

DVD Player

DVP3980K

Service

DVP3980K/98

Service

Service



# Service Manual


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**CLASS 1  
LASER PRODUCT**

Published by KC-ET0812 Service Audio Printed in The Netherlands Subject to modification

 3139 785 33920

Version 1.0

**PHILIPS**

## Technical Specifications

### TV standard (PAL/50Hz) (NTSC/60Hz)

Number of lines	625	525
Playback	Multi standard	(PAL/NTSC)

### Video performance

Video DAC	12 bit, 108MHz	
YPbPr:	0.7Vpp ---- 75 ohm	
Video output	1Vpp ----- 75 ohm	

### Video format

Digital Compression	MPEG 2 for DVD,SVCD MPEG 1 for VCD	
<b>DVD</b>	<b>50Hz</b>	<b>60Hz</b>
Horiz resolution	720 pixels	720 pixels
	1920pixels	1920 pixels
Vertical resolution	576lines	480 lines
	1080 lines	1080 lines

<b>VCD</b>	<b>50Hz</b>	<b>60Hz</b>
Horiz. resolution	352 pixels	352 pixels
Vertical resolution	288lines	240 lines

### Audio format

Digital	<b>MPEG/AC-3/ PCM</b>	<b>Compressed Digital 16, 20, 24 bits</b>
		fs, 44.1, 48, 96KHz
	MP3 (ISO 9660)	96,112,128,256kbps & variable bit rate fs,32, 44.1,48 kHz

Analogue Sound Stereo

Dolby surround compatible downmix from Dolby Digital multi-channel sound

### Audio performance

DA converter	24 bits, 192KHz	
DVD	fs 96 kHz	4 Hz----44 kHz
	fs 48kHz	4 Hz----22 kHz
SVCD	fs 48kHz	4 Hz----22 kHz
	fs 44.1kHz	4 Hz----20 kHz
CD/ VCD	fs 44.1kHz	4 Hz----20 kHz
Signal-Noise (1kHz)	>90 dB	
Dynamic Range (1kHz)	>80 dB	
Cross talk (1kHz)	>70 dB	
Distortion/Noise (1kHz)	>65 dB	
MPEG MP3	MPEG Audio L3	

### Connections

YpbPr output	Cinch 3x
Video output	Cinch ( yellow)
Audio output (L+R )	Cinch (white/red)
Digital output	1 coaxial
	IEC60958 for CDDA/ LPCM
	IEC61937 for MPEG1/2,
	Dolby Digital
HDMI Out	

### Cabinet

Dimensions (w X h X d)	360 x 37 x 209 mm
Weight	Approximately 1.3 kg

### Power consumption

Power supply Rating	120V; 60HZ
Power consumption	<10W
Power consumption in standby mode	<1W

Specifications subject to change without prior notice.


# Safety instruction, Warning & Notes

## Safety instruction

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### 1. General safety

Safety regulations require that during a repair:

- . Connect the unit to the mains via an isolation transformer.
- . Replace safety components indicated by the symbol , only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, you must return the unit in its original condition. Pay, in particular, attention to the following points:

- . Route the wires/cables correctly, and fix them with the mounted cable clamps.
- . Check the insulation of the mains lead for external damage.
- . Check the electrical DC resistance between the mains plug and the secondary side:
  - 1) Unplug the mains cord, and connect a wire between the two pins of the mains plug.
  - 2) Set the mains switch the "on" position (keep the mains cord unplug).
  - 3) Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
  - 4) Repair or correct unit when the resistance measurement is less than  $1M\Omega$ .
  - 5) Verify this, before you return the unit to the customer/user (ref. UL-standard no. 1492).
  - 6) Switch the unit "off", and remove the wire between the two pins of the mains plug.

### 2.Laser safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

Laser device unit

Type	: Semiconductor laser GaAlAs
Wavelength	: 650nm (DVD) : 780nm (VCD/CD)
Output power	: 7mW (DVD) : 10mW (DVD /CD)

Beam divergence: 60 degree

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

## Warning

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### 1. General

. All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are at the same potential as the mass of the set by a wristband with resistance. Keep components and tools at this same potential. Available ESD protection equipment:

- 1) Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
- 2) Wristband tester 4822 344 13999.

. Be careful during measurements in the live voltage section. The primary side of the power supply, including the heat sink, carries live mains voltage when you connect the player to the mains (even when the player is "off!"). It is possible to touch copper tracks and/or components in this unshielded primary area, when you service the player. Service personnel must take precautions to prevent touching this area or components in this area. A "lighting stroke" and a stripe-marked printing on the printed wiring board, indicate the primary side of the power supply.

. Never replace modules, or components, while the unit is "on".

### 2. Laser

- . The use of optical instruments with this product, will increase eye hazard.
- . Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.
- . Repair handling should take place as much as possible with a disc loaded inside the player.
- . Text below is placed inside the unit, on the laser cover shield:

**CAUTION: VISIBLE AND INVISIBLE LASER  
RADIATION WHEN OPEN, AVOID EXPOSURE  
TO BEAM.**


Notes: Manufactured under licence from Dolby Laboratories. The double-D symbol is trademarks of Dolby Laboratories, Inc. All rights reserved.

## Notes

### Lead-Free requirement for service

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#### INDENTIFICATION:

Regardless of special logo (not always indicated) 

One must treat all sets from 1.1.2005 onwards, according next rules.

*Important note: In fact also products a little older can also be treated in this way as long as you avoid mixing solder-alloys (leaded/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.*

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
  - Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
    - To reach at least a solder-temperature of 400°C,
    - To stabilize the adjusted temperature at the solder-tip
    - To exchange solder-tips for different applications.
  - Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
  - Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed solder alloy types (leaded and lead-free). If one cannot avoid, clean carefully the solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
  - Special information for BGA-ICs:
    - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use highest lead-free temperature profile, in case of doubt)
    - lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. This will be communicated via AYS-website.
  - Do not re-use BGAs at all.
  - For sets produced before 1.1.2005, containing leaded soldering-tin and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
  - On our website:
    - [www.atyourservice.ce.Philips.com](http://www.atyourservice.ce.Philips.com)

You find more information to:

BGA-de-/soldering (+ baking instructions)  
 Heating-profiles of BGAs and other ICs used in Philips-sets

You will find this and more technical information within the "magazine", chapter "workshop news".  
 For additional questions please contact your local repair-helpdesk.

## Mechanical and Dismantling Instructions

### Dismantling Instruction

The following guidelines show how to dismantle the player. (The DVD Player should be power off during the dismantling )

**Step1:** Remove 5 screws around the Top Cover, and then remove the Top Cover (Figure 1).



Figure 1

**Step2:** If it is necessary to dismantle Loader or Front Panel, the Front door should be removed first. (Figure 2)

Note: Make sure to operate gently otherwise the guider would be damaged.



Please kindly note that dismantle the front door assembly carefully to avoid damage tray and the front door.

Figure 2

## Mechanical and Dismantling Instructions

### Dismantling Instruction

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**Step3:** If the tray can't open in normal way, you can make it through the instruction as below (Figure 3).  
Note: Make sure to operate gently otherwise the guider would be damaged.



**Step4:** Dismantling Front Panel, disconnect the connector (XP2, XP6), then release the snaps on the both sides of Front Panel and bottom cabinet , then gently pull the Panel out from the set. (Figure 5 & 6 )

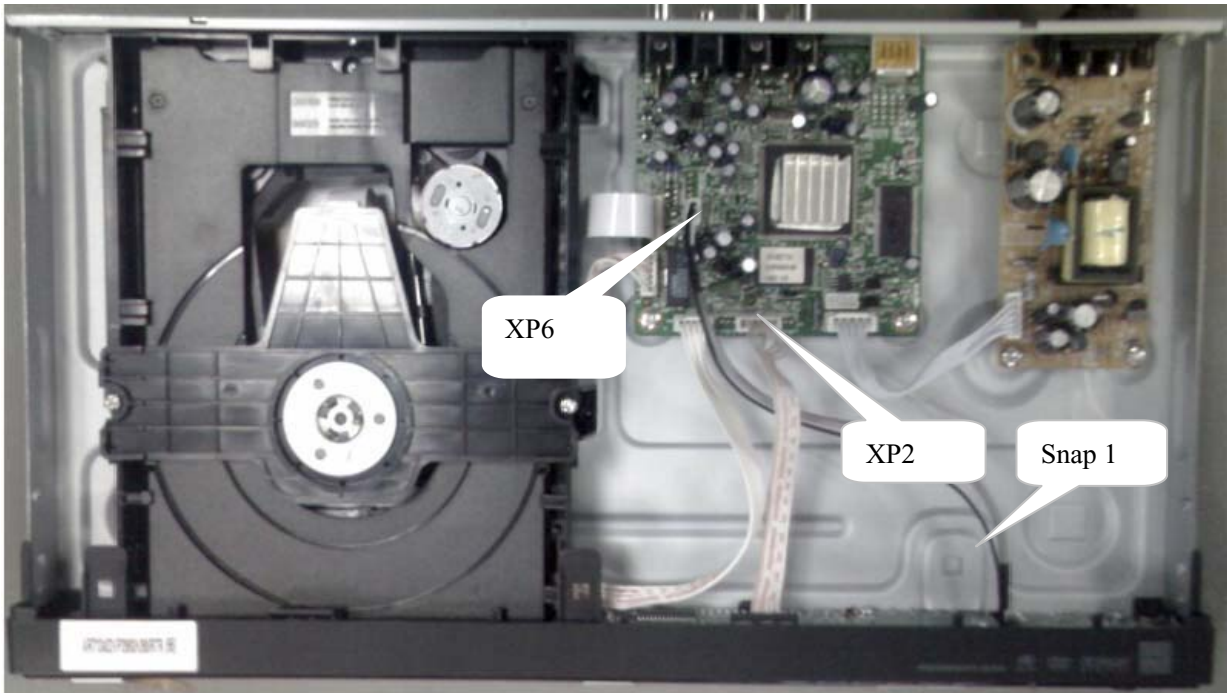


Figure 5



## Mechanical and Dismantling Instructions

### Dismantling Instruction

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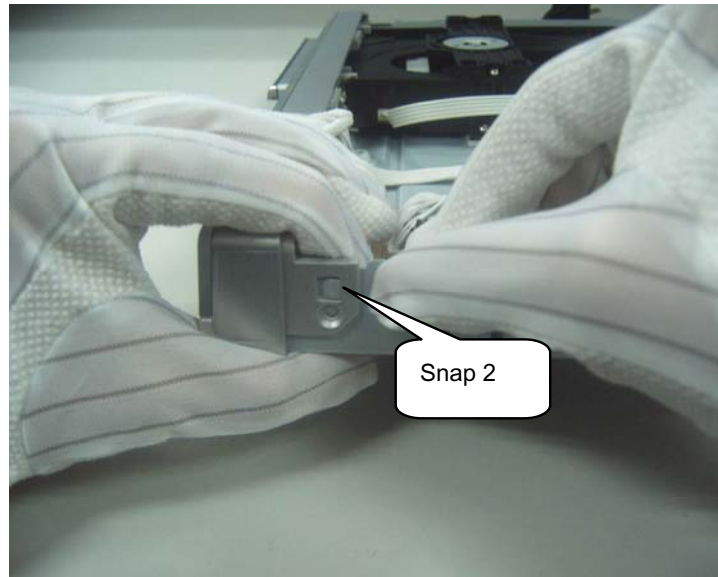


Figure 6

**Step5:** Dismantling Loader, disconnect the 3 connectors (XP3, XP4, XP5) aiming in the below figure, and remove 1 screw that connects the loader and the bottom cabinet. (Figure 7)

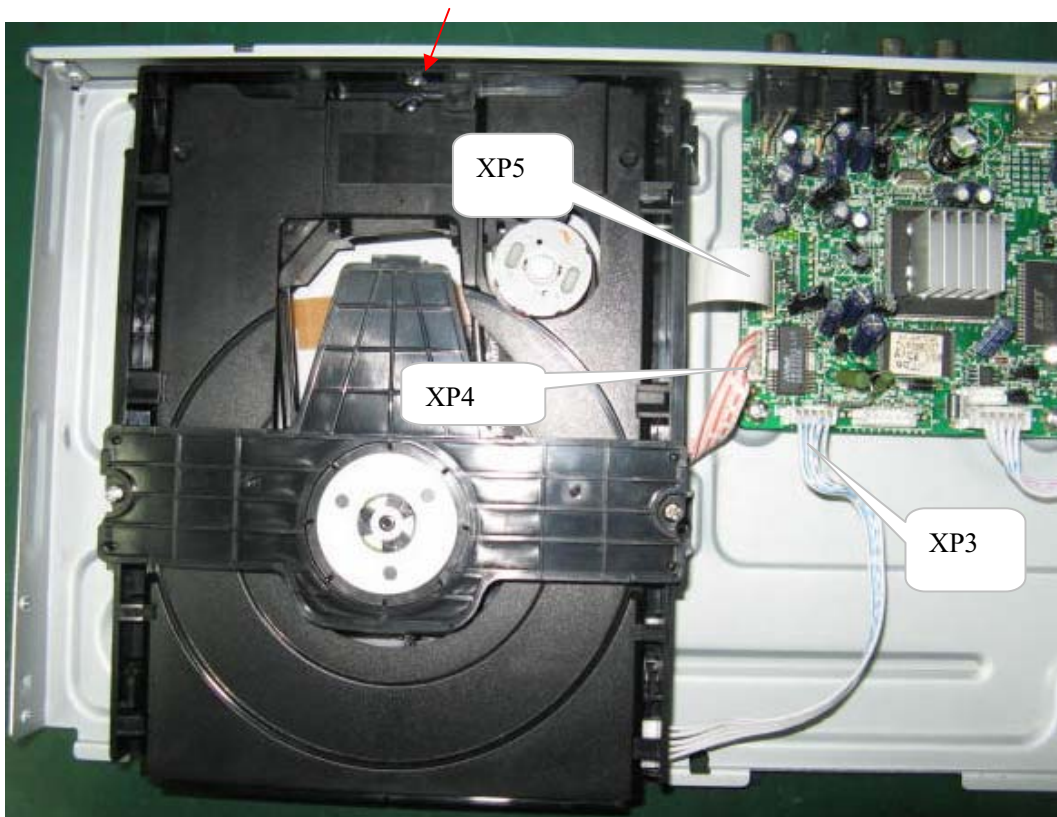


Figure 7



## Mechanical and Dismantling Instructions

### Dismantling Instruction

**Step6:** Dismantling Main Board, first disconnect the connector (XP1), and then remove 4 screws. (Figure 8)

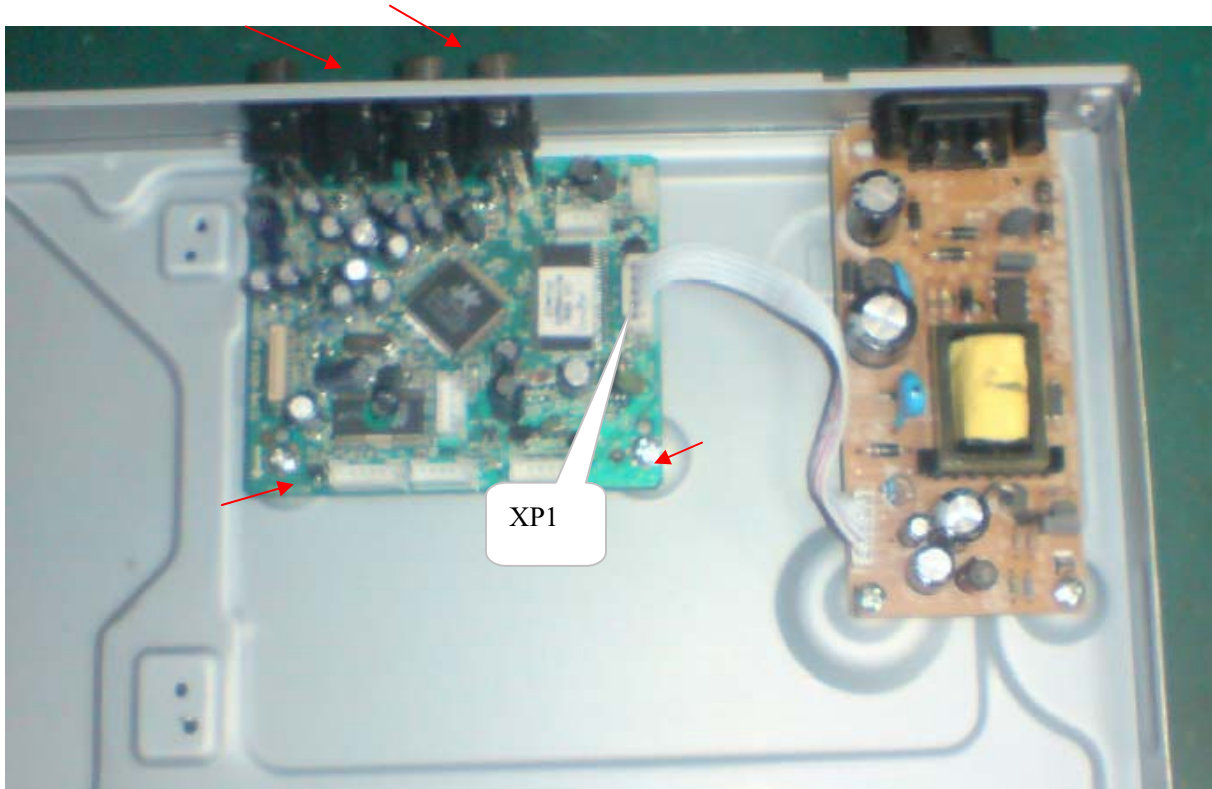


Figure 8

**Step7:** Remove the 4 screws on Power Board to dismantle the Power Board. (Figure 9)



Figure 9

## Software upgrade

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### Preparation to upgrade software

- 1) Start the CD Burning software and create a new CD project (Data Disc) with the following setting:  
Label: DVP3XXX (No need the label name)  
File Name: DVPXXXX\_XX.BIN  
Power on the set and open the tray, then press <5><5> to check the File Name.

