

Service  
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# Service Manual



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3141 785 33590

Version 1.0



## TECHNICAL SPECIFICATION

Tuner	
TuningRange	FM: 87.5-108MHz; MW: 531-1602kHz
Tuninggrid	50KHz
Sensitivity	
-Mono, 26dB S/N Ratio	<22 dBf
-Stereo46dB S/N Ratio	>43 dBf
SearchSelectivity	>28dBf
TotalHarmonicDistortion	<3%
SignaltoNoiseRatio	>55dB

Tape deck	
Frequency response	
-Normal tape (typeI)	125-8000 Hz (8dB)
Signal-to-noise ratio	
-Normal tape (typeI)	40 dBA
Wow and Jitter	<0.4% JIS

Speakers	
SpeakerImpedance	4ohm
SpeakerDriver	3.5" woofer+0.8" Tweeter
Sensitivity	>82dB/m/W

General information-Specs	
AC power	220-230V, 50Hz
OperationPower Consumption	20W
StandbyPower Consumption	<4W
Eco StandbyPower Consumption	<2W
Dimensions	
-MainUnit (W x H x D)	209 x 231 x 147mm
-SpeakerBox (W x H x D)	146 x 228 x 160mm
Weight	
-With Packing	6.6kg
-MainUnit	1.95kg
-SpeakerBox	2 x 1.2kg

Amplifier	
Rated Output Power	2X5W RMS
Frequency Response	60-16kHz, ±3dB
Signal to Noise Ratio	>65dB
Aux Input	0.5V RMS 20kohm

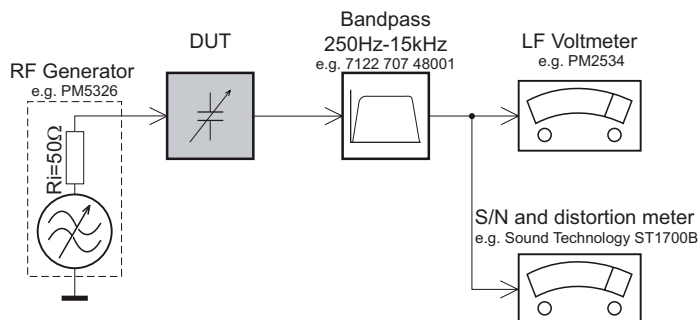
Disc	
Laser Type	Semiconductor
Disc Diameter	12cm/8cm
Support Disc	CD-DA, CD-R, CD-RW, MP3-CD, WMA-CD
Audio DAC	24Bits / 44.1kHz
Total Harmonic Distortion	<1%
Frequency Response	60Hz-16kHz (44.1kHz)
S/N Ratio	>65dBA

## VERSION VARIATION

Type /Versions: Service policy	MCM167									
	/05	/12		/55	/58	/61			/93	/98
Board in used:										
DISPLAY BOARD		C								
MAIN BOARD		C								
CASSETTE BOARD		C								
Type /Versions: Feature difference	MCM167									
Features	/05	/12		/55	/58	/61			/93	/98
RDS & DAB										
VOLTAGE SELECTOR										
ECO STANDBY - DARK		√								
* TIPS : C -- Component Lever Repair. M -- Module Lever Repair √ -- Used										

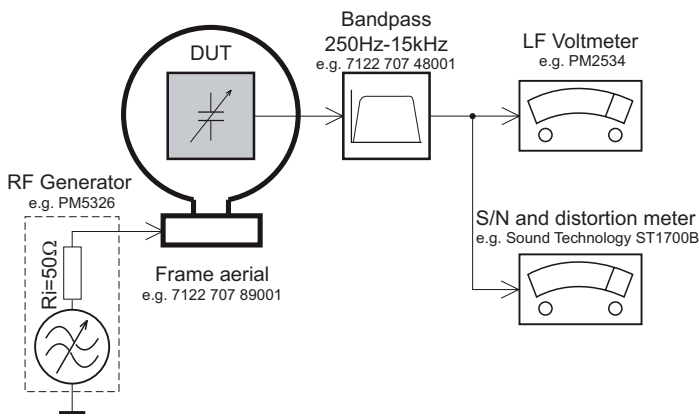
# MEASUREMENT SETUP

## Tuner FM



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

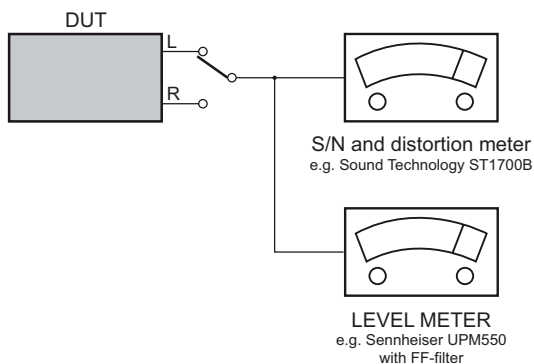
## Tuner AM (MW,LW)



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).

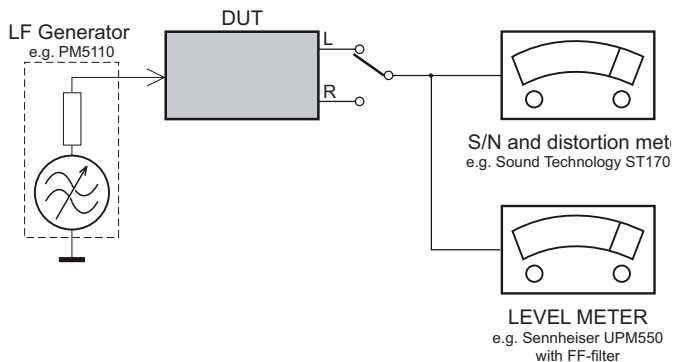
## CD

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".

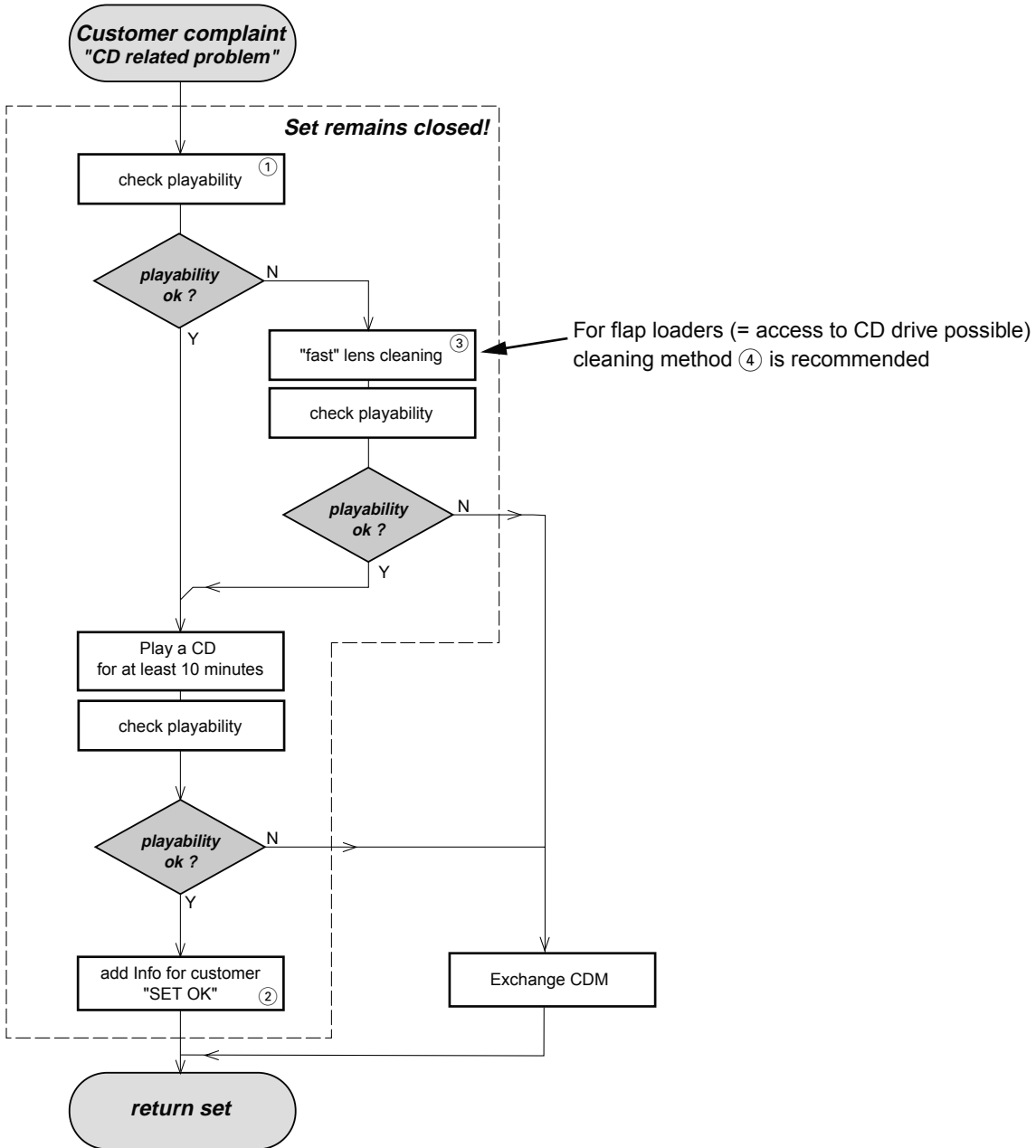
For additional questions please contact your local repair-helpdesk.

