

HCD-S40D

SERVICE MANUAL

Ver. 1.0 2013.06

E Model
Chinese Model



- HCD-S40D is DVD receiver in CMT-S40D.

Model Name Using Similar Mechanism	NEW
Mechanism Type	TDL-5

SPECIFICATIONS

Amplifier section

Except Chinese model

Power output (rated):
20 watts + 20 watts (8 ohms at 1 kHz, 1% THD)

Continuous RMS power output (reference):
25 watts + 25 watts (8 ohms at 1 kHz, 10% THD)

Chinese model

Power output (rated):
18 watts + 18 watts (8 ohms at 1 kHz, 1% THD)

Continuous RMS power output (reference):
22.5 watts + 22.5 watts (8 ohms at 1 kHz, 10% THD)

Inputs

AUDIO IN (3.5 mm stereo mini jack):
Sensitivity 1 V, impedance 50 kilohms

MIC (monaural mini jack):
Sensitivity 4 mV, impedance 10 kilohms

Outputs

VIDEO OUT:
Max. output level 1 Vp-p,
unbalanced, sync negative, load
impedance 75 ohms

SPEAKERS:
Accepts impedance of 8 ohms

Disc player section

System:

Compact disc and digital audio and video system

Laser Diode Properties

Emission Duration: Continuous
Laser Output*: Less than 1000 μW
* This output is the value measurement at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.

Frequency response

DVD (PCM 48 kHz): 20 Hz – 20 kHz
(±1 dB)
CD: 20 Hz – 20 kHz (±1 dB)

Video color system format

Latin American models (except for Argentine model): NTSC
Other models: NTSC/PAL

USB section

↔ (USB) port:

Type A, maximum current: 5 V, 500 mA

Tuner section

FM stereo, FM superheterodyne tuner

Tuning range:

87.5 MHz – 108.0 MHz (50 kHz step)

Antenna: FM lead antenna

General

Power requirements

Korean model: AC 220 V – 240 V, 50/60 Hz
Other models: AC 120 V – 240 V, 50/60 Hz

Power consumption: 23 watts

Dimensions (W/H/D, including largest protrusions) (excl. speakers):

Approx. 170 mm × 133 mm × 240 mm

Mass (excl. speakers):
Approx. 1.4 kg

Design and specifications are subject to change without notice.

- Standby power consumption: 0.5 W
- Halogenated flame retardants are not used in the certain printed wiring boards.

DVD RECEIVER

9-893-772-01

2013F33-1

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Sony Corporation

Published by Sony Techno Create Corporation

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CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
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This appliance is classified as a CLASS 1 LASER product. This marking is located on the rear exterior.

1类激光产品

This appliance is classified as a CLASS 1 LASER product. This marking is located on the rear exterior.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!

COMPONENTS IDENTIFIED BY MARK ▲ OR DOTTED LINE WITH MARK ▲ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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关于安全相关零部件的警告

原理图和零件清单中标有▲记号的零部件，或带有▲记号的虚线所表示的零部件，对于安全操作至关重要。更换时，必须依据本手册或索尼公司追加发行的手册中列明的零件号，使用索尼公司的零件进行。

SECTION 1 SERVICING NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pickup block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.

(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size)



:

LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.
Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
Soldering irons using a temperature regulator should be set to about 350 °C.
- Caution:** The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

ABOUT PART REPAIR OF EACH BOARD

The part that mounted on each board cannot exchange. When the mounted part is damaged, exchange with the complete mounted board or part including complete mounted board.

Printed wiring board and schematic diagram that have been described on this service manual are for reference.

TEST DISCS

Use following TEST DISC (for CD) when this unit confirms the operation and checks it.

Part No.	Description
3-702-101-01	DISC (YEDS-18), TEST
4-225-203-01	DISC (PATD-012), TEST

RELEASING THE DISC TRAY LOCK

The disc tray lock function for the antitheft of sample disc in the shop is equipped.

Releasing Procedure:

1. Press the [**I/O**] button to turn the power on.
2. Press two buttons of the [**■**] on the remote commander and [**▲**] on the main unit simultaneously for five seconds.
3. The message “UNLOCKED” is displayed on the fluorescent indicator tube and the disc tray is unlocked.

Note: When “LOCKED” is displayed, the disc tray lock is not released by turning power on/off with the [**I/O**] button.

CAPACITOR ELECTRICAL DISCHARGE PROCESSING

When checking the board, the electrical discharge is necessary for the electric shock prevention.

Connect the resistor to both ends of respective capacitors.

- POWER Board
CE502, CE533, CE535

– POWER Board (Conductor Side) –



MODEL IDENTIFICATION

Distinguish by model number label stuck on the rear side of a main unit.

Note: The printed contents of following figure model number label may be different from the model number label of a main unit.

MODEL NUMBER LABEL

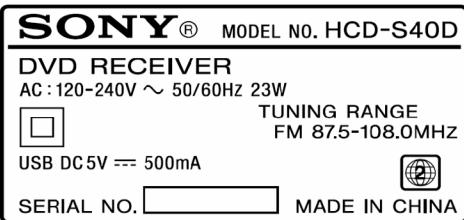
110 – 240V AC area in E model (E32)



Argentina model (AR2)



Saudi Arabia model (EA3)



Korean model (KR2)



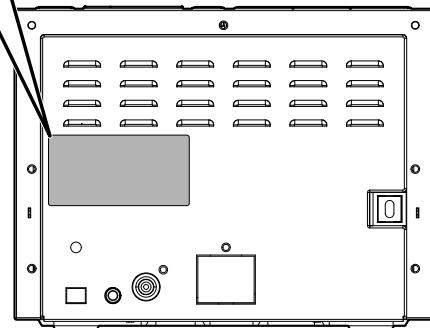
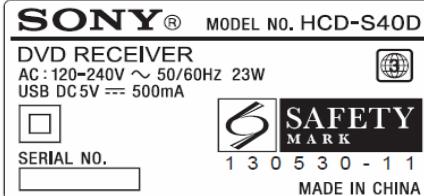
Mexican model (MX2)



Chinese model (CN4)



Singapore model (SP1)



COMPONENT REPAIR GUIDE

1. No Display When You Turn The Main Unit ON

When you plug power cord and turn the main unit on, VFD won't display.

Procedure:

1. Check POWER board have +20V DC output.
2. Check MAIN board output voltage +12V and -24V from U12 on the MAIN board.
If output +12V or -24V is not normal, check the working status of U12 on the MAIN board.
3. Check output voltage +3.3V from U3 on the MAIN board.
If output +3.3V is not normal, check the working status of U3 on the MAIN board.
4. Check waveform of Y3 on the MAIN board , the waveform of Y3 on the MAIN board sine wave.
If waveform of Y3 on the MAIN board is not normal, check Y3 on the MAIN board.

2. When You Plug Power Cord and Turn The Main Unit ON, The Main Unit Won't Have Sound

Procedure:

1. Check U5 on the MAIN board and its peripheral circuit.
2. Check if output voltage +3.3V from pin 32, pin 54, pin 70, pin 72, pin 78 and pin 83 of U5 on the MAIN board.
If output voltage +3.3V is not normal, check +3.3V power circuit of MAIN board.
3. Check if output voltage +1.2V from pin 10, pin 77 and pin 86 of U5 on the MAIN board.
If output voltage +1.2V is not normal, check +1.2V power circuit of MAIN board.
4. Check if oscillating frequency 27 MHz of Y10 crystal on the MAIN board is normal.
If oscillating frequency 27 MHz is not normal, check if Y10 on the MAIN board and its peripheral circuit is in failure.
5. Check if the status of U17 and U25 on the MAIN board work well, the normal status of pin 27 of U25 on the MAIN board is sine wave with frequency 11.0592 MHz. And pin 23 of U25 on the MAIN board is high in normal status.
If pin 27 of U25 on the MAIN board wave is not normal, check if U17 and U25 on the MAIN board and its peripheral circuit is in failure.

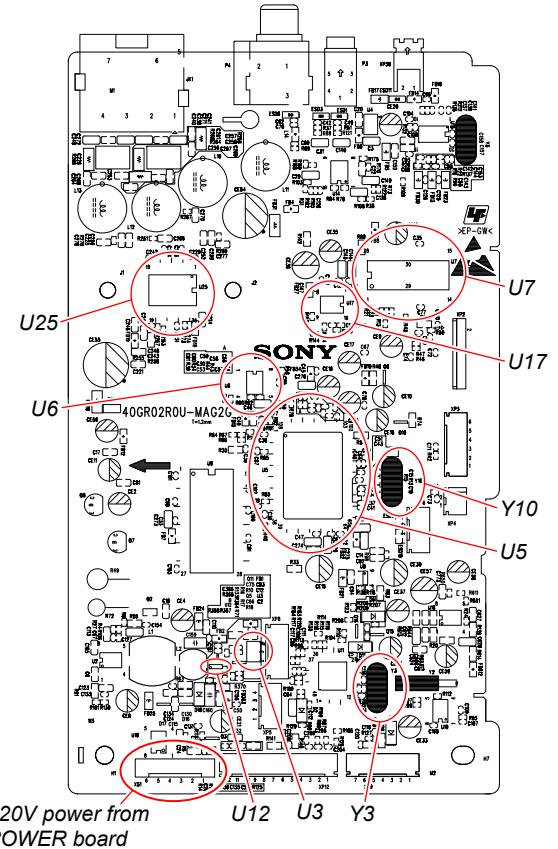
3. When You Plug Power Cord and Turn The Main Unit ON, The Main Unit Won't Read Disc Normal

Procedure:

1. Check U5 on the MAIN board signal and its peripheral circuit, and check output voltage +3.3V from pin 8 of U6 on the MAIN board is normal.
If output voltage +3.3V is not normal, check +3.3V power circuit of MAIN board.
2. Check every signal connected between U5 and U6 on the MAIN board, especially including DATA, CLK and CS signal.
If DATA, CLK and CS signal is not normal output, check if U6 on the MAIN board is in failure.
3. Check if output voltage +5V from pin 8, pin 19 and pin 21 of U7 on the MAIN board is normal.
If output voltage +5V is not normal, check +5V power circuit of MAIN board.
4. Check every signal connected between U5 and U7 on the MAIN board, especially including F+, F-, T+, T-, SP+, SP-, SL+ and SL- signal to drive MD.
If F+, F-, T+, T-, SP+, SP-, SL+ and SL- signal is not normally output, check if U7 on the MAIN board is in failure.

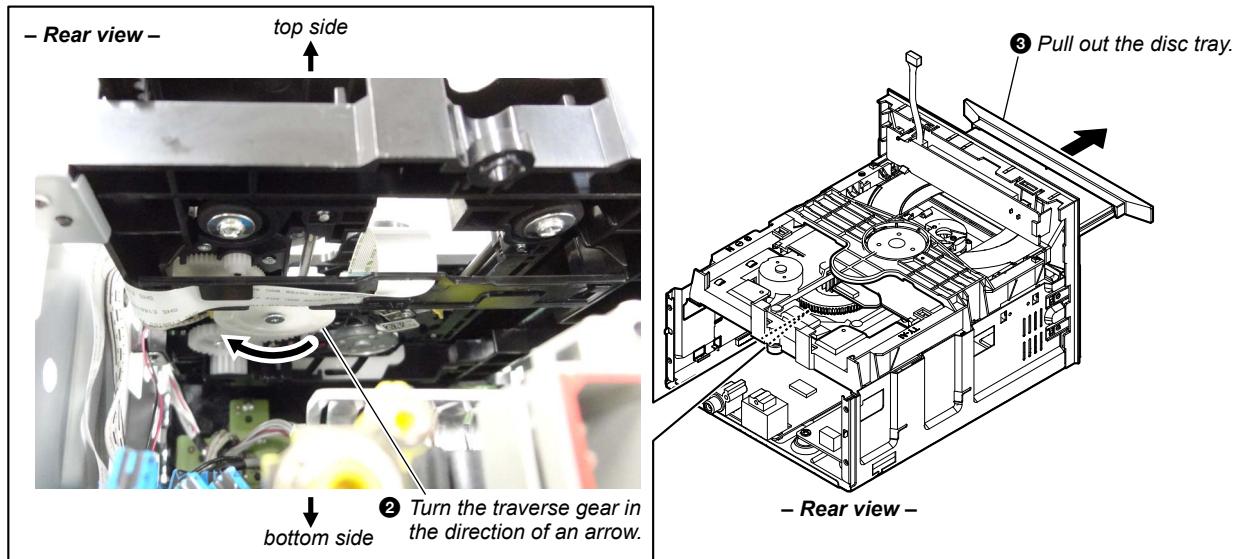
Checking Location:

- MAIN Board (Component Side) -

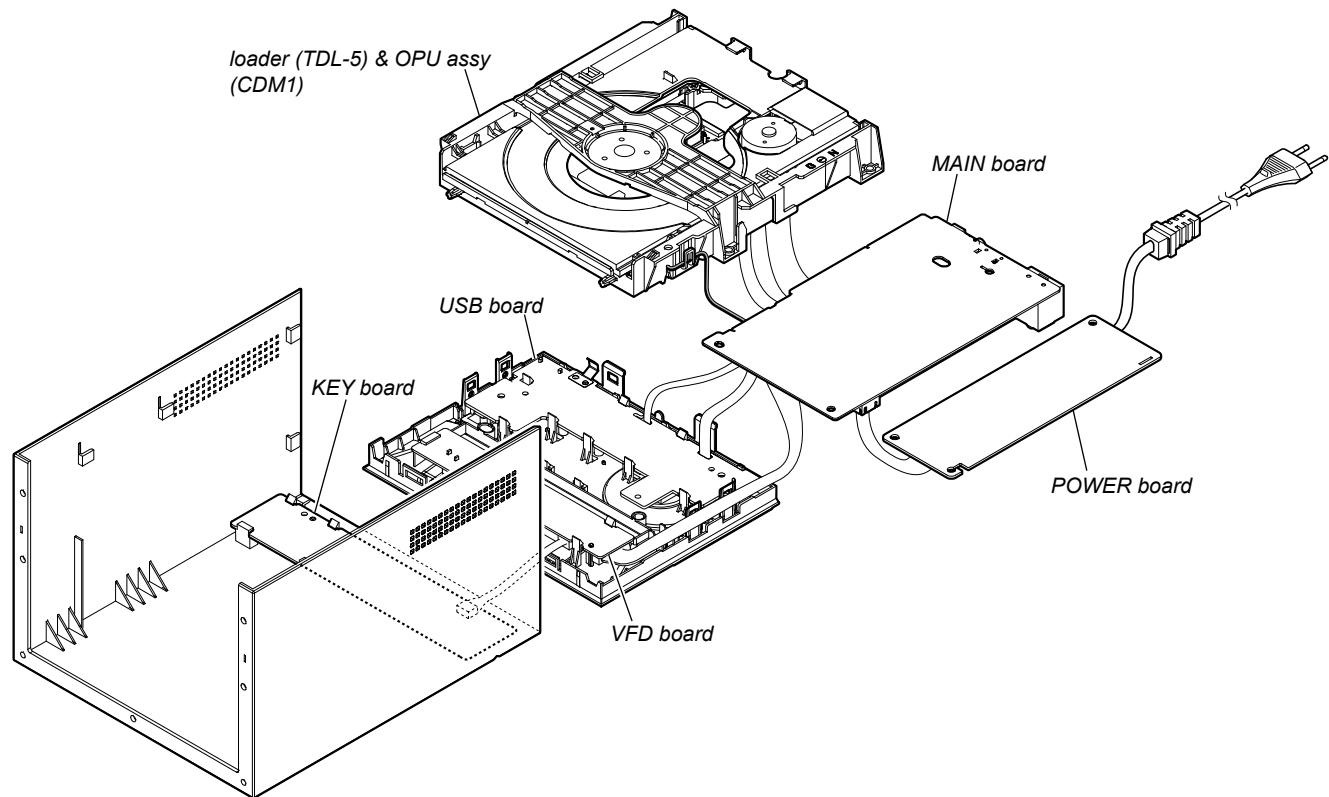


HOW TO EJECT THE DISC WHEN POWER SWITCH TURN OFF

① Refer to "SECTION 2. DISASSEMBLY" (page 7), remove the top cover assy S40D block and the rear panel block from the unit.