**Note: It is required capital letter for the File System name.**

- 2) Burn the data onto a blank CDR

### A. Procedure for software upgrade:

- 1) Power on the set and insert the prepared Upgrade CDR.
- 2) The set will starts reading disc & response with the following display TV screen:  
Upgrade File DETECTED  
Upgrade?  
Press Play TO START.
- 3) Press <OK> button to confirm, then screen will display :  
Files coping...  
UPGRADING...
- 4) The upgraded tray will automatically open when files coping complete, then take out the disc.
- 5) About 1 minute later, the trace will automatically close when upgrading complete.

### B. Read out the software versions to confirm upgrading

- 1) Power on the set and press <Setup> button on the remote control.
- 2) Press <1><3><7><9> button.  
The software version and other information are display on the TV screen as follows:

Version	XX.XX.XX.XX (Main version)
SUB-VER	XX.XX.XX.XX (software version of application software)
8032	XX.XX.XX.XX
Servo	XX.XX.XX.XX (software version of Servo)
RISC	XX.XX.XX.XX
DSP	XX.XX.XX.XX
Region Code	X

**Caution:** The set must not be power off during upgrading, Otherwise the Main board will be damaged entirely.

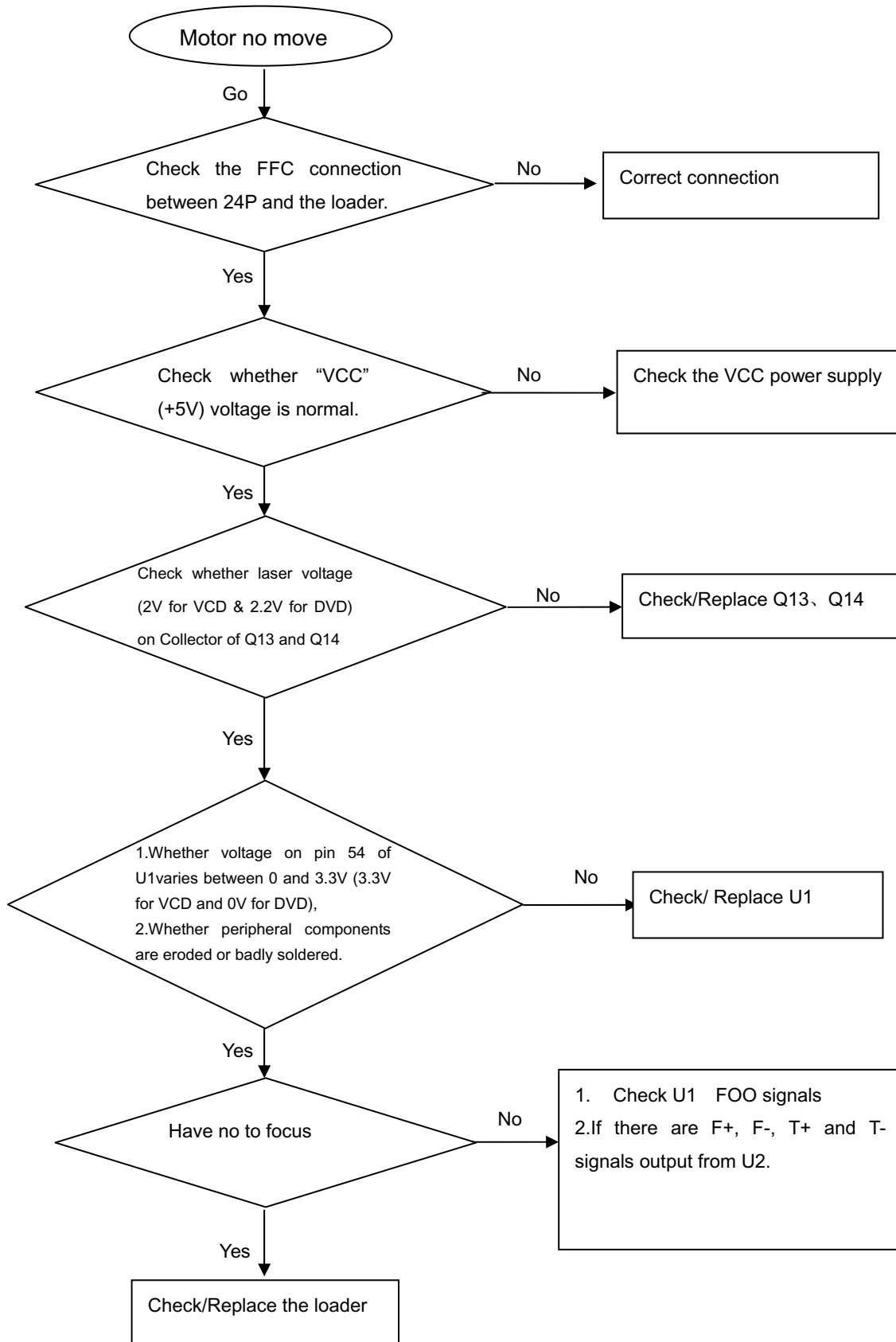
## How to select the right language

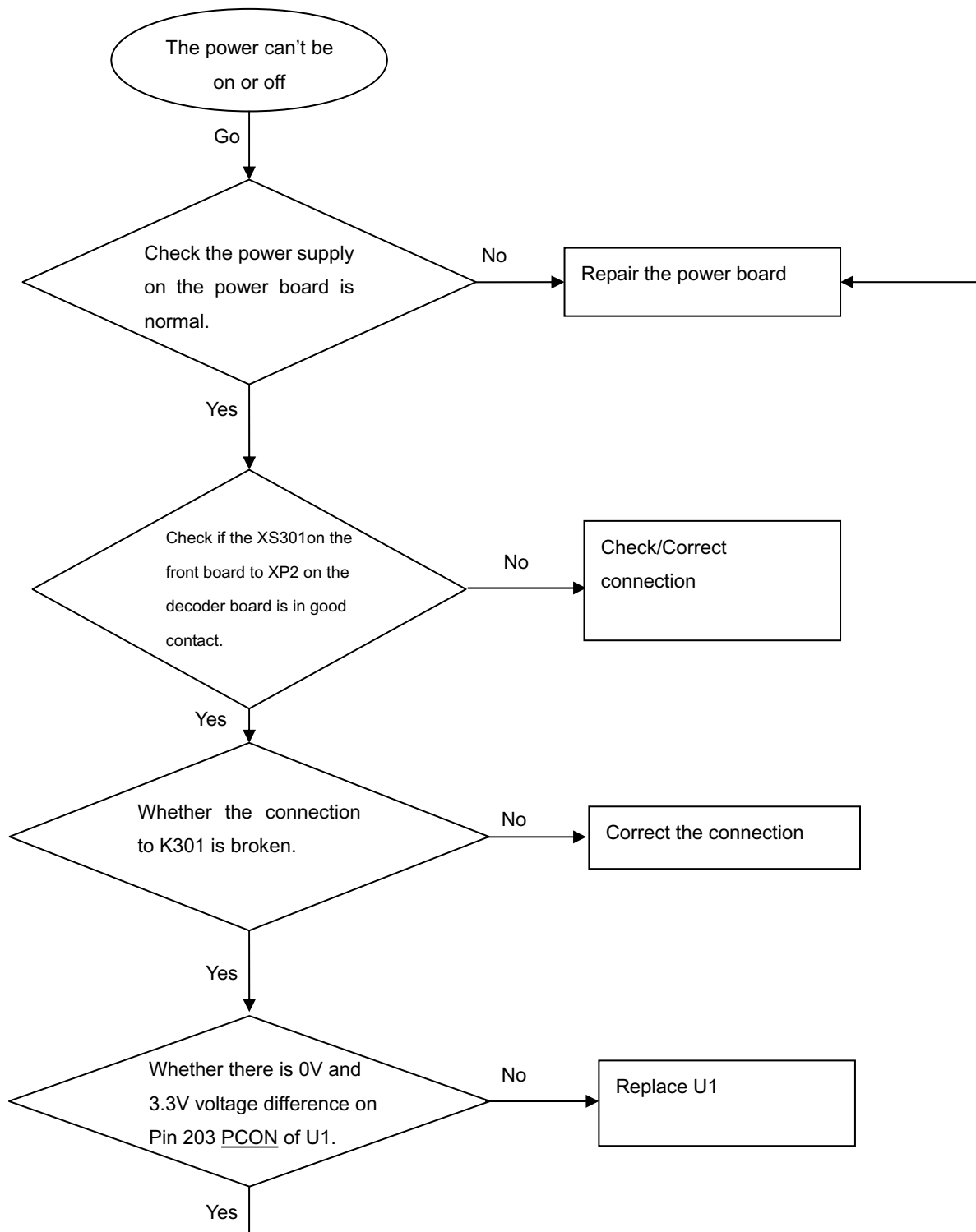
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If the language is not right, it can be corrected by the following operation:

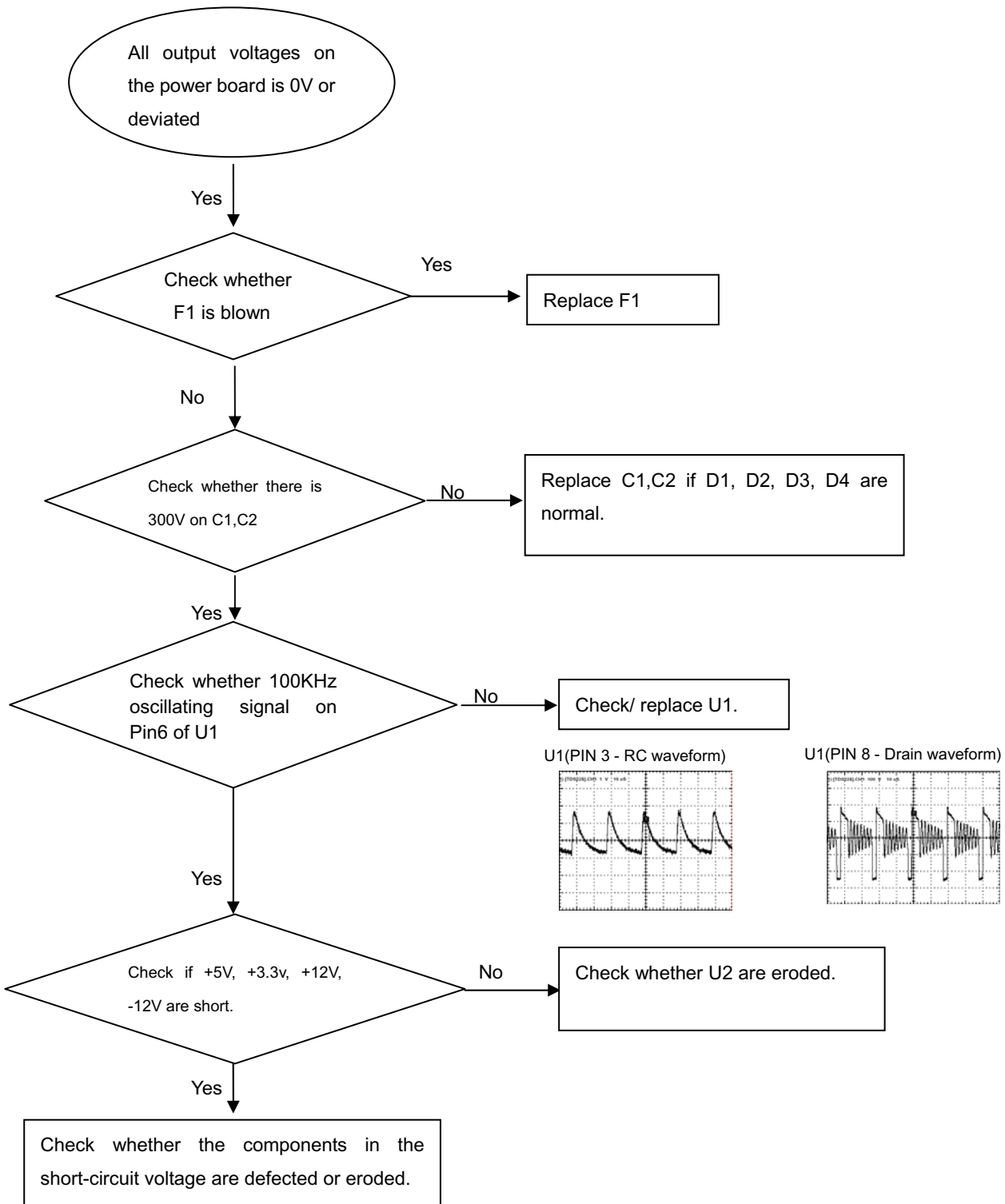
1. Power on the set and open the tray.  
Press "6" "6" "6" "6" and "Audio" button on the remote control.  
After that on the screen it shows:  
PLS INPUT MODEL CODE:
2. Then input the related MODEL CODE "0".  
After that on the screen it shows:  
DVP××××× REGION × OK  
(It means the language has been corrected and the player will be power off automatically.)

