

Service
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Service Manual

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3141 785 32813



Version 1.3



PHILIPS

SPECIFICATIONS

AMPLIFIER

Output power 4 x 75 W RMS*
 Signal-to-noise ratio ≥ 62 dBA (IEC)
 Frequency response 40 – 15000 Hz, ± 3 dB
 Impedance loudspeakers 4 Ω
 Impedance headphones 32 Ω
 * (4 Ω , 1 kHz, 10%THD)

CD/MP3-CD PLAYER

Number of programmable tracks 20
 Frequency range 20 – 20000 Hz
 Signal-to-noise ratio 75 dBA
 Channel separation ≥ 60 dB (1 kHz)
 Total harmonic distortion $< 0.5\%$
 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

USB PLAYER

USB 12Mb/s, V1.1
 support MP3 and WMA files
 Number of albums/folders maximum 99
 Number of tracks/titles maximum 500

TUNER

FM wave range 87.5 – 108 MHz
 Sensitivity at 75 Ω
 – mono, 26 dB signal-to-noise ratio 2.8 μ V
 – stereo, 46 dB signal-to-noise ratio 61.4 μ V
 Total harmonic distortion $\leq 5\%$
 Frequency response 63 – 12500 Hz (± 3 dB)
 Signal-to-noise-ratio ≥ 50 dBA

TAPE DECK

Frequency response
 Normal tape (type I) 80 – 12500 Hz (8 dB)
 Signal-to-noise ratio
 Normal tape (type I) 50 dBA
 Wow and flutter $\leq 0.4\%$ DIN

SPEAKERS

System 2-way, double port bass reflex
 Woofer 1x13 cm
 Tweeter 1x5 cm

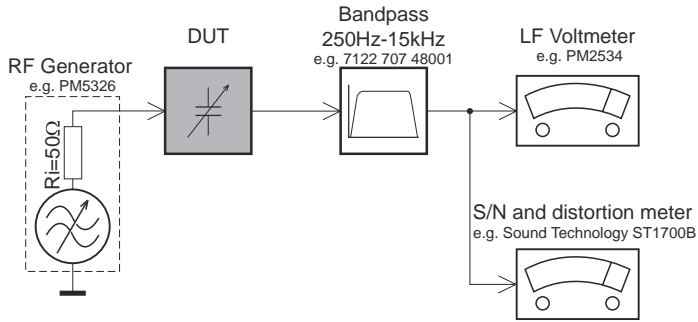
GENERAL INFORMATION

AC Power 110 – 240V, 60Hz / 50 Hz
 Standby Power Consumption ≤ 18 W
 Dimensions (w x h x d)
 – Main unit (w x h x d) 175 x 252 x 360 mm
 – Speaker box (w x h x d) 175 x 252 x 214 mm
 Weight
 With packing 10.16 kg
 Main unit 3.18 kg
 Speaker box 5.36 kg

Specifications and external appearance are subject to change without notice.

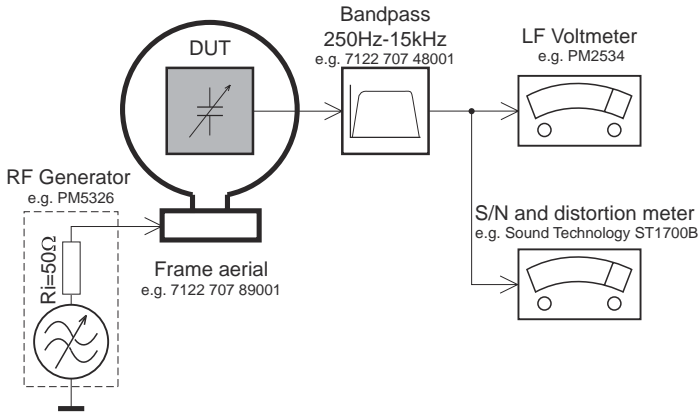
MEASUREMENT SETUP

Tuner FM



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

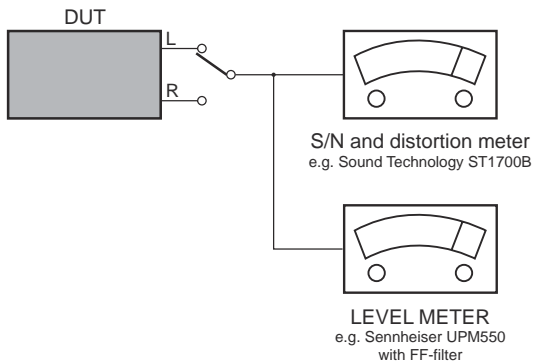
Tuner AM (MW,LW)



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

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 Δ .

**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 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".

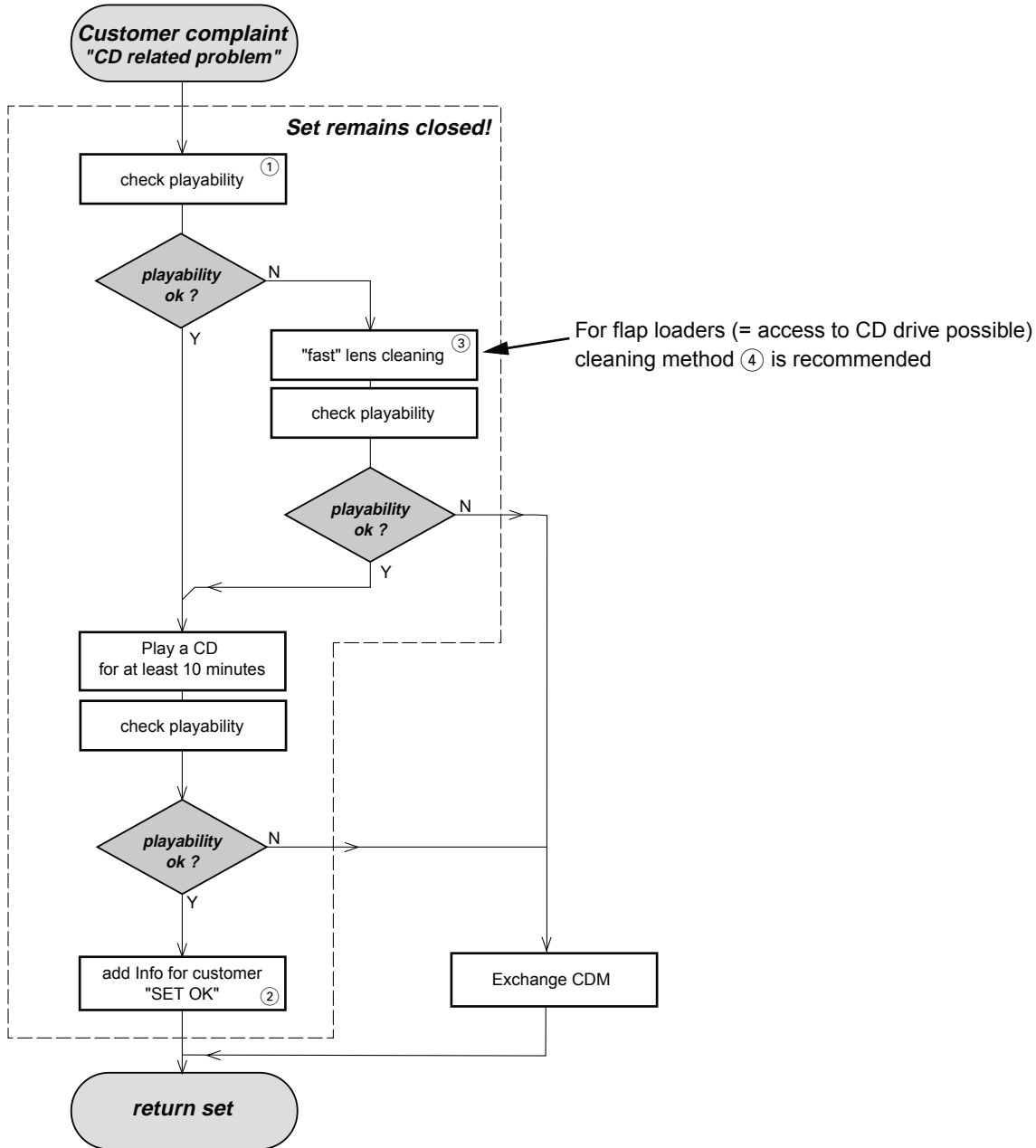
For additional questions please contact your local repair-helpdesk.

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 Disc7104 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 ≥10seconds
 Black dot from 00:50 to 01:10
- jump forward/backward (search) within a reasonable time

For all other sets
 use CD-DA SBC 444A4822 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 ≥10seconds
 Fingerprint ≥10seconds
 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.

④

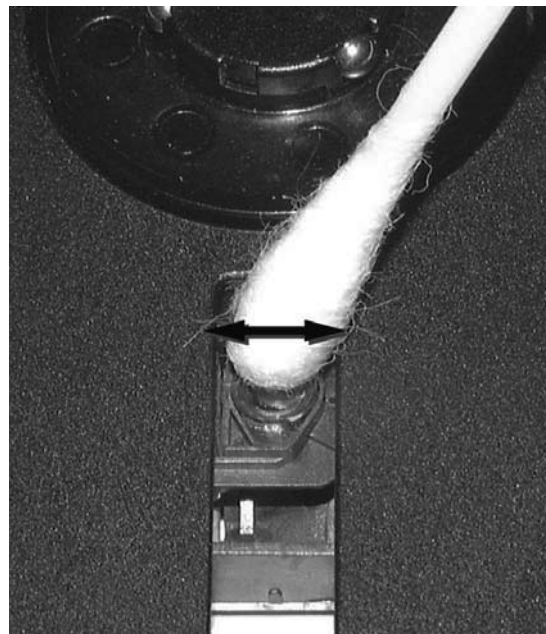
LIQUID LENS CLEANING

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.

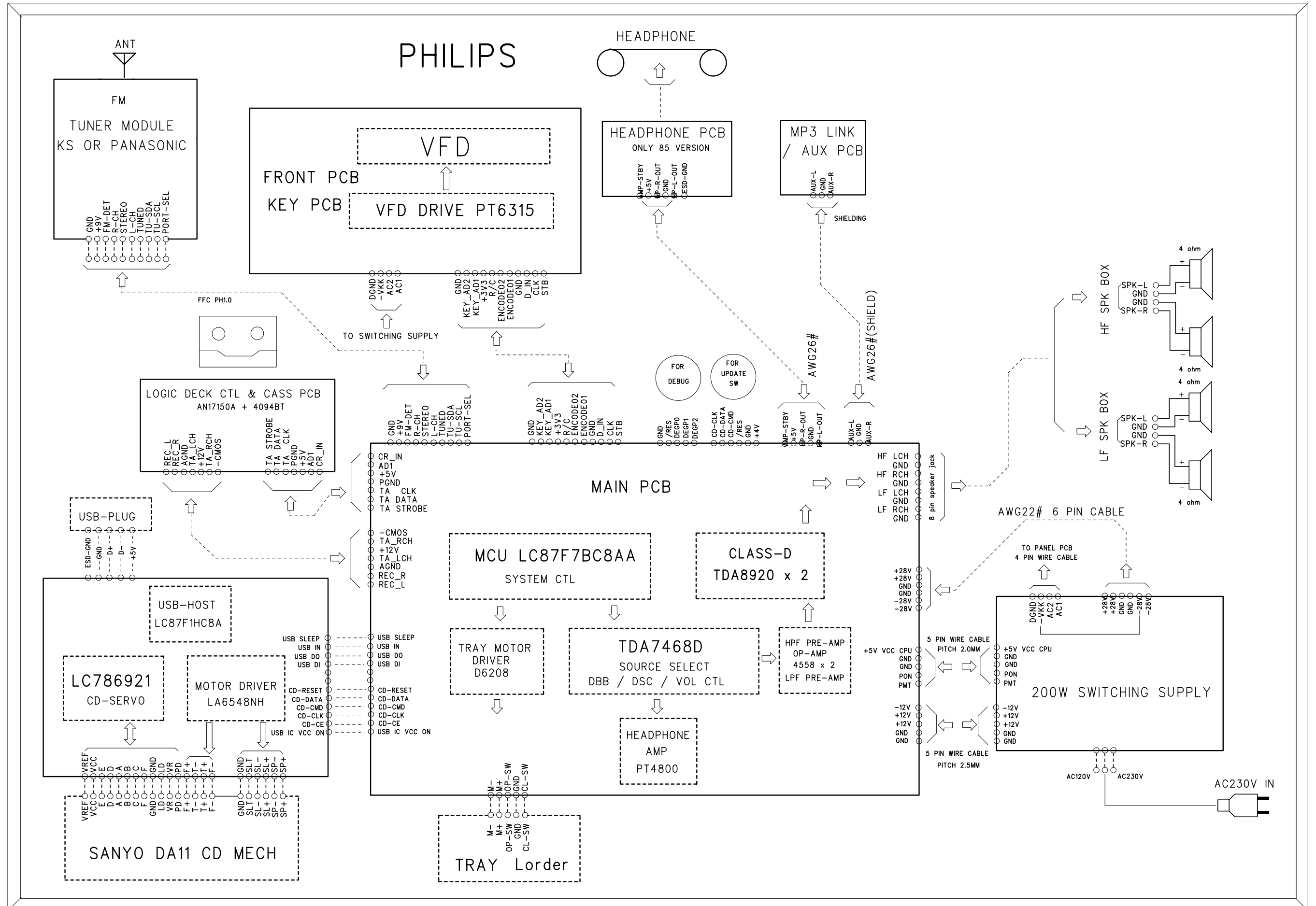
The direction of cleaning must be in the way as indicated in the picture below.



