

Service
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Service Manual

TABLE OF CONTENTS

	Page
Location of PCBs.....	1-2
Specifications	1-3
Measurement Setup	1-4
Service Aids, Safety Instruction, etc	1-5
CD Playability Check	1-6 to 1-7
Software Version Checking	2
Set Wiring & Block Diagram	3
Main & Tuner & Headphone Boards.....	4
MCU & USB Board	5
Display & Key Board.....	6
Set Mechanical Exploded View & Parts List	7
Revision List	8



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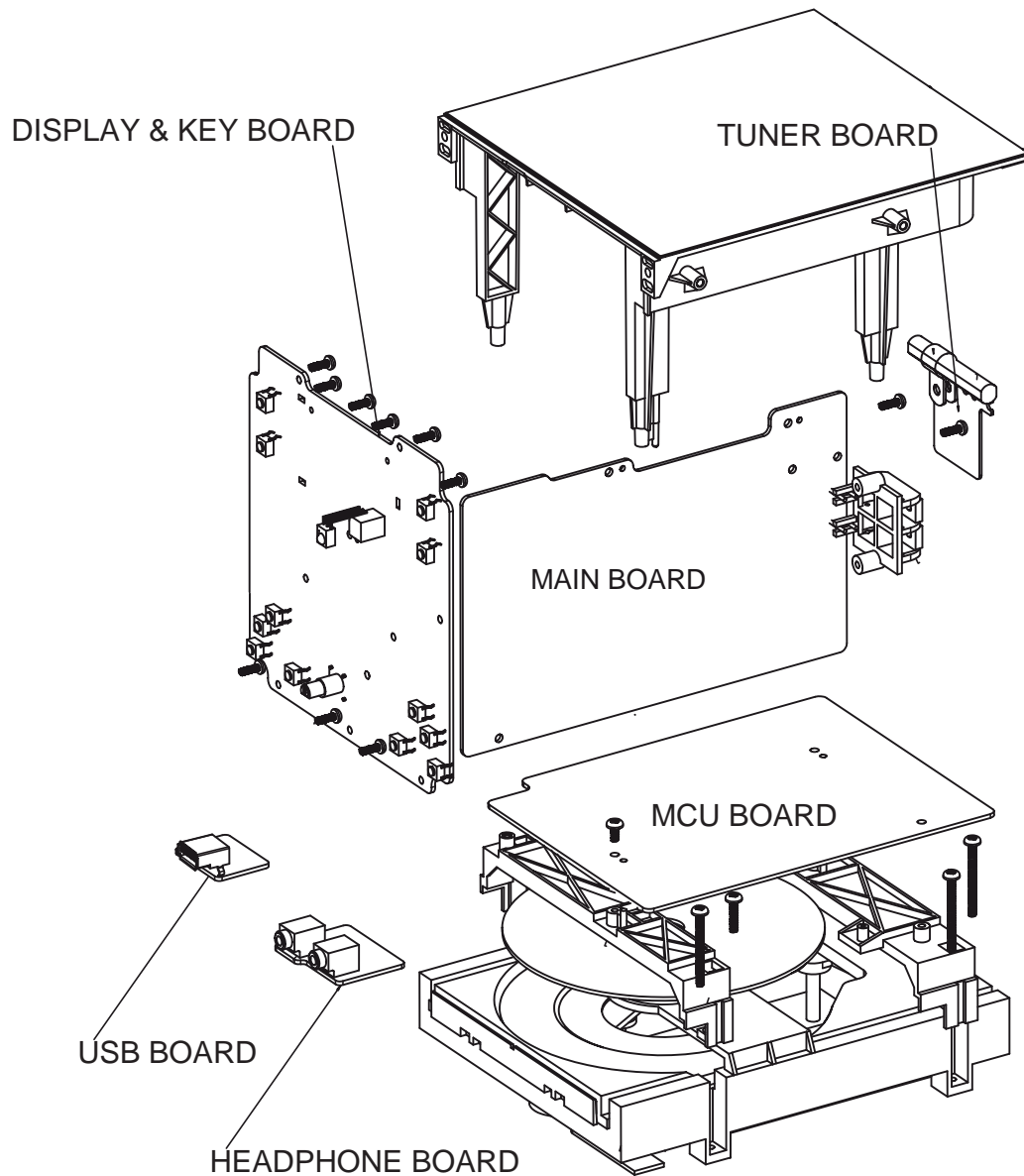
Version 1.2



PHILIPS

**CLASS 1
LASER PRODUCT**

PCBS LOCATION



VERSION VARIATIONS

Type /Versions:	MCM205									
	Service policy									
Board in used:	/12	/05	/37	/55	/58	/61				/98
MAIN BOARD	C									
MCU BOARD	C/M									
USB JACK BOARD	C									
DISPLAY & KEY BOARD	C									
TUNER BOARD	M									
HEADPHONE BOARD	C									

* TIPS : C -- Component Lever Repair.
 M -- Module Lever Repair
 x -- Used

Specifications

Amplifier

Rated Output Power	2X5W RMS
Frequency Response	60 - 16kHz, ± 3 dB
Signal to Noise Ratio	>62dB

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
S/N Ratio	>62dBA

Tuner

Tuning Range	FM: 87.5 - 108MHz; MW: 531 - 1602kHz
Tuning grid	50 kHz (FM); 9 kHz (MW)
Total Harmonic Distortion	<3%
Signal to Noise Ratio	>50 dB

Speakers

Speaker Impedance	4ohm
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General information-Specs

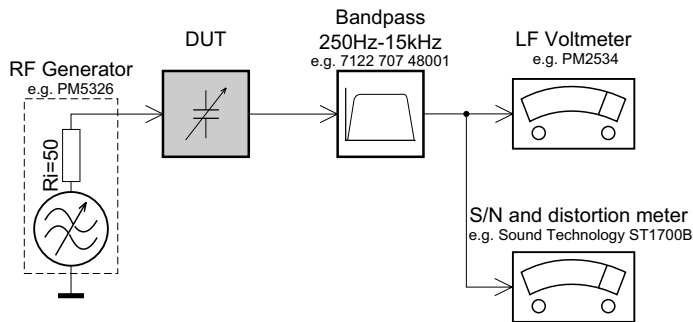
Switching mode power supply	Model: GFPI8IT-1512-I or GFPI8IDA-1512-I, Input: AC100-240V~, 50/60Hz, 0.35A Output: DC15V, 1.2A
Operation Power Consumption	26 W
Standby Power Consumption	<4 W
Eco Standby Power Consumption	<1 W
Dimensions	
- Main Unit (W x H x D)	152 x 232 x 222mm
- Speaker Box (W x H x D)	146 x 232 x 140mm
Weight	
- With Packing	5.20 kg
- Main Unit	1.64 kg
- Speaker Box	2.20 kg

Supported MP3 disc formats

- ISO9660, Joliet
- Maximum title number: 512 (depending on file name length)
- Maximum album number: 255
- Supported sampling frequencies: 32 kHz, 44.1kHz, 48 kHz
- Supported Bit-rates: 32~256 (kbps), variable bit rates

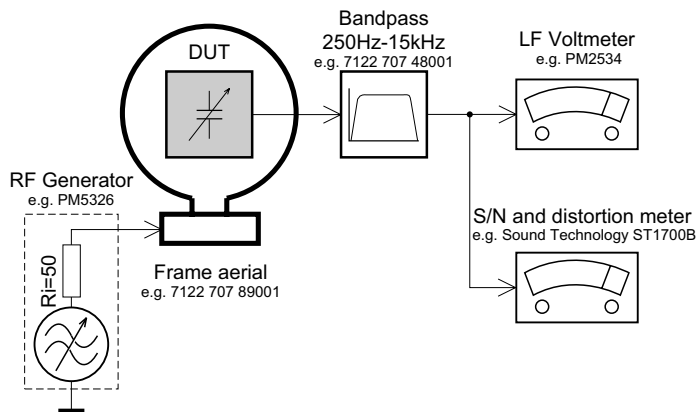
MEASUREMENT SETUP

Tuner FM



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

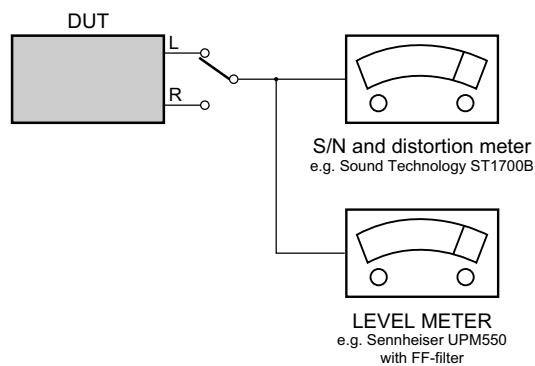
Tuner AM (MW,LW)



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 .

