

Service  
Service  
**Service**



# Service Manual



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## TECHNICAL SPECIFICATION

Amplifier	
Rated output power	2 X 5 W RMS
Frequency response	60 - 16 kHz, ±3 dB
Signal to noise ratio	>65 dB
Aux input	0.5 V RMS 20 kohm

Disc	
Laser type	Semiconductor
Disc diameter	12 cm/8 cm
Video decoding	MPEG-2/MPEG-1
Video DAC	10 bits
Signal system	PAL/NTSC
Video format	4:3/16:9
Video S/N	56 dB (minimum)
Composite video output	1.0 Vp-p, 75 ohm
S-Video output	Y- 1.0 Vp-p, 75 ohm C- 0.286 Vp-p, 75 ohm
Audio DAC	24 bits / 96 kHz
Total harmonic distortion	<1%
Frequency response	4 Hz - 20 kHz (44.1kHz) 4 Hz - 22 kHz (48 kHz) 4 Hz - 44 kHz (96 kHz)
Total harmonic distortion	< 0.1% (1 kHz)
Channel separation	40 dB minimum (1 kHz)
S/N ratio	>65 dBA

FM	
Tuning range	87.5 - 108 MHz
Tuning grid	50 kHz
Sensitivity	- Mono, 26 dB S/N ratio <22 dBf
Total harmonic distortion	<3%
Signal to noise ratio	>55 dB

Speakers	
Speaker Impedance	4ohm
Speaker Driver	3.5"woofer
Sensitivity	>82dB/m/W

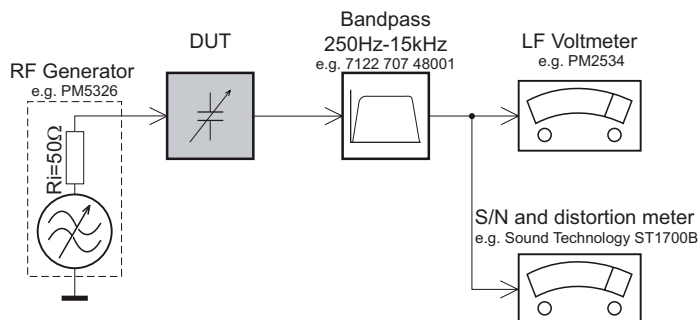
General information	
AC power	220 - 230 V, 50 Hz
Operation power consumption	20 W
Standby power consumption	<4 W
Eco standby power consumption	<2 W
USB direct	Version 2.0/1.1
Dimensions	- Main unit 150 x 152 x 250 mm (W x H x D) - Speaker box 150 x 152 x 197 mm (W x H x D)
Weight	- With packing 5.30 kg - Main unit 2.04 kg - Speaker box 2 x 1.76 kg

## VERSION VARIATION

Type /Versions:	MCD107										
	Service policy		/05	/51		/55	/93	/61			/98
Board in used:	FRONT BOARD			C			C&M				C&M
	MAIN BOARD			C			C&M				C&M
	TUENR BOARD			M			C&M				C&M
	DVD BOARD			M			C&M				C&M
Type /Versions:	MCD107										
Features	Feature diffrence		/05	/51		/55	/93	/61			/98
	RDS										
	VOLTAGE SELECTOR										
	ECO STANDBY - DARK			√							
<p>* TIPS : C -- Component Lever Repair. M -- Module Lever Repair √ -- Used</p>											

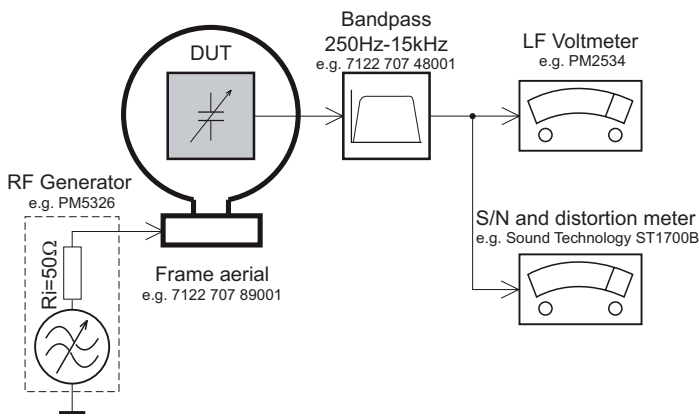
# MEASUREMENT SETUP

## Tuner FM



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

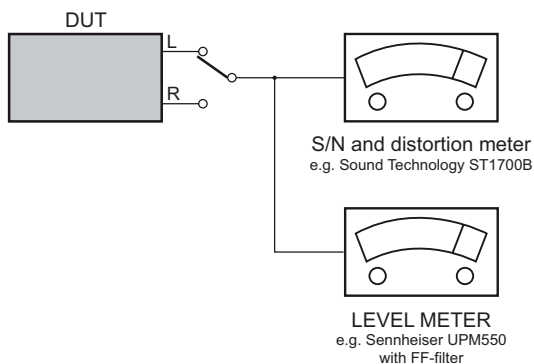
## Tuner AM (MW,LW)



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).

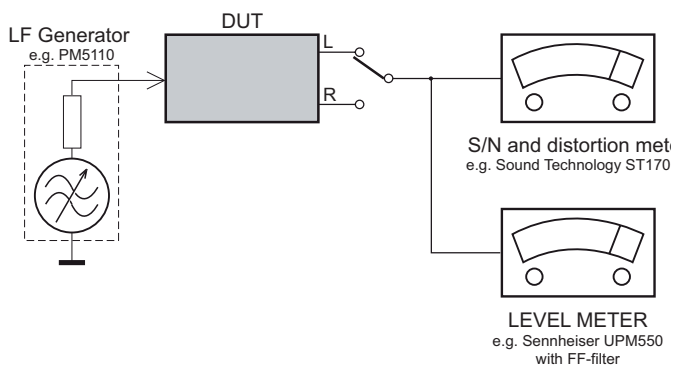
## CD

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".

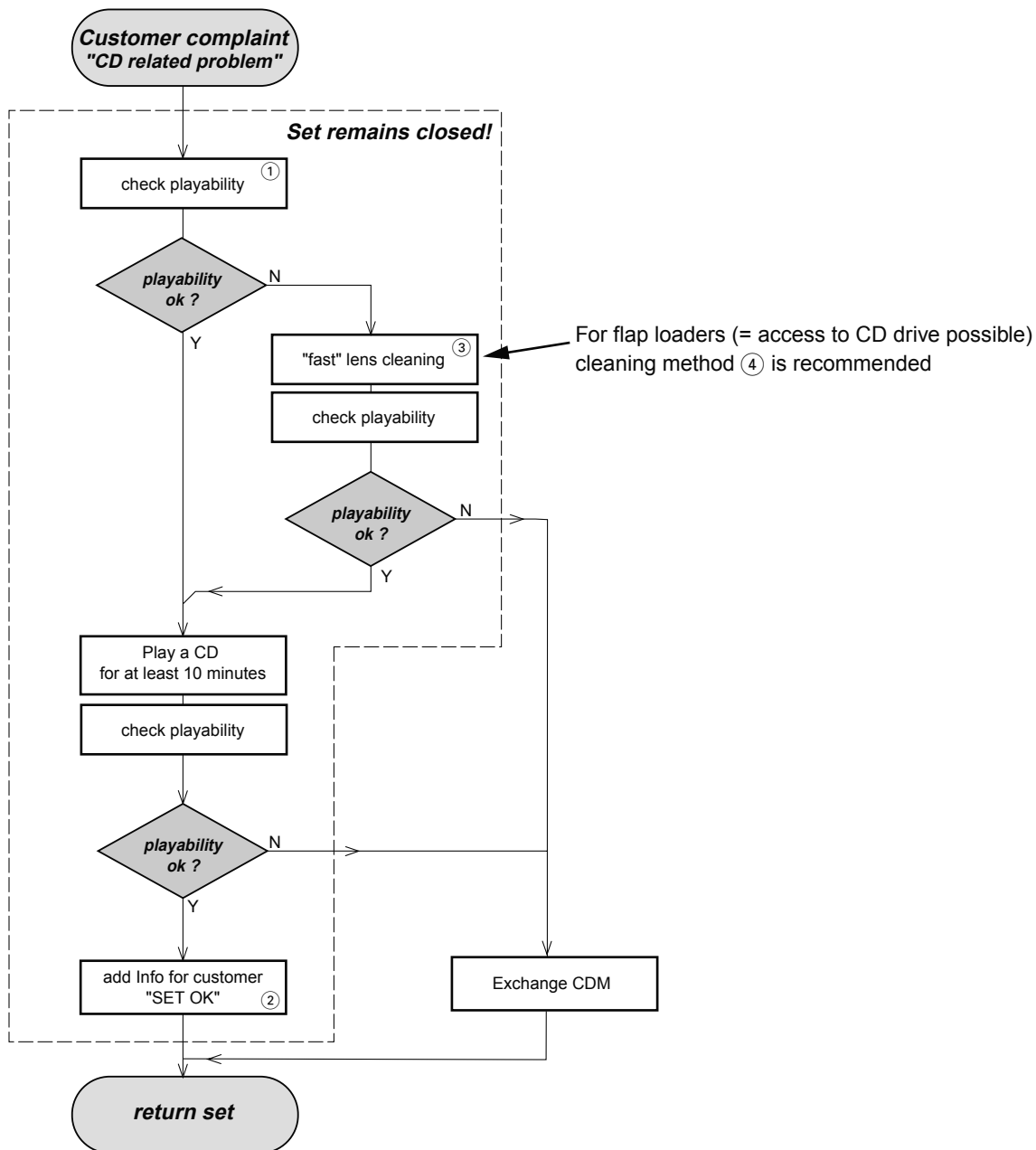
For additional questions please contact your local repair-helpdesk.

## 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



For flap loaders (= access to CD drive possible) cleaning method ④ is recommended

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 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

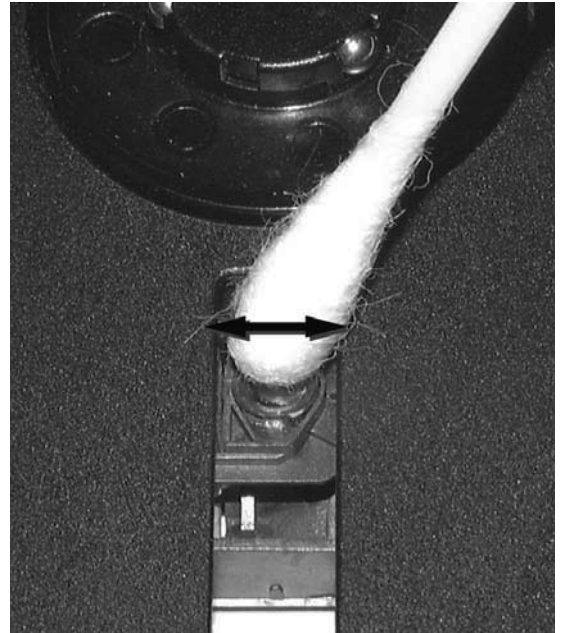
### LIQUID LENS CLEANING

**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.

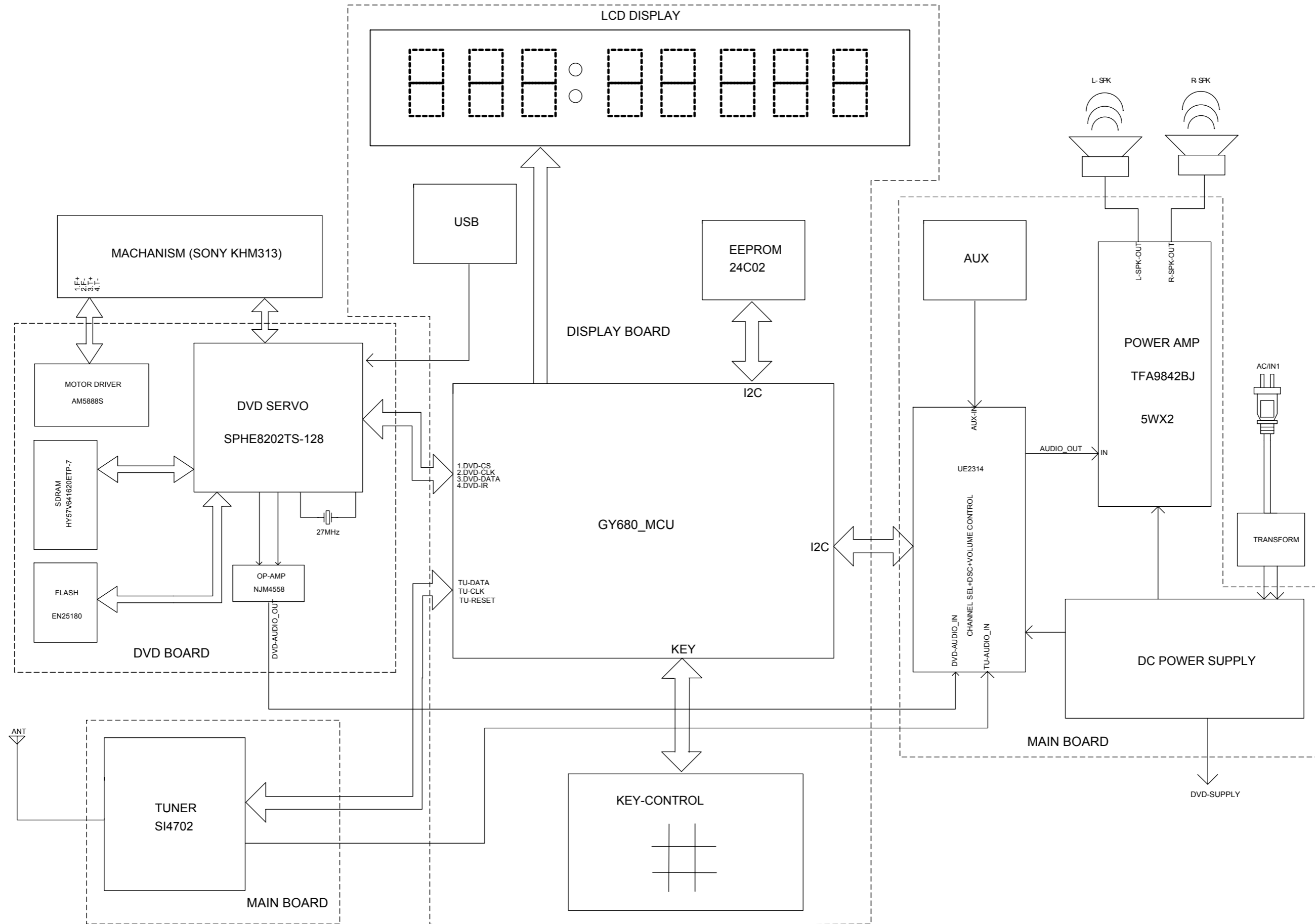
The direction of cleaning must be in the way as indicated in the picture below.