## 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 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

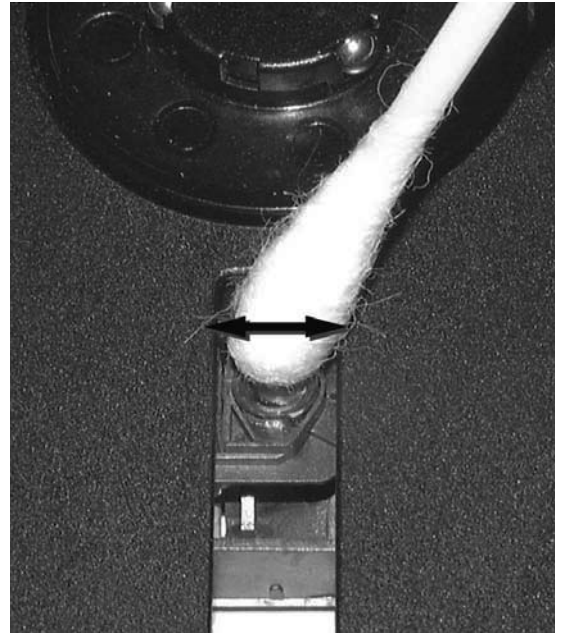
### LIQUID LENS CLEANING

**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.

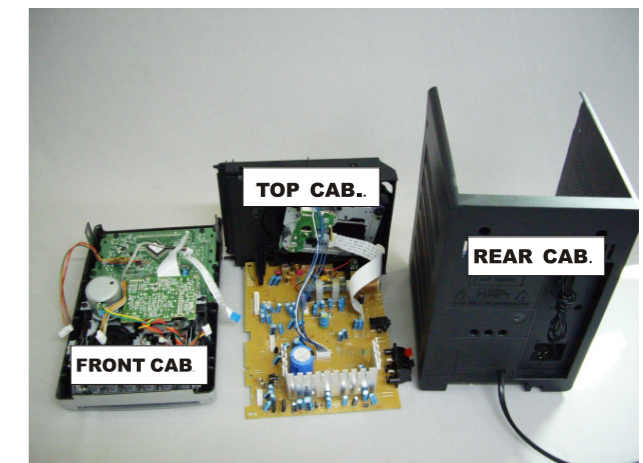
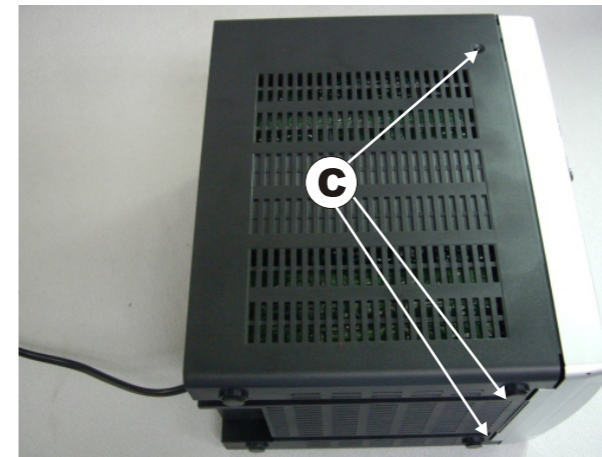
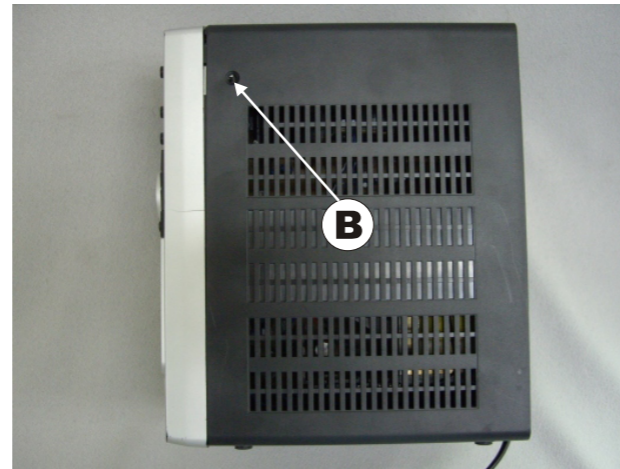
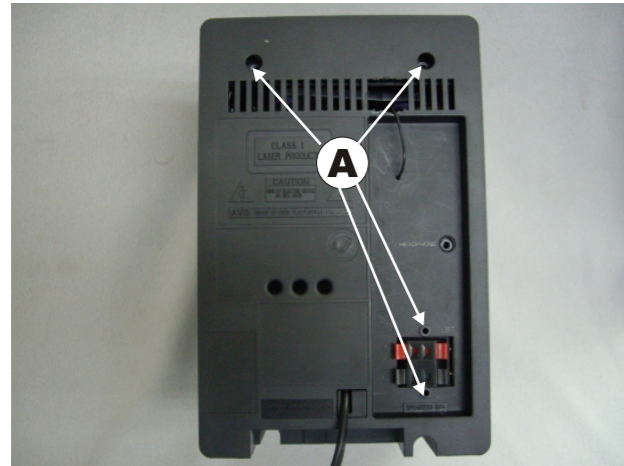


## DISASSEMBLY DIAGRAM VIEW

### Dismantling of the Rear Cabinet

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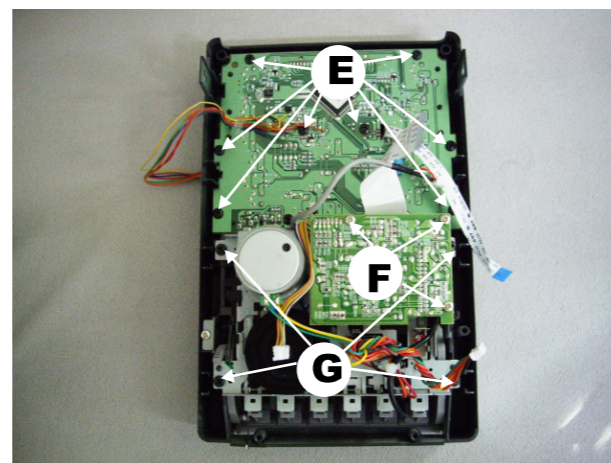
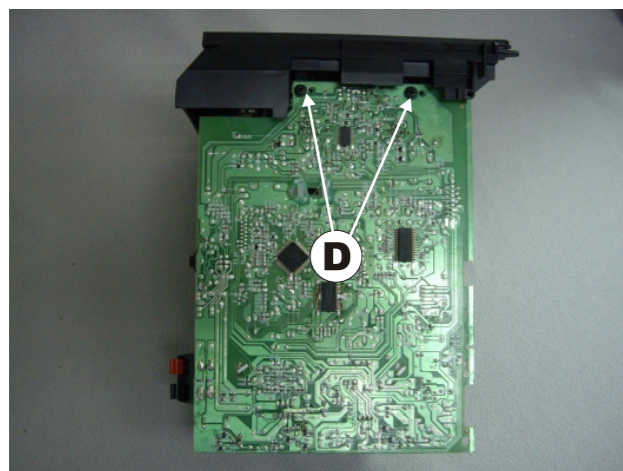
1) Remove 8 screws A&B&C as indicated to loosen the Rear Cabinet.



