DVD Micro Theater

MCD355/98

Service
Service
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Service Manual

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CLASS 1
LASER PRODUCT

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© 3141 785 34150

Version 1.0

PHILIPS

PCBS LOCATION

SPECIFICATIONS

Amplifier

Rated Output Power	4X50W RMS
Frequency Response	63 - 14000 Hz, ±3dB
Signal to Noise Ratio	> 62dB

Tuner (FM)

Tuning Range	87.5 - 108 MHz
Tuning grid	50 KHz
Sensitivity - Mono, 26dB S/N Ratio	<22 dBu
Search Selectivity	<28 dBu
Total Harmonic Distortion	<3%
Signal to Noise Ratio	> 45 dB

Speakers

Speaker Impedance	6ohm

Supported disc formats

- Digital Video Discs (DVDs)
- Video CDs (VCDs)
- Super Video CDs (SVCDs)
- Digital Video Discs + Rewritable (DVD+RW)
- Compact Discs (CDs)
- Picture (Kodak, JPEG) files on CDR(W)
- DivX® disc on CD-R(W):
- DivX 3.11, 4.x and 5.x, 6
- WMA

Supported MP3-CD formats:

- ISO 9660
- Max. title/album name: 12 characters
- Max. title number plus album: 255.
- Max. nested directory: 8 levels.
- Max. album number: 32.
- Max. MP3 track number: 999.
- Supported sampling frequencies for MP3 disc: 32 kHz, 44.1 kHz, 48 kHz.
- Supported Bit-rates of MP3 disc are: 32, 64, 96, 128, 192, 256 (kbps).
- The following formats are not supported:
  - Files like *.VMA, *.AAC, *.DLF, *.M3U,
  - *.PLS, *.WAV
  - Non-English Album/Title name
  - Discs recorded in Joliet format
  - MP3 Pro and MP3 with ID3 tag

General information

AC power	110 - 127V/220 - 240V, 50/60Hz
Dimensions	
- Main Unit (W x H x D)	173 x 257 x 240mm
- Speaker Box (W x H x D)	173 x 257 x 240mm
Weight	
- With Packing	10.8 kg
- Main Unit	2.3 kg
- Speaker Box	2 x 2.8 kg

Disc

Laser Type	Semiconductor
Disc Diameter	12cm/8cm
Video Decoding	MPEG-1 / MPEG-2 / DivX
Video DAC	12Bits
Signal System	PAL / NTSC
Video Format	4:3 / 16:9
Video S/N	> 48dB
Audio DAC	24Bits / 96kHz
Total Harmonic Distortion	<1% (1 kHz)
Frequency Response	4Hz - 20kHz (44.1kHz) 4Hz - 22kHz (48kHz) 4Hz - 24kHz (96kHz)
S/N Ratio	> 65dBA

USB playability information

Compatible USB devices:

- USB flash memory (USB 2.0 or USB1.1)
- USB flash players (USB 2.0 or USB1.1)
- memory cards (requires an additional card reader to work with this apparatus)

Supported formats:

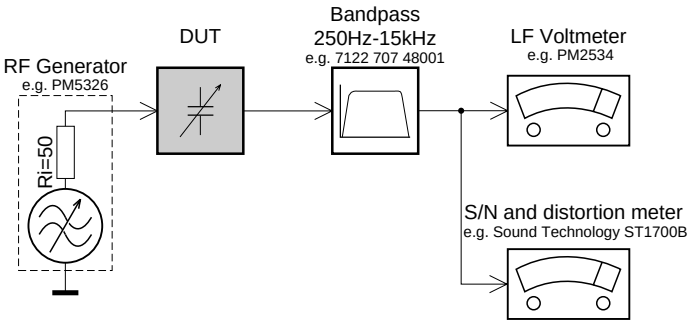
- USB or memory file format FAT12, FAT16, FAT32 (sector size: 512 bytes)
- MP3 bit rate (data rate): 32-320 Kbps and variable bit rate
- WMA v9 or earlier
- Directory nesting up to a maximum of 8 levels
- Number of albums/ folders: maximum 99
- Number of tracks/titles: maximum 999
- ID3 tag v2.0 or later
- File name in Unicode UTF8 (maximum length: 128 bytes)

Unsupported formats:

- Empty albums: an empty album is an album that does not contain MP3/WMA files, and is not be shown in the display.
- Unsupported file formats are skipped. For example, Word documents (.doc) or MP3 files with extension .dlf are ignored and not played.
- AAC, WAV, PCM audio files
- DRM protected WMA files (.wav, .m4a, .m4p, .mp4, .aac)
- WMA files in Lossless format

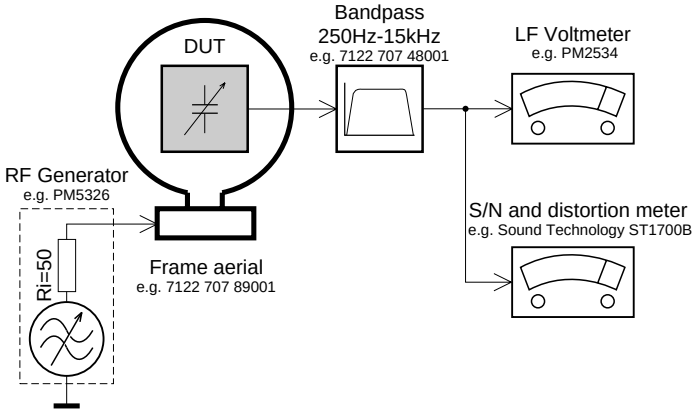
MEASUREMENT SETUP

Tuner FM



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

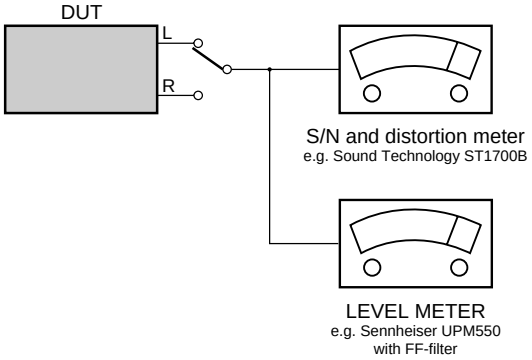
Tuner AM (MW,LW)



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)



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

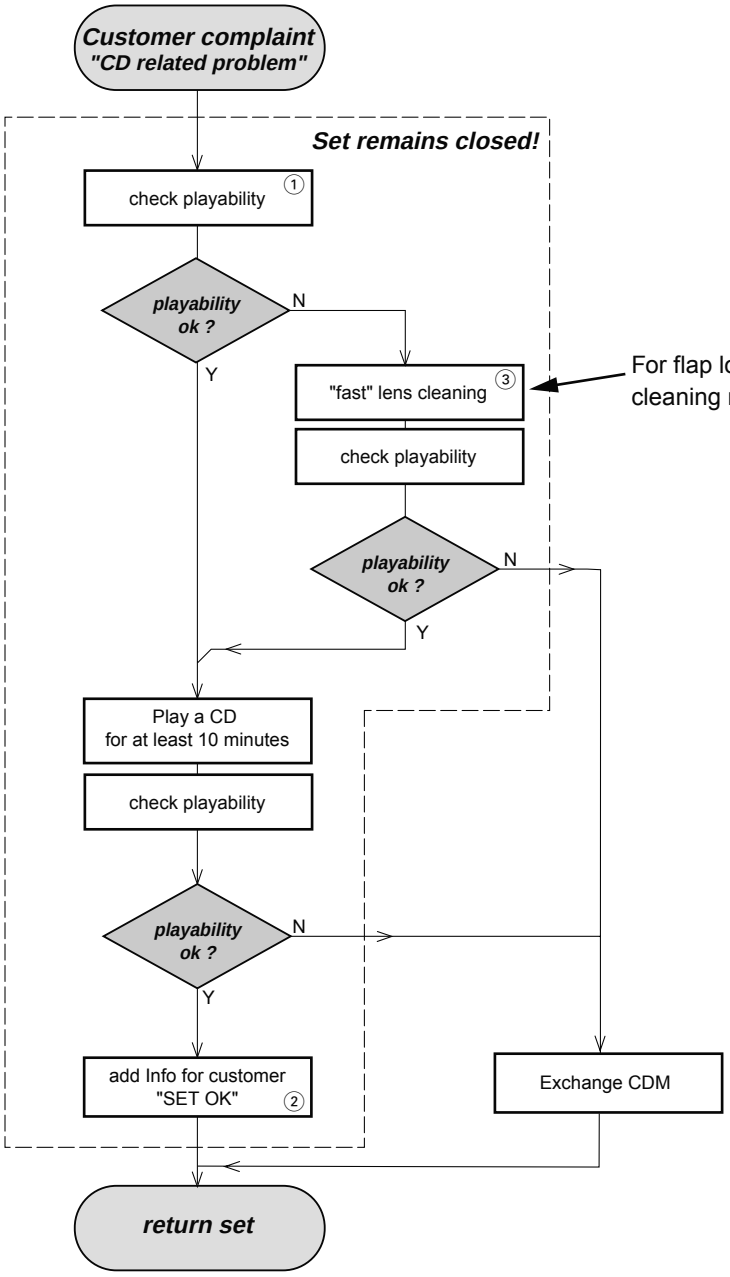
Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- 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

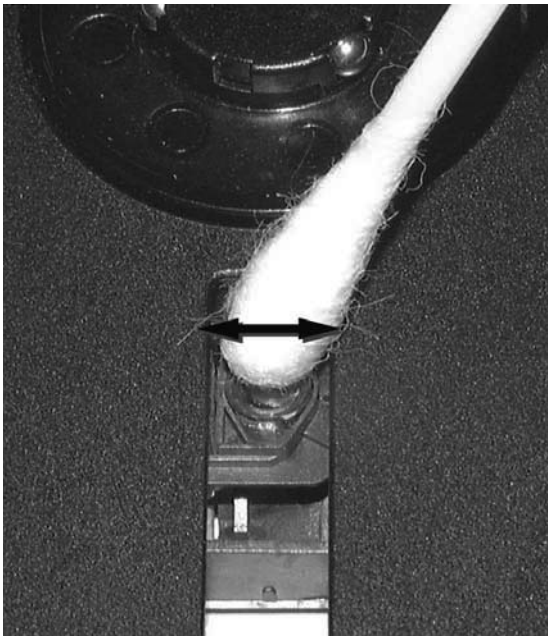
LIQUID LENS CLEANING

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.



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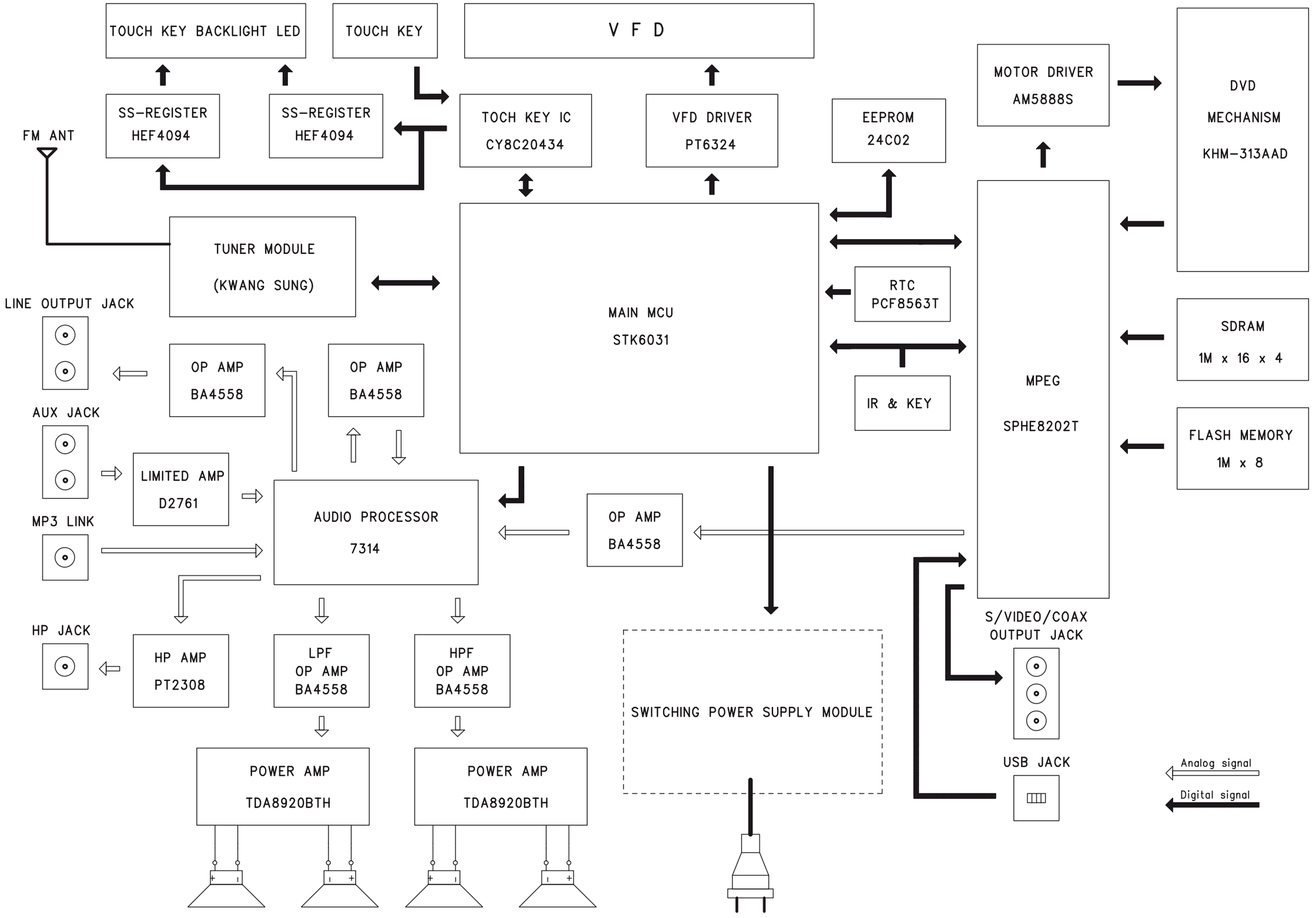
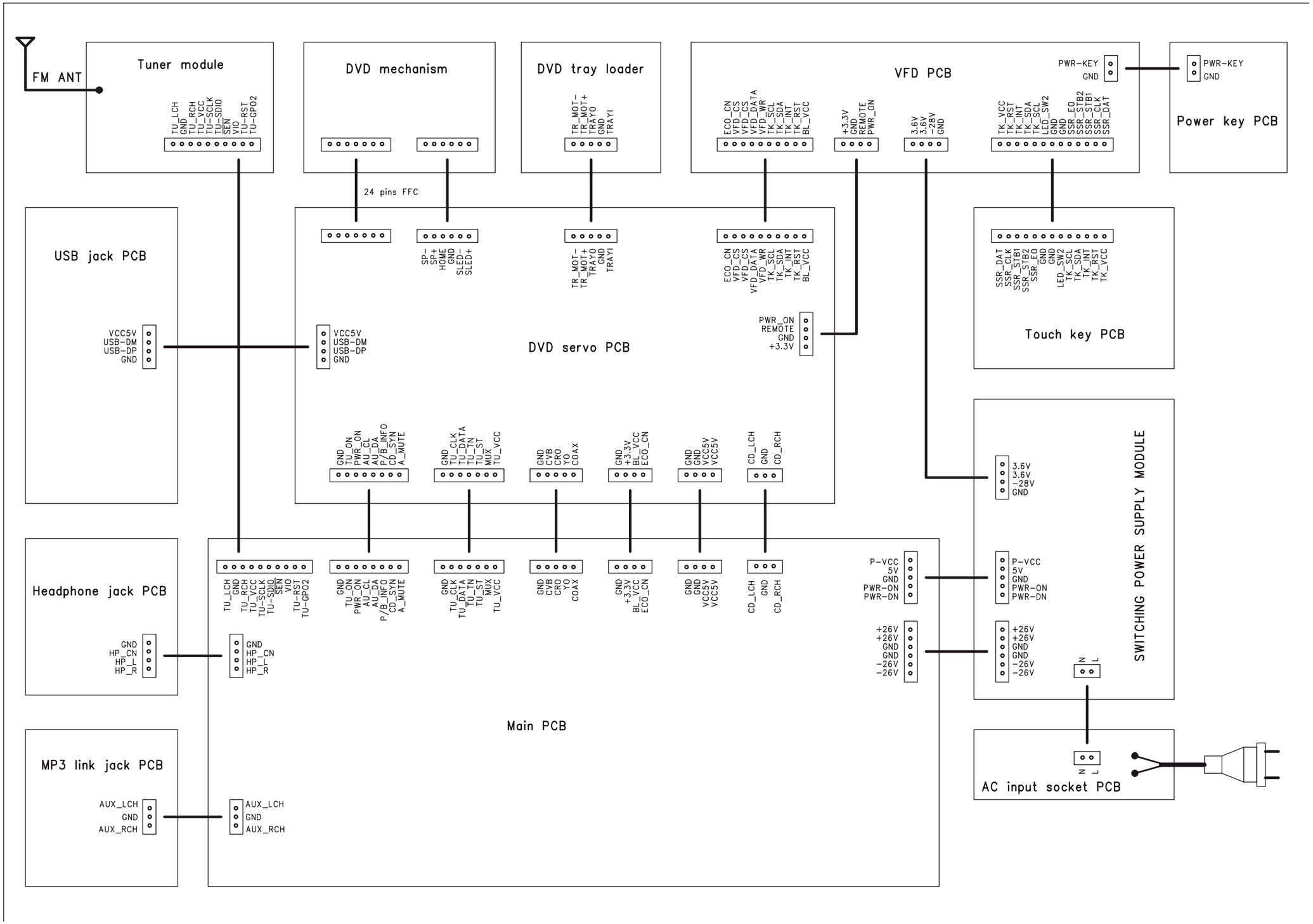
SET BLOCK DIAGRAM



4-1

SET WIRING DIAGRAM



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MAIN & HP JACK & AUX JACK BOARD

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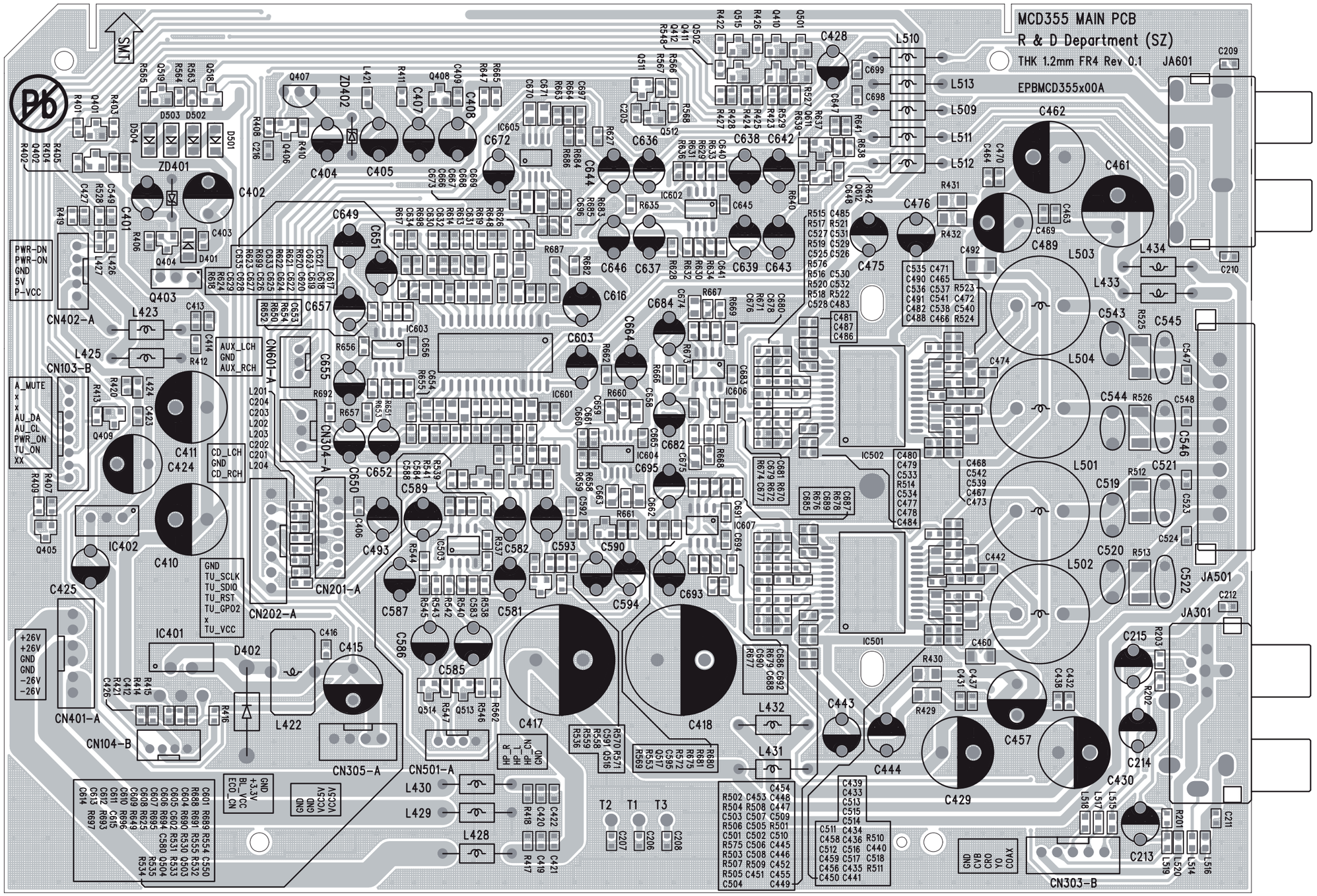
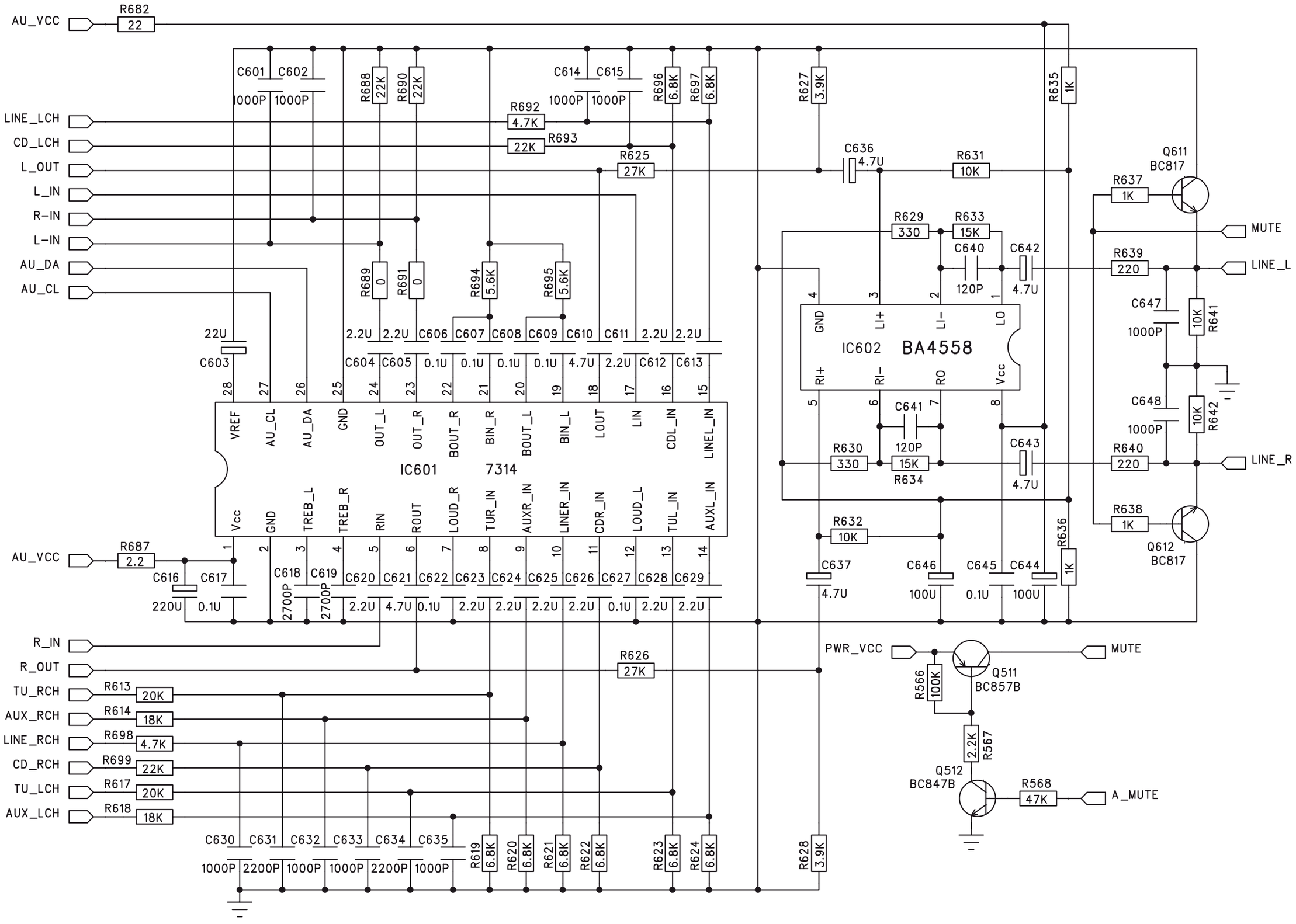
PCB LAYOUT - MAIN BOARD (TOP VIEW)



