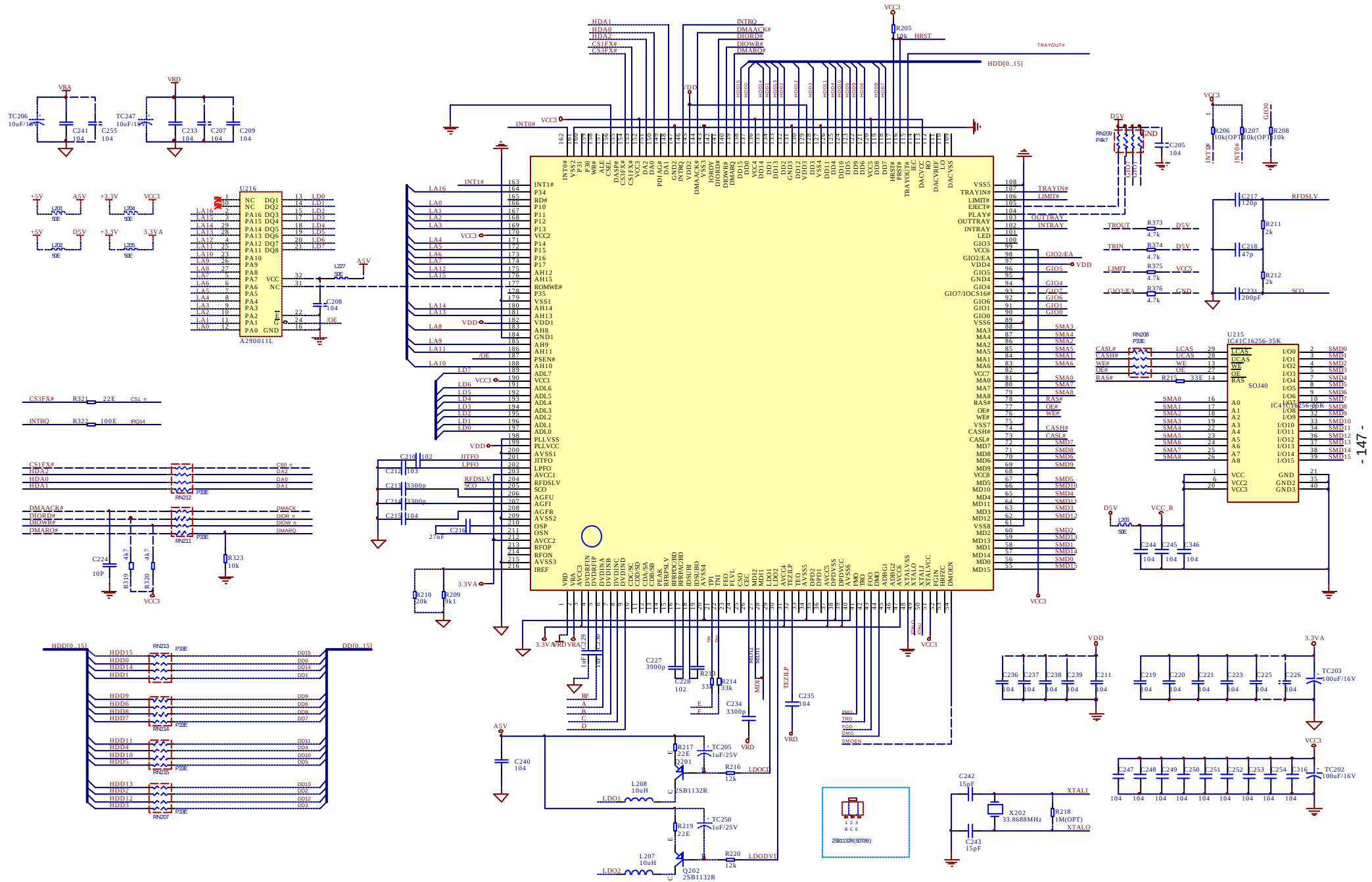
5.2.7 MPEG&SERVO BOARD 5



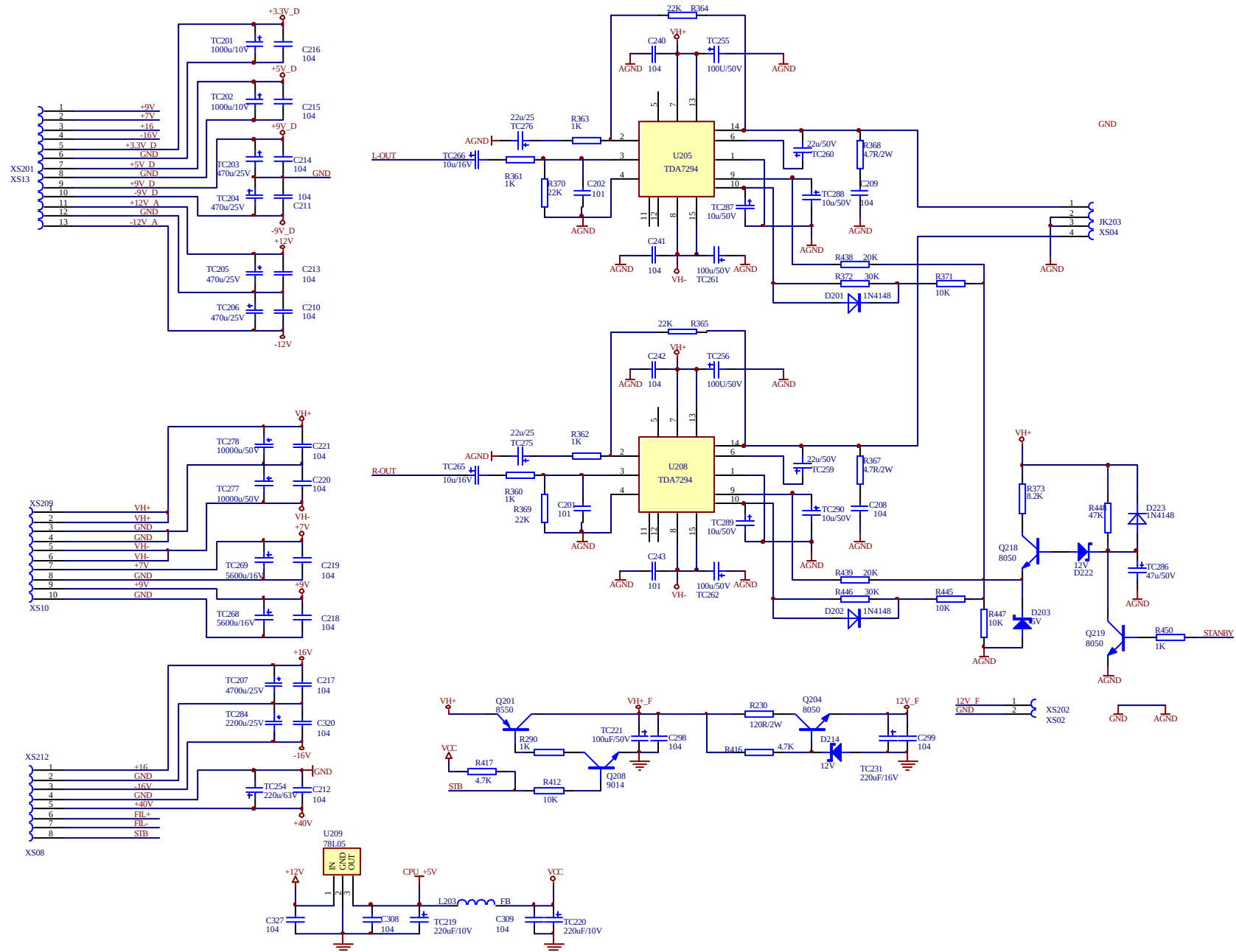
G106	0	1
CD_DVD	CD	DVD
VR	VR_CD	VR_DVD



5.2.8 MPEG&SERVO BOARD 6



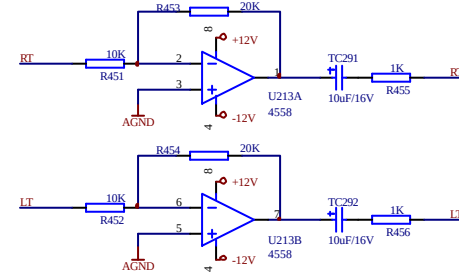
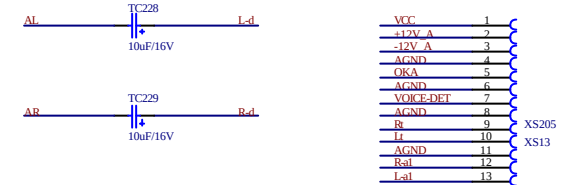