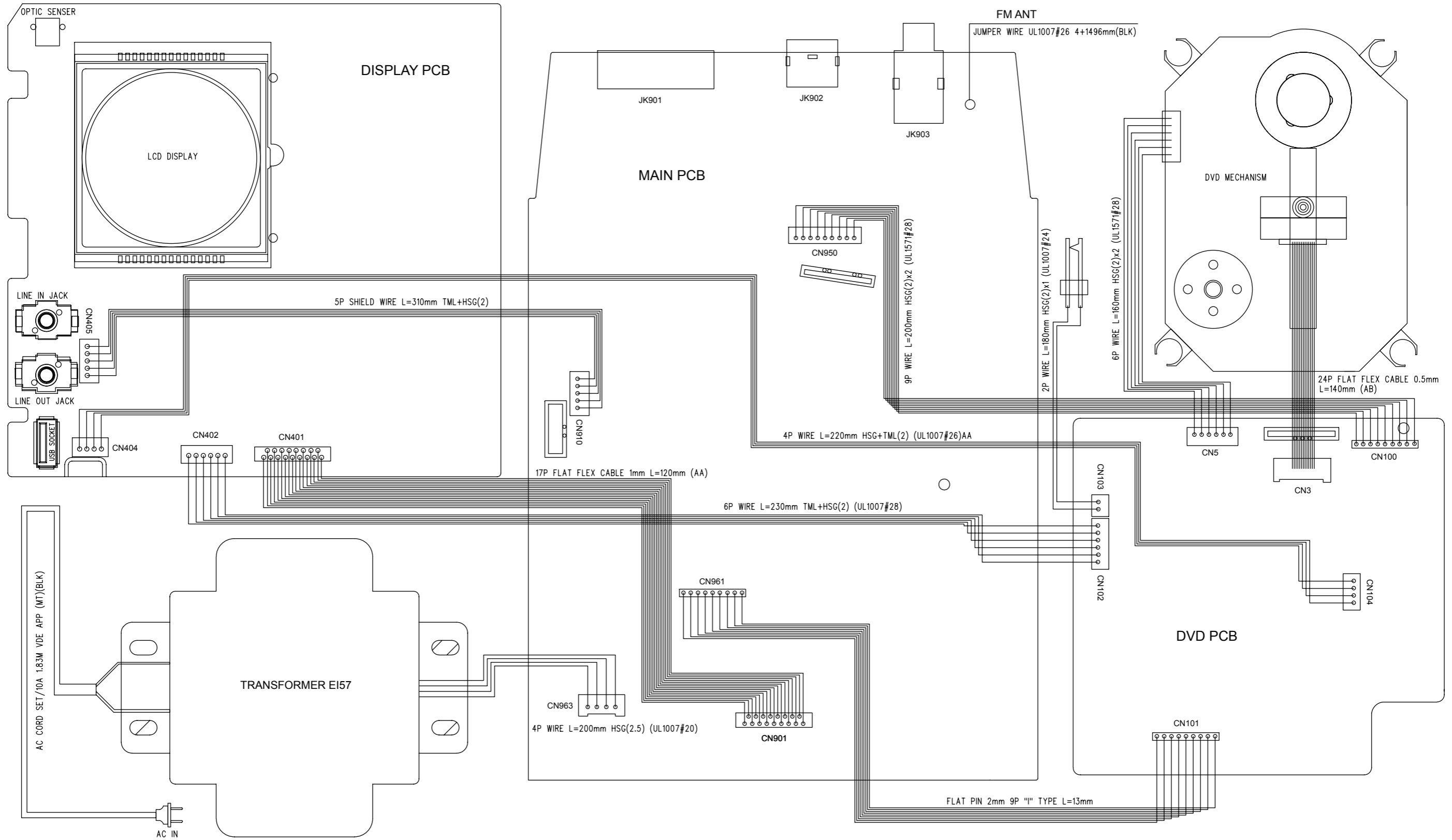
BLOCK DIAGRAM

3-1

3-1



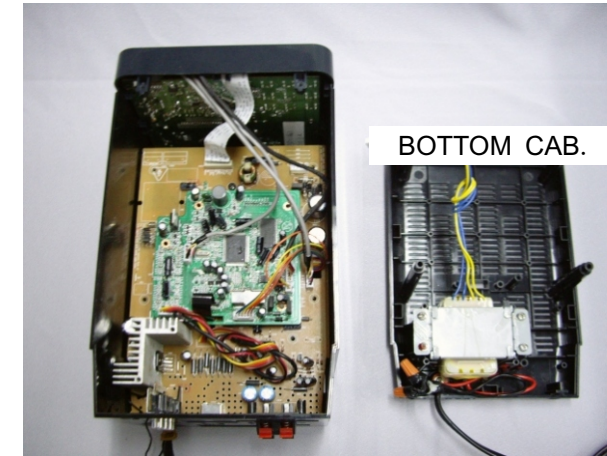
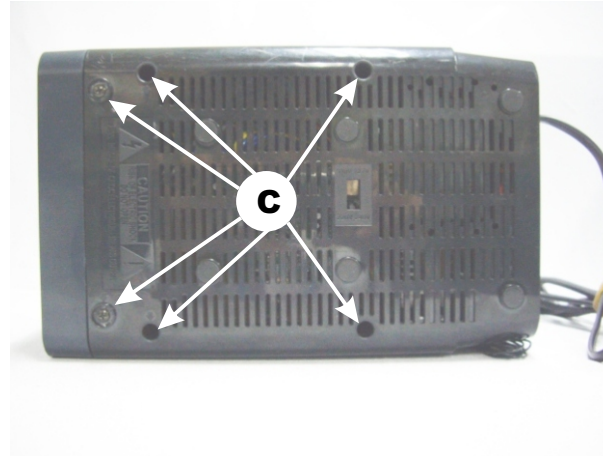
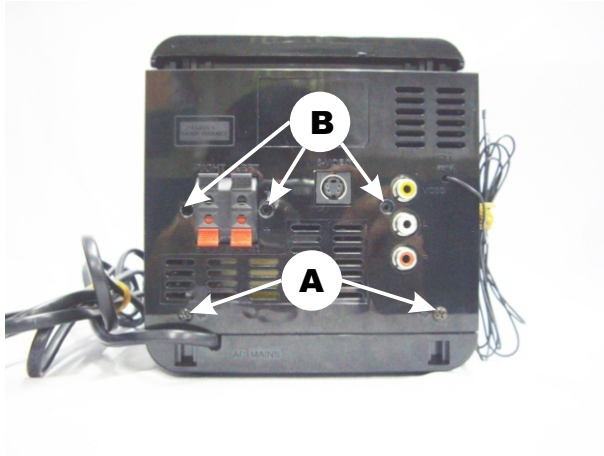
# WIRING DIAGRAM



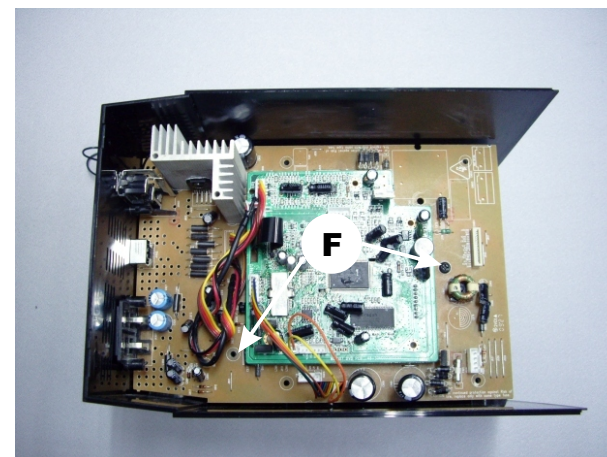
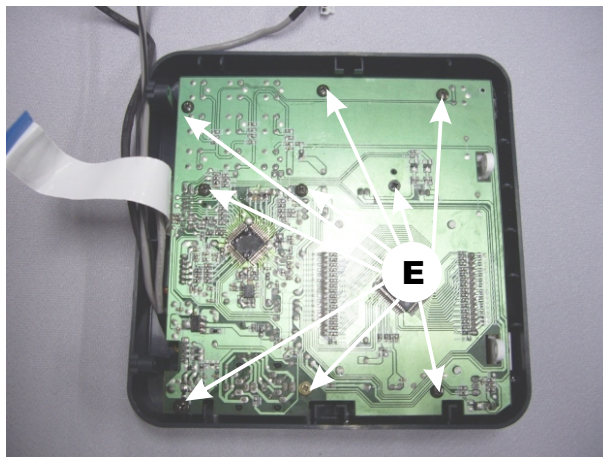
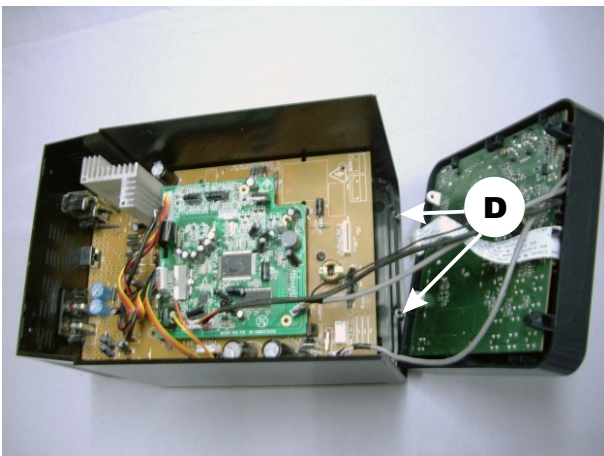


**DISASSEMBLY DIAGRAM****Dismantling of the Bottom Cabinet**

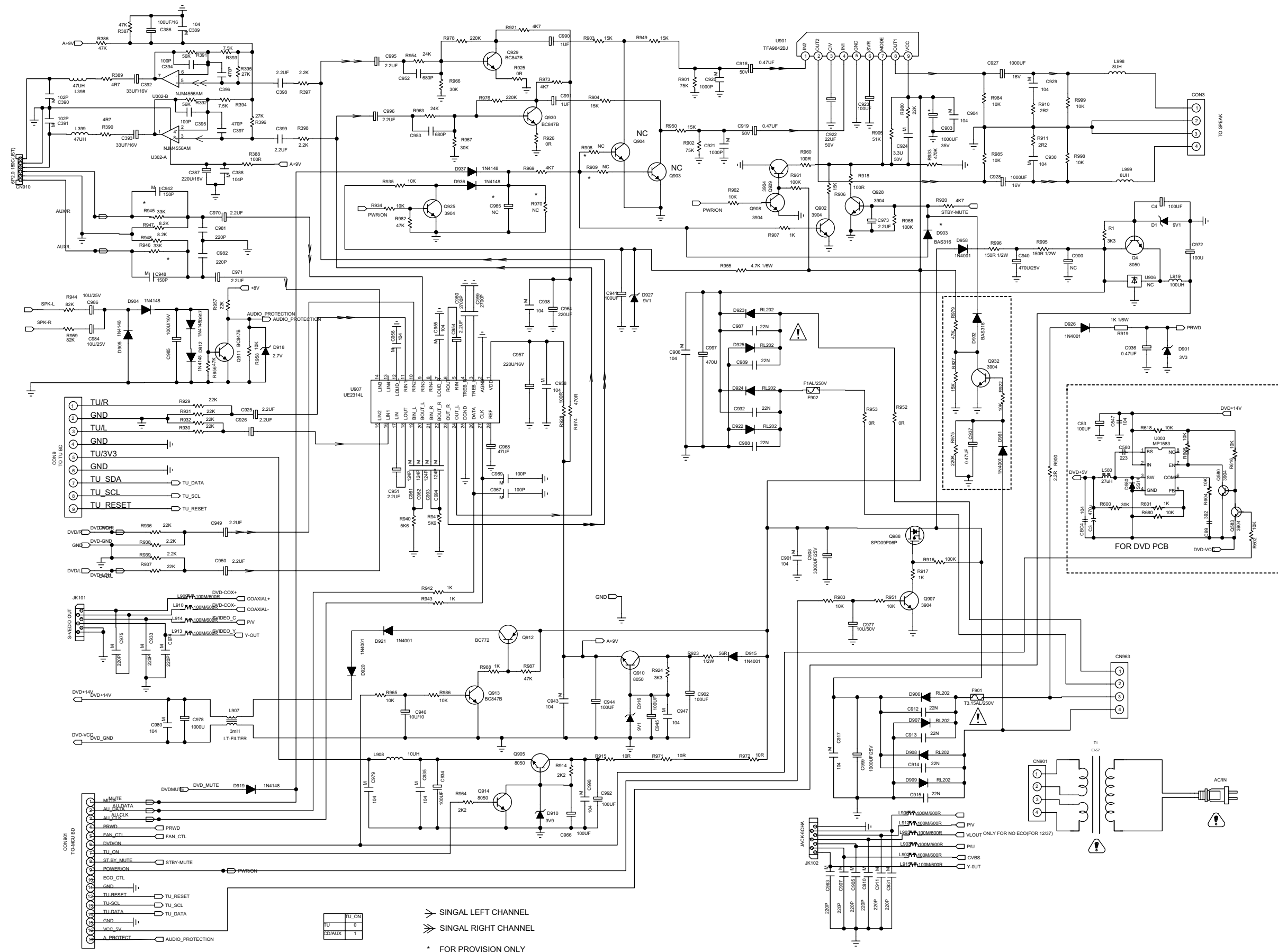
- 1) Remove 2 screws A as indicated.
- 2) Remove 3 screws B as indicated.
- 2) Remove 6 screws C as indicated to loosen the Bottom Cabinet.