5-3

CIRCUIT DIAGRAM - MAIN BOARD (PART1)



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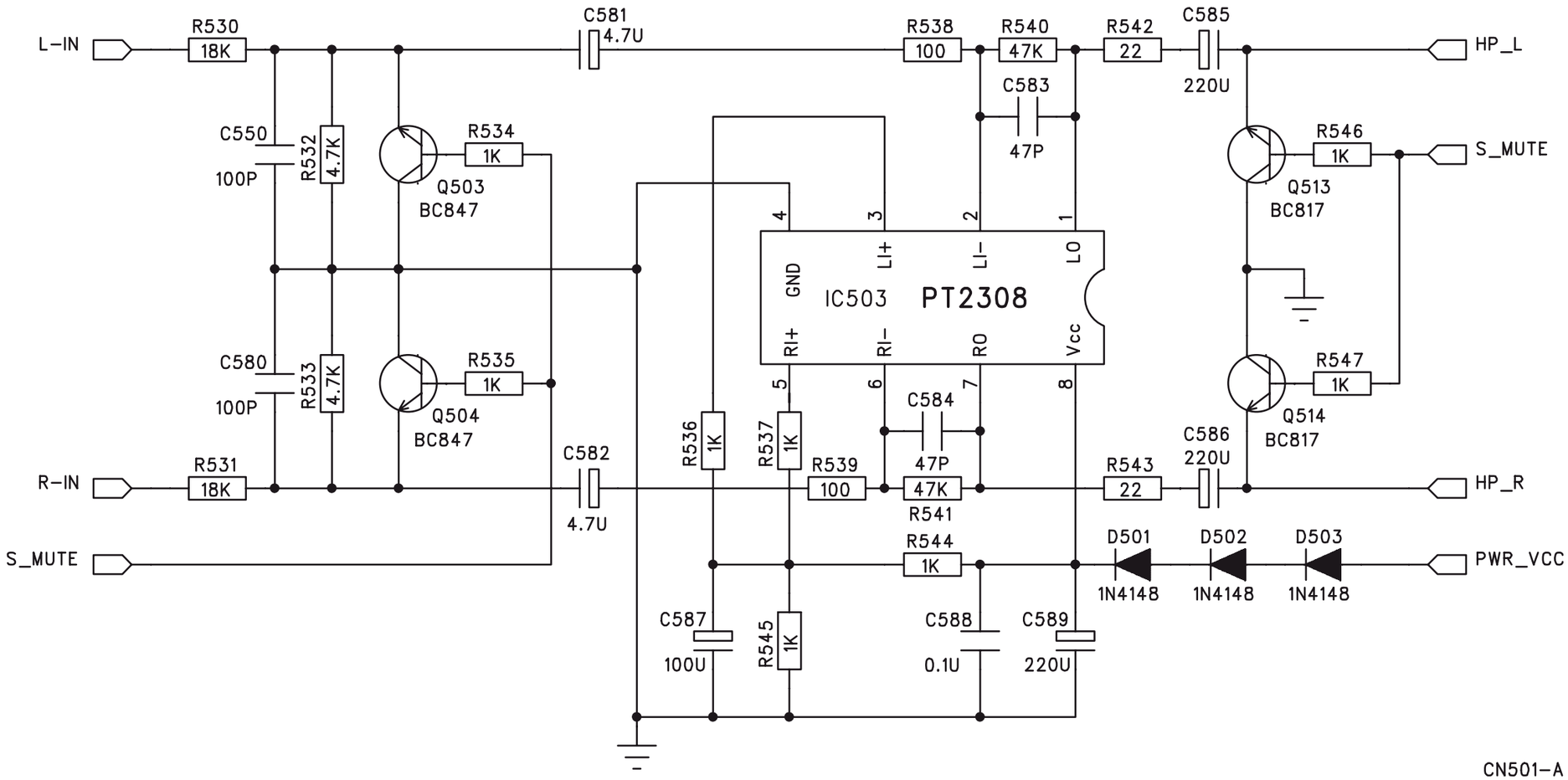
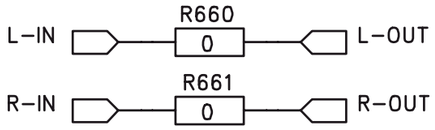
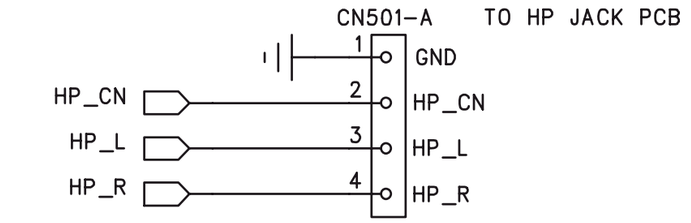
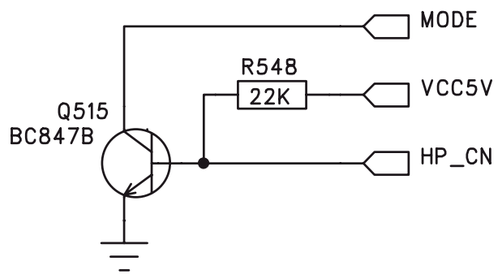
CIRCUIT DIAGRAM - MAIN BOARD (PART2)









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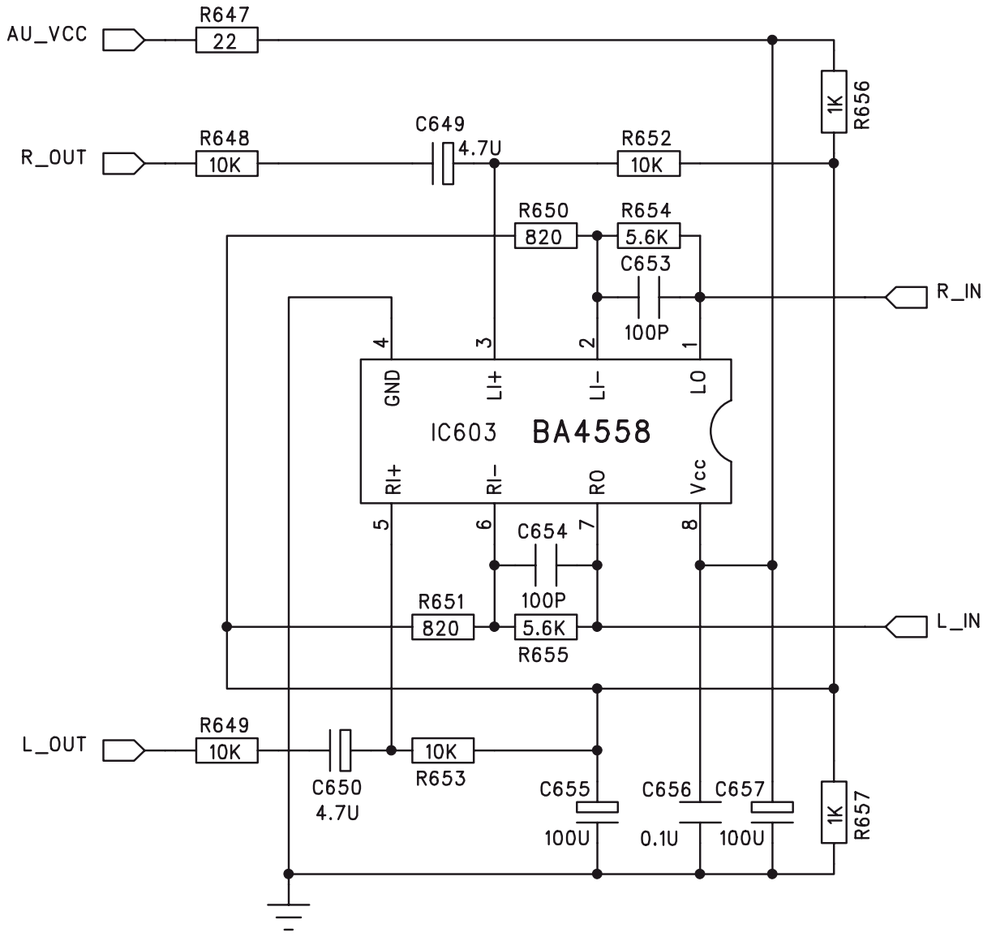
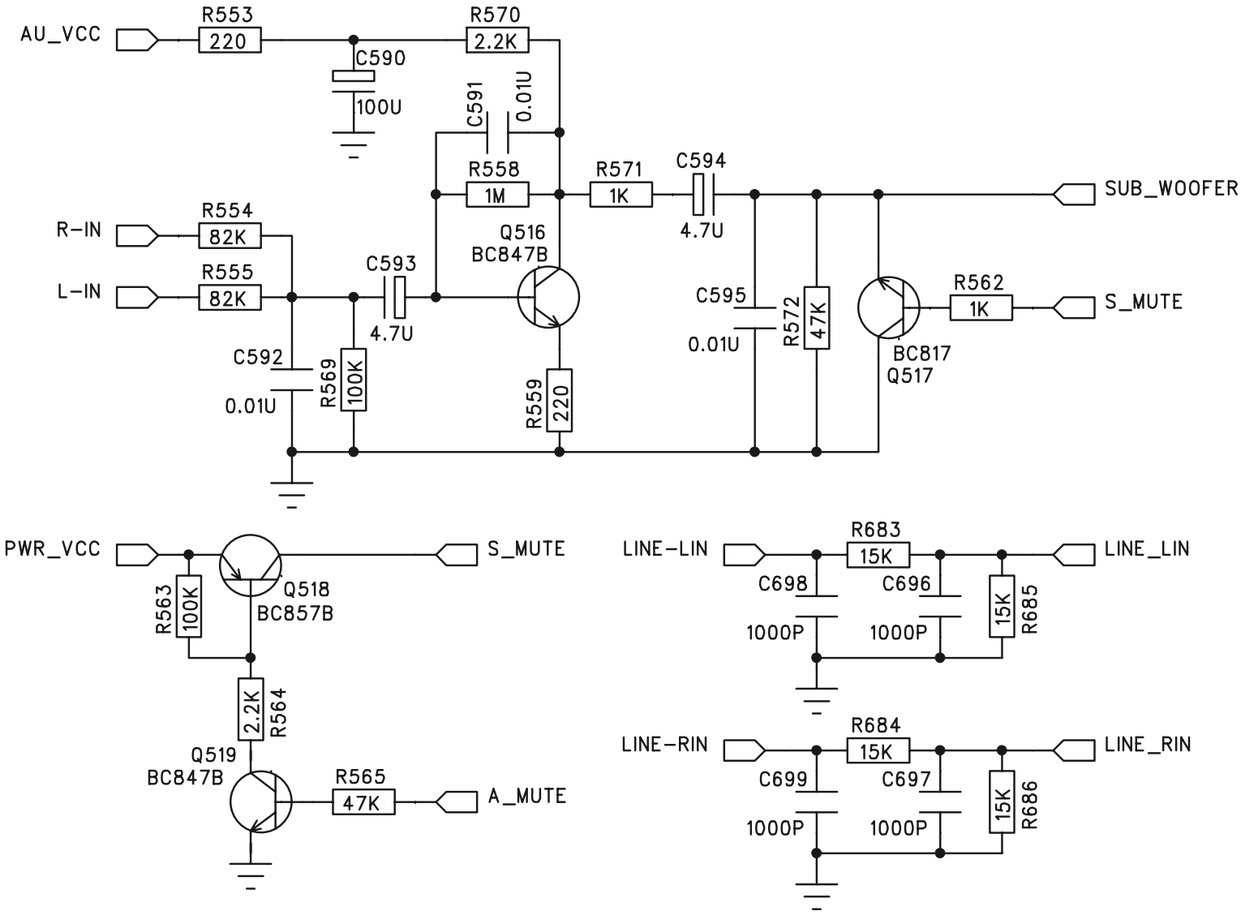
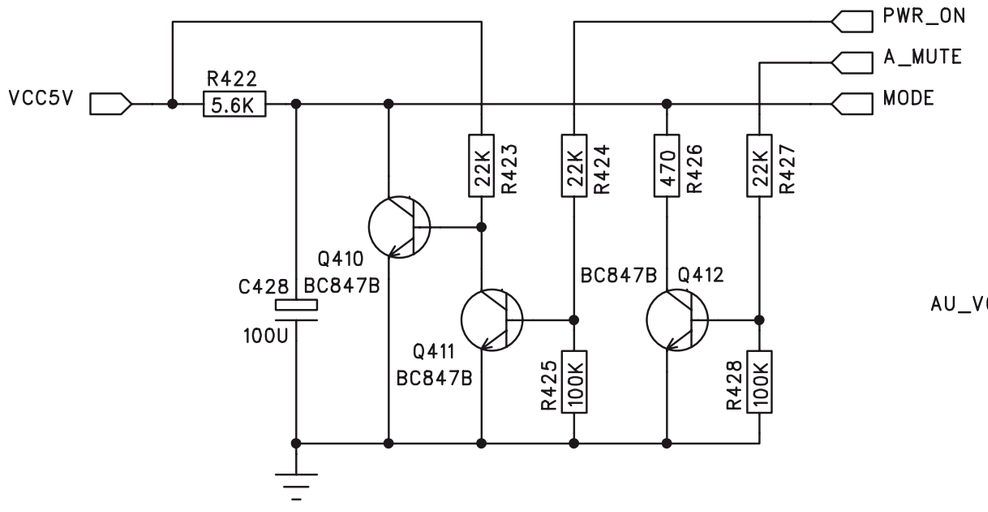
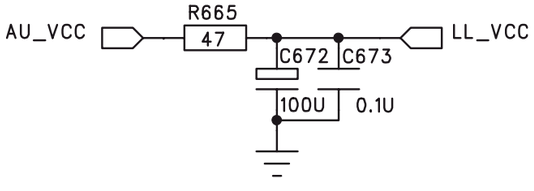
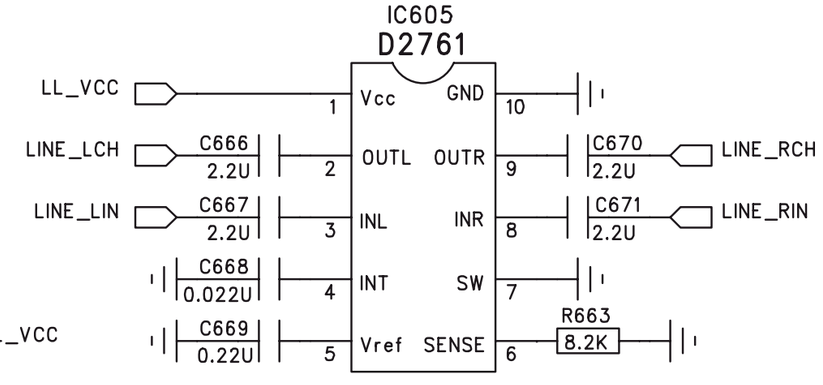
CIRCUIT DIAGRAM - MAIN BOARD (PART3)











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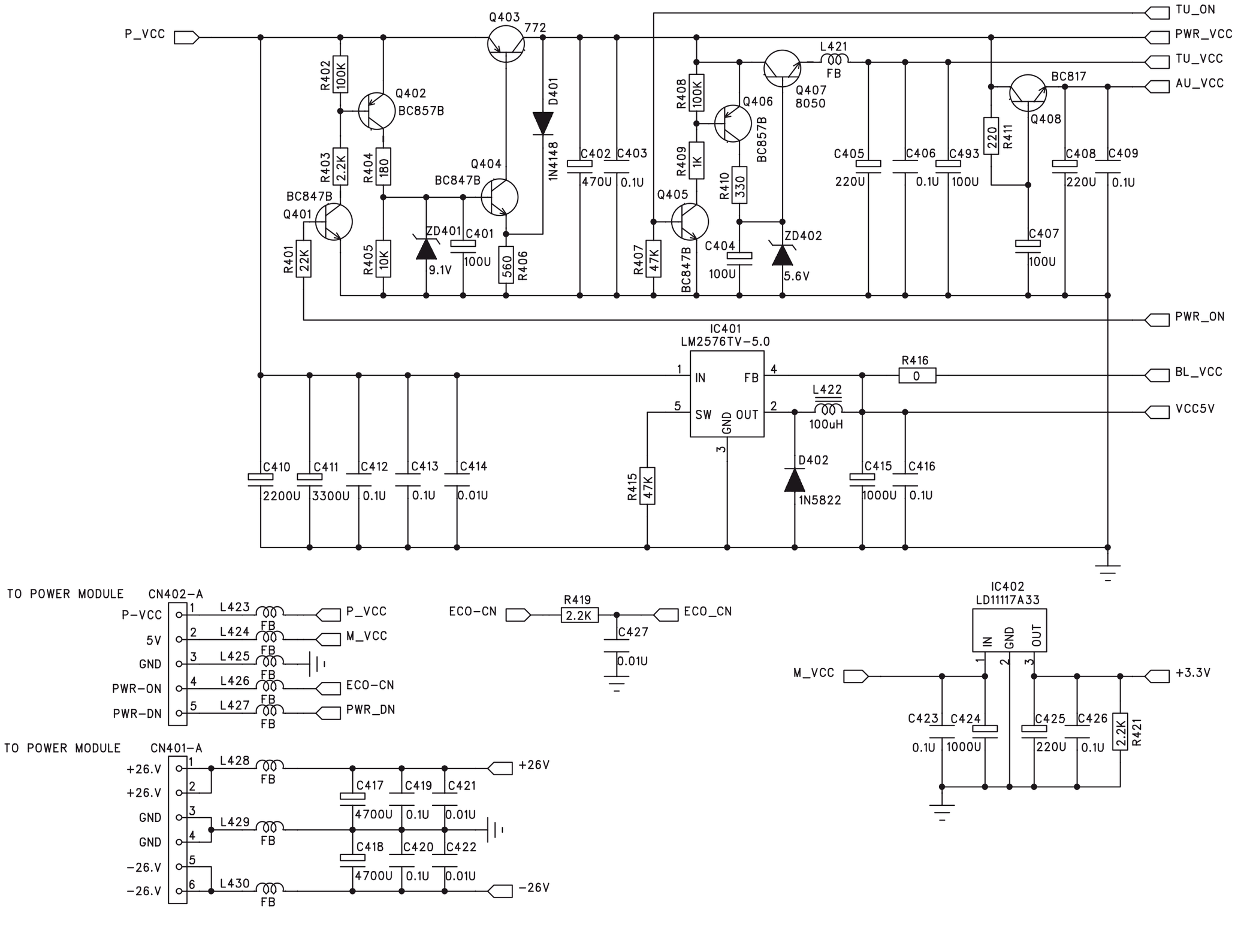
CIRCUIT DIAGRAM - MAIN BOARD (PART4)