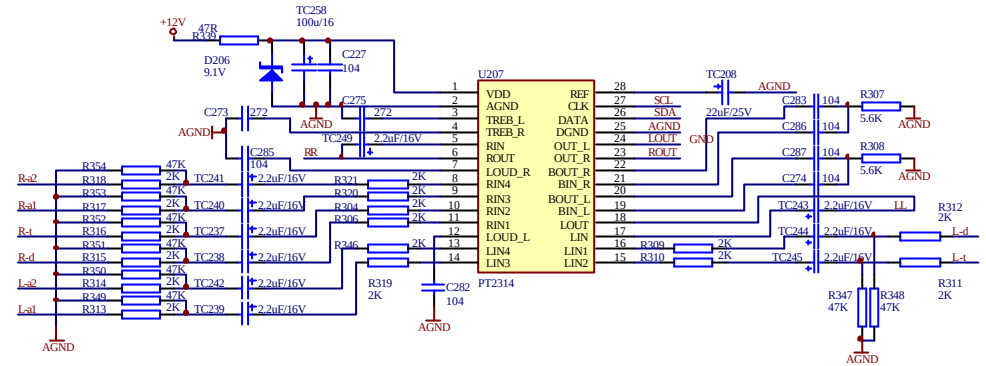
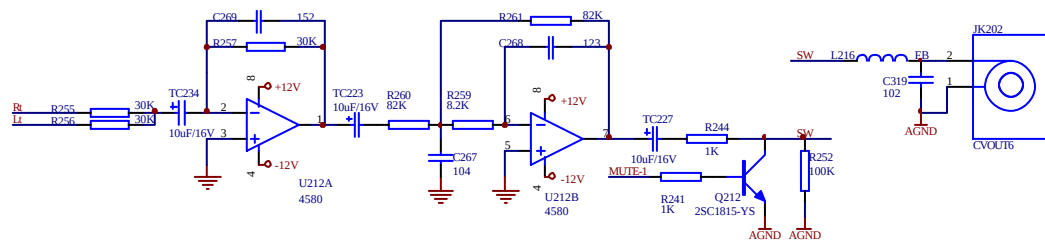
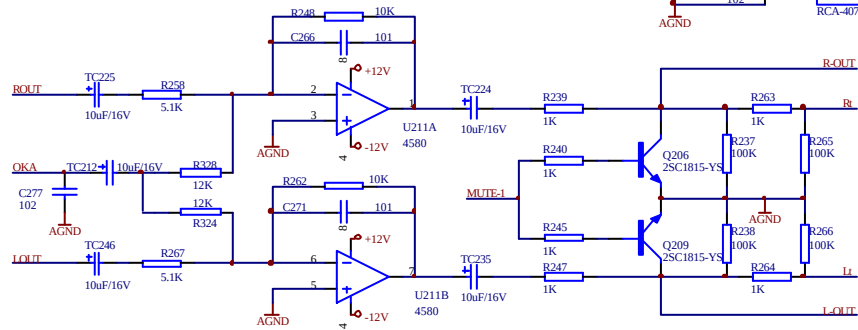
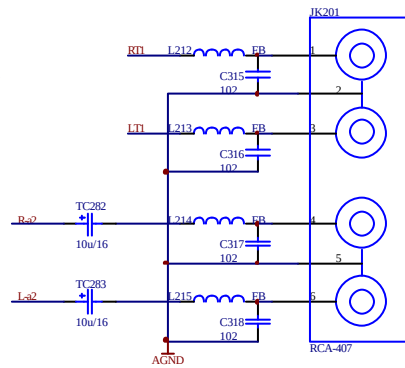
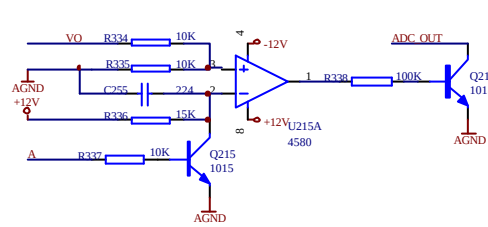
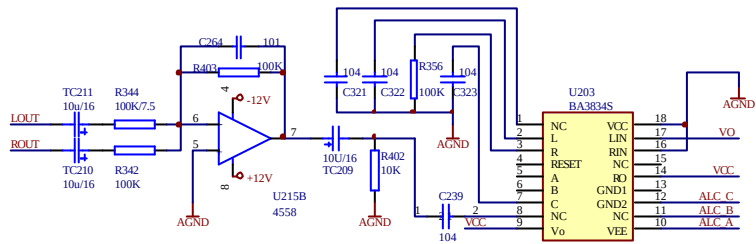
5.2.9 AUDIO POWER AMPLIFYING BOARD 1