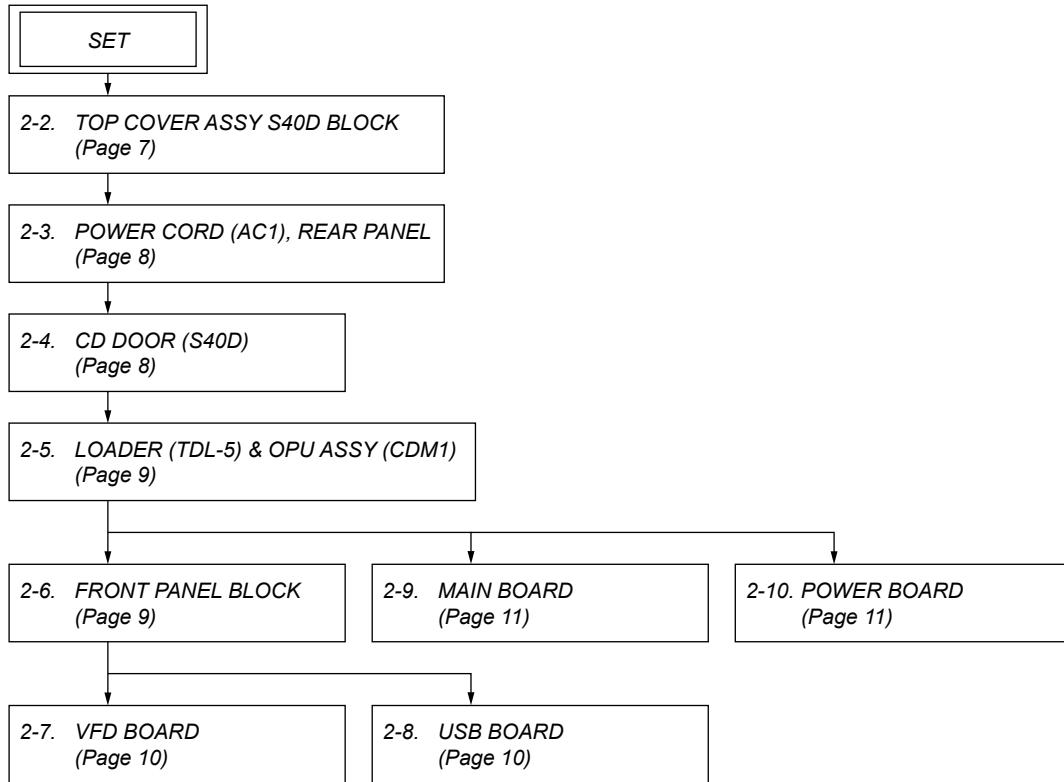
SERVICE POSITION



SECTION 2 DISASSEMBLY

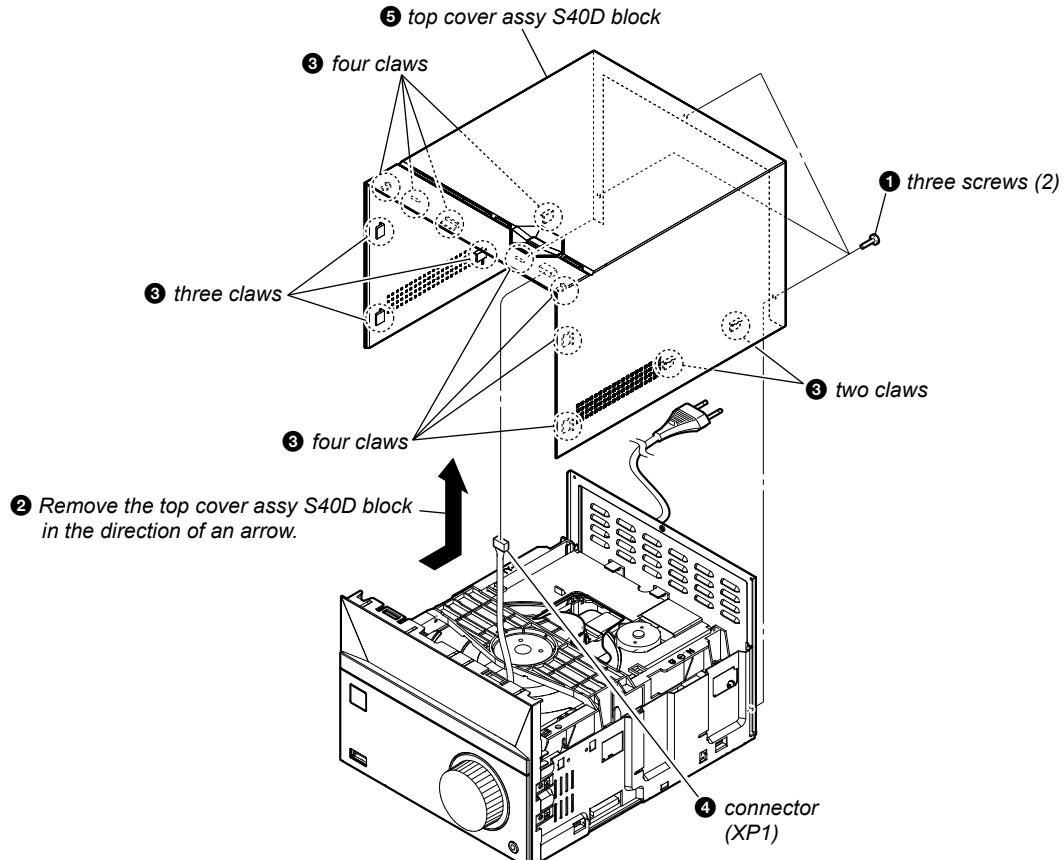
- This set can be disassembled in the order shown below.

2-1. DISASSEMBLY FLOW

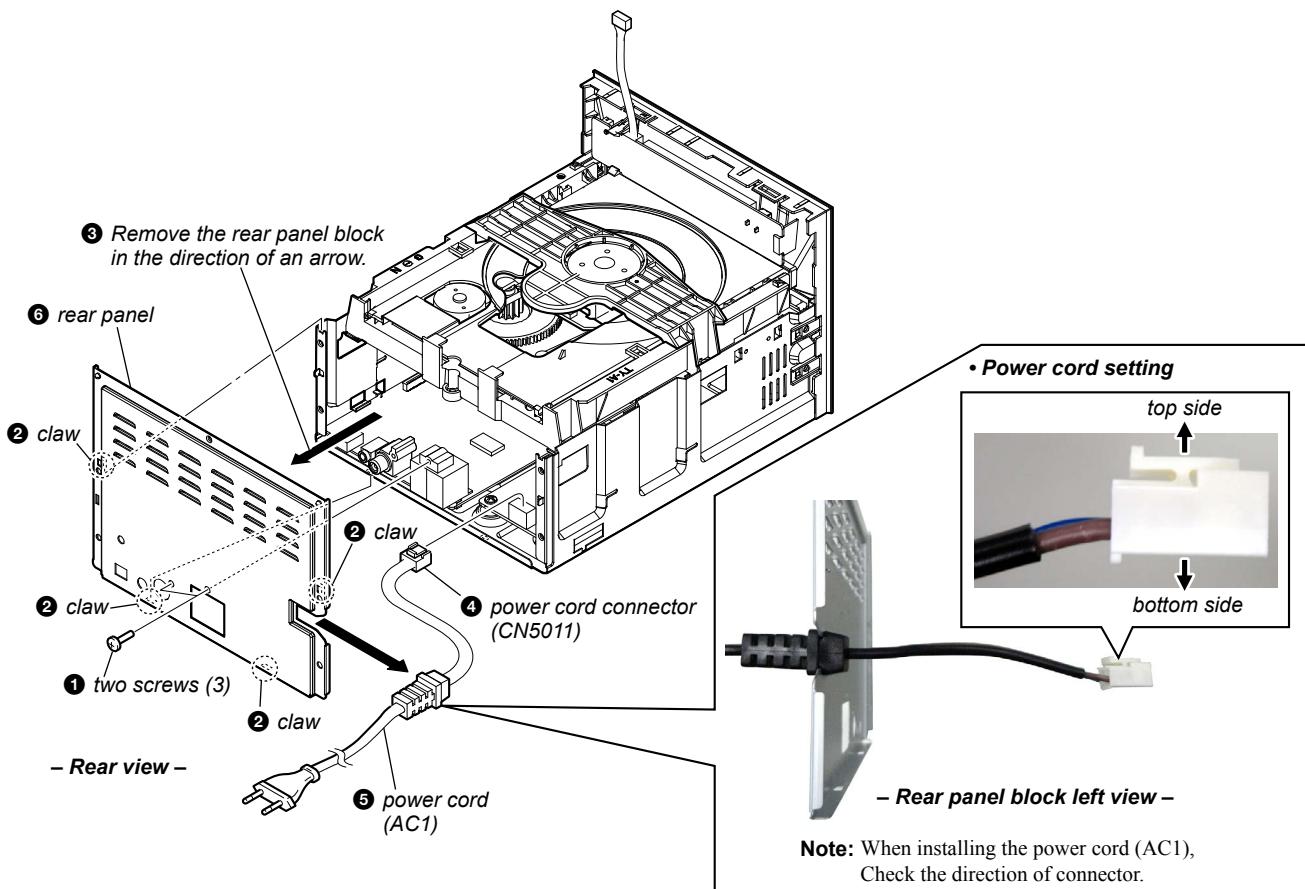


Note: Follow the disassembly procedure in the numerical order given.

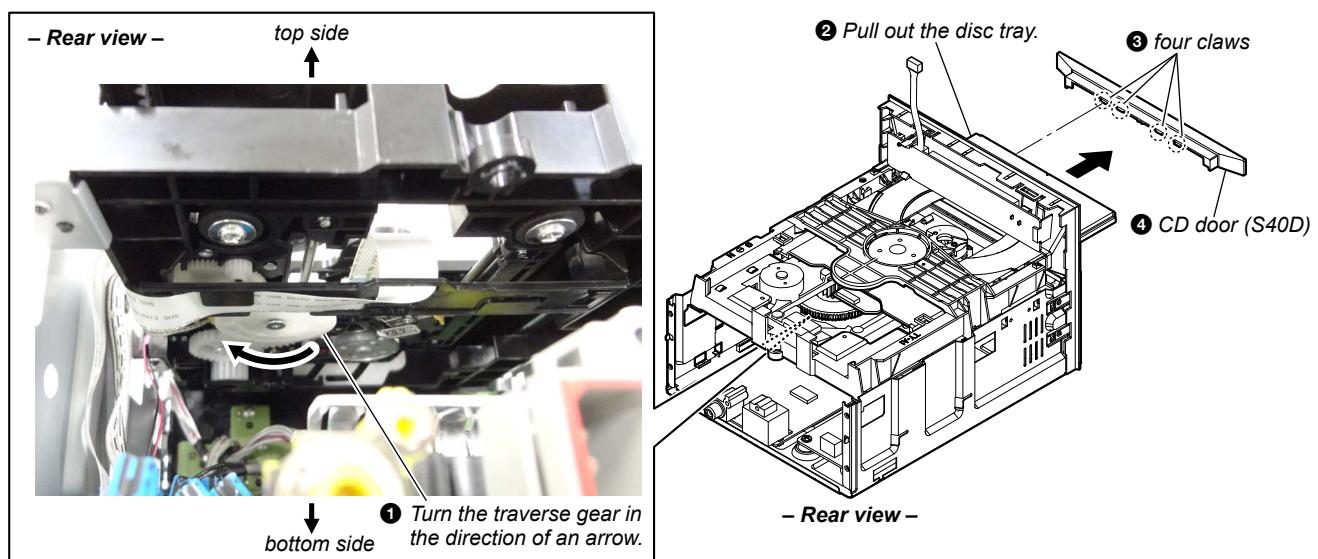
2-2. TOP COVER ASSY S40D BLOCK



2-3. POWER CORD (AC1), REAR PANEL



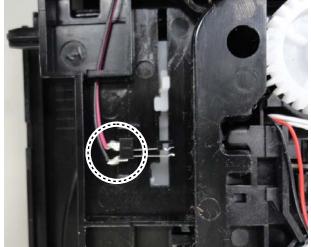
2-4. CD DOOR (S40D)



2-5. LOADER (TDL-5) & OPU ASSY (CDM1)

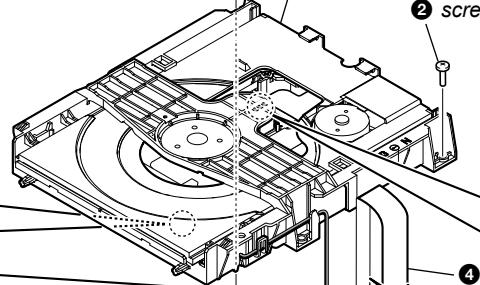
Note 1: Before disconnecting the flexible flat cable of the loader (TDL-5) & OPU assy (CDM1), solder the short-land.

Note 4: The wire is soldered to the terminal of the switch. Be careful so that not cut or bend the terminal.



- Bottom view -

② screw (3) ⑦ loader (TDL-5) & OPU assy (CDM1)
② screw (3)

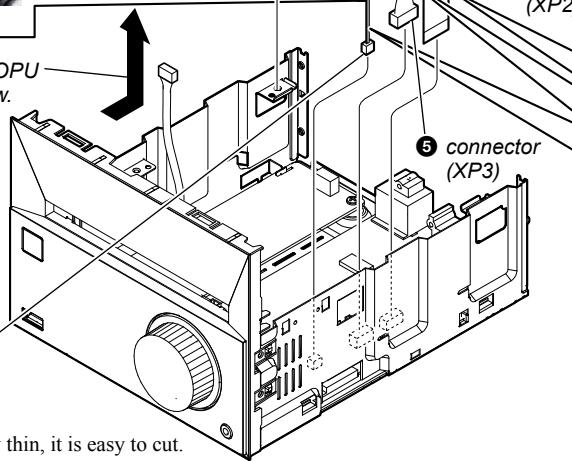


Note 2: When assembling the loader (TDL-5) & OPU assy (CDM1), remove the solder of short-land after connecting all flexible flat cable and connector.



① Solder the short-land.

③ Remove the loader (TDL-5) & OPU assy in the direction of an arrow.



⑥ connector (XP4)

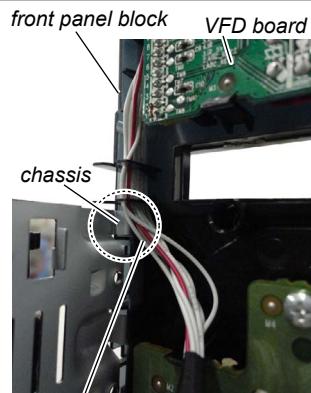
Note 3: Since the wire is very thin, it is easy to cut. When disconnecting, do it while holding the connector part.

• Wire setting
loader (TDL-5) & OPU assy (CDM1)



2-6. FRONT PANEL BLOCK

• Wire setting



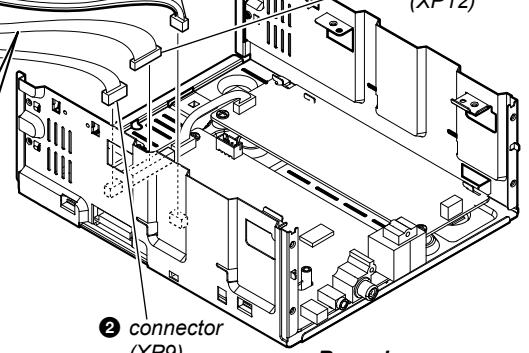
Note: When installing the front panel block, be careful not to bite the wire at the chassis.

④ six claws

⑤ front panel block

① connector (XP6)

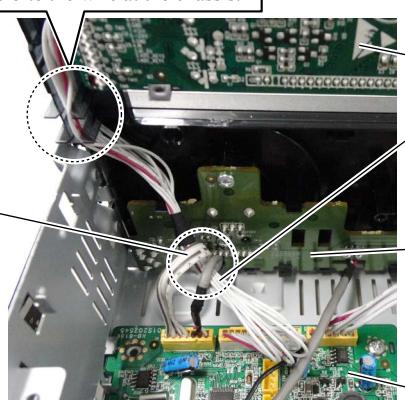
③ connector (XP12)



② connector (XP9)

- Rear view -

Wire from USB board is upper.



- Rear view -

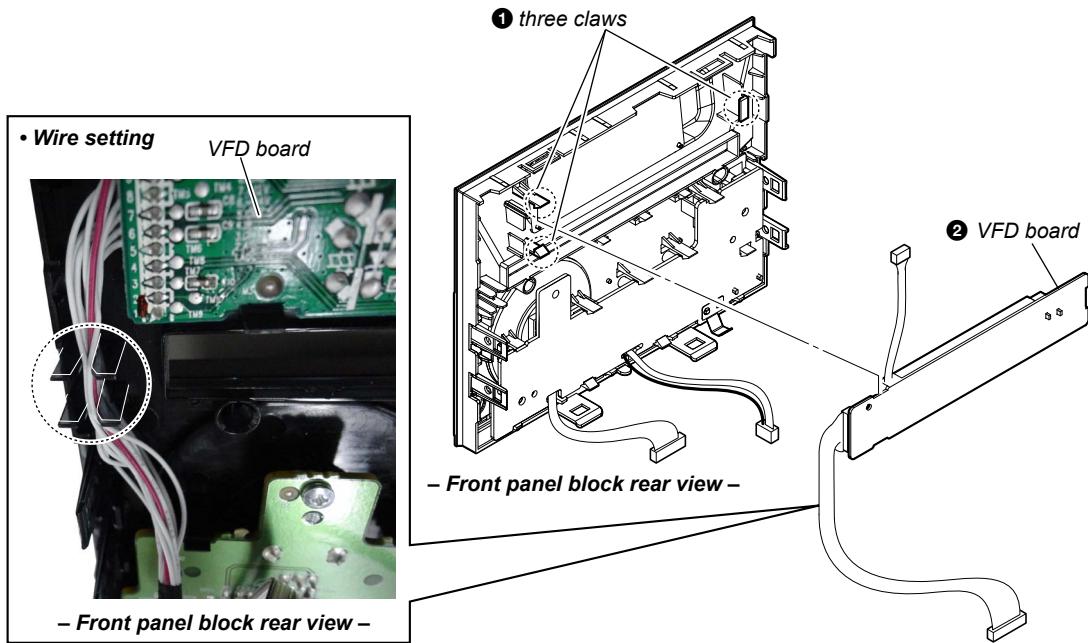
VFD board

Wire from VFD board is lower.