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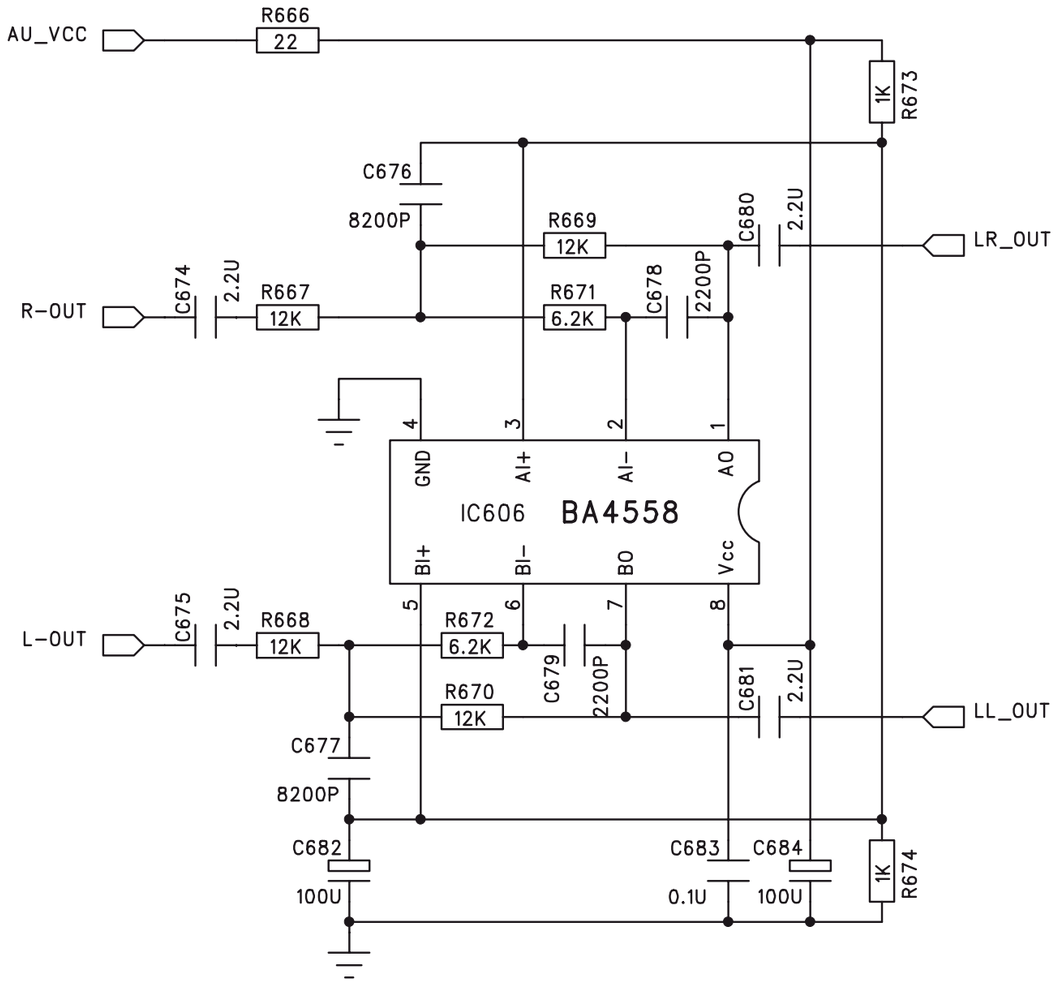
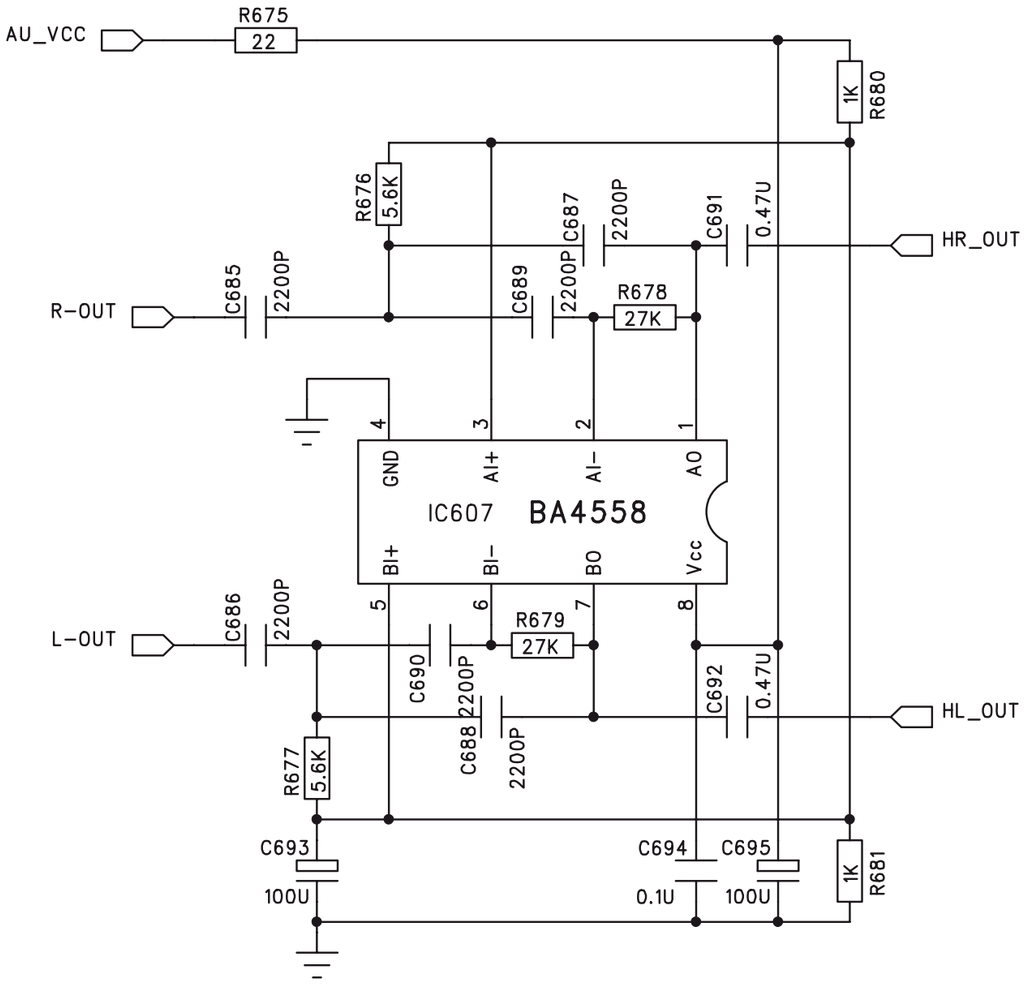
CIRCUIT DIAGRAM - MAIN BOARD (PART5)





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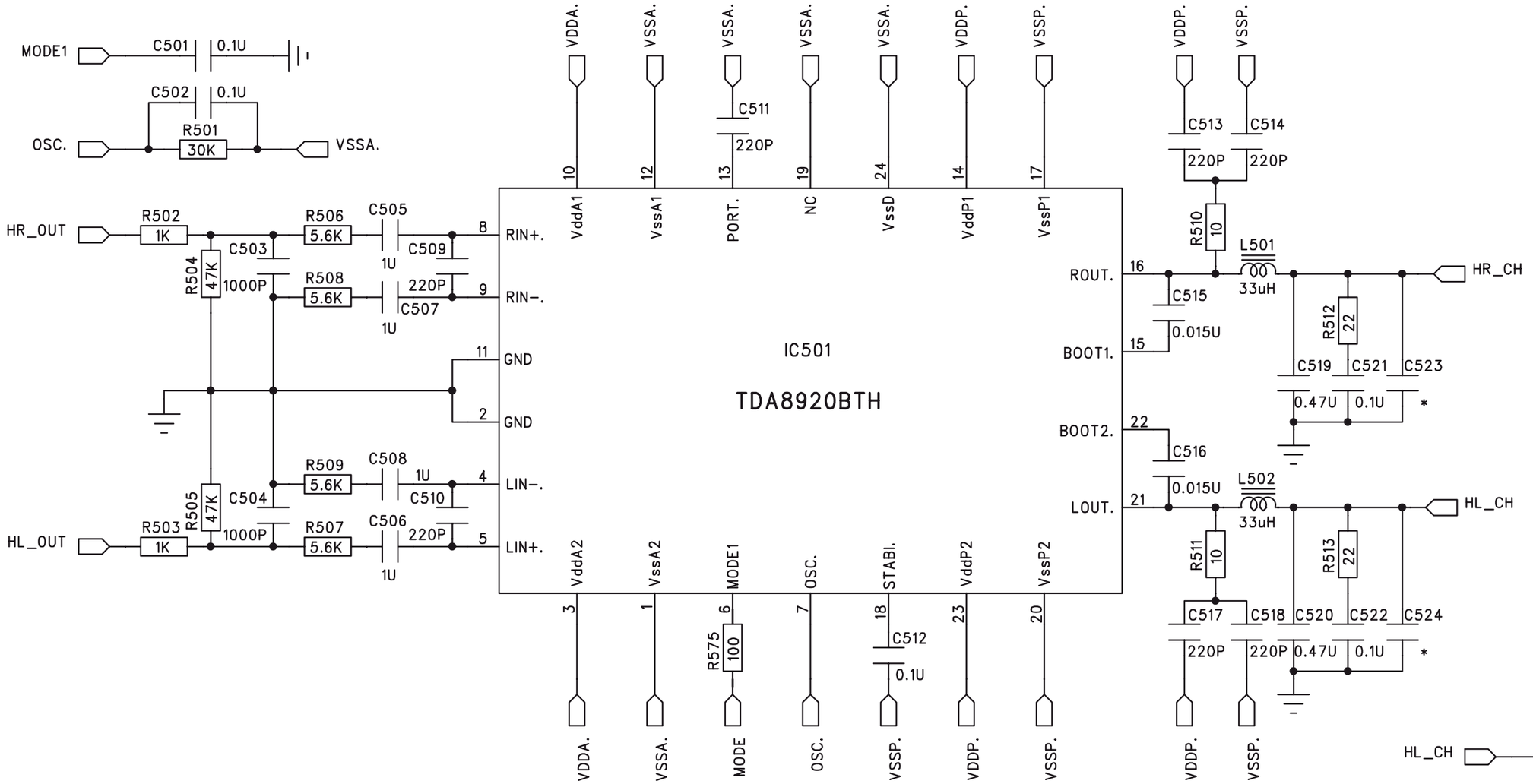
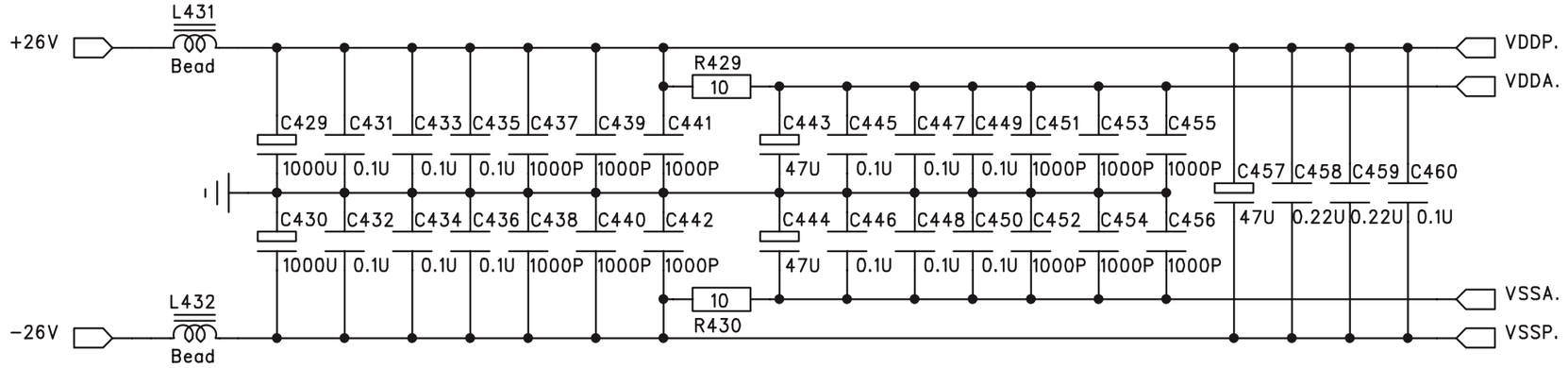
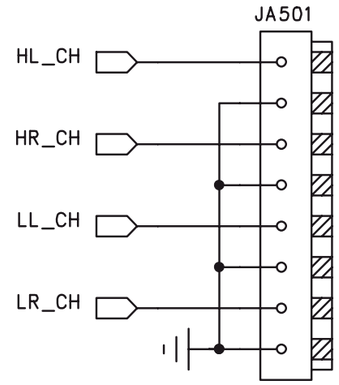
CIRCUIT DIAGRAM - MAIN BOARD (PART6)

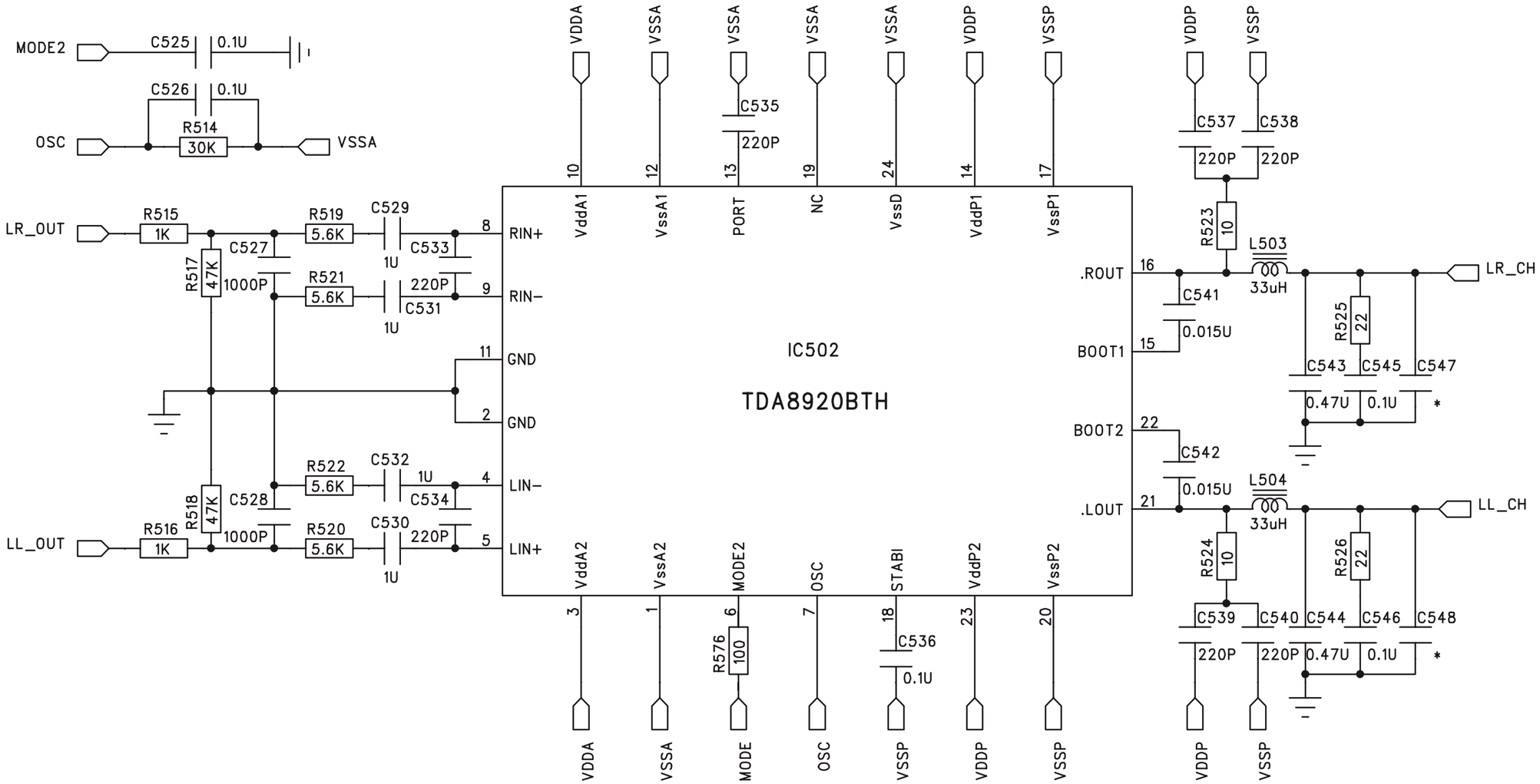


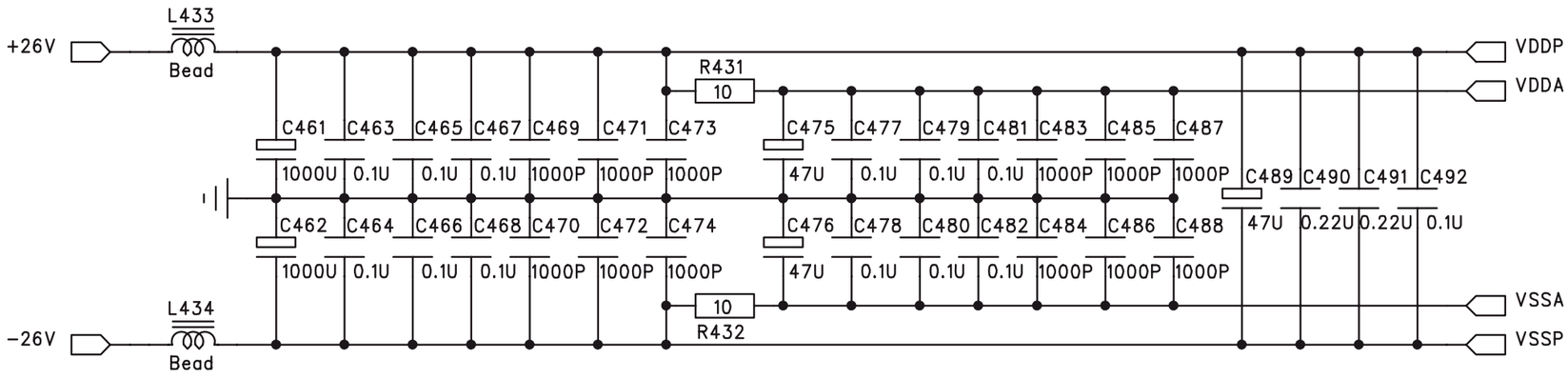




5-9

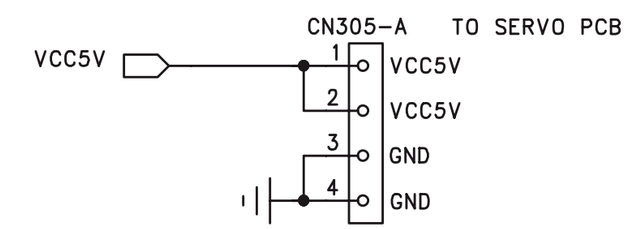
CIRCUIT DIAGRAM - MAIN BOARD (PART7)

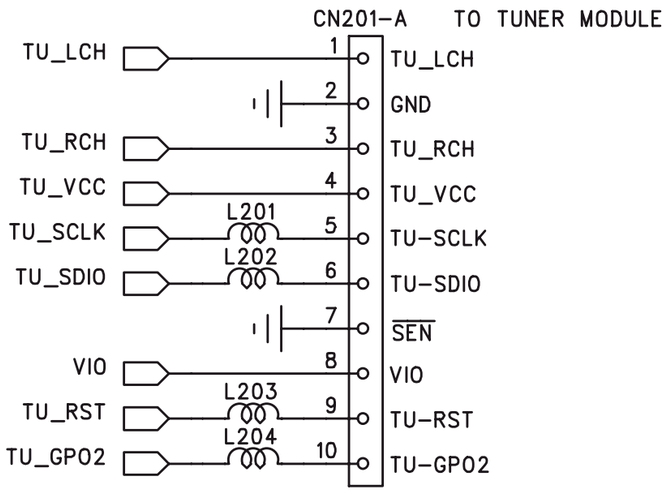


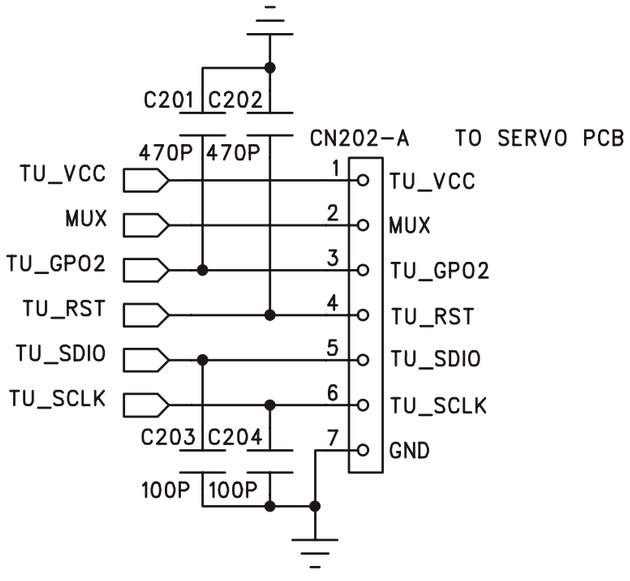


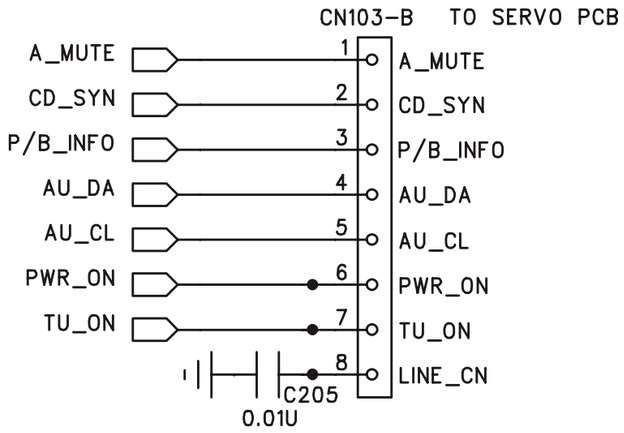
5-10

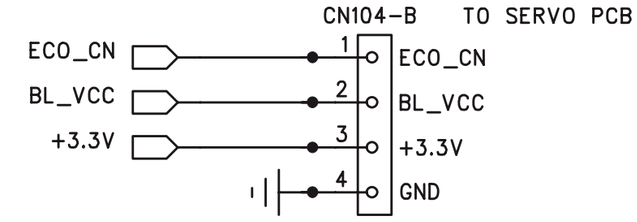
CIRCUIT DIAGRAM - MAIN BOARD (PART8)

