MP3 Mini Hi-Fi System

FWM592

-/55/BK

Service
Service
Service

Service Manual

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CLASS 1
LASER PRODUCT

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3141 785 32780

Version 1.0

PHILIPS

TECHNICAL SPECIFICATION

AMPLIFIER

RMS output power
- 1KHz (Low channel-both channels driven) ..... 100 W per channel
- 10KHz (High channel-both channels driven) .... 100 W per channel
- Total output power ..... 400 W

Signal-to-noise ratio ..... 67 dB A (IEC)
Frequency response ..... 60 – 16000 Hz
Input sensitivity
- AUX 1500mV/2000mV

Output
- Speakers ..... 3 Ω

(1) (3 Ω, 1 kHz, 10% THD)

CD/MP3-CD PLAYER

Number of programmable tracks 40
Frequency response ..... 60 – 16000 Hz -3dB
Signal-to-noise ratio ..... 75 dB A
Channel separation ..... 50 dB (1 kHz)
Total harmonic distortion ..... < 1.5%
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

TUNER

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

USB PLAYER

USB ..... 12Mb/s, V1.1 ..... support MP3 and WMA files
Number of albums/folders ..... maximum 99
Number of tracks/titles ..... maximum 999

SPEAKERS

System 2-way; double port bass reflex
Impedance ..... 3 Ω
Woofer ..... 6.5''
Tweeter ..... 1.75''
Dimensions (w x h x d) . 249 x 344 x 271 (mm)
Weight ..... 3.5 kg each

GENERAL

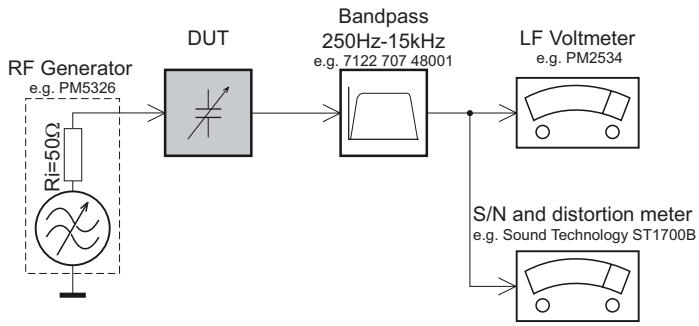
Material/finish ..... Polystyrene/Metal
AC Power ..... 110 – 127 / 220 – 240 V; ..... 50/60 Hz, Switchable
Power Consumption
- Active ..... 90 W
- Standby ..... ≤ 20 W

Dimensions (w x h x d) .. 265 x 345 x 382 (mm)
Weight (without speakers) ..... 8.415 kg

Specifications and external appearance are subject to change without notice.

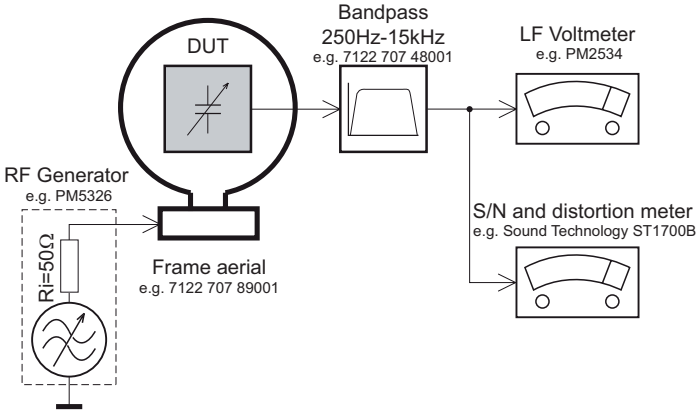
MEASUREMENT SETUP

Tuner FM



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

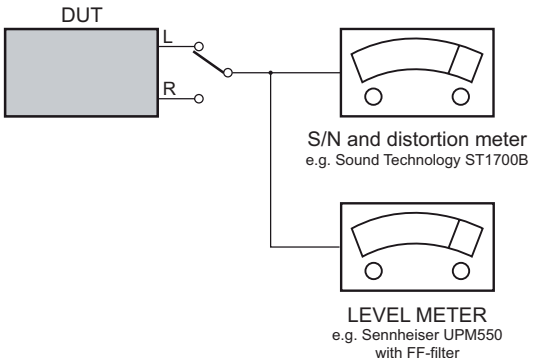
Tuner AM (MW,LW)



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).

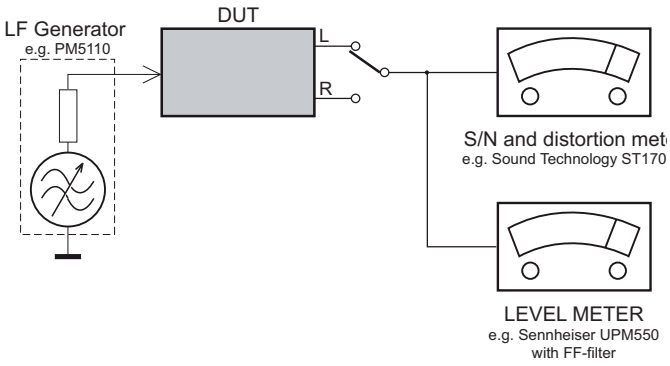
CD

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



Recorder

Use Universal Test Cassette **CrO2** 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** 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

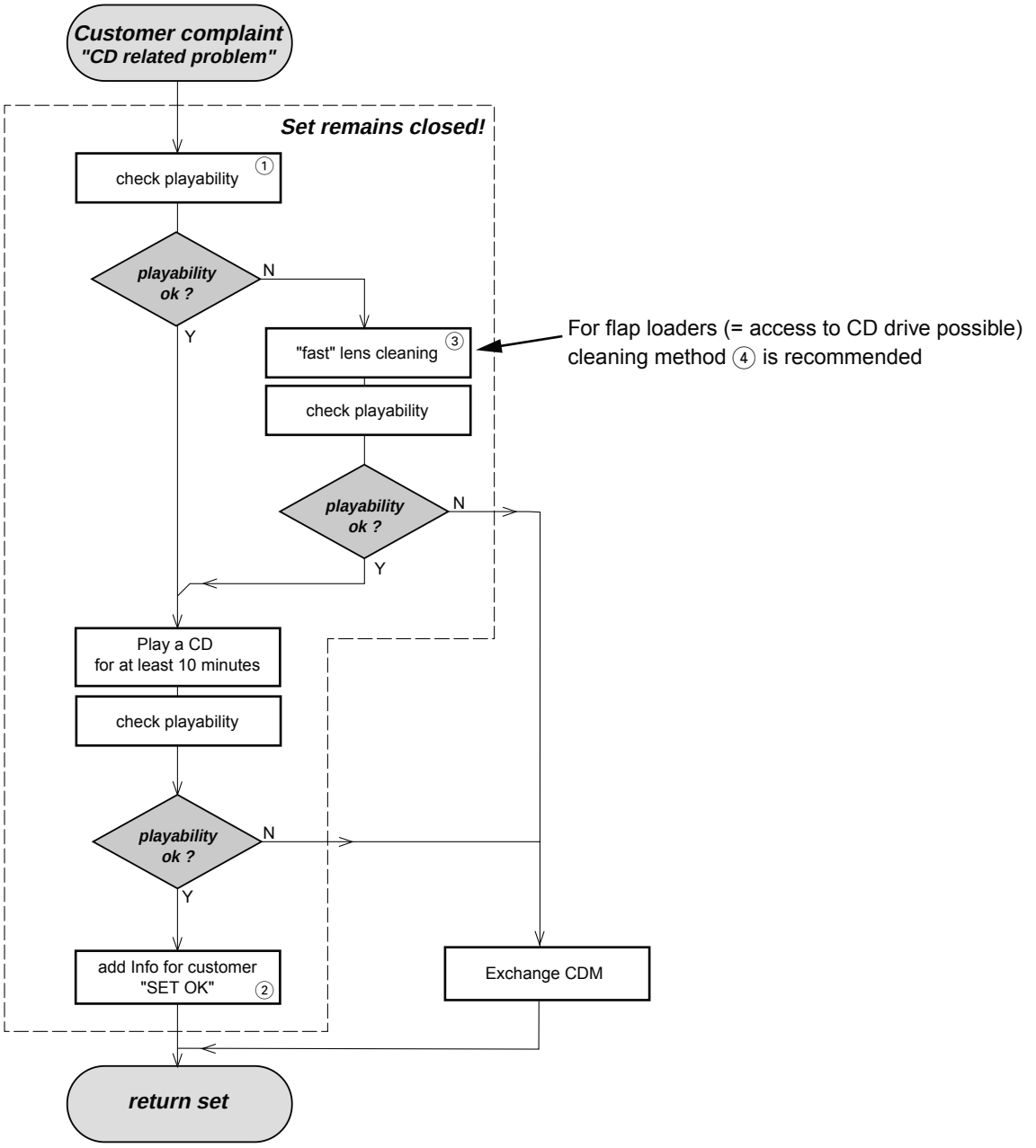
Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- 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 ≥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 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 ≥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

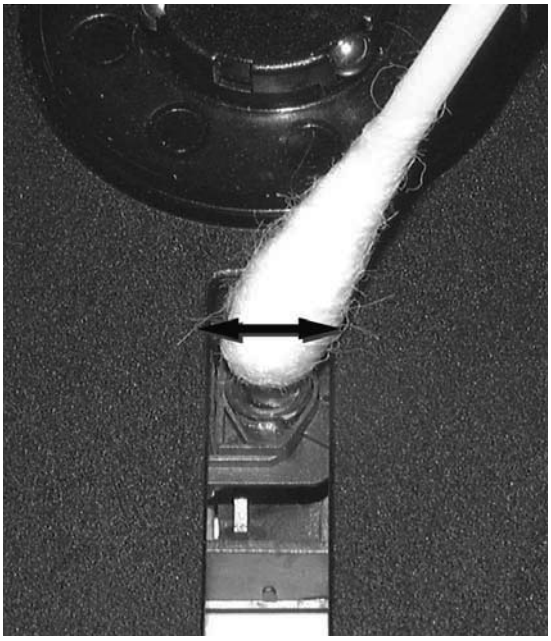
LIQUID LENS CLEANING

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.

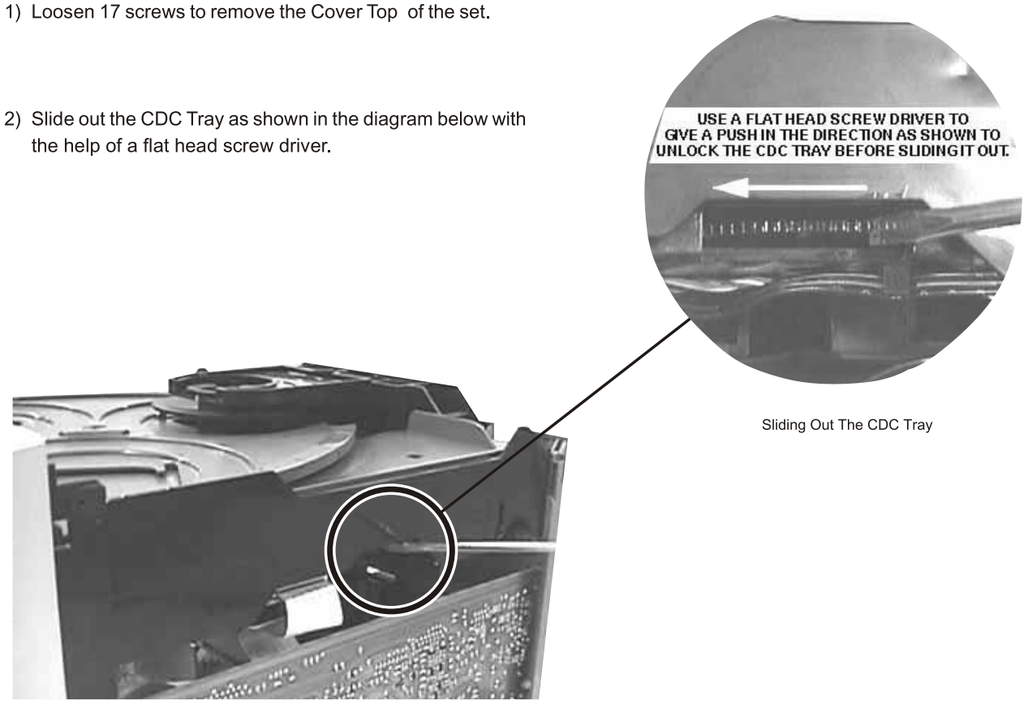


DISASSEMBLY DIAGRAM VIEW
PART 1

Dismantling of the CDC Module and Front Panel

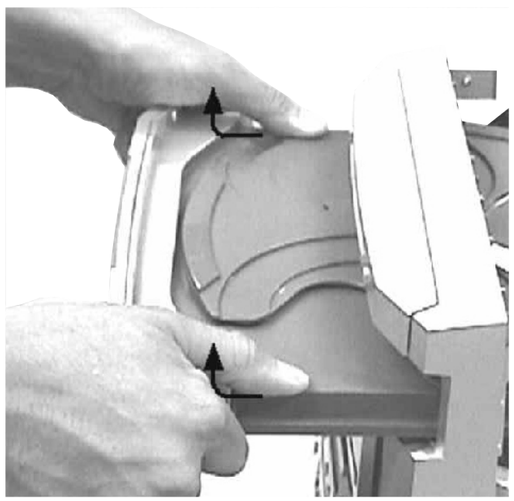
1) Loosen 17 screws to remove the Cover Top of the set.