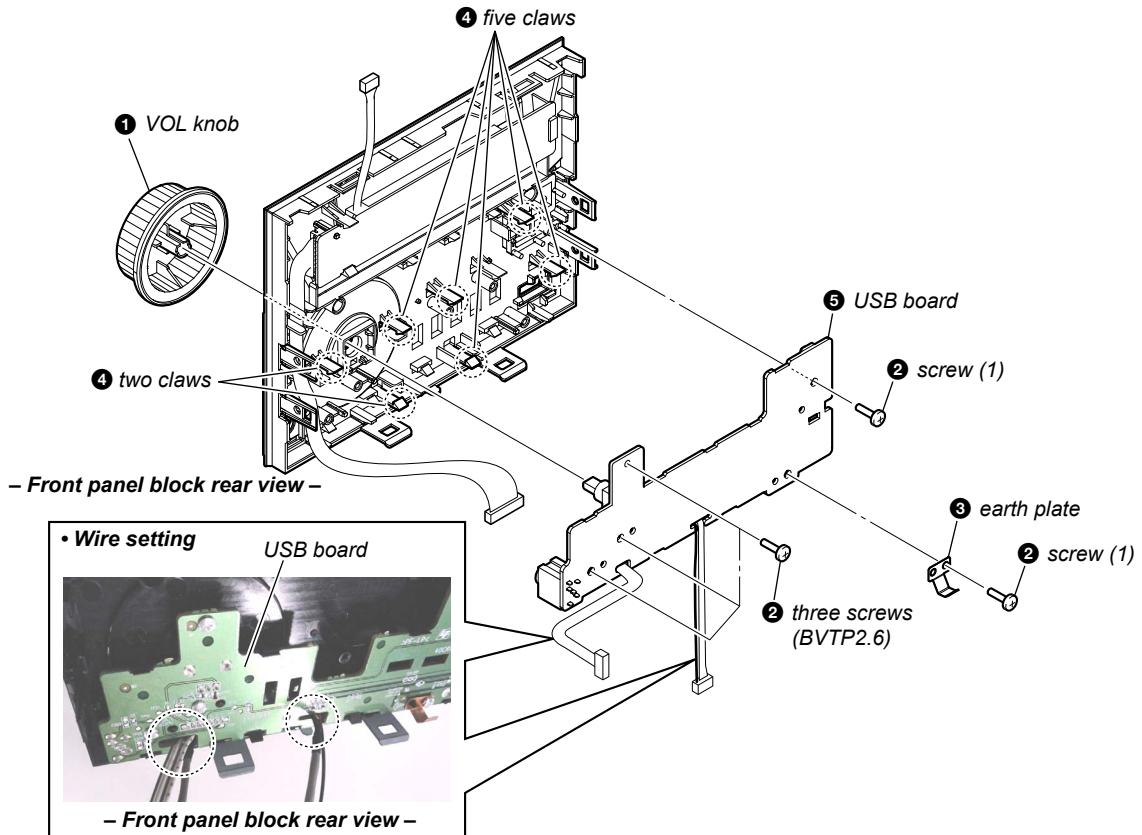
USB board

MAIN board

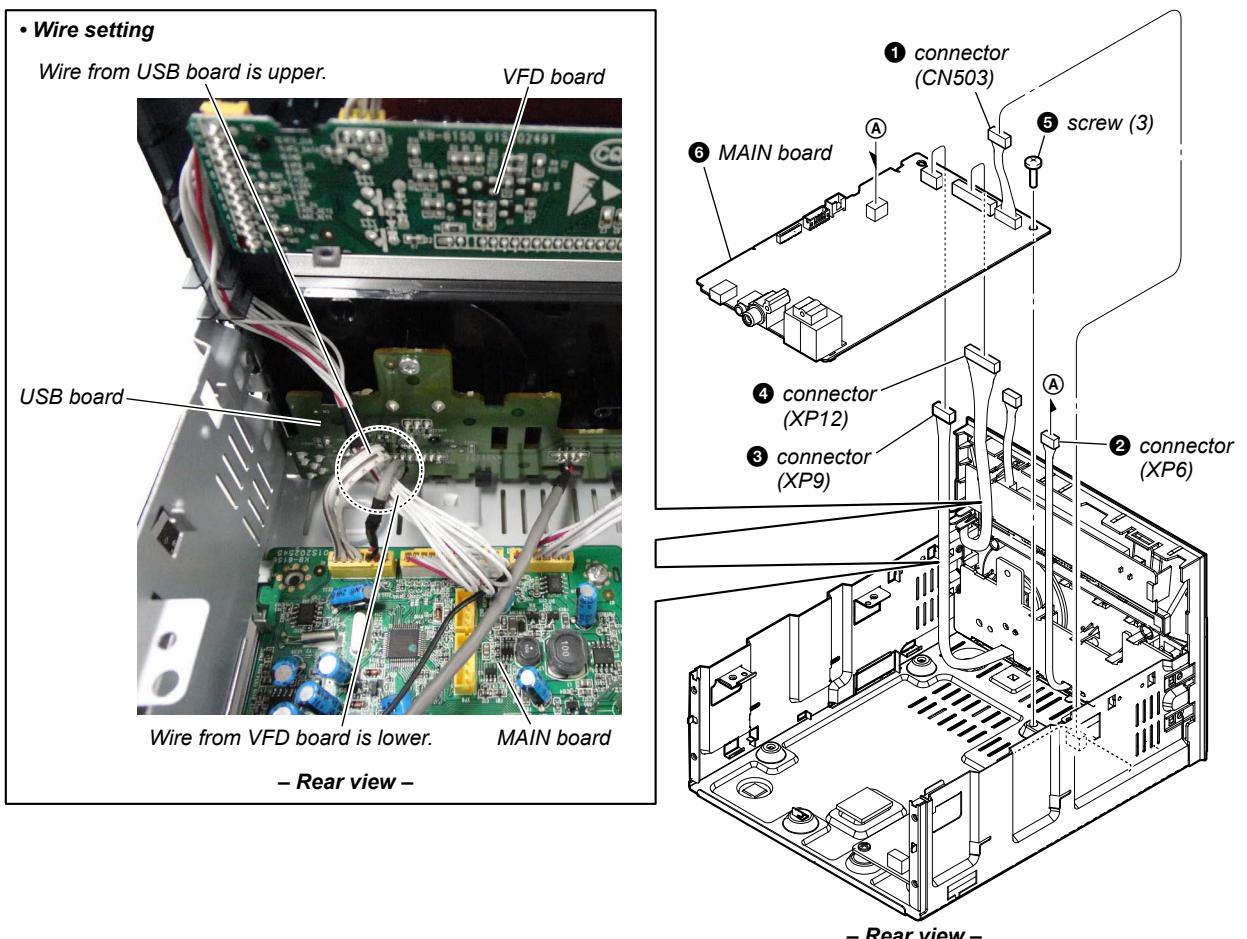
2-7. VFD BOARD



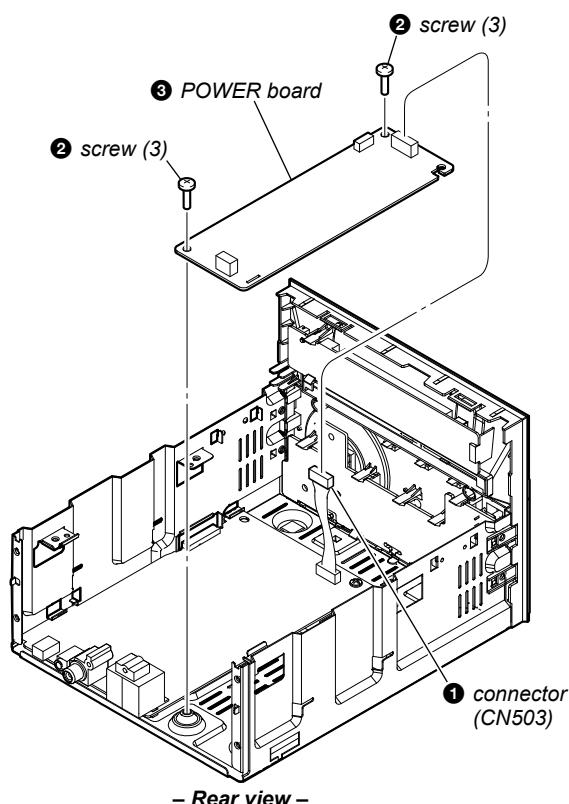
2-8. USB BOARD



2-9. MAIN BOARD



2-10. POWER BOARD



SECTION 3

TEST MODE

SOFTWARE VERSION

It can confirm the software version.

Procedure:

1. Press the [**I/Off**] button to turn the power on.
2. Press the [**▲**] button to open the disc tray.
3. Press the button on the remote commander as following order.
[**■**] → [ZOOM] → [**⊕**]
(Displayed values in the following figure are example)

Screen display**Releasing method:**

Press the [**▲**] button to close the disc tray or press the [**I/Off**] button to turn the power off.

FACTORY RESET 1

It can clear all data including preset data stored in the memory to initial conditions. Execute this mode when returning the this unit to the customer.

Procedure:

1. Connect this unit with TV monitor.
2. Press the [**I/Off**] button to turn the power on.
3. Press the [SETUP] on the remote commander to enter the set-up menu.
4. The message “SETUP” is displayed on the fluorescent indicator tube and setup menu is displayed on the TV monitor.
5. Press the [**↑**]/[**↓**] button on the remote commander to select “PREFERENCE” on the TV monitor, and press the [**⊕**] button on the remote commander.
6. Press the [**↑**]/[**↓**] button on the remote commander to select “Default” on the TV monitor, and press the [**⊕**] button on the remote commander.
7. In the state of selecting “Restore” on the TV monitor, press the [**⊕**] button on the remote commander.
8. The message “RESET OK is displayed on the fluorescent indicator tube, then returns to the normal mode.

FACTORY RESET 2

It can clear all data including preset data stored in the memory to initial conditions. Execute this mode when returning the this unit to the customer.

Procedure:

1. Press the [**I/Off**] button to turn the power on.
2. Press two buttons of the [**■**] on the remote commander and [**EQ**] on the main unit simultaneously for five seconds.
3. The message “RESET OK is displayed on the fluorescent indicator tube, then returns to the normal mode.

TRAY LOCK

It can be unable to take sample disc out of disc tray in the shop.

Procedure:

1. Press the [**I/Off**] button to turn the power on.
2. Press the [**▲**] button to open the disc tray.
3. Set a disc on the disc tray.
4. Press the [**▲**] button to close the disc tray.
5. Press two buttons of the [**■**] on the remote commander and [**▲**] on the main unit simultaneously for five seconds.
6. The message “LOCKED” is displayed on the fluorescent indicator tube and the disc tray is locked.
(Even if pressing the [**▲**] button, the message “LOCKED” is displayed on the fluorescent indicator tube and the disc tray is locked)

Releasing method:

1. Press two buttons of the [**■**] on the remote commander and [**▲**] on the main unit simultaneously for five seconds.
2. The message “UNLOCKED” is displayed on the fluorescent indicator tube and the disc tray is unlocked.

VFD TEST

It can confirm the fluorescent indicator tube.

Procedure:

1. Press the [**I/Off**] button to turn the power on.
2. Press two buttons of the [**■**] on the remote commander and [**■**/CANCEL] on the main unit simultaneously for five seconds.
3. All segments on the fluorescent indicator tube light up.

Screen display**Releasing method:**

Press two buttons of the [**■**] on the remote commander and [**■**/CANCEL] on the main unit simultaneously for five seconds or press the [**I/Off**] button to turn the power off.

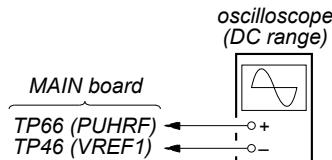
SECTION 4 ELECTRICAL CHECK

DVD/CD SECTION

Note:

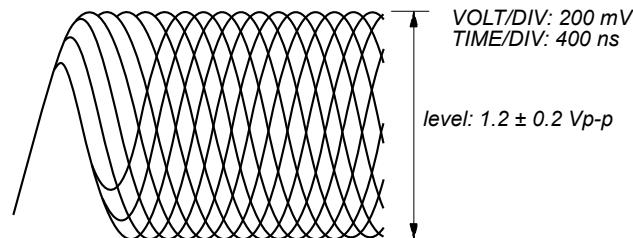
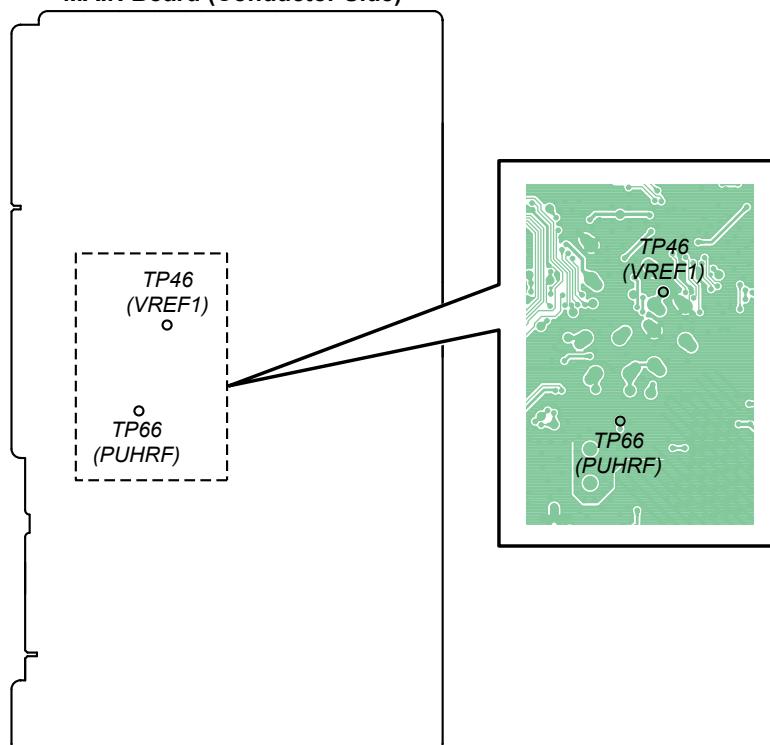
1. DVD/CD block is basically constructed to operate without adjustment.
2. Use YEDS-18 disc (Part No. 3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than $10 \text{ M}\Omega$ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following check.

RF SIGNAL CHECK


Procedure:

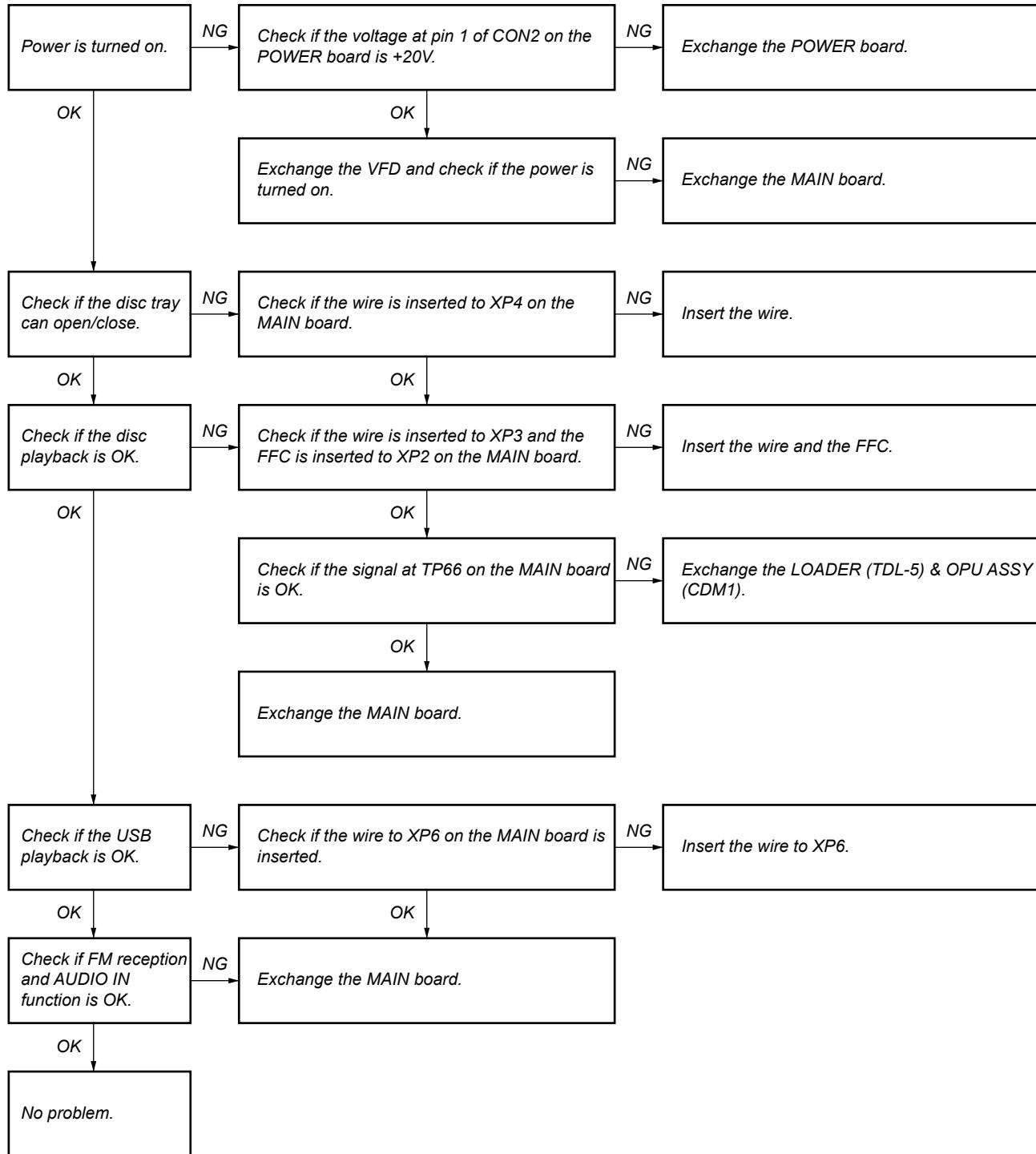
1. Connect the oscilloscope to TP66 (PUHRF) and TP46 (VREF1) on the MAIN board.
2. Press the [I/O] button to turn the power on.
3. Press the [FUNCTION] button to turn the DVD/CD function.
4. Press the [\blacktriangle] button to open the disc tray.
5. Set the disc (YEDS-18) on the disc tray.
6. Press the [\blacktriangle] button to close the disc tray.
7. Press the [$\blacktriangleright/\text{II}$] button to playback.
8. Confirm that oscilloscope waveform is as shown in the figure below. (eye pattern)

A good eye pattern means that the diamond shape (\diamond) in the center of the waveform can be clearly distinguished.

