DVD Micro System MCD906

Service
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Service Manual

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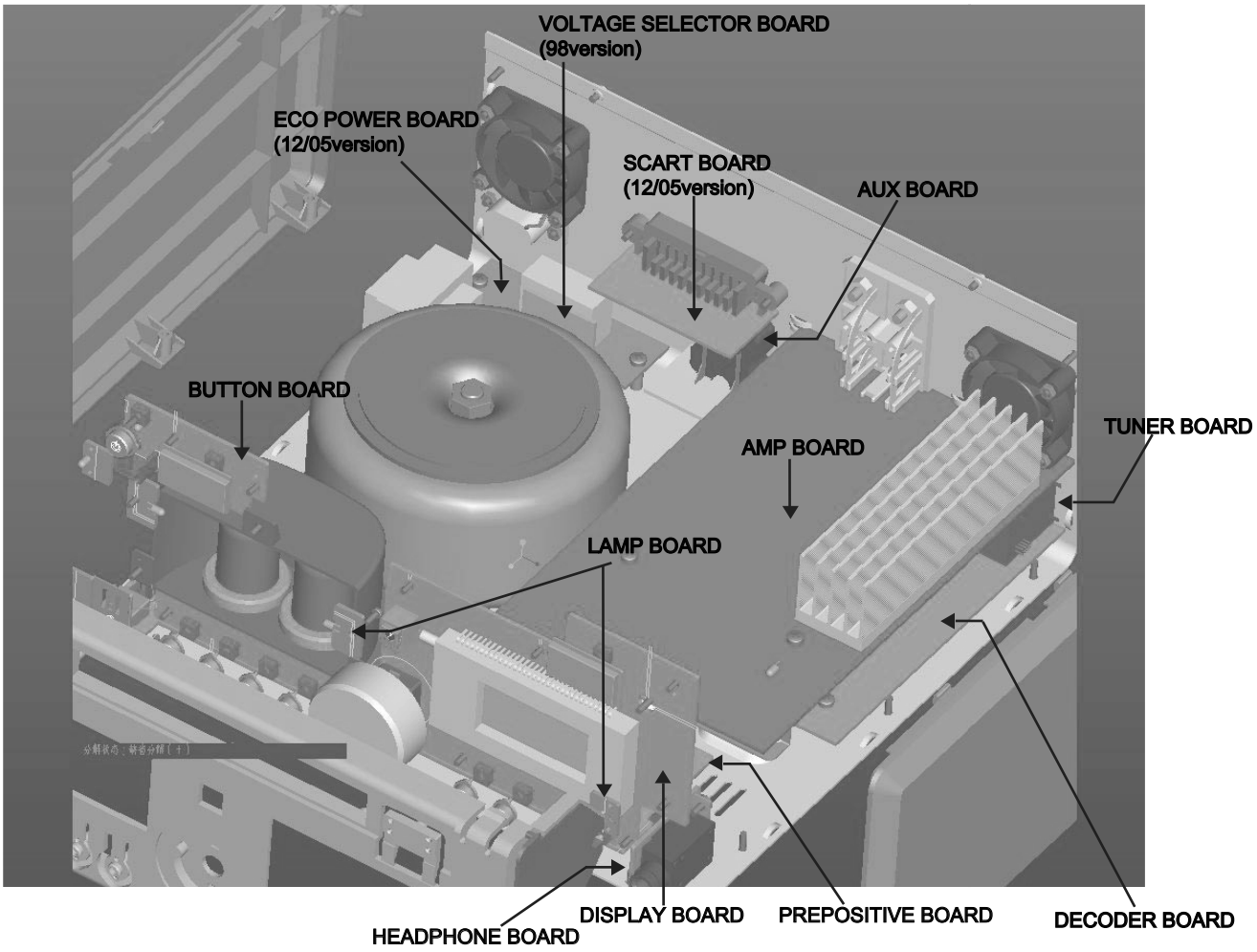
CLASS 1
LASER PRODUCT

Published by DB 0946 Service Audio Printed in The Netherlands Subject to modification © 3141 785 33011

Version 1.1

PHILIPS

Location of PC Boards



VERSION VARIATIONS :

Type /Versions: / Service policy / Board in used:	MCD906										
	/05	/12	/37	/55	/58	/61	/79	/93	/94	/96	/98
BUTTON BOARD								M			M
DISPLAY BOARD								M			M
AXU BOARD								M			M
TUNER BOARD								M			M
DECODER BOARD								M			M
AMP BOARD								M			M
HEADPHONE BOARD								M			M
LAMP BOARD								M			M
PREPOSITIVE BOARD								M			M

Type /Versions: / Feature diffrence / Features	MCD906										
	/05	/12	/37	/55	/58	/61	/79	/93	/94	/96	/98
RDS											
VOLTAGE SELECTOR											√
ECO STANDBY - DARK											
TDS								√			

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

Specification

AMPLIFIER

Rated Output Power ....2 x 75W RMS
Signal-to-noise ratio ..... ≥ 65 dBA
Frequency response ..... 40Hz + 3dB+/-3 20KHz
Aux Input .....0.5V RMS 47kohm

DISC

Laser Type ..... Semiconductor
Disc Diameter 12cm/8cm
Support Disc .....DVD,
DVD-R,DVD-RW,DVD+RW,CD-DA,MP3,CD-RW
Audio DAC .....24Bits / 44.1kHz
Total Harmonic Distortion ..... <0.5%(1kHz)
Frequency Response .....40Hz + 0.5dB+/-2 20KHz
S/N Ration .....≥65dBA

TUNER

FM Tuning Range ..... 87.5 – 108 MHz
Tuning grid 100K/50KHz

Sensitivity

– Mono, 50dB S/N Ratio ..... 5u V
– Stereo, 50dB S/N Ratio 100uV
Selectivity .....>28dB
Image Rejection .....>25dB
Total Harmonic Distortion ..... <1%
Signal to Noise Ration .....>65dBA

SPEAKERS

Speaker Impedance 4ohm
Speaker Driver, base .....5 1/4"
Speaker Driver, tweeter .....BUZZER
Frequency Response .....40Hz + 3dB+/-3 20KHz

GENERAL INFORMATION

Total Output power ..... 150W RMS
AC Power .....220-230V / 50Hz/60Hz
Operation Power Consumption 85W
Standby Power Consumption .....<4W
Eco Standby Power Consumption .....<1W
Headphone Output 2X15mW 32ohm
USB Direct ..... Version 1.1

Dimensions

– Main unit (w x h x d) 275x126x250mm
– Speaker box (w x h x d) 186x300x222.5mm

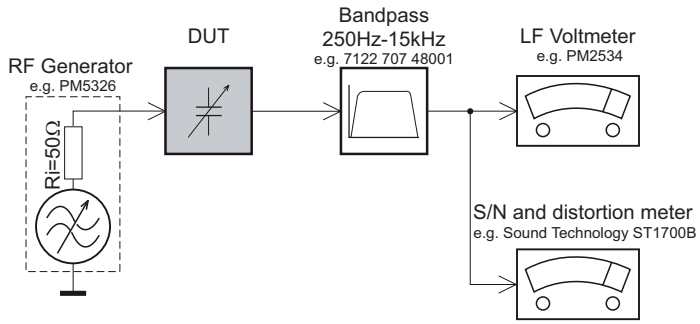
Weight

– With Packing ..... 16.5 KG
– Main Unit 5.0KG
– Speaker box 4.5x2KG

Specifications and external appearance are subject to change without notice.

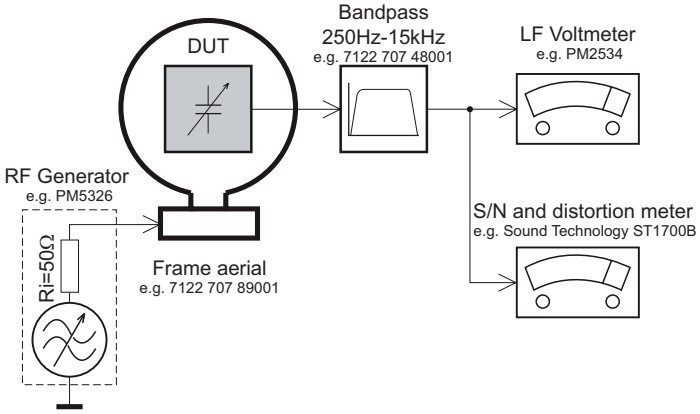
MEASUREMENT SETUP

Tuner FM



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

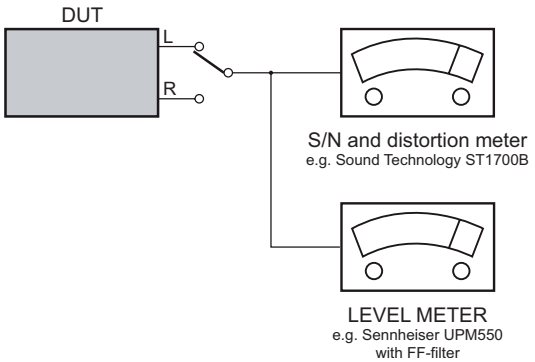
Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

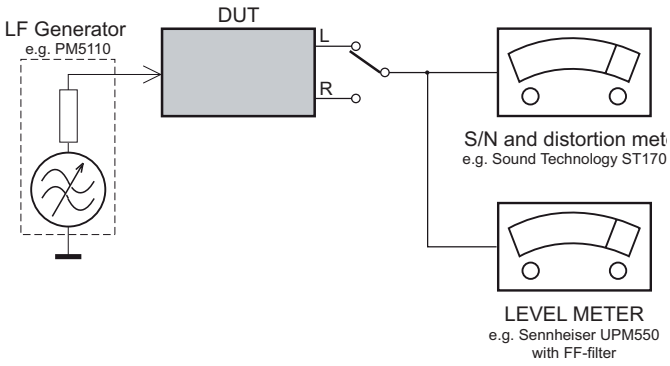
CD

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



Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071



SERVICE AIDS

GB WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

ESD

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used

Safety components are marked by the symbol ⚠.

INFORMATION ABOUT LEAD-FREE SOLDERING

Philips CE is producing lead-free sets from 1.1.2005 onwards.
IDENTIFICATION:

Regardless of special logo (not always indicated) one must treat all sets from 1 Jan 2005 onwards, according next rules:

- On our website **www.atyourservice.ce.Philips.com** you find more information to:
  - BGA-de-/soldering (+ baking instructions)
  - Heating-profiles of BGAs and other ICs used in Philips-sets
  - Lead free

  You will find this and more technical information within the "magazine", chapter "workshop news".

For additional questions please contact your local repair-helpdesk.

SERVICE INSTRUCTION

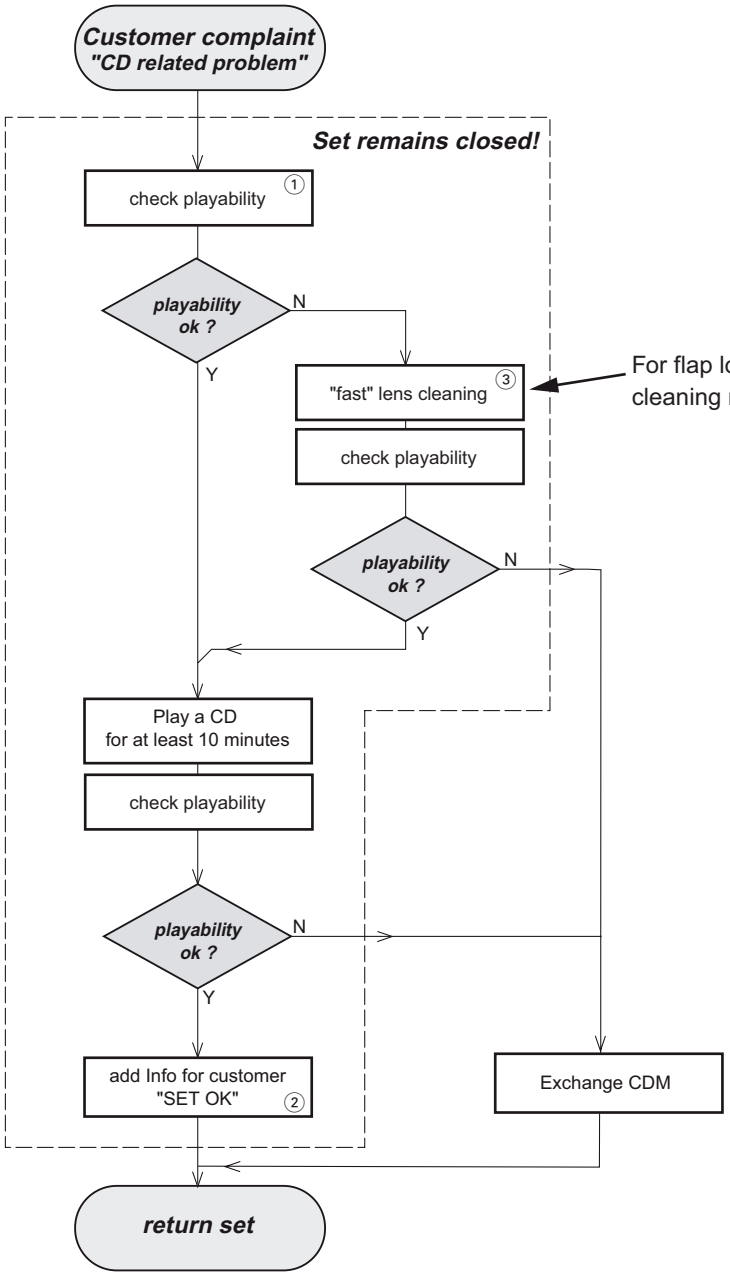
Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the AC Power lead for external damage.
- Check the strain relief of the AC Power cord for proper function.
- Check the electrical DC resistance between the AC Power Plug and the secondary side (only for sets which have a AC Power isolated power supply):

1. Unplug the AC Power cord and connect a wire between the two pins of the AC Power plug.
2. Set the AC Power switch to the "on" position (keep the AC Power cord unplugged!).
3. Measure the resistance value between the pins of the AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be larger than 4.5 Mohm (For U.S. it should be between 4.2 Mohm and 12 Mohm).
4. Switch "off" the set, and remove the wire between the two pins of the AC Power plug.

- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

INSTRUCTIONS ON CD PLAYABILITY



For flap loaders (= access to CD drive possible) cleaning method ④ is recommended

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

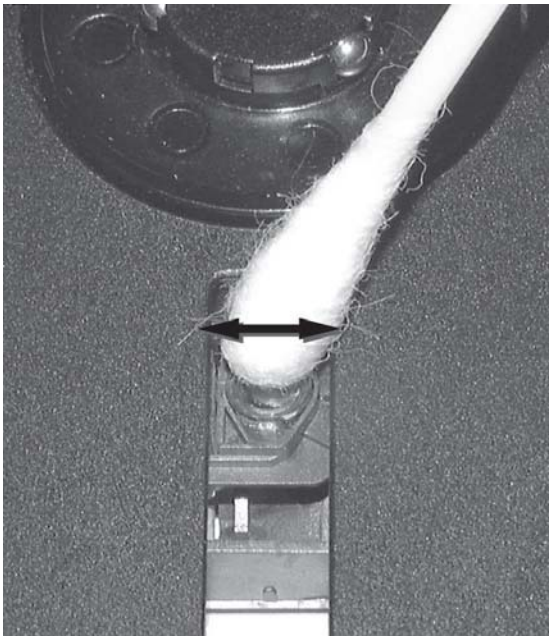
LIQUID LENS CLEANING

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.



Software Version Check & Upgrade

Upgrade software

1.Downloading the software form Philips support website
http://www.philips.com/support

2.Put in the Software CD Disc or USB,when it is loading,
the TV screen showing as below:

```
Upgrade File detected
Upgrade?
Press PLAY to start
Upgrading
```

Waiting half to one minute,till the TV screen showing disappear.
Turnoff electrical source and reopen.

3.Press SYSTEM on the remote open menu, press Left or Right to select “Preference Page”, TV screen showing as below:

```
--Preference Page--
  TV type          PAL
  Audio            CHI      English
  Subtitle         CHI      French
  Disc menu        CHI      Spanish
  Parental                  Chinese
                            Japanese
  Default                   Korean
                            Russian
                            Tjai
```

Press Up or Down to select “Default” on remote, Press OK to exit reset.
Software upgrade finish.

