

Service
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MCD139B/37/12/05/58/79/55/98/MME239/37



Service Manual

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PHILIPS

**CLASS 1
LASER PRODUCT**

Type /Versions:		MCD139 & MCD139B & HTM139									
Board in used:	Service policy	/05	/12	/37	/55	/58	/78	/79	/98		
MAIN BOARD		C	C	M	C	C	C	M	C		
POWER BOARD		C	C	M		C			C		
AMP BOARD		C	C	M		C			C		
KEY BOARD		C	C	M	C	C	C	C	C		
CONTROL BOARD		C	C	M	C	C	C	C	C		
TUNER BOARD		M	M	M	M	M	M	M	M		
DVD MODULE		M	M	M	M	M	M	M	M		
LEFT SPEAKER BOX		C	C	M	M	C	M	M	C		
Type /Versions:		MCD139 & MCD139B & HTM139									
Features in used:	Feature diffrence	/05	/12	/37	/55	/58	/78	/79	/98		
Aux in / CDR in		x	x	x	x	x		x	x		
SCART Out		x	x								
S-Video Out		x	x	x	x	x		x	x		
Subwoofer Out		x	x	x	x	x		x	x		
DIN Out		x	x	x	x	x		x	x		
Component Video Out				x	x	x		x	x		
Voltage Selector											
ECO Power Standby (LCD Display Off)		x	x	x	x	x		x	x		
USB Direct											
* TIPS : C -- Component Lever Repair. M -- Module Lever Repair x -- Used											

SPECIFICATIONS

AMPLIFIER SECTION

Total output power FTC	60 W
Main speakers L/R	20W × 2 RMS 1
Subwoofer	20W RMS 2
Output power	
L/R speakers	25 W /channel RMS
Subwoofer	50 W RMS
Speaker channel	
Frequency Response	
.....	180 Hz - 16 kHz / ± 3 dB
Signal-to-Noise Ratio	> 60dB (A-weighted)
Input Sensitivity	
AUX In	500 mV
Output Sensitivity	
Line Out(1KHZ 0dB)	2 ± 0.2V

Notes:

- 1** Main speakers:20W FTC × 2 with 8 ohm 1KHZ THD=/ $<0.5\%$
- 2** Subwoofer:20W FTC with 6 ohm 100 HZ THD=/ $<1\%$

TUNER SECTION

Tuning Range	
.....	FM 87.5 – 108 MHz (50 kHz steps)
Signal-to-Noise Ratio	FM $\geq$ 50 dB

DVD SECTION

Laser Type	Semiconductor
Disc Diameter	12cm / 8cm
Video Decoding	MPEG-2 / MPEG-1
Video DAC	10 Bits
Signal System	PAL / NTSC
Video Format	4:3 / 16:9
Video S/N	56 dB (minimum)
Composite Video Output	1.0 Vp-p, 75 Ω
S-Video Output	Y - 0.714 Vp-p, 75 Ω
.....	C - 0.286 Vp-p, 75 Ω
Audio DAC	24 Bits / 96 kHz
Frequency Response	4 Hz - 20 kHz (44.1kHz)
.....	4 Hz - 22 kHz (48kHz)
.....	4 Hz - 44 kHz (96kHz)

MAIN UNIT

Power Supply Rating	120 V 60HZ /37
.....	110 V - 127V 60HZ / 220V - 240V 50HZ /55/78/98
.....	220V - 240V 50HZ /79
Power Consumption	
Active	30 W
Standby	<1 W /37
Standby	<10 W /55/78/79/98
Dimensions (w × h × d) ...	218× 90 × 222 (mm)
Weight	1.4kg
Packaging Dimensions (w × h × d)	
.....	550 × 314 × 330 (mm)
Gross weight	9.7Kg

SPEAKERS

System	1-way, Bass reflex
Impedance	8 Ω
Speaker drivers	3" fullrange
Frequency response	80 Hz – 20 kHz
Dimensions (w × h × d)	
.....	125 × 250 × 232 (mm)
Weight	2.5 kg/left speaker
.....	1.9 kg/right speaker

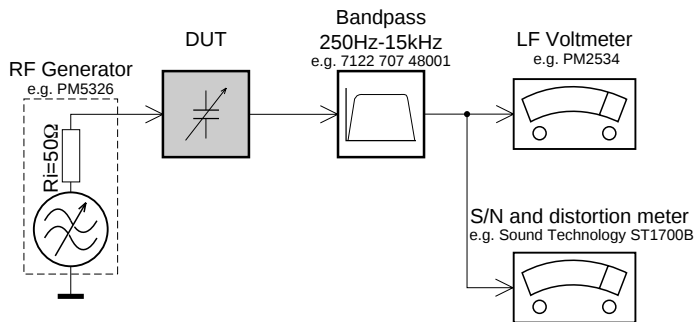
SUBWOOFER

Impedance.....	6 Ω
Speaker driver	5.25"subwoofer
Frequency response.....	60HZ---1K HZ
Dimensions(w × h × d).....	
.....	147 × 250 × 232(mm)
Weight	2.5kg

Specifications and external appearance are subject to change without notice.

MEASUREMENT SETUP

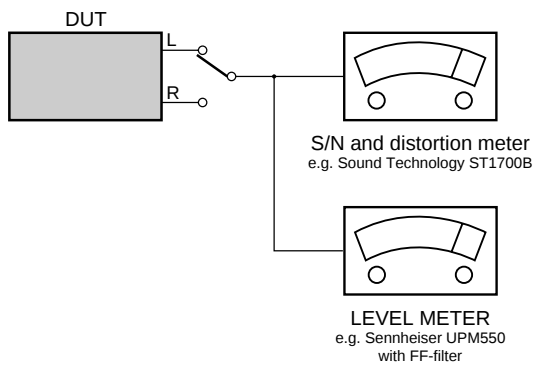
Tuner FM



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

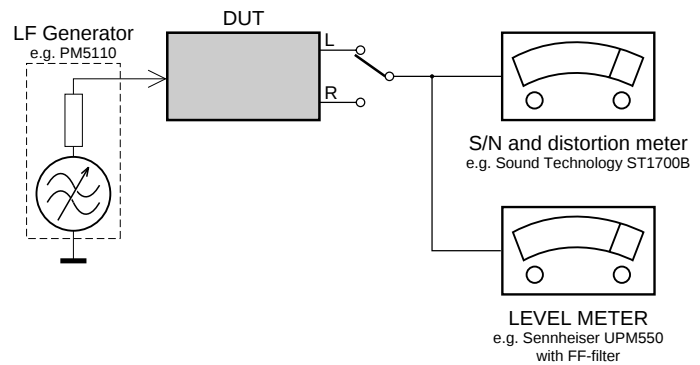
CD

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



Recorder

Use Universal Test Cassette **Cr02** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071



SERVICE AIDS

Service Tools:

Universal Torx driver holder	4822 395 91019
Torx bit T10 150mm	4822 395 50456
Torx driver set T6-T20	4822 395 50145
Torx driver T10 extended	4822 395 50423

Compact Disc:

SBC426/426A Test disc 5 + 5A	4822 397 30096
SBC442 Audio Burn-in test disc 1kHz	4822 397 30155
SBC429 Audio Signals disc	4822 397 30184
Dolby Pro-logic Test Disc	4822 395 10216



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



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".

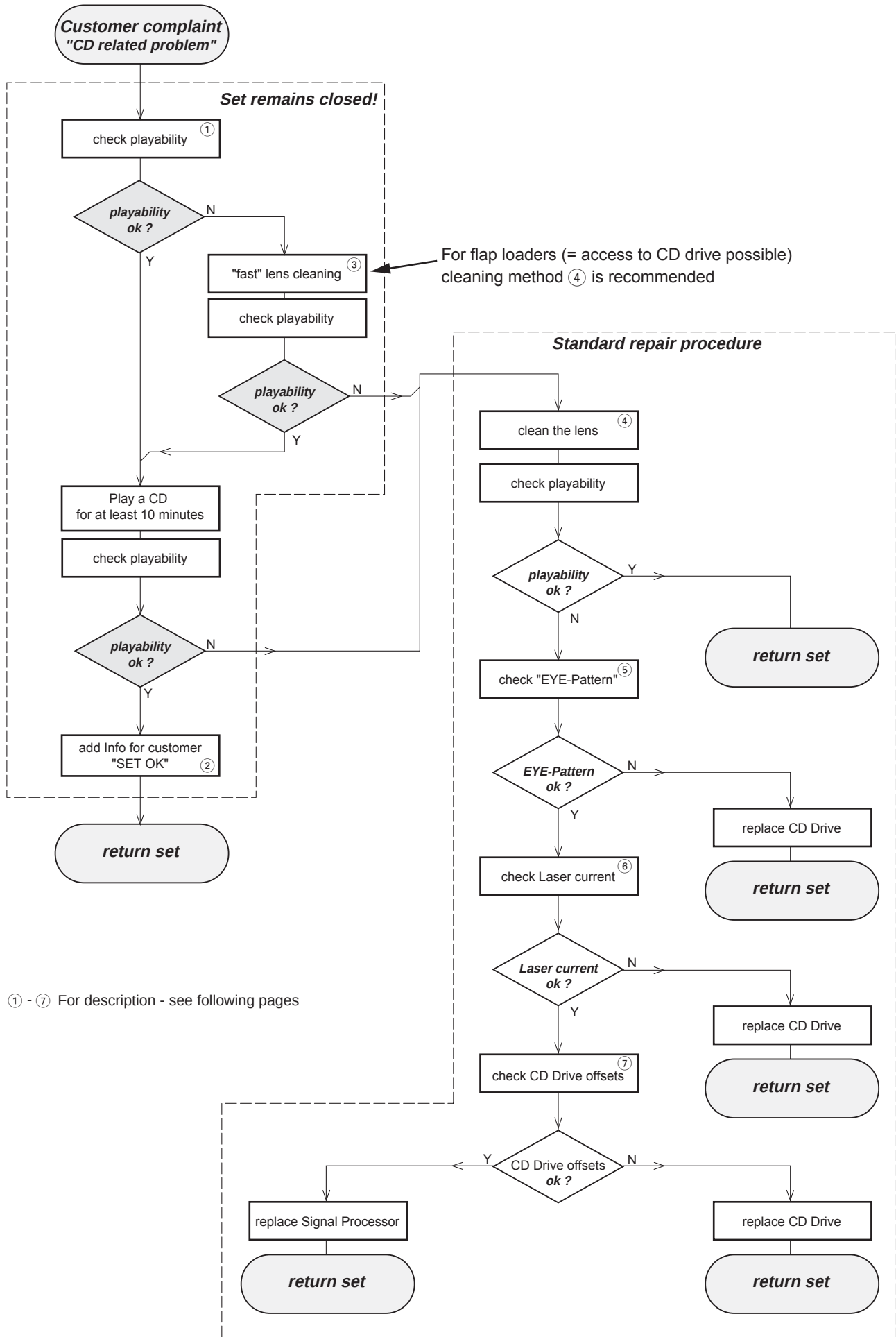
For additional questions please contact your local repair-helpdesk.

