

# Service Service Service



# Service Manual

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**CLASS 1  
LASER PRODUCT**

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Published by SL0728 Service Audio

Printed in The Netherlands Subject to modification.



3141 785 31980

**Version 1.0**



# PHILIPS

## VERSION VARIATIONS

Type /Versions: Features & Board in used:	FWM583							
	/55							
Karaoke								
News								
RDS								
Rotary Encoder (volume control)	x							
Jog Shuttle								
Voltage Selector								
Aux Input	x							
Digital Output								
Headphone Socket	x							
Line Output								
Matrix Surround Loudspeakers								
Standby - FTD Clock Display	x							
ECO Standby - LED Display	x							
ECO6 Tuner board - System Non-Cenelec	x							
ECO6 Tuner board - System Cenelec								
ETF7 Tape Module: Non-Autoreverse Ferro								
USB Direct	x							

## SPECIFICATIONS

### AMPLIFIER

RMS output power  
 LF channel ..... 105 W per channel  
 HF channel ..... 105 W per channel  
 Total Bi-Amp power ..... 420 W  
 Signal-to-noise ratio ..... 60 dBA (IEC)  
 Frequency response ..... 50 – 15000 Hz  
 Input sensitivity  
 AUX ..... 900/2400 mV  
 Output  
 Speakers ..... 3  $\Omega$   
 Headphones ..... 32  $\Omega$   
 (1) (3  $\Omega$ , 1 kHz, 10% THD)

### CD/MP3-CD PLAYER

Number of programmable tracks ..... 99  
 Frequency response ..... 50 – 20000 Hz -3dB  
 Signal-to-noise ratio ..... 60 dBA  
 Channel separation ..... 60 dBA (1 kHz)  
 Total harmonic distortion ..... < 0.003%  
 MPEG 1 Layer 3 (MP3-CD) ..... MPEG AUDIO  
 MP3-CD bit rate ..... 32-256 kbps  
 (128 kbps advised)  
 Sampling frequencies ..... 32, 44.1, 48 kHz

### TUNER

FM wave range ..... 87.5 – 108 MHz  
 MW wave range (9 kHz) ..... 531 – 1602 kHz  
 MW wave range (10 kHz) ..... 530 – 1700 kHz  
 Tuning grid ..... 9/10 kHz  
 Number of presets ..... 40  
 Antenna  
 FM ..... 75  $\Omega$  wire  
 MW ..... Loop antenna

### USB PLAYER

USB ..... 12 Mb/s, V1.1  
 ..... support MP3 and WMA files  
 Number of albums/folders ..... maximum 99  
 Number of tracks/titles ..... maximum 400

### SPEAKERS

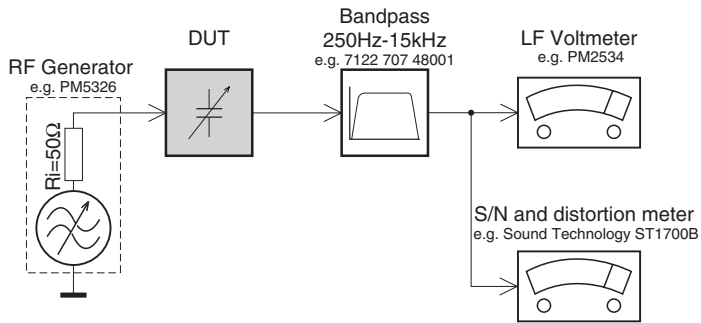
System 2-way; double port bass reflex  
 Impedance ..... 3  $\Omega$   
 Woofer ..... 1 x 5.5"  
 Tweeter ..... 1 x 2"  
 Dimensions (w x h x d) .. 248 x 310 x 195 (mm)  
 Weight ..... 3.65 kg each

### GENERAL

Material/finish ..... Polystyrene/Metal  
 AC Power ..... 110 – 127 / 220 – 240 V;  
 ..... 50/60 Hz Switchable  
 Power Consumption  
 Active ..... 90 W  
 Standby .....  $\leq$  15 W  
 Dimensions (w x h x d) .. 265 x 310 x 367 (mm)  
 Weight (without speakers) ..... 9.1 kg

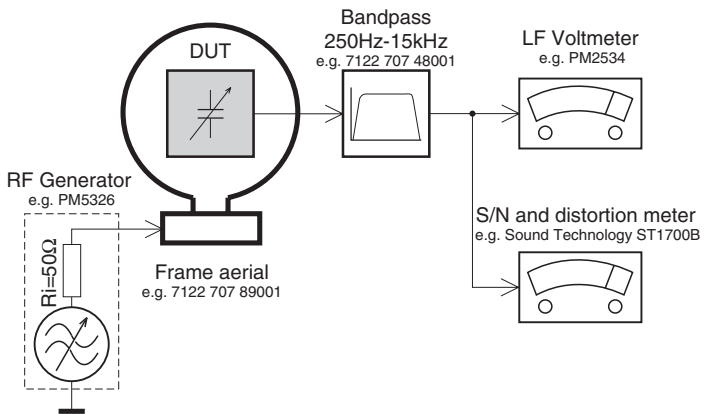
## MEASUREMENT SETUP

### Tuner FM



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

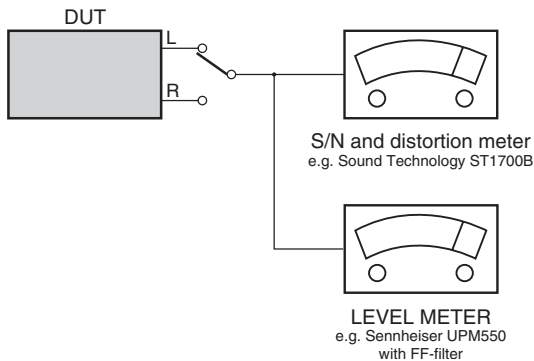
### Tuner AM (MW,LW)



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)





## SERVICE AIDS

### Service Tools:

Universal Torx driver holder .....	4822 395 91019
Torx bit T10 150mm .....	4822 395 50456
Torx driver set T6-T20 .....	4822 395 50145
Torx driver T10 extended .....	4822 395 50423

### Compact Disc:

SBC426/426A Test disc 5 + 5A .....	4822 397 30096
SBC442 Audio Burn-in test disc 1kHz .....	4822 397 30155
SBC429 Audio Signals disc .....	4822 397 30184
Dolby Pro-logic Test Disc .....	4822 395 10216




### 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



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".

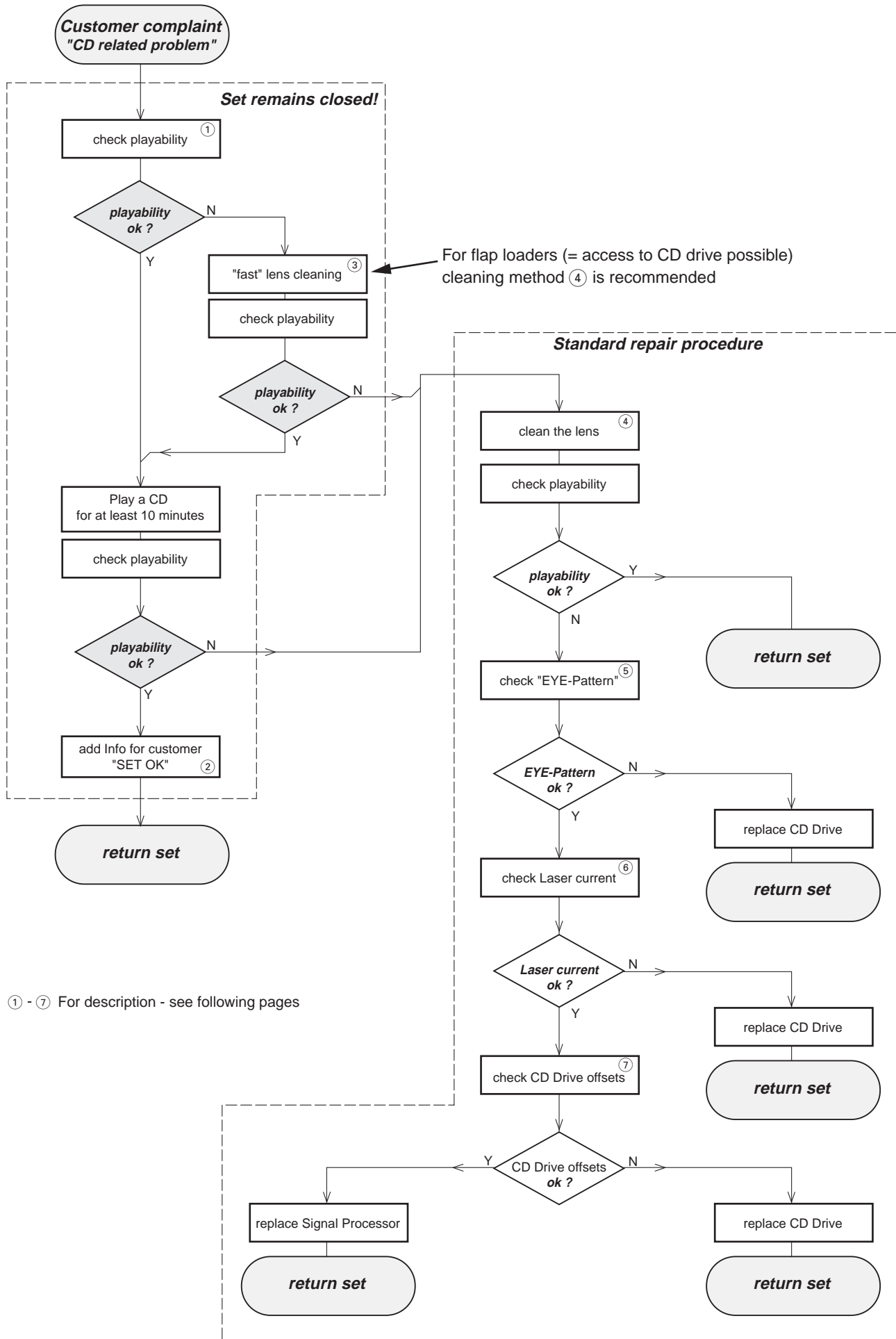
For additional questions please contact your local repair-helpdesk.

## 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



## 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 ③) 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.

③

### FAST LENS CLEANING (dry brush)

Use lens cleaning CD  
 SBC AC300 .....9082 100 00043

Insert the lens cleaning CD, press PLAY and follow the voice guide's instructions on the CD.

④

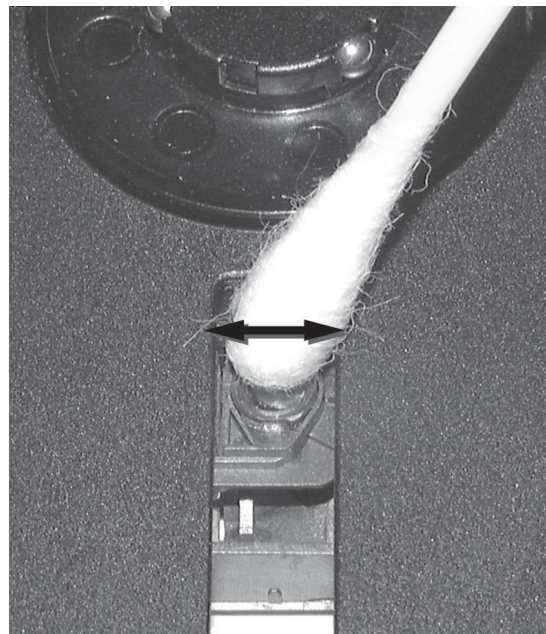
### LIQUID LENS CLEANING

**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 B4-No2", available with codenumber 4822 389 10026.

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.

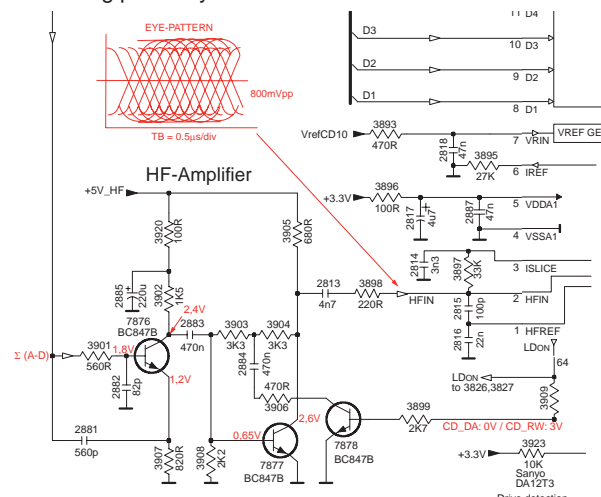


## INSTRUCTIONS ON CD PLAYABILITY

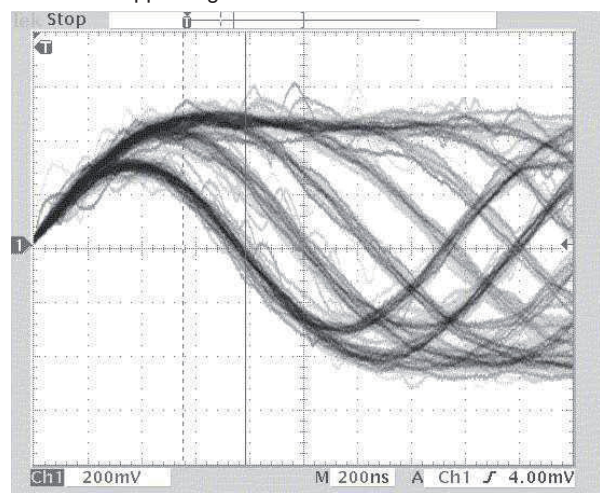
5

### EYE-PATTERN SIGNAL – JITTER MEASUREMENT

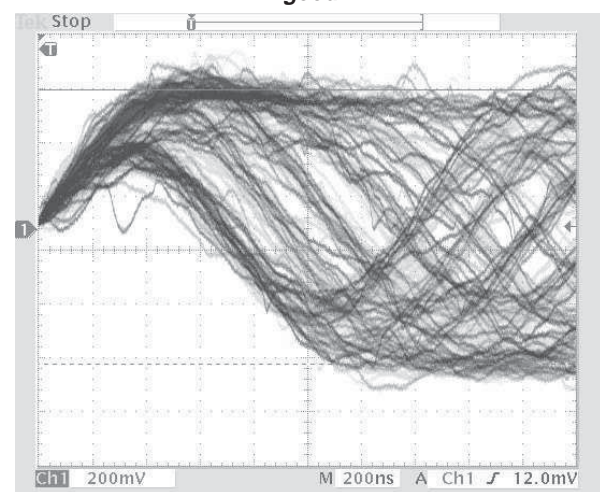
Measure the signal on the input of the Signal processor using an **analog** oscilloscope. Please find the exact measuring point in your Service Manual.



See below examples of the signal. Amplitude should read at least 700mVpp using SBC444A.



**good**



***bad***

If the oscilloscope shows a signal like the 'bad' one, and/or the amplitude decreases within 1 minute - the CD drive has to be replaced.

⑥

### CD DRIVE – LASER CURRENT MEASUREMENT

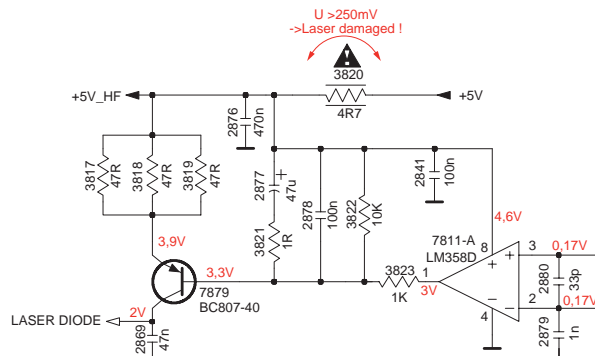
The laser current can be measured as a voltage drop on a resistor. The resistor is marked in every Service Manual. The value depends on the type of CD drive.

	typical value	most probably defect
VAMxxxx	: 150-230mV	≥350mV
MCDxx	: 170-230mV	≥300mV
DA1x	: 210-250mV	≥350mV
DA2x	: 175-200mV	≥250mV

Use SBC444A (CD-DA) for measurement.

Use SBC444A (CD-DA) for measurement.

## Laser power control



7

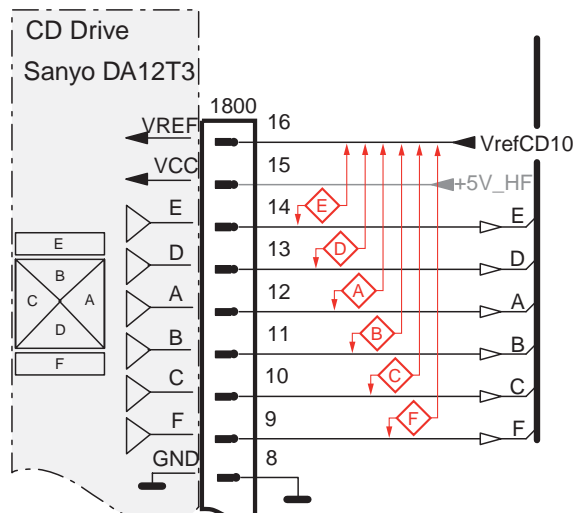
### CD DRIVE – OFFSET MEASUREMENT

The photodiodes of the CD-drive may have an offset. These offsets have to be compensated by the signal processor. High offsets can lead to poor playability of some CDs (skipping tracks).

To measure the offset values, start the **Service Test Program** - section "Focus Test" without a CD.

The offsets can be measured with a DC Millivoltmeter directly on the connector (see drawing below). Pin numbering varies from drive to drive.

**The values from diode A-D should read  $0 \pm 10\text{mV}$ . Diodes E and F are less critical.**

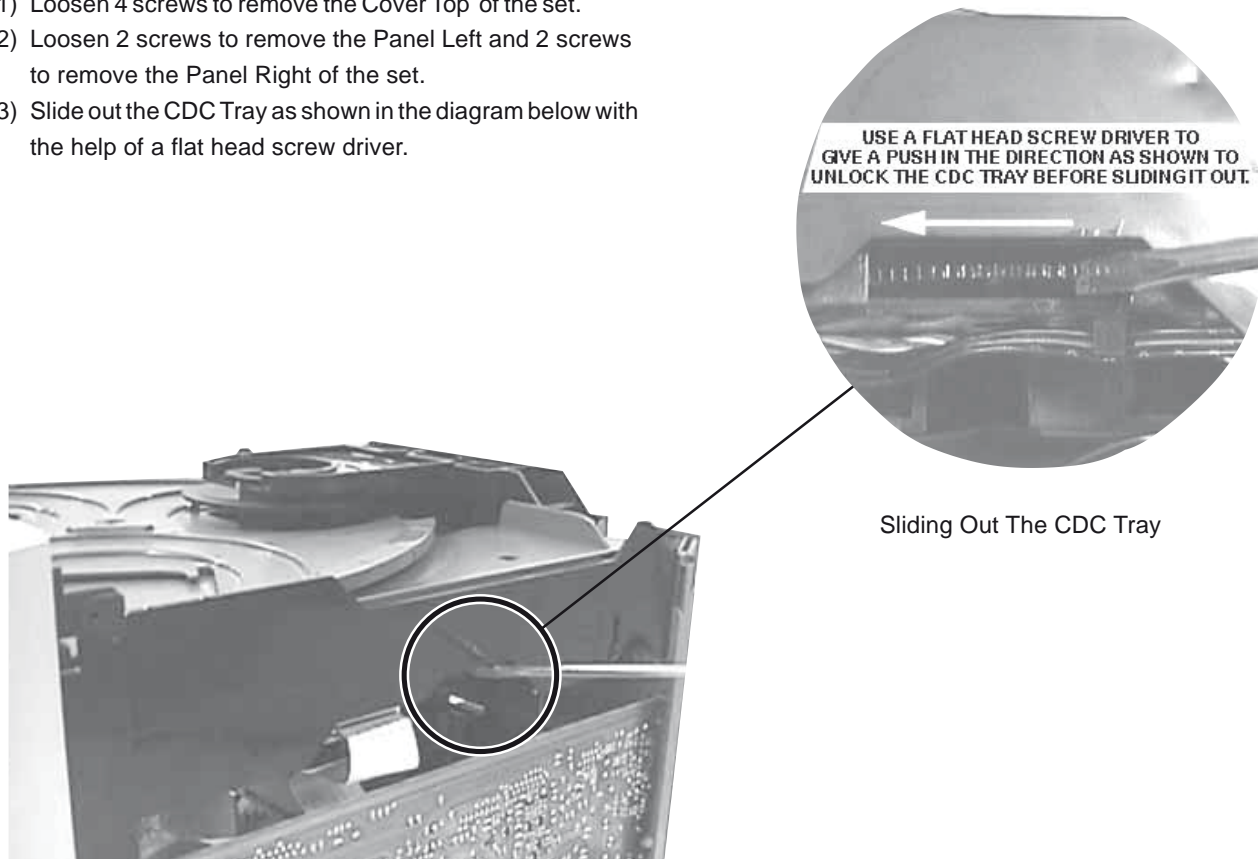


If one of the offsets is higher than  $\pm 10\text{mV}$  the CD drive has to be replaced. Otherwise replace the Signal Processor.