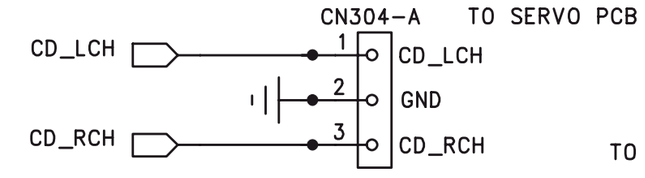


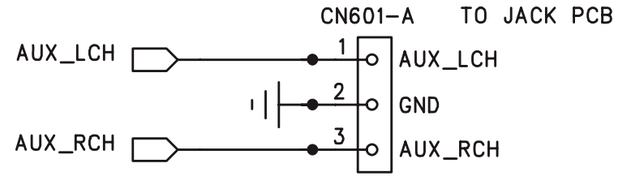


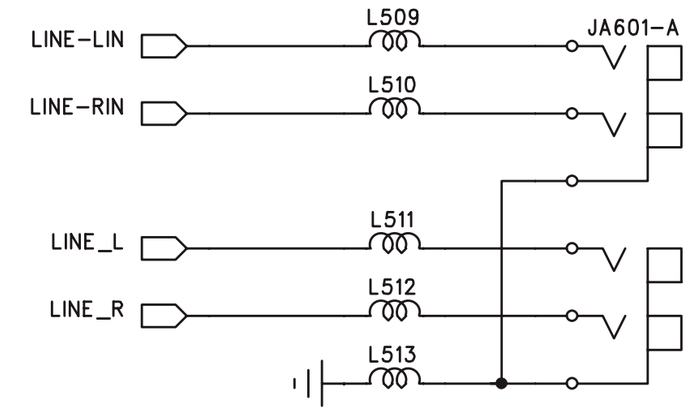


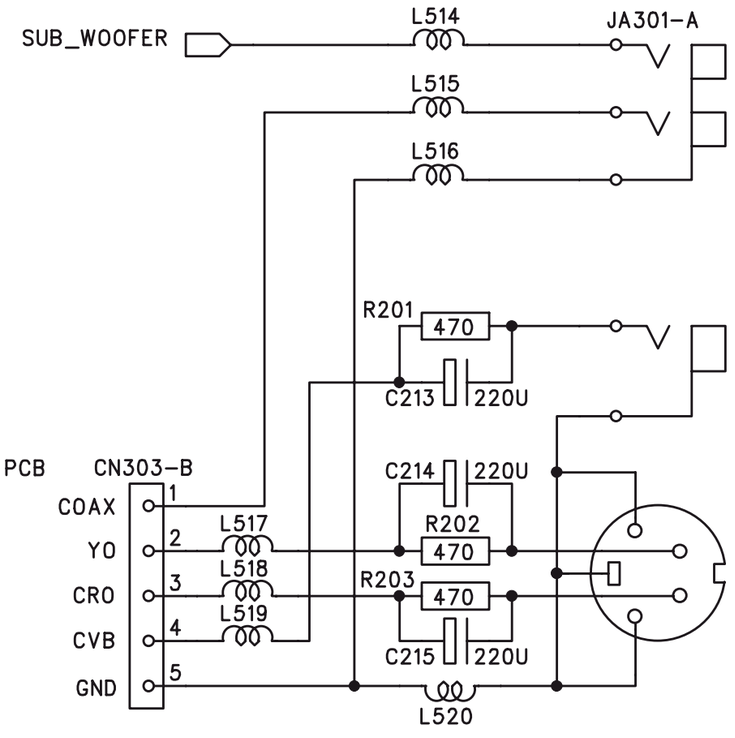












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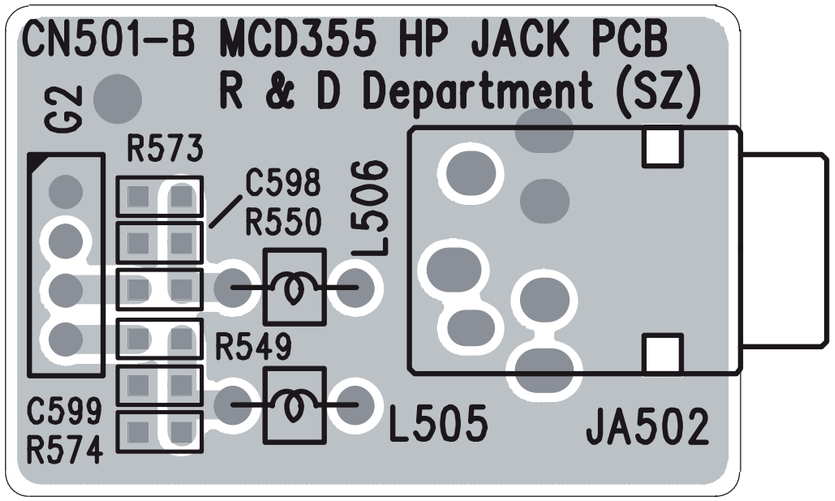
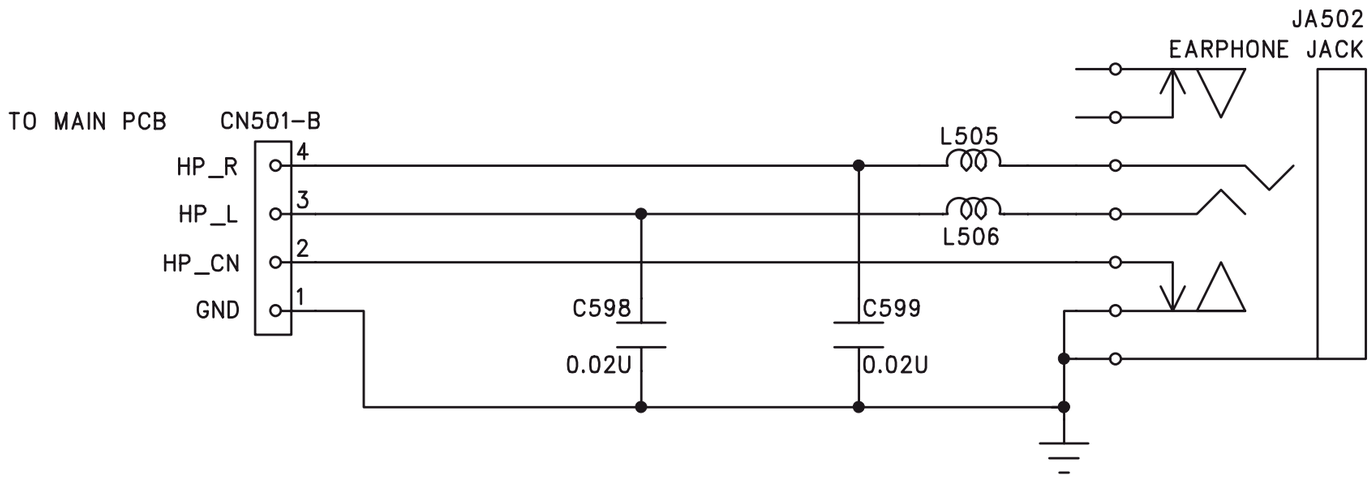
PCB LAYOUT - HEADPHONE JACK BOARD



CIRCUIT DIAGRAM - HEADPHONE JACK BOARD



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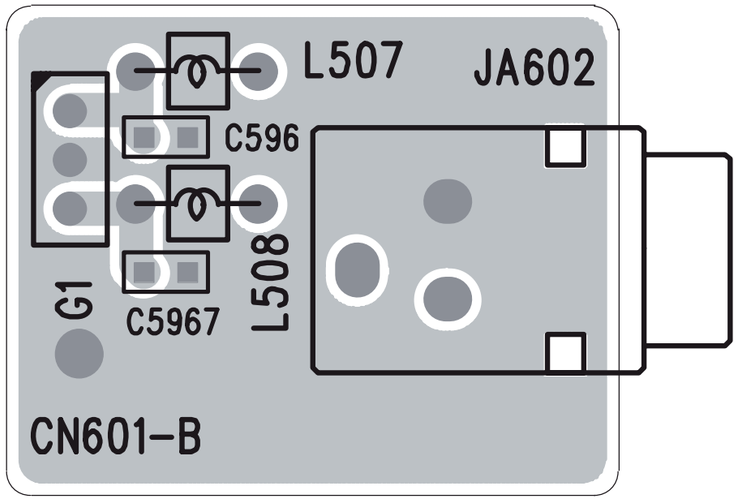
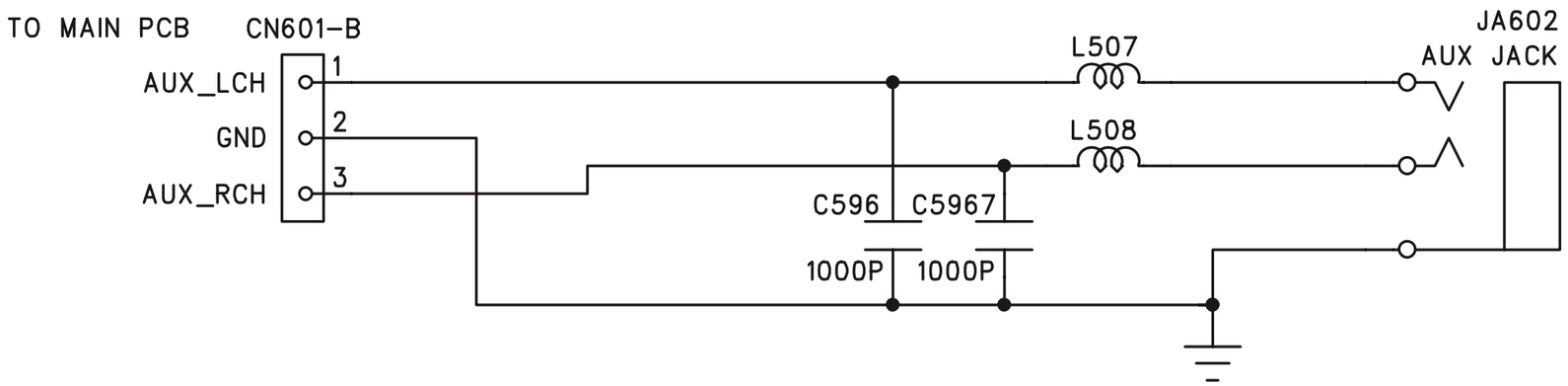
PCB LAYOUT - AUX JACK BOARD



CIRCUIT DIAGRAM - AUX JACK BOARD



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VFD BOARD & TOUCH KEY BOARD

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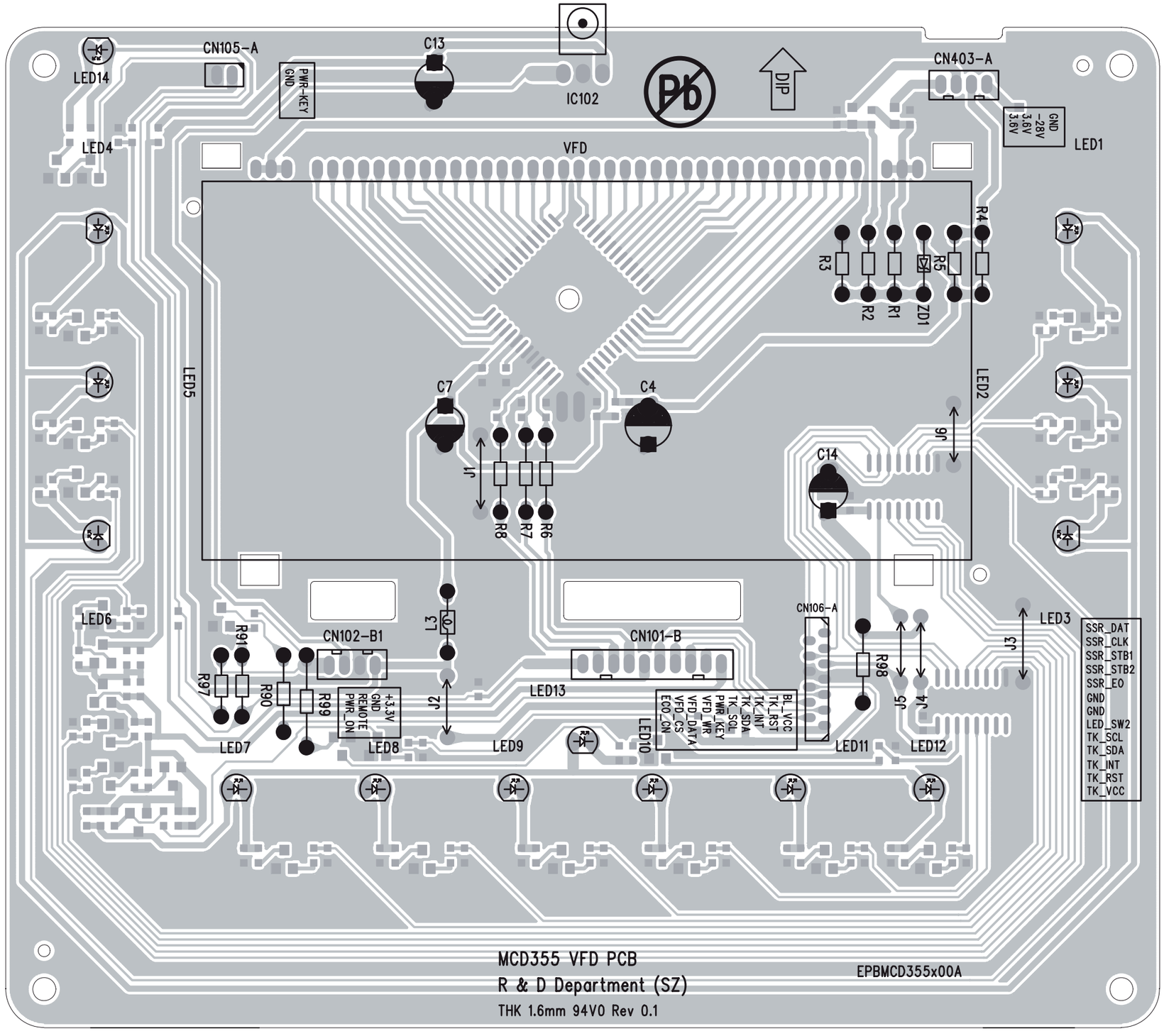
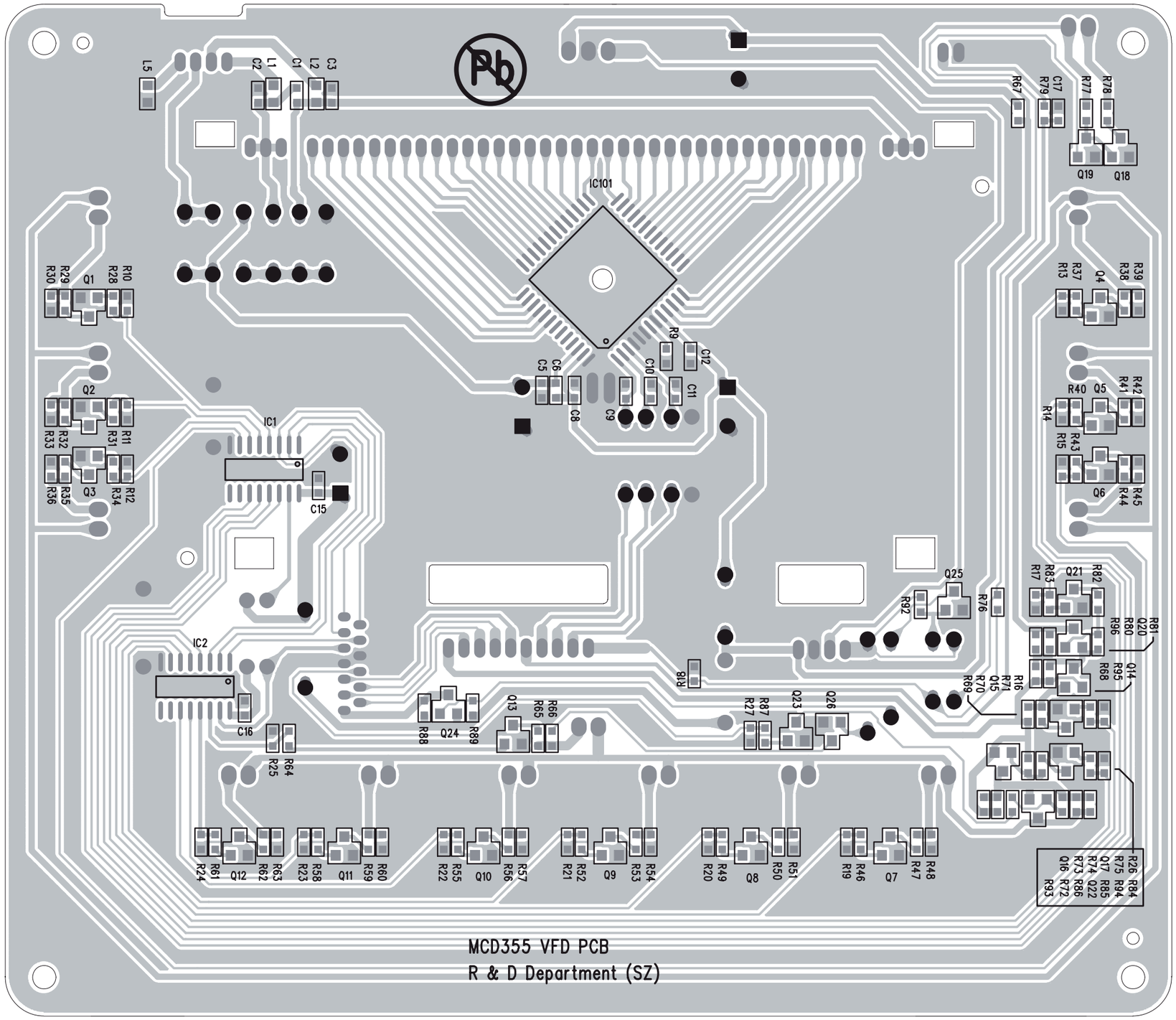
PCB LAYOUT - VFD BOARD (TOP VIEW)



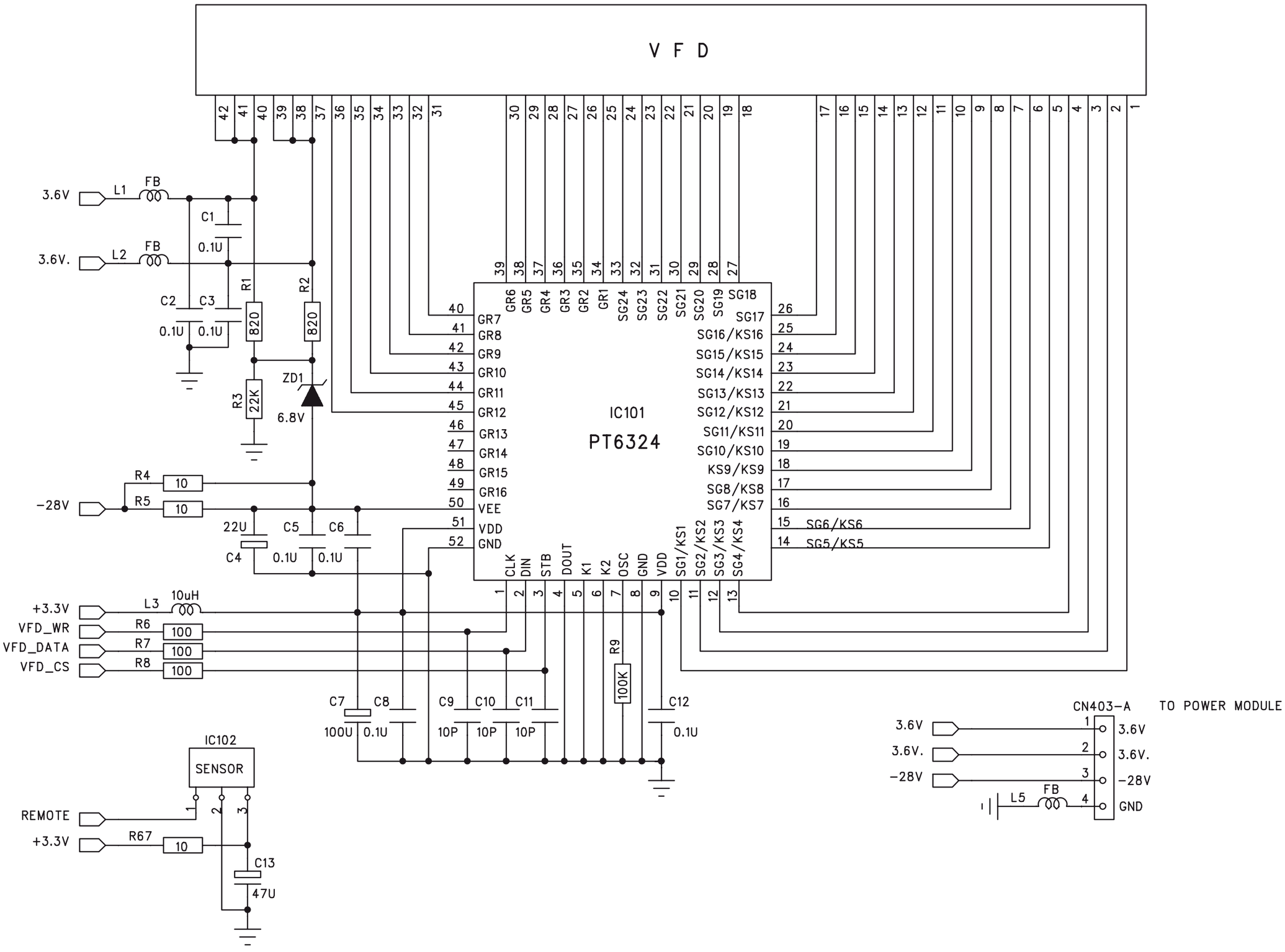
6-3

PCB LAYOUT - DISPLAY(PANEL) BOARD (BOTTOM VIEW)



