

Service
Service
Service



Service Manual

TABLE OF CONTENTS

	Page
PCBs Location & Version Variations.....	1-2
Specifications	1-3
Measurement Setup	1-4
Service Aids, Safety Instruction, etc	1-5 to 1-7
Software Version Checking	2
Set Block Diagram.....	3
Set Wiring Diagram	4
Main Board & MCU Board.....	5
Key & LCD Board	6
Power Board.....	7
Power AMP Board	8
ECO Power Board.....	9
Headphone & AUX & USB Board.....	10
Set Mechanical Exploded View & Parts List.....	11



© Copyright 2008 Philips Consumer Electronics B.V. Eindhoven, The Netherlands
 All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.

Published by SL 0820 Service Audio

Printed in The Netherlands

Subject to modification

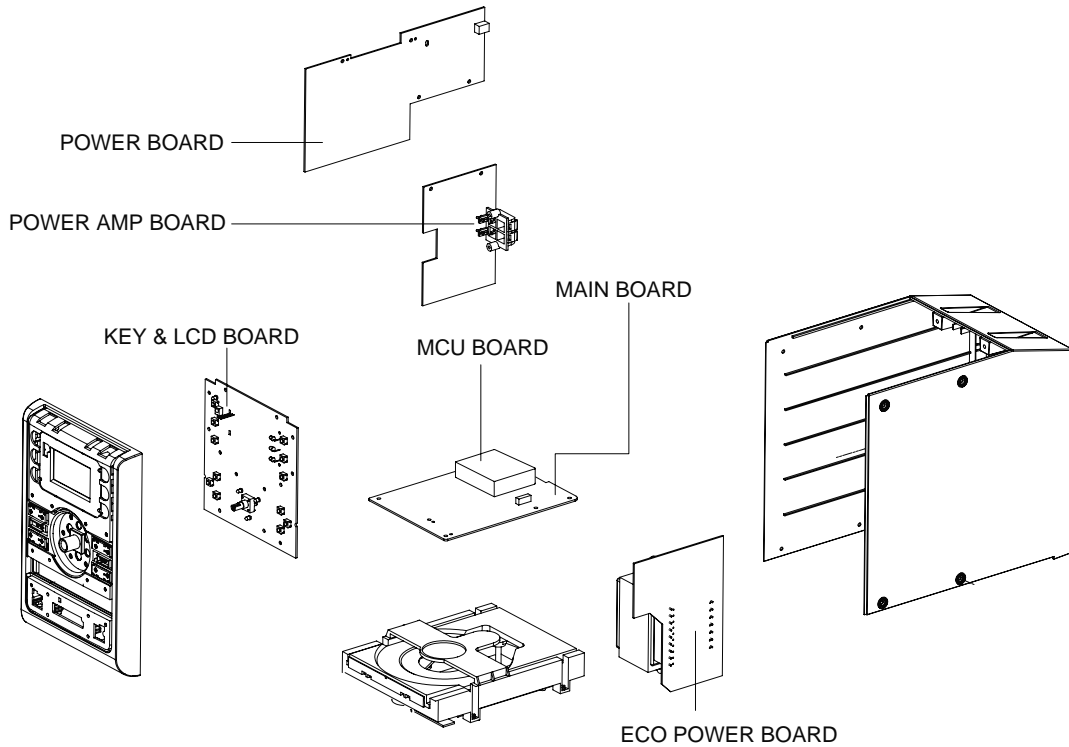
GB 3141 785 32850

Version 1.0



PHILIPS

PCBS LOCATION



VERSION VARIATIONS

Type /Versions:		MCB395									
Board in used:	Service policy	/12	/05		/55	/58	/61				/98
MAIN BOARD			C								
POWER BOARD			C								
POWER AMP BOARD			C								
KEY & LCD BOARD			C								
ECO POWER BOARD			C								
DAB MODULE			M								
USB & AUX & HP BOARD			C								
MCU BOARD			C								
Type /Versions:		MCB395									
Features in used:	Feature diffrence	/05	/12	/58							
Aux in / CDR in											
Line Out											
Video Out											
Subwoofer Out											
Digital Out											
Karaoke Features											
Voltage Selector											
ECO Power Standby (LCD Display Off)		x									
USB Direct		x									
* TIPS : C -- Component Lever Repair. M -- Module Lever Repair x -- Used											

SPECIFICATIONS

AMPLIFIER

Output power 2 x 50 W RMS
 100 W + 100 W MPO
 Signal-to-noise ratio ≥ 62 dBA (IEC)
 Frequency response 40 – 15000 Hz, ± 3 dB
 Impedance loudspeakers 4 Ω
 Impedance headphones 32 Ω -1000 Ω

CD/MP3-CD PLAYER

Number of programmable tracks 20
 Frequency range 20 – 20000 Hz
 Signal-to-noise ratio 75 dBA
 Channel separation ≥ 50 dBA (1 kHz)
 Total harmonic distortion $\leq 0.5\%$
 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
 Number of albums/folders maximum 99
 Number of tracks/titles maximum 999

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
 DAB wave range 174-240 MHz

SPEAKERS

2-way Bass reflex system

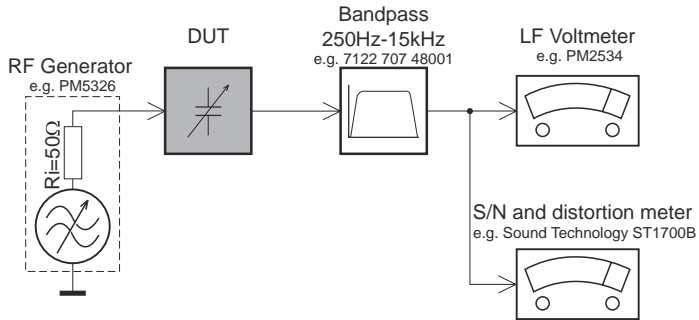
GENERAL INFORMATION

AC Power 220 – 230 V / 50 Hz
 Standby Power Consumption ≤ 7 W
 ECO Standby Power Consumption ≤ 1 W
 Dimensions (w x h x d)
 – Main unit (w x h x d) 152 x 228 x 285 mm
 – Speaker box (w x h x d) 152 x 228 x 257 mm
 Weight
 – With Packing 8.92 kg
 – Main Unit 3.66 kg
 – Speaker box 4.13 kg

Specifications and external appearance are subject to change without notice.

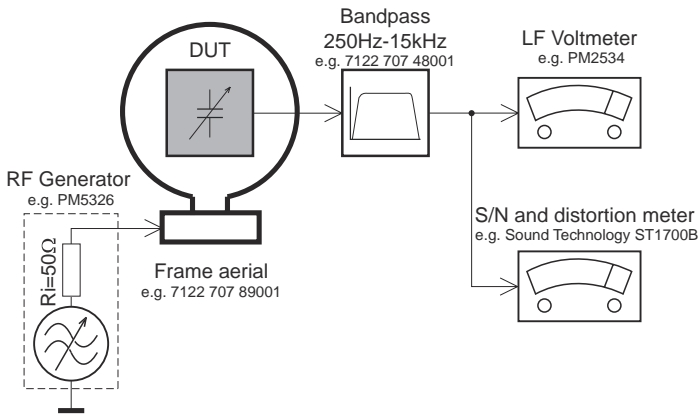
MEASUREMENT SETUP

Tuner FM



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

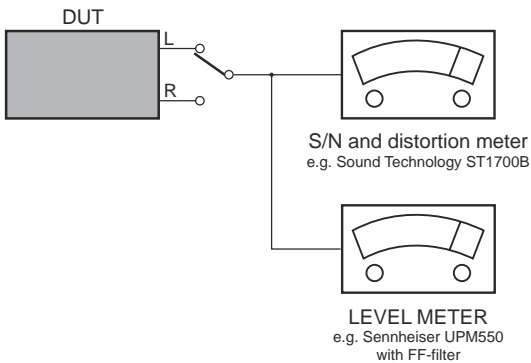
Tuner AM (MW,LW)



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 .

**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".

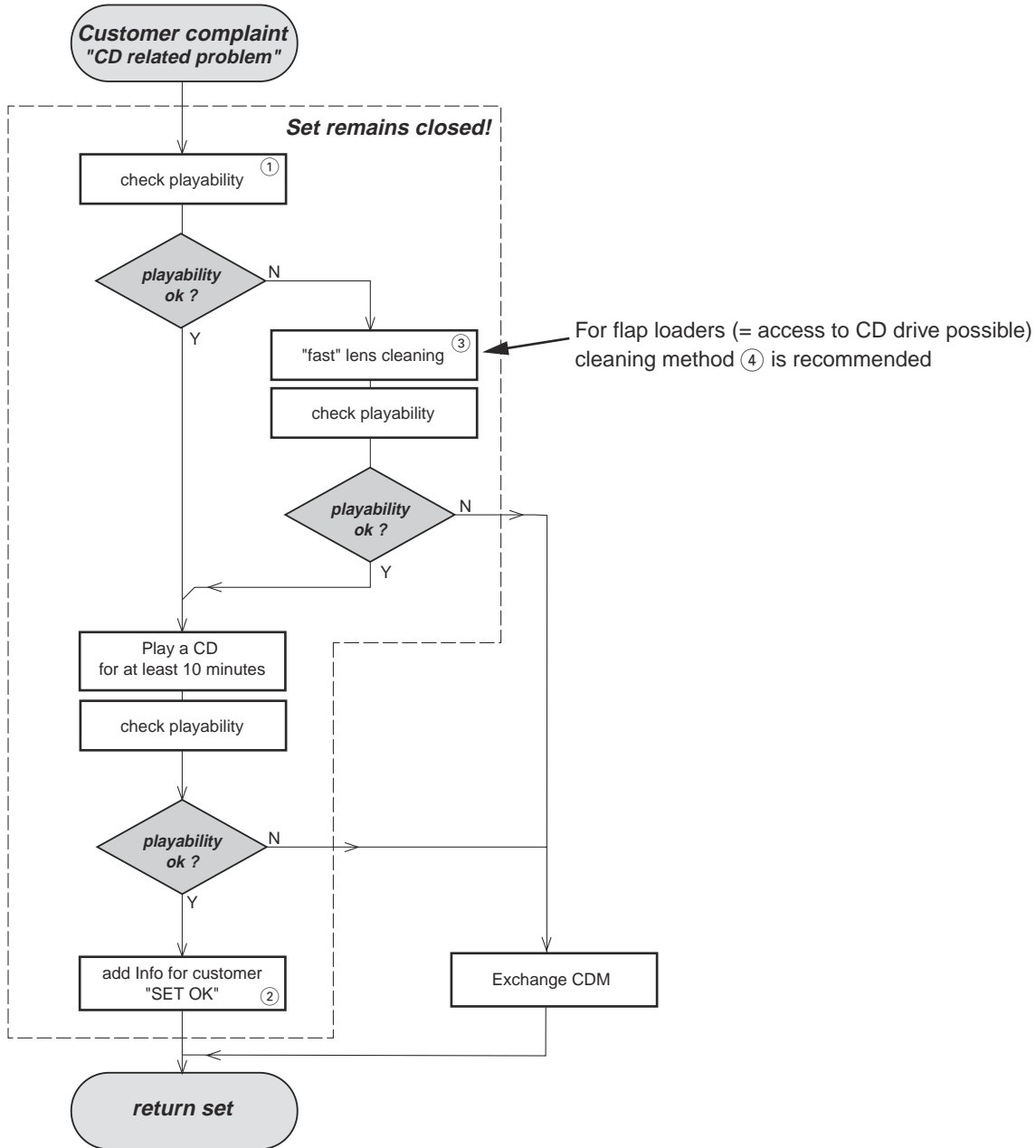
For additional questions please contact your local repair-helpdesk.

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

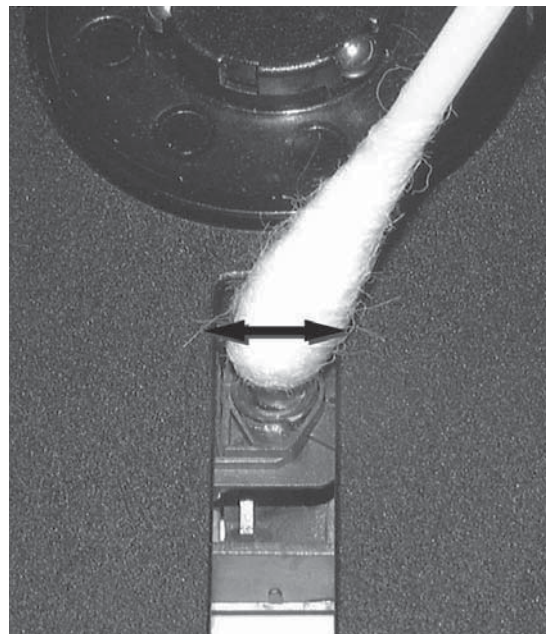
LIQUID LENS CLEANING

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.

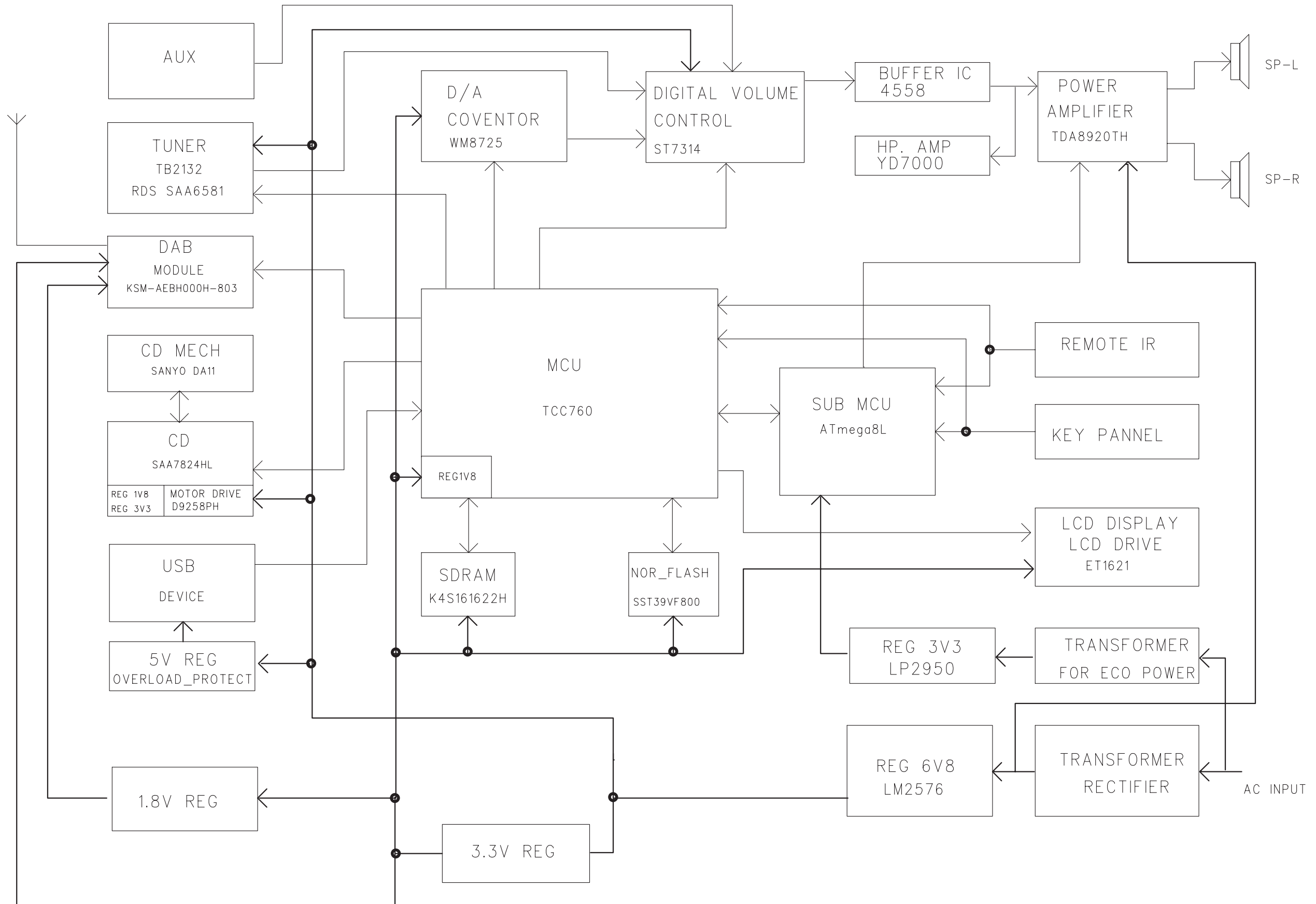
The direction of cleaning must be in the way as indicated in the picture below.