**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".

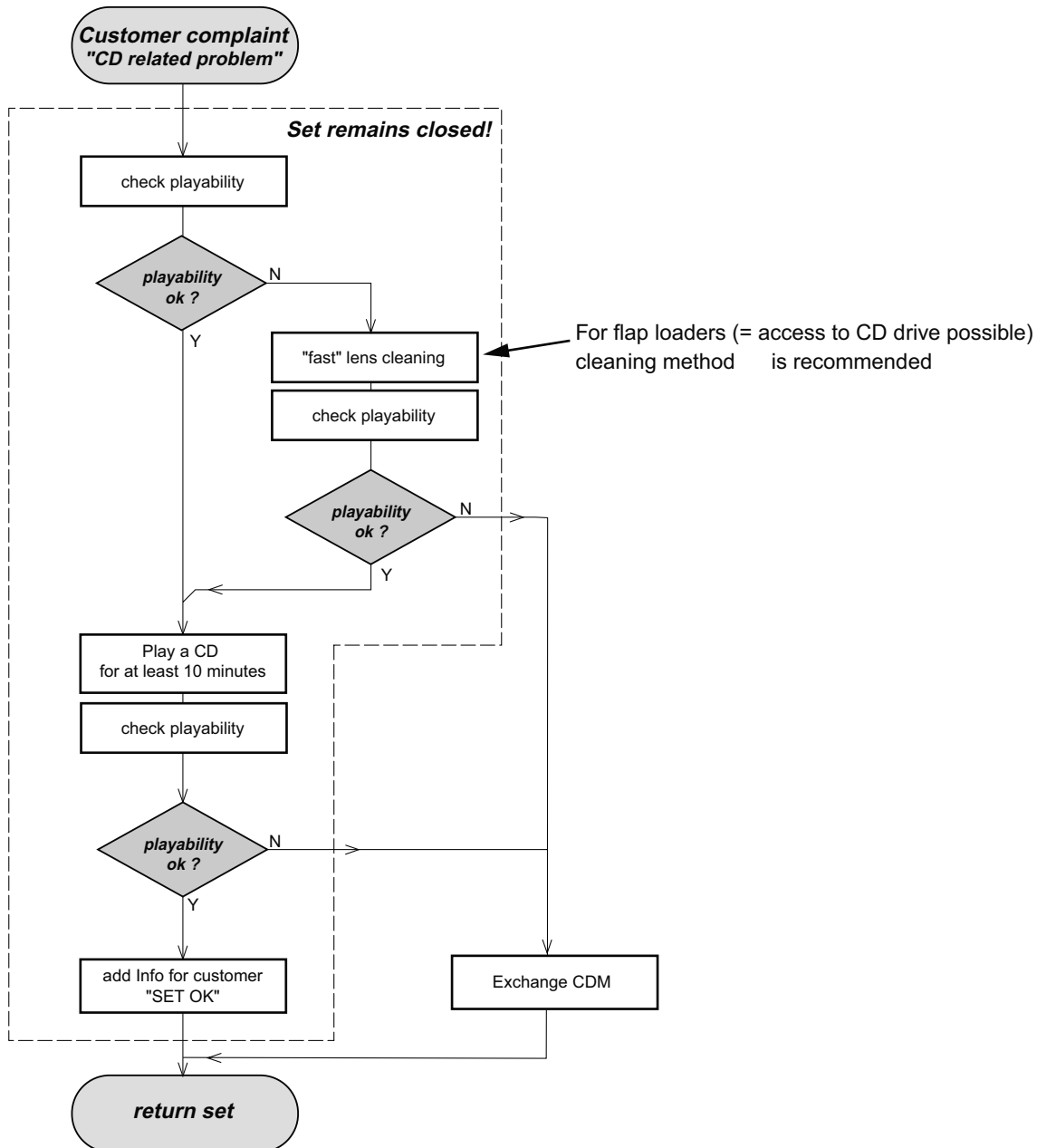
For additional questions please contact your local repair-helpdesk.

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



- For description - see following pages

INSTRUCTIONS ON CD PLAYABILITY

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 ≥ 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 ≥ 10 seconds
 Fingerprint ≥ 10 seconds
 Black dot from 01:05 to 01:25
- jump forward/backward (search) within a reasonable time

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) 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.

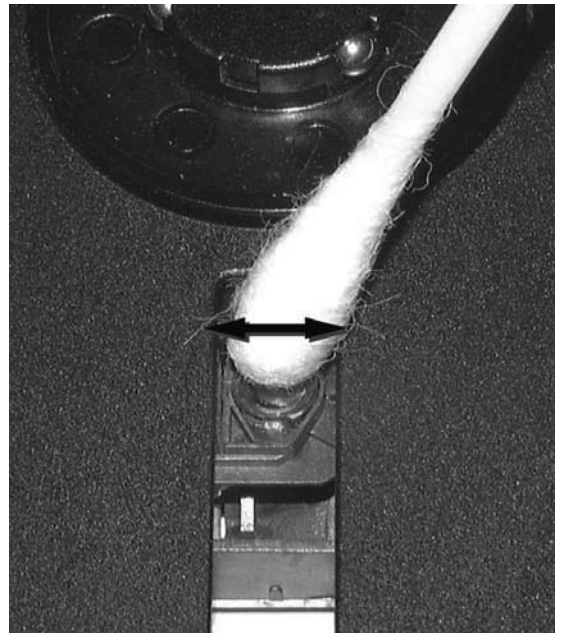
LIQUID LENS CLEANING

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 PROGRAM

How to read software version,

1. Plug A/C to power on and under NO DISC status, press and hold PLAY and DBB buttons for 5 seconds, LCD Display shows existing CD software version "CD - V029" and MCU software version "MCU - 013".