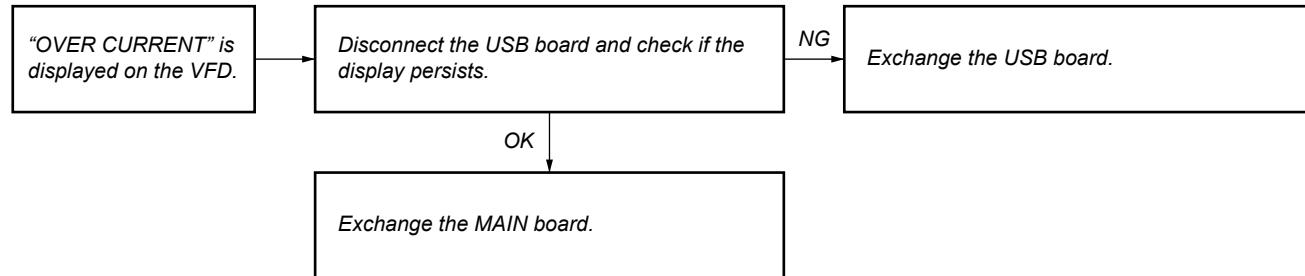

Connection Location:
- MAIN Board (Conductor Side) -


SECTION 5 TROUBLESHOOTING

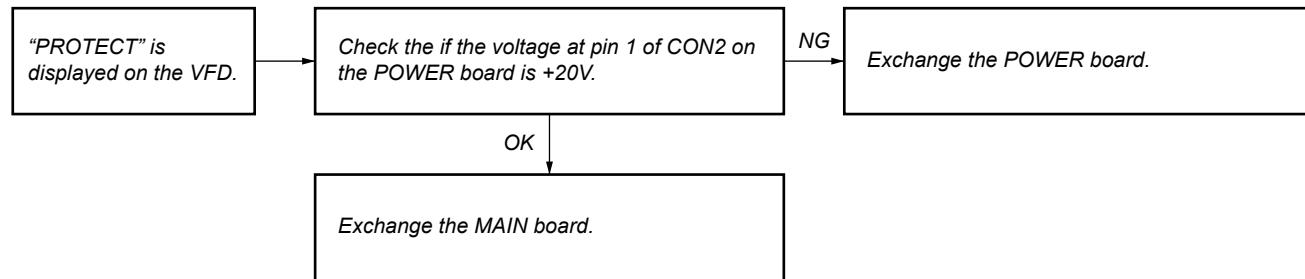
1. Operation Check Flow



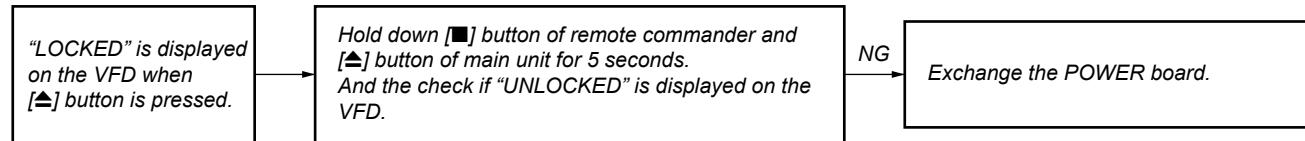
2. Flow When “OVER CURRENT” is Displayed



3. Flow When “PROTECT” is Displayed

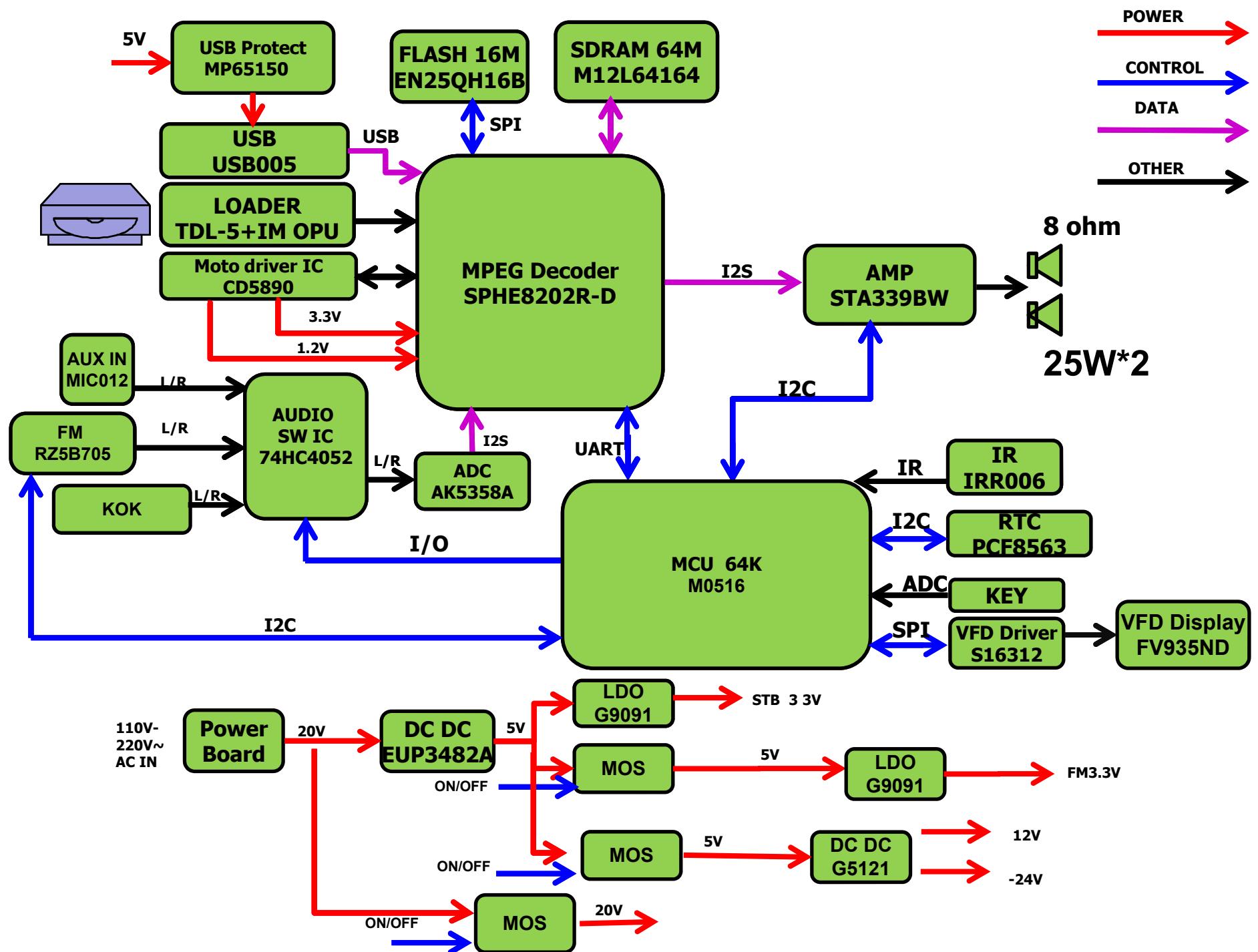


4. Flow When “LOCKED” is Displayed

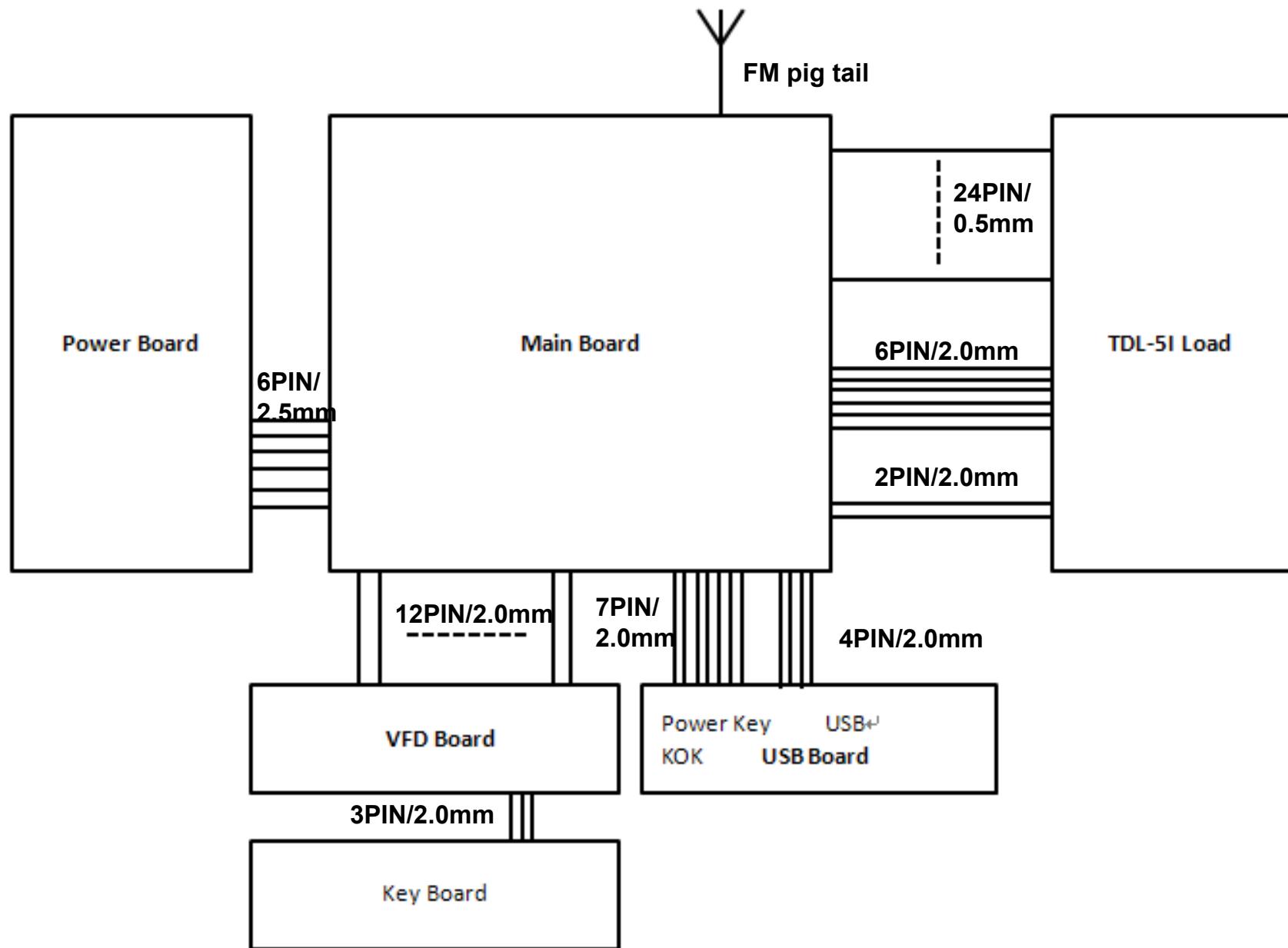


**SECTION 6
DIAGRAMS**

6-1. BLOCK DIAGRAM



6-2. WIRING DIAGRAM



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For Printed Wiring Boards.

Note:

- Pattern from the side which enables seeing.
 (The other layers' patterns are not indicated.)

Caution:

Pattern face side: Parts on the pattern face side seen
 (Conductor Side) from the pattern face are indicated.

Parts face side: Parts on the parts face side seen from
 (Component Side) the parts face are indicated.

For Schematic Diagrams.

Note:

- All capacitors are in μF unless otherwise noted. (p: pF) 50
 WV or less are not indicated except for electrolytics and
 tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise
 specified.

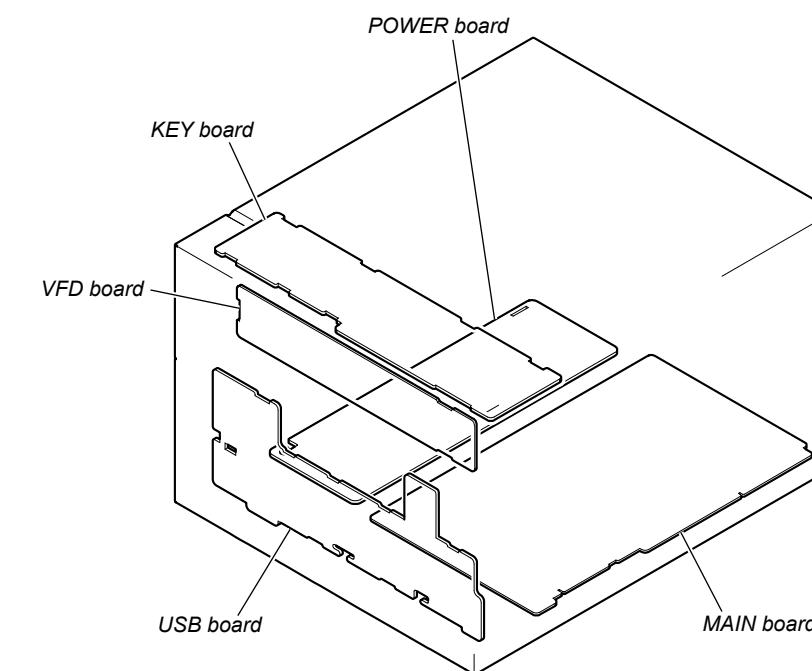
Note:

The components identified by mark \triangle or dotted
 line with mark \triangle are critical
 for safety.
 Replace only with part
 number specified.

注意:

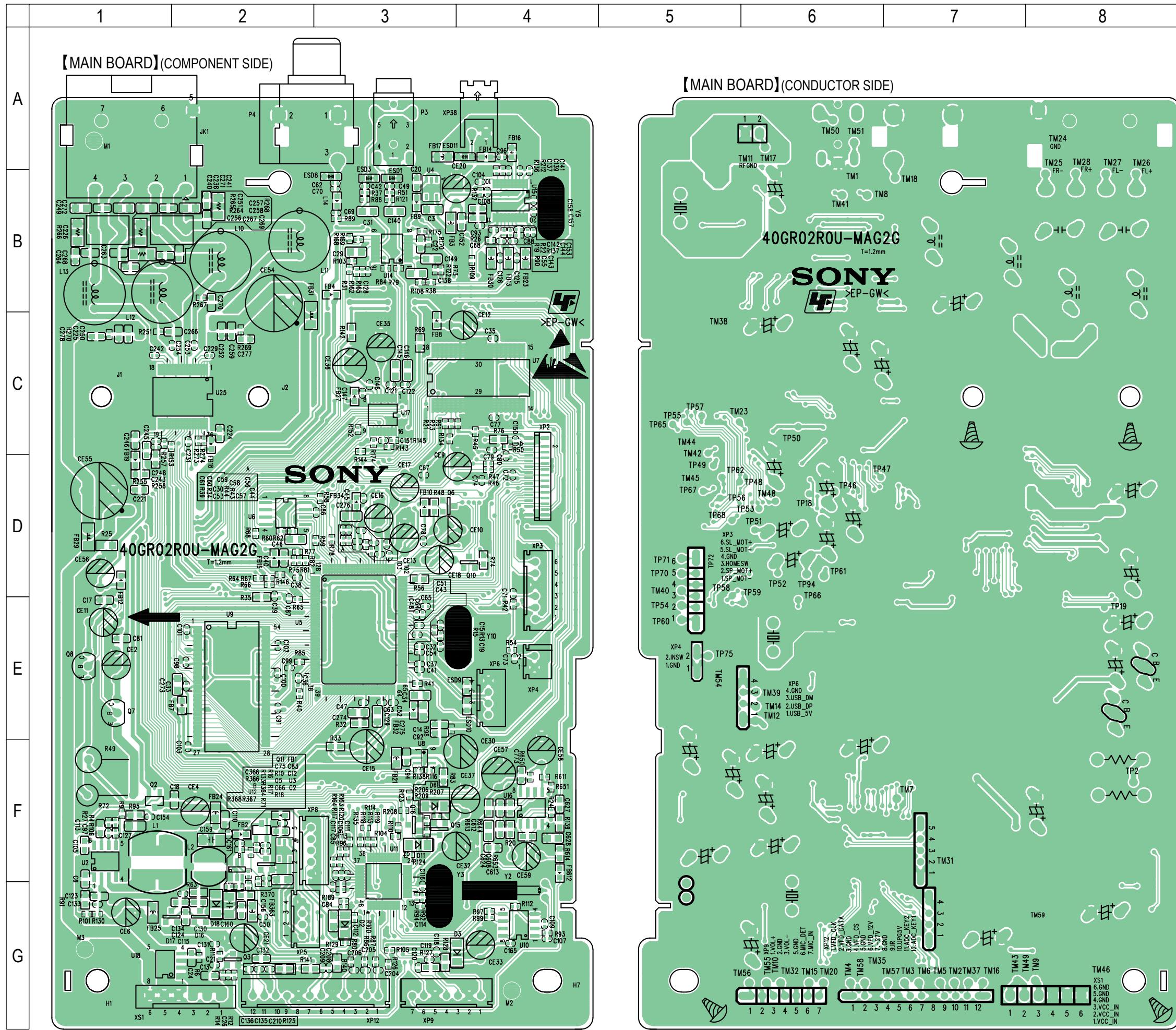
原理图和零件清单中标有 \triangle 记号
 的零部件，或带有 \triangle 记号的虚线
 所圈示的零部件，对于维系安全
 至关重要。因此只能以指定号码
 的零部件来更换。