**Dismantling of the Front Cabinet and PCB Board.**

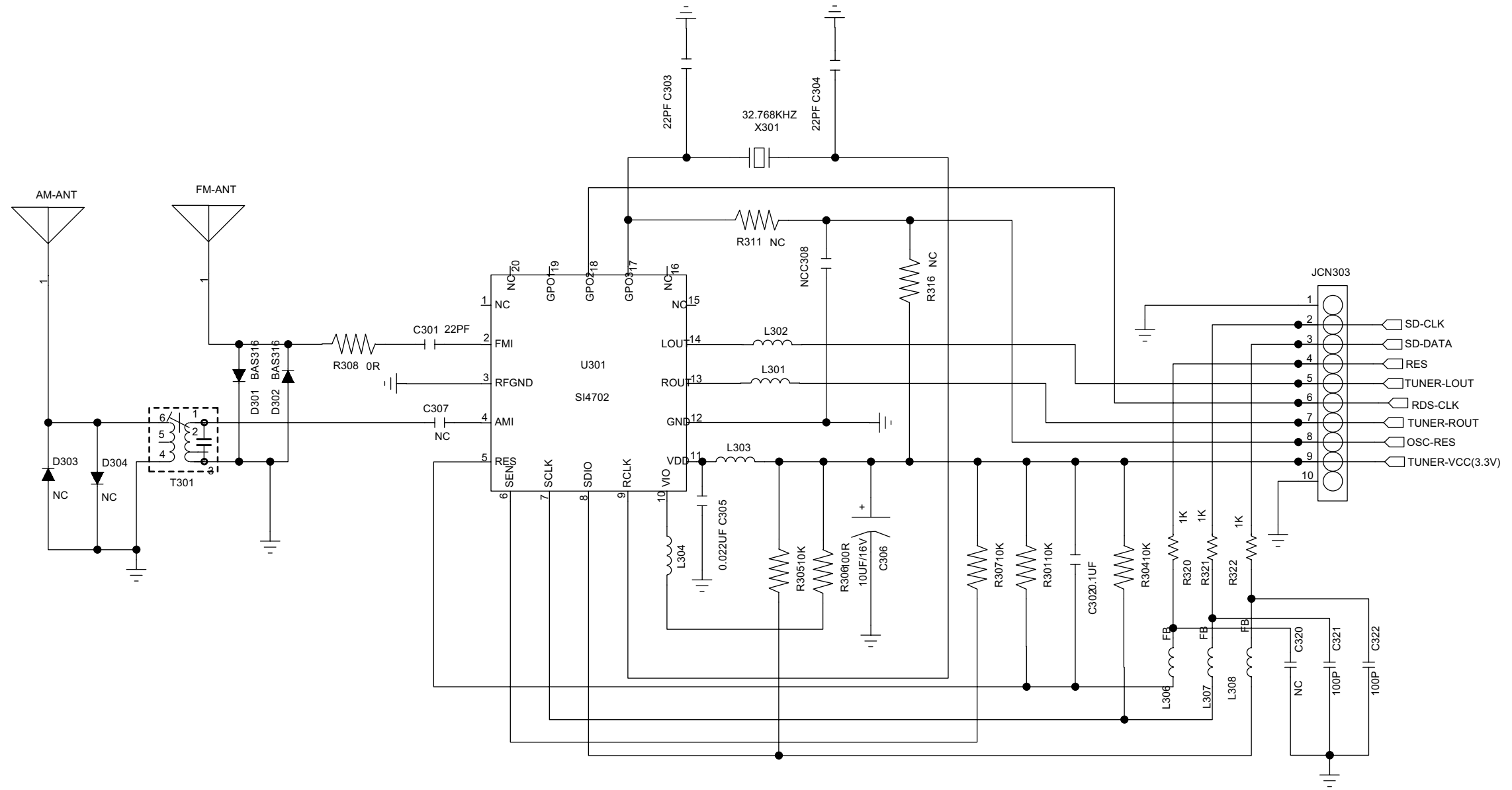
- 1) Remove 2 screws D as indicated to loosen the Front Cabinet.
- 2) Remove 9 screws E as indicated to loosen the Front Board.
- 3) Remove 2 screws F as indicated to loosen the Main Board.



