

Service  
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# Service Manual

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Version 1.0



# PHILIPS



## SPECIFICATIONS

### AMPLIFIER

Output power ..... 30 W RMS  
 Signal-to-noise ratio .....  $\geq 65$  dBA  
 Frequency response ..... 100 – 18kHz,  $\pm 3$  dB  
 Input sensitivity AUX ..... 0.5 V (max. 1 V)  
 Impedance loudspeakers .....  $\geq 6 \Omega$   
 Impedance headphones .....  $32 \Omega$  -1000  $\Omega$   
 ..... <15 mW

### CD PLAYER

Frequency range ..... 100 – 18 kHz  
 Signal-to-noise ratio ..... 65 dBA

### TUNER

FM wave range ..... 87.5 – 108 MHz  
 MW wave range ..... 531 – 1602 kHz  
 Number of presets ..... 40  
 Antenna  
 FM .....  $75 \Omega$  wire

### USB PLAYER

USB ..... V2.0/V1.1  
 ..... support MP3 and WMA files  
 Number of albums/ folders ..... maximum 999  
 Number of tracks/titles ..... maximum 999

### SPEAKERS

Bass reflex system  
 Dimensions (w x h x d) .. 158 x 250x 185 (mm)

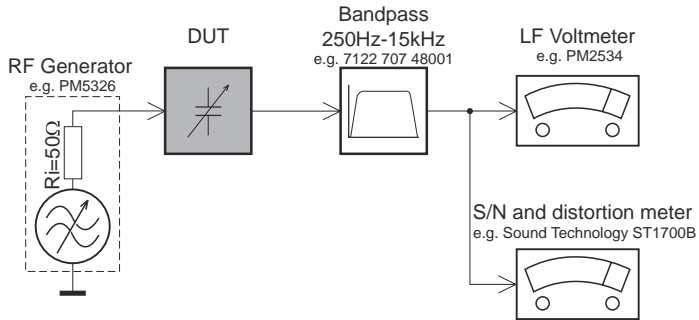
### GENERAL INFORMATION

AC Power ..... 110 – 240 V, 50 Hz/60 Hz  
 Dimensions (w x h x d, with/without the stand)  
 ..... 211 x 250 x 160/211 x 250 x 126 (mm)  
 Weight(with/without speakers) ..... 3.7 / 1.33 kg  
 Standby power consumption ..... <2 W  
 Eco power standby ..... <1 W

**Specifications and external appearance are subject to change without notice.**

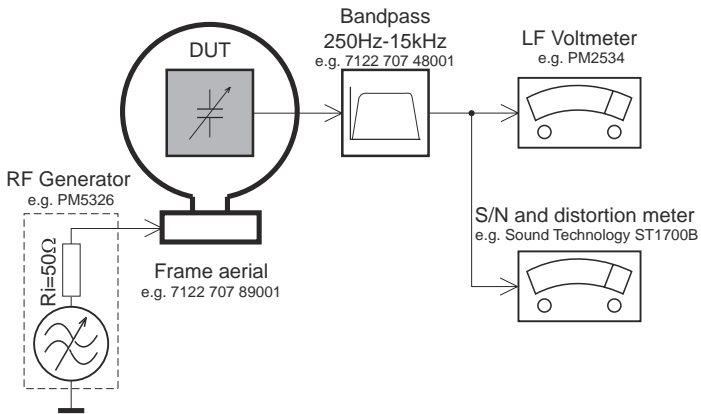
## MEASUREMENT SETUP

### Tuner FM



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

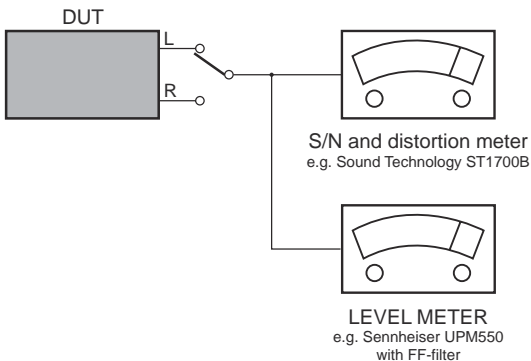
### Tuner AM (MW,LW)



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  $\Delta$ .

**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".

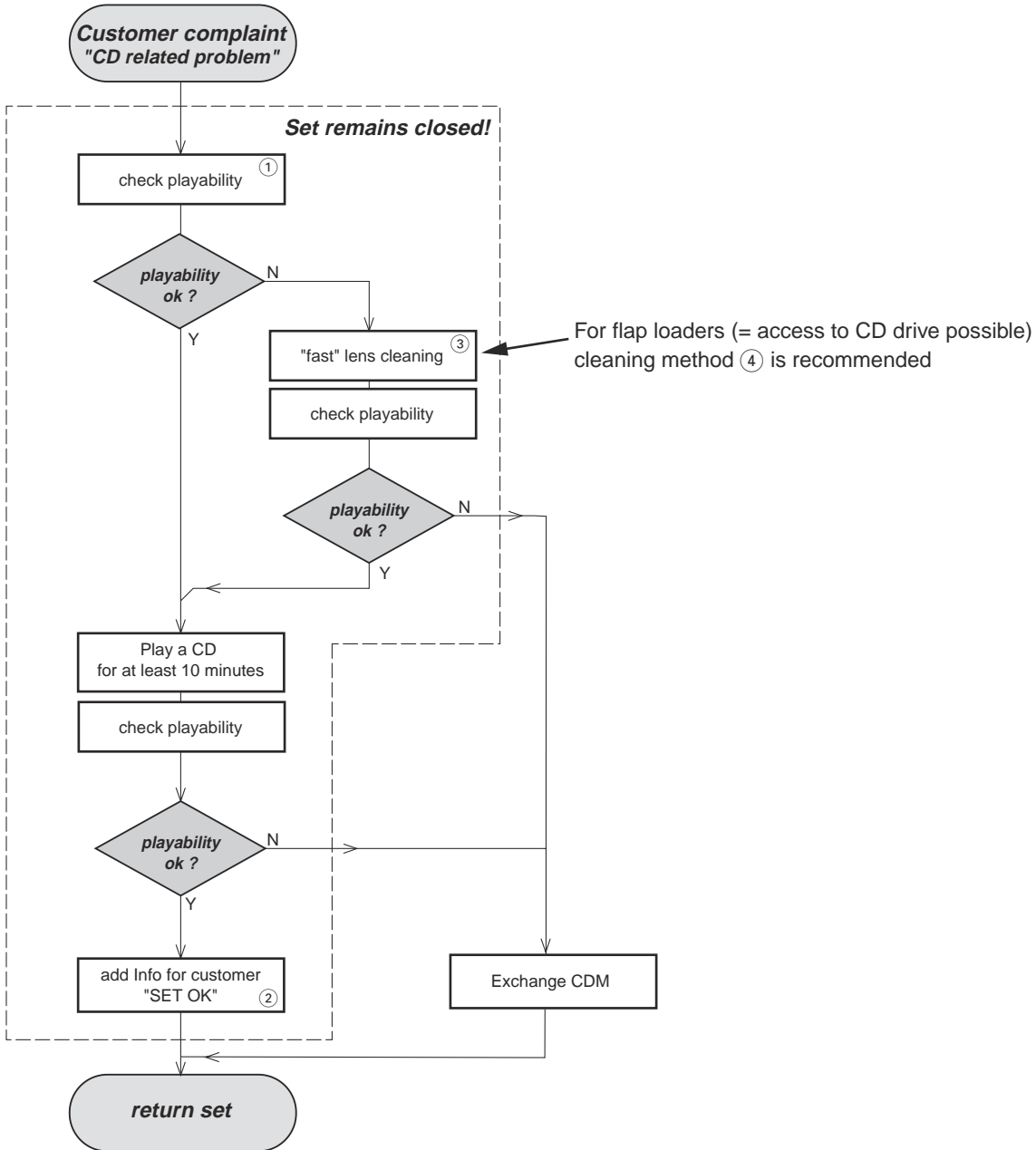
For additional questions please contact your local repair-helpdesk.

## 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

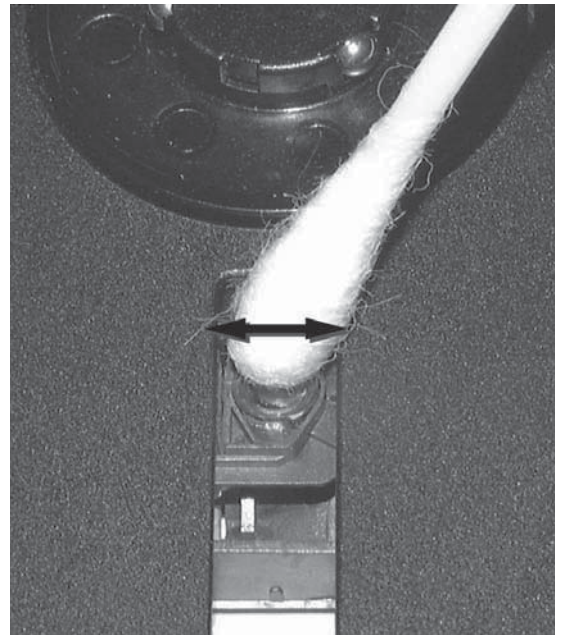
### LIQUID LENS CLEANING

**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.

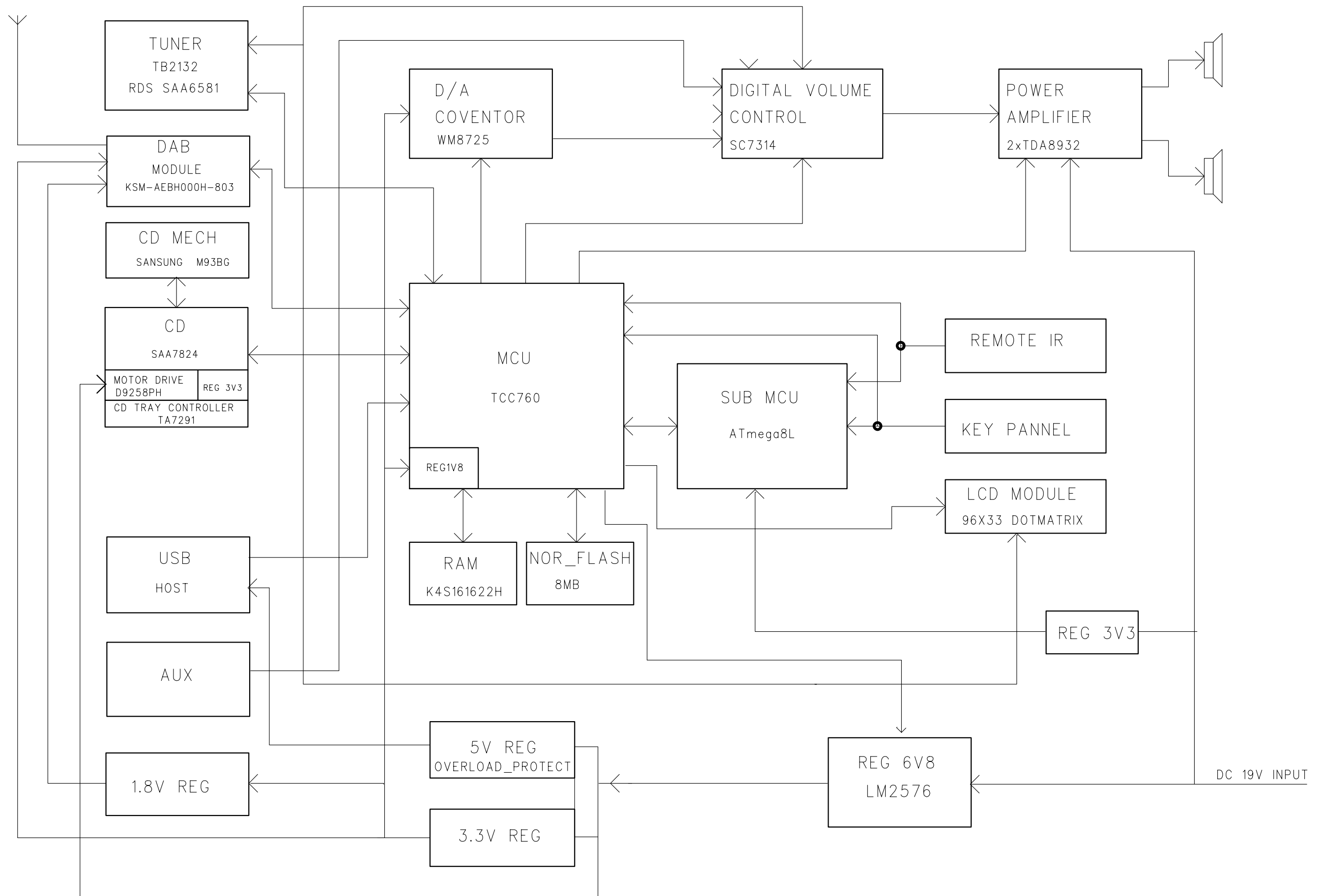


**SOFTWARE VERSION CHECKING****Software checking:**

- 1) MCU version : at standby mode, press and hold "SOURCE" & "PLAY" buttons at the same time. e.g. V2.01 JT3