• Circuit Boards Location

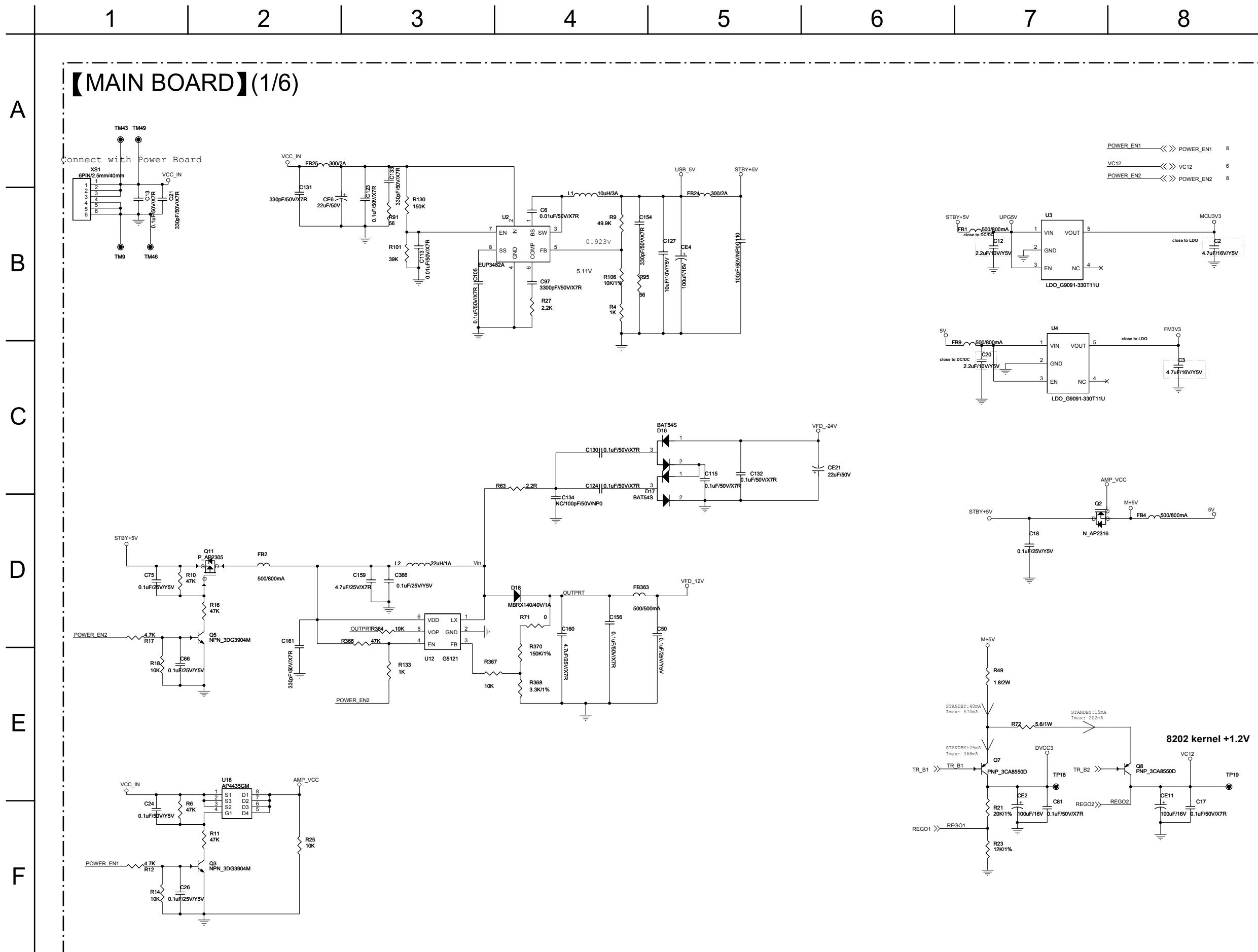


6-3. PRINTED WIRING BOARD - MAIN Board - • See page 18 for Circuit Boards Location. • : Uses unleaded solder

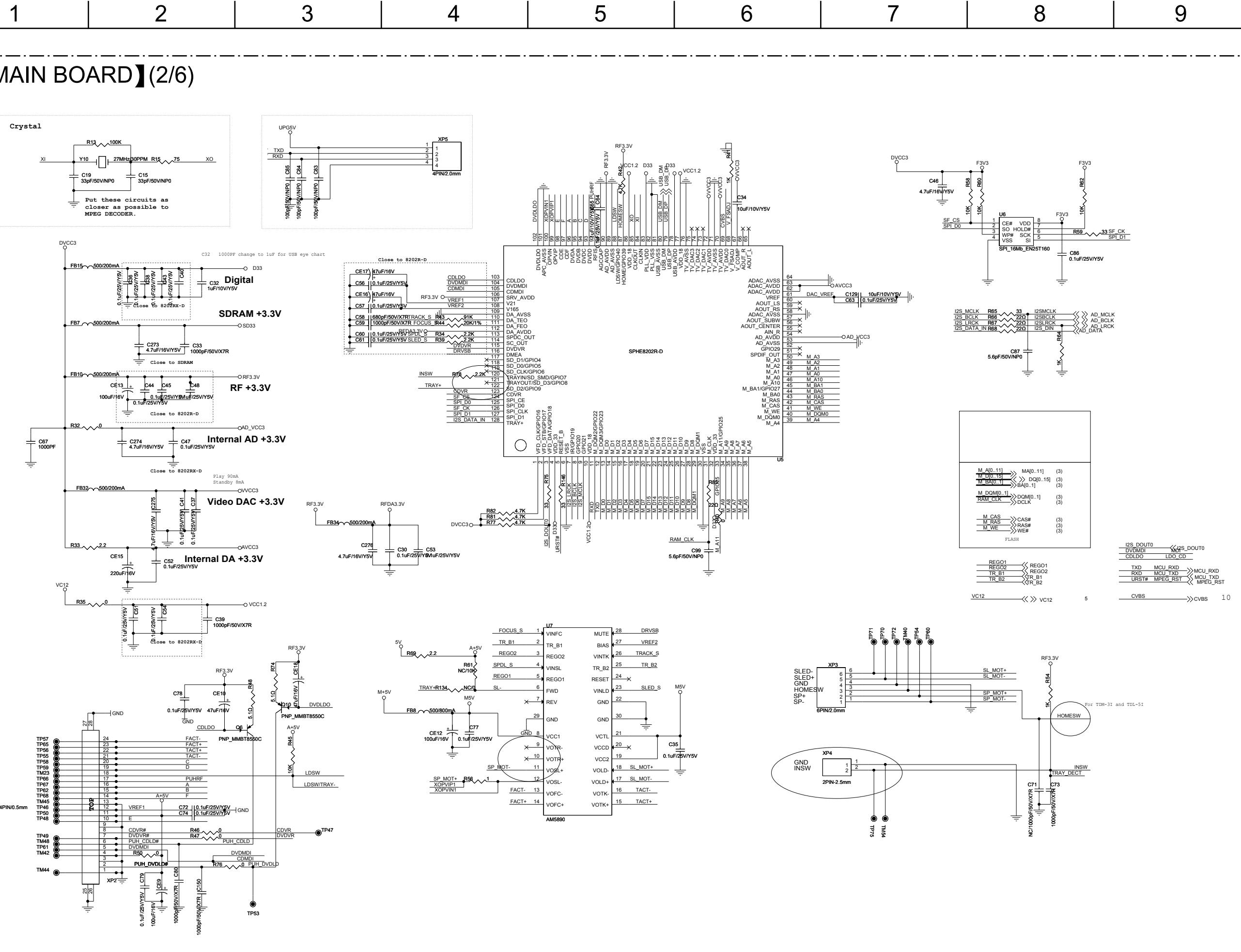
- : Uses unleaded solder



6-4. SCHEMATIC DIAGRAM - MAIN Board (1/6) -



6-5. SCHEMATIC DIAGRAM - MAIN Board (2/6) -



6-6. SCHEMATIC DIAGRAM - MAIN Board (3/6) -

1

2

3

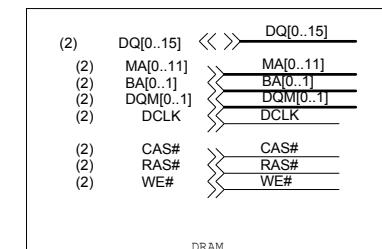
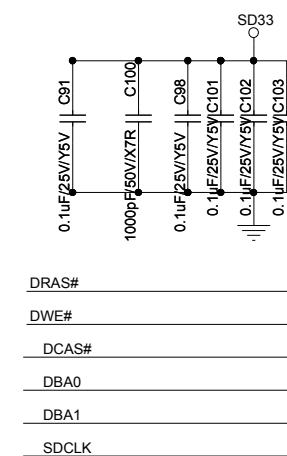
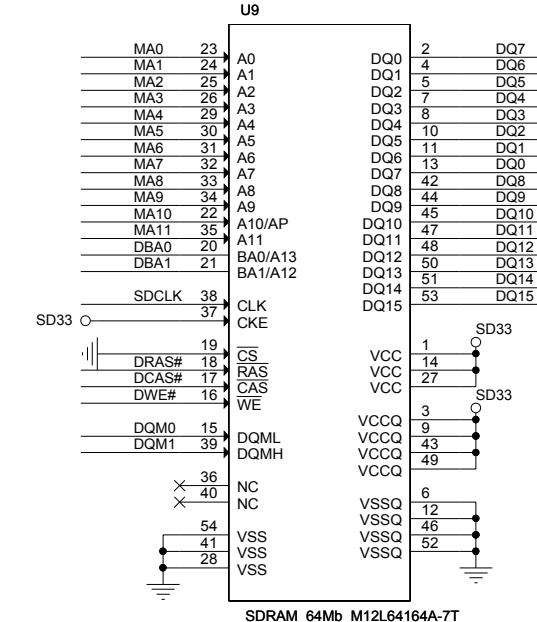
4

5

【MAIN BOARD】(3/6)