## Spindle motor does not move

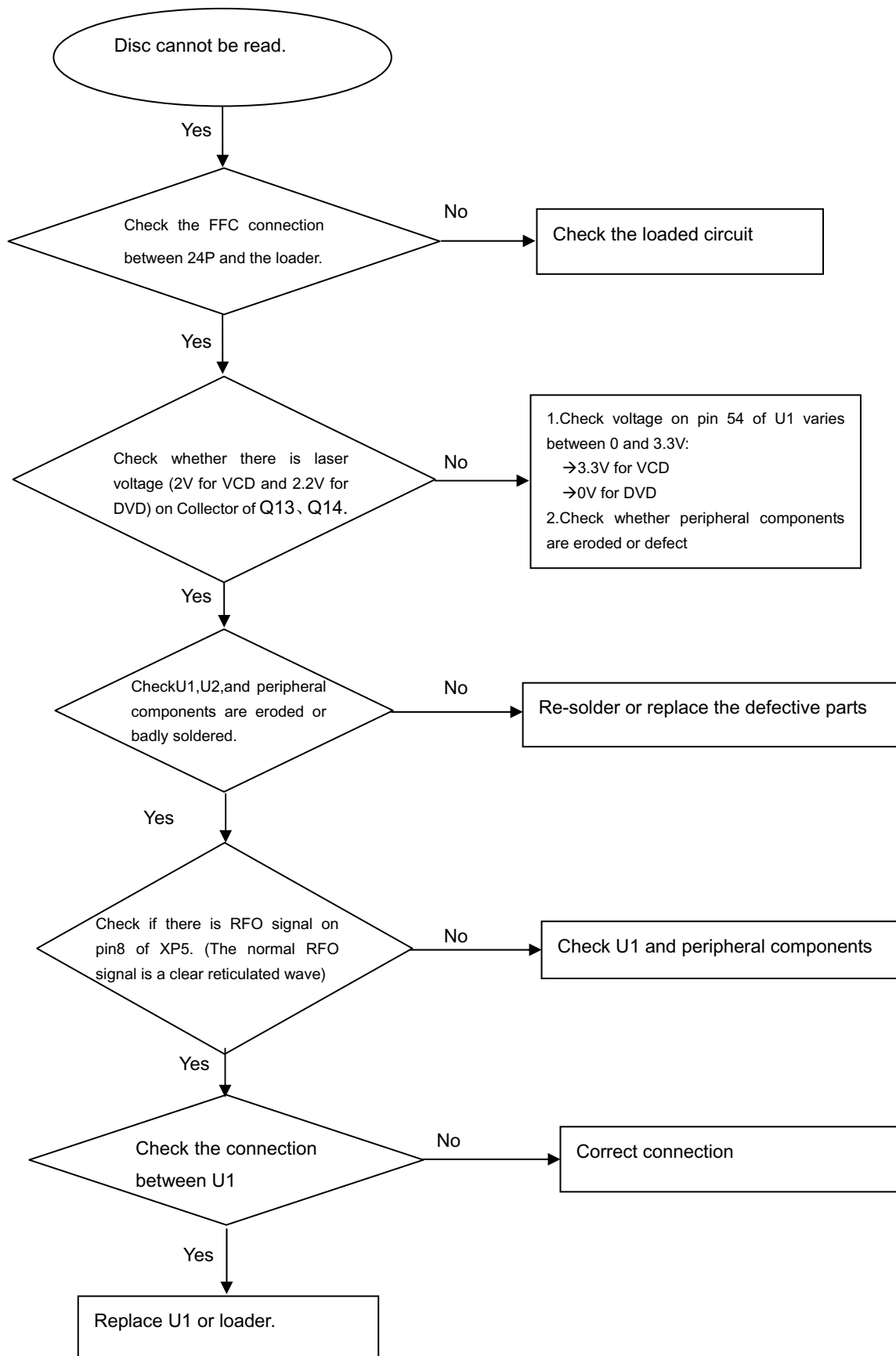


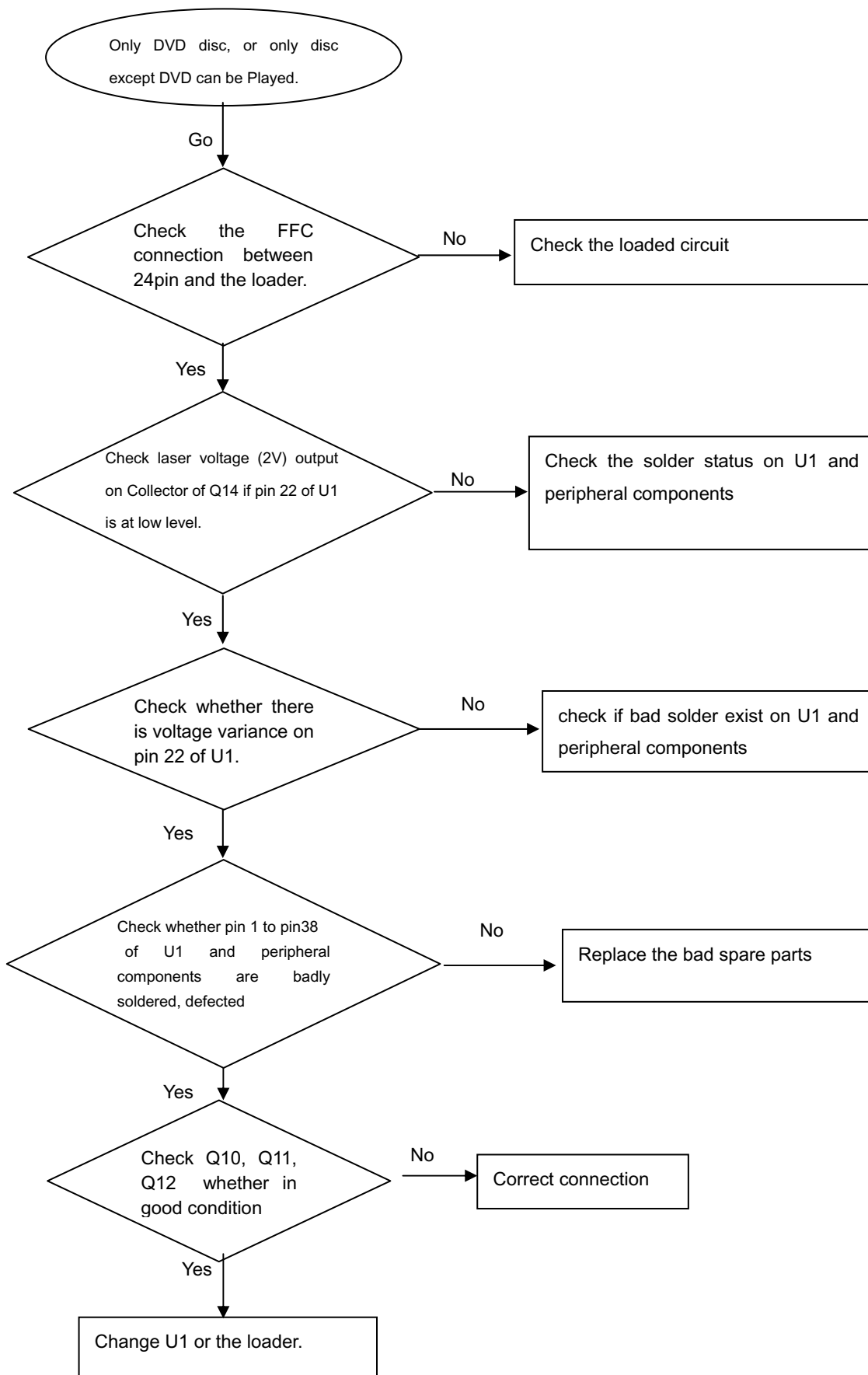
**The power can not be on or off**

**All output voltages on the power board is 0V or deviated.**

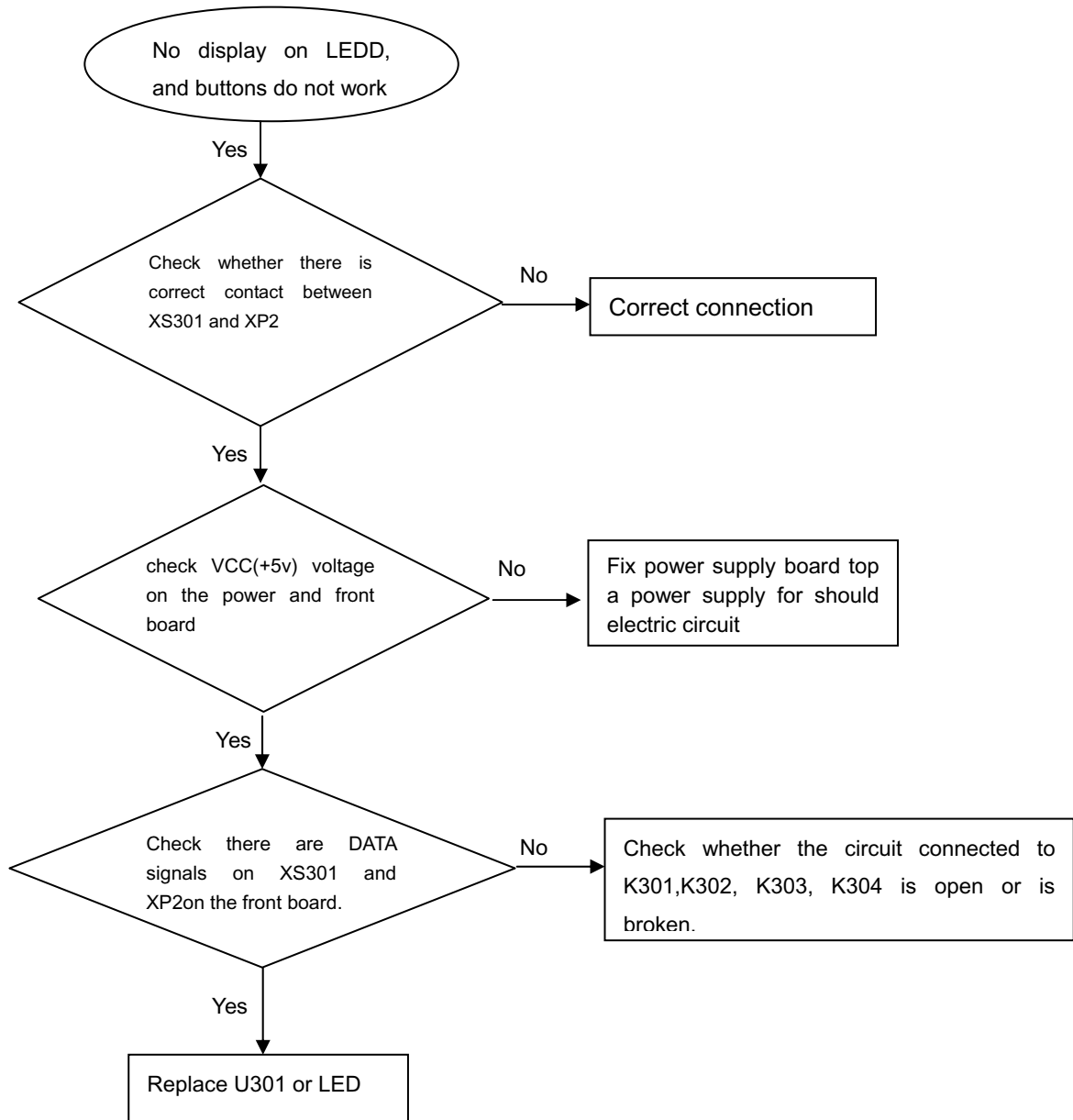




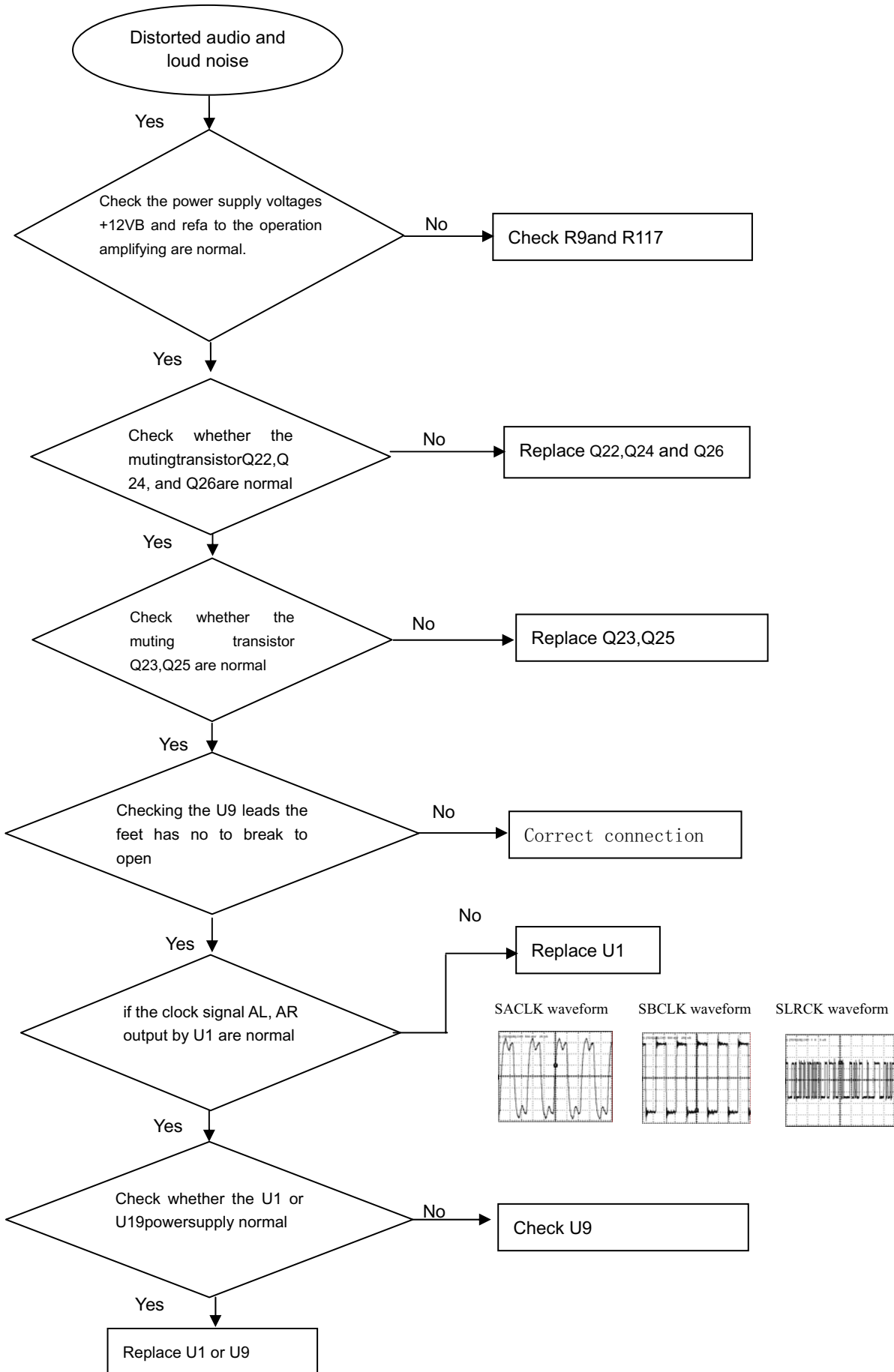
**Disc cannot be read.**

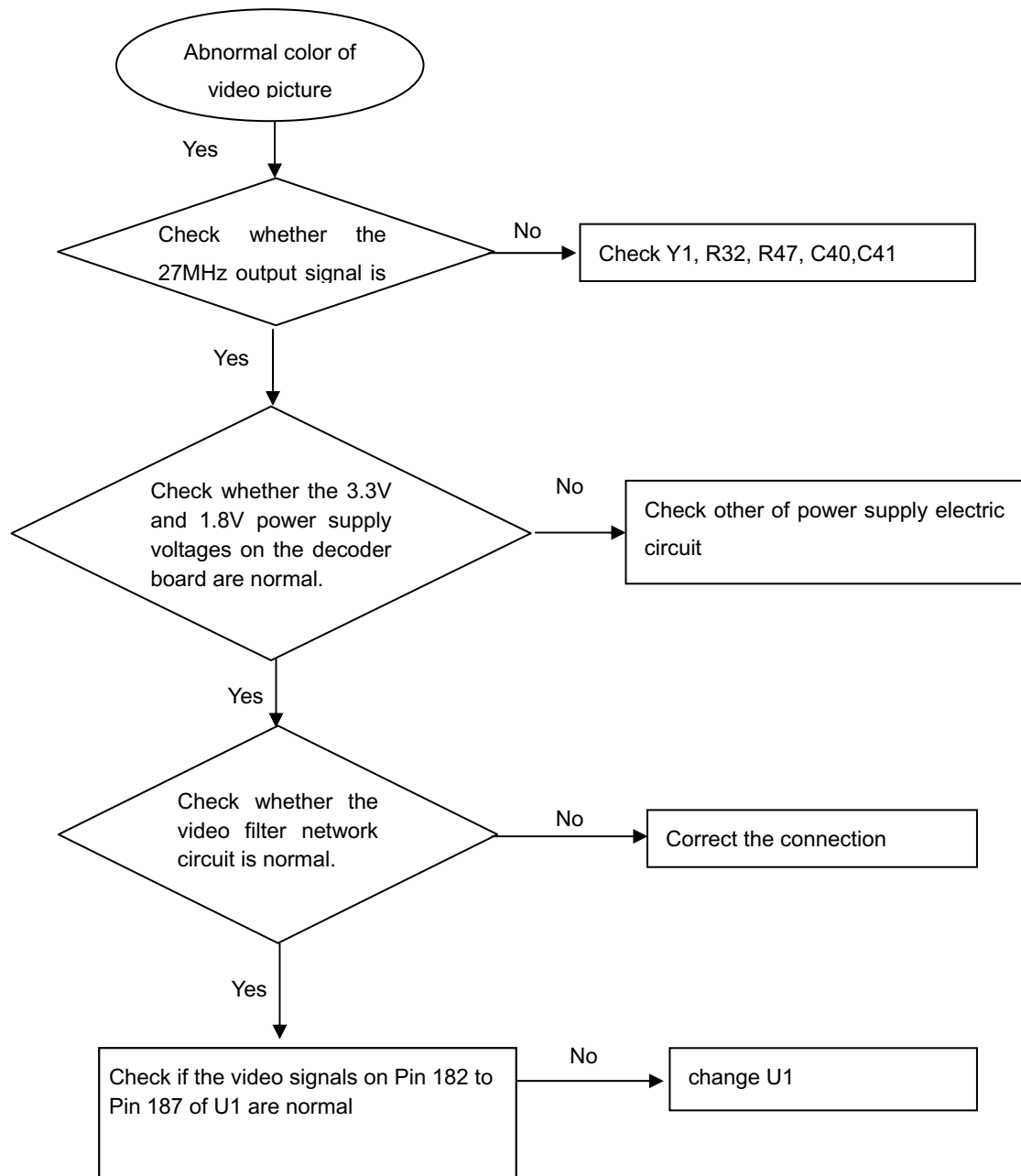
**Only DVD disc or only disc except DVD can be played**