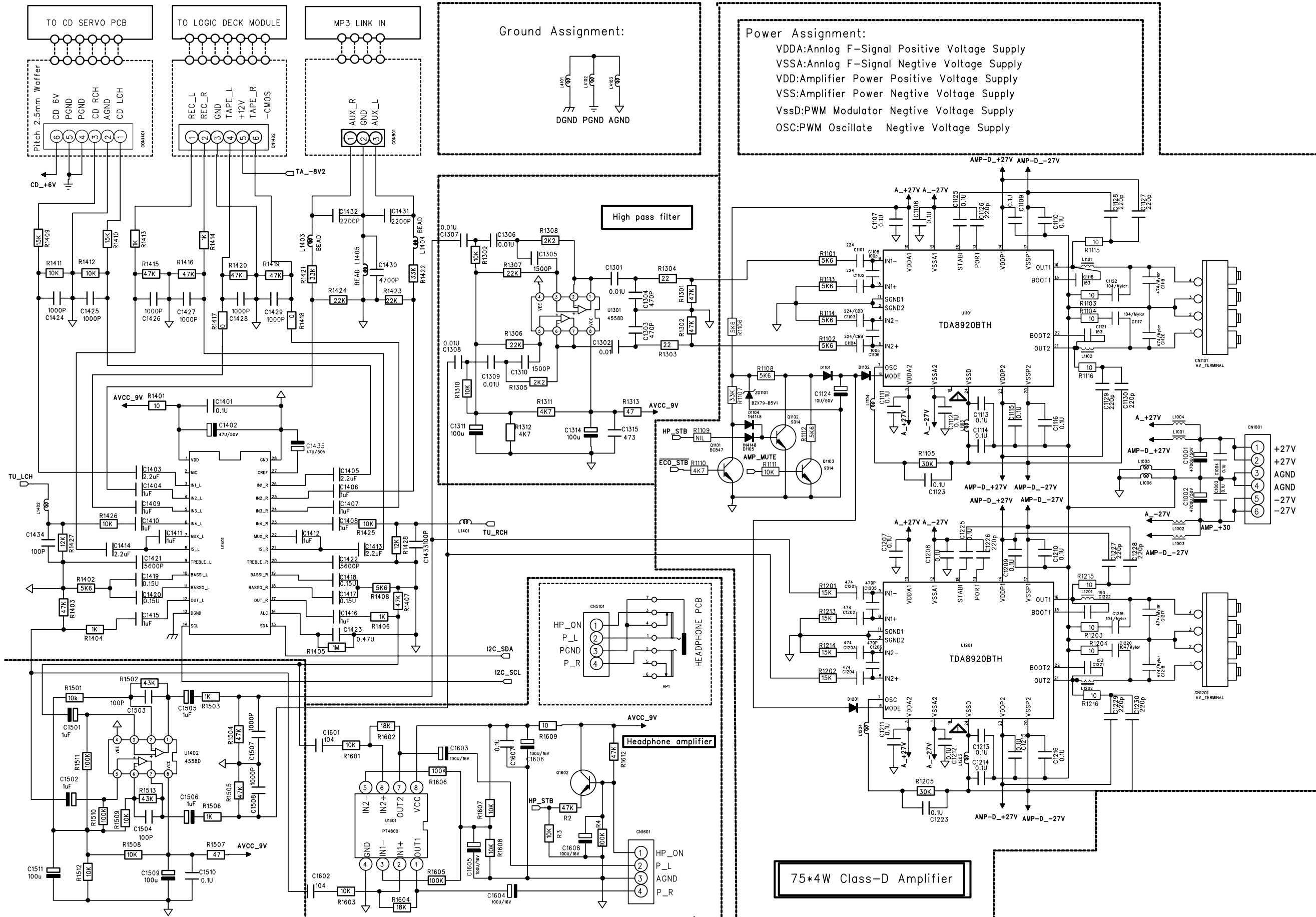
SERVICE TEST MODE

1. How to enter Test Mode:
 1. Plug out the power cord.
 2. Hold "FB" key and "STOP" Key.
 3. Plug in power cord.
 4. Unit will enter test mode.
2. Test mode operation:
 1. Each VFD grid will ON for every 1s, starting from grid 1 to grid 12.
 2. Then, each VFD grid will OFF for every 1s, starting from grid 1 to grid 12.
 3. Plug out the power cord and plug in again, test mode will be exit.
3. Version Check:
 1. In Power ON Mode, Hold "PLAY" key for 5s. LCD will show the data code and version number.
4. USB Version Check:
 1. In Power ON USB Mode, Hold "STOP" and "SOURCE" key for 5s. LCD will show the USB chip version number:
MM SS (M=main ver S=sub ver).
5. USB Version Update:
 1. In Power ON CD Mode, Hold "STOP" and "FB" key for 5s. LCD will show the "UPDATE".
 2. Plug in USB drive will show "LOADING"
 3. Wait until the screen show "LOAD OK" and then press "PLAY" to start update.
 4. The Screen shows the "WRITING" during the update process
 5. "Complete" will show up after updating USB chip. Plug out the power cord and plug in again to resume normal operations.

SET BLOCK & WIRING DIAGRAM

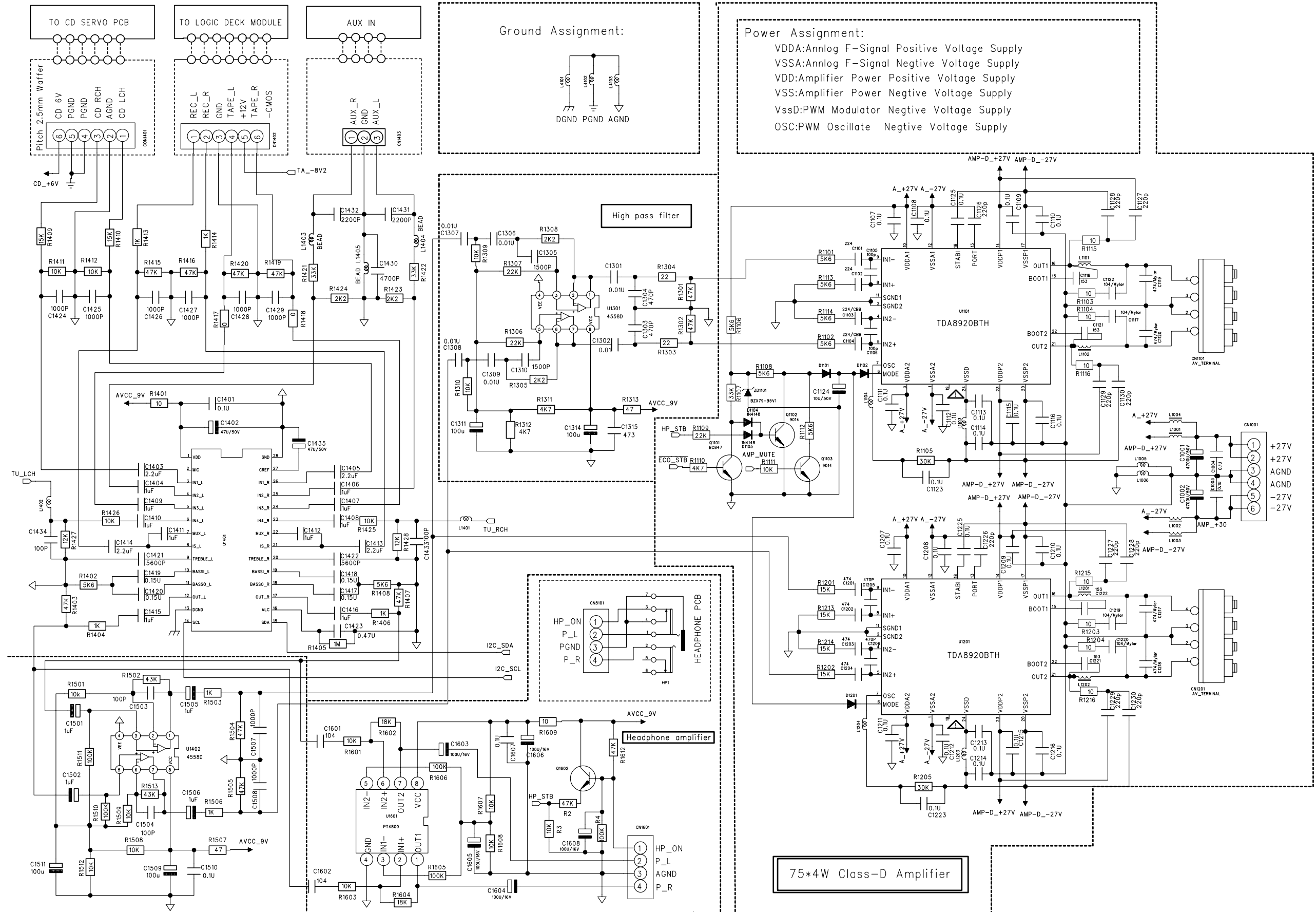


CIRCUIT DIAGRAM - MAIN BOARD AUDIO & POWER AMP. SECTION (only for /55/77)