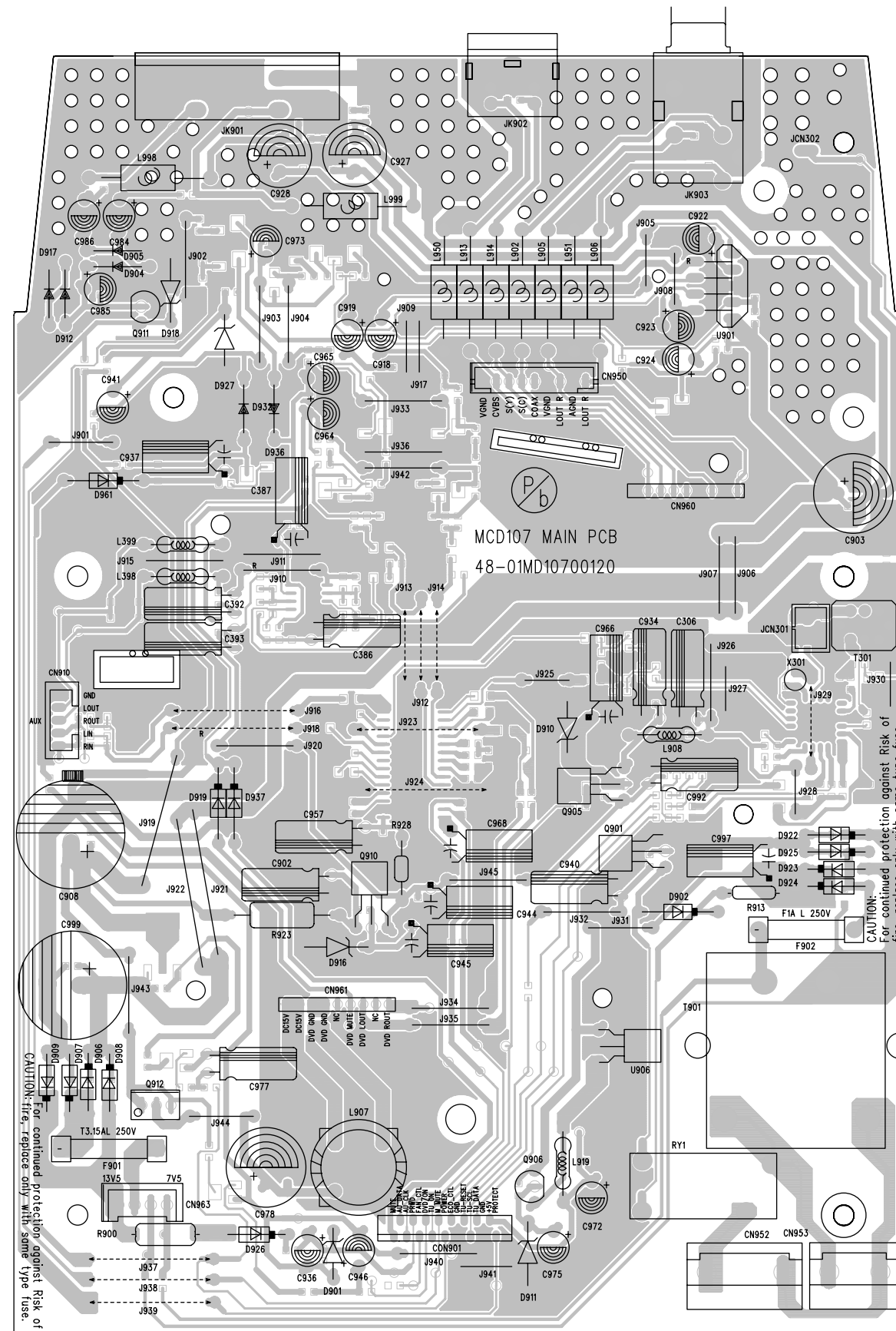
# CIRCUIT DIAGRAM - MAIN BOARD PART1



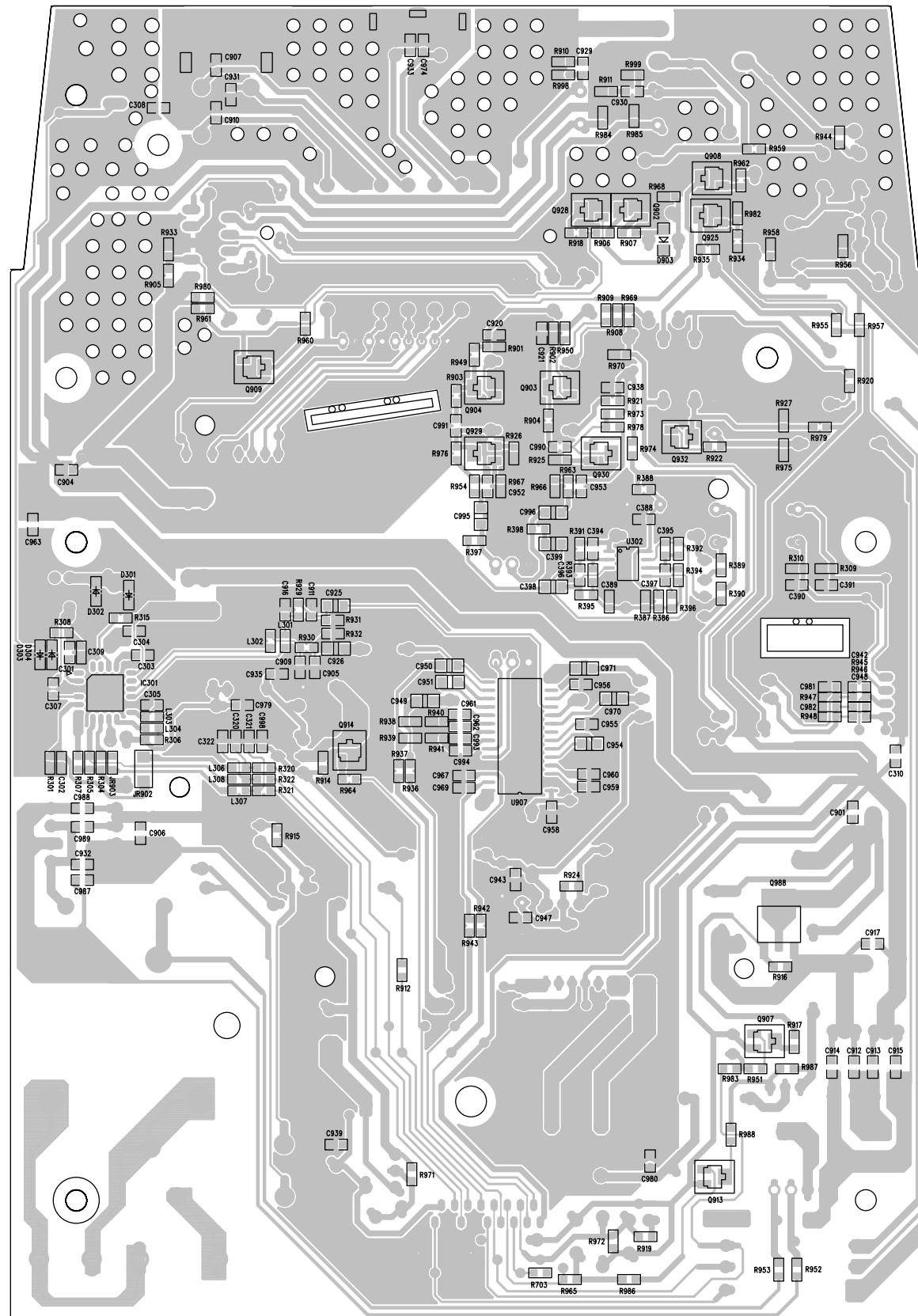
# CIRCUIT DIAGRAM - MAIN BOARD PART2



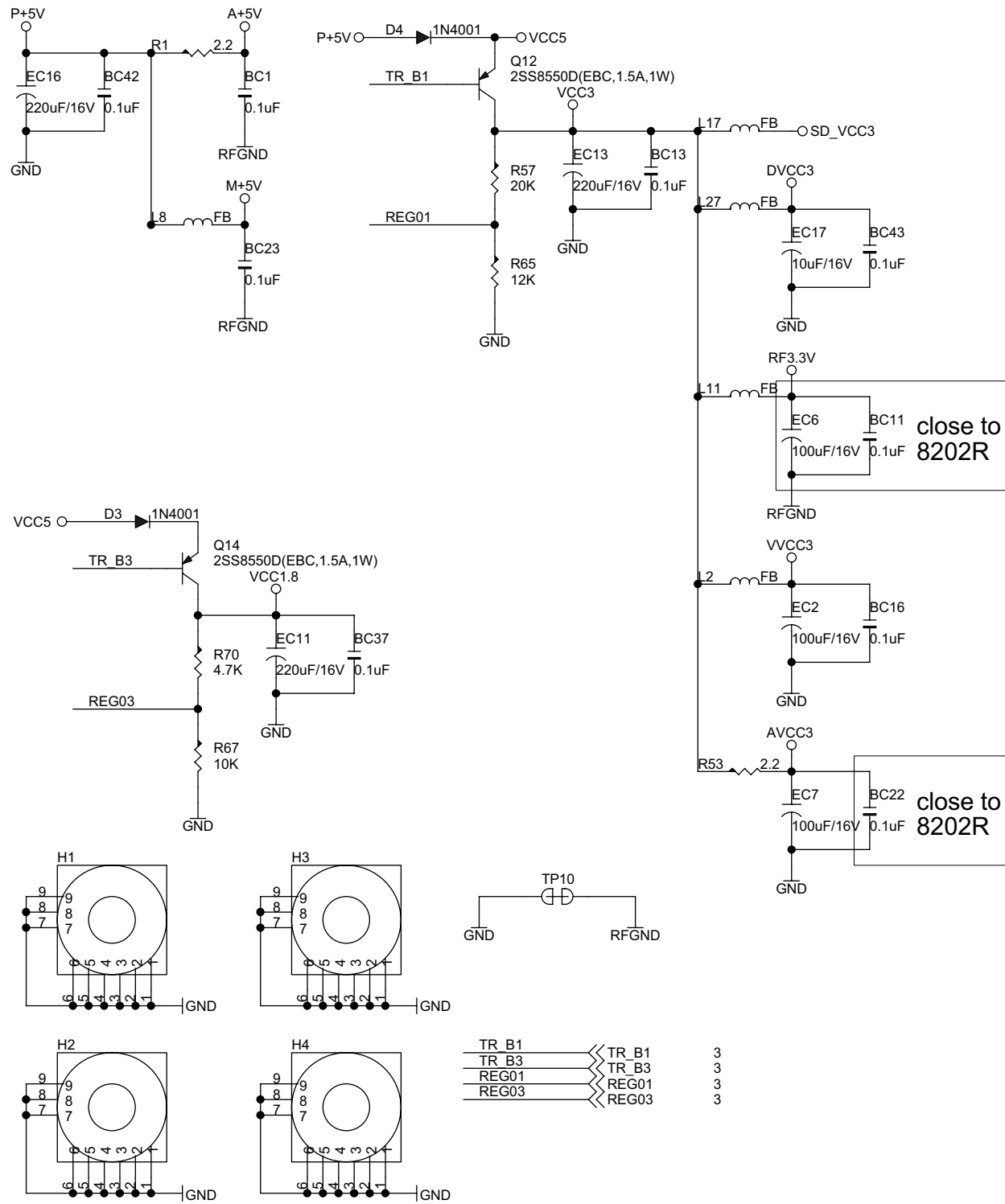
# LAYOUT DIAGRAM -MAIN BOARD TOP SIDE



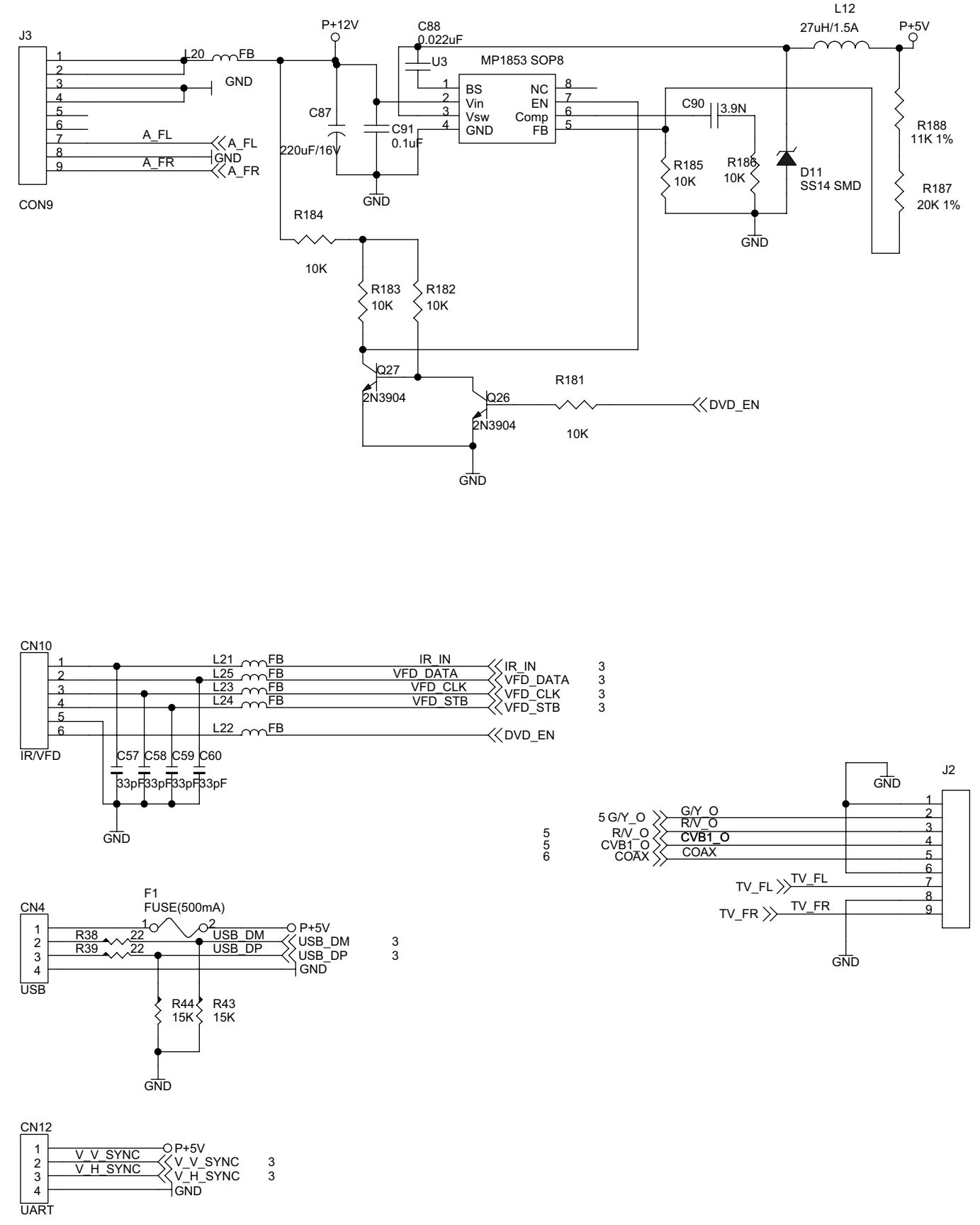
LAYOUT DIAGRAM - MAIN BOARD  
BOTTOM SIDE



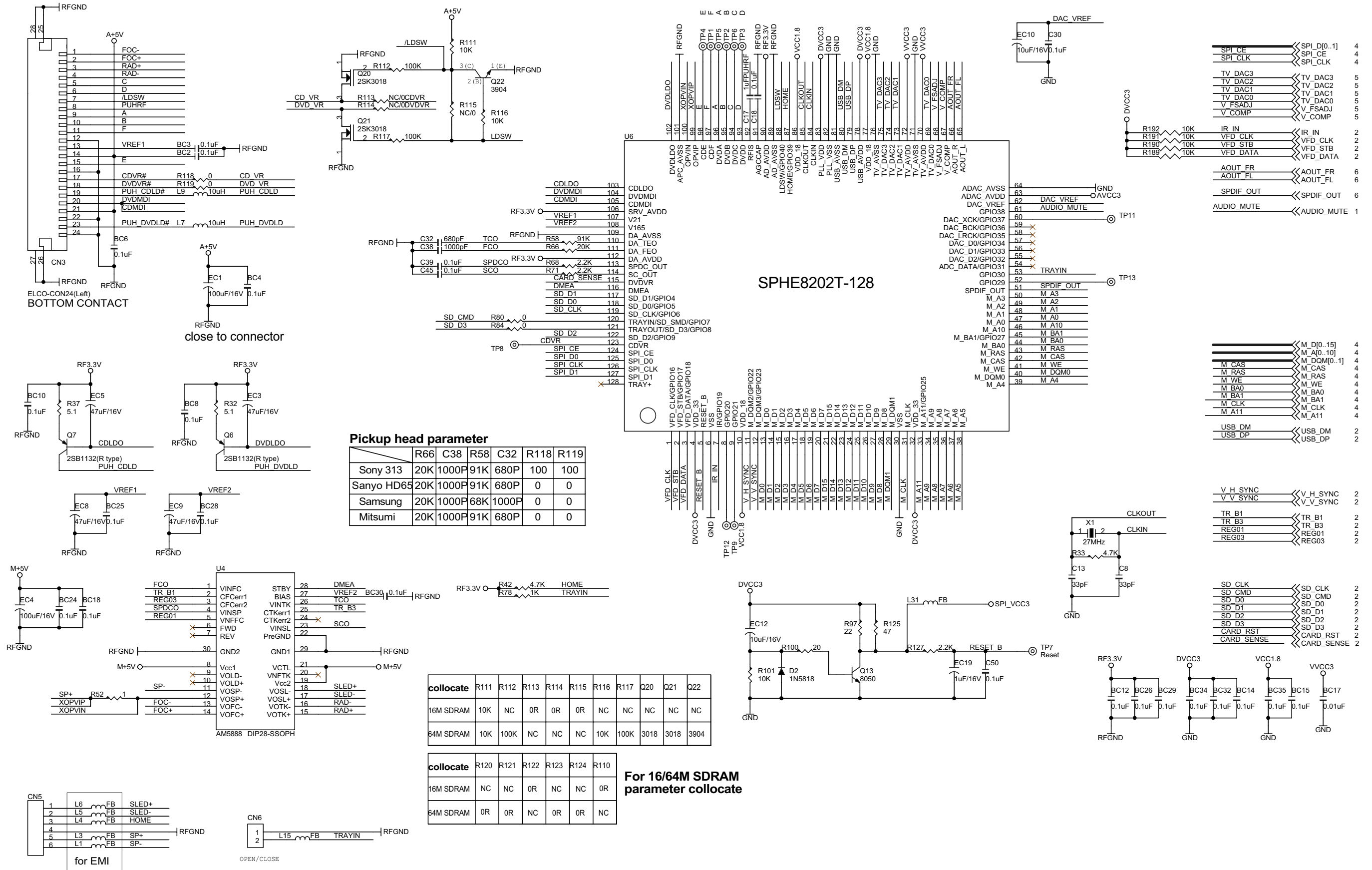
**CIRCUIT DIAGRAM - DVD BOARD PART1**



Power Bead > 2A, RAC@100 MHz = 70 ohm, RDC(max)= 0.4 ohm



CIRCUIT DIAGRAM - DVD BOARD PART2



**Pickup head parameter**

	R66	C38	R58	C32	R118	R119
Sony 313	20K	1000P	91K	680P	100	100
Sanyo HD65	20K	1000P	91K	680P	0	0
Samsung	20K	1000P	68K	1000P	0	0
Mitsumi	20K	1000P	91K	680P	0	0