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



INSTRUCTIONS ON CD PLAYABILITY

①

PLAYABILITY CHECK

For sets which are compatible with **CD-RW** discs
 use CD-RW Printed Audio Disc7104 099 96611
 TR 3 (Fingerprint)
 TR 8 (600µ Black dot) **maximum at 01:00**

- playback of these two tracks without audible disturbance
 playing time for: Fingerprint ≥10seconds
 Black dot from 00:50 to 01:10
- jump forward/backward (search) within a reasonable time

For all other sets
 use CD-DA SBC 444A4822 397 30245
 TR 14 (600µ Black dot) **maximum at 01:15**
 TR 19 (Fingerprint)
 TR 10 (1000µ wedge)

- playback of all these tracks without audible disturbance
 playing time for: 1000µ wedge ≥10seconds
 Fingerprint ≥10seconds
 Black dot from 01:05 to 01:25
- jump forward/backward (search) within a reasonable time

②

CUSTOMER INFORMATION

It is proposed to add an addendum sheet to the set which informs the customer that the set has been checked carefully - but no fault was found.
 The problem was obviously caused by a scratched, dirty or copy-protected CD. In case problems remain, the customer is requested to contact the workshop directly.
 The lens cleaning (method ③) should be mentioned in the addendum sheet.

The final wording in national language as well as the printing is under responsibility of the Regional Service Organizations.

③

FAST LENS CLEANING (dry brush)

Use lens cleaning CD
 SBC AC3009082 100 00043

Insert the lens cleaning CD, press PLAY and follow the voice guide's instructions on the CD.

④

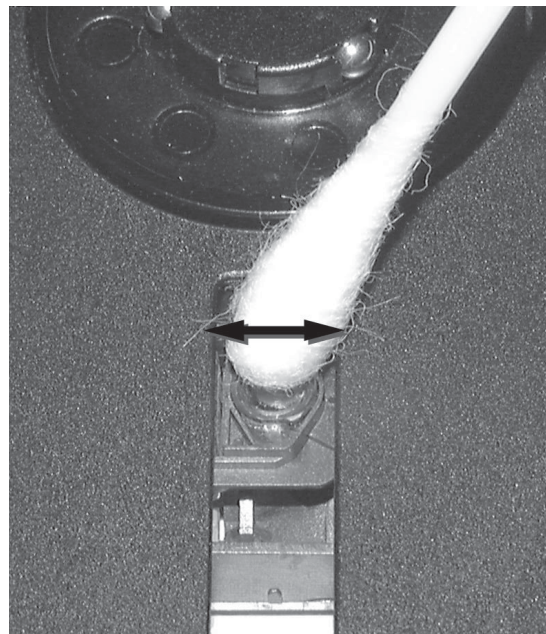
LIQUID LENS CLEANING

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 B4-No2", available with codenumber 4822 389 10026.

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.

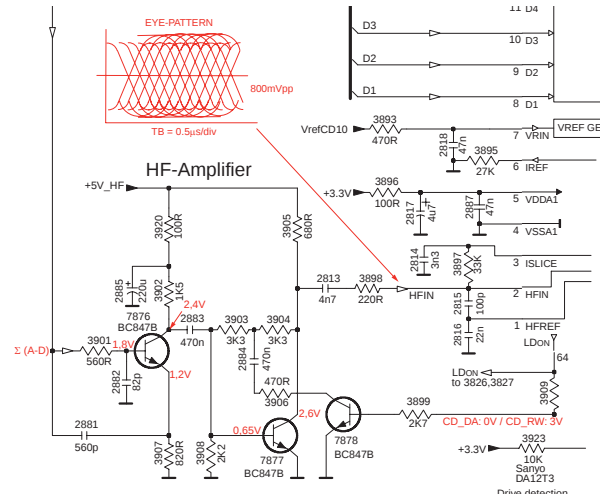


INSTRUCTIONS ON CD PLAYABILITY

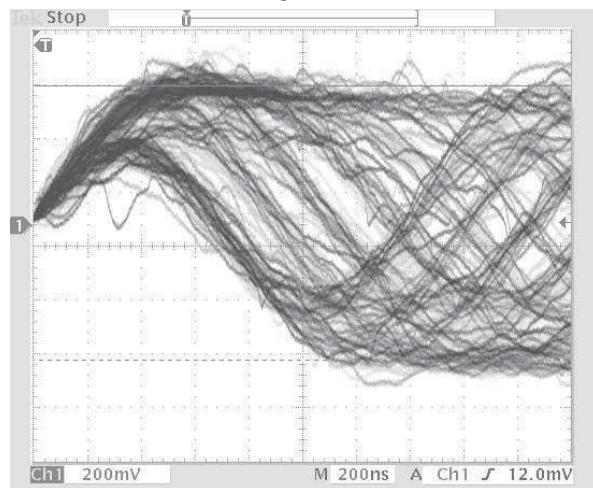
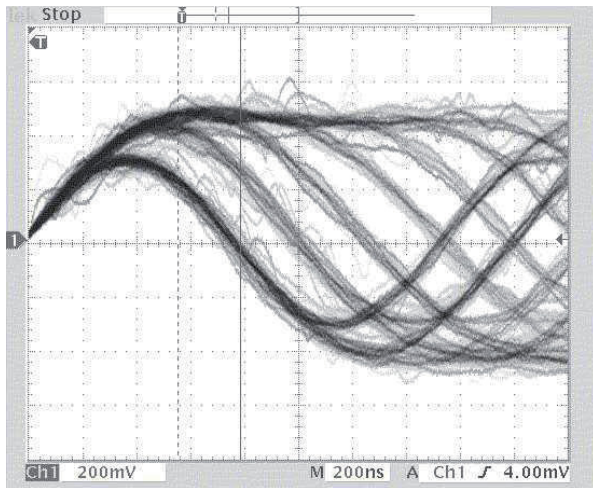
⑤

EYE-PATTERN SIGNAL – JITTER MEASUREMENT

Measure the signal on the input of the Signal processor using an **analog** oscilloscope. Please find the exact measuring point in your Service Manual.



See below examples of the signal. Amplitude should read at least 700mVpp using SBC444A.



If the oscilloscope shows a signal like the 'bad' one, and/or the amplitude decreases within 1 minute - the CD drive has to be replaced.

⑥

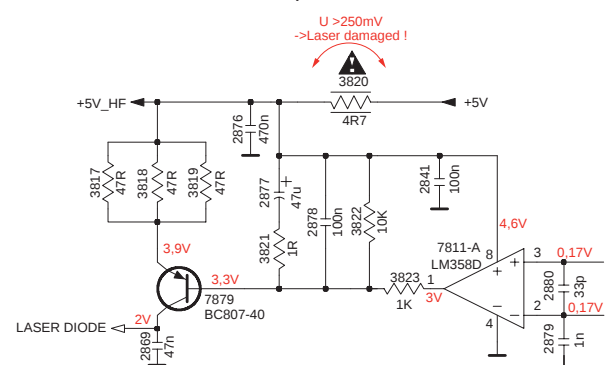
CD DRIVE – LASER CURRENT MEASUREMENT

The laser current can be measured as a voltage drop on a resistor. The resistor is marked in every Service Manual. The value depends on the type of CD drive.

	typical value	most probably defect
VAMxxxx	: 150-230mV	≥350mV
MCDxx	: 170-230mV	≥300mV
DA1x	: 210-250mV	≥350mV
DA2x	: 175-200mV	≥250mV

Use SBC444A (CD-DA) for measurement.

Laser power control



⑦

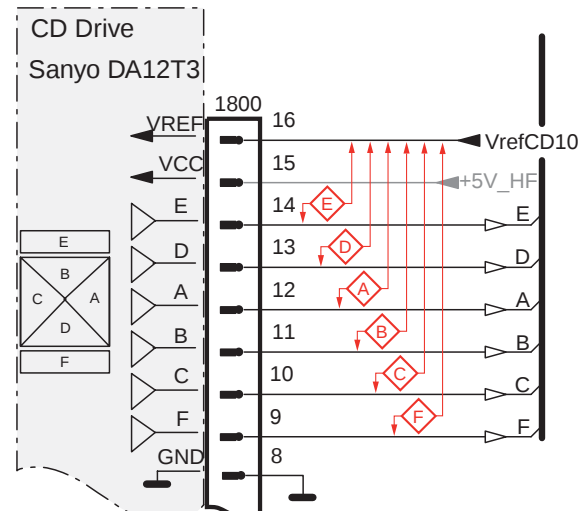
CD DRIVE – OFFSET MEASUREMENT

The photodiodes of the CD-drive may have an offset. These offsets have to be compensated by the signal processor. High offsets can lead to poor playability of some CDs (skipping tracks).

