

# Service Service Service



# Service Manual



## CONTENTS

Technical specification .....	1-2
Version variation .....	1-2
Service measurement setup.....	1-3
Service aids .....	1-4
Instructions on CD playability .....	2-1..2-2
Block diagram.....	3-1
Wiring diagram .....	4-1
Disassembly diagram.....	5-1..5-2
Main board	
Circuit diagram .....	6-1
Layout diagram.....	6-2..6-3
Display board	
Circuit diagram .....	7-1..7-2
Layout diagram.....	7-3..7-4
USB/SD board	
Circuit diagram .....	8-1
Layout diagram.....	8-2

AMP Board	
Circuit diagram .....	9-1..9-2
Layout diagram.....	9-3..9-4
CD board	
Circuit diagram .....	10-1
Layout diagram.....	10-2..10-3
MCU Board	
Circuit diagram .....	11-1
Layout diagram.....	11-2..11-3
Exploded view diagram .....	12-1

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**CLASS 1  
LASER PRODUCT**



- Total Sound Power (RMS): 800 W
- Output Power: 9900W PMPO
- Sound Enhancement: MAX Sound, Dynamic Bass Boost 3 steps, Incredible Surround, Digital Sound Control 4 modes, Virtual Ambience Control

- Number of Loudspeakers: 3
- Main Speaker: 2" tweeter, Bass Reflex Speaker System, 2 way
- Subwoofer driver: 10" woofer
- Subwoofer type: Passive

- Loader Type: 3 CD Carousel
- Number of Discs: 3
- Playback Media: CD, CD-R, CD-RW, MP3-CD, WMA-CD, SD Card, USB flash drive
- Disc Playback Modes: 40-Track Programmable, Repeat/one/disk/program, Shuffle Play
- USB Direct / SD Modes: Fast Backward/Fast Forward, Play/Pause, Previous/Next, Repeat, Shuffle

- Recording Media: USB device, SD/MMC card
- USB recording sources: CD, Tuner, Microphone in, Aux, SD Card
- SD card recording sources: Aux, CD, Microphone in, Tuner, USB device
- USB / SD card recording modes: Delete, Instant record, Programmed tracks, Schedule radio program, Single disc, Single track

- Auto digital tuning
- Station presets: 40

- Tuner Bands: FM, MW
- Tuner Enhancements: Auto Store, Easy Set (Plug & Play)

- Audio Connections: RCA Aux in, 3.5mm stereo line in -MP3 link
- USB: USB host
- Microphone: Dual Microphone sockets
- Other connections: FM Antenna. MW Antenna

- Alarms: CD Alarm, USB alarm, Radio Alarm, Sleep timer
- Clock: On main display
- Display Type: FTD
- Karaoke: MIC volume, Echo control

- Remote control: 36-key with 2xAAA batteries
- User Manual: Spanish, B-Portuguese
- Quick start guide: Spanish, B-Portuguese
- Guarantee booklet: Global version
- Included accessories: FM/MW Antenna, Batteries for remote control, \*Flat pin adaptor
- Cables: MP3 line-in cable

- Set dimensions (W x H x D): 265 x 359 x 353 mm
- Main speaker dimensions (W x H x D): 263 x 447 x 360 mm
- Subwoofer dimensions (W x H x D): 337 x 491 x 360 mm
- Packaging dimensions (W x H x D): 791 x 562 x 741 mm
- Weight incl. Packaging: 35.2 kg

- Power supply: 100-240VAC, 50/60Hz

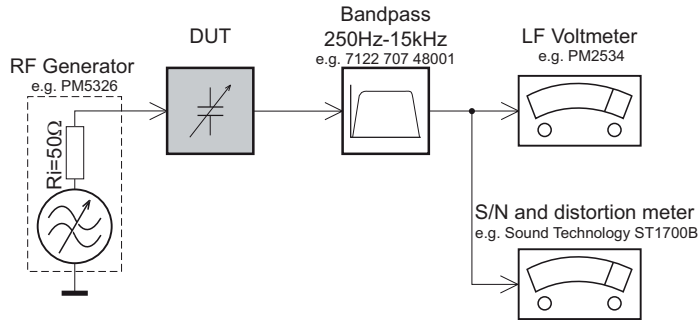
## VERSION VARIATION

Type /Versions:		FWM663									
Board in used:	Service policy	/55	/00		/77	/BK	/93	/94			/98
USB BOARD		C/M			C/M	C/M					
MAIN BOARD		C/M			C/M	C/M					
AMP BOARD		C/M			C/M	C/M					
DISPLAY BOARD		C/M			C/M	C/M					
CD BOARD		C/M			C/M	C/M					
MCU BOARD		C/M			C/M	C/M					
SD BOARD		C/M			C/M	C/M					
Type /Versions:		FWM663									
Features	Feature difference	/55	/00		/77	/BK	/93	/94			/98
RDS											
VOLTAGE SELECTOR											
ECO STANDBY - DARK											

\* TIPS : C -- Component Lever Repair.  
M -- Module Lever Repair  
√ -- Used

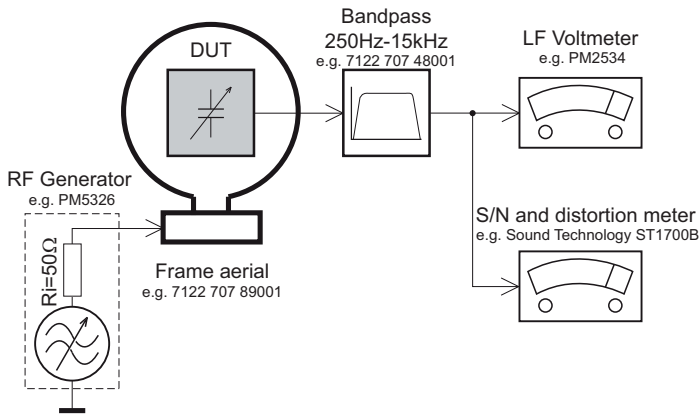
## MEASUREMENT SETUP

### Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilotone (19kHz, 38kHz).

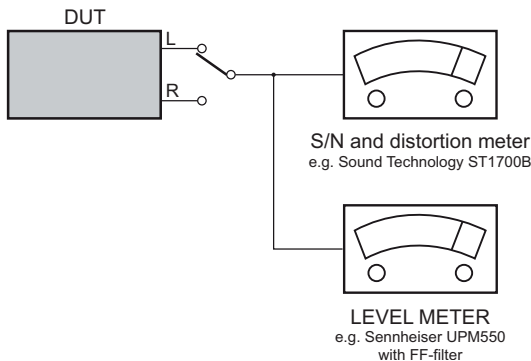
### Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage.  
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

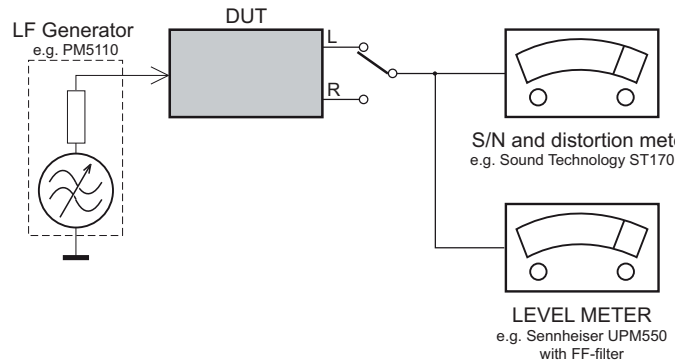
### CD

Use Audio Signal Disc SBC429 4822 397 30184  
(replaces test disc 3)



### Recorder

Use Universal Test Cassette **Cr02** SBC419 4822 397 30069  
or Universal Test Cassette **Fe** SBC420 4822 397 30071



## SERVICE AIDS

### **GB** WARNING


All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.  
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

### ESD



### **GB**

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used

Safety components are marked by the symbol .

**CLASS 1  
LASER PRODUCT**

## INFORMATION ABOUT LEAD-FREE SOLDERING

Philips CE is producing lead-free sets from 1.1.2005 onwards.

### IDENTIFICATION:

Regardless of special logo (not always indicated) one must treat all sets from 1 Jan 2005 onwards, according next rules:



- 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
- \* Lead free

You will find this and more technical information within the "magazine", chapter "workshop news".

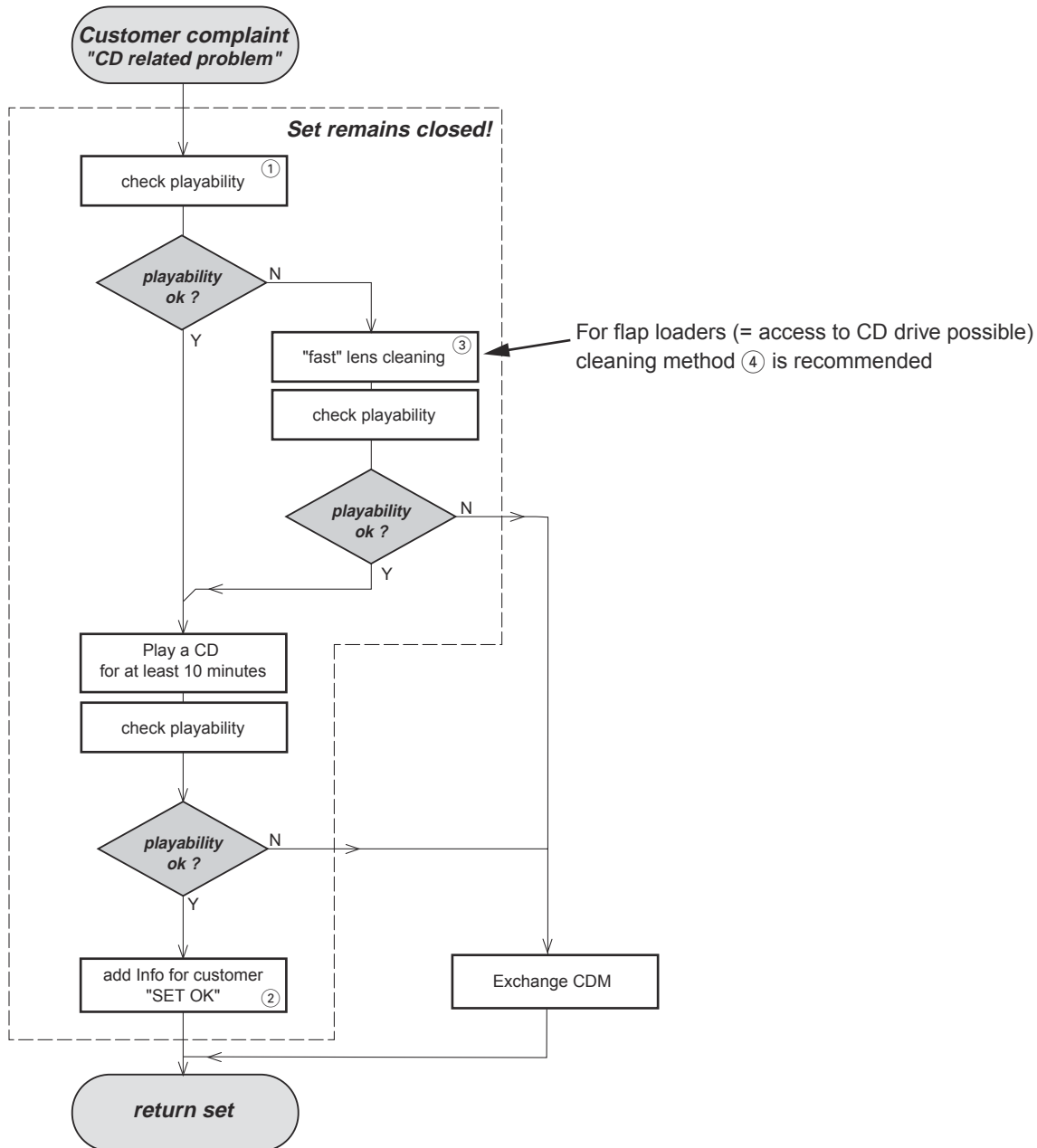
For additional questions please contact your local repair-helpdesk.

## SERVICE INSTRUCTION

Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the AC Power lead for external damage.
- Check the strain relief of the AC Power cord for proper function.
- Check the electrical DC resistance between the AC Power Plug and the secondary side (only for sets which have a AC Power isolated power supply):
  1. Unplug the AC Power cord and connect a wire between the two pins of the AC Power plug.
  2. Set the AC Power switch to the "on" position (keep the AC Power cord unplugged!).
  3. Measure the resistance value between the pins of the AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be larger than 4.5 Mohm (For U.S. it should be between 4.2 Mohm and 12 Mohm).
  4. Switch "off" the set, and remove the wire between the two pins of the AC Power plug.
- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

## INSTRUCTIONS ON CD PLAYABILITY



① - ④ For description - see following pages

## INSTRUCTIONS ON CD PLAYABILITY

①

### PLAYABILITY CHECK

For sets which are compatible with **CD-RW** discs  
 use CD-RW Printed Audio Disc.....7104 099 96611  
 TR 3 (Fingerprint)  
 TR 8 (600µ Black dot) **maximum at 01:00**

- playback of these two tracks without audible disturbance  
 playing time for: Fingerprint  $\geq 10$ seconds  
 Black dot from 00:50 to 01:10
- jump forward/backward (search) within a reasonable time

For all other sets  
 use CD-DA SBC 444A.....4822 397 30245  
 TR 14 (600µ Black dot) **maximum at 01:15**  
 TR 19 (Fingerprint)  
 TR 10 (1000µ wedge)

- playback of all these tracks without audible disturbance  
 playing time for: 1000µ wedge  $\geq 10$ seconds  
 Fingerprint  $\geq 10$ seconds  
 Black dot from 01:05 to 01:25
- jump forward/backward (search) within a reasonable time

②

### CUSTOMER INFORMATION

It is proposed to add an addendum sheet to the set which informs the customer that the set has been checked carefully - but no fault was found.

The problem was obviously caused by a scratched, dirty or copy-protected CD. In case problems remain, the customer is requested to contact the workshop directly.

The lens cleaning (method ④) should be mentioned in the addendum sheet.

The final wording in national language as well as the printing is under responsibility of the Regional Service Organizations.