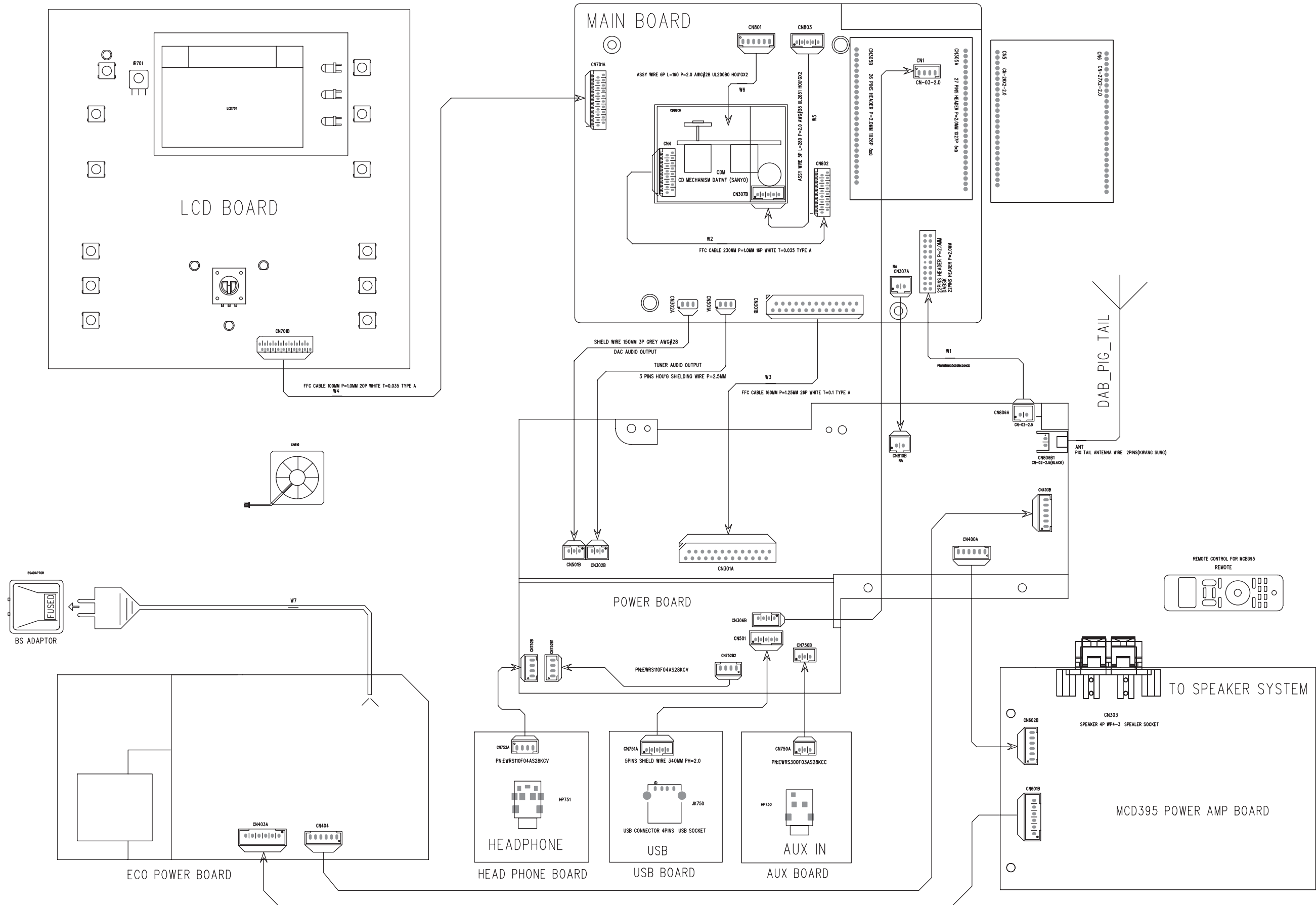
SOFTWARE VERSION CHECKING**Software checking:**

- 1) MCU version : at standby mode, press and hold "ALBUM -" & "STOP" buttons at the same time. e.g. V2.01G

SET BLOCK DIAGRAM

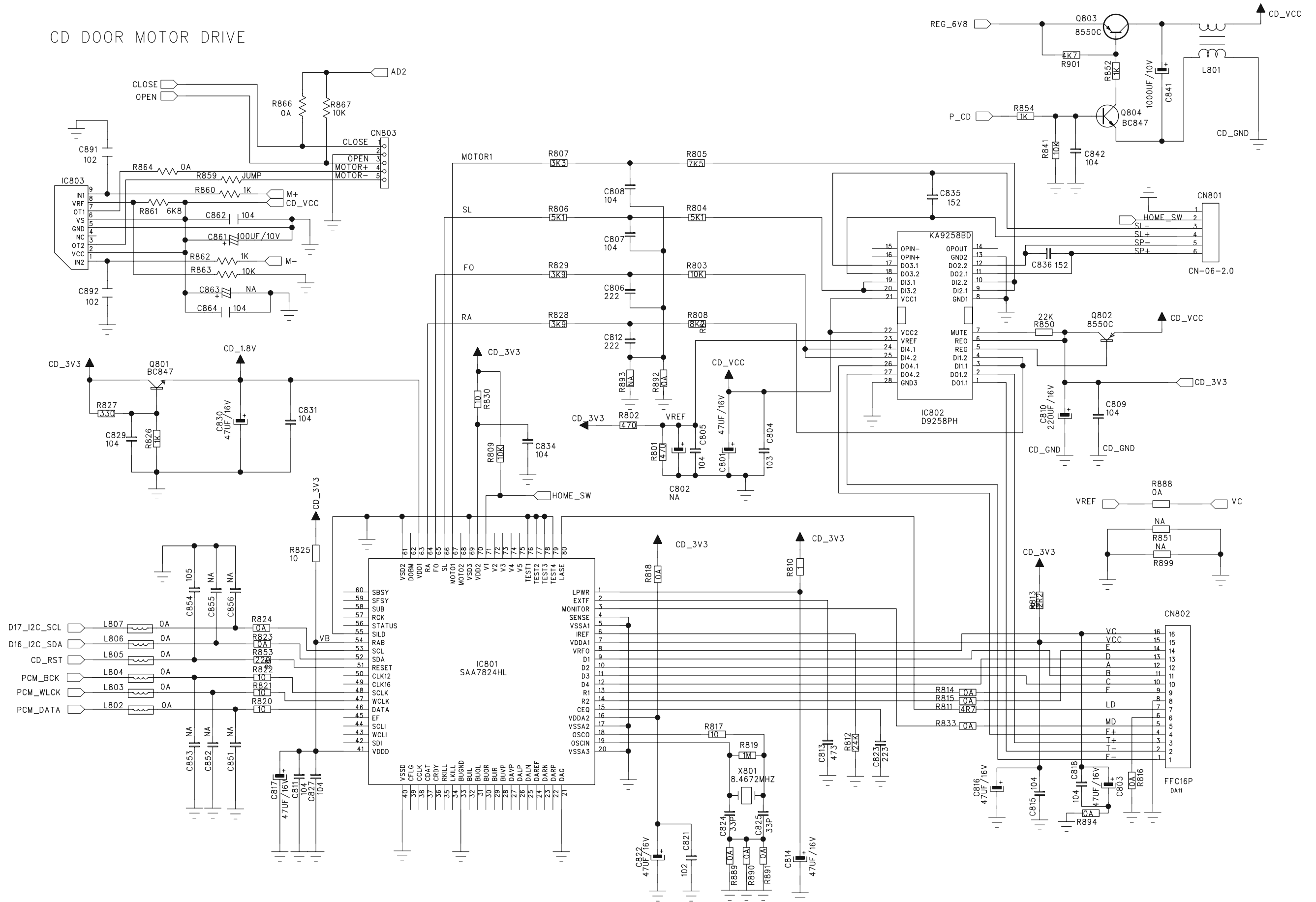


SET WIRING DIAGRAM

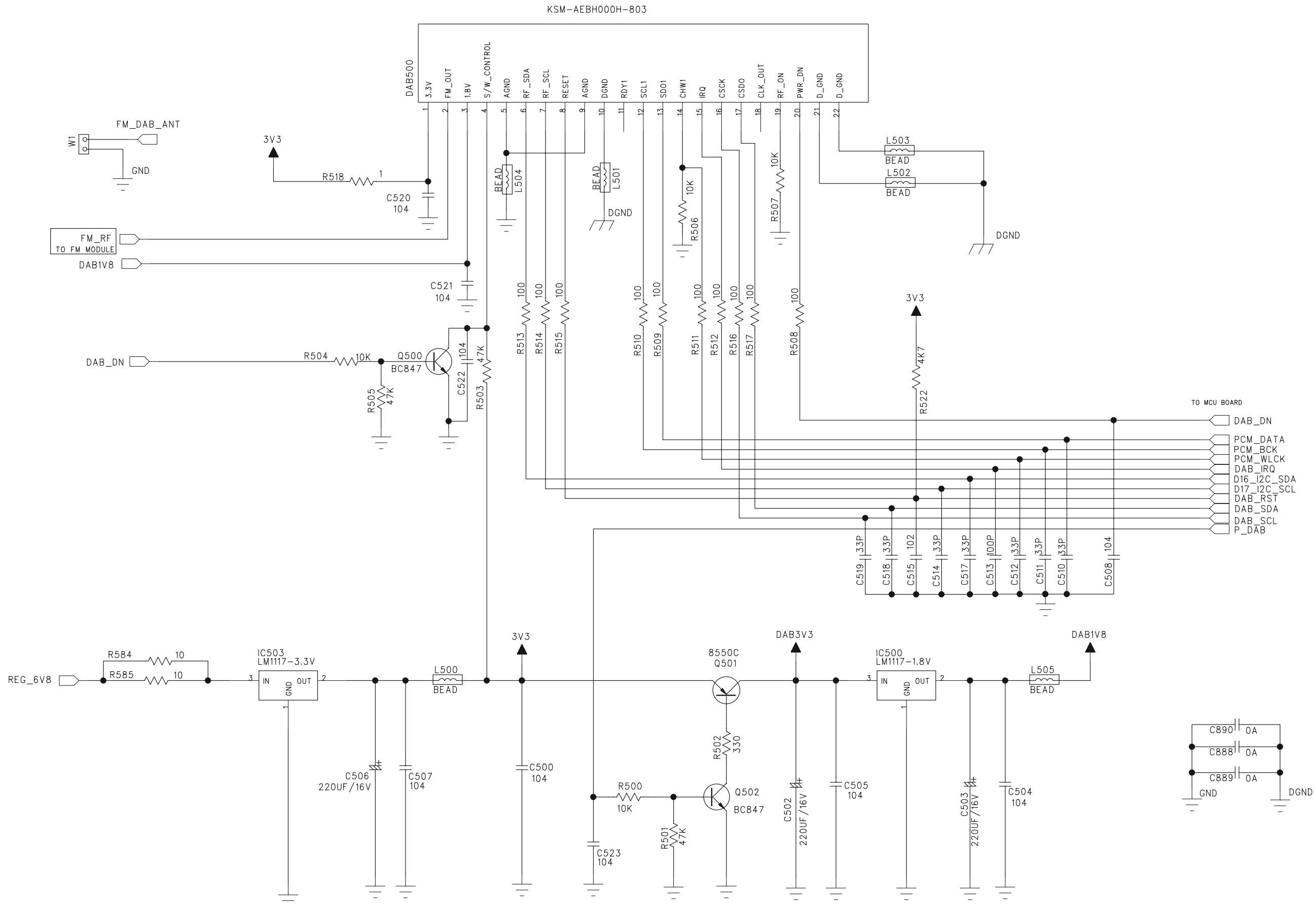


CIRCUIT DIAGRAM - MAIN BOARD CD PART

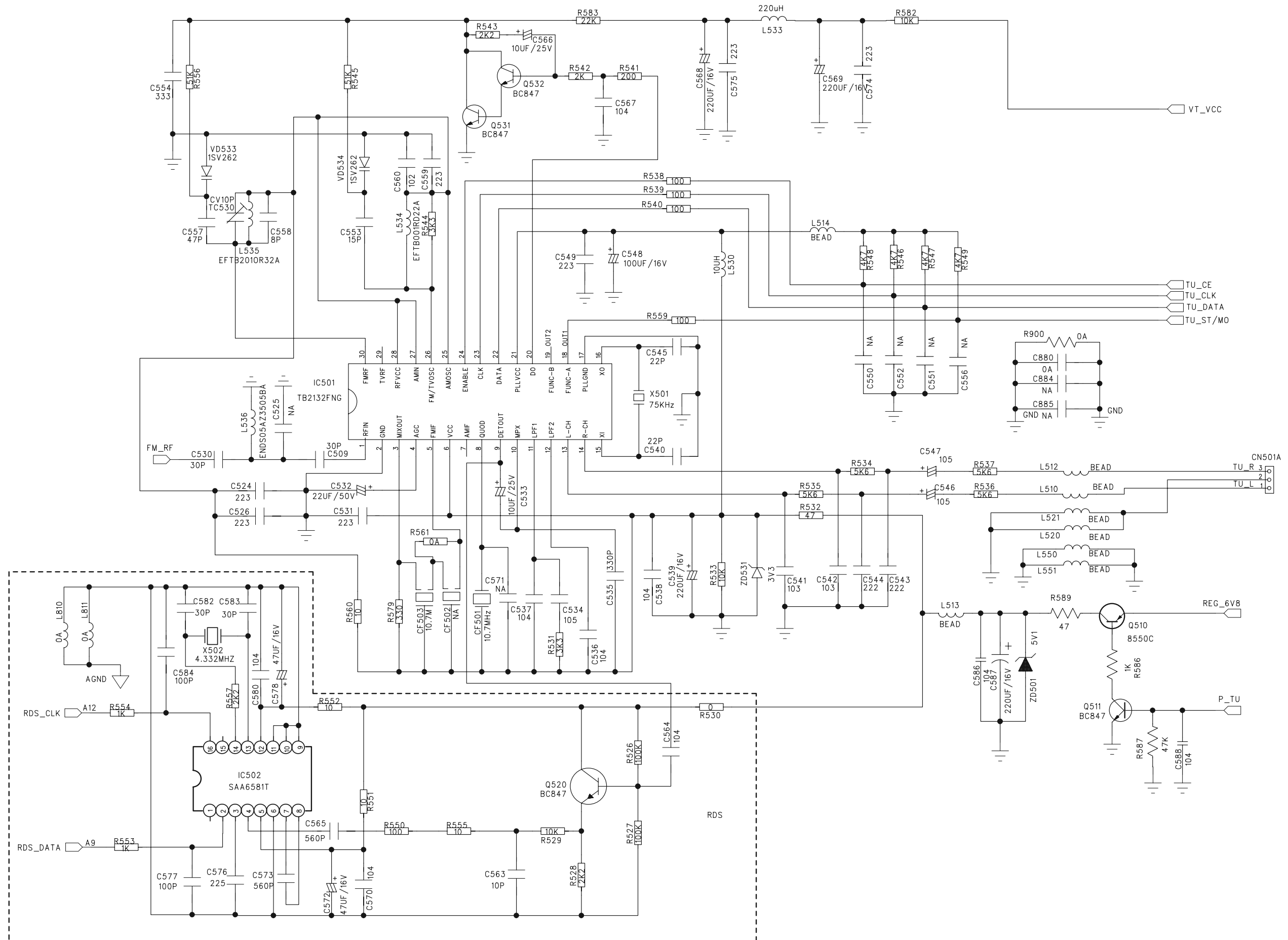
CD DOOR MOTOR DRIVE



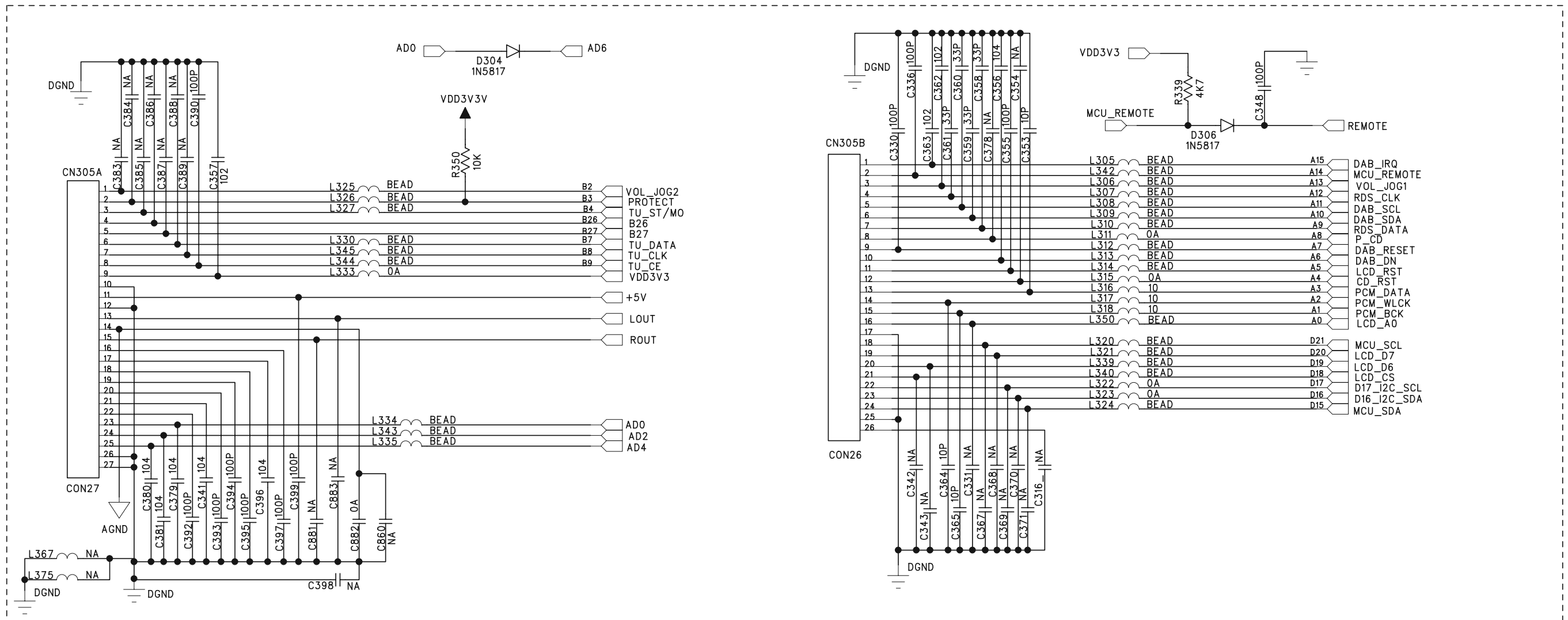
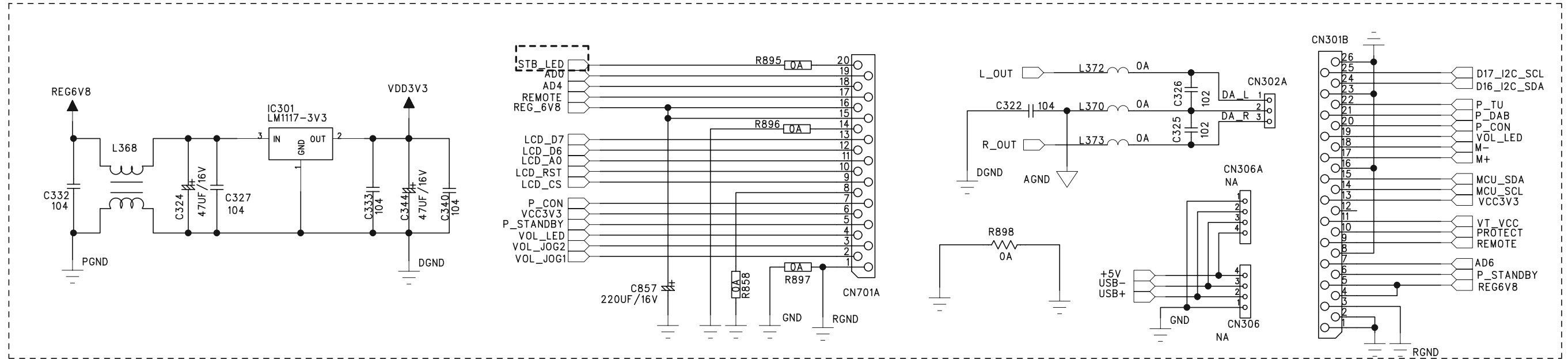
CIRCUIT DIAGRAM - MAIN BOARD DAB PART