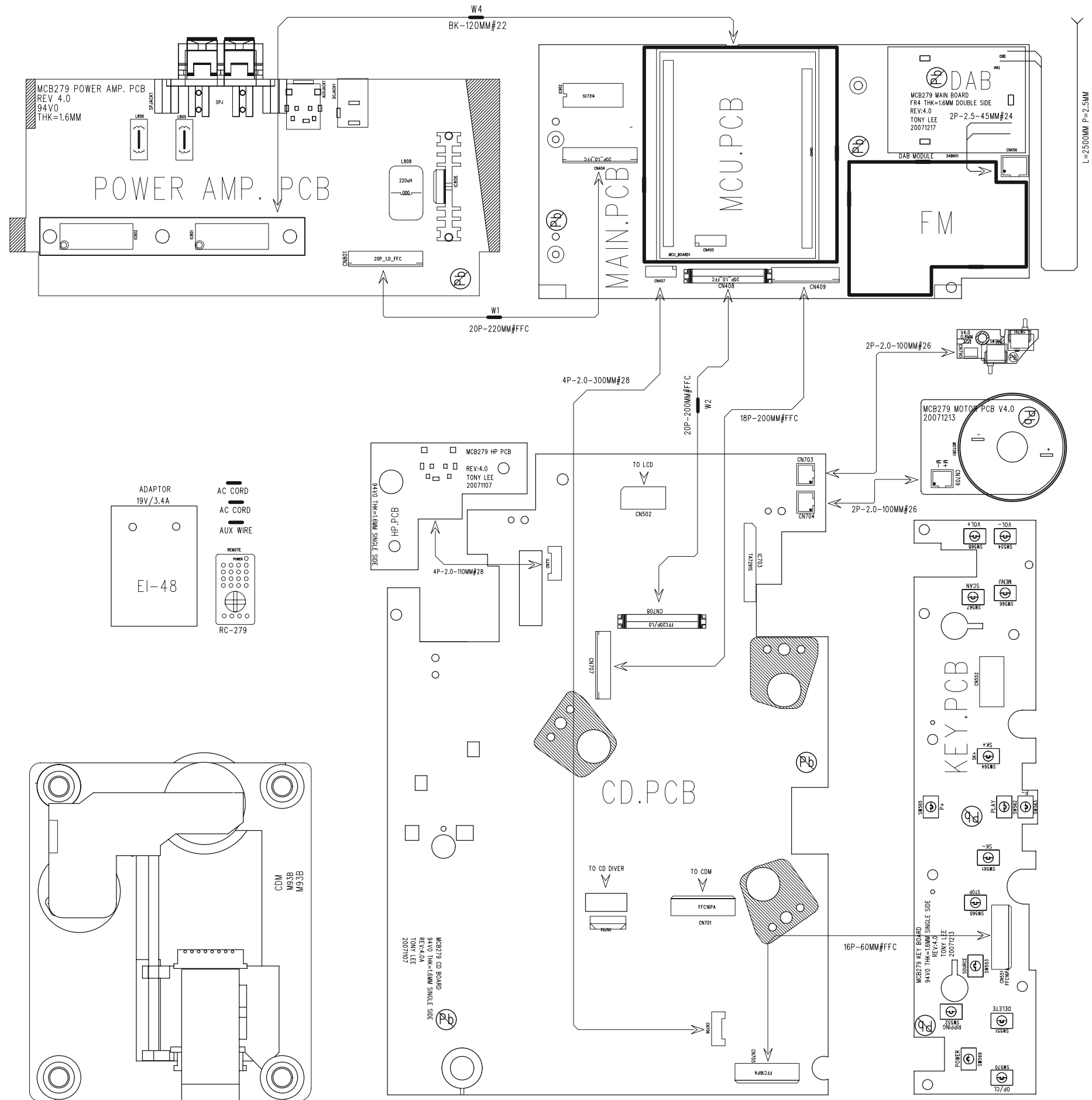
SET BLOCK DIAGRAM



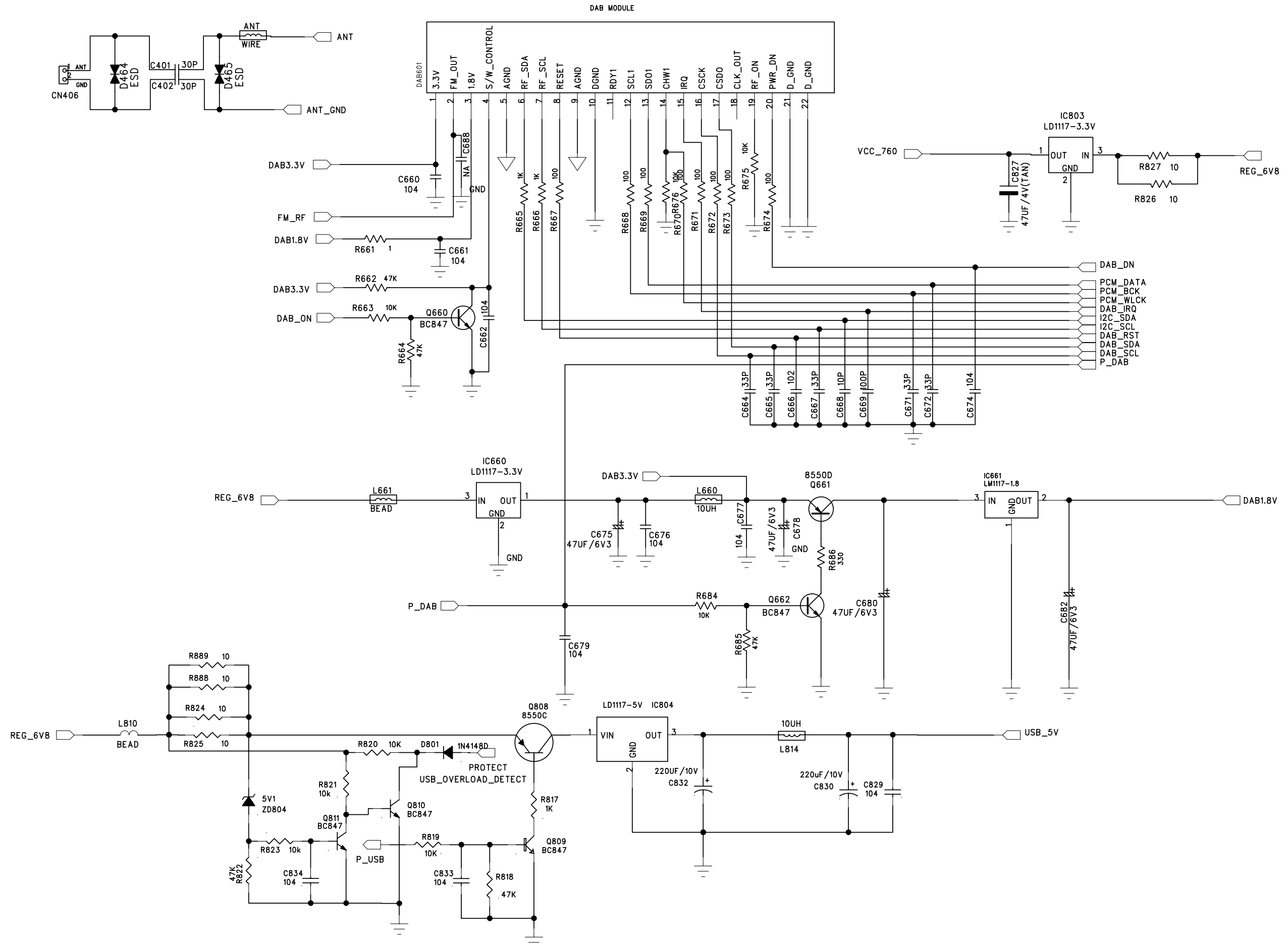
SET WIRING DIAGRAM

4 - 1

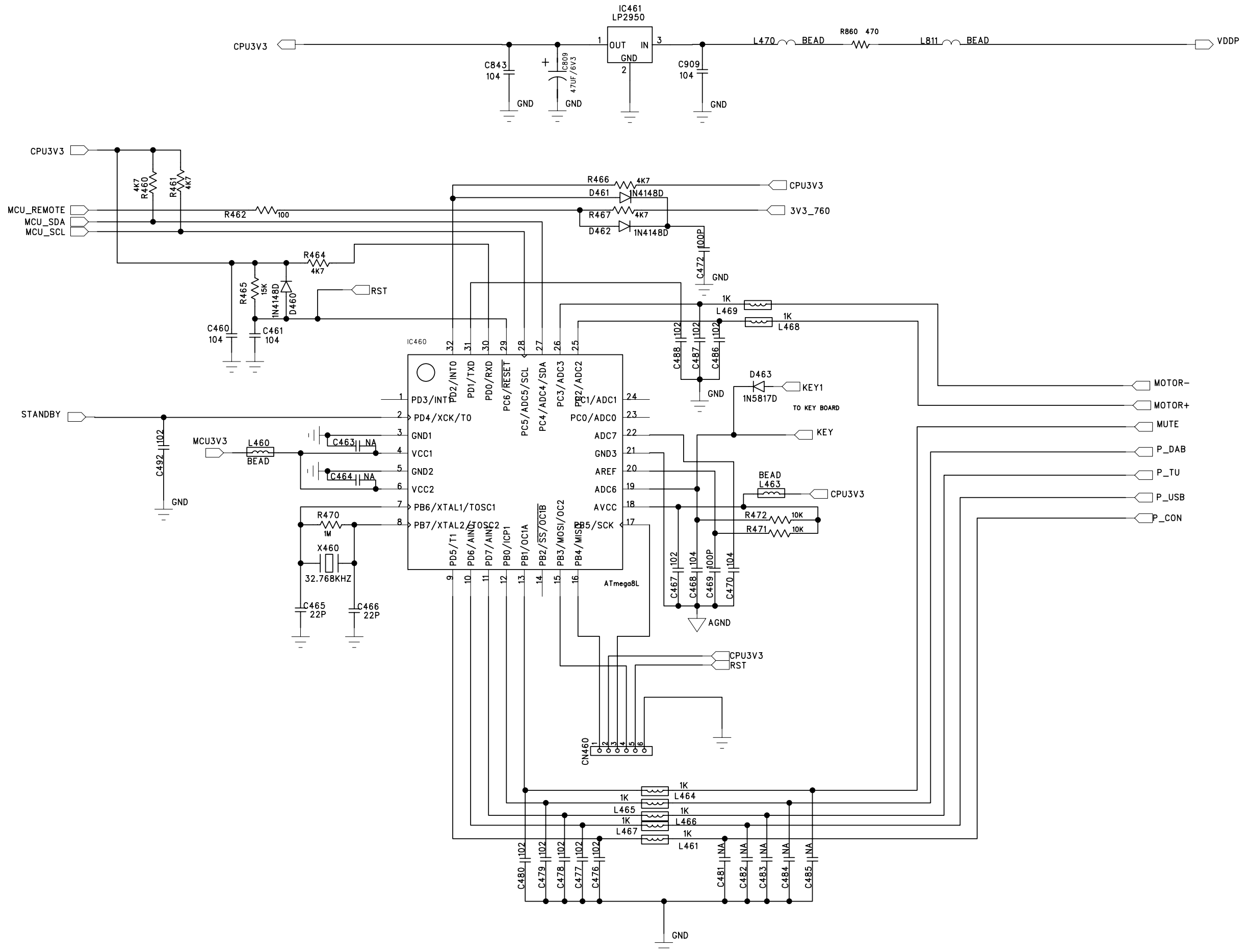
4 - 1



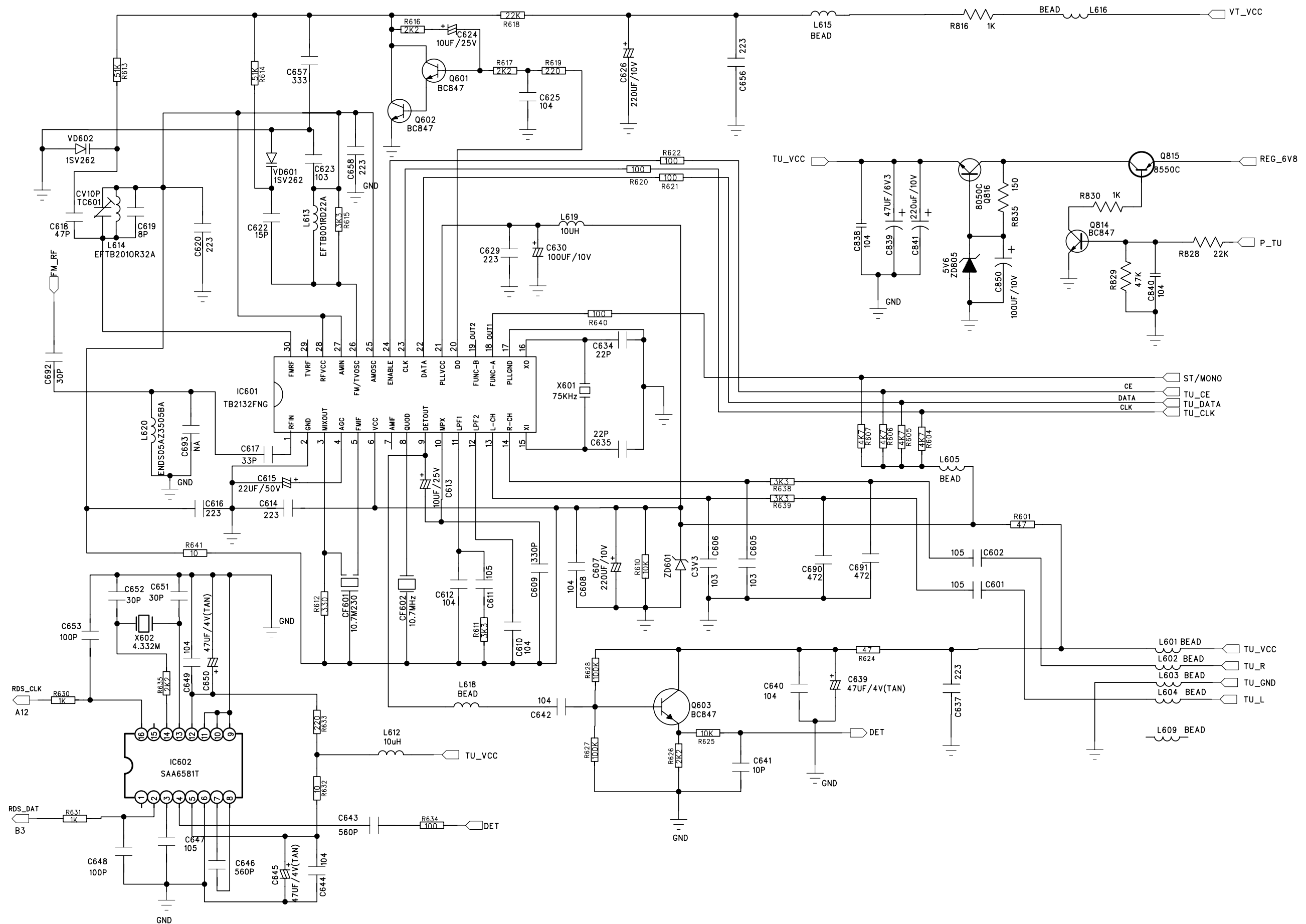
# CIRCUIT DIAGRAM - MAIN BOARD DAB PART



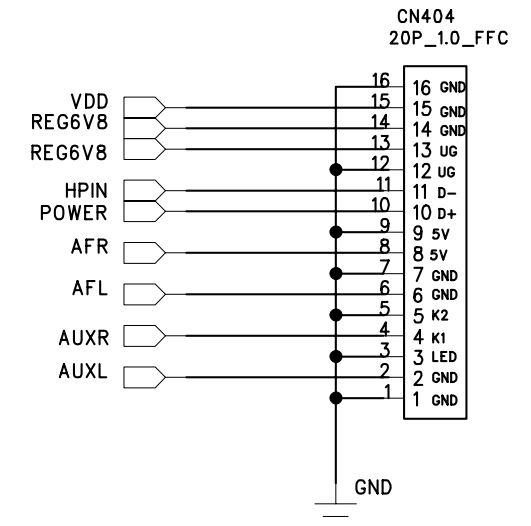
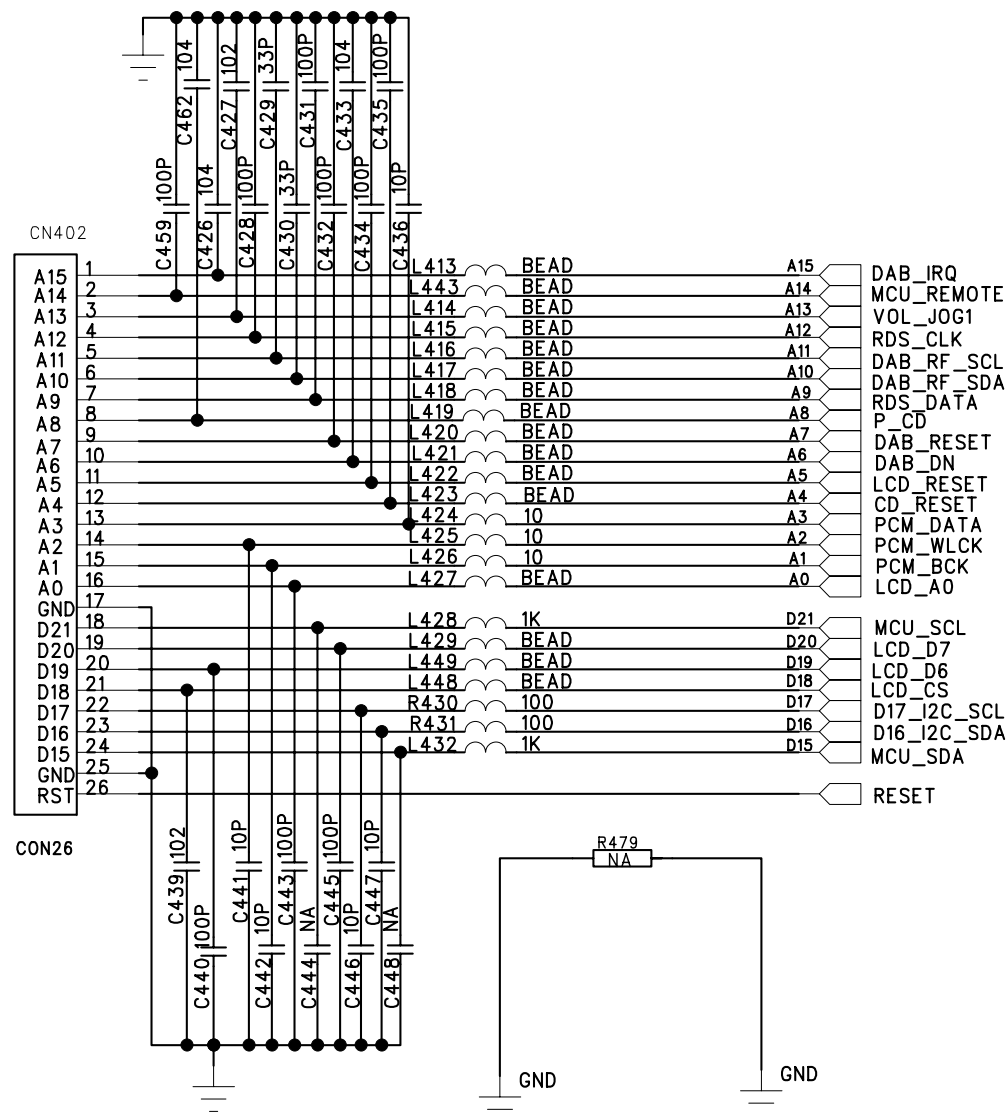
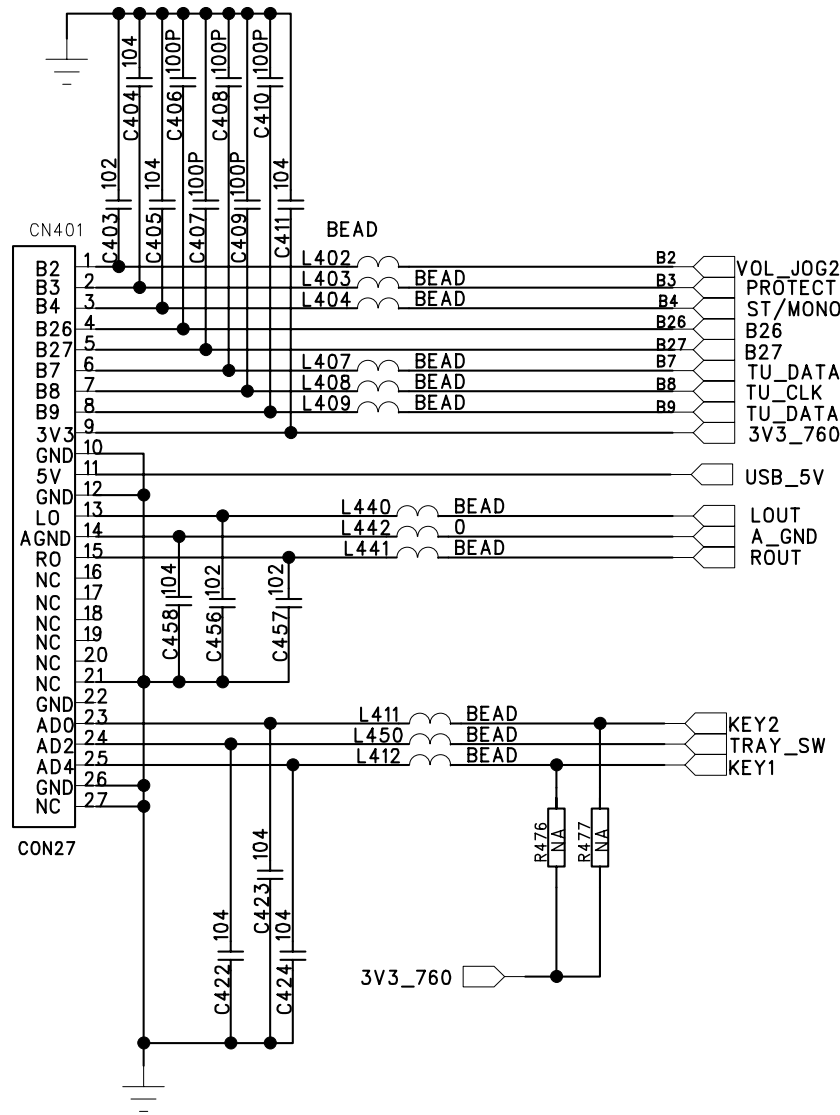
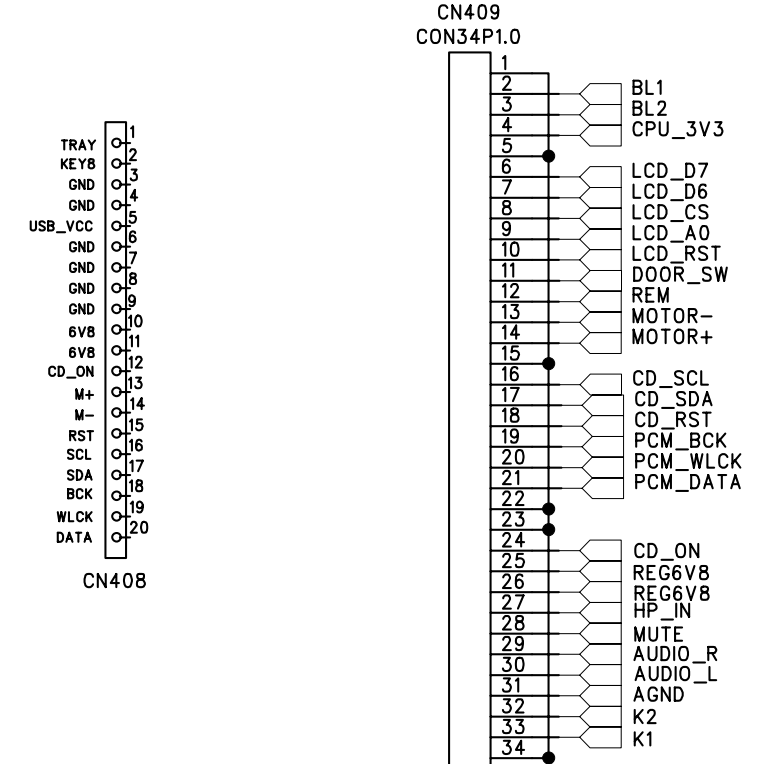
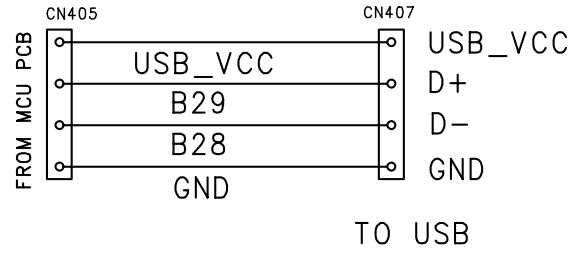
# CIRCUIT DIAGRAM - MAIN BOARD SUB MCU PART