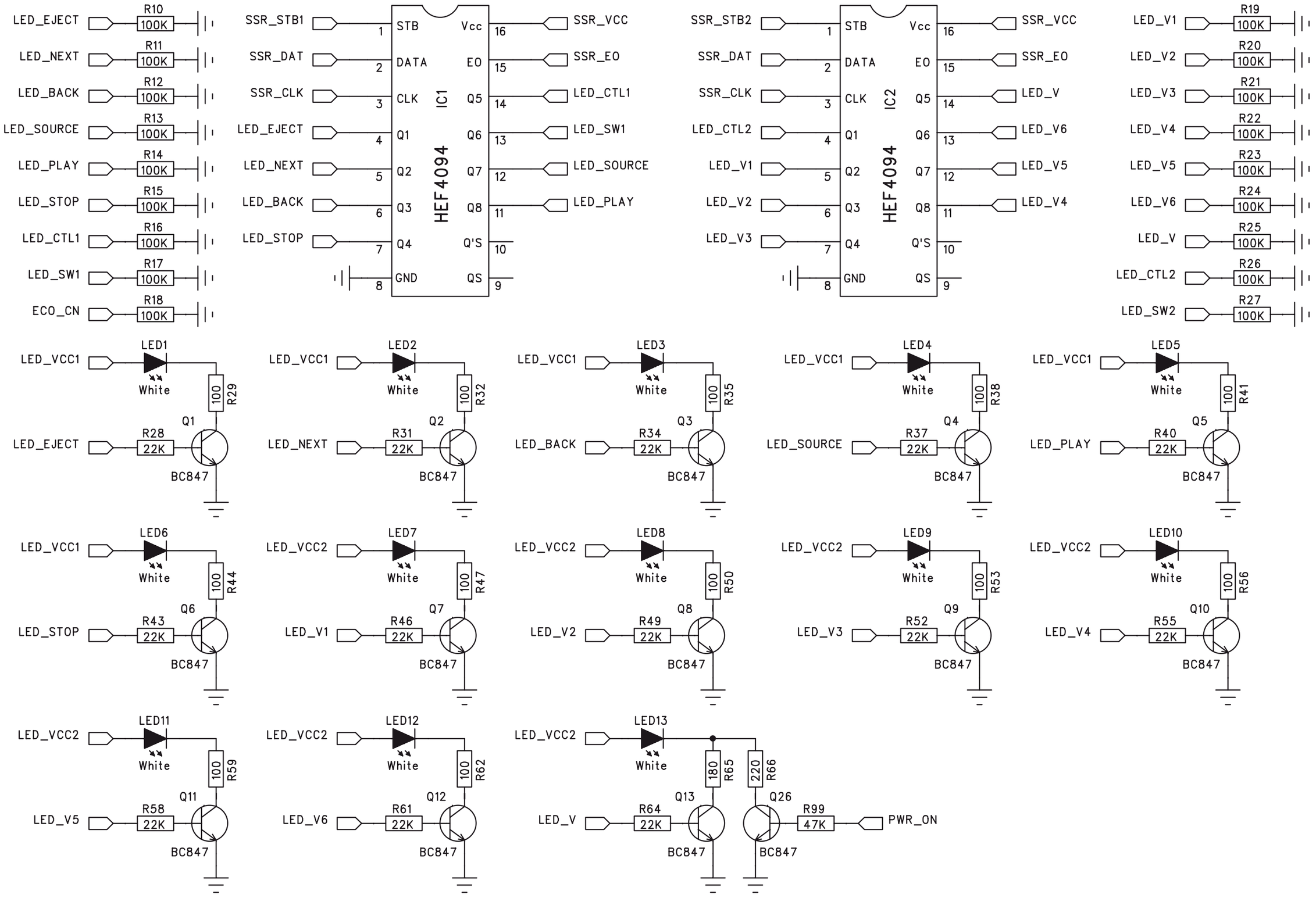
6-4

CIRCUIT DIAGRAM - VFD BOARD (PART1)



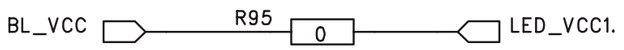
6-5

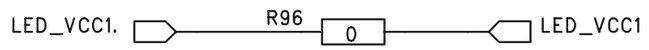
CIRCUIT DIAGRAM - VFD BOARD (PART2)

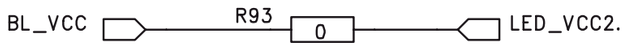


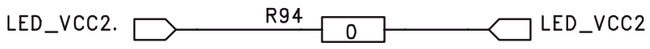
6-6

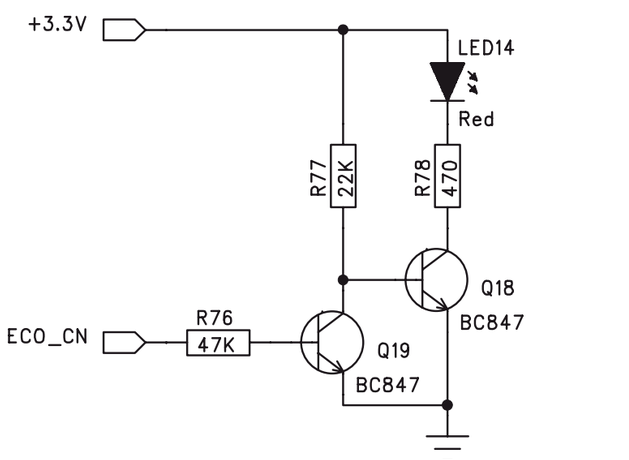
CIRCUIT DIAGRAM - VFD BOARD (PART3)

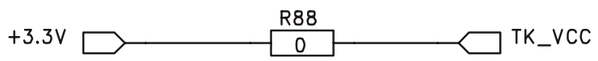


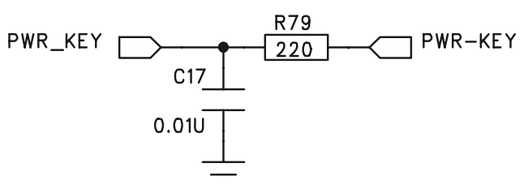


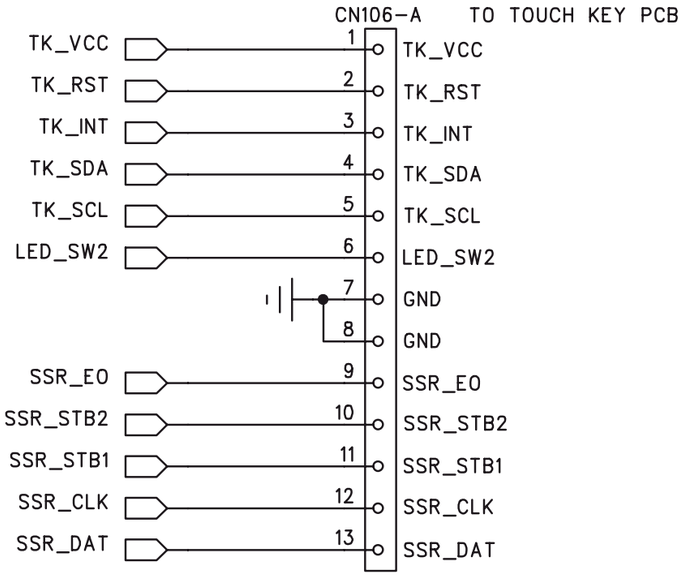


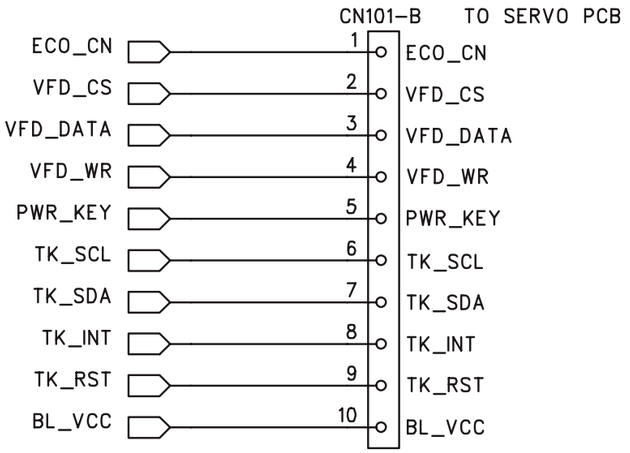


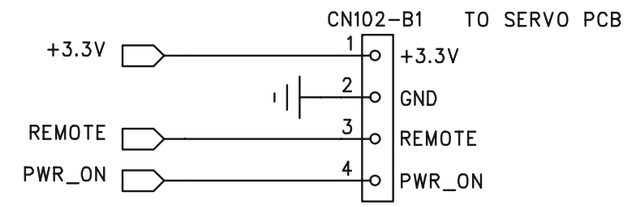


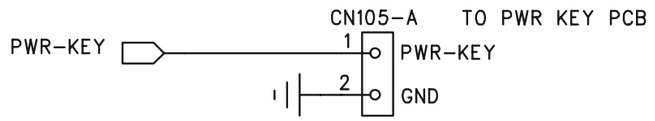






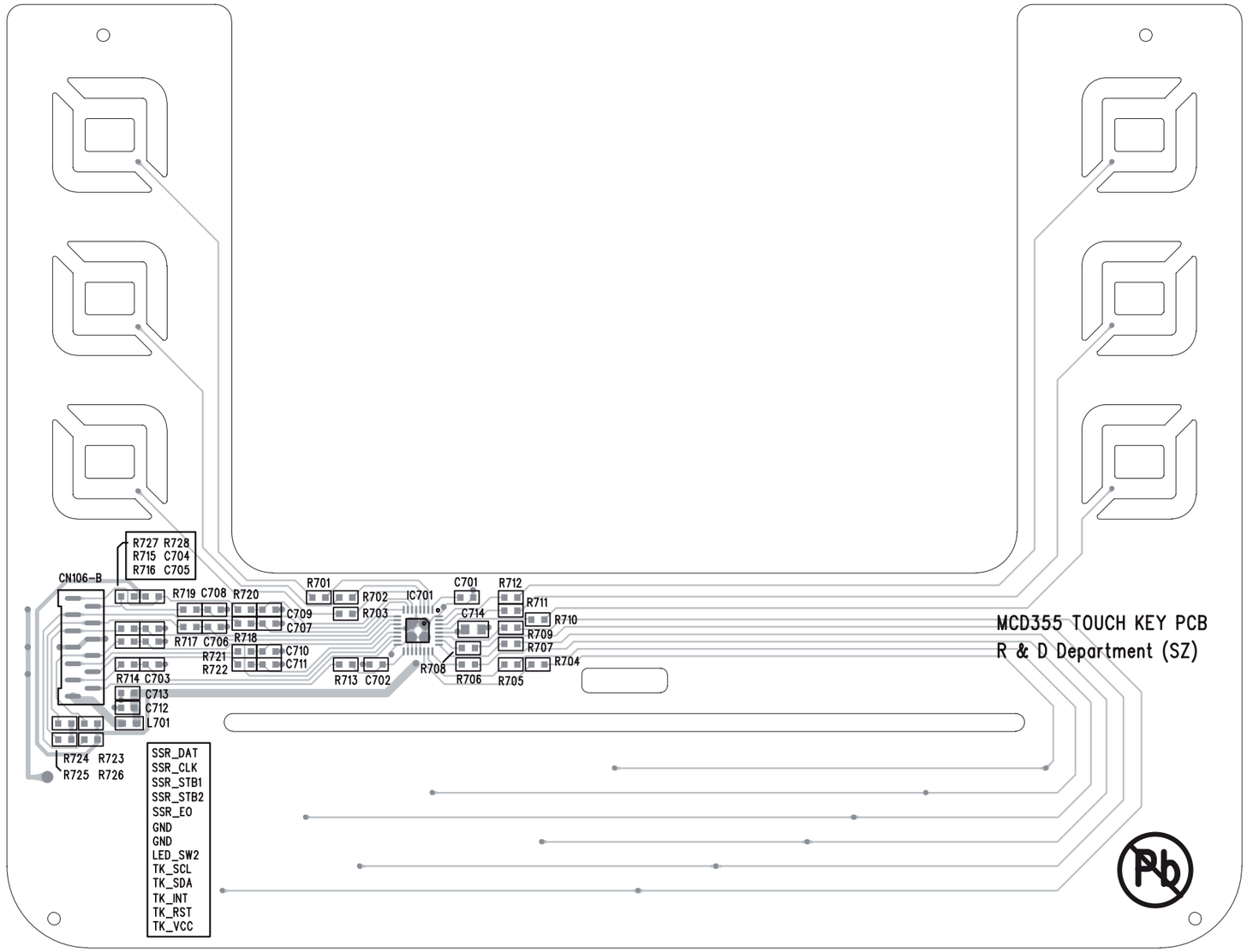




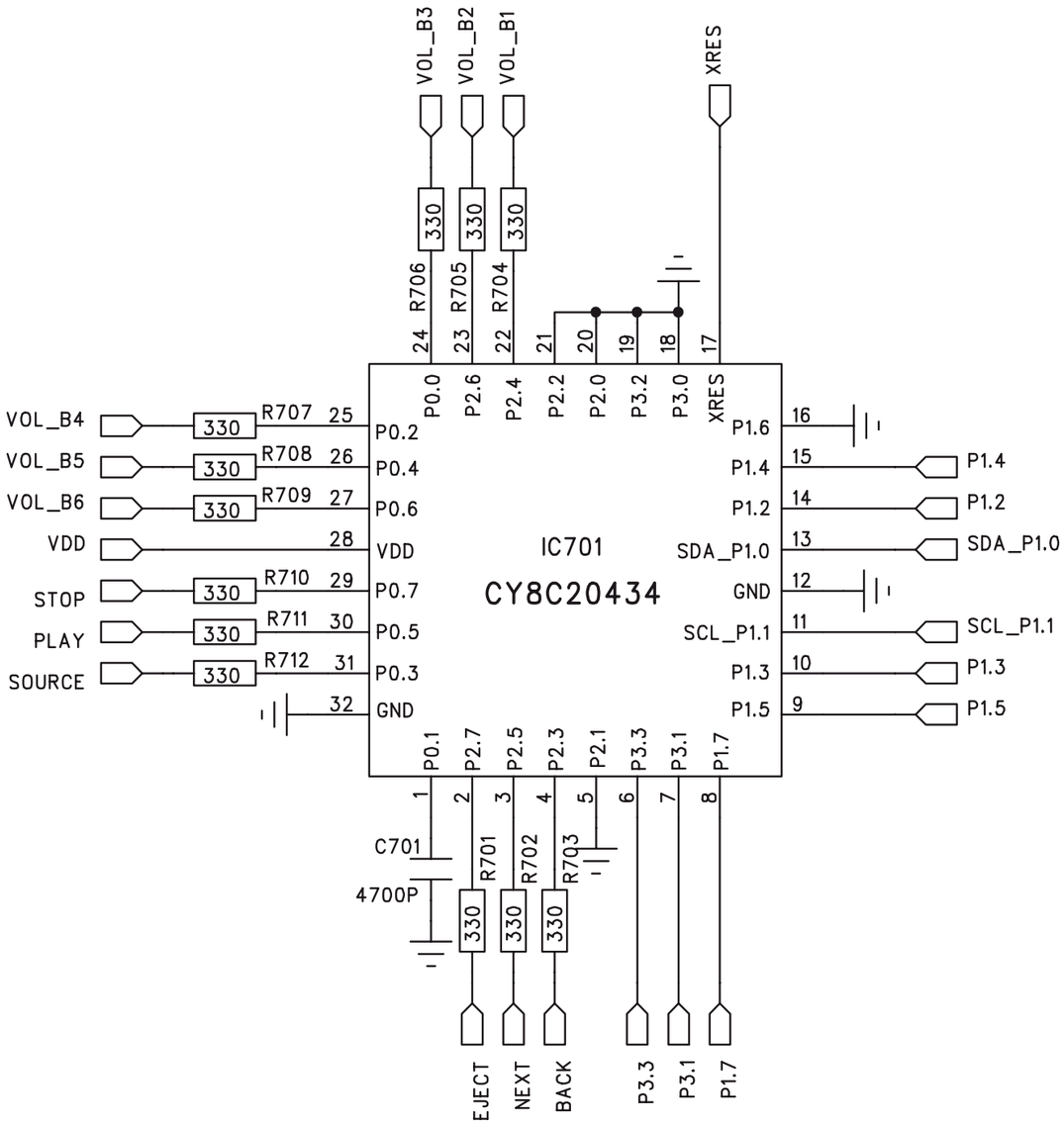


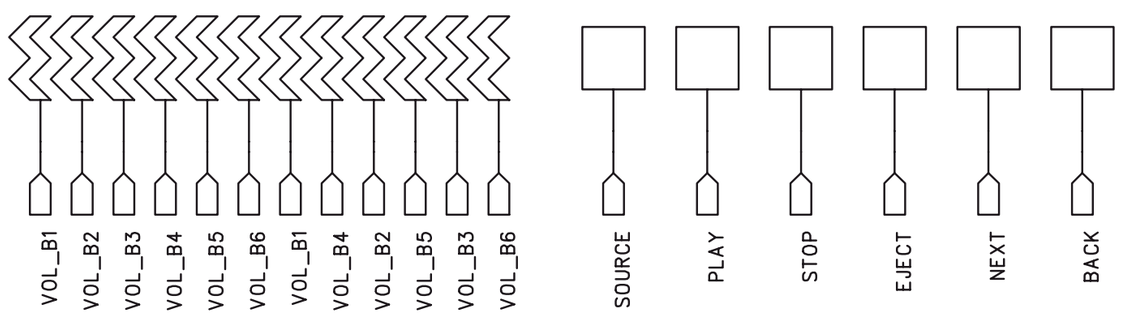
6-7

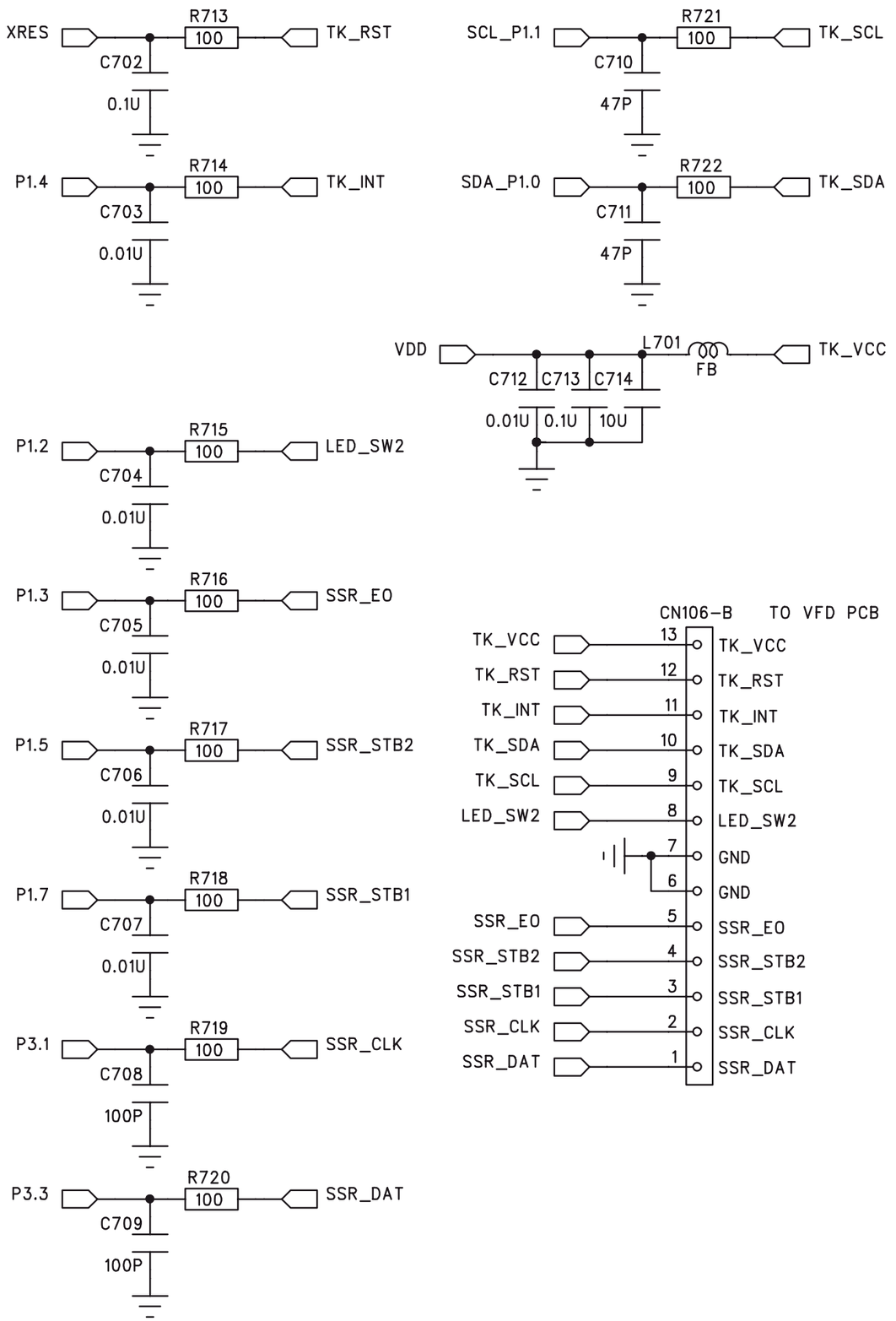
PCB LAYOUT - TOUCH KEY BOARD



CIRCUIT DIAGRAM - TOUCH KEY BOARD







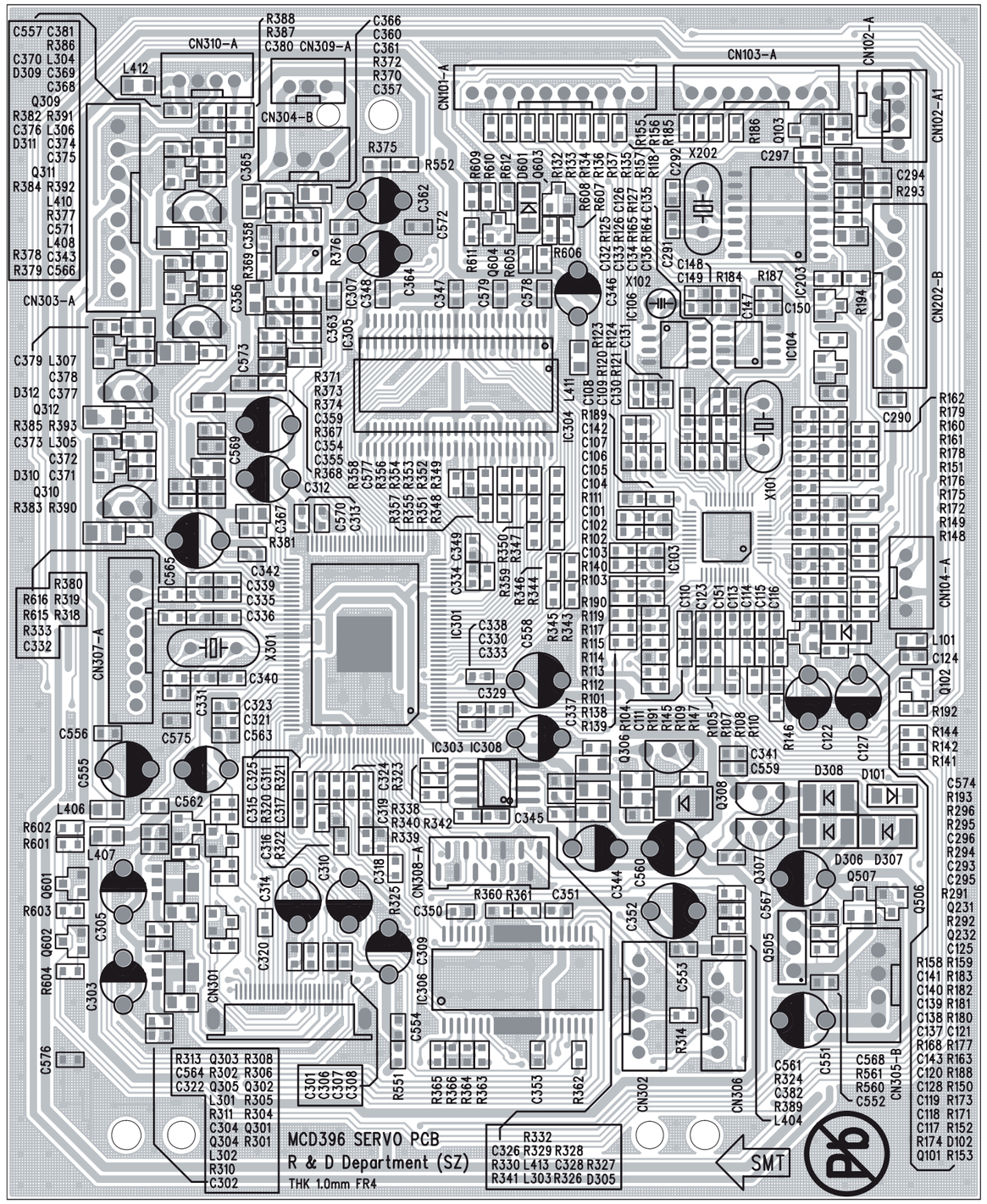
7-1

SERVO BOARD

The servo board is not intended to repair on components level. The diagrams only for reference. The whole board can be ordered with 12nc: 996510025795