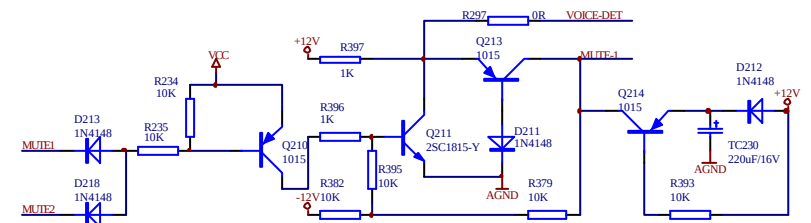
5.2.10 AUDIO POWER AMPLIFYING BOARD 2



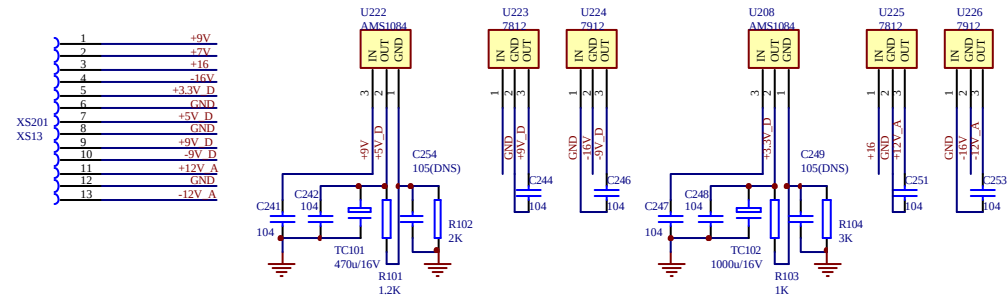
5.2.11 AUDIO POWER AMPLIFYING BOARD 3



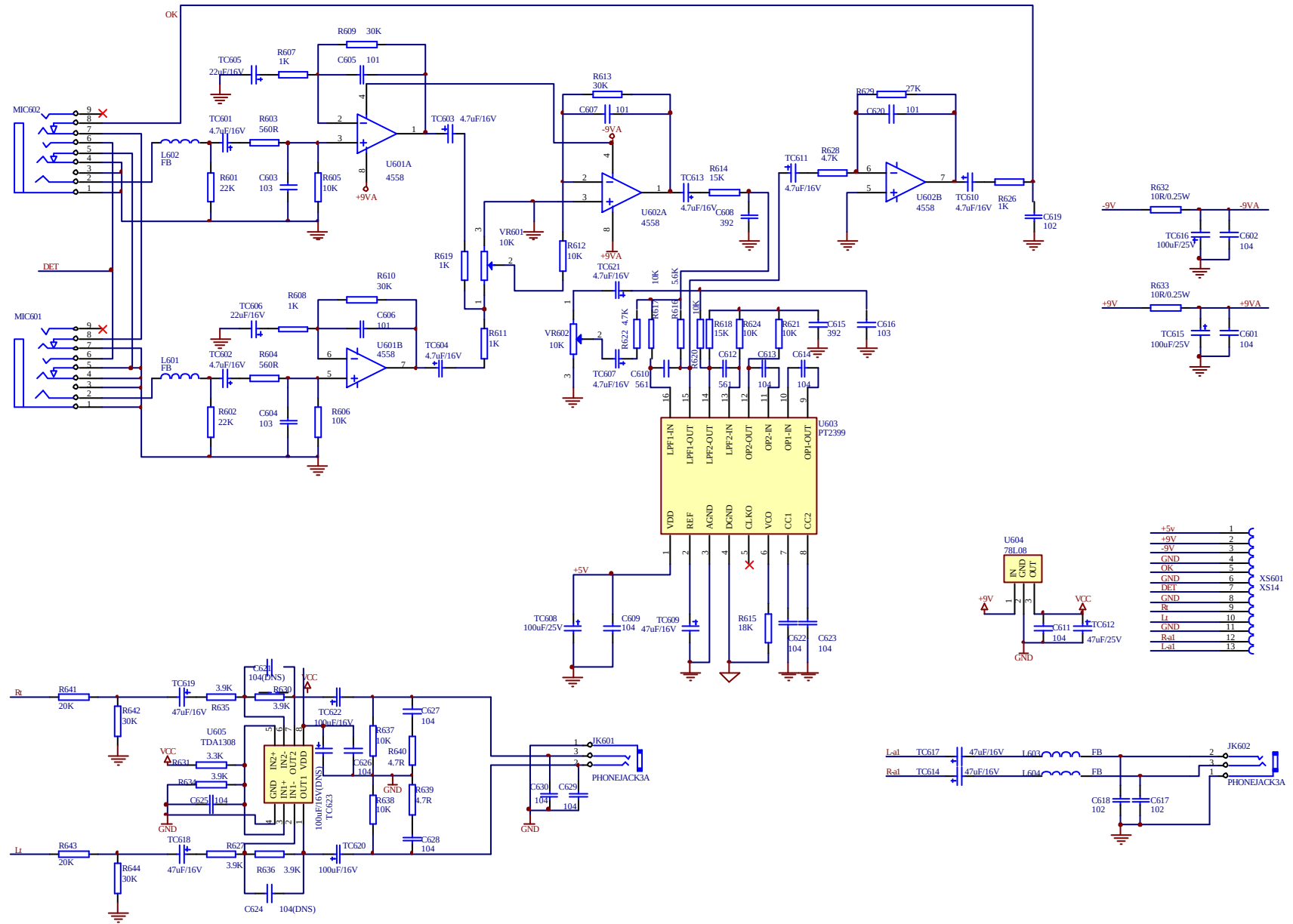
STANBY



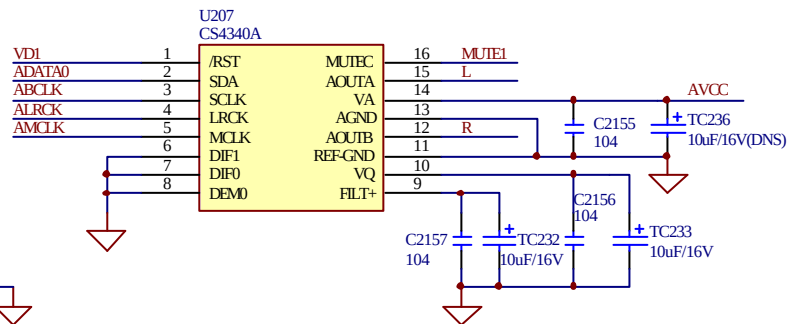
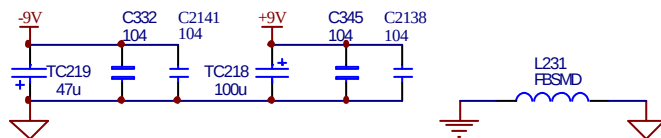
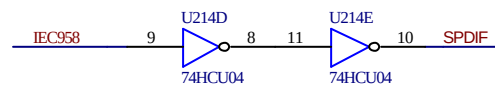
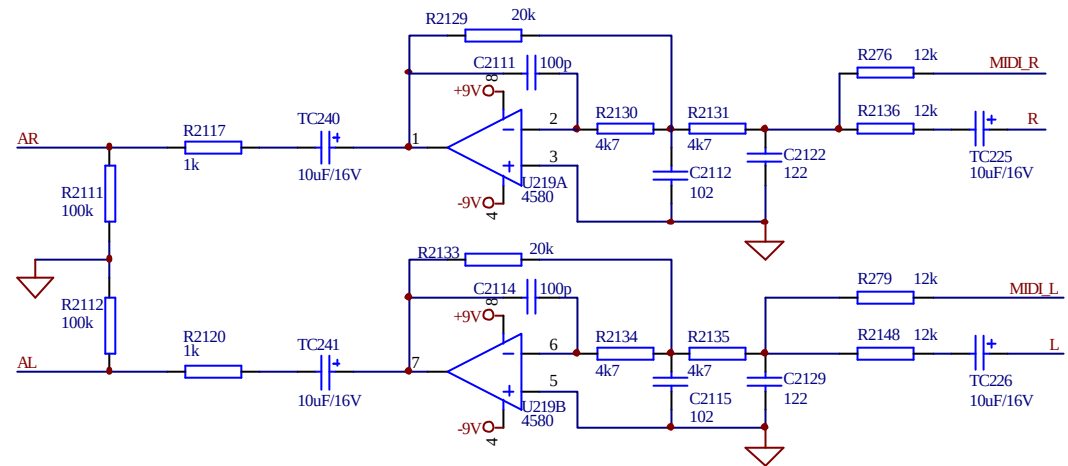
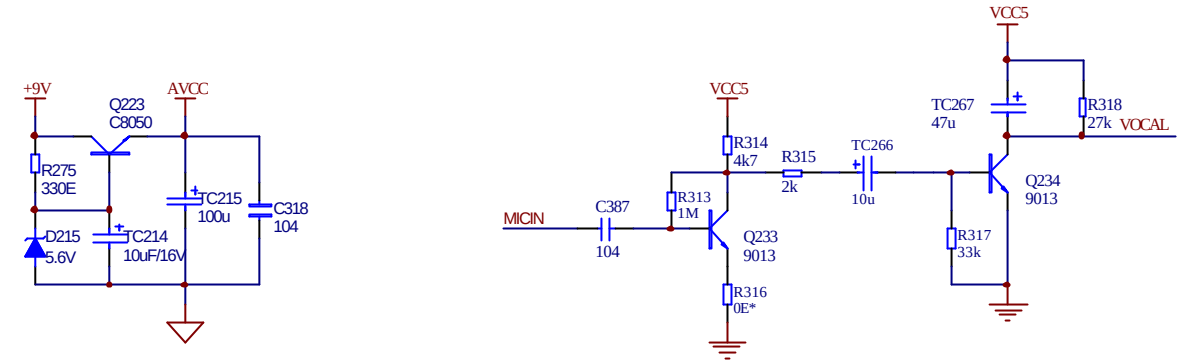
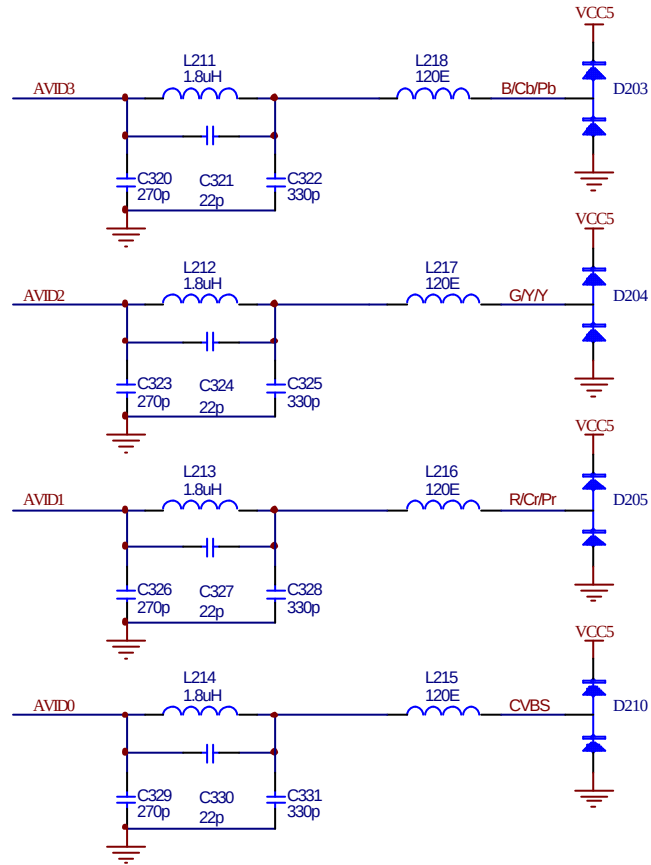
5.2.12 AUDIO POWER AMPLIFYING BOARD 4