**collocate**

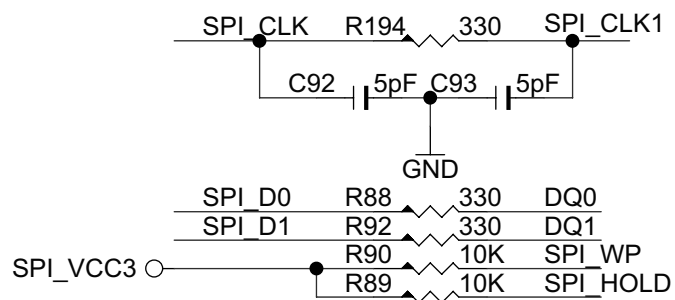
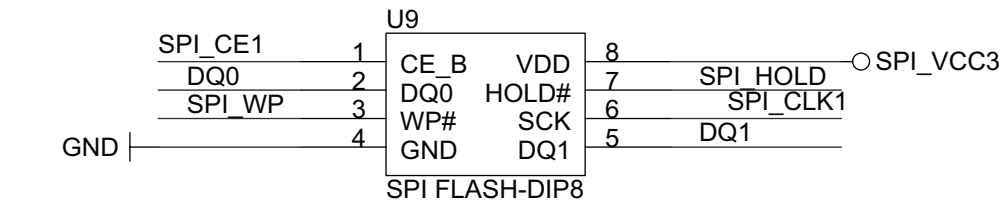
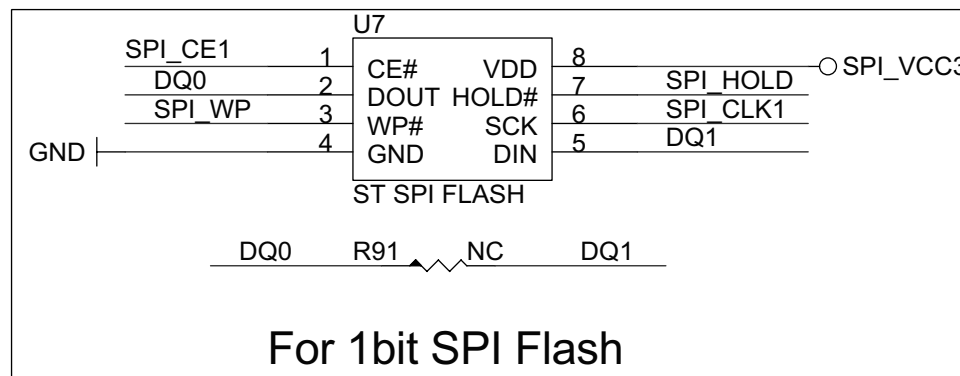
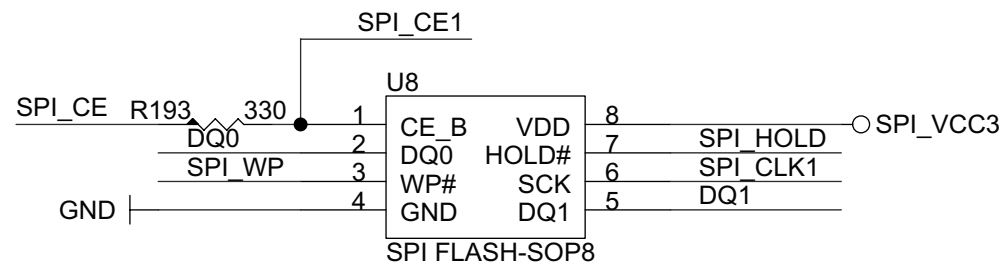
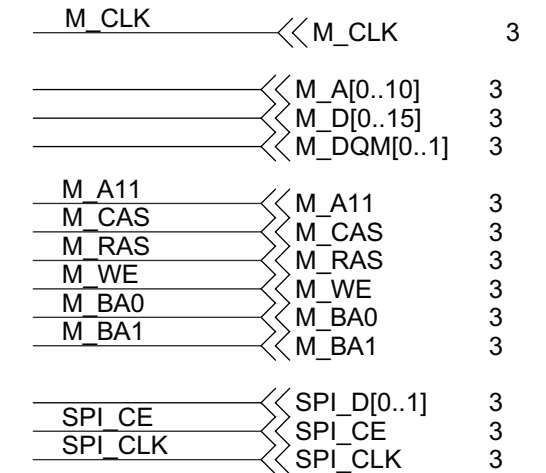
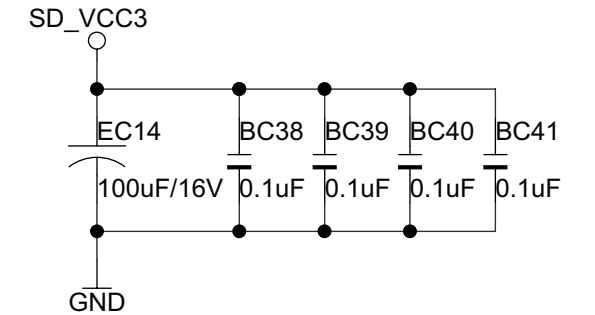
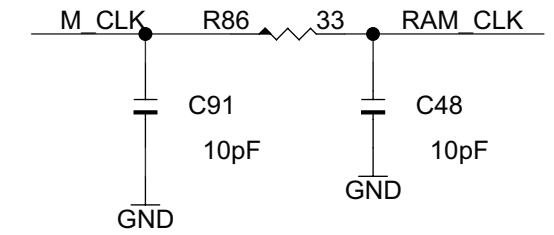
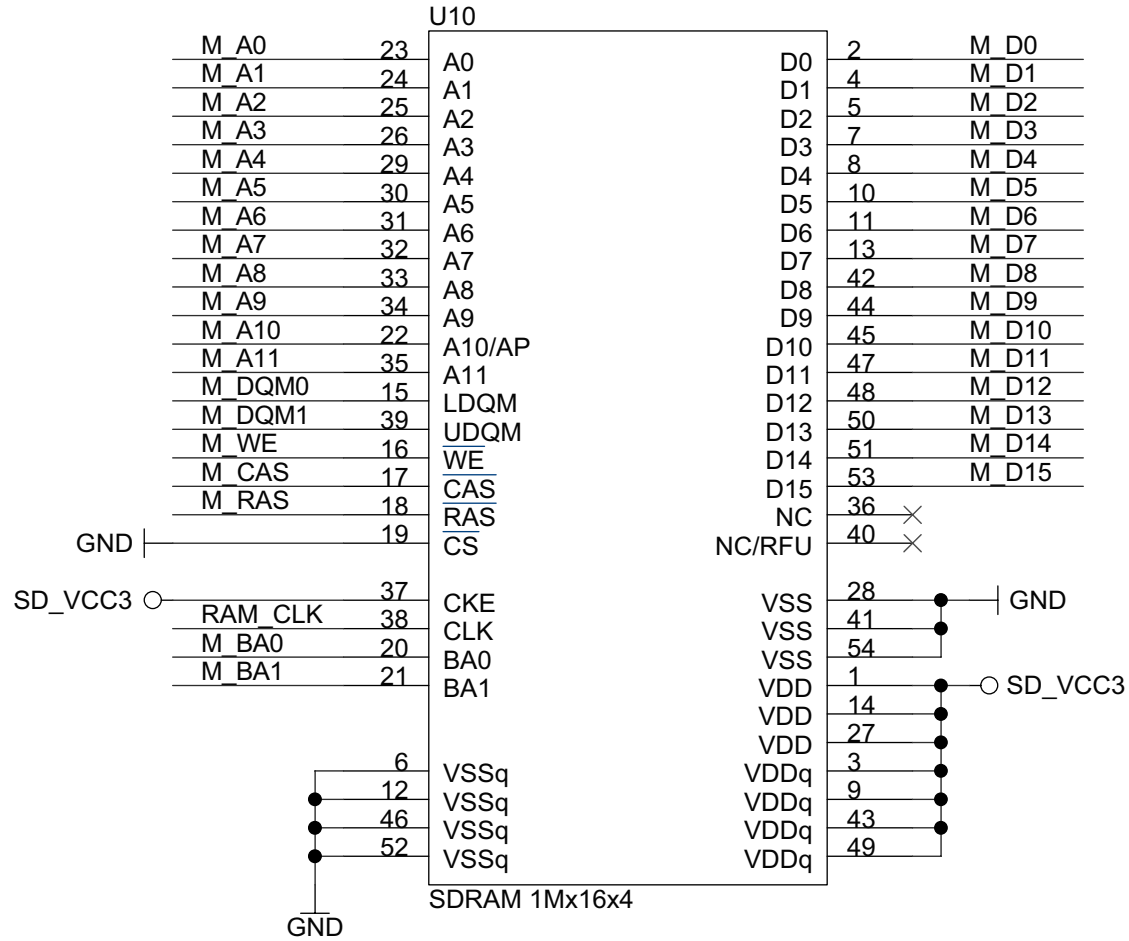
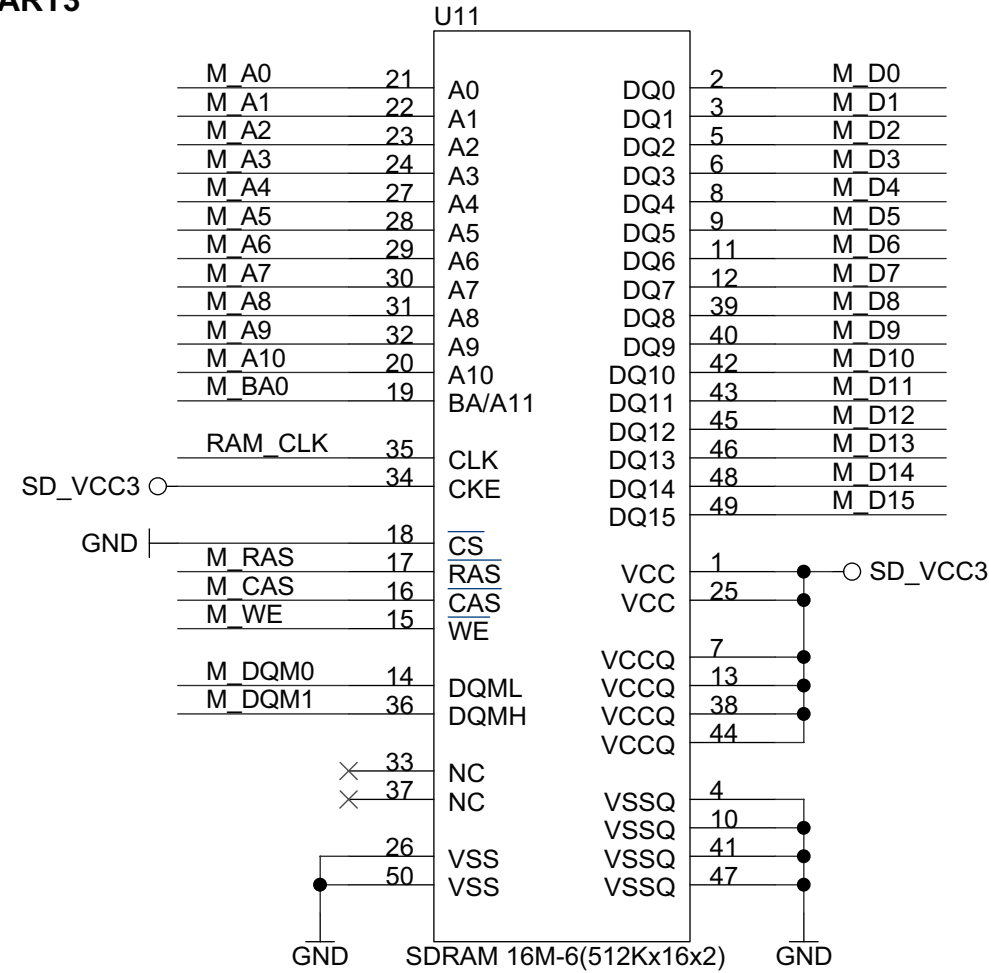
	R111	R112	R113	R114	R115	R116	R117	Q20	Q21	Q22
16M SDRAM	10K	NC	0R	0R	0R	NC	NC	NC	NC	NC
64M SDRAM	10K	100K	NC	NC	NC	10K	100K	3018	3018	3904

**For 16/64M SDRAM parameter collocate**

	R120	R121	R122	R123	R124	R110
16M SDRAM	NC	NC	0R	NC	NC	0R
64M SDRAM	0R	0R	NC	0R	0R	NC

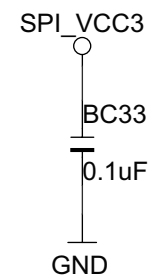
- SPI\_CE << SPI\_D[0..1] 4
- SPI\_CLK << SPI\_CLK 4
- TV\_DAC3 << TV\_DAC3 5
- TV\_DAC2 << TV\_DAC2 5
- TV\_DAC1 << TV\_DAC1 5
- TV\_DAC0 << TV\_DAC0 5
- V\_FSADJ << V\_FSADJ 5
- V\_COMP << V\_COMP 5
- IR\_IN << IR\_IN 2
- VFD\_CLK << VFD\_CLK 2
- VFD\_STB << VFD\_STB 2
- VFD\_DATA << VFD\_DATA 2
- AOUT\_FR << AOUT\_FR 6
- AOUT\_FL << AOUT\_FL 6
- SPDIF\_OUT << SPDIF\_OUT 6
- AUDIO\_MUTE << AUDIO\_MUTE 1
- M\_D[0..15] << M\_D[0..15] 4
- M\_A[0..10] << M\_A[0..10] 4
- M\_CAS << M\_DQM[0..1] 4
- M\_RAS << M\_CAS 4
- M\_WE << M\_WE 4
- M\_BA0 << M\_BA0 4
- M\_BA1 << M\_BA1 4
- M\_CLK << M\_CLK 4
- M\_A11 << M\_A11 4
- USB\_DM << USB\_DM 2
- USB\_DP << USB\_DP 2
- V\_H\_SYNC << V\_H\_SYNC 2
- V\_V\_SYNC << V\_V\_SYNC 2
- TR\_B1 << TR\_B1 2
- TR\_B3 << TR\_B3 2
- REG01 << REG01 2
- REG03 << REG03 2
- SD\_CLK << SD\_CLK 2
- SD\_CMD << SD\_CMD 2
- SD\_D0 << SD\_D0 2
- SD\_D1 << SD\_D1 2
- SD\_D2 << SD\_D2 2
- SD\_D3 << SD\_D3 2
- CARD\_RST << CARD\_RST 2
- CARD\_SENSE << CARD\_SENSE 2