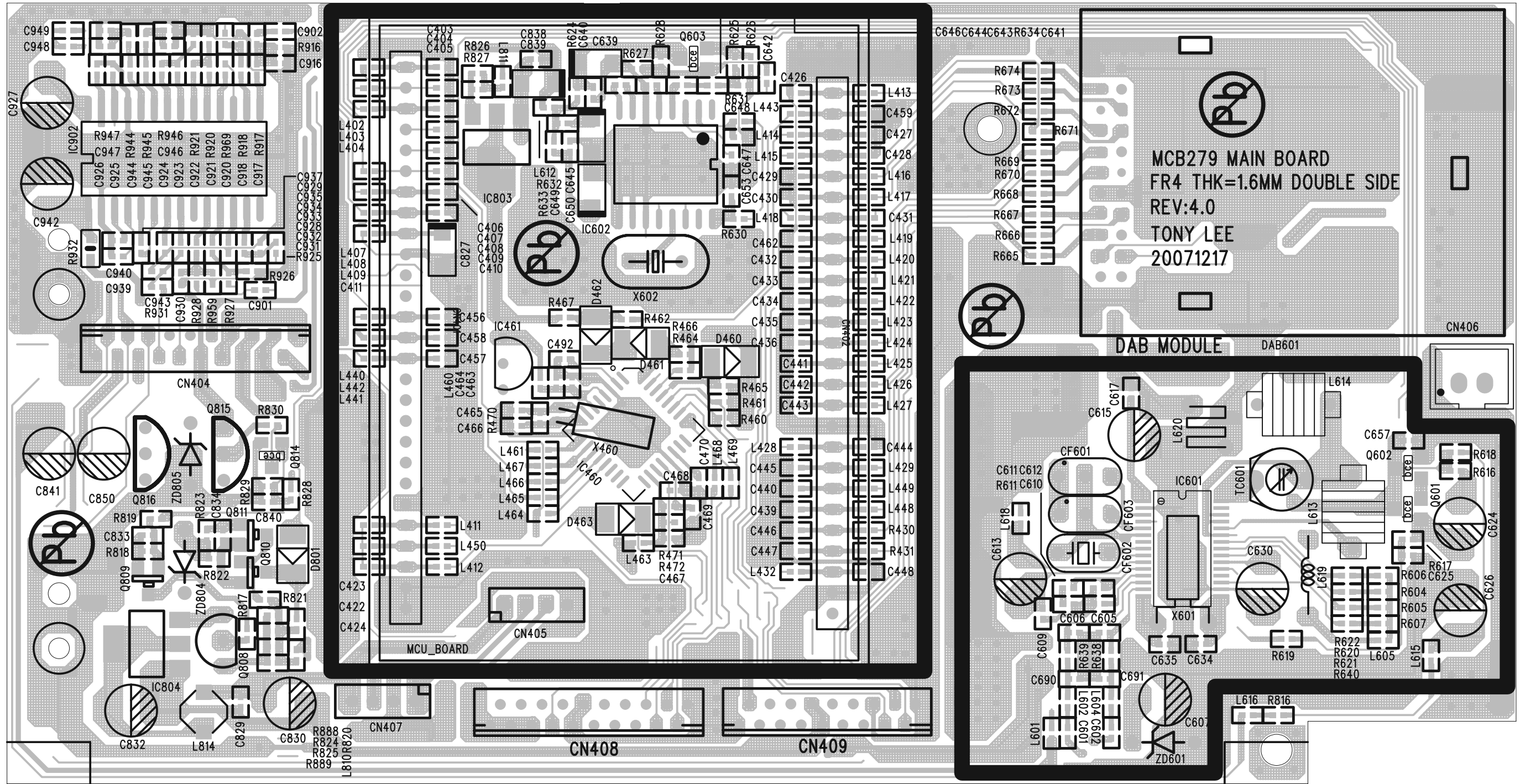
# CIRCUIT DIAGRAM - MAIN BOARD TUNER PART



CIRCUIT DIAGRAM - MAIN BOARD  
INTERFACE PART



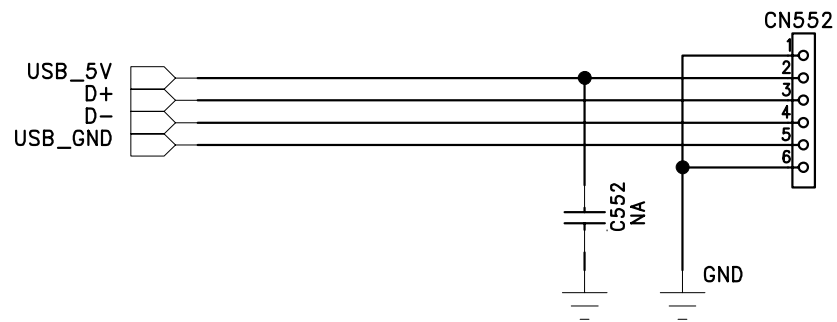
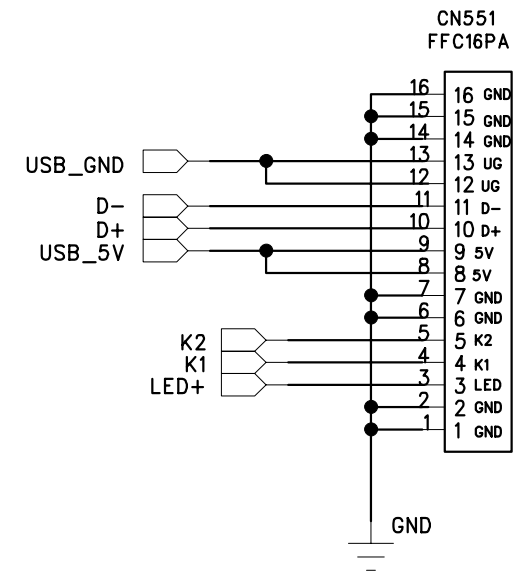
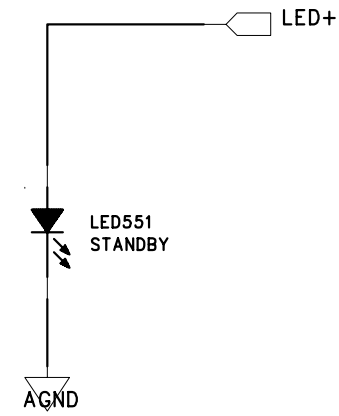
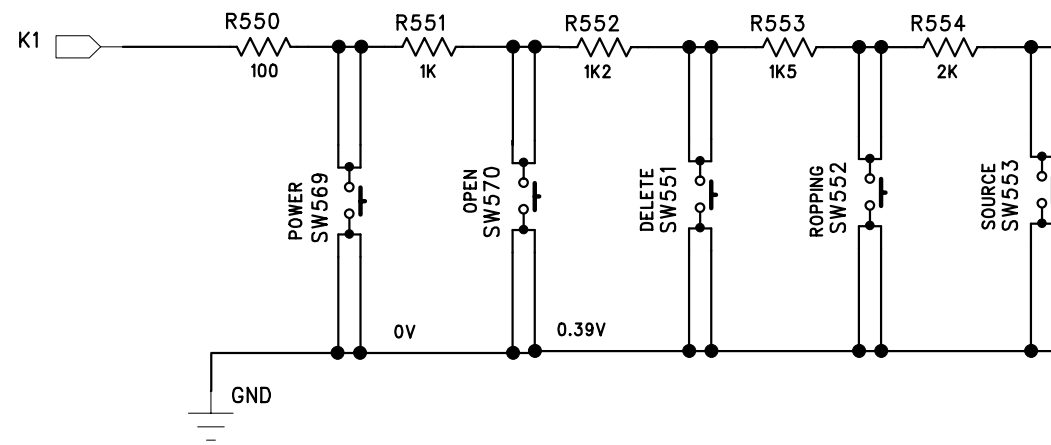
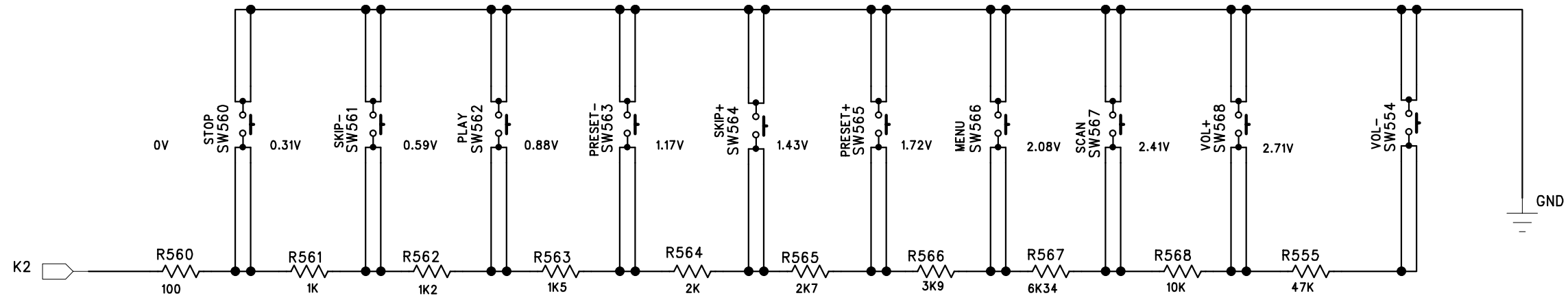
LAYOUT DIAGRAM - MAIN BOARD  
TOP VIEW