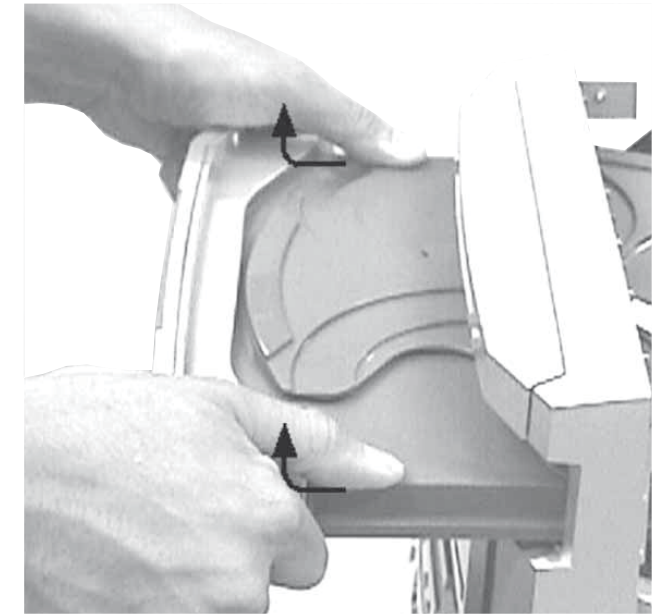
## DISMANTLING INSTRUCTIONS

### *Dismantling of the CDC Module and Front Panel*

- 1) Loosen 4 screws to remove the Cover Top of the set.
- 2) Loosen 2 screws to remove the Panel Left and 2 screws to remove the Panel Right of the set.
- 3) Slide out the CDC Tray as shown in the diagram below with the help of a flat head screw driver.



- 4) Remove the Cover Tray CDC as indicated.

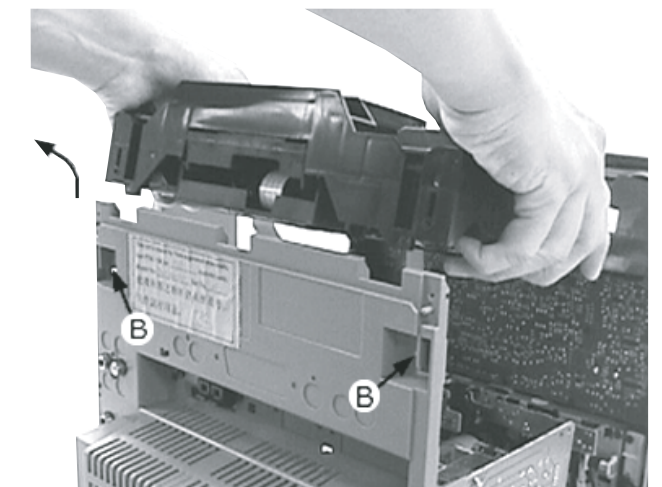


Remove Cover Tray CDC

- 5) Loosen 2 screws A and 2 screws B to remove the CDC Module as indicated.
- 6) Remove 2 screws at the bottom to separate the Front Panel Assembly from the Plate Bottom .



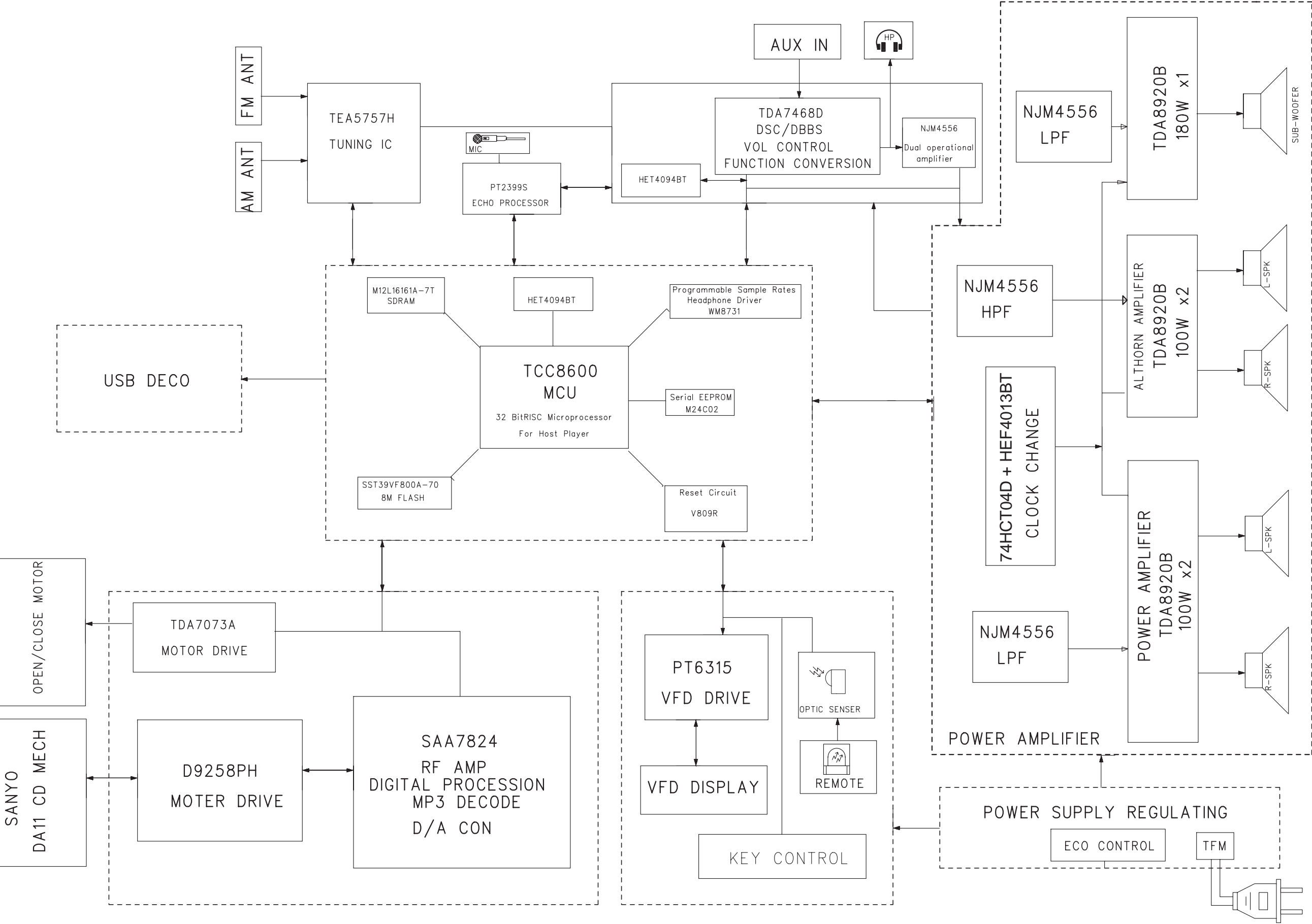
Front View CDC

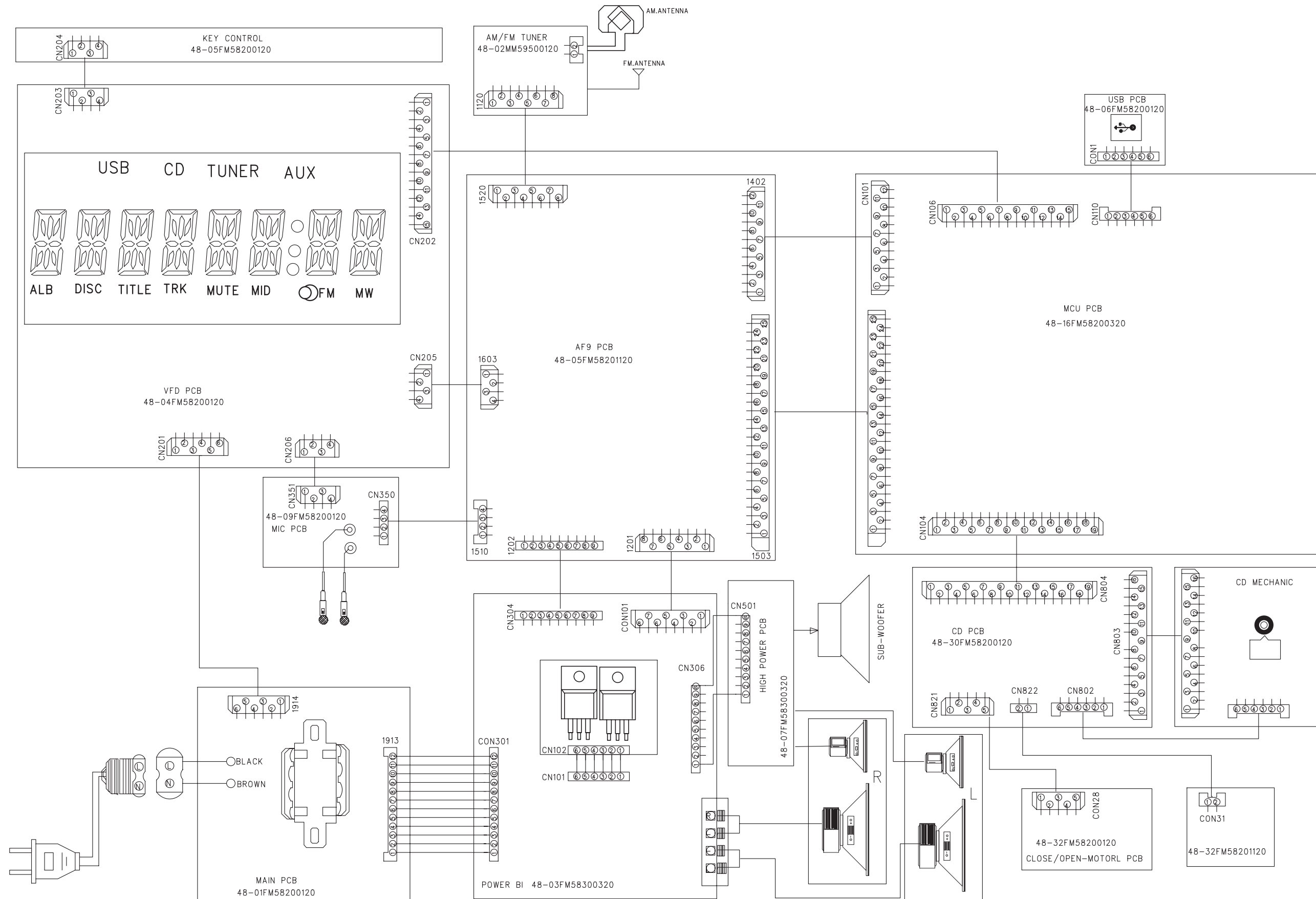


Remove CDC Module

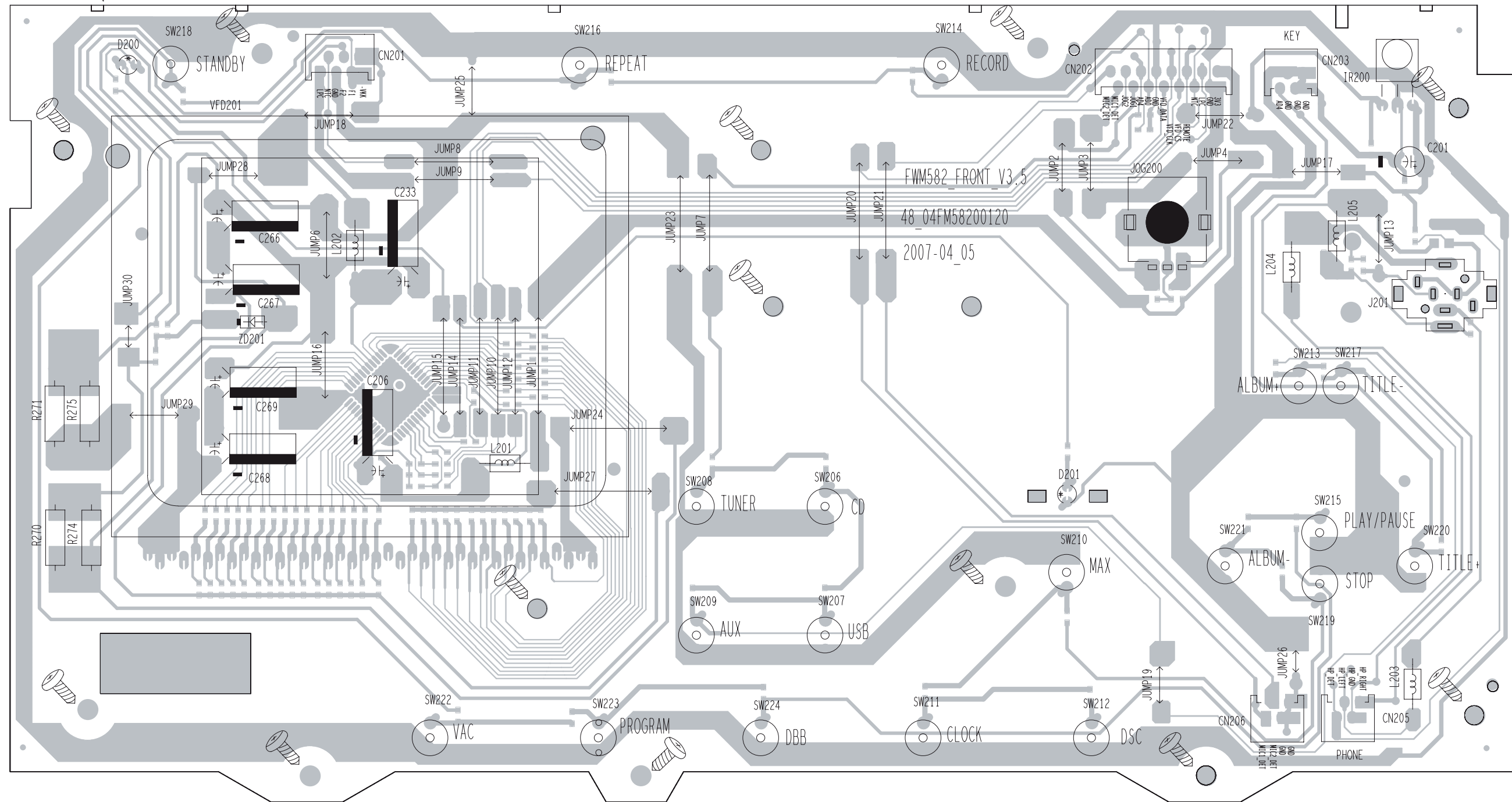


SET BLOCK DIAGRAM



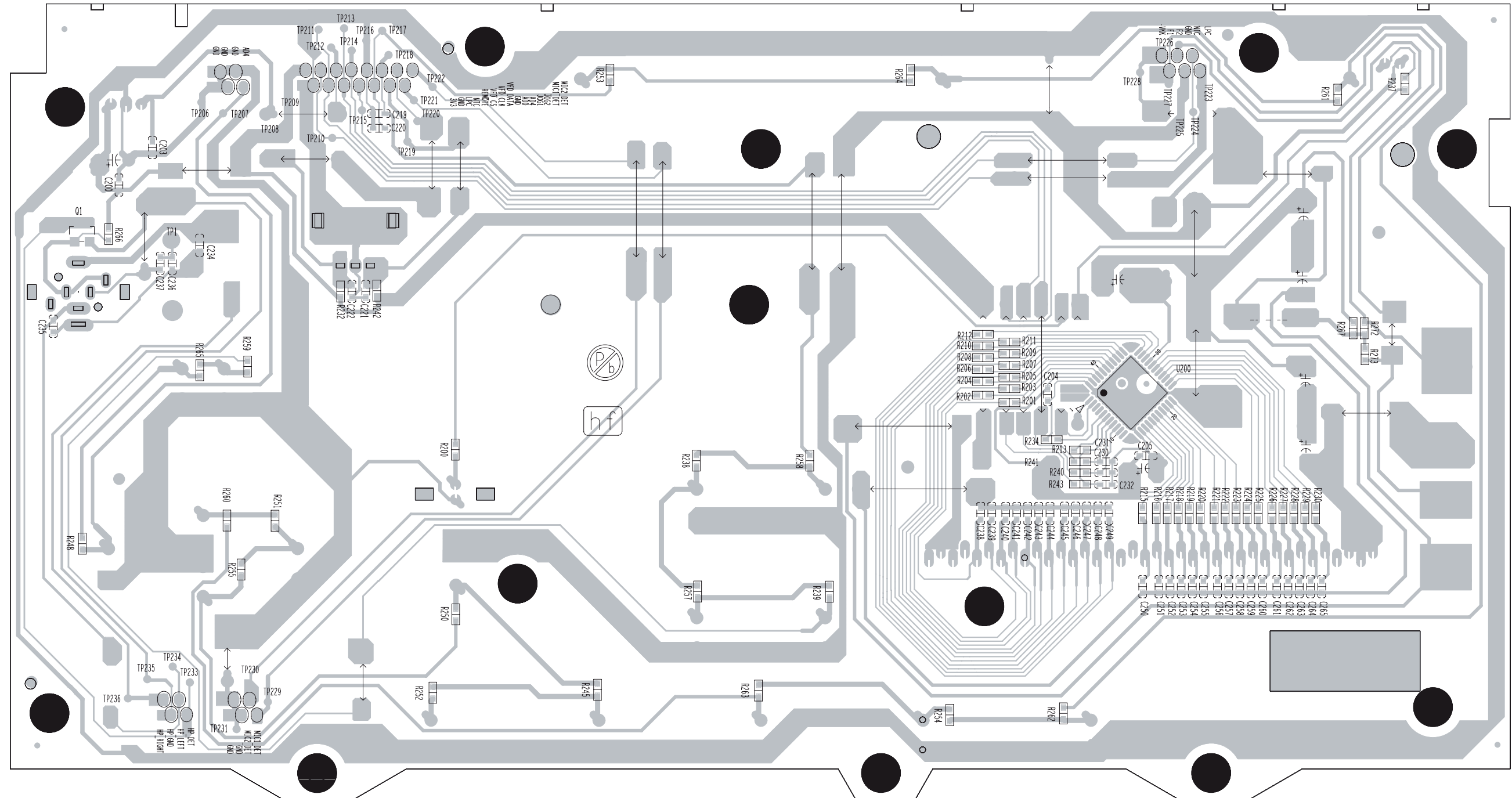


## PCB LAYOUT - FRONT BOARD (TOP VIEW)

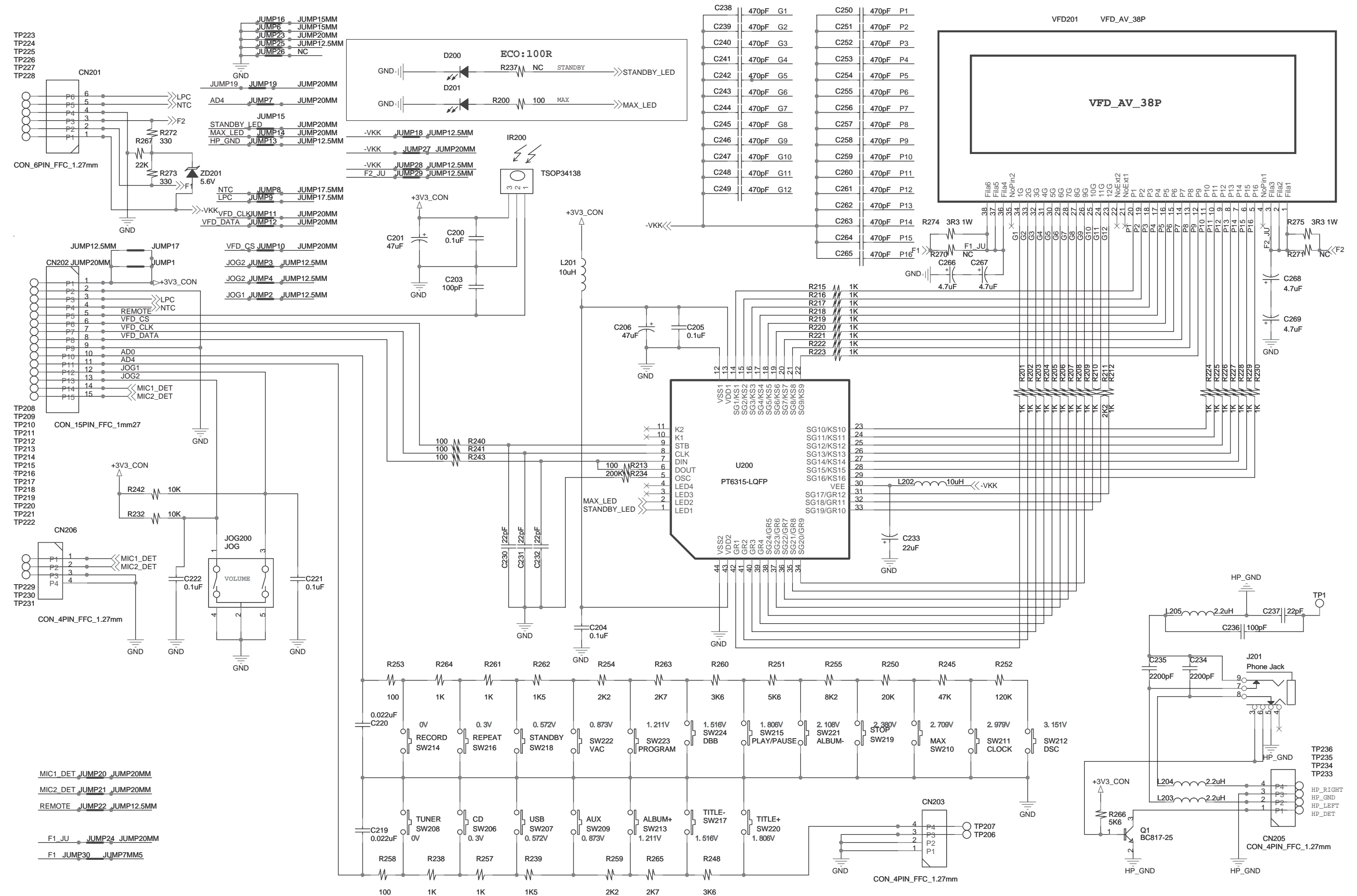




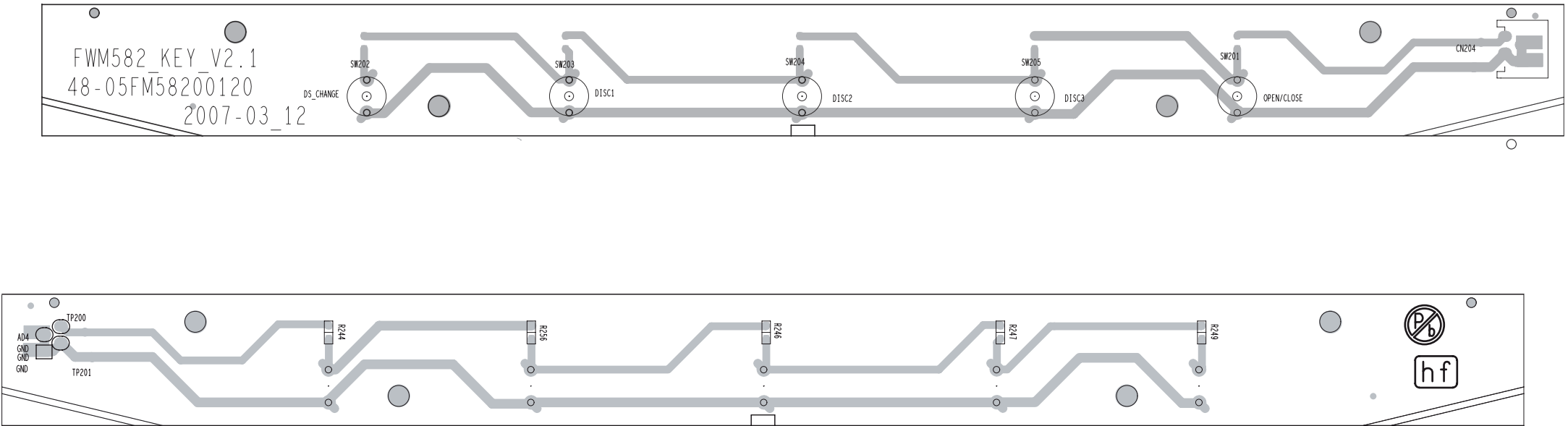
## PCB LAYOUT - FRONT BOARD (BOTTOM VIEW)