2) Slide out the CDC Tray as shown in the diagram below with the help of a flat head screw driver.



Sliding Out The CDC Tray

3) Remove the Cover Tray CDC as indicated.

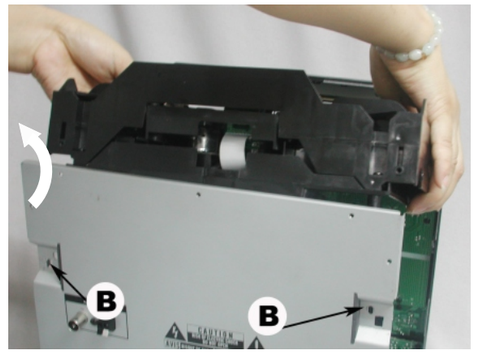


Remove Cover Tray CDC

3 - 1

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

Front View CDC



Remove CDC Module

3 - 2

DISASSEMBLY DIAGRAM VIEW
PART 2

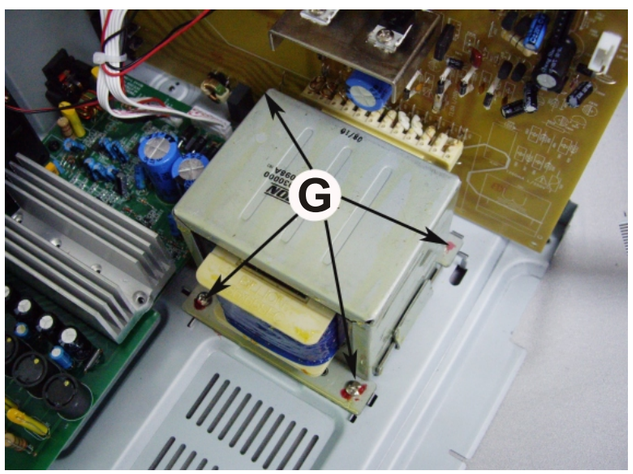
Dismantling of Rear Portion

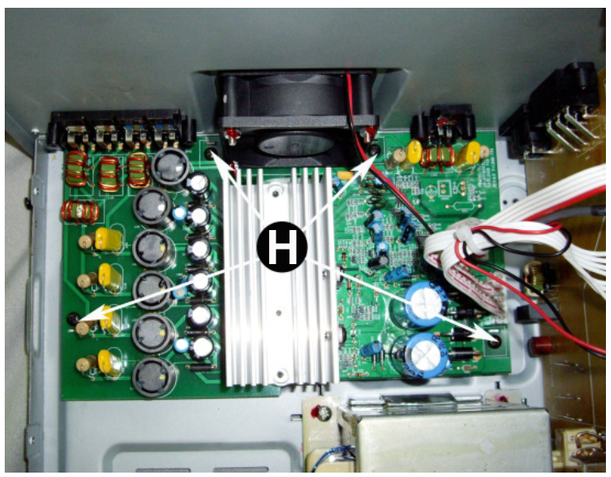
1)Remove 1 screw C as indicated to loosen the Tuner Module

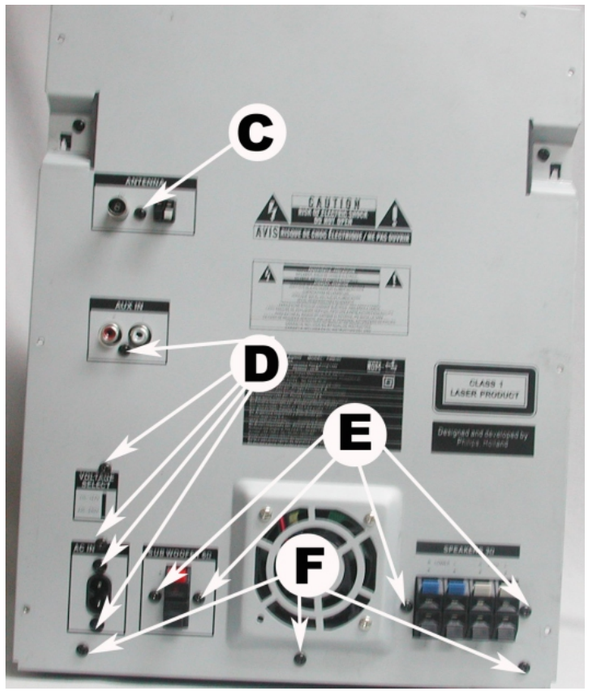
2)Remove 9 screws D&G as indicated to loosen the Main Board.

3)Remove 8 screws E&H as indicated to loosen the AMP Board.

4)Remove 3 screws F as indicated to loosen the Bottom Cabinet.





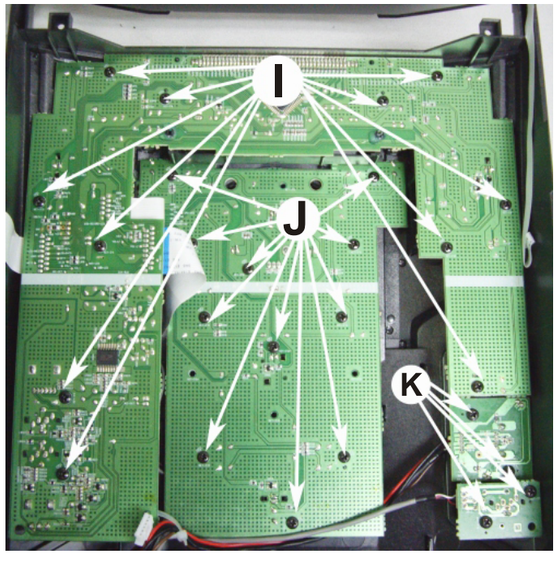


Dismantling of the PCB Board

1) Remove 11 screws **I** as indicated to loosen the KEY1 Board.

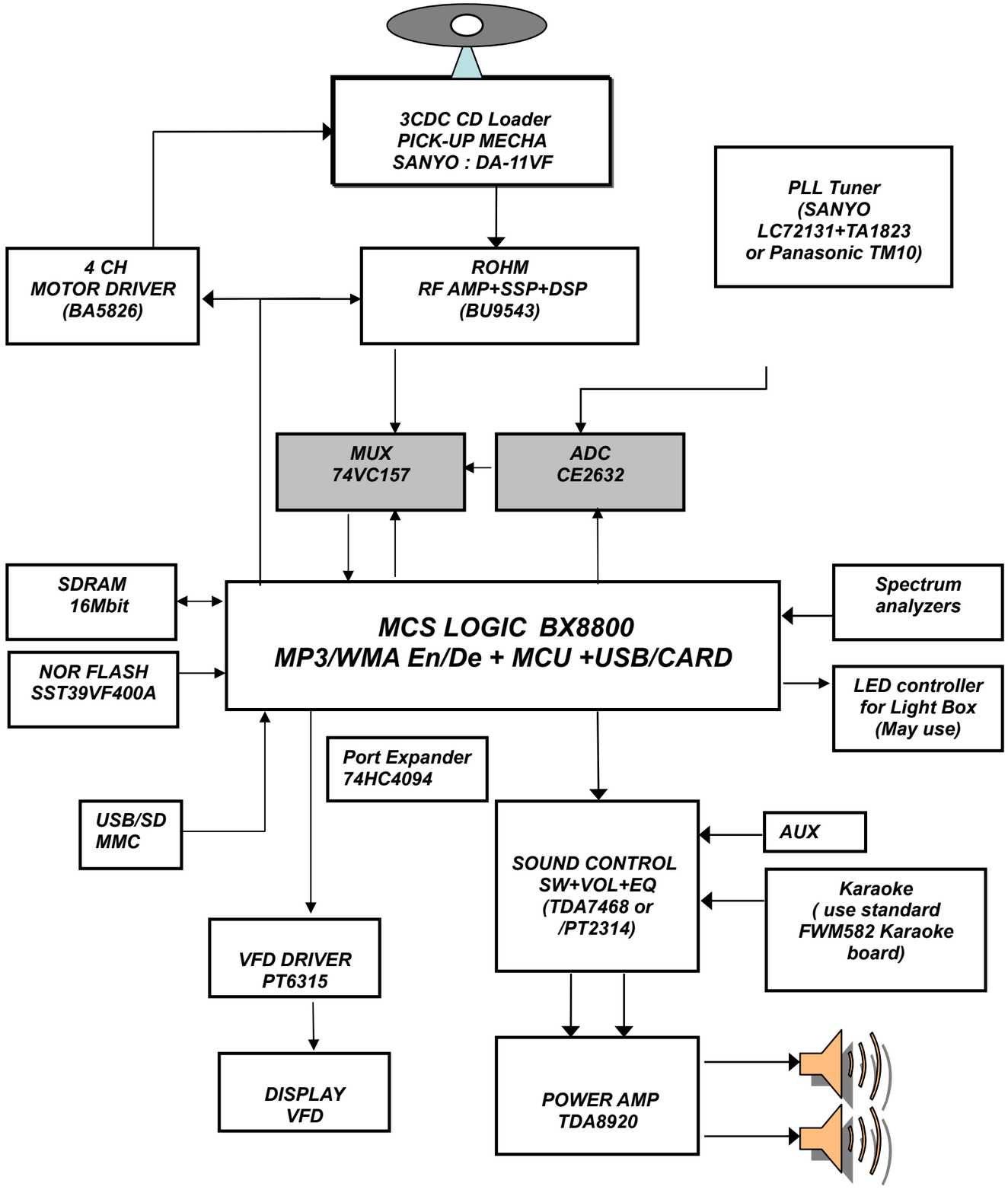
2) Remove 11 screws J as indicated to loosen the KEY2 Board.

3) Remove 4 screws K as indicated to loosen the USB&LINE IN Board.