Software check

Input password “811502” on remote, TV screen showing as below:

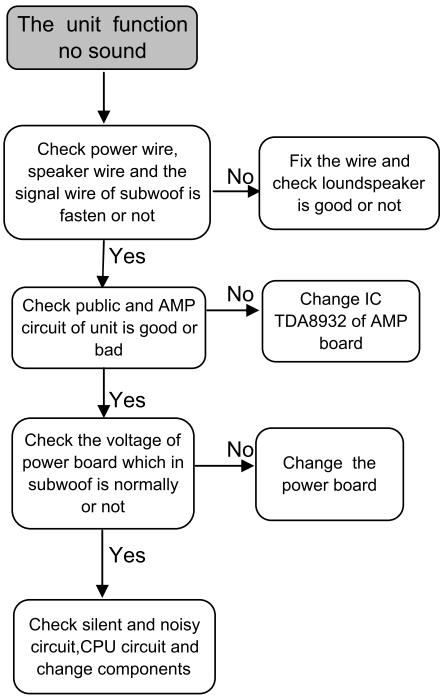
```
Ver :    MCD906 / xxxx
Date     mm    dd   yyyy
Time     hh : mm : ss
Region code   x
```

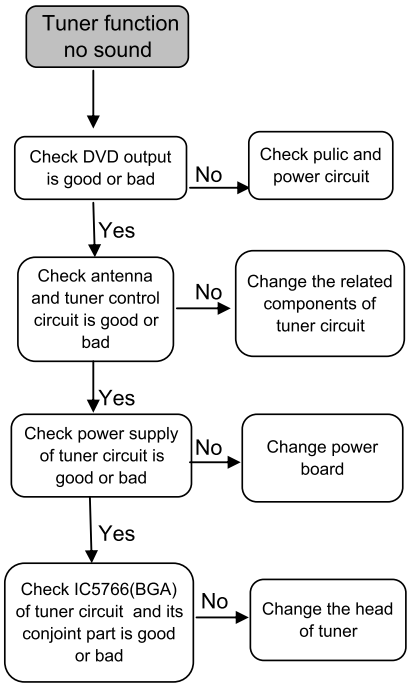
CPU version check

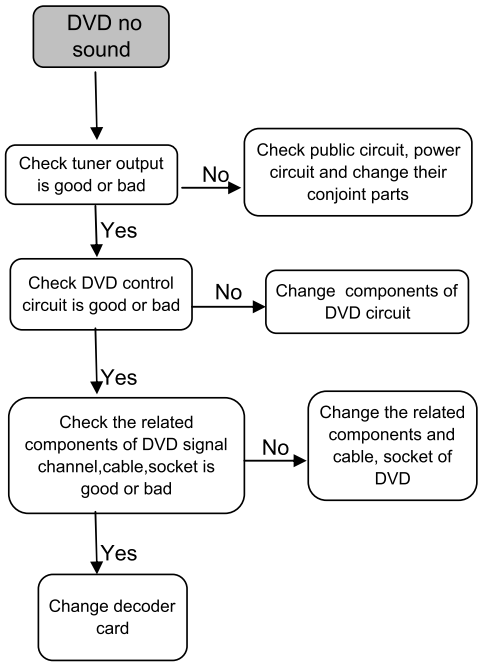
1.Keep press PLAY/PAUSE and STOP buttons,plug into the power cord at the same time,
TV showing as below:

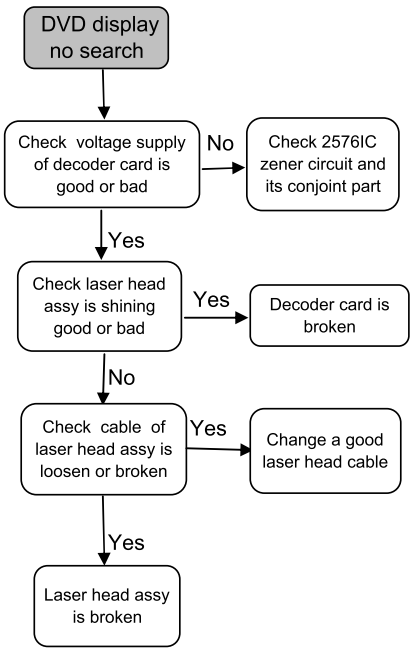
```
MCD906  Vxx
```

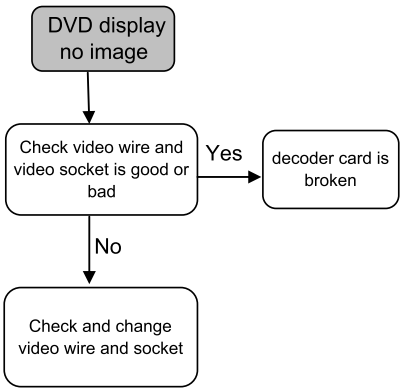
Malfunction follow check chart

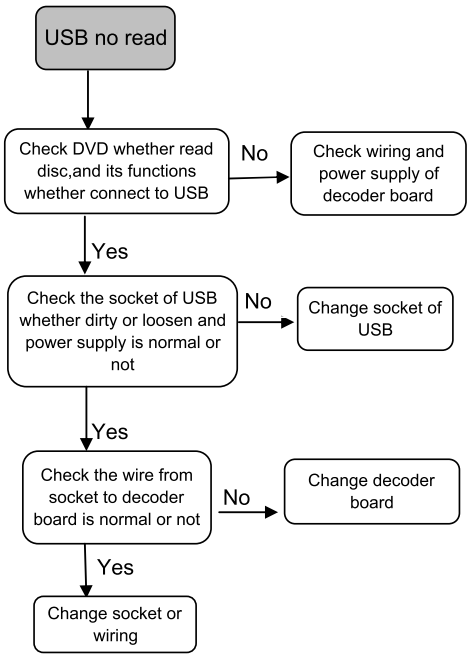






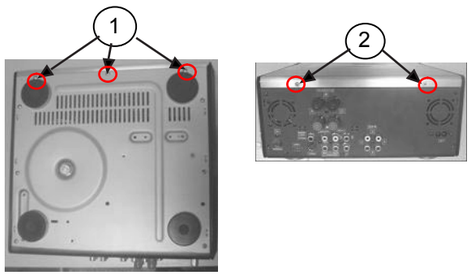




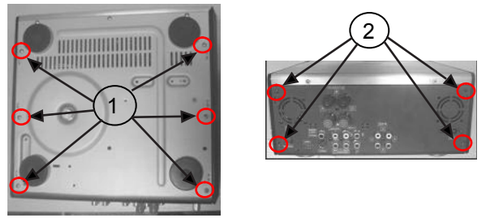


Disassembly Diagram

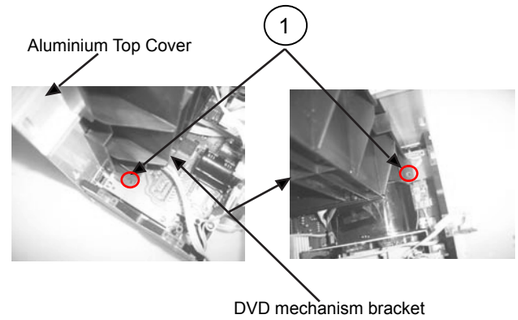
A,Loosen screws as below sketch map to
open the top cabinet:
1,screws:3x6BMTT(3PCS)
2,screws:3x6FMTT(2PCS)



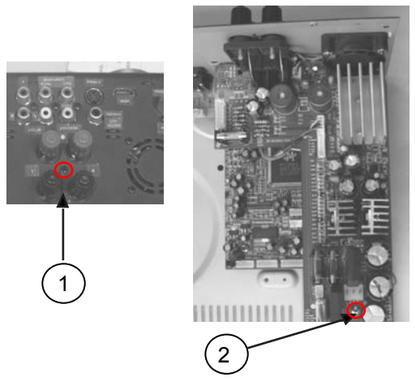
B,Loosen screws as below sketch map to
remove the both sides panels:
1,screws:3x6PA(6PCS)
2,screws:3x10PA(4PCS)



C,Loosen screws as below sketch map to
remove the DVD mechanism bracket:
1,screws:3x12BA(2PCS)
2,after loosed the screws, push the DVD mechanism bracket breadthwise to remove it

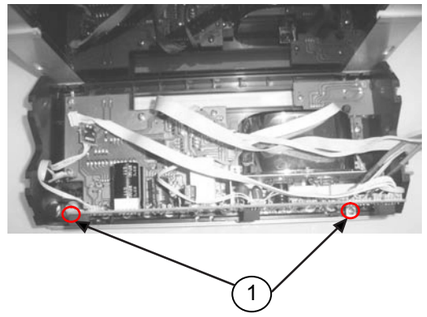


D,Loosen screws as below sketch map to
remove AMP board:
1,screws:3x10PA(1PC)
2,screws:3x10PA(4PCS)

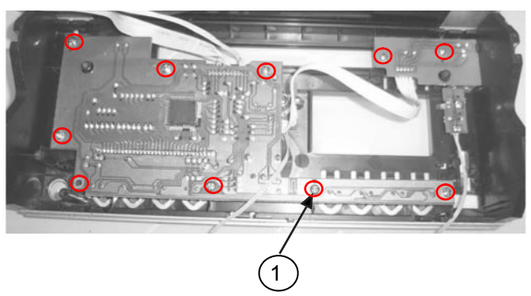


E,Loosen screws as below sketch map to
remove the Decoder Board:
1,screws:3x10PA(3PCS)
2,screws:3x6BM(2PCS)

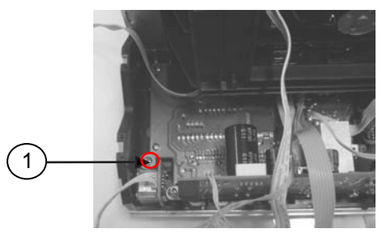
F,Loosen screws as below sketch map to
remove the Prepositive Board:
1,screws:3x6PA(2PCS)



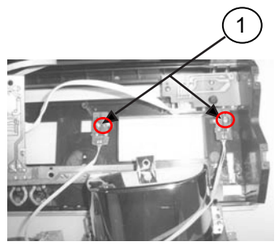
G,Loosen screws as below sketch map to
remove the Display Board:
1,screws:2.6x6BB(10PCS)



H,Loosen screws as below sketch map to
remove the USB Board:
1,screws:3x6PA(1PC)

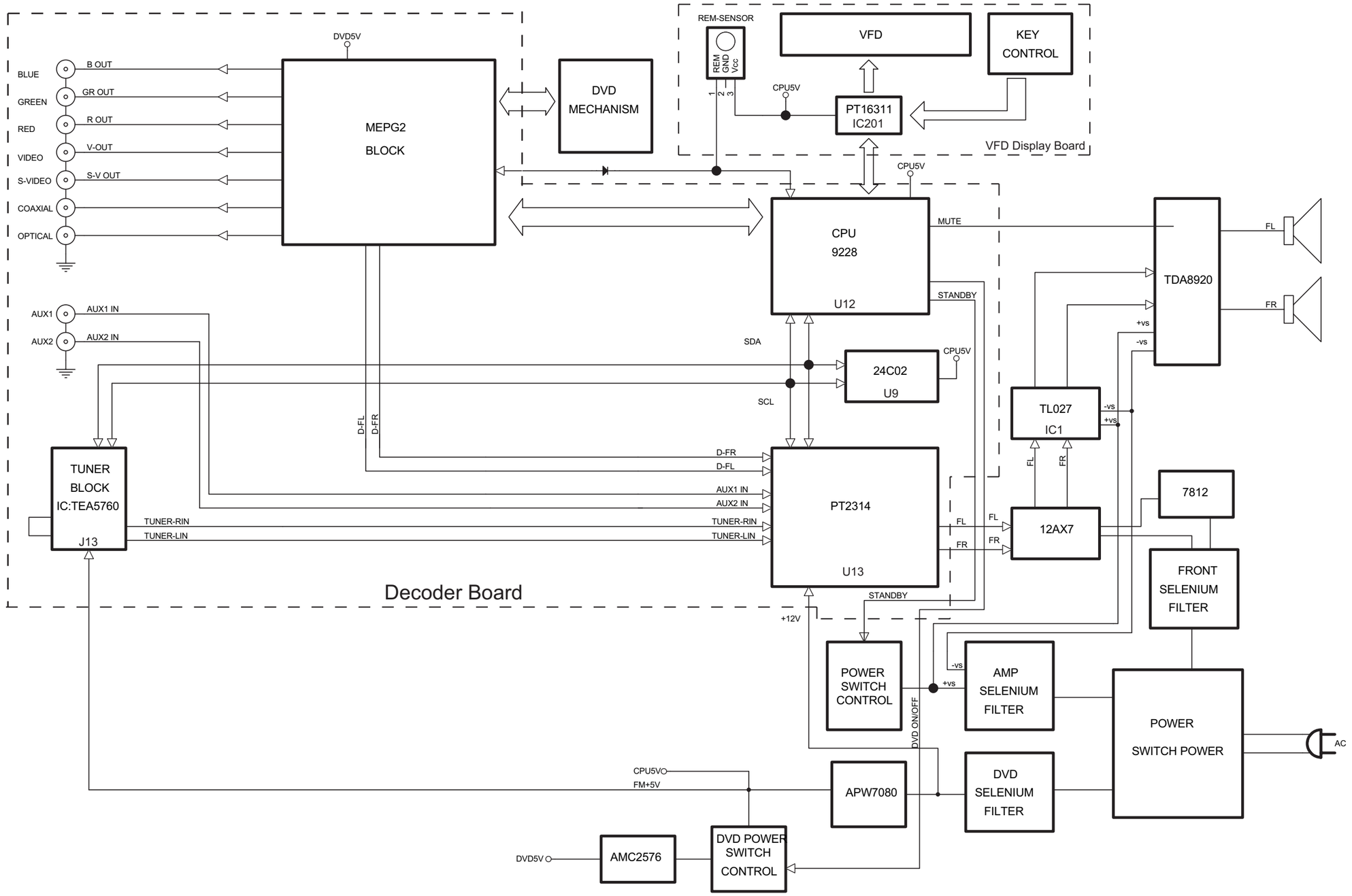


I,Loosen screws as below sketch map to
remove the LAMP Board:
1,screws:2.6x4BB(2PCS)