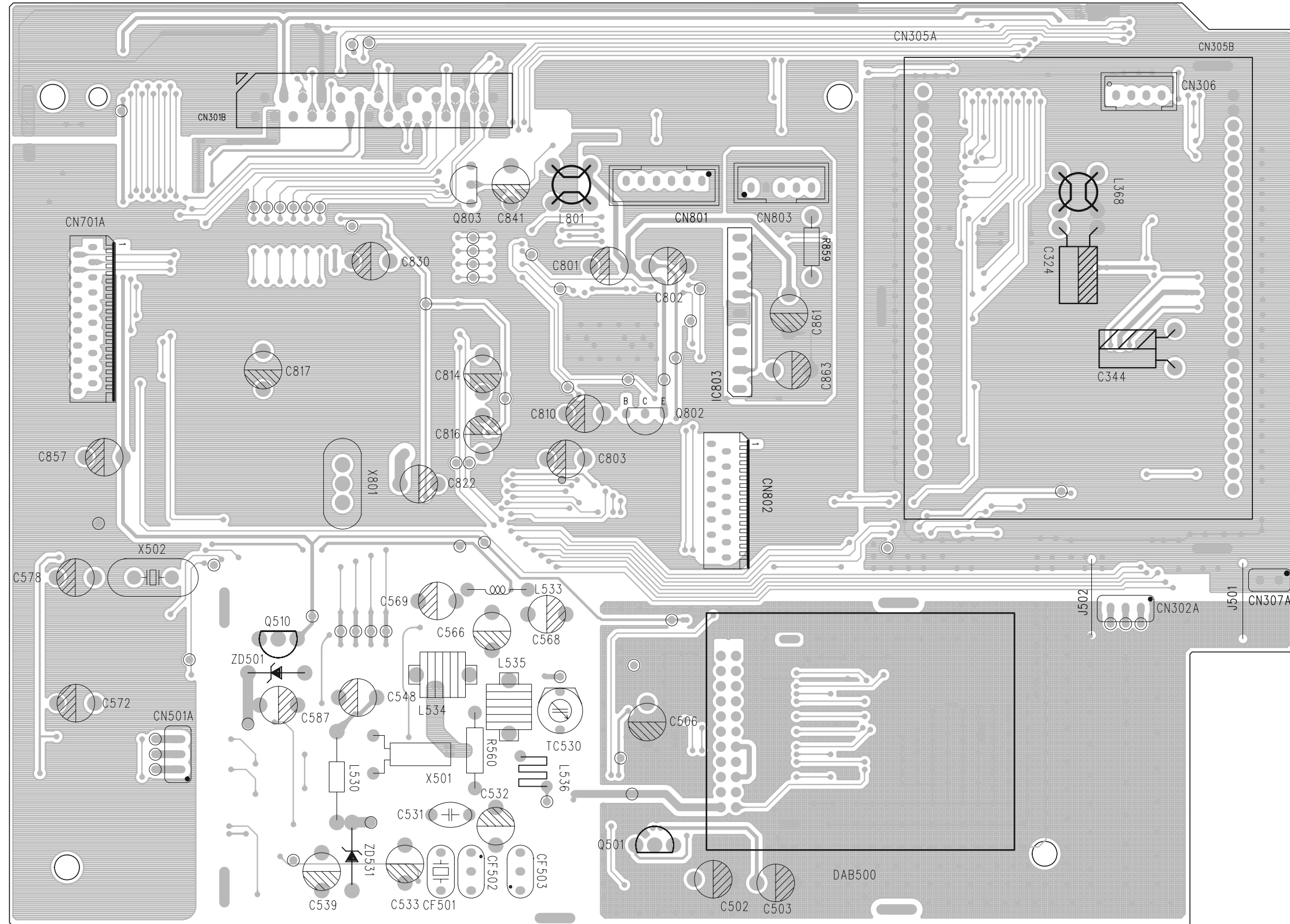
CIRCUIT DIAGRAM - MAIN BOARD TUNER PART



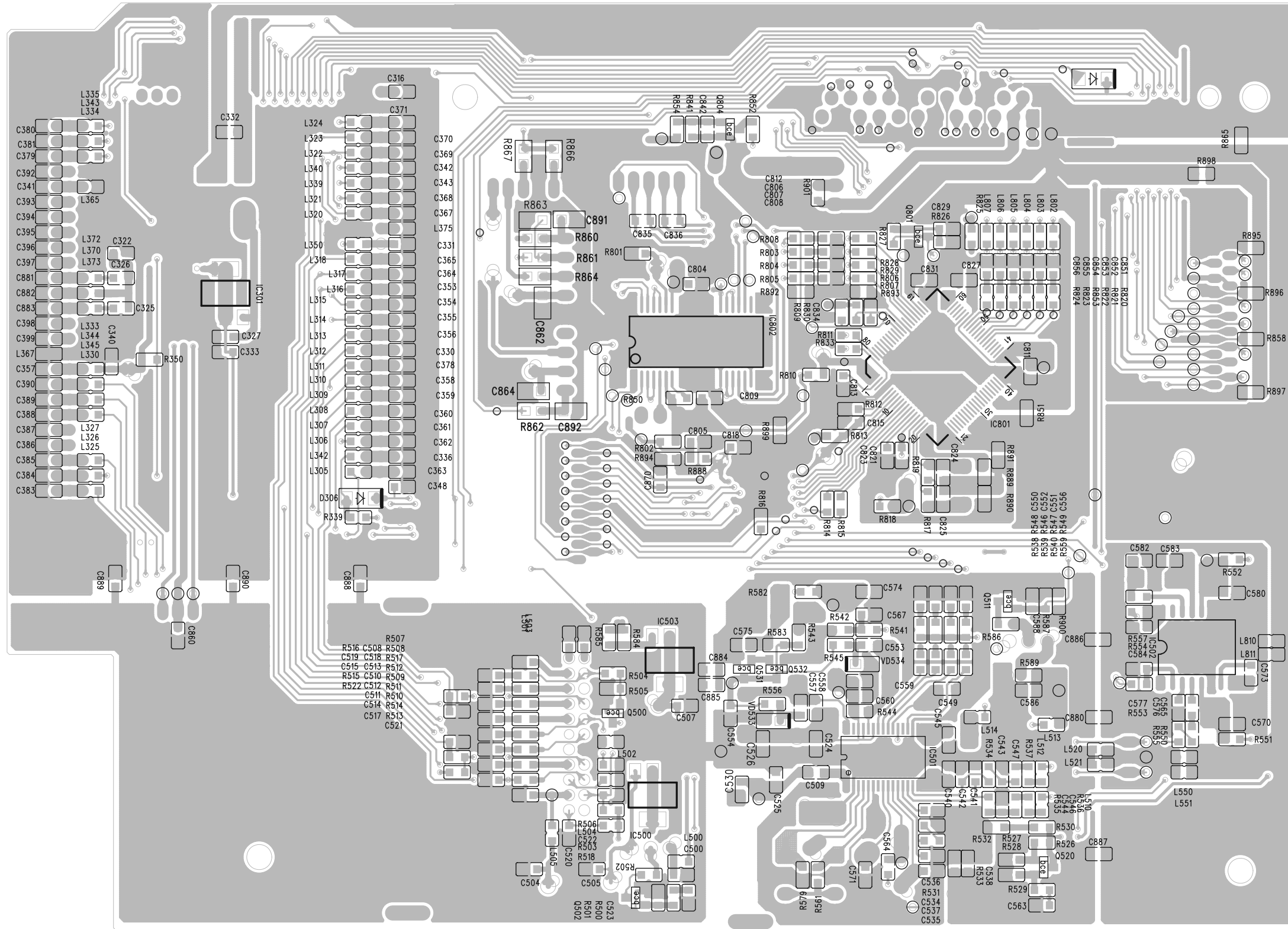
CIRCUIT DIAGRAM - MAIN BOARD
INTERFACE PART



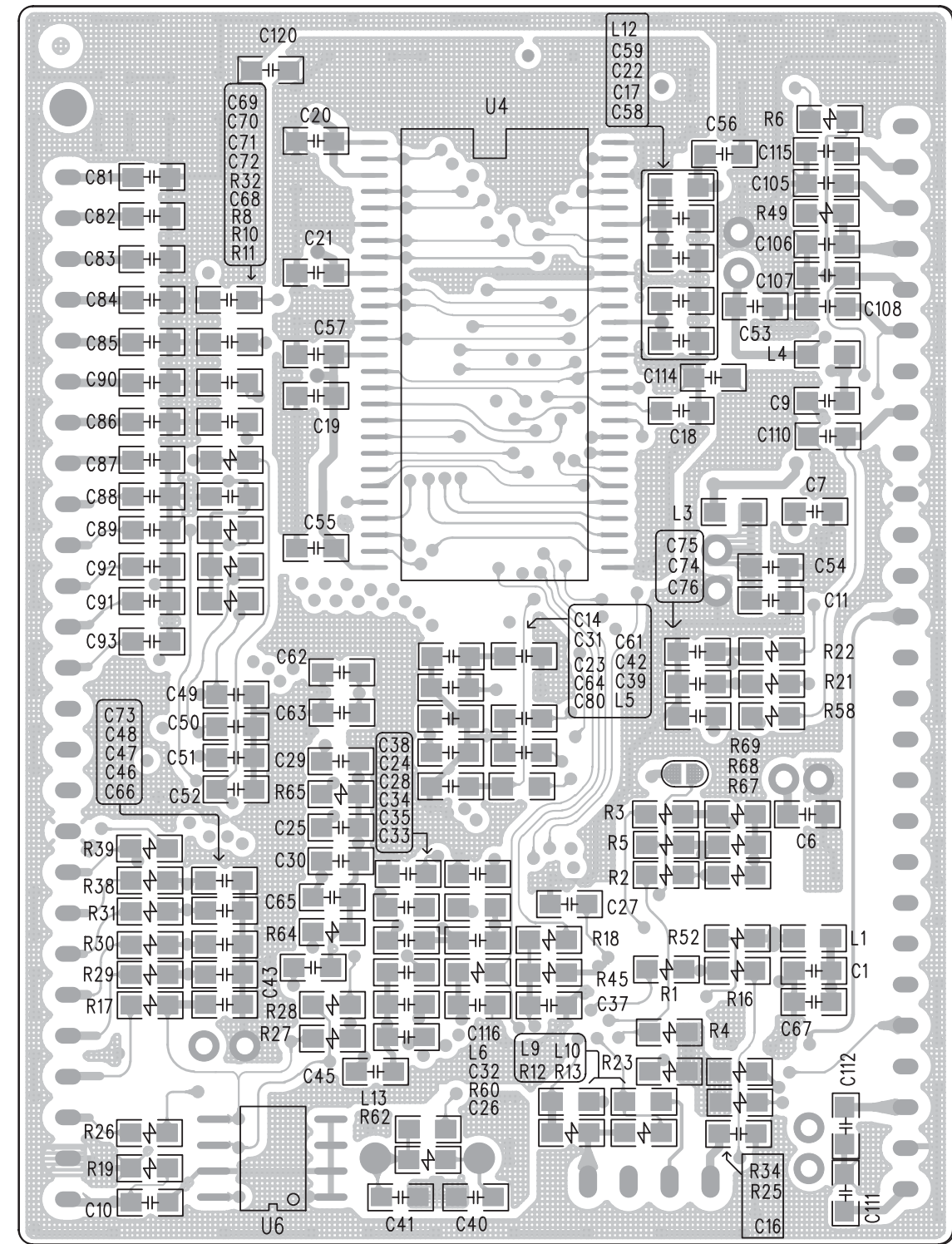
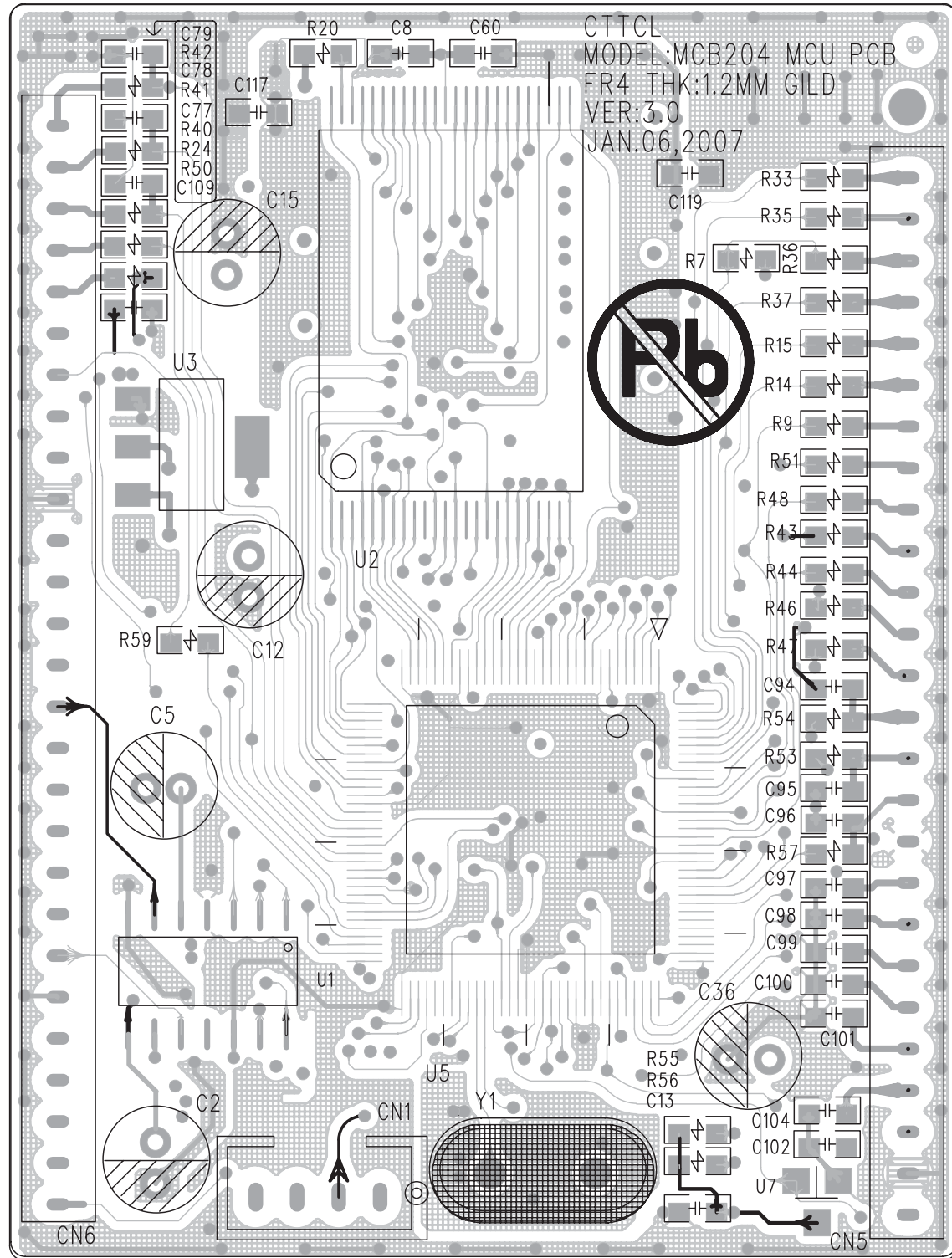
LAYOUT DIAGRAM - MAIN BOARD
TOP VIEW