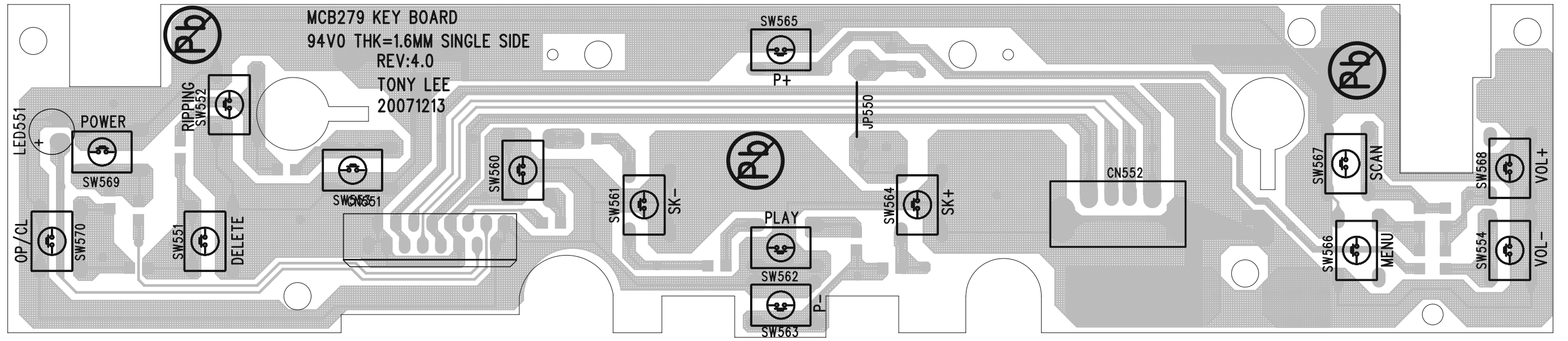




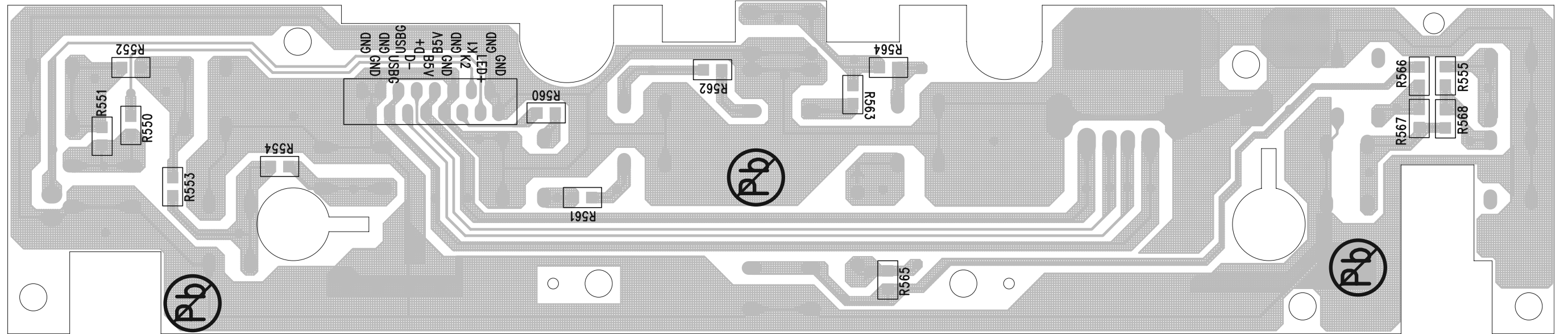
# CIRCUIT DIAGARM - KEY BOARD



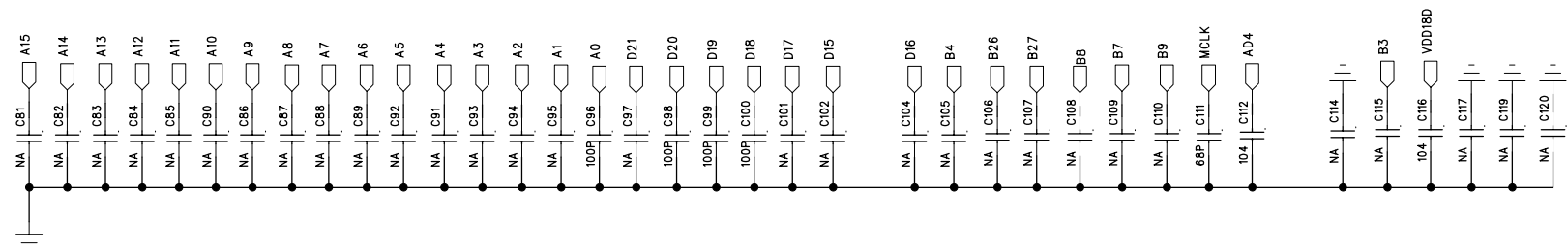
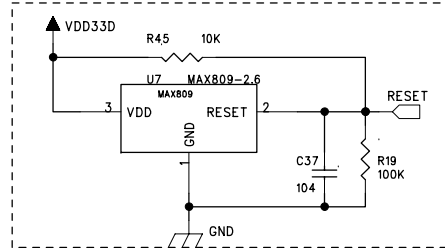
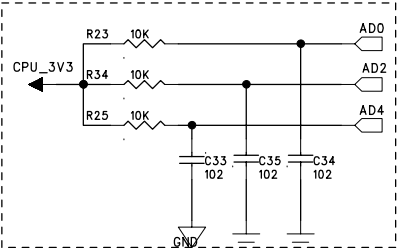
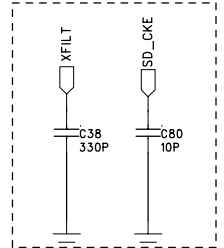
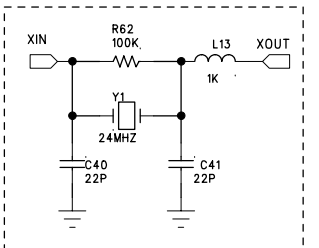
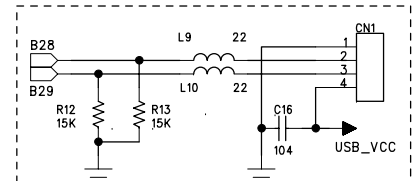
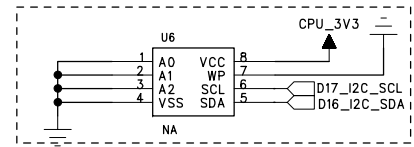
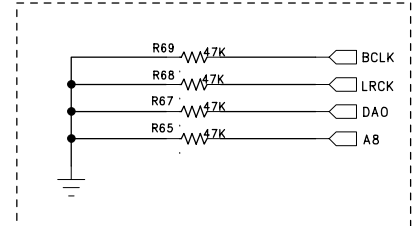
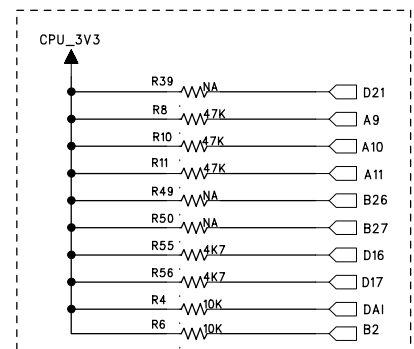
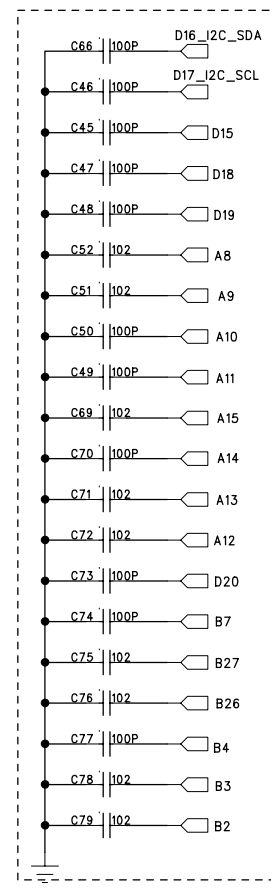
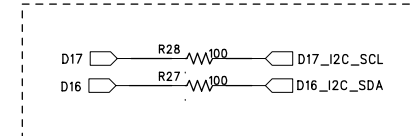
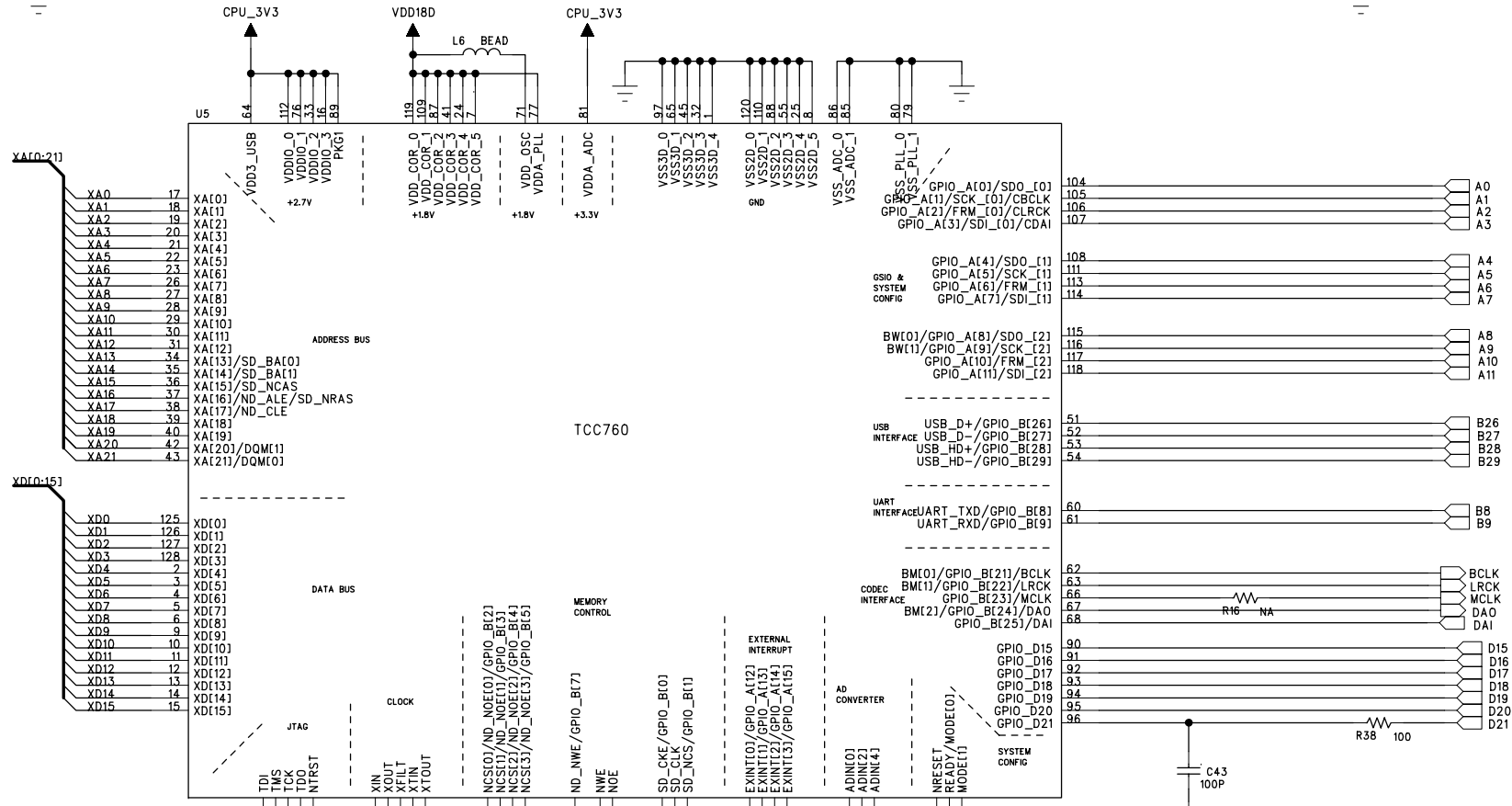
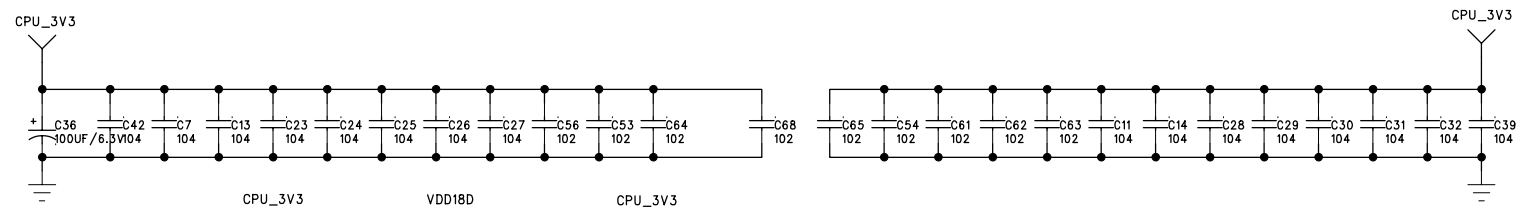
LAYOUT DIAGARM - KEY BOARD  
TOP VIEW



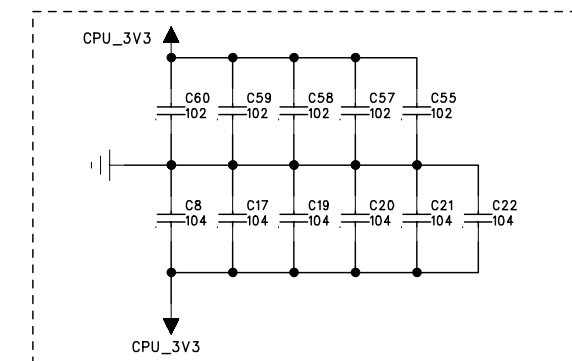
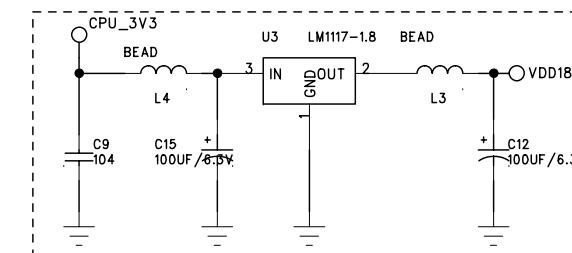
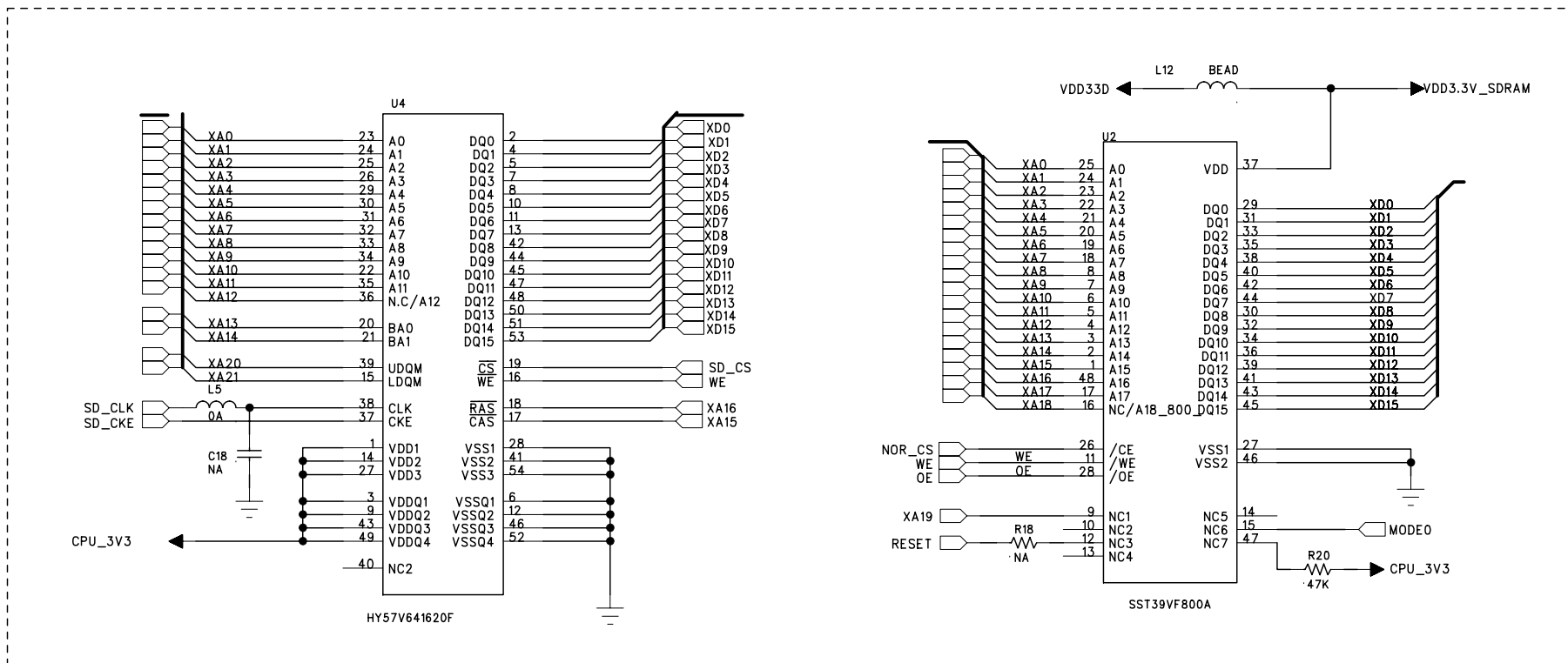
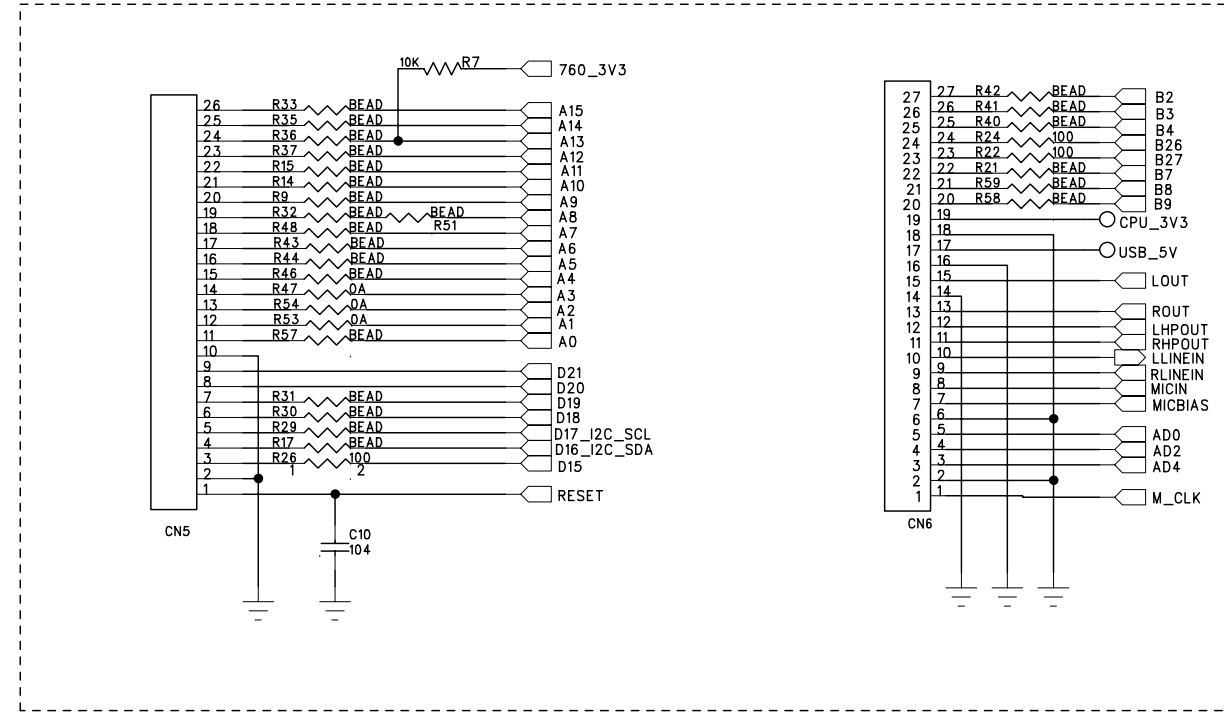
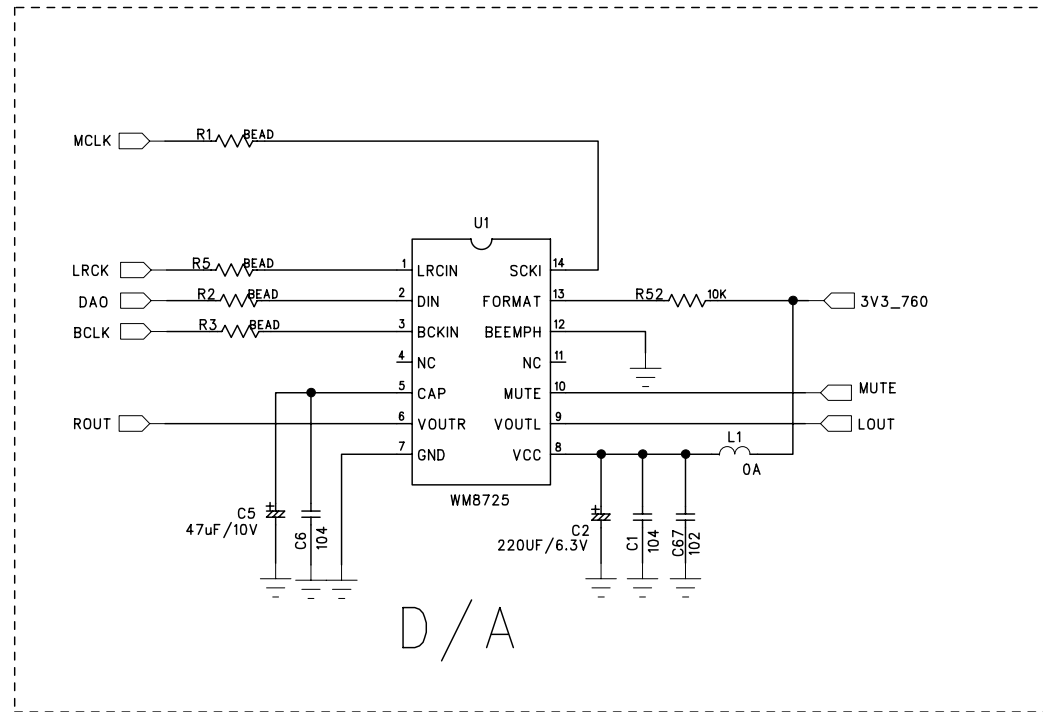
LAYOUT DIAGARM - KEY BOARD  
BOTTOM VIEW