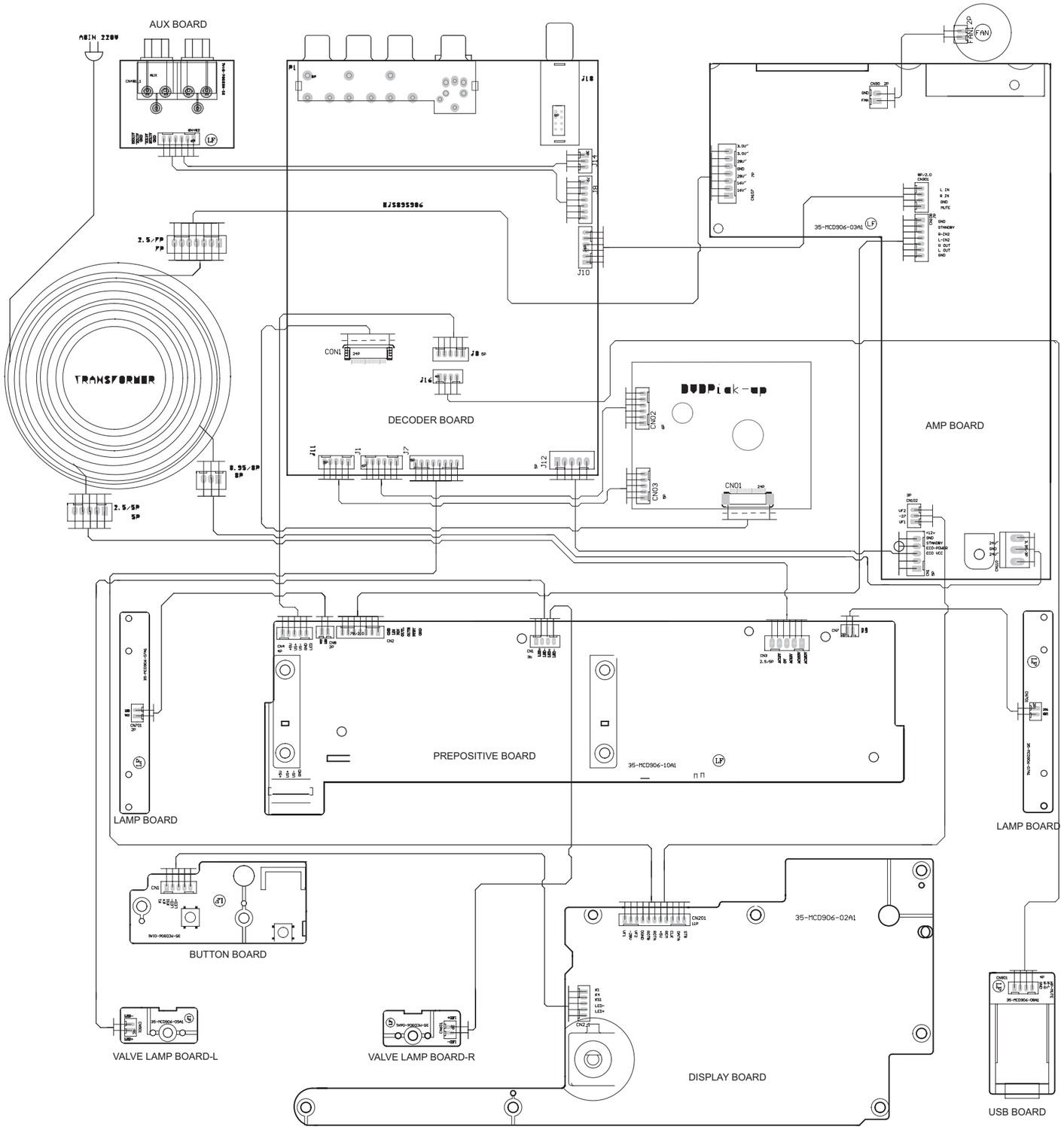
4-1

Block Diagram



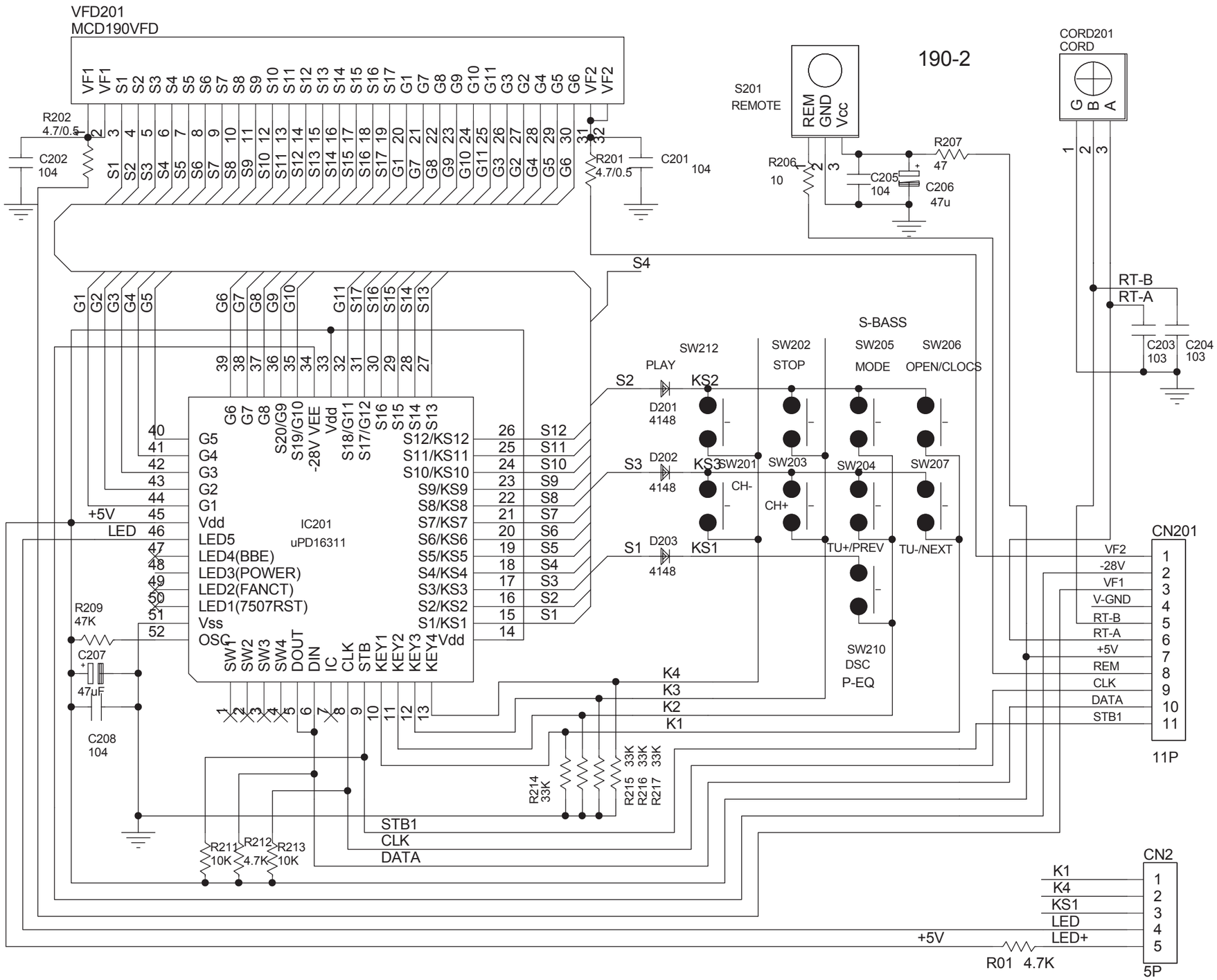
4-2

Wiring Diagram



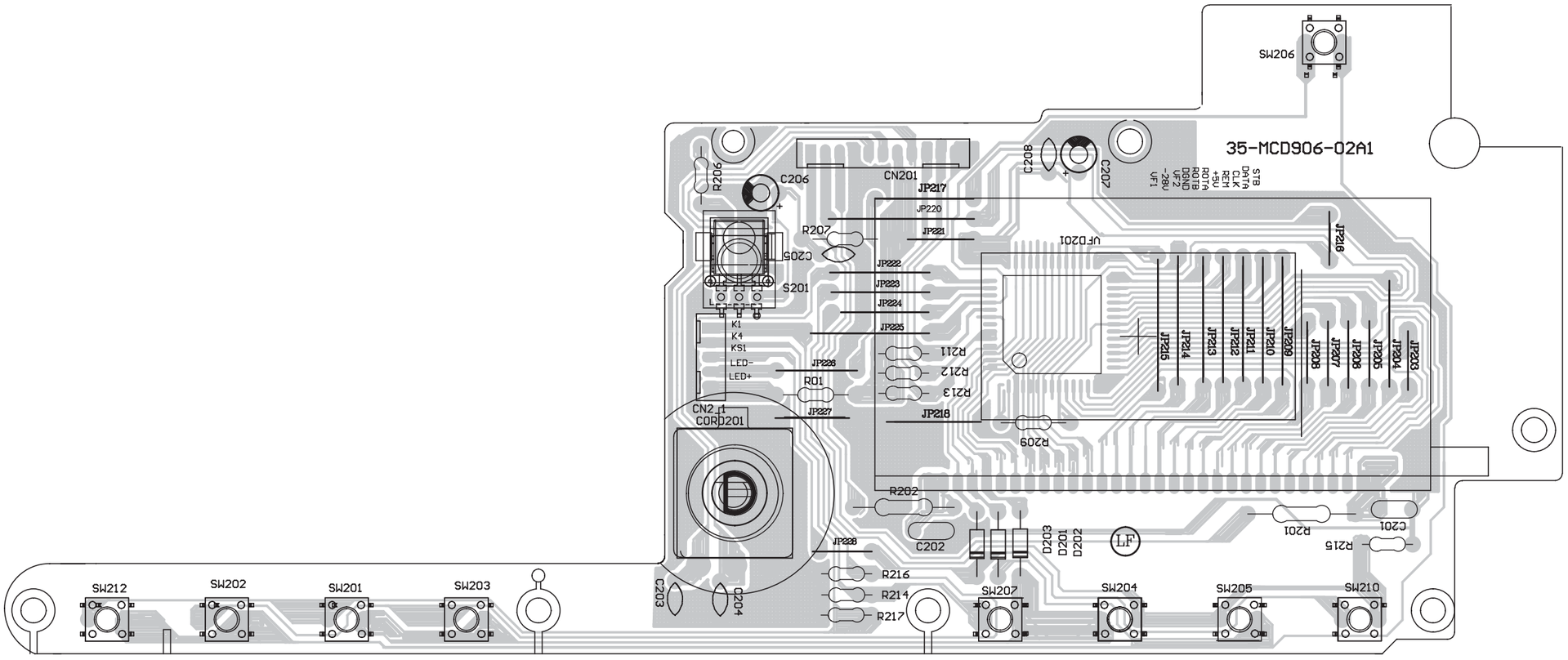
5-1

VFD Display Board --Circuit Diagram



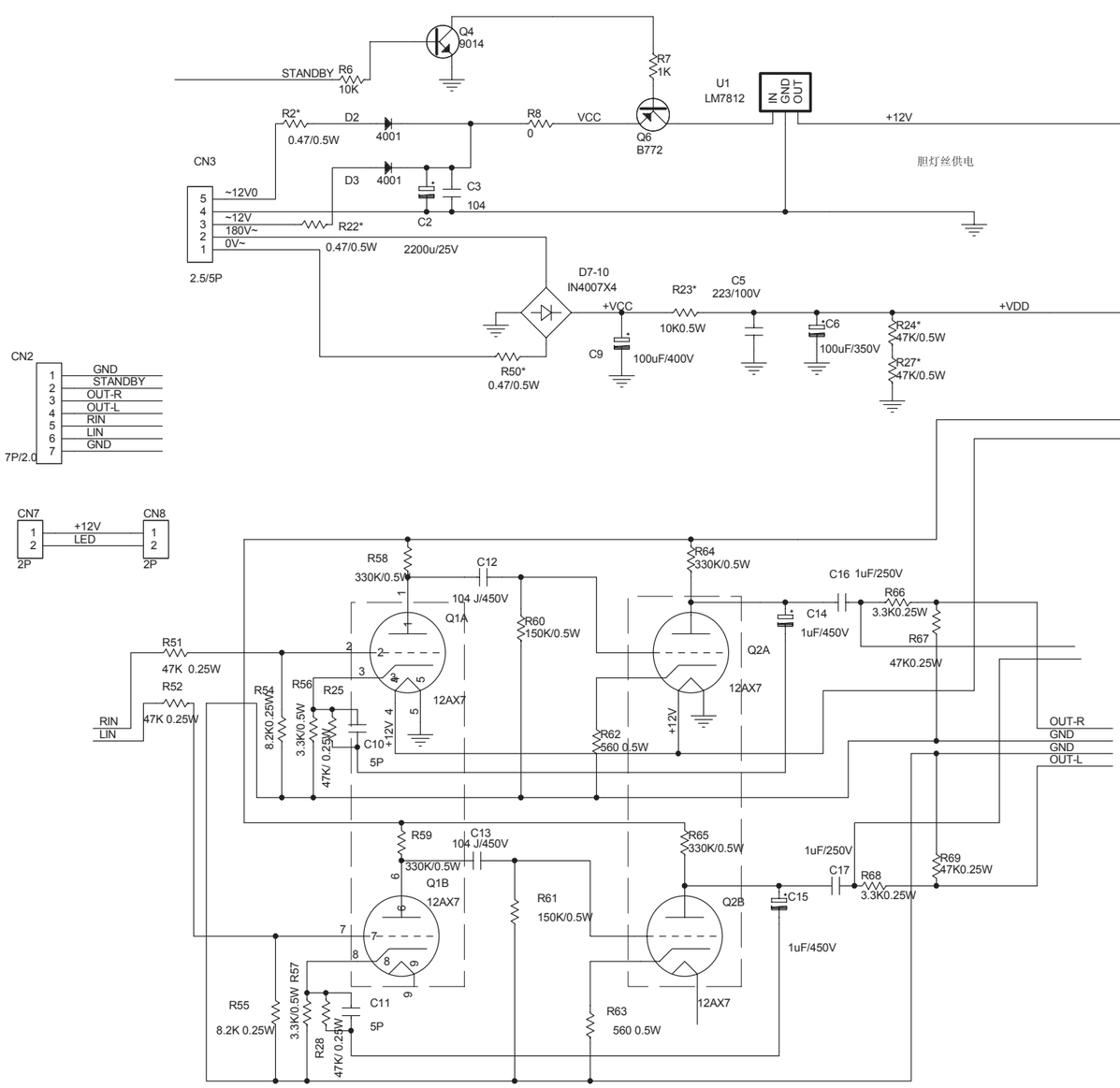
5-2

VFD Display Board--Layout Diagram



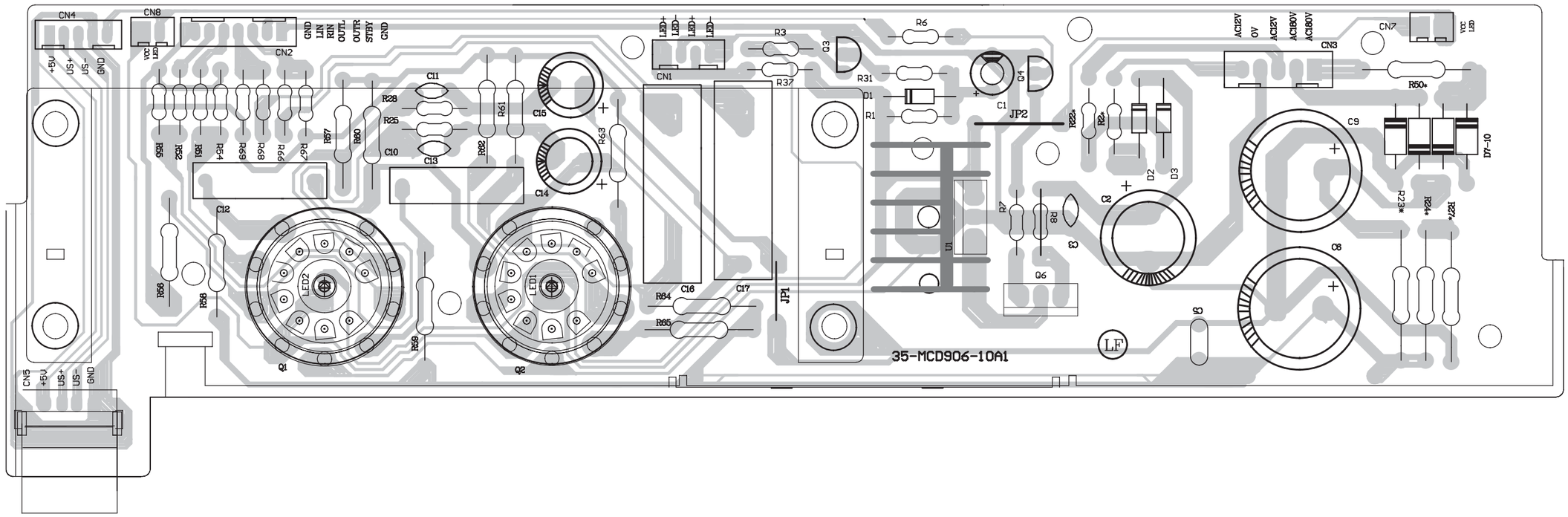
6-1

Prepositive Board -- Circuit Diagram



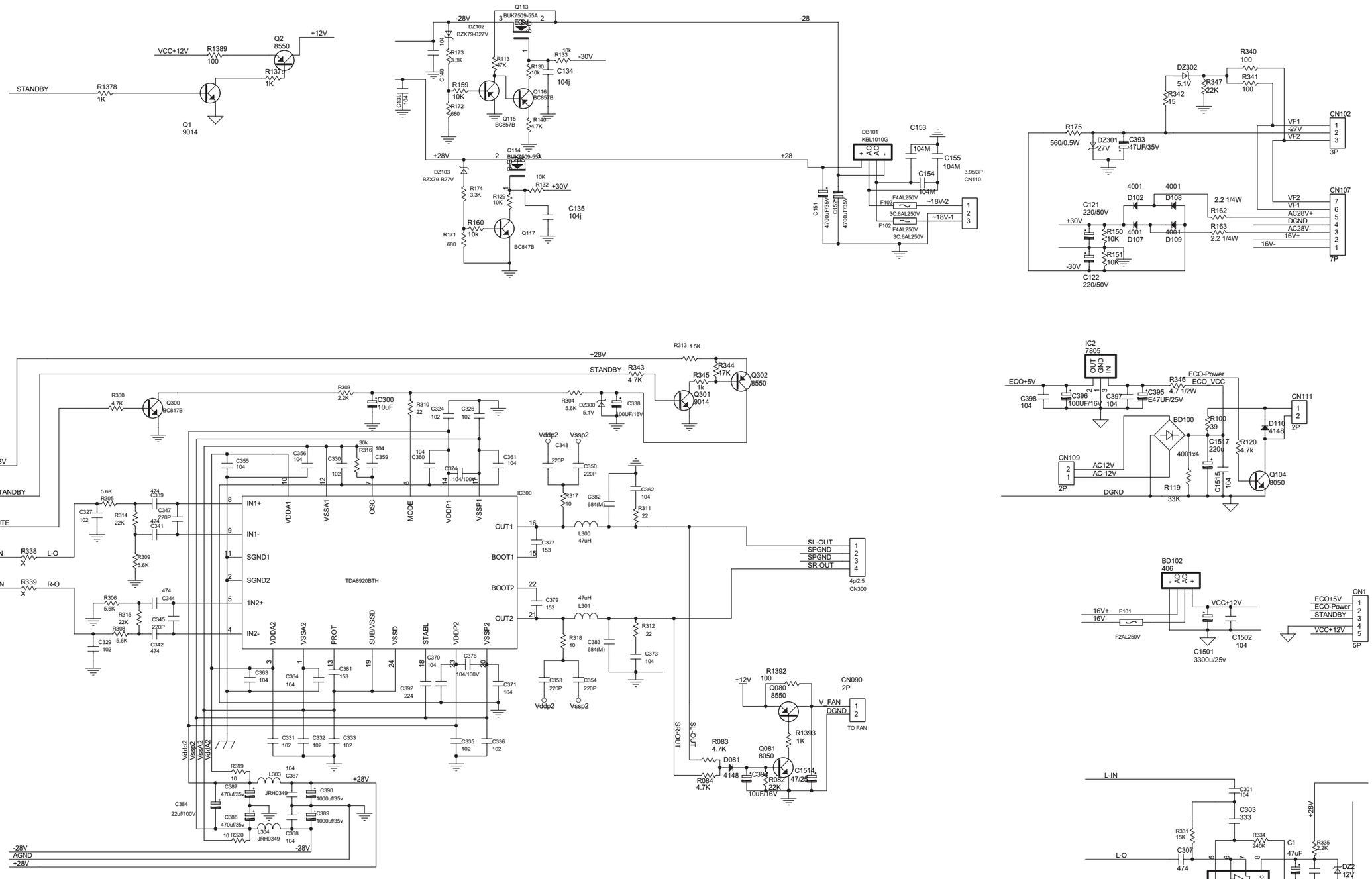
6-2

Prepositive Board--Layout Diagram

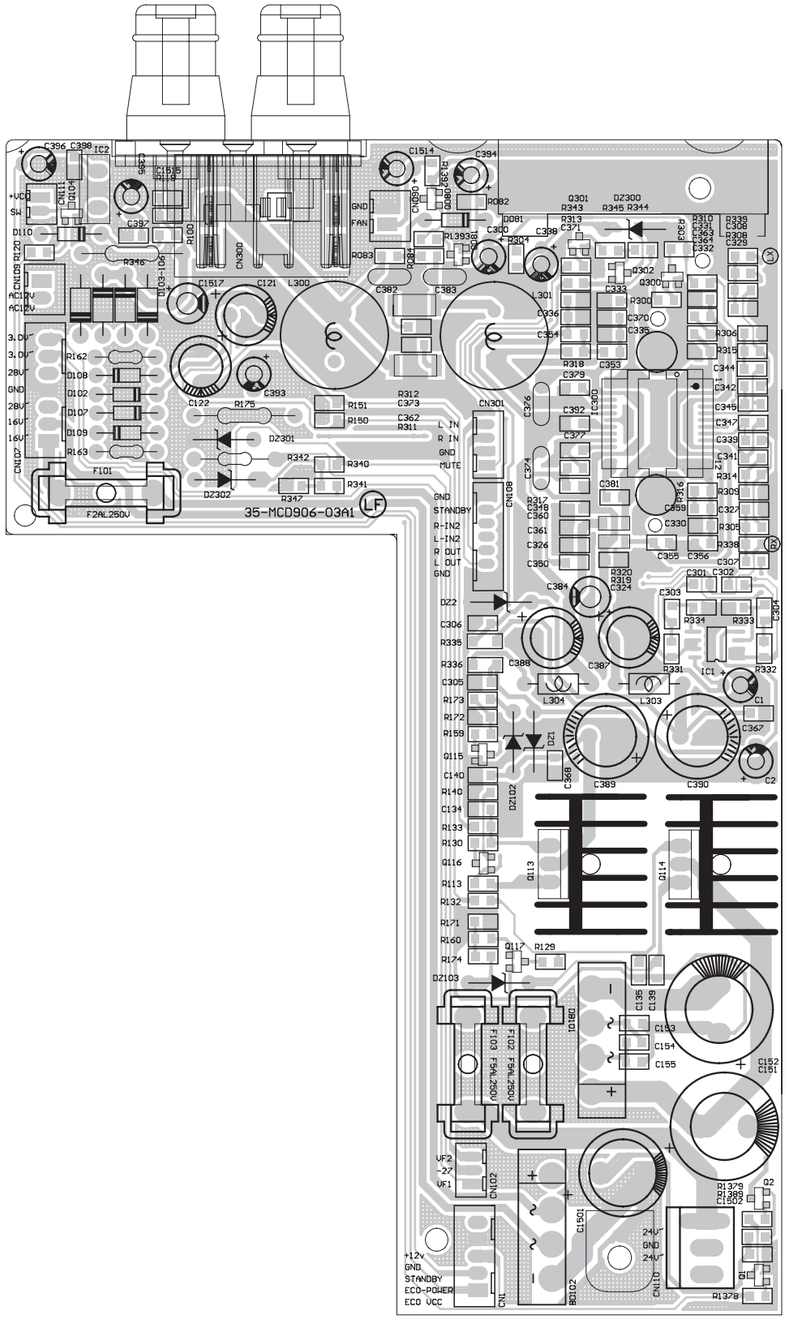


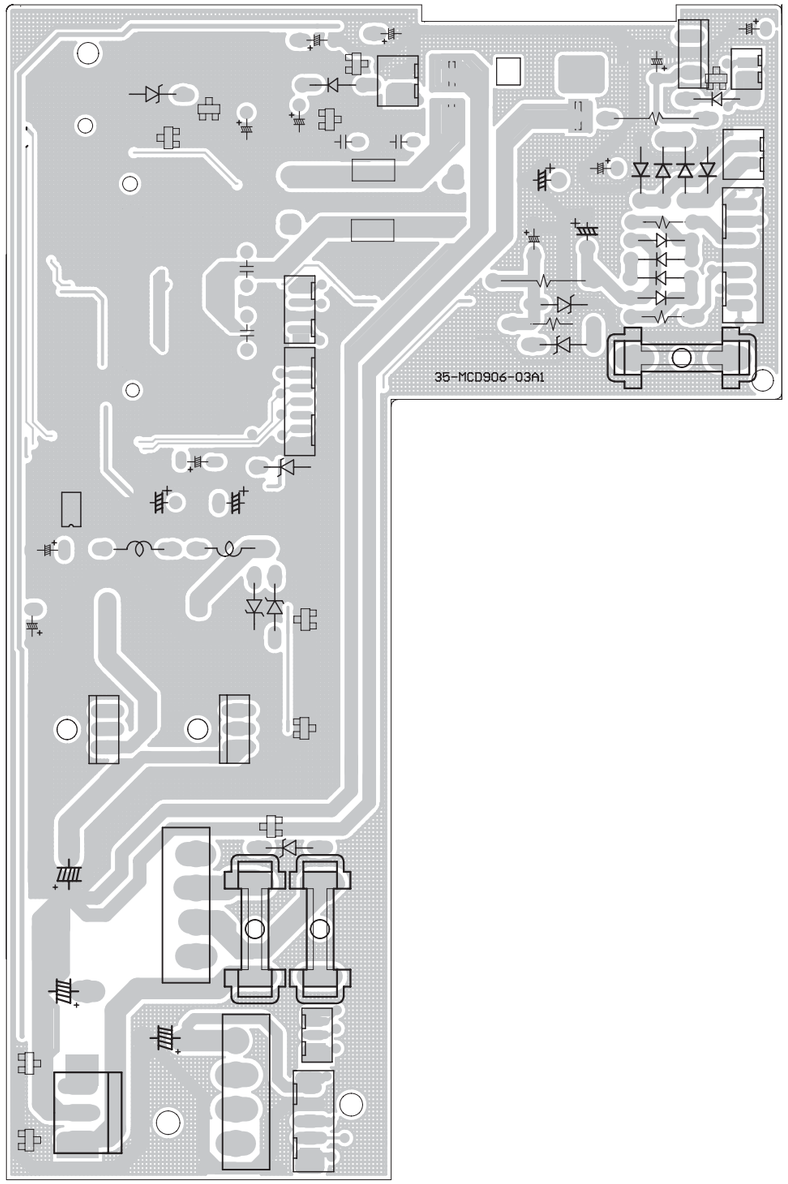
7-1

AMP Board --Circuit Diagram



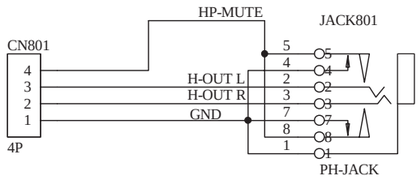
AMP Board --Layout Diagram

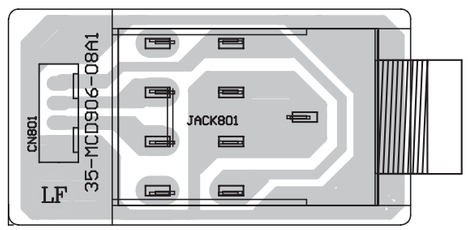




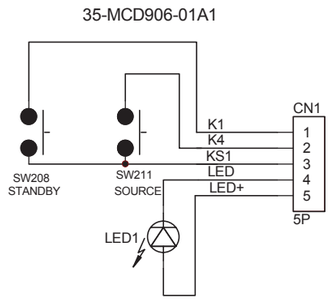
Headphone, Button & AUX Board Diagram

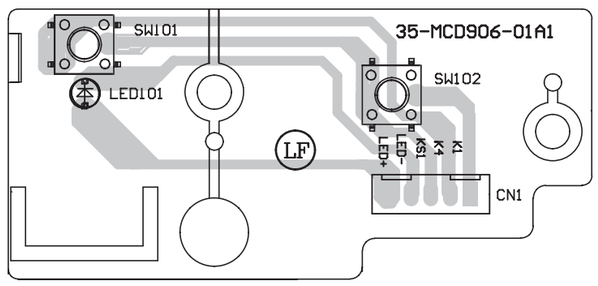
Headphone Board



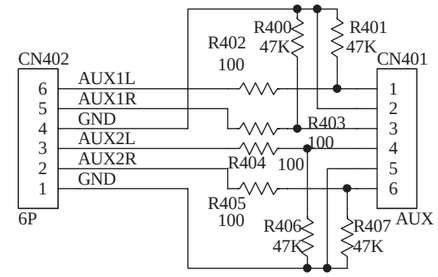