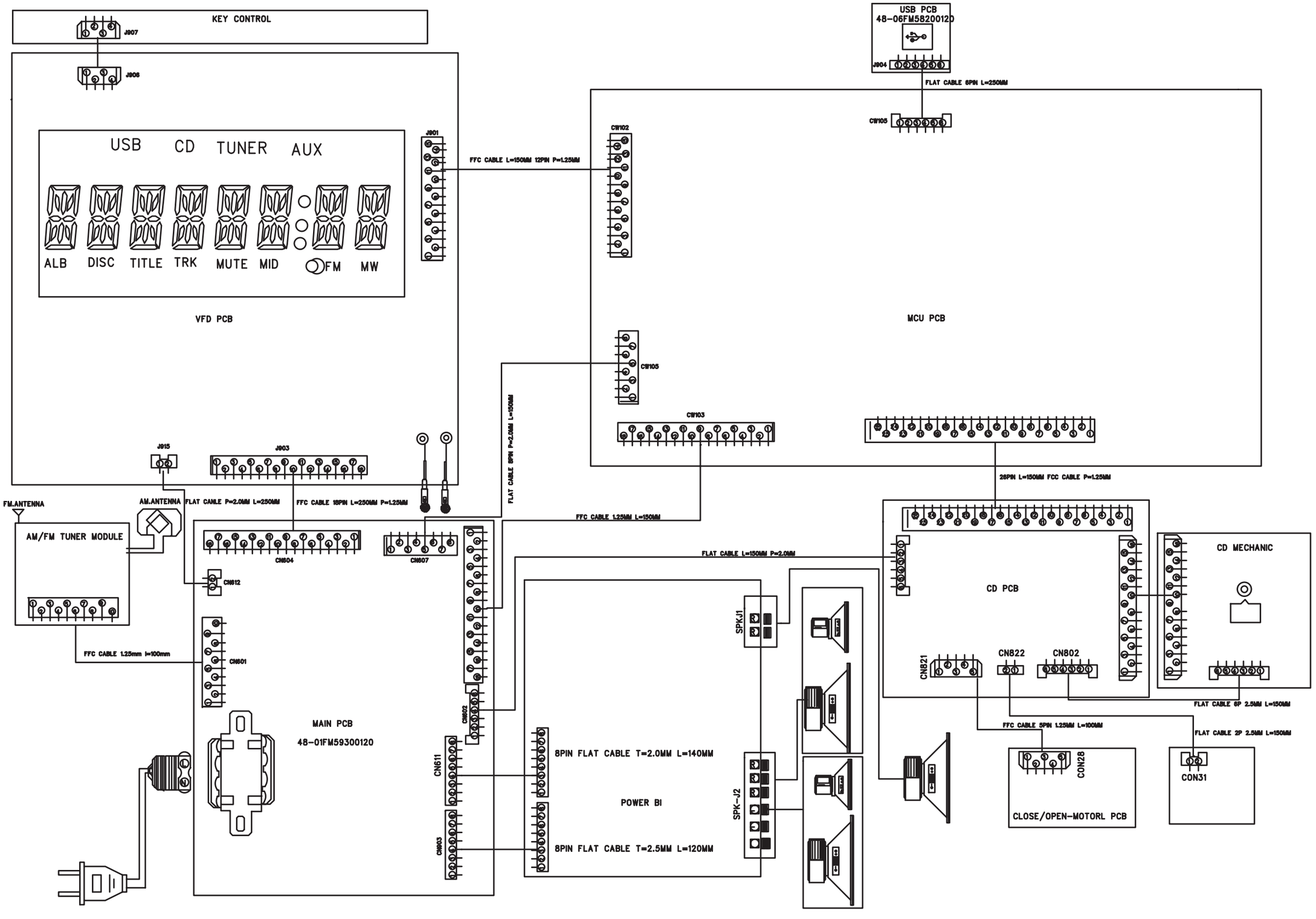
4 - 1

SET BLOCK DIAGRAM



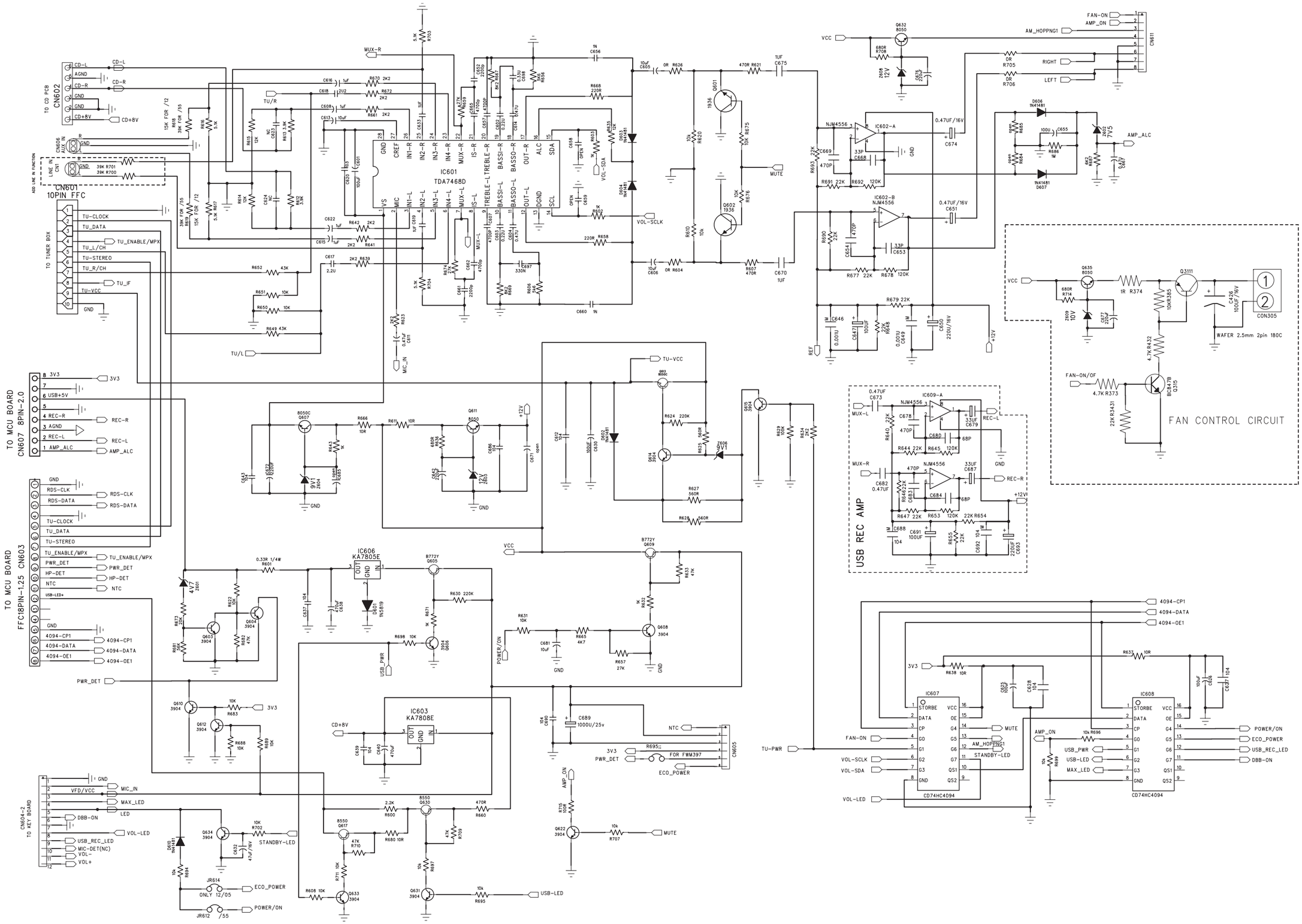
4- 2

SET WIRING DIAGRAM



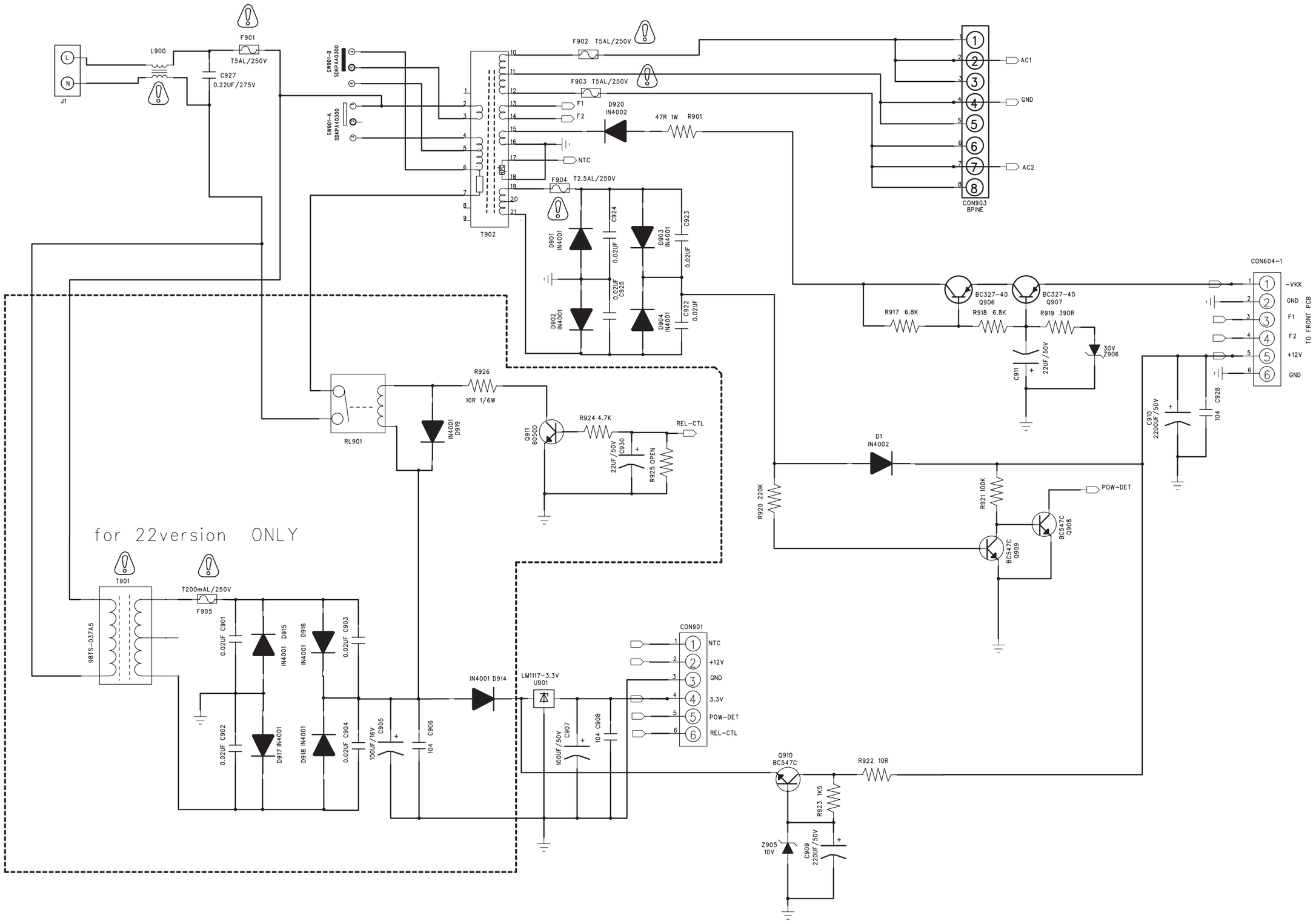
5 - 1

CIRCUIT DIAGRAM - MAIN BOARD
PART 1

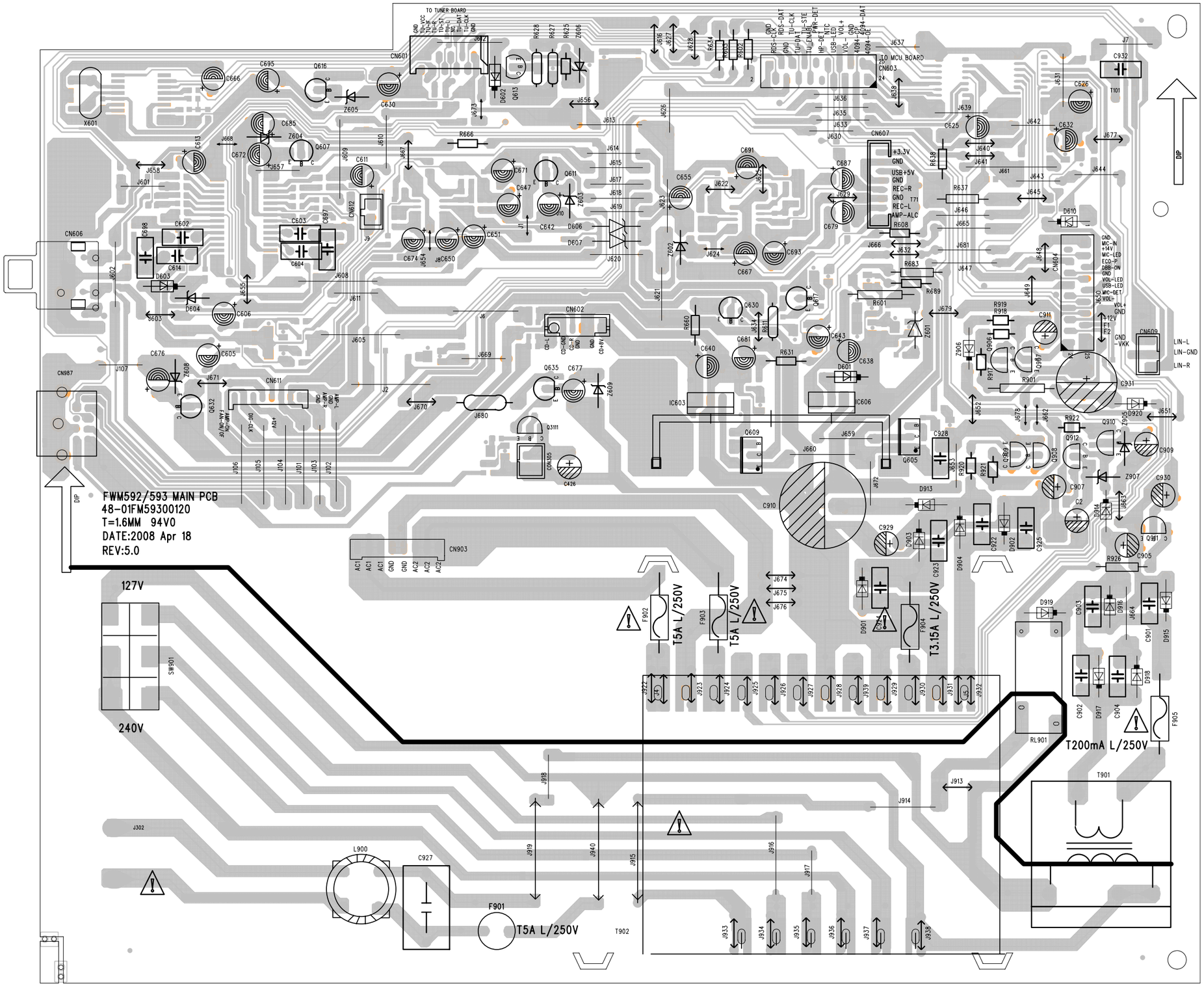


5 - 2

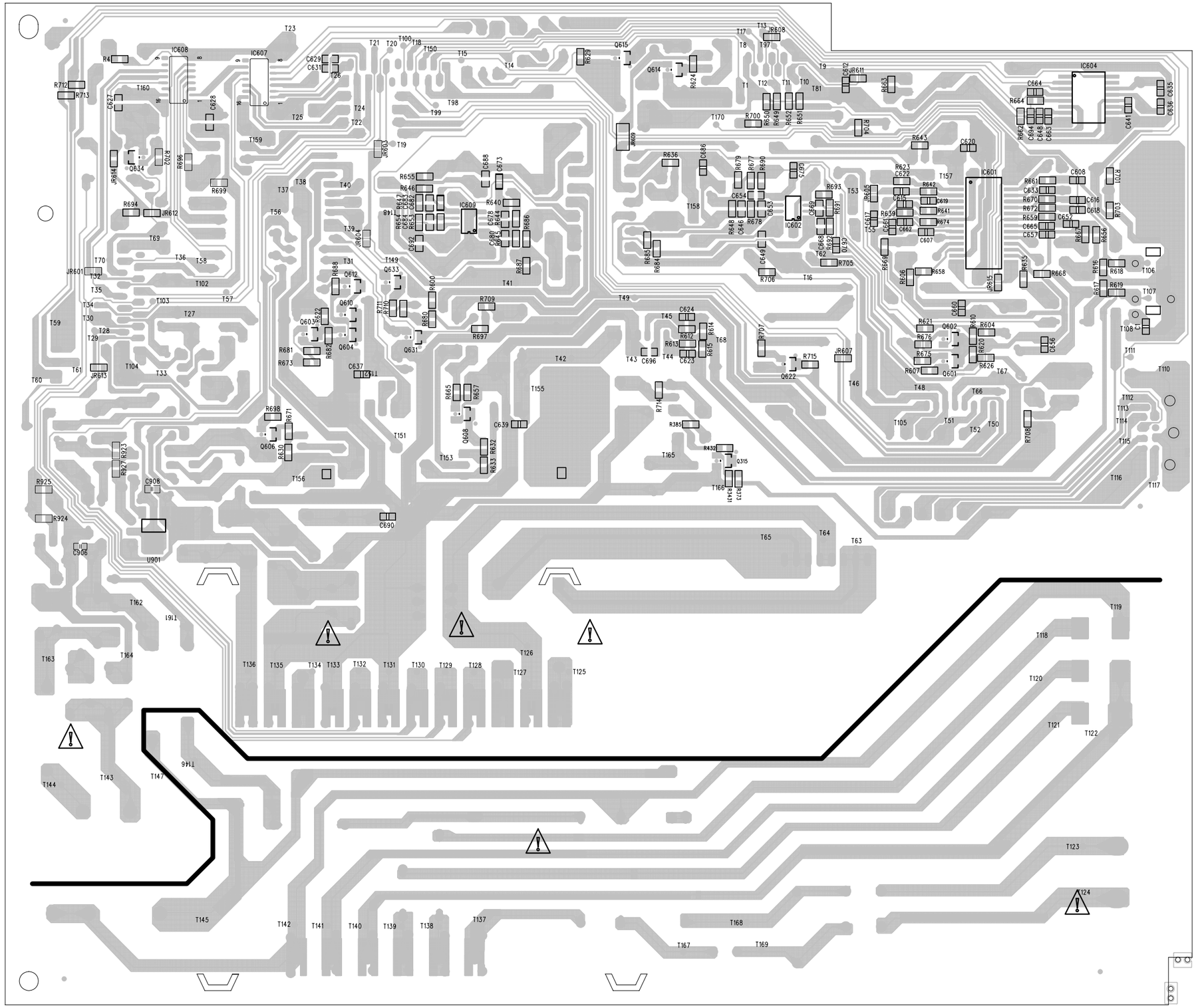
CIRCUIT DIAGARM - MAIN BOARD
PART 2



LAYOUT DIAGARM - MAIN BOARD
COMPONENT SIDE VIEW

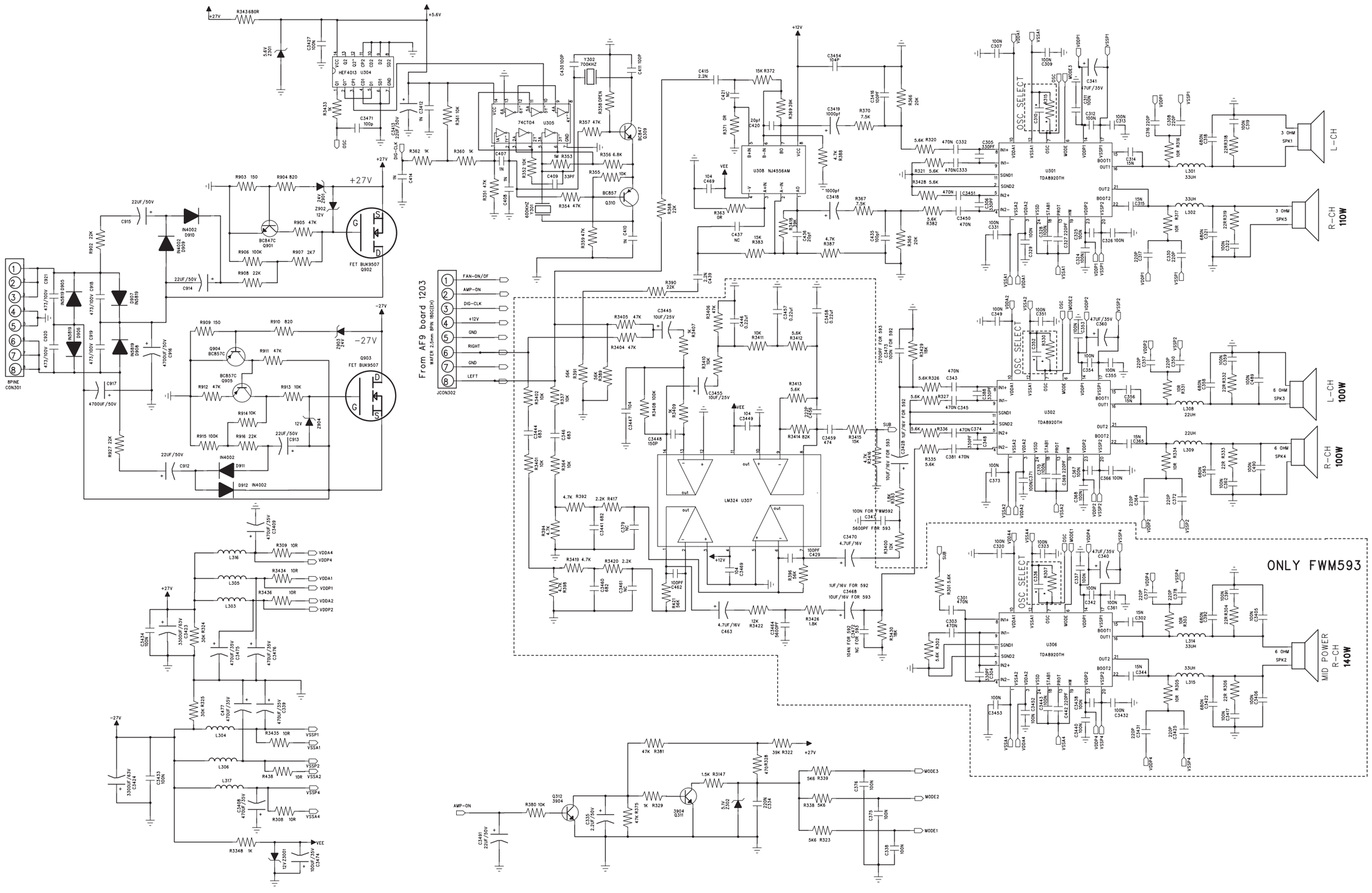


LAYOUT DIAGARM - MAIN BOARD
COPPER SIDE VIEW



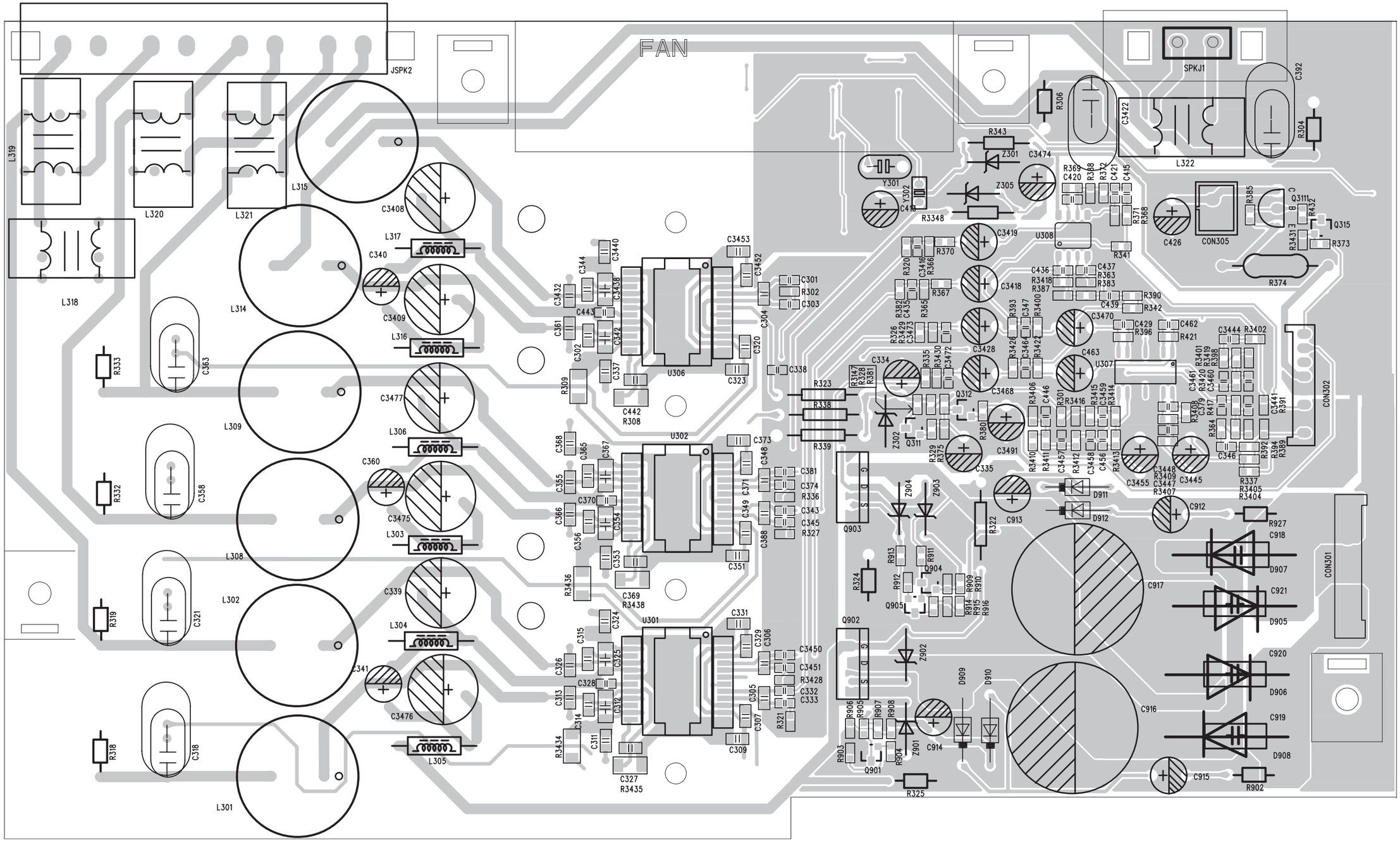
6 - 1

CIRCUIT DIAGRAM - AMP BOARD



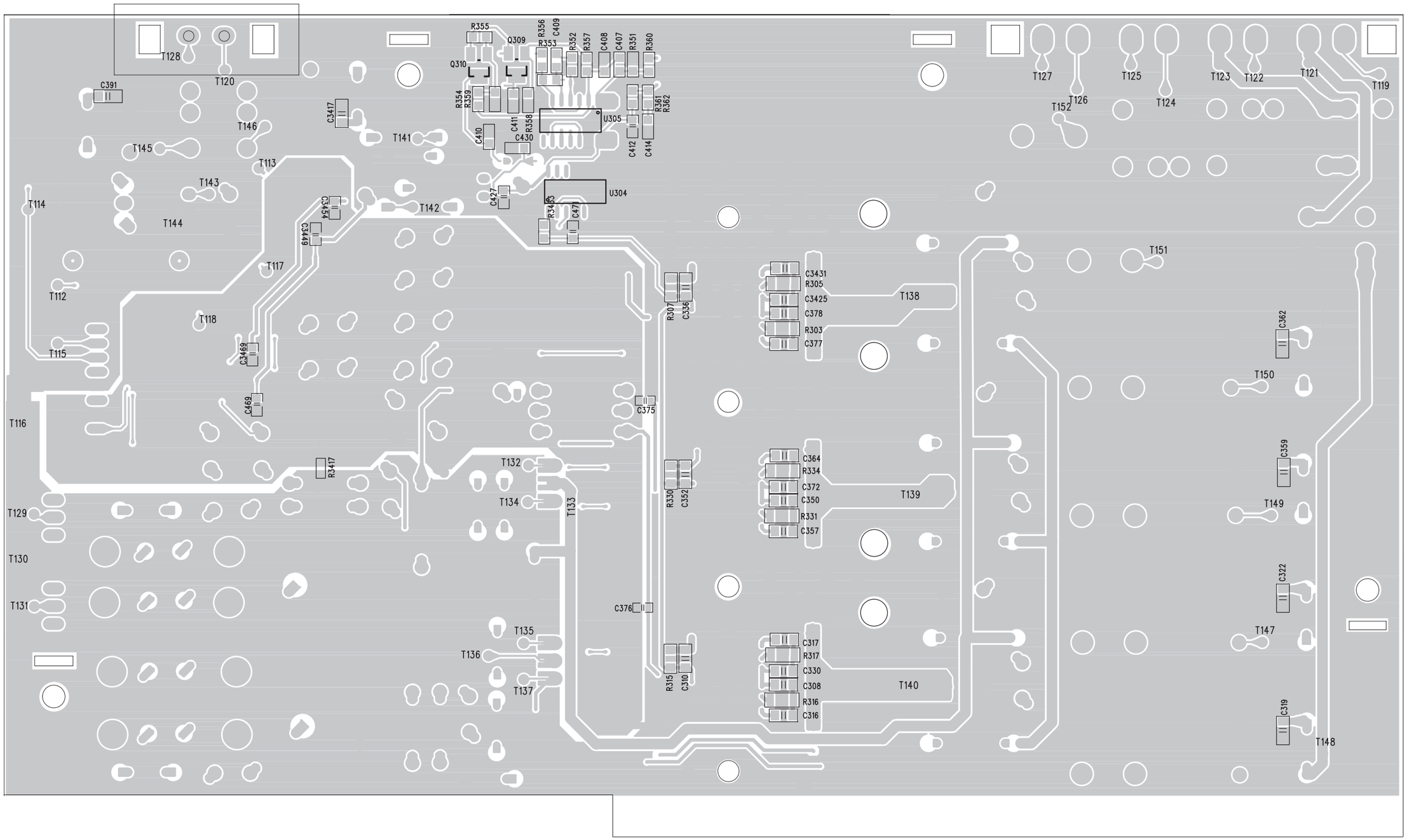
6 - 2

LAYOUT DIAGARM - AMP BOARD
COMPONENT SIDE VIEW



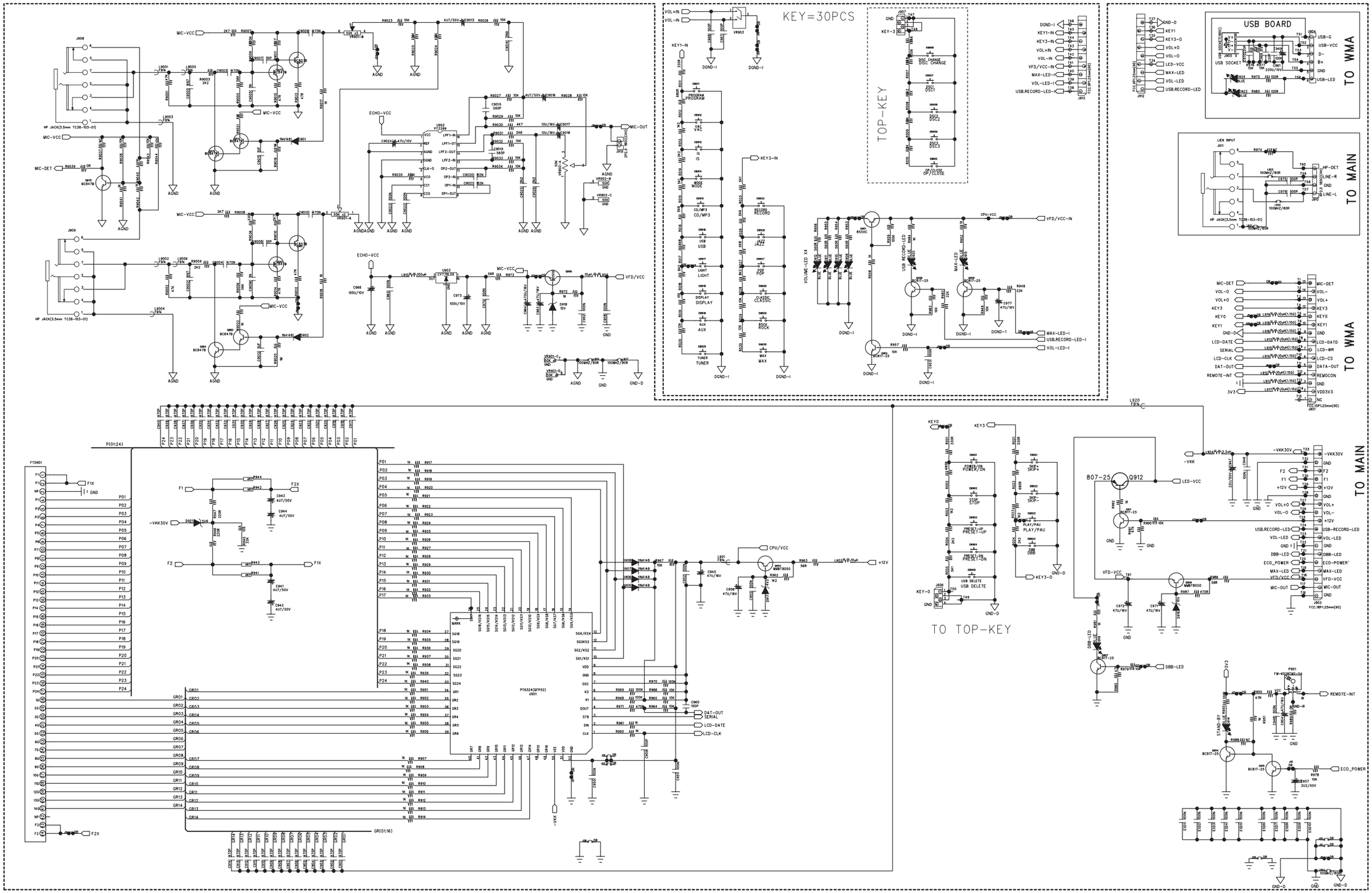
6 - 3

LAYOUT DIAGARM - AMP BOARD
COPPER SIDE VIEW



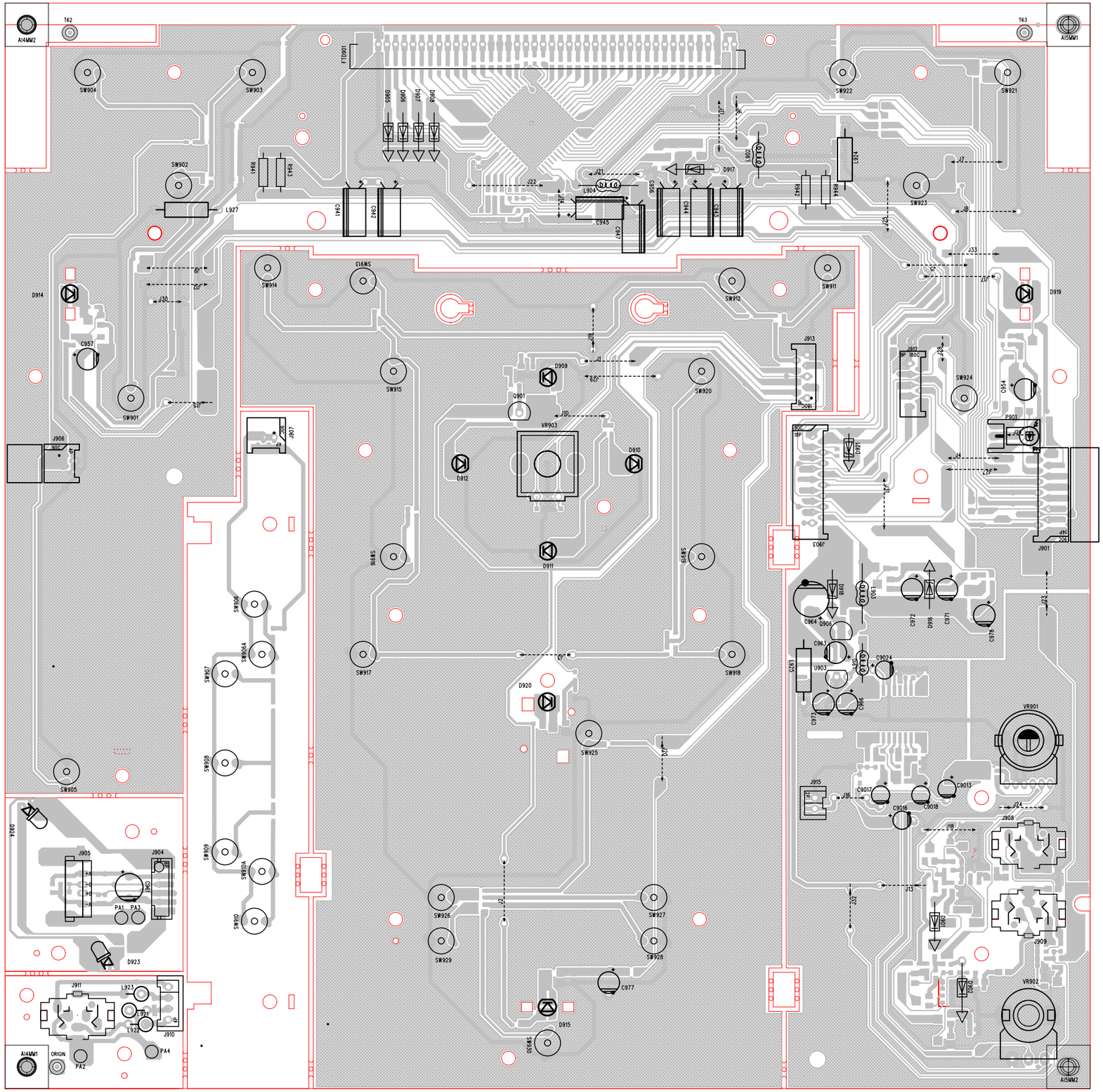
7 - 1

CIRCUIT DIAGRAM - FRONT BOARD



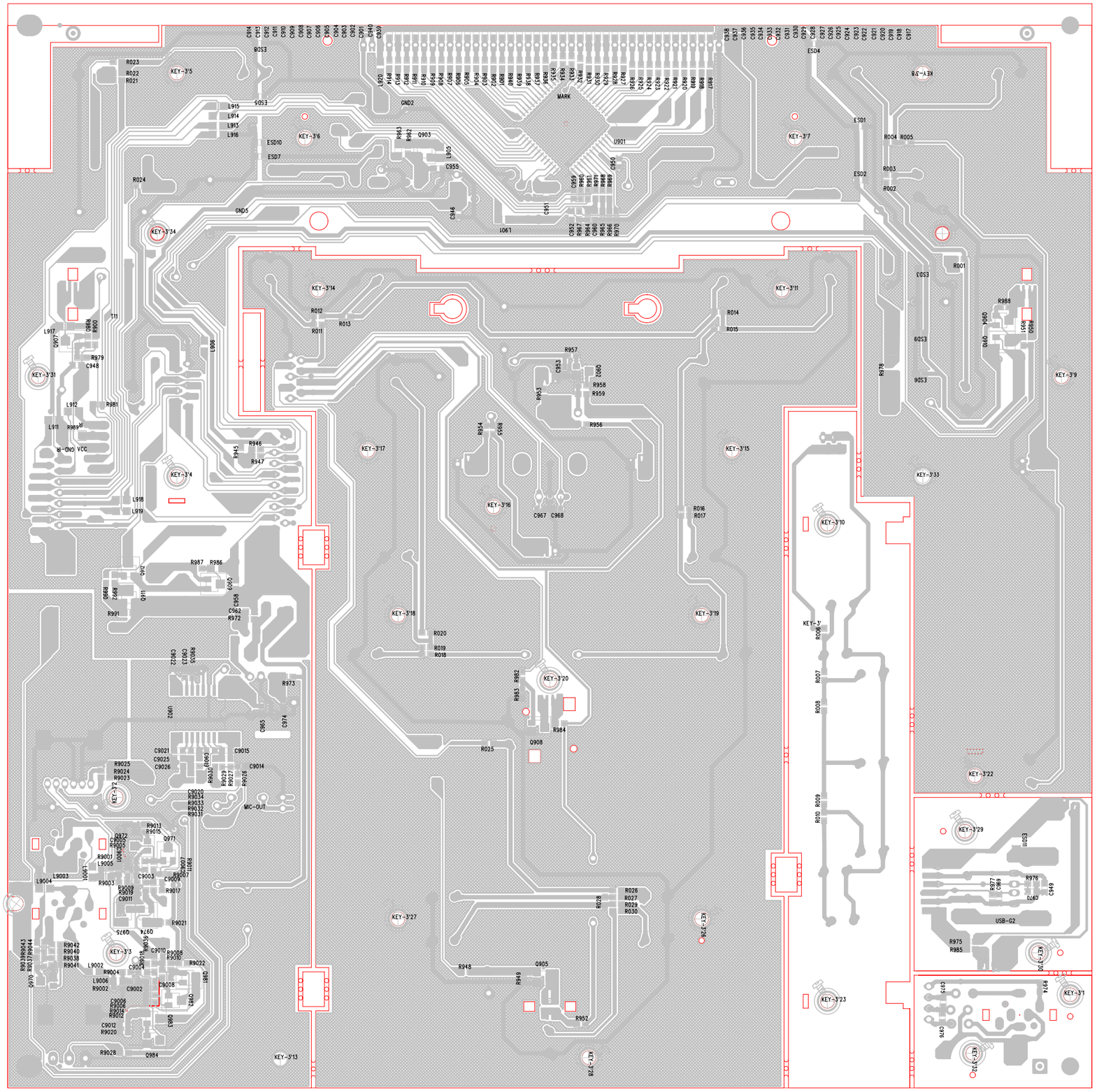
7 - 2

LAYOUT DIAGARM - FRONT BOARD
COMPONENT SIDE VIEW



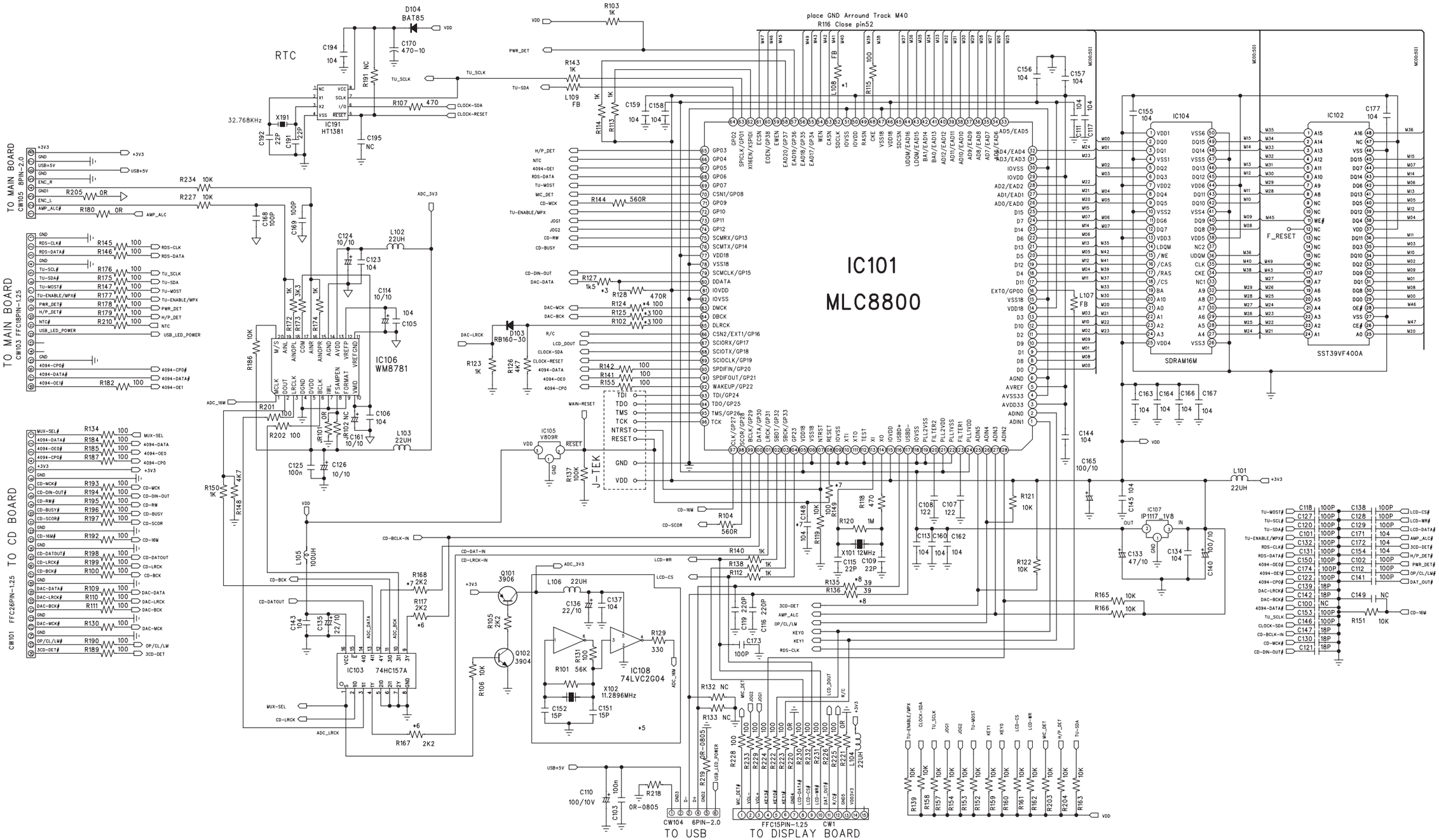
7 - 3

LAYOUT DIAGARM - FRONT BOARD
COPPER SIDE VIEW



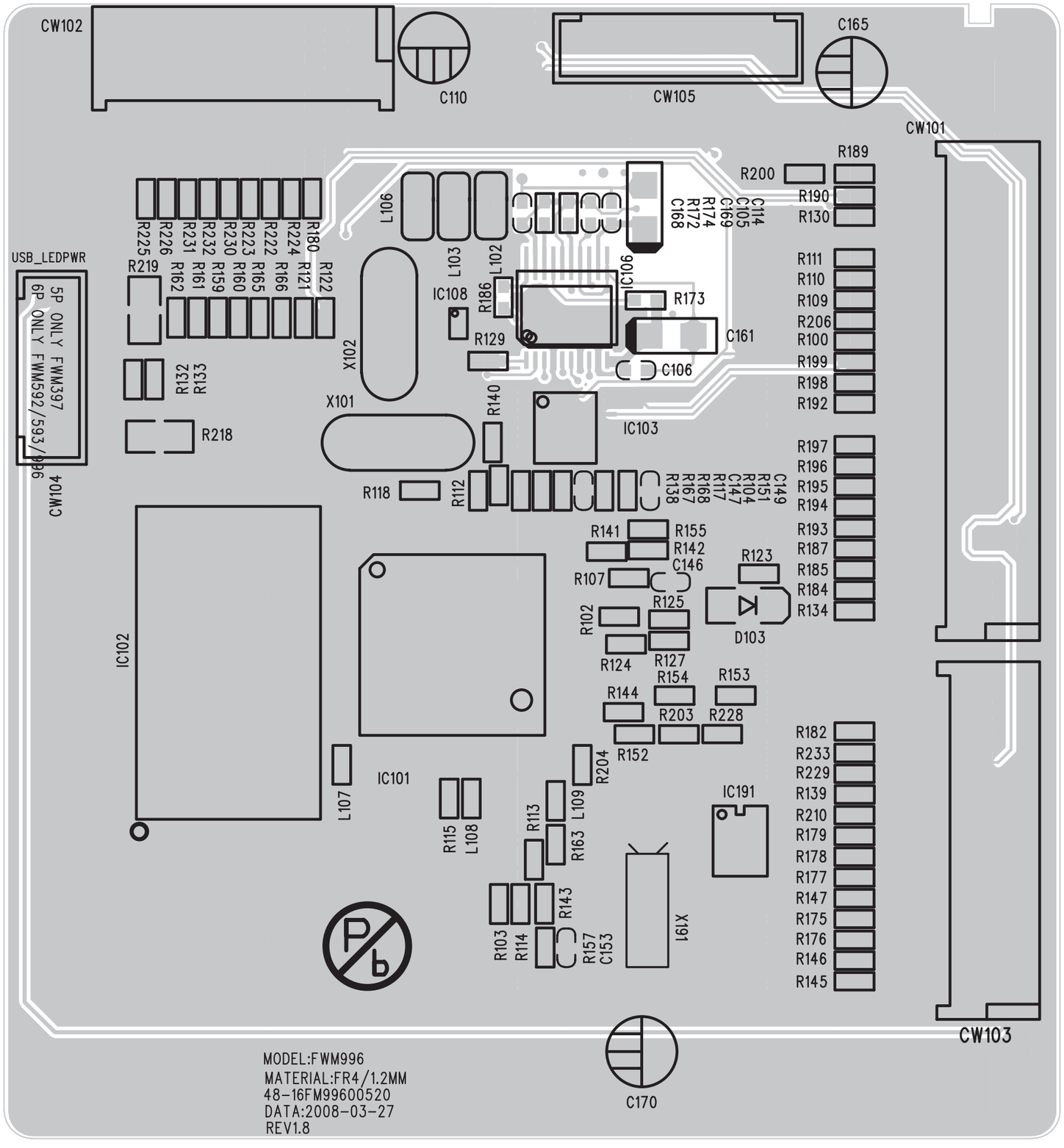
8 - 1

CIRCUIT DIAGRAM - MCU BOARD



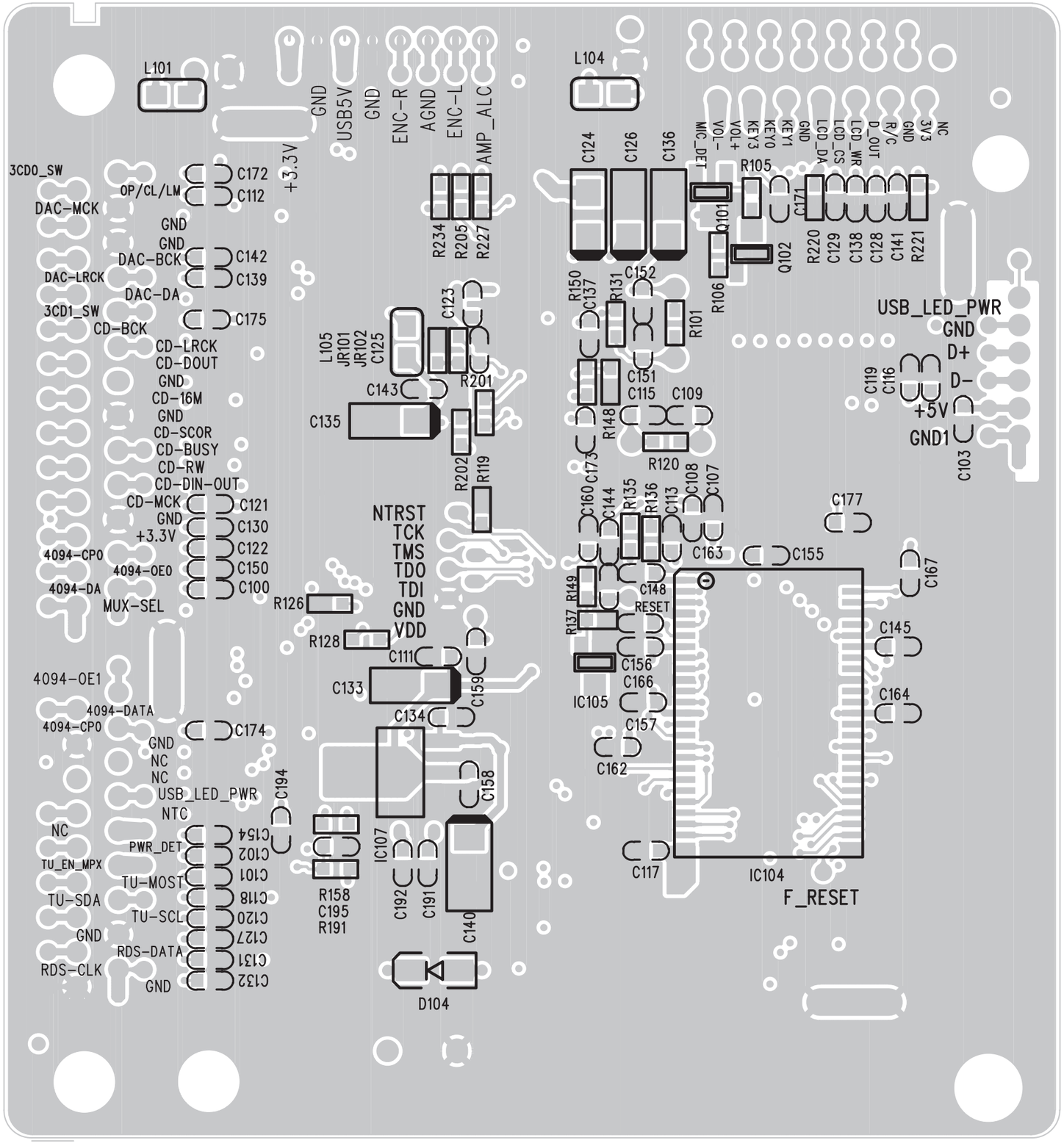
8 - 2

LAYOUT DIAGARM - MCU BOARD
COMPONENT SIDE VIEW



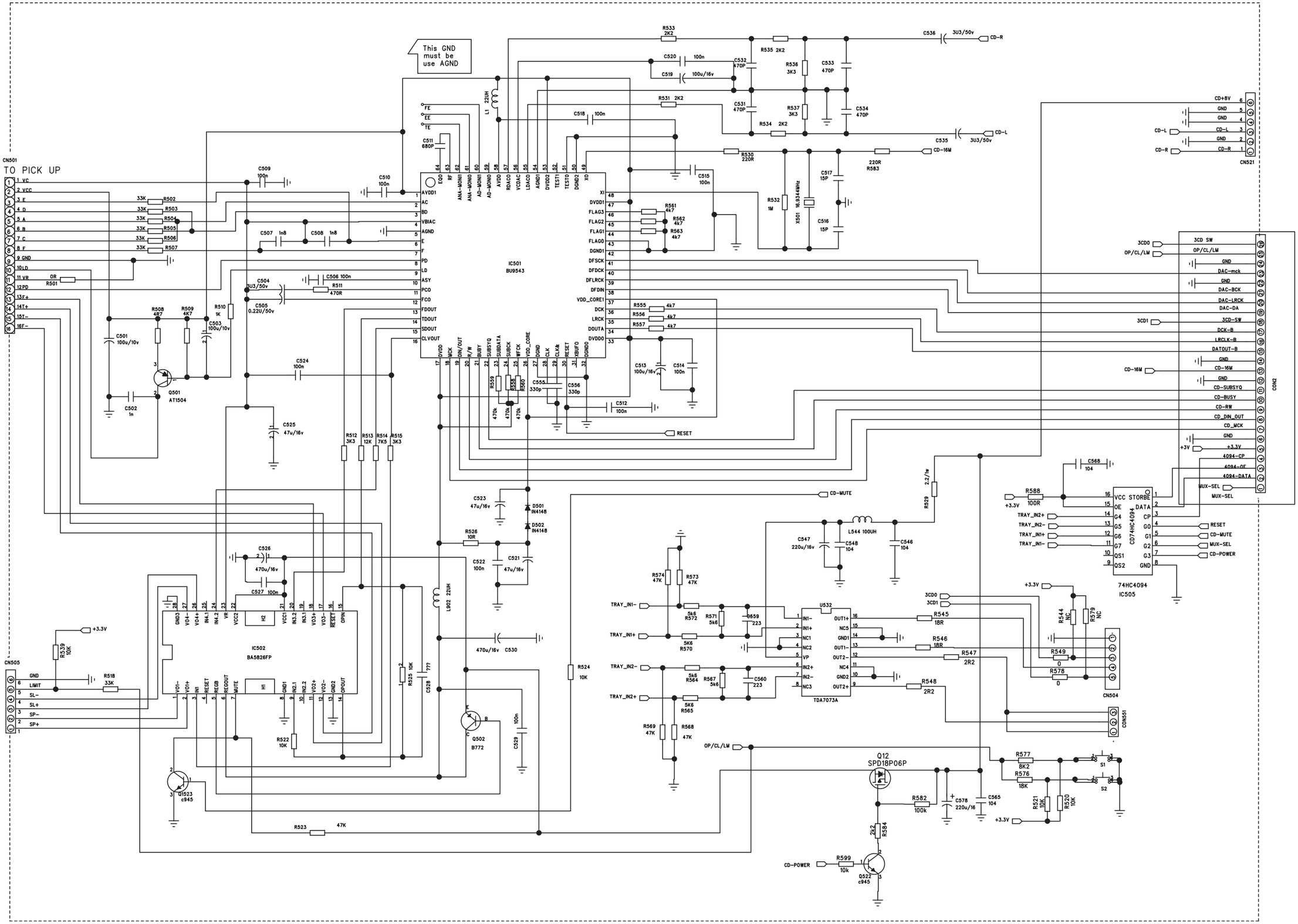
8 - 3

LAYOUT DIAGARM - MCU BOARD
COPPER SIDE VIEW



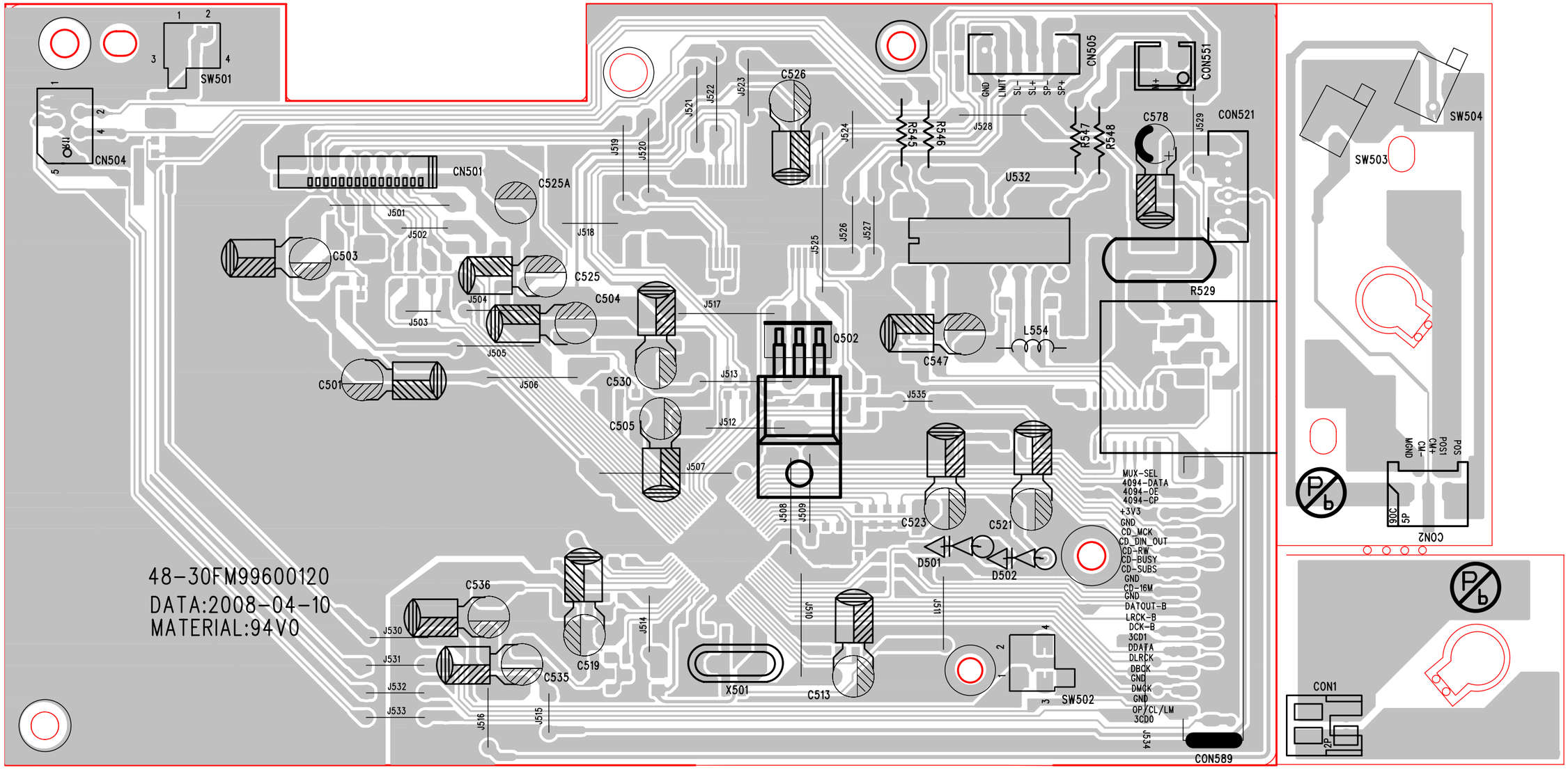