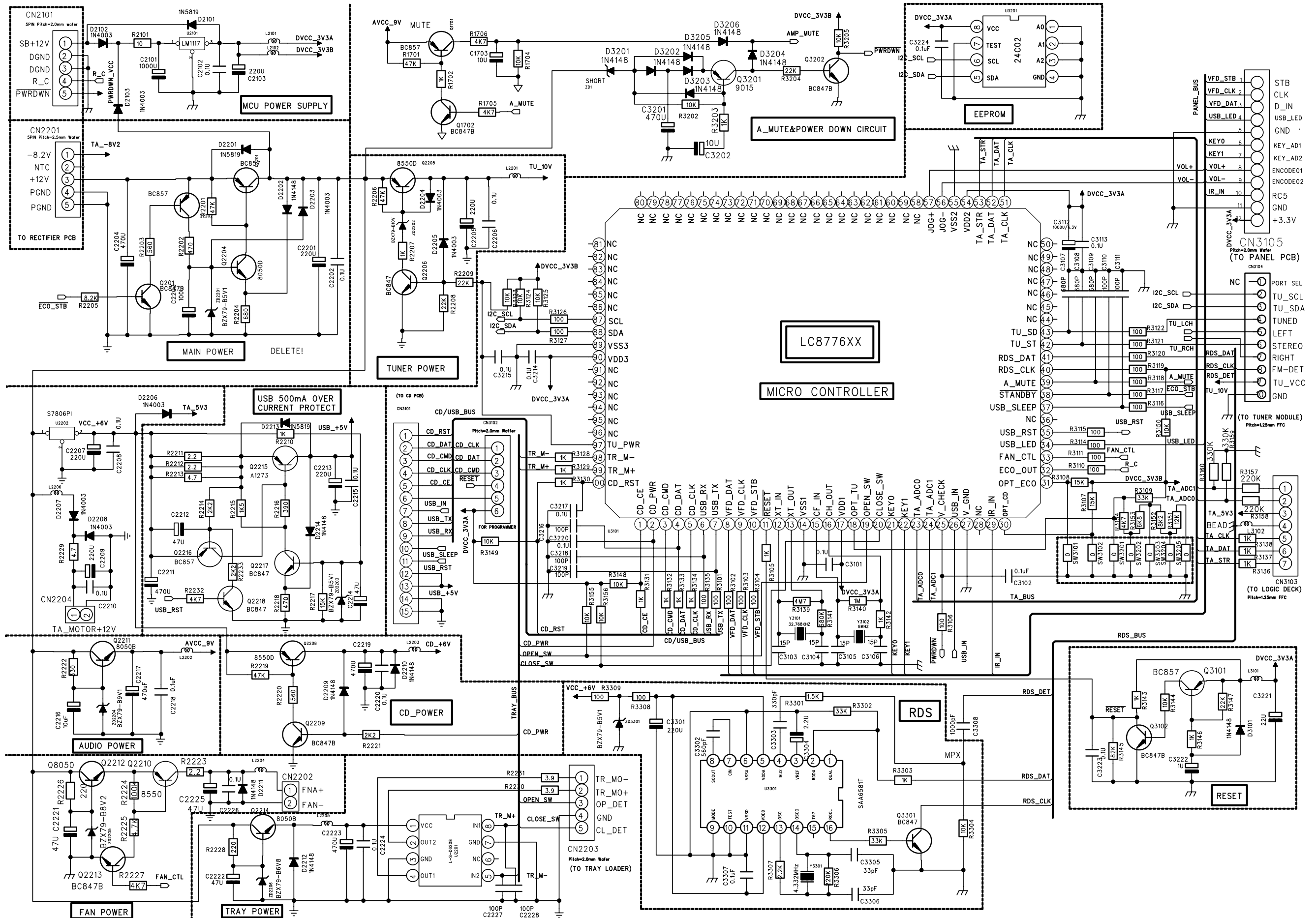


75*4W Class-D Amplifier

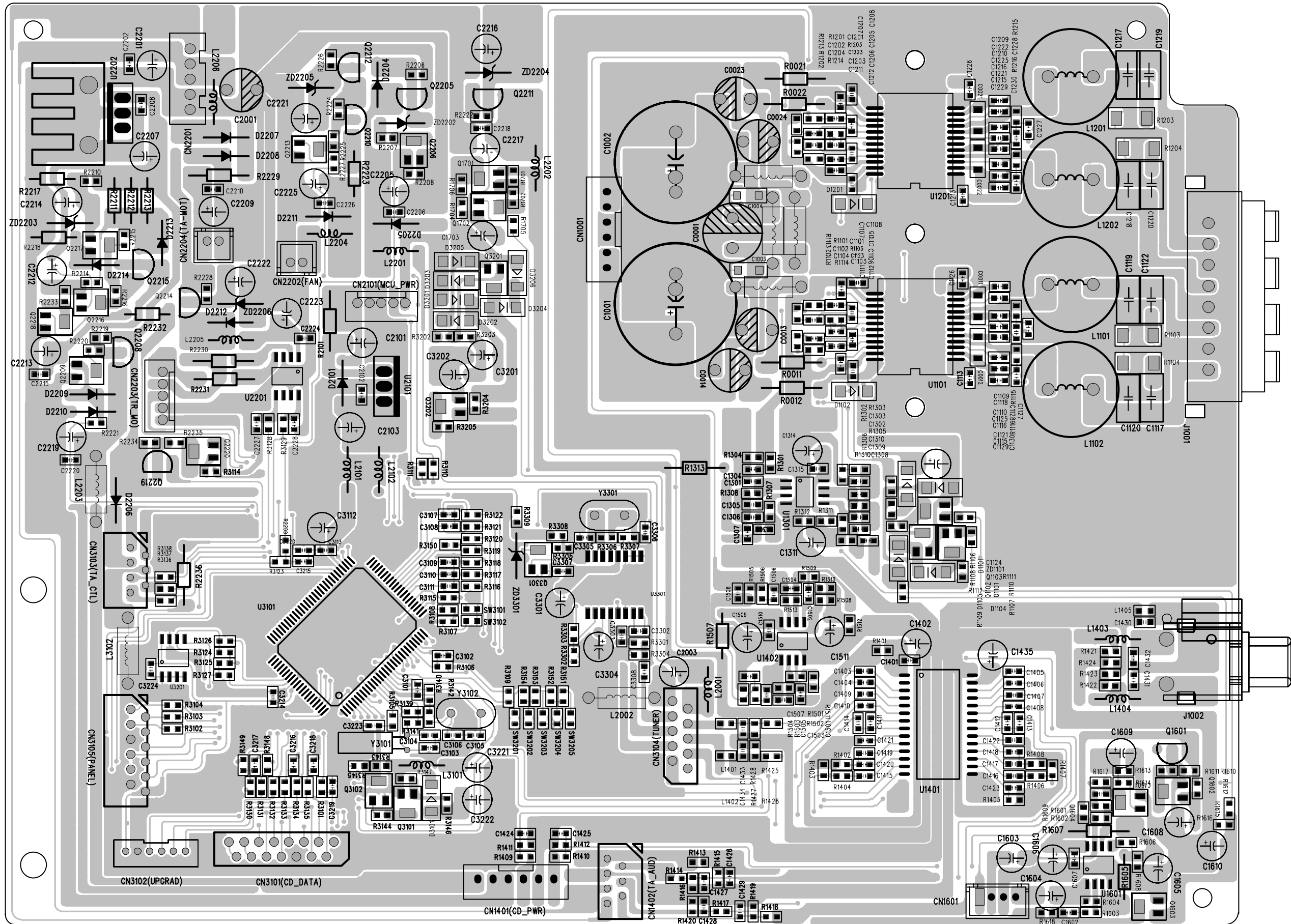
CIRCUIT DIAGRAM - MAIN BOARD AUDIO & POWER AMP. SECTION (only for /85)