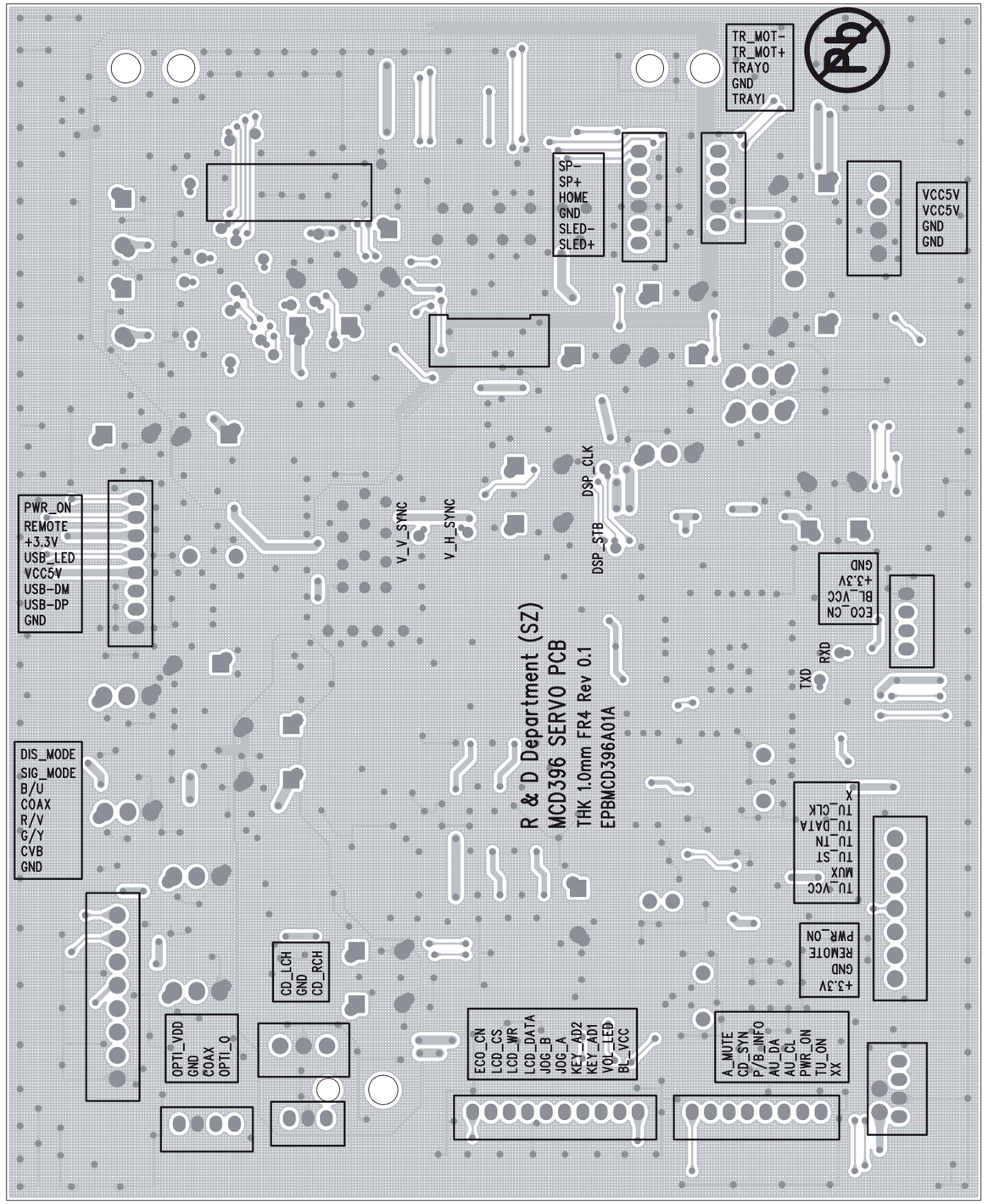
7-2

PCB LAYOUT - SERVO BOARD (TOP VIEW)



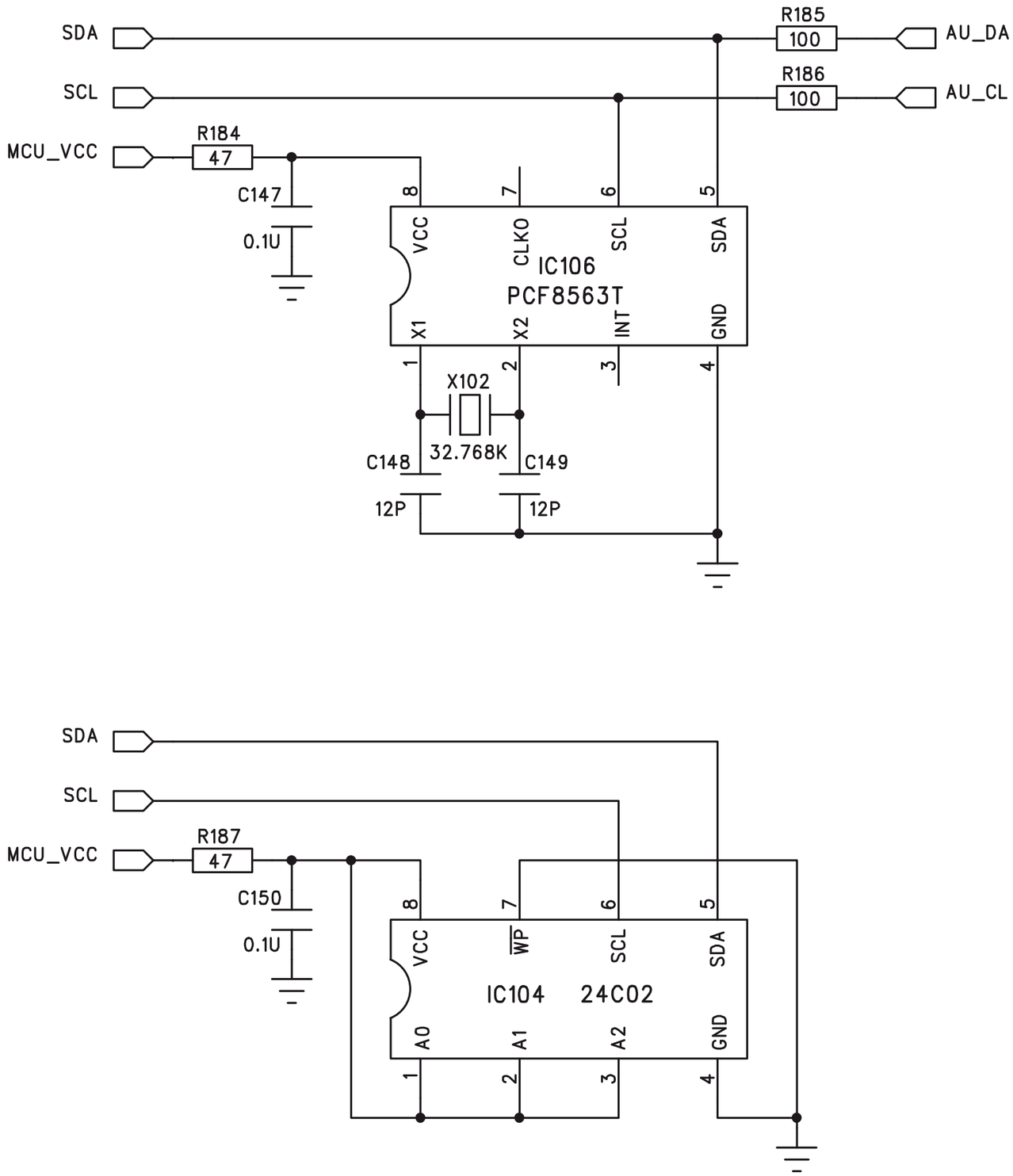
7-3

PCB LAYOUT - SERVO BOARD (BOTTOM VIEW)



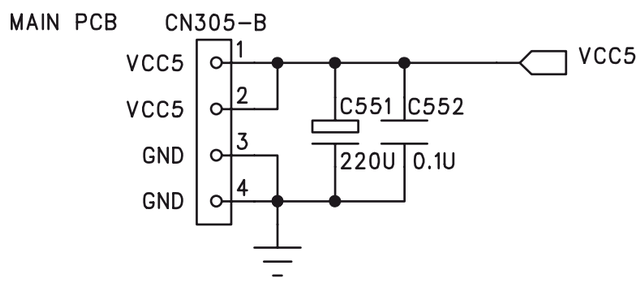
7-4

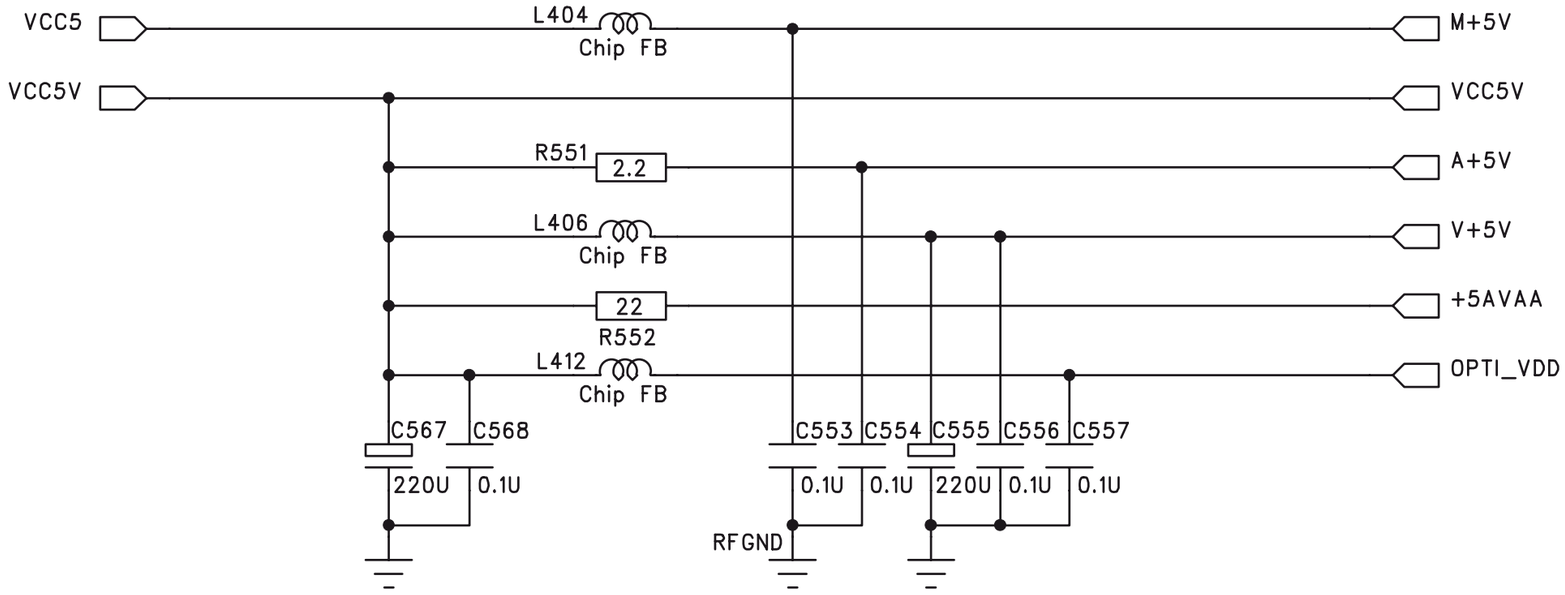
CIRCUIT DIAGRAM - SERVO BOARD (PART1)

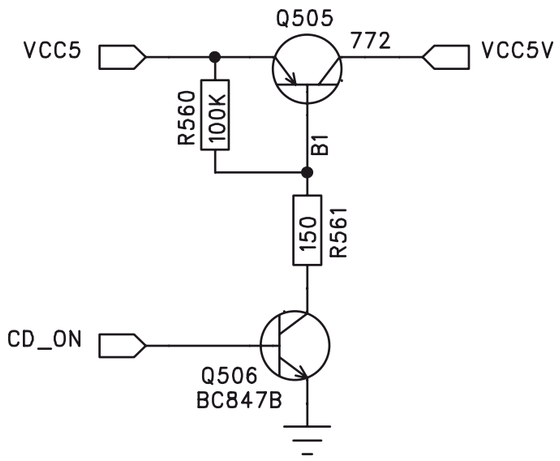


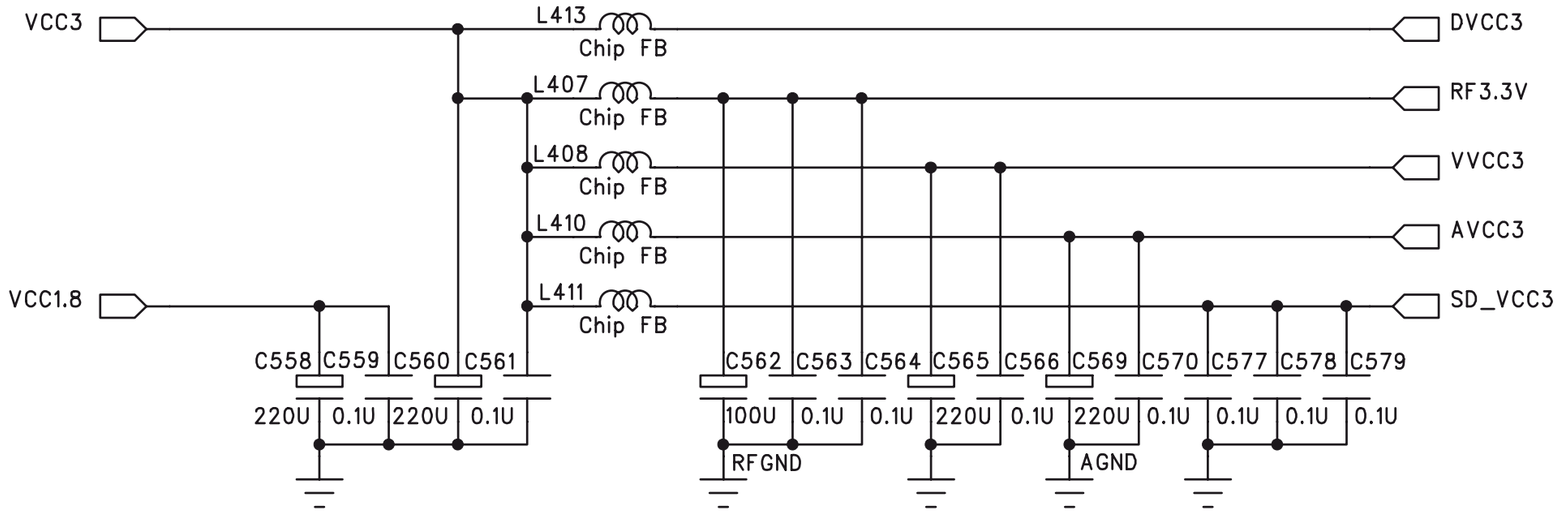
7-5

CIRCUIT DIAGRAM - SERVO BOARD (PART2)



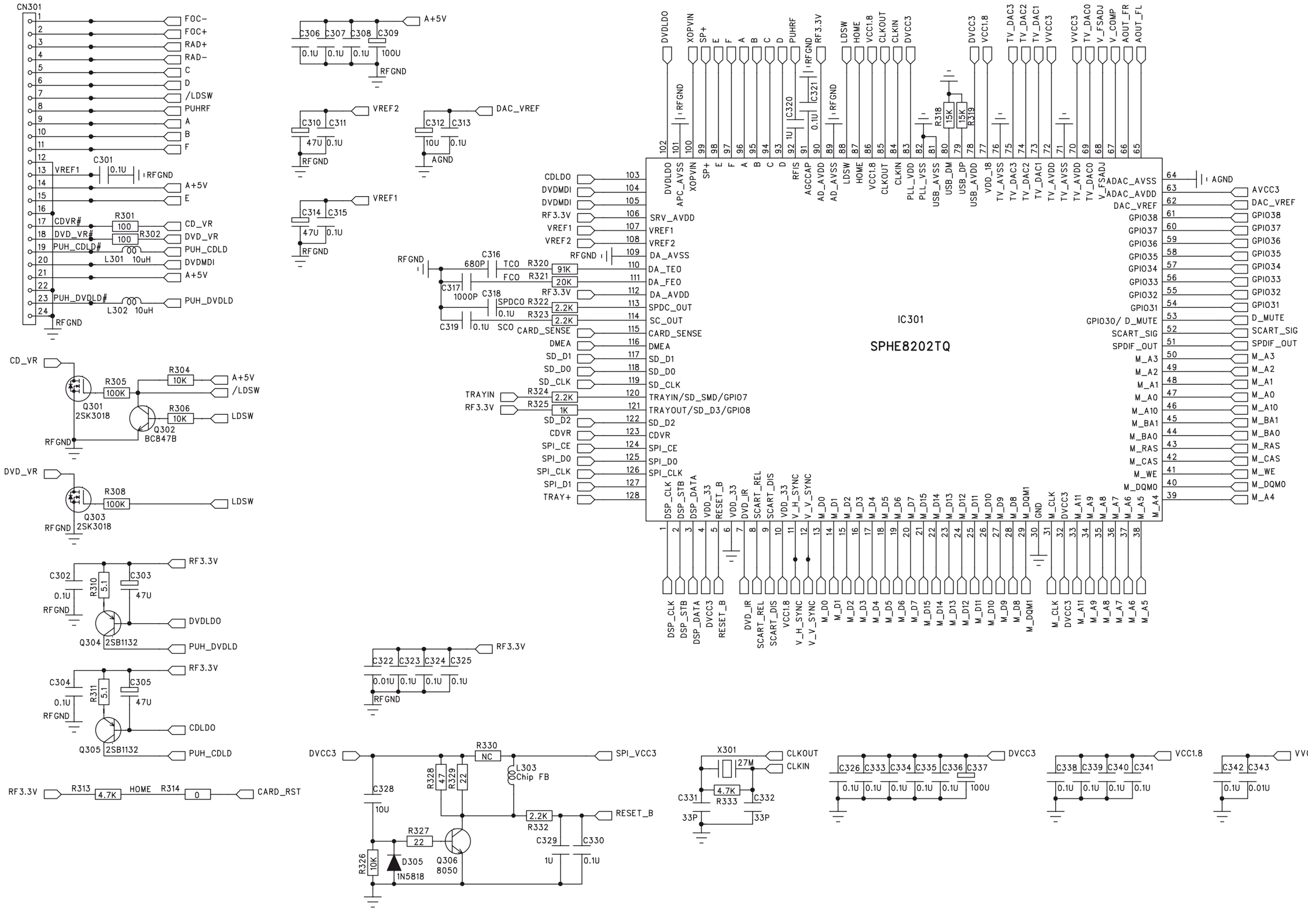






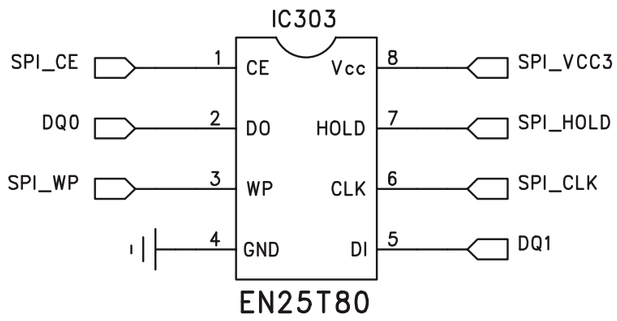
7-6

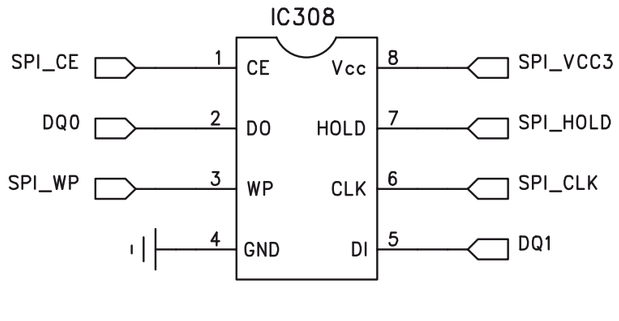
CIRCUIT DIAGRAM - SERVO BOARD (PART3)