**No display on LED, and buttons do not work**

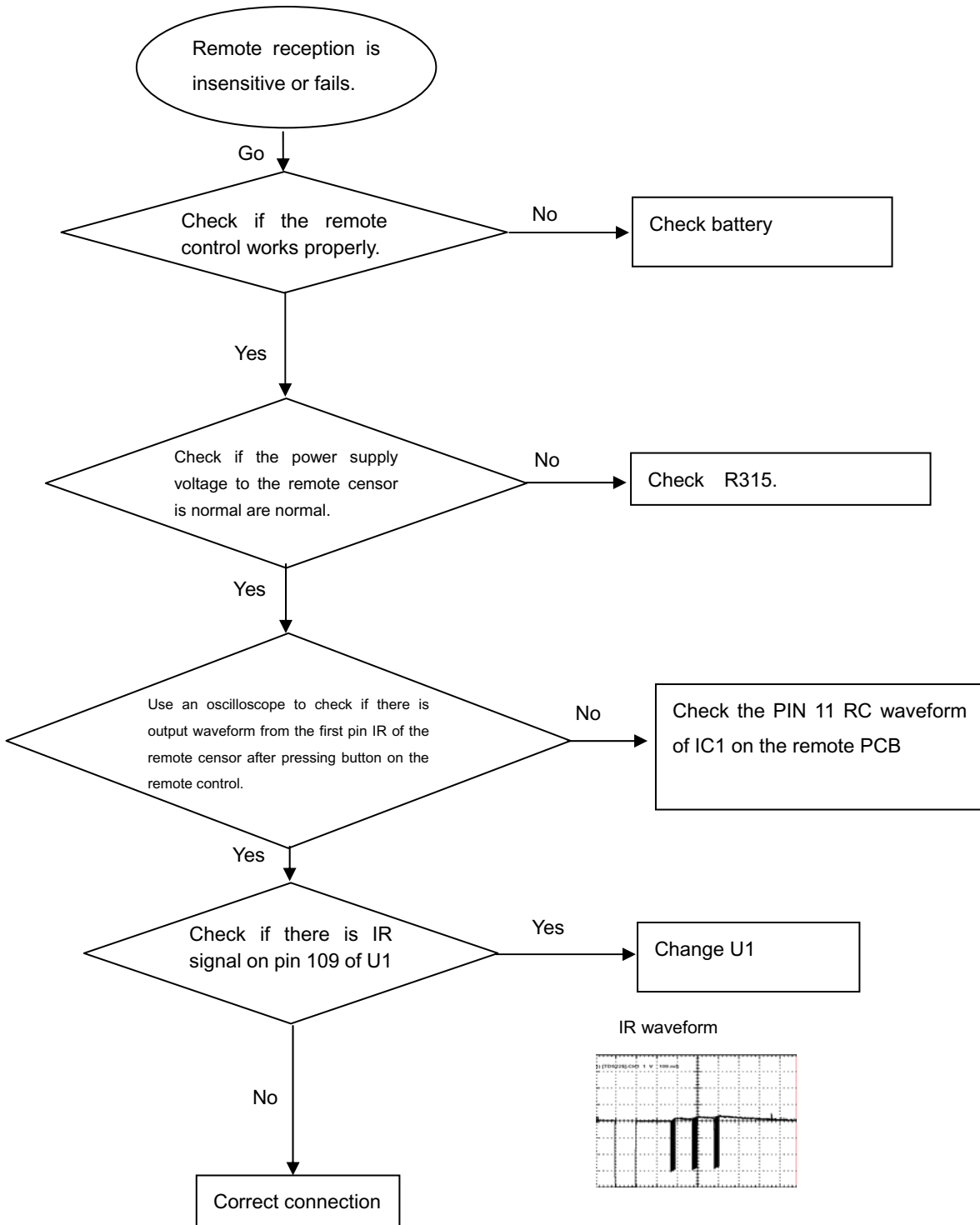


**Distorted audio and loud noise**



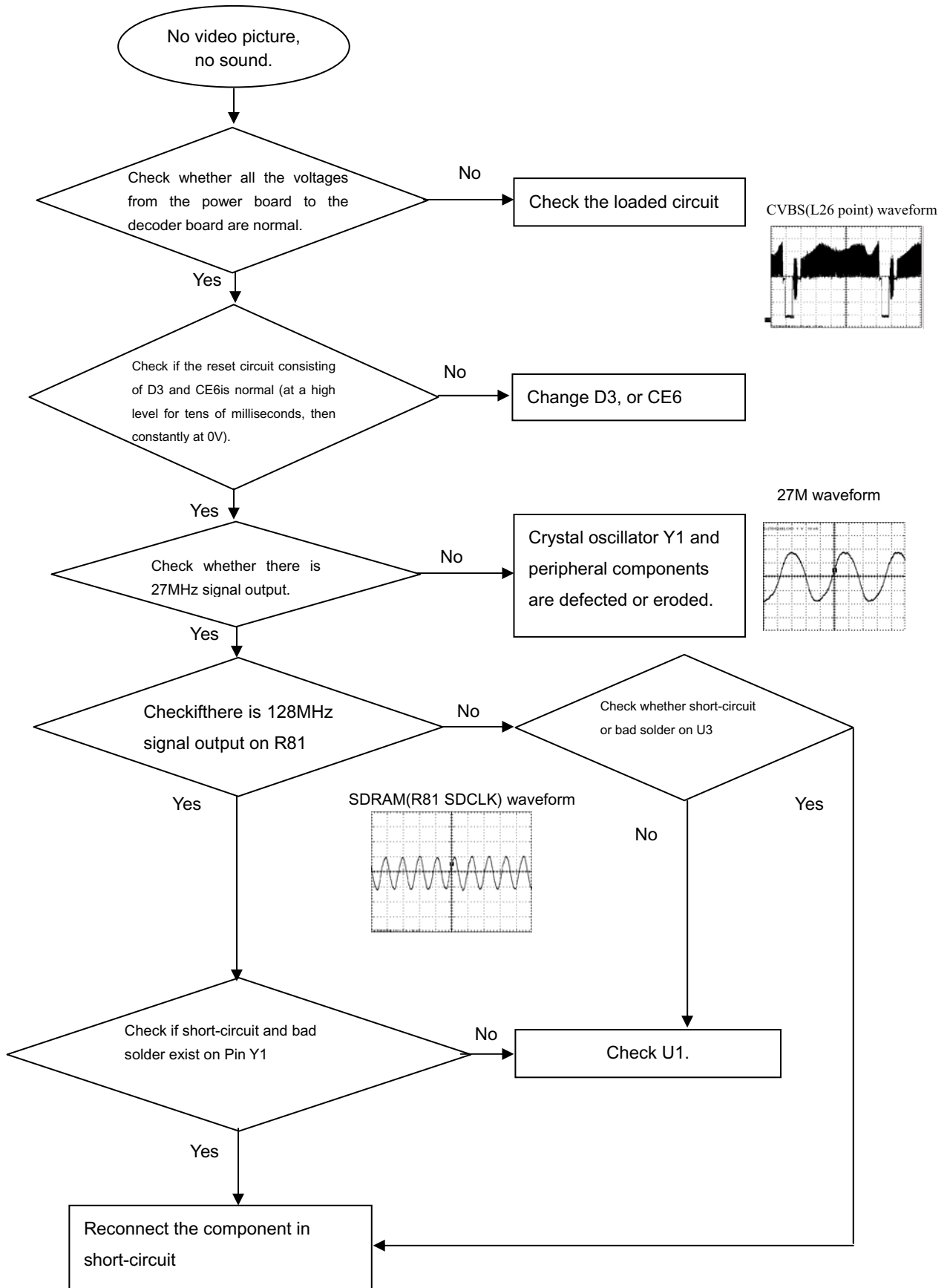
**Abnormal color of video picture**

**Remote reception is insensitive or fails.**

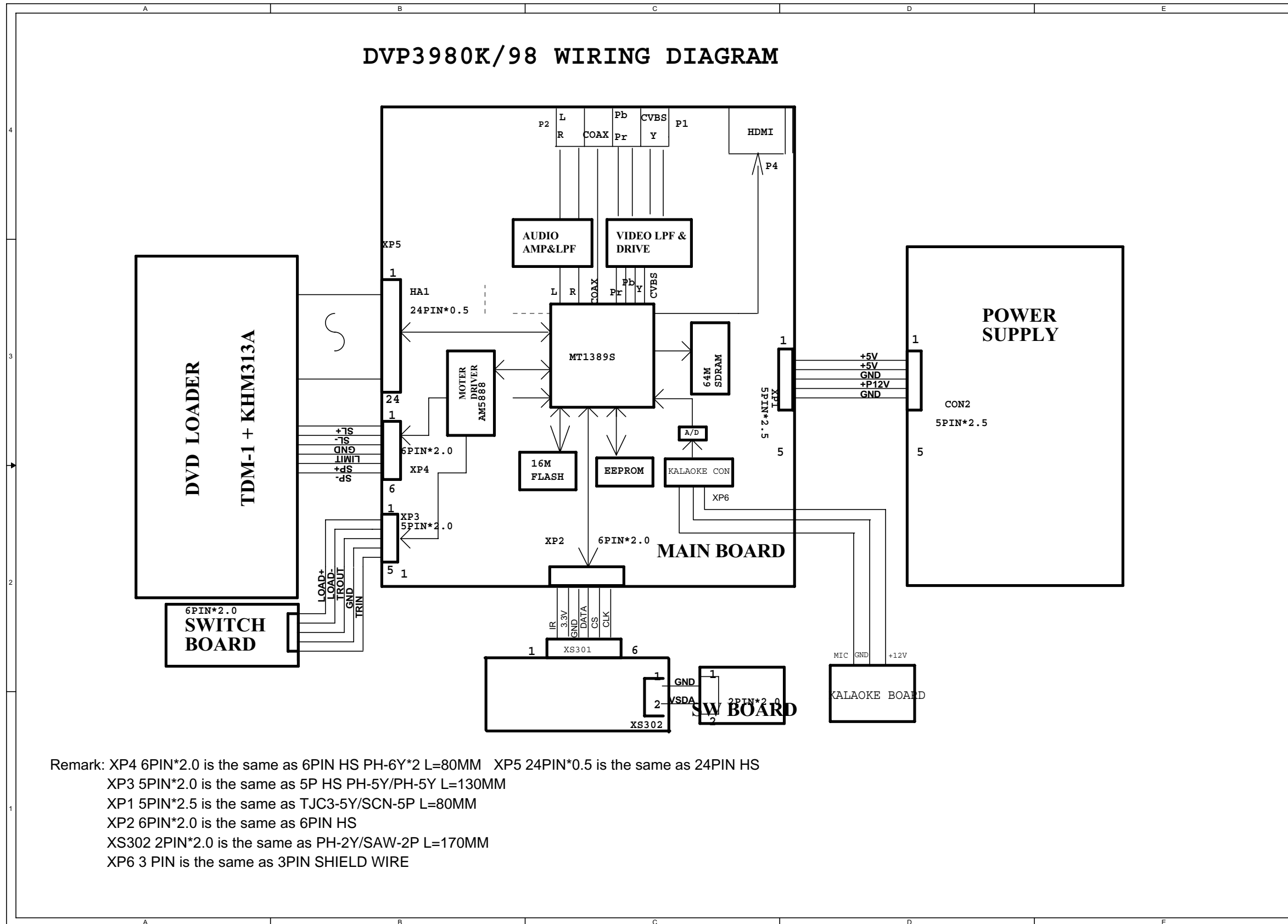




**No video picture, no sound.**



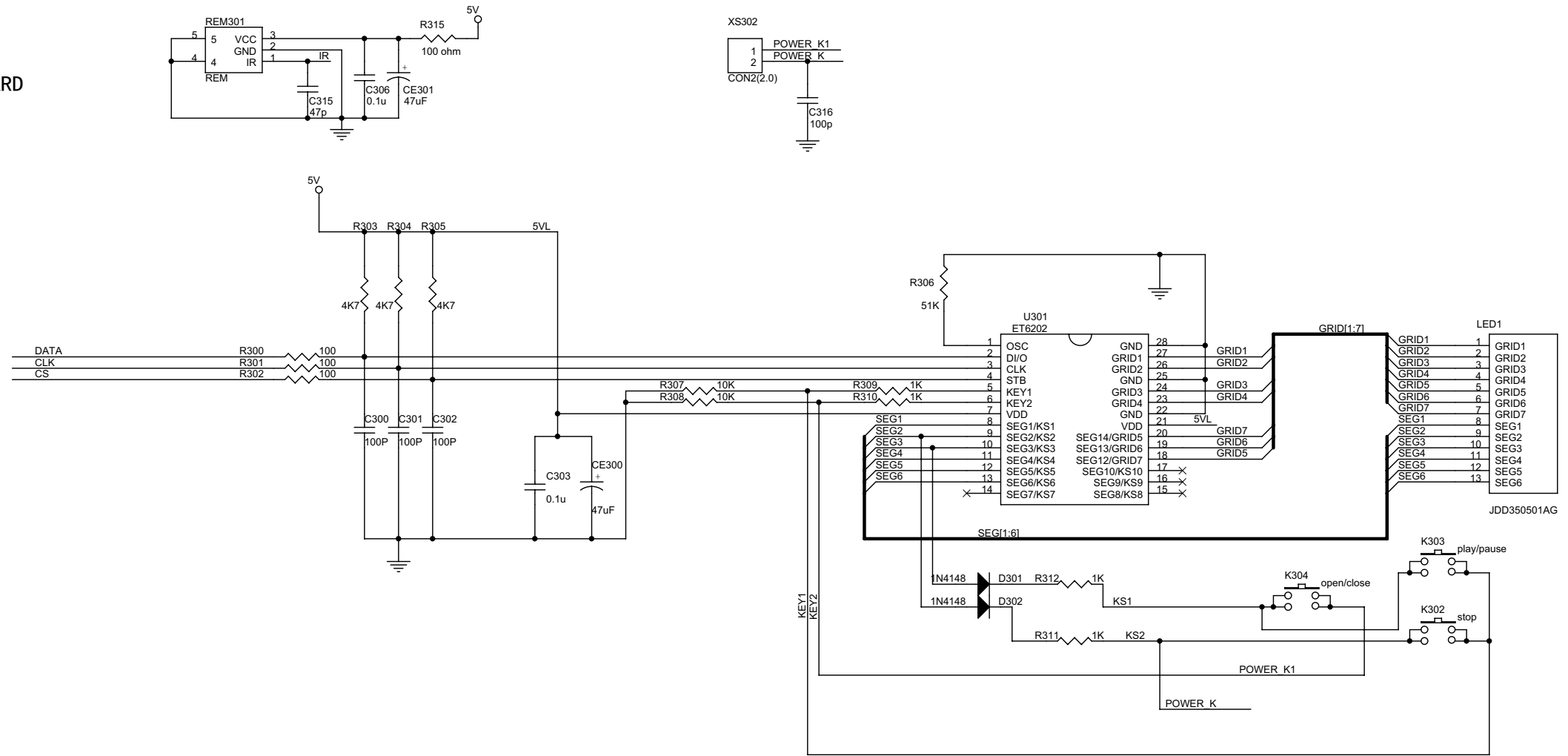
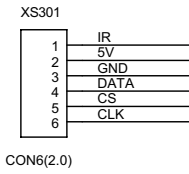
### DVP3980K/98 WIRING DIAGRAM