To measure the offset values, start the **Service Test Program** - section "Focus Test" without a CD.

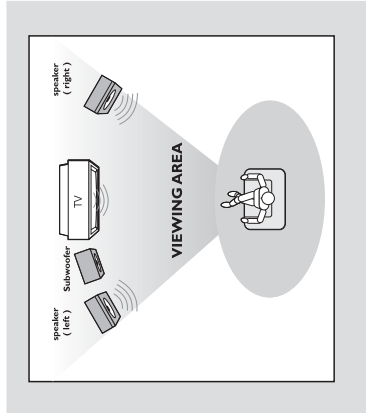
The offsets can be measured with a DC Millivoltmeter directly on the connector (see drawing below). Pin numbering varies from drive to drive.

The values from diode A-D should read 0±10mV. Diodes E and F are less critical.



If one of the offsets is higher than ±10mV the CD drive has to be replaced. Otherwise replace the Signal Processor.

S ep 1: Placing speakers and subwoofer



For best possible surround sound, locate your speakers and subwoofer as follows:

- Place the left and right speakers at equal distances from the TV set and at an angle of approximately 45 degrees from the listening position.
- Place the subwoofer on the floor near the TV set.

Notes:

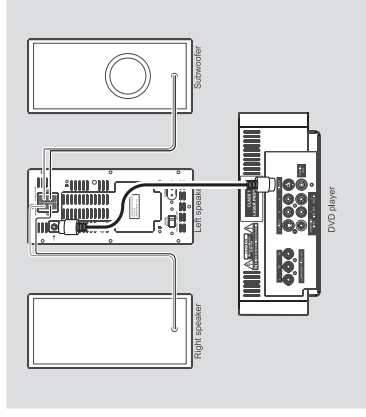
- To avoid magnetic interference, do not position the left and right speakers too close to your TV set.
- Allow adequate ventilation around the DVD System.

IMPORTANT!

The type placement is located on the bottom of the system.

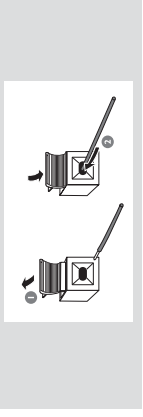
To avoid overheating of the system, a safe circuit has been built in. Therefore, your system may switch on S and by mode automatically under extreme conditions. If this happens, let the system cool down before reusing it.

S ep 2: Connecting speakers and subwoofer



- Connect the supplied DIN cable to DVD player's DIN jack and the left speaker's DIN jack.

- Connect the supplied speaker wires of the right speaker to SPEAKER RIGHT on the left speaker; red wire to red jack ("+"), black wire to black jack ("-"). Fully insert the stripped portion of the speaker wire into the terminal as shown.



- Connect the supplied speaker wire of the subwoofer to SUBWOOFER OUT on the left speaker; green wire to green jack ("+"), white wire to white jack ("-").
- Connect the supplied AC power cord to AC MAINS of the left speaker and the wall socket.

Notes:

- For optimal sound performance, use the supplied speakers.
- Do not connect more than one speaker to any one pair of +/- speaker terminals.
- Do not connect speakers with an impedance lower than the speakers supplied. Please refer to the SPECIFICATIONS section of this manual.

S ep 3: Connecting TV set

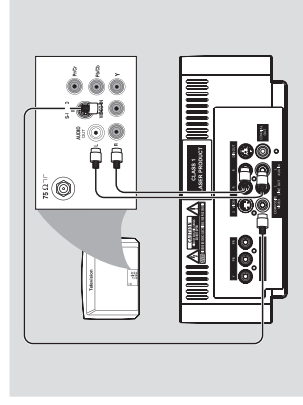
IMPORTANT!

You only need to make one video connection from the following options, according to the capabilities of your TV system.

S-Video or Component Video connection provides higher picture quality. These options must be available on your TV set.

Connect the system directly to the TV set.

Using Video In jack (CVBS)



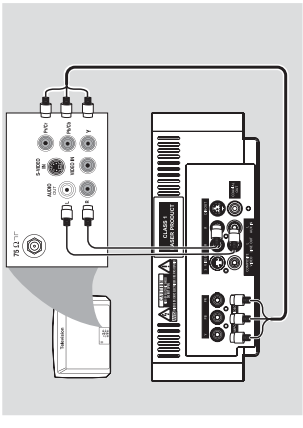
- Use the supplied composite video cable (yellow) to connect the system's COMPOSITE VIDEO jack to the video input jack (or labeled as A/V In, Video In, Composite or Baseband) on the TV set.

- To listen to TV channels through this system, use the audio cables (white/red, not supplied) to connect AUX IN (L/R) jacks to the corresponding AUDIO OUT jacks on the TV set. Or, to listen to disc playback of the system through your TV, use the audio cables (white/red, not supplied) to connect LINE OUT (L/R) jacks to the corresponding AUDIO IN jacks on the TV set.

Using component Video In jack (Pr-PbY)

- Use the component video cables (red/blue/green, not supplied) to connect the system's PR/PB/Y jacks to the corresponding Component video input jacks (or labeled as Pr/Cr Pb/Cb Y or YUV) on the TV set.

- To listen to TV channels through this system, use the audio cables (white/red, not supplied) to connect AUX IN (L/R) jacks to the corresponding AUDIO OUT jacks on the TV set. Or, to listen to disc playback of the system through your TV, use the audio cables (white/red, not supplied) to connect LINE OUT (L/R) jacks to the corresponding AUDIO IN jacks on the TV set.



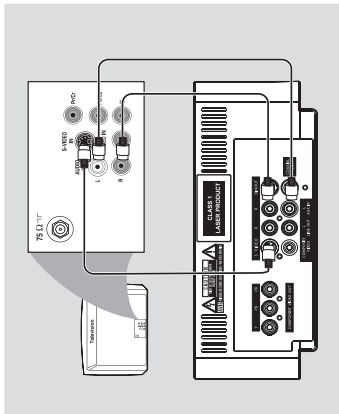
Notes for progressive scan video:

- The progressive scan video quality is only possible when using Y Pb Pr, and a progressive scan TV is required.
- If you are using a Progressive Scan TV (TV must indicate Progressive Scan or ProScan capability), to activate TV Progressive Scan, please refer to your TV user manual. For DVD system's Progressive Scan function, see "Getting Started - Setting up Progressive Scan feature".
- If your TV does not support Progressive Scan, you will not be able to view the picture. Turn off the progressive scan in the PROGRESSIVE menu of the system setup menu.

CONNECTIONS

Connections

Using S-Video In jack

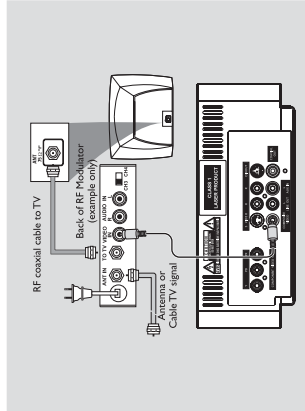


- Use the S-Video cable (not supplied) to connect the system's **S-VIDEO** jack to the S-Video input jack (or labeled as Y/C or S-VHS) on the TV set.
- To listen to TV channels through this system, use the audio cables (white/red, not supplied) to connect **AUX IN (L/R)** jacks to the corresponding AUDIO OUT jacks on the TV set. Or, to listen to disc playback of the system through the TV, use the audio cables (white/red, not supplied) to connect **LINE OUT (L/R)** jacks to the corresponding AUDIO IN jacks on the TV set.

Using an accessory RF modulator or

IMPORTANT!

If your TV set only has a single An-ena In jack (or labeled as 75 ohm or RF In), you will need a RF modulator or in order to view the DVD playback via TV. See your electronics retailer or contact Philips for details on RF modulators or availability and options.



- Use the supplied composite cable (yellow) to connect the system's **COMPOSITE VIDEO** jack to the video input jack on the RF modulator.
- Use the RF coaxial cable (not supplied) to connect the RF modulator to your TV's RF jack.

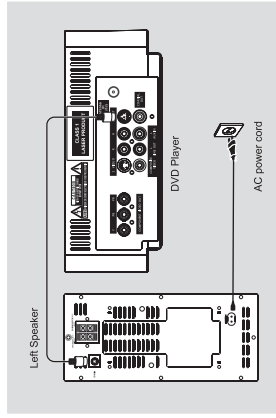
S ep 4: Connecting the FM antenna

- Connect the supplied FM antenna to the FM (75 Ω) jack at the back of the main unit. Extend the FM antenna and fix its end to the wall.

S ep 5: Connecting the power cord

IMPORTANT!

If your system is equipped with a Voltage Selector, set the **VOLTAGE SELECTOR** (located on the back of the left speaker) to match the local power line.



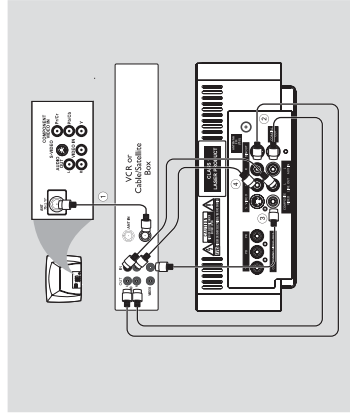
- After everything is connected properly, plug in the AC power cord to the power socket.