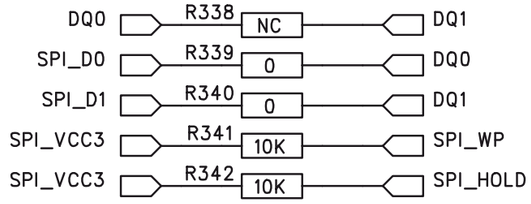


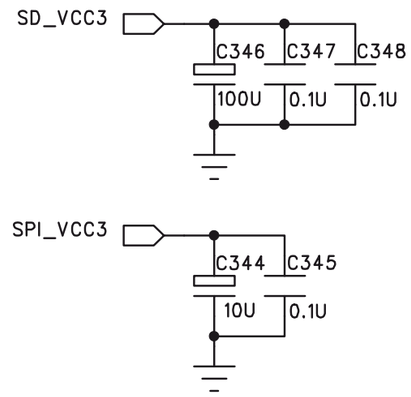
7-7

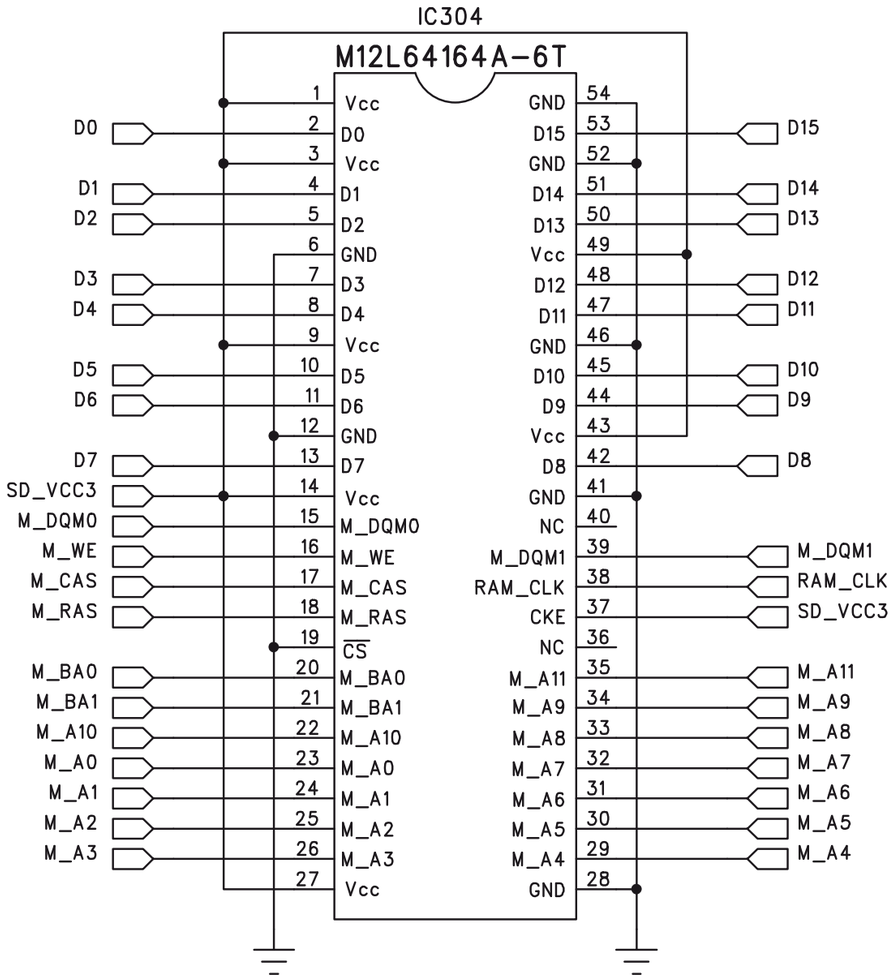
CIRCUIT DIAGRAM - SERVO BOARD (PART4)

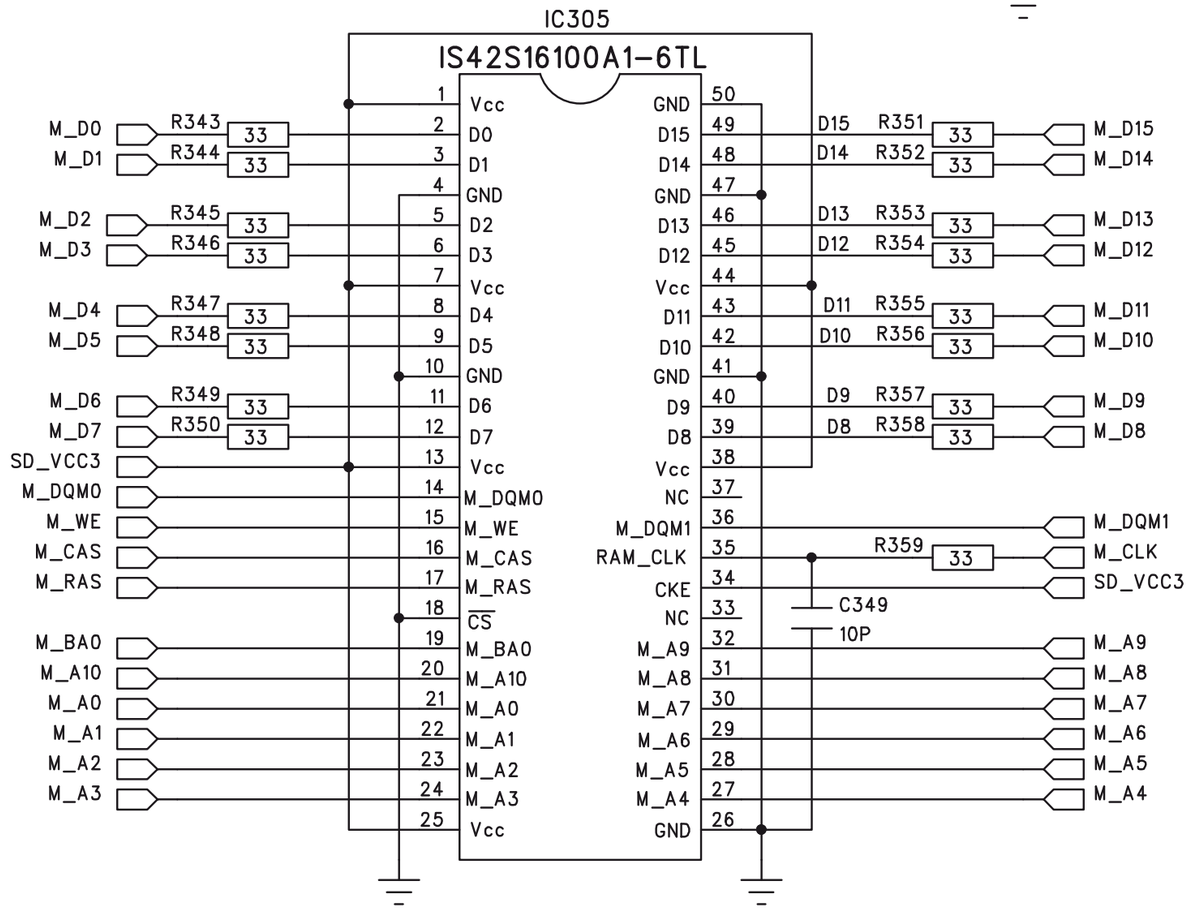






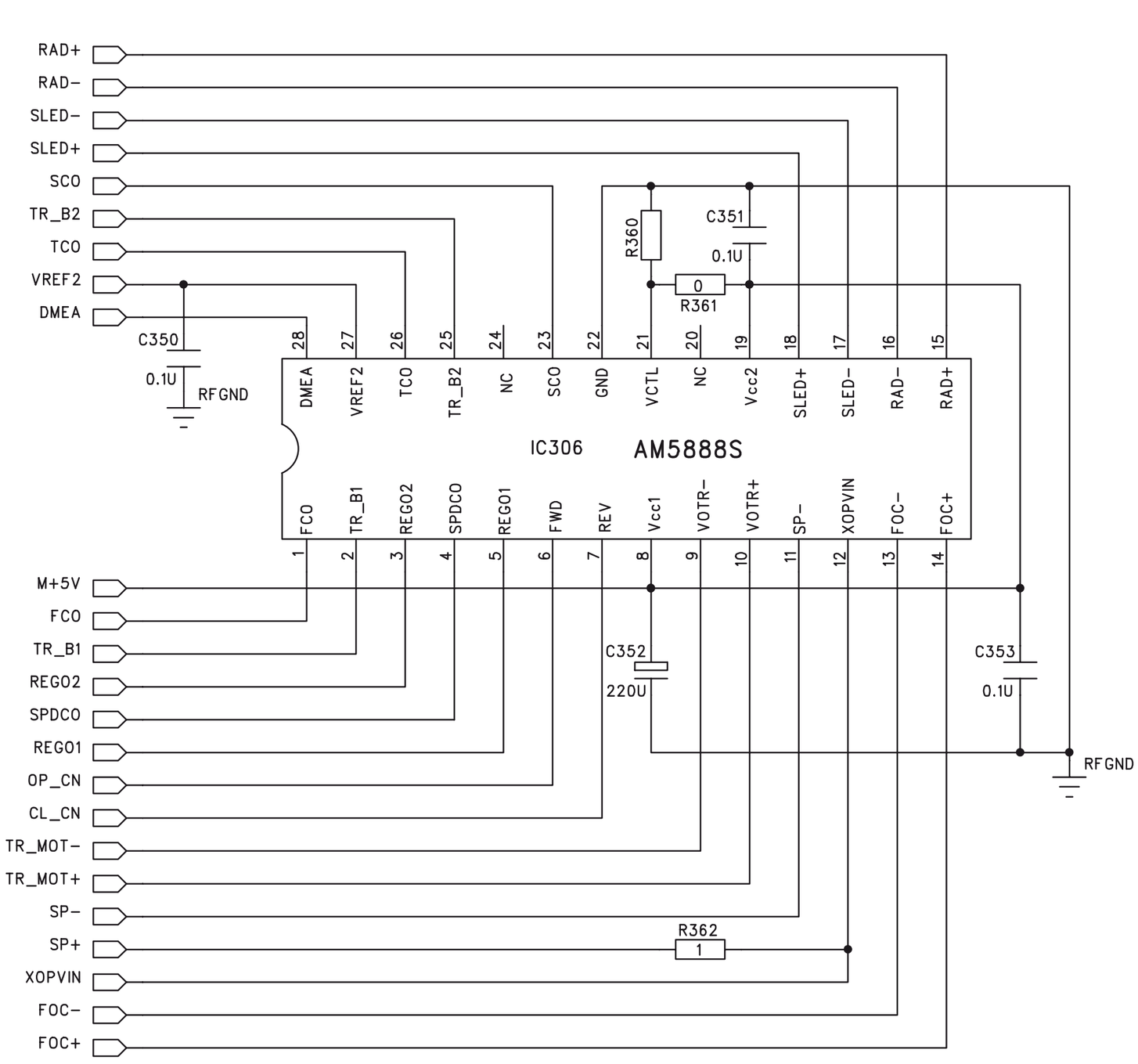


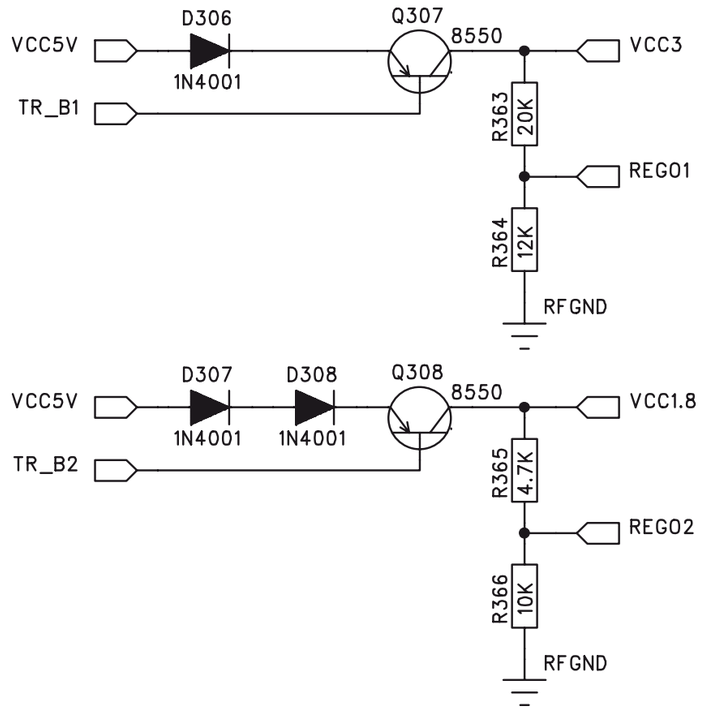


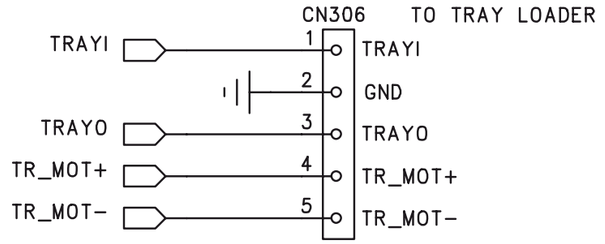


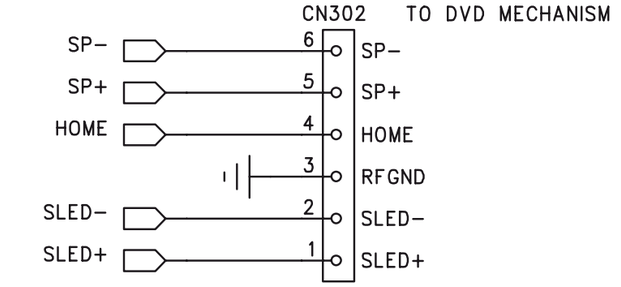
7-8

CIRCUIT DIAGRAM - SERVO BOARD (PART5)



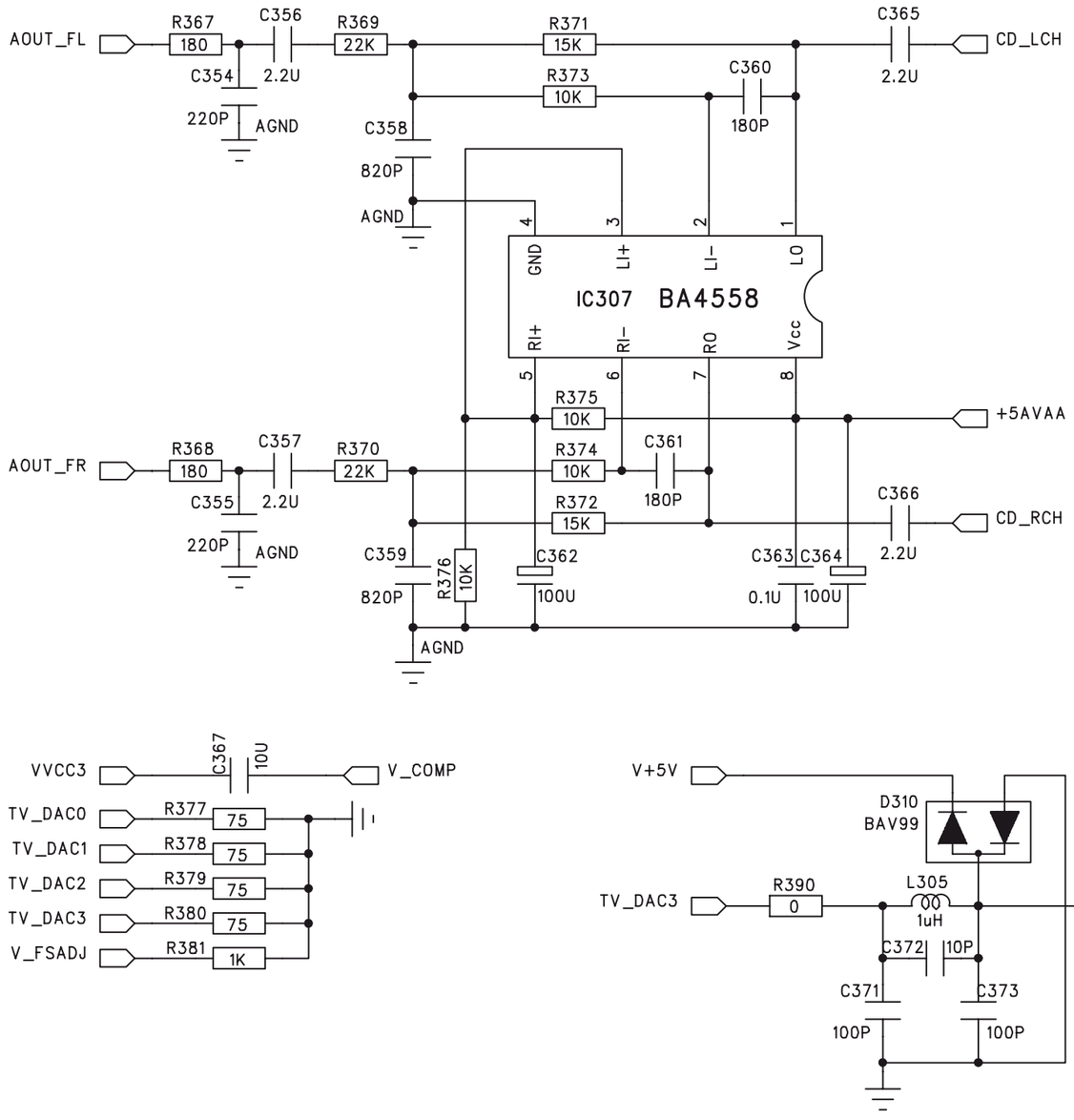


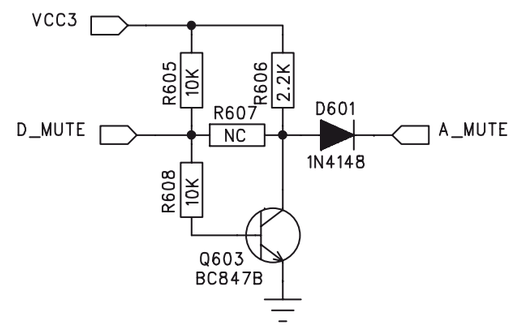


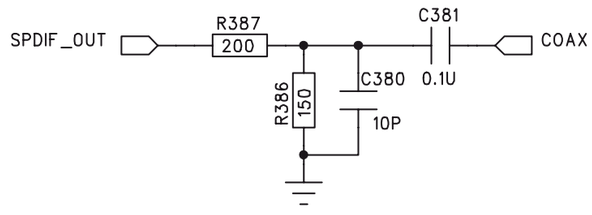


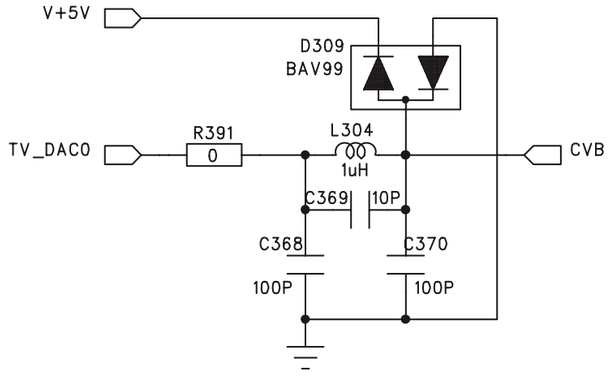
7-9

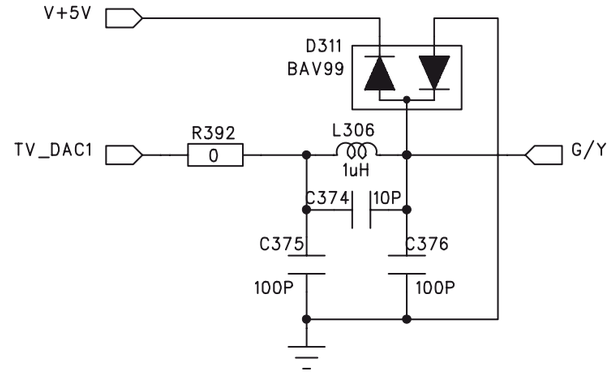
CIRCUIT DIAGRAM - SERVO BOARD (PART6)

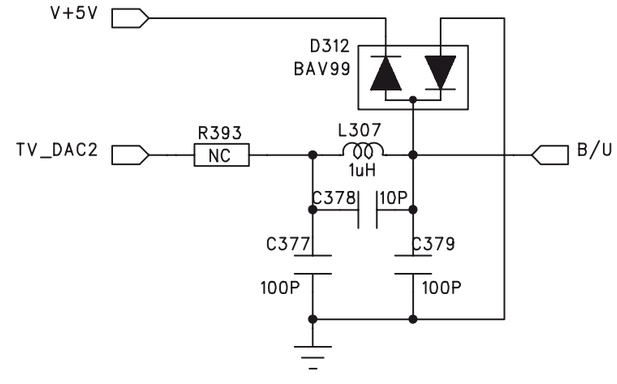


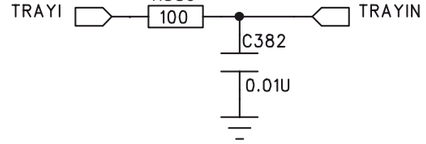






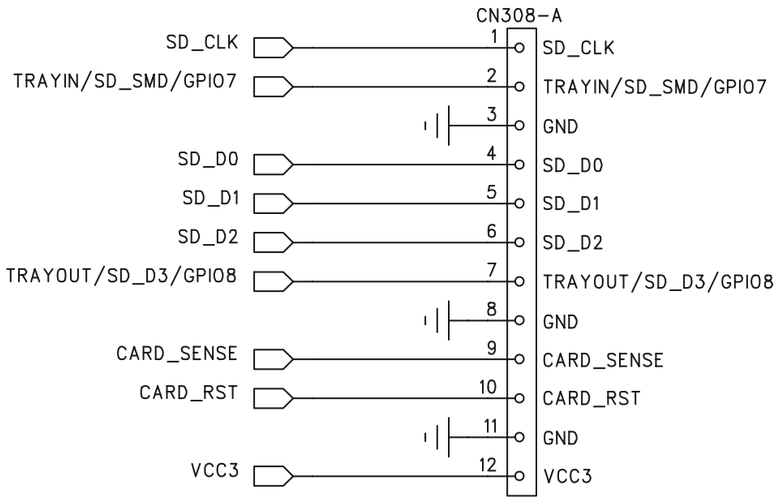


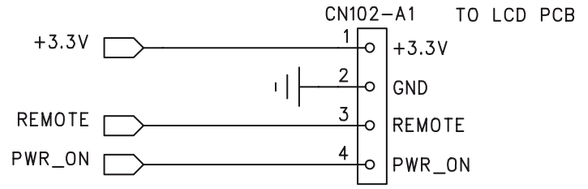


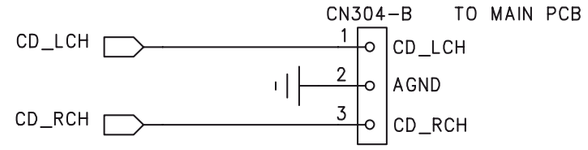


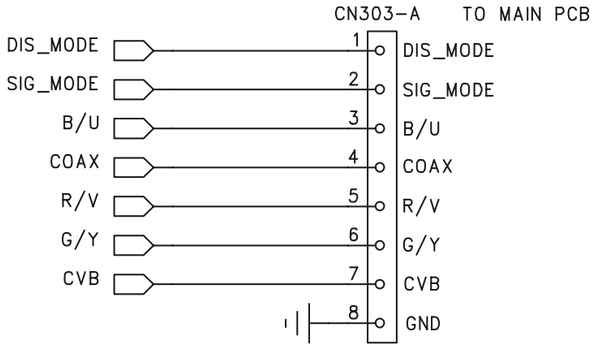
7-10

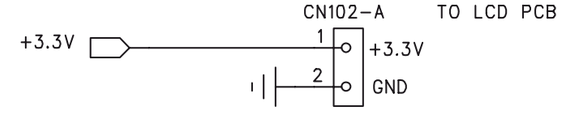
CIRCUIT DIAGRAM - SERVO BOARD (PART7)