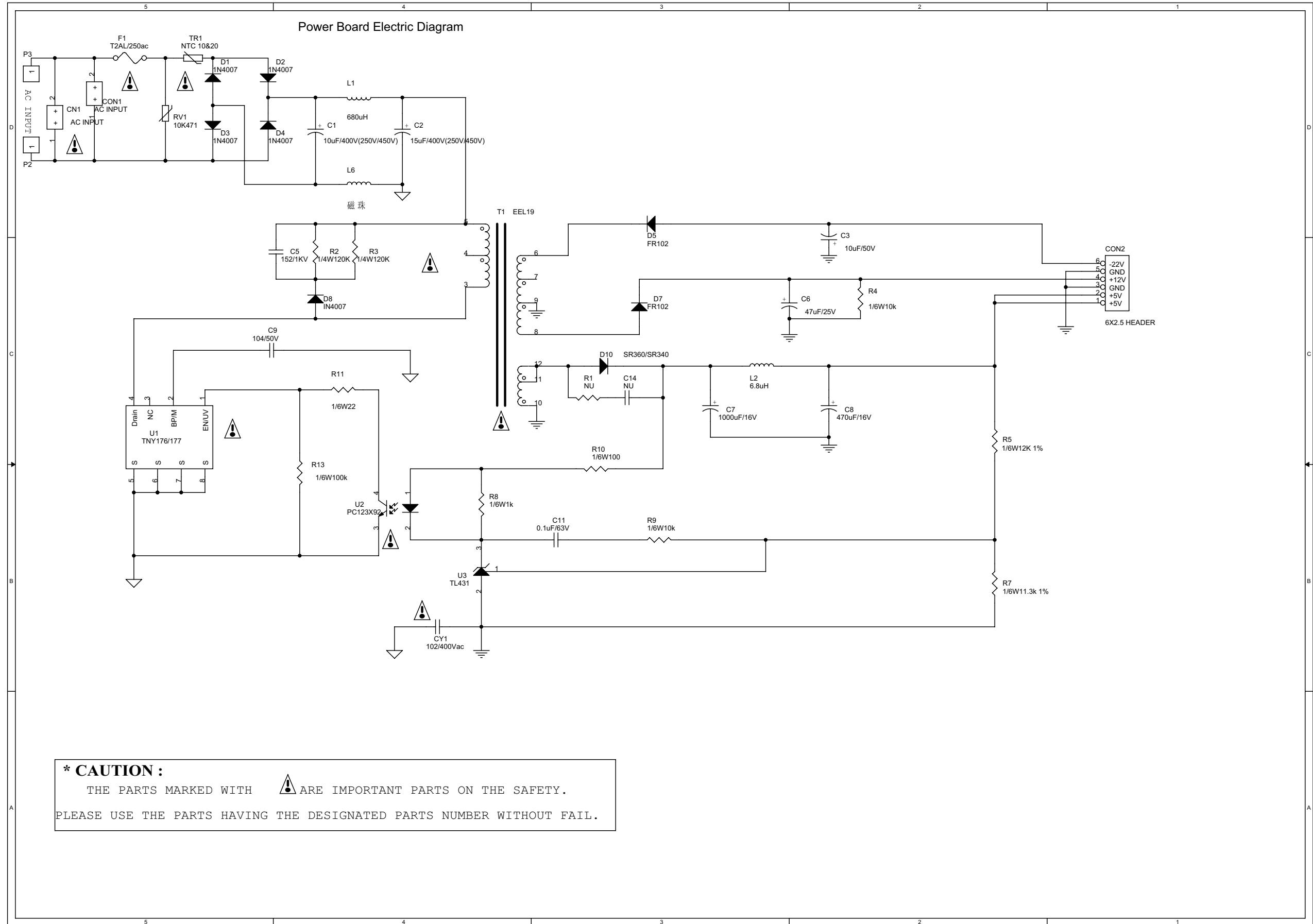



Remark: XP4 6PIN\*2.0 is the same as 6PIN HS PH-6Y\*2 L=80MM  
 XP5 24PIN\*0.5 is the same as 24PIN HS  
 XP3 5PIN\*2.0 is the same as 5P HS PH-5Y/PH-5Y L=130MM  
 XP1 5PIN\*2.5 is the same as TJC3-5Y/SCN-5P L=80MM  
 XP2 6PIN\*2.0 is the same as 6PIN HS  
 XS302 2PIN\*2.0 is the same as PH-2Y/SAW-2P L=170MM  
 XP6 3 PIN is the same as 3PIN SHIELD WIRE

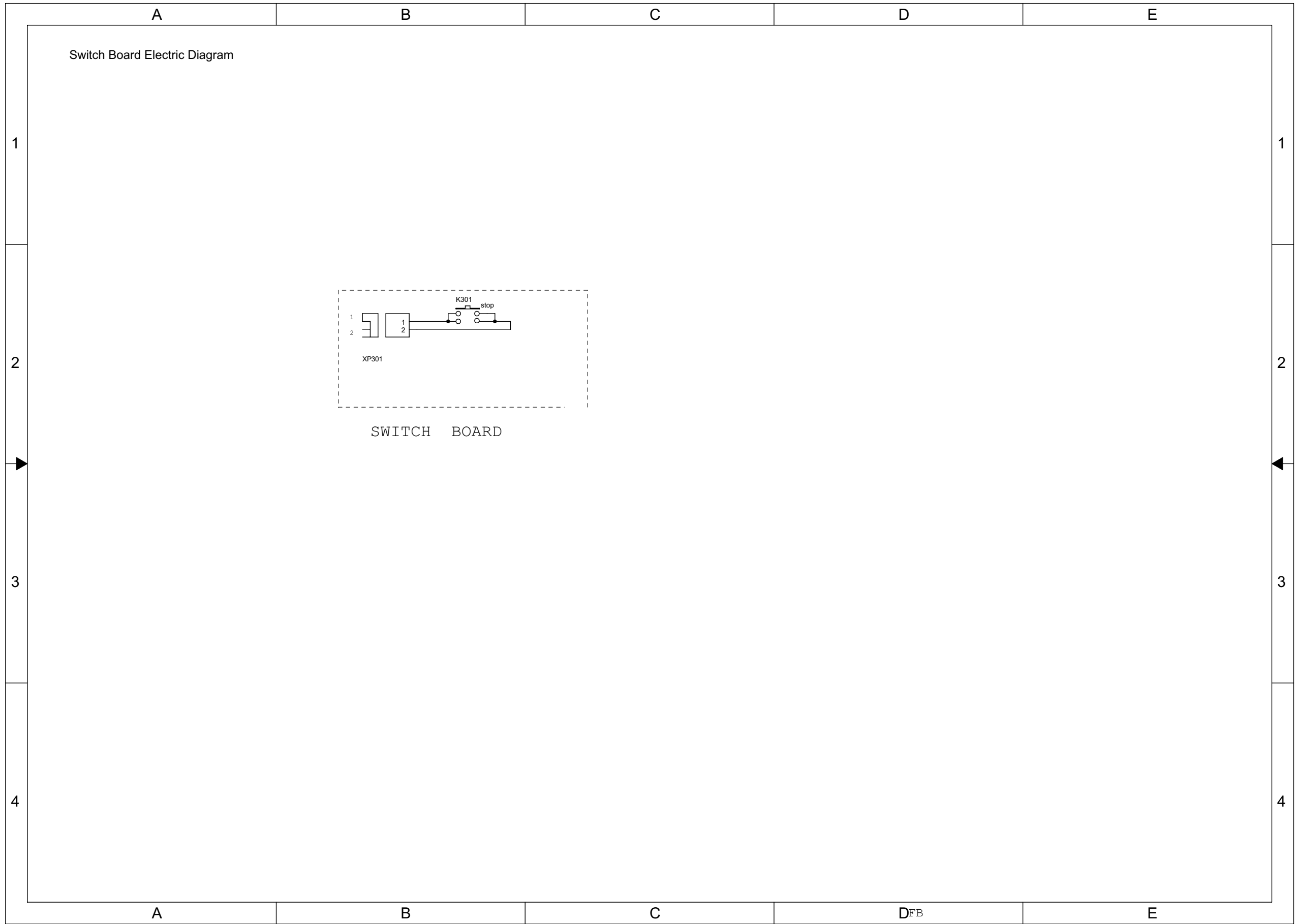
### Front Board Electric Diagram

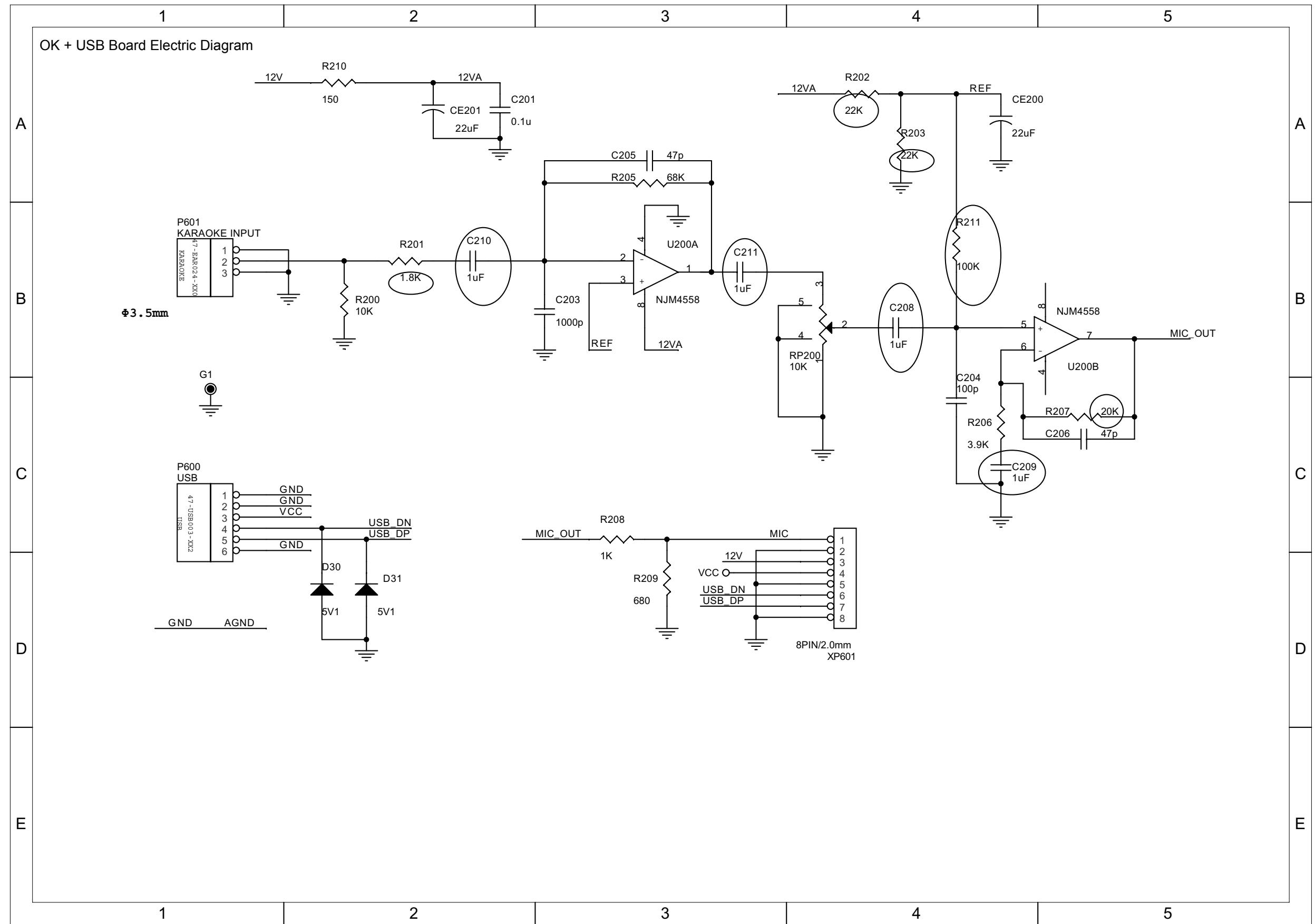
FROM MAIN BOARD





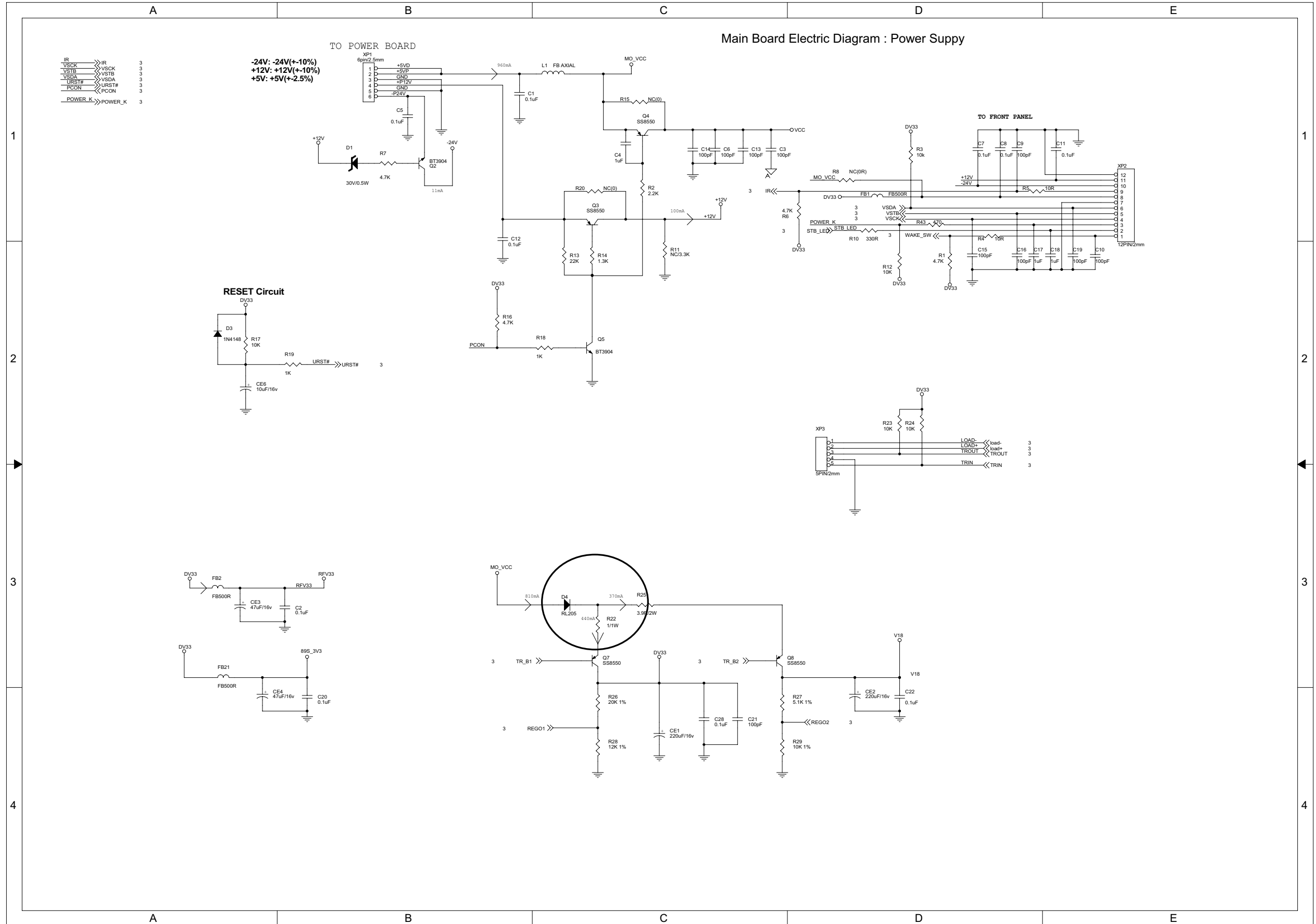
**\* CAUTION :**  
 THE PARTS MARKED WITH  ARE IMPORTANT PARTS ON THE SAFETY.  
 PLEASE USE THE PARTS HAVING THE DESIGNATED PARTS NUMBER WITHOUT FAIL.