④

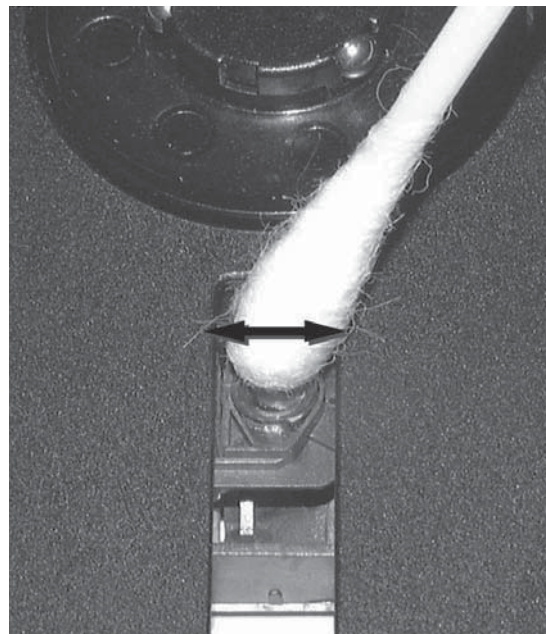
### LIQUID LENS CLEANING

**Before touching the lens it is advised to clean the surface of the lens by blowing clean air over it. This to avoid that little particles make scratches on the lens.**

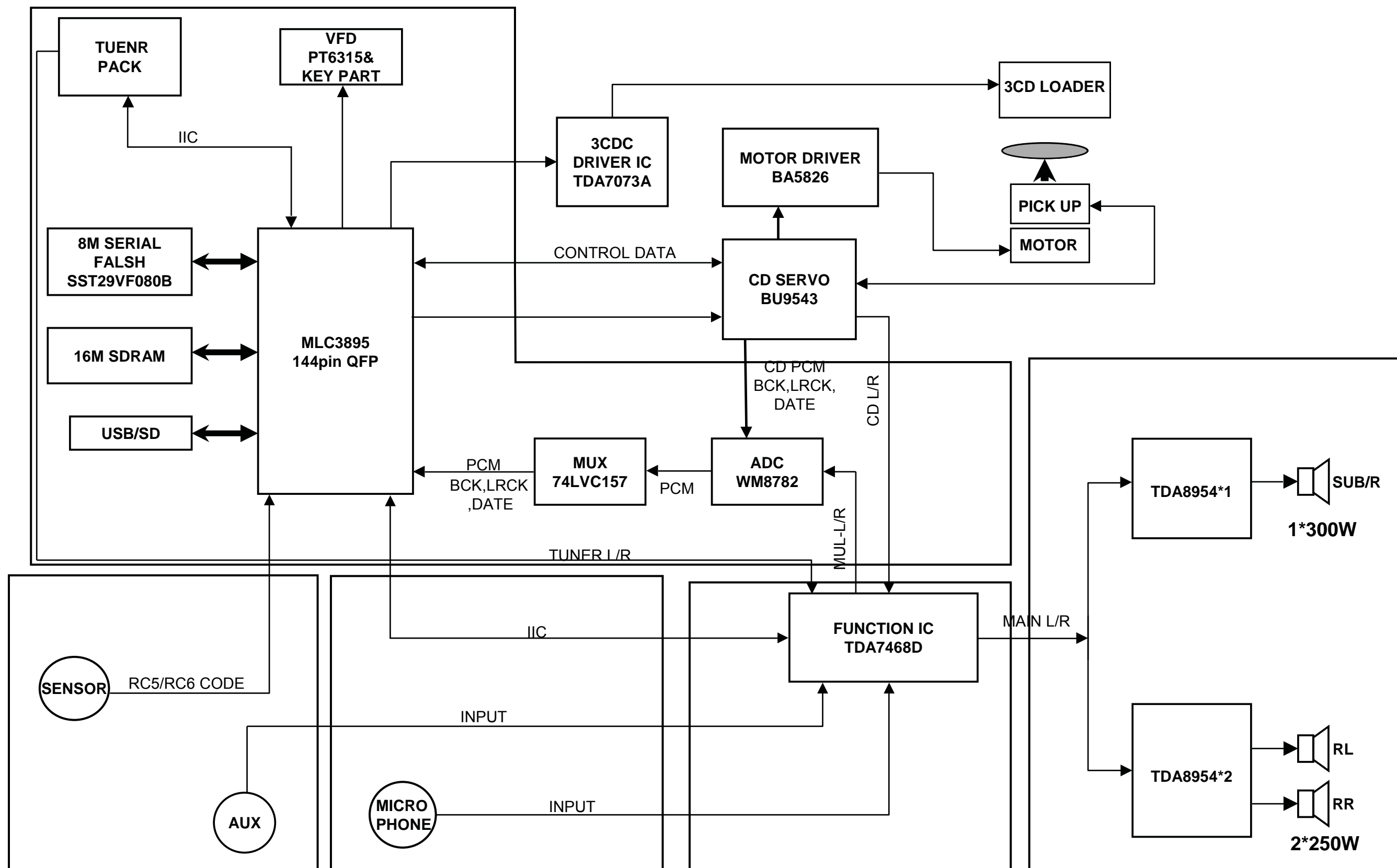
Because the material of the lens is synthetic and coated with a special anti-reflectivity layer, cleaning must be done with a non-aggressive cleaning fluid. It is advised to use "Cleaning Solvent

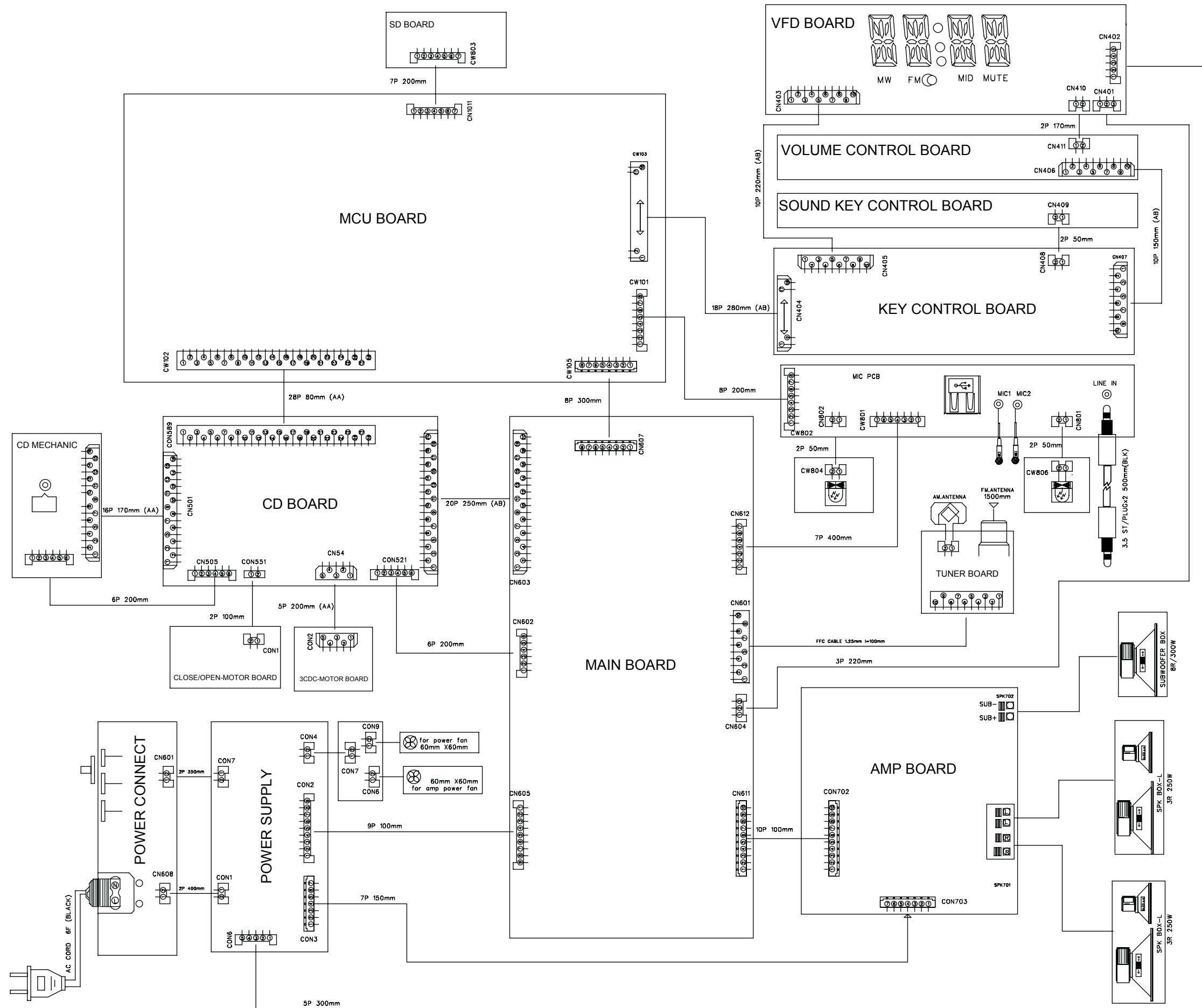
The actuator is a very precise mechanical component and may not be damaged in order to guarantee its full function. Clean the lens gently (don't press too hard) with a soft and clean cotton bud moistened with the special lens cleaner.

The direction of cleaning must be in the way as indicated in the picture below.



## BLOCK DIAGRAM



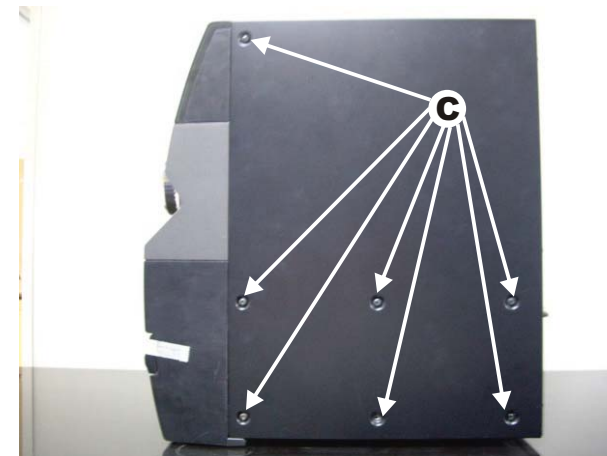
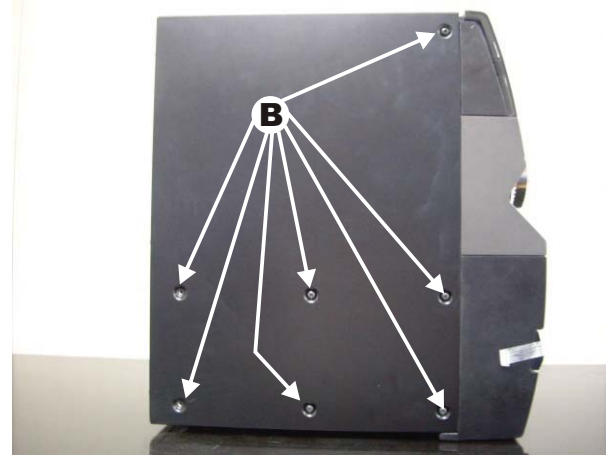
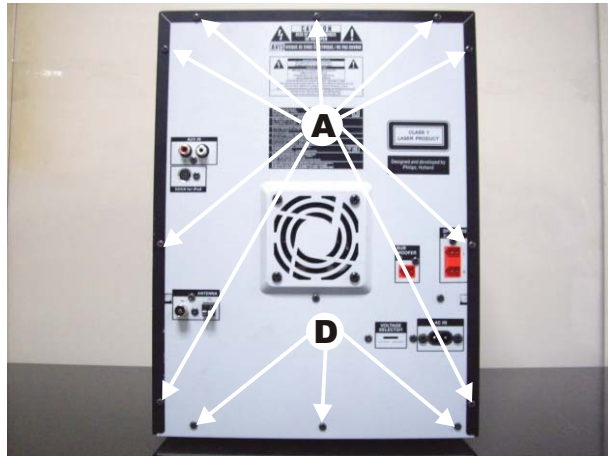




## DISASSEMBLY INSTRUCTIONS

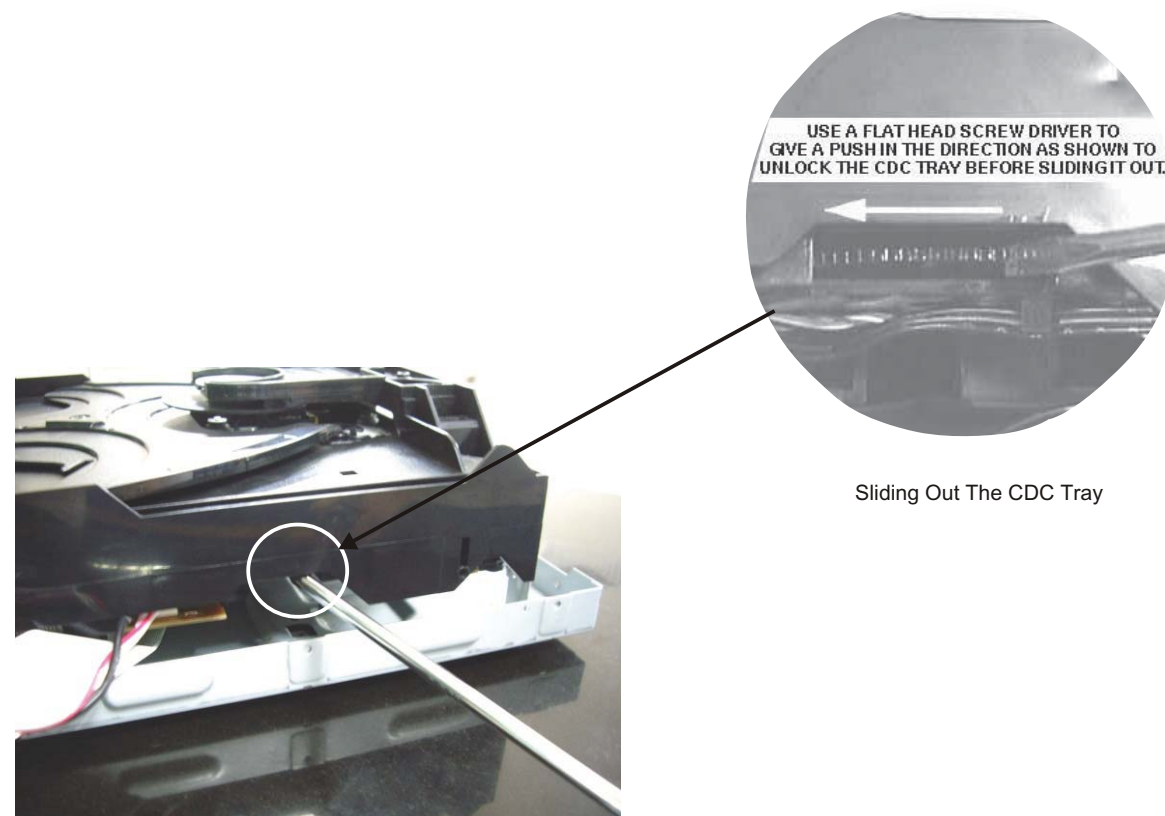
### Dismantling of Rear Portion

- 1) Remove 9 screws A and 14 screws B/C as indicated to loosen the outer plate.
- 2) Remove 3 screws D as indicated to loosen the Rear portion .