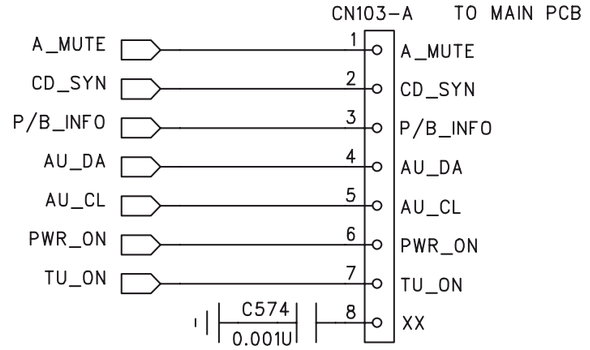


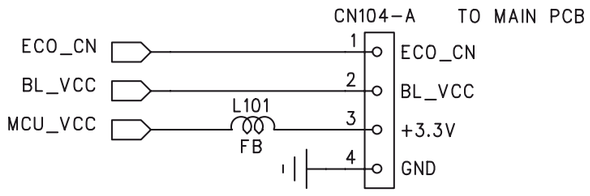


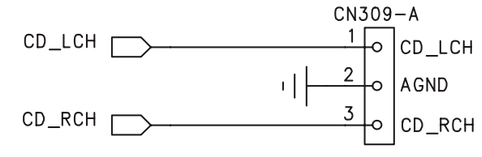


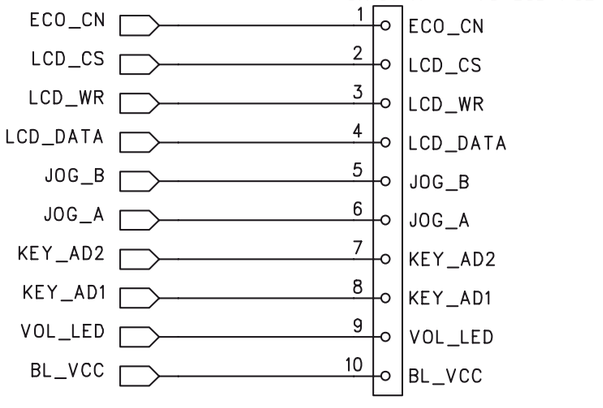


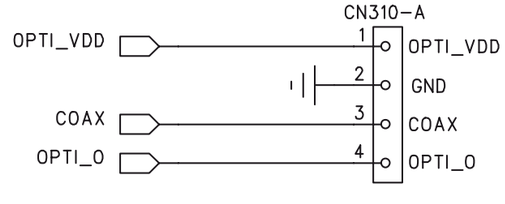


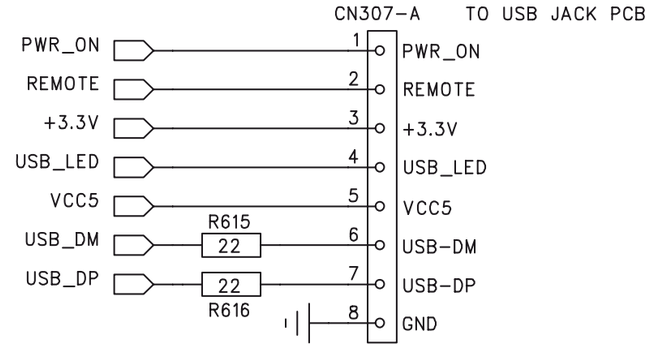






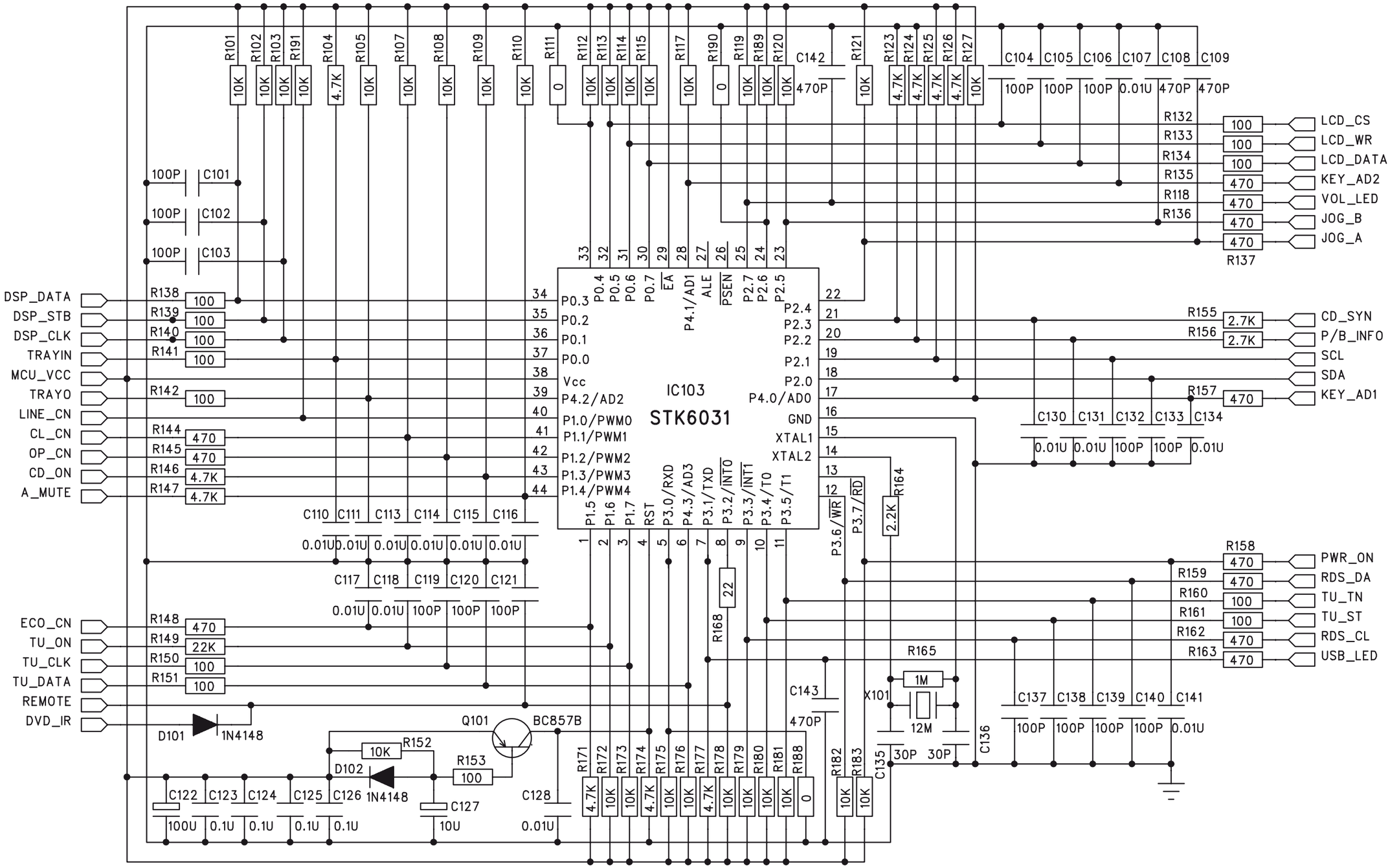






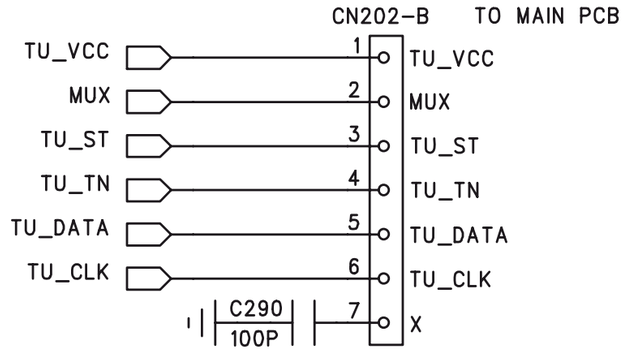
7-11

CIRCUIT DIAGRAM - SERVO BOARD (PART8)



7-12

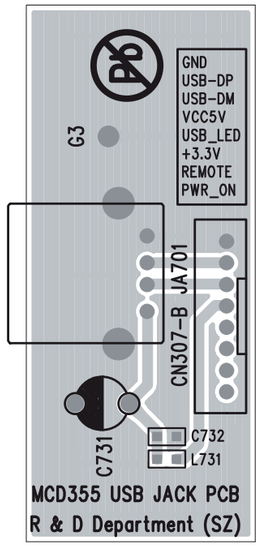
CIRCUIT DIAGRAM - SERVO BOARD (PART9)



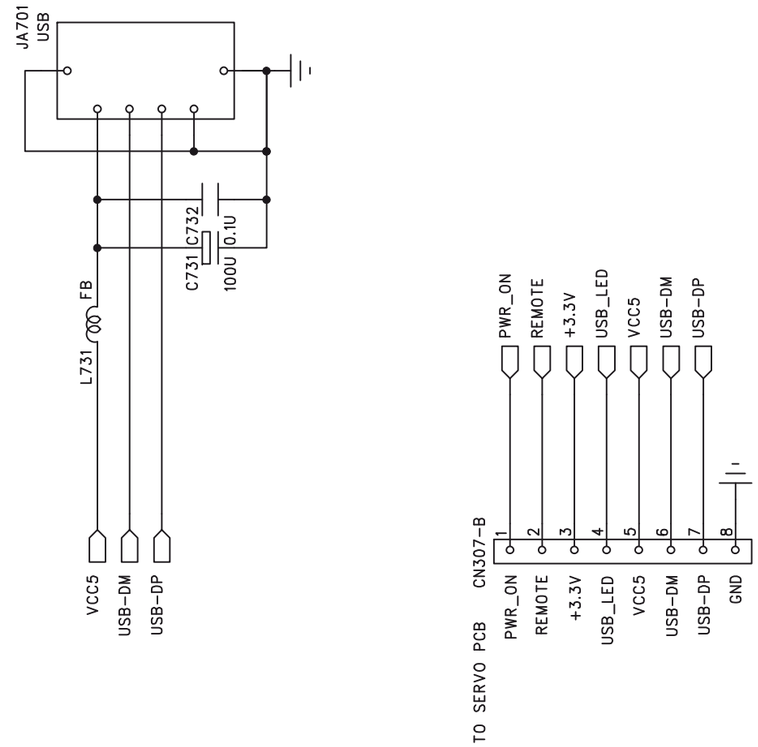
8-1

USB & POWER KEY BOARD

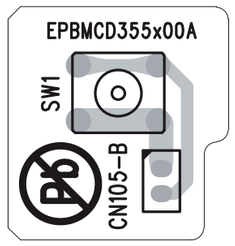
PCB LAYOUT - USB JACK BOARD



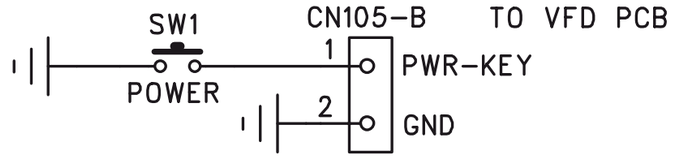
CIRCUIT DIAGRAM - USB JACK BOARD



PCB LAYOUT - POWER KEY BOARD



CIRCUIT DIAGRAM - POWER KEY BOARD



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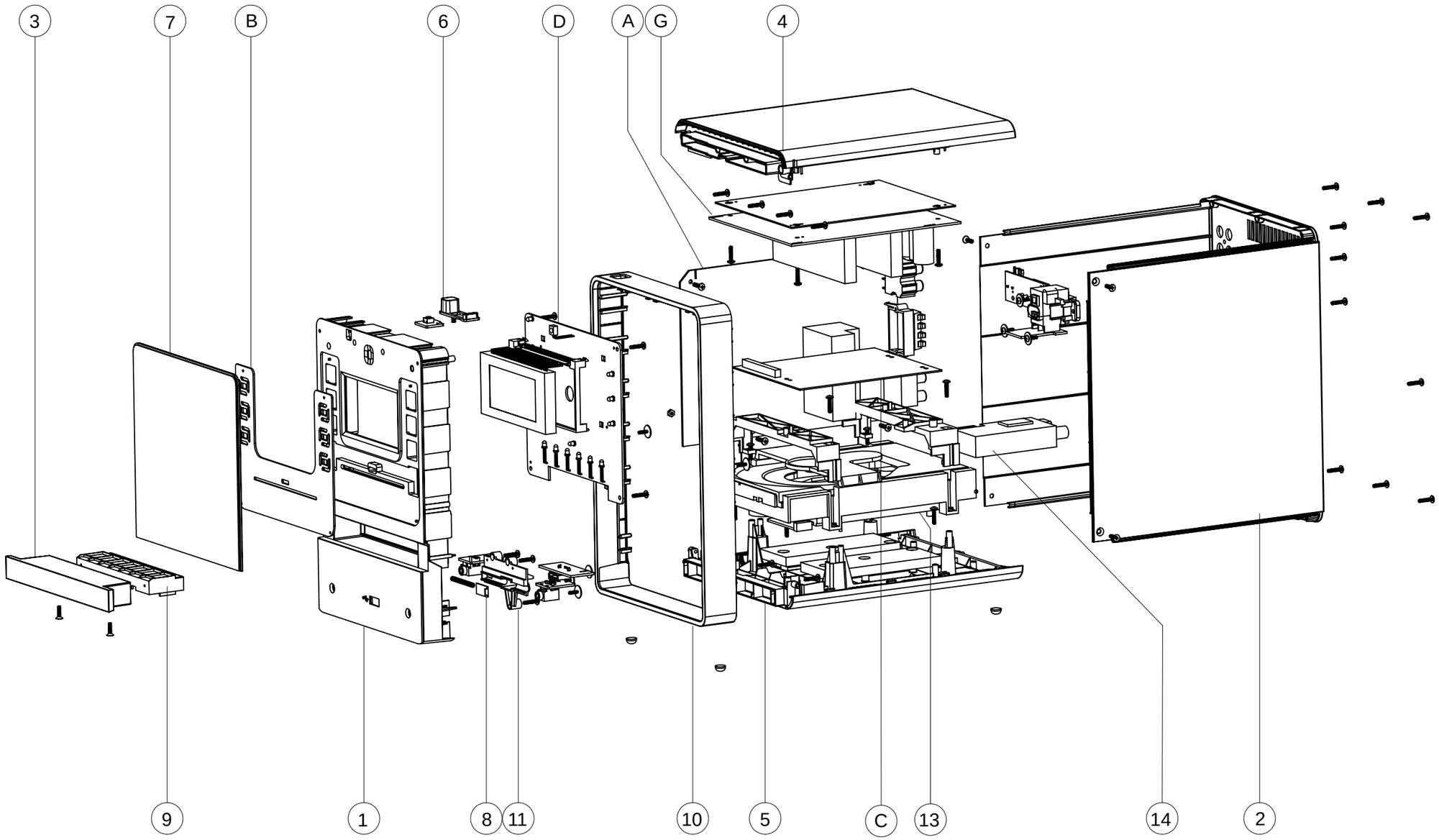
SET MECHANICAL EXPLODED VIEW



MECHANICAL & ACCESSORIES PARTS LIST

Loc.	12NC	Description
MAIN UNIT		
1	996510025819	FRONT CABINET
2	996510025797	REAR CABINET
3	996510025816	CD DOOR COVER OUTER
4	996510020642	TOP CABINET
5	996510020643	BOTTOM CABINET
6	996510020644	POWER BUTTON
7	996510020654	TOUCH PANEL LENS
8	996510020645	USB DOOR
9	996510020646	CD DOOR COVER INNER
10	996510020648	FRAME STAND
11	996510020612	USB BRACKET
12	996510010779	DVD MECHANISM SONY KHM-313AAD
13	996510001452	DVD TRAY LOADER WXD-8213
14	996510025802	TUNER MODULE KST-MW004FA1-S59A
A	996510025799	MCD355 MAIN PCB
ACC	⚠ 996500038903	5-FEET VDE APPRROVED POWER COR
ACC	⚠ 996510000876	5 FT VDE APPRROVED POWER CORD
B	996510025813	TOUCH KEY PCB
C	996510025795	SERVO PCB
D	996510025821	MCD355 VFD PCB
G	⚠ 996510025814	SWITCHING POWER SUPPLY MODULE
H	996510001456	RCA WIRE 1500MM
I	996510001906	AUX STEREO CORD
J	996510025815	REMOTE CONTROL
K	996510005595	PIG TAIL ANTENNA WIRE BLACK
L	996510025794	SPK BOX L+R
MANTU	996510025803	FFC CABLE 400MM 10P P1.25
SERDVD	996510001453	FFC CABLE 24P L200 P0.5
VFDTCH	996510025804	FFC CABLE 100MM 13P P1

ELECTRICAL PARTS LIST

Loc.	12NC	Description
MAIN PCB ASSY		
C411	996510016290	E.CAP 3300UF 16V 13X26MM M%
C417	994000003218	ELECT. CAPACITOR 4700UF 35V
C418	994000003218	ELECT. CAPACITOR 4700UF 35V
C429	996510025796	AL E. CAP. 1000UF 35V 105C M%
C430	996510025796	AL E. CAP. 1000UF 35V 105C M%
C461	996510025796	AL E. CAP. 1000UF 35V 105C M%
C462	996510025796	AL E. CAP. 1000UF 35V 105C M%

ELECTRICAL PARTS LIST

Loc.	12NC	Description
MAIN PCB ASSY		
C519	996510004554	CBB CAP HMFS-5 0.47UF 63V
C520	996510004554	CBB CAP HMFS-5 0.47UF 63V
C543	996510004554	CBB CAP HMFS-5 0.47UF 63V
C544	996510004554	CBB CAP HMFS-5 0.47UF 63V
D401	996510010774	DIODE 1N4148 FDLL4148
D402	996510010770	RECTIFIER DIODE 1N5822
D501	996510010774	DIODE 1N4148 FDLL4148
D502	996510010774	DIODE 1N4148 FDLL4148
D503	996510010774	DIODE 1N4148 FDLL4148
D504	996510010774	DIODE 1N4148 FDLL4148
IC401	996510001412	IC LM2576TV-5.0
IC402	994000005724	IC LD1117AL-3.3V-D
IC501	996510012838	IC TDA8920BTH SOT566-3
IC502	996510012838	IC TDA8920BTH SOT566-3
IC503	996510020220	IC PT2308L-S(L) SOP-8PIN
IC601	996510010771	IC 7314(ANGUS)
IC602	996510001055	IC BA4558 SOP8
IC603	996510001055	IC BA4558 SOP8
IC605	996510005002	IC D2761 (SILICORE)
IC606	996510001055	IC BA4558 SOP8
IC607	996510001055	IC BA4558 SOP8
JA301	996510025818	DIN JK S-VIDEO+VIDEO JK+RCA
JA501	996510017000	AUDIO TERMINAL JACK 8P B/B/R/R
JA601	996510001409	RCA JACK 8.3MM 4HOLES
L501	996510025808	CHOKE COIL 33UH M%
L502	996510025808	CHOKE COIL 33UH M%
L503	996510025808	CHOKE COIL 33UH M%
L504	996510025808	CHOKE COIL 33UH M%
Q403	996510001414	TRANSISTOR KTB772
Q407	996510005008	TRANSISTOR SS8050D TO-92
ZD401	996500039258	ZENER DIODE 9V1 1/2W
ZD402	996510012835	ZENER DIODE 5V6 1/2W (TC5V6)
TOUCH KEY PCB		
IC701	996510025805	IC CY8C20434-12LKXIT QFN

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ELECTRICAL PARTS LIST

Loc.	12NC	Description
SERVO PCB ASSY (ONLY FOR REFERENCE)		
D305	996510025812	SCHOT. BARRIER DIODE FM5818-L
D306	996500038177	DIODE PRLL4001
D307	996500038177	DIODE PRLL4001
D308	996500038177	DIODE PRLL4001
D309	996510010757	SWITCHING DIODE BAV99L
D310	996510010757	SWITCHING DIODE BAV99L
D311	996510010757	SWITCHING DIODE BAV99L
D401	996510010774	DIODE 1N4148 FDLL4148
D501	996510010774	DIODE 1N4148 FDLL4148
D502	996510010774	DIODE 1N4148 FDLL4148
D503	996510010774	DIODE 1N4148 FDLL4148
D504	996510010774	DIODE 1N4148 FDLL4148
IC103	996510025801	IC TK6031AL PROGRAMMED
IC104	996510010763	IC AT24C02BN-SH-T
IC106	996510010764	IC PCF8563T SO8
IC301	996510025809	IC SPHE8202TQ
IC303	996510025806	IC H25L8036DM PROGRAMMED
IC304	996510010760	IC SDRAM 64M M12L64164A-7TG
IC306	996510010762	IC AM5888S HSOP28
IC602	996510001055	IC BA4558 SOP8
Q103	996510024762	TRANSISTOR KTC9014S
Q301	996510010766	TRANSISTOR (MOSFET) 2SK3018
Q302	996510024762	TRANSISTOR KTC9014S
Q303	996510010766	TRANSISTOR (MOSFET) 2SK3018
Q304	996510010765	TRANSISTOR 2SB1132R
Q305	996510010765	TRANSISTOR 2SB1132R
Q307	996510025817	TRANSISTOR SS8550D TO-92
Q308	996510025817	TRANSISTOR SS8550D TO-92
Q407	996510005008	TRANSISTOR SS8050D TO-92
Q506	996510024762	TRANSISTOR KTC9014S
Q507	996510025798	TRANS. P-CHANNEL MODE MOSFET
USB	996510016567	USB CONNECTOR 4P 90
X101	996510005000	X'TAL 12MHZ 49S 20PF+/-20PPM
X102	996510012842	X'TAL 32.768KHZ 12.5PF
X301	996510010755	X'TAL 27MHz 20PF +/-20PPM
VFD PCB ASSY		
IC1	994000003199	IC HEF4094BT
IC101	996510020610	IC VFD DRIVER PT6324QL 52P
IC102	996510011311	INFRARED RECEIVER RIGHT ANGLE
IC2	994000003199	IC HEF4094BT
L301	996510025807	CHIP BEAD 600R/100MHz
L302	996510025807	CHIP BEAD 600R/100MHz

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ELECTRICAL PARTS LIST

Loc.	12NC	Description
VFD PCB ASSY		
L303	996510025807	CHIP BEAD 600R/100MHz
M	996510025038	VFD BRACKET
VFD	996510025037	VFD FOR MCM355
ZD402	996510012835	ZENER DIODE 5V6 1/2W (TC5V6)
HEADPHONE JACK PCB ASSY		
JA502	994000001456	STEREO HEADPHONE JACK
AUX JACK PCB ASSY		
JA602	996510001073	EARPHONE CKX3.5-19S (3PIN)

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