9 - 1

CIRCUIT DIAGRAM - CD BOARD



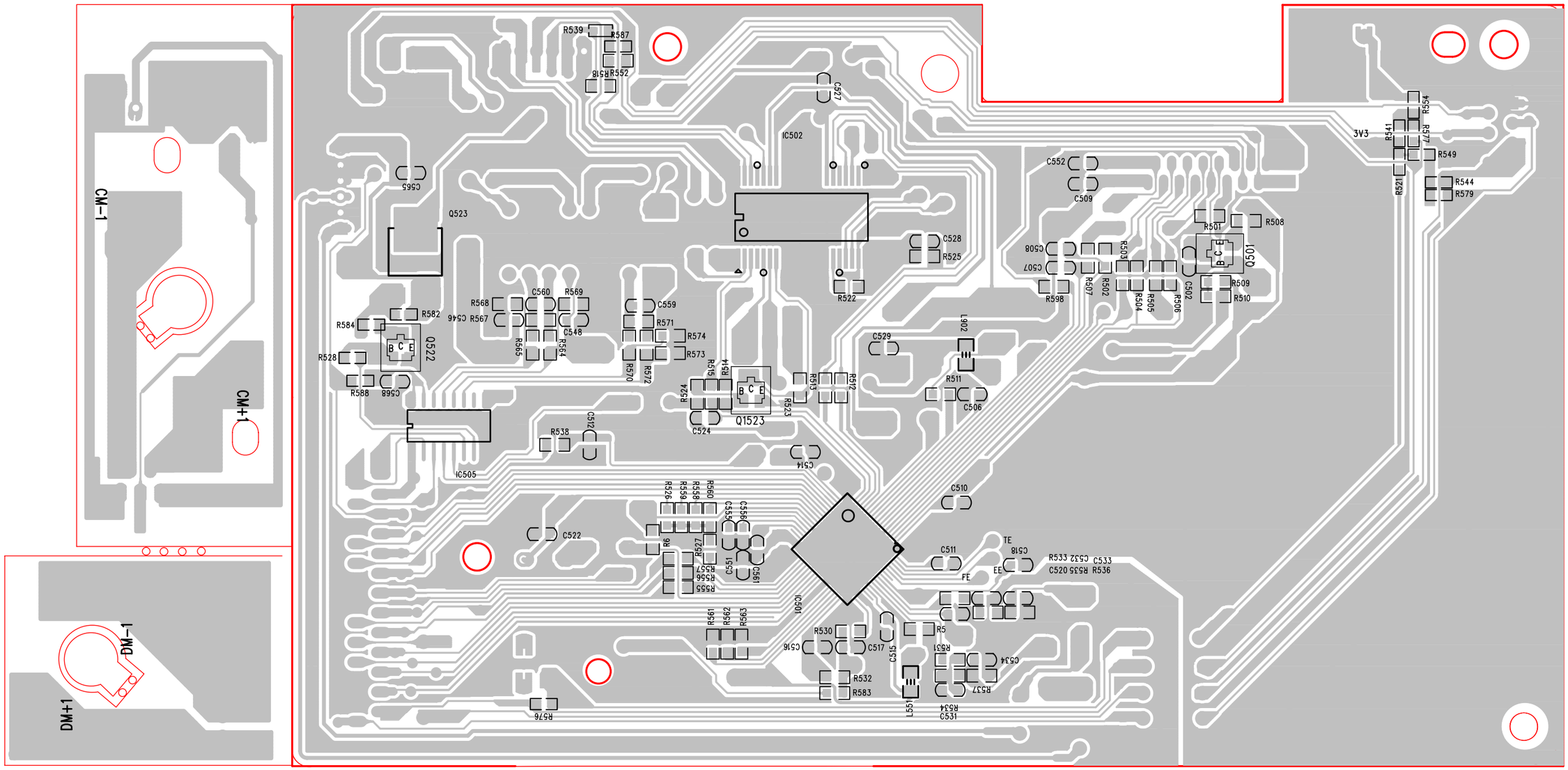
9 - 2

LAYOUT DIAGRAM - CD BOARD
COMPONENT SIDE VIEW



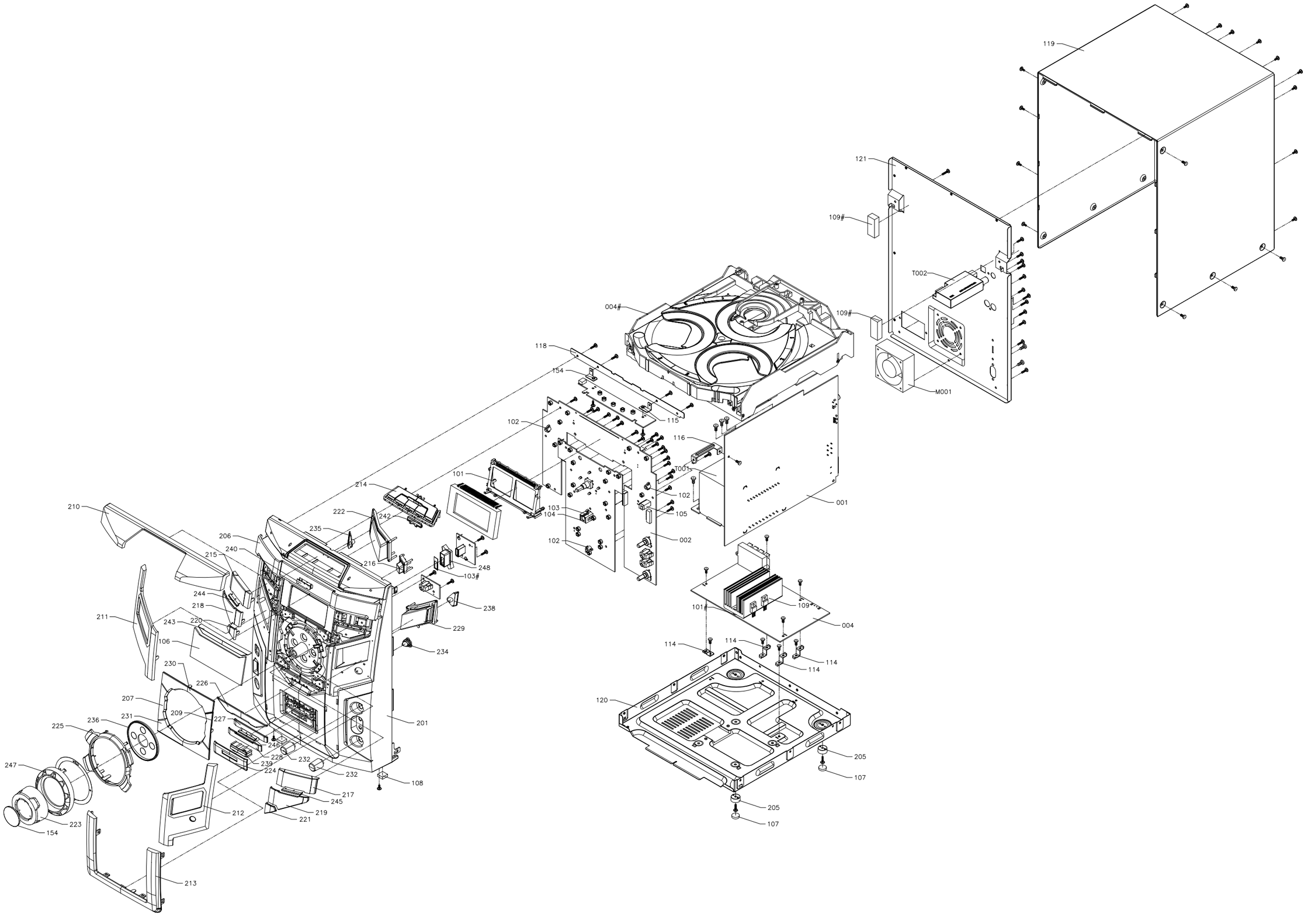
9 - 3

LAYOUT DIAGRAM - CD BOARD
COPPER SIDE VIEW



10 - 1

EXPLODED VIEW DIAGRAM



MECHANICAL PARTSLIST

101	996510016093	FTD HOLDER
102	996510016094	LED HOLDER
103	996510016095	LED BRACKET
104	996510016096	LED LIGHT GUIDE
154	996510016113	VOL KNOB COVER
201	996510016104	FRONT CABINET
205	996510016105	FOOT HOLDER
206	996510016106	3CDC DOOR
207	996510016107	LEFT PANEL AROUND VOL
209	996510016108	RIGHT PANEL AROUND VOL
210	996510016109	TOP COVER
211	996510016110	LEFT COVER
212	996510016111	RIGHT COVER
213	996510016112	BOTTOM COVER
214	996510016114	TOP CD BUTTON
215	996510016115	ALBUM BUTTON
216	996510015507	USB DELETE BUTTON
217	996510016116	TITLE BUTTON
218	996510016117	STOP BUTTON
219	996510016118	PLAY BUTTON
220	996510016119	MODE BUTTON
221	996510016120	PROGRAM BUTTON
222	996510016121	POWER BUTTON
223	996510016122	VOL KNOB
224	996510016123	MAX SOUND BUTTON
225	996510016124	CLUSTER BUTTON
226	996510016125	USB RECORD BUTTON
227	996510016126	JAZZ-POP BUTTON
228	996510016127	ROCK-CLASSIS BUTTON
229	996510016128	DDB BUTTON
230	996510016129	DISC AND TUNER BUTTON
231	996510016130	USB AND AUX BUTTON
232	996510015510	MIC KNOB
234	996510016131	IR LENS