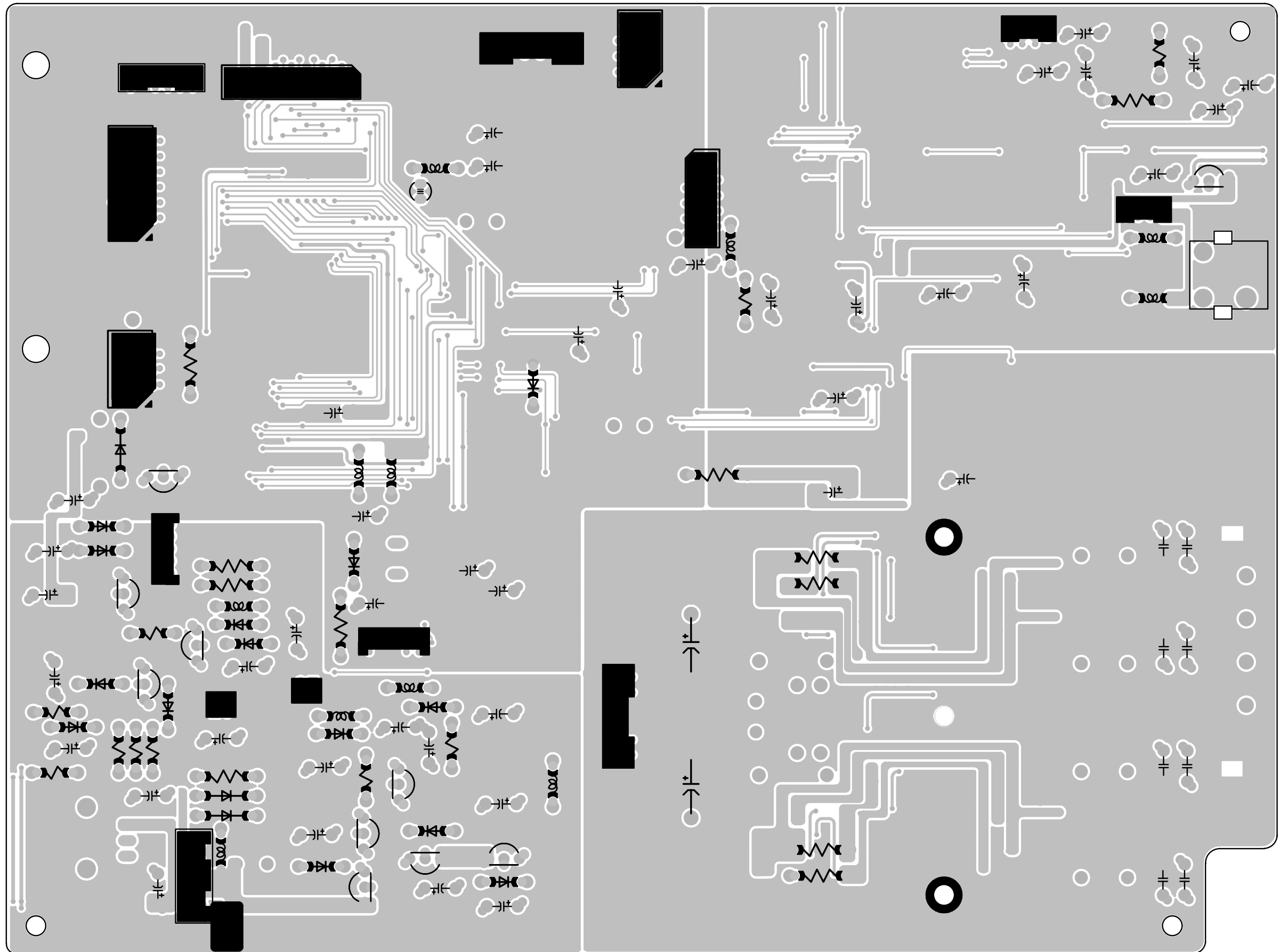
CIRCUIT DIAGRAM - MAIN BOARD MCU & POWER SUPPLY SECTION



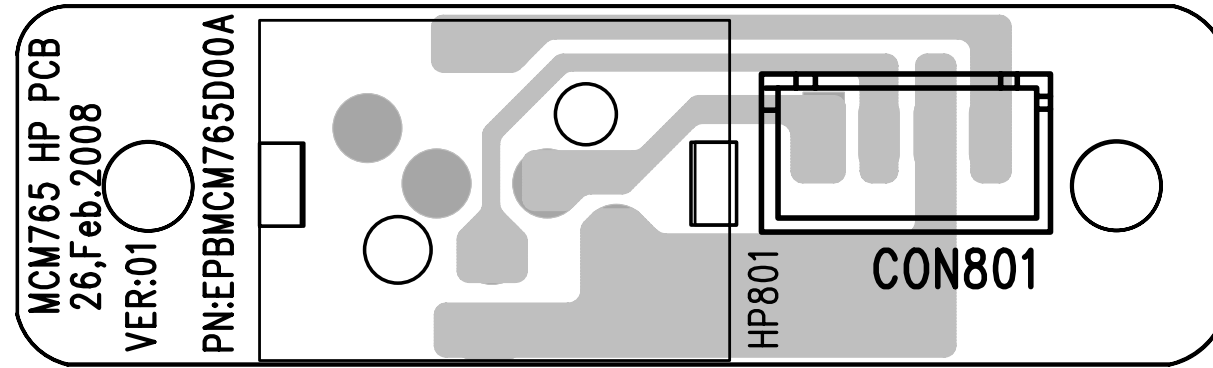
LAYOUT DIAGRAM - MAIN BOARD
TOP VIEW



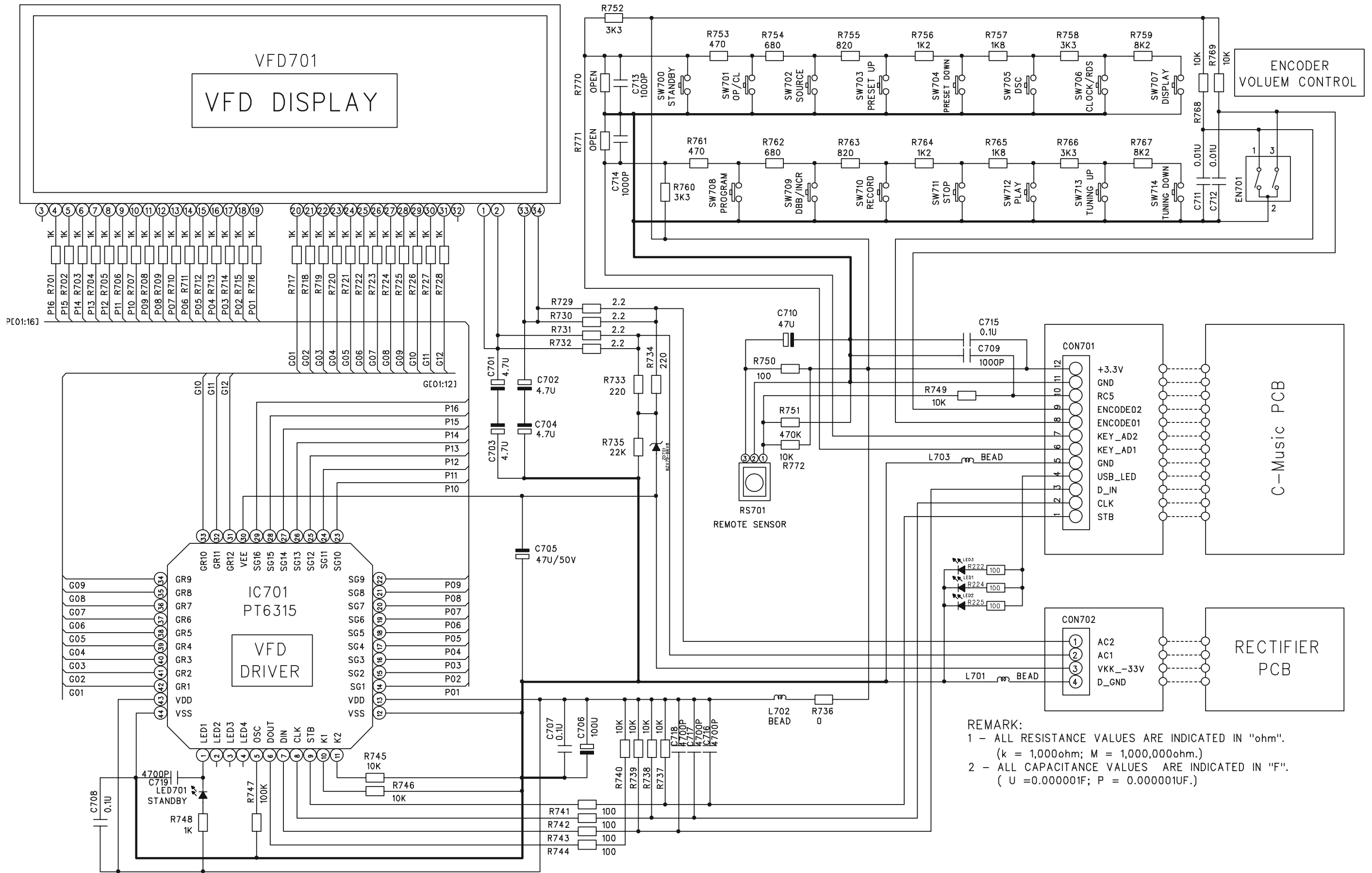
LAYOUT DIAGRAM - MAIN BOARD
BOTTOM VIEW



LAYOUT DIAGRAM - HEADPHONE BOARD

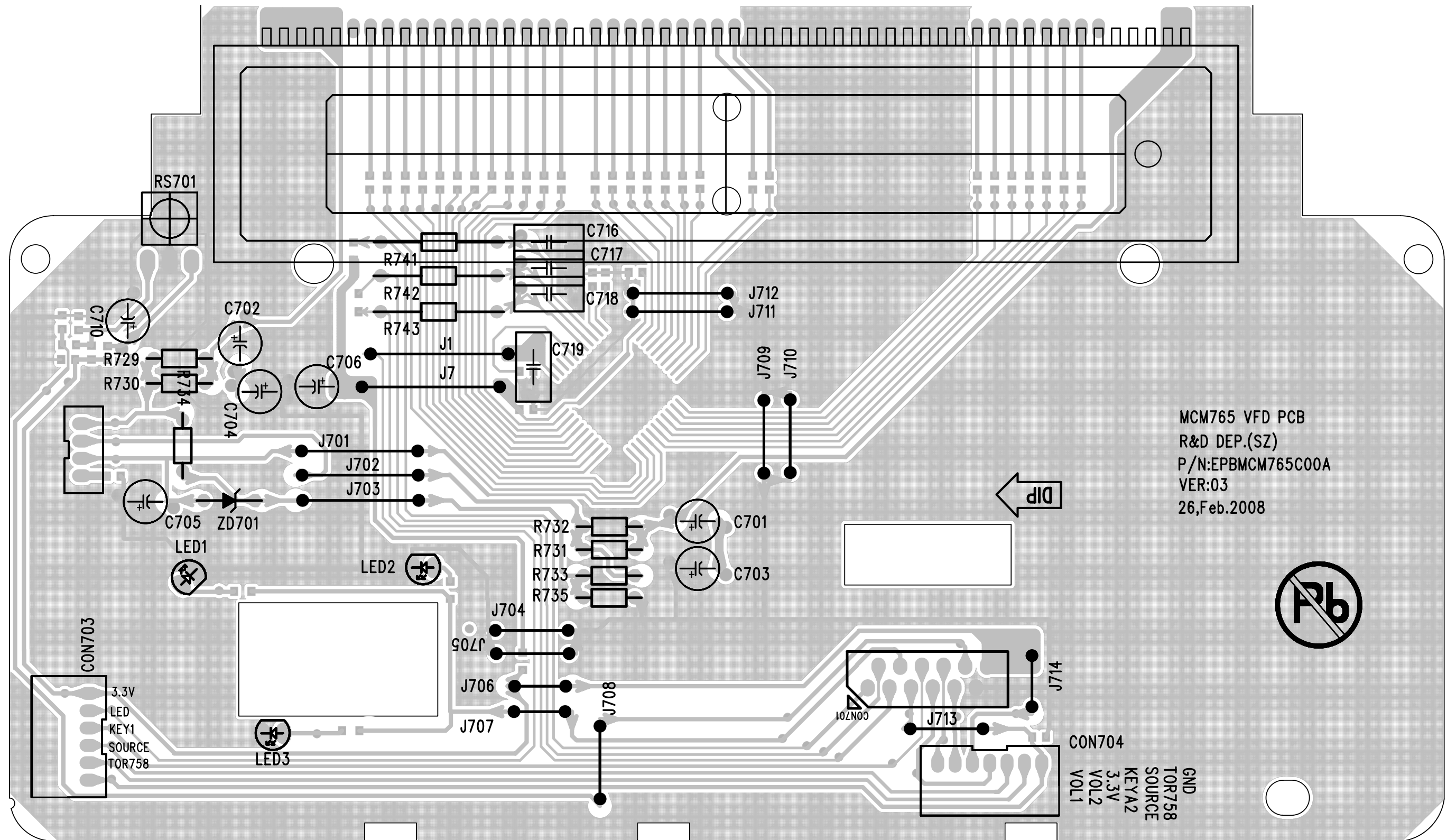


CIRCUIT DIAGRAM - FRONT BOARD

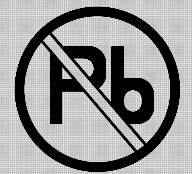


REMARK:
 1 - ALL RESISTANCE VALUES ARE INDICATED IN "ohm".
 (k = 1,000ohm; M = 1,000,000ohm.)
 2 - ALL CAPACITANCE VALUES ARE INDICATED IN "F".
 (U = 0.000001F; P = 0.000001UF.)