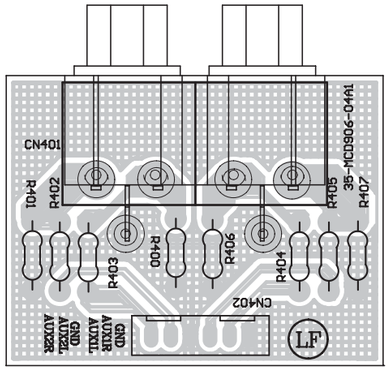
Button Board





AUX Board

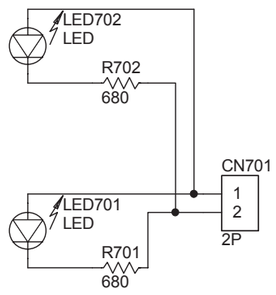




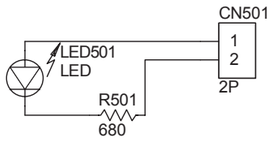
9-1

Lamp Board Diagram

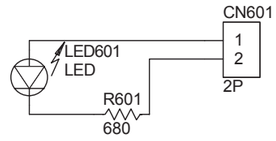
LAMP BOARD

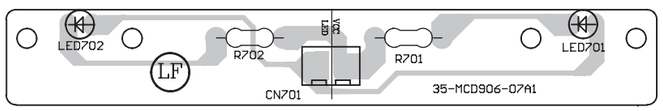


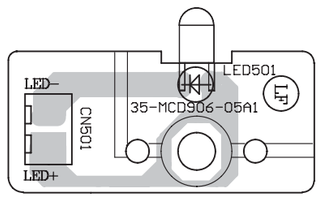
VALVE LAMP BOARD-L

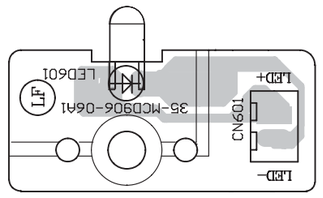


VALVE LAMP BOARD-R



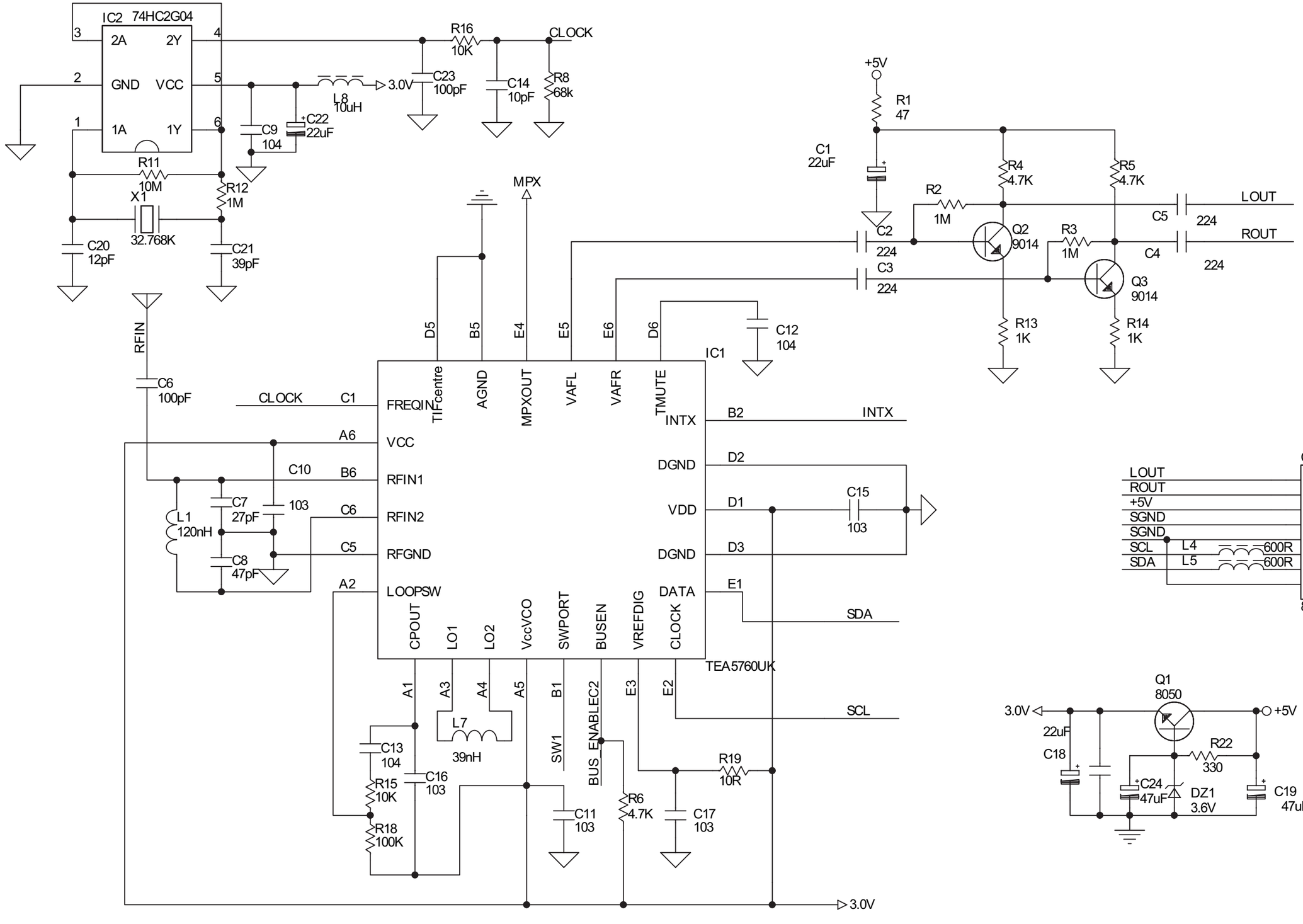






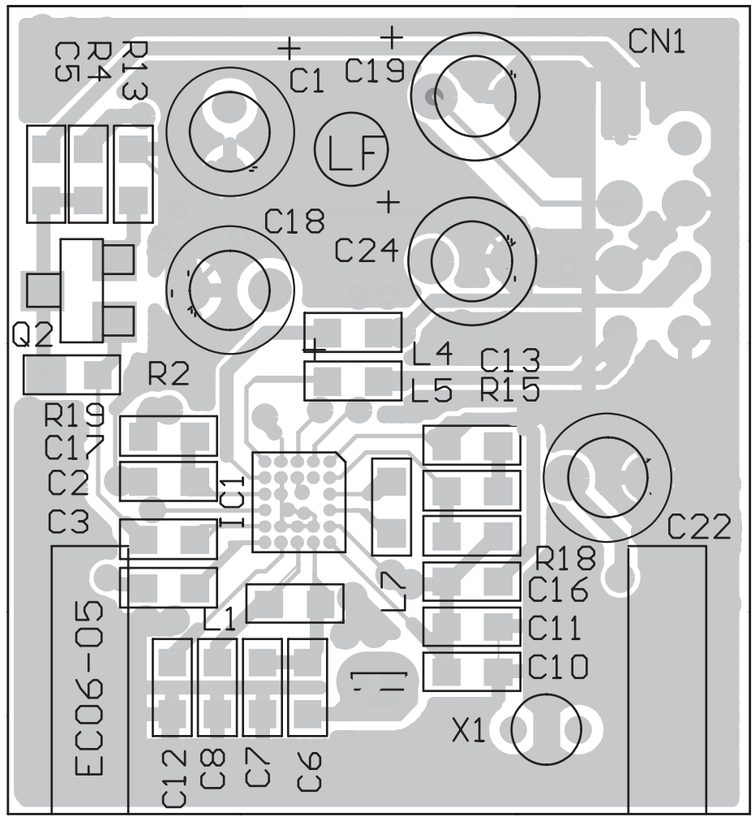
10 -1

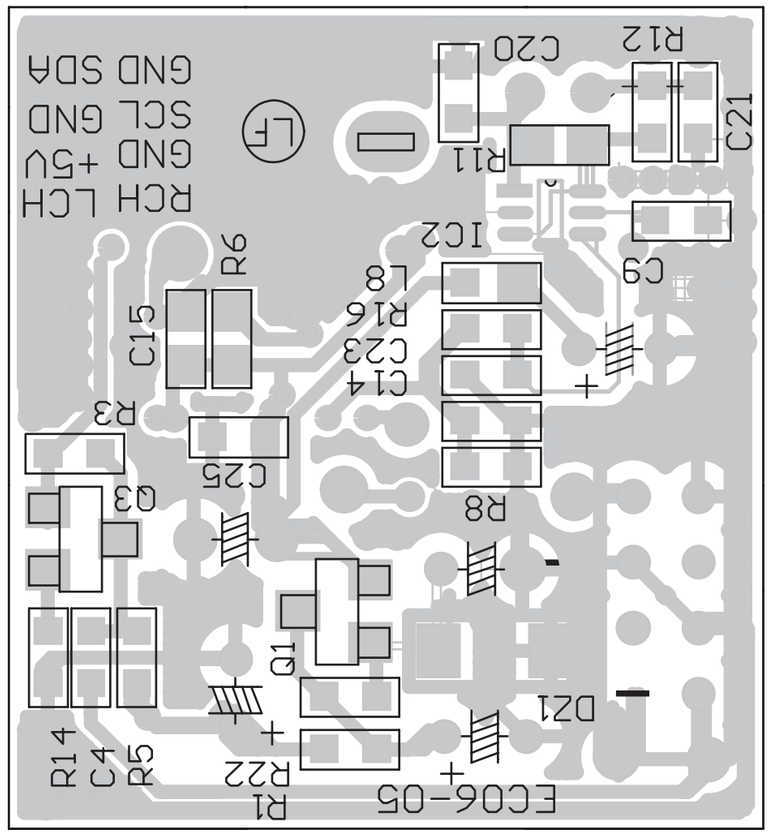
Tuner Board-Circuit Diagram



10-2

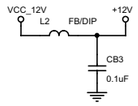
Tuner Board-Layout Diagram

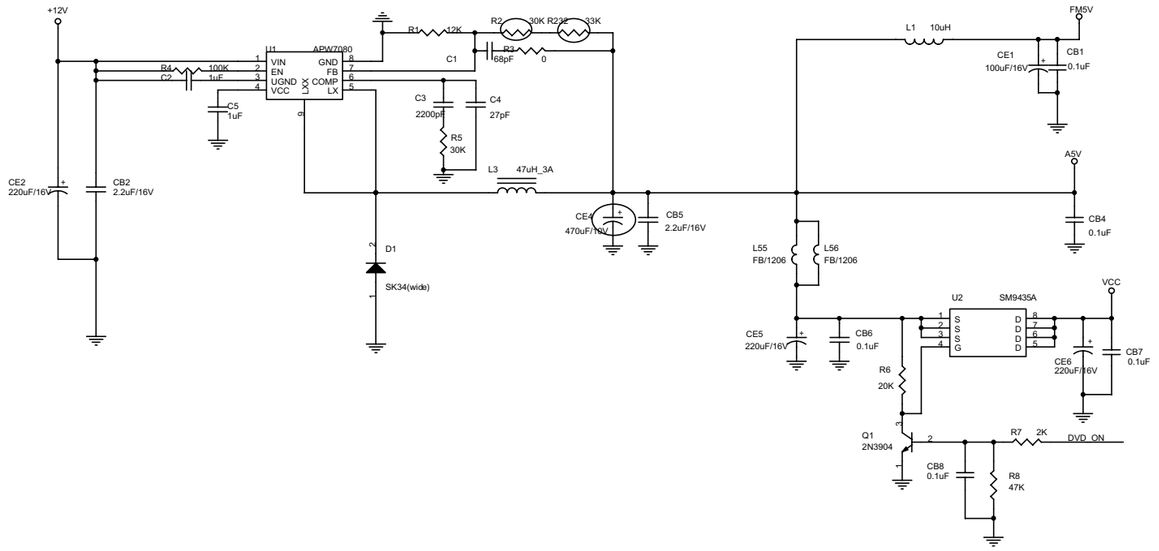


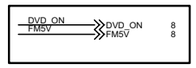


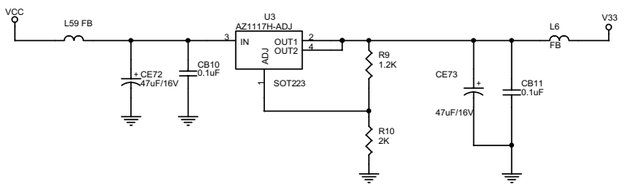
11-1

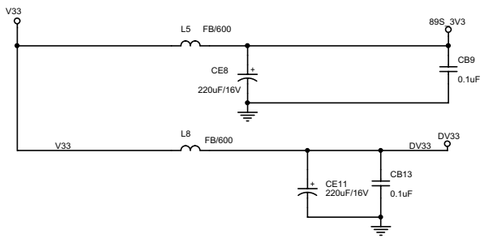
Decoder Board--Circuit Diagram