MAIN & TUNER & HEAD- PHONE BOARD

TABLE OF CONTENTS

Main Board Layout Top View 5-2

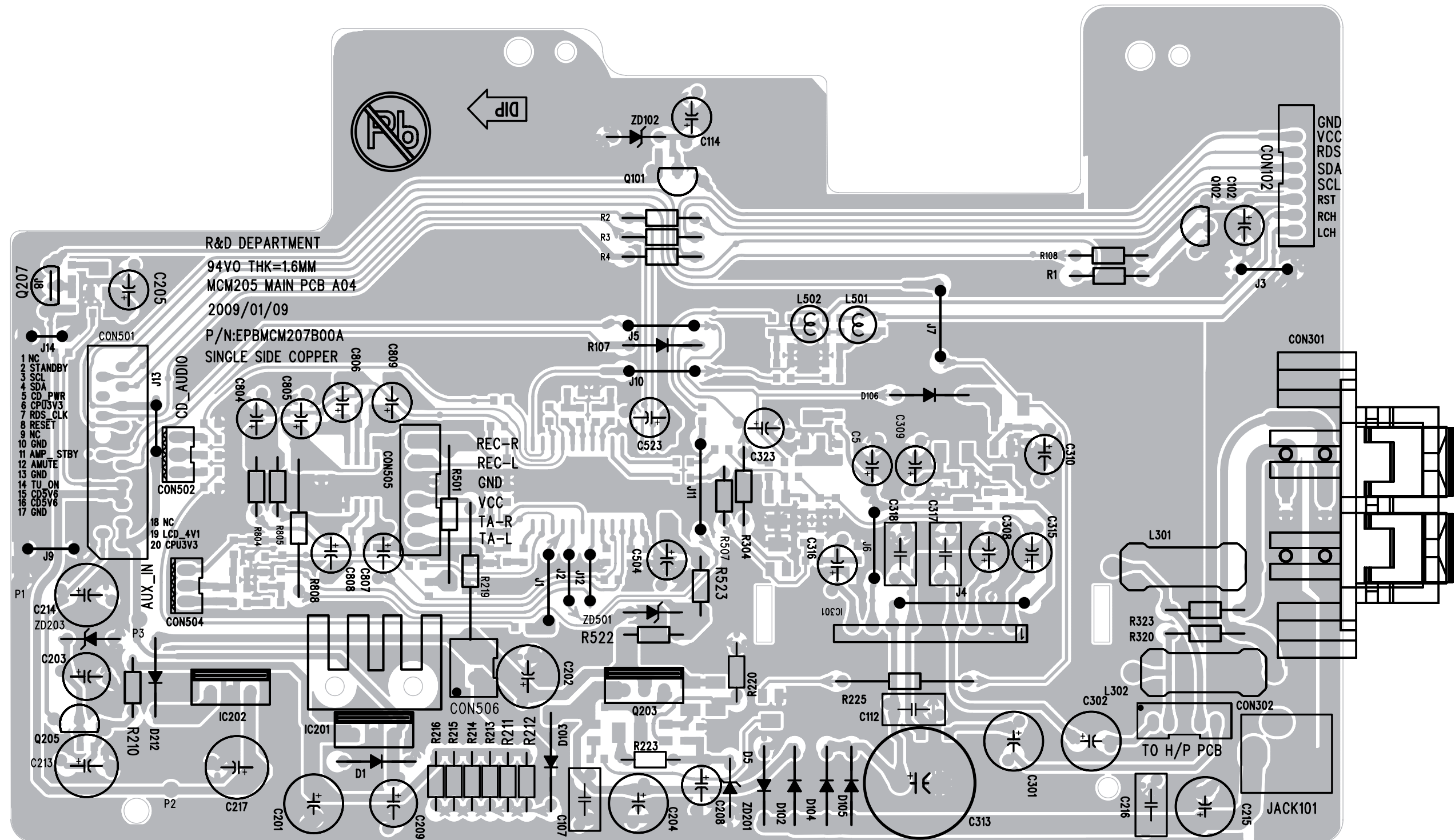
Main Board Layout Bottom View 5-3

Tuner Board Layout Diagram 5-4

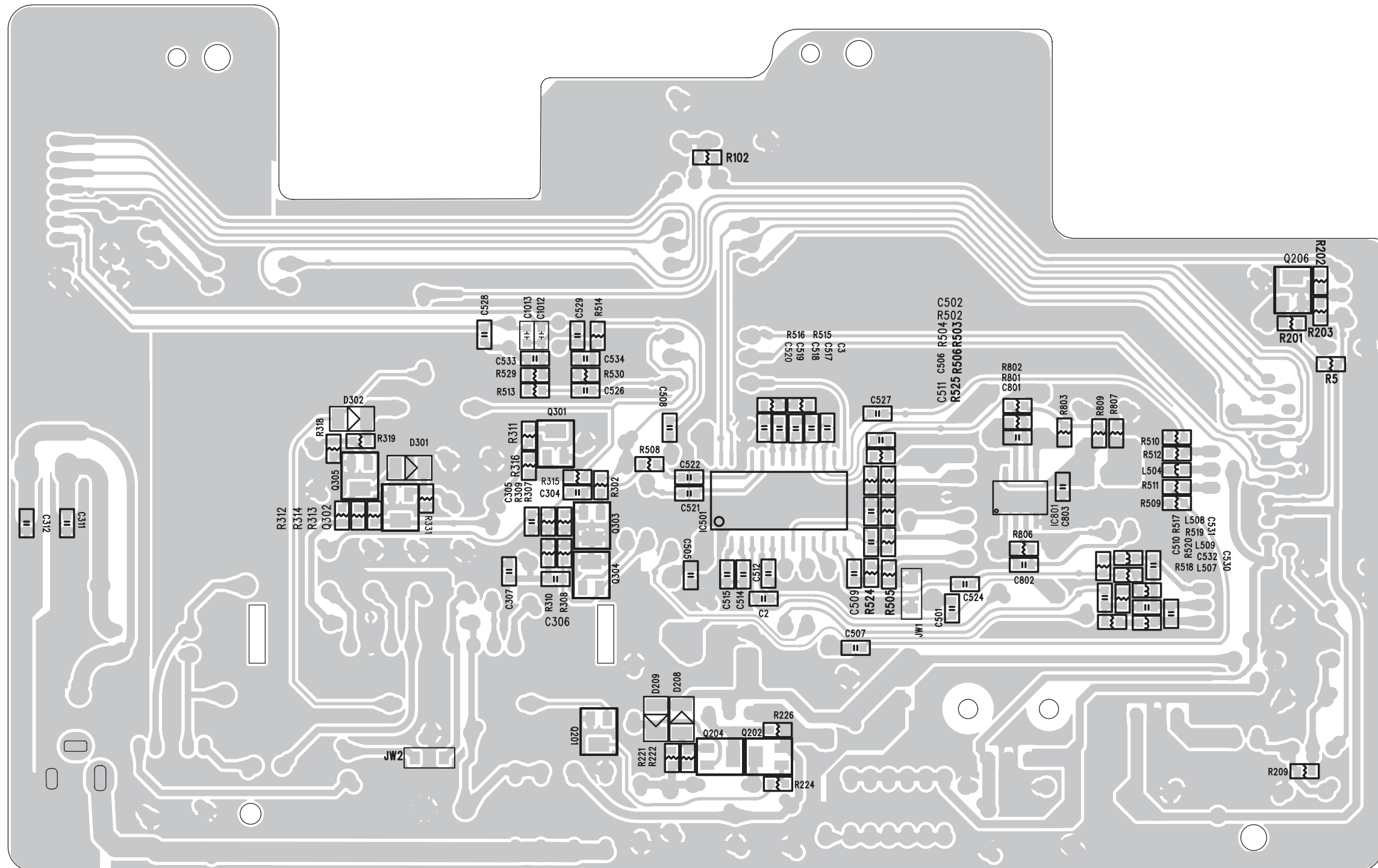
Headphone Board Layout Diagram 5-5

Circuit Diagram 5-6

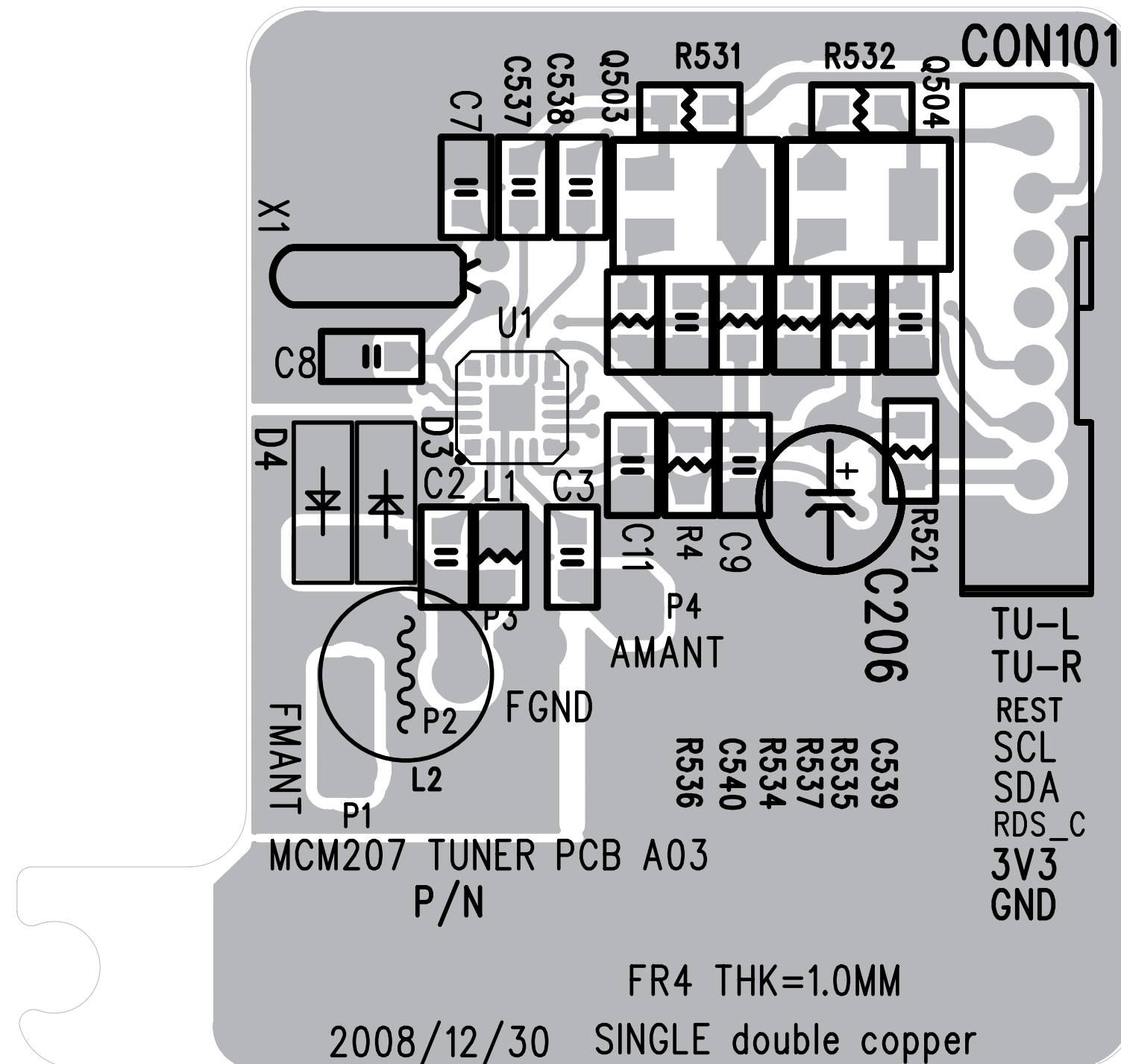
PCB LAYOUT - MAIN BOARD (TOP VIEW)



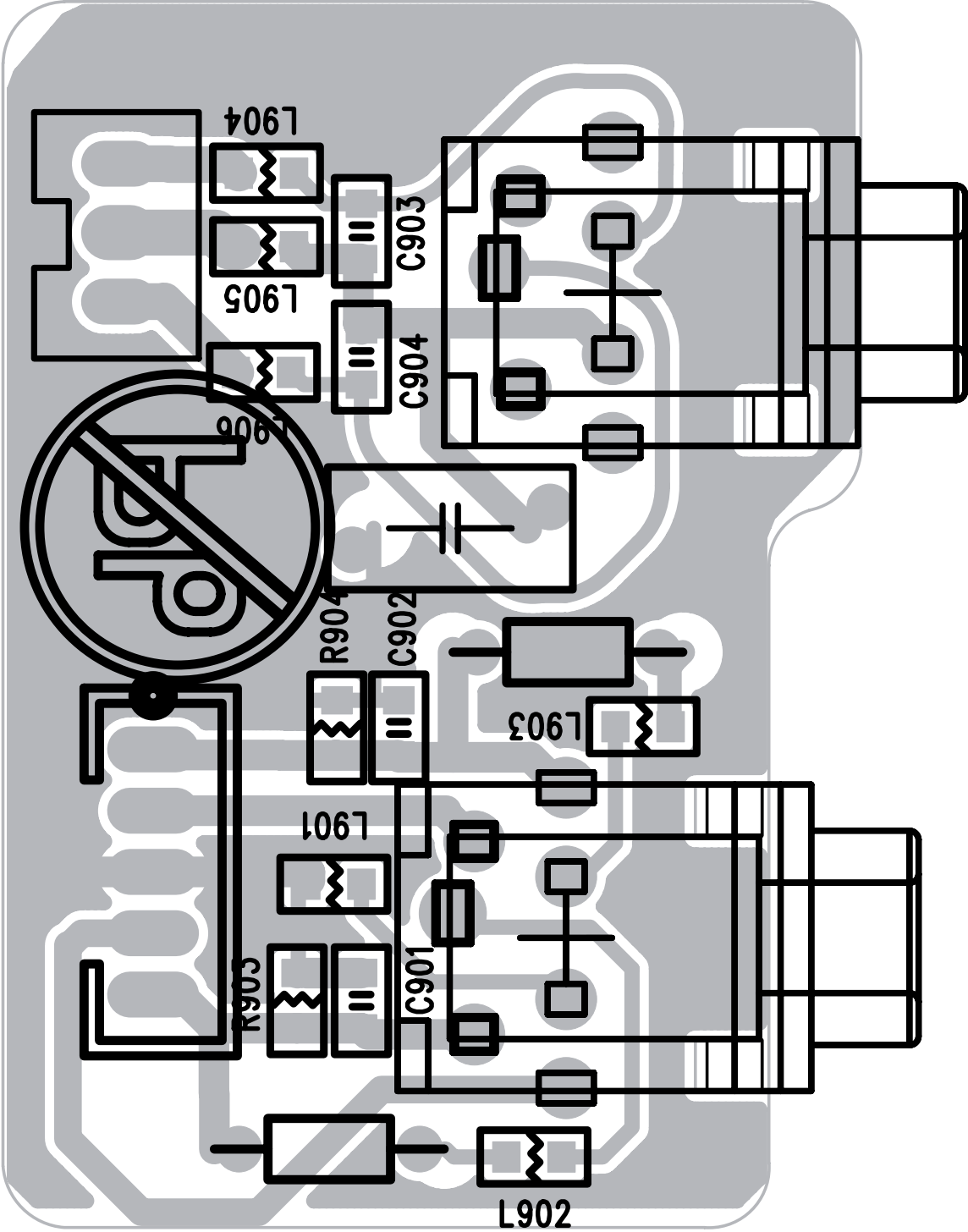
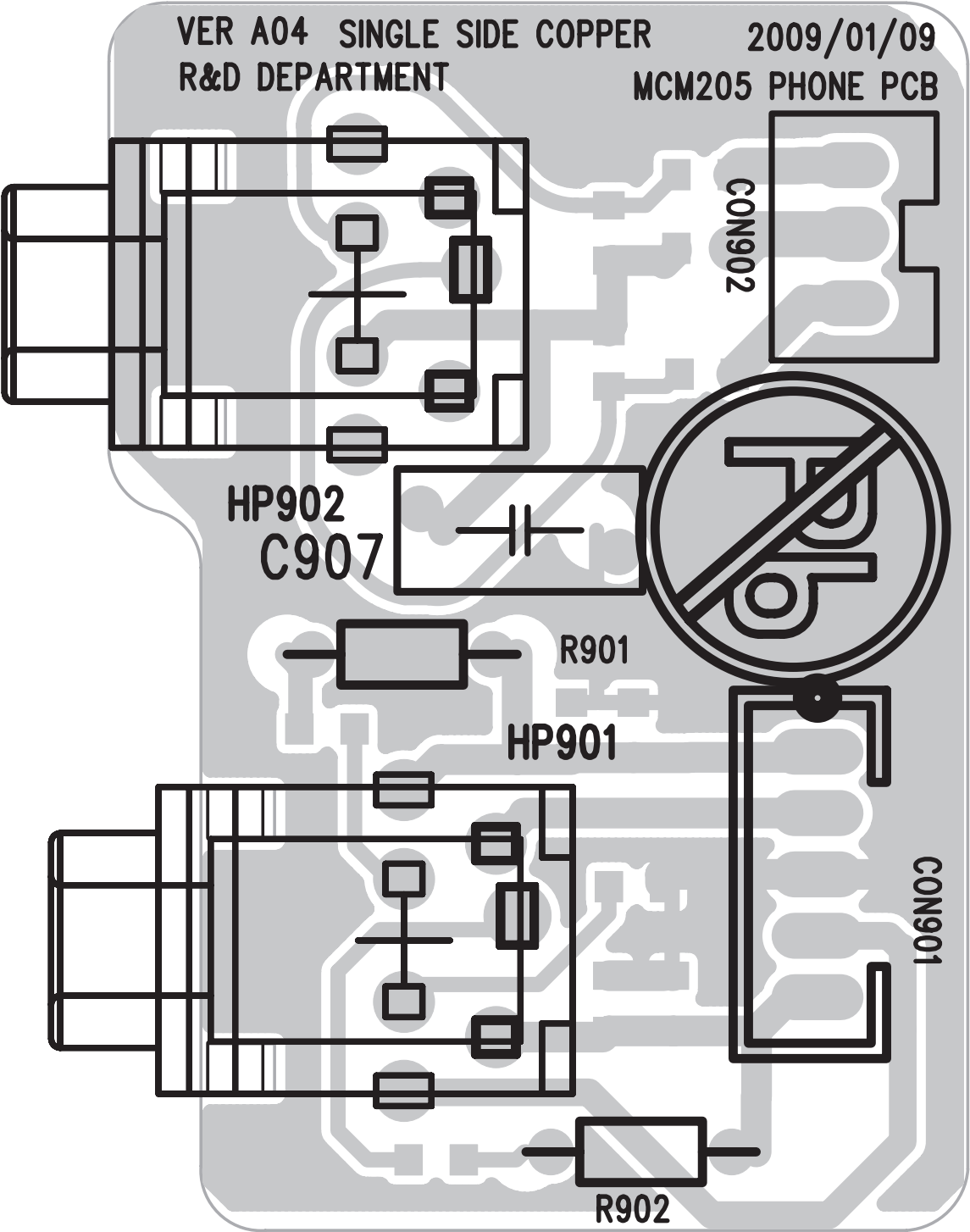
PCB LAYOUT - MAIN BOARD (BOTTOM VIEW)