LAYOUT DIAGRAM - FRONT BOARD
TOP VIEW



MCM765 VFD PCB
 R&D DEP.(SZ)
 P/N:EPBMCM765C00A
 VER:03
 26, Feb. 2008

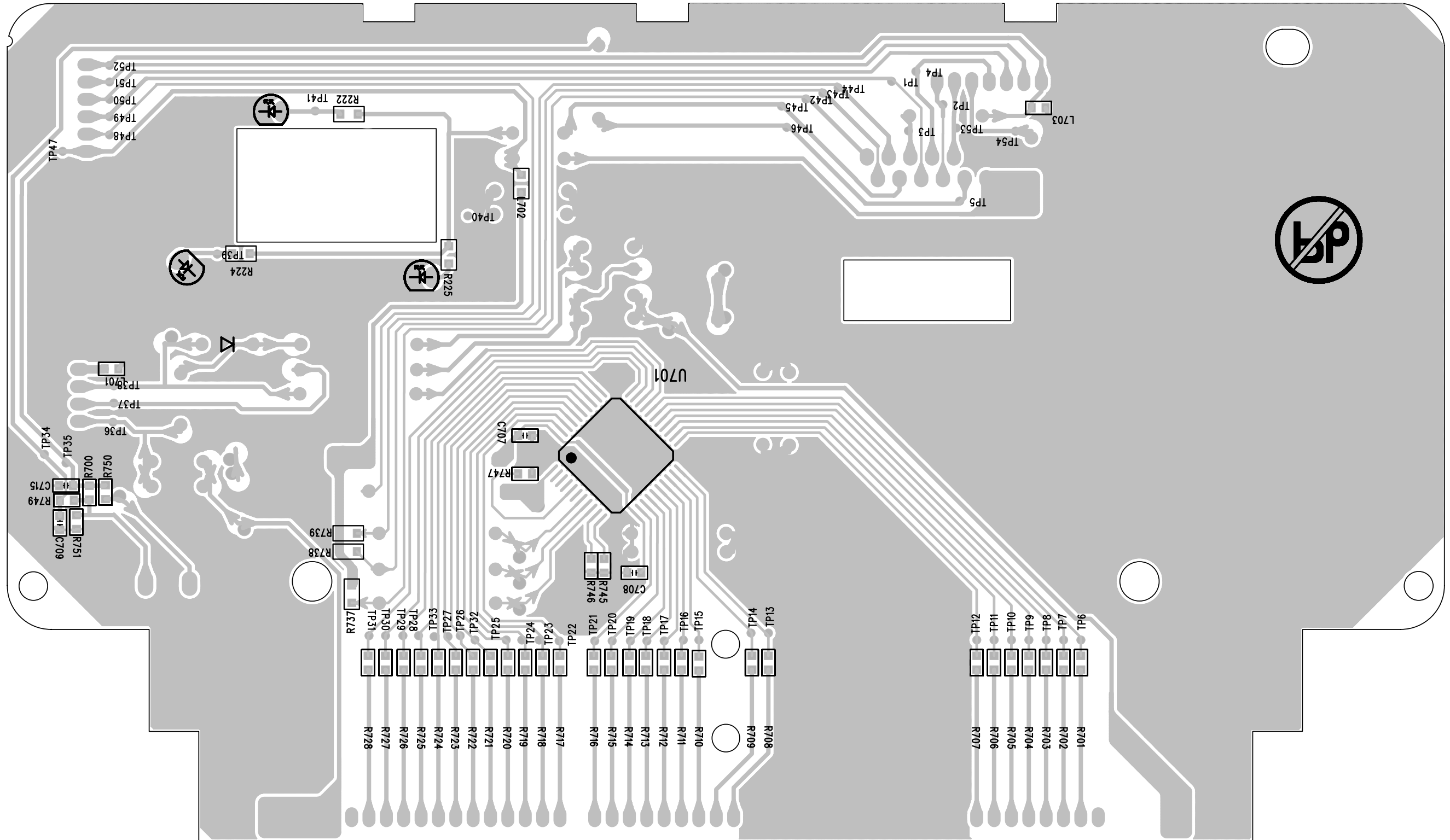


CON703

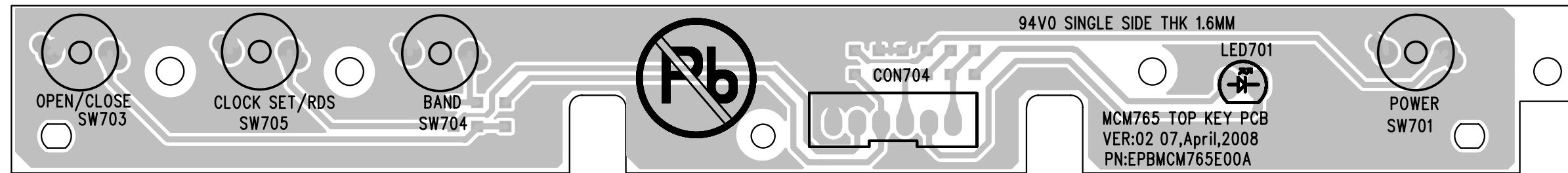
3.3V
 LED
 KEY1
 SOURCE
 TOR758

CON704
 GND
 TOR758
 SOURCE
 3.3V
 VOL2
 VOL1

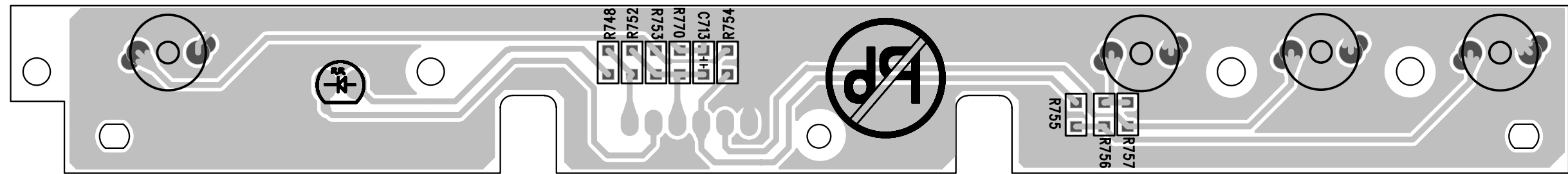
LAYOUT DIAGRAM - FRONT BOARD
BOTTOM VIEW