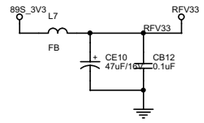


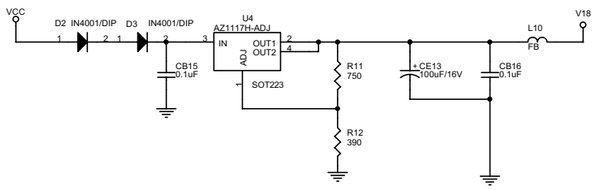


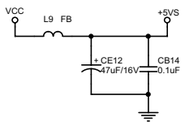


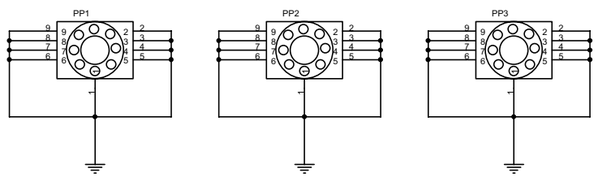






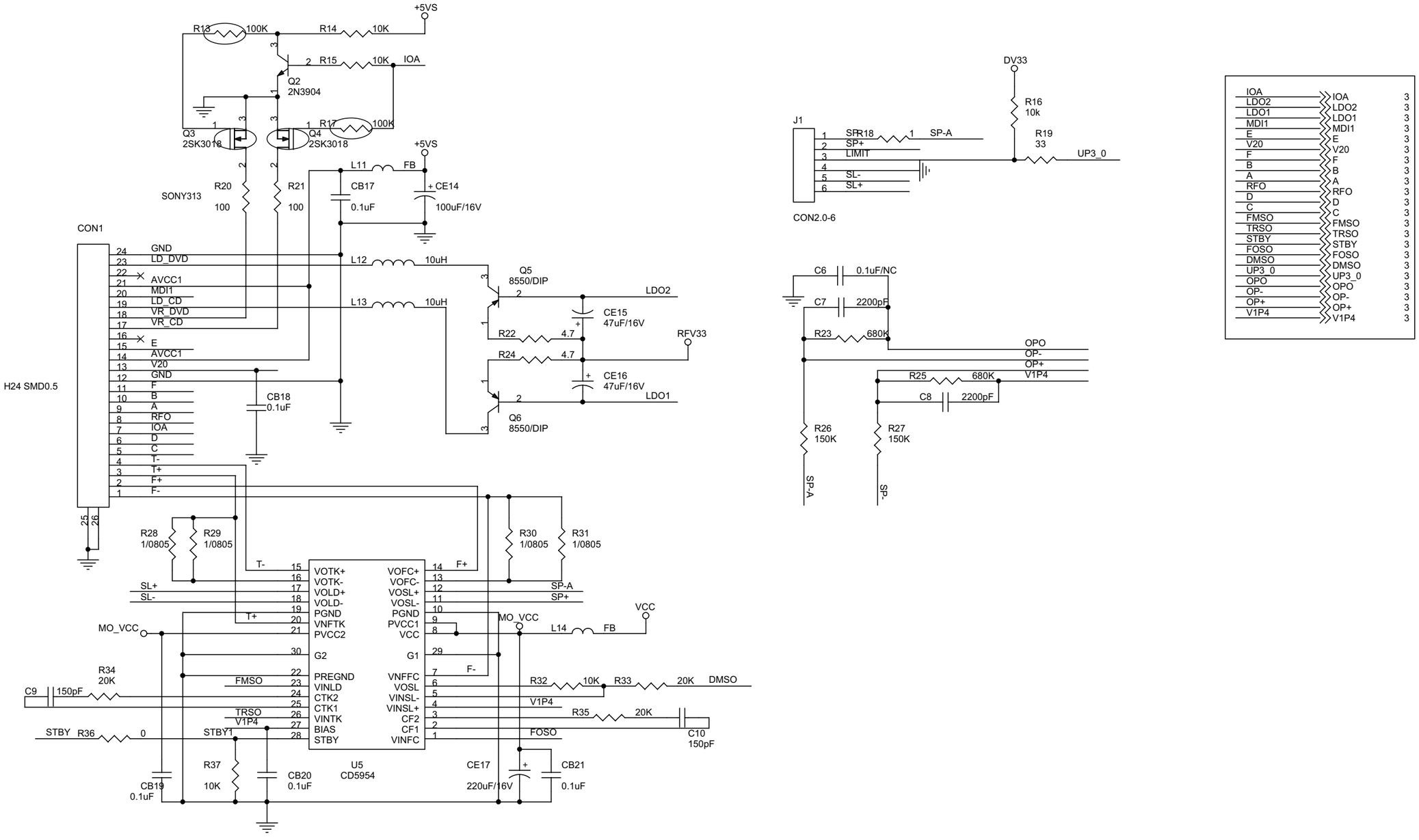






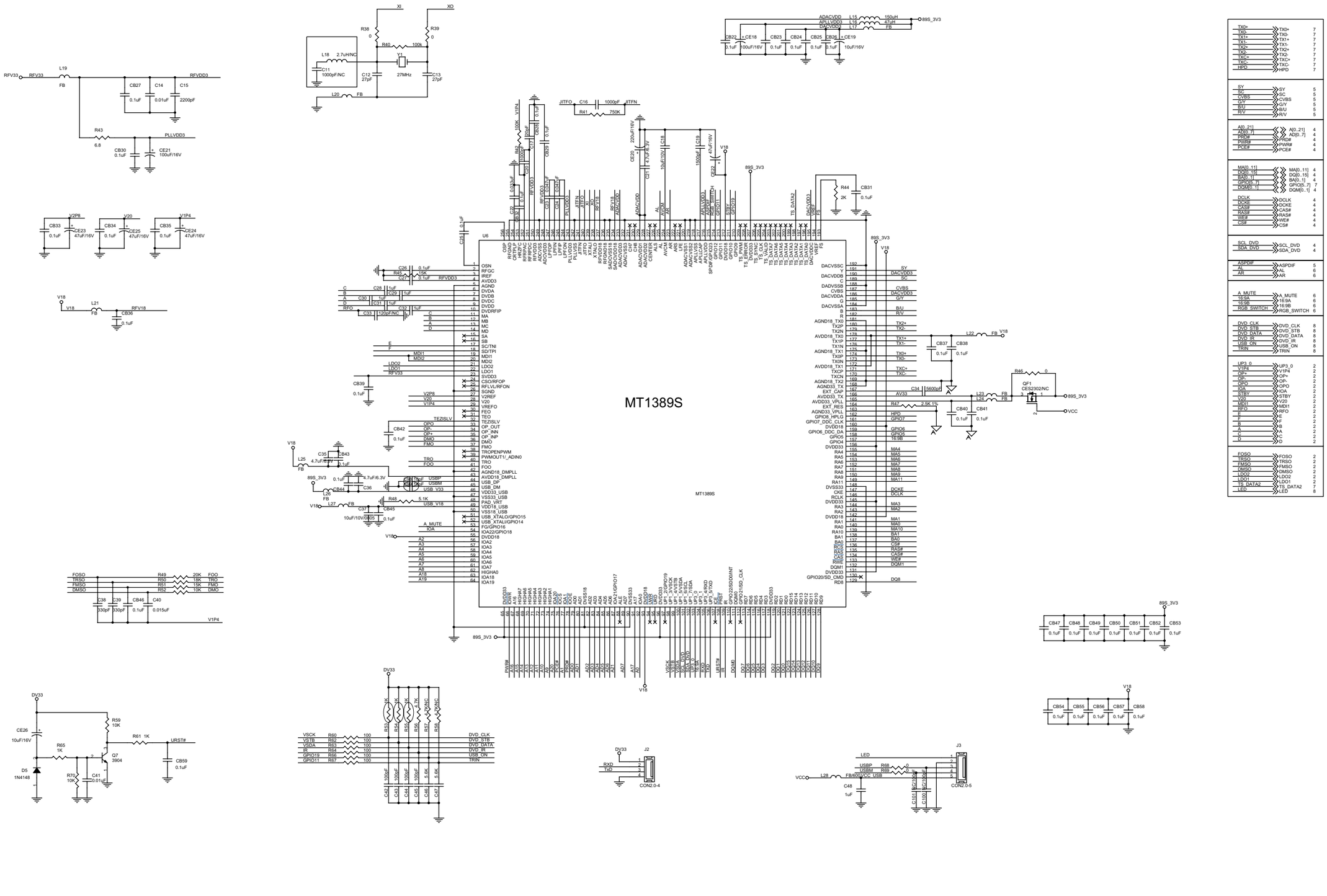
11-2

Decoder Board--Circuit Diagram



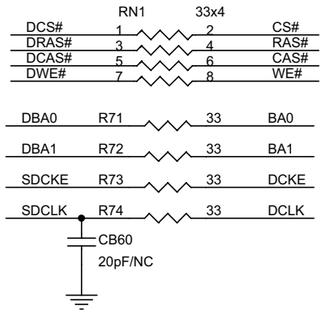
11-3

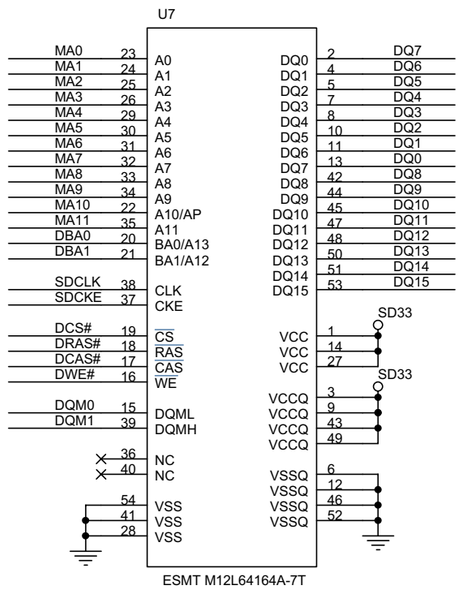
Decoder Board--Circuit Diagram

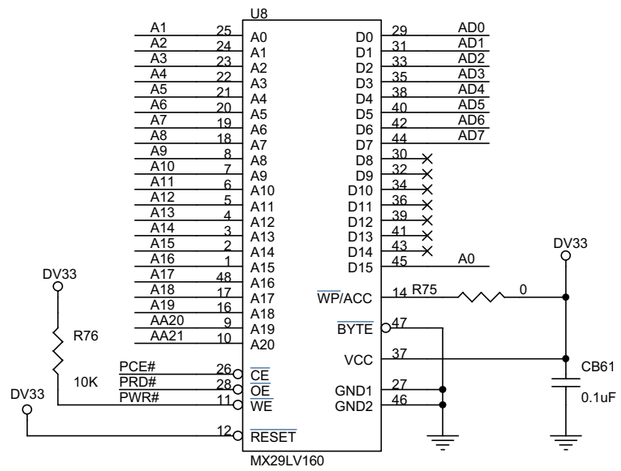


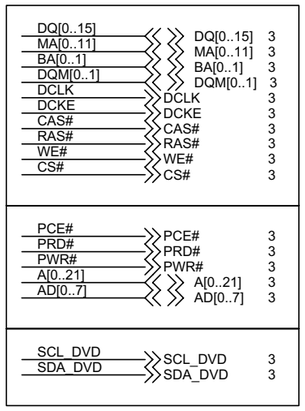
11-4

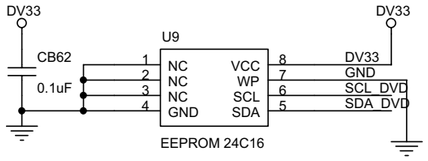
Decoder Board--Circuit Diagram

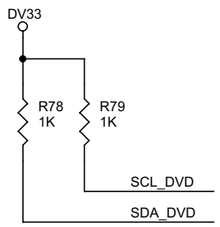










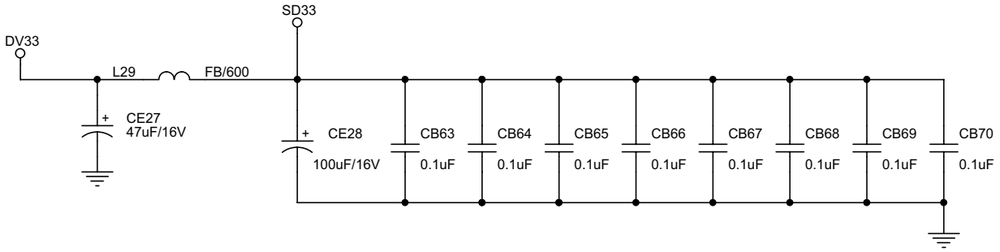


16 Mb FLASH

A20 R77 0 AA20

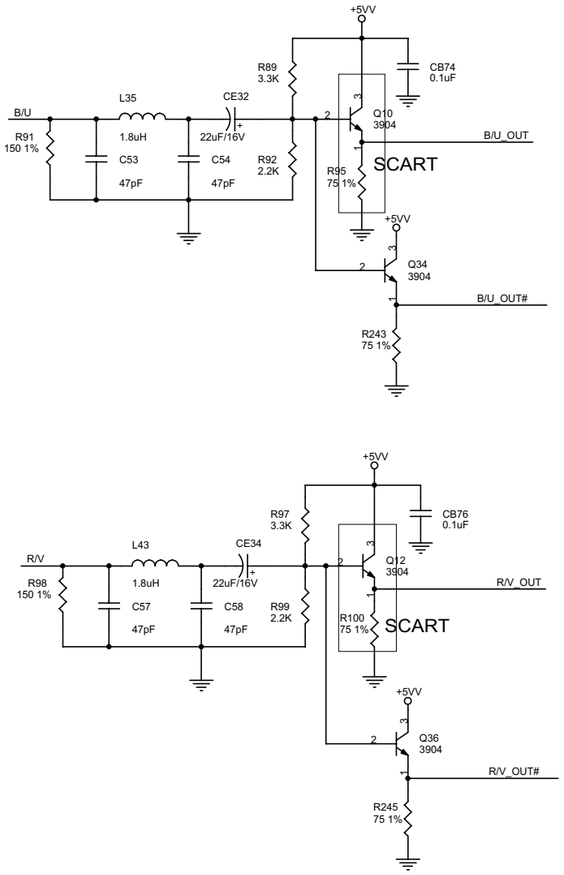
A21 R80 0/NC AA21

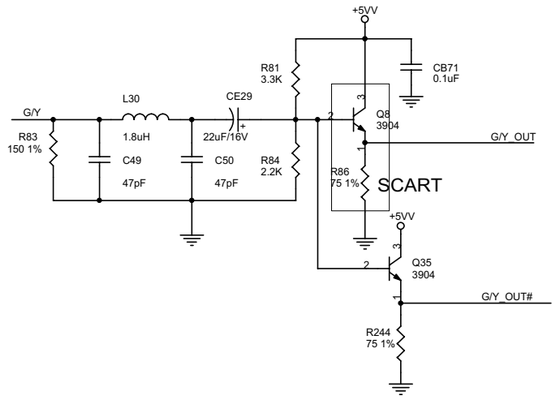
32 Mb FLASH

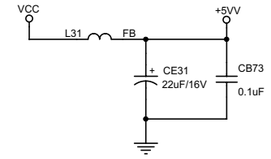