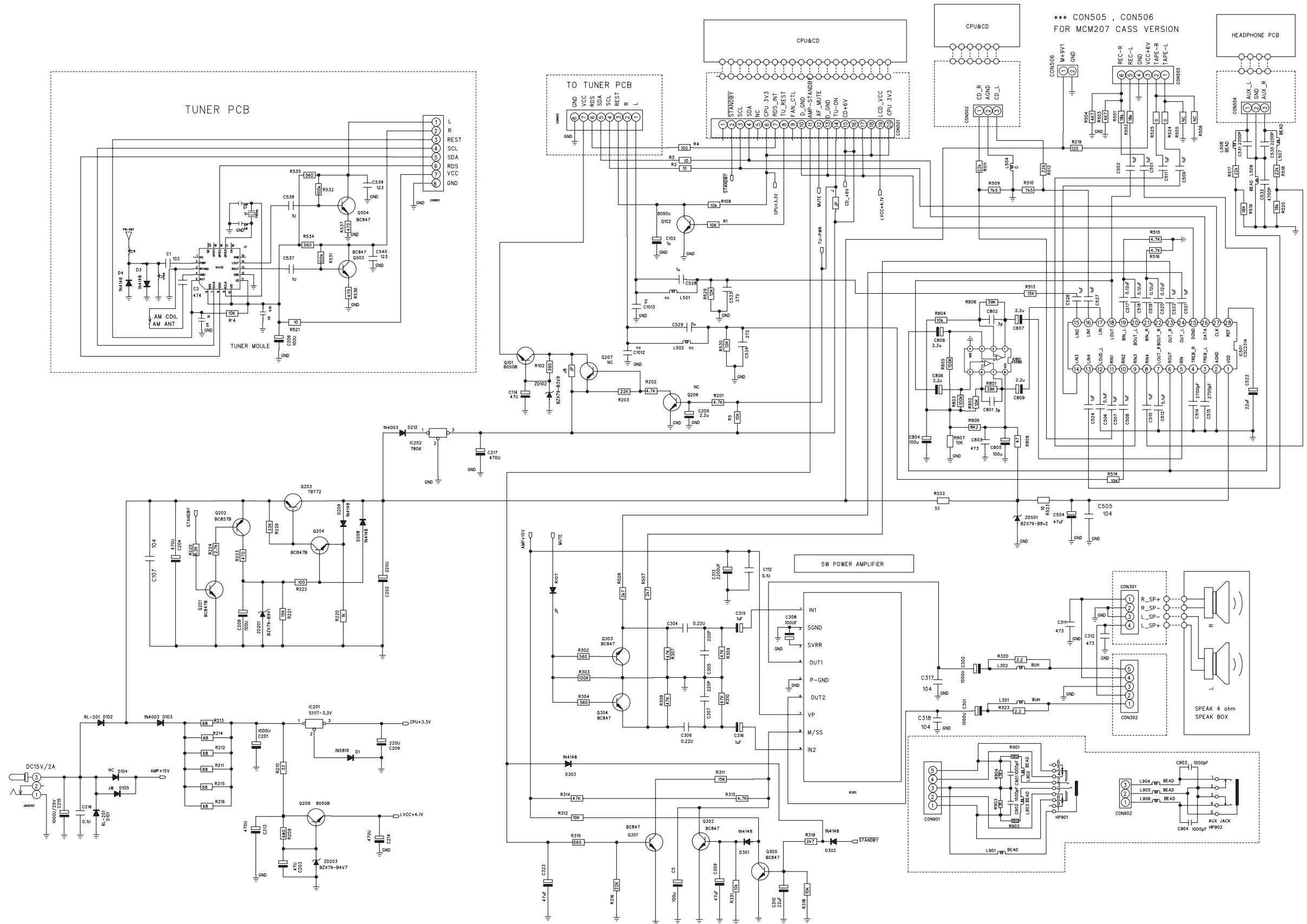
PCB LAYOUT - TUNER BOARD (ONLY FOR REFERENCE, MODULE SWAP)