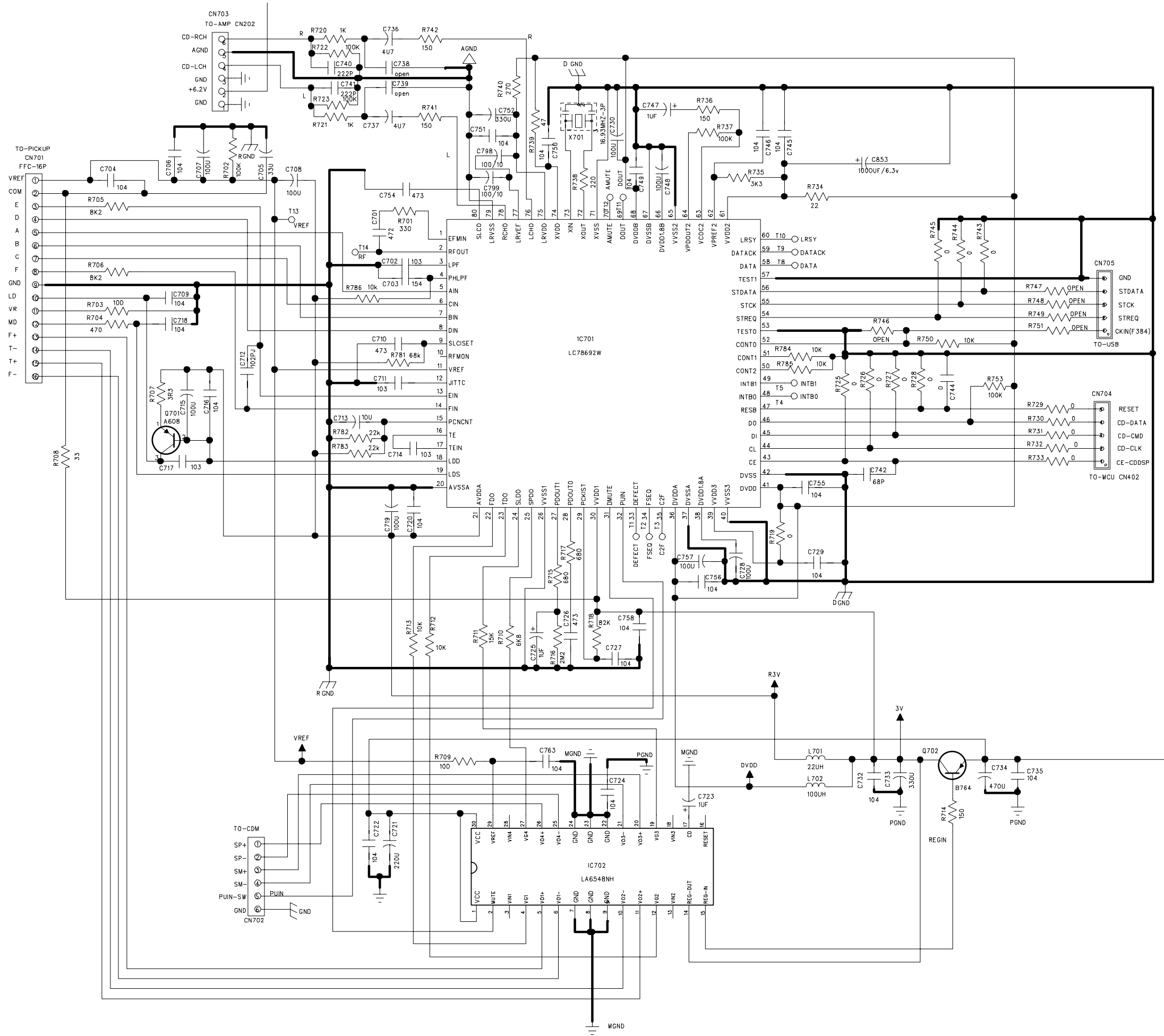
LAYOUT DIAGRAM - TOP KEY BOARD
TOP VIEW



LAYOUT DIAGRAM - TOP KEY BOARD
BOTTOM VIEW

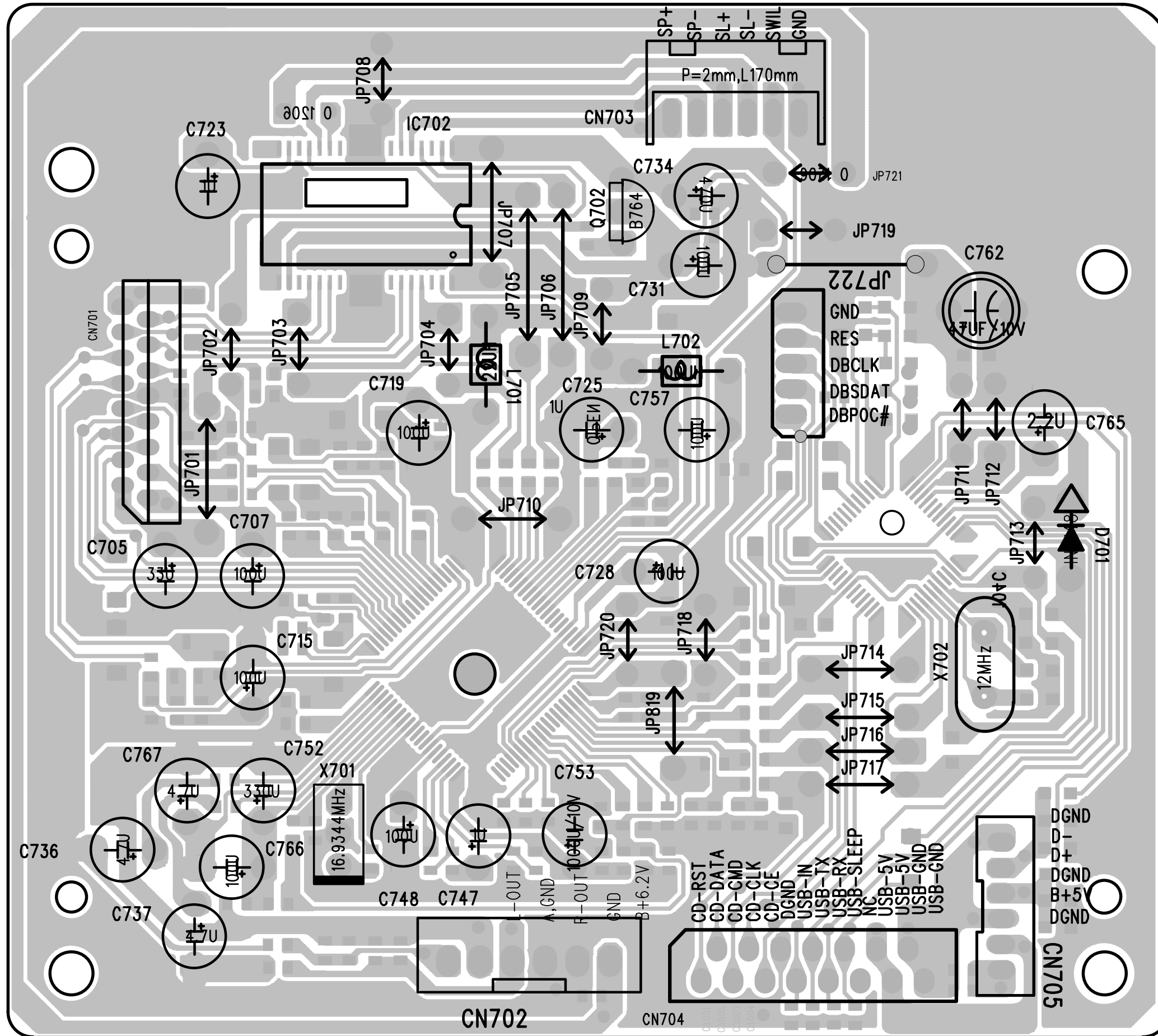


CIRCUIT DIAGARM - CD BOARD

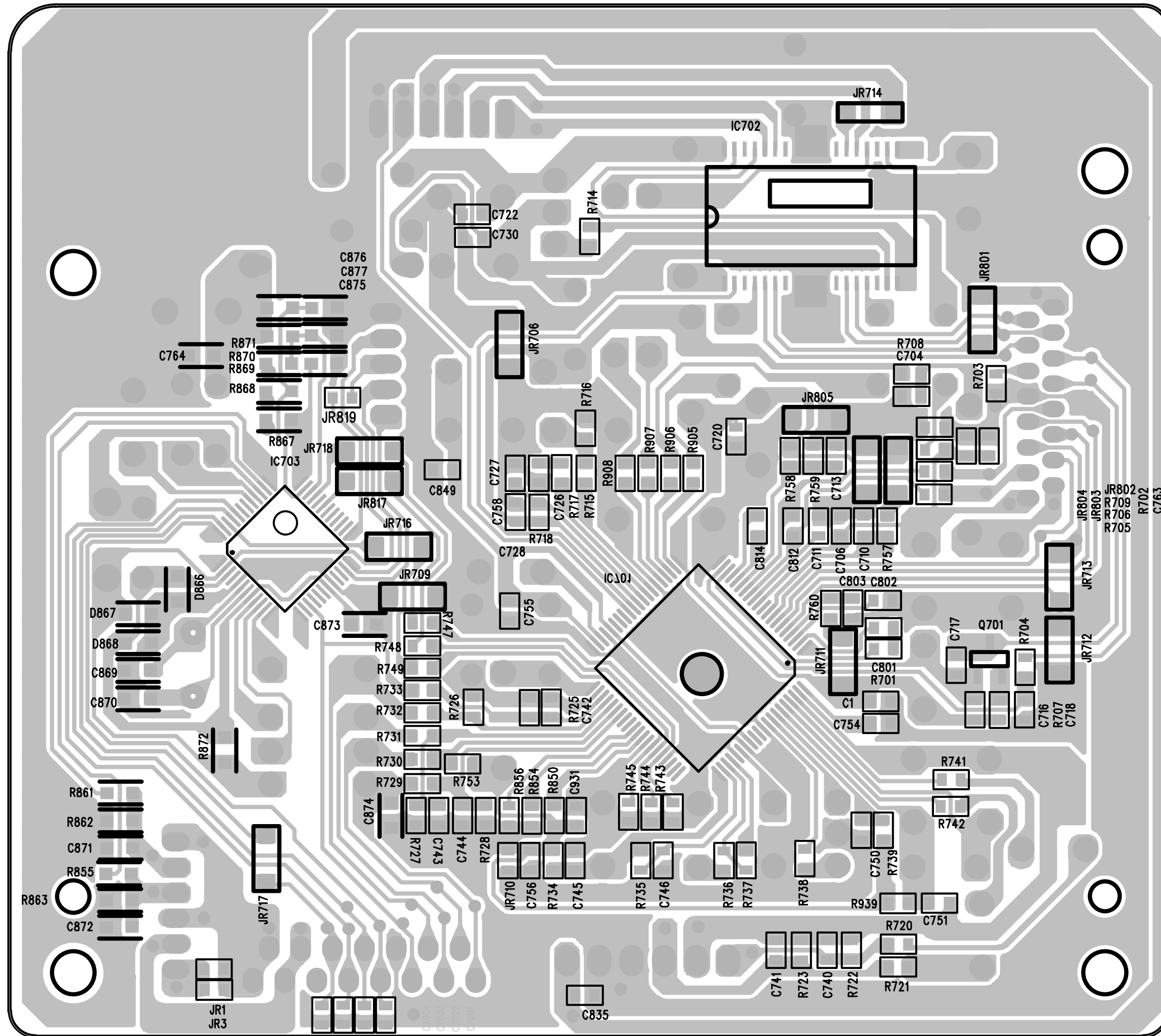


	Sanyo Mech	Sony Mech
R746	OPEN	10K
R750	10K	OPEN

LAYOUT DIAGARM - CD BOARD
TOP VIEW



LAYOUT DIAGARM - CD BOARD
BOTTOM VIEW



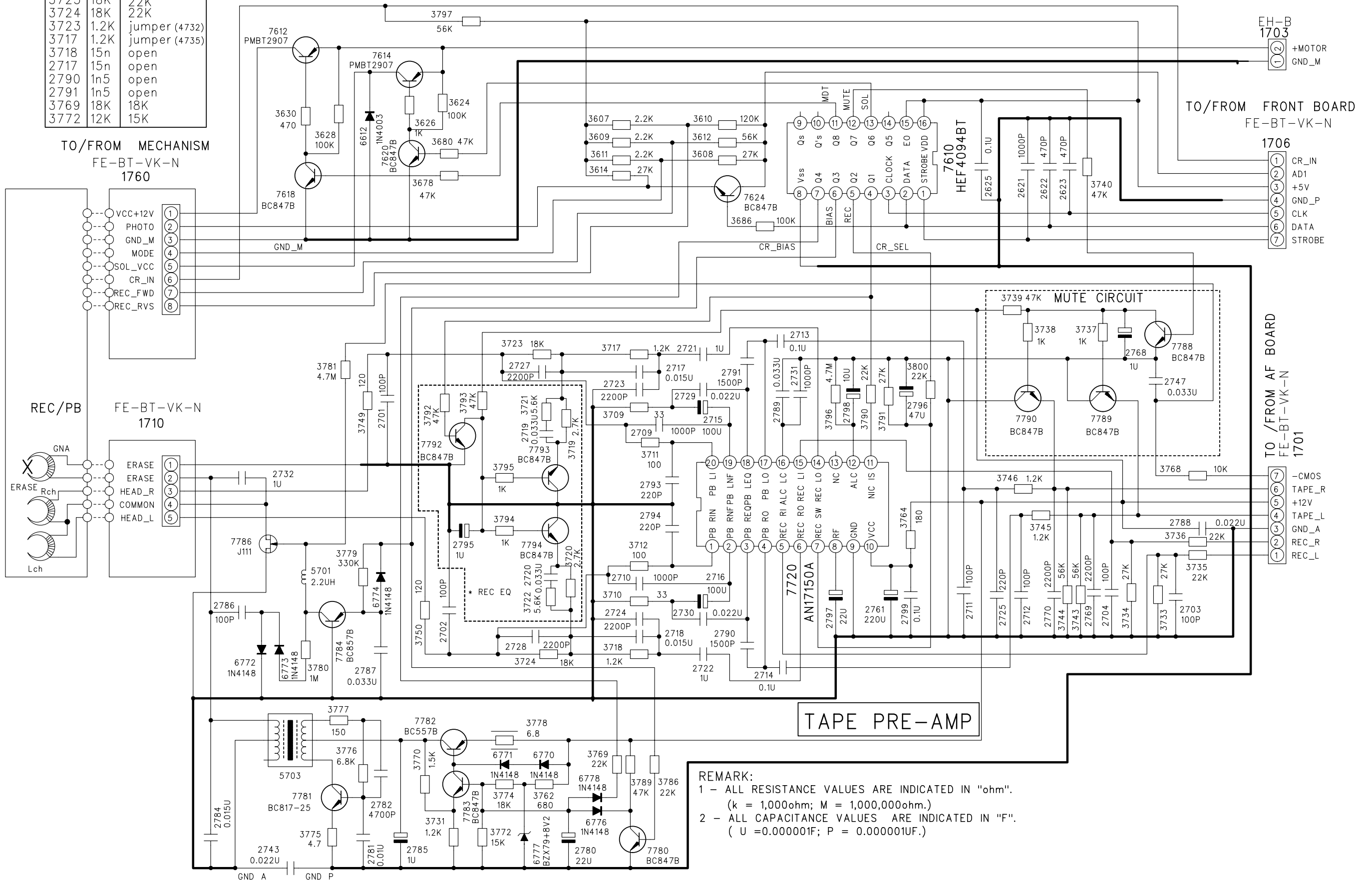
CIRCUIT DIAGRAM - CASSETTE BOARD

Variant Parts between AR d NAR version :please refer to table below

	AR	NAR
3723	18K	22K
3724	18K	22K
3723	1.2K	jumper (4732)
3717	1.2K	jumper (4735)
3718	15n	open
2717	15n	open
2790	1n5	open
2791	1n5	open
3769	18K	18K
3772	12K	15K