A

SDRAM

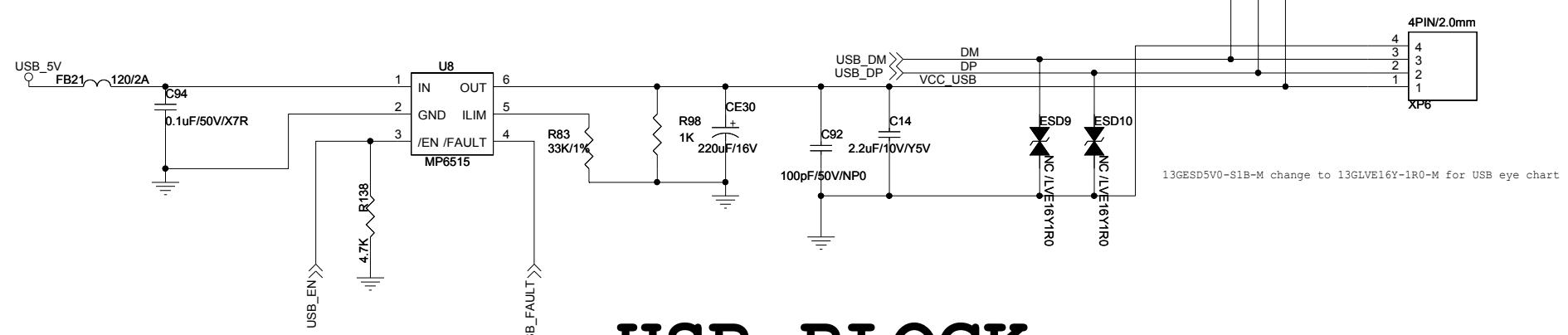


B

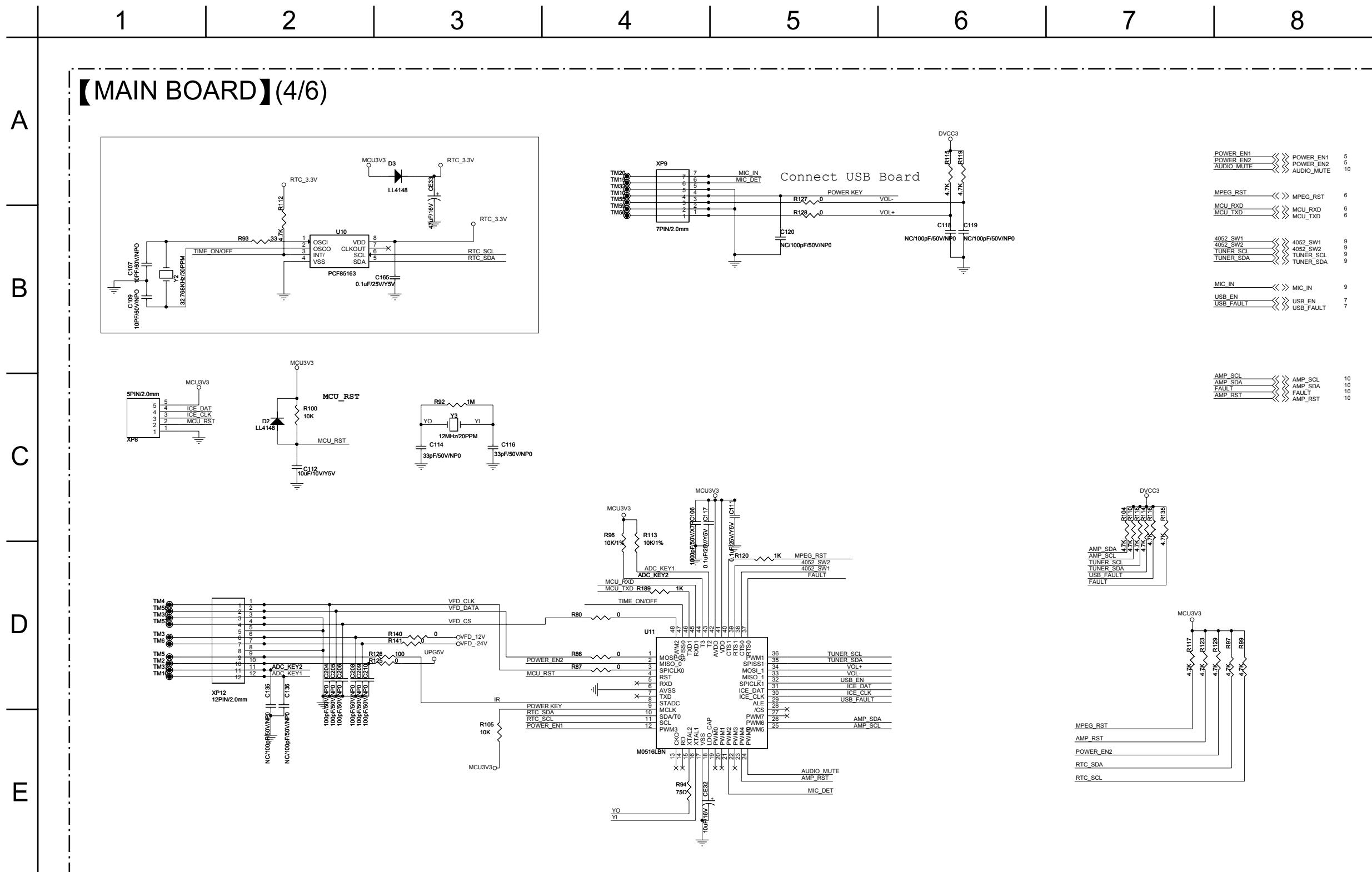
C

D

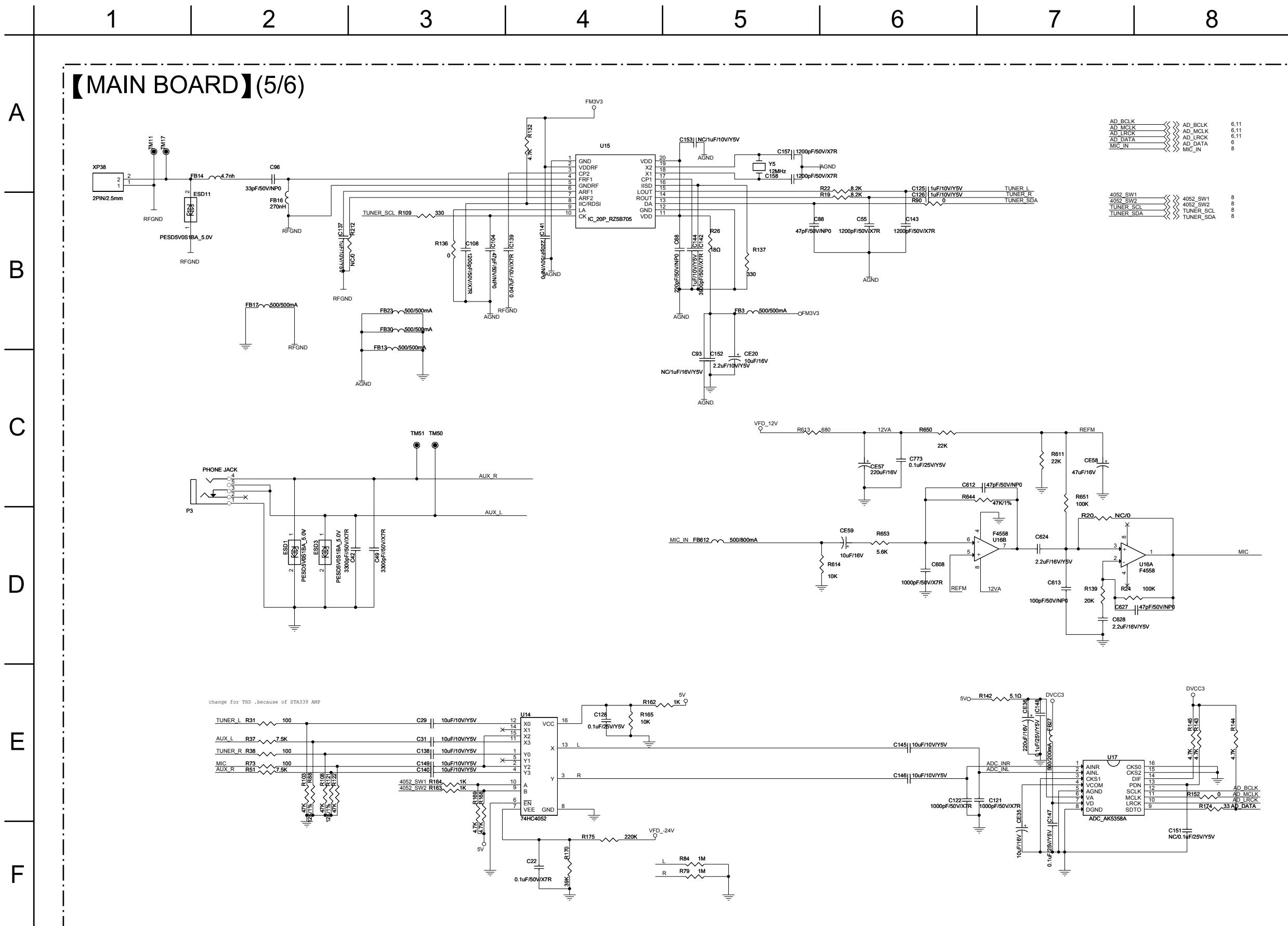
USB BLOCK



6-7. SCHEMATIC DIAGRAM - MAIN Board (4/6) -

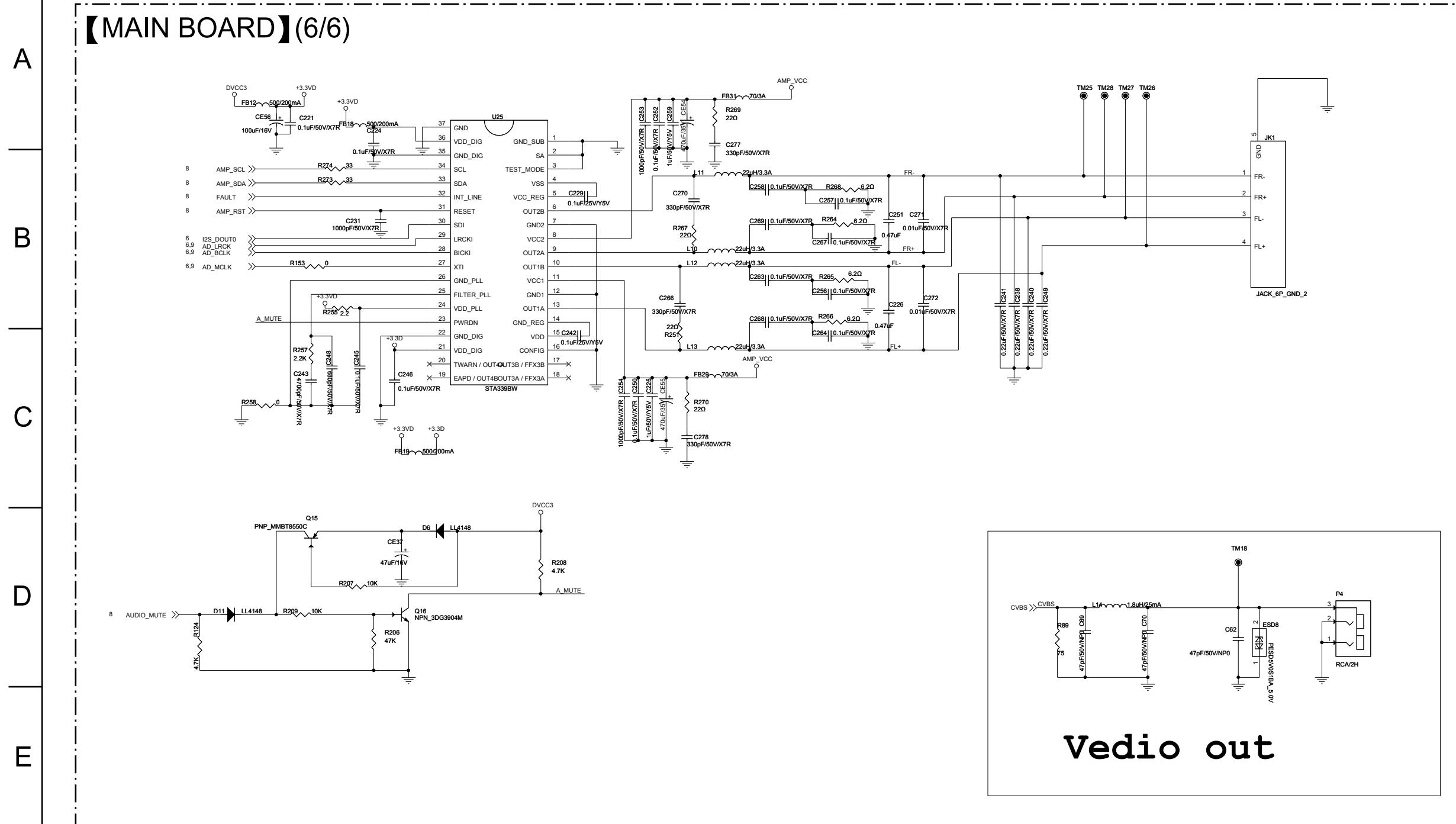


6-8. SCHEMATIC DIAGRAM - MAIN Board (5/6) -

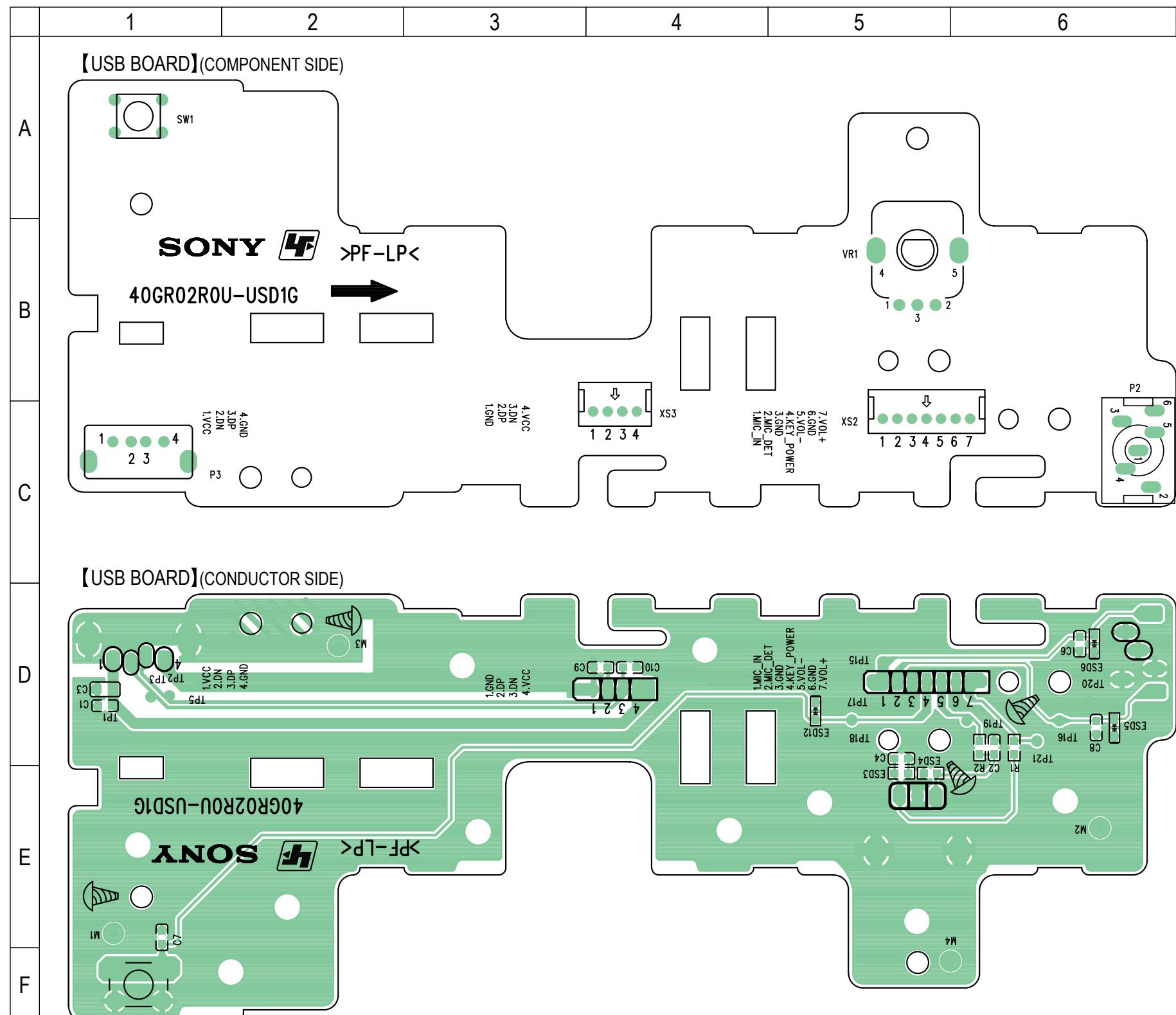


6-9. SCHEMATIC DIAGRAM - MAIN Board (6/6) -

1 2 3 4 5 6 7 8



6-10. PRINTED WIRING BOARD - USB Board - • See page 18 for Circuit Boards Location. •  : Uses unleaded solder.



6-11. SCHEMATIC DIAGRAM - USB Board -

1

2

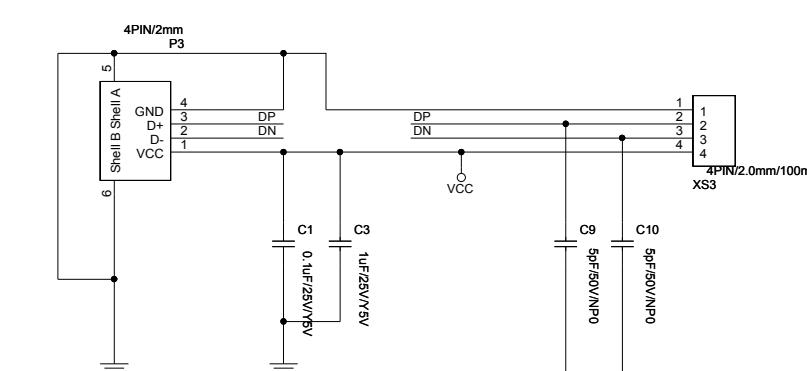
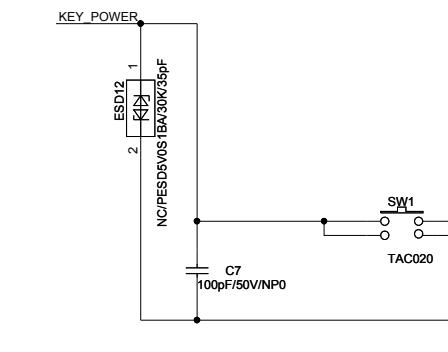
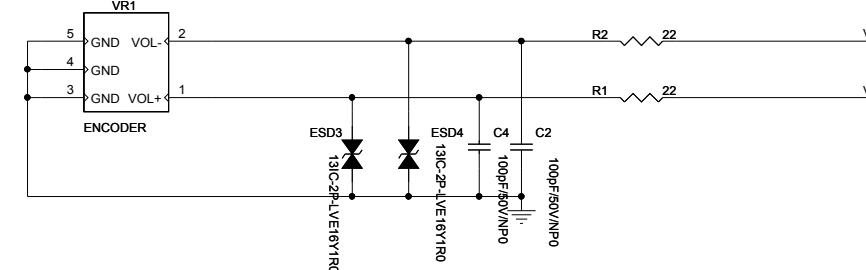
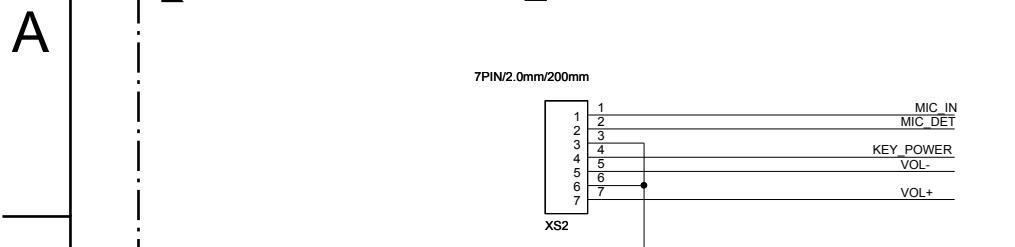
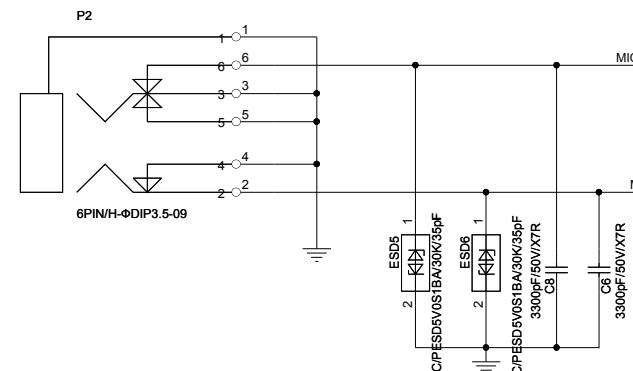
3

4

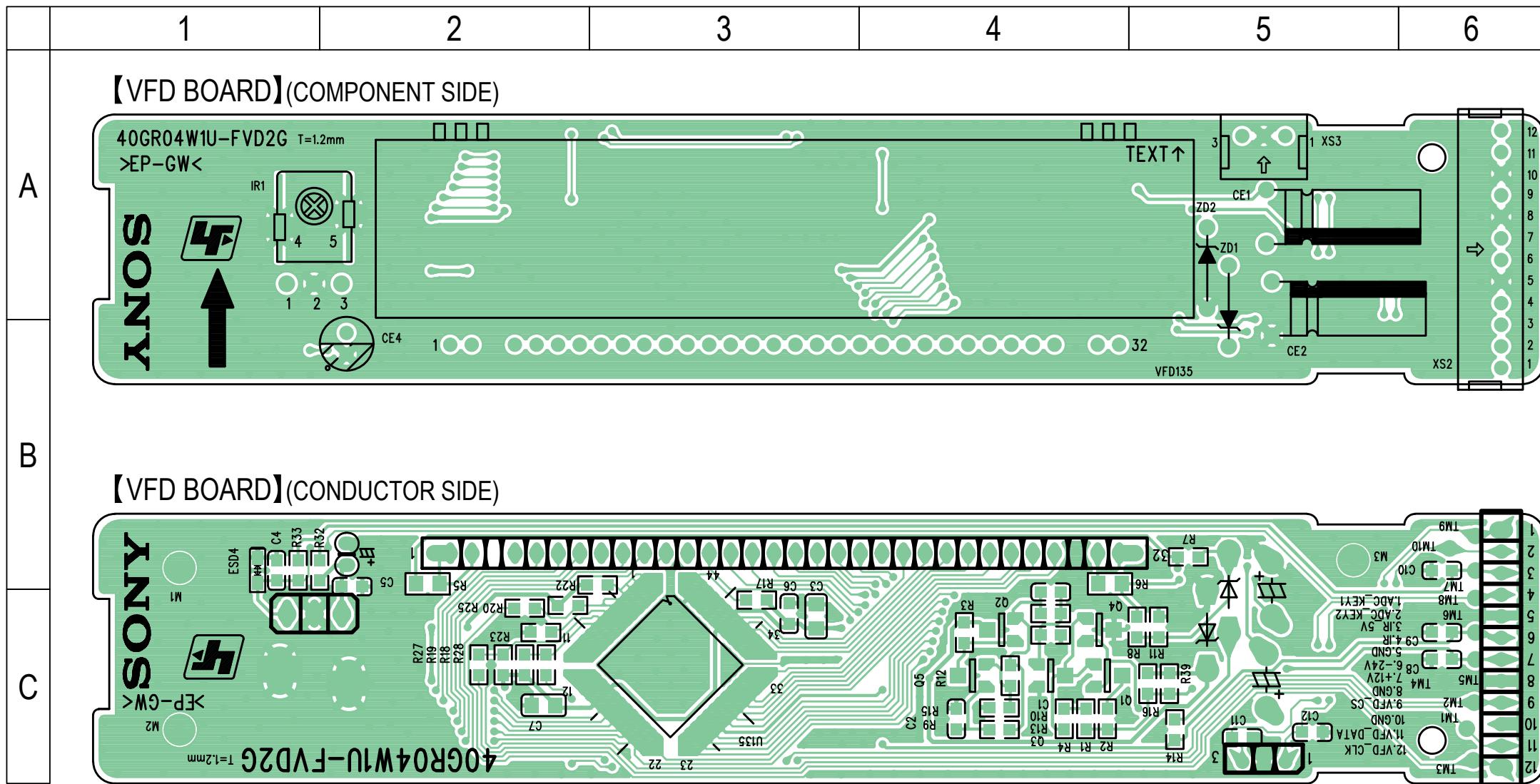
5

6

【USB BOARD】

**MIC**

6-12. PRINTED WIRING BOARD - VFD Board - • See page 18 for Circuit Boards Location. •  : Uses unleaded solder.