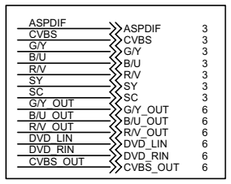
11-5

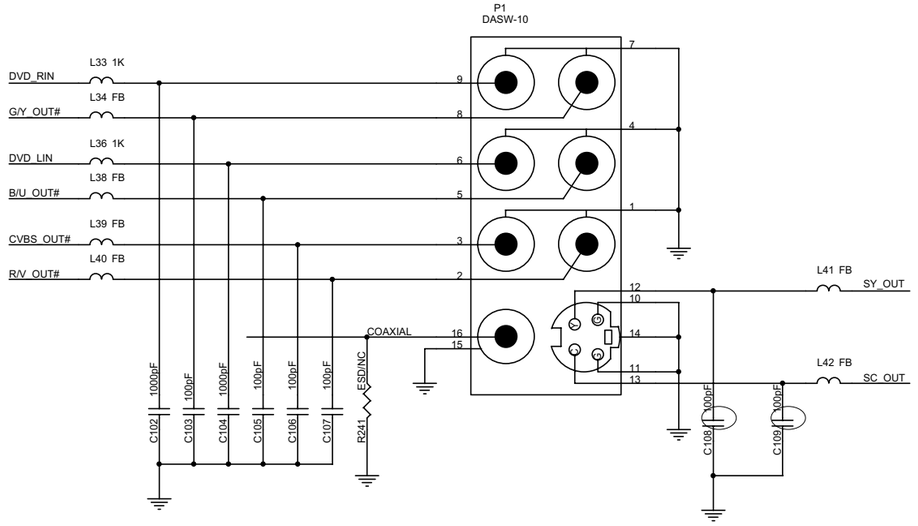
Decoder Board--Circuiit Diagram

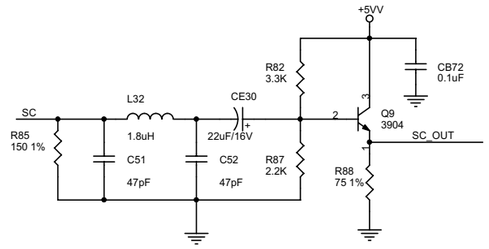


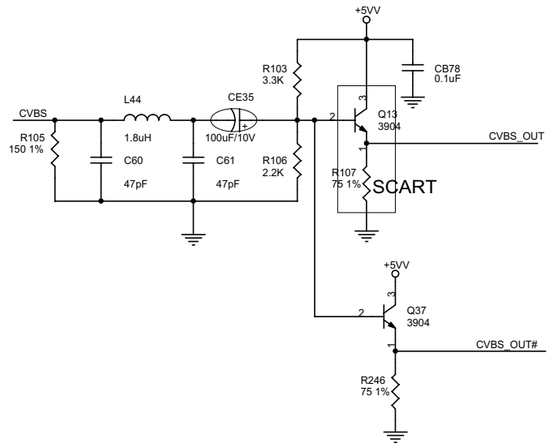


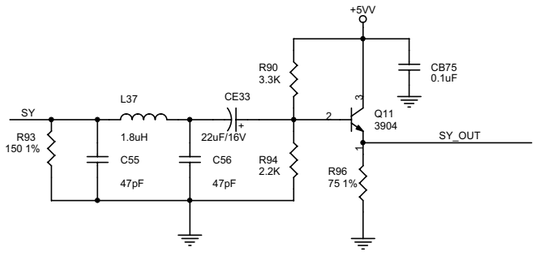


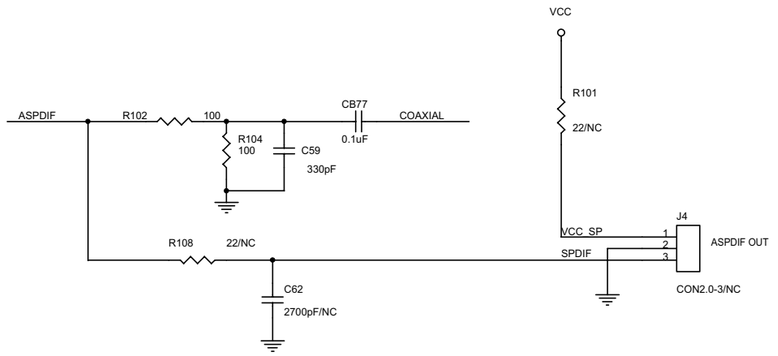






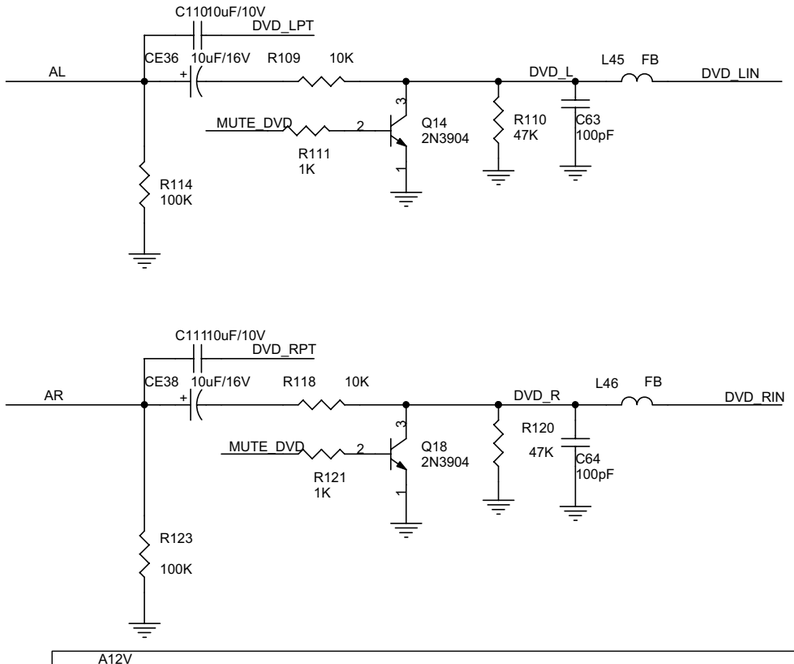


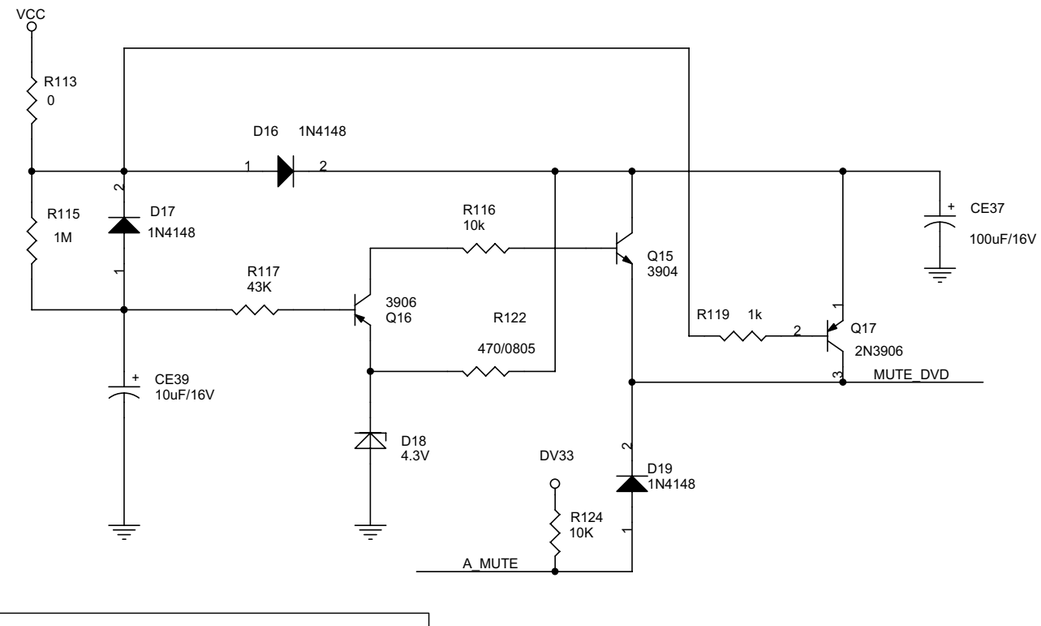


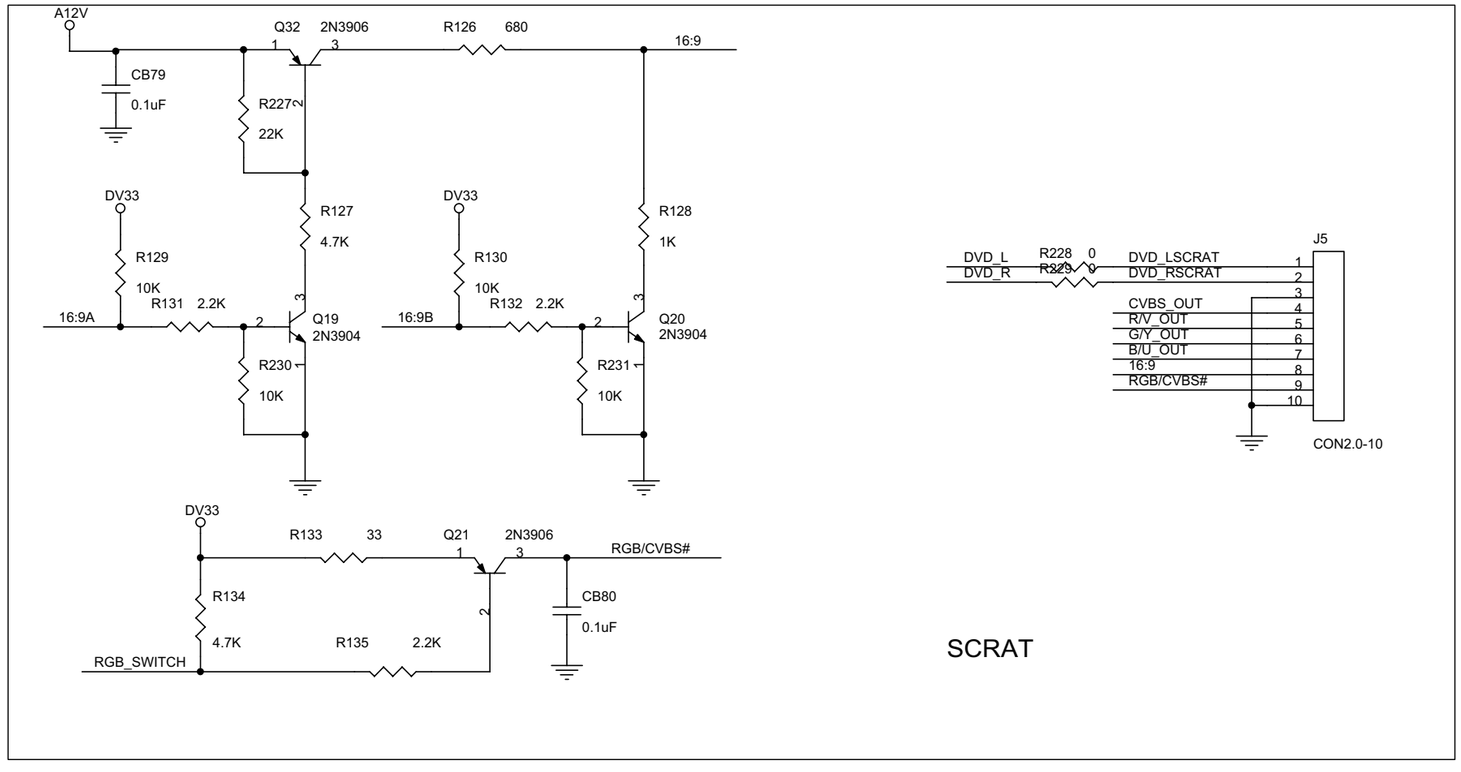


11-6

Decoder Board--Circuit Diagram



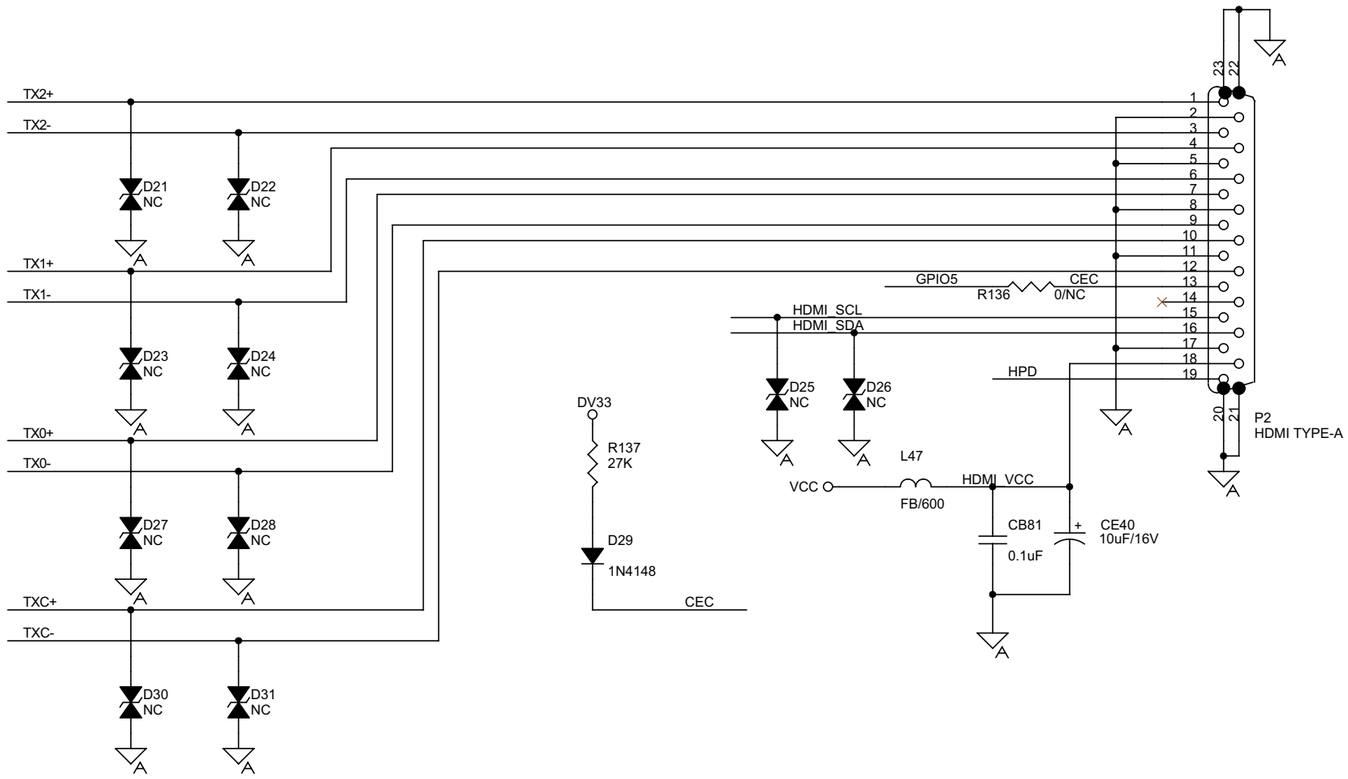


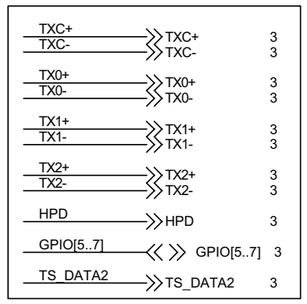


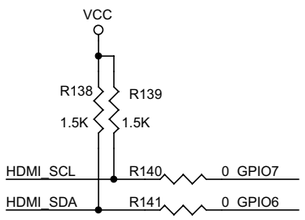
A_MUTE	A_MUTE	3
AL	AL	3
AR	AR	3
16:9A	16:9A	3
16:9B	16:9B	3
RGB_SWITCH	RGB_SWITCH	3
DVD_LIN	DVD_LIN	5
DVD_RIN	DVD_RIN	5
DVD_LPT	DVD_LPT	8
DVD_RPT	DVD_RPT	8
MUTE_DVD	MUTE_DVD	8
CVBS_OUT	CVBS_OUT	5
R/V_OUT	R/V_OUT	5
G/Y_OUT	G/Y_OUT	5
B/U_OUT	B/U_OUT	5