LAYOUT DIAGRAM - HEADPHONE BOARD



CIRCUIT DIAGRAM - MAIN & TUNER & HP BOARD



MCU & USB BOARD

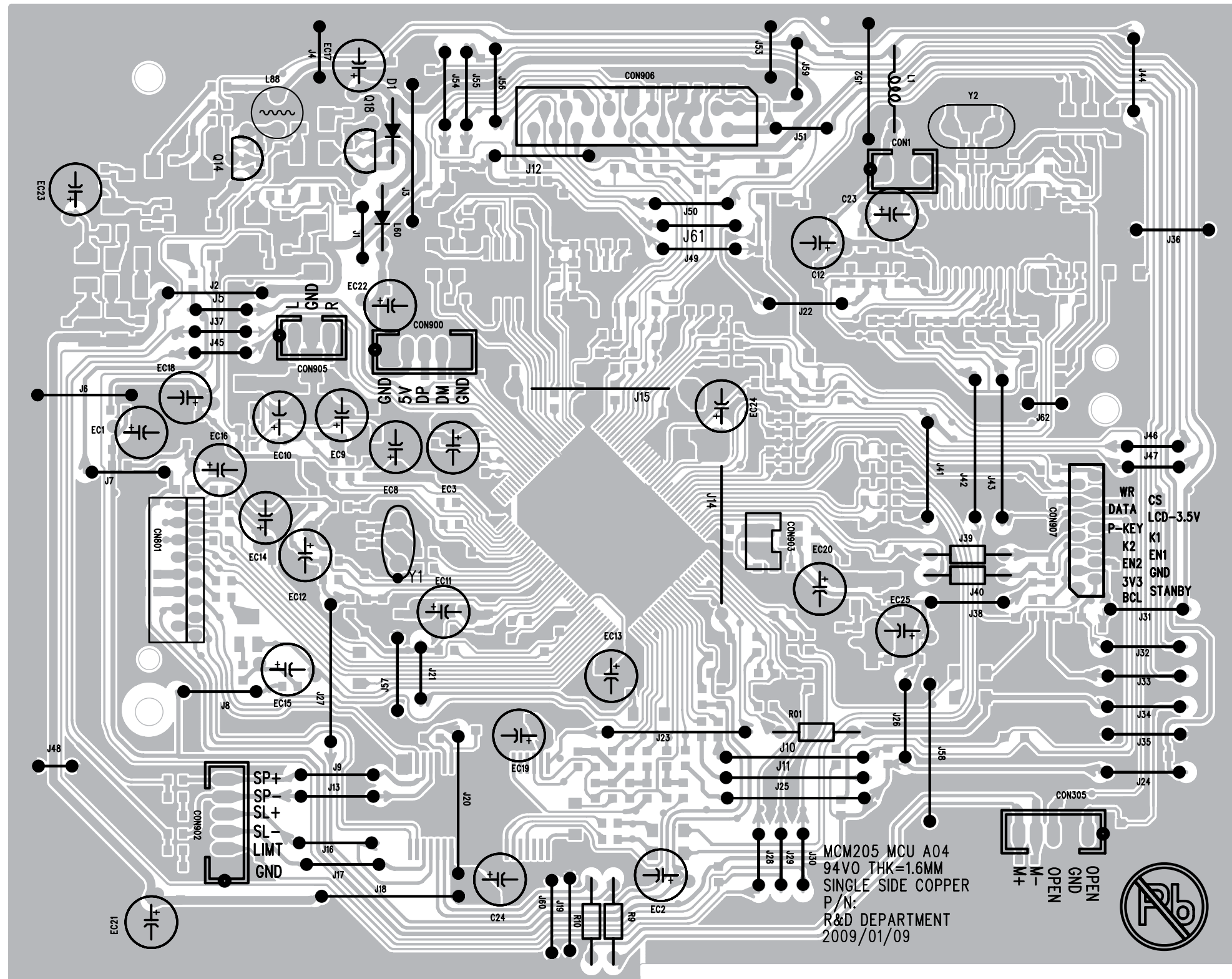
TABLE OF CONTENTS

MCU Board Layout Top View 5-2

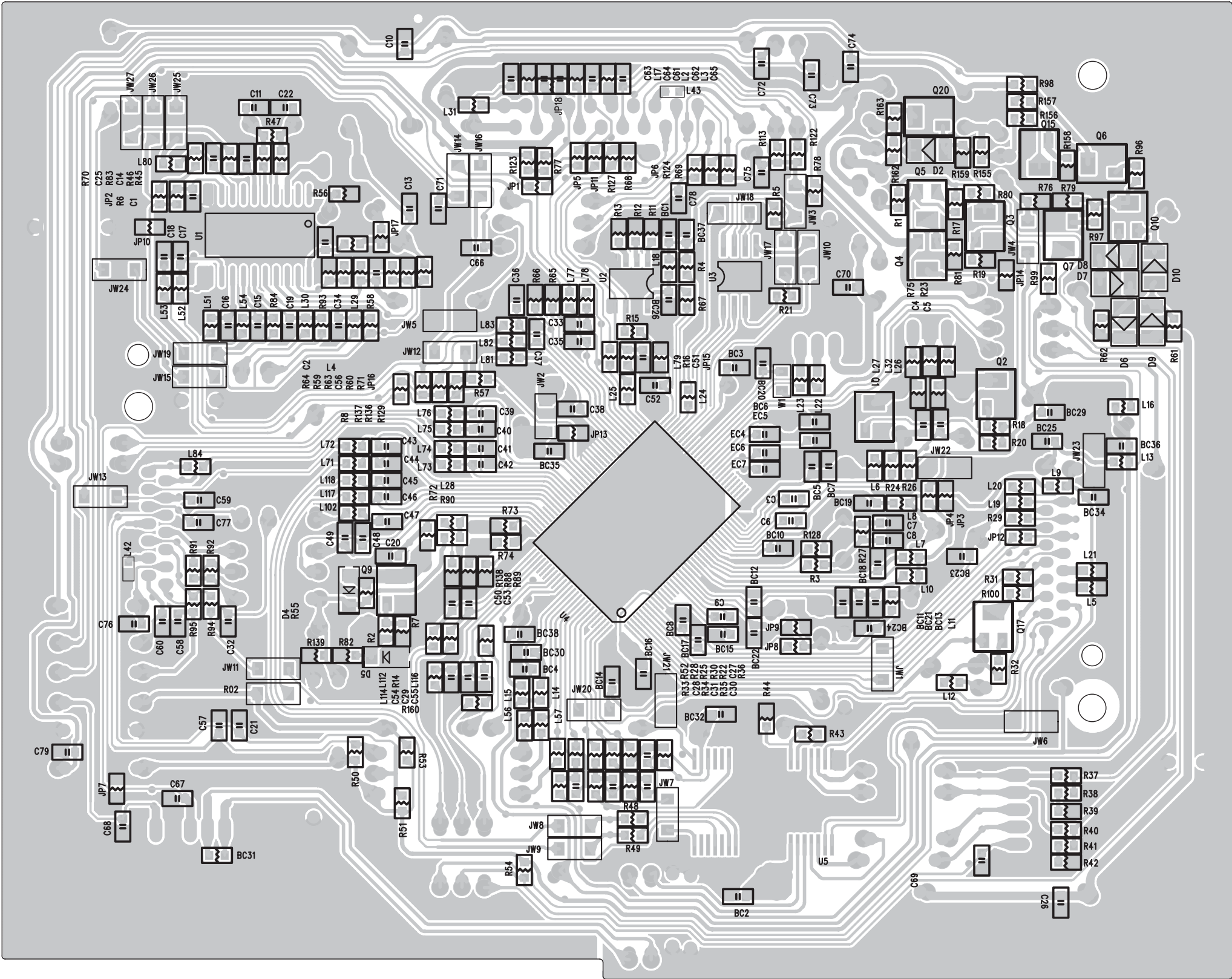
MCU Board Layout Bottom View 5-3

USB Jack Board Layout Diagram..... 5-4

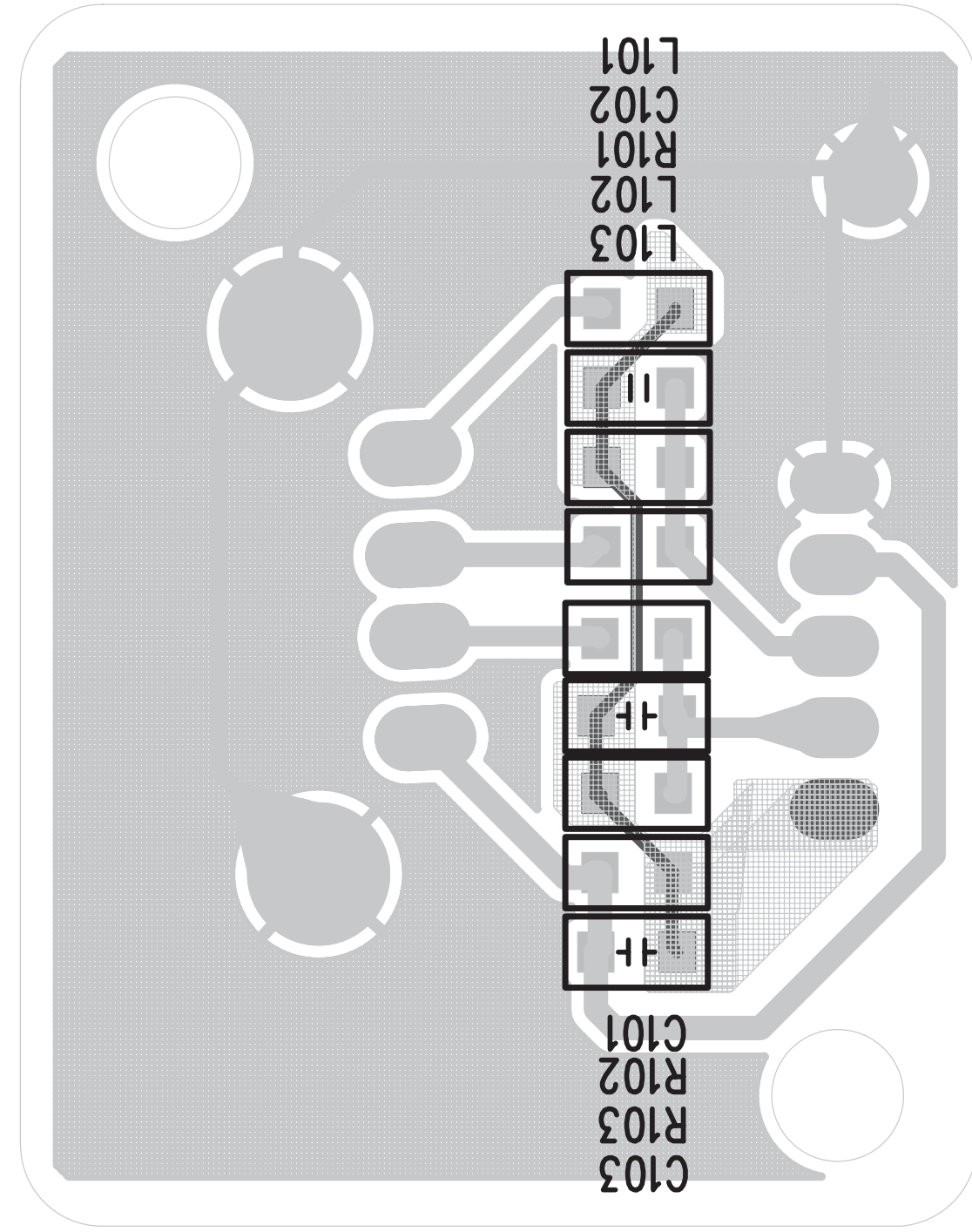
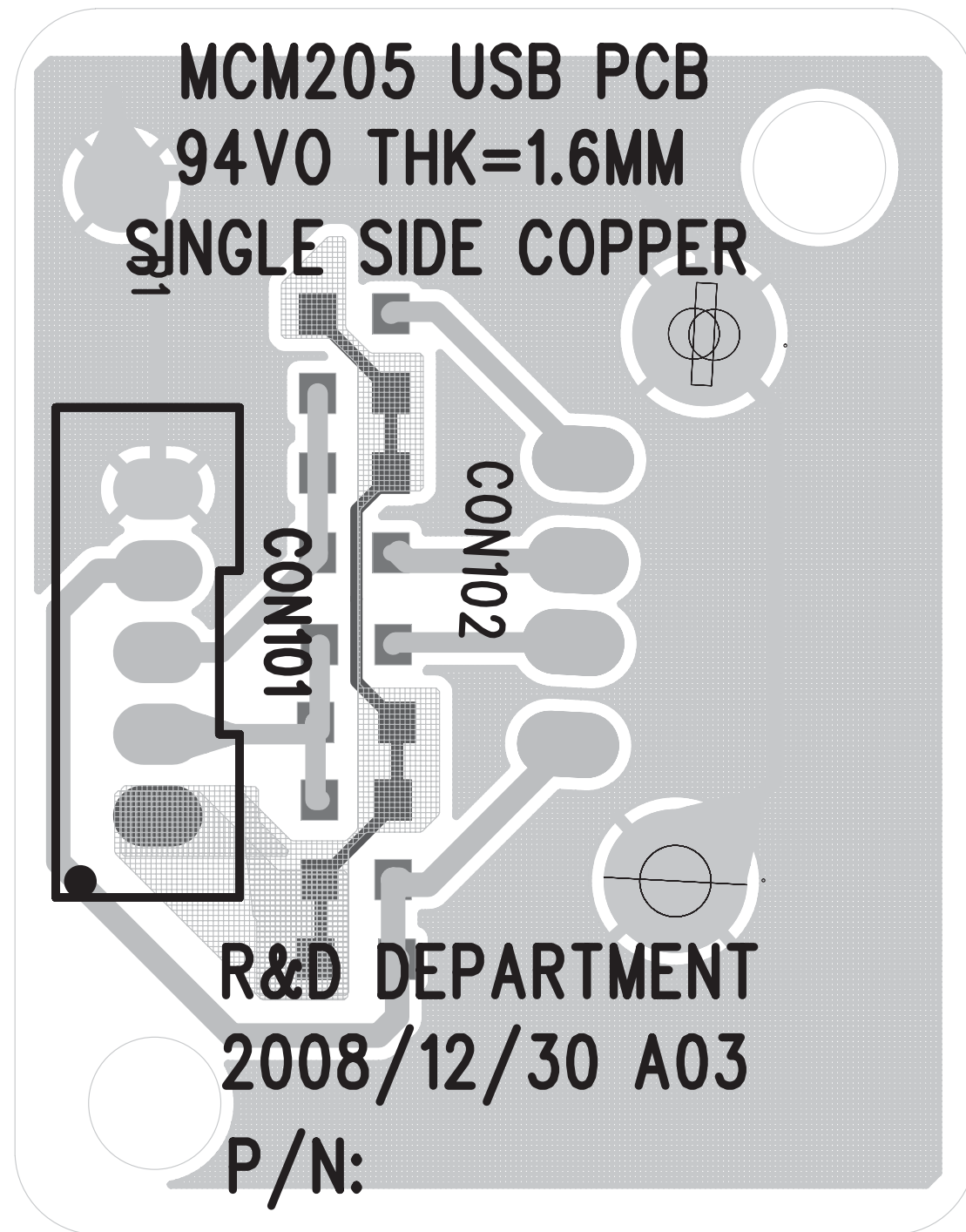
Circuit Diagram..... 5-5