6-13. SCHEMATIC DIAGRAM - VFD Board -

1

2

3

△

4

6

7

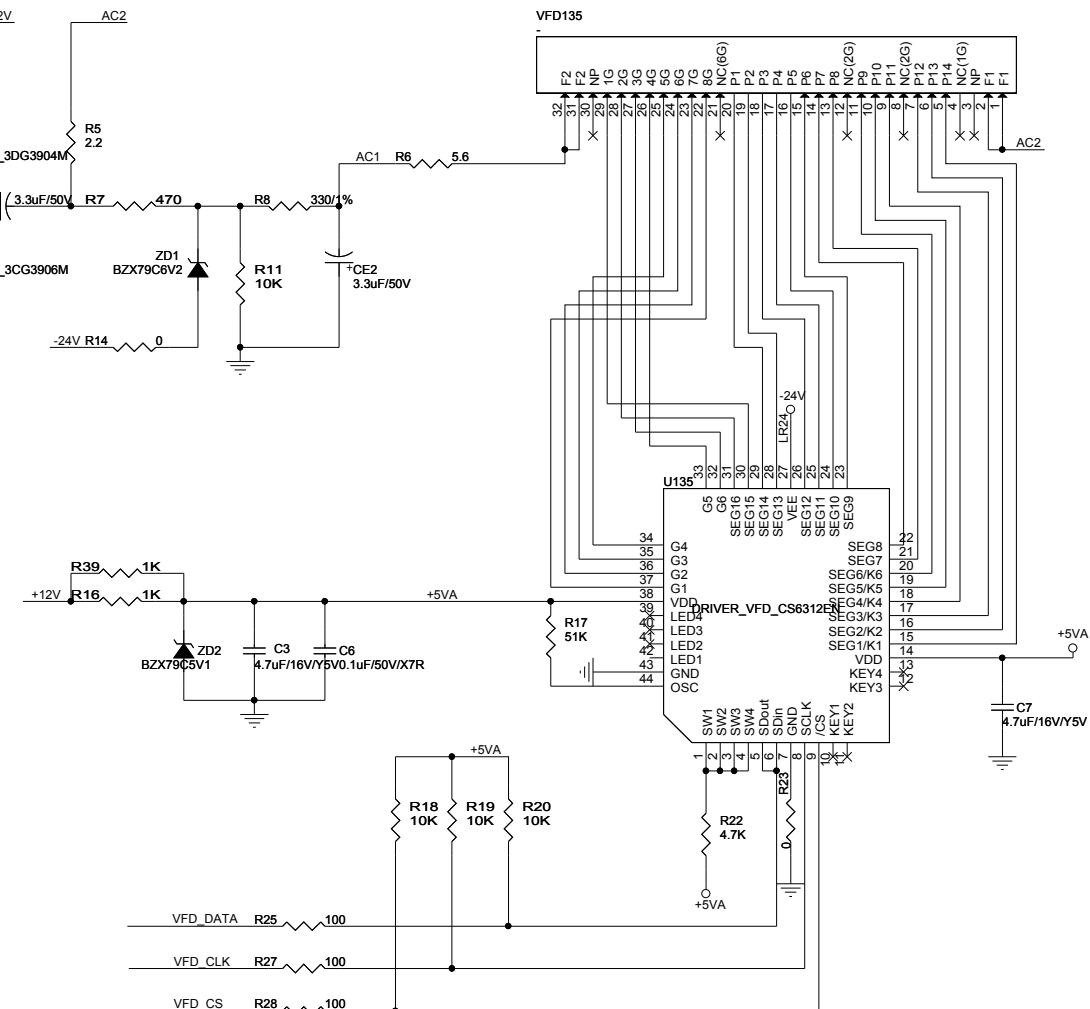
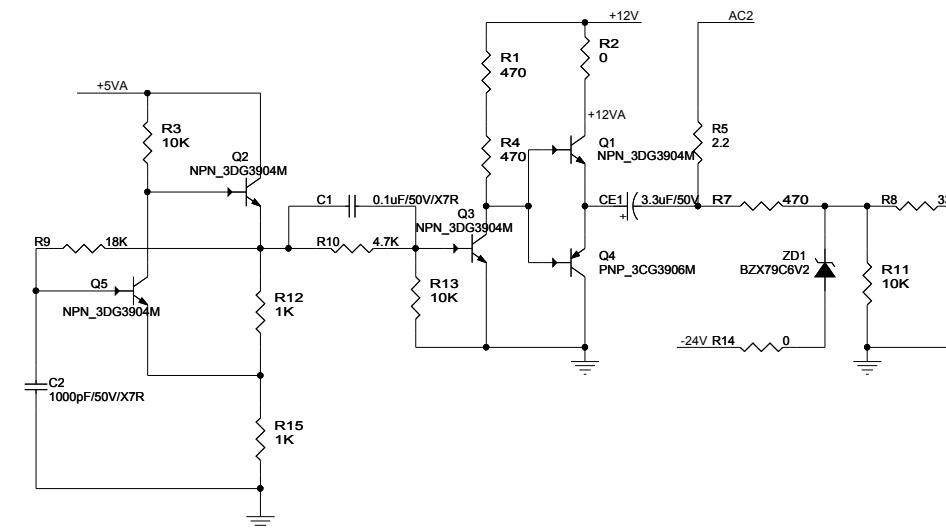
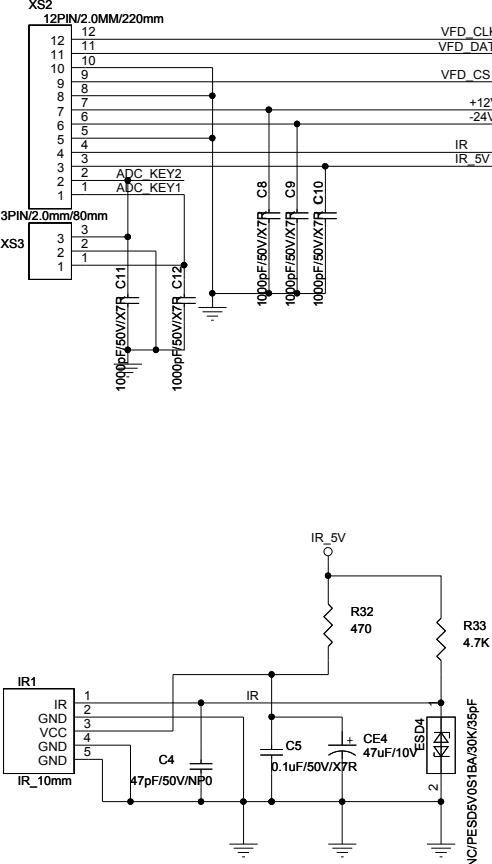
A

B

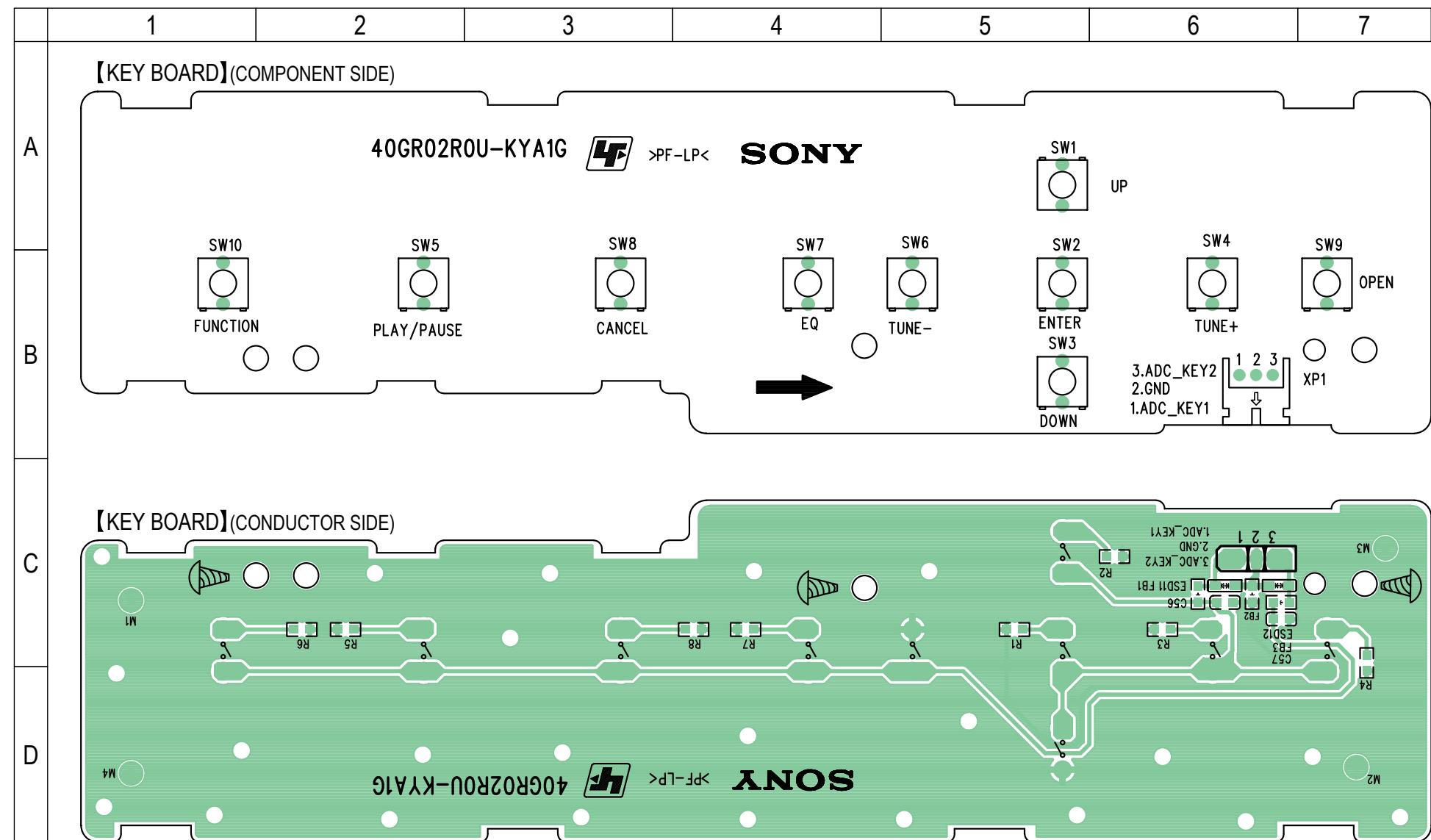
C

D

(VFD BOARD)



6-14. PRINTED WIRING BOARD - KEY Board - • See page 18 for Circuit Boards Location. •  : Uses unleaded solder.



6-15. SCHEMATIC DIAGRAM - KEY Board -

1

2

3

4

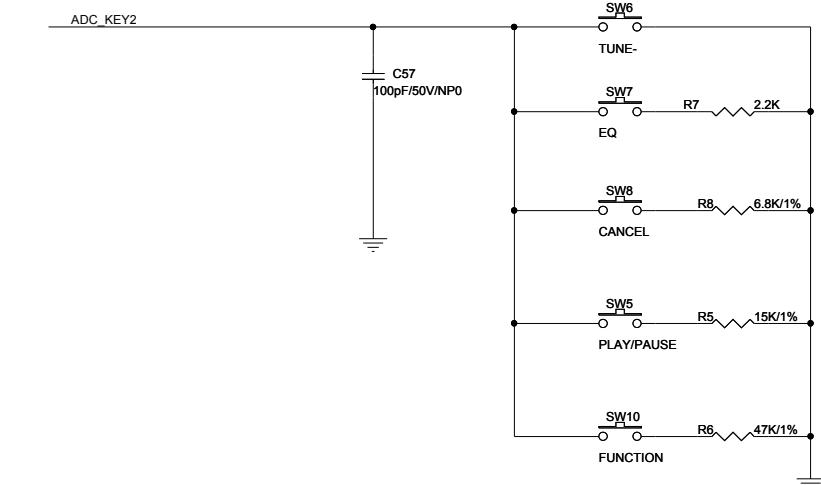
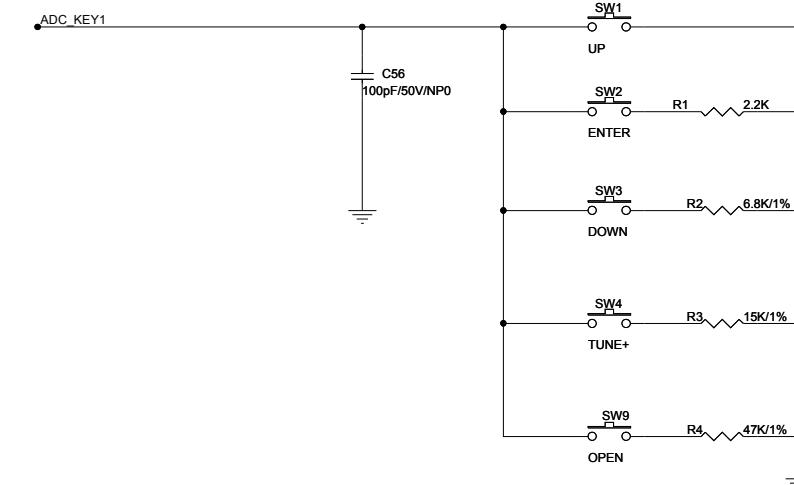
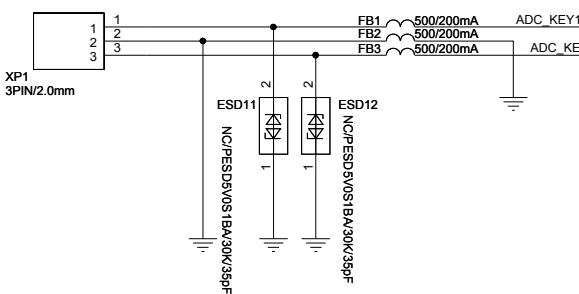
5