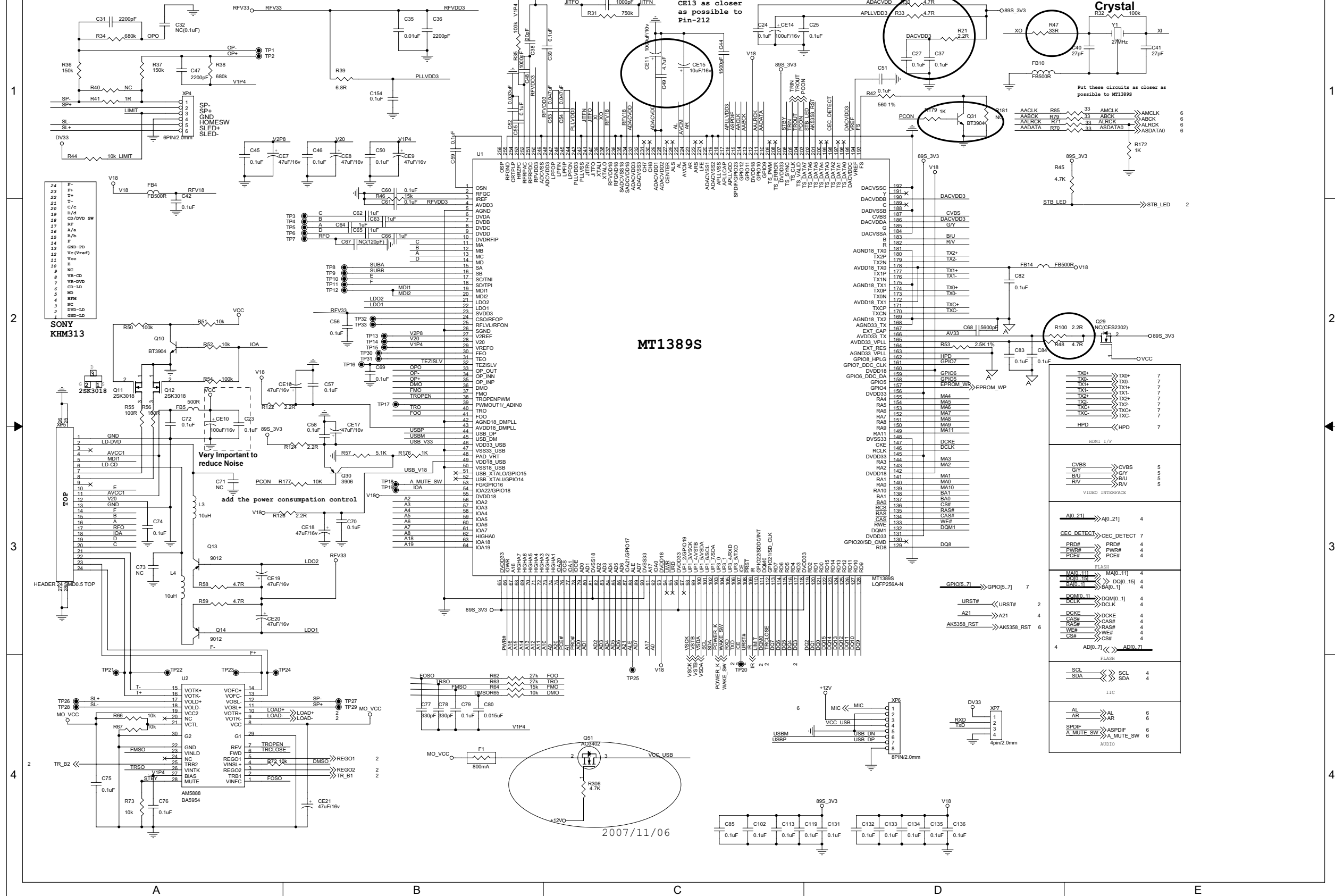




### Main Board Electric Diagram : Power Supply



### Main Board Electric Diagram: MT1389S

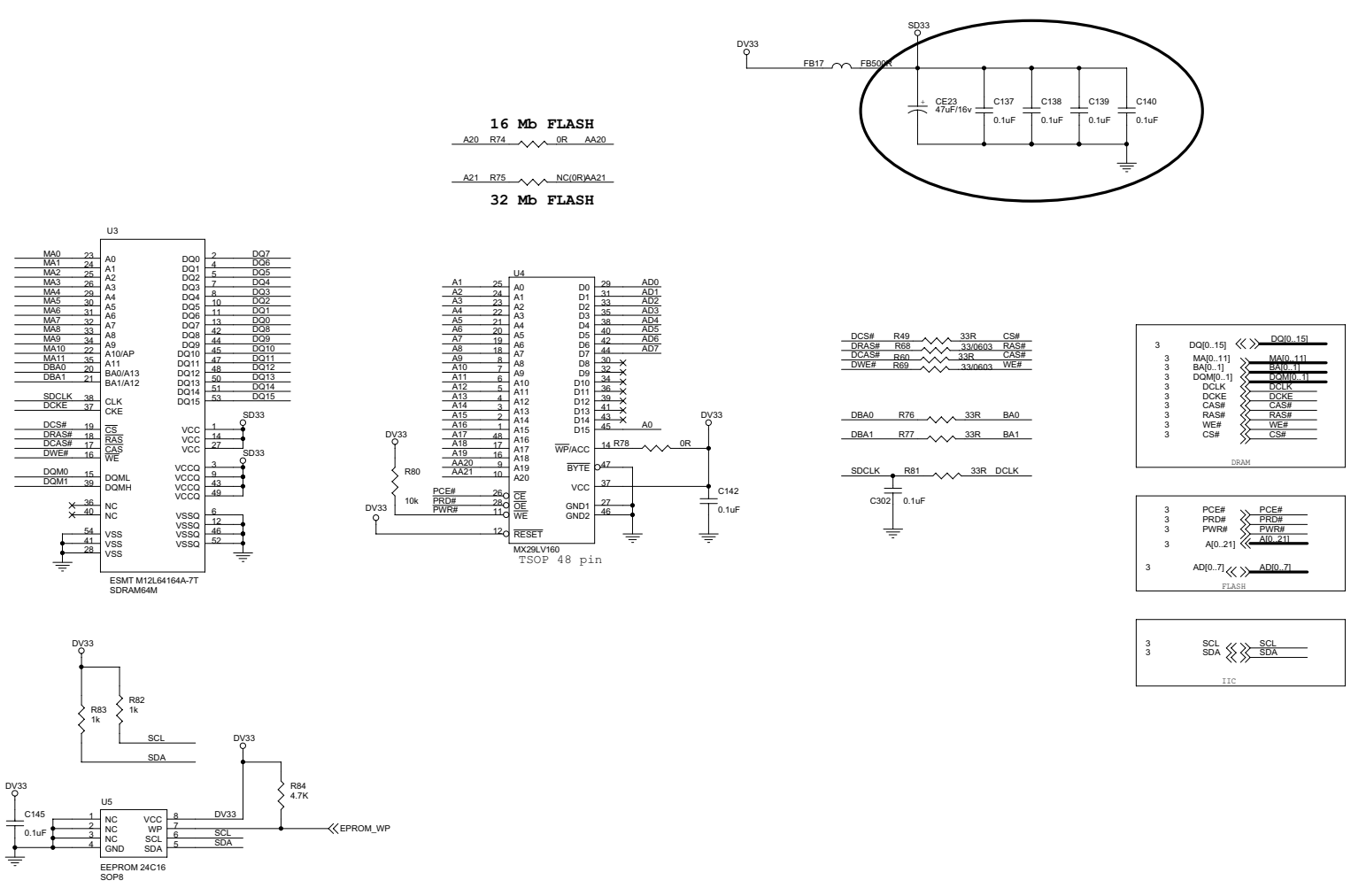


2007/11/06

Main Board Electric Diagram : SDRAM & FLASH

1  
2  
3  
4

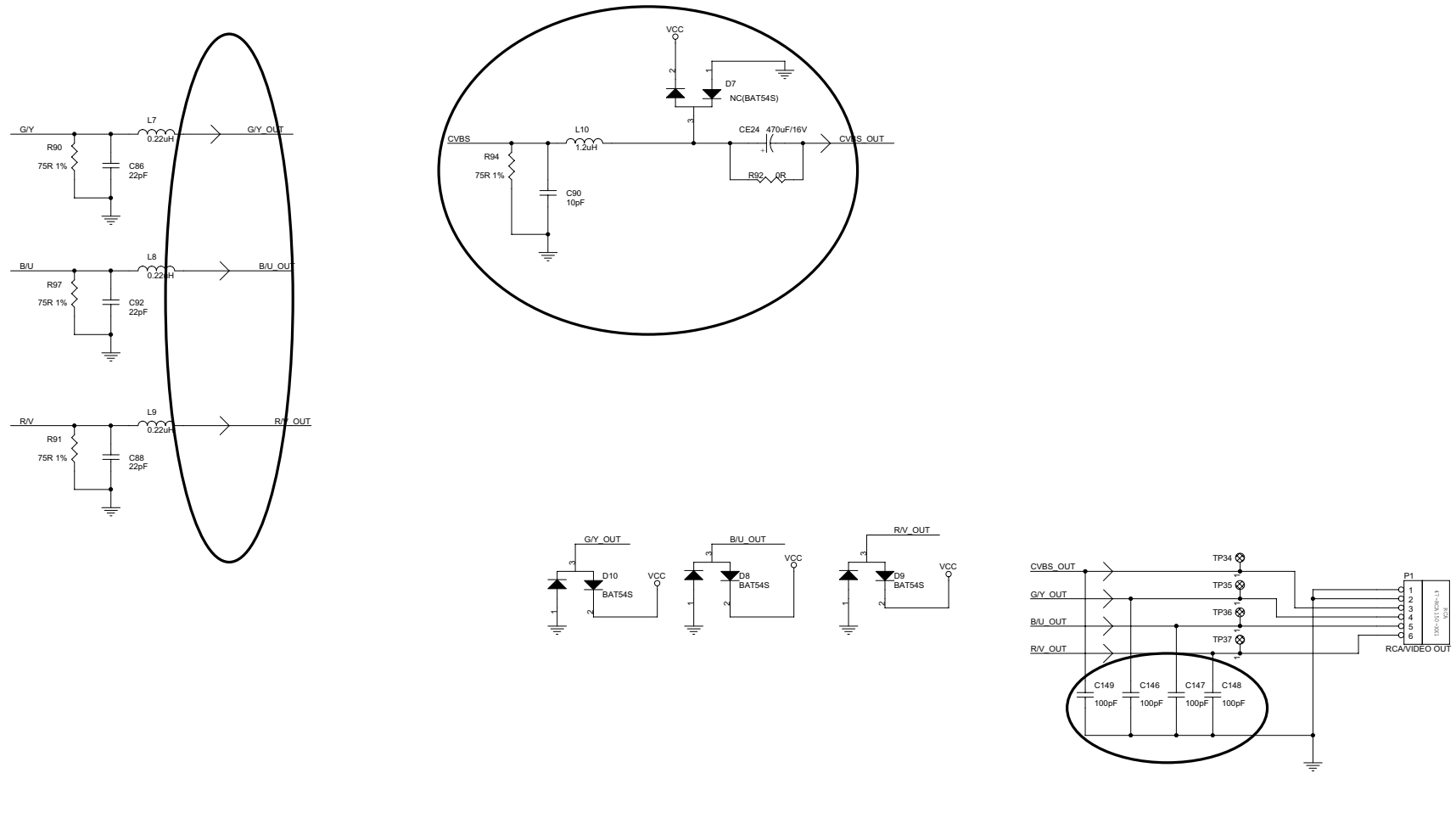
1  
2  
3  
4



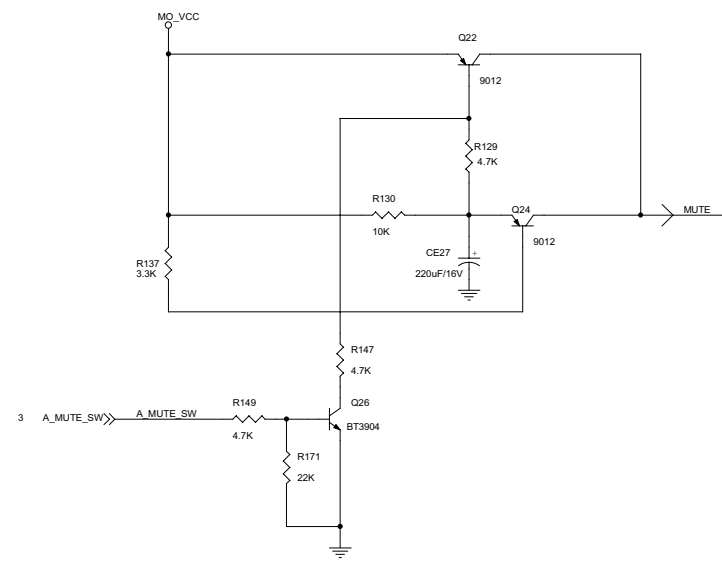
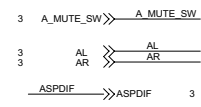
Main Board Electric Diagram: Video Out & AV-CONNECTOR

1  
2  
3  
4

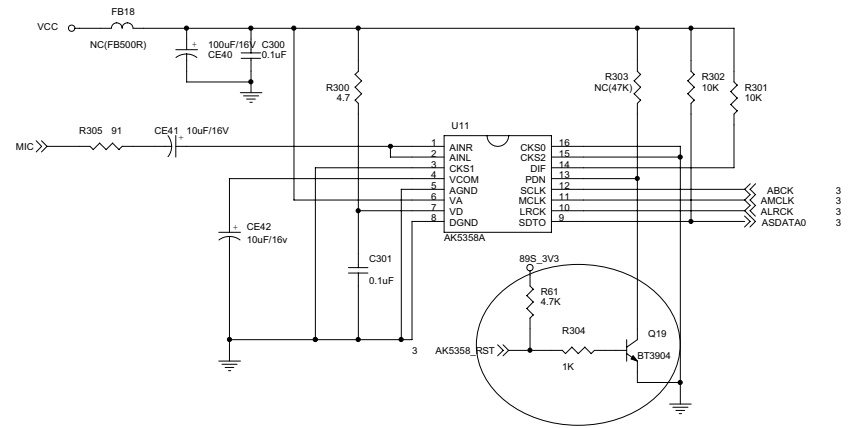
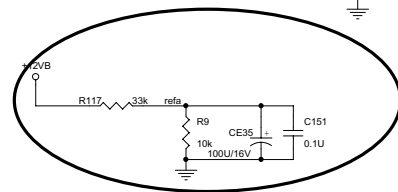
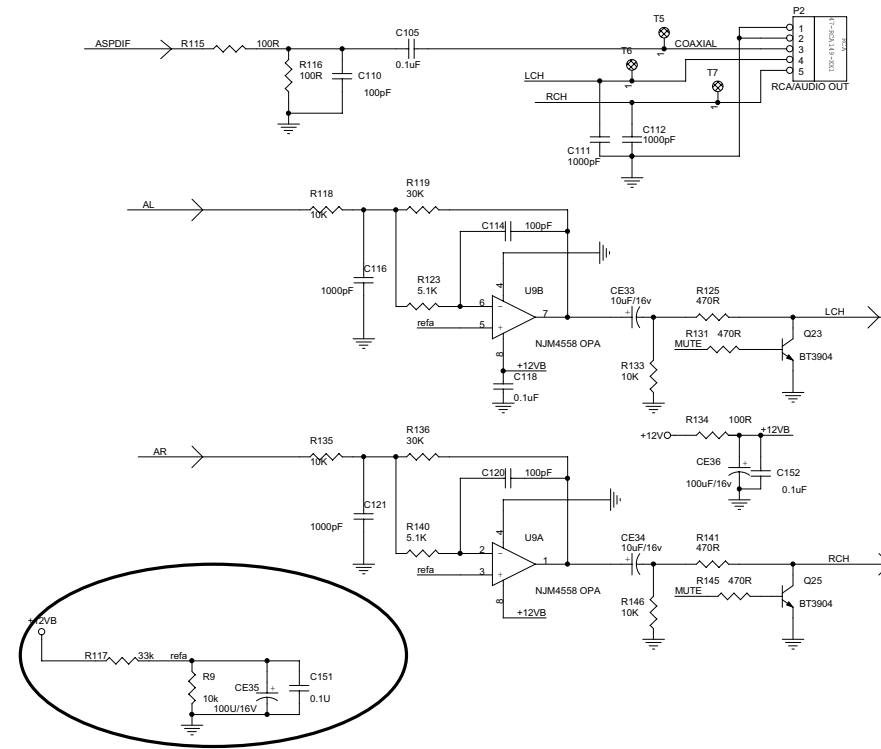
1  
2  
3  
4