Never make or change any connection while the power switch is on.

Connections

S ep 6: Connecting a VCR or cable/satellite box

Viewing and listening to playback



- 1 Connect the VCR or Cable/Satellite Box to the TV system as shown.
- 2 Using the audio cables (red/white, not supplied) connect the system's **AUX IN (L/R)** jacks to the AUDIO OUT jacks on the VCR or Cable/Satellite box.
Before starting operation, press **AUX** on the remote control to select "AUX" in order to activate the input source.

Using the VCR for recording DVDs

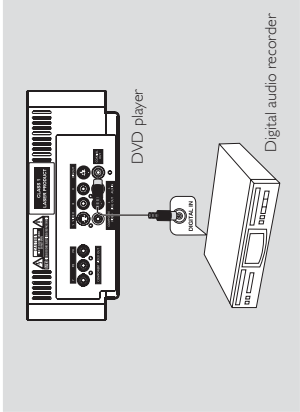
Some DVDs are copyright-protected. You cannot record or dub protected discs using a VCR.

- 3 Connect the system's **COMPOSITE VIDEO** jack to the VIDEO IN jack on the VCR.
- 4 Connect the system's **LINE OUT (R/L)** jacks to the AUDIO IN jacks on the VCR. This will allow you to make analog stereo (two channel, right and left) recording.

To view DVD playback while recording

You must connect the system to your TV system using the **S-VIDEO** (as shown above) or the **COMPONENT VIDEO OUT** (Pr-Pb-Y) video connection.

Step 6: Connecting digital audio equipment

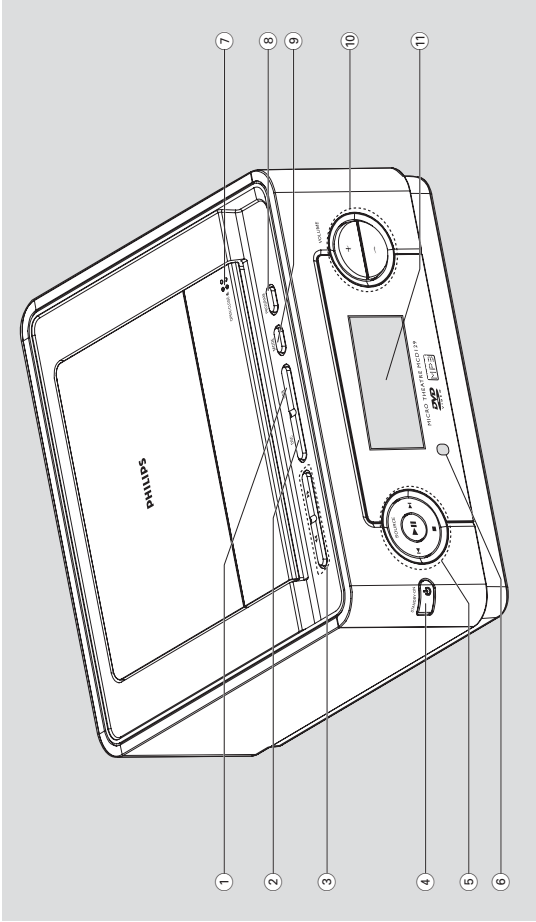


Recording (digital)

Connect the system's COAXIAL OUT (digital out) jack to the DIGITAL IN jack on a digital recording device (DTS-Digital Theater System compatible, with a Dolby Digital decoder; for example).

Before operation, set COAXIAL OUTPUT according to the audio connection.

Functional Overview



Controls and System

- 1 **DBB**
 - enables or disables bass enhancement.
- 2 **DSC**
 - selects different types of preset sound equalizer settings (CLASSIC, POP, ROCK or JAZZ).
- 3 **◀◀ / ▶▶**
 - fast searches backward/forward in a disc at different speeds.
- 4 **STANDBY-ON**
 - switches the system on or to standby mode.
- 5 **▶▶ / II**
 - starts or interrupts disc playback
- SOURCE**
 - selects the respective sound source: DVD or AUX.
- ◀ / ▶
 - press to skip to the previous/next chapter/title/track.
- - stops disc playback or erases a program.
- 6 **iR Sensor**
 - point the remote control towards this sensor.
- 7 **OPEN/CLOSE**
 - opens or closes the disc door.
- 8 **PROGRAM**
 - selects various repeat play modes (For VCD with PBC feature, PBC must be turned off).
- 9 **MODE**
 - selects various repeat play modes (For VCD with PBC feature, PBC must be turned off).
- 10 **VOLUME +/-**
 - adjusts the volume upward/downward.
- 11 **Display**
 - shows the current status of the DVD player.

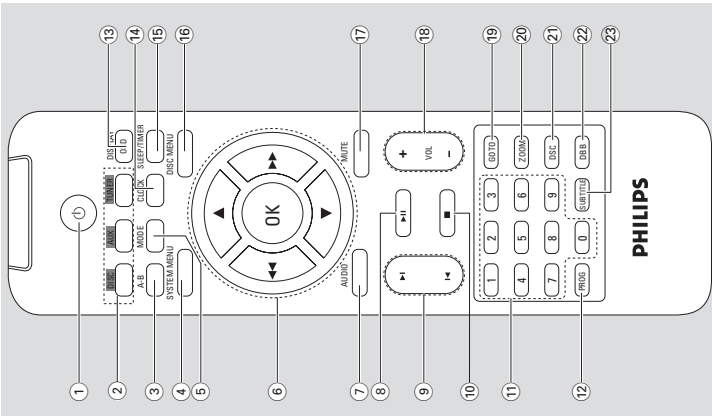
CONNECTIONS AND FUNCTIONAL OVERVIEW

Functional Overview

Remote control

- 1 switches the system to standby mode.
- 2 SOURCE (DISC/AUX/TUNER)
 - switches on the system
 - selects the respective sound source for disc/FM/AUX
- 3 A-B
 - repeats playback of a specific section within a chapter of DVD or a track of VCD/CD.
- 4 SYSTEM MENU
 - enters or exits the system menu.
- 5 MODE
 - selects variations of continuous playback (For VCD with PBC feature, PBC must be turned off.)
 - For VCD/CD only: selects to playback in random order (For VCD with PBC feature, PBC must be turned off.)

- 6 OK
 - confirms a selection.
 - ▲ / ▲ / ◀ / ▶
 - selects an item in a menu.
 - ◀ / ▶
 - Disc.....: fast searches backward/forward in a disc at different speeds.
 - Tuner.....:tunes to a radio station
 - Clock.....:sets the minutes
- 7 AUDIO
 - f r VCD
 - sets Left vocal, Right vocal, Mono left, Mono right or Stereo sound mode.
 - f r DVD
 - selects an audio language.
- 8 ► II
 - starts or interrupts disc playback.
- 9 ◀ / ▶
 - Tuner.....:selects a preset radio station
 - Disc.....:skips to the previous/next chapter/ title/track
 - Clock.....:sets the hours
 - For JPEG:selects different zooming rates
- 10 ■
 - stops disc playback or erases a program.
- 11 Numeric Keypad (0-9)
 - inputs a track/title/chapter number of the disc.
- 12 PROG
 - F r VCD/CD nlyoprogram the favourite tracks
- 13 DISPLAY (OSD)
 - displays disc playback time during playback
- 14 CLOCK
 - sets and views the clock
- 15 SLEEP/TIMER
 - activates/deactivates or selects the sleep timer
 - activates/deactivates or sets the wake-up timer
- 16 DISC MENU
 - DVD/VCD: enters or exits the disc contents menu (For VCD with PBC feature, PBC must be turned on.)
 - MP3/WMA/JPEG: switches on or off the album/ picture menu.



Functional Overview

- 17 MUTE
 - disables or enables sound output.
- 18 VOL +/-
 - adjusts the volume upward/downward.
- 19 GOTO
 - fast searches in a disc by entering a time, title or chapter (For VCD with PBC feature, PBC must be turned off.)
- 20 ZOOM
 - DVD/VCD/JPEG: enlarges a picture or active image on the TV screen.
 - For JPEG: turns on/off the zooming feature
- 21 DSC
 - selects different types of preset sound equalizer settings (CLASSIC, ROCK, JAZZ or POP).
- 22 DBB
 - enables or disables bass enhancement.
- 23 SUBTITLE
 - selects a subtitle language.

Notes for remote control:

- First select the source you wish to control by pressing one of the source select keys on the remote control (for example CD, TUNER).
- Then select the desired function (for example ►, ◀, ►/).

Troubleshooting

WARNING

Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty. Do not open the system as there is a risk of electric shock.

If a fault occurs, first check the points listed below before taking the system for repair. If you are unable to remedy a problem by following these hints, consult your dealer or Philips for help.

Problem	Solution
No power.	✓ Check if the AC power cord is properly connected. ✓ Press STANDBY ON  on the DVD System or  on the remote to turn on the power.
No picture.	✓ Check if the TV is switched on. ✓ Check the video connection. ✓ Press SOURCE on the DVD player repeatedly to select "DVD" or press DISC on the remote. ✓ Set your TV to the correct Video In channel. This channel is usually near channel 00. Or, you may have a button on the TV remote control that selects Auxiliary or A/V IN channel. See your TV owner's manual for details. Or, change channels at the TV until you see DVD screen on the TV. ✓ If the progressive scan feature is activated but the connected TV does not support progressive signals or the cables are not connected accordingly, see page 17-18 for proper progressive scan setup or deactivate the progressive scan feature as below: 1) Turn off your TV progressive scan mode or turn on to interlaced mode. 2) Select "OFF" in PROGRESSIVE menu of system setup menu to turn off progressive, then press SYSTEM MENU to exit the menu.
Distorted or poor picture.	✓ Sometimes a small amount of picture distortion may appear. This is not a malfunction. ✓ Clean the disc.
Completely distorted picture or black/white picture.	✓ TV has a colour system standard. If the disc's or DVD system's colour system is different than your TV's colour system, the picture may be distorted or colourless.