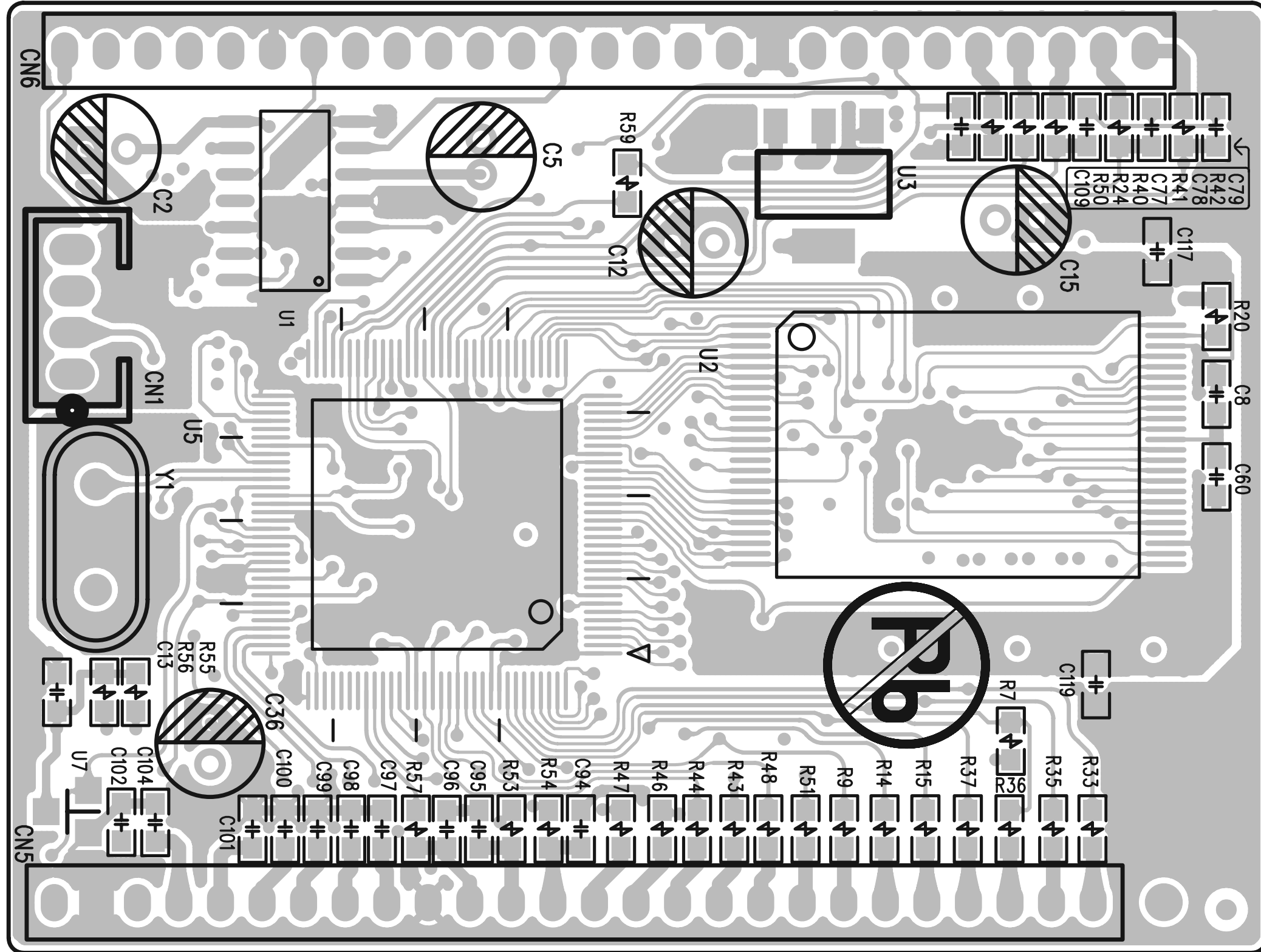
# CIRCUIT DIAGRAM - MCU BOARD PART 1



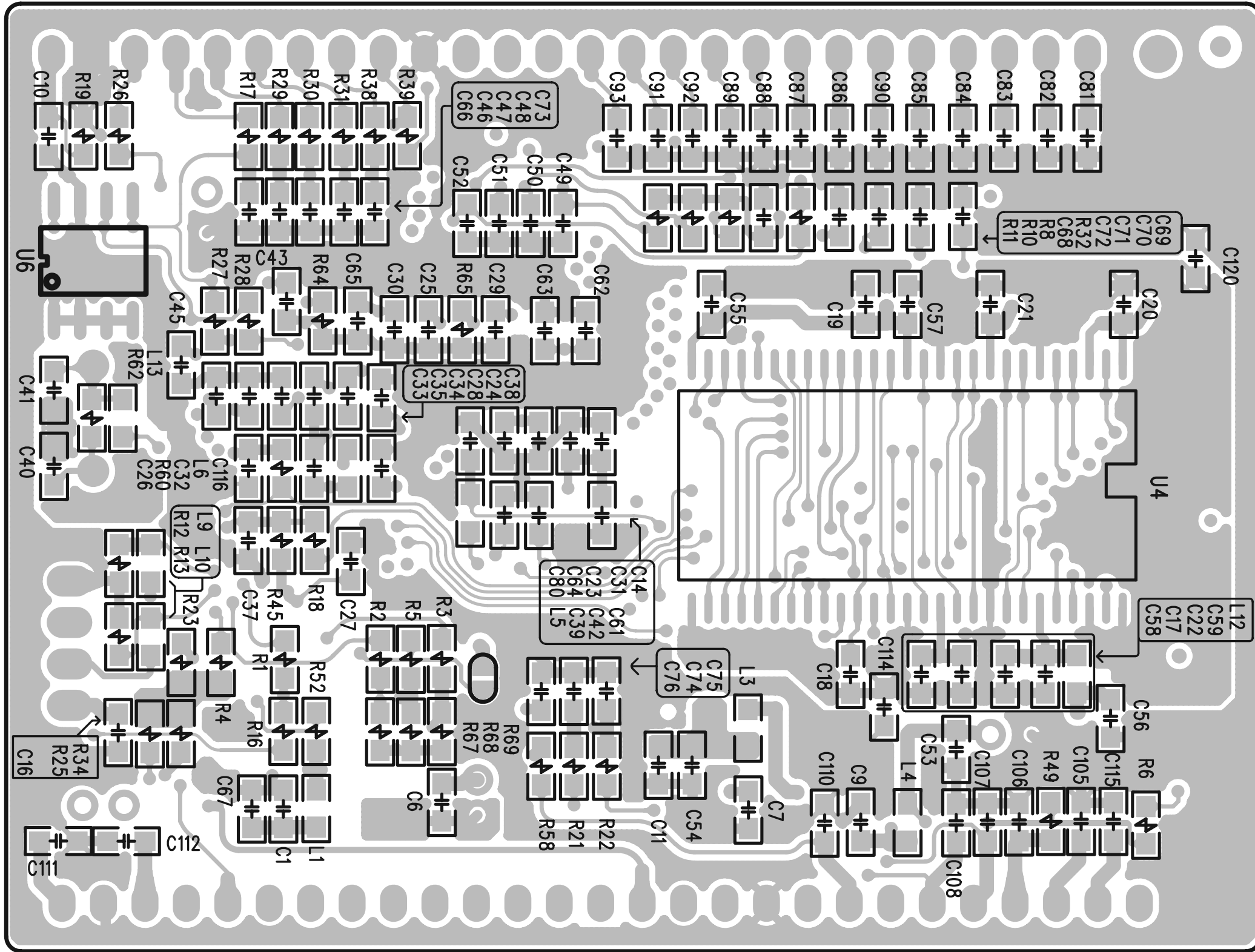
# CIRCUIT DIAGARM - MCU BOARD MEMORY PART



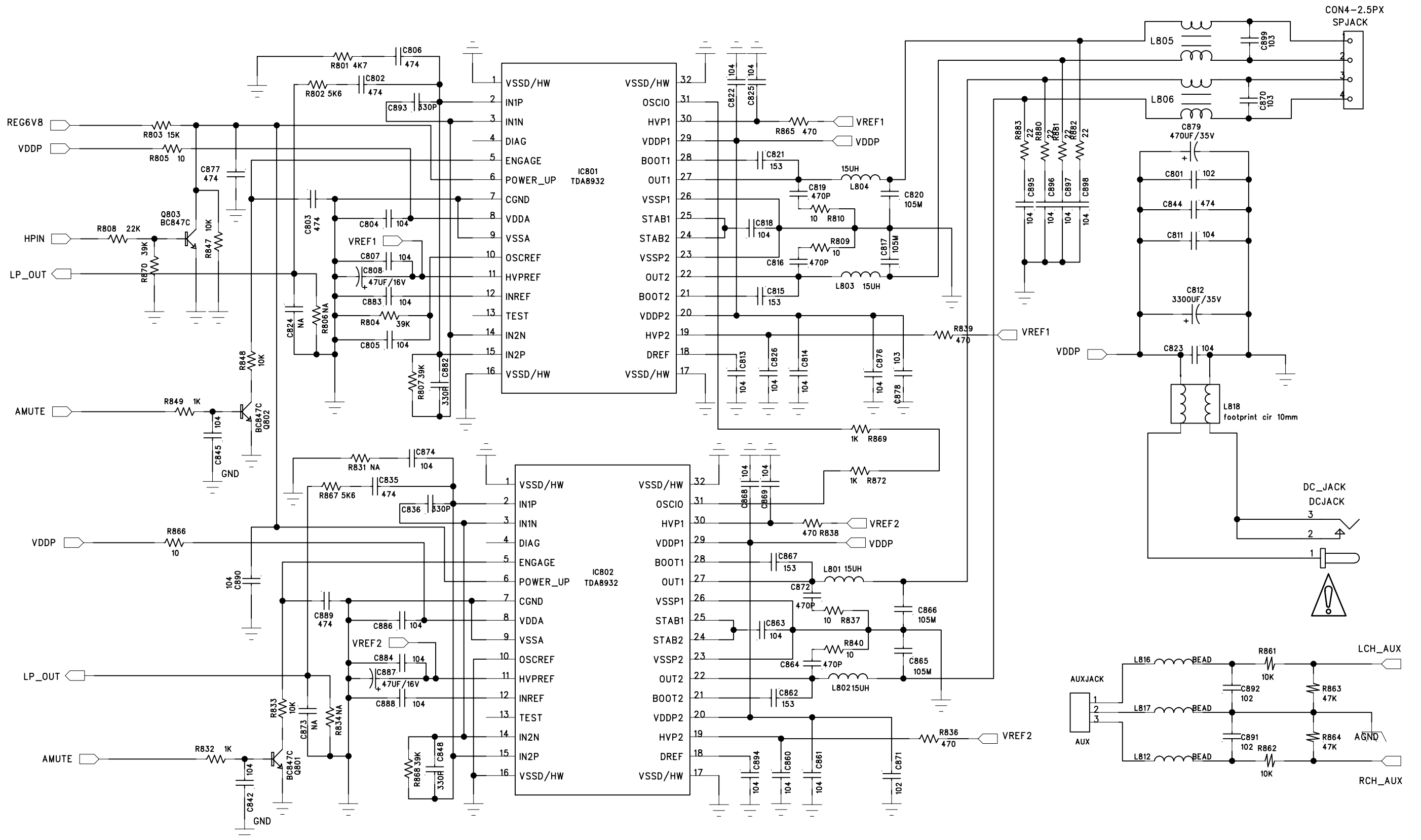
LAYOUT DIAGARM - MCU BOARD  
TOP VIEW



LAYOUT DIAGARM - MCU BOARD  
BOTTOM VIEW

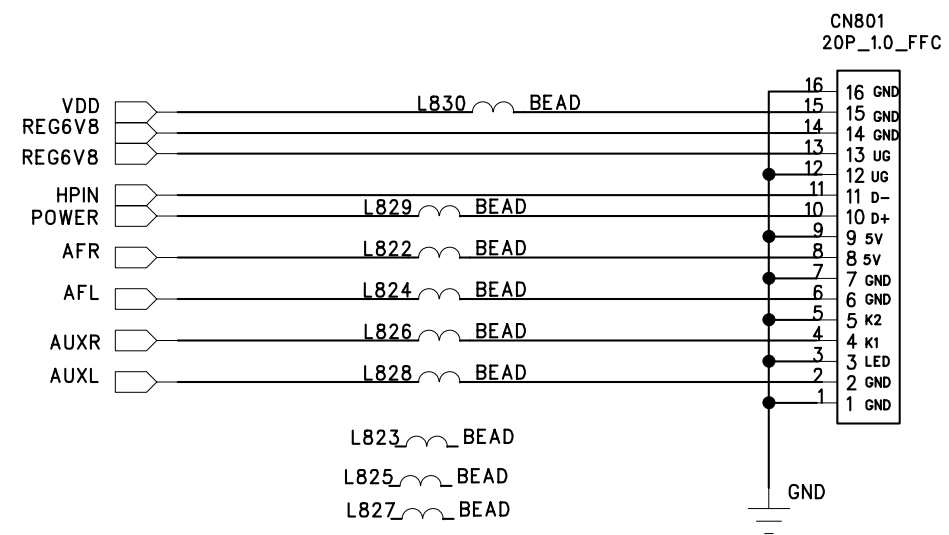
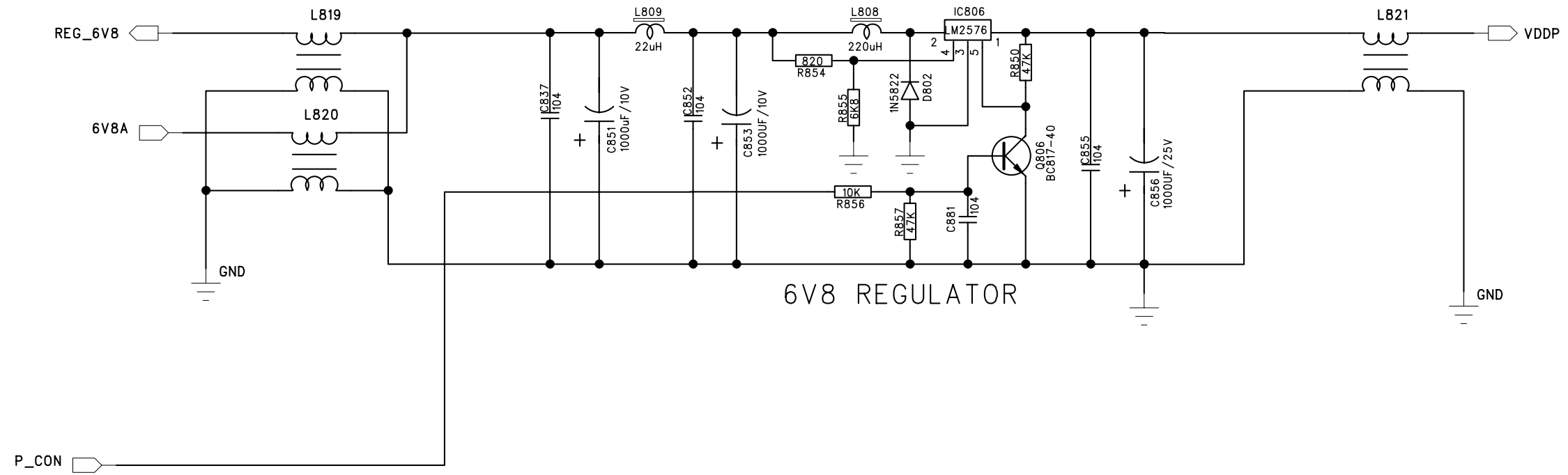