5.2.13 MIC BOARD

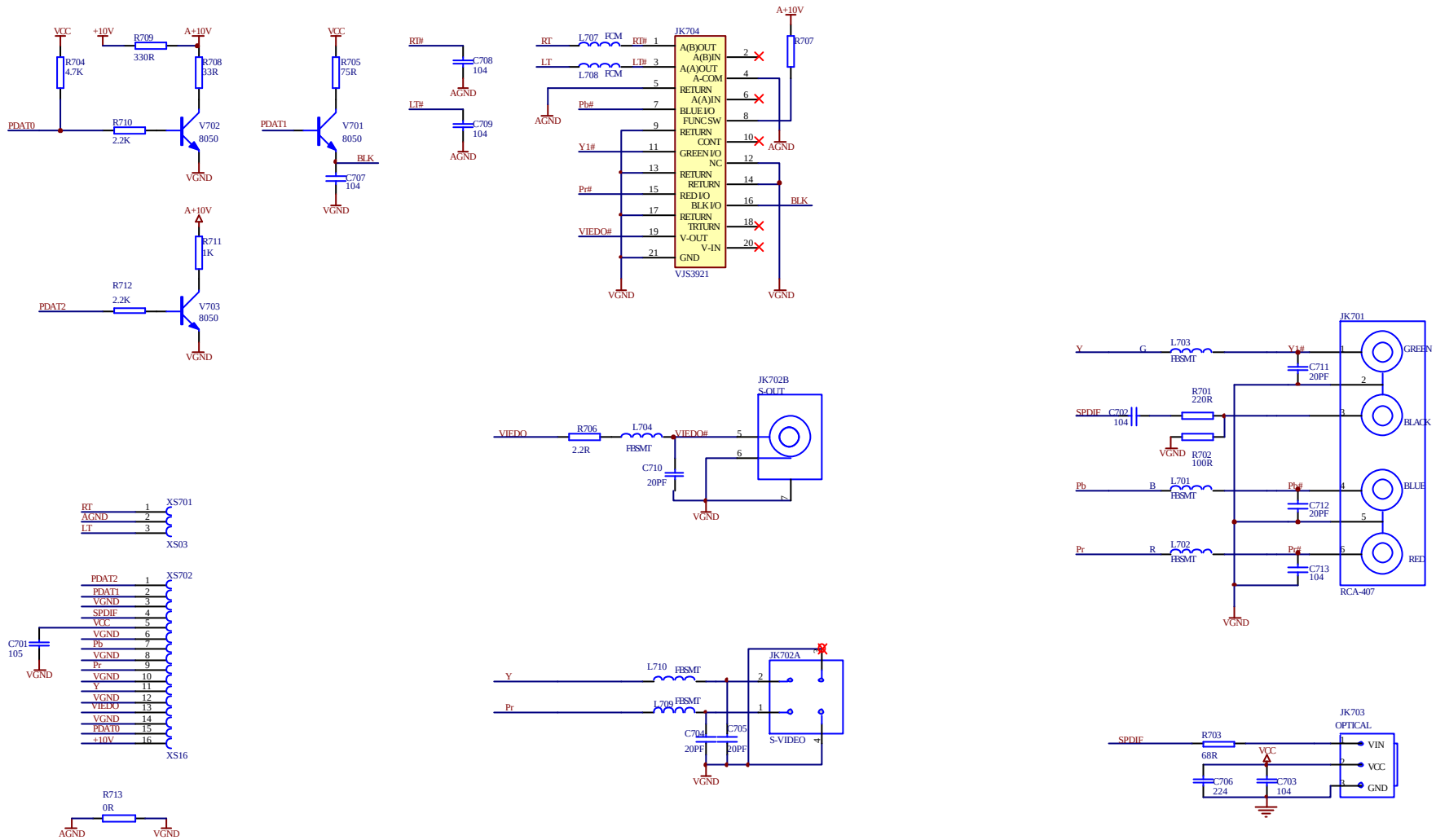


5.2.14 AV OUTPUT BOARD 1

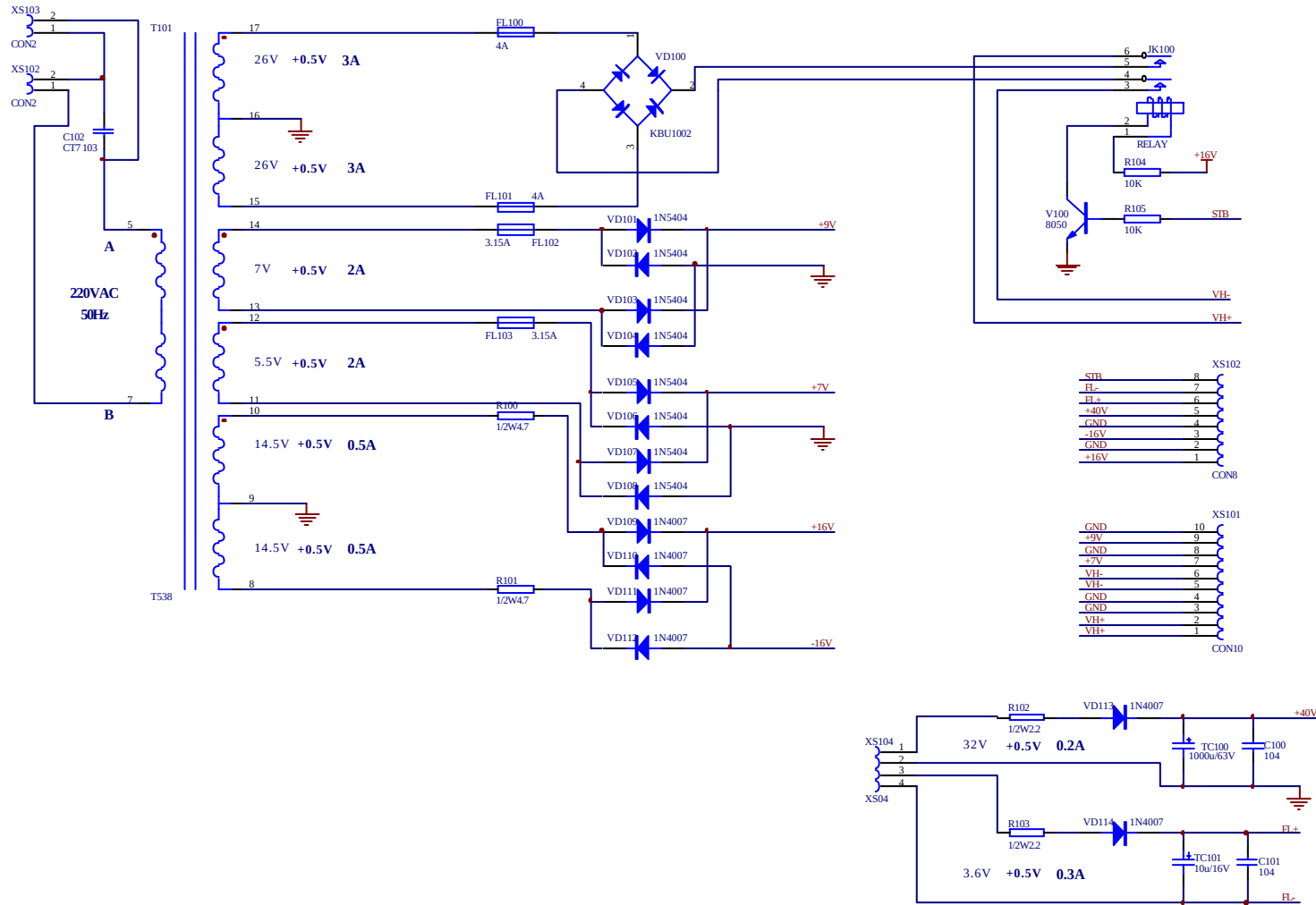


HSYNC	1	XS207
VSYNC	2	XS16
GND	3	
SPDIF	4	
VCC5	5	
GND	6	
B/Cb/Pb	7	
GND	8	
R/Cr/Pr	9	
GND	10	
G/Y/Y	11	
GND	12	
CVBS	13	
GND	14	
FS1	15	
+9V	16	

5.2.15 AV OUTPUT BOARD 2



5.2.16 POWER BOARD



Chapter six BOM List

6.1 output board			
ABS730X(RU)		5446827	
material code	material name	Spec	Location
0090001	SMD RESISTOR	1/16W 00 ±5% 0603	R713
0090002	SMD RESISTOR	1/16W 2.20 ±5%	R706
0310085	SMD CAPACITOR	50V 20P ±5% NPO 0603	C704,C705,C710,C711,C712 ,C713
0310066	SMD CAPACITOR	50V 102 ±10% 0603	C708,C709
0310222	SMD CAPACITOR	25V 104 ±20% X7R 0603	C702,C703,C707
0310643	SMD CAPACITOR	16V 105 ±20% Y5V 0603	C701,C706
0000481	CARBON FILM RESISTOR	1/6W330±5% SHAPED 7.5	R708
0090238	SMD RESISTOR	1/16W 680 ±5% 0603	R703
0000008	CARBON FILM RESISTOR	1/6W750±5%	R705
0090181	SMD RESISTOR	1/16W 1000 ±5% 0603	R702
0000181	CARBON FILM RESISTOR	1/4W2200±5%	R701
0000013	CARBON FILM RESISTOR	1/6W3300±5%	R709
0000129	CARBON FILM RESISTOR	1/6W1K±5% SHAPED 7.5	R711
0090017	SMD RESISTOR	1/16W 2.2K ±5% 0603	R712,R710
0000034	CARBON FILM RESISTOR	1/6W4.7K±5%	R704
0390057	MAGNETIC BEADS INDUCTOR	RH354708	L701~L704,L707~L710
1090045	ELECTRO-OPTIC TRANSFORMER	TX179ATW	JK703 ①
1090024	ELECTRO-OPTIC TRANSFORMER	TX179AT	JK703 ①
1910094	TERMINAL SOCKET	AV4-8.4-6G-5	JK701
1910129	TERMINAL SOCKET	SA-001-012 BLACK IRON PIECE, SCREEN-SHIELDED	JK702
1860029	SCART SOCKET	SCART-01	JK704
1940026	SOCKET	3P 2.0mm	XS701
1940285	CABLE SOCKET	8P 1.0mm DUAL RANK TOUCH POINT,STRAIGHT INSERT	XS702
0780050	TRIODE	S8050D	V701~V703
2100010	CONNECTED CORDS	F 0.6 SHAPED 5mm	JP702
2100003	CONNECTED CORDS	F 0.6 SHAPED 7.5mm	JP701,JP703,JP707~JP709,R707
2100004	CONNECTED CORDS	F 0.6 SHAPED 10mm	JP704~JP706

material code	material name	Spec	Location
1563777	PCB	7538-0	
6.2 ok board			
ABS730X(RU) 5446824			
0090106	SMD RESISTOR	1/16W 4.7O $\pm 5\%$ 0603	R639,R640
0000118	CARBON FILM RESISTOR	1/6W100 $\pm 5\%$ SHAPED 7.5	R632,R633
0090012	SMD RESISTOR	1/16W 560O $\pm 5\%$ 0603	R603,R604
0090014	SMD RESISTOR	1/16W 1K $\pm 5\%$ 0603	R607,R608,R611,R626
2110203	LEAD	20# 100mm BLACK,WITH WELD PIECE,HOLEF 4.2	
0000022	CARBON FILM RESISTOR	1/6W1K $\pm 5\%$	R619
0700004	SMD VOLTAGE REGULATOR DIODE	5.1V $\pm 5\%$ 1/2W	ZD602,ZD604