Troubleshooting

The aspect ratio of the screen cannot be changed even though you have selected the TV shape.

No sound or distorted sound.

The micro DVD player does not start playback.

The DVD micro system does not respond when the buttons are pressed.

Cannot activate some features, such as Subtitles, or multi-language Audio.

Radio reception is poor.

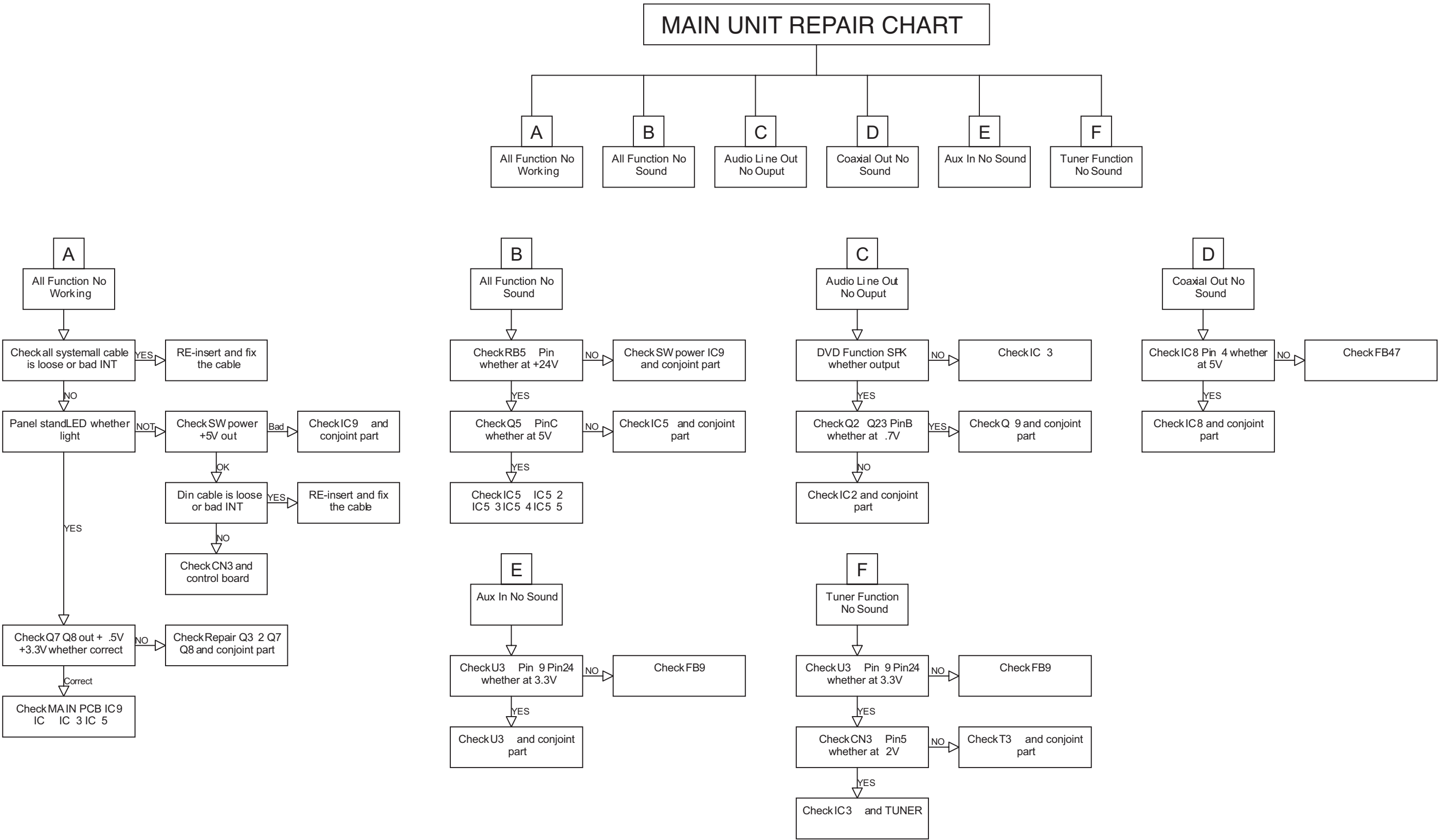
✓ The aspect ratio is fixed on the DVD disc. ✓ Depending on the TV, it may not be possible to change the aspect ratio.	✓ Adjust the volume. ✓ Check that the speakers are connected correctly. ✓ Replace the speaker cables. ✓ Disconnect the headphones. ✓ The system is in pause, slow motion or fast forward/reverse mode, press ▶II (or II▶ on the remote) to resume normal play mode.
✓ Insert a readable disc with the playback side facing down. ✓ Check the disc type, colour system and regional code. Check for any scratches or smudges on the disc. ✓ Press SYSTEM MENU to turn off the setup menu screen. ✓ Cancel the parental control rating function or change the rating level. ✓ Moisture has condensed inside the system. ✓ Remove the disc and leave the system turned on for about an hour.	✓ Disconnect the power plug from the outlet and insert again.
✓ Multi-language sound or subtitle is not recorded on the DVD. ✓ Changing the language for the sound or subtitle is prohibited on the DVD. ✓ The features may not be available on the disc.	✓ If the signal is too weak, adjust the antenna or connect an external antenna for better reception. ✓ Increase the distance between the Mini HiFi System and your TV or VCR.

TROUBLESHOOTING

Troubleshooting

The timer is not working.	✓ Set the clock correctly.
The Clock/Timer setting is erased.	✓ Power has been interrupted or the power cord has been disconnected. Reset the clock/timer.
The remote control does not function.	✓ Select the correct source (DISC or AUX for example) before pressing the function button. ✓ Point the remote control at the remote sensor of the unit. ✓ Reduce the distance to the player. ✓ Remove any possible obstacles. ✓ Replace the battery with new one. ✓ Check that the battery is loaded correctly.
Low hum or buzz sound.	✓ Place the DVD micro system as far away as possible from electrical devices (such as speakers, TV) that may be causing interference.
Low bass response.	✓ Check all speakers for correct polarity.
Unable to select Progressive Scan	✓ Check that the output of the video signal is switched to 'Ybpr'.

REPAIR INSTRUCTION



DISASSEMBLY INSTRUCTIONS

Dismantling of the Main Board

- 1) Loosen 6 screws "A" on the bottom cover as shown in figure 1.
- 2) Loosen 5 screws "B" on the rear plate as shown in figure 2.
- 2) Loosen 3 screw "C" at the main board as shown in figure 3.

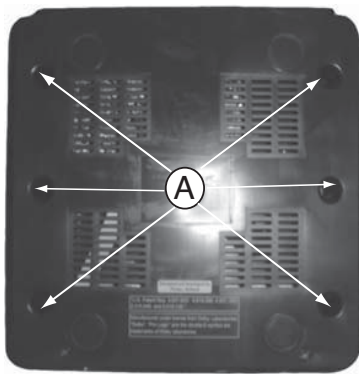


Figure 1

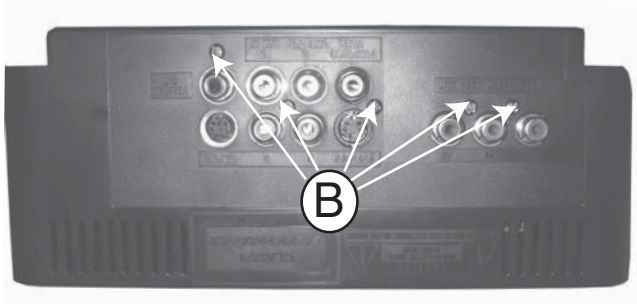


Figure 2

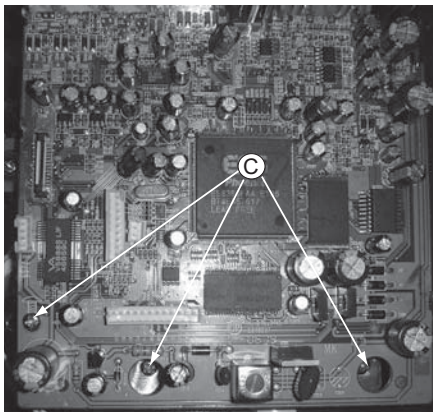


Figure 3

Dismantling of the Control Board

- 1) Loosen 6 screws "D" on the bottom of Key board as shown in figure 4.
- 2) Loosen 7 screws "E" at the bottom of VFD board as shown in figure 5.