# CIRCUIT DIAGARM - POWER AMP BOARD PART 1

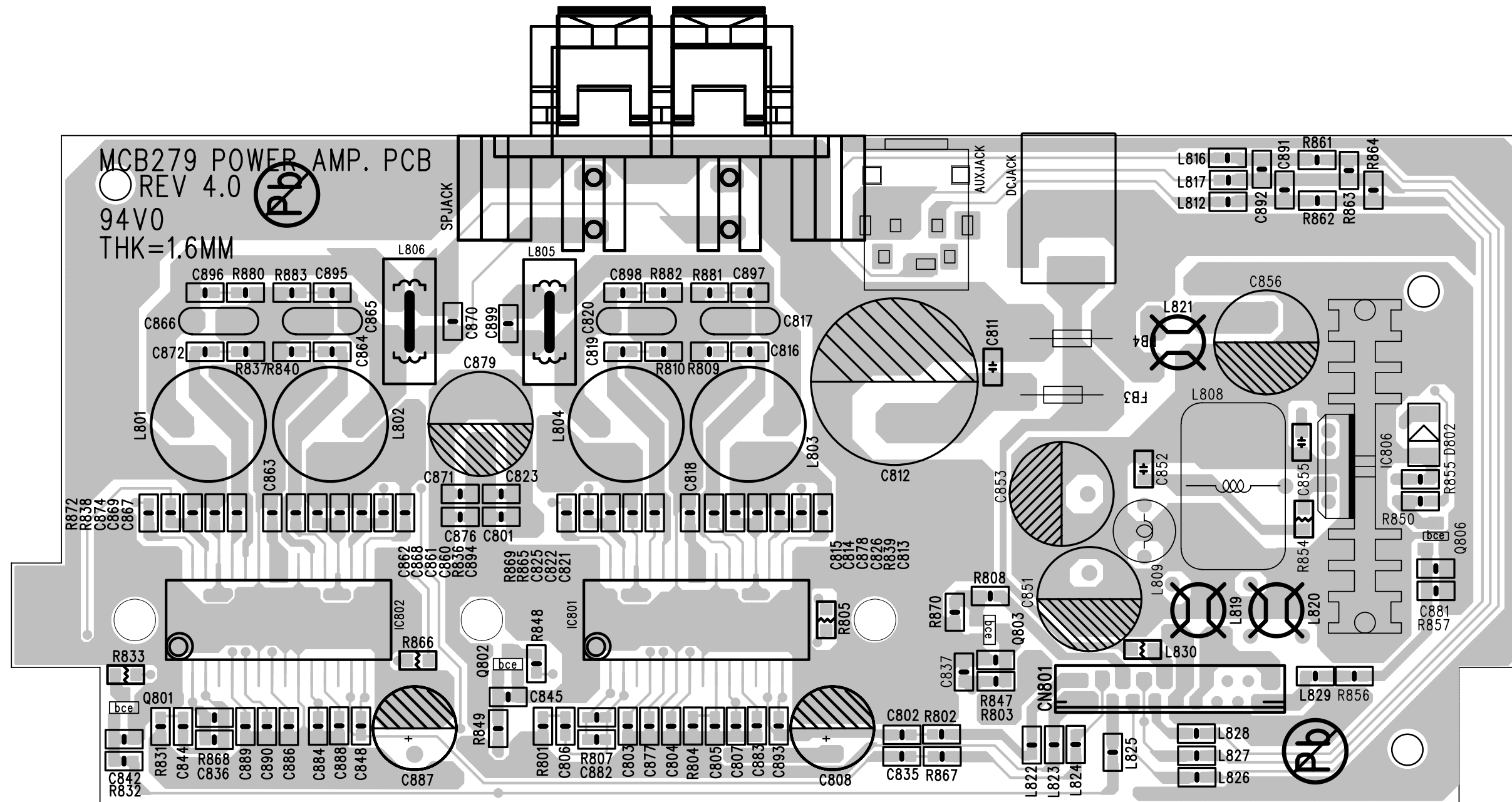




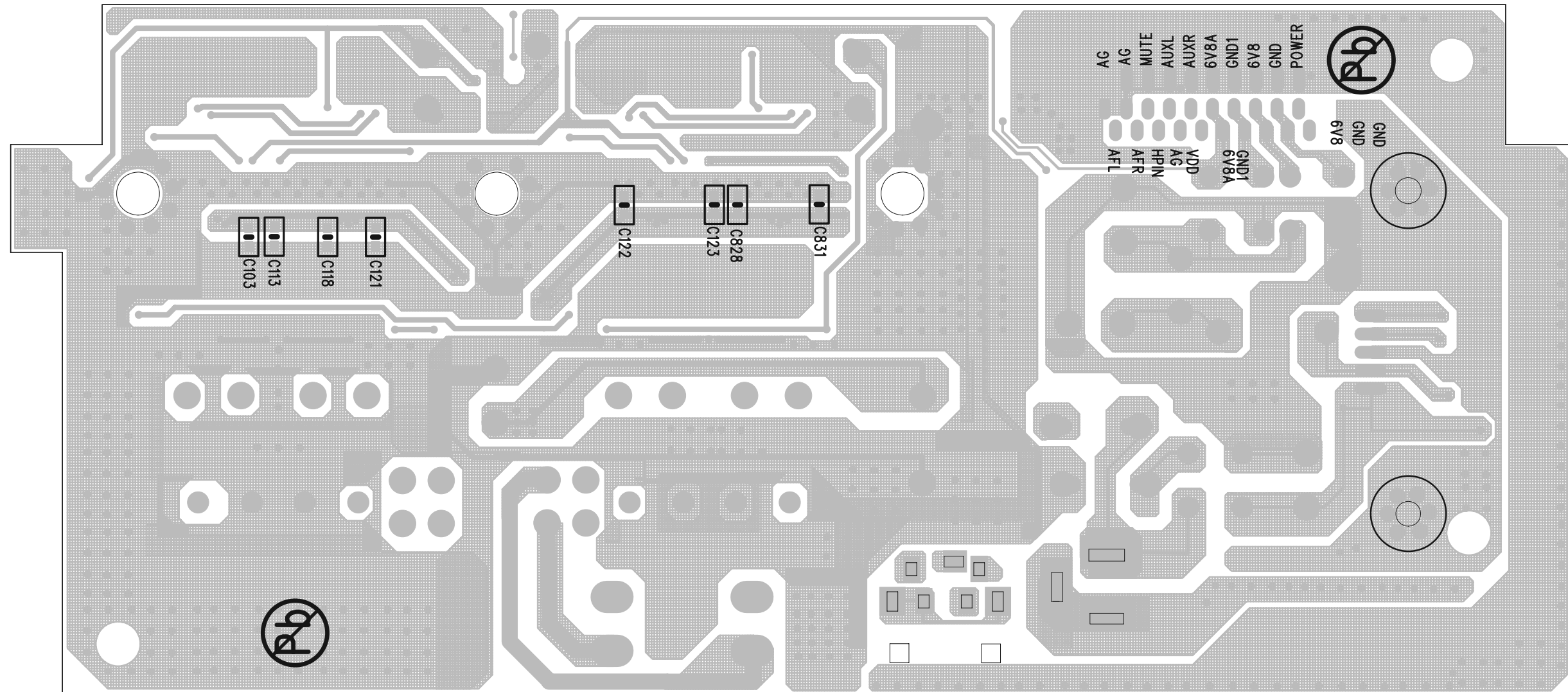
# CIRCUIT DIAGARM - POWER AMP BOARD PART 2



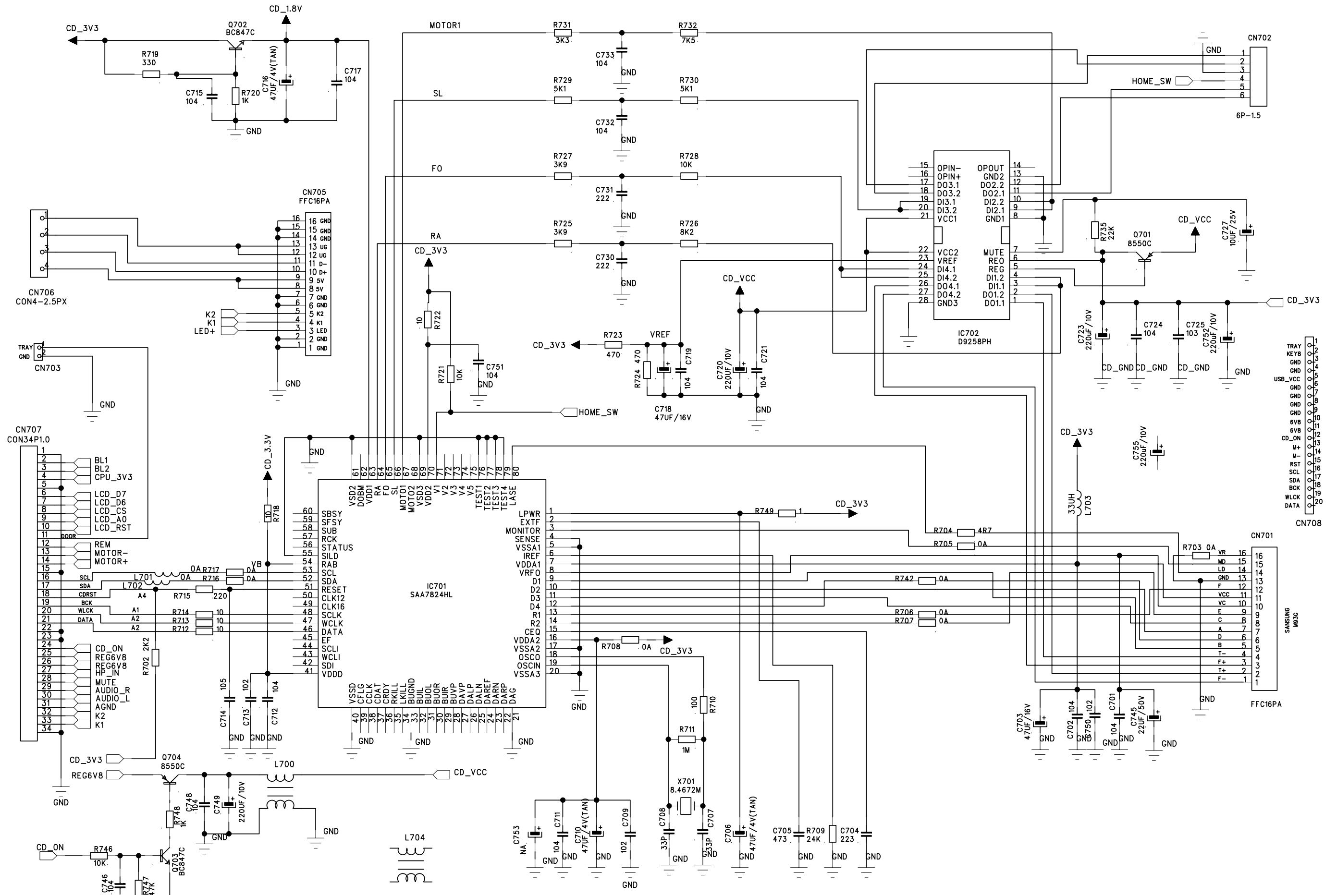
LAYOUT DIAGARM - POWER AMP BOARD  
TOP VIEW



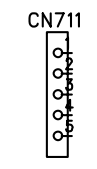
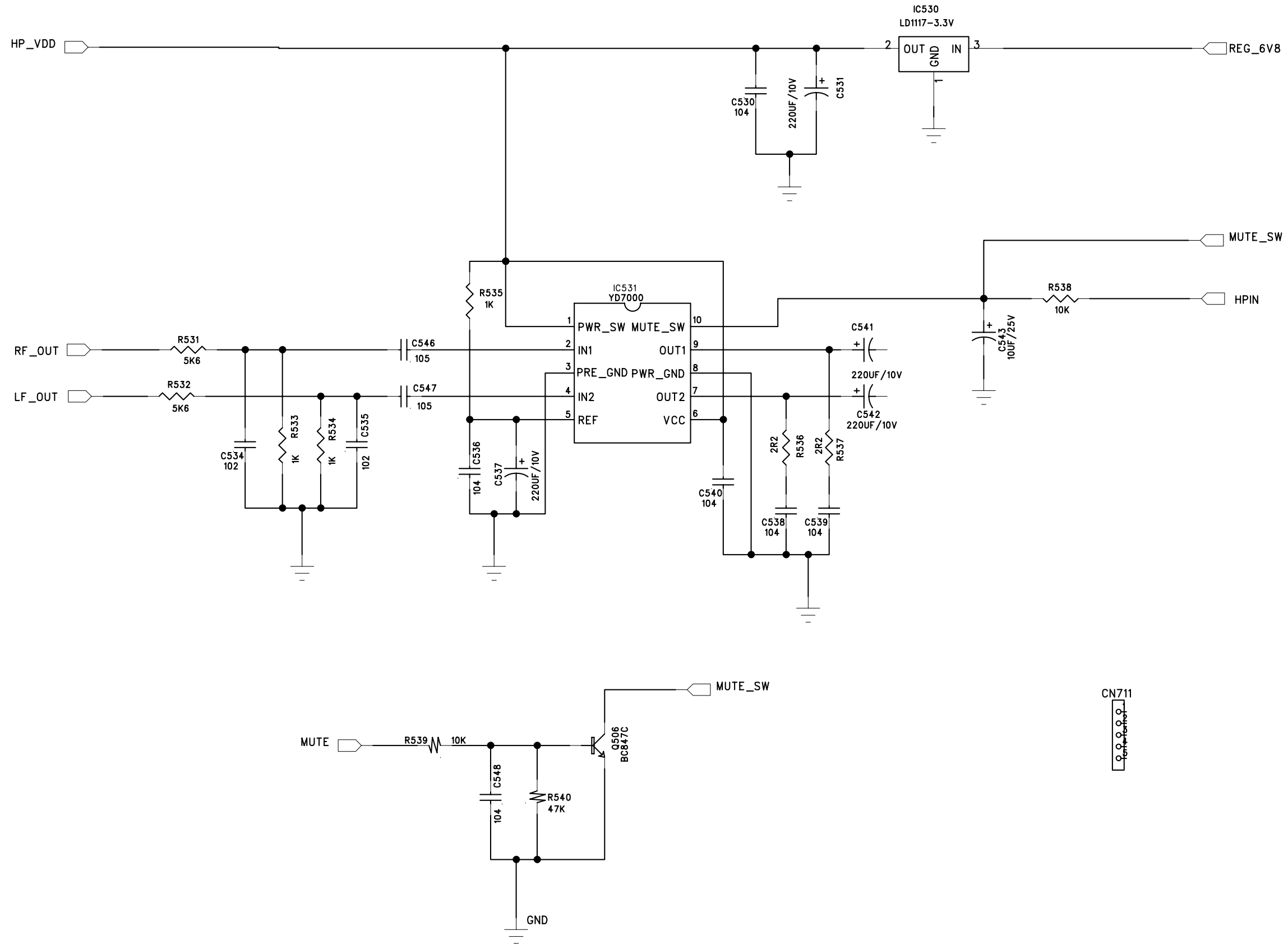
LAYOUT DIAGARM - POWER AMP BOARD  
BOTTOM VIEW



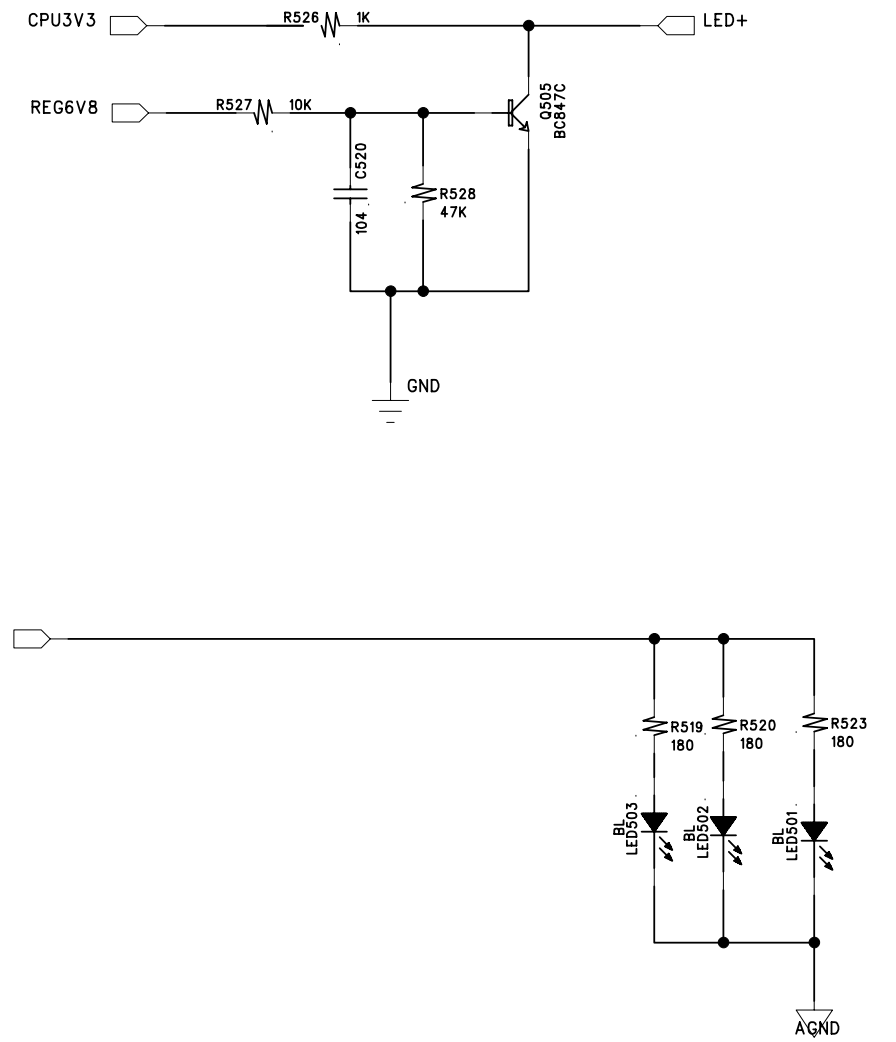
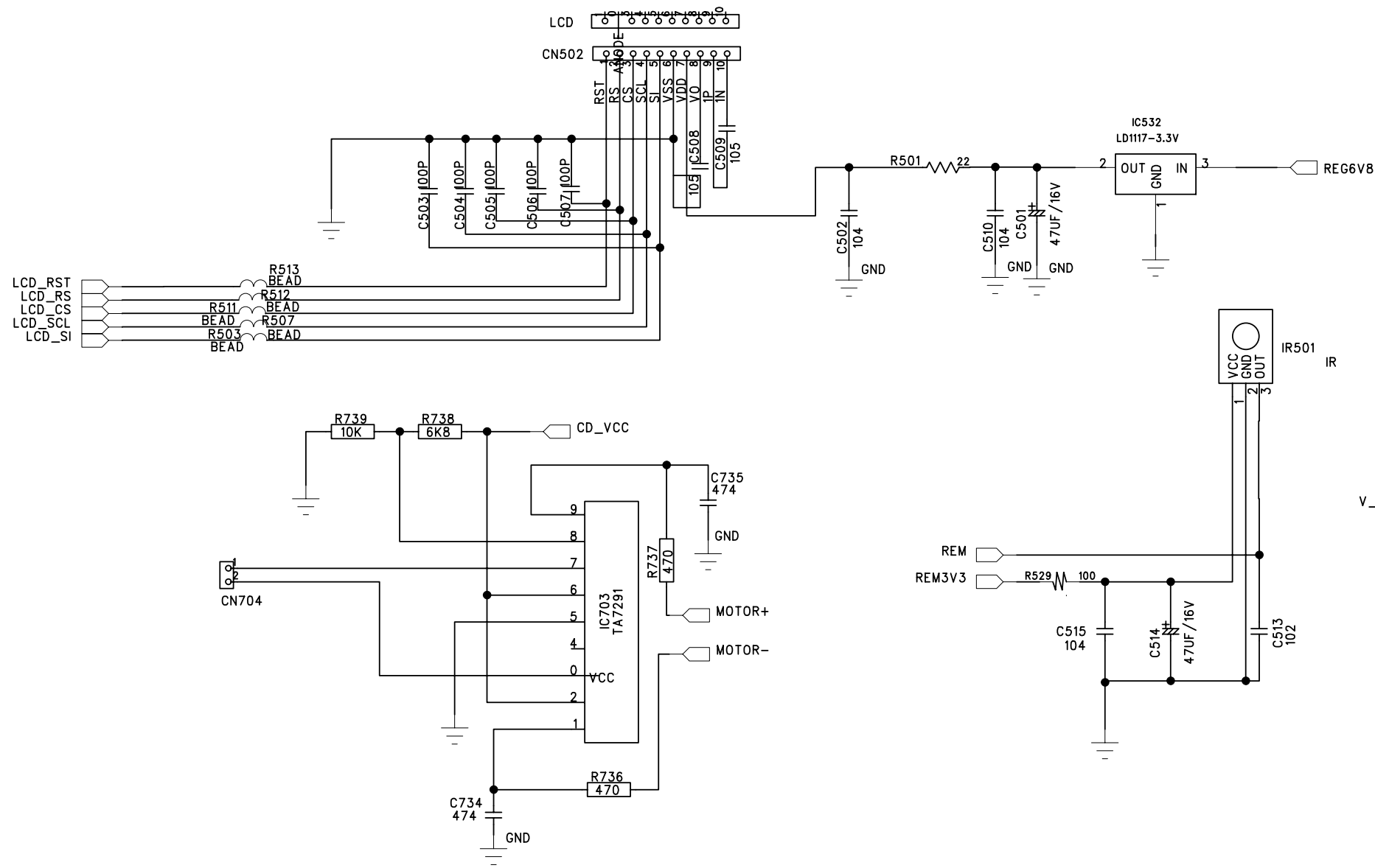
# CIRCUIT DIAGRAM - CD BOARD PART 1