0000030	CARBON FILM RESISTOR	1/6W3.3K $\pm 5\%$	R631
0310045	SMD CAPACITOR	50V 47P $\pm 5\%$ NPO 0603	C632
0090224	SMD RESISTOR	1/16W 3.9K $\pm 5\%$ 0603	R627,R630,R634~R636
0090019	SMD RESISTOR	1/16W 4.7K $\pm 5\%$ 0603	R628,R622
0090225	SMD RESISTOR	1/16W 5.6K $\pm 5\%$ 0603	R616
0090023	SMD RESISTOR	1/16W 10K $\pm 5\%$ 0603	R605,R606,R617,R620,R621,R624,R637,R638
0000040	CARBON FILM RESISTOR	1/6W10K $\pm 5\%$	R612
0090024	SMD RESISTOR	1/16W 15K $\pm 5\%$ 0603	R614,R618
0090188	SMD RESISTOR	1/16W 18K $\pm 5\%$ 0603	R615
0000045	CARBON FILM RESISTOR	1/6W20K $\pm 5\%$	R641,R643
0090026	SMD RESISTOR	1/16W 22K $\pm 5\%$ 0603	R601,R602
0090027	SMD RESISTOR	1/16W 27K $\pm 5\%$ 0603	R629
0090189	SMD RESISTOR	1/16W 30K $\pm 5\%$ 0603	R609,R610,R613,R642,R644
0310047	SMD CAPACITOR	50V 101 $\pm 5\%$ NPO 0603	C605~C607,C620
0310066	SMD CAPACITOR	50V 102 $\pm 10\%$ 0603	C617~C619
0310072	SMD CAPACITOR	50V 103 $\pm 10\%$ 0603	C603,C604,C616
0310207	SMD CAPACITOR	50V104 $\pm 20\%$ 0603	C601,C602,C609,C611,C613,C614,C622,C623,C625~C630
0310323	SMD CAPACITOR	50V 392 $\pm 10\%$ X7R 0603	C608,C615
0310197	SMD CAPACITOR	50V 561 $\pm 10\%$ X7R 0603	C610,C612
1563974	PCB	6538-3	
0260241	CD	CD11C 16V4.7U $\pm 20\%$ 4x7 1.5	TC601~TC604,TC607,TC610,TC611,TC613,TC621
0000133	CARBON FILM RESISTOR	1/6W4.7K $\pm 5\%$ SHAPED 7.5	R645

material code	material name	Spec	Location
0260199	CD	CD11C 16V22U±20%4×7 1.5	TC605,TC606
0260200	CD	CD11C 16V47U±20%5×7 2	TC609,TC614,TC617~TC619 ,TC612
0260103	CD	CD11C 25V100U±20%8×9 3.5	TC608,TC615,TC616,TC620,TC622
0390057	MAGNETIC BEADS INDUCTOR	RH354708	L603,L604
0390055	SMD MAGNETIC BEADS	FCM2012K-601B	L601,L602
0881743	IC	F4558 DIP	U601,U602
2150262	FLAT CABLE	13P200 2.0 T2 2×2P SHIELD,WITH NEEDLE,THE SAME DIRECTION	XS601
1980006	MICROPHONE SOCKET	CK3-6.35-106	MIC601,MIC602
1980046	EARPHONE SOCKET	ST-301-030-100	JK602
0160206	ROTATED POTENTIOMETER	RK093NHA03-F25B12-B10K	VR601
1980048	MIC SOCKET	ST-403-070-100	JK601
0160209	ROTATED POTENTIOMETER	RK093NHA03-F25B12-B50K	VR602
2100003	CONNECTED CORDS	F 0.6 SHAPED 7.5mm	JP602,JP604,JP605,JP611,JP612,JP615~JP617,JP620,JP622
2100004	CONNECTED CORDS	F 0.6 SHAPED 10mm	JP608~JP610,JP613,JP614,JP621
2100010	CONNECTED CORDS	F 0.6 SHAPED 5mm	JP601,JP603,JP606,JP607,JP618,JP619
0880230	IC	PT2399 DIP	U603
0882115	IC	PJ78L05CT TO-92	U604
0881537	IC	TDA1308 SOP	U605