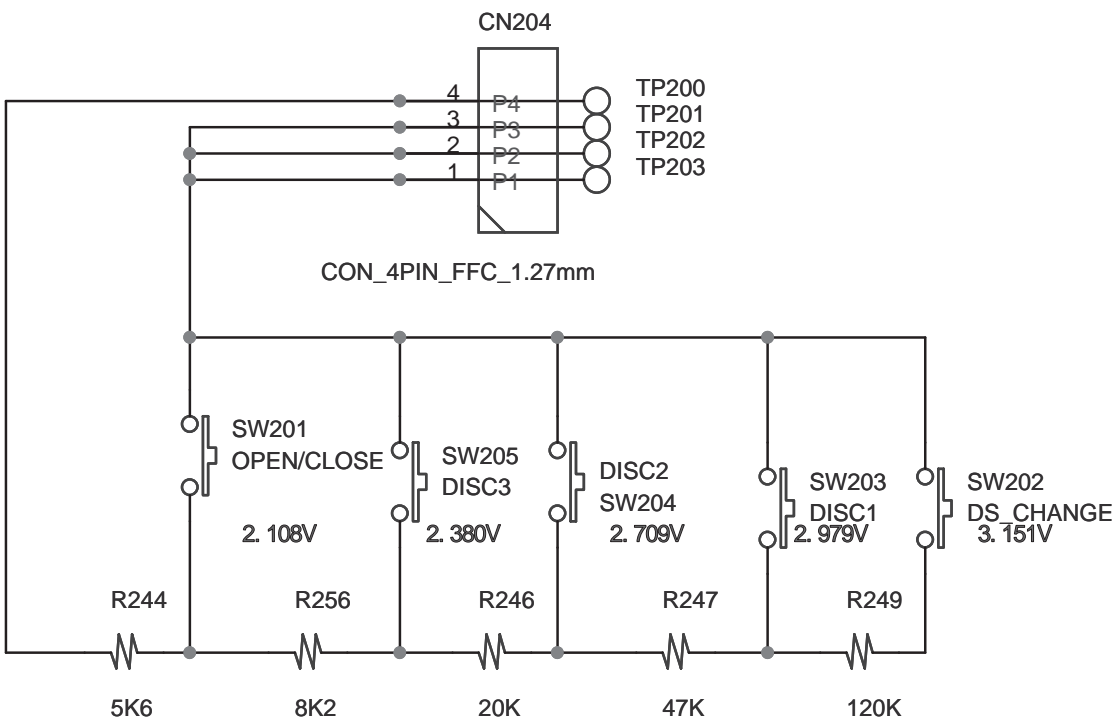
## CIRCUIT DIAGRAM - FRONT BOARD

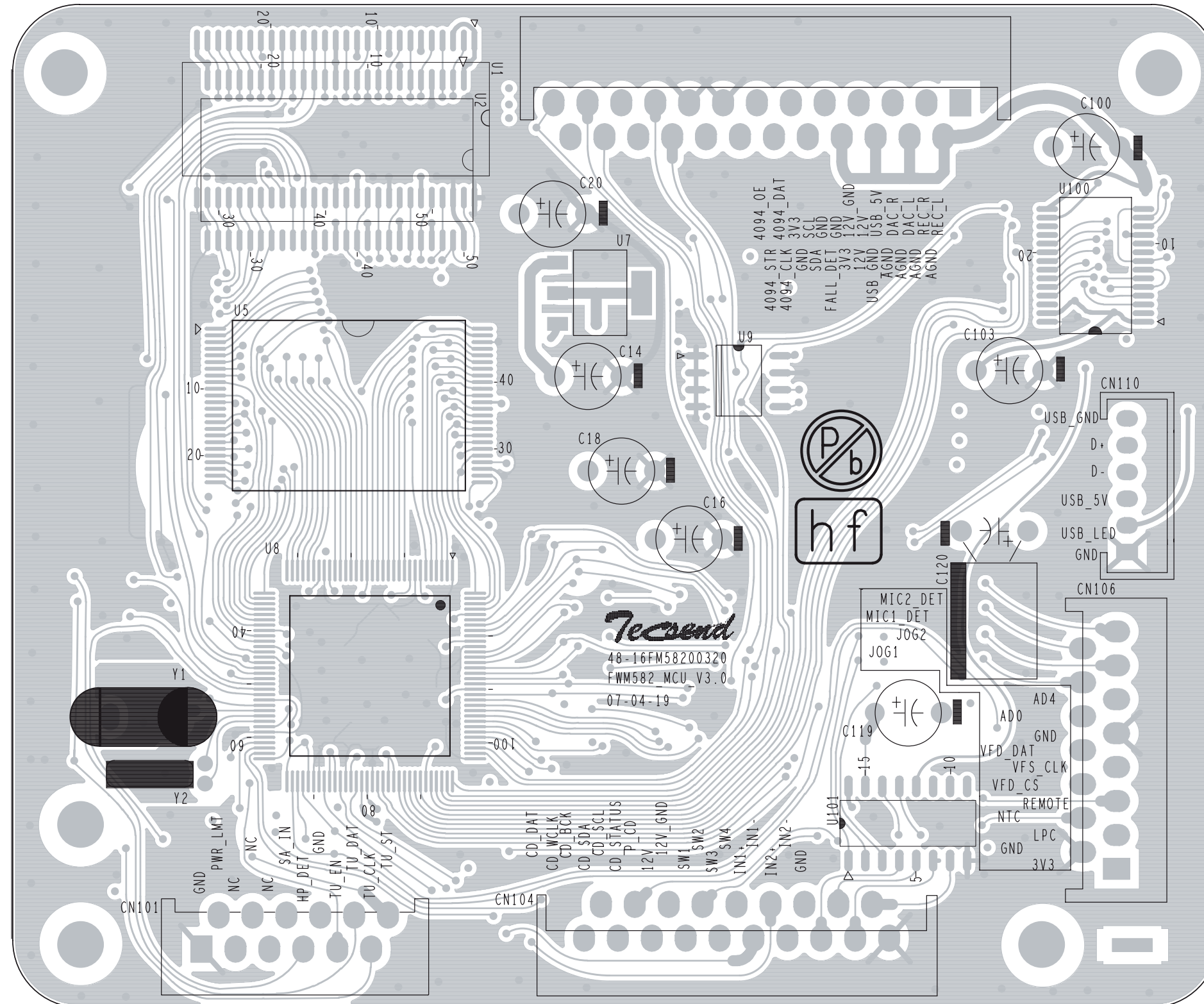


PCB LAYOUT - KEY BOARD



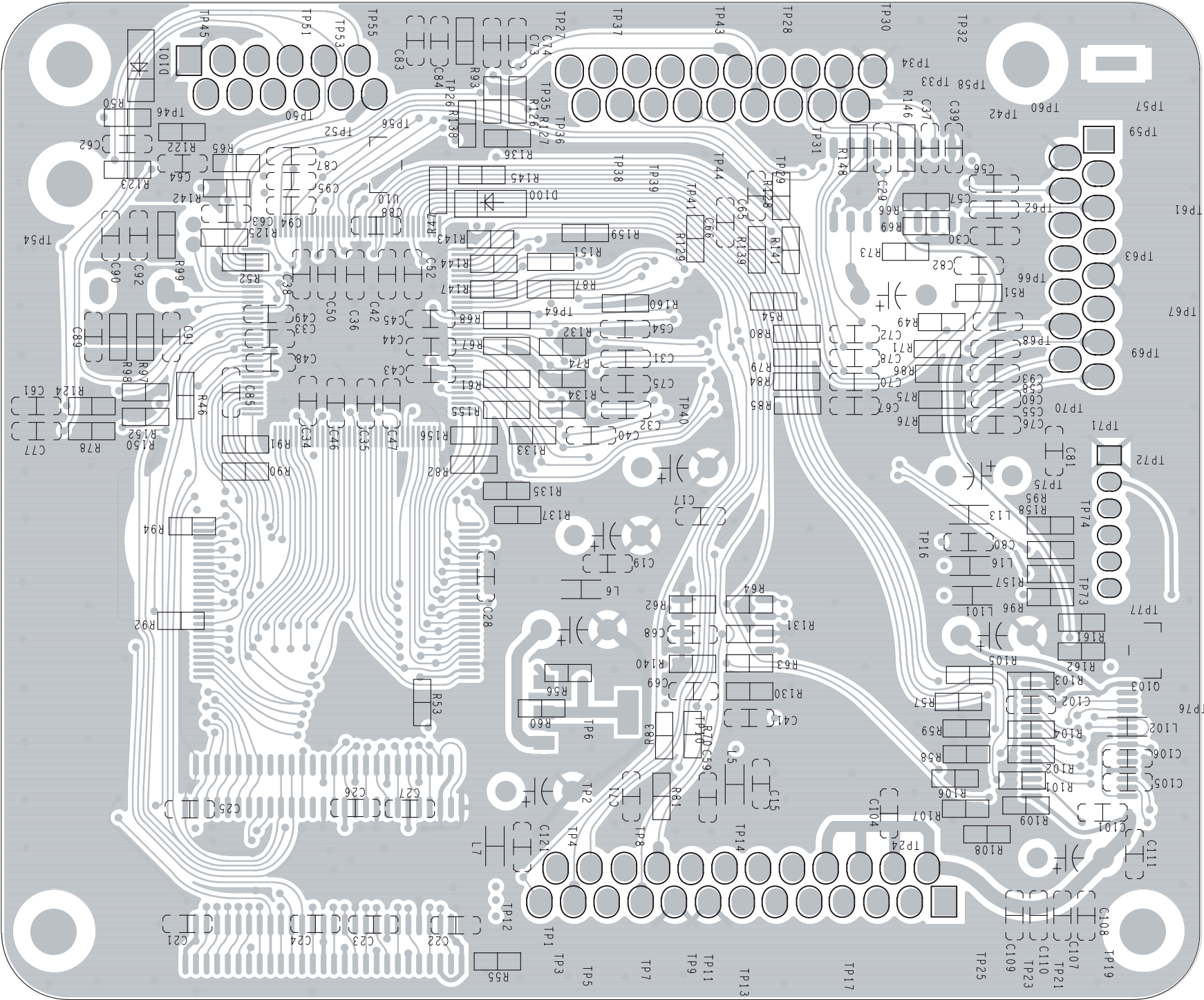
CIRCUIT DIAGRAM - KEY BOARD



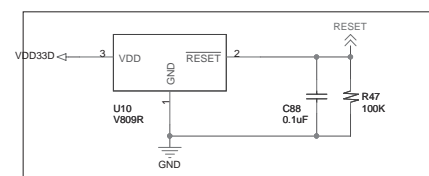
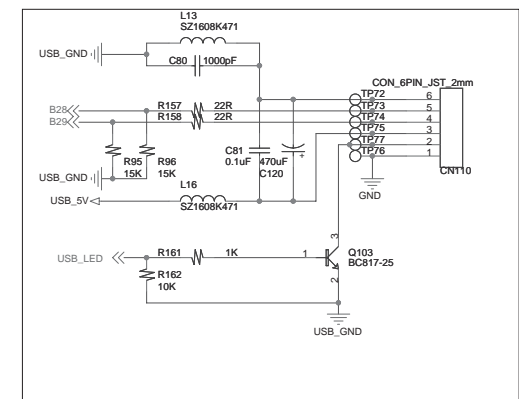
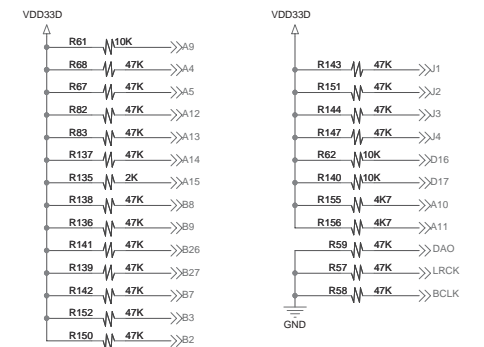
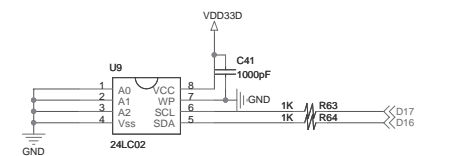
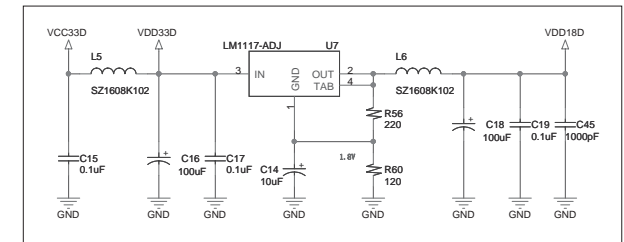
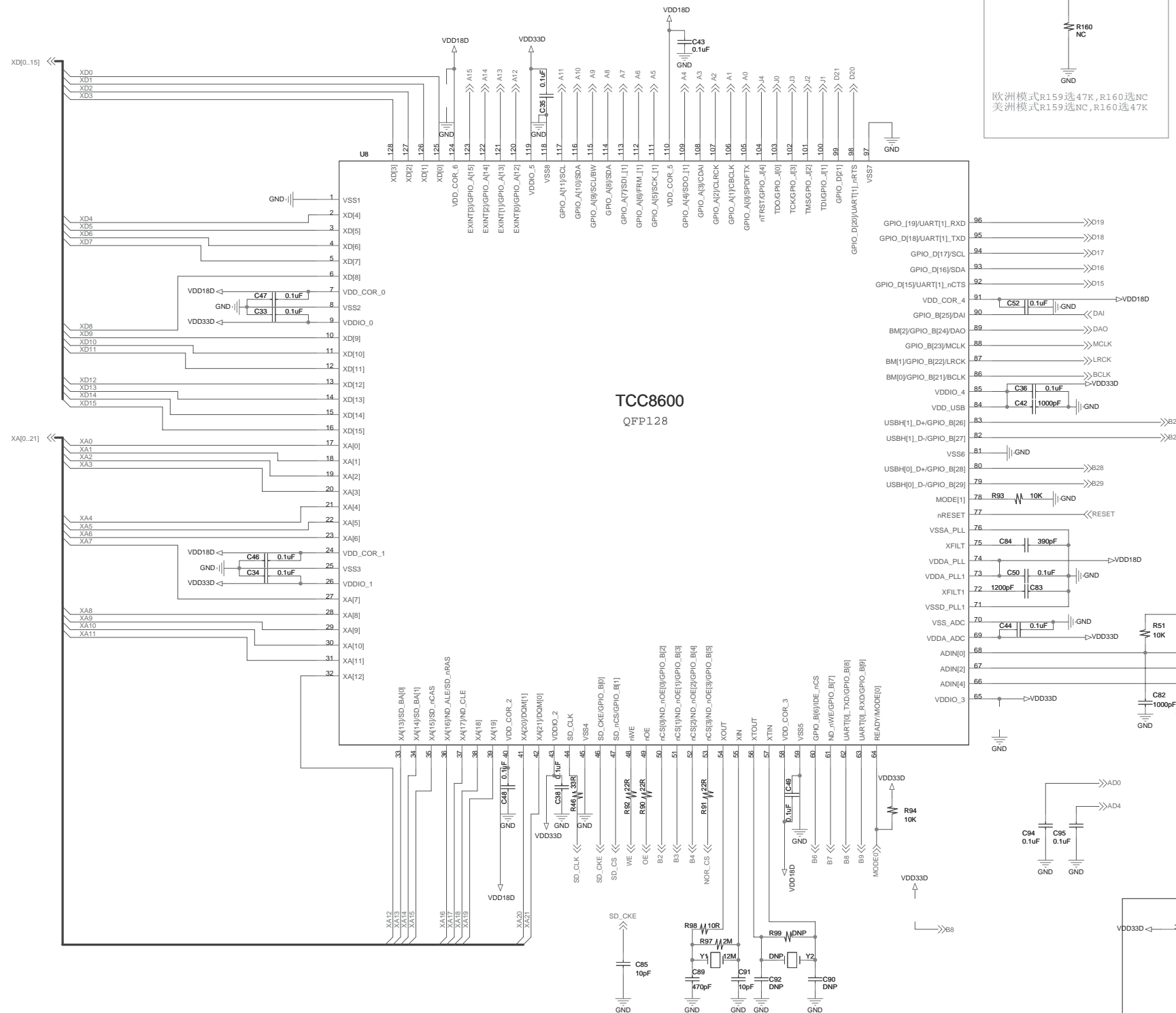




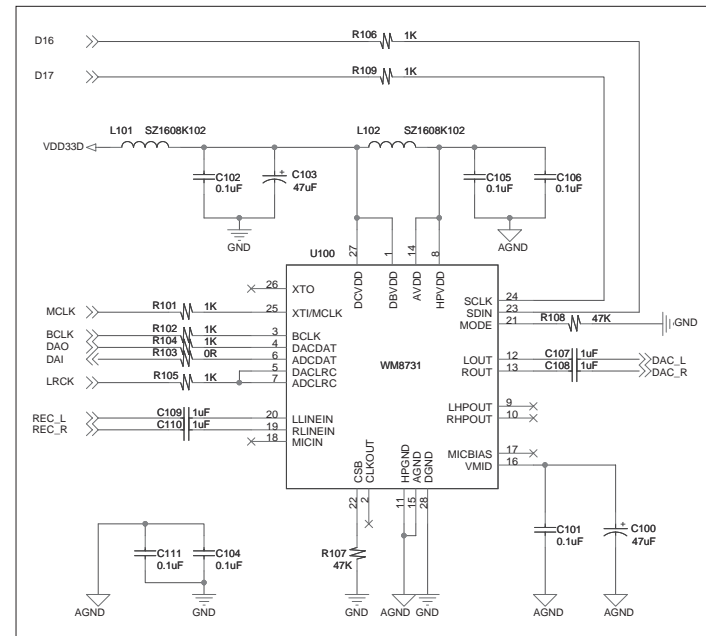
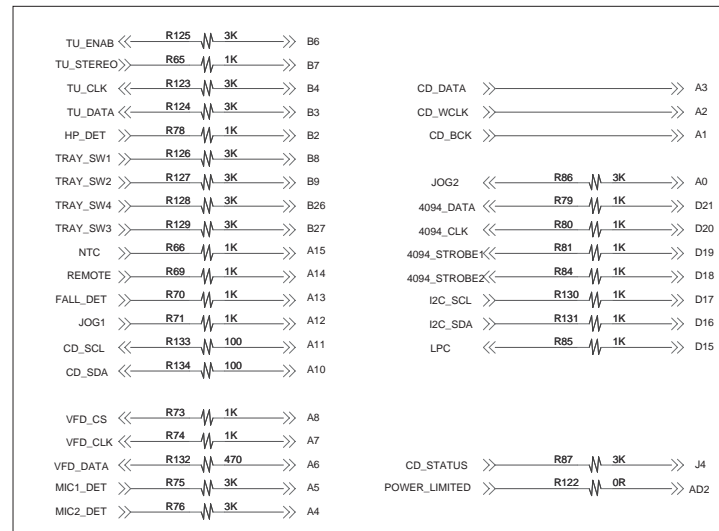
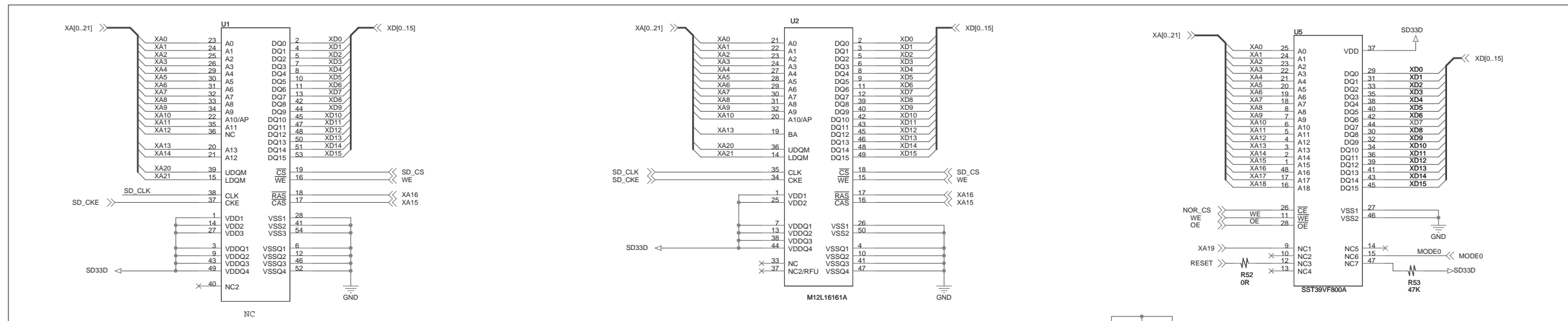
PCB LAYOUT - MCU BOARD (BOTTOM VIEW)