235	996510016132	POWER LIGHT GUIDE
236	996510016133	VOL LIGHT GUIDE
238	996510016134	DBB LIGHT GUIDE
239	996510016135	MAX BUTTON LIGHT GUIDE
240	996510016136	BADGE PHILIPS
242	996510016137	MIDDLE STRAP SOUND BUTTON
243	996510016138	DISPLAY TOP BAR
244	996510016139	MIDDLE STRAP L
245	996510016140	MIDDLE STRAP R
246	996510016141	MIDDLE STRAP TOP BUTTON
247	996510016142	VOL RING
248	996510016143	USB RING
4	996510018624	3CD MECHA PART DA11VF(NO PCBA)
J013	994000004462	4P FFC 1.25MM L=270MM(AA)
J014	996510016102	9P FFC.1.25mm L=80mm
J015	994000002431	FFC CABLE 10P L=120MM

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MECHANICAL PARTSLIST

J016	996510016103	14P FFC.1.25mm L=180mm
J017	996510015486	18P FFC.1.25mm L=150mm
J018	996500040407	18P FFC 1.25mm L=130mm
T001	996510016098	TRANS EI86xS65 127/240V
T002	⚠ 996510016100	TUNER MODULE MT004MS0-6I
J011	996510012091	FERRITE CORE 22.5x15x6.5mm
119	996510017973	OUT PLATE
121	996510017974	BACK PLATE
M001	996510041827	FAN

ACCESSORIES

FM	996510009429	FM ANT (GREY) 1.5M CE/75
J010	996510016101	AM LOOP ANTENNA
6	996510003974	REMOTE CONTROL
7	⚠ 996500037714	AC CORD SET VDE/BRAZIL APP 1.8
SPK	996510016099	SPK BOX PART (SINGLE) -/55/BK
J012	996510002103	CONN. CORD 3.5 ST/PLUGx2 500mm

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

ELECTRICAL PARTSLIST

MAIN BOARD ASSEMBLY