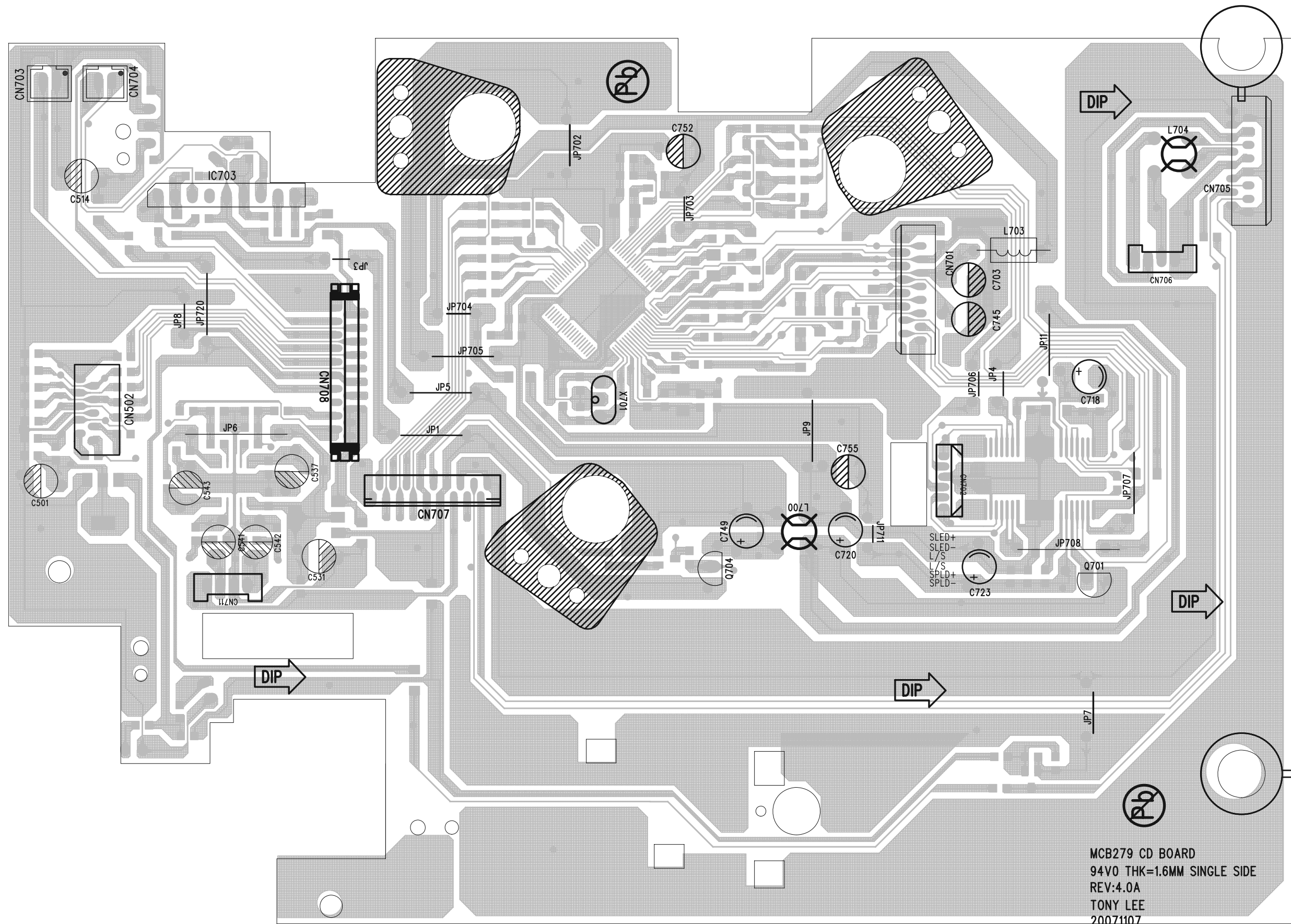
# CIRCUIT DIAGRAM - CD BOARD HP AMP PART



# CIRCUIT DIAGRAM - CD BOARD LCD PART



LAYOUT DIAGRAM - CD BOARD  
TOP VIEW

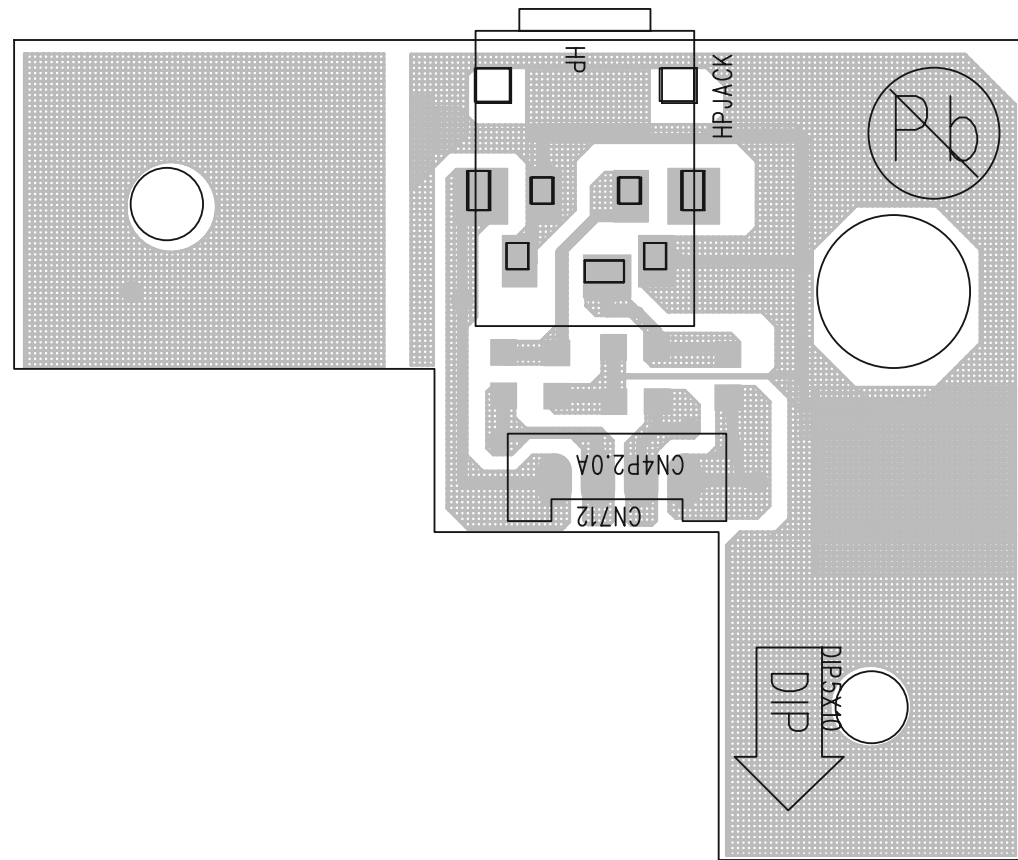


MCB279 CD BOARD  
 94VO THK=1.6MM SINGLE SIDE  
 REV:4.0A  
 TONY LEE  
 20071107

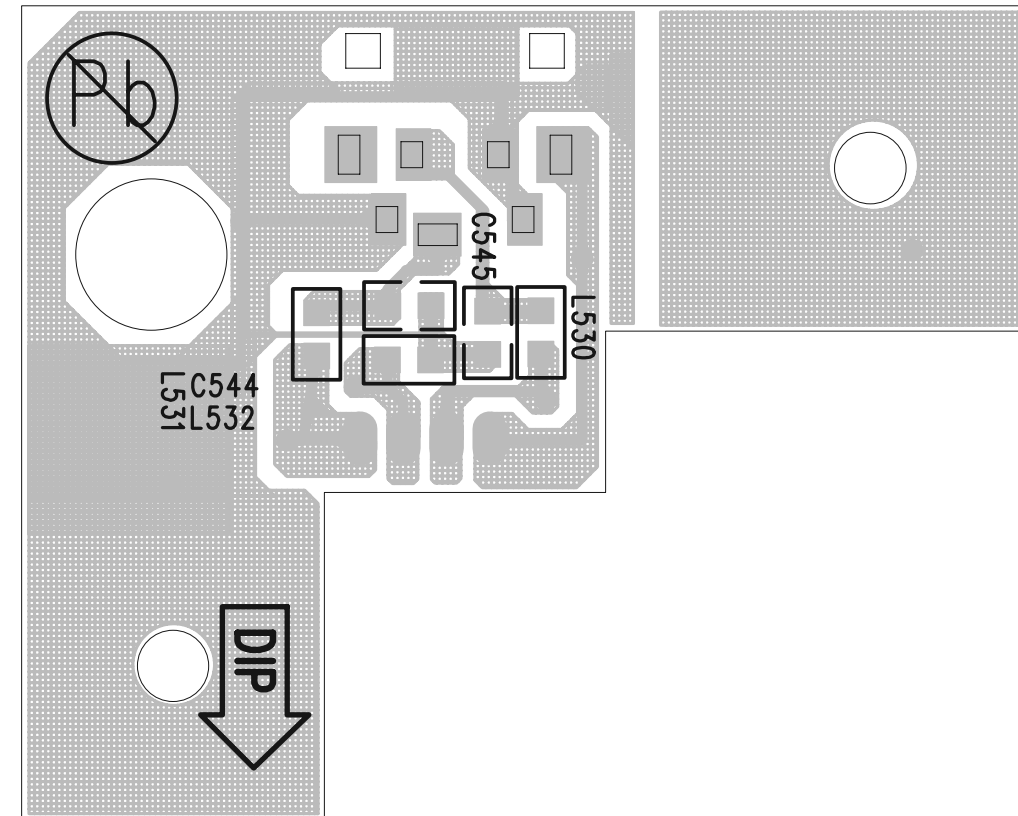




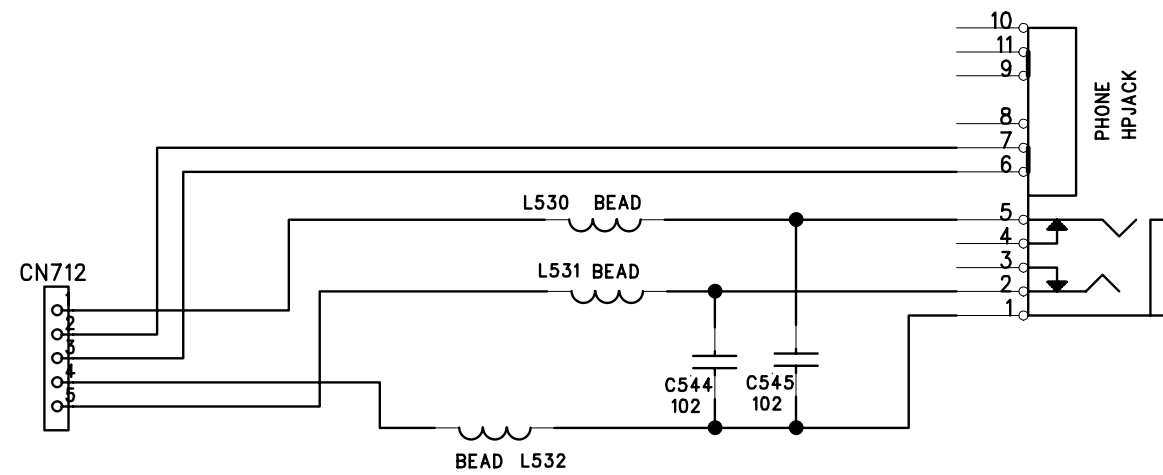
LAYOUT DIAGRAM - HEADPHONE BOARD  
TOP VIEW



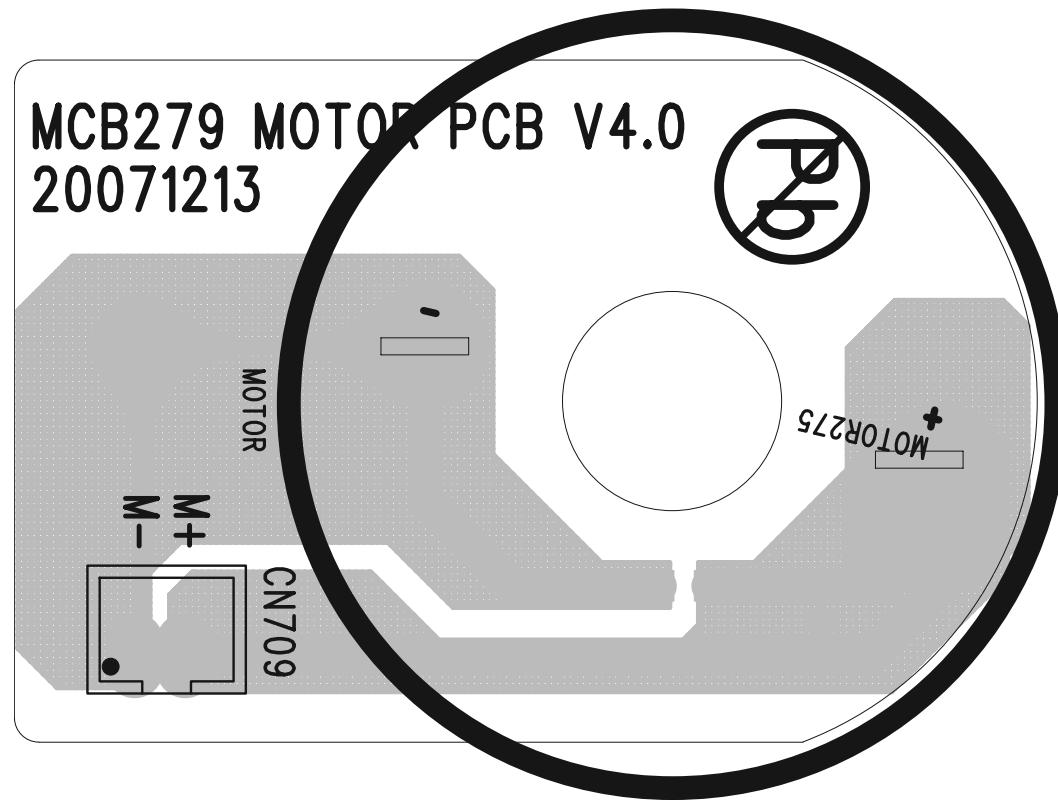
LAYOUT DIAGRAM - HEADPHONE BOARD  
BOTTOM VIEW



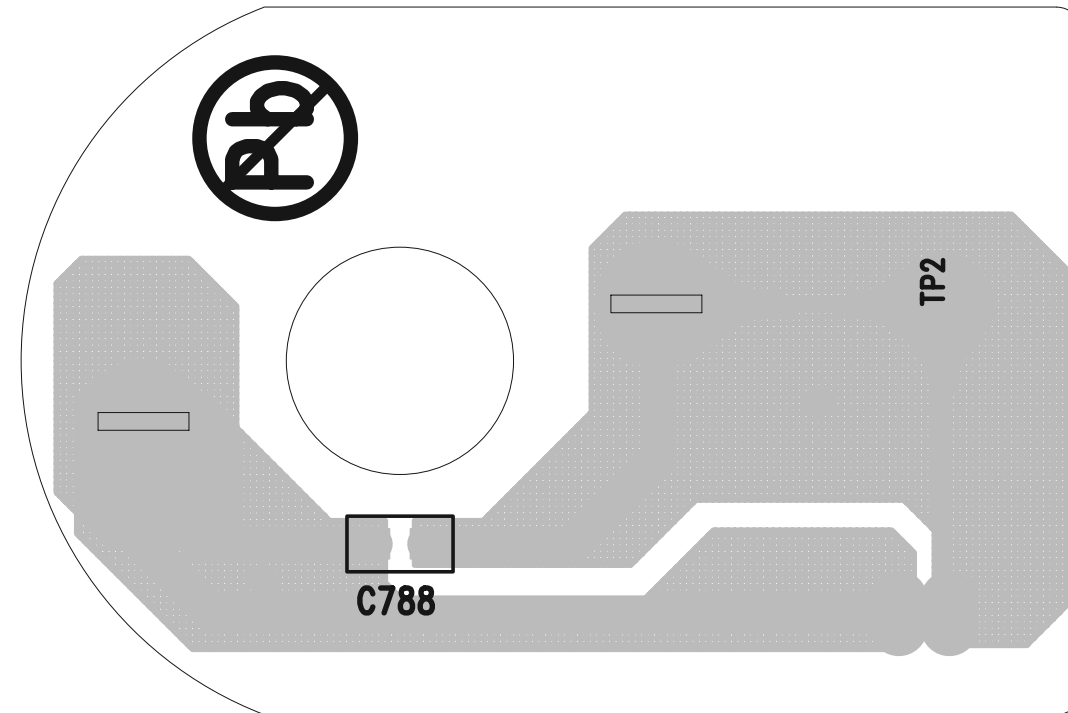
CIRCUIT DIAGRAM - HEADPHONE BOARD



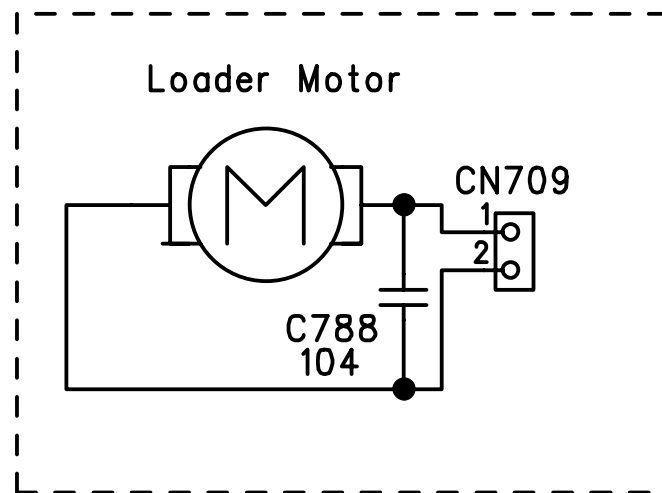
CIRCUIT DIAGRAM - MOTOR BOARD  
TOP VIEW