## CIRCUIT DIAGRAM - MCU BOARD PART1

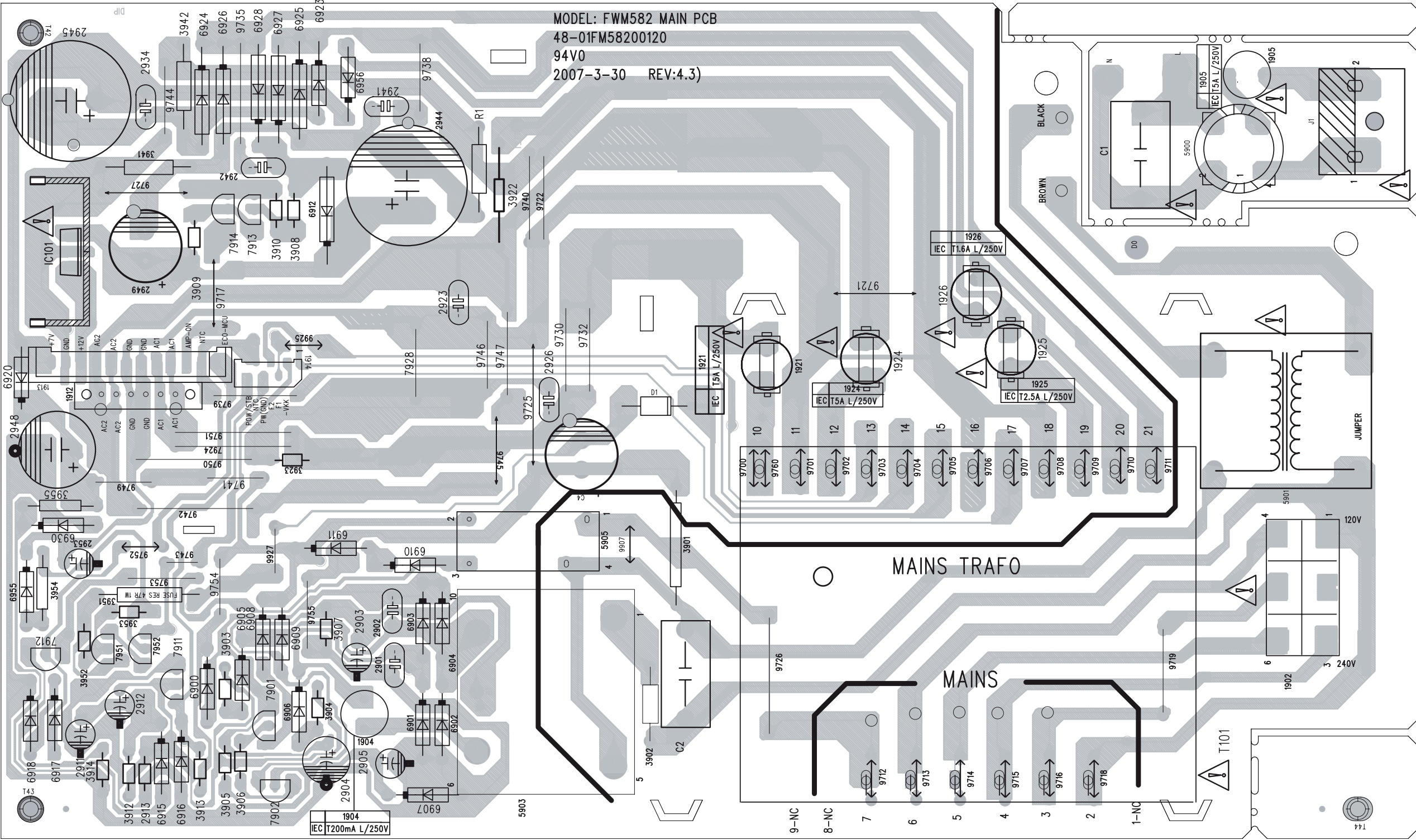


## CIRCUIT DIAGRAM - MCU BOARD PART2



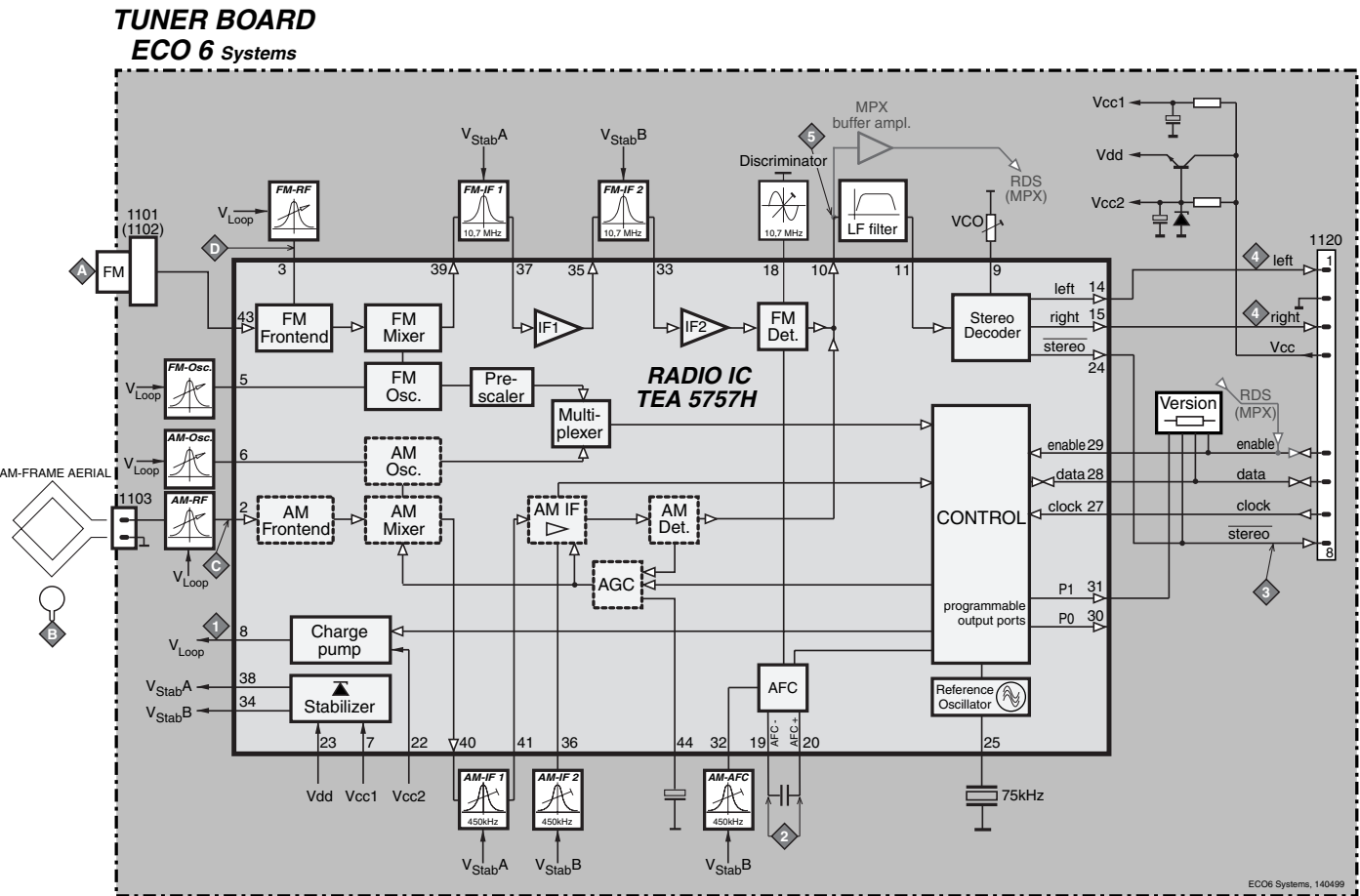
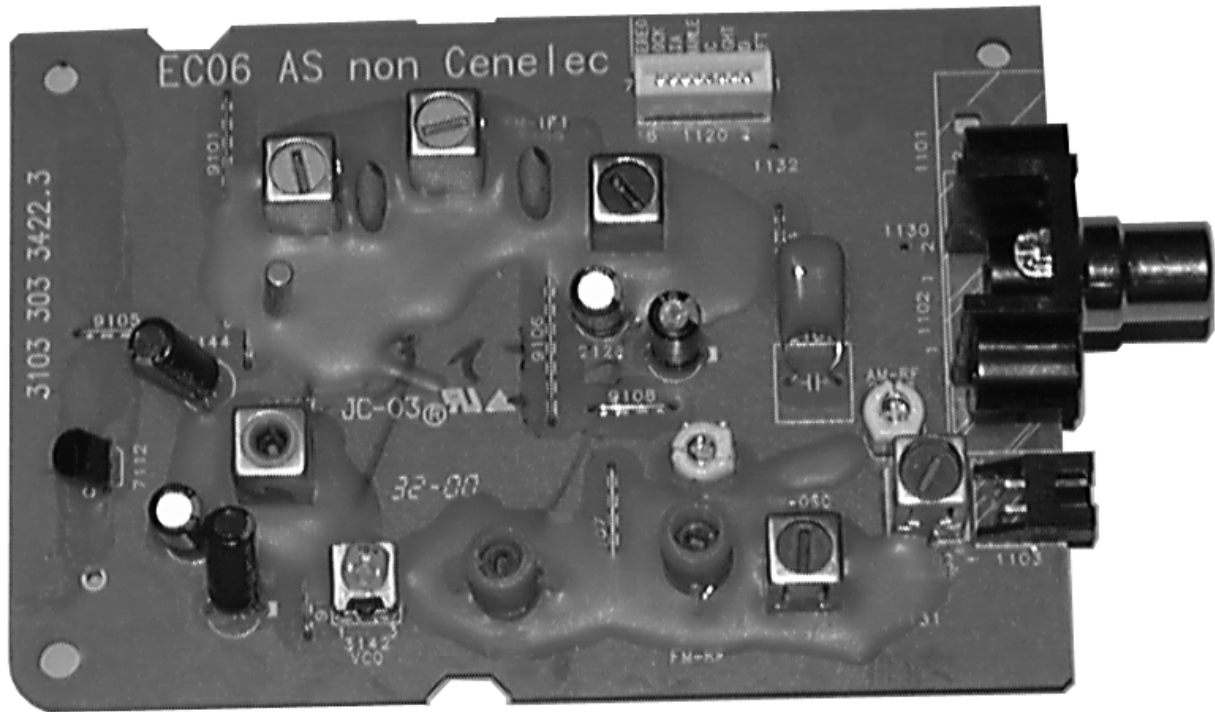


LAYOUT DIAGRAM - MAINS BOARD (TOP VIEW)





BLOCK DIAGRAM



# ECO6 Tuner Board

version: **SYSTEMS non-CENELEC**

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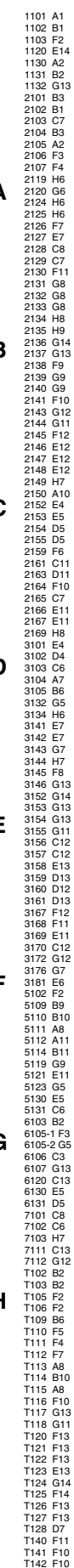
Blockdiagram .....7A-1

Schematic Diagram .....7A-2

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Adjustment table .....7A-3

Electrical Partslist.....7A-4



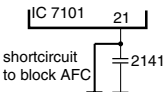
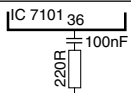
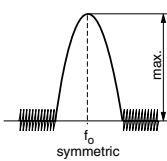
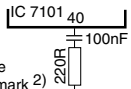
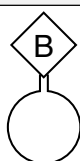
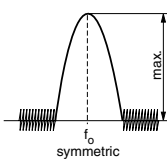
EG06 Sys-non Genelec 00091

(p)...for provision only  
**USA ...** for USA version only  
**E-EU ...** for East European version only  
**J ...** for Japanese version only

**Signal path**

- FM
- - - AM
- - MPX (Audio Frequency)
- ⇒ AF - left/right

TUNER ADJUSTMENT TABLE ( ECO6 FM/MW- and FM/MW/LW - versions with AM-frame aerial )

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz	1700kHz		5123	8V ±0.2V		
	530kHz		check	1.1V ±0.4V		
FM/MW-version, 9kHz grid 531 - 1602kHz	1602kHz		5123	6.9V ±0.2V		
	531kHz		check	1.1V ±0.4V		
<b>LW</b>  153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
<b>MW</b> FM/MW/LW- version, 9kHz grid 531 - 1602kHz		1602kHz	5123	8V ±0.2V		
		531kHz	check	1.1V ±0.4V		
FM IF						
<b>FM</b>	10.7MHz, 45mV continuous wave	D		5119	2	0 ± 3 mV DC
FM RF						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A mod=1kHz Δf=±22.5kHz	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
<b>FM</b>	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz <sup>1)</sup>
AM IF						
<b>MW</b>	450kHz  connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C Δf=±10kHz V <sub>RF</sub> = 0.5mV (as low as possible)		5111	5	
			see remark 2) 	5112		
<b>AM AFC</b> <b>MW</b>		C continuous wave V <sub>RF</sub> = 2mV		5114	2	0 ± 2 mV DC
AM RF <sup>3)</sup>						
<b>MW</b> <sup>4)</sup> FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B 	1494kHz	2106	5	
	558kHz		558kHz	5102		
<b>LW</b>	198kHz		198kHz	5103		
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		Δf = ±30kHz V <sub>RF</sub> as low as possible	1500kHz		
	560kHz	560kHz	5102			

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

<sup>1)</sup> If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

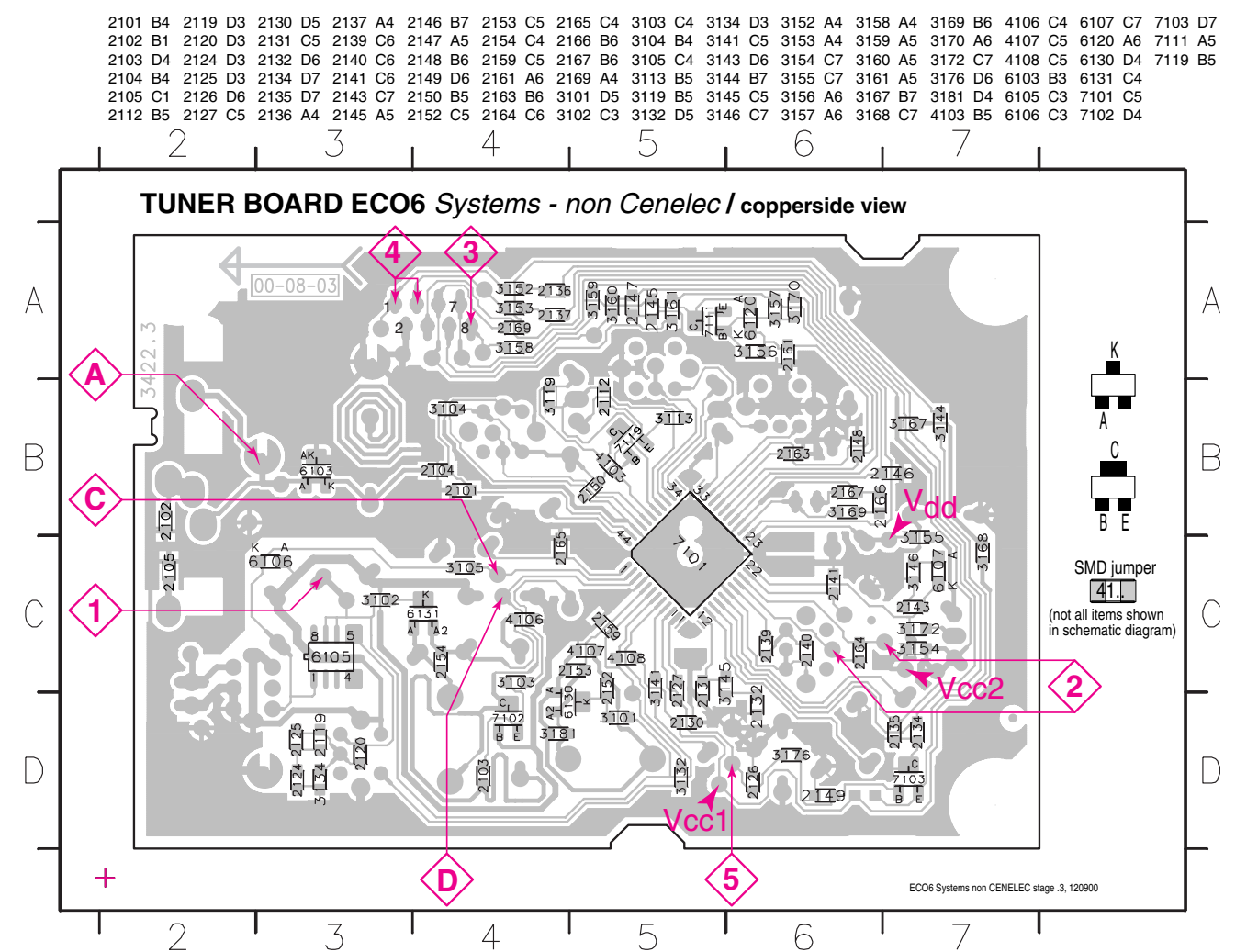
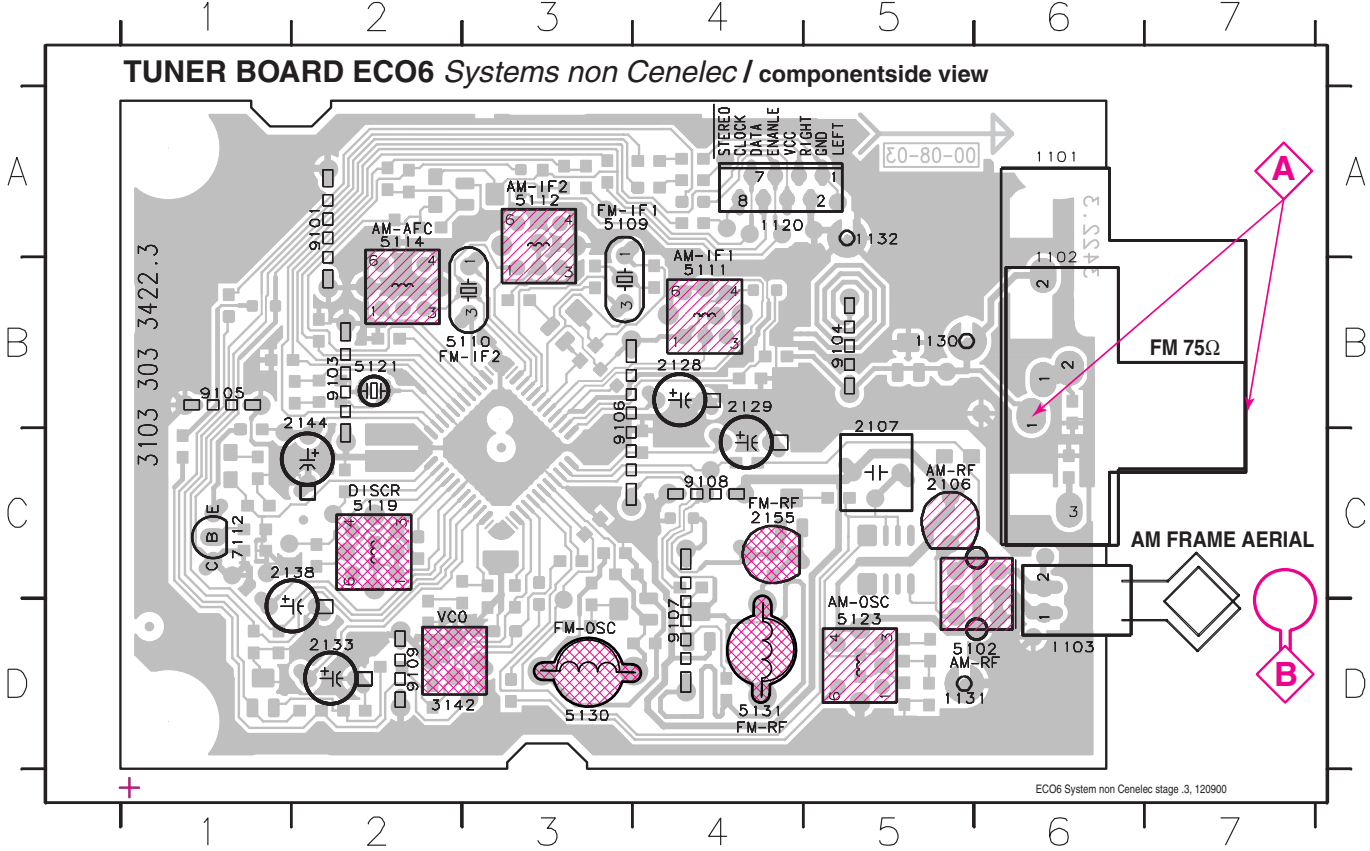
<sup>2)</sup> RC network serves for damping the IF-filter while adjusting the other one.