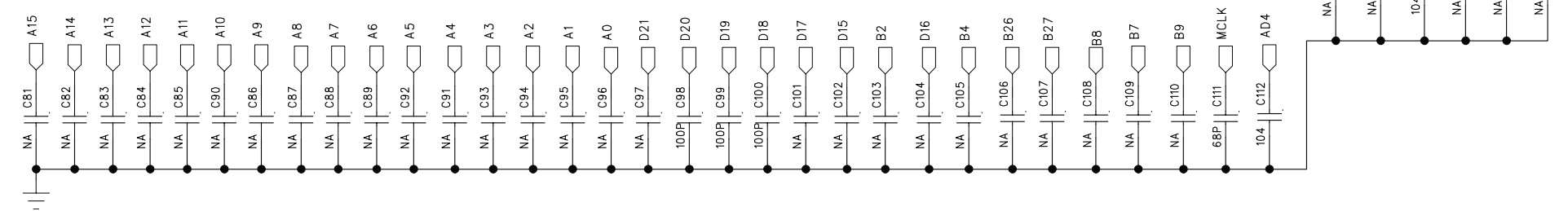
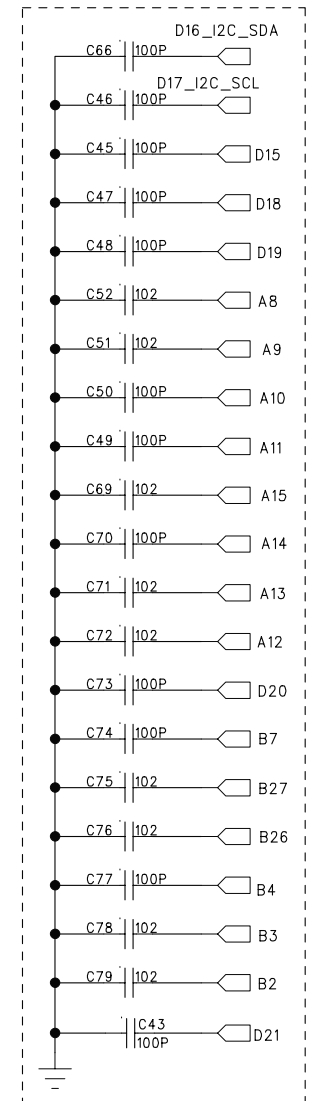
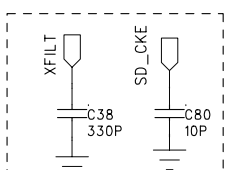
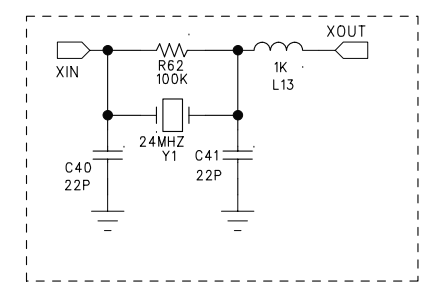
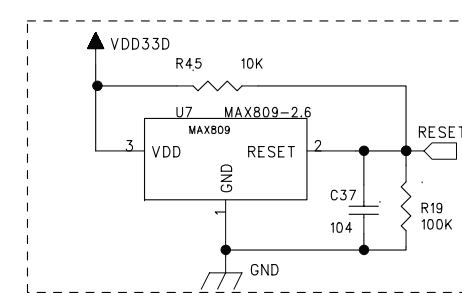
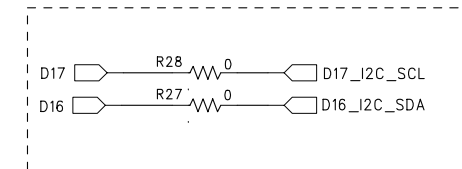
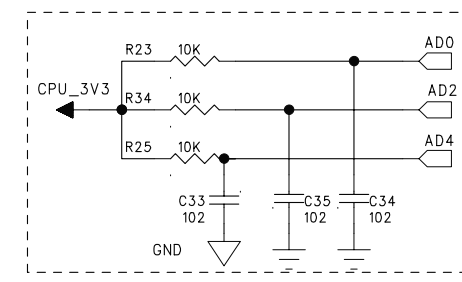
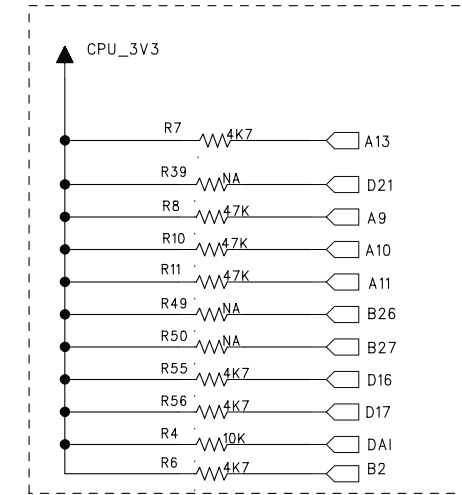
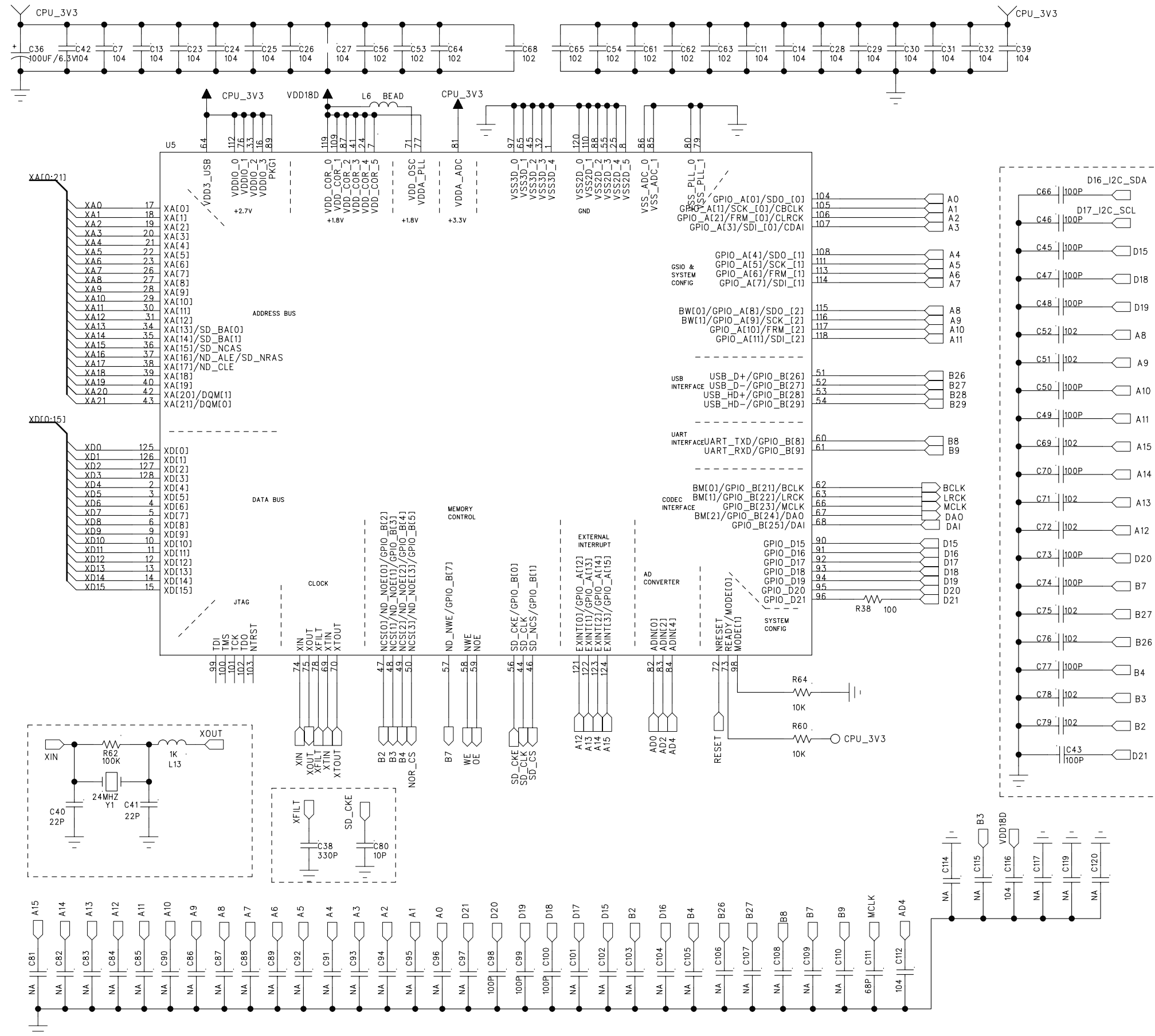
LAYOUT DIAGRAM - MAIN BOARD BOTTOM VIEW



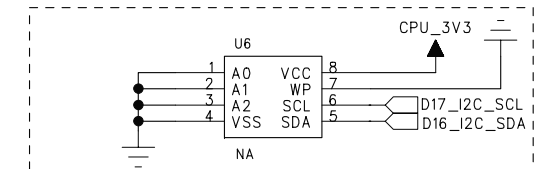
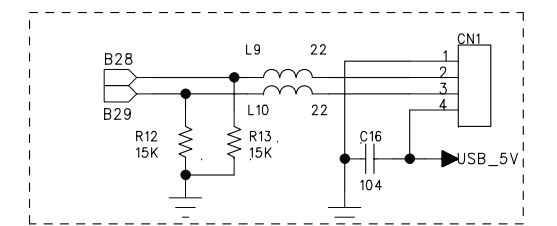
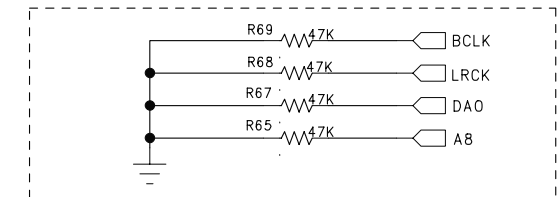
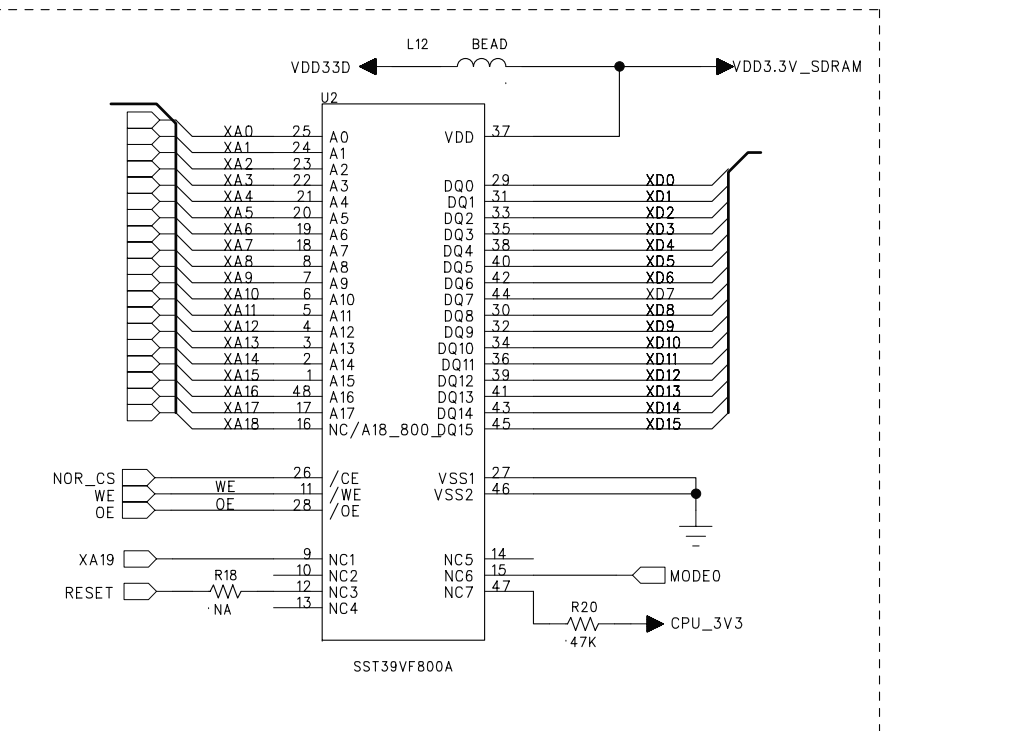
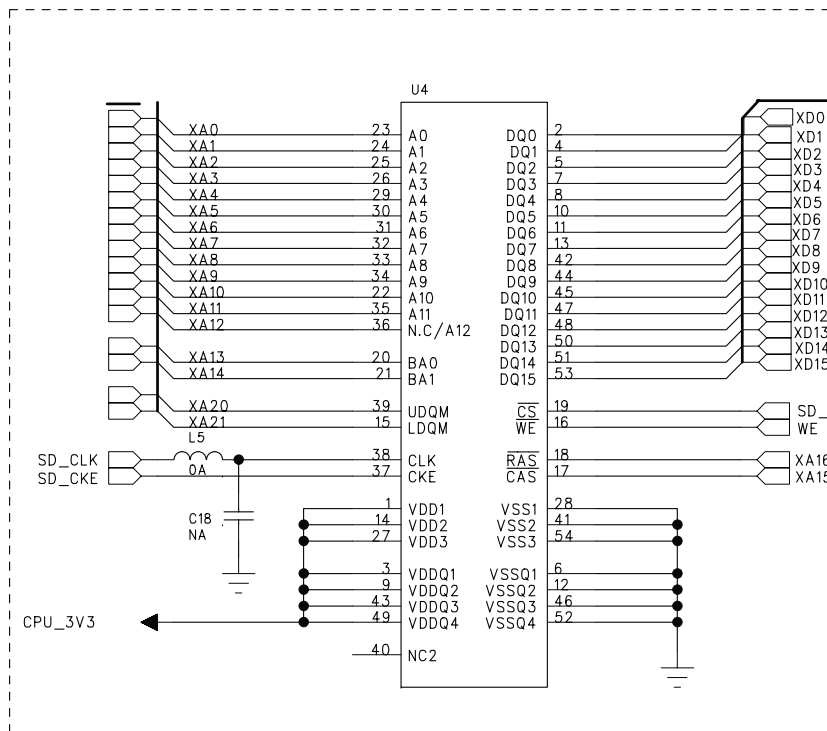
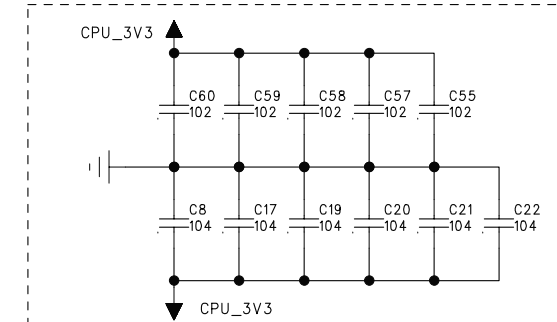
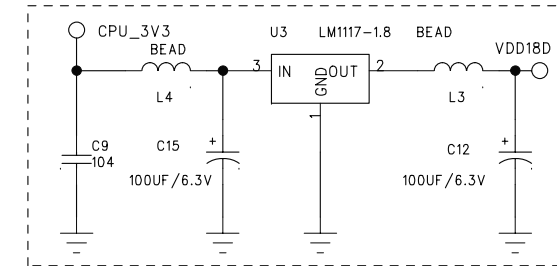
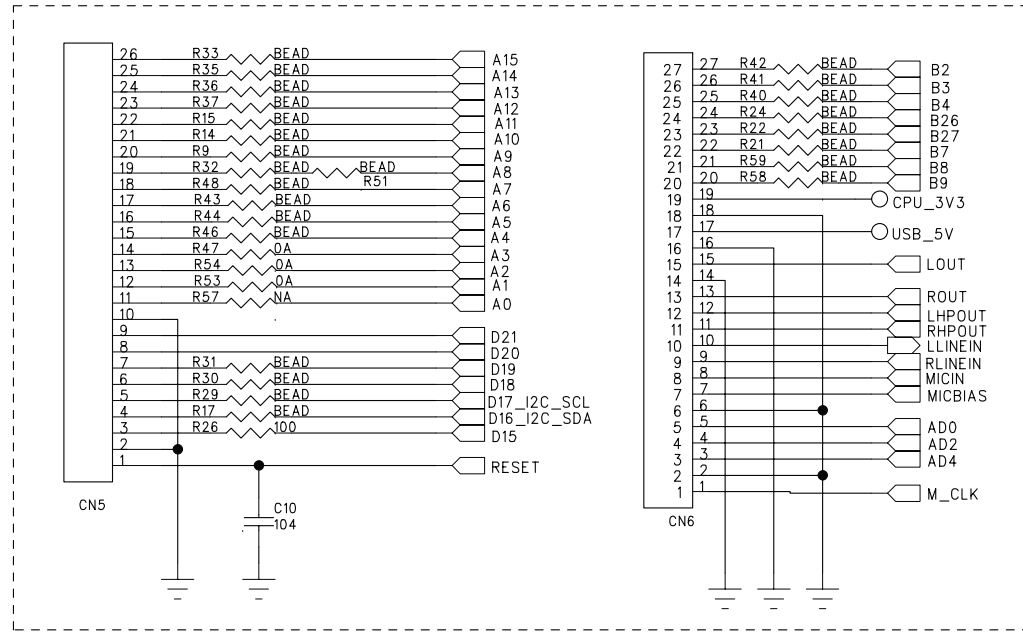
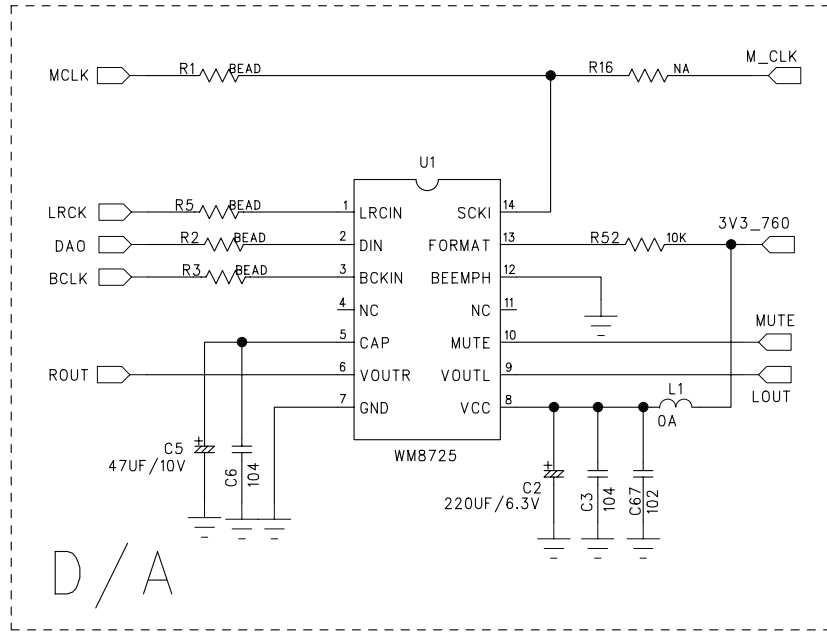
PCB LAYOUT - MCU BOARD