6

7

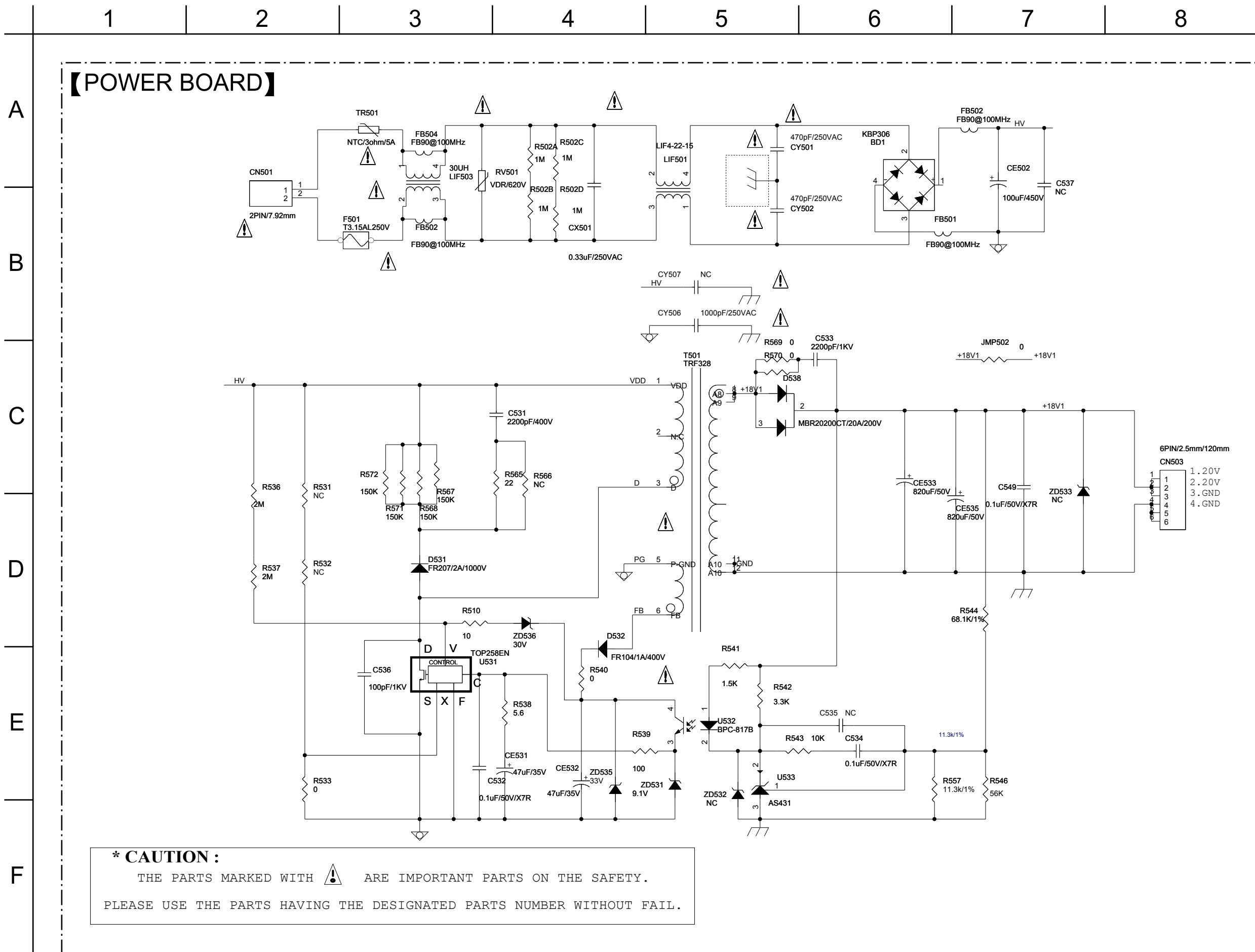
【KEY BOARD】

A



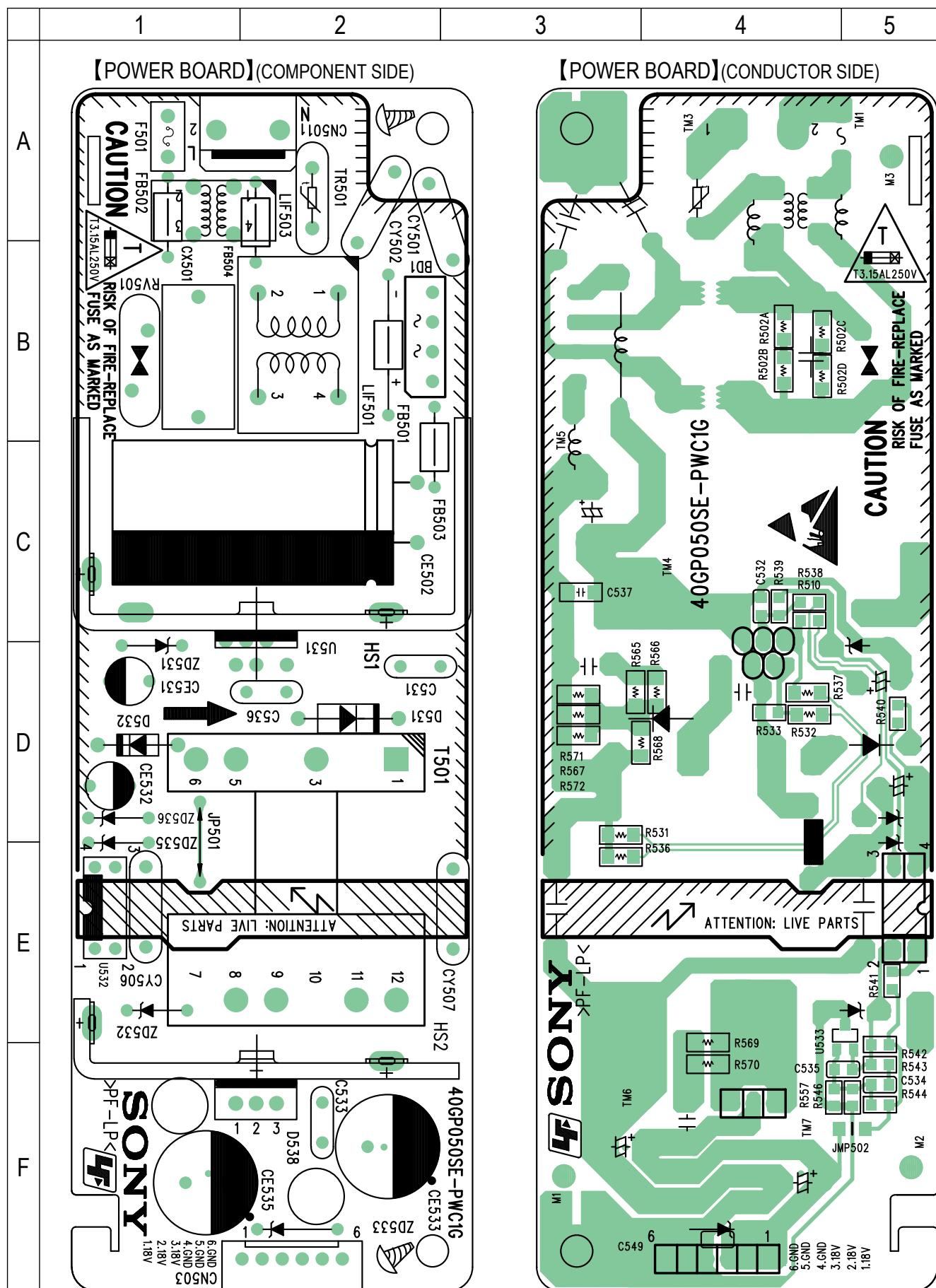
B

6-16. SCHEMATIC DIAGRAM - POWER Board -



6-17. PRINTED WIRING BOARD - POWER Board -

- See page 18 for Circuit Boards Location.
-  : Uses unleaded solder.



SECTION 7

EXPLODED VIEWS

Note:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

- Color Indication of Appearance Parts Example:

KNOB, BALANCE (WHITE) . . . (RED)
 ↑ ↑
 Parts Color Cabinet's Color

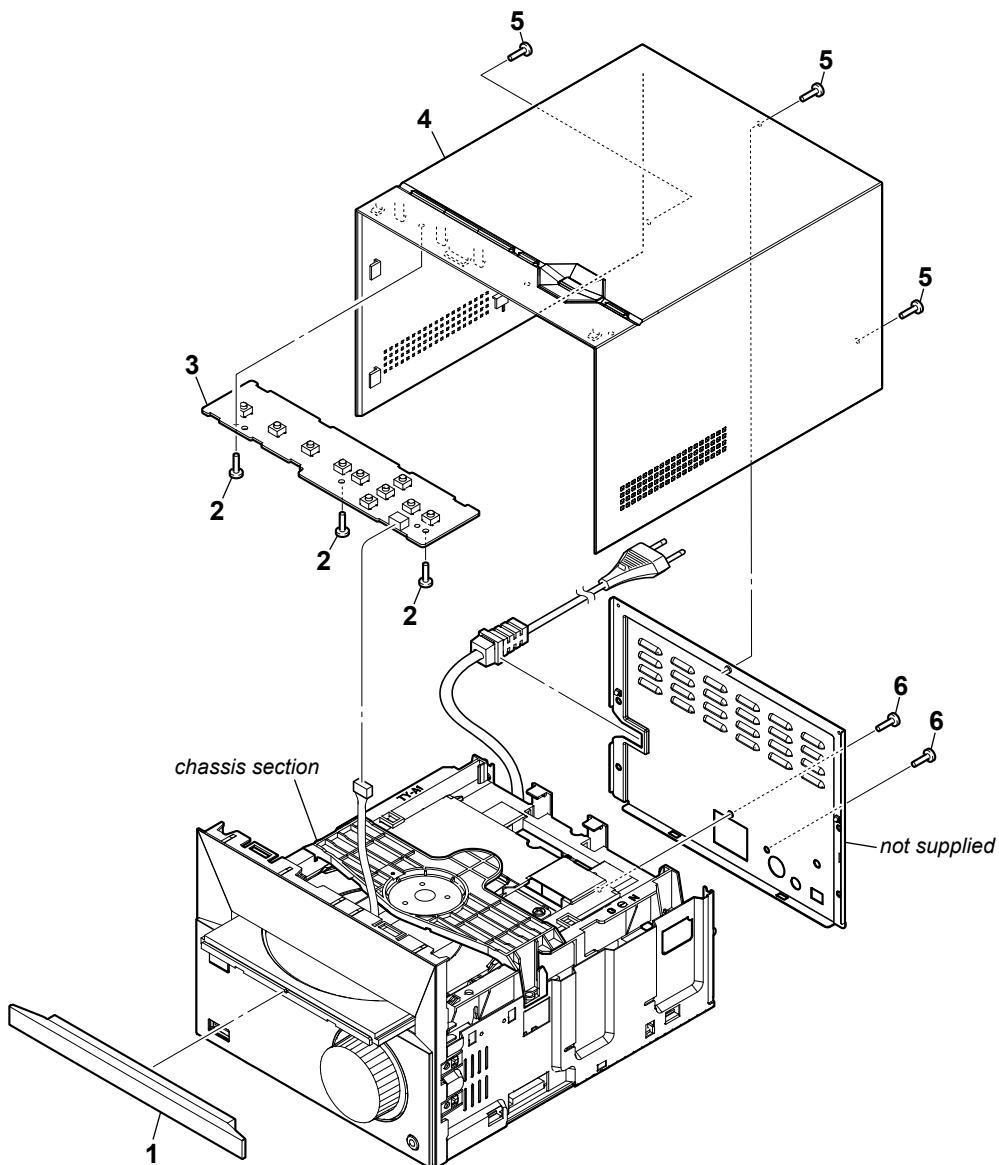
- Abbreviation

AR	: Argentina model
CH	: Chinese model
E32	: 110 – 240V AC area in E model
EA	: Saudi Arabia model
KR	: Korean model
MX	: Mexican model
SP	: Singapore model

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety.

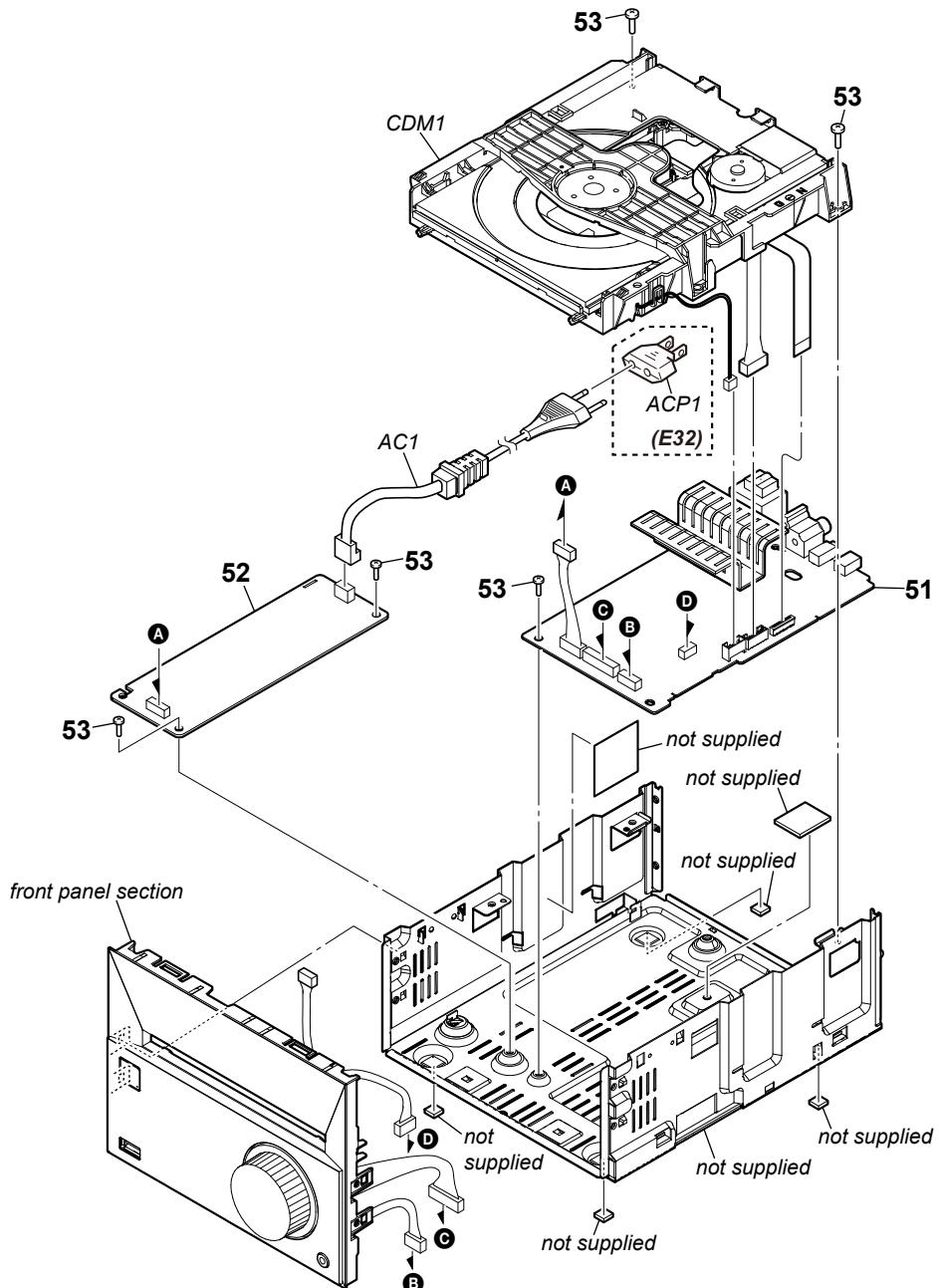
Replace only with part number specified.

原理图和零件清单中标有△记号的零部件，或带有△记号的虚线所圈示的零部件，对于维系安全至关重要。因此只能以指定号码的零部件来更换。

7-1. TOP COVER SECTION

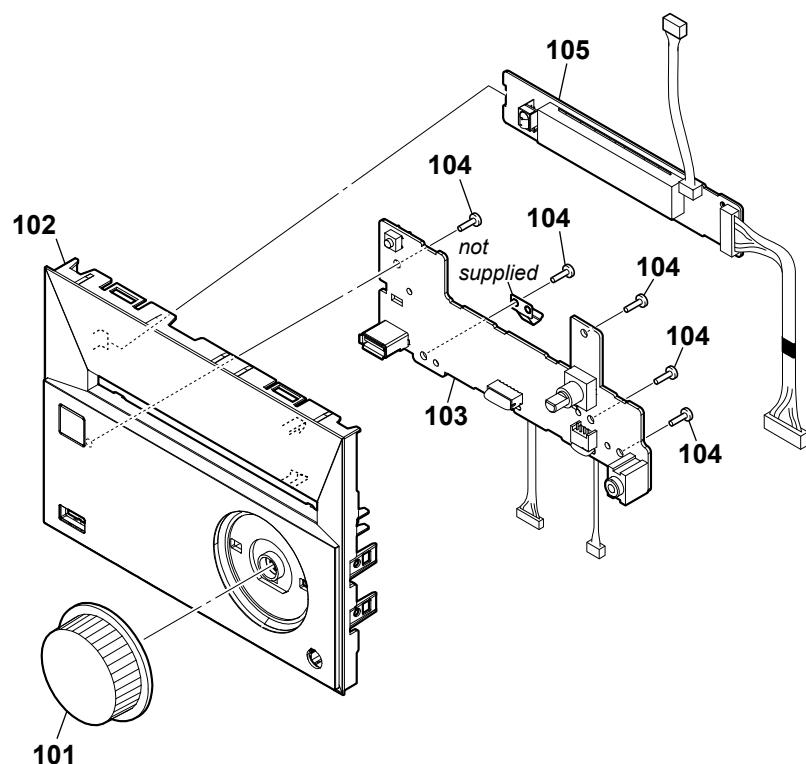
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	4-465-828-11	CD DOOR (S40D)		5	4-465-833-01	SCREW (2)	
2	4-465-832-01	SCREW (1)		6	4-465-834-01	SCREW (3)	
3	A-1945-238-A	KEY BOARD, COMPLETE (Including USB board)					
4	X-2587-413-1	TOP COVER ASSY S40D					

7-2. CHASSIS SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	A-1945-223-A	MAIN BOARD, COMPLETE (E32)		△ AC1	9-885-185-53	CORD, POWER (MX)	
51	A-1970-069-A	MAIN BOARD, COMPLETE (MX)		△ AC1	9-885-185-54	CORD, POWER (AR)	
51	A-1970-070-A	MAIN BOARD, COMPLETE (EA)		△ AC1	9-885-185-55	CORD, POWER (EA)	
51	A-1970-071-A	MAIN BOARD, COMPLETE (AR)		△ AC1	9-885-185-56	CORD, POWER (KR)	
51	A-1970-072-A	MAIN BOARD, COMPLETE (SP)		△ AC1	9-885-185-58	CORD, POWER (CH)	
51	A-1970-073-A	MAIN BOARD, COMPLETE (KR)		△ AC1	9-885-187-01	CORD, POWER (SP)	
51	A-1970-074-A	MAIN BOARD, COMPLETE (CH)		△ ACP1	9-885-169-85	ADAPTOR, CONVERSION PLUG (E32)	
52	A-1945-221-A	POWER BOARD, COMPLETE		△ CDM1	A-1945-216-A	LOADER (TDL-5) & OPU ASSY	
53	4-465-834-01	SCREW (3)				(Including optical pick-up and flexible flat cable)	
△ AC1	9-885-185-52	CORD, POWER (E32)					

7-3. FRONT PANEL SECTION



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
101	4-465-831-01	VOL NOB		104	4-465-832-01	SCREW (1)	
102	X-2587-414-1	FRONT PANEL ASSY S40D		105	A-1945-218-A	VFD BOARD, COMPLETE	
103	A-1945-238-A	USB BOARD, COMPLETE (Including KEY board)					

MEMO

REVISION HISTORY