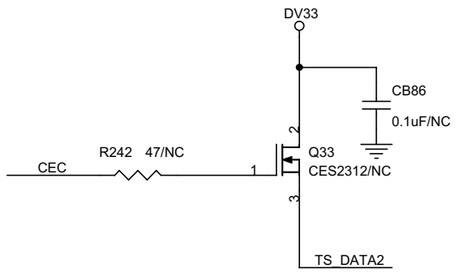
11-7

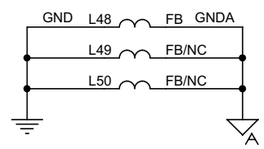
Decoder Board--Circuit Diagram





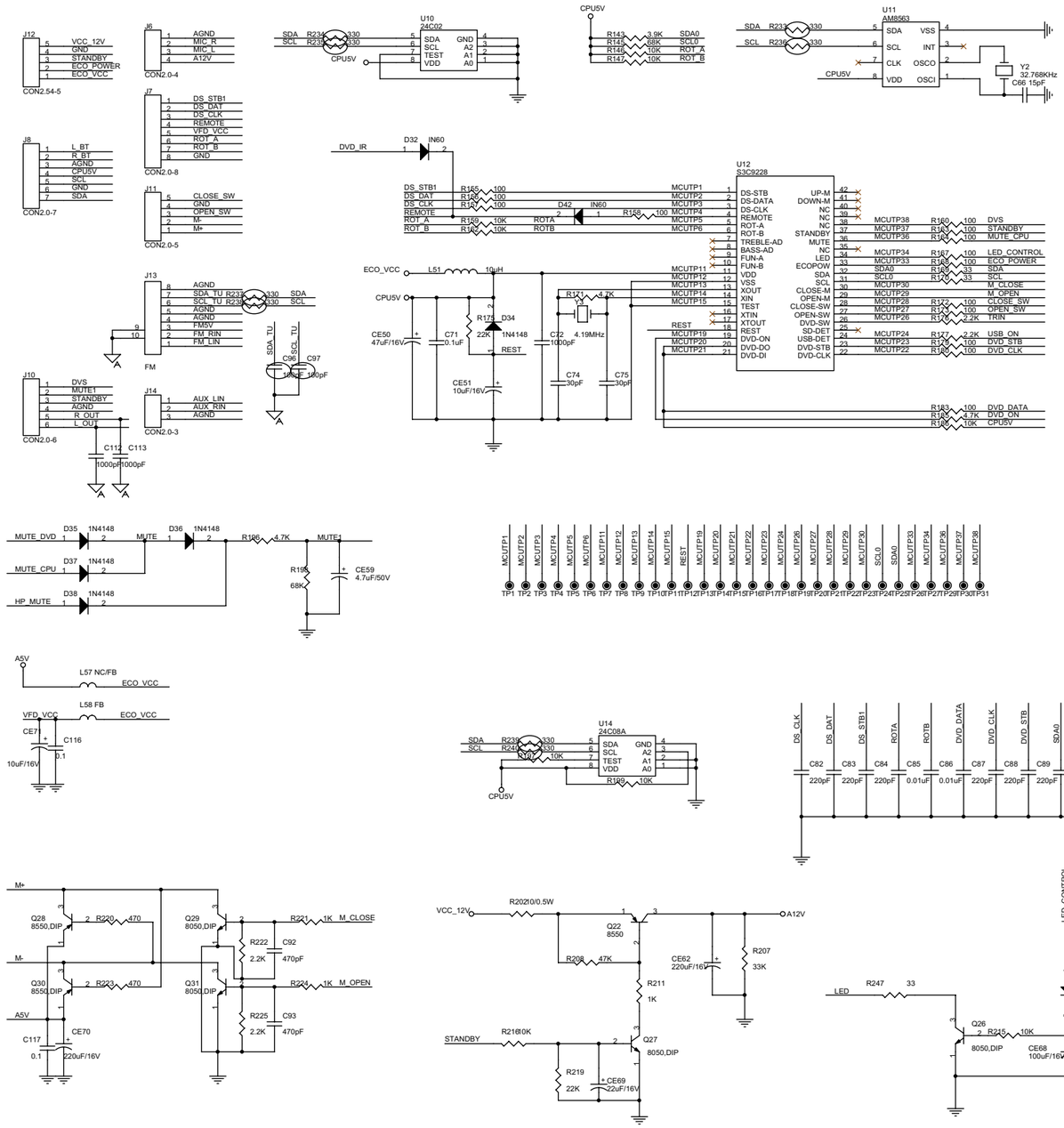


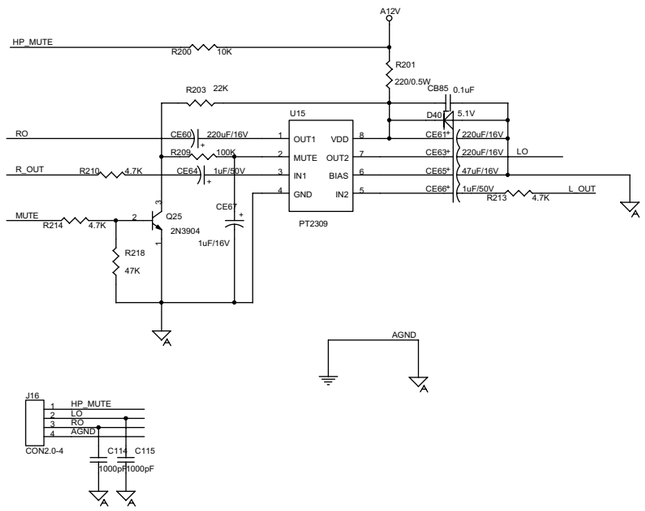


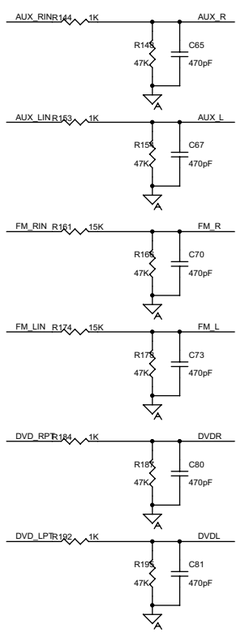


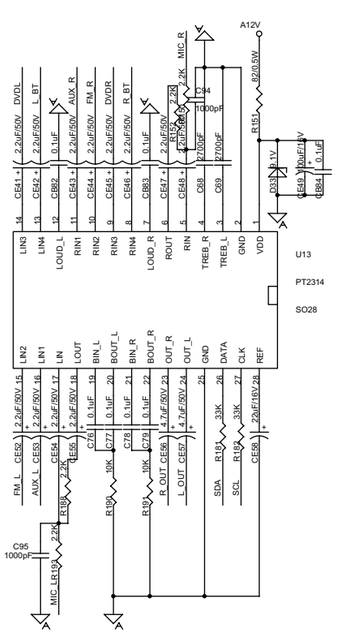
11-8

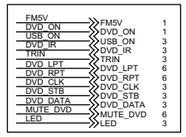
Decoder Board--Circuit Diagram





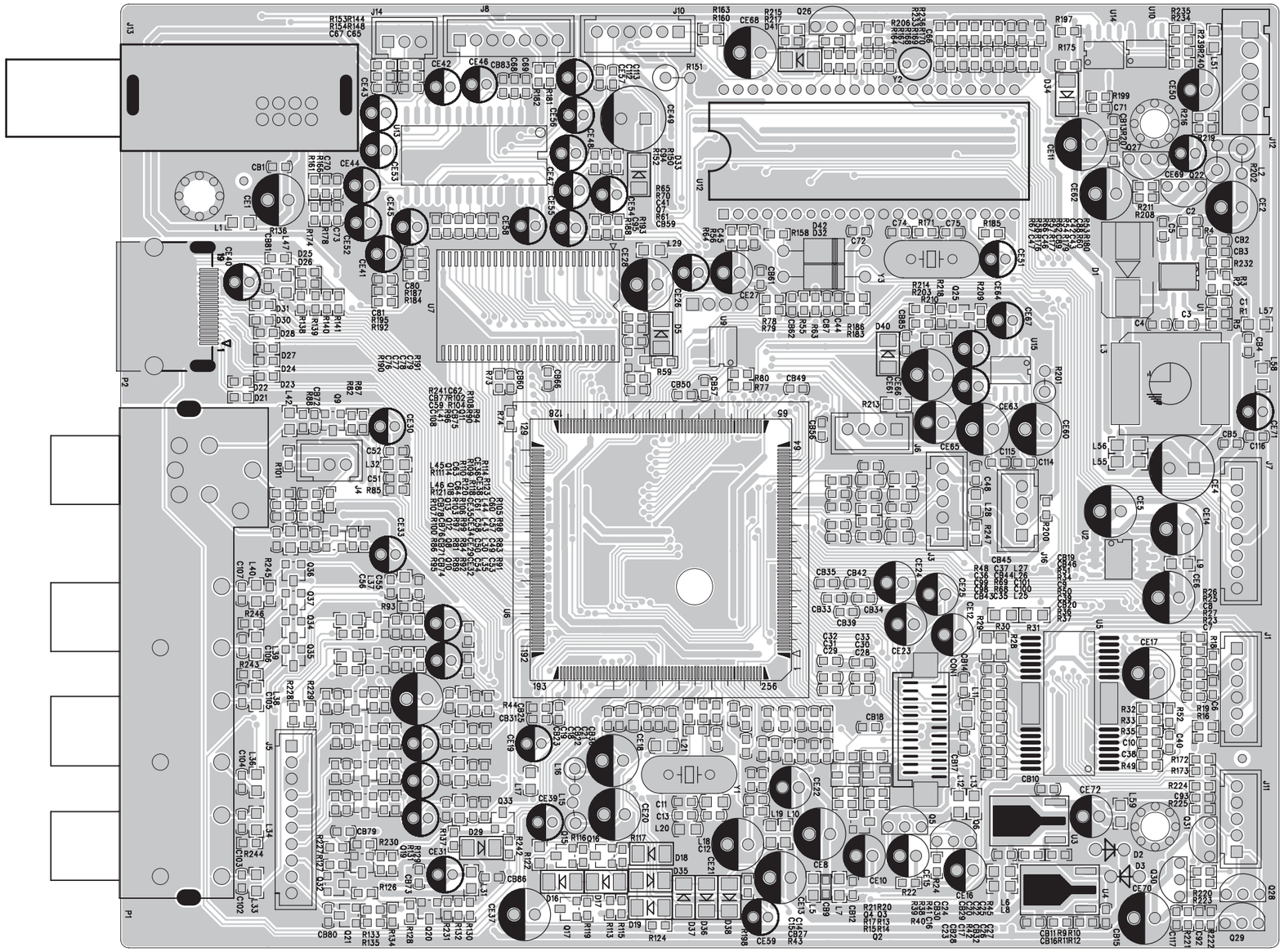






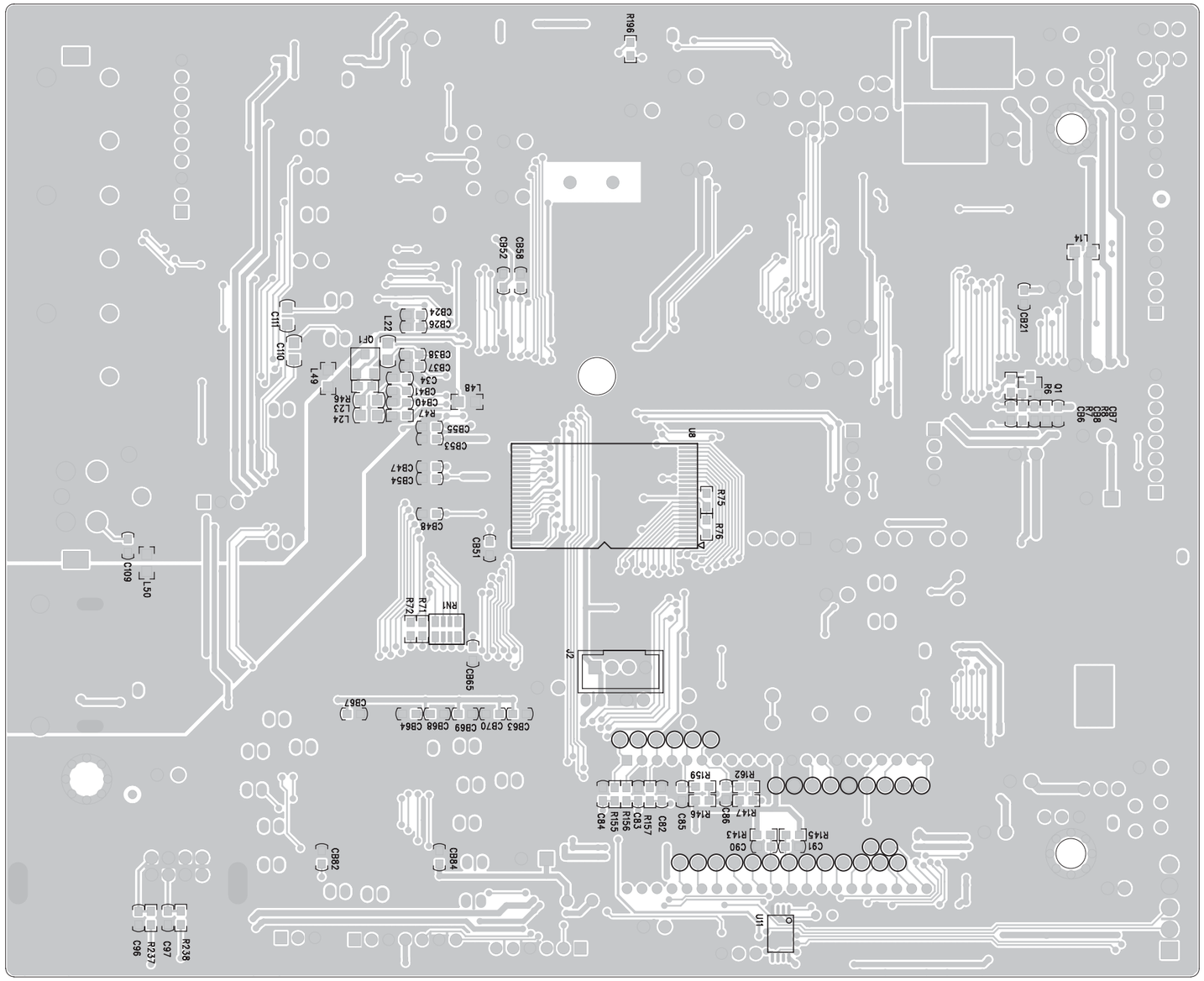
11-9

Decoder Board--Layout Diagram--TOP



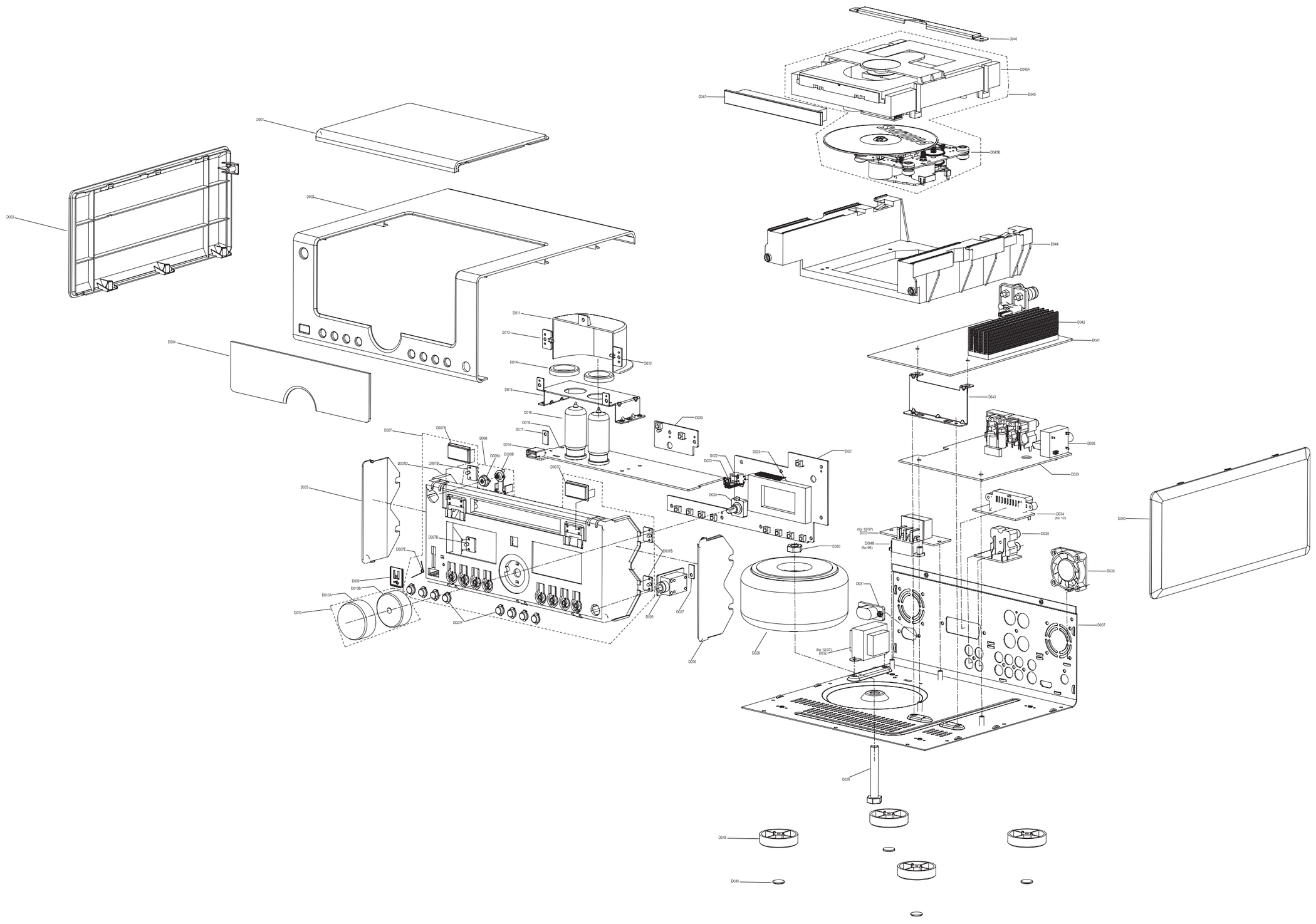
11-10

Decoder Board--Layout Diagram--Bottom



12-1

Explode View



ACCESSORIES PARTS LIST

996510018909	MCD906/98 SPEAKER BOX-L(/98)
996510017929	MCD906/93 SPEAKER BOX-L(/73/93)
996510018910	MCD906/98 SPEAKER BOX-R(/98)
996510017930	MCD906/93 SPEAKER BOX-R(/73/93)
996510017931	MCD906 REMOTE CONTROL
996510000218	VIDEO CABLE 1.5m 3P RD WHI YEL(/93/98)
994000005078	AUDIO SINGLE WIRE 1.5M(/73)
994000004988	AC LINE CORD 1.8M (/73/98)
994000005166	AC LINE CORD 1.8M (/93)
996500041018	FM ANTENNA WIRE 1.5m

MECHNICAL&MISCELLANEOUS PARTS

1A	996510000069	24P FLAT FELX CABLE
1B	996510007807	MINI FAN RDM4010S DC12V/0.7A
D001	996510017917	MCD906 DOOR PARTS
D003	996510017923	MCD906 PLASTIC SIDE PLATE(L)
D004	996510017927	MCD906 DISPLAY LENS(PMMA)
D005	996510017925	MCD906 LIGHT GUIDE-L
D006	996510017926	MCD906 LIGHT GUIDE-R
D007	996510017915	MCD906 FRONT CABINET PARTS
D008	996510017916	MCD906 POWER BUTTON PARTS
D009	996510017920	MCD906 USB DOOR(HIPS)
D010	996510017918	MCD906 VOLUME KNOB PARTS
D028	996510018908	TRANSFORMER 906D/98 120/230V (/98)
D028	996510017928	TRANSFORMER 906D/93 220V/50CCC (/93)
D028	996510019445	TRANSFORMER(906D-73 220V/50)(/73)
D031	994000005165	AC SOCKET 1A/250V
D040	996510017924	MCD906 PLASTIC SIDE PLATE-R
D044	996510017921	MCD906 DVD MECHANISM BRACKET
D045	996510029974	KHM-313AAD-T LOADER MECHANISM
D047	996510017919	MCD906 TOP LENS(ABS+PC)
D048	996510017922	MCD906 DVD MACHINE FOOT(HIPS)
D049	996520033990	RUBBER PAD
D012	996510019411	MCD906VALVE LAMP BOARD ASSY
D007B	996510017910	MCD906 LAMP BOARD ASSY
D018	996510017912	MCD906 PREPOSITIVE BOARD ASSY(/93/98)
D020	996510017905	MCD906 BUTTON BOARD ASSY
D021	996520034962	MCD906 DISPLAY BOARD ASS'Y(/93/98)
D026	996510017911	MCD906 HEADPHONE BOARD ASSY
D035	996510017907	MCD906 AUX BOARD ASSY
D039	996510018906	MCD906/98 DECODER+MCU PARTS(/98)
D039	996510017913	MCD906/93 DECODER+MCU PARTS(/93)
D039	996510019444	MCD906/73 DECODER+MCU PARTS(/73)
D041	996510017906	MCD906 AMP BOARD ASSY(/93/98)
D048	996510000522	PW CTR SW ASS'Y 110/220V MCD7X(/98)