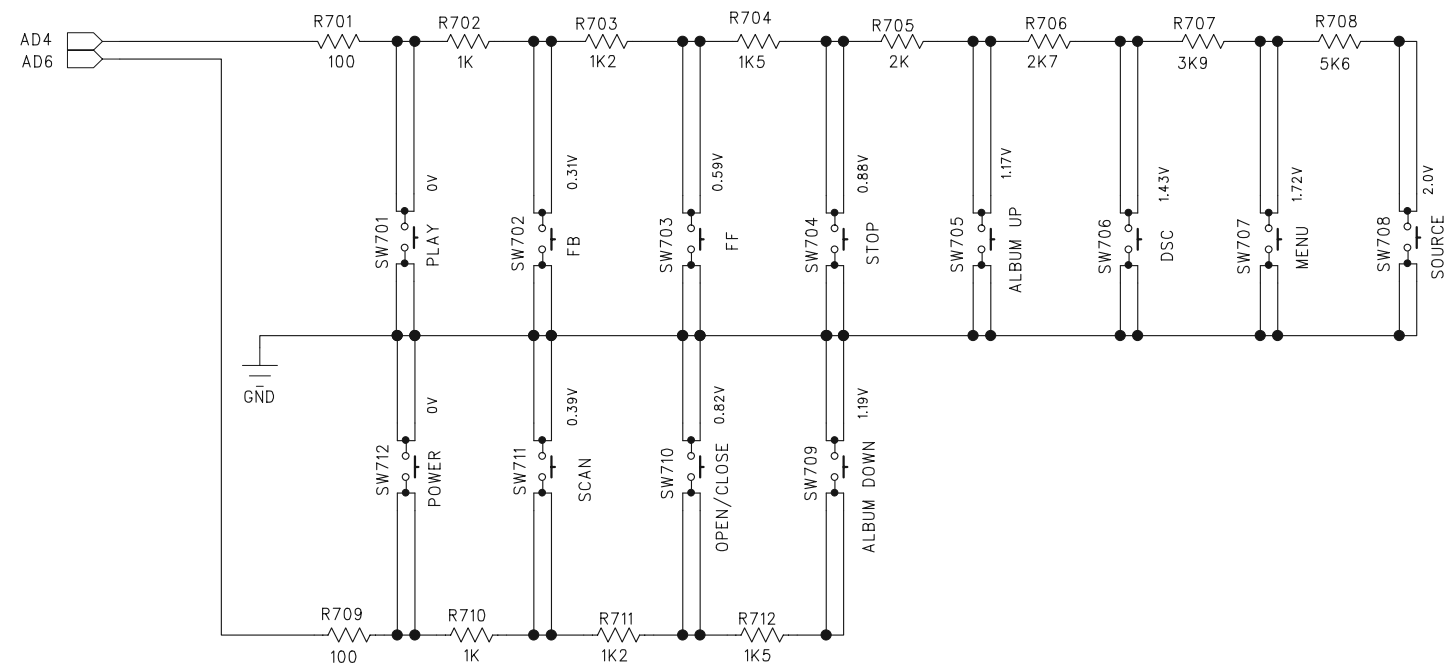
CIRCUIT DIAGRAM - MCU BOARD



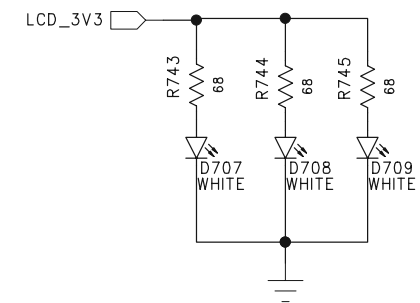
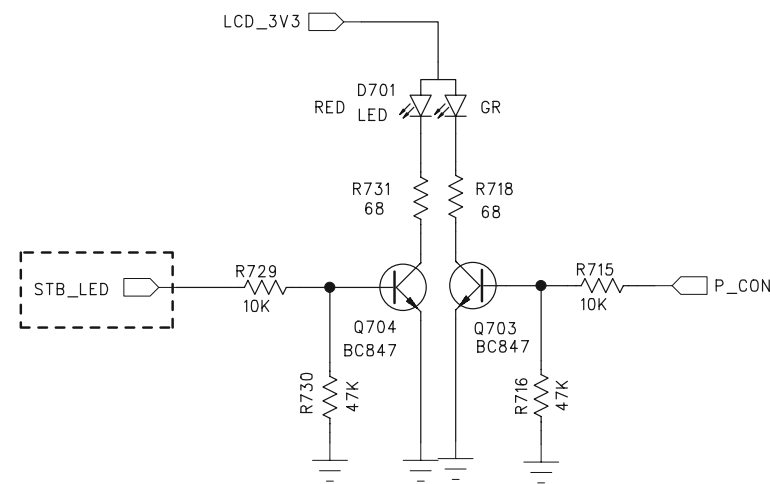
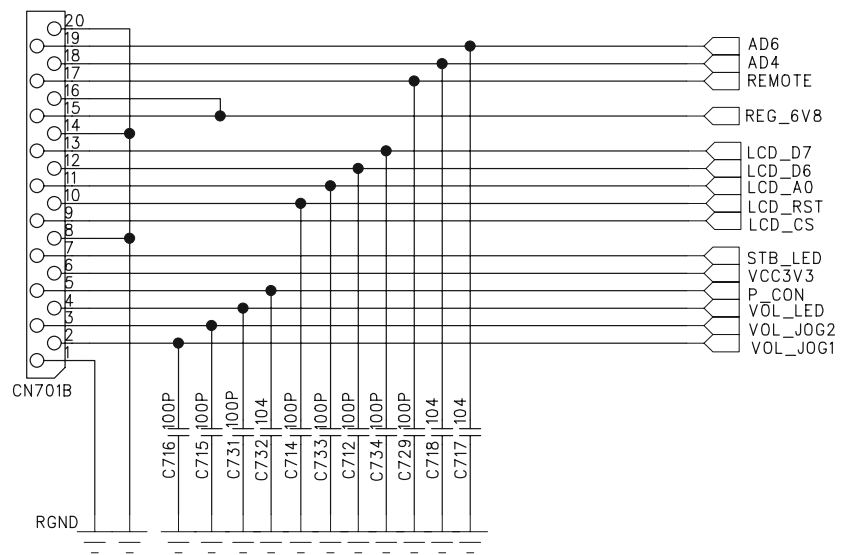
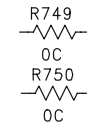
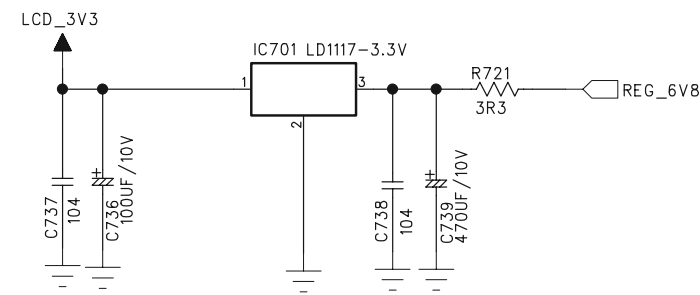
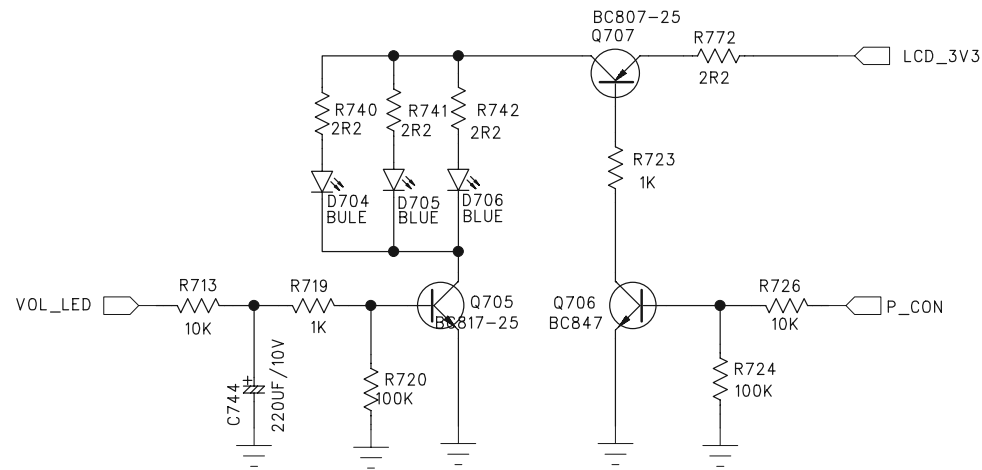
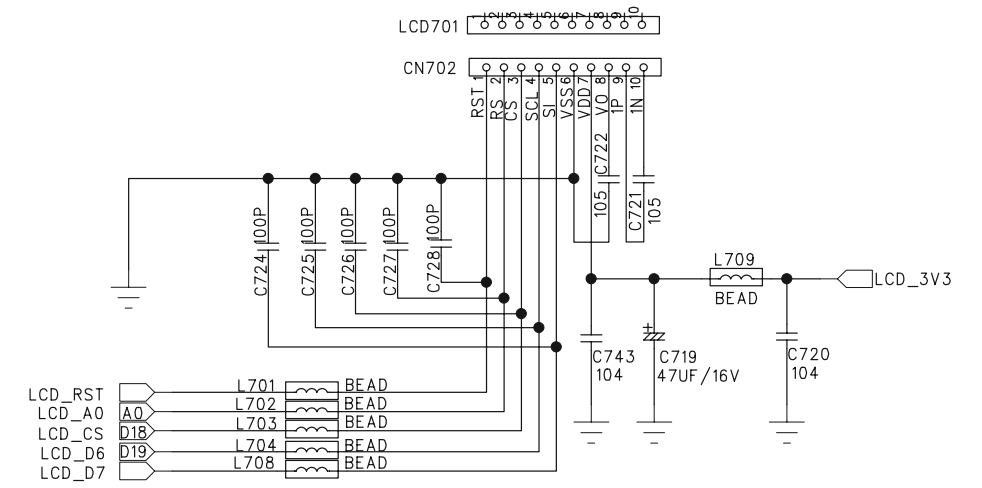
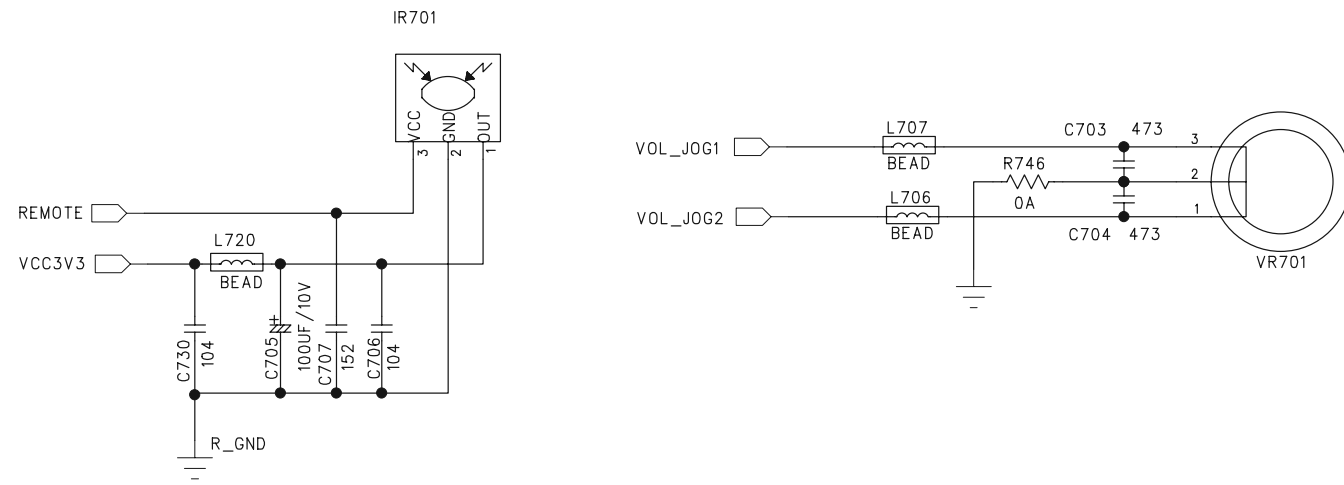
CIRCUIT DIAGRAM - MCU BOARD MEMORY PART



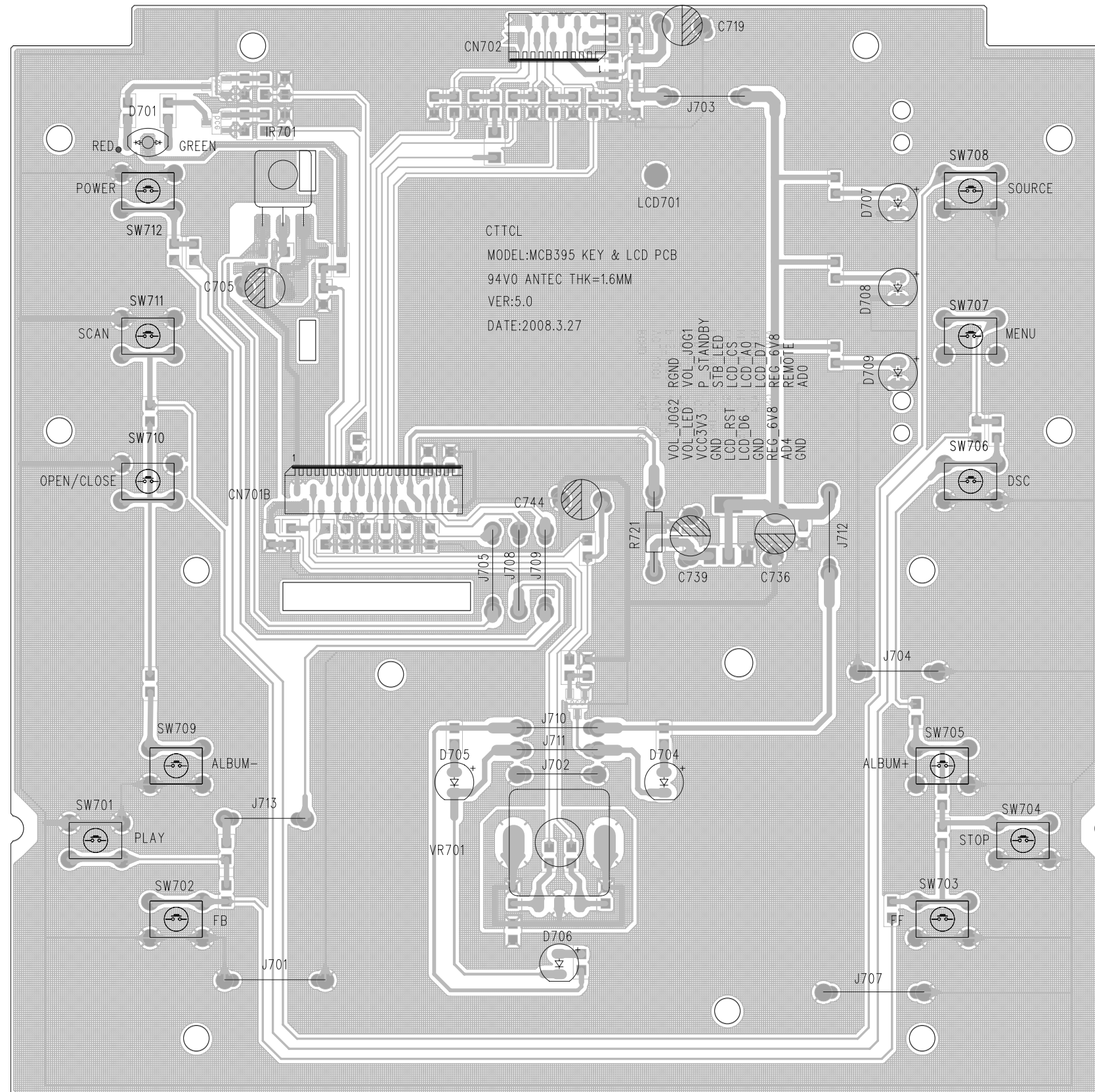
CIRCUIT DIAGARM - KEY & LCD BOARD KEY PART



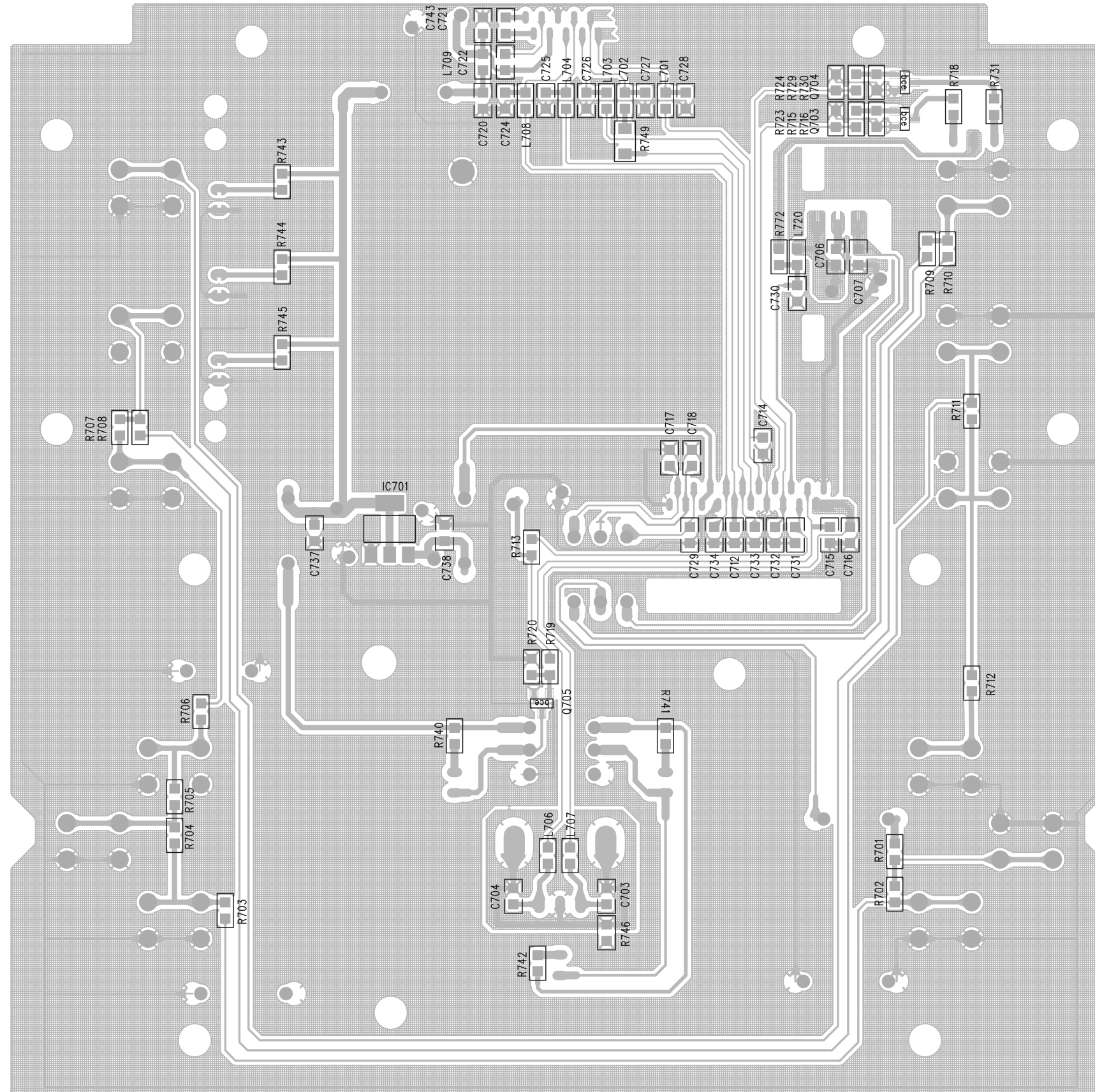
CIRCUIT DIAGARM - KEY & LCD BOARD
LCD PART