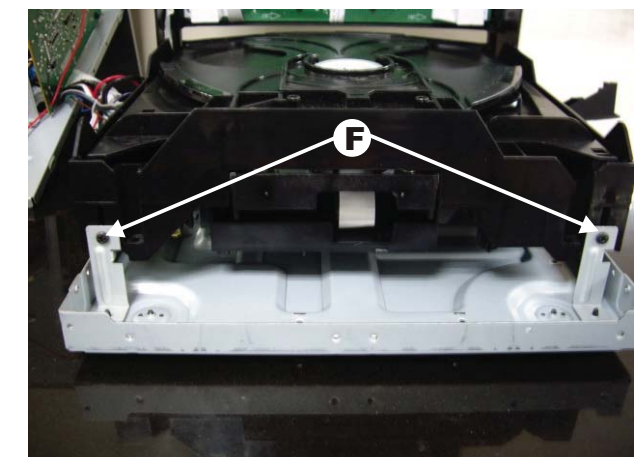
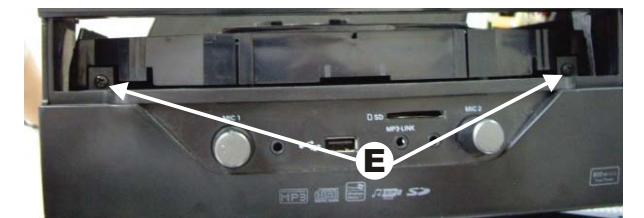


### Dismantling of the CDC Module

- 1) Slide out the CDC Tray as shown in the diagram below with the help of a flat head screw driver.
- 2) Remove the Cover Tray CDC as indicated.
- 3) Loosen 2 screws E and 2 screws F to remove the CDC Module as indicated.



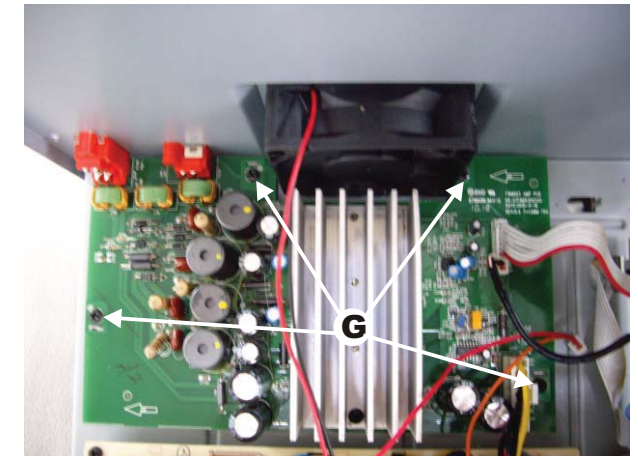
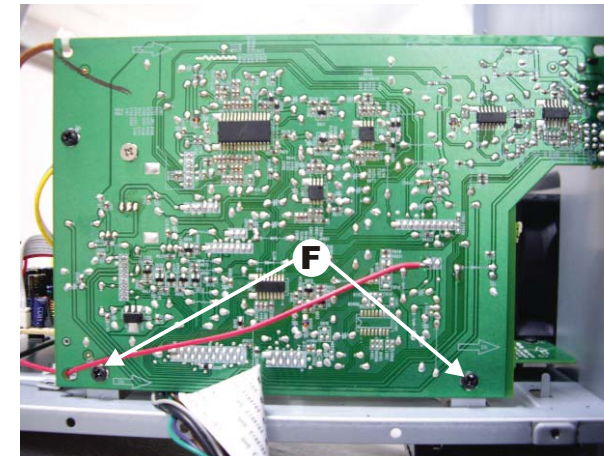
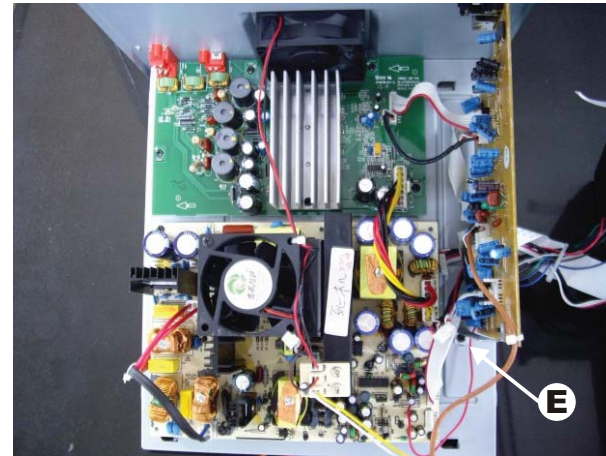
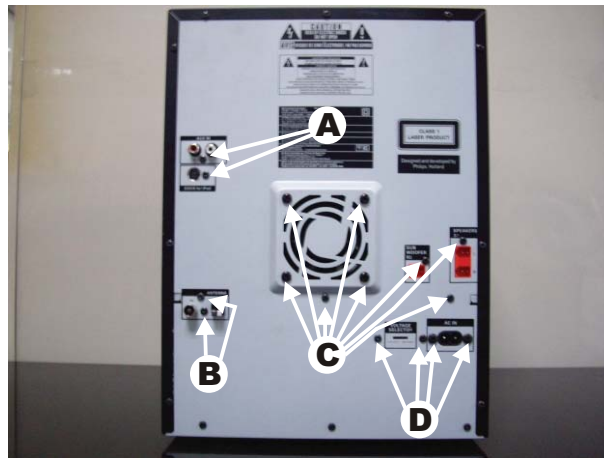
Remove Cover Tray CDC



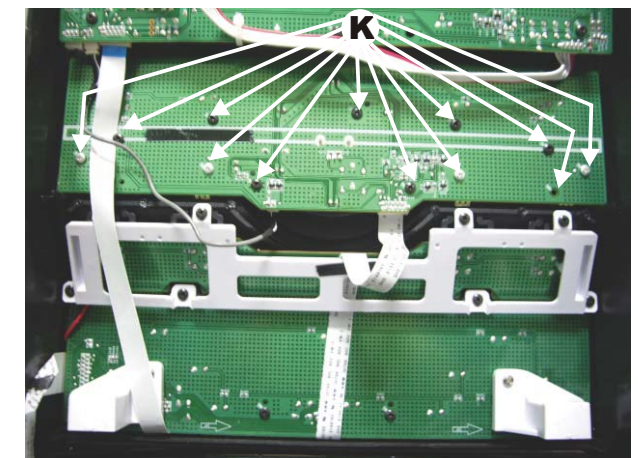
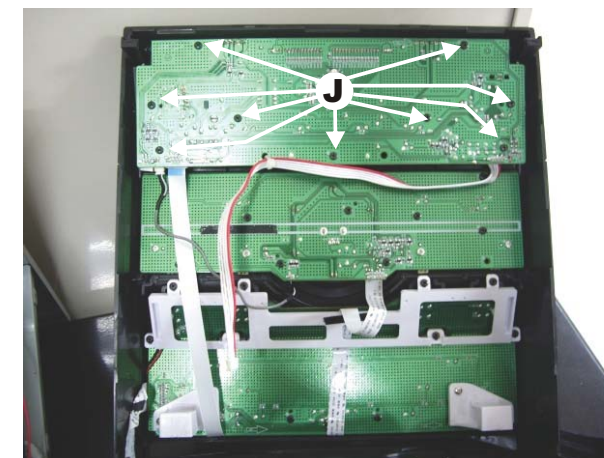
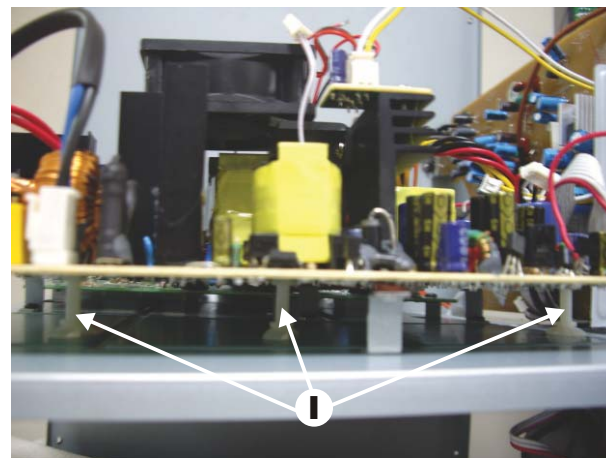
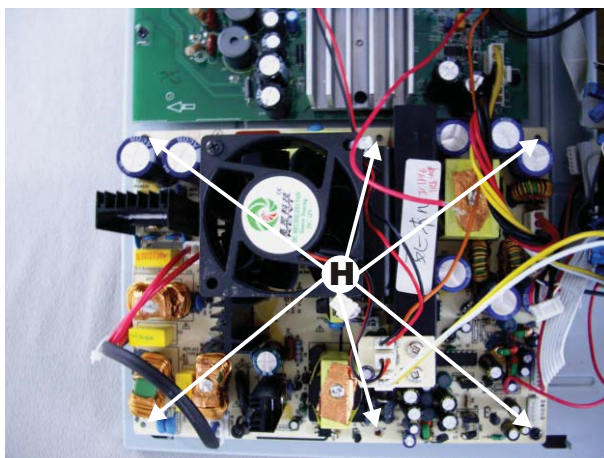


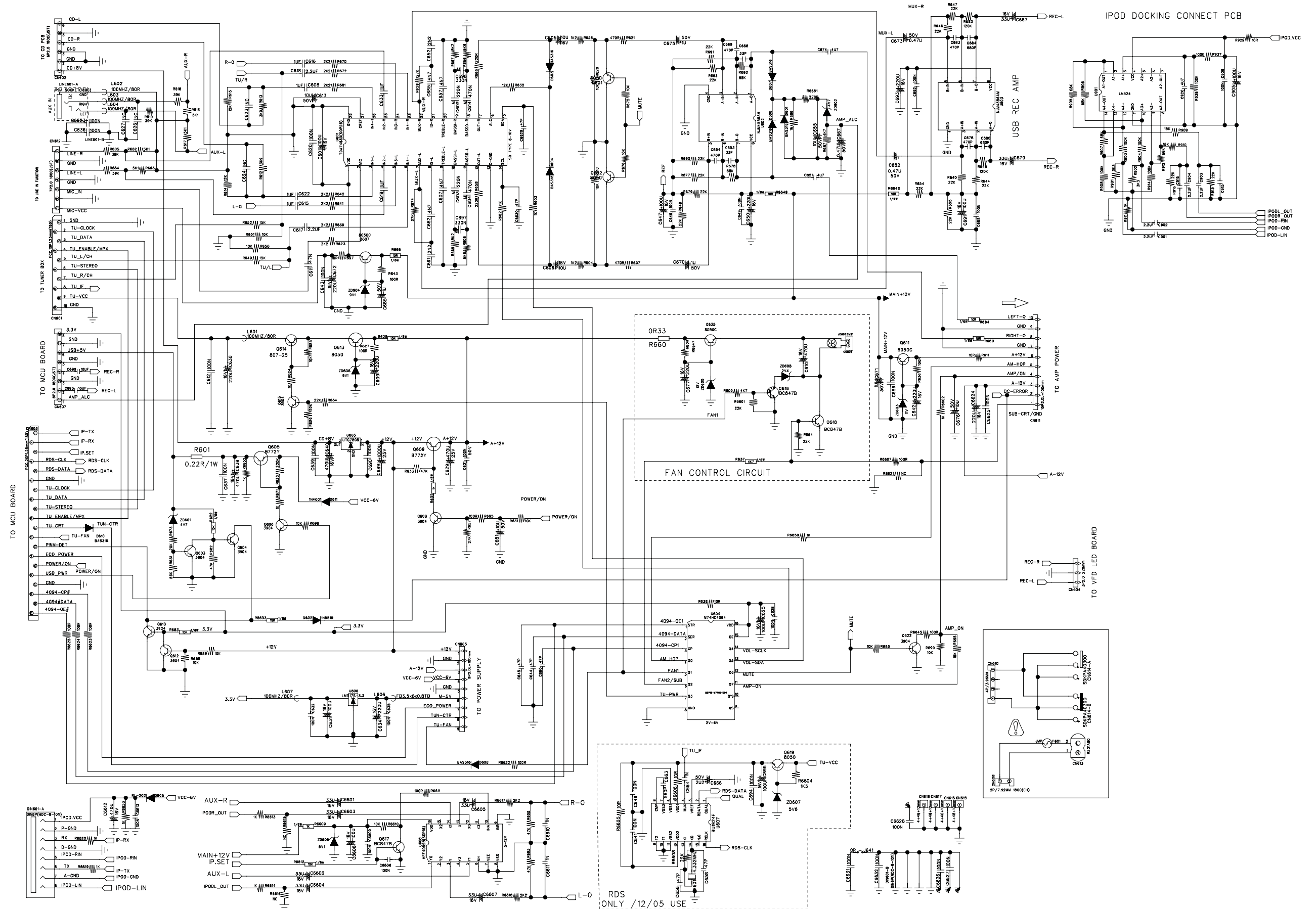
### Dismantling of the PCB Board

- 1) Remove 2 screws A and 3 screws E&F as indicated to loosen the Main Board.
- 2) Remove 2 screws B as indicated to loosen the Tuner Module.
- 3) Remove 8 screws C and 4 screws G as indicated to loosen the Amp Board.
- 4) Remove 4 screws D as indicated to loosen the AC Board.



- 5) Remove 6 screws H and 3 PCB Spacer I as indicated to loosen the Switch Power Board.
- 6) Remove 9 screws J as indicated to loosen the Display Board.
- 7) Remove 12 screws K as indicated to loosen the Volume Board.