6.3 power board

ABS730X(RU) 5446820

0000713	CARBON FILM RESISTOR	1/2W2.20±5%	R102,R103
0010118	METAL OXIDE FILM RESISTOR	1/2W0.470±5% X SHAPED 10	R100,R101
0200227	PORCELAIN CAPACITOR	50V 104 ±10% 5mm	C100
0260717	CD	CD11T 63V1000U±20%16×30 7.5	TC100
3870057	FUSE HOLDER	0	FL100,FL101,FL102,FL103
0570005	DIODE	1N4007	VD109,VD110,VD111,VD112,VD113
2100010	CONNECTED CORDS	F 0.6 SHAPED 5mm	JP106,JP107
0570020	DIODE	1N5404	VD101,VD102,VD103,VD104
2300041	FUSE	@T8AL 250V VDE	FL100,FL101
2300033	FUSE	@T3.15AL 250V VDE	FL102,FL103
2300038	FUSE	@T2.5AL 250V VDE	FL104
0670015	SILICON BRIDGE	KBU10J	VD100

material code	material name	Spec	Location
1000051	POWER GRID FILTER	@JLB2085 2mH $\pm\infty$ -0% UL	T102
1940003	SOCKET	4P 2.5mm	XS104
1940074	SOCKET	2P 7.92mm	XS103
2100004	CONNECTED CORDS	F 0.6 SHAPED 10mm	JP101,JP102,VD114
3580180	RADIATOR	40×30×18 ABS730X(RU)	VD100
4000577	SELF-TAPPING SCREW	BT 3×12 WHITE NICKEL	
4490001	SPRING PAD	F 3	
3020402	FUSE HOLDER	BLX-2	
4450012	BOLT PAD	F 3×7.2×0.5	
0460552	SQUARENESS TRANSFORMER	@ABS730X CQC	T101
0070007	HIGH VOLTAGE RESISTOR	@1/2W680K $\pm$ 5% UL	R106
2121862	FLAT CABLE	8P300 2.0 2 PIN,WITH NEEDLE,THE SAME DIRECTION	XS102
0210204	ANTI-JAMMING CAPACITOR	@MKP61 X2 275VAC 104M 15 UL	C102,C103
2121863	FLAT CABLE	10P320 2.5 2 PIN,WITH NEEDLE,THE SAME DIRECTION	XS101
0680045	SCHOTTKY DIODE	SR360 DO-27 SHAPED R 17.5×8	VD105,VD106,VD107,VD108
1564041	PCB	@D538-2 UL	

6.4 assistant power board

ABS730X(RU) 5446821

0010209	METAL FILM RESISTOR	1/6W2K $\pm$ 1%	R104
0010006	METAL FILM RESISTOR	1/6W1.2K $\pm$ 1%	R103
0010038	PRECISION RESISTOR	1/6W1K $\pm$ 1%	R101
0010248	METAL FILM RESISTOR	1/6W3K $\pm$ 1%	R102
02003199	POLYPROPYLENE CAPACITOR	50V 104 $\pm$ 10% SHAPED 5mmf 8 BELT	C241,C242,C247,C248,C251,C253
0260597	CD	CD11 105°C 16V1000U $\pm$ 20%10×20 5	TC101,TC102
0882674	IC	AZ1084T-ADJ TO-220	U208,U222
0880131	IC	L7812CV GOLD SEALED TO-220	U225
0880505	IC	L7912CV GOLD SEALED TO-220	U226
2121993	FLAT CABLE	13P 170 2.0 2 PIN,WITH NEEDLE,THE SAME DIRECTION	XS201
2100003	CONNECTED CORDS	F 0.6 SHAPED 7.5mm	JP904,JP907
0260715	CD	CD11T 25V10U $\pm$ 10%5×11 C5	TC103
2100004	CONNECTED CORDS	F 0.6 SHAPED 10mm	JP908,JP909
2100006	CONNECTION CORDS	F 0.6 SHAPED 12.5mm	JP906

material code	material name	Spec	Location
1563972	PCB	C538-1	
6.5 assistant panel			
ABS730X(RU) 5446823			
5233878	SOFT SPONGE SPACER	7×7×7 DOUBLE-FACED,HARD	
0000175	CARBON FILM RESISTOR	1/4W1000±5%	RB16
0000190	CARBON FILM RESISTOR	1/4W5600±5%	RB17,RB18 ,RB01~RB15,RB19
0580073	VOLTAGE REGULATOR DIODE	5.1V ±5% 1/2W SHAPED 10mm	ZDB01
0580009	VOLTAGE REGULATOR DIODE	9.1V ±5% 1/2W	ZDB02
0200035	PORCELAIN CAPACITOR	50V 47P ±5% NPO 5mm	CB03~CB08
0200138	PORCELAIN CAPACITOR	50V 104 ±20% 5mm	CB01,CB02
0260201	CD	CD11C 16V100U±20%6×7 2.5	TCB01,TCB02
0780030	TRIODE	8550C	VB01,VB02
1340003	LIGHT TOUCH RESTORE SWITCH	HORIZONTAL 6×6×1	SWB01~SWB23
0620076	RADIATION DIODE	3B3HC COLORLESS WITH BLUE	LEDB02~LEDB15
0620054	DUAL COLOR RADIATION DIODE	3RB9HW-A COMMON CATHODE,RED BLUE	LEDB01
2360019	IR SENSOR	AT138B	UB01
0160208	DIGITAL POTENTIOMETER	EC1120-2-20-F15	RVB02
0160207	DIGITAL POTENTIOMETER	EC1120-2-20-F20	RVB01
1940286	CABLE SOCKET	10P 1.0mm DUAL RANK TOUCH POINT,STRAIGHT INSERT	XS401
1563780	PCB	B538-0	
2100004	CONNECTED CORDS	F 0.6 SHAPED 10mm	JB01~JB14
6.6 decode board			
ABS730X(RU) 5446819			
0090001	SMD RESISTOR	1/16W 00 ±5% 0603	R344,R349,R351
0090272	SMD RESISTOR	1/16W10±5% 0603	R249,R251,R257,R258
0090004	SMD RESISTOR	1/16W 220 ±5% 0603	R217,R219,R301,R302,R321
0090005	SMD RESISTOR	1/16W 330 ±5% 0603	R215,R260,R261,R303,R329,R352~R356,R372,R256
0090237	SMD RESISTOR	1/16W 390 ±5% 0603	R331
0090006	SMD RESISTOR	1/16W 750 ±5% 0603	R332~R336
0090181	SMD RESISTOR	1/16W 1000 ±5% 0603	R259,R263,R269,R322
0700004	SMD VOLTAGE REGULATOR DIODE	5.1V ±5% 1/2W	ZD218~ZD221,ZD224~ZD227
0090007	SMD RESISTOR	1/16W 1800 ±5% 0603	R343