*2725/220p

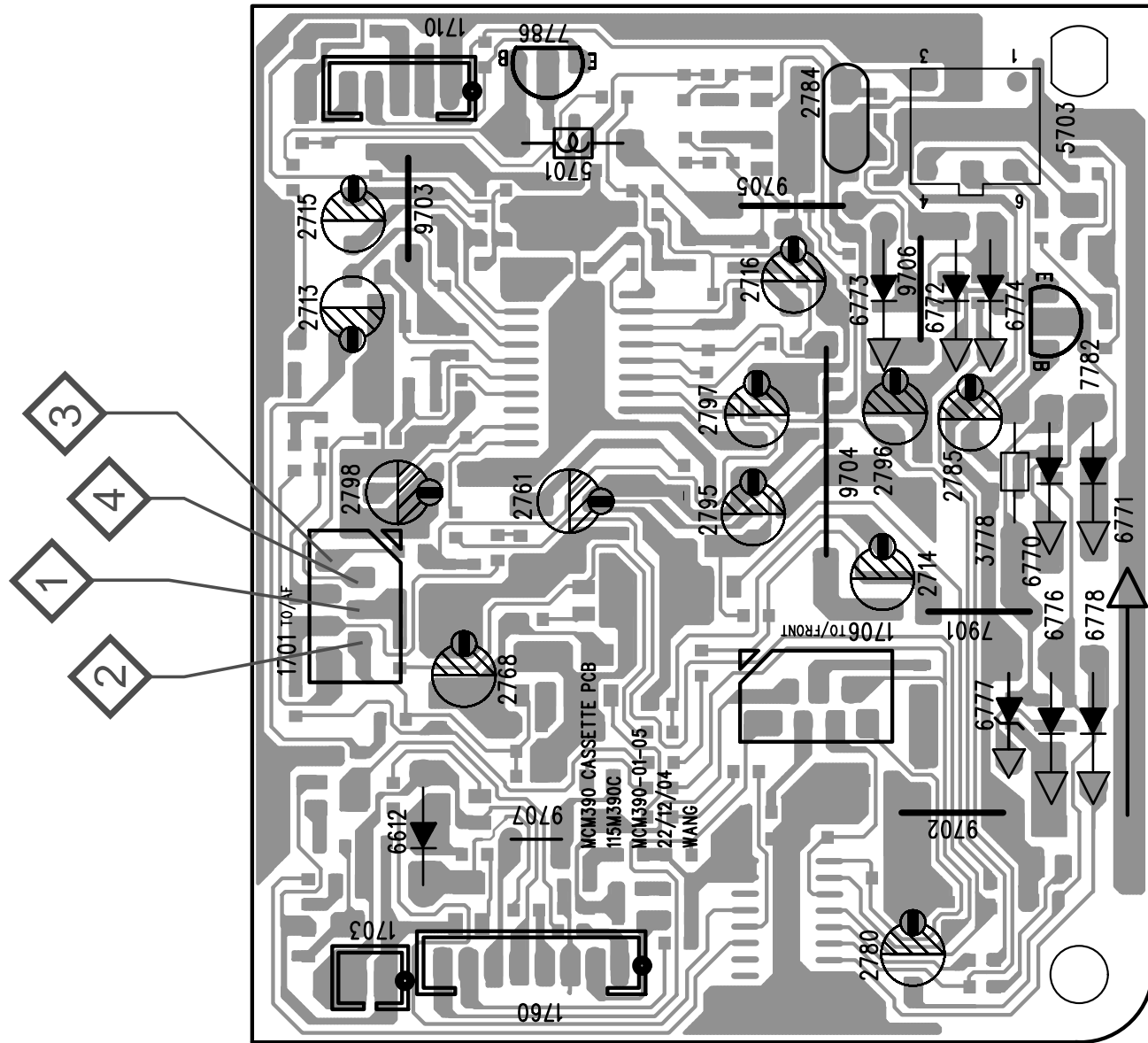
SHIFT REGISTER



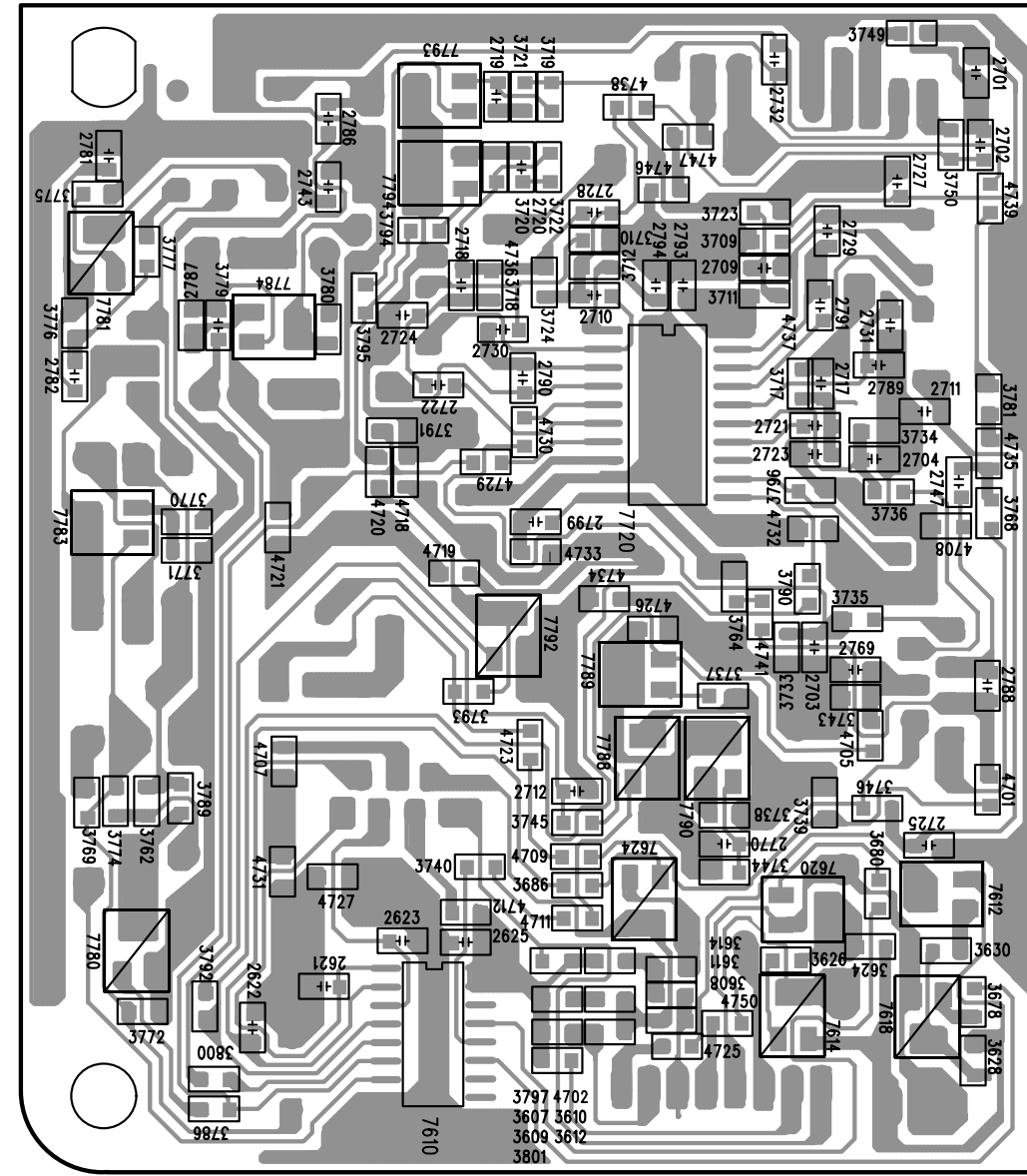
REMARK:
 1 - ALL RESISTANCE VALUES ARE INDICATED IN "ohm".
 (k = 1,000ohm; M = 1,000,000ohm.)
 2 - ALL CAPACITANCE VALUES ARE INDICATED IN "F".
 (U = 0.000001F; P = 0.000001UF.)

LAYOUT DIAGRAM - CASSETTE BOARD

COMPONENT SIDE



COPPER SIDE

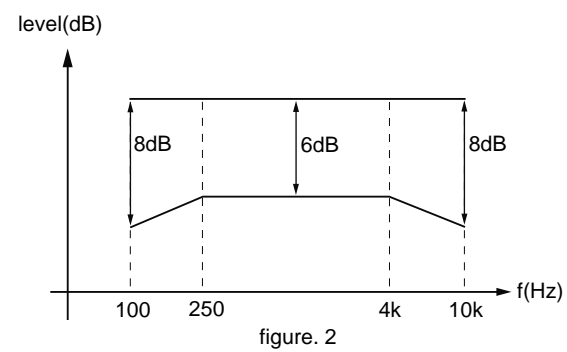
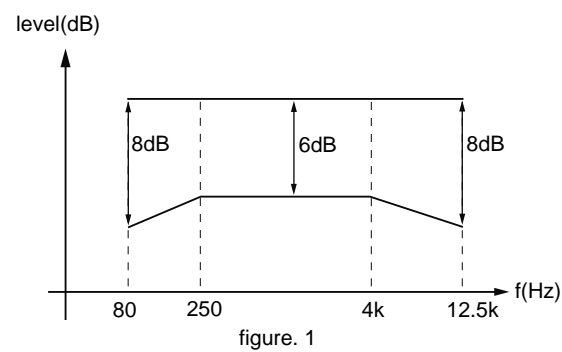


TAPE ADJUSTMENT & CHECK TABLE

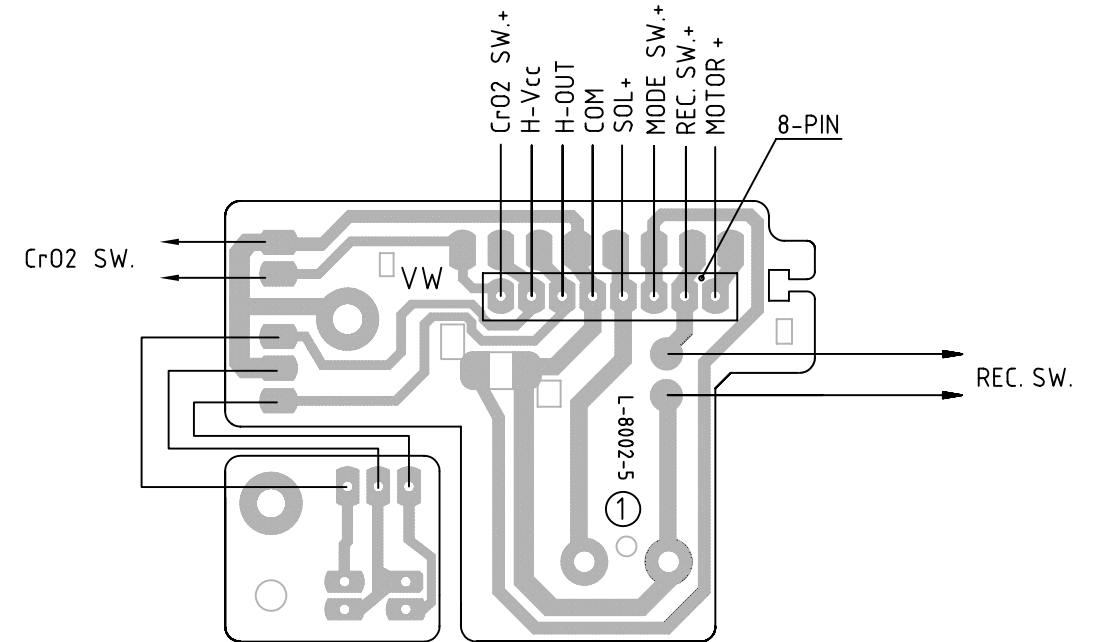
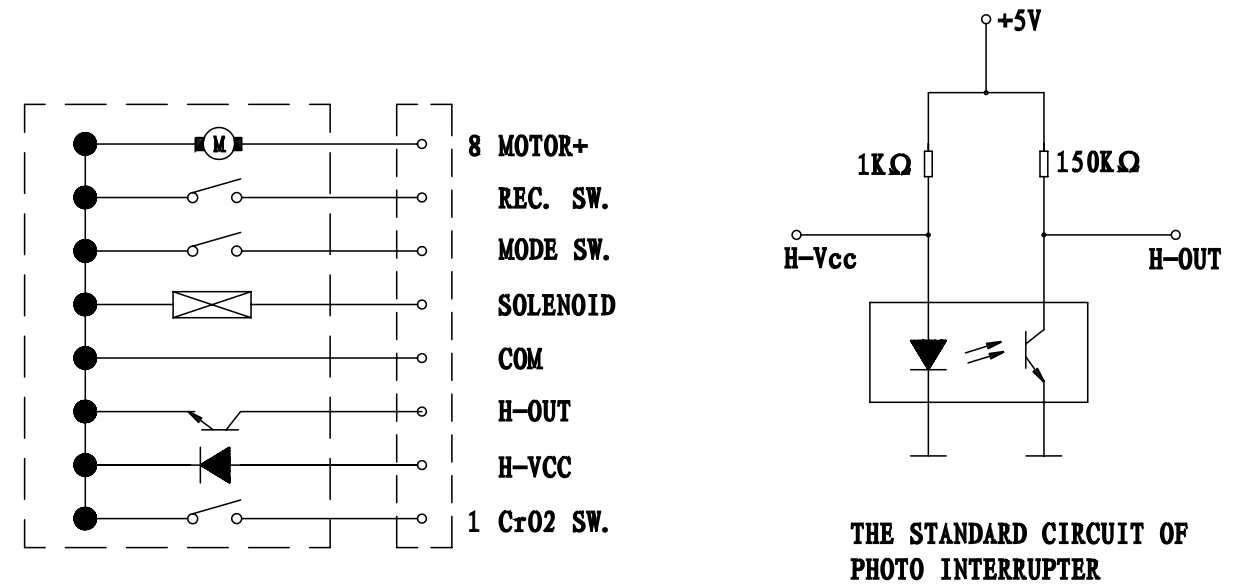
	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
MOTOR SPEED	SBC420 3150Hz	PLAY		frequency counter	check	3150Hz +/- 2%
WOW & FLUTTER	SBC420 3150Hz	PLAY		W&F-meter	check	< 0.4 % DIN
ADJUST AZIMUTH	SBC420 10kHz	PLAY FWD	1 or 2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV ^			right hand screw	
PLAYBACK LEVEL & FREQ. RESPONSE	SBC420 315Hz	PLAY		mV-meter	check	125mV +/- 3dB (see fig.1 for freq. response)
CHECK RECORD/PLAYBACK FREQUENCY AND DISTORTION						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	SBC419A or SBC420	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig. 2 *
Inject 1kHz 8.85mV via 3 or 4	SBC419A or SBC420	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	THD-meter	check	< 3% *

SBC419A : 4822 397 30069
SBC420 : 4822 397 30071

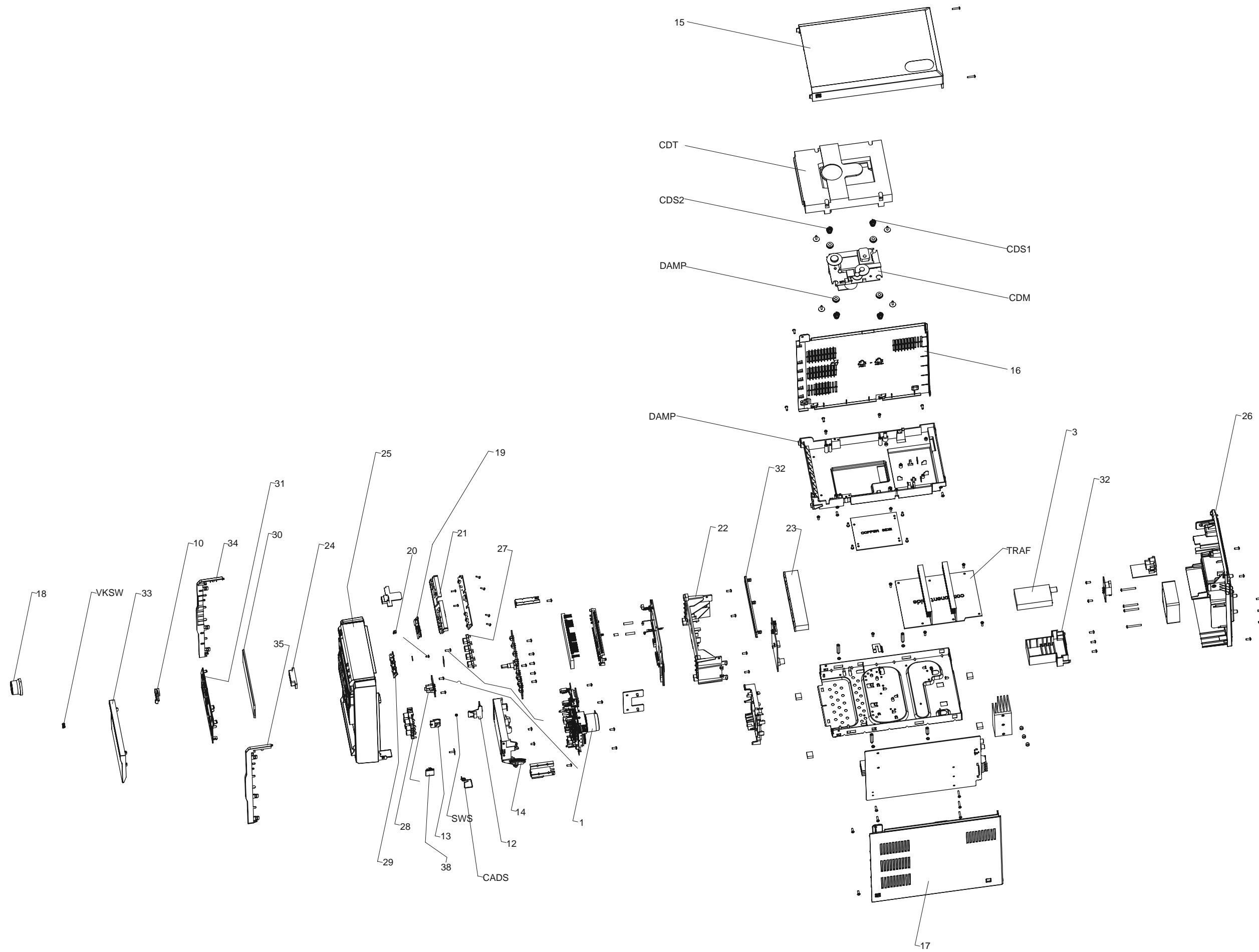
^ For Auto-reverse version only
* If high frequencies are not within limits, decrease bias and re-measure.
If distortion is too high, increase bias and re-measure