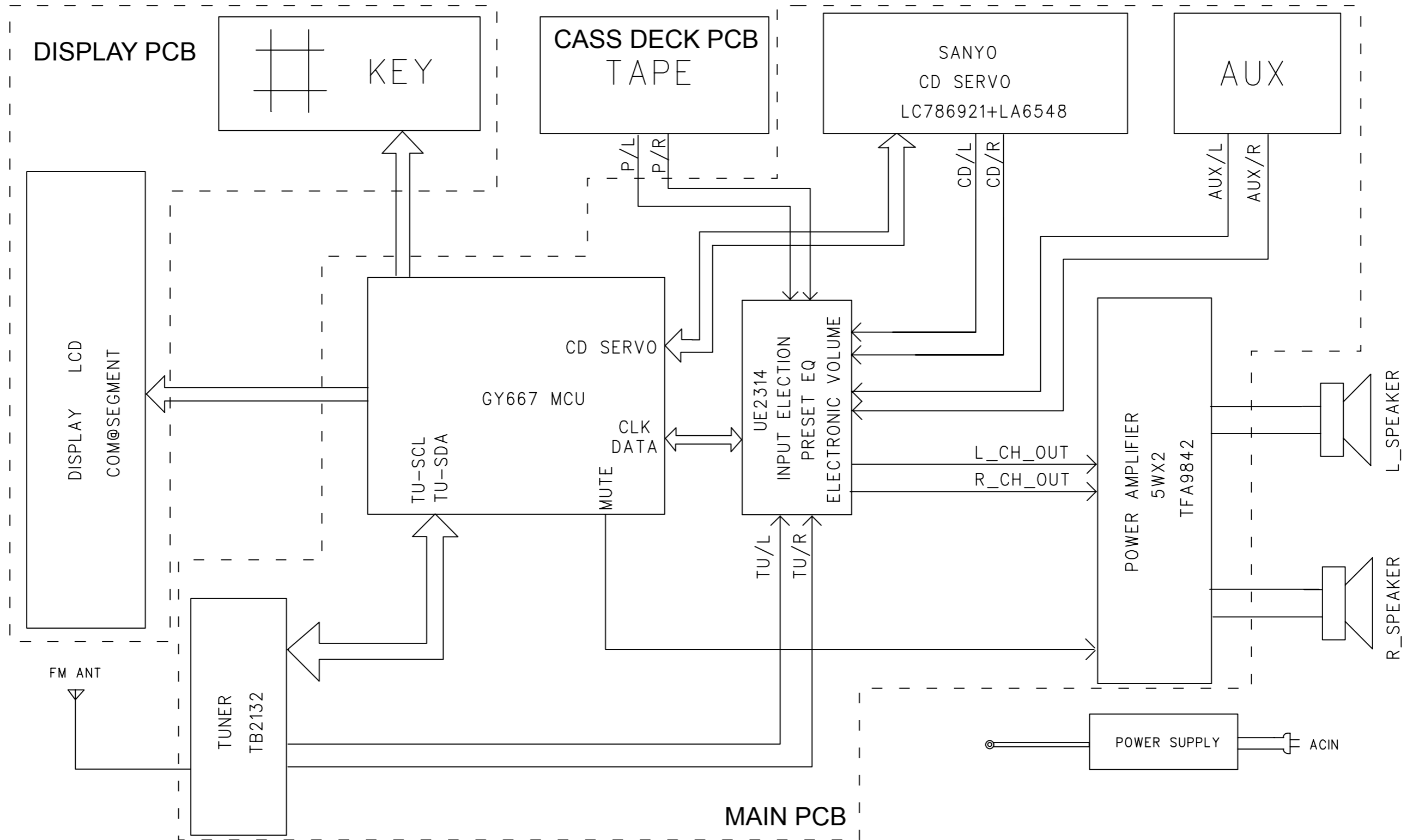
### Dismantling of the PCB Board

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- 1) Remove 2 screws D as indicated to loosen the Main Board.
- 2) Remove 9 screws E as indicated to loosen the Display Board.
- 3) Remove 3 screws F as indicated to loosen the Cass deck Board.
- 4) Remove 4 screws G as indicated to loosen the Cass deck.