D051	996510019438	MCD772/906 M-BOY BOARD ASSY(/73)

ELECTRONIC PARTS - PREPOSITIVE BOARD(/73)

C12	996510001150	MYLAR CAPACITOR 104P 280V K
C13	996510001150	MYLAR CAPACITOR 104P 280V K
C14	996510001152	ELE.CAPACITOR 1U 450V L-5
C15	996510001152	ELE.CAPACITOR 1U 450V L-5
C16	996510001151	METALLIZED CAP. 1u 250V
C17	996510001151	METALLIZED CAP. 1u 250V
C2	996520034967	ELECTROLYTIC CAP.2200u 25V L
C5	996510001153	CERAMIC CAPACITOR 223P 1000V L
C6	996510001149	ELECTROLYTIC CAP. 100U 350V
C9	996510001149	ELECTROLYTIC CAP. 100U 350V
CN5	994000004968	USB JACK A-TYPE 4P FEMALE
D011	996520034965	MCD906 VAC. TUBE BACK PANEL
Q1	996510001121	VACUUM TUBE 12AX7
Q2	996510001121	VACUUM TUBE 12AX7
Q6	994000004938	TRANSISTOR 2SB772A
U1	996500042020	I.C. PT2314 PRINCETON

ELECTRONIC PARTS - DISPLAY BOARD(/73)

CORD201	996500041645	ROT ENCODER
D022	996520034964	MCD906 IR BRACKET HIPS
IC201	996510000500	IC PT6311/SC16311/CD16311
S201	994000004961	IR SENSOR BLACK
SW201	996520033923	TACT SWITCH TS-1307-01 6X6X5
SW202	996520033923	TACT SWITCH TS-1307-01 6X6X5
SW203	996520033923	TACT SWITCH TS-1307-01 6X6X5
SW204	996520033923	TACT SWITCH TS-1307-01 6X6X5
SW205	996520033923	TACT SWITCH TS-1307-01 6X6X5
SW206	996520033923	TACT SWITCH TS-1307-01 6X6X5
SW207	996520033923	TACT SWITCH TS-1307-01 6X6X5
SW210	996520033923	TACT SWITCH TS-1307-01 6X6X5
SW212	996520033923	TACT SWITCH TS-1307-01 6X6X5
VFD701	996510020157	NE-906D-1.GB VFD DISPLAY

ELECTRONIC PARTS - AMP BOARD(/73)

DB101	996510000462	THYRISTOR RS1010G(10A)
DB102	994000004975	THYRISTOR RS808
DZ1	994000005488	ZENER DIODE 12V 0.5W-52
DZ102	996510010895	ZENER DIODE 27V 1W -52
DZ103	996510010895	ZENER DIODE 27V 1W -52
DZ2	994000005488	ZENER DIODE 12V 0.5W-52
DZ300	996510005833	ZENER DIODE 5.1V 1/2W-52
DZ301	996510010895	ZENER DIODE 27V 1W -52
DZ302	996510005833	ZENER DIODE 5.1V 1/2W-52
F101	994000004867	FUSE F2AL250V
F101H	996510000682	FUSE HOLDER(PLASTIC)
F101R	996500042474	4 PINS RCA SOCKET RCA-407
F102	996510000823	FUSE F6.3AL250V(50F)
F102H	996510000682	FUSE HOLDER(PLASTIC)
F102R	996500042474	4 PINS RCA SOCKET RCA-407

ELECTRONIC PARTS - AMP BOARD(/73)

F103	996510000823	FUSE F6.3AL250V(50F)
F103H	996510000682	FUSE HOLDER(PLASTIC)
F103R	996500042474	4 PINS RCA SOCKET RCA-407
IC1	996510002941	IC TL072 SOP
IC300	996510000464	CHIP IC TDA8920
L300	996520034966	INDUCTOR 22u(7A)
L301	996520034966	INDUCTOR 22u(7A)
Q113	996500042558	MOSFET BUK7509-55A
Q114	996500042558	MOSFET BUK7509-55A
Q300	996510005815	CHIP TRANSISTOR BC817-25

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