W991S-390 CIRCUIT



SET MECHANICAL EXPLODED VIEW



MECHANICAL & ACCESSORIES PARTS LIST

1	994000001434	CASS MECHANISM W991S-390	ANT	994000003268	ANTENNA WIRE 1000MM
2	△ 996510018690	1.5M VDE POWER CORD /55	CADS	996510002331	CASSETTE DOOR SPRING
2	△ 996510016721	1.5M VDE POWER CORD /77	CDM	994000005786	CD MECHANISM DA11VF(SANYO)
2	△ 996510000876	5FT VDE POWER CORD /85	CDS1	996510001074	CD SPRING DIM:0.5MM
3	996510012855	FM TUNER MODULE	CDS2	996510001075	CD SPRING DIM:0.6MM
4	996510016579	FFC L100MM P1.25 10P	CDT	996510000871	CD TRAY LOADER
5	996510016580	FFC L100MM 15P	DAMP	996510000868	CD DAMPER PINK 658F
6	996500017774	FFC 16P L140MM	REM	996510019921	REMOTE CONTROL /85
7	994000005765	FFC 7P L60MM	REM	996510019920	REMOTE CONTROL /77/55
8	996510016581	FFC L170MM P1.25 12P	SWS	994000005777	SWITCH SPRING
9	996510016582	FFC L230MM P1.25 7P	TAC	996510002319	TACT SWITCH EVQ11L04M
10	996510016584	USB RUBBER COVER /55/85	TRAF	△ 996510016583	SWITCH SUPPLY MODULE
10	996510016722	USB RUBBER COVER /77	VKSW	996510016578	VOLUME KNOB SPRING D0.8MM
11	994000001409	CD DOOR GEAR HOLDER			
12	996510000402	BRACKET PUSH LOCK			
13	994000001412	PUSH LOCK FOR CASSETTE DOOR			
14	994000004801	BRACKET - CASSETTE DOOR			
15	996510002333	TOP CABINET			
16	996510002334	LEFT CABINET			
17	996510002335	RIGHT CABINET			
18	996510002337	VOLUME KNOB			
19	996510017001	POWER KEY			
20	996510002342	POWER LENS			
21	996510002347	BRACKET -TOP BUTTON			
22	996510016585	BRACKET-FRONT CABINET DISPLAY			
23	996510002348	BRACKET CD DOOR			
24	996510018689	USB LIGHT GUIDE			
25	996510016587	FRONT CABINET			
26	996510016588	REAR CABINET /55/77			
26	996510017002	REAR CABINET /85			
27	996510016595	MODE KEY CLUSTER BUTTONS			
28	996510016620	CD CONTROL KEY CLUSTER BUTTONS /55/77			
28	996510002340	CD CONTROL KEY CLUSTER BUTTONS /85			
29	996510016621	TOPKEY CLUSTER BUTTONS			
30	996510016622	DISPLAY LENS			
31	996510016623	CONTROL PANEL /55/77			
31	996510017003	CONTROL PANEL /85			
32	996510016624	CD DOOR			
33	996510016625	CASSETTE DOOR			
34	996510016626	DECORATION STRIP LEFT			
35	996510016627	DECORATION STRIP RIGHT			
36	996510016628	FM TUNER BRACKET			
37	996510016589	CD TRAY			
38	996510002350	CASSETTE DOOR DAMPING GEAR			
39	996510018691	WOODEN SPEAKER (L+R)			

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

ELECTRICAL PARTS LIST

6612	996510015966	DIODE 1N4001 TAPE FORM	D3203	996510010774	DIODE 1N4148 FDLL4148
6772	996510011332	DIODE 1N4148	D3204	996510010774	DIODE 1N4148 FDLL4148
6773	996510011332	DIODE 1N4148	D3205	996510010774	DIODE 1N4148 FDLL4148
6774	996510011332	DIODE 1N4148	D3206	996510010774	DIODE 1N4148 FDLL4148
6776	996510011332	DIODE 1N4148	HP801	996510002322	D3.5MM ST. JACK TC38-103-DG-010
6777	996510011338	DIODE BZX79-B8V2 SOD27	IC701	996510012790	IC LC786921W-UPHI-E
6778	996510011332	DIODE 1N4148	IC702	996510012791	LA6548NHL-TE-L-E
7610	994000003199	IC HEF4094BT	IC703	996510016568	IC LC87F1HC8A PROGRAMMED
7612	996510003718	TRANSISTOR KTC-8550C	INRE	996510018687	IR RECEIVER SIRC430M3B
7614	996510002323	TRANSISTOR S8550	J1001	996510016569	AUDIO JACK 8P R/W/G /55/77
7618	996510012793	TRANSISTOR BC847B	J1001	996510017000	AUDIO JACK 8P B/B/R/R /85
7620	996510012793	TRANSISTOR BC847B	J1002	994000003196	8.3MM RCA JACK
7624	996510012793	TRANSISTOR BC847B	J501	996510016570	AC POWER SOCKET 2P VDE
7720	994000005719	IC SM AN17150A-E2V	L2201	996510016571	RECTIFIER DIODE 1N4001
7780	996510012793	TRANSISTOR BC847B	LED1	994000005762	LED BLUE
7781	996510010776	TRANSISTOR BC817-25 SOT23	LED2	994000005762	LED BLUE
7782	996510016564	TRANSISTOR BC557B	LED3	994000005762	LED BLUE
7783	996510012793	TRANSISTOR BC847B	LED701	994000005763	LED INDICATOR RED
7784	996510012833	TRANSISTOR BC857B	Q1	996510012793	TRANSISTOR BC847B
7786	994000001433	TRANSISTOR (FET) J112	Q1101	996510016572	TRANSISTOR KTC8050S SOT-23
7788	996510012793	TRANSISTOR BC847B	Q1102	996510016572	TRANSISTOR KTC8050S SOT-23
7789	996510016565	TRANSISTOR 8050M	Q1103	996510016572	TRANSISTOR KTC8050S SOT-23
7790	996510016565	TRANSISTOR 8050M	Q1601	994000003206	TRANSISTOR 8550D
C1001	996510018688	AL.E.CAP. 6800UF 35V	Q1602	996510016572	TRANSISTOR KTC8050S SOT-23
C1002	996510018688	AL.E.CAP. 6800UF 35V	Q2205	994000003206	TRANSISTOR 8550D
C1119	996510012837	CBB CAP HMFS-5 0.68UF 63V	Q2208	994000003206	TRANSISTOR 8550D
C1120	996510012837	CBB CAP HMFS-5 0.68UF 63V	Q2210	994000003206	TRANSISTOR 8550D
C1217	996510012837	CBB CAP HMFS-5 0.68UF 63V	Q2211	996500039268	TRANSISTOR KTC-8050C
C1218	996510012837	CBB CAP HMFS-5 0.68UF 63V	Q2212	996500039268	TRANSISTOR KTC-8050C
CN102	996510016567	USB CONNECTOR 4P 90	Q2214	996500039268	TRANSISTOR KTC-8050C
D1101	996510003726	SCHOTTKY DIODE PRLL5817	Q2215	994000005755	TRANSISTOR KTA1273
D1102	996510003726	SCHOTTKY DIODE PRLL5817	Q2219	994000003206	TRANSISTOR 8550D
D1104	996510010774	DIODE 1N4148 FDLL4148	Q702	996510011342	TRANSISTOR HIT562 PNP
D1105	996510010774	DIODE 1N4148 FDLL4148	SW701	996510002319	TACT SWITCH EVQ11L04M
D1201	996510003726	SCHOTTKY DIODE PRLL5817	SW702	994000001444	TACT SWITCH TSA-065001-150
D2101	996510011340	DIODE 1N5819 DO-41	SW703	996510002319	TACT SWITCH EVQ11L04M
D2204	996510011339	DIODE 1N4003	SW705	996510002319	TACT SWITCH EVQ11L04M
D2205	996510011339	DIODE 1N4003	SW706	994000001444	TACT SWITCH TSA-065001-150
D2206	996510011339	DIODE 1N4003	SW707	994000001444	TACT SWITCH TSA-065001-150
D2207	996510011339	DIODE 1N4003	SW708	994000001444	TACT SWITCH TSA-065001-150
D2208	996510011339	DIODE 1N4003	SW709	994000001444	TACT SWITCH TSA-065001-150
D2213	996510011340	DIODE 1N5819 DO-41	SW710	994000001444	TACT SWITCH TSA-065001-150
D3101	996510010774	DIODE 1N4148 FDLL4148	SW711	994000001444	TACT SWITCH TSA-065001-150
D3201	996510010774	DIODE 1N4148 FDLL4148	SW712	994000001444	TACT SWITCH TSA-065001-150
D3202	996510010774	DIODE 1N4148 FDLL4148	SW713	994000001444	TACT SWITCH TSA-065001-150

ELECTRICAL PARTS LIST

SW714	994000001444	TACT SWITCH TSA-065001-150
U1101	996510012838	IC TDA8920BTH SOT566-3
U1201	996510012838	IC TDA8920BTH SOT566-3
U1301	996510001055	IC BA4558 SOP8
U1401	996510016573	IC TDA7468D13TR(E)
U1402	996510001055	IC BA4558 SOP8
U1601	996510020220	IC PT2308(L) DIP-8 PIN
U2101	994000005724	IC LD1117AL-3.3V-D
U2201	996510001069	IC D6208 SOP8
U2202	996510001058	IC S7806PI TO-220F
U3101	996510016574	IC LC87F7BC8A-QIP-E PROGRAMMED
U3201	996510010763	IC AT24C02BN-SH-T
U701	994000003214	VFD DRIVER IC PT6315
VFD701	996510016575	DISPLAY VFD25-1236N
X702	996510016576	X'TAL 12MHZ 20PF +-20PPM
Y3101	996510003839	X'TAL 32.768KHZ 12.5PF
Y3102	996510016577	X'TAL 8MHZ?20PF+/-20PPM
ZD1101	996510004557	DIODE 5V6 1/2W TCLLZ5V6 LL34
ZD2202	996510011335	ZENER DIODE 10V 1/2W
ZD2203	994000005744	ZENER DIODE 5V1 1/2W
ZD2204	996500039258	ZENER DIODE 9V1 1/2W
ZD2205	996510010769	ZENER DIODE 8V2 1/2W (TC8V2)
ZD2206	994000005758	DIODE BZX79-B6V8 SOD27
ZD3301	994000005744	ZENER DIODE 5V1 1/2W

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

REVISION LIST

1.0 Manual 3141 785 32810

Initial Service Manual released.

1.1 Manual 3141 785 32811

In this version, on Page 9-2, Mechanical & Accessories Parts List updated.

REM 996510019921 REMOTE CONTROL /85 (WAS 996510002352)

REM 996510019920 REMOTE CONTROL /55/77 (WAS 996510002352)

1.2 Manual 3141 785 32812

In this version, on Page 9-4, Mechanical & Accessories Parts List updated.

U1601 996510020220 IC PT2308(L) DIP-8 PIN (WAS 996500039259 IC PT4800(L) DIP-8 PIN)

1.3 Manual 3141 785 32813

In this version, on Page 9-2, Mechanical & Accessories Parts List updated.

CDM 994000005786 CD MECHANISM DA11VF(SANYO) (WAS 994000003553 CDM DA12T3V)