250x197x1.6mm

MODE	FWM663/998
Description	MAIN PCB
Board Size	125x197x1.6mm
PART P/N	48-01FM66300120
MATERIAL	94VO 1.6MM
MARK REV	REV:1.0
DATE CODE	2010 0628

1-MIC-VCC  
2-GND  
3-MIC\_IN  
4-GND  
5-LINE-L  
6-AGND  
7-LINE-R

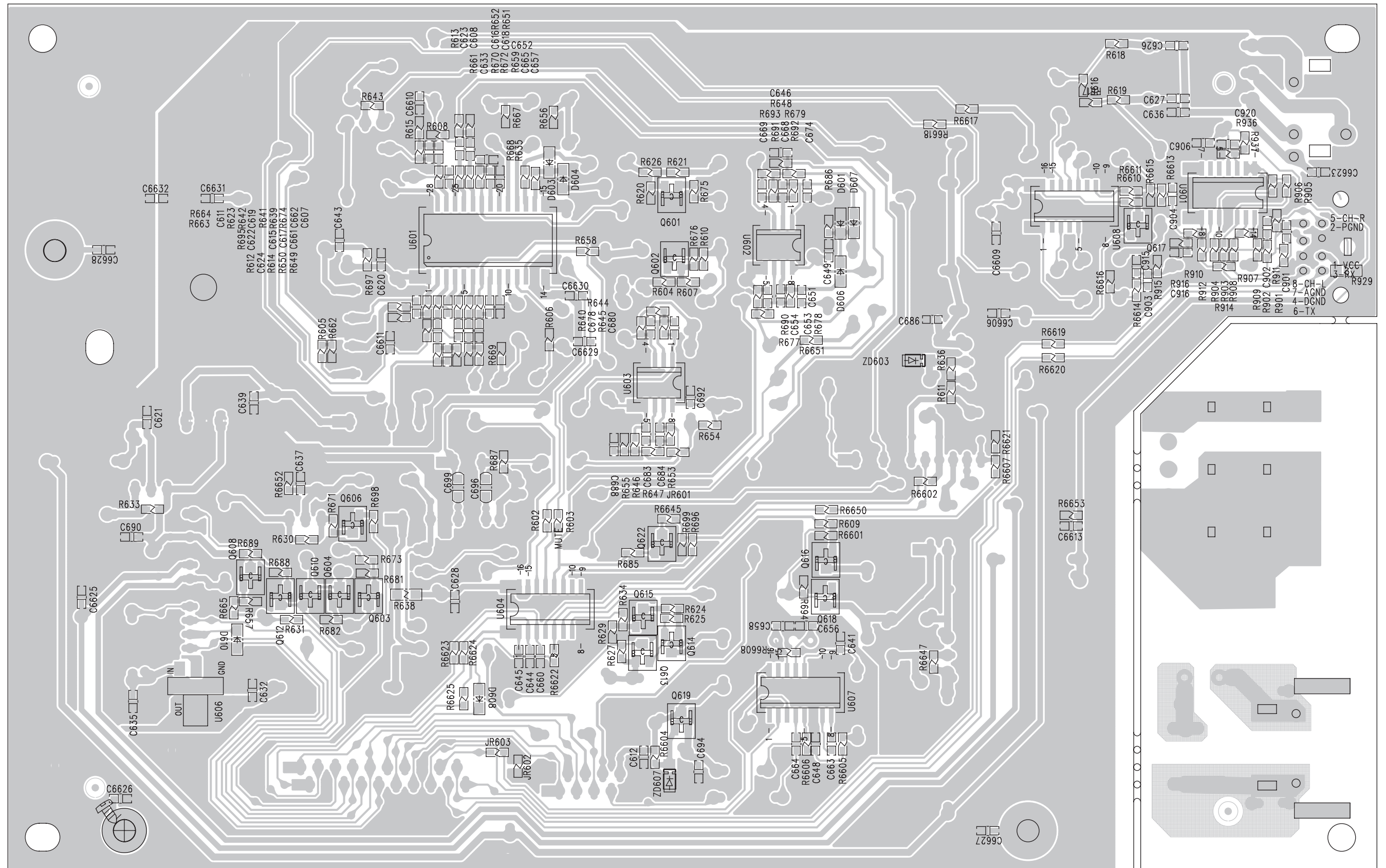
1-SUB CRT/GND  
2-DC-ERROR  
3-A-12V  
4-AMP/ON  
5-AM-HOPPING  
6-A+12V  
7-GND  
8-RIGHT-0  
9-AGND  
10-LEFT-0

1-AMP\_ALC  
2-REC-L  
3-AGND  
4-REC-R  
5-USB\_GND  
6-USB+5V  
7-GND  
8-MCU3V3

1-VCC+12V  
2-GND  
3-VCC-12V  
4-USB-5V  
5-USB-C  
6-MCU-5V  
7-ECO\_POWER  
8-AM-HOP  
9-TUN-FAN

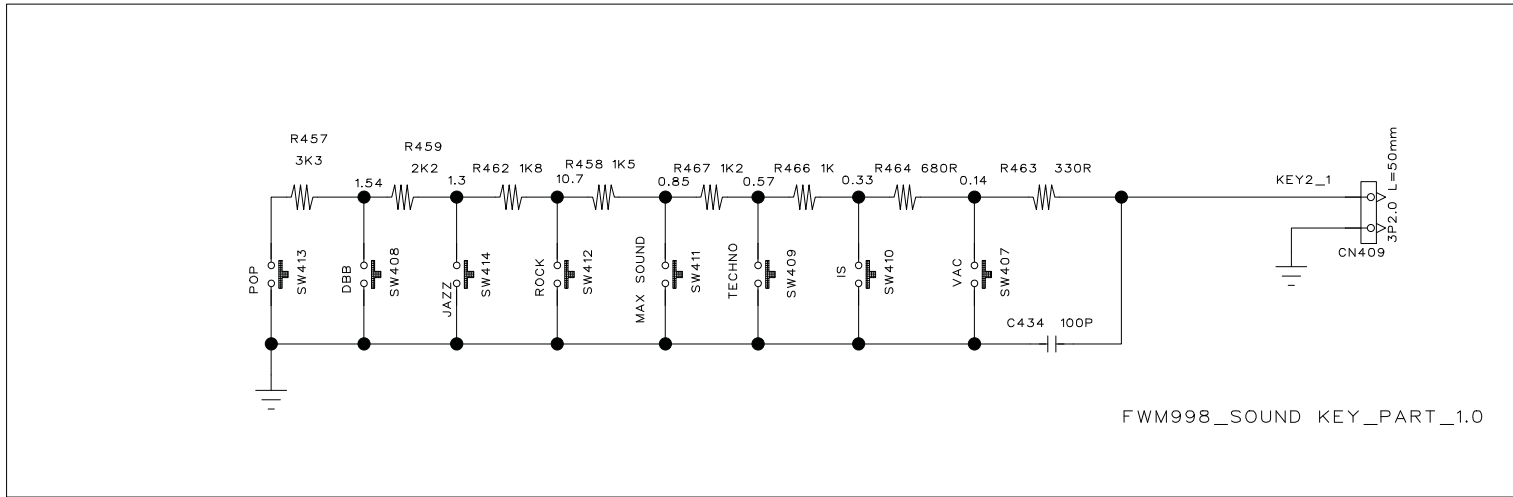
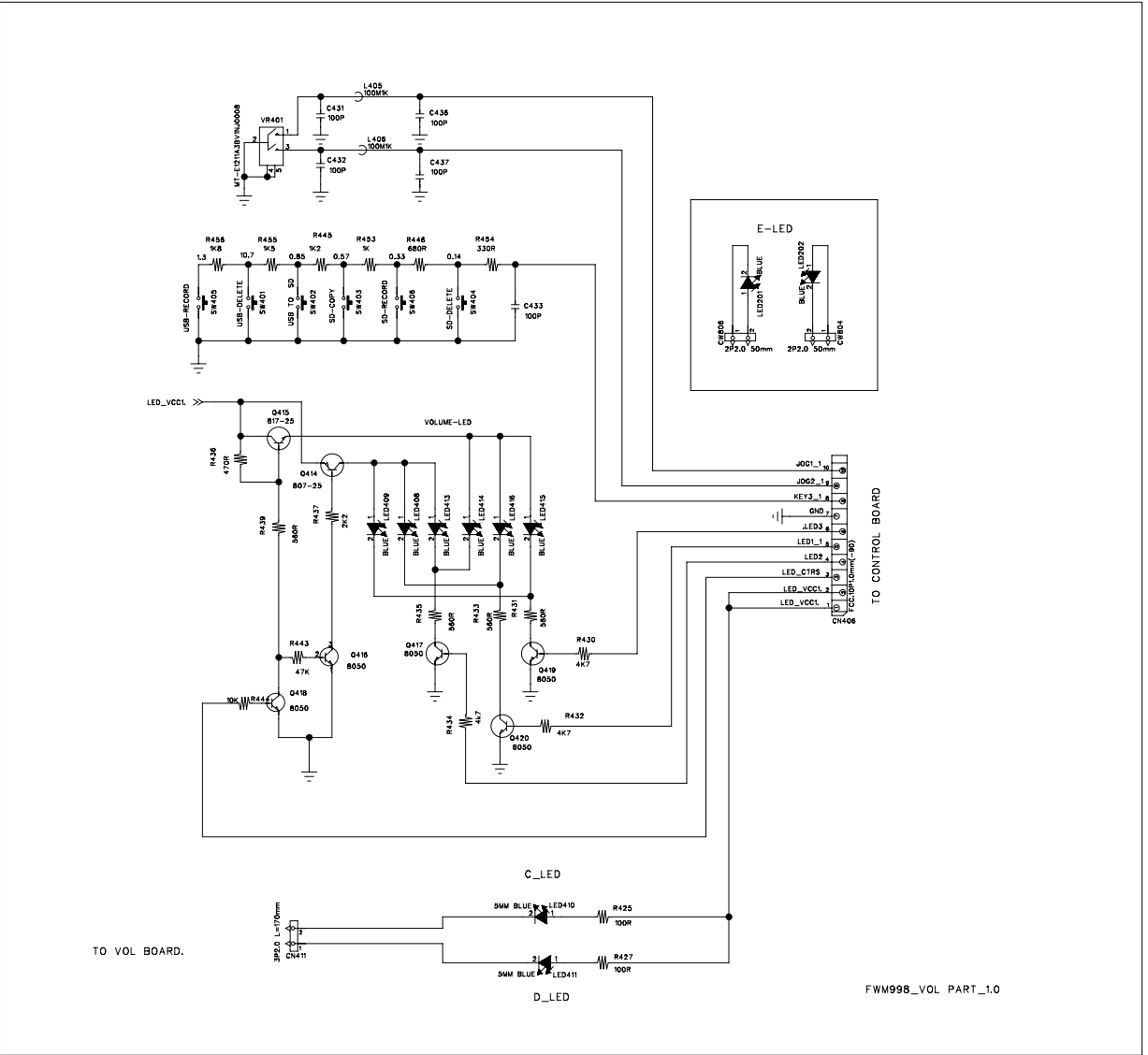
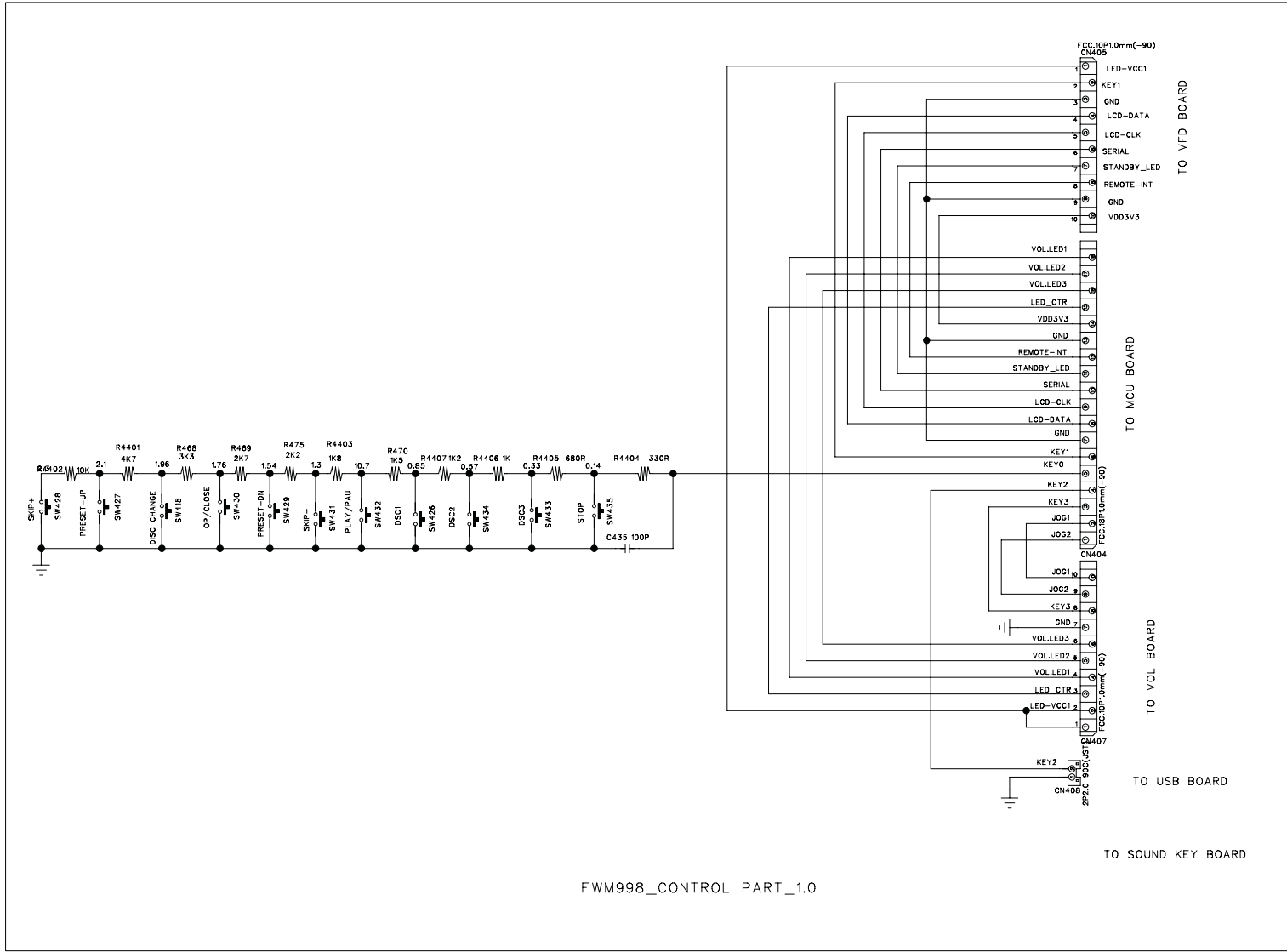
10-AGND  
9-TUN-VCC  
8-IF  
7-RIGHT-0  
6-ST  
5-LEFT-0  
4-TU\_ENABLE  
3-TU\_DATA  
2-TU\_CLOCK  
1-GND