material code	material name	Spec	Location
0090008	SMD RESISTOR	1/16W 220O $\pm 5\%$	R330
0090009	SMD RESISTOR	1/16W 330O $\pm 5\%$ 0603	R201~R203,R275
0090011	SMD RESISTOR	1/16W 470O $\pm 5\%$ 0603	R233,R234
0090014	SMD RESISTOR	1/16W 1K $\pm 5\%$ 0603	R271,R272,R273,R274,R287,R290,R2117,R2120,R292,R254,R316
0090016	SMD RESISTOR	1/16W 1.5K $\pm 5\%$ 0603	R228,R230,R231,R239
0090223	SMD RESISTOR	1/16W 2K $\pm 5\%$	R211,R212,R315
0090017	SMD RESISTOR	1/16W 2.2K $\pm 5\%$ 0603	R242,R244,R246
0090019	SMD RESISTOR	1/16W 4.7K $\pm 5\%$ 0603	R360~R362,R373~R376,R229,R240,R289,R293,R294,R314,R319,R320,R2130,R2131,R2134,R2135,R339,R340
0090020	SMD RESISTOR	1/16W 5.1K $\pm 5\%$ 0603	R218,R250
0090021	SMD RESISTOR	1/16W 6.8K $\pm 5\%$ 0603	R279,R276
0090022	SMD RESISTOR	1/16W 8.2K $\pm 5\%$	R247,R248
0090254	SMD RESISTOR	1/16W 9.1K $\pm 5\%$ 0603	R209
0090023	SMD RESISTOR	1/16W 10K $\pm 5\%$ 0603	R205~R208,R222,R223,R226,R235,R237,R268,R270,R288,R323~R328,R342,R345,R346,R253
0090187	SMD RESISTOR	1/16W 12K $\pm 5\%$	R216,R220
0090186	SMD RESISTOR	1/16W 7.5K $\pm 5\%$ 0603	R2136,R2148
0090025	SMD RESISTOR	1/16W 20K $\pm 5\%$ 0603	R210,R252
0090026	SMD RESISTOR	1/16W 22K $\pm 5\%$ 0603	R232,R241
0090027	SMD RESISTOR	1/16W 27K $\pm 5\%$ 0603	R318
0090028	SMD RESISTOR	1/16W 33K $\pm 5\%$ 0603	R213,R214,R317
0090190	SMD RESISTOR	1/16W 36K $\pm 5\%$ 0603	R2129,R2133
0090191	SMD RESISTOR	1/16W 39K $\pm 5\%$ 0603	R291
0090029	SMD RESISTOR	1/16W 47K $\pm 5\%$ 0603	R243,R245
0090034	SMD RESISTOR	1/16W 100K $\pm 5\%$ 0603	R221,R224,R262,R341,R2111,R2112
0090109	SMD RESISTOR	1/16W 1MO $\pm 5\%$ 0603	R227,R238,R313
0100019	SMD RESISTOR NETWORKS	1/16W330 $\pm 5\%$ 8P	RN201~RN205,RN207,RN208,RN211~RN215,RN218
0090623	SMD RESISTOR NETWORK	1/16W750 $\pm 5\%$ 0603 $\times 4$ 8P	RN206,RN216,RN217
0100031	SMD RESISTOR NETWORK	1/16W 4.7K $\pm 5\%$ 0603 8P	RN209,RN219,RN220
0090609	PRECISION SMD RESISTOR	1/16W 100O $\pm 1\%$ 0603	R338
0090626	PRECISION SMD RESISTOR	1/16W 200O $\pm 1\%$ 0603	R337
00003759	CARBON FILM RESISTOR	1/4W2.2O $\pm 5\%$ BELT	R236

material code	material name	Spec	Location
02604379	CD	CD11 16V10U±20%5×11C5 BELT	TC206,TC207,TC209,TC210,TC212,TC213,T C214,TC225,TC226,TC232,TC233,TC236,TC 240,TC241,TC247,TC251,TC266
02600029	CD	CD11 16V47U±20%5×11 C5 BELT	TC211,TC219,TC220,TC246,TC249,TC252,T C267
02601889	CD	CD11 16V100U±20%6×12 C5 BELT	TC215,TC218,TC255,TC201~TC203,TC216
02601819	CD	CD11 16V220U±20%6×12 C5 BELT	TC245,TC258,TC259,TC261~TC263,TC256,T C257,TC265
0310186	SMD CAPACITOR	50V 7P ±0.5P NPO 0603	C224,C259,C260
0310042	SMD CAPACITOR	50V 15P ±5% NPO 0603	C242,C243
0310043	SMD CAPACITOR	50V 22P ±5% NPO 0603	C286~C291,C321,C324,C327,C330,C384
0310045	SMD CAPACITOR	50V 47P ±5% NPO 0603	C218,C388,C389,C393,C394,C397~C400
0310192	SMD CAPACITOR	50V 56P ±5% NPO 0603	C385,C2111,C2114
0310047	SMD CAPACITOR	50V 101 ±5% NPO 0603	C336,C337,C370,C371,C372,C386
0310326	SMD CAPACITOR	50V 121 ±5% NPO 0603	C217
0310656	SMD CAPACITOR	50V 201 ±5% NPO 0603	C231
0310061	SMD CAPACITOR	50V 271 ±10% X7R 0603	C320,C323,C326,C329
0310051	SMD CAPACITOR	50V 331 ±5% NPO 0603	C322,C325,C328,C331
0310053	SMD CAPACITOR	50V 471 ±5% NPO 0603	C333,C334
0310198	SMD CAPACITOR	50V 472 ±10% X7R 0603	C392
0310054	SMD CAPACITOR	50V 681 ±5% NPO 0603	C339
0310066	SMD CAPACITOR	50V 102 ±10% 0603	C202~C204,C210,C228,C262,C265~C268,C2 73,C277,C281,C282,C284,C293,C295,C297,C 299,C302,C349~C351,C359~C361
0310231	SMD CAPACITOR	50V 122 ±10% 0603	C2122,C2129,C2112,C2115
0310070	SMD CAPACITOR	50V 332 ±10% X7R 0603	C213,C214,C234,C303
0310323	SMD CAPACITOR	50V 392 ±10% X7R 0603	C227
0310200	SMD CAPACITOR	50V 822 ±10% X7R 0603	C314,C315
0310072	SMD CAPACITOR	50V 103 ±10% 0603	C212,C269~C272,C274~C276,C278~C280,C2 83,C304,C342,C343,C352~C358,C362~C367
0310203	SMD CAPACITOR	50V 273 ±10% X7R 0603	C216
0310056	SMD CAPACITOR	16V 473 ±10% 0603	C206
0310207	SMD CAPACITOR	50V104 ±20% 0603	C201,C205,C207~C209,C211,C215,C219~C2 23,C225,C226,C233,C235~C241,C244,C245, C247~C255,C257,C258,C261,C264,C292,C29 4,C296,C298,C301,C305~C313,C316~C318,C 332,C335,C338,C340,C341,C345,C346,C368, C373~C382,C387,C391,C2138,C2141,C2155, C2156,C2157,C348 ②