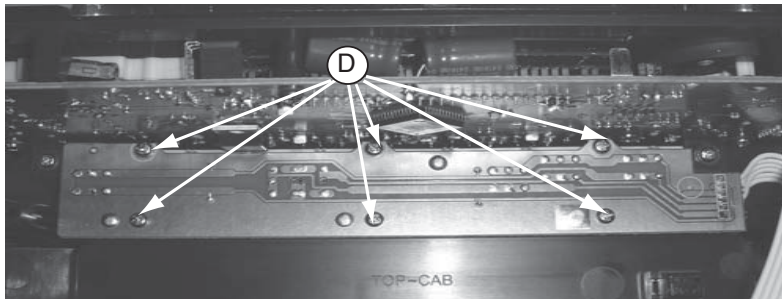


Figure 4

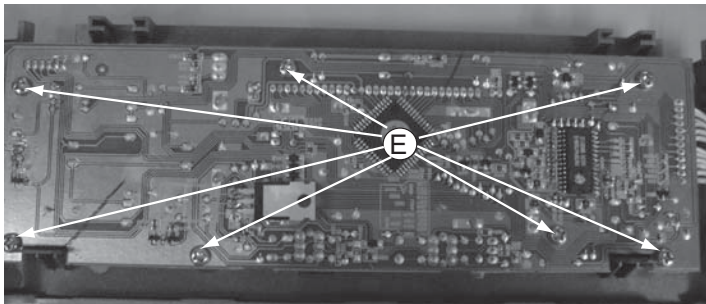


Figure 5

Dismantling of the Power & Amplifier Board

- 1) Loosen 8 screws "F" on the rear plate of speaker set as shown in figure 6.
- 2) Loosen 3 screws "G" on the rear plate to dismantling the Amplifier board as shown in figure 7.
- 3) Loosen 4 screws "H" on the top of power board to dismantling the power board as shown in figure 8.

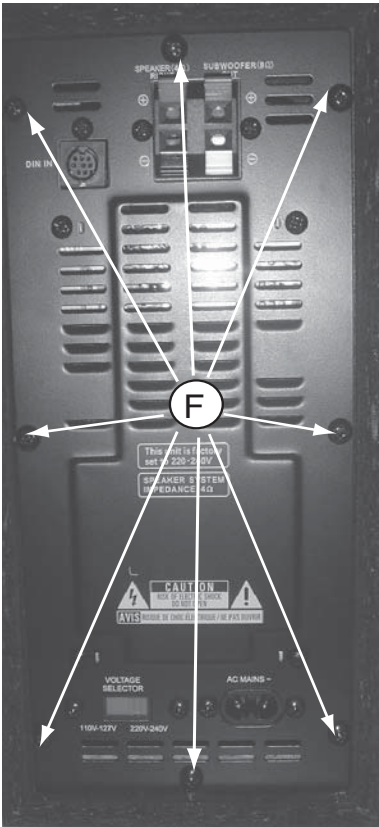


Figure 6

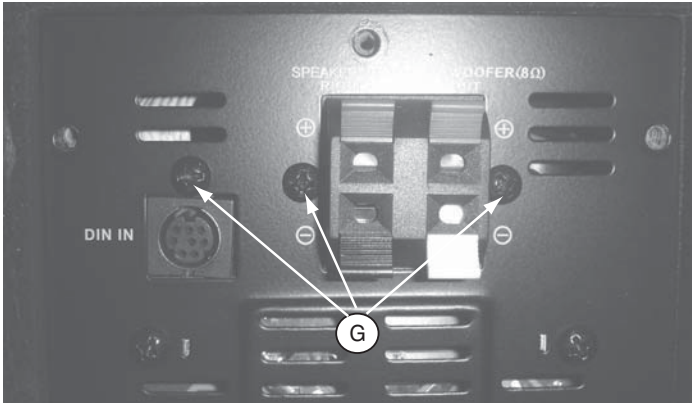


Figure 7

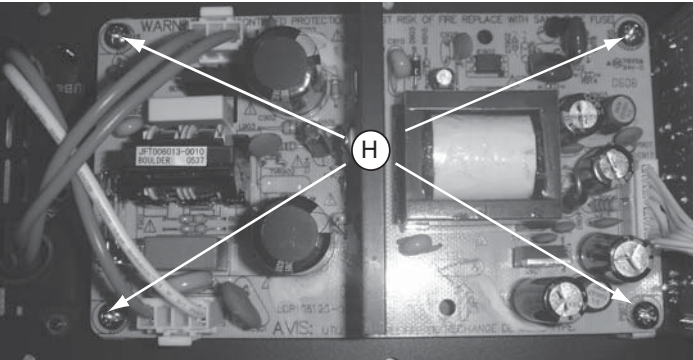


Figure 8

Dismantling of DVD Loader

- 1) Loosen 2 screws "I" on the metal plate as shown in figure 9.
- 2) Loosen 4 screws "J" on the top of DVD loader as shown in figure 10.

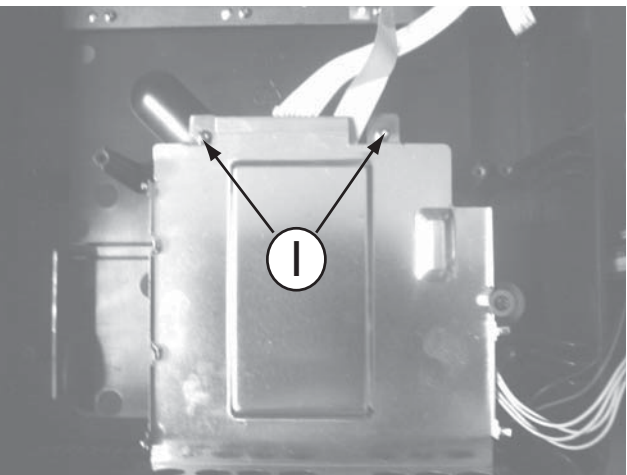


Figure 9

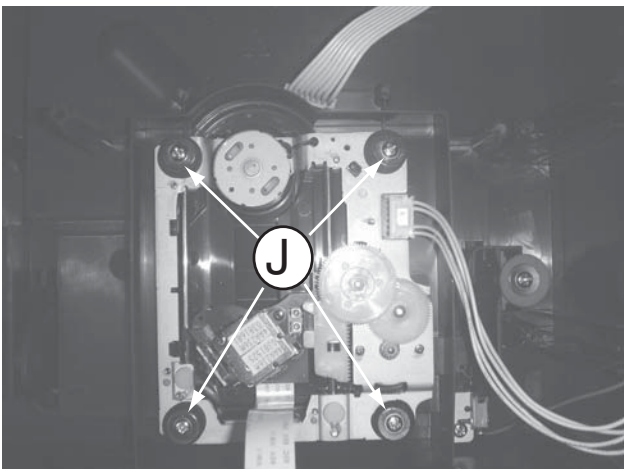


Figure 10

Dismantling of the Tuner Board

- 1) Loosen 2 screws "K" on the rear plate as shown in figure 11.
- 2) Loosen 1 screw "L" at top of the tuner pad as shown in figure 12.