1-IP-TX  
2-IP-RX  
3-P-SET  
4-RDS-CLK  
5-RDS-DATA  
6-GND  
7-TU\_CLOCK  
8-TU\_DATA  
9-TU\_STEREO  
10-TU\_ENABLE  
11-PWR\_DET  
12-FAN2  
13-NTC\_POWER  
14-ECO\_POWER  
15-POWER\_ON  
16-USB\_PWR  
17-GND  
18-4094-CPI  
19-4094-DATA  
20-4094-OET



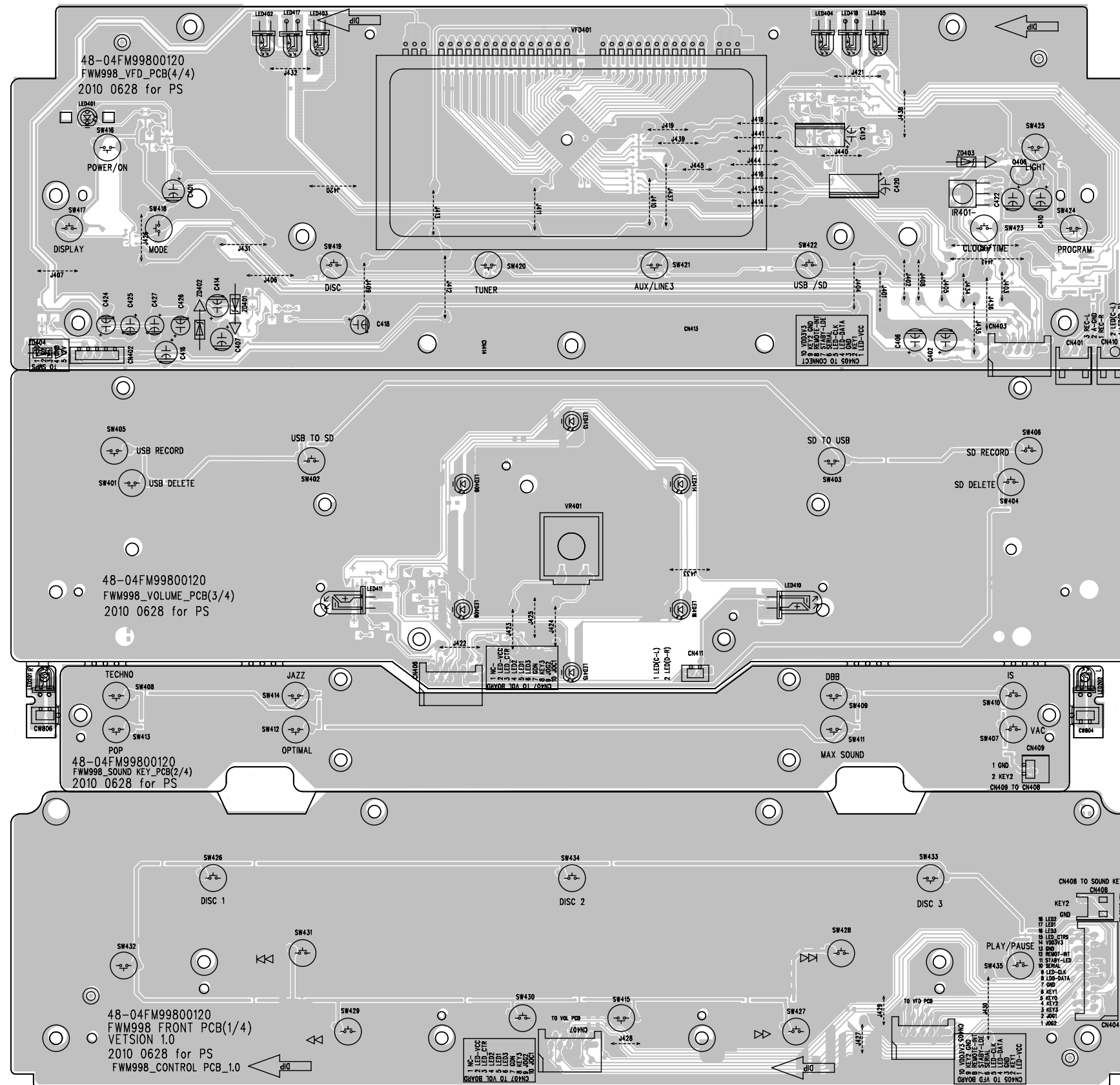


CIRCUIT DIAGRAM - DISPLAY BOARD  
PART2



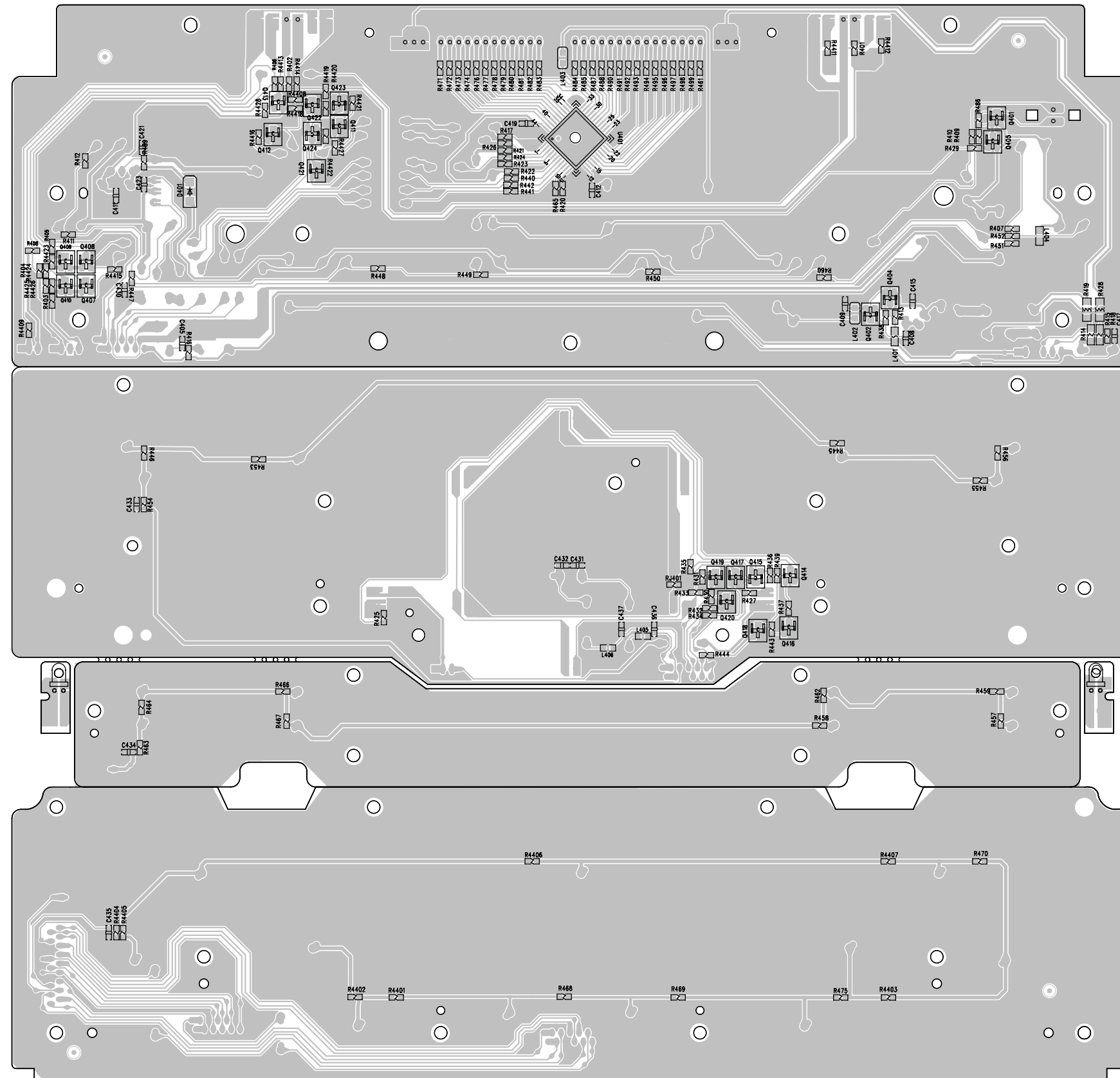