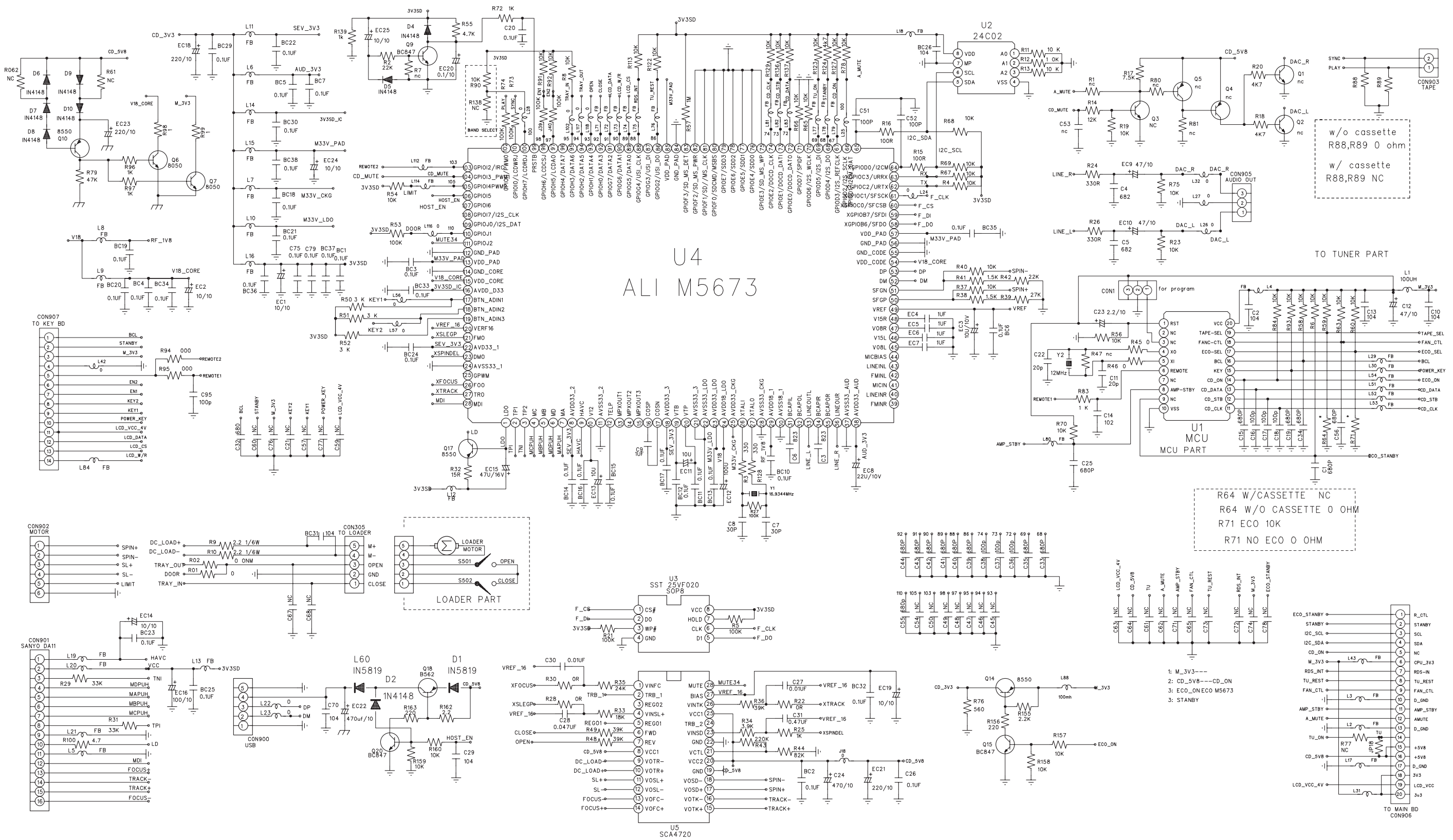
PCB LAYOUT - MCU BOARD (BOTTOM VIEW)