CN606	994000001221	V/RCA JACK 2P
F901	⚠ 996510002426	CERAMIC FUSE 3.9x10.5mmW
F902	⚠ 996510002426	CERAMIC FUSE 3.9x10.5mmW
F903	⚠ 996510002426	CERAMIC FUSE 3.9x10.5mmW
F904	⚠ 994000002459	FUSE PTU 2.5A 250V
IC601	996510005250	IC TDA7468D
IC602	994000001201	IC NJM4556AM
IC603	994000000253	IC (SAMSUNG) KA7808
IC606	994000004549	IC KA7805E
IC607	994000001247	IC HEF4094BT
IC608	994000001247	IC HEF4094BT
IC609	994000001201	IC NJM4556AM
J001	996510014304	AC SOCKET UL APP
SW901	994000001323	SWITCH
U901	996510016090	IC AP1117E33L-13

AMP BOARD ASSEMBLY

JSPK2	996510016097	SPK JACK 8P PT-24V11A
U301	996510003980	IC TDA8920(SOT566-3) 2X100W
U302	996510003980	IC TDA8920(SOT566-3) 2X100W
U304	996500042457	IC HEF4013BT
U305	996500042456	IC 74HCT04D SOP14
U308	994000001201	IC NJM4556AM
Y301	996500042460	CERAMIC RESONATOR 600KHz
Y302	996500042461	CERAMIC RESONATOR 700KHz

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

ELECTRICAL PARTSLIST

FRONT BOARD ASSEMBLY

D909	996510000438	LED LAMP
D910	996510000438	LED LAMP
D911	996510000438	LED LAMP
D912	996510000438	LED LAMP
D914	996510000438	LED LAMP
D915	996510000438	LED LAMP
D919	996510000438	LED LAMP
D920	996500042443	LED LAMP 2x5x7mm(S.BLUE)
D923	996510000438	LED LAMP
D924	996510000438	LED LAMP
FTD901	996510016092	VFD DISPLAY
J905	996510000344	USB SOCKET