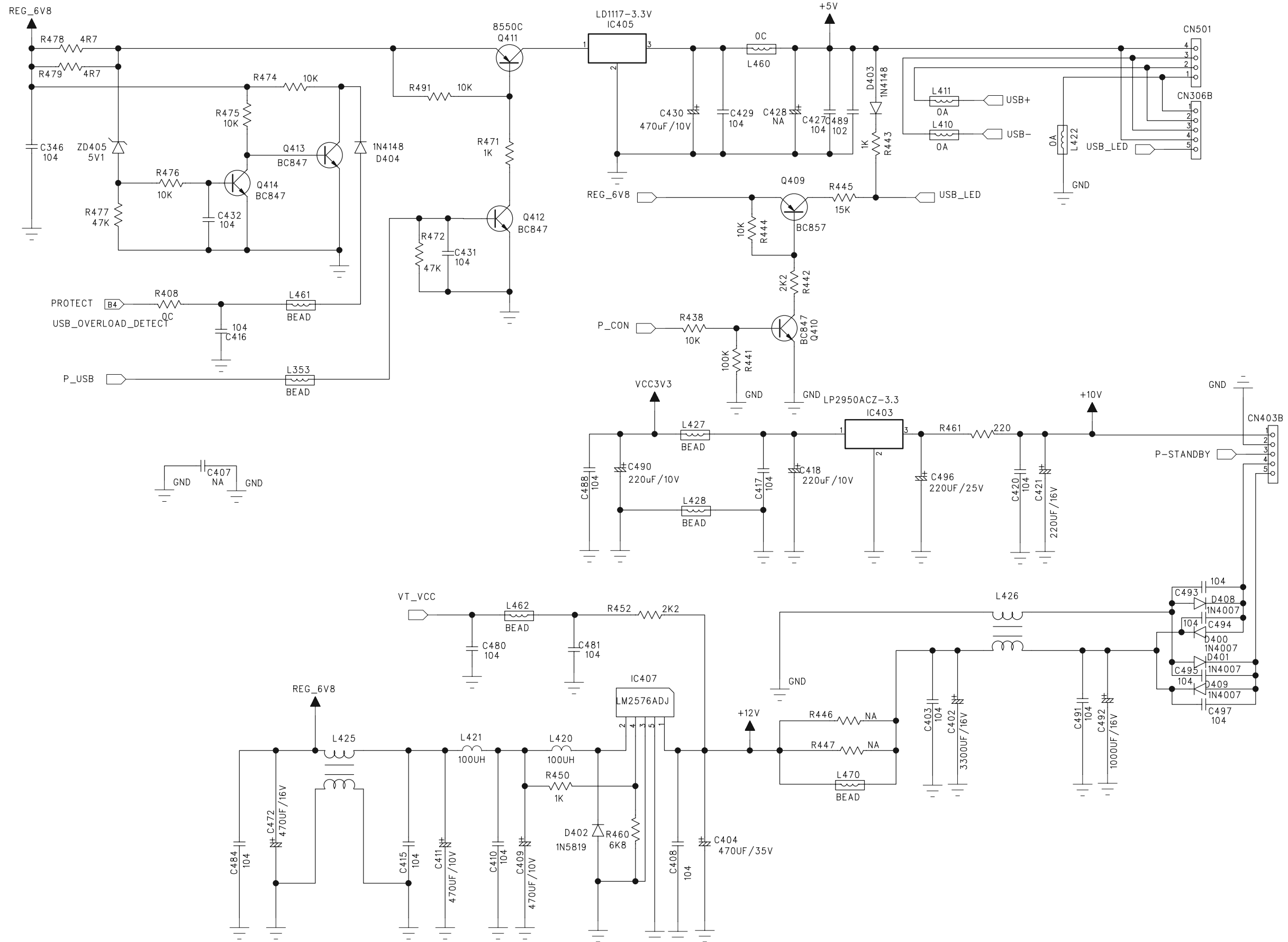
LAYOUT DIAGARM - KEY & LCD BOARD TOP VIEW



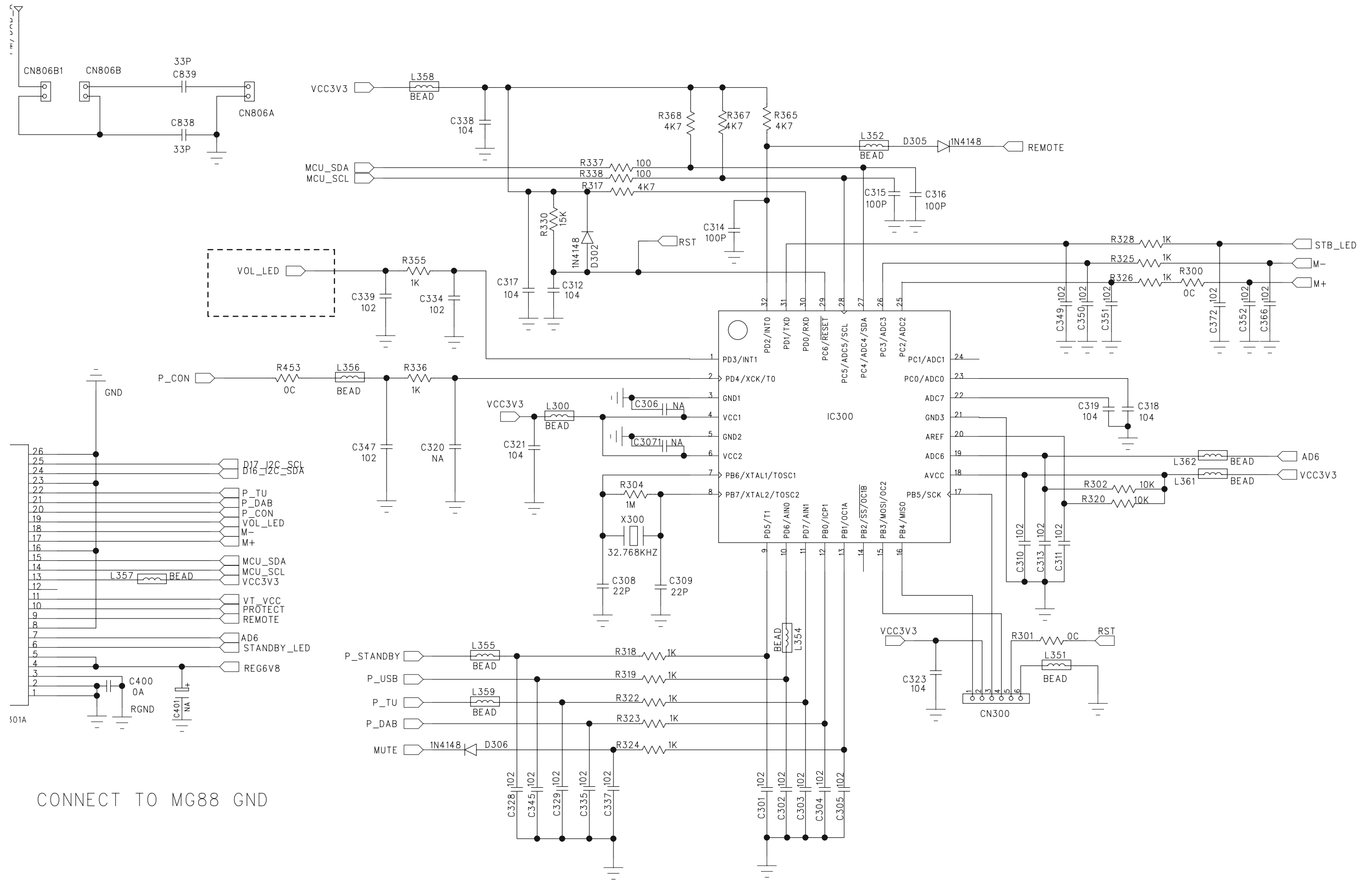
LAYOUT DIAGARM - KEY & LCD BOARD
BOTTOM VIEW