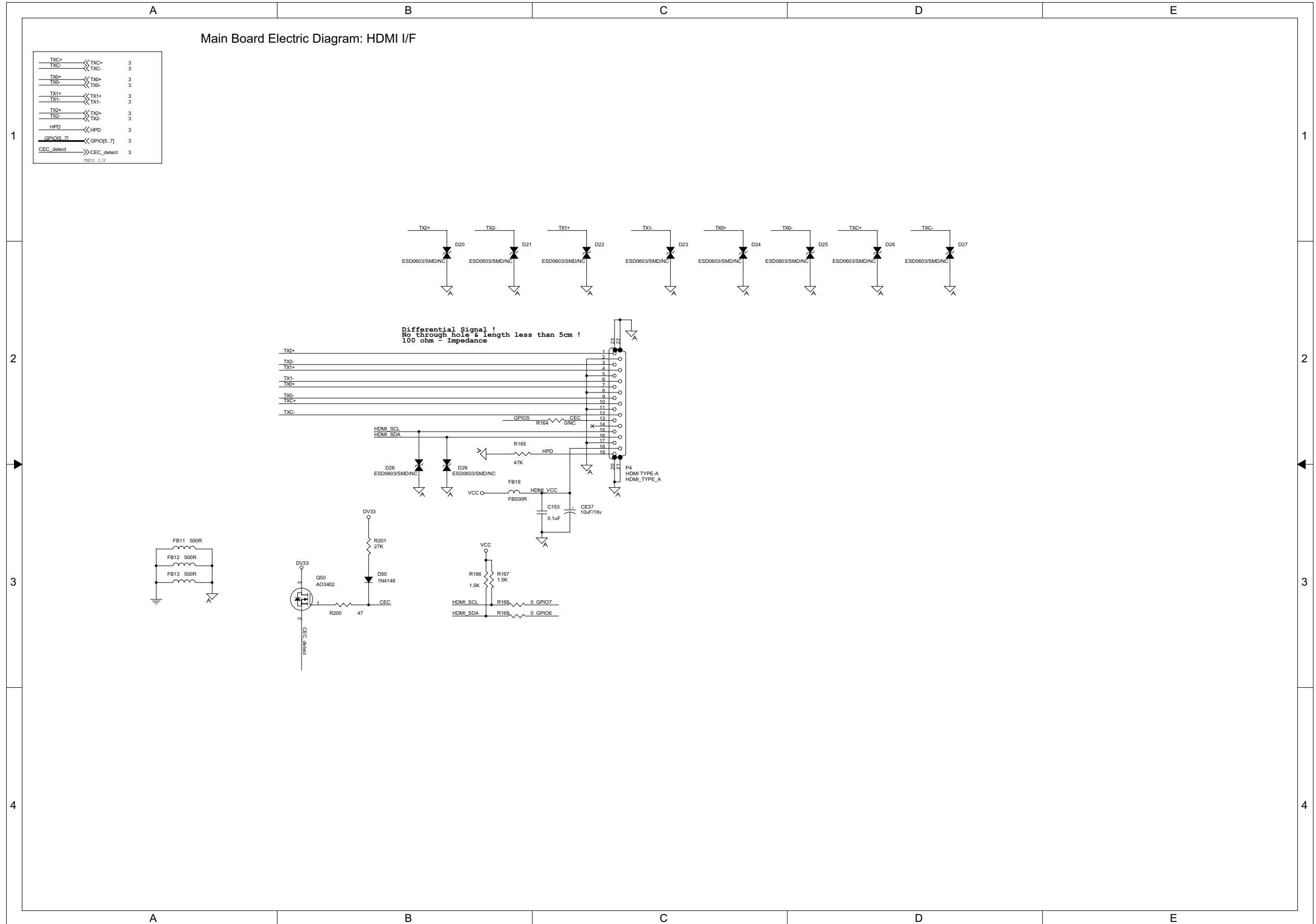
### Main Board Electric Diagram: Audio Output



mute circuit

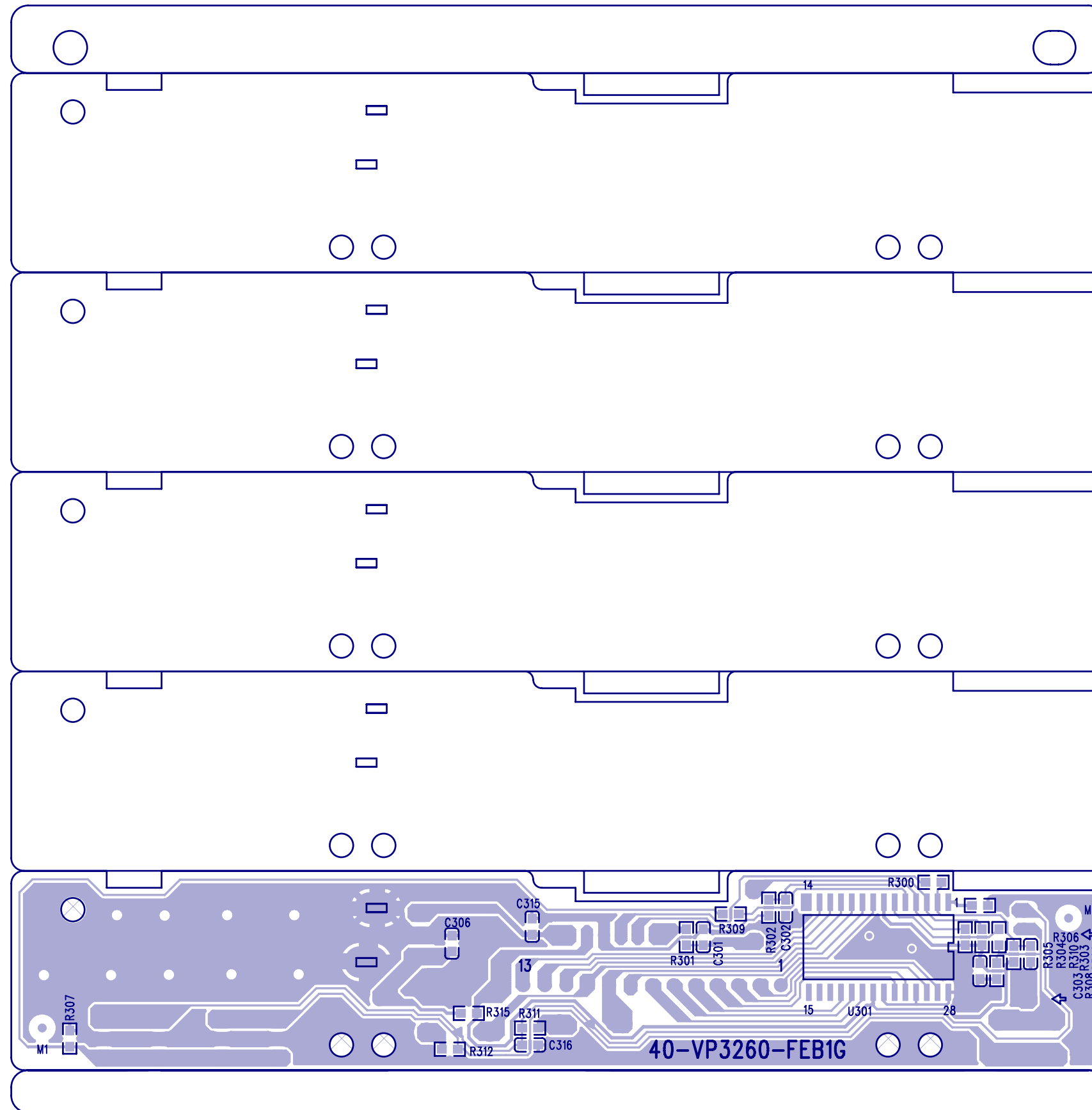


DIF PULL UP:I2S  
 CKS0,CKS1,CKS2 PULL Down:CLOCK SLAVE,ALL SPEED MODES

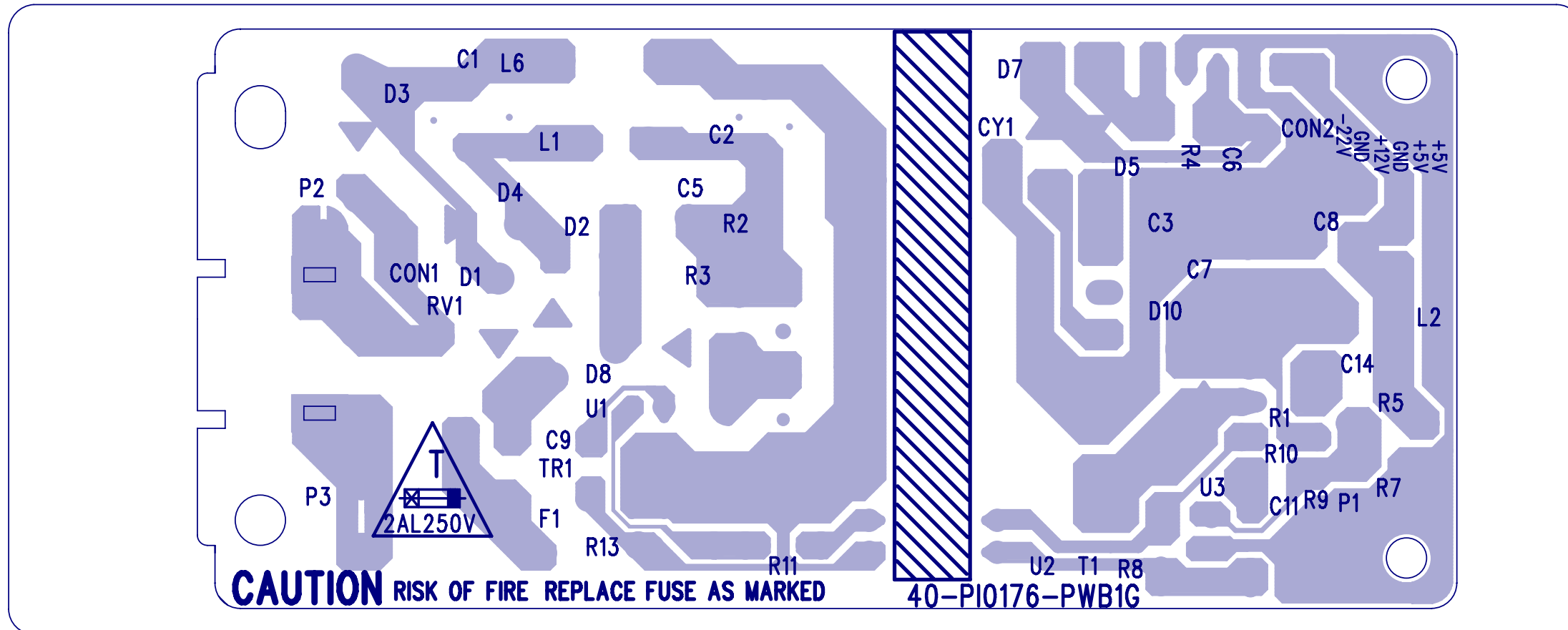




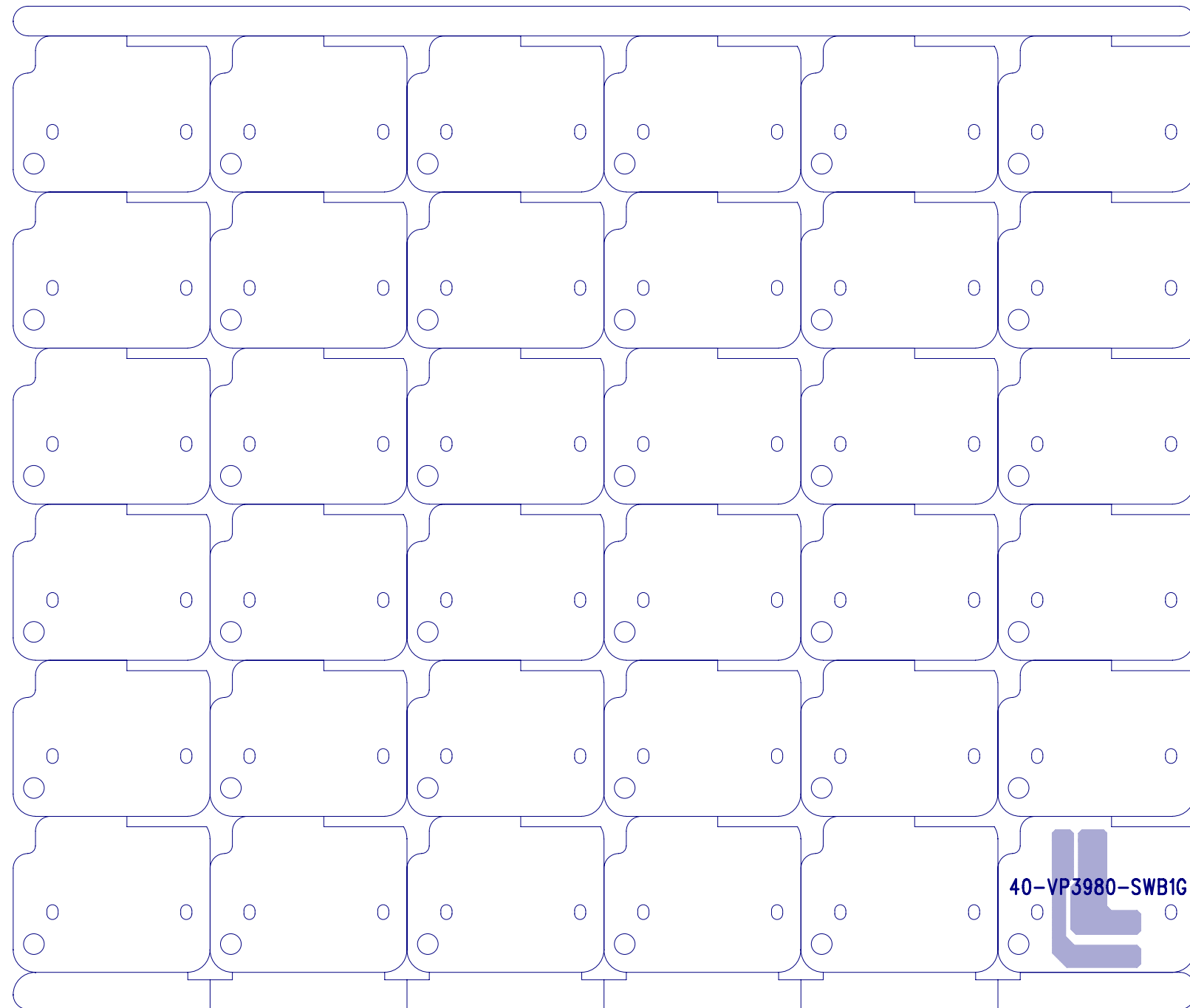
Front Board Print-layout (Bottom side)



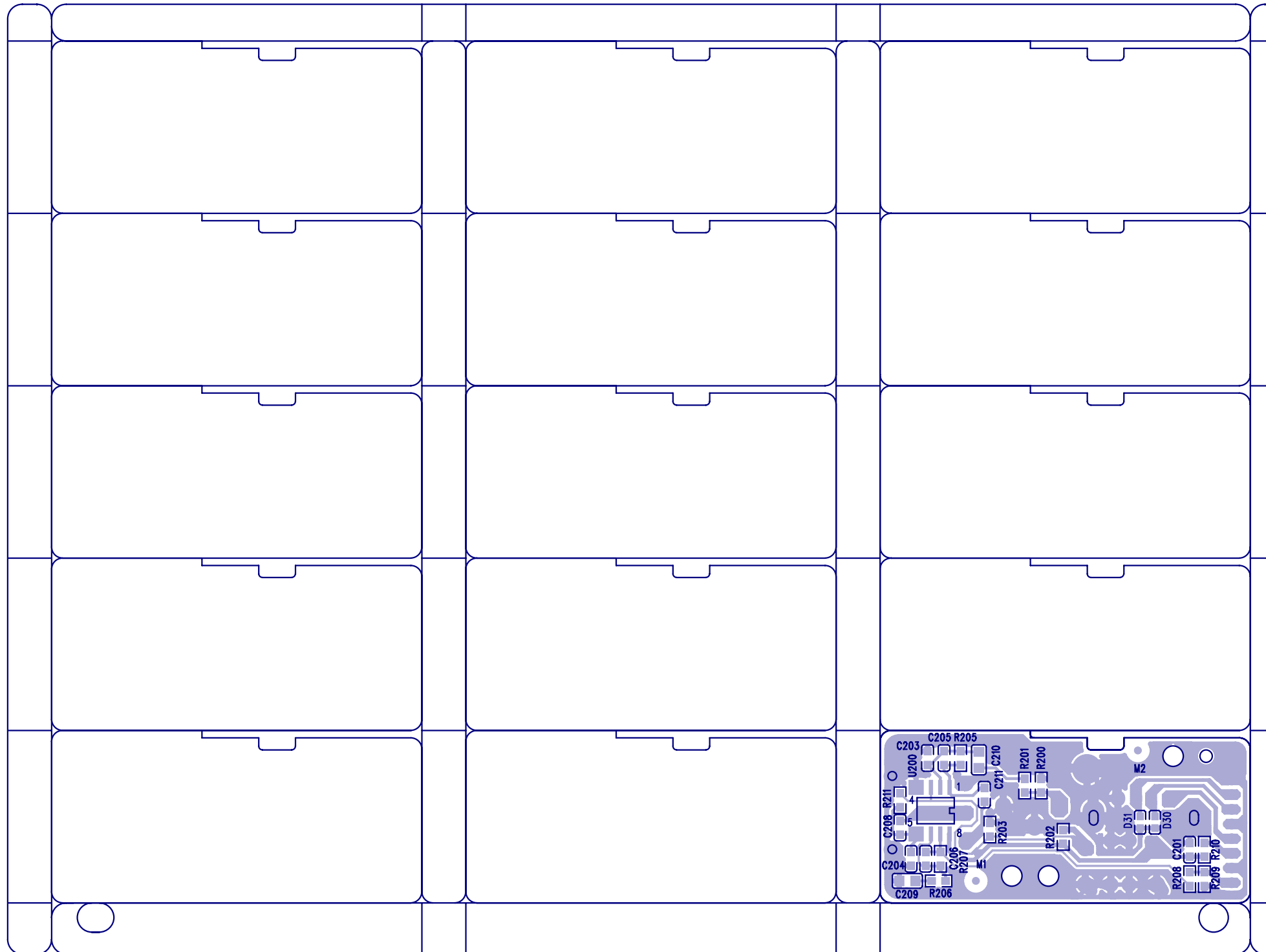
Power Board Print-layout (Bottom Side)