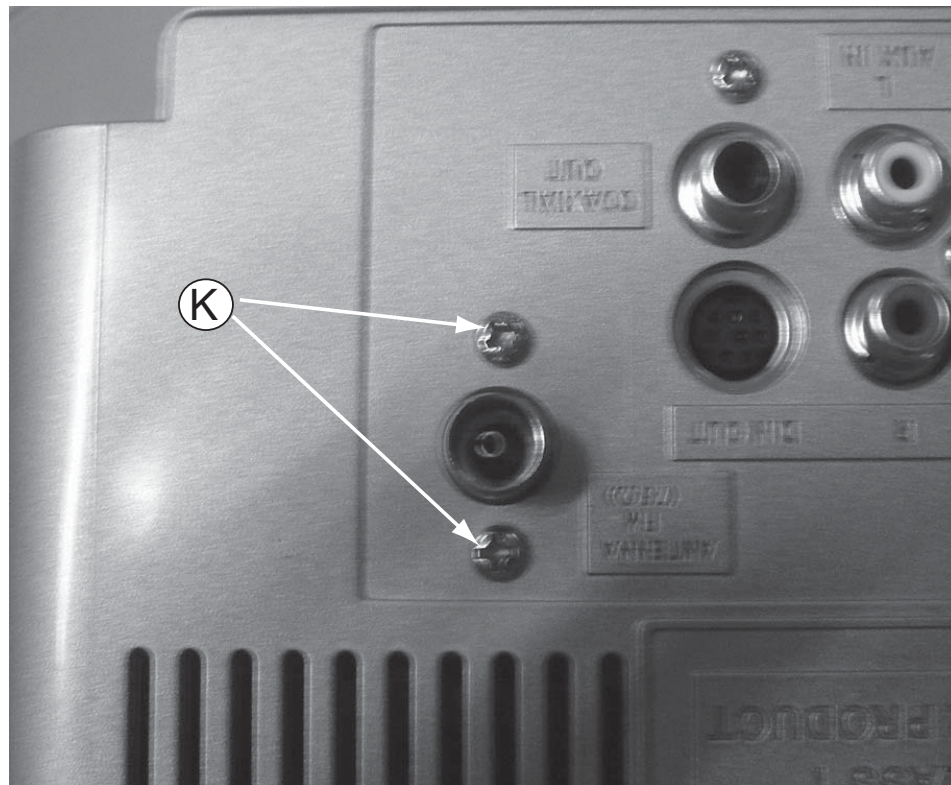


Figure 11

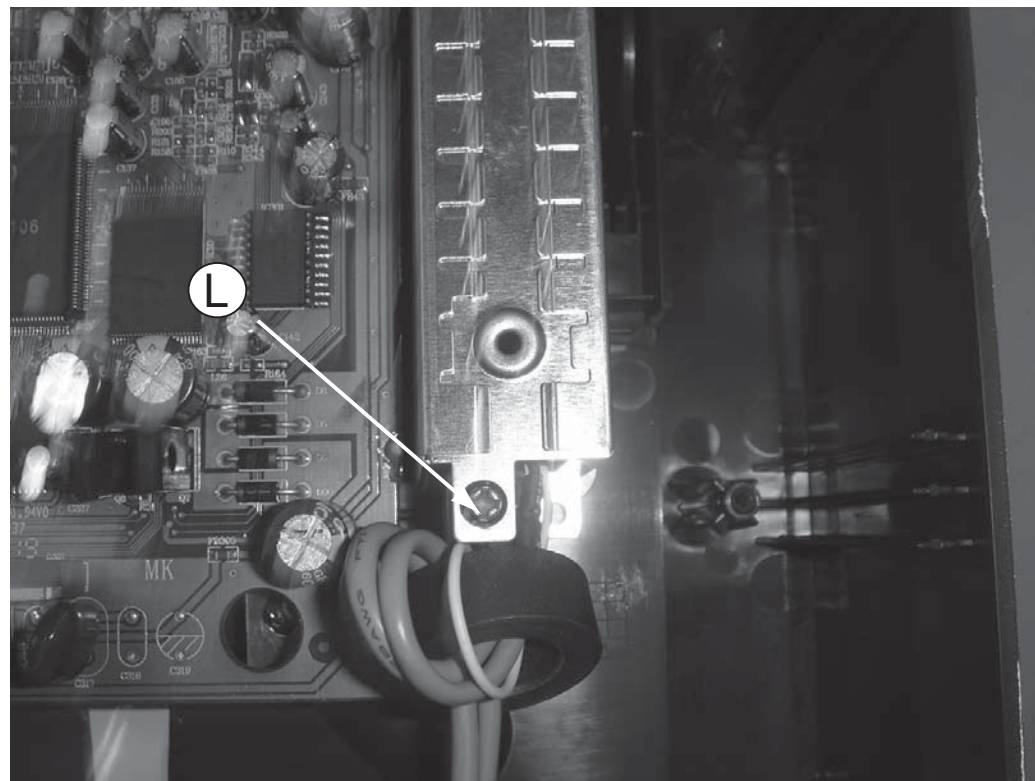
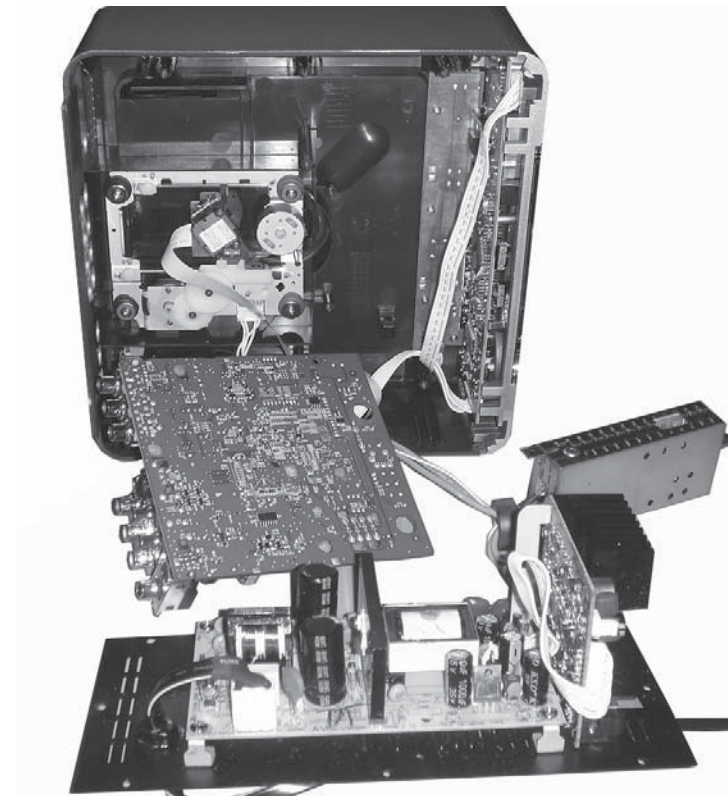


Figure 12

SERVICE POSITIONS

Service position A

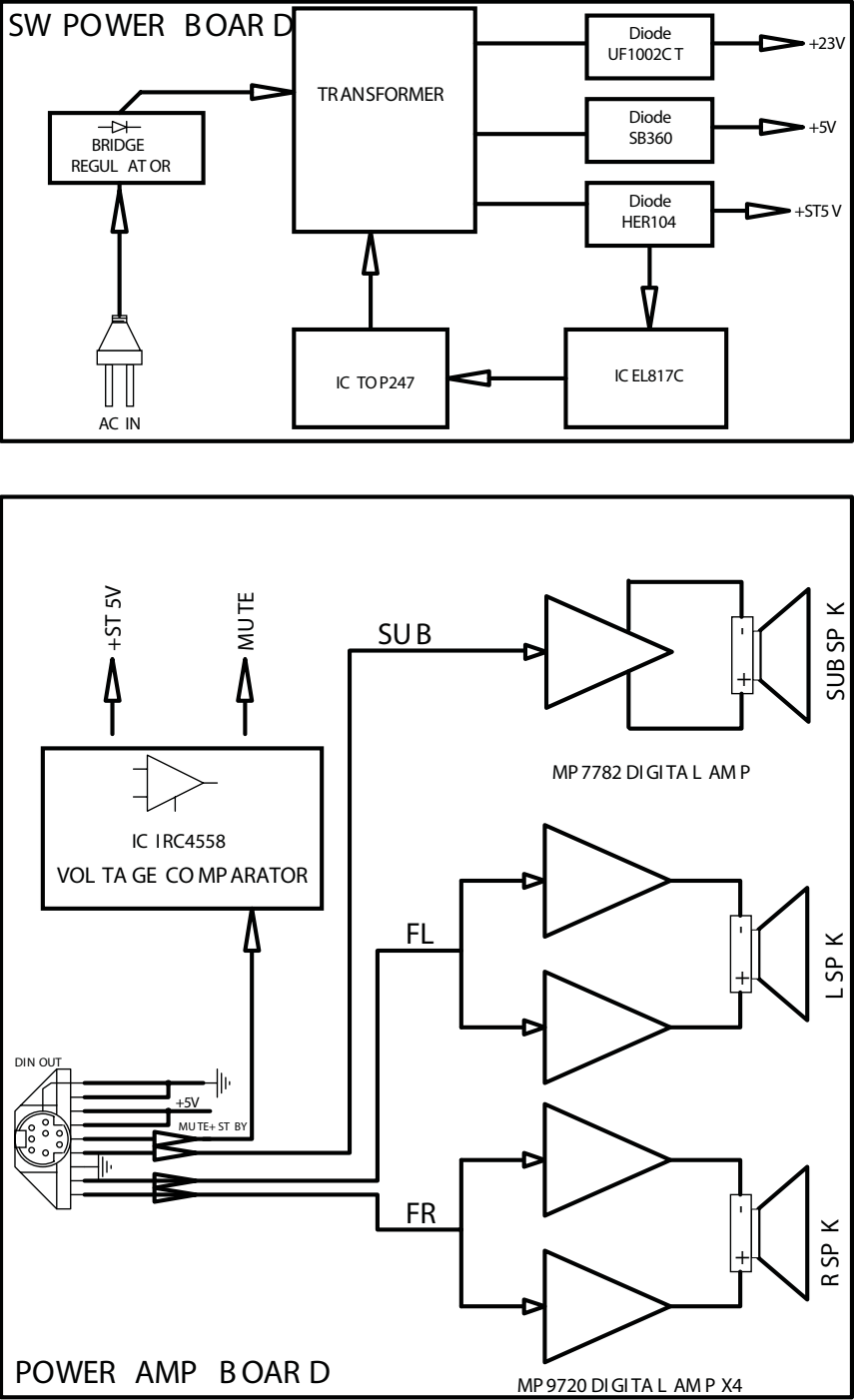
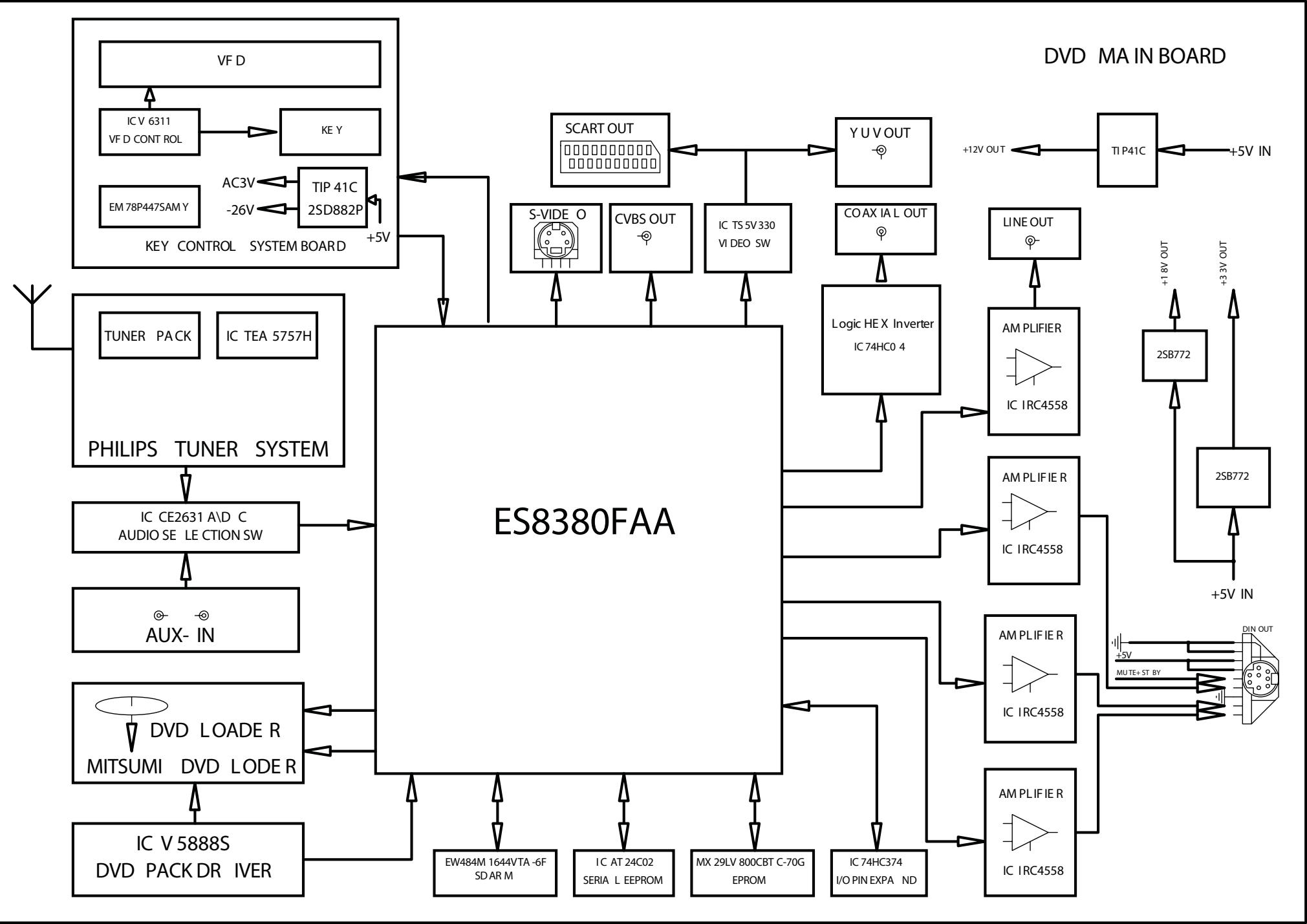