<sup>3)</sup> For AM RF adjustments the original frame antenna has to be used !

<sup>4)</sup> MW has to be aligned before LW.

↑ Repeat

1101 A6 1120 A4 1132 A5 2128 C4 2138 C2 3142 D2 5110 B3 5114 A2 5123 D5 7112 C1 9104 B5 9107 D4  
1102 B6 1130 B5 2106 C5 2129 B4 2144 B2 5102 D6 5111 B4 5119 C2 5130 D3 9101 A2 9105 B1 9108 C4  
1103 D6 1131 D5 2107 B5 2133 D2 2155 C4 5109 A3 5112 A3 5121 B2 5131 D4 9103 B2 9106 B3 9109 D2



These assembly drawings show a summary of all possible versions.  
For components used in a specific version see schematic diagram respectively partslist.

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# CD BOARD

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**TABLE OF CONTENTS**

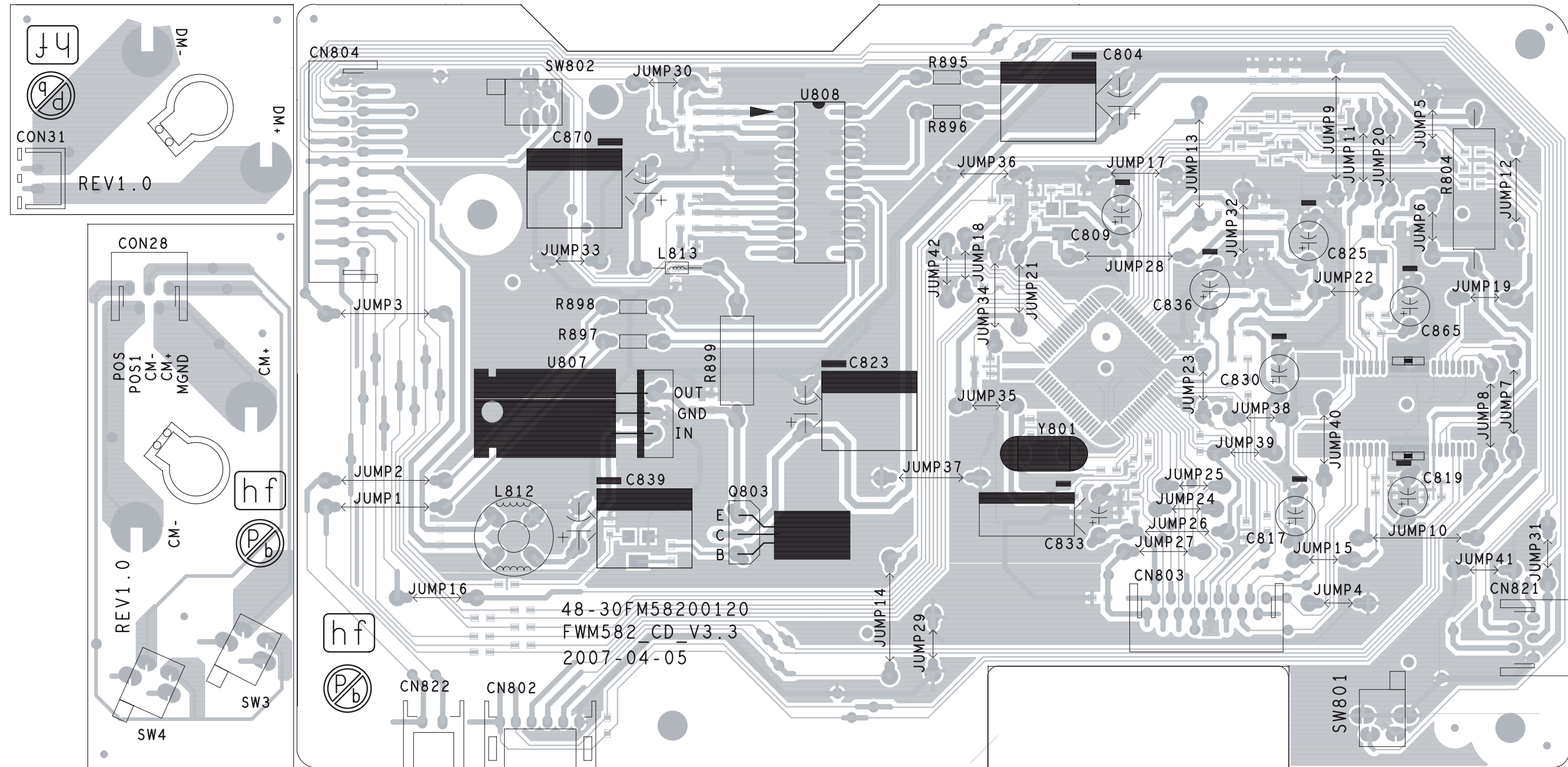
PCB Layout .....8-2 to 8-3

Circuit Diagram .....8-4 to 8-5

Remark: This chapter is only for reference, the whole CD Board Ass'y can be orderd with  
12nc: 9965 100 03995

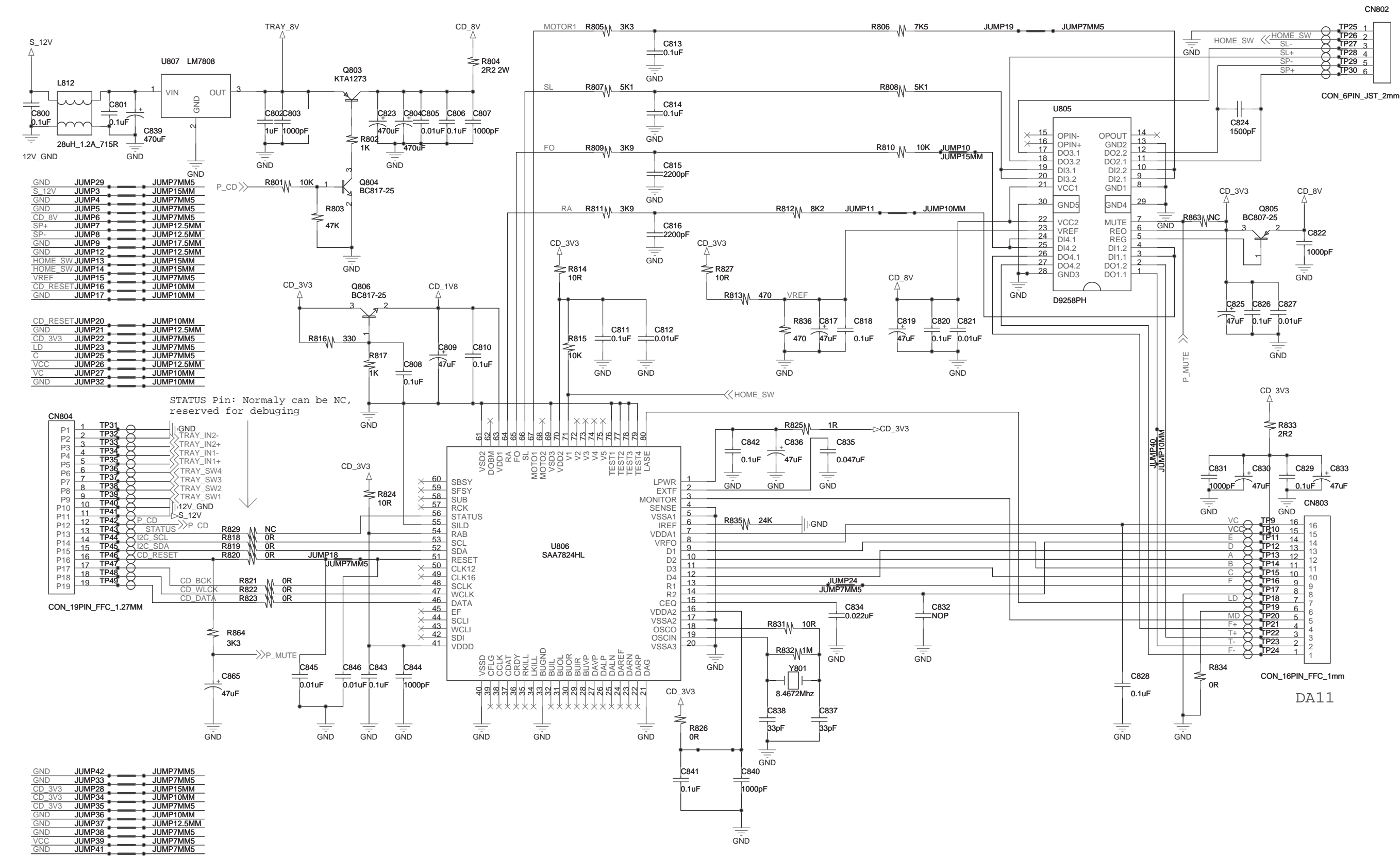


## LAYOUT DIAGRAM - CD BOARD (TOP VIEW)

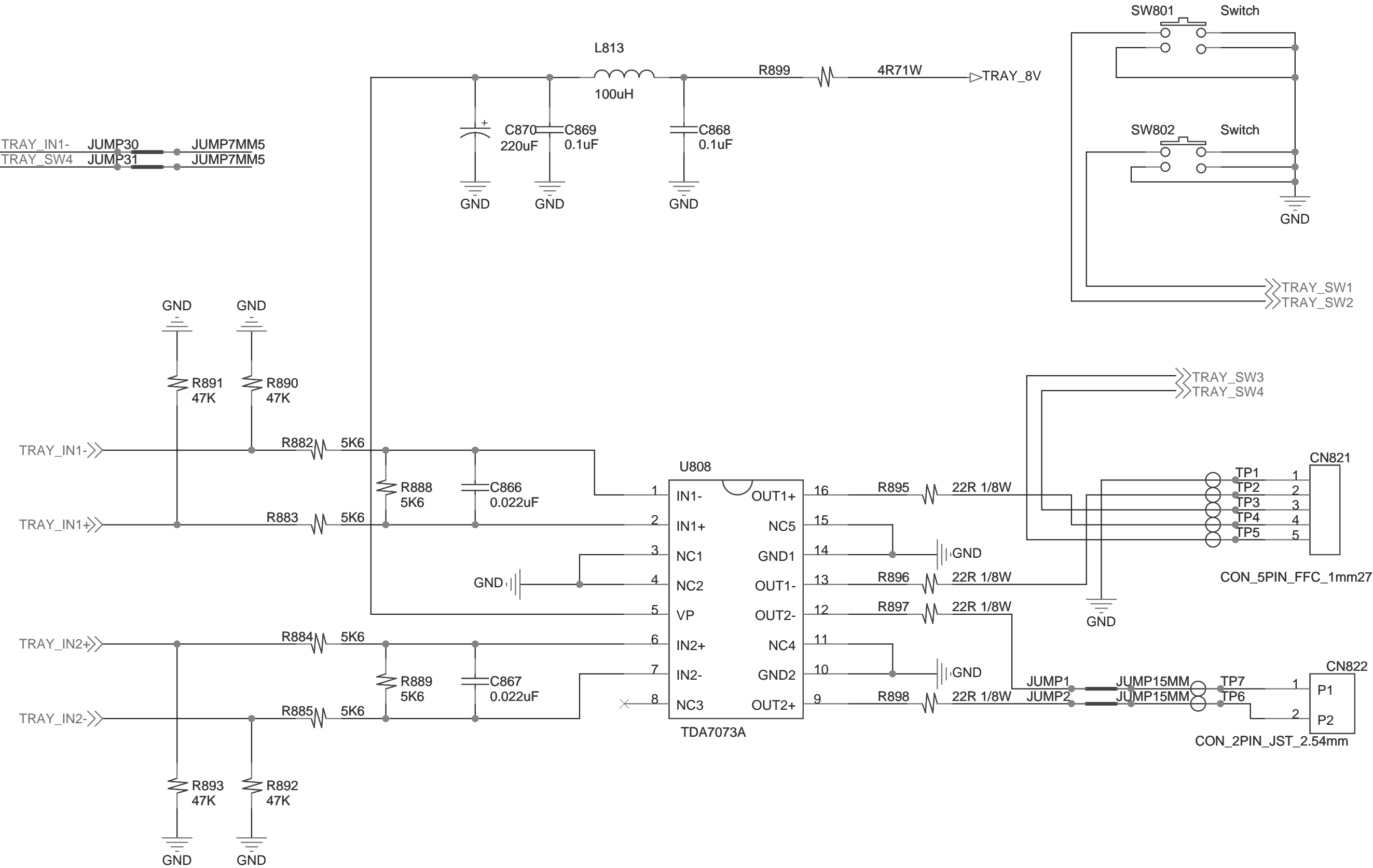




CIRCUIT DIAGRAM - CD BOARD (PART1)

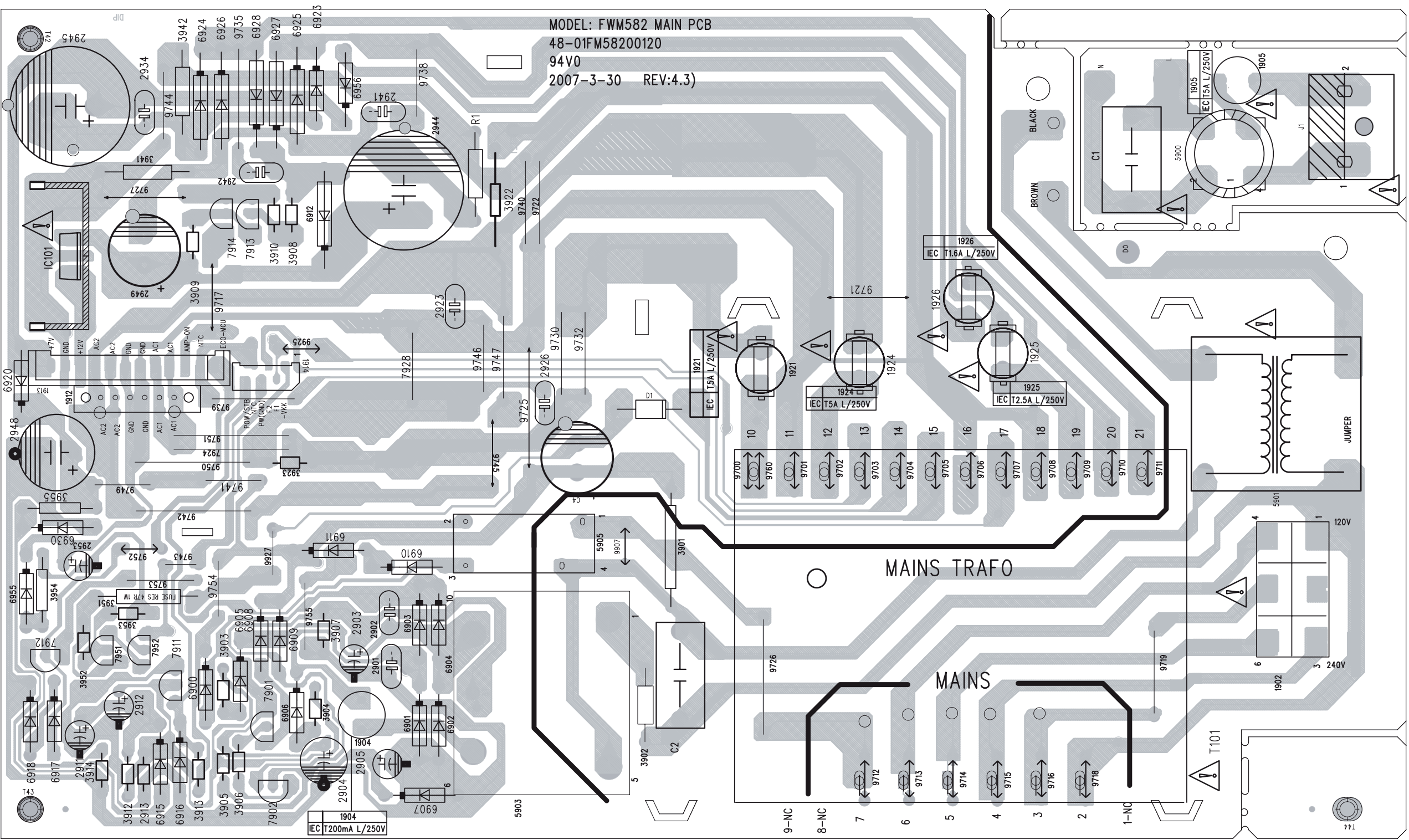


CIRCUIT DIAGRAM - CD BOARD (PART 2)

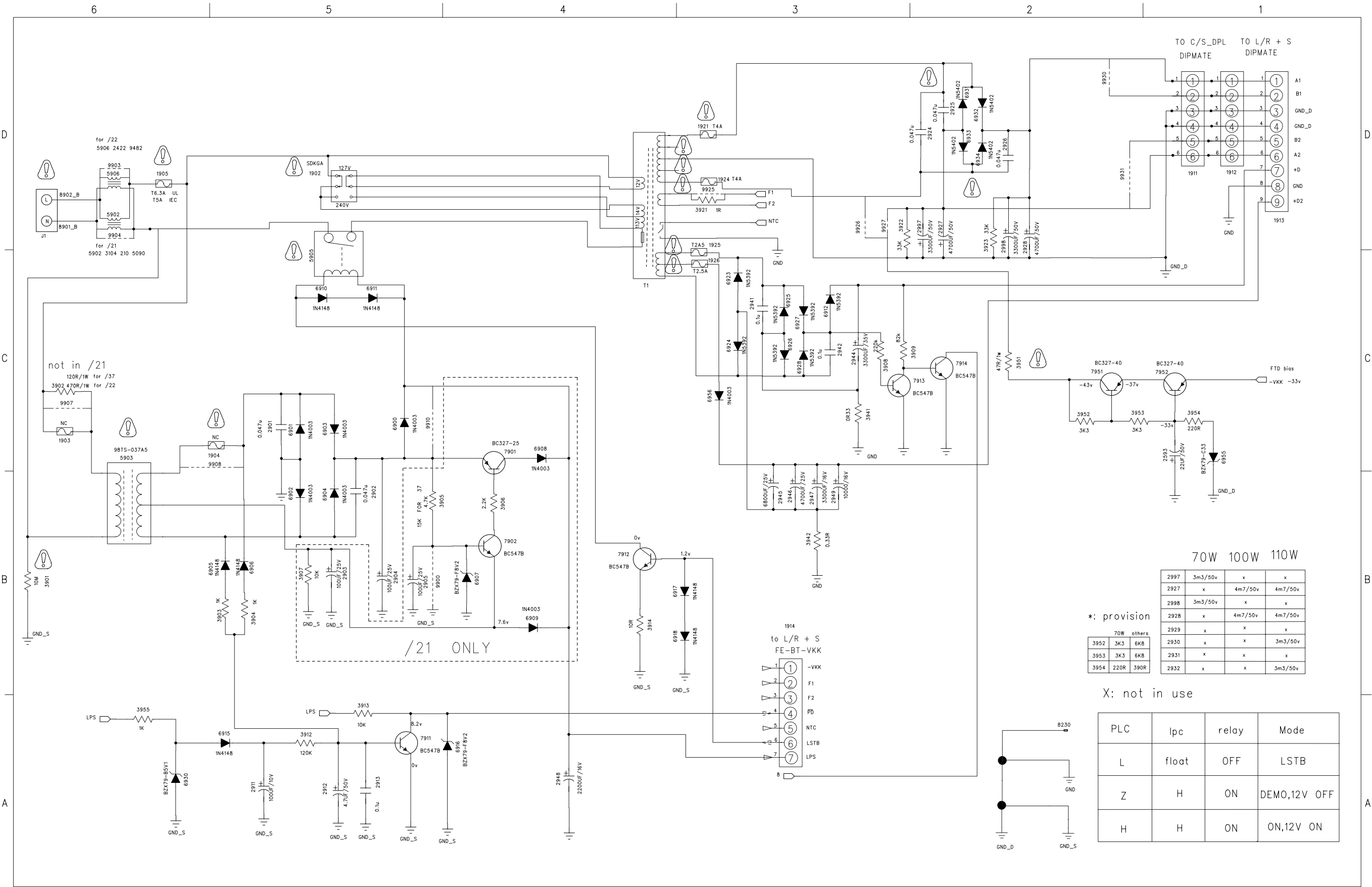




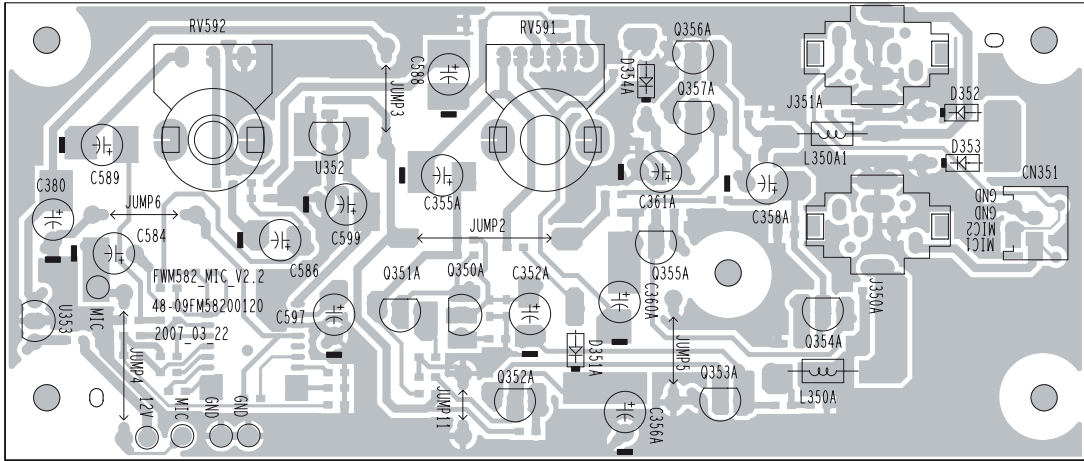
LAYOUT DIAGRAM - MAINS BOARD (TOP VIEW)