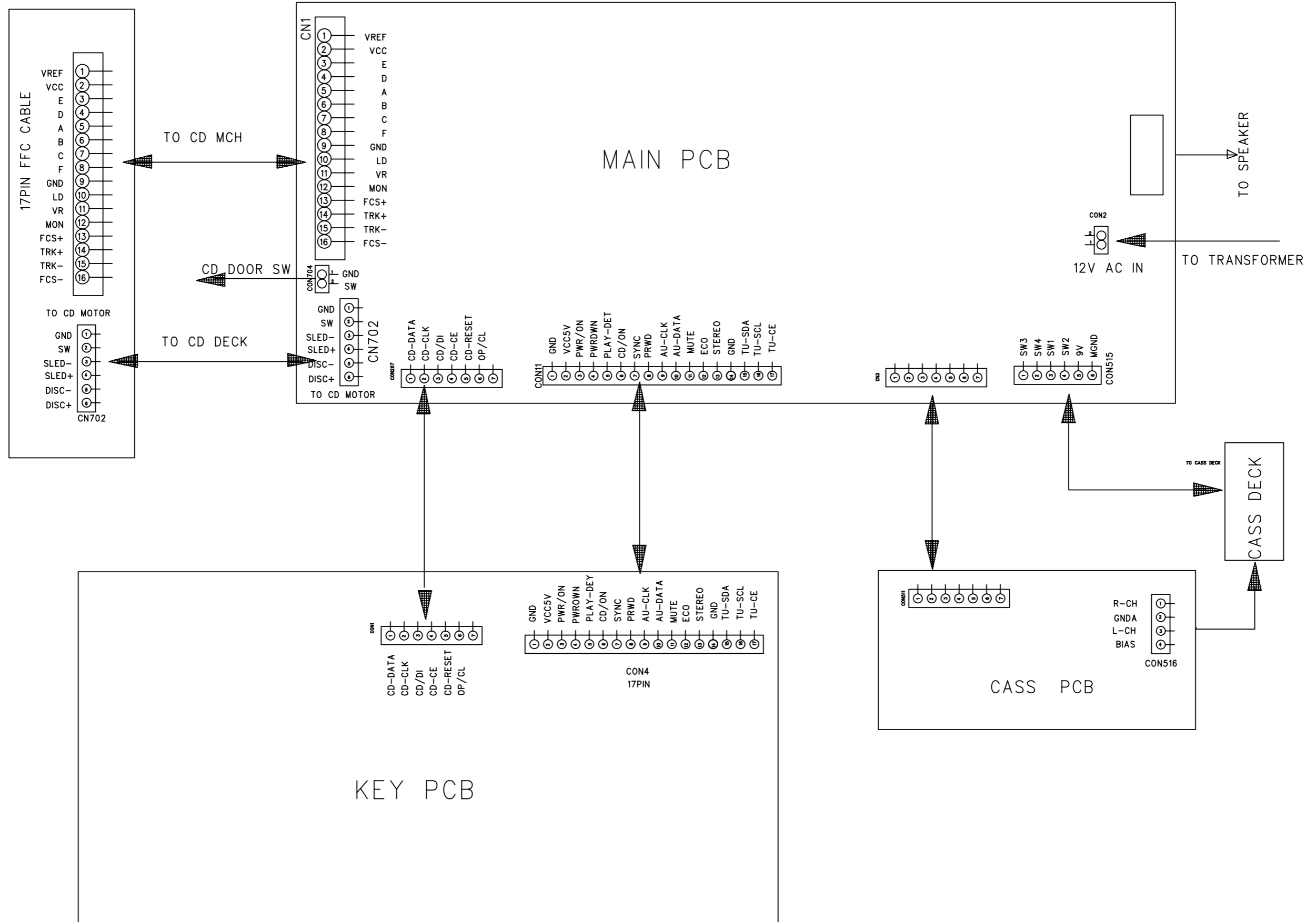
SET BLOCK DIAGRAM





# SET WIRING DIAGRAM

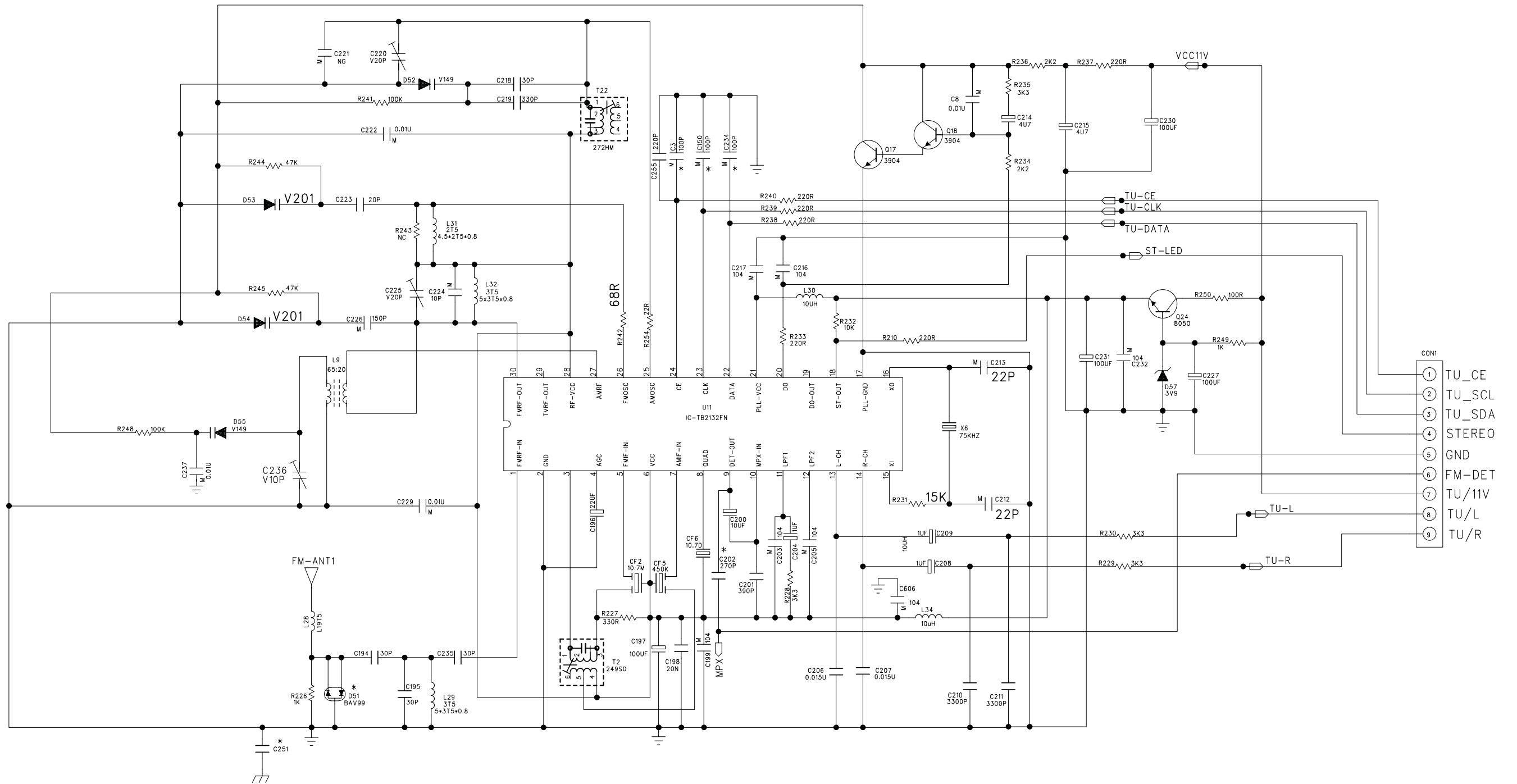
## CD DECK





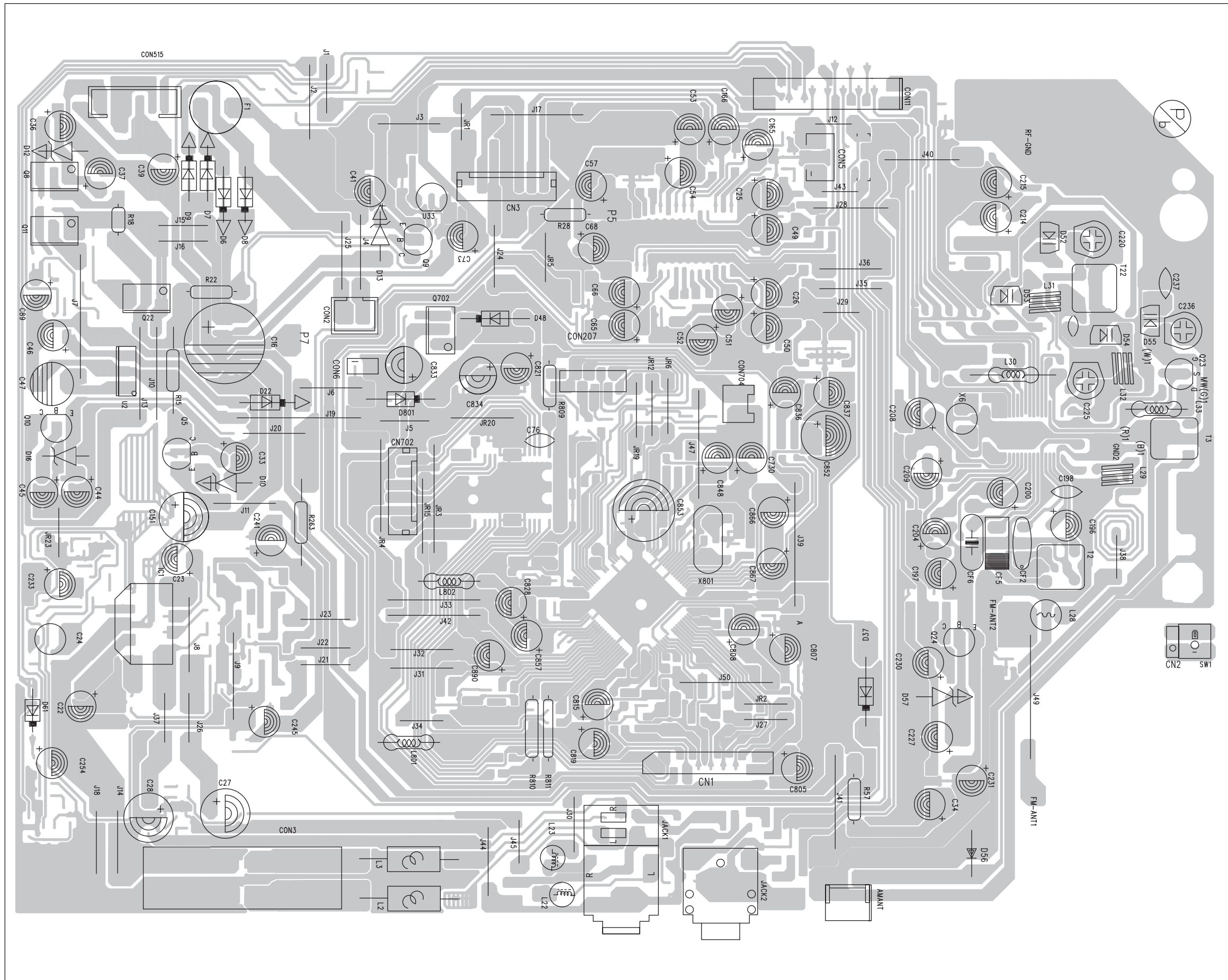