LAYOUT DIAGRAM - USB BOARD



CIRCUIT DIAGRAM - MCU & USB BOARD



DISPLAY/KEY BOARD

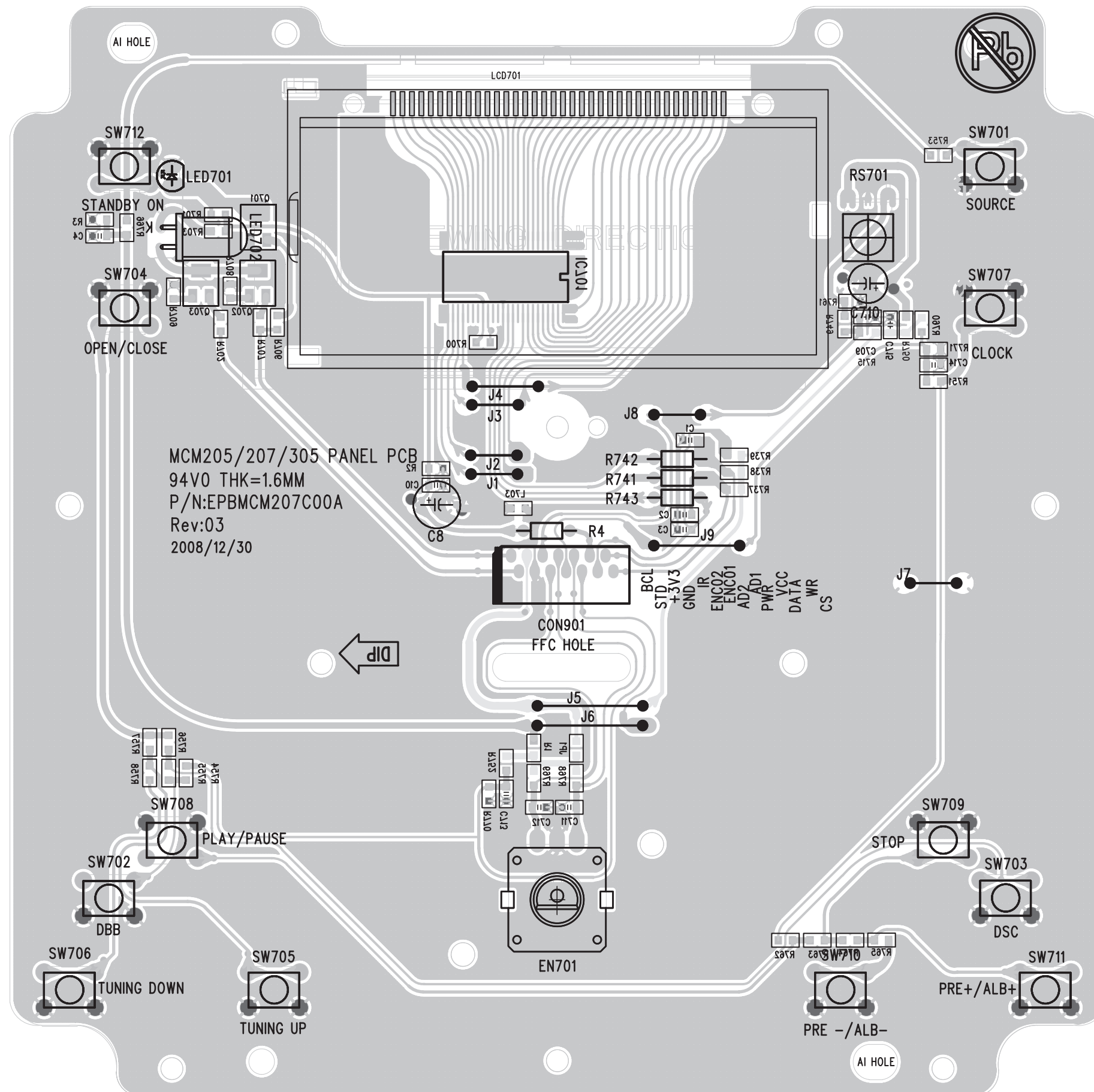
TABLE OF CONTENTS

Layout Top View 6-2

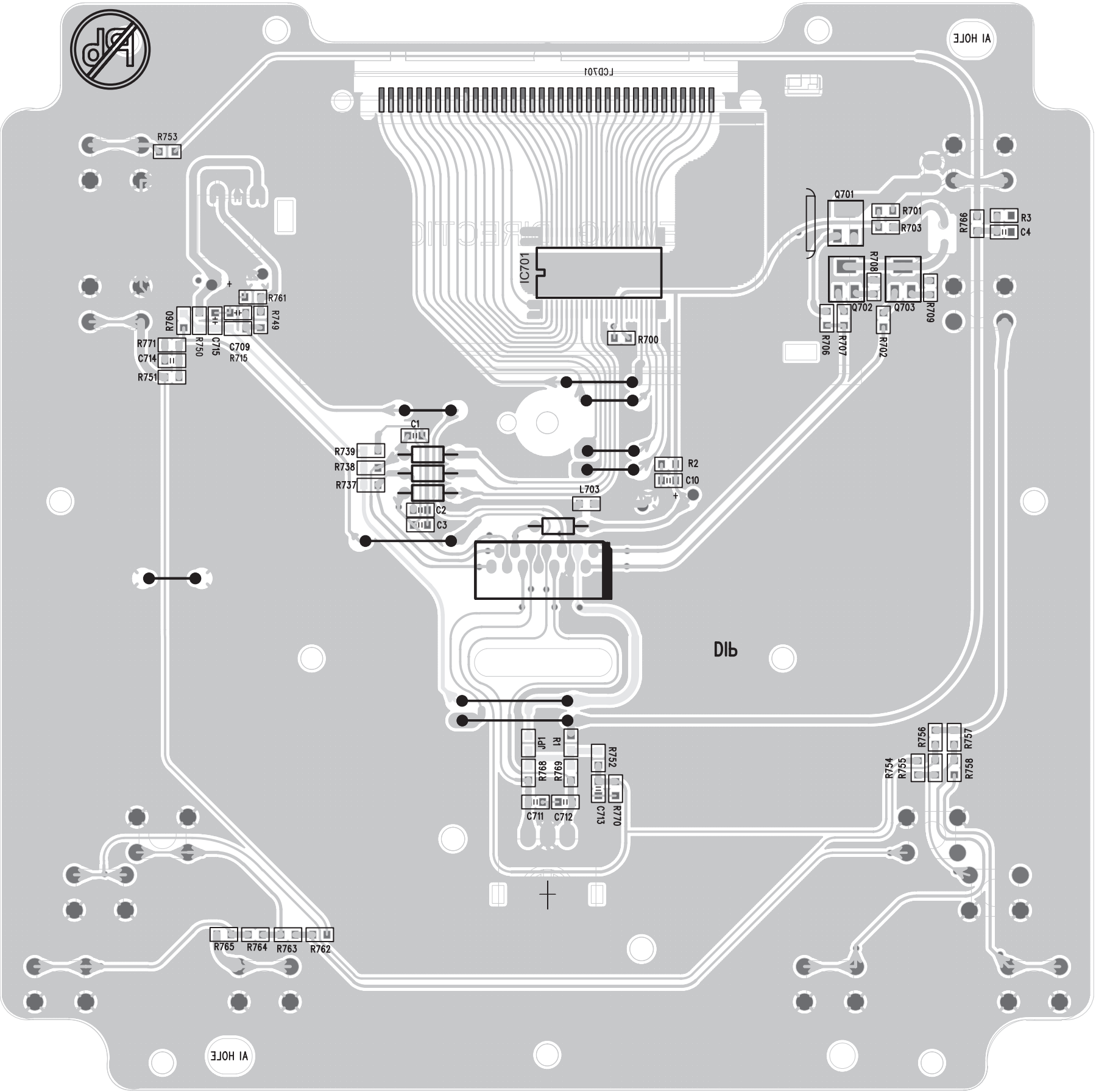
Layout Bottom View..... 6-3

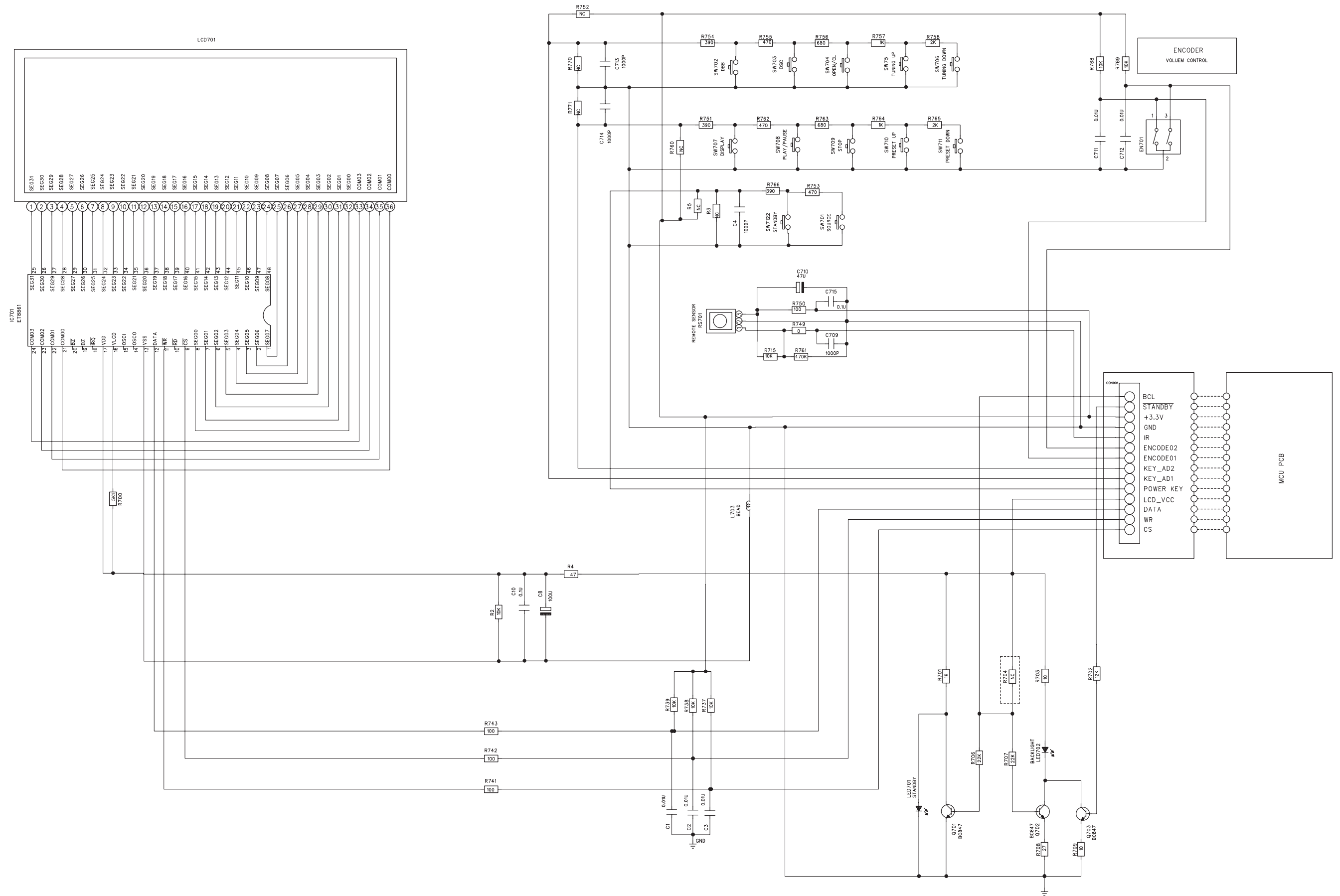
Circuit Diagram..... 6-4

PCB LAYOUT - DISPLAY/KEY BOARD (TOP VIEW)