**CIRCUIT DIAGRAM - DVD BOARD  
PART3**



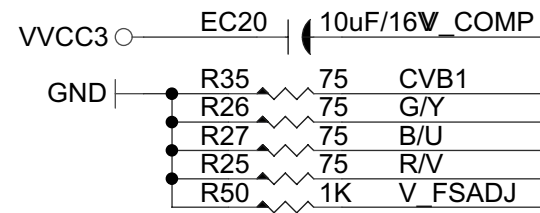
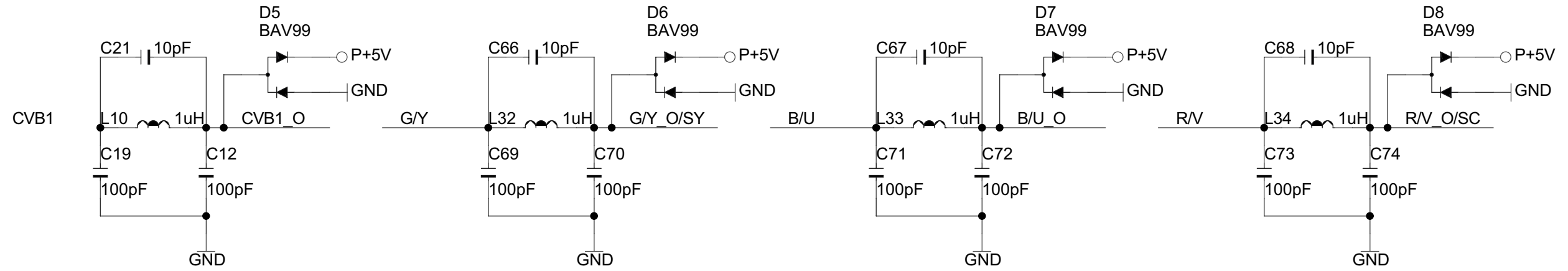
**SPI Mode Setting**

	2bit	1bit
R91	NC	0
R92	0	NC





**CIRCUIT DIAGRAM - DVD BOARD  
PART4**

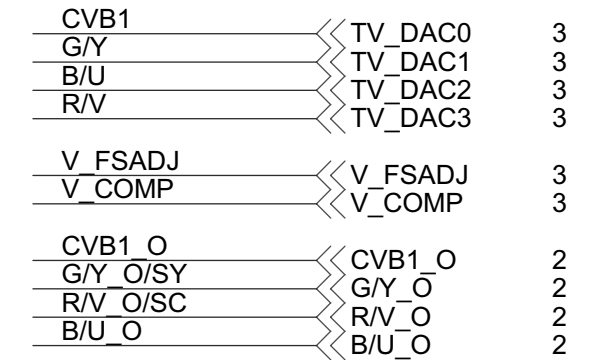


TV0	TV1	TV2	TV3
C V B	Y	Cb	C r
CVB	Y(S-Video)	CVB	C(S-Video)
C V B	G	B	R

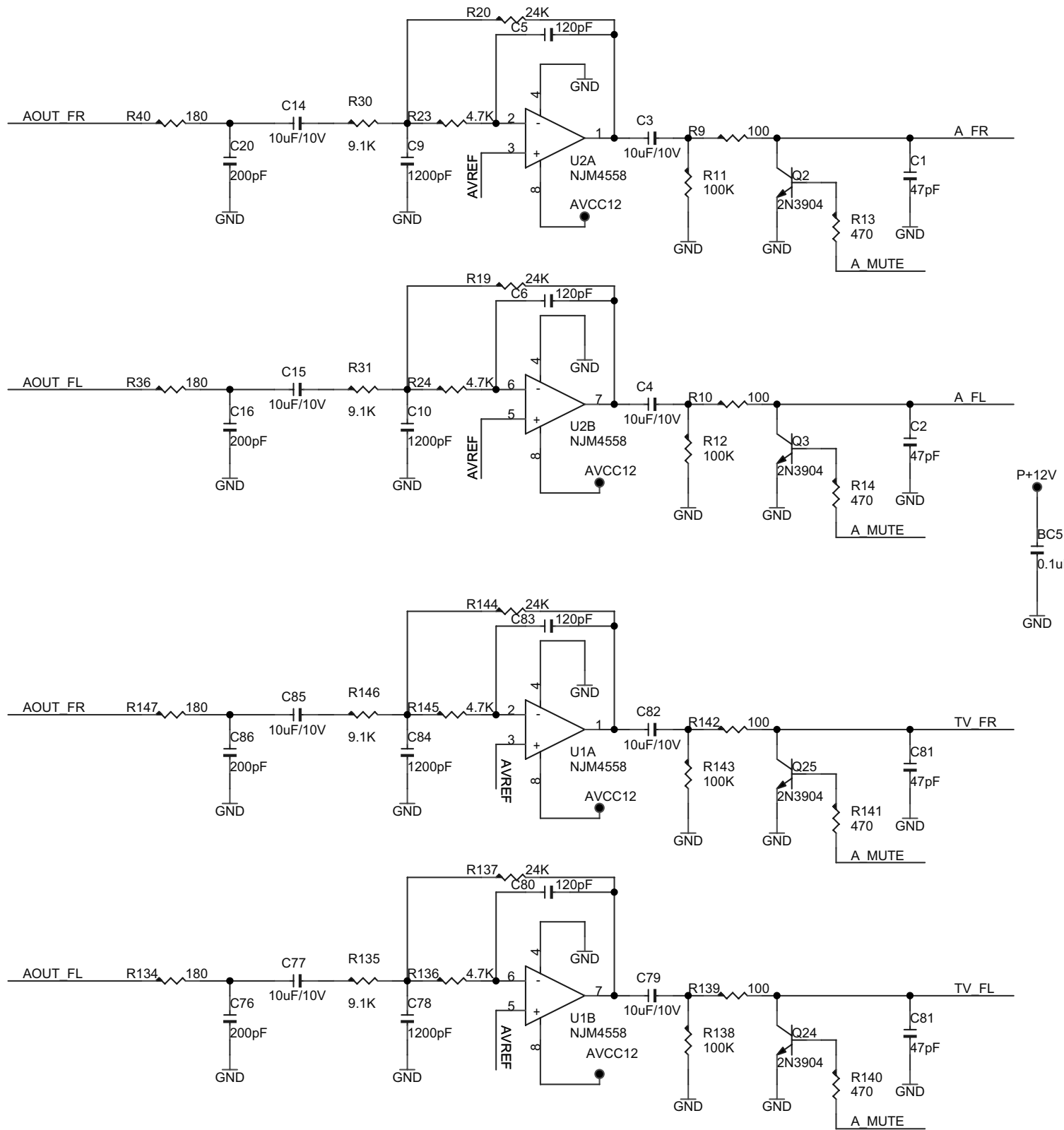
RELEASE_SCART	DISPLAY_MODE
0	Not RELEASE
1	RELEASE

SCART_DISPLAY	DISPLAY_MODE
0	12V(9.5V--12V 4:3)
1	6V(5V--8V 16:9)

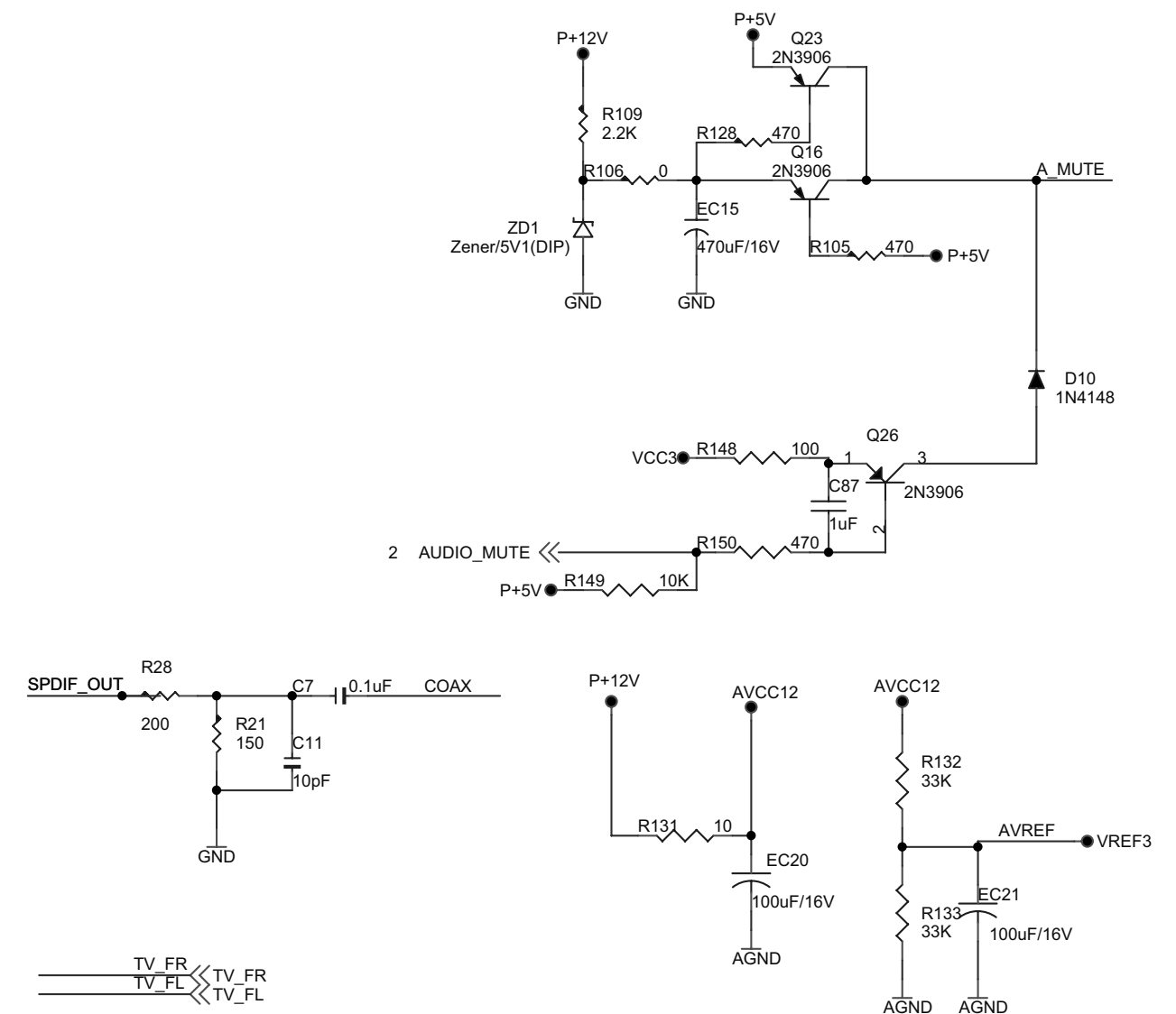
SCART_SIG	SIGNAL_MODE
0	0V(CVBS)
1	3V(RGB)