# CIRCUIT DIAGRAM - MAIN BOARD TUNER PART

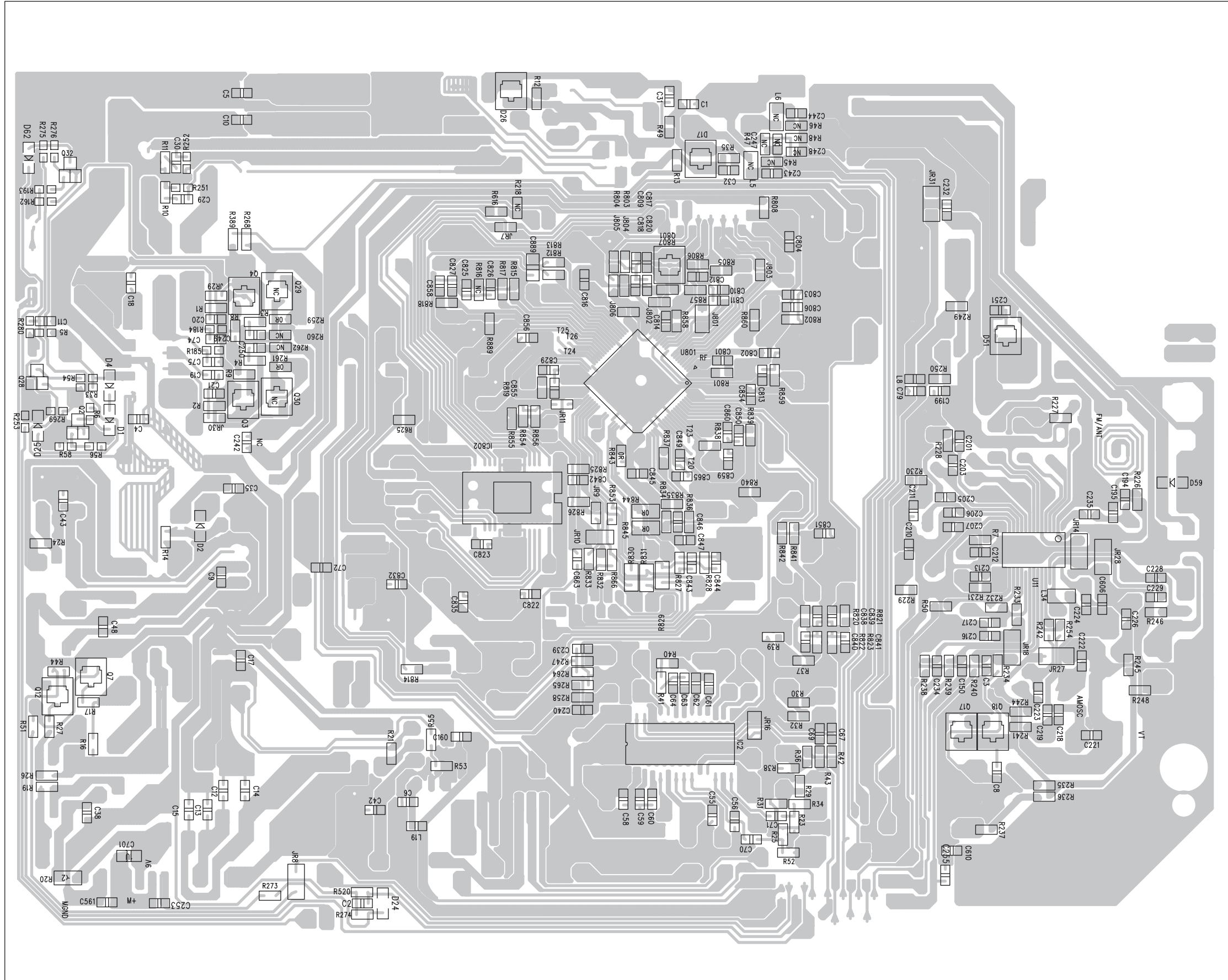


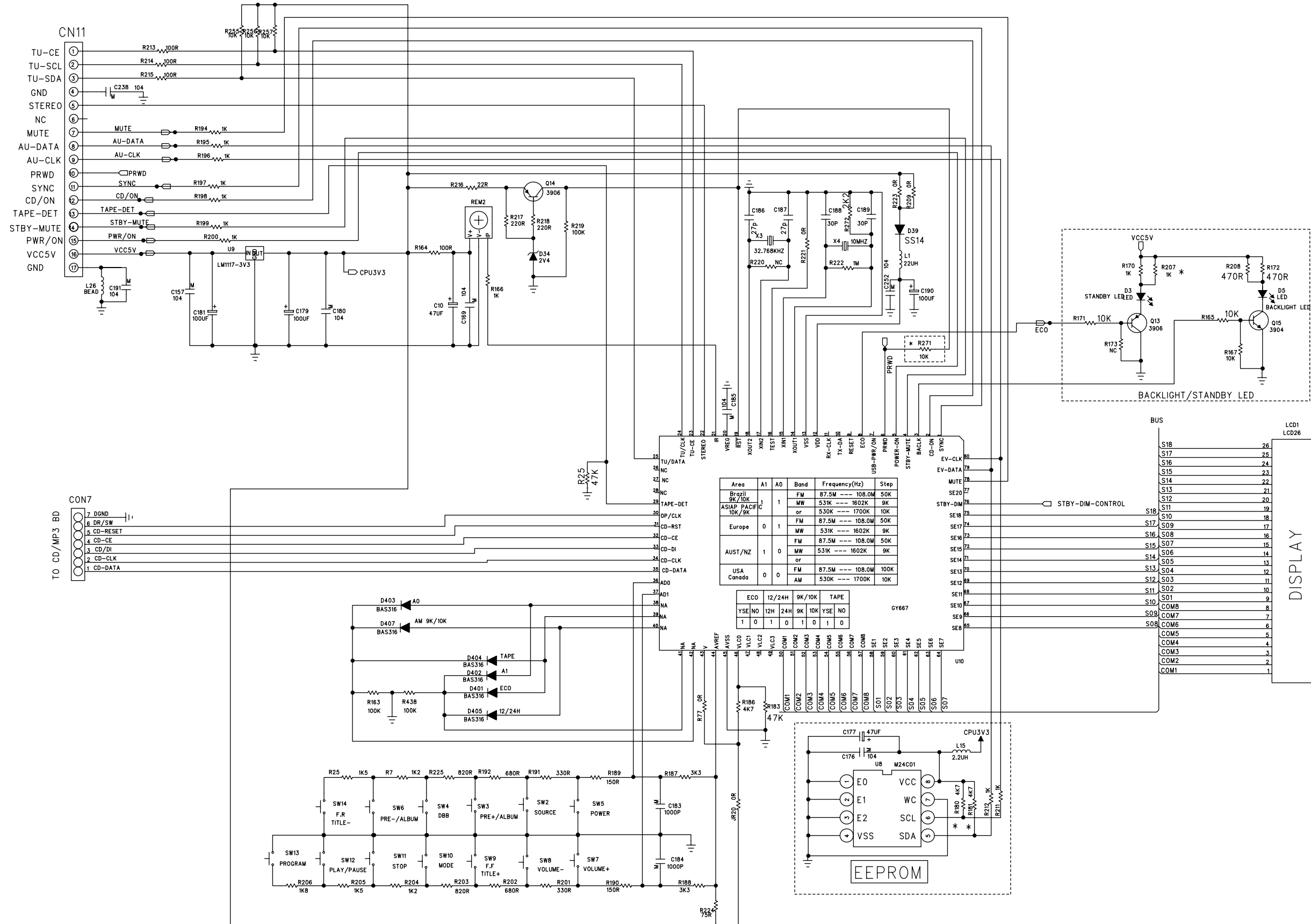
- CON1
- ① TU\_CE
  - ② TU\_SCL
  - ③ TU\_SDA
  - ④ STEREO
  - ⑤ GND
  - ⑥ FM-DET
  - ⑦ TU/11V
  - ⑧ TU/L
  - ⑨ TU/R