CIRCUIT DIAGARM - POWER BOARD PART 1

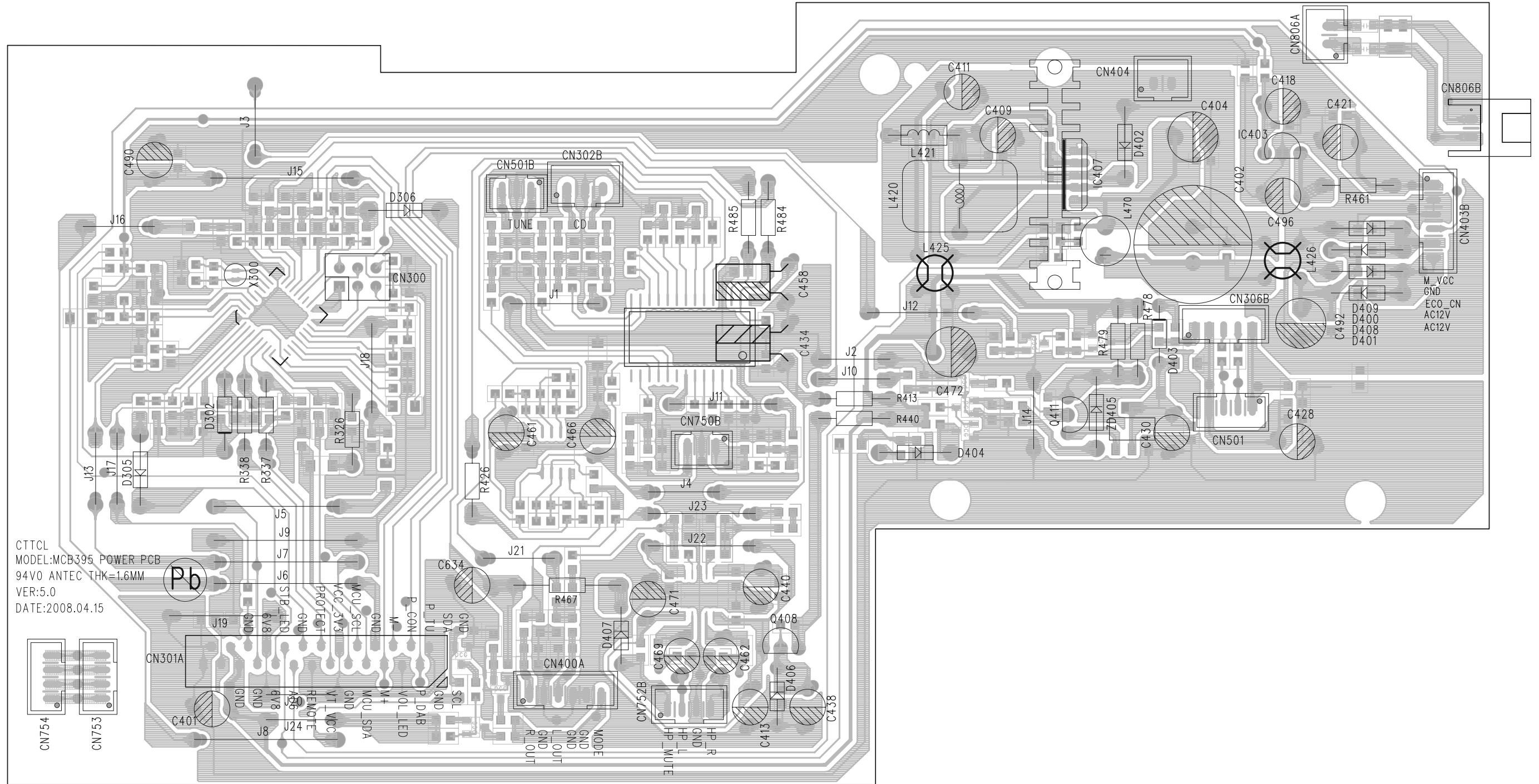


CIRCUIT DIAGRAM - POWER BOARD SUB MCU PART

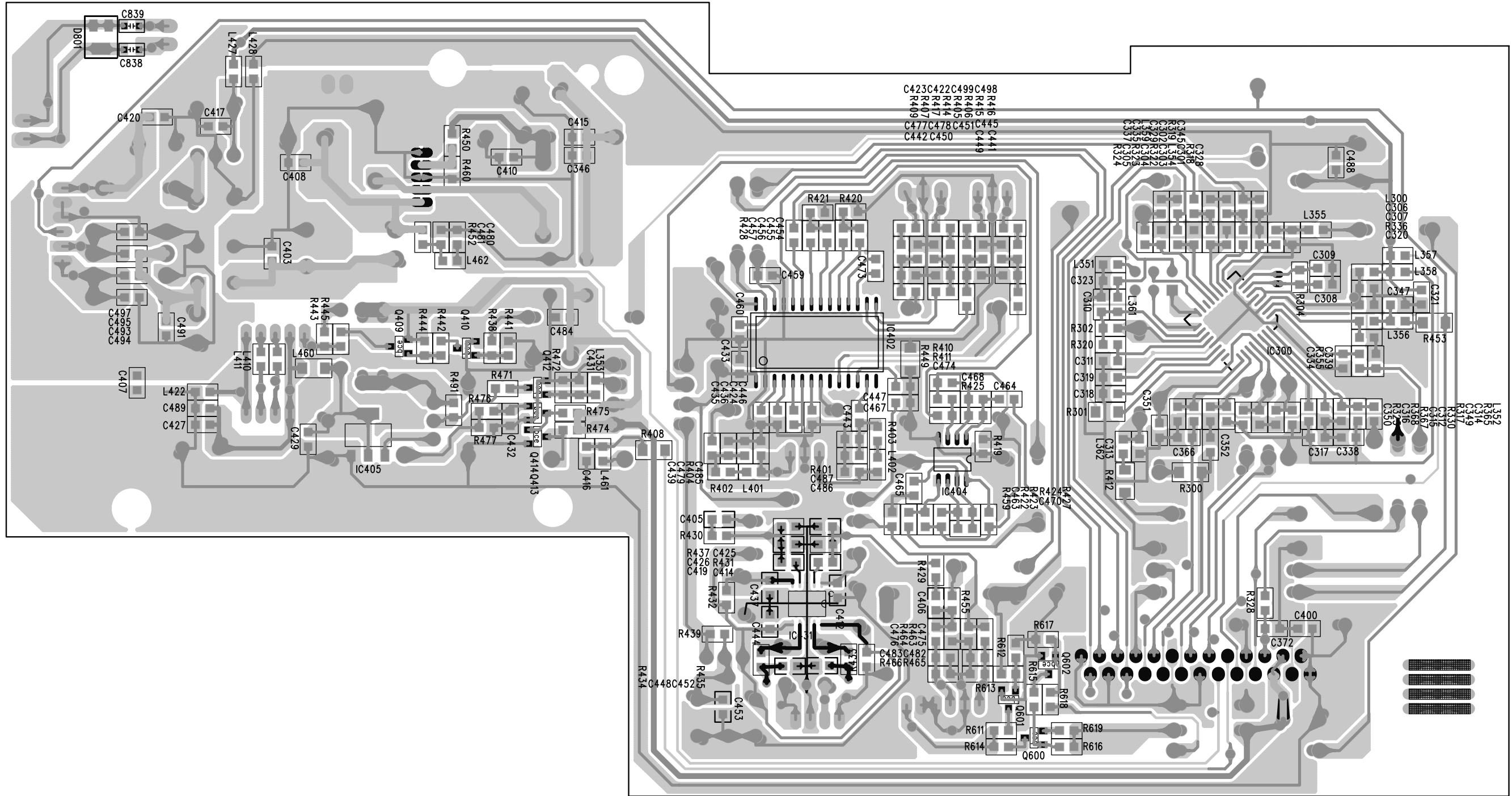


CONNECT TO MG88 GND

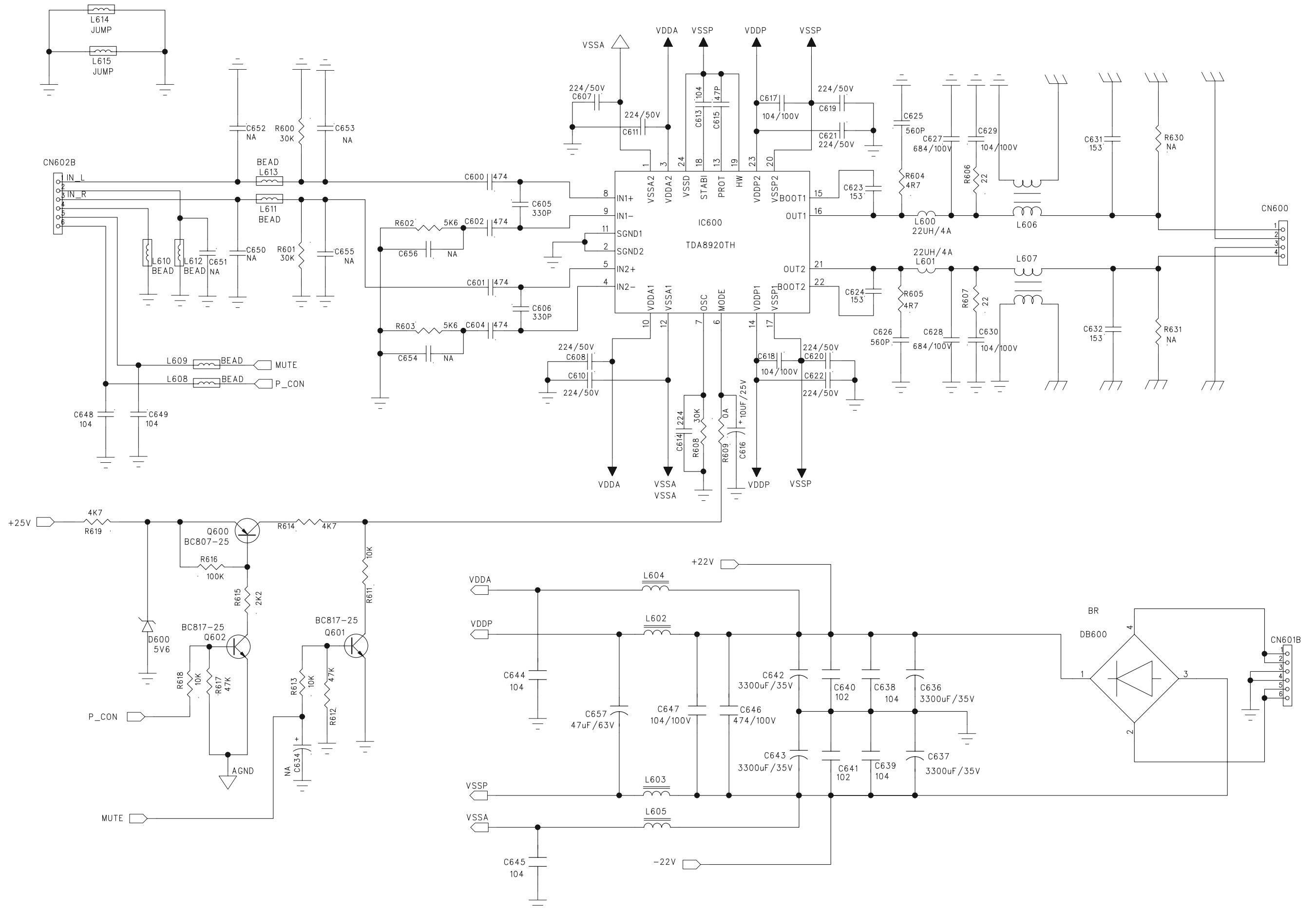
LAYOUT DIAGARM - POWER BOARD
TOP VIEW



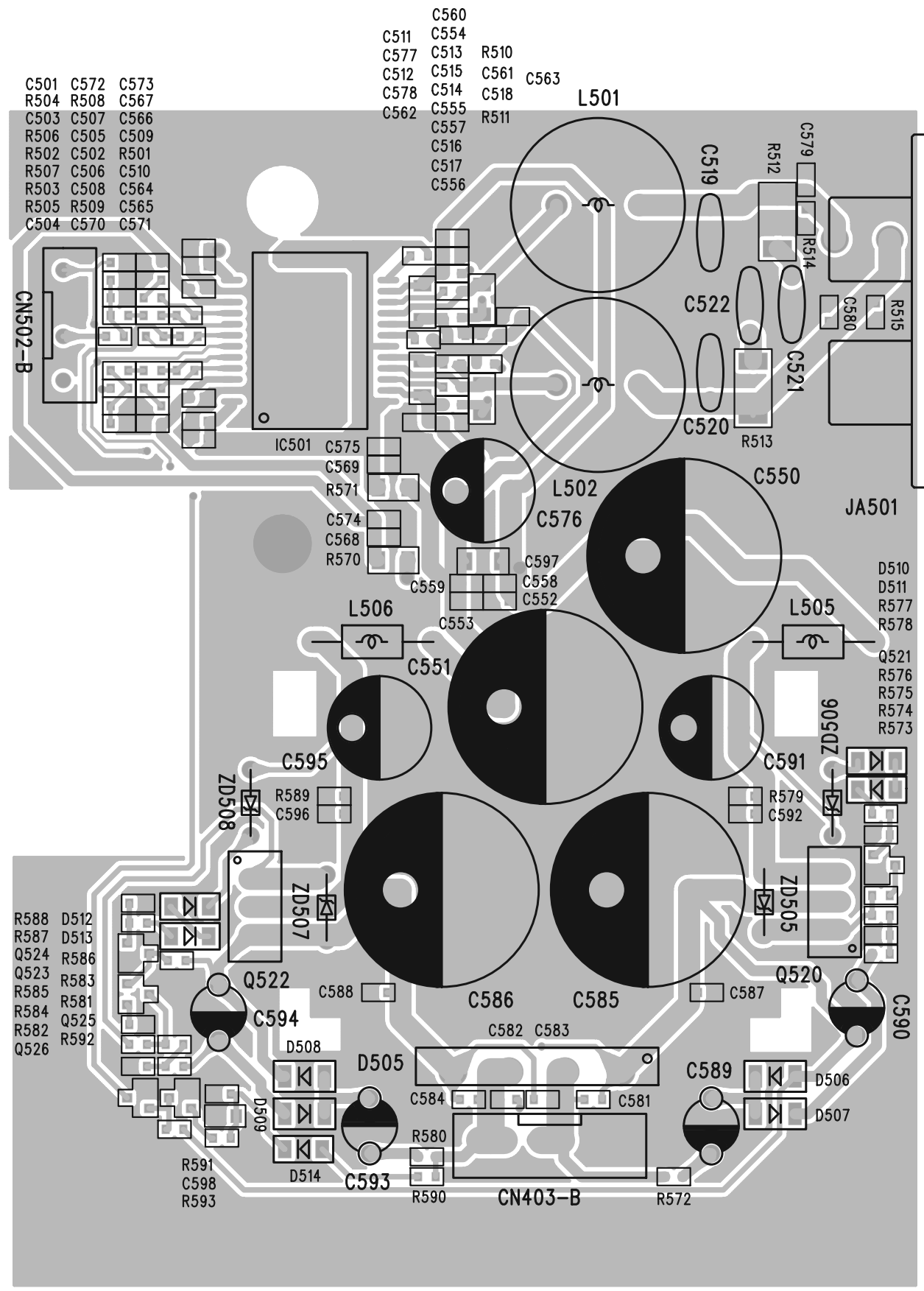
LAYOUT DIAGARM - POWER BOARD BOTTOM VIEW