# CIRCUIT DIAGRAM - DVD BOARD PART5

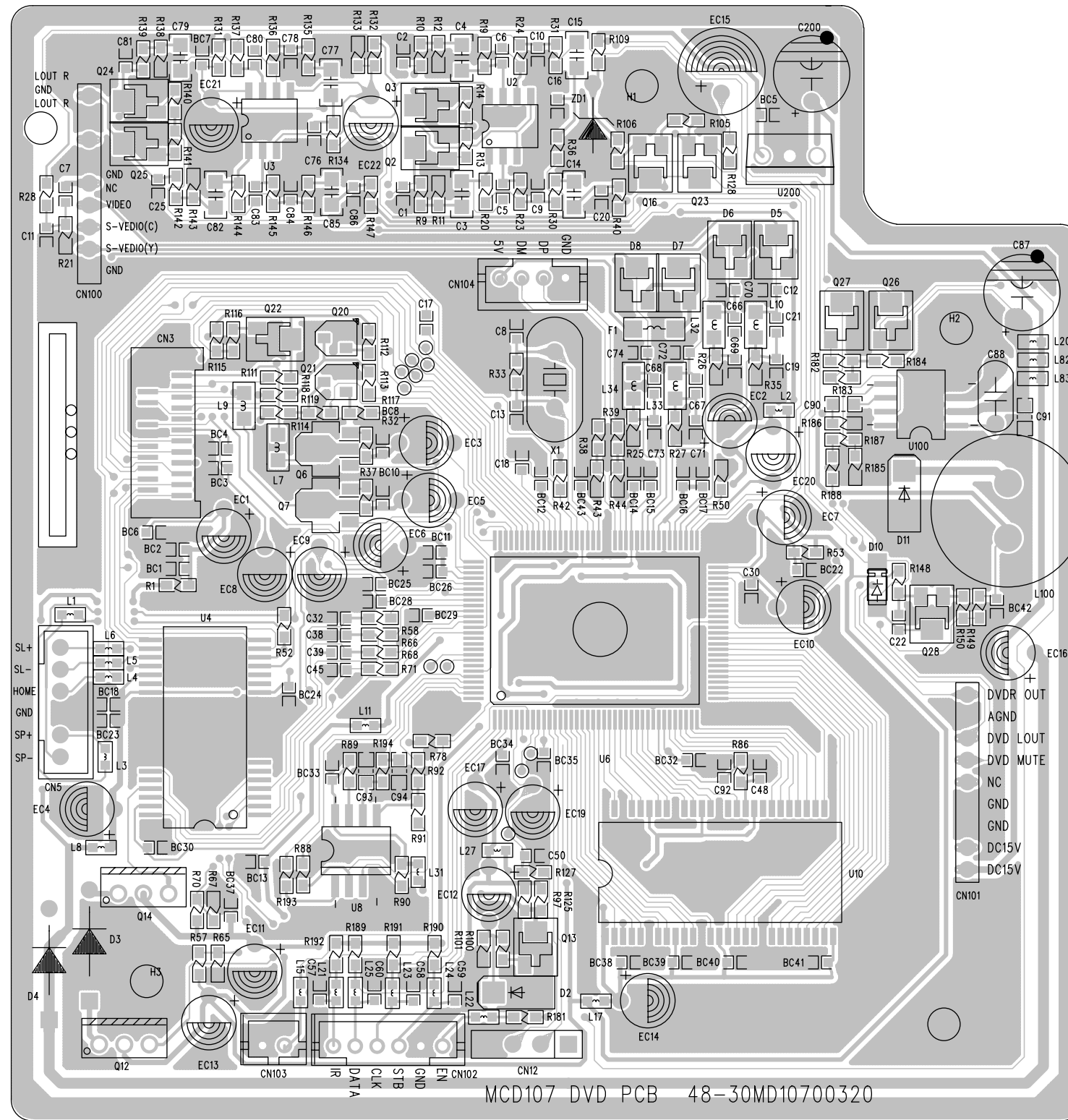


## Power ON / OFF Mute

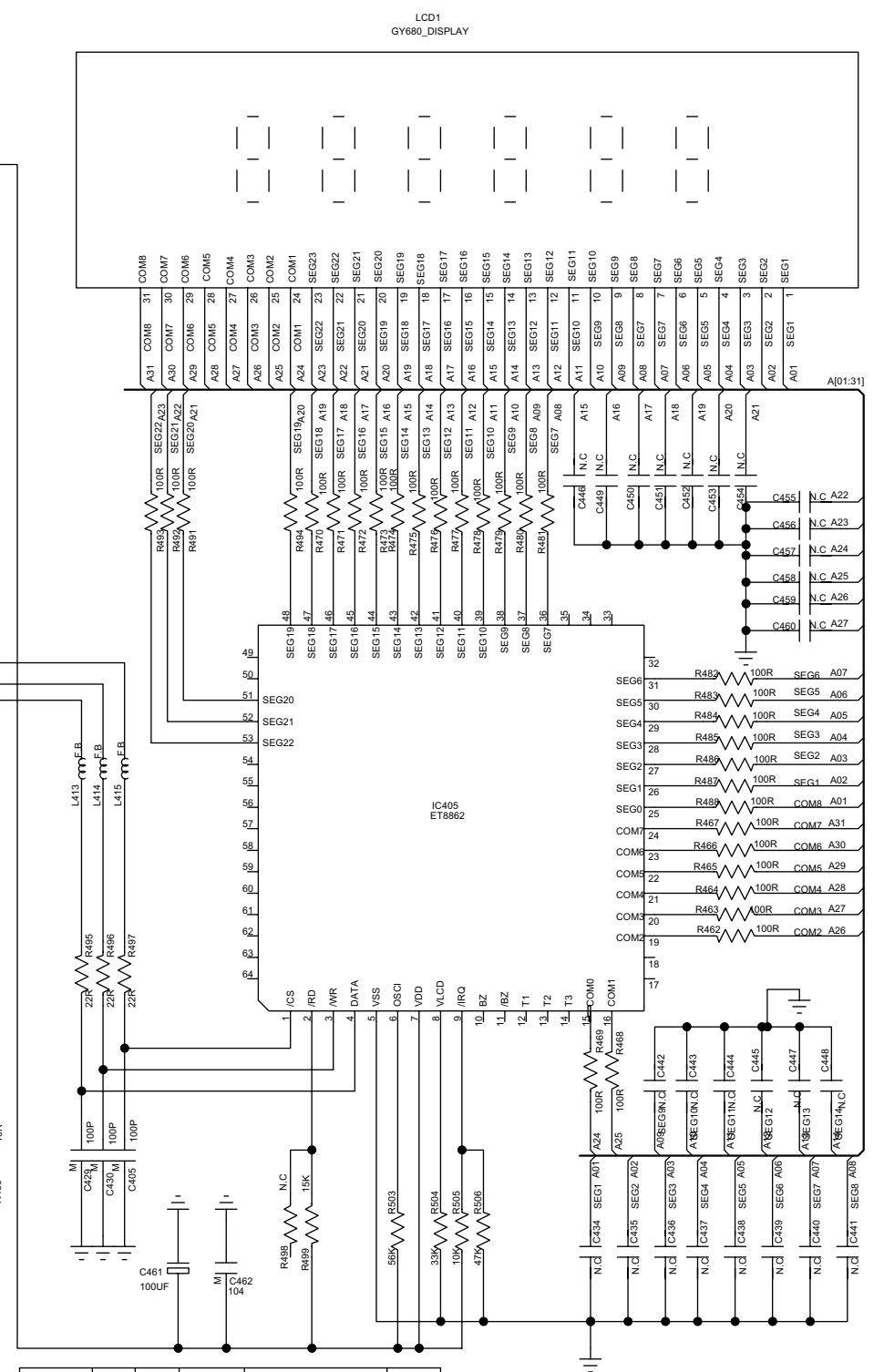
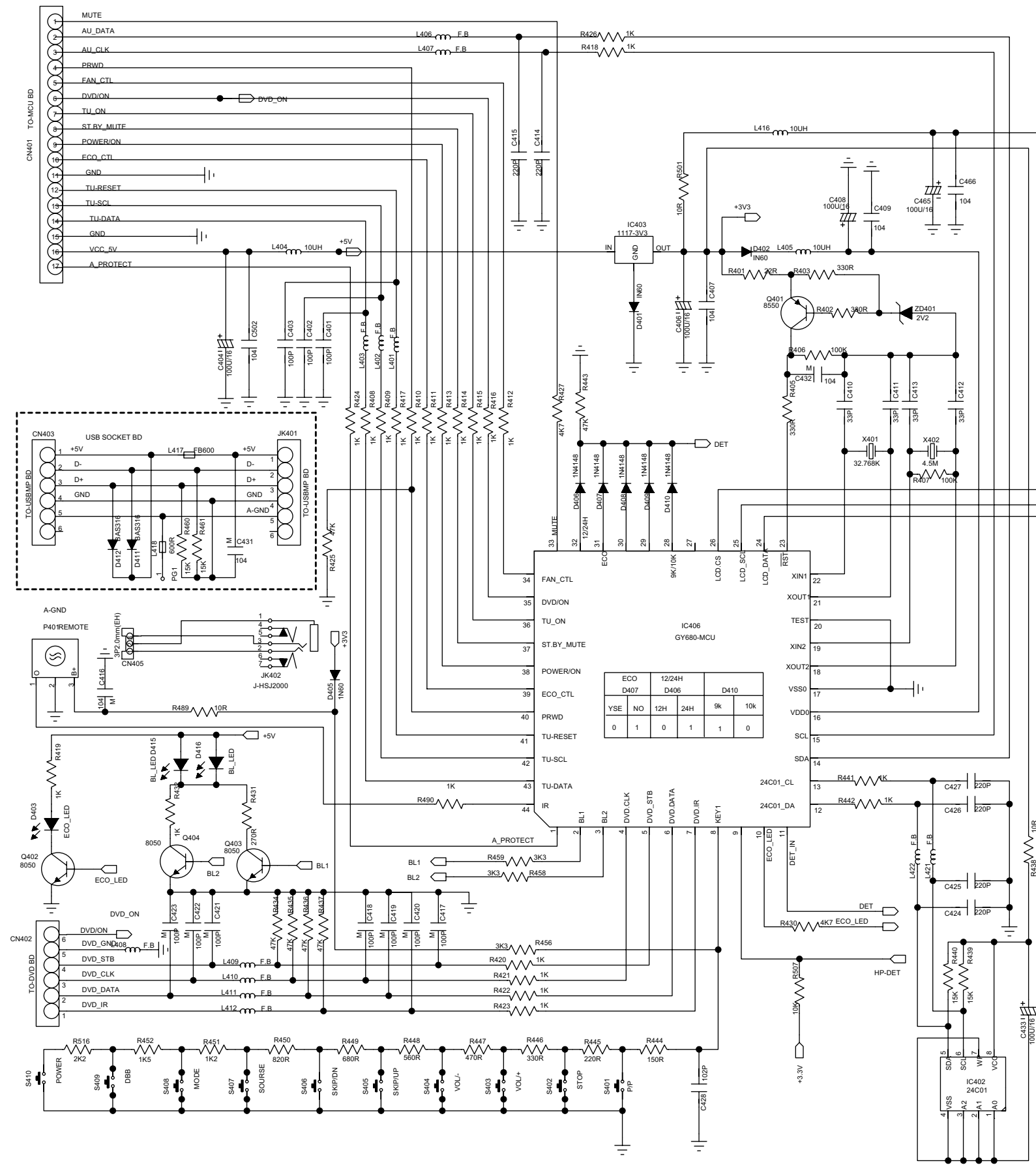


TV_FR	TV_FR	2
TV_FL	TV_FL	2
A_FR	A_FR	2
A_FL	A_FL	2
AOUT_FR	AOUT_FR	3
AOUT_FL	AOUT_FL	3
COAX	COAX	2
SPDIF_OUT	SPDIF_OUT	3
OPTI_O	OPTI_O	2