LAYOUT DIAGRAM - MAIN BOARD  
TOP SIDE

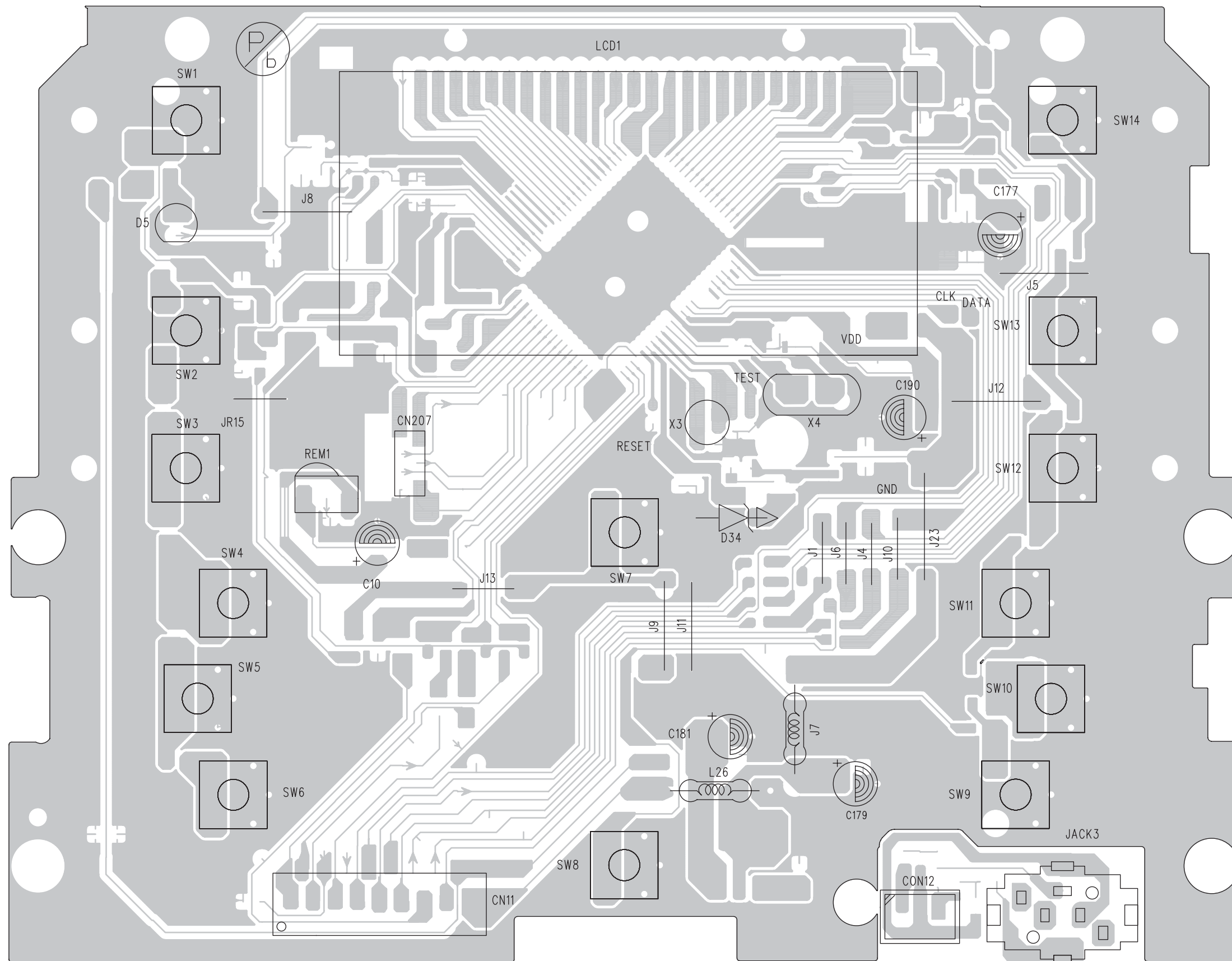


LAYOUT DIAGRAM - MAIN BOARD  
BOTTOM SIDE



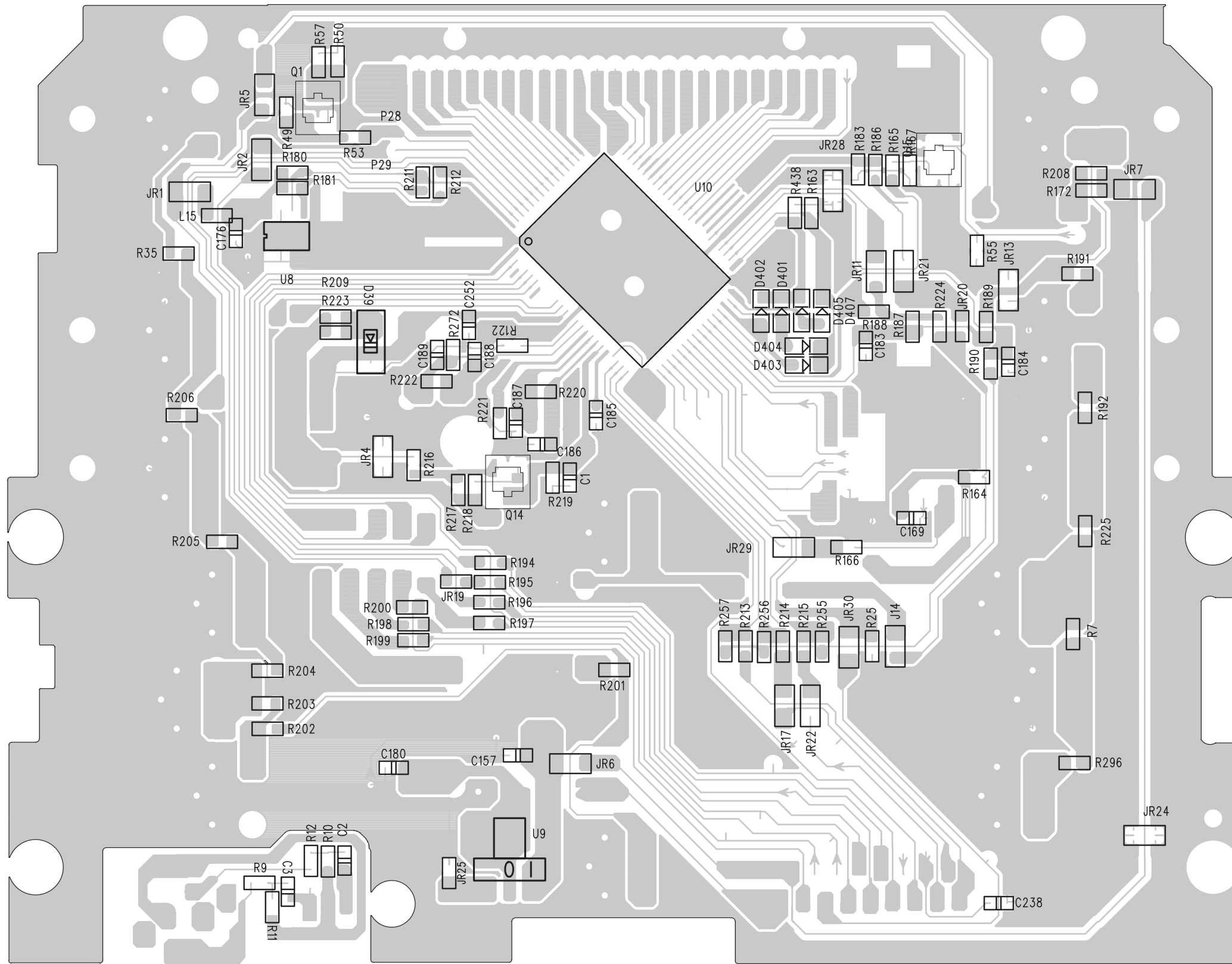


LAYOUT DIAGRAM - DISPLAY BOARD  