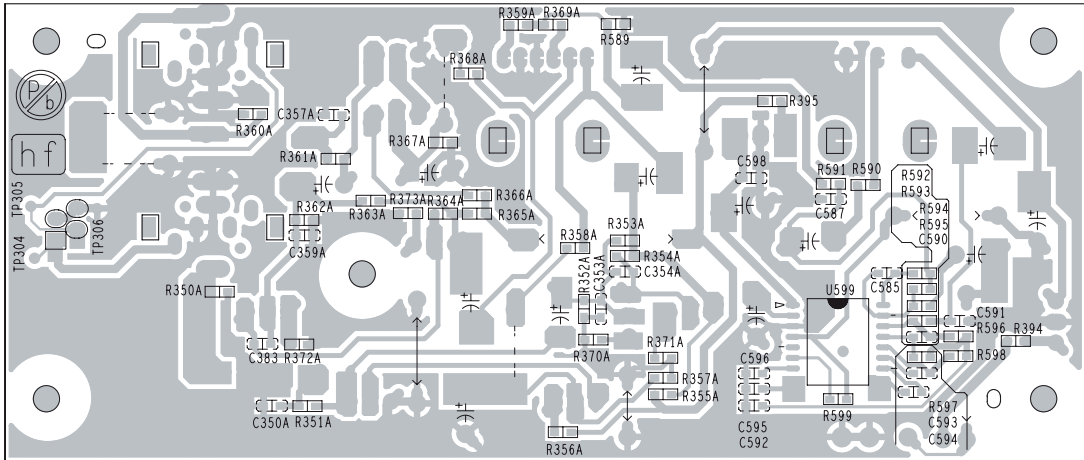
CIRCUIT DIAGRAM - MAINS BOARD



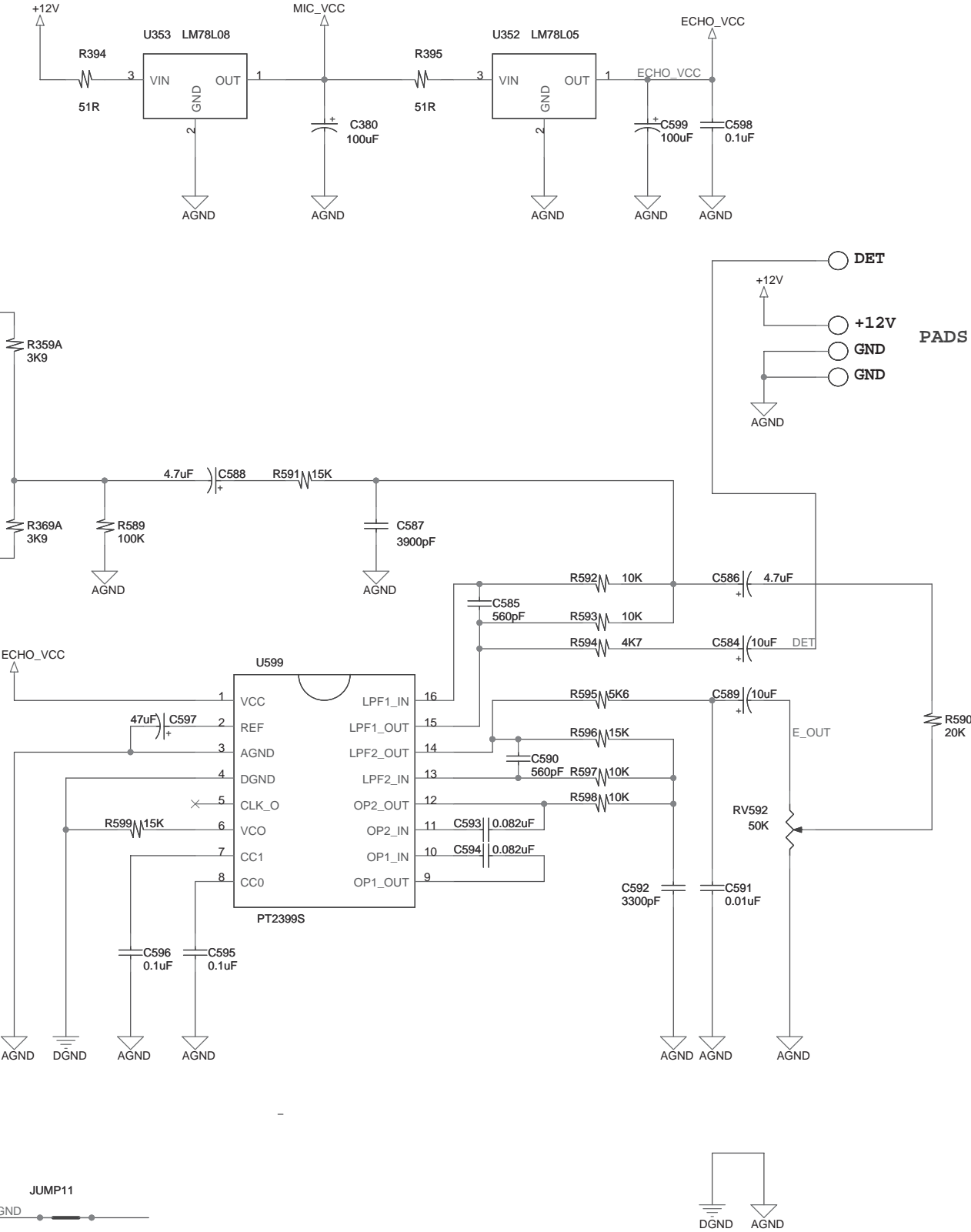
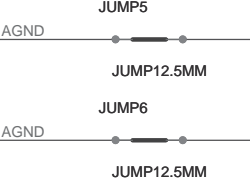
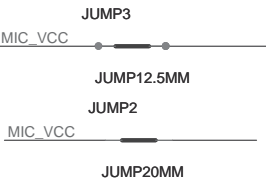
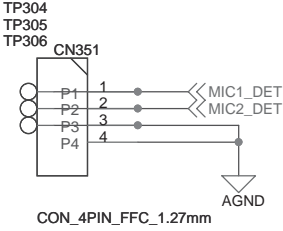
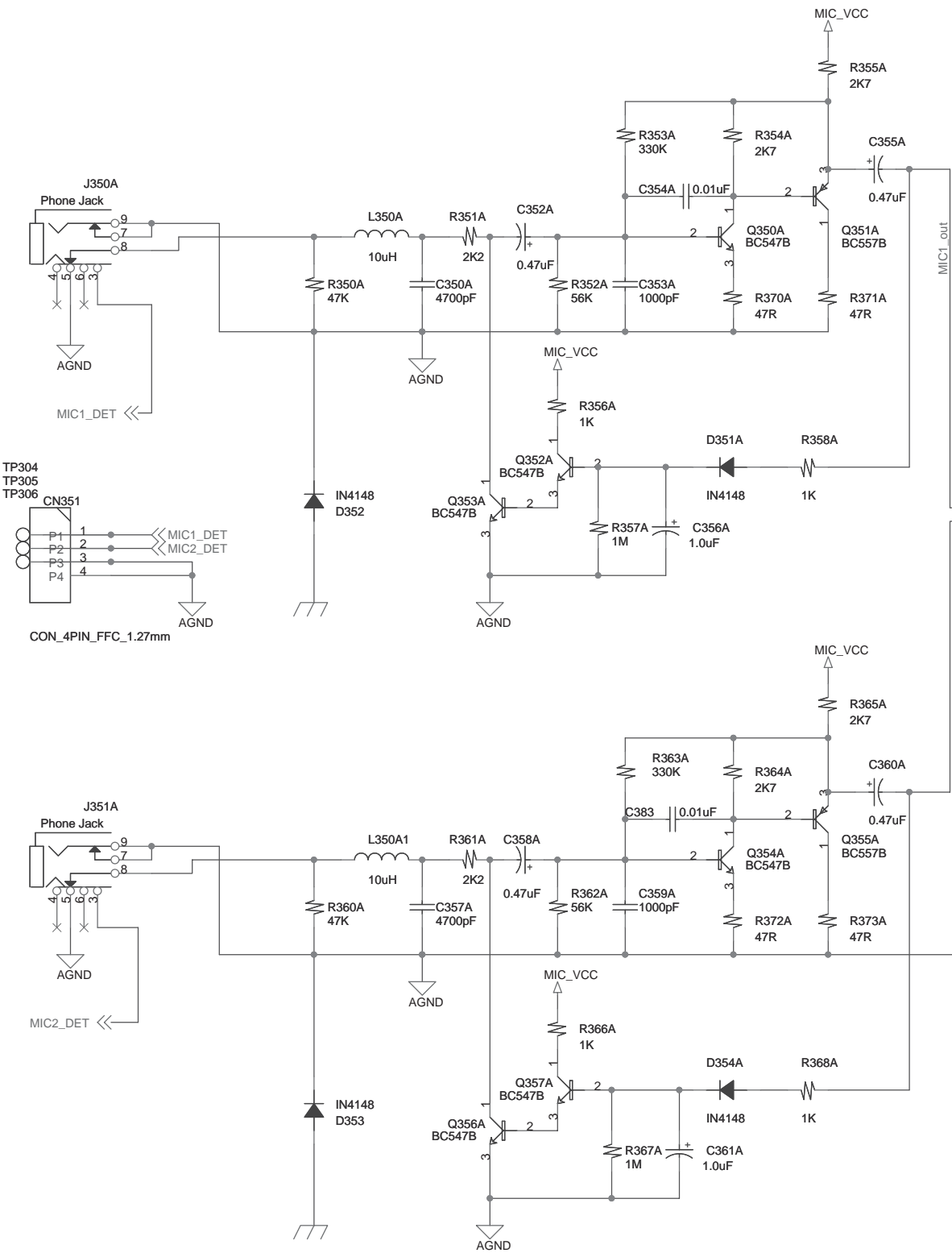
LAYOUT DIAGRAM - MIC BOARD (TOP VIEW)



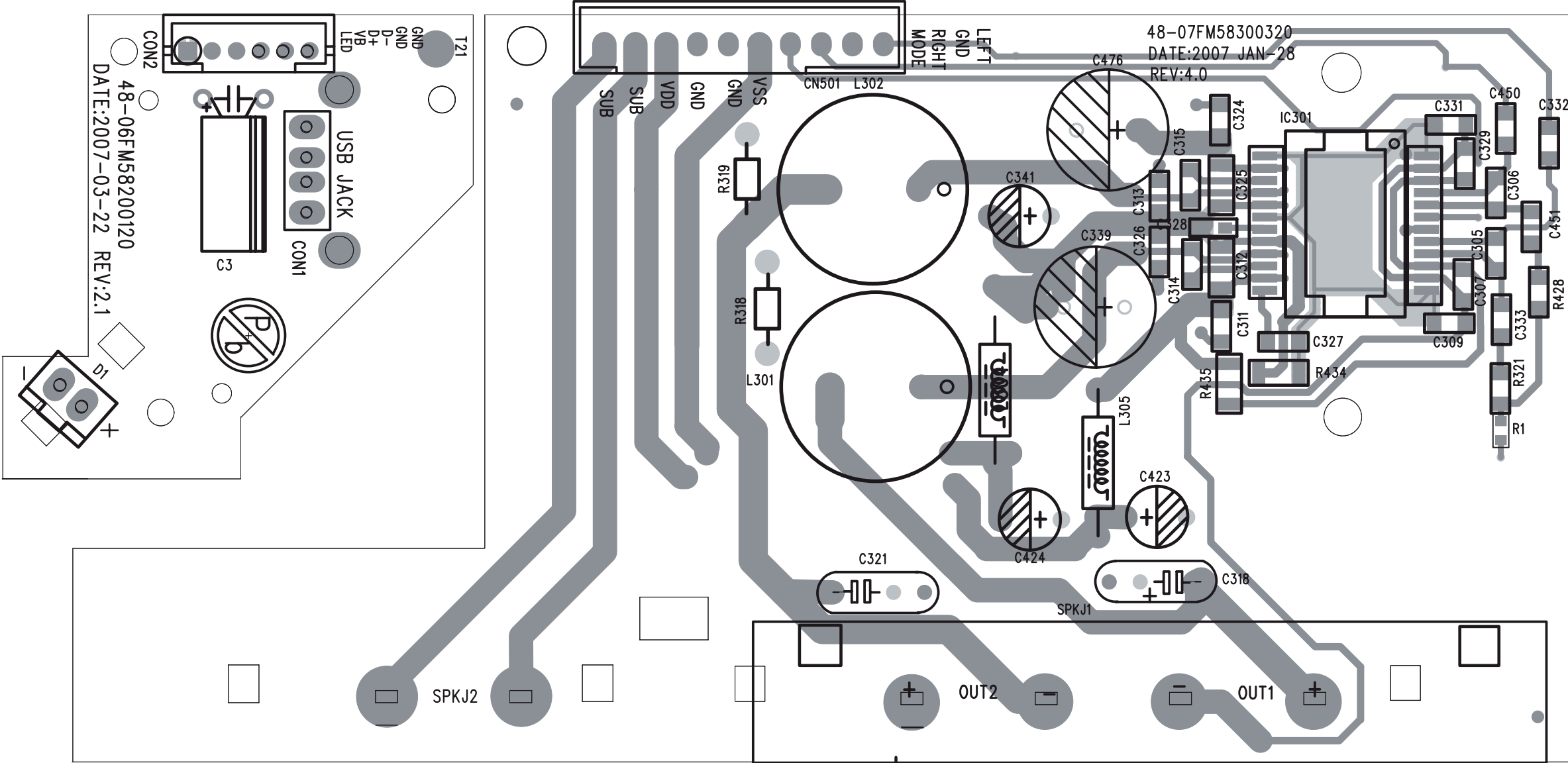
LAYOUT DIAGRAM - MIC BOARD (BOTTOM VIEW)



CIRCUIT DIAGRAM - MIC BOARD

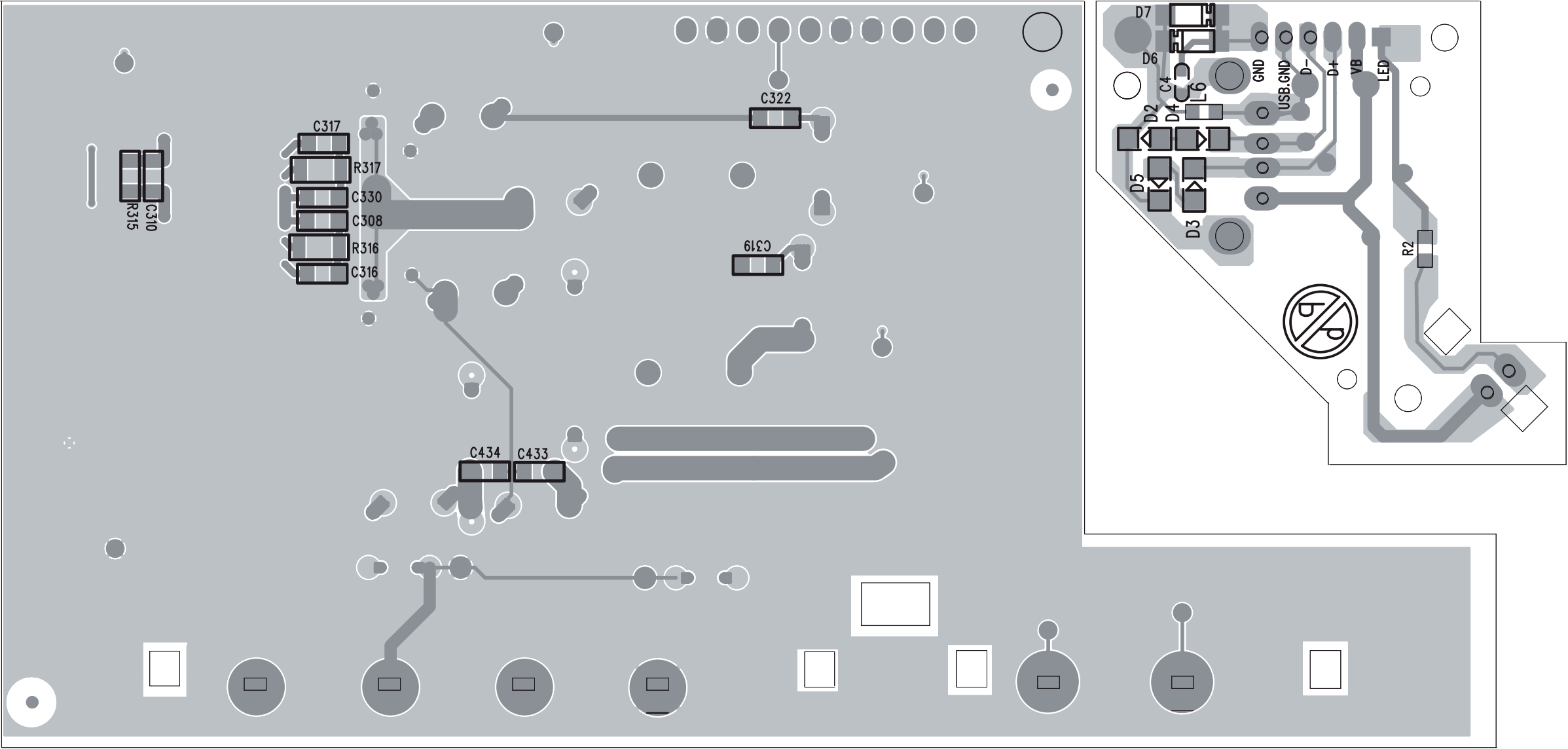


LAYOUT DIAGRAM - HIGH AMP & USB JACK BOARD (TOP VIEW)





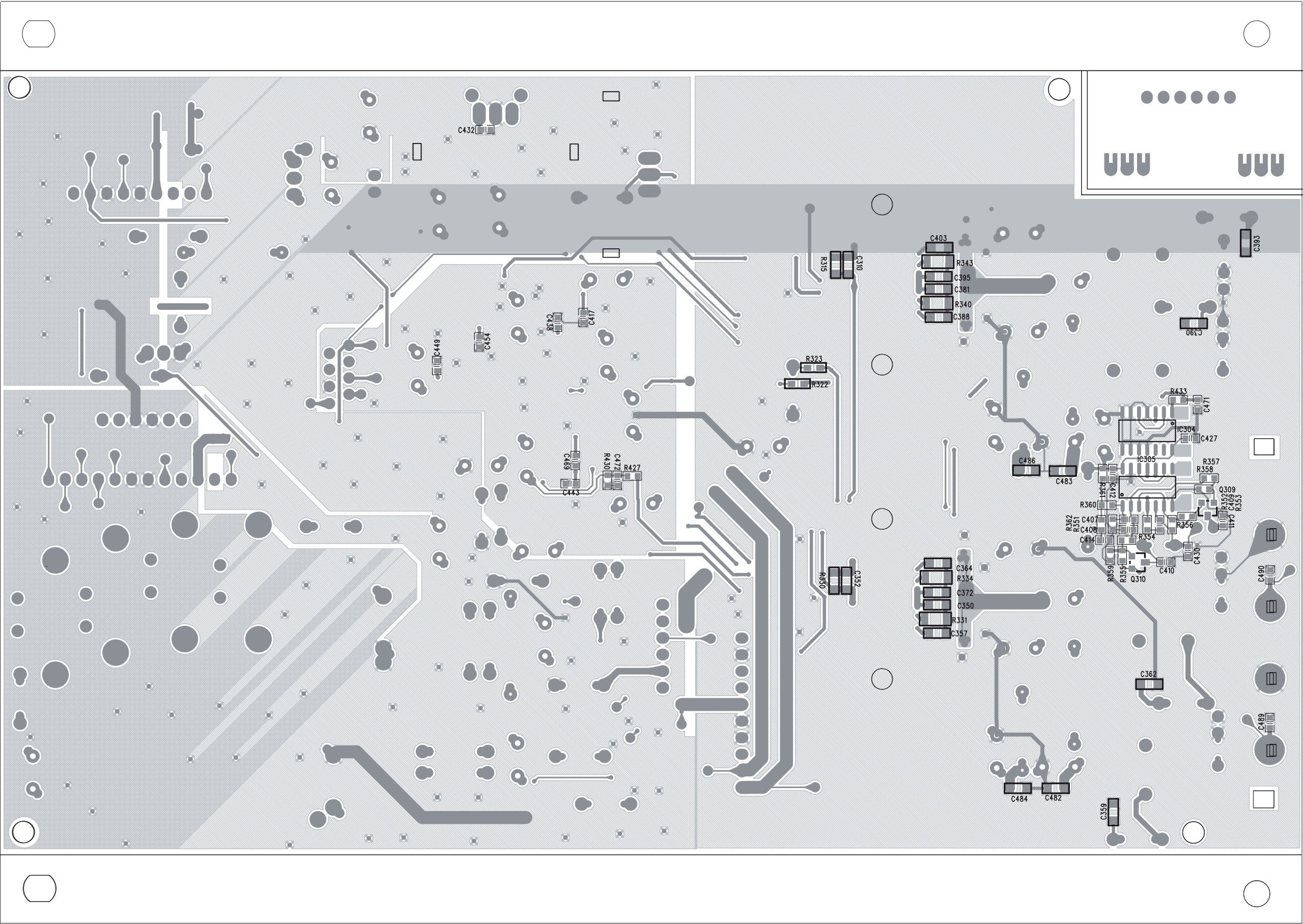
LAYOUT DIAGRAM - HIGH AMP & USB JACK BOARD (BOTTOM VIEW)