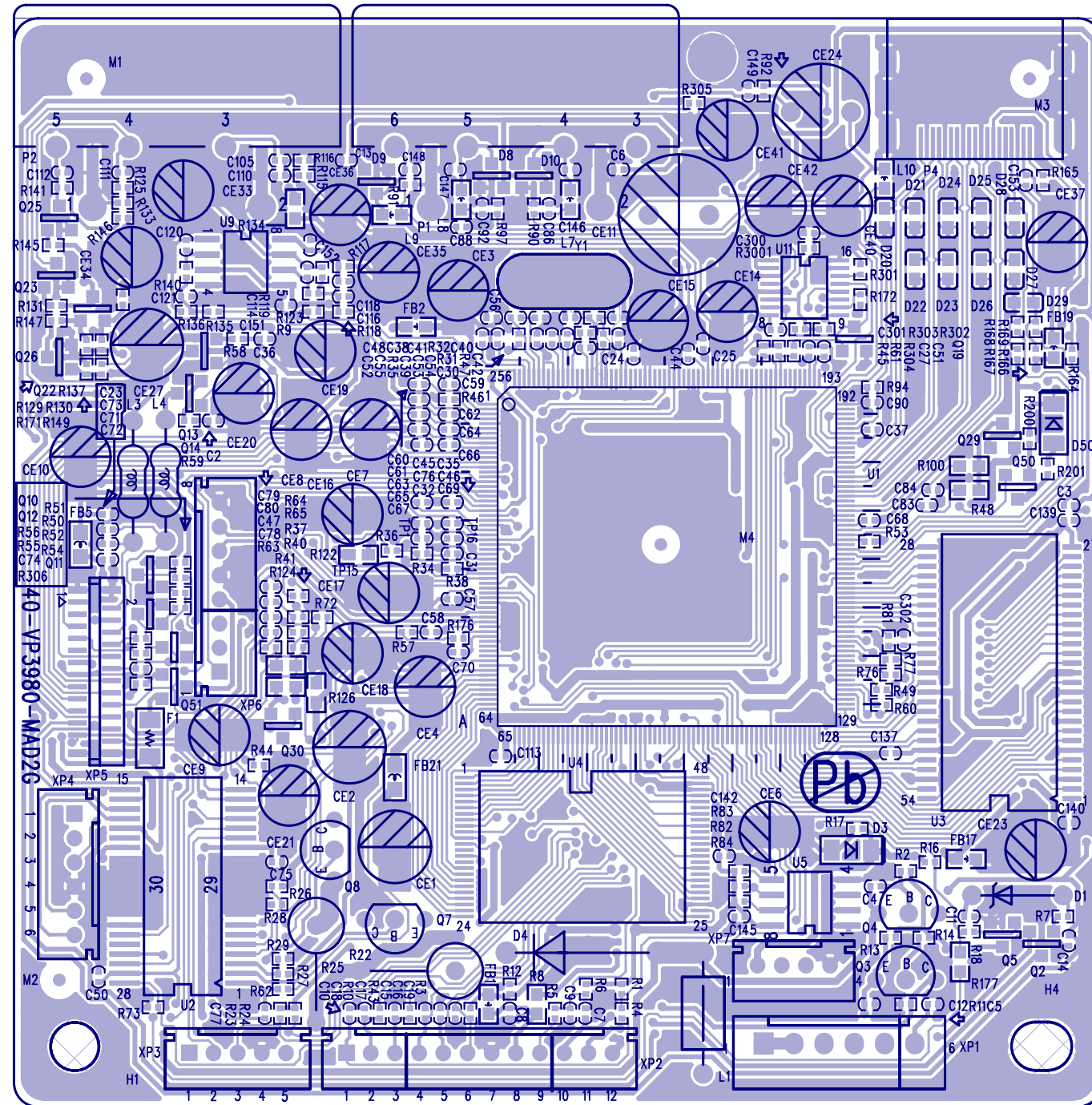
Switch Board Print-layout (Bottom Side)



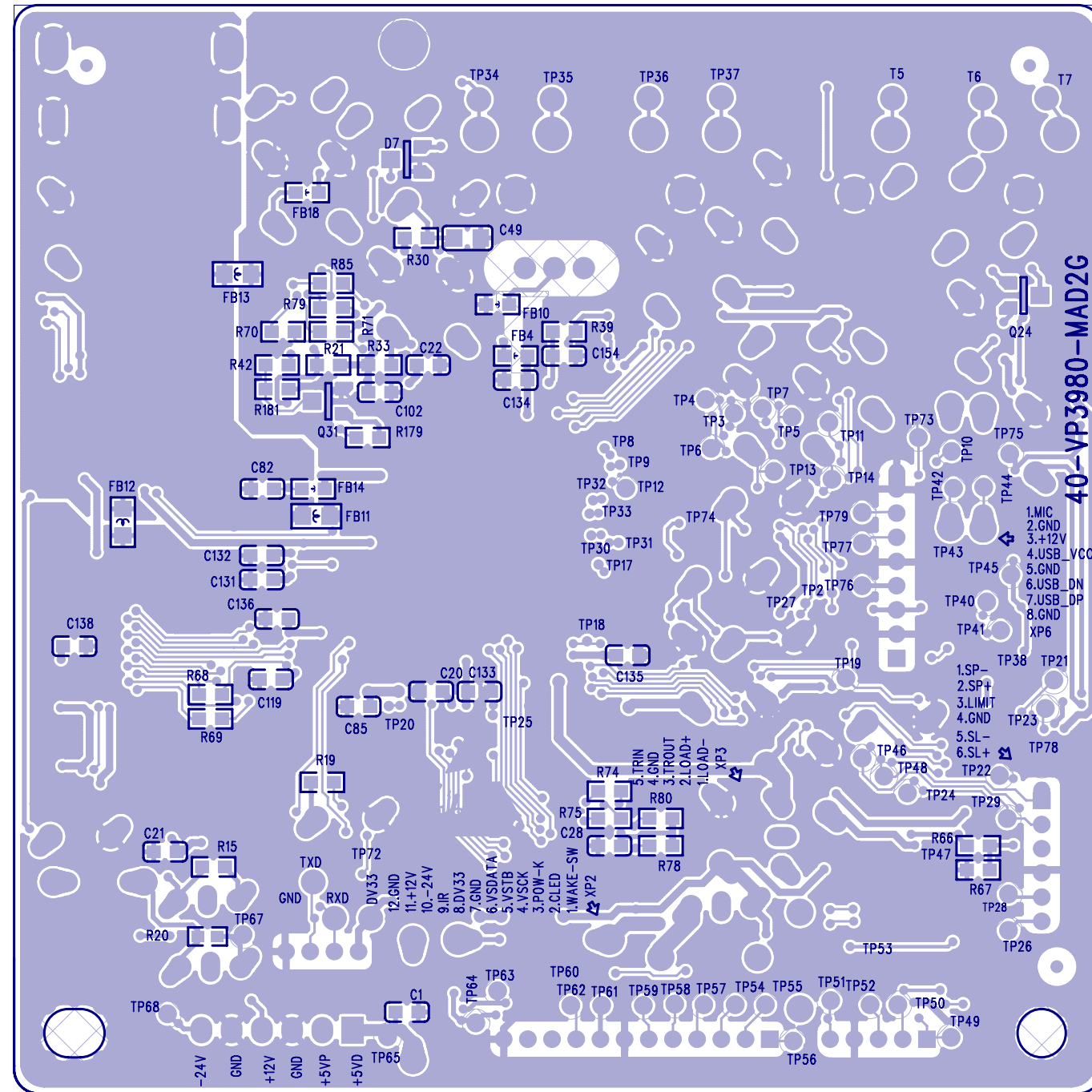
OK + USB Board Print-layout : Bottom side



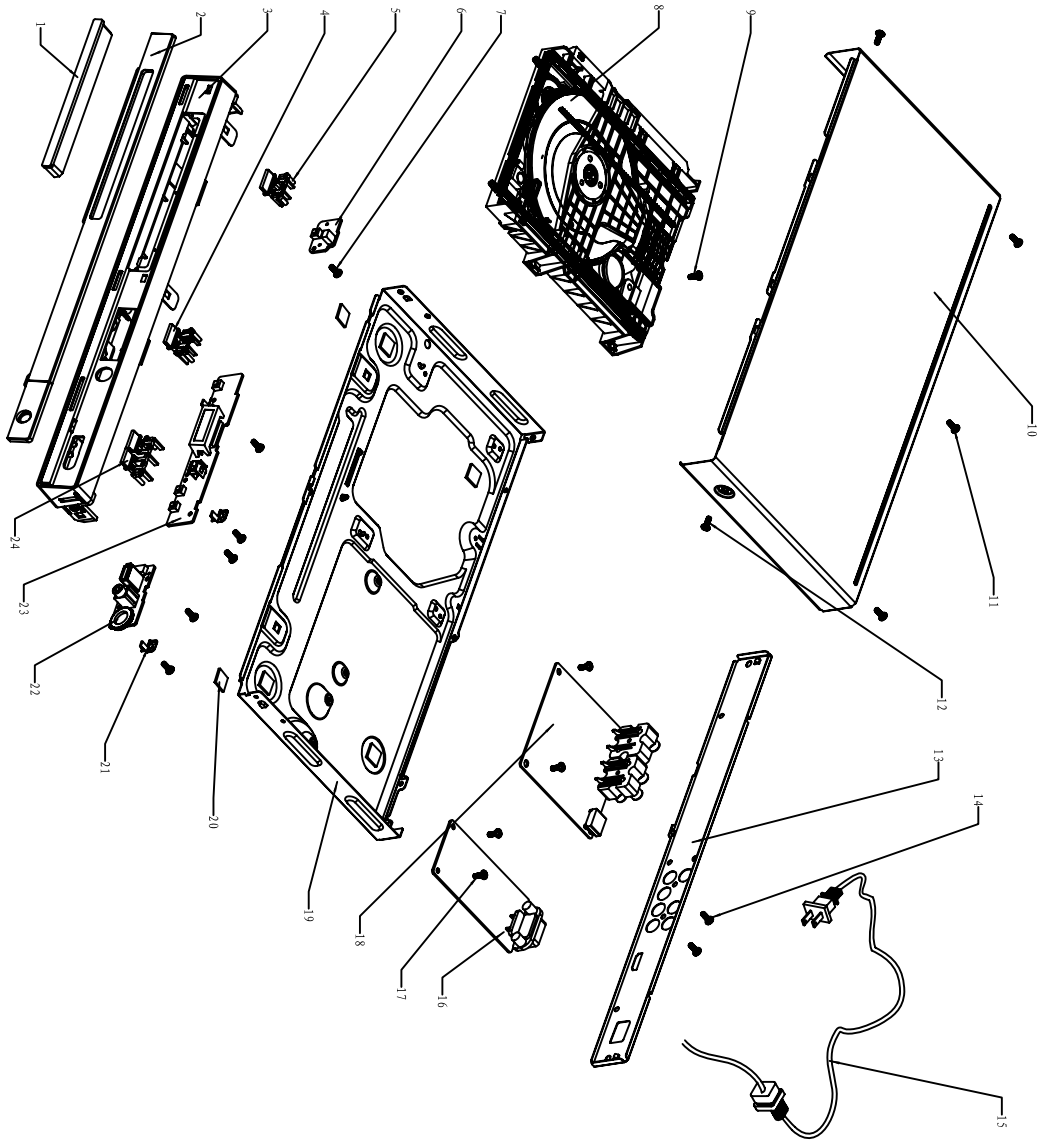
Main Board Print-layout (Top side)



Main Board Print-layout (Bottom side)



## DVP3980K/98 Exploded View



It is a general view for DVP3980K/98.  
Please refer to the model set for the detailed information.  
Assy1 includes components 2.3.4.5.24.

Electrical PARTS LIST				MECHANICAL & ACCESSORIES PARTS LIST			
No	12NC No.	Part Name	Q'ty	No	12NC No.	Part Name	Q'ty
△ 16	996510012675	ASSY- PW BD	1	1	996510012679	FRONT DOOR	1
D1	996510011047	DIODE IN4007	1	10	996510007452	TOP COVER	1
D10	996510011042	SR260	1	13	996510014066	BACK PANEL	1
D2	996510011047	DIODE IN4007	1	△ 15	996510001537	POWER CORD	1
D3	996510011047	DIODE IN4007	1	19	996510010483	BOTTOM CABINET	1
D4	996510011047	DIODE IN4007	1	20	996510006463	PAD	1
D7	996500014043	DIODE FR102 (FAST RECOVERY)	1	AVCable	996510001106	VIDEO CABLE 1500mm	1
D8	996510011047	DIODE IN4007	1	Assy1	996510012680	ASSY - FRONT CABINET	1
L1	996510009942	COIL WIDTH	1	△ F1	996510001780	FUSE 2A 250V 5X20MM	1
L2	996500032509	COIL SL0811-6R8K2R4	1	RC	996510012677	REMOTE CONTROL	1
T1	996510010954	TRANSFORMER CONV	1	XP1	996510010478	TJC3-5Y/SCN-5P L=80MM	1
U1	996510010953	IC TNY176PN	1	XP2	996510010479	6PIN HS L=120MM	1
U2	996500024838	PC123X9YFZ	1	XP3	996510004063	CABLE PH-5Y/PH-5Y L=130MM	1
U3	996500014609	IC AM431LP	1	XP4	996510001170	6PIN HS	1
18	996510012673	ASSY- MAIN BD	1	XP5	996510001168	24PIN HS	1
D10	996510009859	SCHOTTKY DIODES BAT54S SOP-23	1	XP6	996510012678	3PIN CABLE WITCH SHIELD	1
D3	996510009667	SMD. SWITCHING DIODE LL4148	1	XS302	996510006820	CABLE PH-2Y/SAW-2P L=170MM	1
D50	996510009667	SMD. SWITCHING DIODE LL4148	1				
D7	996510009859	SCHOTTKY DIODES BAT54S SOP-23	1				
D8	996510009859	SCHOTTKY DIODES BAT54S SOP-23	1				
D9	996510009859	SCHOTTKY DIODES BAT54S SOP-23	1				
L3	996500014082	COIL CHOKE 10UH +/-10%	1				
L4	996500014082	COIL CHOKE 10UH +/-10%	1				
Q10	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPN	1				
Q11	996510009769	N Channel MOSFET 2SK3108	1				
Q12	996510009769	N Channel MOSFET 2SK3108	1				
Q13	996510009670	TRANSISTOR SMT 3CG9012M	1				
Q14	996510009670	TRANSISTOR SMT 3CG9012M	1				
Q19	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPN	1				
Q22	996510009670	TRANSISTOR SMT 3CG9012M	1				
Q23	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPN	1				
Q24	996510009670	TRANSISTOR SMT 3CG9012M	1				
Q25	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPN	1				
Q26	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPN	1				
Q29	996510010922	ASM3402M/TR-LF SOT-23	1				
Q3	996510009671	TRANSISTOR	1				
Q30	996510009736	SMD TRANSISTORMMBT3906LT1 PNP	1				
Q31	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPN	1				
Q4	996510009671	TRANSISTOR	1				
Q5	996510009669	SMD.TRANSISTOR MMBT3904LT1 NPN	1				
Q50	996510010949	MOSFET AO3402	1				
Q7	996510009671	TRANSISTOR	1				
Q8	996510009671	TRANSISTOR	1				
U1	996510011041	IC MT1389DXE/S_L NO HDCP KEY	1				
U11	996510012674	IC AK5358A	1				
U2	996510009674	IC AM5888IC	1				
U3	996510009863	64M SDRAM TSOP54 M12L64164A-7T	1				
U4	996510009673	16m Flash 70ns 3.3V TSOP-48	1				
U5	996510010944	IC 16K EEPROM M24C16-MN6	1				
U9	996510010924	F45580 IC	1				
Y1	996510009675	27MCL20PF	1				
22	996510012676	OK BD	1				
U200	996500032494	IC AS4558M	1				
23	996510010474	ASSY-FB BD	1				
LED1	996510010957	LED	1				
REM301	996510010903	IR RECEIVER MODULE 14MM 5V	1				
U301	996510009665	IC ET6202 SOP-2	1				
6	996510010473	ASSY-SW BD	1				
8	996510010477	ASSY- LOADER	1				
OPU	996510006029	SONY AAM OPU	1				



## REVISION LIST

Version 1.0

\* Initial release