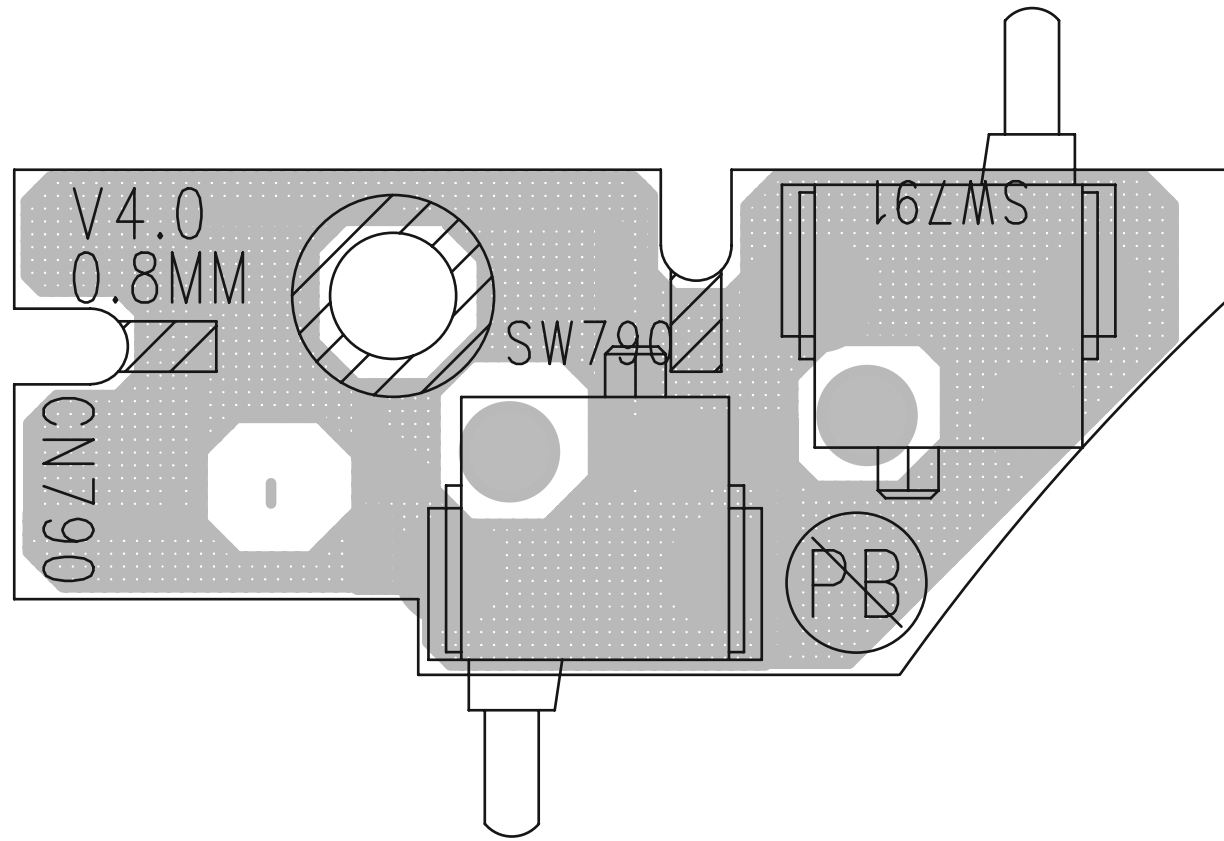
CIRCUIT DIAGRAM - MOTOR BOARD  
BOTTOM VIEW



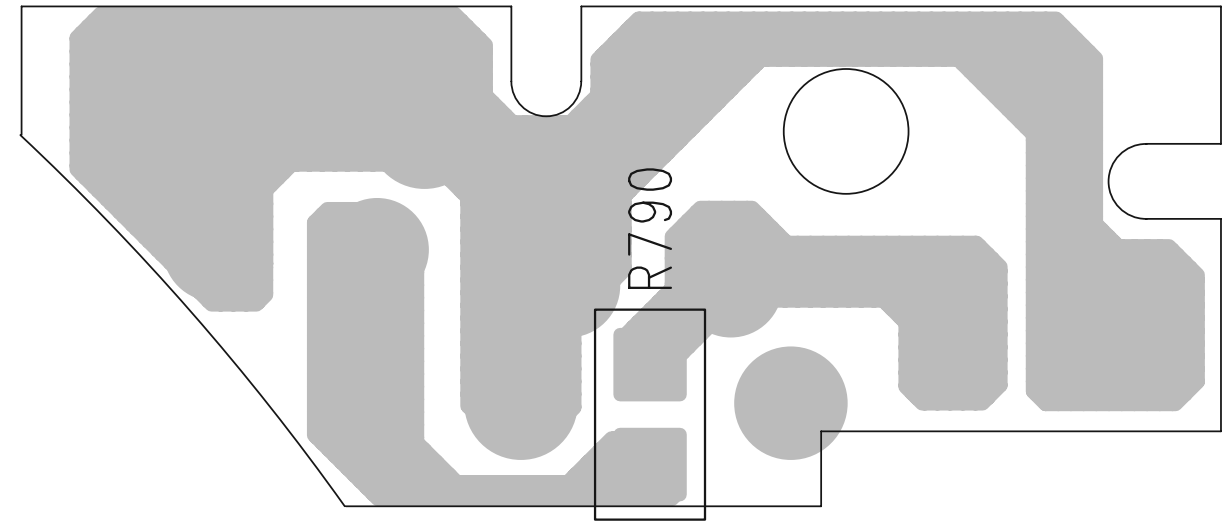
CIRCUIT DIAGRAM - MOTOR BOARD



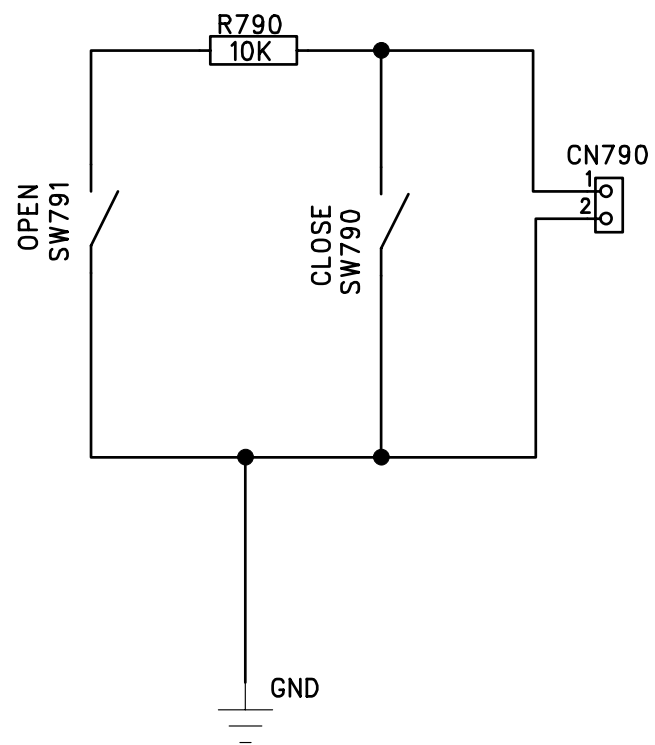
CIRCUIT DIAGRAM - DOOR SWITCH BOARD  
TOP VIEW



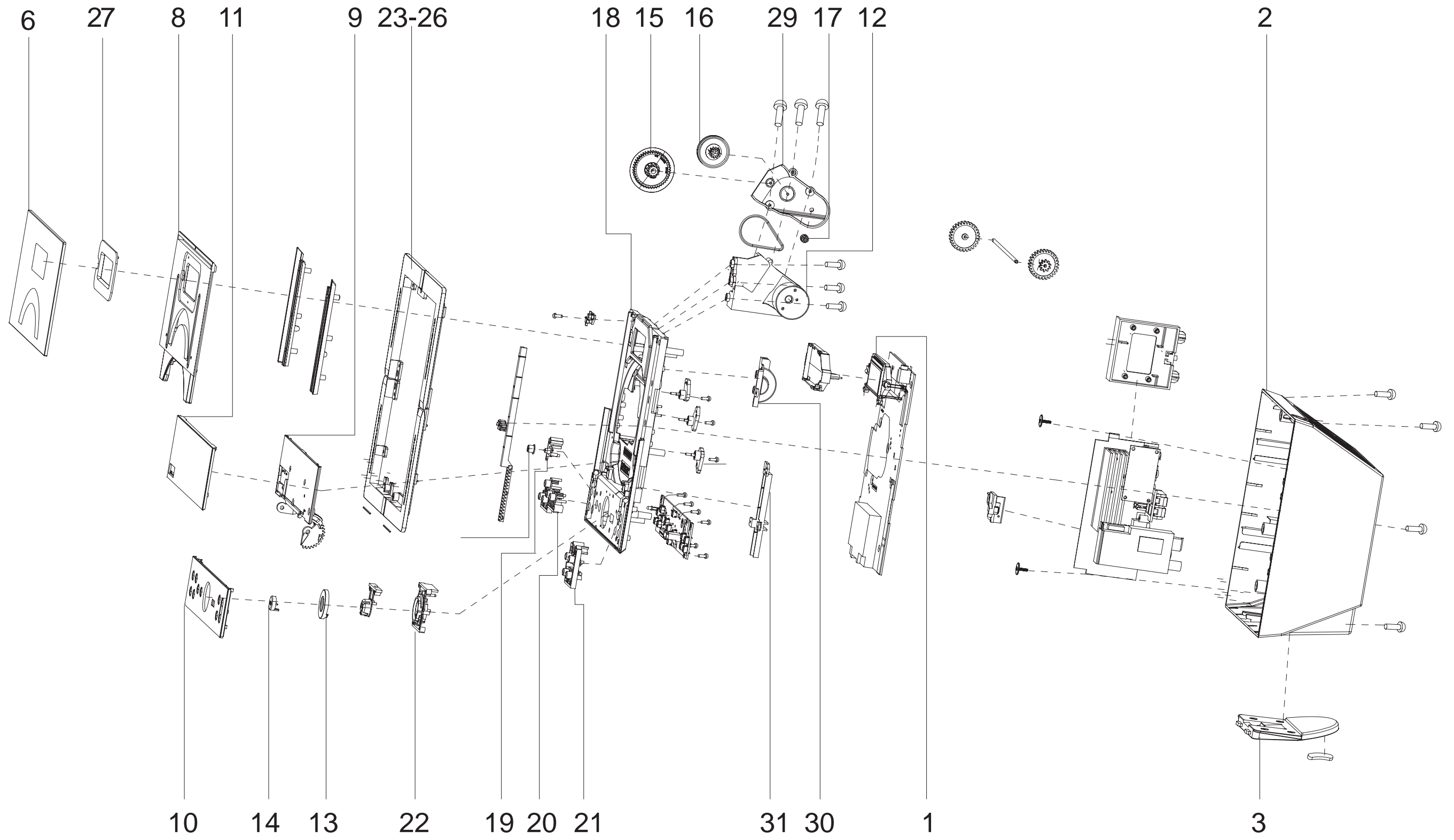
CIRCUIT DIAGRAM - DOOR SWITCH BOARD  
BOTTOM VIEW



CIRCUIT DIAGRAM - DOOR SWITCH BOARD



SET MECHANICAL EXPLODED VIEW



**MECHANICAL & ACCESSORIES PARTS LIST**

1	996510016420	LIGHT GUIDE DISPLAY LENS	W2	5: 996510016415	20P FFC CABLE L200MM P1.0MM
2	996510016421	CABINET REAR	W3	5: 996510016414	18P FFC CABLE L200MM P1.0MM
3	996510016422	STAND BASE	ANT2	5: 996510016413	16P FFC CABLE 60MM P1.0MM
4	996510016423	WOODEN SPEAKER (L+R)			
5	996510001906	AUX STEREO CORD BLACK			
6	996510016424	CD DOOR LENS			
7	996510016442	CD AMBI LIGHT GUIDE LENS			
8	996510016425	SLIDE CD DOOR			
9	996510016426	ROTATED CD DOOR			
10	996510016427	CONTROL PANEL			
11	996510016428	COVER ROTATED CD DOOR			
12	996510003940	DOOR MOTOR RF-500TB-14415			
13	996510003909	FF/FW BUTTON			
14	996510003921	COVER PLAY BUTTON			
15	996510003923	GEAR WHEEL A			
16	996510003924	GEAR WHEEL B			
17	996510003926	PULLEY SERVO MOTOR			
18	996510016429	CABINET FRONT			
19	996510016430	BUTTON POWER			
20	996510016431	BUTTON SET FUNCTION A			
21	996510016432	BUTTON SET FUNCTION B			
22	996510016433	BUTTON SET NAVIGATION			
23	996510016434	FRAME COSMETIC TOP LEFT			
24	996510016435	FRAME COSMETIC BOTTOM LEFT			
25	996510016436	FRAME COSMETIC BOTTOM RIGHT			
26	996510016437	FRAME COSMETIC TOP RIGHT			
27	996510016446	FRAME LCD			
28	996510016438	GEAR HOLDER BRACKET A			
29	996510016439	GEAR HOLDER BRACKET B			
30	996510016440	RACK HOLDER BRACKET A			
31	996510016441	RACK HOLDER BRACKET B			
32	996510003766	ANT WIRE ASSEMBLY L2500MM			
CDM	996510016412	CD MECHANISM M93BGP-BF			
ACCO $\Delta$	996510003937	AC CORD 0.71M BS TYPE			
ADAP $\Delta$	996510016418	SW MODE POWER SUPPLY 19V			
REMOTE	996510016417	REMOTE CONTROL			
W1	996510016416	20P FFC CABLE L220MM P1.0MM			

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

**ELECTRICAL PARTS LIST**

C812	996510016408	E. CAP. 3300UF 35V 16X36MM	Q801	996510010777	TRANSISTOR BC847C FREE
CN552	996510003885	USB SOCKET	Q802	996510010777	TRANSISTOR BC847C FREE
D460	996510010774	DIODE 1N4148 FDLL4148	Q803	996510010777	TRANSISTOR BC847C FREE
D461	996510010774	DIODE 1N4148 FDLL4148	Q806	996510016407	TRANSISTOR BC817-40 SOT23
D462	996510010774	DIODE 1N4148 FDLL4148	Q808	996510003718	TRANSISTOR KTC-8550C
D463	996510003726	BARRIER DIODE PRL5817	Q809	996510012793	TRANSISTOR BC847B
D466	996510003726	BARRIER DIODE PRL5817	Q810	996510012793	TRANSISTOR BC847B
D801	996510010774	DIODE 1N4148 FDLL4148	Q811	996510012793	TRANSISTOR BC847B
D802	996510010770	RECTIFIER DIODE 1N5822	Q814	996510012793	TRANSISTOR BC847B
DAB601	996510003725	DAB TUNER MODULE	Q815	996510003718	TRANSISTOR KTC-8550C
DCJ	996510001054	6.5MM DC JACK (DJ32-2)	Q816	996500039268	TRANSISTOR KTC-8050C
HPJ	994000001456	STEREO HEADPHONE JACK	SW551	996500039269	TACT SWITCH
IC460	996510016411	IC PROGRAMMED FOR MCB279	SW552	996500039269	TACT SWITCH
IC461	996510003845	IC LP2950ACZ-3.3 TO-92	SW553	996500039269	TACT SWITCH
IC531	996510016296	IC YD7000	SW554	996500039269	TACT SWITCH
IC601	996510003732	IC TB2132FNG	SW560	996500039269	TACT SWITCH
IC602	994000003215	RDS IC SAA6581T	SW561	996500039269	TACT SWITCH
IC660	996510003731	IC V REGULATOR LD1117-3.3	SW562	996500039269	TACT SWITCH
IC701	996510003730	IC SAA7824HL/M1A 557	SW563	996500039269	TACT SWITCH
IC702	994000005753	IC D9258PH	SW564	996500039269	TACT SWITCH
IC703	996510003896	IC TA7291S(M) (MOTOR DRIVER)	SW565	996500039269	TACT SWITCH
IC801	996510016406	IC TDA8932T	SW566	996500039269	TACT SWITCH
IC802	996510016406	IC TDA8932T	SW567	996500039269	TACT SWITCH
IC803	996510003731	IC V REGULATOR LD1117-3.3	SW568	996500039269	TACT SWITCH
IC804	996510003844	IC VOLTAGE REGULATOR	SW569	996500039269	TACT SWITCH
IC806	996510005007	IC LM2576 T-5.0 TO-220	SW570	996500039269	TACT SWITCH
IC902	996510003846	IC SC7314 SELECTOR & E_VOL	SW790	996510016419	DOOR SWITCH DTS-03-KL H:8.5M
IR501	996510011311	INFRA REM CONTROL RECEIVER	SW791	996510016419	DOOR SWITCH DTS-03-KL H:8.5M
LCD	996510016445	LCD DISPLAY FOR MCB279	U1	996510003740	IC WM8725ED 14-PIN SOIC
LED501	996510003894	LED INDICATOR WHITE	U2	996510016409	IC SST39VF800A-70 PROGRAM
LED502	996510001422	LED INDICATOR BLUE	U3	996510003733	IC UTCLD1117/A 1.8V SOT-223
LED503	996510001422	LED INDICATOR BLUE	U4	996510016299	IC HY57V641620FTP-7 64M SD
LED551	996510003893	LED INDICATOR RED EL-204HD 3M	U5	996510003739	IC TCC760
PTJ	996510000380	PUSH TERMINAL JACK PST-418	U7	996510003738	IC MAX809STR SOT-23
Q601	996510012793	TRANSISTOR BC847B	VD601	996510003727	DIODE 1SV262
Q602	996510012793	TRANSISTOR BC847B	VD602	996510003727	DIODE 1SV262
Q603	996510012793	TRANSISTOR BC847B	X460	996510003839	X'TAL 32.768KHZ 12.5PF
Q660	996510012793	TRANSISTOR BC847B	X601	996510003724	X'TAL 75KHZ 20PF +/-20PPM
Q661	996510002323	TRANSISTOR S8550 SMD TYPE	X602	994000003209	X'TAL 4.332MHZ HC-49/S
Q662	996510012793	TRANSISTOR BC847B	X701	994000005742	X'TAL 8.4672 MHZ 20PF

***ELECTRICAL PARTS LIST***

Y1	996510003735	X'TAL 24.000MHZ 20PF +/-20PPM
ZD601	996510016410	DIODE BZX79-C3V3 SOD27
ZD804	994000005744	ZENER DIODE 5V1 1/2W
ZD805	996510012835	ZENER DIODE 5V6 1/2W (TC5V6)

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