# LAYOUT DIAGRAM - DVD BOARD

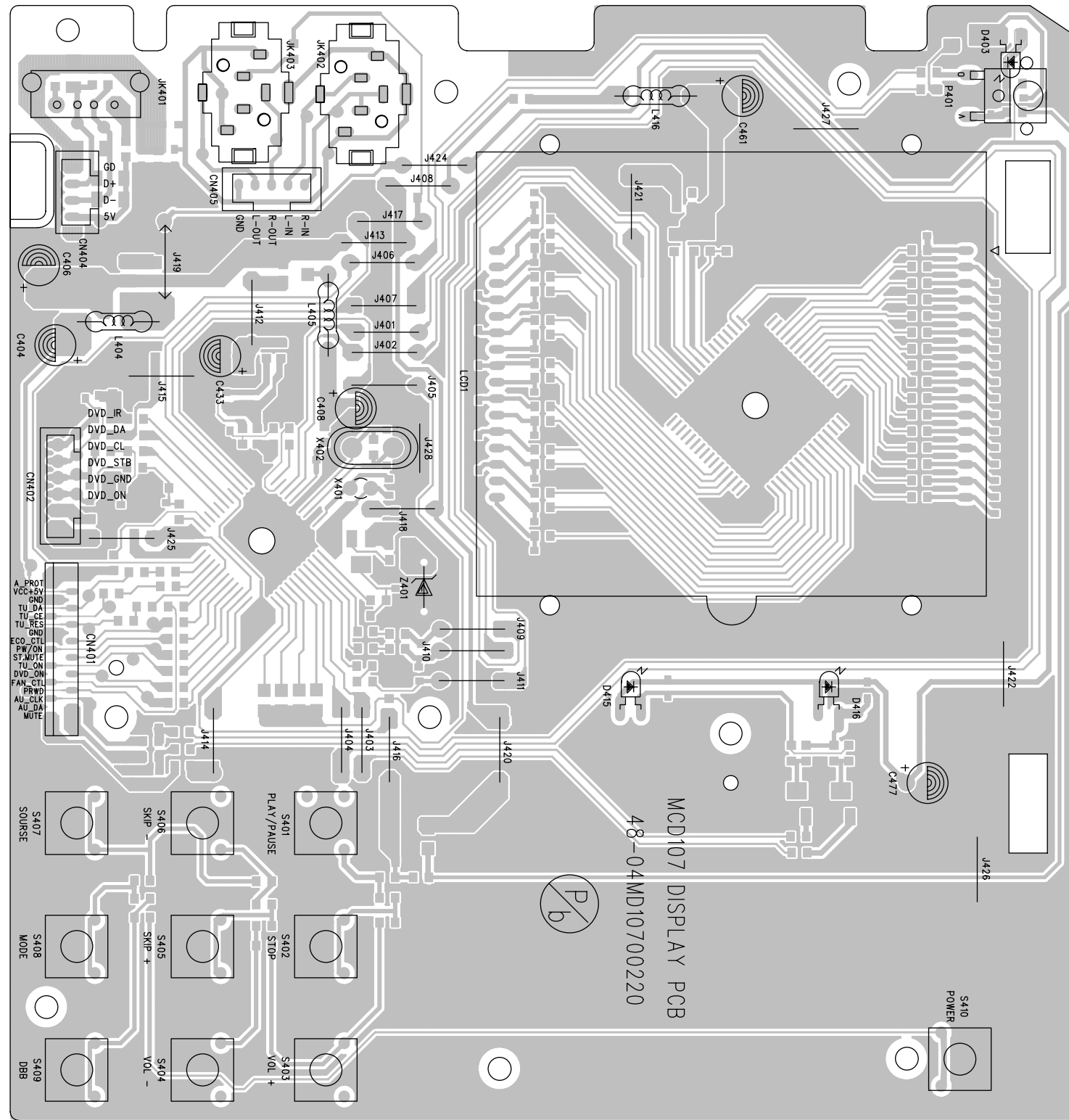


# CIRCUIT DIAGRAM - FRONT BOARD

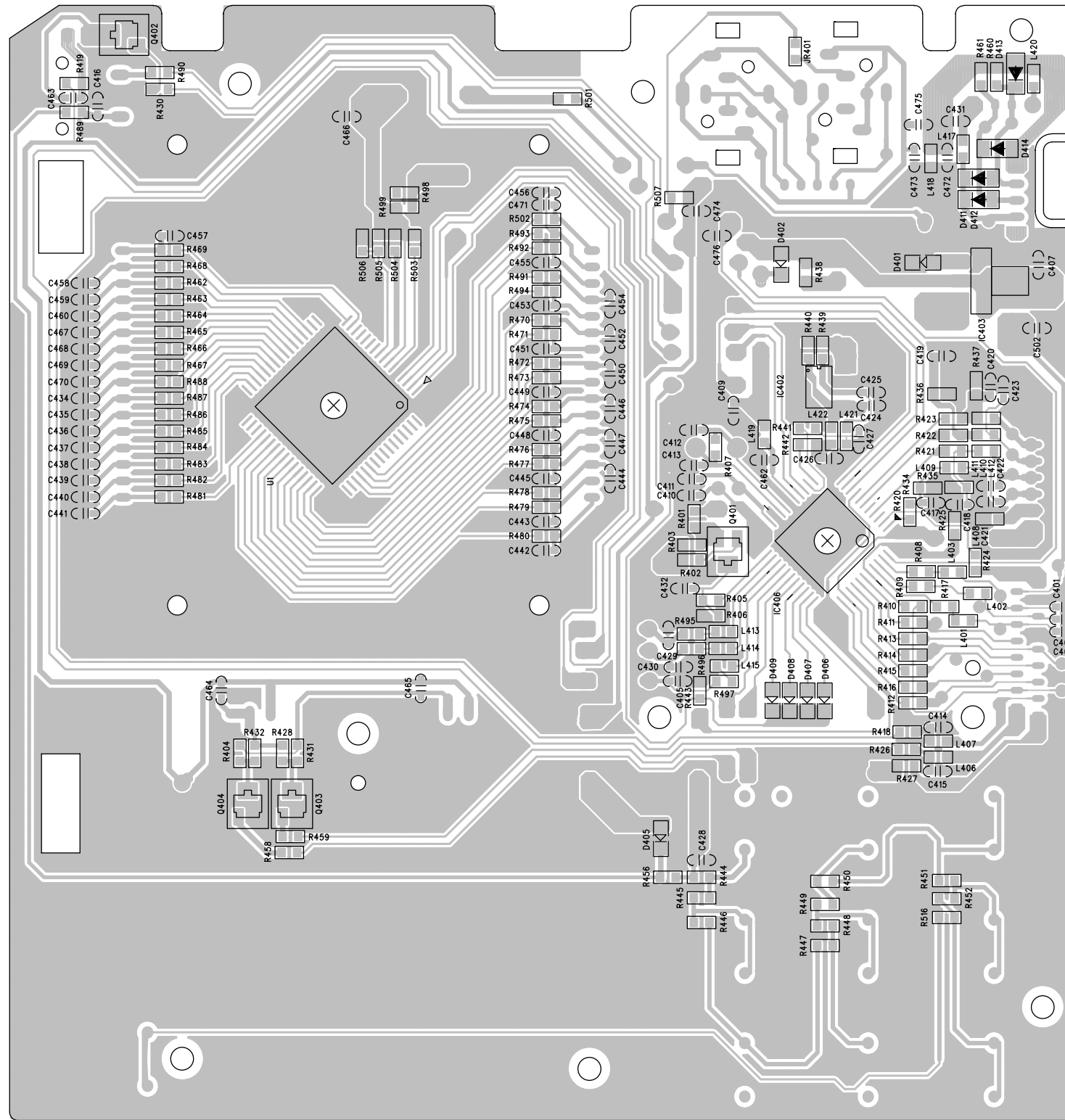


Area	D408	D409	Band	Frequency(Hz)	Step
OVS	1	1	FM	87.5M - 108.0M	50K
			MW	531K - 1602K	9K
			or	530K - 1700K	10K
Europe	0	1	FM	87.5M - 108.0M	50K
			MW	531K - 1602K	9K
			LW	135K - 279K	3K
AUST/NZ	1	0	FM	87.5M - 108.0M	50K
			MW	531K - 1602K	9K
USA Canada	0	0	FM	87.5M - 108.0M	100K
			AM	530K - 1700K	10K

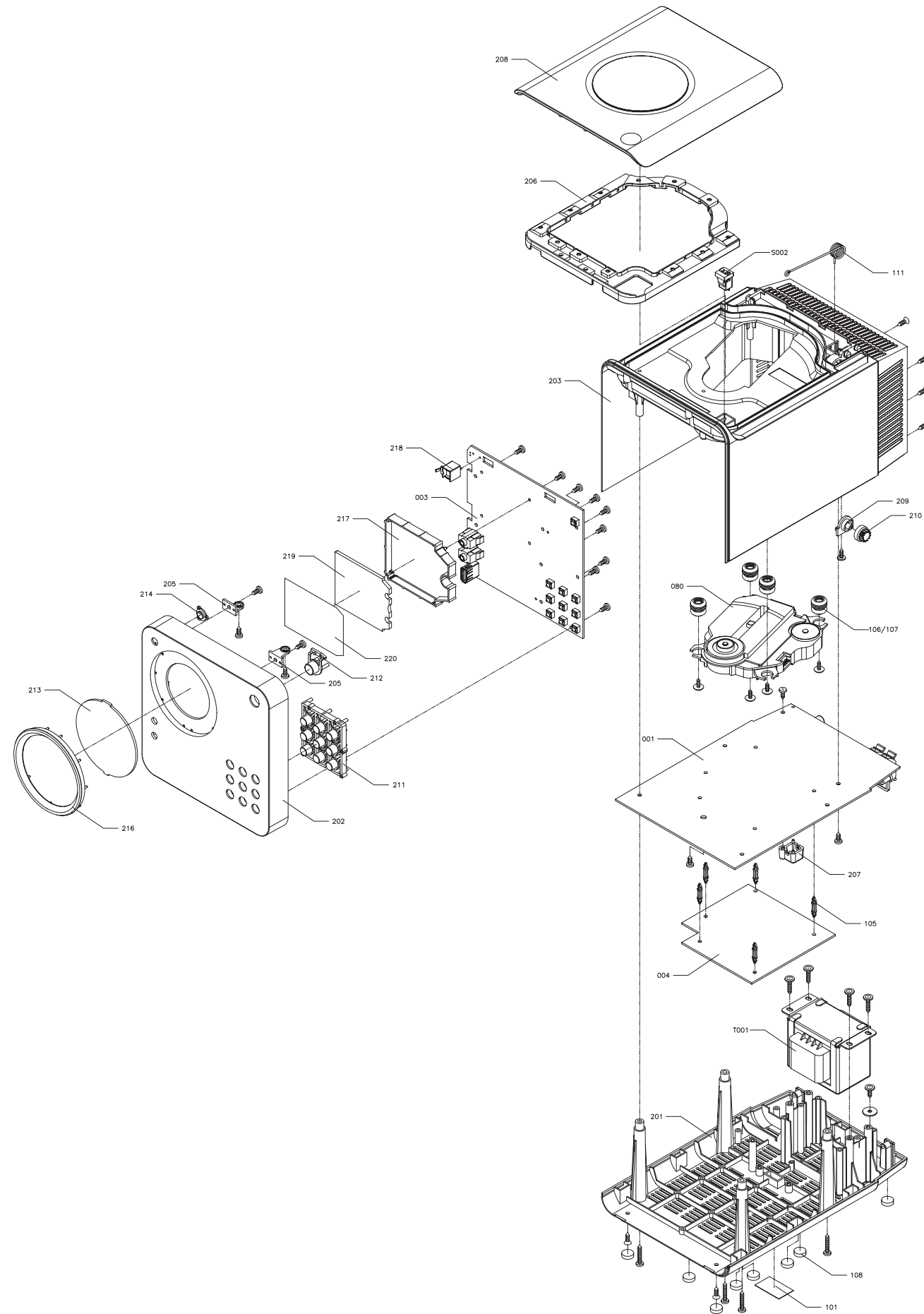
LAYOUT DIAGRAM - FRONT BOARD  
TOP SIDE



# LAYOUT DIAGRAM - FRONT BOARD BOTTOM SIDE



# SET EXPLODED VIEW DIAGRAM



**MECHANICAL PARTSLIST**

0001	996510029023	PCBA-MAIN (only for -/98)	
0001N	996510041642	PCBA-MAIN (arfter LM1C1042011949 ) (only for -/98)	
0002	996510029024	PCBA-TUNER	
0003	996510030191	PCBA-FRONT (only for -/98)	
0004	996510040184	PCBA-DVD	
0080	996510012090	DVD MECHANISM (SONY)	
0111	994000005401	CD DOOR SPRING	
0201	996510029028	BOTTOM CABINET (only for -/51)	
0201	996510029411	BOTTOM CABINET (only for -/98)	
0202	996510029072	FRONT PANEL	
0203	996510029029	BACK CABINET	
0205	996510029071	PANEL FIXER	
0206	996510029019	DUST RIBS	
0207	996500039790	FM PIG TAIL HOUSING	
0208	996510029014	CD DOOR	
0209	996510000864	CD GEAR BRACKET	
0210	996510000865	CD GEAR BLK	
0211	996510029073	PANEL BUTTONS	
0212	996510029021	POWER BUTTONS	
0213	996510029022	DISPLAY LENS	
0214	996500039338	IR LENS(WHITE)	
0216	996510029026	TRIM RING	
J003	996510012092	24P FFC 0.5mm L=140mm	
J002	996510029287	AC SOCKET R-201A(B00) BLACK	
J004	996510029017	17P FFC. 1mm L=120mm	
J007	▲ 996510029034	AC CORD VDE APP 2M (only for -/51)	
J007	994000003633	AC CORD SET/10A 1.83M VDE APP (only for -/98)	
S001	994000004376	SWITCH SL14-22AH-5AN	
S002	994000002354	CD DOOR SWITCH DLS-02-W-1	
T001	▲ 996510029015	TRANSFORMER EI57 230V (only for -/51)	
T001	996510029408	TRANSFORMER EI57 127/240V (only for -/98)	
0001N	996510041643	PCBA-MAIN (after LM1D1042017596 ) (only for /51)	

**ACCESSORIES**

0005	996510029409	SPK BOX (SINGLE L/R) (only for -/98)	
0005	996510029035	SPK BOX (SINGLE L/R) (only for -/51)	
0006	996510029031	REMOTE CONTROL	
J009	996510020831	RCA PLUG CORD 3P L=1.5M	
J010	996510002089	CONN. CORD 3.5 ST/PLUGx2 500mm	

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



**ELECTRICAL PARTSLIST****MAIN BOARD ASSEMBLY**

C908	996510024798	E.CAP 3300UF 25V +-20% 85C
C999	996510024798	E.CAP 3300UF 25V +-20% 85C
F901	⚠ 996510029016	AXIAL FUSE 4x10mm F3.5A/250V (only for -/51)
F901	⚠ 994000000586	GLASS FUSE W/LEAD 3.15A/250V (only for -/98)
F902	⚠ 996510029013	AXIAL FUSE 4x10mm F1A/250V (only for -/51)
F902	⚠ 996510029405	AXIAL FUSE 1A 250V 3.9X11mm (only for -/98)
JK901	996510029018	SPK JACK CJ4P048064440
JK902	996510029012	D-S TERMINAL DS-15
JK903	996510012086	RCA JACK 3P
Q912	994000004145	TRANSISTORS B772Y (160-320)
U302	994000001201	IC NJM4556AM
U901	996510000882	IC TFA9842BJ
U906	996510003984	IC CYT78L05 (TO-92)
U907	996510014303	IC UE2314 (only for -/51)
U907	996500039806	IC ET2314 (SOP28) (only for -/98)
X301	996500042441	X'TAL 32.768KHZ -20PPM

**FRONT BOARD ASSEMBLY**

D403	994000001965	LED LAMP 3MM (RED)
D415	994000005385	LED LAMP (WHITE)
D416	994000005385	LED LAMP (WHITE)
IC402	996510020822	IC AT24C02BN
IC403	994000002839	IC LM1117S-3.3
IC406	996510029027	IC GY680 LQFP44-1010 (OTP)
JK401	996510001316	USB SOCKET 4P
JK402	994000001244	V/PHONE JACK 3.5MM
JK403	994000001244	V/PHONE JACK 3.5MM
LCD1	996510029074	LCD DISPLAY SDM8A5788A-HPTNN
P401	994000004367	OPTIC SENSER FM-6038TM2-5AN
S401	996500042444	TACT SWITCH 6x6mm 4.3mm
S402	996500042444	TACT SWITCH 6x6mm 4.3mm
S403	996500042444	TACT SWITCH 6x6mm 4.3mm
S404	996500042444	TACT SWITCH 6x6mm 4.3mm
S405	996500042444	TACT SWITCH 6x6mm 4.3mm
S406	996500042444	TACT SWITCH 6x6mm 4.3mm
S407	996500042444	TACT SWITCH 6x6mm 4.3mm
S408	996500042444	TACT SWITCH 6x6mm 4.3mm
S409	996500042444	TACT SWITCH 6x6mm 4.3mm
S410	996500042444	TACT SWITCH 6x6mm 4.3mm
U1	996510020783	IC ET8862Q
X401	996510012083	CRYSTAL 32.768KHZ
X402	994000004616	CRYSTAL 4.500MHZ

**ELECTRICAL PARTSLIST****DVD BOARD ASSEMBLY (only for -98)**

Q12	994000004145	TRANSISTORS B772Y (160-320)
Q14	994000004145	TRANSISTORS B772Y (160-320)
U10	996510026062	IC SI638165TS/VE-6G SDRAM4mx16
U100	996510009443	IC (MPS) MP1583 (SOP-8)
U2	996500039809	IC YD4558
U200	996510026072	IC UTC7812 (TO-220) (1.5A)
U3	996500039809	IC YD4558
U4	996510026057	IC D5888S (HSOP28)
U6	996510026054	ICSPHE8202TS-HL11M(LQFP128PIN)
U8	996510026053	IC EN25T80 (FLASH) (OTP SOP-8)
X1	996510009448	CRYSTAL27MHzHC49/US30PF+-20PPM

**TUNER BOARD ASSEMBLY (only for -98)**

IC301	996510018861	IC SI4702
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**Note:** Only these parts mentioned in the list are normal service parts.