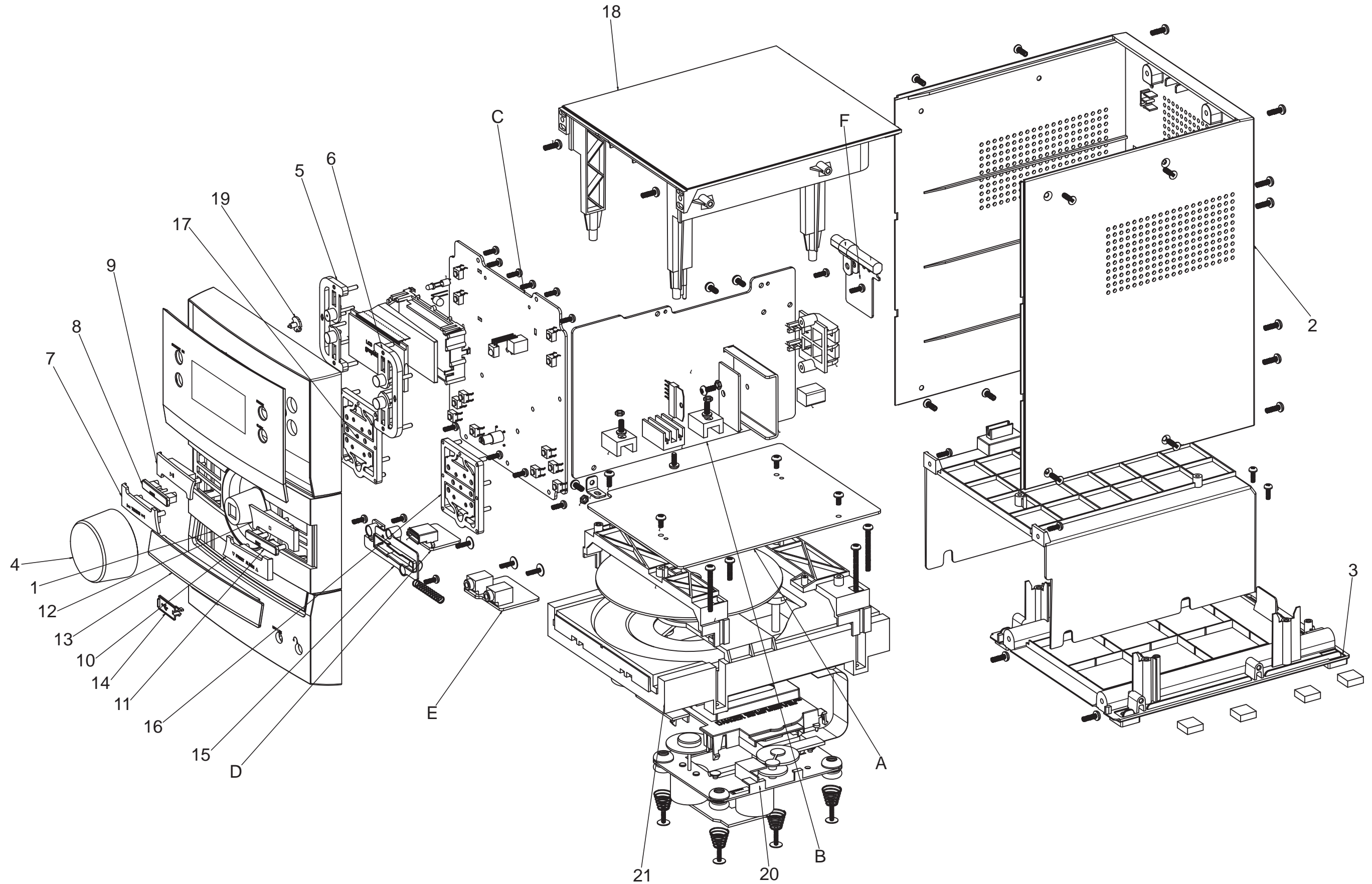


PCB LAYOUT - DISPLAY/KEY BOARD (BOTTOM VIEW)





SET MECHANICAL EXPLODED VIEW



MECHANICAL & ACCESSORIES PARTS LIST

Loc.	12NC	Description
MAIN UNIT		
1	996510021684	FRONT CABINET
2	996510021679	REAR CABINET
3	996510021659	BOTTOM CABINET
4	996510021657	VOLUME KNOB
5	996510021656	POWER CD BUTTON
6	996510021666	SOURCE CLOCK BUTTON
7	996510021677	TUNING BUTTON
8	996510021682	DBB BUTTON
9	996510021662	PLAY BUTTON
10	996510021667	PRESET ALBUM BUTTON
11	996510021653	DSC BUTTON
12	996510021685	STOP BUTTON
13	996510021668	CD DOOR
14	996510021672	USB DOOR
15	996520035756	USB BRACKET
16	996510021658	FUNCTION BUTTON BKT LEFT
17	996510021663	FUNCTION BUTTON BKT RIGHT
18	996510012849	TOP CABINET
19	996510012854	POWER LIGHT GUIDE
20	994000005786	CD MECHANISM DA11VF(SANYO)
21	996510000871	CD TRAY LOADER
22	996510021686	FFC CABLE 80MM 14P P1MM
23	994000005767	20 PINS FFC CABLE TYPE A
24	996510021681	FFC CABLE 16P 180MM P1MM
25	△ 996510035718	SWITCHING ADAPTOR AC100-240V
26	996510021665	REMOTE CONTROL
27	996510021654	SINGLE SPK BOX L/R
F	996510021664	MCM207 TUNER PCB
A	996510021678	MCM207 MCU PCB

ELECTRICAL PARTS LIST

Loc.	12NC	Description
MCU PCB ASSY		
D1	996510011340	DIODE 1N5819 DO-41
D10	996510010774	DIODE 1N4148 FDLL4148
D2	996510010774	DIODE 1N4148 FDLL4148
D4	996510010774	DIODE 1N4148 FDLL4148
D5	996510010774	DIODE 1N4148 FDLL4148
D6	996510010774	DIODE 1N4148 FDLL4148
D7	996510010774	DIODE 1N4148 FDLL4148
D8	996510010774	DIODE 1N4148 FDLL4148
D9	996510010774	DIODE 1N4148 FDLL4148
J39	996520035757	CARBON RES.100KR 1/6W J%

ELECTRICAL PARTS LIST

Loc.	12NC	Description
MCU PCB ASSY		
J40	996520035757	CARBON RES.100KR 1/6W J%
L60	996510011340	DIODE 1N5819 DO-41
Q10	996510002323	TRANSISTOR S8550 SMD TYPE
Q14	996510002323	TRANSISTOR S8550 SMD TYPE
Q15	996510024762	TRANSISTOR KTC9014S
Q17	996510012833	TRANSISTOR BC857B
Q18	996510011342	TRANSISTOR HIT562 PNP TO-92MOD
Q3	996510024762	TRANSISTOR KTC9014S
Q20	996510024762	TRANSISTOR KTC9014S
Q6	996510016572	TRANSISTOR KTC8050S SOT-23
Q7	996510016572	TRANSISTOR KTC8050S SOT-23
Q9	996510024762	TRANSISTOR KTC9014S
R10	996520035758	CARBON RES.2.2R 1/6W J%
R9	996520035758	CARBON RES.2.2R 1/6W J%
U1	996510021671	IC MA802AS PROGRAMMED
U2	996510010763	IC AT24C02BN-SH-T
U3	996510021661	IC ST25VF040 PROGRAMMED
U4	996510021675	IC M5673 128P LQFP
U5	996510021673	IC SCA4720
Y2	996510016576	X'TAL 12MHZ 20PF +-20PPM

USB PCB ASSY

CON102	996510001071	USB JACK 4P ANGLE TYPE
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MAIN PCB ASSY

CON301	996510000380	PUSH TERMINAL JACK PST-418
D1	996510011340	DIODE 1N5819 DO-41
D102	996510001053	RECTIFIER DIODE RL201
D103	996510011339	DIODE 1N4003
D106	996510011332	DIODE 1N4148
D2	996510010774	DIODE 1N4148 FDLL4148
D212	996510011339	DIODE 1N4003
D4	996510010774	DIODE 1N4148 FDLL4148
D5	996510001053	RECTIFIER DIODE RL201
D5	996510010774	DIODE 1N4148 FDLL4148
D6	996510010774	DIODE 1N4148 FDLL4148
IC201	994000005724	IC LD1117AL-3.3V-D
IC202	996510001058	IC S7806PI TO-220F
IC301	996510021676	IC D1517 FSIP9 (DIP)
IC501	996510010771	IC 7314(ANGUS)
IC801	996510004562	IC D4558
JACK101	996510001054	6.5MM DC JACK (DJ32-2)
L2	996510001060	FERRITE BEAN SBK160808T-601Y-S
L3	996510001060	FERRITE BEAN SBK160808T-601Y-S

MAIN PCB ASSY

L4	996510001060	FERRITE BEAN SBK160808T-601Y-S
Q101	996500039268	TRANSISTOR KTC-8050C
Q102	996500039268	TRANSISTOR KTC-8050C
Q15	996510024762	TRANSISTOR KTC9014S
Q17	996510012833	TRANSISTOR BC857B
Q20	996510024762	TRANSISTOR KTC9014S
Q203	996510001414	TRANSISTOR KTB772(KEC)
Q205	996500039268	TRANSISTOR KTC-8050C
Q207	996510003718	TRANSISTOR KTC-8550C
Q3	996510024762	TRANSISTOR KTC9014S
Q9	996510024762	TRANSISTOR KTC9014S
ZD102	994000005722	ZENER DIODE 4V3 1/2W
ZD201	996500039258	ZENER DIODE 9V1 1/2W
ZD203	996510011334	ZENER DIODE BZX4V7
ZD501	996510011338	DIODE BZX79-B8V2 SOD27

DISPLAY/KEY PCB ASSY

EN701	996510001059	ENCODER EC121102X2B-HA1-082
IC701	996510001064	IC ET8861S LCD DRIVER
LCD701	996510021695	LCD DISPLAY
Q15	996510024762	TRANSISTOR KTC9014S
Q20	996510024762	TRANSISTOR KTC9014S
Q3	996510024762	TRANSISTOR KTC9014S
R741	996510021674	CARBON RES. 100R 1/6W J%
R742	996510021674	CARBON RES. 100R 1/6W J%
R743	996510021674	CARBON RES. 100R 1/6W J%
R808	996510021669	CARBON RES. 47R 1/6W J%
RS701	996510011311	INFRARED RECEIVER RIGHT ANGLE
SW701	996500039269	TACT SWITCH
SW702	996500039269	TACT SWITCH
SW703	996500039269	TACT SWITCH
SW704	996500039269	TACT SWITCH
SW705	996500039269	TACT SWITCH
SW706	996500039269	TACT SWITCH
SW707	996500039269	TACT SWITCH
SW708	996500039269	TACT SWITCH
SW709	996500039269	TACT SWITCH
SW710	996500039269	TACT SWITCH
SW711	996500039269	TACT SWITCH
SW712	996500039269	TACT SWITCH

HEADPHONE PCB ASSY

HP901	994000001456	STEREO HEADPHONE JACK
HP902	996510001073	EARPHONE CKX3.5-19S (3PIN)

ELECTRICAL PARTS LIST

Loc.	12NC	Description
<i>TUNER PCB ASSY (ONLY FOR REFERENCE)</i>		
D2	996510010774	DIODE 1N4148 FDLL4148
D4	996510010774	DIODE 1N4148 FDLL4148
Q20	996510024762	TRANSISTOR KTC9014S
Q9	996510024762	TRANSISTOR KTC9014S
U1	996510021655	IC SI4730-A10-GM 20P (QFN)
X1	994000003208	CRYSTAL 32.768KHZ 12.5PF -10P

REVISION LIST

1.0 Manual 3141 785 33910

Initial Service Manual released.

1.1 Manual 3141 785 33911

In this version,

P7-2 Mechanical Partslist updated.

25 996510035718 SWITCHING ADAPTOR AC100-240V (was 996510021683 SWITCHING ADAPTOR AC100-240V)

1.2 Manual 3141 785 33912

In this version,

P7-2 Mechanical Partslist updated.

996510024762 TRANSISTOR KTC9014S (was 996510012793 TRANSISTOR BC847B)