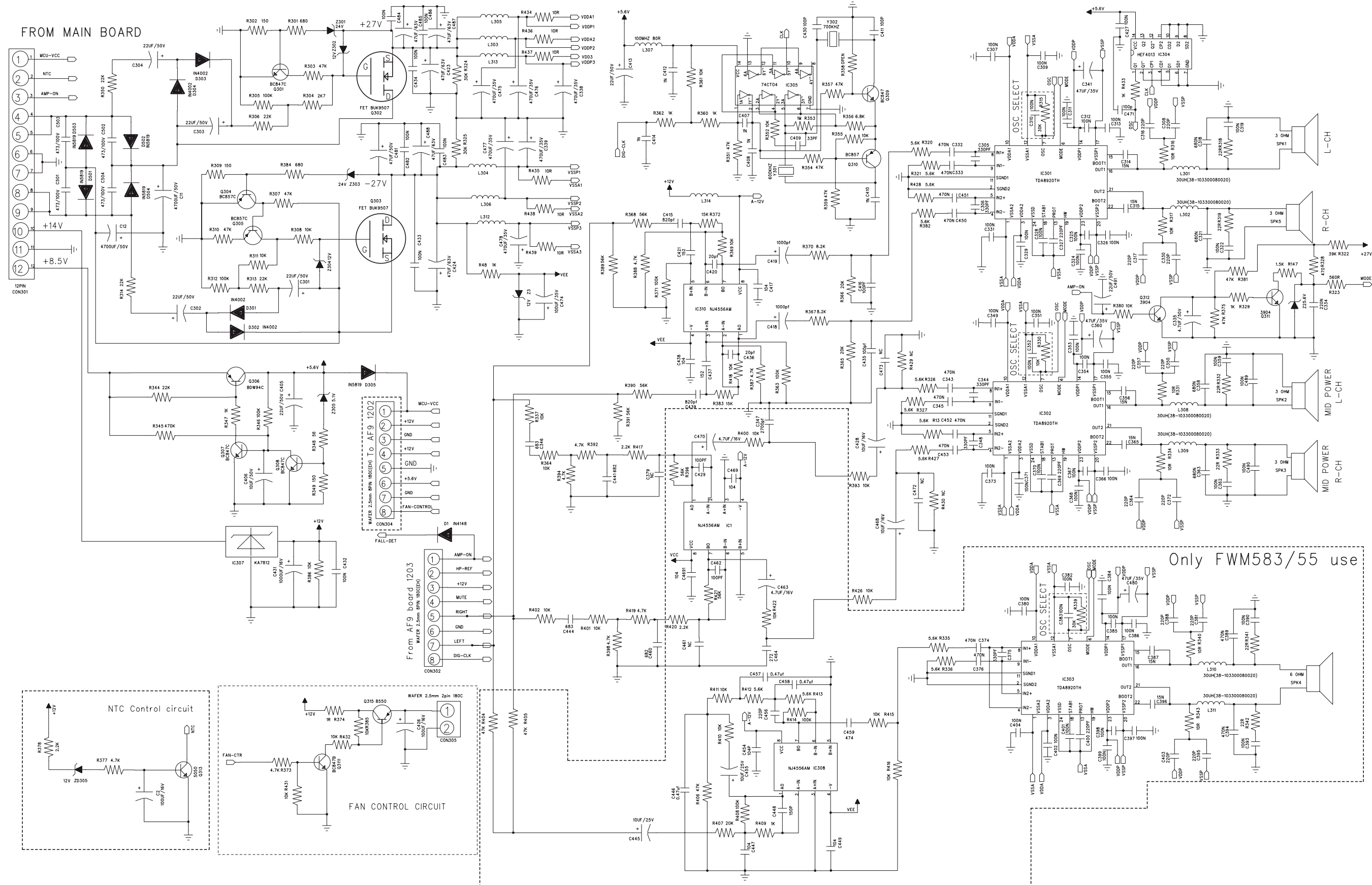


LAYOUT DIAGRAM - POWER BOARD (BOTTOM VIEW)





FROM MAIN BOARD



# AF9 BOARD

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Brief Introduction of the AF9 Board .....	12-1
AF9 Board - Component layout .....	12-2
AF9 Board - Chip layout .....	12-3
AF9 Board - Circuit Diagram (Part 1) .....	12-4
AF9 Board - Circuit Diagram (Part 2) .....	12-5

## ***BRIEF INTRODUCTION OF THE AF9 BOARD***

The AF9 Board consists of the following features :

a. TDA7468D IC

TDA7468D IC (7501) which includes functions such as source selection, loudness control, dynamic bass control, treble control, volume control and muting function. Sound features such as ALC, DBB, DSC and IS are controllable via I<sup>2</sup>C Bus from the microprocessor.

The TDA7468D IC caters for 4 input sources namely TUNER, TAPE, CD and AUX. It also has a Mic mix input. In our application, software will switch the input source to previous source MUTE during STANDBY mode and some other occasions where noise from other input source is undesirable.

Note that the input to the TDA7468D IC must be ac coupled to prevent 'polp' noise. Input networks are included to provide appropriate attenuation for various sources.

b. SIMPLE MIC MIXING

The AF9 Board has provisions which can be configured to cater for one of the following:

MM : which caters for Mic mixing with additional Mic amplifier board.

NM : non Mic mixing.

c. DOLBY PRO LOGIC (DPL) INTERFACE

The AF9 Board has provisions which can be configured to cater for DPL.

d. LINE OUT

Line out cinch socket for connection to external amplifier.

e. SUB-WOOFER OUT

Sub-woofer out cinch socket for connection to active sub-woofer speaker.

f. INCREDIBLE SURROUND

Incredible surround effect using transistor circuit to create phase shifting and spatial effect.

g. HEADPHONE AMPLIFIER

Headphone amplifier to drive 32 ohm to 1kohm headphone.

h. CD STANDBY CONTROL

CD Standby Control circuit which switches on the supply to CD servo control IC, digital out buffer IC, HF circuit and the laser light pen in CD mode only.

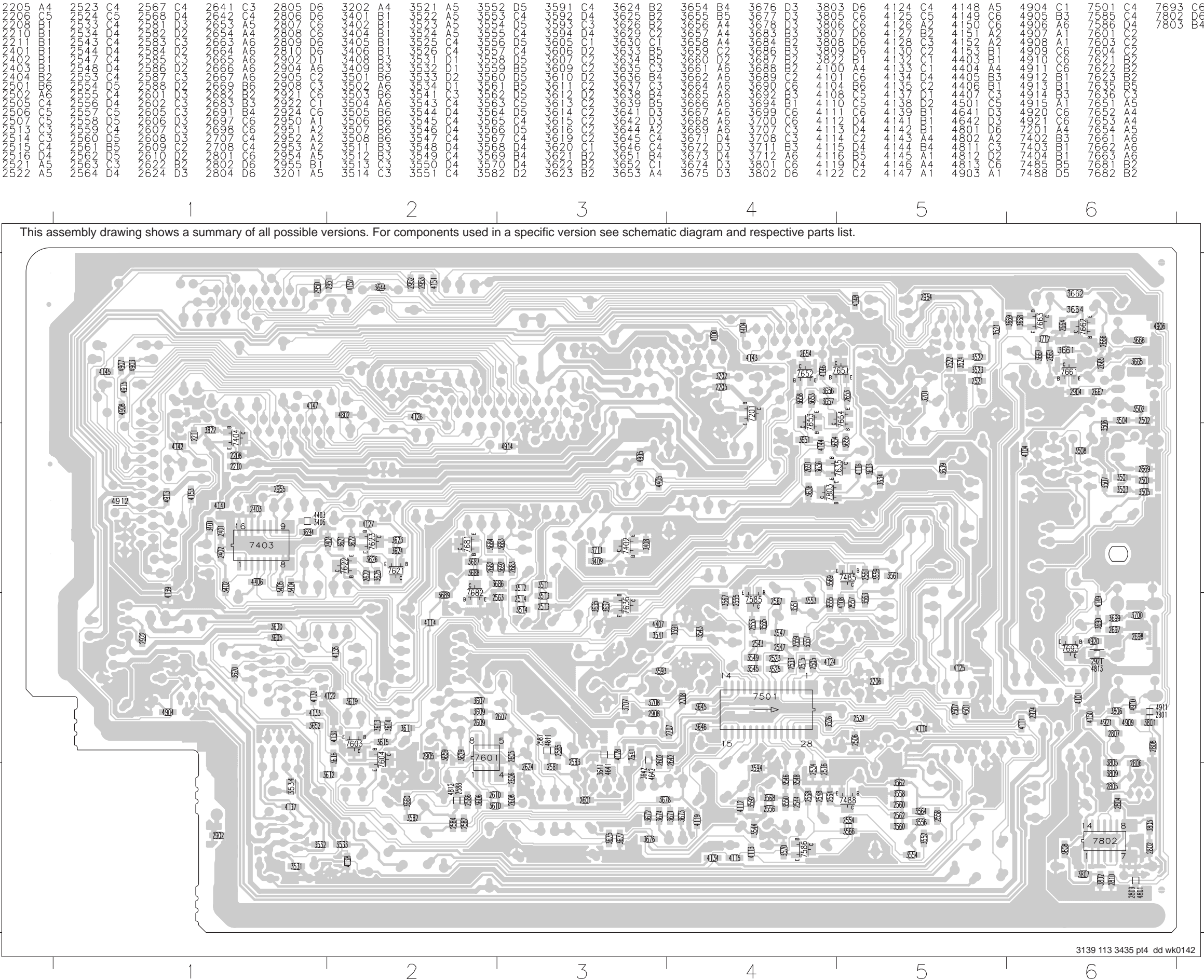
i. ATTENUATION NETWORK

Attenuation network is provided at the output of the AF9 Board for interfacing with power board of different output power.

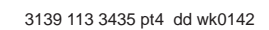
j. CD DIGITAL OUT

CD Digital out cinch socket for connection to external digital audio decoders.

CHIP LAYOUT



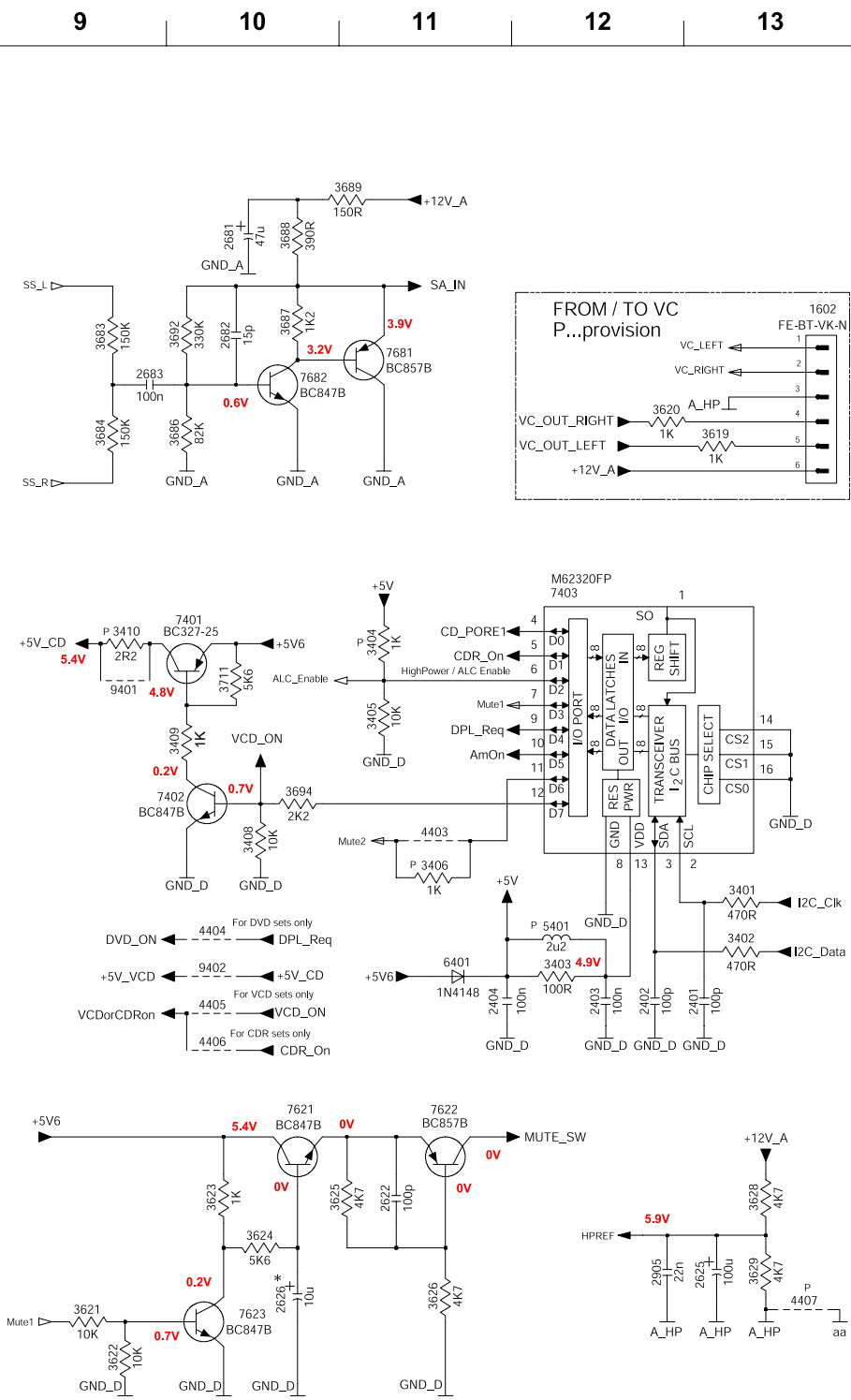
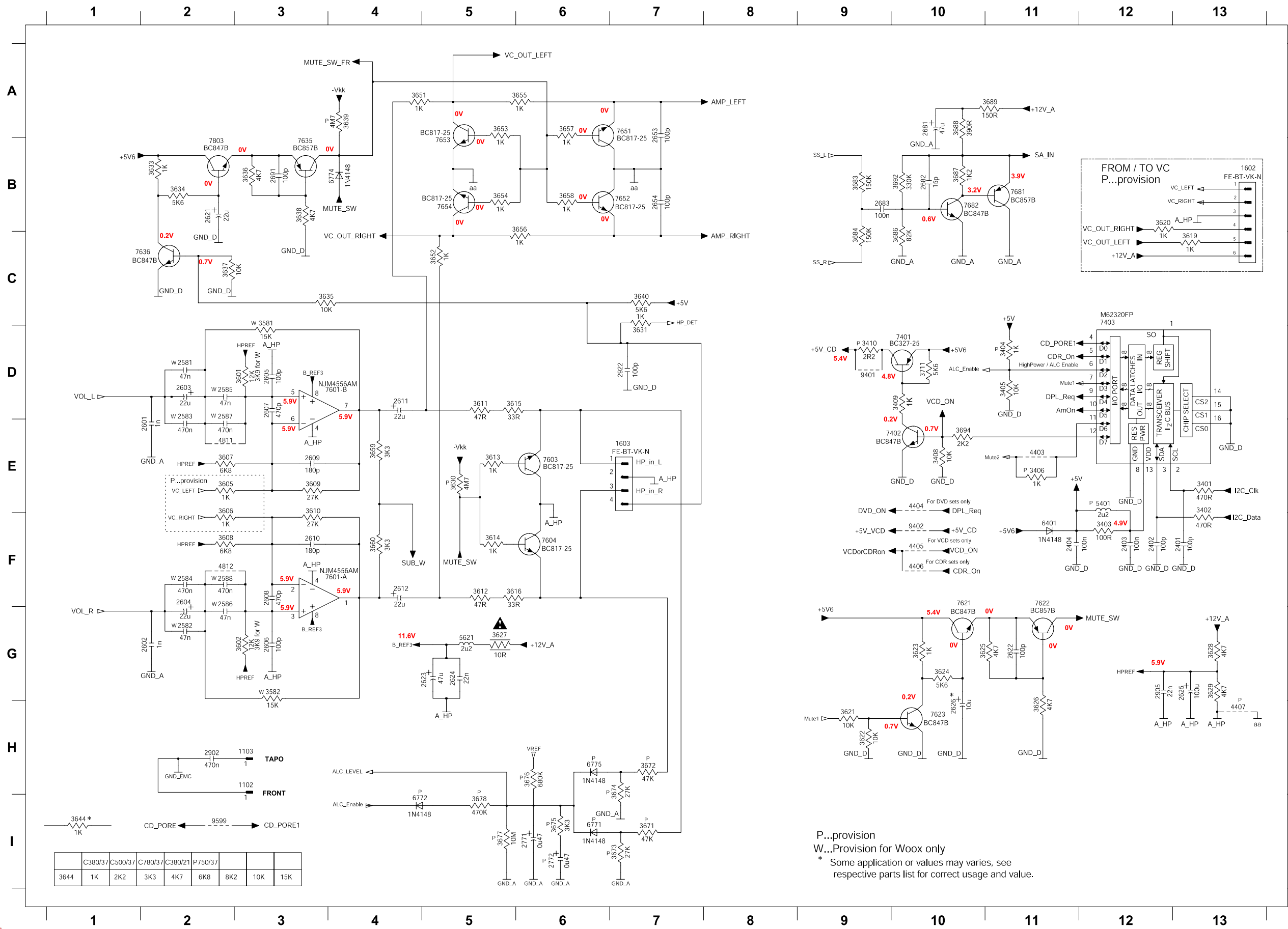




D...for DPL  
S...for simple I.S.  
P...provision  
\* Some application or values may varies, see respective parts list for correct usage and value.

1501 E1  
1502 E3  
1503 F1  
1504 H1  
1505 E4  
1506 A1  
1510 F1  
1531 C1  
1532 C2  
1691 H5  
2201 B7  
2202 C7  
2203 D7  
2204 C6  
2205 C5  
2206 C7  
2501 E2  
2502 E2  
2503 D3  
2504 E3  
2505 F5  
2506 F7  
2507 E7  
2511 A4  
2512 B4  
2513 A4  
2514 B4  
2515 F6  
2516 F7  
2521 A4  
2522 A4  
2523 F6  
2524 F6  
2531 D4  
2532 C4  
2533 F6  
2534 F7  
2535 B3  
2536 C3  
2541 A8  
2542 H8  
2543 C9  
2544 G9  
2546 F9  
2547 B10  
2548 G10  
2549 C11  
2550 F11  
2551 C11  
2552 F11  
2553 B12  
2554 G11  
2555 B12  
2556 H11  
2557 B3  
2558 G12  
2559 C12  
2560 G12  
2561 C14  
2562 G14  
2563 C14  
2564 G14  
2565 C9  
2566 G9  
2568 G9  
2569 A10  
2590 B9  
2591 A10  
2592 I10  
2593 A11  
2594 I11  
2641 D13  
2642 E13  
2661 G2  
2662 I2  
2663 H2  
2664 I2  
2665 H2  
2666 H2  
2667 G1  
2669 E1  
2696 G7  
2697 H7  
2698 G5  
2707 E11  
2708 E12  
2904 G1  
2908 E12  
2921 G5  
2923 B1  
2924 F5  
3201 B6  
3202 C6  
3435 D3  
3436 D3  
3437 D3  
3438 D3  
3501 D1  
3502 E1  
3503 D2  
3504 E2  
3505 E2  
3506 E2  
3507 E3  
3508 E3

HEADPHONE AMPLIFIER & I<sup>2</sup>C EXPANDER CIRCUIT



P...provision  
W...Provision for Woox only  
\* Some application or values may varies, see respective parts list for correct usage and value.