J908	994000001244	V/PHONE JACK 3.5MM
J909	994000001244	V/PHONE JACK 3.5MM
J911	994000001244	V/PHONE JACK 3.5MM
P901	994000000325	OPTIC SENSER (OPTO..)
SW901	994000001243	TACT SWITCH
SW902	994000001243	TACT SWITCH
SW903	994000001243	TACT SWITCH
SW904	994000001243	TACT SWITCH
SW905	994000001243	TACT SWITCH
SW906	994000001243	TACT SWITCH
SW907	994000001243	TACT SWITCH
SW908	994000001243	TACT SWITCH
SW909	994000001243	TACT SWITCH
SW910	994000001243	TACT SWITCH
SW911	994000001243	TACT SWITCH
SW912	994000001243	TACT SWITCH
SW913	994000001243	TACT SWITCH
SW914	994000001243	TACT SWITCH
SW915	994000001243	TACT SWITCH
SW916	994000001243	TACT SWITCH
SW917	994000001243	TACT SWITCH
SW918	994000001243	TACT SWITCH
SW919	994000001243	TACT SWITCH
SW920	994000001243	TACT SWITCH
SW921	994000001243	TACT SWITCH
SW922	994000001243	TACT SWITCH
SW923	994000001243	TACT SWITCH
SW924	994000001243	TACT SWITCH
SW925	994000001243	TACT SWITCH
SW926	994000001243	TACT SWITCH
SW927	994000001243	TACT SWITCH
SW928	994000001243	TACT SWITCH
SW929	994000001243	TACT SWITCH
SW930	994000001243	TACT SWITCH
U901	996510016091	IC PT6324
U902	996510003985	IC ECHO PROCESSOR PT2399S
U903	996510003984	IC CYT78L05 (TO-92)
VR901	996510006586	ROTARY VOLUME F-122KGP B50K L
VR902	996510003986	ROTARY VOLUME
VR903	994000001241	ROTARY ENCODER

ELECTRICAL PARTSLIST

CD BOARD ASSEMBLY