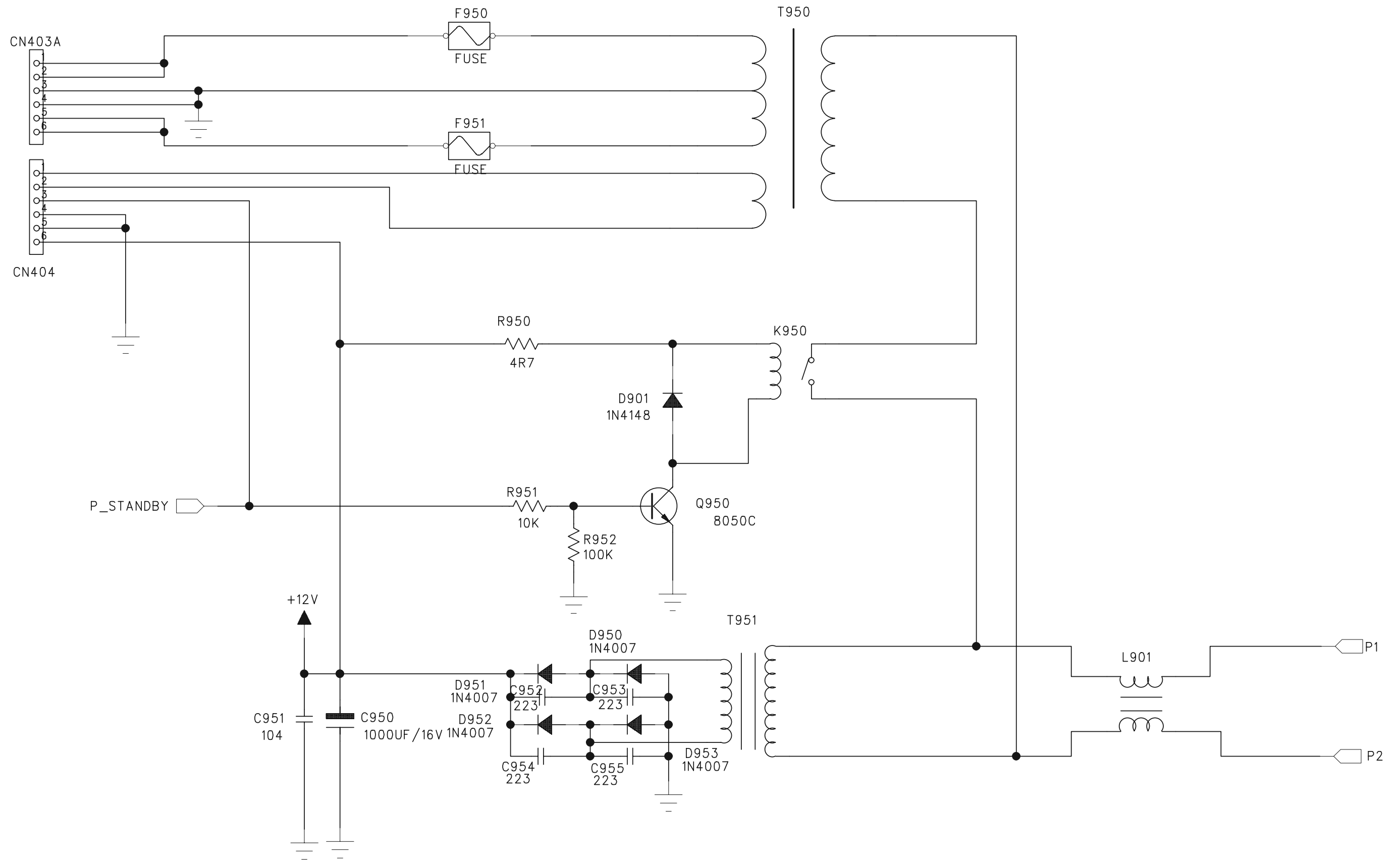
CIRCUIT DIAGRAM - POWER AMP BOARD



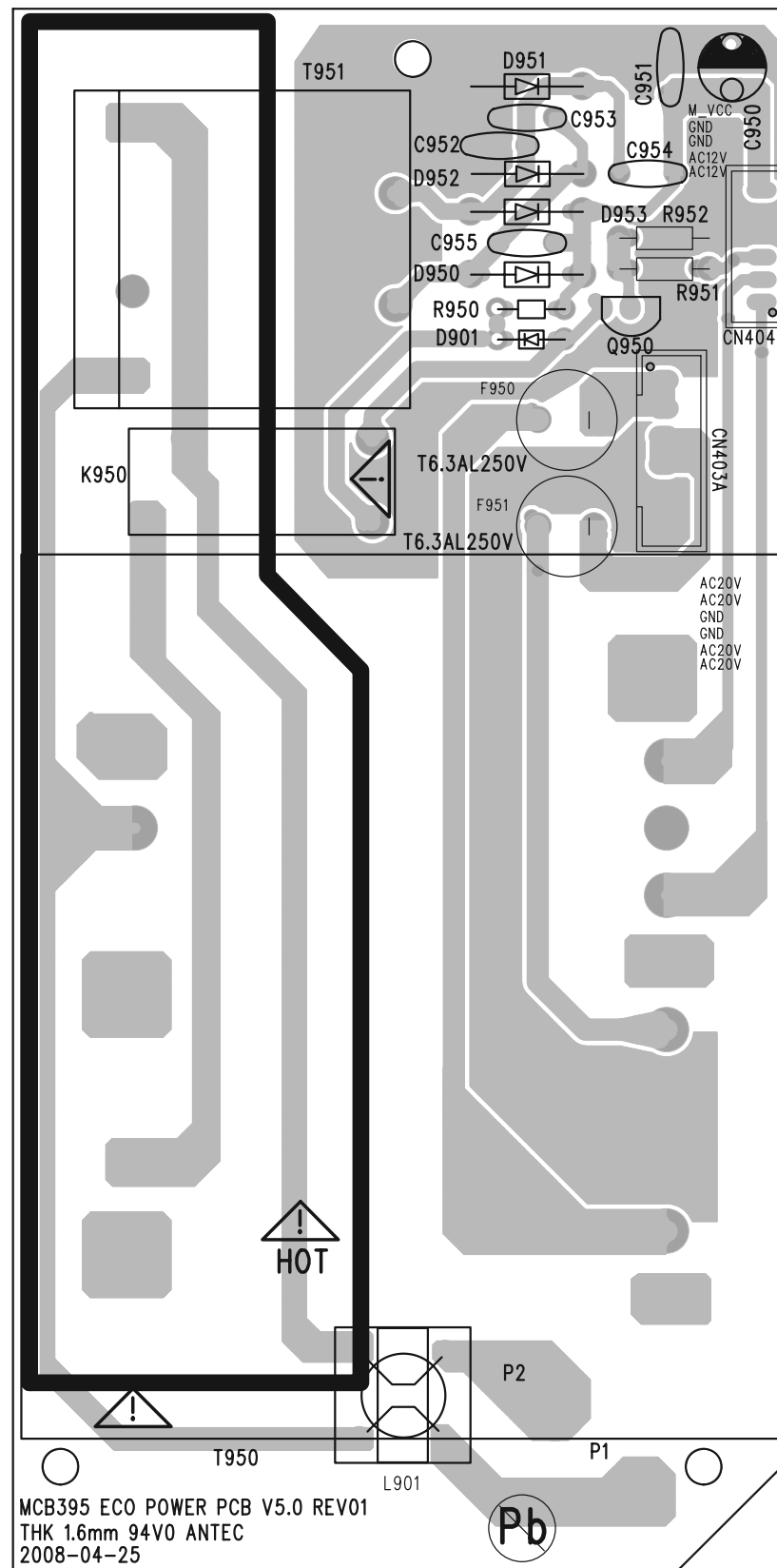
LAYOUT DIAGARM - POWER AMP BOARD



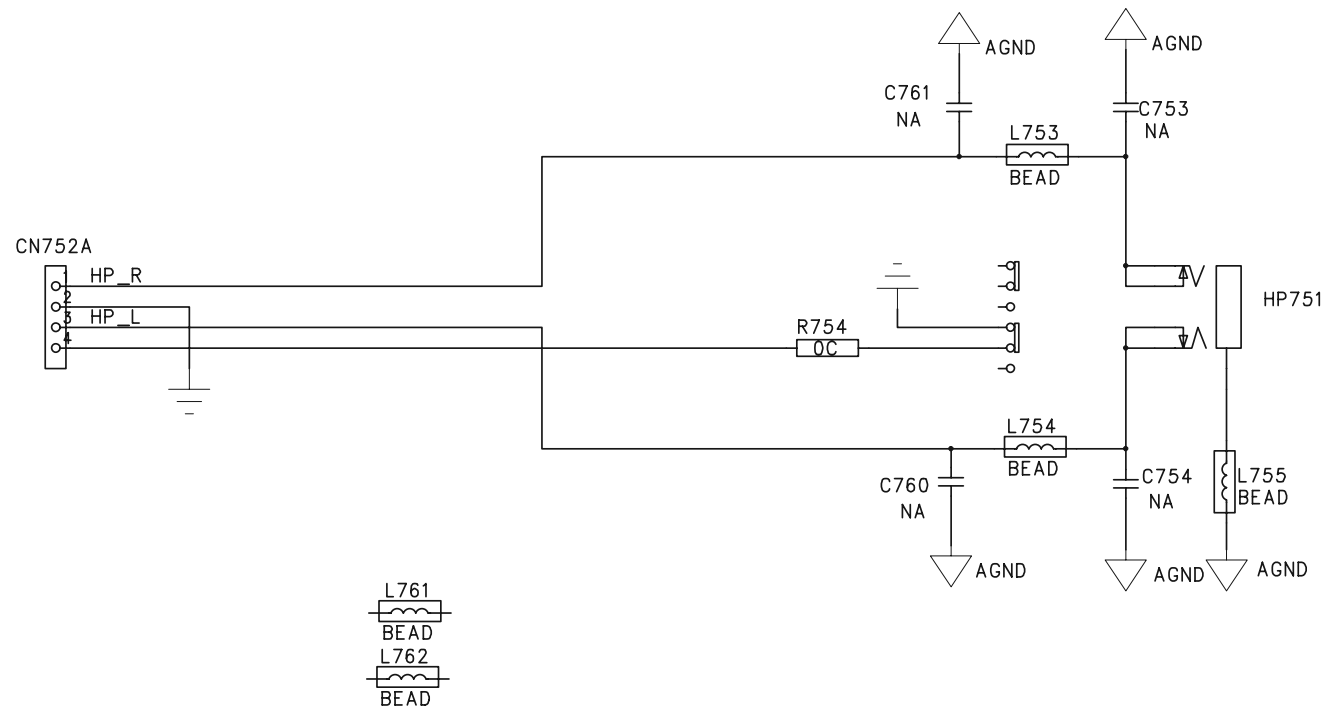
CIRCUIT DIAGRAM - ECO POWER BOARD



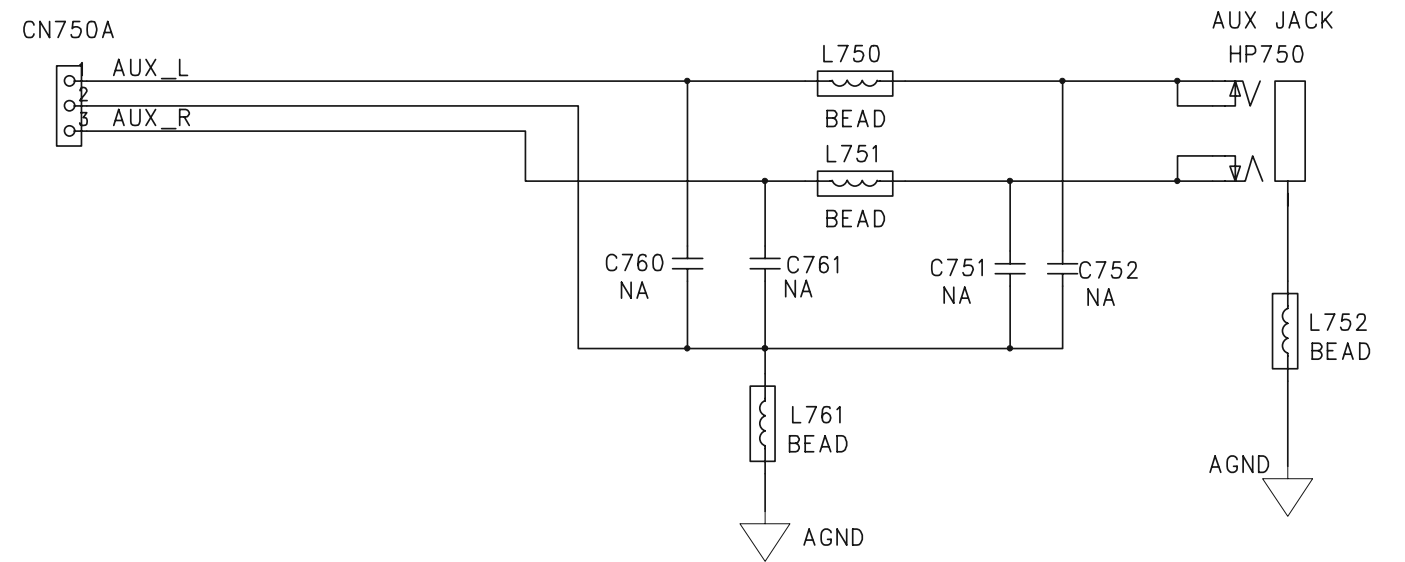
LAYOUT DIAGRAM - ECO POWER BOARD



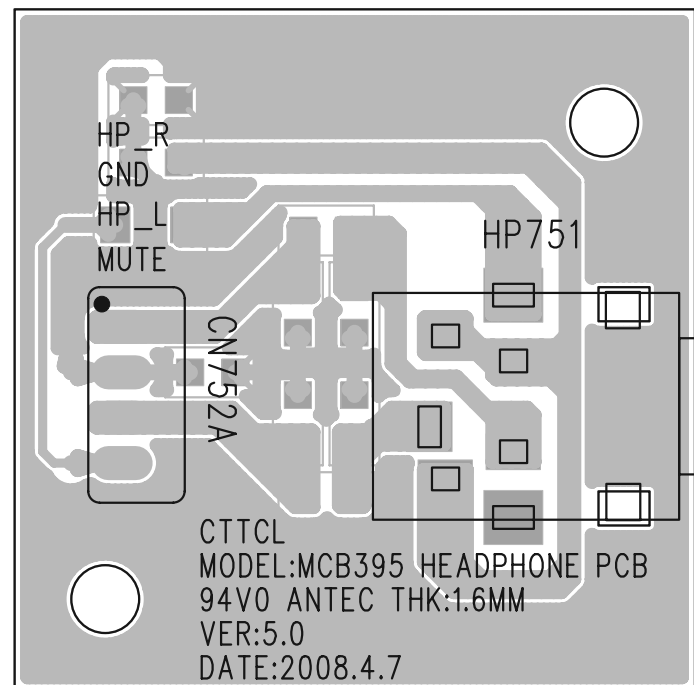
CIRCUIT DIAGRAM - HEADPHONE BOARD



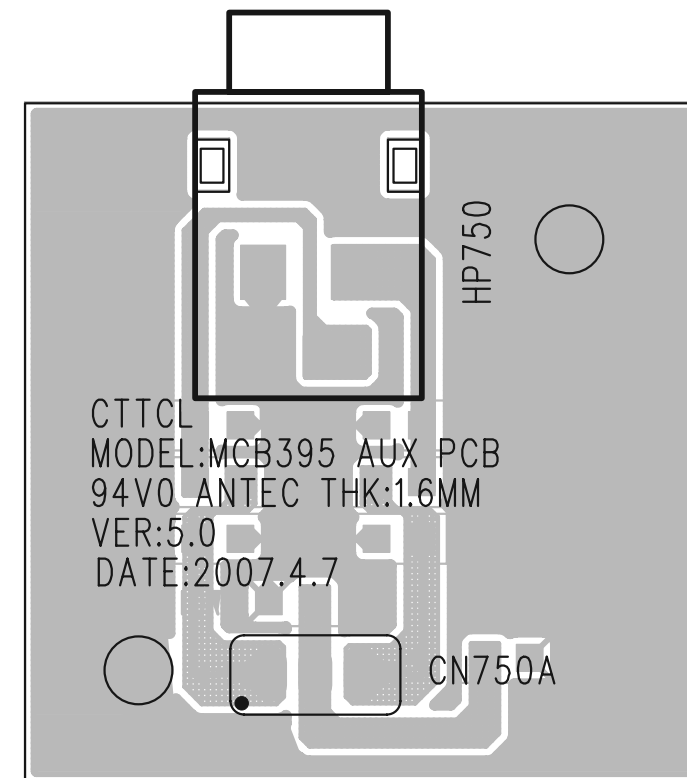
CIRCUIT DIAGRAM - AUX BOARD



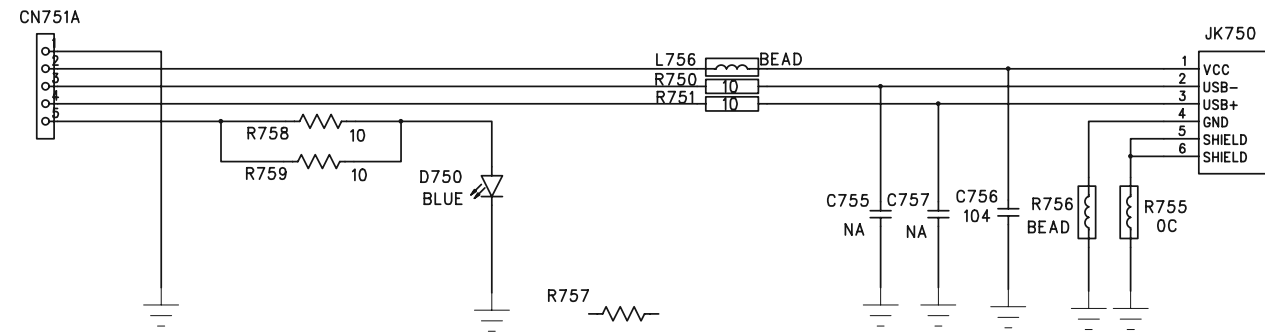
LAYOUT DIAGRAM - HEADPHONE BOARD



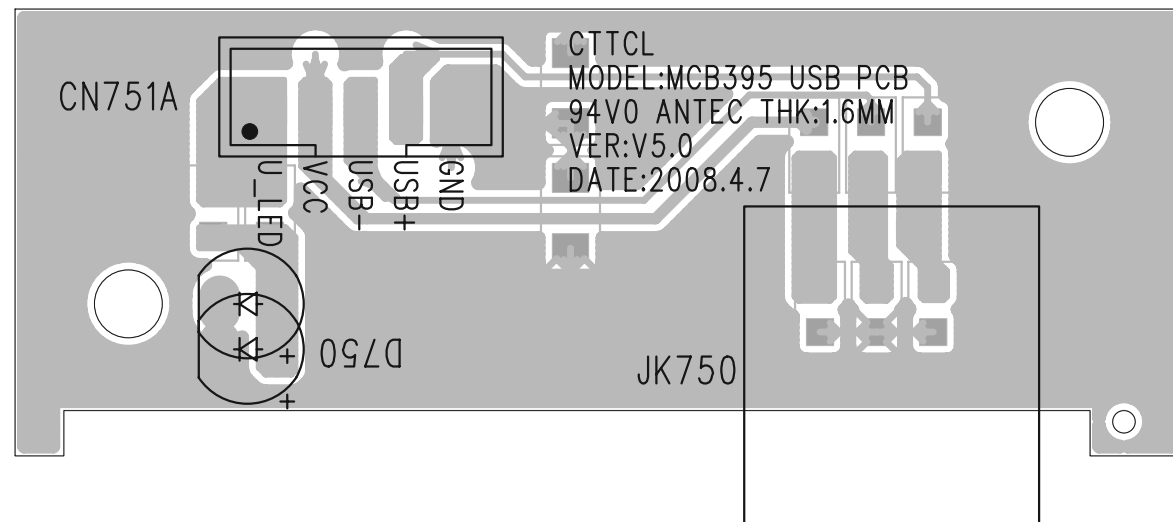
LAYOUT DIAGRAM - AUX BOARD



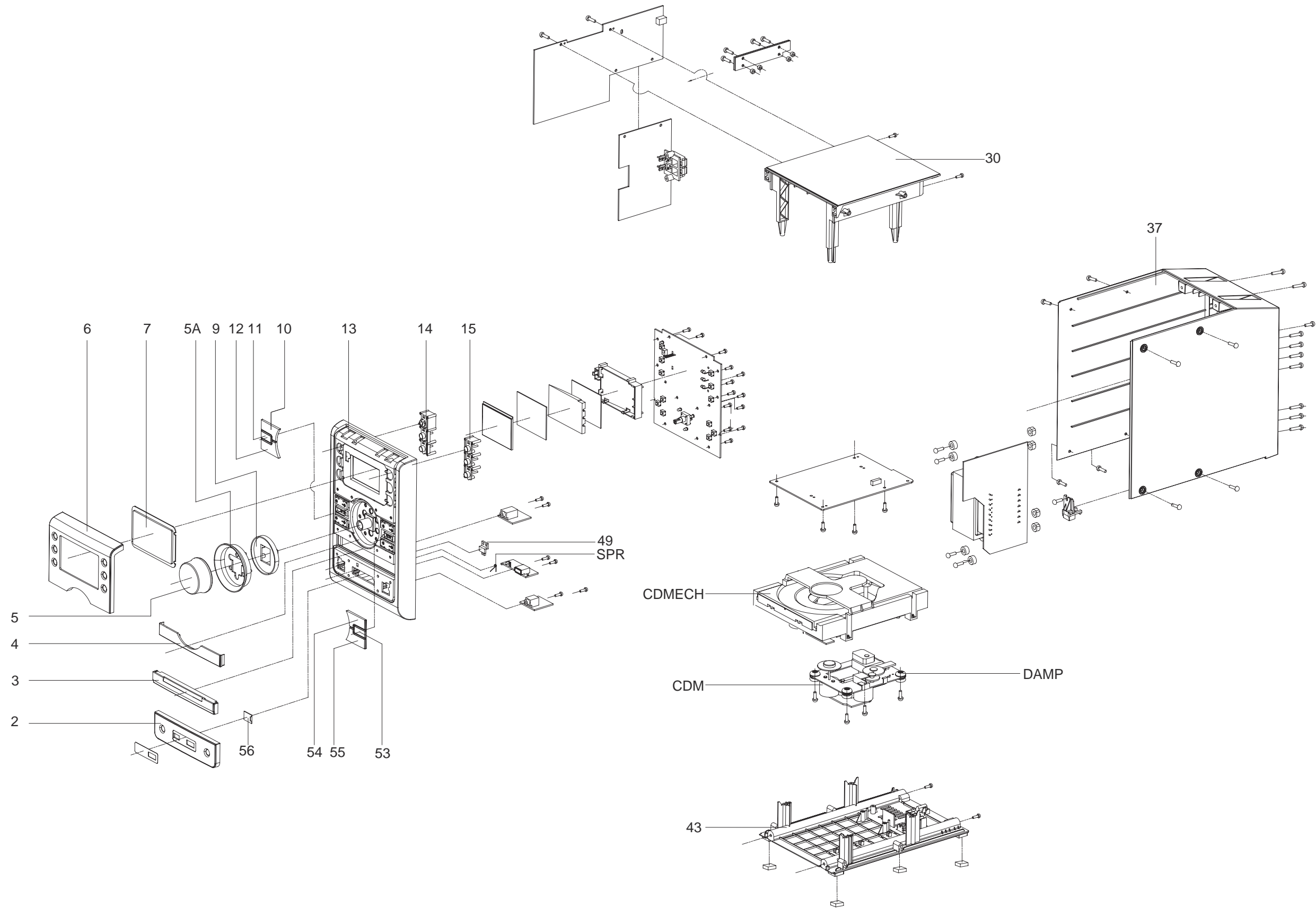
CIRCUIT DIAGRAM - USB BOARD



LAYOUT DIAGRAM - USB BOARD



SET MECHANICAL EXPLODED VIEW



MECHANICAL & ACCESSORIES PARTS LIST

2	996510012826	DECORATION LENS BOTT PANEL	REM	996510003938	REMOTE CONTROL
3	996510012799	CD DOOR	SPK	996510016285	WOODEN SPEAKER BOX(L+R)
4	996510016270	DECORATION LENS MIDD PANEL	W2	996510016286	FFC R/A TYPE 16PIN L=230MM
5	996510012851	VOLUME KNOB	W3	996510016287	FFC CABLE L=160MM 26PINS
6	996510016271	DECORATION LENS TOP PANEL	W4	996510016288	FFC CABLE 20PINS L=140MM
7	996510012806	DISPLAY LENS	W7	△ 996510016289	BS POWER SUPPLY CORD 1980mm
9	996510016272	DECORATION RING	W9	996510001906	AUX STEREO CORD BLACK
10	996510016273	CONTROL KNOB-PRESETS(DN)	DAB500	996510003725	DAB TUNER MODULE
11	996510016274	CONTROL KNOB-PLAY/PAUSE			
12	996510016275	CONTROL KNOB-FB			
13	996510016276	FRONT CABINET			
14	996510016277	CONTROL KNOB-TOP-LEFT			
15	996510016278	CONTROL KNOB-TOP-RIGHT			
30	996510012849	TOP CABINET			
37	996510016280	REAR CABINET			
43	996510016281	BOTTOM CABINET			
49	996510012827	USB LIGHT GUIDE			
53	996510016282	CONTROL KNOB-STOP			
54	996510016283	CONTROL KNOB-PRESETS(UP)			
55	996510016284	CONTROL KNOB-FF			
56	996510012824	USB DOOR			
5A	996510012828	VOLUME KNOB LIGHT GUIDE			
SPR	996510012846	USB DOOR SPRING			
CDM	994000003392	CD MECHANISM DA11B3VF (SANYO)			
CDMECF	996510000871	CD TRAY LOADER			
CDSP	996510001074	CD SPRING DIM:0.5MM			
DAMP	996510000868	CD DAMPER PINK 658F			

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

ELECTRICAL PARTS LIST

C402	996510016290	E.CAP 3300UF 16V 13X26MM M%	IC502	994000003215	RDS IC SAA6581T
C627	996510012837	CBB CAP HMFS-5 0.68UF 63V	IC503	996510003731	IC V REGULATOR LD1117-3.3
C628	996510012837	CBB CAP HMFS-5 0.68UF 63V	IC600	996510012838	I.C TDA8920BTH SOT566-3
C636	996510012836	E.CAP. 3300UF 35V	IC801	996510003730	IC SAA7824HL/M1A 557
C637	996510012836	E.CAP. 3300UF 35V	IC802	994000005753	IC D9258PH
C642	996510012836	E.CAP. 3300UF 35V	IC803	996510003896	IC TA7291S(M) (MOTOR DRIVER)
C643	996510012836	E.CAP. 3300UF 35V	IR701	996510016297	INFRARED RECEIVER SM3385JB
C646	996510004554	CBB CAP HMFS-5 0.47UF 63V	JK750	996510003842	USB CONNECTOR 4PINS
CN600	996510000380	PUSH TERMINAL JACK PST-418	LCD701	996510016326	LCD DISPLAY
D302	996510011332	DIODE 1N4148	Q408	996500039268	TRANSISTOR KTC-8050C
D304	996510003726	BARRIER DIODE PRL5817	Q409	996510012833	TRANSISTOR BC857B
D305	996510011332	DIODE 1N4148	Q500	996510012793	TRANSISTOR BC847B
D306	996510003726	BARRIER DIODE PRL5817	Q501	996510003718	TRANSISTOR KTC-8550C
D400	996510016291	DIODE 1N4007	Q502	996510012793	TRANSISTOR BC847B
D401	996510016291	DIODE 1N4007	Q510	996510003718	TRANSISTOR KTC-8550C
D402	996510011340	DIODE 1N5819 DO-41	Q511	996510012793	TRANSISTOR BC847B
D403	996510011332	DIODE 1N4148	Q520	996510012793	TRANSISTOR BC847B
D404	996510011332	DIODE 1N4148	Q531	996510012793	TRANSISTOR BC847B
D406	996510016292	ZENER DIODE 3V6 1/2W (TC3V6)	Q532	996510012793	TRANSISTOR BC847B
D407	996510011332	DIODE 1N4148	Q600	996510015685	TRANSISTOR BC807-25 SOT23
D408	996510016291	DIODE 1N4007	Q601	996510010776	TRANSISTOR BC817-25 SOT23
D409	996510016291	DIODE 1N4007	Q602	996510010776	TRANSISTOR BC817-25 SOT23
D600	996510012835	ZENER DIODE 5V6 1/2W (TC5V6)	Q801	996510012793	TRANSISTOR BC847B
D701	996510016293	LED RED/GRN 3RG9SW-1-A	Q802	996510003718	TRANSISTOR KTC-8550C
D704	996510001422	LED INDICATOR BLUE	Q803	996510003718	TRANSISTOR KTC-8550C
D705	996510001422	LED INDICATOR BLUE	Q804	996510012793	TRANSISTOR BC847B
D706	996510001422	LED INDICATOR BLUE	SW701	996500039269	TACT SWITCH
D707	996510001423	LED INDICATOR 3mm WHITE	SW702	996500039269	TACT SWITCH
D708	996510001423	LED INDICATOR 3mm WHITE	SW703	996500039269	TACT SWITCH
D709	996510001423	LED INDICATOR 3mm WHITE	SW704	996500039269	TACT SWITCH
D750	996510016294	LED INDICATOR BLUE 3X5MM	SW705	996500039269	TACT SWITCH
DB600	994000003223	DIODE BRIDGE RECTIFIER GBU6B	SW706	996500039269	TACT SWITCH
F950 Δ	996510000390	FUSE 3.15A 250V	SW707	996500039269	TACT SWITCH
F951 Δ	996510000390	FUSE 3.15A 250V	SW708	996500039269	TACT SWITCH
HP750	996510001073	EARPHONE CKX3.5-19S (3PIN)	SW709	996500039269	TACT SWITCH
HP751	994000001456	STEREO HEADPHONE JACK	SW710	996500039269	TACT SWITCH
IC300	996510016295	IC ATMEGA88-20AU FOR MCB395	SW711	996500039269	TACT SWITCH
IC301	996510003731	IC V REGULATOR LD1117-3.3	SW712	996500039269	TACT SWITCH
IC402	996510003846	IC SC7314 SELECTOR & E_VOL	T950 Δ	996510012812	TRASFO EI-76 230V/50Hz
IC403	996510003845	IC LP2950ACZ-3.3 TO-92	T951 Δ	996510001418	TRASFO STANDBY
IC404	996510001055	IC BA4558 SOP8	TC530	994000002418	TRIMMER CAP 220VDC 50%-0%
IC407	996510005007	IC LM2576 T-5.0 TO-220	U1	996510003740	IC WM8725ED 14-PIN SOIC
IC431	996510016296	IC YD7000	U2	996510016298	IC SST39VF800A-70 PROGRAMMED
IC500	996510003733	IC UTCLD1117/A 1.8V SOT-223	U4	996510016299	IC HY57V641620FTP-7 64M SDRAM
IC501	996510003732	IC TB2132FNG	U5	996510003739	IC TCC760

ELECTRICAL PARTS LIST

U7	996510003738	IC MAX809STR SOT-23
VD533	996510003727	DIODE 1SV262
VD534	996510003727	DIODE 1SV262
VR701	996510001059	ENCODER EC121102X2B-HA1-082
X300	996510003839	X'TAL 32.768KHZ 12.5PF
X501	996510003724	X'TAL 75KHZ 20PF +/-20PPM
X502	994000003209	X'TAL 4.332MHZ HC-49/S
X801	994000005742	X'TAL 8.4672 MHZ 20PF
Y1	996510003735	X'TAL 24.000MHZ 20PF +/-20PPM
ZD501	994000005744	ZENER DIODE 5V1 1/2W
ZD531	996510016300	ZENER DIODE 3V3 1/2W (TC3V3)

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