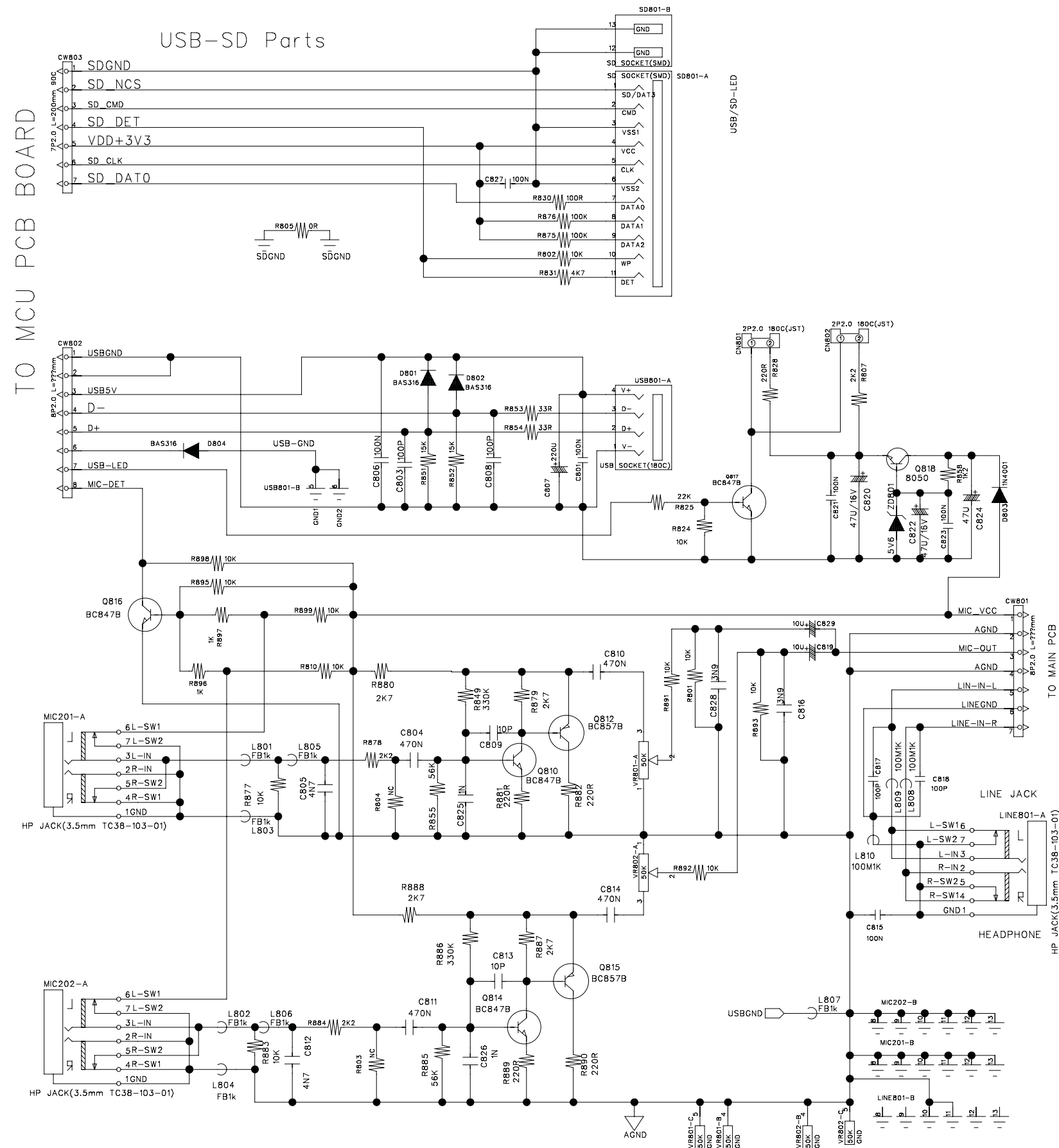
## PCB LAYOUT - DISPLAY BOARD TOP SIDE



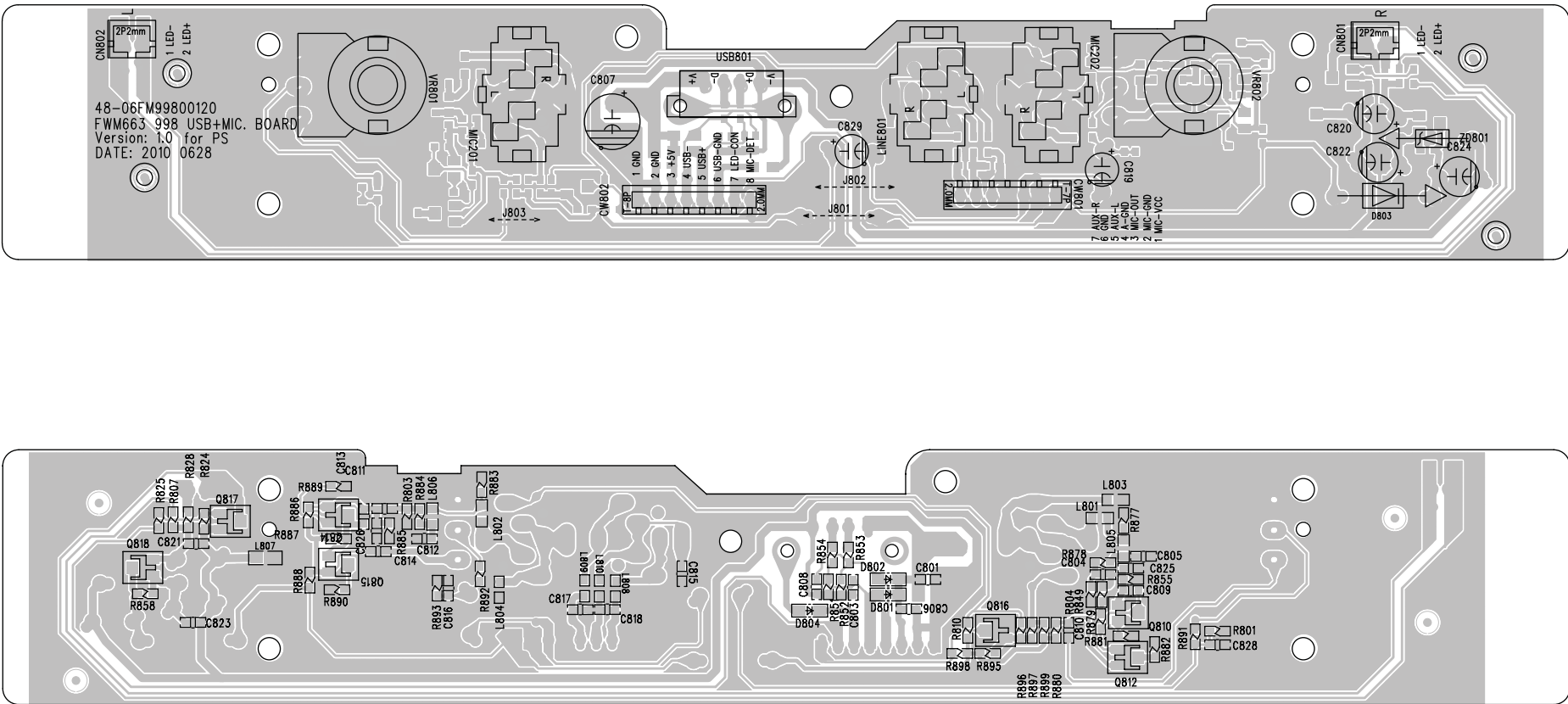


PCB LAYOUT - DISPLAY BOARD  
BOTTOM SIDE

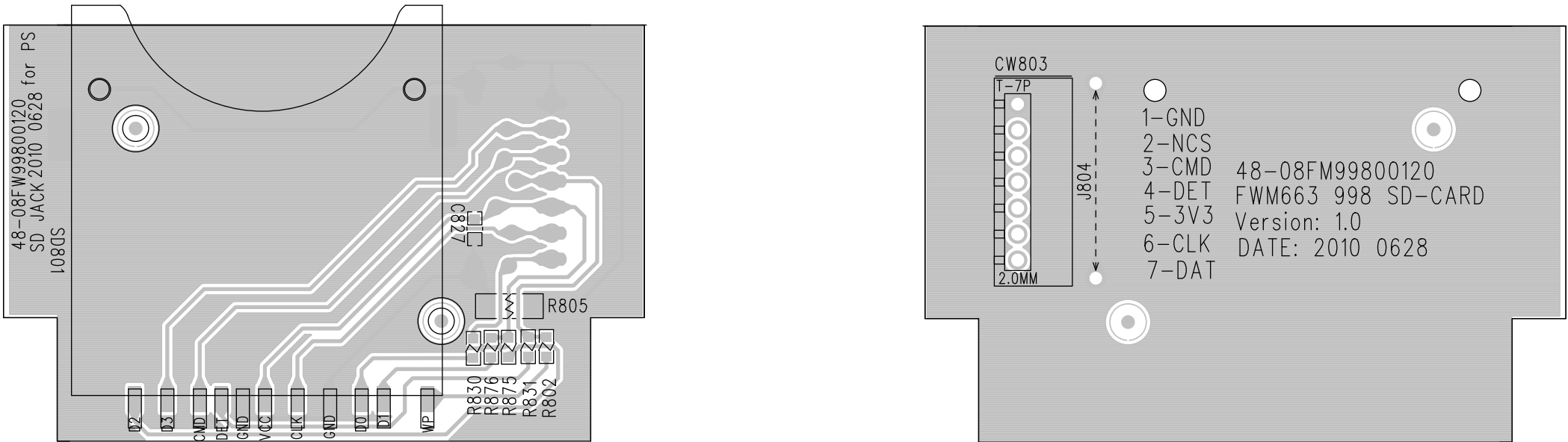




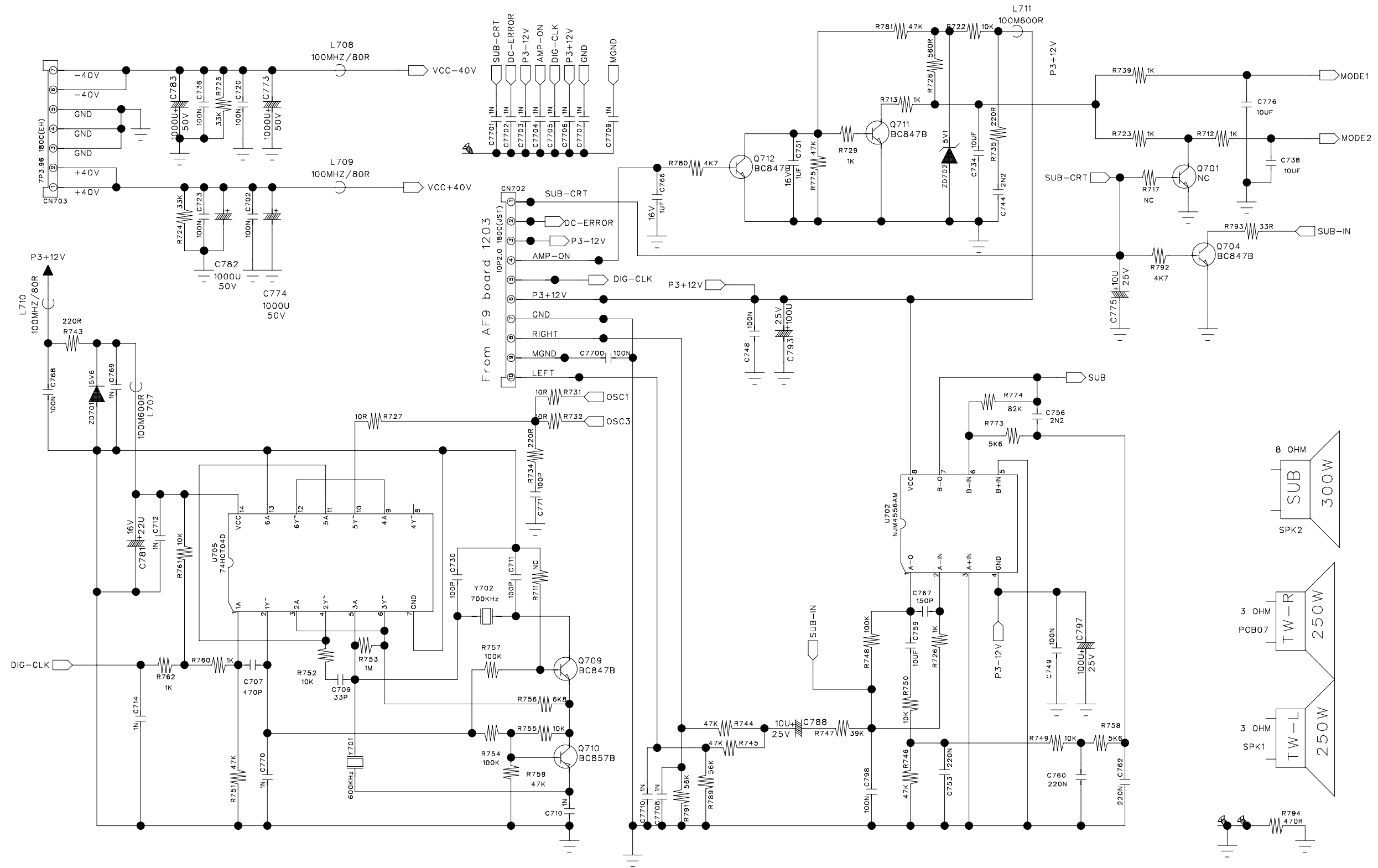
PCB LAYOUT - USB BOARD



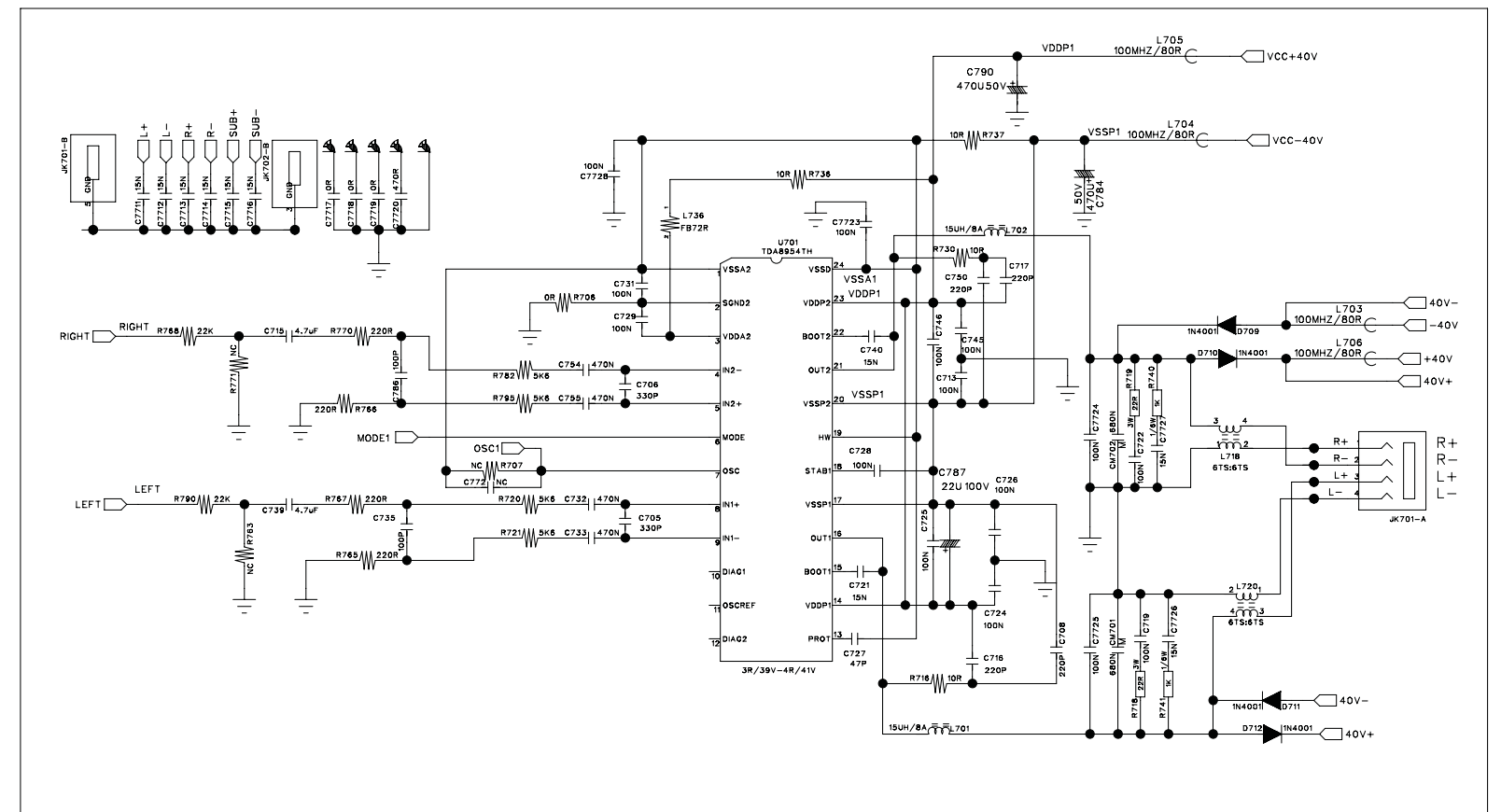
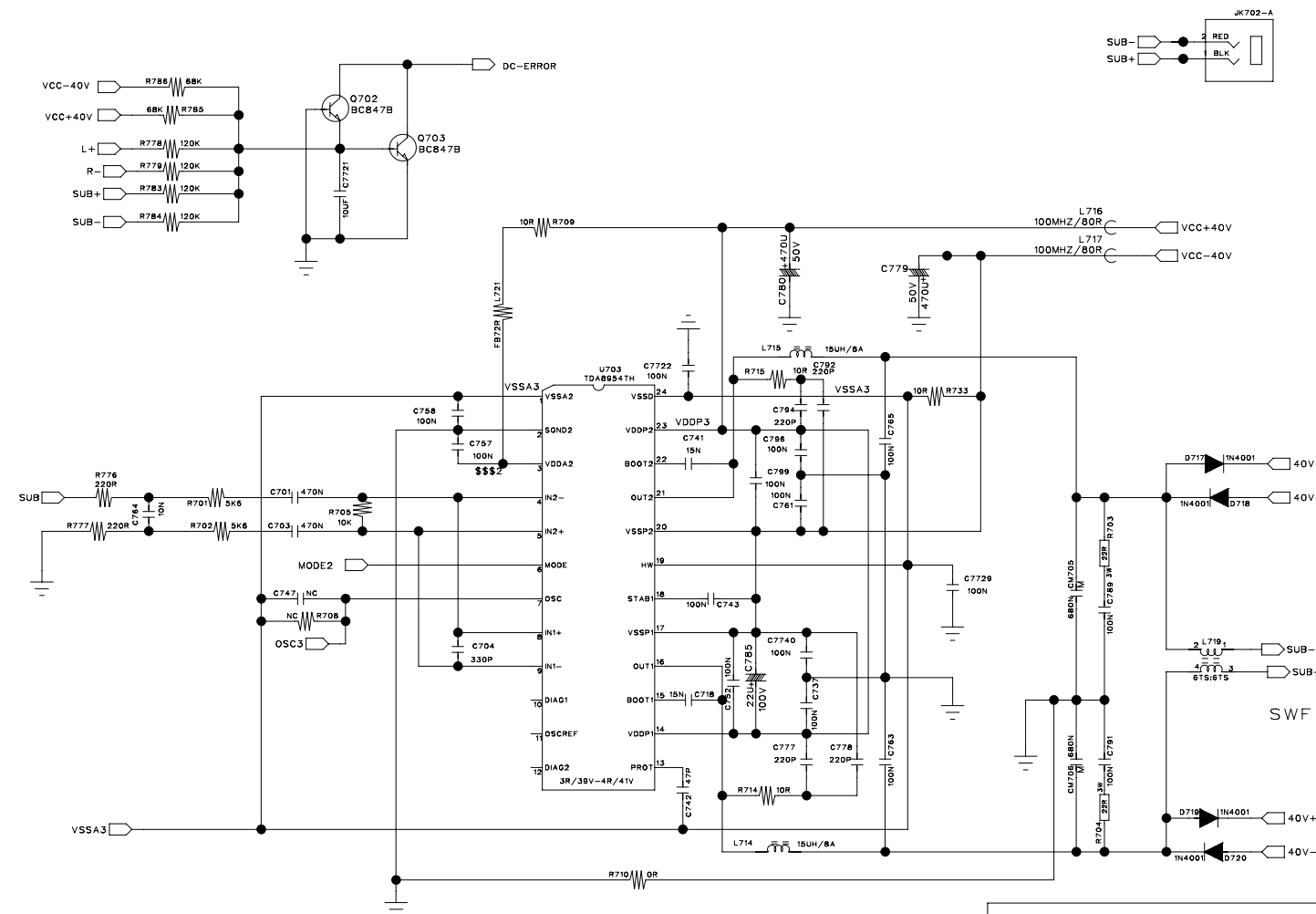
PCB LAYOUT - SD BOARD