IC501	996510009311	IC BU9543KV (SMD)
IC502	996510009310	IC BA5826FP
IC505	994000001247	IC HEF4094BT
J001	996510015477	26P FFC.1.25mm L=80mm
Q1523	996510000317	SMD TRANSISTORS BC817-25
Q501	996510000315	SMD TRANSISTORS BC807-25
Q502	994000001193	TRANSISTORS KSB772YS
Q522	996510000317	SMD TRANSISTORS BC817-25
Q523	996510000992	TRANSISTORS SPD18P06P
SW501	994000004552	DETECT SWITCH
SW502	994000004552	DETECT SWITCH
SW503	994000004552	DETECT SWITCH
SW504	994000004552	DETECT SWITCH
U532	996510003998	IC TDA7073A/N4
X501	994000004551	CRYSTAL 16.9344MHZ +-20PPM

MCU BOARD ASSEMBLY

82	994000003669	CD MECHANISM (SANYO) DA11VF
102	996510014310	MAGNET 27x16x4mm 546g
8001	994000004487	16P FFC 1MM L=170MM
8002	996510001327	23P FFC 1.25mm L80mm
8003	994000004457	5P FFC L=200MM(AA)
IC101	996510015478	IC BX8800
IC102	996510009337	IC SST39VF800A-70 8M 3.3V TSOP
IC103	996510001318	IC 74LVC157APW
IC104	996510003990	IC SDRAM M12L16161A-7T
IC105	996510003993	IC V809R
IC106	996510015480	IC WM8782SEDS
IC107	996510009335	IC LM1117S-1.8V SOT-223
IC108		IC 74LVC2G04GW
IC191	996510015481	IC HT1381
Q101	994000003937	SMD TRANSISTORS PMBT3906
Q102	996510010292	SMD TRANSISTORS MMBT3904
X101	996510008326	CRYSTAL 12 MHzHC-49/US H=3.5mm
X102	996510015482	CRYSTAL 11.2896MHz
X191	994000004615	CRYSTAL 32.768KHZ 12.5PF

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