material code	material name	Spec	Location
0310543	SMD CAPACITOR	50V 104 $\pm 10\%$ X7R 0603	C201,C205,C207~C209,C211,C215,C219~C223,C225,C226,C233,C235~C241,C244,C245,C247~C255,C257,C258,C261,C264,C292,C294,C296,C298,C301,C305~C313,C316~C318,C332,C335,C338,C340,C341,C345,C346,C368,C373~C382,C387,C391,C2138,C2141,C2155,C2156,C2157,C348 ②
0310222	SMD CAPACITOR	25V 104 $\pm 20\%$ X7R 0603	C201,C205,C207~C209,C211,C215,C219~C223,C225,C226,C233,C235~C241,C244,C245,C247~C255,C257,C258,C261,C264,C292,C294,C296,C298,C301,C305~C313,C316~C318,C332,C335,C338,C340,C341,C345,C346,C368,C373~C382,C387,C391,C2138,C2141,C2155,C2156,C2157,C348 ②
0310234	SMD CAPACITOR	16V 105 +80%-20% 0603	C229,C230,TC205,TC250
0390096	SMD INDUCTOR	1.8UH $\pm 10\%$ 1608	L211~L214
0390355	SMD INDUCTOR	4.7UH $\pm 10\%$ 1608	L207, L208
0390095	SMD MAGNETIC BEADS	FCM1608K-221T05	L203,L227,L215~L218,L221~L224,L228,L230
03900579	MAGNETIC BEADS INDUCTOR	RH354708 BELT	L201,L202,L204~L206,L220,L226
0700007	SMD DIODE	1N4148	D201,D202,D216 ④
0700001	SMD DIODE	LS4148	D201,D202,D216 ④
0700002	SMD DIODE	LL4148	D201,D202,D216 ④
0700056	SMD DOUBLE DIODE	MMBD4148SE SOT-23	D203~D205,D210
0700008	SMD VOLTAGE REGULATOR DIODE	5.6V $\pm 5\%$ 1/2W	D215
07800509	TRIODE	S8050D BELT	Q215,Q216
07800499	TRIODE	S8550D BELT	Q213,Q214
0780276	SMD TRIODE	GS9013 SOT-23	Q224,Q233,Q234
0780062	SMD TRIODE	9014C	Q217,Q220,Q229
0780063	SMD TRIODE	9015C	Q204
0780129	SMD TRIODE	8550D	Q225
0780085	SMD TRIODE	8050D	Q223
0780040	SMD TRIODE	0	Q231
0780193	SMD TRIODE	2SK3018	Q203,Q230
0780115	SMD TRIODE	2SB1132	Q201,Q202
0881604	IC	AT24C16 SOP	U223
0882022	IC	CS4340A SOP	U207,U213
0882262	IC	K4S641632H-TC60 TSOP	U205,U208
0881674	IC	LM393D SO8	U222 ⑤

material code	material name	Spec	Location
0882105	IC	LM393 SO8	U222 ⑤
0882359	IC	AAI393 SO8	U222 ⑤
0880300	IC	M11B416256A-25 SOJ	U215
0882502	IC	MK-6000B(4504) PQFP	U209
0881742	IC	F4558 SOP	U219 ⑥
0880562	IC	4580 SOP	U219 ⑥
0880361	IC	4558 SOP	U219 ⑥
0880322	IC	MM74HCU04M SOP	U214 ⑦
0880513	IC	HCU04 SOP	U214 ⑦
0881182	IC	LM1117MP-ADJ SOT-223	U224 ⑧
0881969	IC	IP1117-ADJ SOT-223	U224 ⑧
0882461	IC	AZ1117H-ADJ SOT-223	U224 ⑧
0882500	IC	AML3298 QFP	U202
0881378	IC	BA5954FP HSOP	U203
0882504	IC	R27V3202F TSOP	U212
0882503	IC	SAM2133B TQFP	U211
0882501	IC	VT7208 LQFP	U201
0960271	CRYSTAL OSCILLATOR	9.6MHz±20PPM 49-S 20P	X201
0960020	CRYSTAL OSCILLATOR	27.00MHz 49-S	X203
0960022	CRYSTAL OSCILLATOR	33.8688MHz 49-S	X202
1940285	CABLE SOCKET	8P 1.0mm DUAL RANK TOUCH POINT, STRAIGHT INSERT	XS207
1940044	SOCKET	9P 2.0mm	XS202
1940008	SOCKET	8P 2.0mm	XS209
1940094	CABLE SOCKET	24P 0.5mm SMD WITH CLASP	XS203
1940024	SOCKET	5P 2.0mm	XS206
1940005	SOCKET	6P 2.0mm	XS205
1632733	PCB	2538-2	
6.7 amplifier board			
ABS730X(RU)		5446826	
0000599	CARBON FILM RESISTOR	1/6W100K±5% BELT	R800
0200062	PORCELAIN CAPACITOR	50V 151 ±10% 2.5mm	C801,C802
0570006	DIODE	1N4148	VD800,VD801,VD802

material code	material name	Spec	Location
0630003	EMISSION PIPE	TSAL6200	LED800
0780050	TRIODE	S8050D	V800
0880220	IC	PT2222 SOP	N800
0970003	CERAMIC RESONATOR	455E	G800
1561684	PCB	8219-1	
2100003	CONNECTED CORDS	F 0.6 SHAPED 7.5mm	
4000258	SELF-TAPPING SCREW	BB 2.3×8 BLACK	
3031194	SURFACE CASING OF REMOTE CONTROL	RC-109 SILVER WHITE	
3040873	ROMOTE CONTROL BOTTOM CASING	RC-109 SILVER WHITE	
3050750	BATTEMETAL OXIDE FILM RESISTOR CASE DOOR OF REMOTE CONTROL	RC-109 SILVER WHITE	
3850068	ANODE CATHODE SPRING	RC-109	
3850066	ANODE SPRING	RC-109	
3850067	CATHODE SPRING	RC-109	
3050603	GLASS OF REMOTE CONTROLLER	YK10 BRIGHT PURPLE	
5155724	SURFACE STICKER OF REMOTE CONTROL	RC-59 2#	
4630914	CONDUCT GLUE OF REMOTE CONTROL	RC-59 2#	
5070070	GLUE BAG	85×250	
6.8 main surface board			
ABS730X(RU) 5446822			
5233877	SOFT SPONGE SPACER	46×20×4 DOUBLE-FACED,HARD	
0090001	SMD RESISTOR	1/16W 00 ±5% 0603	R409
0000122	CARBON FILM RESISTOR	1/6W1000±5% SHAPED 7.5	R402~R406
0000488	CARBON FILM RESISTOR	1/6W2200±5% SHAPED 7.5	R401
0000133	CARBON FILM RESISTOR	1/6W4.7K±5% SHAPED 7.5	R408
0000139	CARBON FILM RESISTOR	1/6W20K±5% SHAPED 7.5	R407
0200035	PORCELAIN CAPACITOR	50V 47P ±5% NPO 5mm	C401~C404,C411~C420,C423
0310045	SMD CAPACITOR	50V 47P ±5% NPO 0603	C421,C422
0200041	PORCELAIN CAPACITOR	50V 151 ±10% NPO 5mm	C409,C410
0310207	SMD CAPACITOR	50V104 ±20% 0603	C405~C408,C424 ⑨
0310543	SMD CAPACITOR	50V 104 ±10% X7R 0603	C405~C408,C424 ⑨
0260201	CD	CD11C 16V100U±20%6×7 2.5	TC401,TC403

material code	material name	Spec	Location
0260240	CD	CD110 63V100U±20%10×12 5	TC402
0570006	DIODE	1N4148	VD401~VD405
0580001	VOLTAGE REGULATOR DIODE	3.3V ±5% 1/2W	ZD401
0970003	CERAMIC RESONATOR	455E	X401
1340003	LIGHT TOUCH RESTORE SWITCH	HORIZONTAL 6×6×1	SW401~SW408
1200728	DISPLAY SCREEN	VFD48-1601FN	VFD401
0580073	VOLTAGE REGULATOR DIODE	5.1V ±5% 1/2W SHAPED 10mm	XS402,ZD402~ZD413
0881587	IC	PT2222A SOP	U401
0882647	IC	PT6305 QFP	U402
1940286	CABLE SOCKET	10P 1.0mm DUAL RANK TOUCH POINT,STRAIGHT INSERT	XS403,XS401
1563778	PCB	4538-0	
2100010	CONNECTED CORDS	F 0.6 SHAPED 5mm	JP414,JP416,JP419,JP422~JP424,JP427~JP430, JP440
2100003	CONNECTED CORDS	F 0.6 SHAPED 7.5mm	JP417,JP418,JP420,JP421,JP431,JP434~JP436, JP438
2100007	CONNECTION CORDS	F 0.6 SHAPEN 15mm	JP406,JP426
2100004	CONNECTED CORDS	F 0.6 SHAPED 10mm	JP404,JP439
2100006	CONNECTION CORDS	F 0.6 SHAPED 12.5mm	JP401~JP403,JP405,JP407~JP413,JP415,JP425,JP432, JP433,JP437
6.9 sofeware program			
ABS730X(RU)		0911147	
0881238	IC	EPM3032A TC44-10 QFP	
ABS730X(RU)		0911146	
0882471	IC	A290021TL-70 PLCC	
ABS730X(RU)		0890256	
0882087	IC	SM79164C25P DIP	