- 1102 H3
- 1103 H3
- 1602 B13
- 1603 E7
- 2401 F13
- 2402 F12
- 2403 F12
- 2404 F11
- 2581 D2
- 2582 G2
- 2583 D2
- 2584 F2
- 2585 D2
- 2586 F2
- 2587 D2
- 2588 F2
- 2601 E2
- 2602 G2
- 2603 D2
- 2604 F2
- 2605 D3
- 2606 G3
- 2607 D3
- 2608 F3
- 2609 E3
- 2610 F3
- 2611 D4
- 2612 F4
- 2621 B2
- 2622 G11
- 2623 G5
- 2624 G5
- 2625 G13
- 2626 H10
- 2653 A7
- 2654 B7
- 2681 A10
- 2682 B10
- 2683 B9
- 2691 B3
- 2771 I6
- 2772 I6
- 2902 H2
- 2905 G12
- 2922 D7
- 3401 E13
- 3402 E13
- 3403 F12
- 3404 D11
- 3405 D11
- 3406 E11
- 3408 E10
- 3409 D10
- 3410 D9
- 3581 D3
- 3582 G3
- 3601 D3
- 3602 G3
- 3605 E2
- 3606 F2
- 3607 E2
- 3608 F2
- 3609 E3
- 3610 F3
- 3611 D5
- 3612 F5
- 3613 E5
- 3614 F5
- 3615 D5
- 3616 F5
- 3619 C13
- 3620 B12
- 3621 H9
- 3622 H9
- 3623 G10
- 3624 G10
- 3625 G10
- 3626 H11
- 3627 G5
- 3628 G13
- 3629 G13
- 3630 E5
- 3631 D7
- 3633 B2
- 3634 B2
- 3635 C3
- 3636 B3
- 3637 C2
- 3638 B3
- 3639 A4
- 3640 C7
- 3644 I1
- 3651 A4
- 3652 C5
- 3653 A5
- 3654 B5
- 3655 A6
- 3656 C6
- 3657 A6
- 3658 B6
- 3659 E4
- 3660 F4
- 3671 I7
- 3672 H7
- 3673 I7
- 3674 H7
- 3675 I6
- 3676 H6
- 3677 I5
- 3678 I5
- 3683 B9
- 3684 C9
- 3686 C10
- 3687 B10
- 3688 A10
- 3689 A11
- 3692 B10
- 3694 E10
- 3711 D10
- 4403 E11
- 4404 E10
- 4405 F10
- 4406 F10
- 4407 H13
- 4811 E2
- 4812 F2
- 5401 E12
- 5621 G5
- 6401 F11
- 6771 I6
- 6772 I4
- 6774 B4
- 6775 H6
- 7401 D10
- 7402 E10
- 7403 C12
- 7601-A G3
- 7601-B D3
- 7603 E6
- 7604 F6
- 7621 F10
- 7622 F11
- 7623 H10
- 7635 B3
- 7636 C2
- 7651 A7
- 7652 B7
- 7653 B5
- 7654 B5
- 7681 B11
- 7682 B10
- 7803 B2
- 9401 D9
- 9402 F10
- 9599 I2



[illegible]

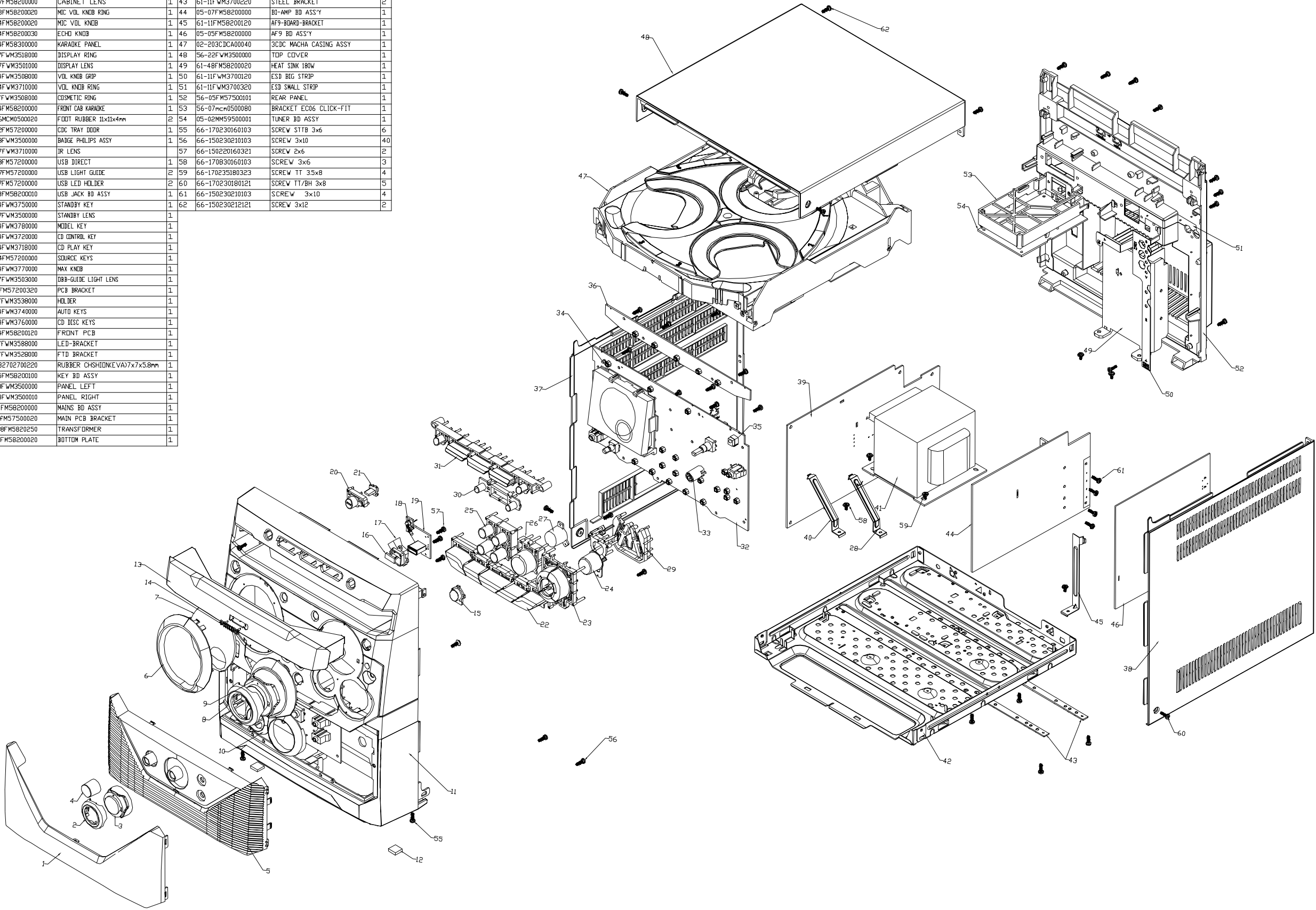
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1206 C1	T060 D1
1401 A9	T061 D1
1402 D9	T062 D1
1403 A9	T063 D1
1404 D9	T064 D1
1405 A9	T065 E1
1520 E6	T066 E1
1521 A7	T067 E1
1522 A6	T068 F1
1523 D6	T069 F1
1524 A5	T070 F1
1525 B5	T071 F1
1541 D4	T072 F1
1542 D4	T073 F1
1801 B1	T074 E4
2207 D3	T075 E4
2208 F2	T076 E4
2209 E3	T077 E4
2210 F2	T078 E4
2211 F3	T079 F4
2520 E7	T080 F4
2801 B4	T081 F4
2802 C3	T082 F4
2803 B3	T084 F4
2804 B3	T085 A6
2805 E2	T086 A7
2806 E2	T087 A7
2807 B1	T088 A7
2808 B4	T089 A6
2809 B4	T090 A6
2810 A4	T091 B6
2901 F6	T092 B6
2950 E7	T093 B6
2951 E7	T094 B6
2952 E7	T095 B6
2953 E7	T096 B6
2954 E6	T097 C6
2955 E1	T098 C6
3205 D2	T099 C6
3412 A8	T100 C6
3801 B4	T101 C6
3802 A4	T102 D6
3803 B3	T103 D6
3804 A3	T104 D6
3805 B2	T105 D6
3806 A1	T106 D6
3807 B4	T107 E6
3808 A3	T108 E6
3809 B2	T109 E6
3820 E3	T110 E6
3821 E2	T111 E6
3822 F3	T112 A8
4801 B4	T113 A8
4802 C4	T114 A8
4903 B8	T115 A8
4904 F7	T116 E3
4905 D3	T117 E8
4906 A5	T118 E8
4907 C8	T119 E8
4908 C8	T120 F8
4909 A3	T121 E1
4910 A3	T122 F6
4911 A4	T123 F6
4912 B8	T124 E1
4913 B8	T130 B8
4914 B5	
4915 C8	
4921 C1	
5801 B2	
5802 A3	
6204 F7	
6205 D3	
6206 F2	
6207 C5	
6208 C5	
6209 F3	
7202 E3	
7404 F3	
7802 A3	
9405 C8	
9483 F6	
9484 D4	
9486 E7	
9614 E3	
9634 E2	
9904 F7	
T050 B1	
T051 B1	
T052 A3	
T053 C4	

Updated on 15 SEPT 2003



SET MECHANICAL EXPLODED VIEW

ITEM	PART NO.	NAME	QTY	ITEM	PART NO.	NAME	QTY
1	56-57FM58200000	CABINET LENS	1	43	61-11FWM3700220	STEEL BRACKET	2
2	56-78FM58200020	MIC VOL KNOB RING	1	44	05-07FM58200000	BI-AMP BD ASS'Y	1
3	56-54FM58200020	MIC VOL KNOB	1	45	61-11FWM3700120	AF9-BOARD-BRACKET	1
4	56-54FM58200030	ECHO KNOB	1	46	05-05FM58200000	AF9 BD ASS'Y	1
5	56-04FM58300000	KARAOKE PANEL	1	47	02-203CDA00040	3CDC MACHA CASING ASSY	1
6	56-07FM3518000	DISPLAY RING	1	48	56-22FWM3500000	TOP COVER	1
7	56-57FM3501000	DISPLAY LENS	1	49	61-48FM58200020	HEAT SINK 180W	1
8	56-54FM3508000	VOL KNOB GRP	1	50	61-11FWM3700120	ESD BIG STRIP	1
9	56-54FM3710000	VOL KNOB RING	1	51	61-11FWM3700320	ESD SMALL STRIP	1
10	56-07FM3508000	COSMETIC RING	1	52	56-05FM57500101	REAR PANEL	1
11	56-04FM58200000	FRONT CAB KARAOKE	1	53	56-07MCM05000080	BRACKET EC06 CLICK-FIT	1
12	58-26MCM0500020	FOOT RUBBER 11x1x4mm	2	54	05-02MMS9500001	TUNER BD ASSY	1
13	56-02FM57200000	CDC TRAY DOOR	1	55	66-170230160103	SCREW STTB 3x6	6
14	56-58FM3500000	BADGE PHILIPS ASSY	1	56	66-150230210103	SCREW 3x10	40
15	56-57FM3710000	IR LENS	1	57	66-150220160321	SCREW 2x6	2
16	56-08FM57200000	USB DIRECT	1	58	66-170830160103	SCREW W 3x6	3
17	56-57FM57200000	USB LIGHT GUIDE	2	59	66-170235180323	SCREW TT 35x8	4
18	56-07FM57200000	USB LED HOLDER	2	60	66-170230180121	SCREW TT/BH 3x8	5
19	05-08FM58200010	USB JACK BD ASSY	1	61	66-150230210103	SCREW 3x10	4
20	56-54FM3750000	STANDBY KEY	1	62	66-150230212121	SCREW 3x12	2
21	56-57FM3500000	STANDBY LENS	1				
22	56-54FM3780000	MODEL KEY	1				
23	56-54FM3720000	CD CONTROL KEY	1				
24	56-54FM3718000	CD PLAY KEY	1				
25	56-54FM57200000	SOURCE KEYS	1				
26	56-54FM3770000	MAX KNOB	1				
27	56-57FM3503000	DBB-GUIDE LIGHT LENS	1				
28	61-11FM57200320	PCB BRACKET	1				
29	56-07FM3538000	HOLDER	1				
30	56-54FM3740000	AUTO KEYS	1				
31	56-54FM3760000	CD DISC KEYS	1				
32	48-04FM58200120	FRONT PCB	1				
33	56-07FM3588000	LED-BRACKET	1				
34	56-07FM3528000	FTD BRACKET	1				
35	58-582702700220	RUBBER CHSHD0NKEVA07x7x5.8mm	1				
36	05-05FM58200100	KEY BD ASSY	1				
37	56-03FM3500000	PANEL LEFT	1				
38	56-03FM3500010	PANEL RIGHT	1				
39	05-01FM58200000	MAINS BD ASSY	1				
40	61-11FM57500020	MAIN PCB BRACKET	1				
41	18-208FM5820250	TRANSFORMER	1				
42	61-31FM58200020	BOTTOM PLATE	1				



**MECHANICAL & ACCESSORIES PARTS LIST**

1	996510004022	CABINET LENS	B	996510003974	REMOTE CONTROL
2	996510004023	MIC VOL KNOB RING	C	996510003975	SPK BOX L+R
3	996510004013	MIC VOL KNOB	D	994000001192	AM LOOP ANTENNA LAN-031
4	996510004014	ECHO KNOB	E	△ 994000001478	AC PLUG ADAPTOR
5	996510004010	KARAOKE PANEL	F	△ 9965000037714	AC CORD SET VDE APP 1.8
6	996510004012	DISPLAY RING	G	994000001381	FM ANT (BLACK) 1M
7	994000001308	DISPLAY LENS	L	994000003669	CD MECHANISM DA11VF
8	996510004024	VOL KNOB RING	M	994000004487	16P FFC 1MM L=170MM
9	996510004021	VOL KNOB GRIP	N	996510004002	19P FFC 1.25mm L80mm (AA)
10	994000001281	COSMETIC RING	O	994000004457	5P FFC L=200MM(AA)
11	996510004009	FRONT CAB KARAOKE	P	996510004004	15P FFC 1.25mm L120mm(AB)
13	996510006292	CDC TRAY DOOR	Q	994000001362	8P FFC1.25MM L=160MM
15	996500038473	IR LENS	R	996510004005	4P FFC 1.25mm L180mm (AB)
16	994000004495	USB DIRECT	S	996510004006	12P FFC 1.25mm L250mm (AA)
17	994000004514	USB LIGHT GUIDE LENS	T	996510004007	25P FFC 1.25mm L250mm AB
20	996510004019	STANDBY KEY	U	994000004462	4P FFC 1.25MM L=270MM(AA)
21	994000001307	STANDBY LENS	V	994000001258	6P FFC 1.25MM L=280MM
22	996510006295	MODEL KEY			
23	996510006294	CD CONTROL KEY			
24	996510004016	CD PLAY KEY			
25	996510004015	SOURCE KEYS			
26	994000004512	MAX KNOB			
27	996510000987	DBB-GUIDE LIGHT LENS			
30	996510004020	AUTO KEYS			
31	996510000984	CD DISC KEYS			
37	994000001276	PANEL LEFT	<b>Note: Only these parts mentioned in the list are normal service parts.</b>		
38	994000001277	PANEL RIGHT			
41	△ 996510004003	TRANSFORMER EI86x65 127/240V			
47	996510004001	3CD MECHA CASING ASS'Y			
48	994000001285	TOP COVER			
52	996510006293	REAR PANEL			
54	994000001964	TUNER BOARD ASS'Y			

ELECTRICAL PARTSLIST

FRONT BOARD			AF9 BOARD		
D201	994000001234	LED LAMP 3MM (RED)	1501	994000001221	V/RCA JACK 2P
IR200	994000000325	OPTIC SENSER (OPTO..)	7102	996500038610	TRANSISTORS 2W 8550C
J201	994000001244	PHONE JACK 3.5MM	7202	994000002839	IC LM1117S-3.3
JOG200	994000001241	ROTARY ENCODER	7403	994000001247	IC HEF4094BT
SW206	994000001243	TACT SWITCH	7601	994000001201	IC NJM4556AM
			KEY BOARD		
SW207	994000001243	TACT SWITCH	SW201	994000001243	TACT SWITCH
SW208	994000001243	TACT SWITCH	SW202	994000001243	TACT SWITCH
SW209	994000001243	TACT SWITCH	SW203	994000001243	TACT SWITCH
SW210	994000001243	TACT SWITCH	SW204	994000001243	TACT SWITCH
SW211	994000001243	TACT SWITCH	SW205	994000001243	TACT SWITCH
			POWER BOARD		
SW212	994000001243	TACT SWITCH	104	996500042455	FAN JD4020L-S110 5000R/MIN
SW213	994000001243	TACT SWITCH	C3055	996510003982	E.CAP 4700UF 50V +-20% (PH)85C
SW214	994000001243	TACT SWITCH	C3066	996510003982	E.CAP 4700UF 50V +-20% (PH)85C
SW215	994000001243	TACT SWITCH	C358	996510006290	M. POLY FILM CAP 0.68UF 63V
SW216	994000001243	TACT SWITCH	C363	996510006290	M. POLY FILM CAP 0.68UF 63V
SW217	994000001243	TACT SWITCH	IC302	996510003980	IC TDA8920(SOT566-3) 2X100W
SW218	994000001243	TACT SWITCH	IC303	996510003980	IC TDA8920(SOT566-3) 2X100W
SW219	994000001243	TACT SWITCH	IC304	996500042457	IC HEF4013BT
SW220	994000001243	TACT SWITCH	IC305	996500042456	IC 74HCT04D SOP14
SW221	994000001243	TACT SWITCH	IC308	994000001201	IC NJM4556AM
SW222	994000001243	TACT SWITCH	IC309	994000001201	IC NJM4556AM
SW223	994000001243	TACT SWITCH	IC310	994000001201	IC NJM4556AM
SW224	994000001243	TACT SWITCH	J3	994000001219	SPK JACK (RD/BLK/BLK/RD)
U200	994000004542	IC PT6315	Q302	994000004545	TRANSISTORS BUK9507-30B
VFD201	996510003978	VFD DISPLAY QG/ZBOE-VFD	Q303	994000004545	TRANSISTORS BUK9507-30B
MAINS BOARD			Q306	994000004443	TRANSISTOR BDW94C
1902	994000001323	SWITCH	Q311	994000004338	SMD TRANSISTORS PMBT3904
1905	△ 994000001223	FUSE RADIAL T5A 250V	Q3111	996500038610	TRANSISTORS 2W 8550C
1921	△ 994000001223	FUSE RADIAL T5A 250V	Q312	994000004338	SMD TRANSISTORS PMBT3904
1924	△ 994000001223	FUSE RADIAL T5A 250V	Q313	996500038609	TRANSISTORS 2W 8050C
1925	△ 994000001356	FUSE RADIAL T2.5A/250V	Y301	996500042460	CERAMIC RESONATOR 600KHz
1926	△ 994000001349	FUSE RADIAL T1.6A 250V	Y302	996500042461	CERAMIC RESONATOR 700KHz
2944	996500042429	E.CAP 6800UF 25V -20%			
2945	996500042429	E.CAP 6800UF 25V -20%			
3941	994000004473	RESISTOR METAL 0.33R 1W +-1%			
3942	994000004473	RESISTOR METAL 0.33R 1W +-1%			
3951	994000004472	RESISTOR FUSIBLE 47R 1W +-1%			
5900	994000001226	AC LINE FILTER IND. 400UH 3A			
C1	△ 994000001225	SAFETY CAP 275V 0.22UF -20%			
IC101	996510003976	IC (SAMSUNG) KA7812E			
J1	△ 996510003977	AC SOCKET 2PIN TC08-275-11			

ELECTRICAL PARTSLIST

HIGH AMP BOARD			TUNER BOARD		
C318	996510006290	M. POLY FILM CAP 0.68UF 63V	5111	996500042436	I.F.T 7mm 7M4A2011N (BLACK)
C321	996510006290	M. POLY FILM CAP 0.68UF 63V	5112	996500042434	I.F.T 7mm C712KC-004 (YEL)
IC301	996510003980	IC TDA8920(SOT566-3) 2X100W	5114	996500042434	I.F.T 7mm C712KC-004 (YEL)
SPKJ1	996510003983	SPK JACK (GR/BL/BL/GR)	5119	996500042433	I.F.T 7mm KS2599 (BLK)
SPKJ2	996510006291	SPK JACK PST-202B-03 (B/P)	5123	996500042435	I.F.T 7mm 7M1A2146 (BROWN)
			5130	994000003653	BOBBIN COIL WHITE 1 1/2T
			5131	994000003653	BOBBIN COIL WHITE 1 1/2T
			6105	994000002454	VARIABLE CAP DIODE HN-1V02H
			6130	994000001479	VARICAP DIODE ISV228
			6131	994000001479	VARICAP DIODE ISV228
MCU BOARD			7101	994000001321	IC TEA5757H/V1
D100	996510003989	SMD DIODE 1N4148 (1206)			
Q103	996510000317	SMD TRANSISTORS BC817-25			
U10	996510003993	IC V809R			
U100	996510003994	IC WM8731 SSOP28			
U101	994000001247	IC HEF4094BT			
			USB BOARD		
U2	996510003990	IC SDRAM M12L16161A-7T	D1	996510000438	LED LAMP
U5	996510003991	IC SST39VF800A-70 8M 3.3V W/SW	J6	996510000344	USB SOCKET
U7	996500039353	IC LM1117SJ-ADJ SOT-223			
U8	996510003992	IC TCC8600 12-LQFP-1414			
U9	994000004541	IC M24C02-WMN6			
			SPK JACK BOARD		
			SPKJ1	996510003983	SPK JACK (GR/BL/BL/GR)
CD BOARD					
L812	996510004000	TOROID COIL 28UH +-30% 1.2A			
L813	996510000855	AXIAL INDUCTOR 100UH +-10%			
Q803	996510003996	TRANSISTORS KTA1273			
SW3	994000004552	DETECT SWITCH	J350	994000001244	V/PHONE JACK 3.5MM
SW4	994000004552	DETECT SWITCH	J351	994000001244	V/PHONE JACK 3.5MM
SW801	994000004552	DETECT SWITCH	RV591	996510003987	ROTARY VOLUME F-122KGP B50K
SW802	994000004552	DETECT SWITCH	RV592	996510003986	ROTARY VOLUME
U805	994000005381	IC D9258PH	U352	996510003984	IC CYT78L05 (TO-92)
U806	996510000330	IC SAA7824HL/MIA	U353	996510000880	IC LM78L08
U807	996510003997	IC LM7808	U599	996510003985	IC ECHO PROCESSOR PT2399S
U808	996510003998	IC TDA7073A/N4			
Y801	996510003999	XTAL 8.4672MHz +-30PPM 20PF			
			TUNER BOARD		
1102	994000001353	COAXIAL JACK IF-01A			
2106	994000000254	TRIMMER 10PF 6MM (WH)			
2155	994000000254	TRIMMER 10PF 6MM (WH)			
5102	994000001212	AM IFT (BLACK) 7MM			
5109	994000001208	CER. FILTER SFELA10M7HA00-B0			
5110	994000001208	CER. FILTER SFELA10M7HA00-B0			

Note: Only these parts mentioned in the list are normal service parts.