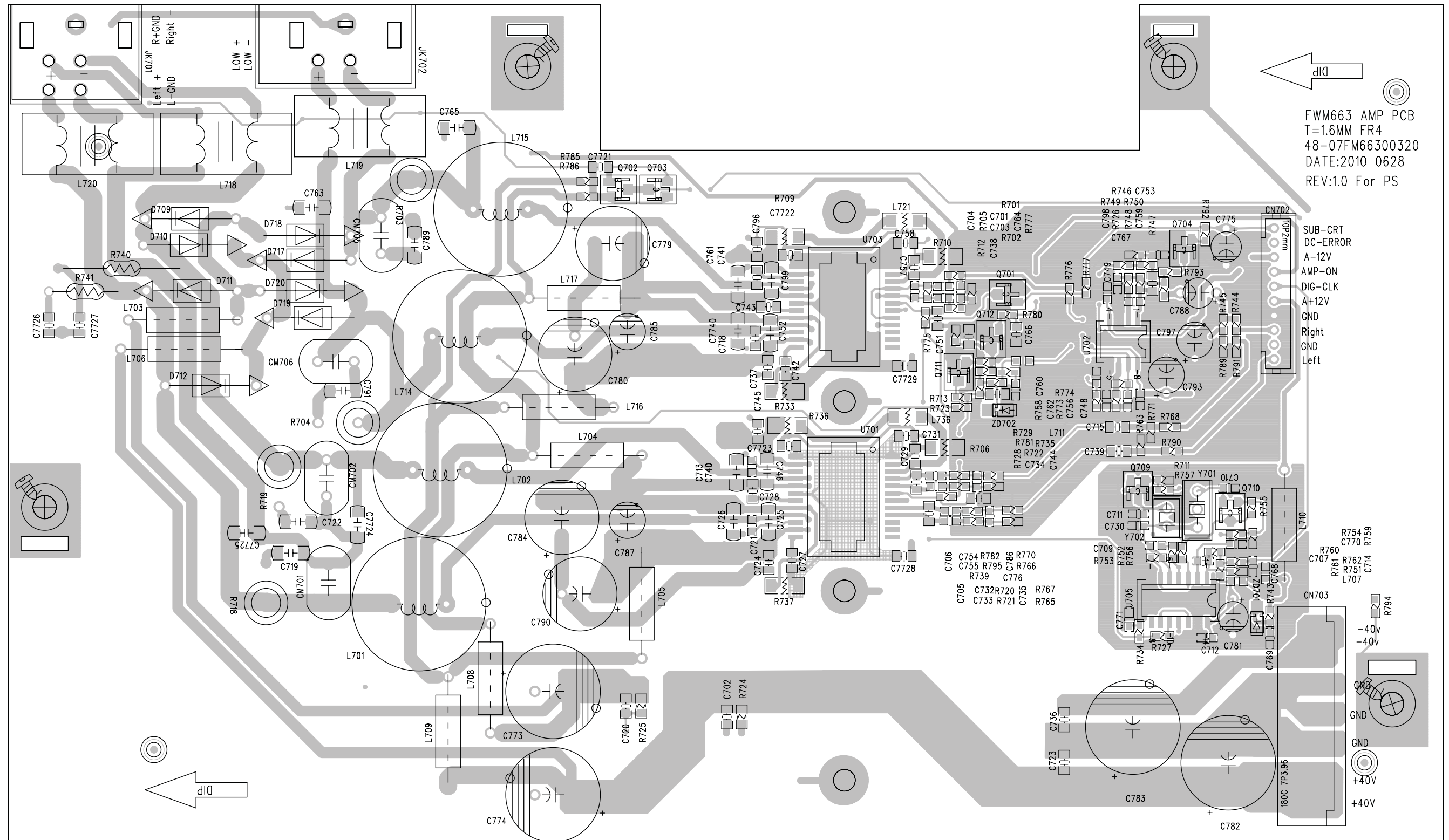
## CIRCUIT DIAGRAM - AMP BOARD



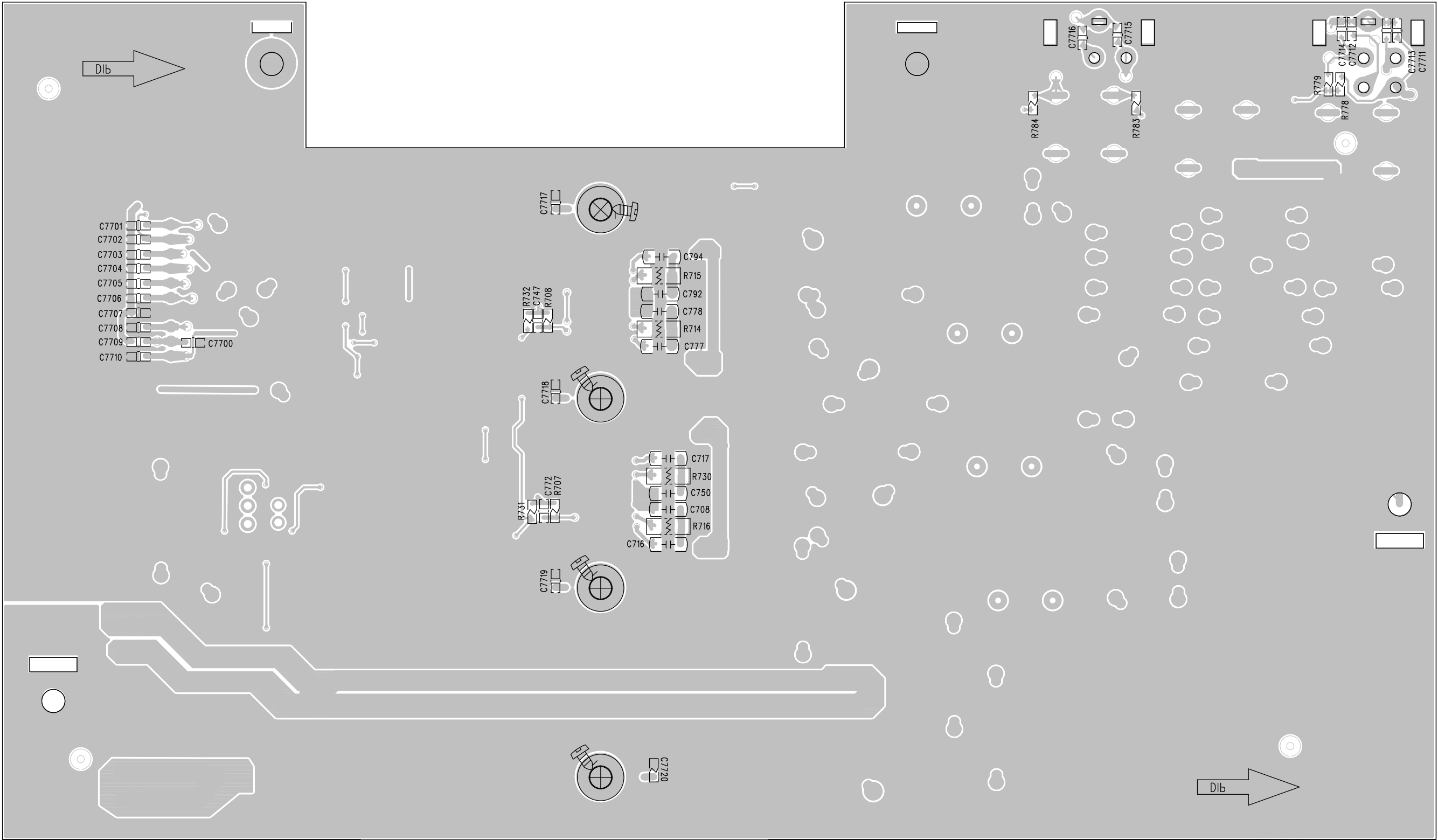
## CIRCUIT DIAGRAM - AMP BOARD PART2



## PCB LAYOUT - AMP BOARD TOP SIDE

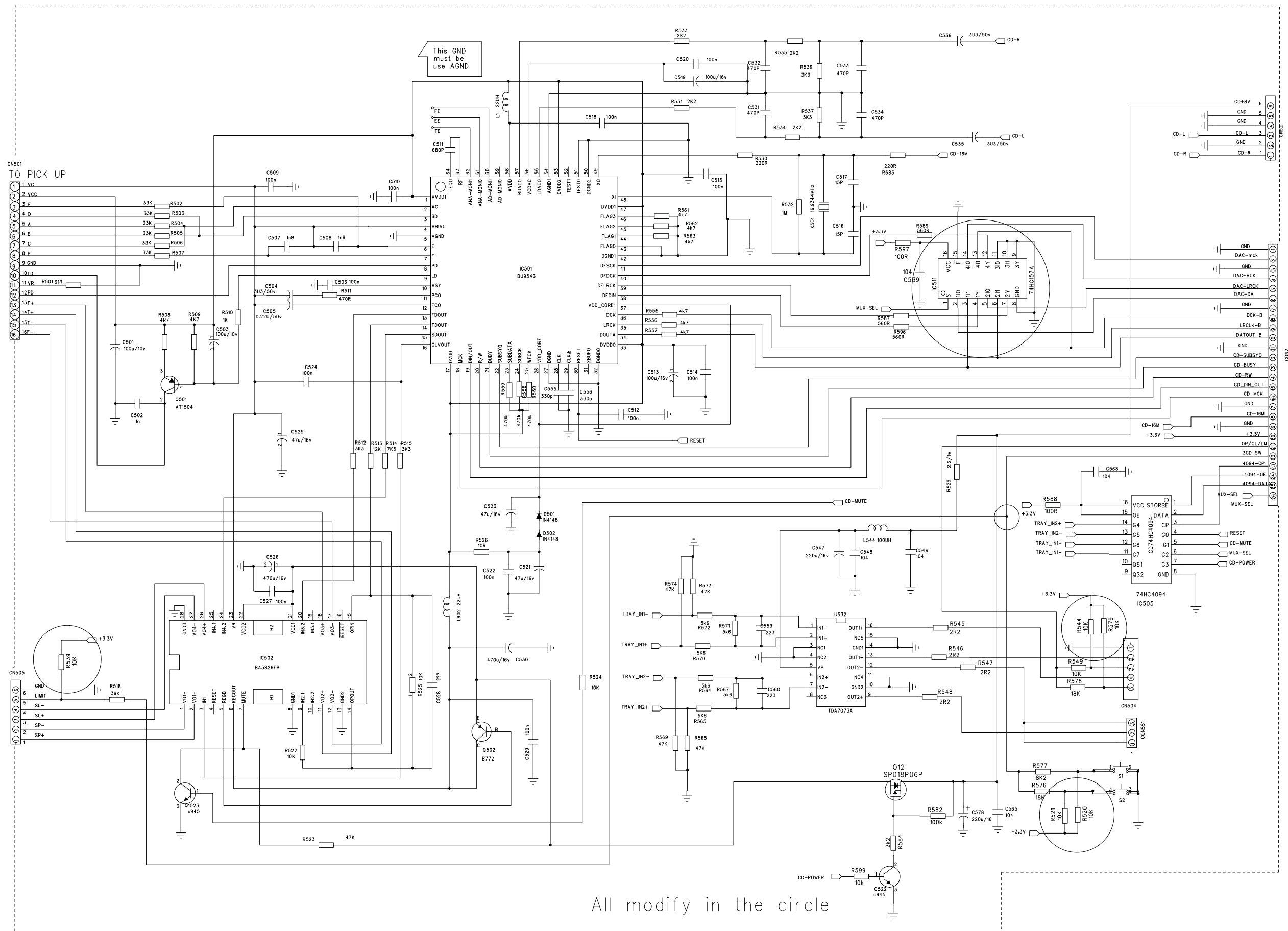


PCB LAYOUT - AMP BOARD  
BOTTOM SIDE



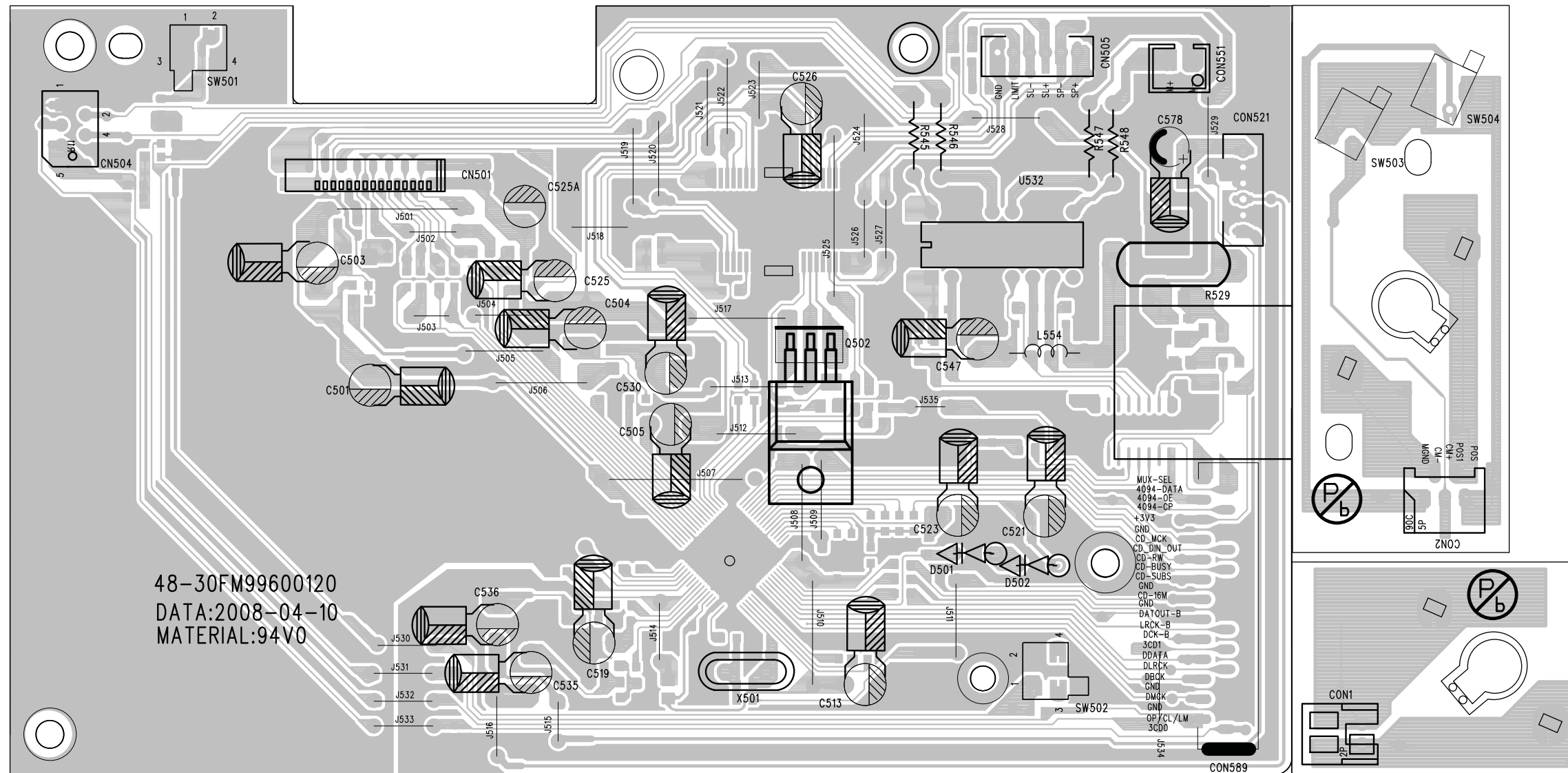