TOP SIDE



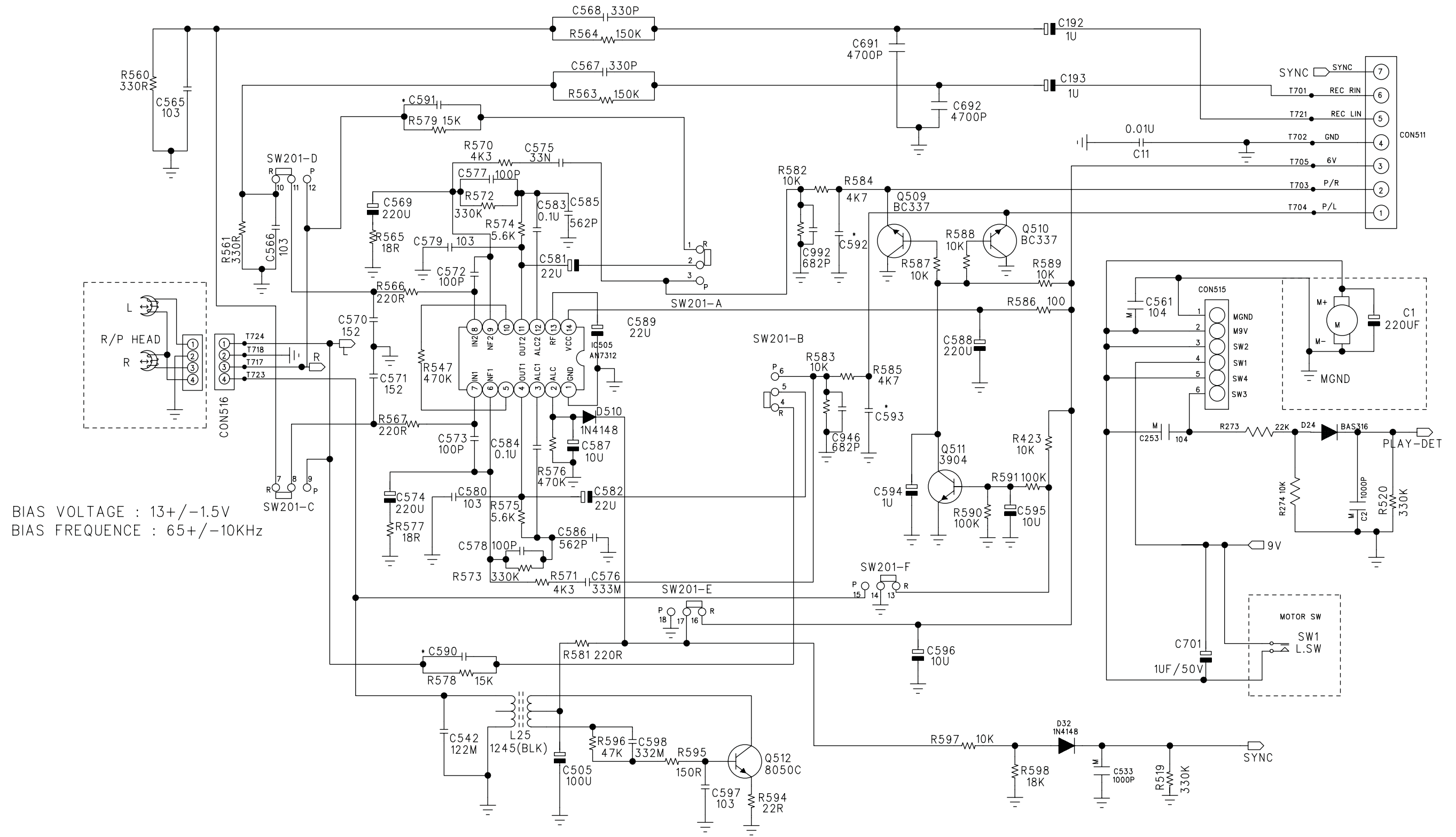


LAYOUT DIAGRAM - DISPLAY BOARD  
BOTTOM SIDE



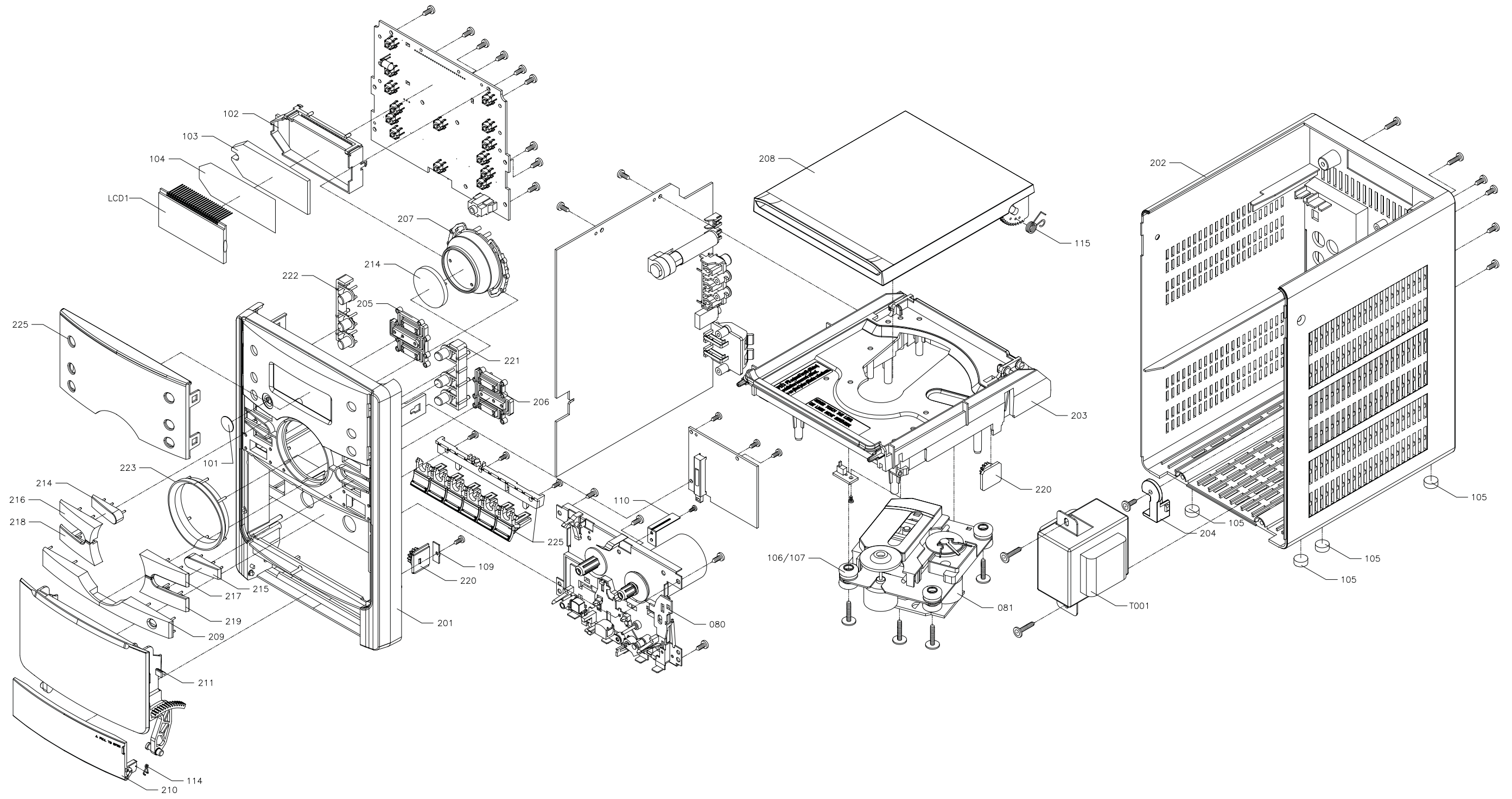
8-1  
**CIRCUIT DIAGRAM - CASS DECK BOARD**