All modify in the circle

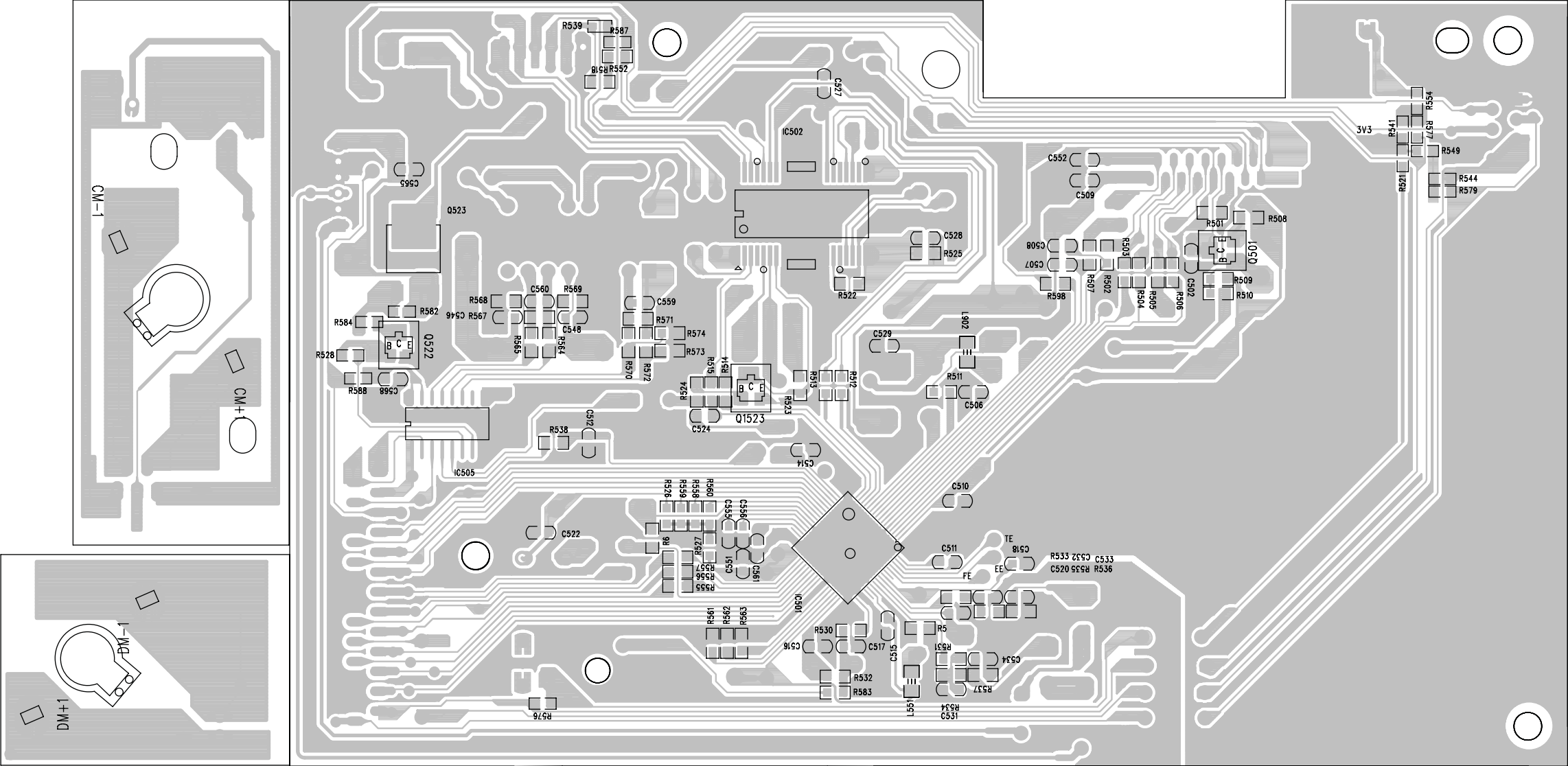




### LAYOUT DIAGRAM-CD BOARD TOP SIDE

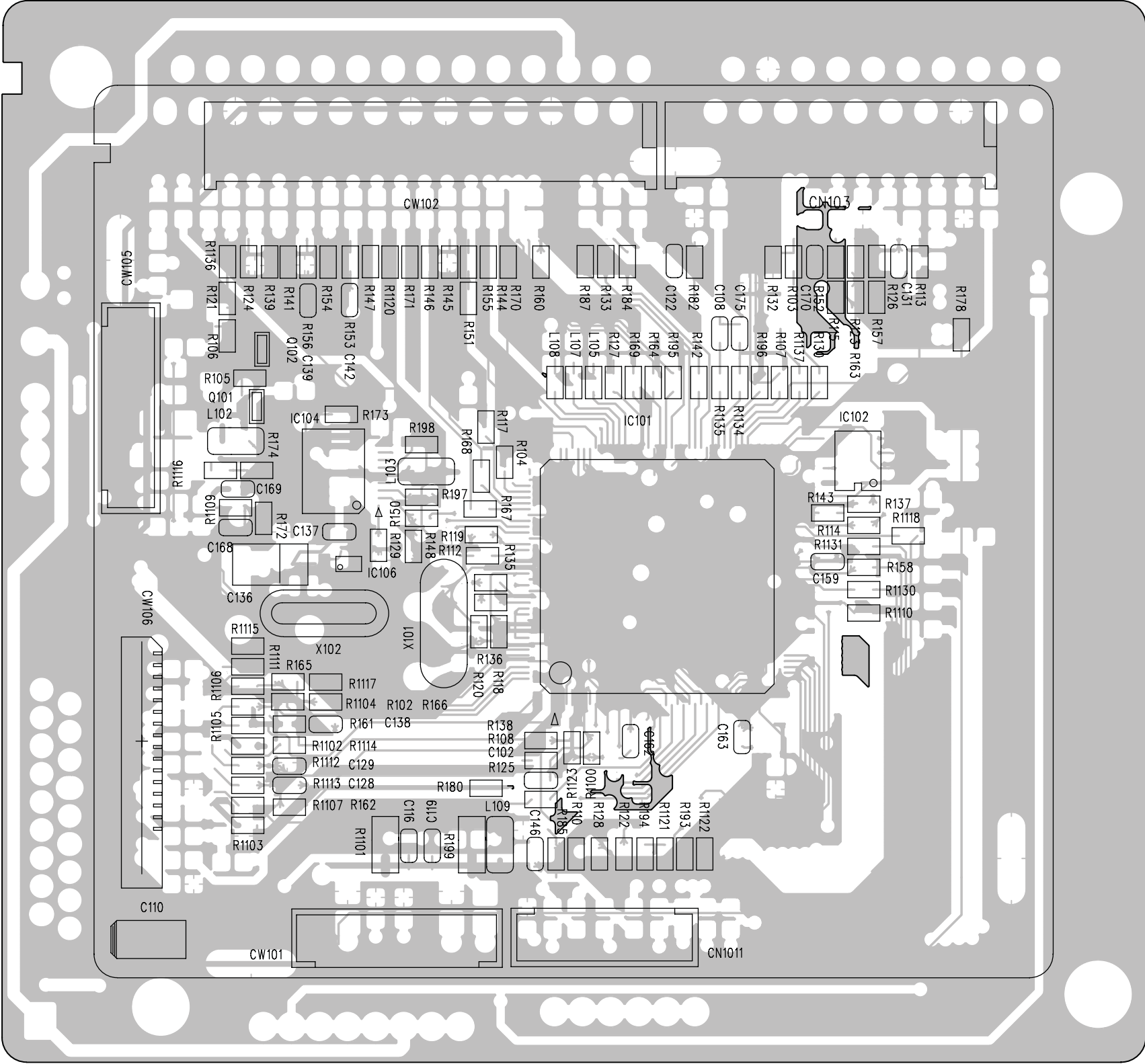


LAYOUT DIAGRAM-CD BOARD  
BOTTOM SIDE

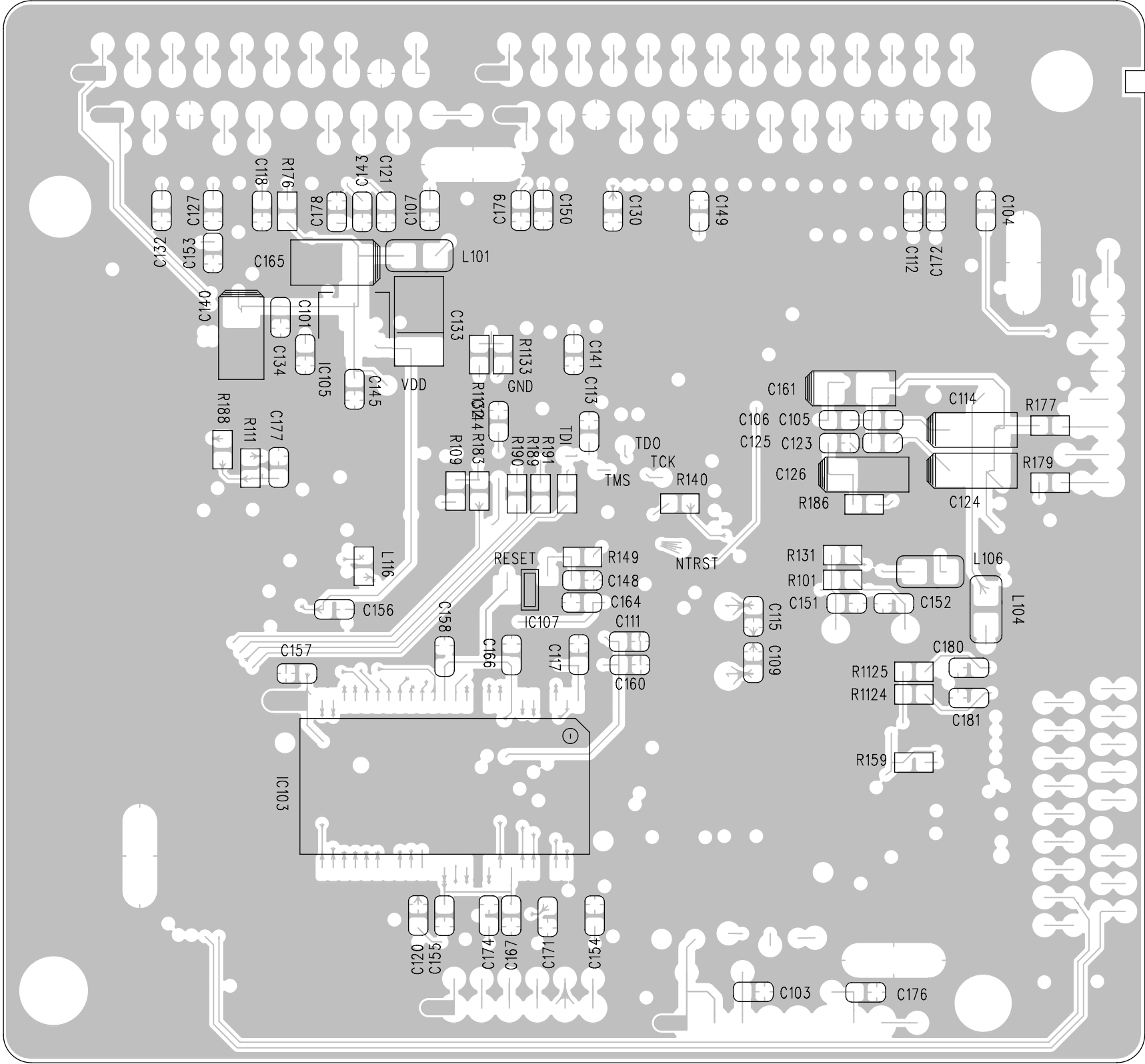




PCB LAYOUT - MCU BOARD  
TOP SIDE



PCB LAYOUT - MCU BOARD  
BOTTOM SIDE





EXPLODED VIEW