8-1



BIAS VOLTAGE : 13+/-1.5V  
 BIAS FREQUENCY : 65+/-10KHz

# SET EXPLODED VIEW DIAGRAM







**MECHANICAL PARTSLIST**

102	996510019018	LCD BRACKET
103	996510019019	LCD LIGHT GUIDE
080	996510020195	CASS DECK
081	994000005398	CD MECHANISM DA11B3VF
201	996510020196	FRONT CABINET
202	996510020197	REAR CABINET
203	996510020198	CD TRAY
204	996510020199	AC CORD BRACKET
205	996510018975	LEFT KEY BRACKET
206	996510018976	RIGHT KEY BRACKET
207	996510020200	VOL UP-DOWN BRACKET
208	996510020201	CD DOOR
209	996510020202	MP3 LINE DECORATE PLATE
210	996510020203	CASSETTE KEY DOOR
211	996510020204	CASSETTE DOOR
212	996500039787	LASER COVER (FOR SANYO CD)
213	996510020205	PRESET - KEY
214	996510020206	VOL. UP-DOWN KNOB
215	996510020207	PRESET + KEY
216	996510020208	PLAY KEY
217	996510020209	STOP KEY
218	996510020210	REVIEW KEY
219	996510020211	NEXT KEY
220	994000001295	DAMPER GEAR ASS'Y
221	996510020212	SOURCE KEY
223	996510020213	PUSH DECORATE RING
224	996510020214	CASS KEY WITH HOLDER
225	996510020215	MP3 LINE DECORATE PLATE
J002	996510006652	7P FFC 1MM L=150MM (AB)
J003	994000004487	16P FFC 1MM L=170MM
J009	△ 996510000909	AC CORD VDE APP 2M
J010	996510018969	FM ANT L=1.5M
T001	△ 996510018966	TRANSFORMER VDE EI57 230V

**ACCESSORIES**

J011	996510002103	CONN. CORD 3.5 ST/PLUGx2 500mm
RC	996510018965	REMOTE CONTROL
S001	996510040164	SPEAKER BOX

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

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

CON3	996510005450	SPK JACK PT-22V11A
F1	994000000586	GLASS FUSE W/LEAD 3.15A/250V
JACK1	994000004369	PHONE JACK TC38-063-05-0
SW1	994000003093	CD DOOR SWITCH 1P1T DTS-03
X6	996510018961	CRYSTAL 75KHZ 12.5PF
X801	994000004551	CRYSTAL 16.9344MHZ +-20PPM
IC1	996510000882	IC TFA9842BJ
IC2	996510014303	IC UE2314
IC802	994000004622	IC LA6548NH
Q10	996510018960	TRANSISTOR ST8050C
Q11	994000004145	TRANSISTORS B772Y (160-320)
Q12	996510010292	SMD TRANSISTORS MMBT3904
Q17	996510010292	SMD TRANSISTORS MMBT3904
Q18	996510010292	SMD TRANSISTORS MMBT3904
Q2	996510010292	SMD TRANSISTORS MMBT3904
Q22	994000004145	TRANSISTORS B772Y (160-320)
Q24	996510018960	TRANSISTOR ST8050C
Q28	996510010292	SMD TRANSISTORS MMBT3904
Q3	996510010292	SMD TRANSISTORS MMBT3904
Q32	996510010292	SMD TRANSISTORS MMBT3904
Q4	996510010292	SMD TRANSISTORS MMBT3904
Q5	996510018960	TRANSISTOR ST8050C
Q7	996510010292	SMD TRANSISTORS MMBT3904
Q702	994000004145	TRANSISTORS B772Y (160-320)
Q8	996510020216	TRANSISTORS D882F
Q9	996510018960	TRANSISTOR ST8050C
U11	996510000881	IC TB2132FNG
U2	996510018852	IC UTC7808
U33	996510000880	IC LM78L08
U801	996510006679	IC (SANYO) LC786921W-UPHI-E

**ELECTRICAL PARTSLIST****FRONT BOARD ASSEMBLY**

D5	996500042438	LED LAMP 2x5x7mm (WHITE)
JACK3	994000001244	V/PHONE JACK 3.5MM
LCD1	996510019017	LCD DISPLAY
Q1	996510010292	SMD TRANSISTORS MMBT3904
Q14	994000003937	SMD TRANSISTORS PMBT3906
Q15	996510010292	SMD TRANSISTORS MMBT3904
REM1	994000004367	OPTIC SENSER FM-6038TM2-5AN
SW1	996500042444	TACT SWITCH 6x6mm 4.3mm
SW10	996500042444	TACT SWITCH 6x6mm 4.3mm
SW11	996500042444	TACT SWITCH 6x6mm 4.3mm
SW12	996500042444	TACT SWITCH 6x6mm 4.3mm
SW13	996500042444	TACT SWITCH 6x6mm 4.3mm
SW14	996500042444	TACT SWITCH 6x6mm 4.3mm
SW2	996500042444	TACT SWITCH 6x6mm 4.3mm
SW3	996500042444	TACT SWITCH 6x6mm 4.3mm
SW4	996500042444	TACT SWITCH 6x6mm 4.3mm
SW5	996500042444	TACT SWITCH 6x6mm 4.3mm
SW6	996500042444	TACT SWITCH 6x6mm 4.3mm
SW7	996500042444	TACT SWITCH 6x6mm 4.3mm
SW8	996500042444	TACT SWITCH 6x6mm 4.3mm
SW9	996500042444	TACT SWITCH 6x6mm 4.3mm
U10	996510020193	MCU IC GY667
U8	996510020192	IC BR24C02
U9	994000002839	IC LM1117S-3.3
X3	994000004615	CRYSTAL 32.768KHZ 12.5PF
X4	996510020194	CRYSTAL 8.0MHZ

**CASSETTE BOARD ASSEMBLY**

IC505	994000004533	IC YD7312
L25	994000004538	I.F.T 10148BK7
Q509	996510010337	TRANSISTOR BC337-40
Q510	996510010337	TRANSISTOR BC337-40
Q511	996510010292	SMD TRANSISTORS MMBT3904
Q512	996510018960	TRANSISTOR ST8050C
SW201	994000003656	PUSH SWITCH PS-102D13-NS

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