Note: In some service positions the components or copper patterns of one board may risk touching its neighbouring pc boards or metallic parts. To prevent such short-circuit use a piece of hard paper or other insulating material between them.

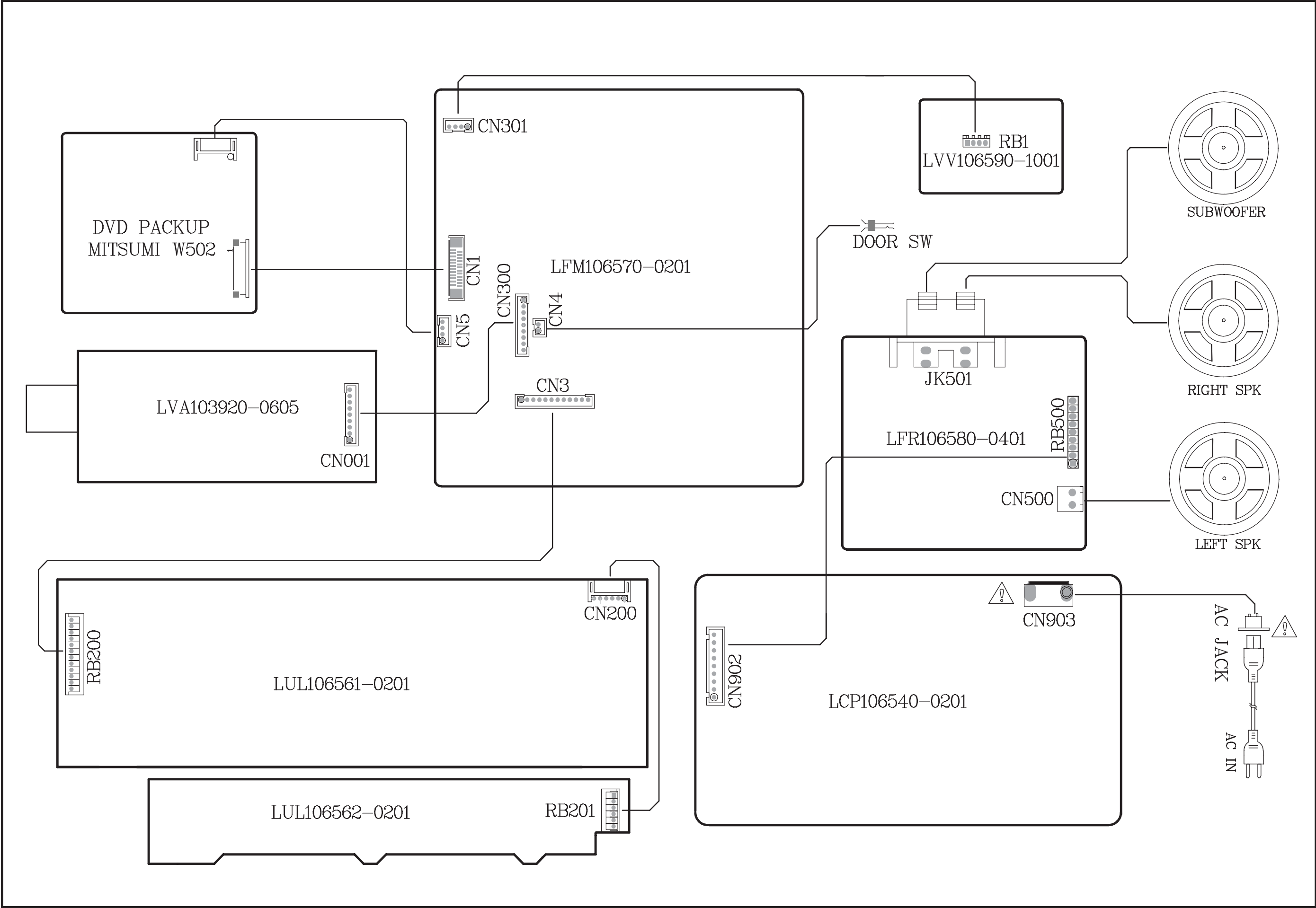
Service position B



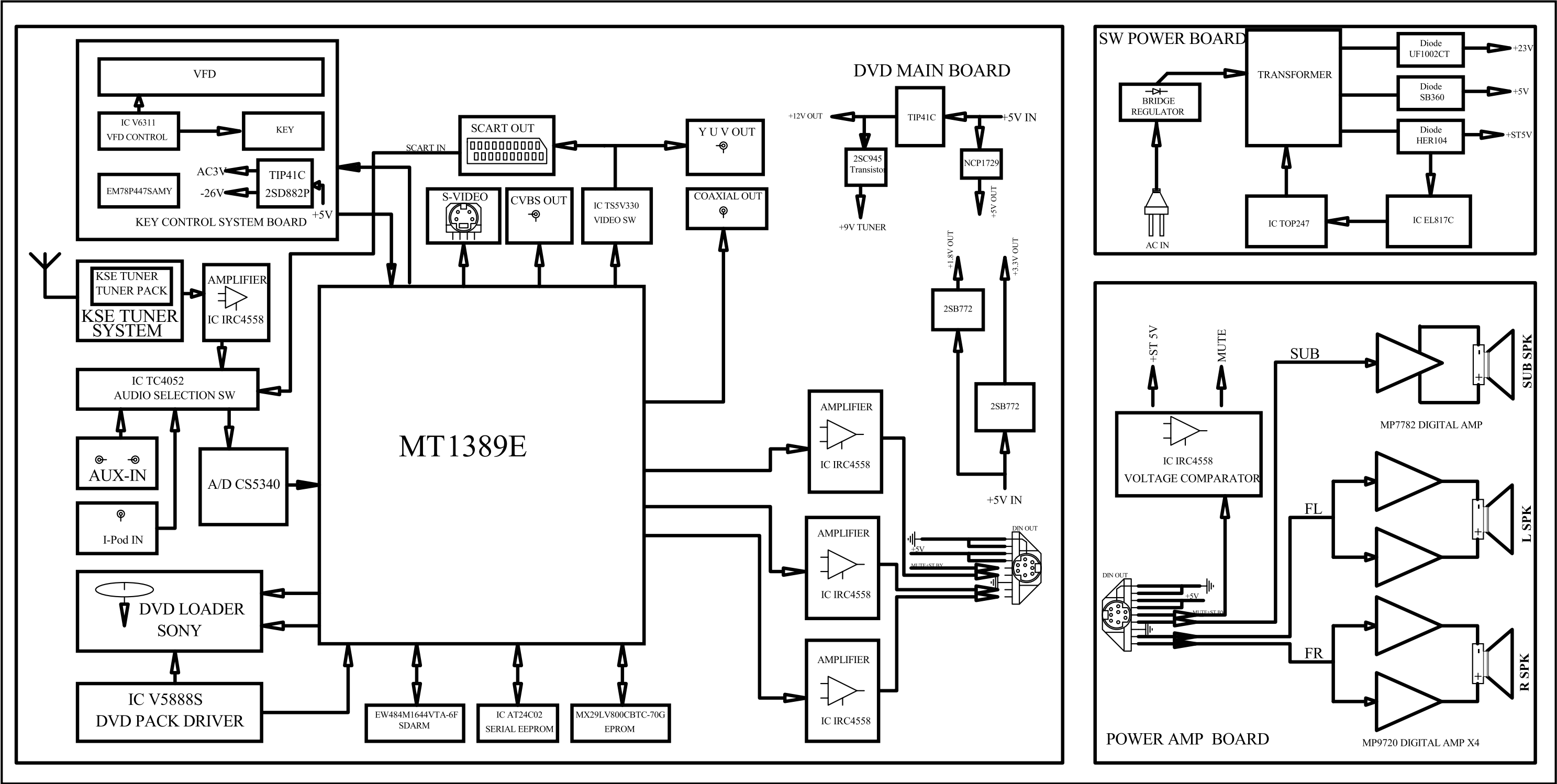
BLOCK DIAGRAM



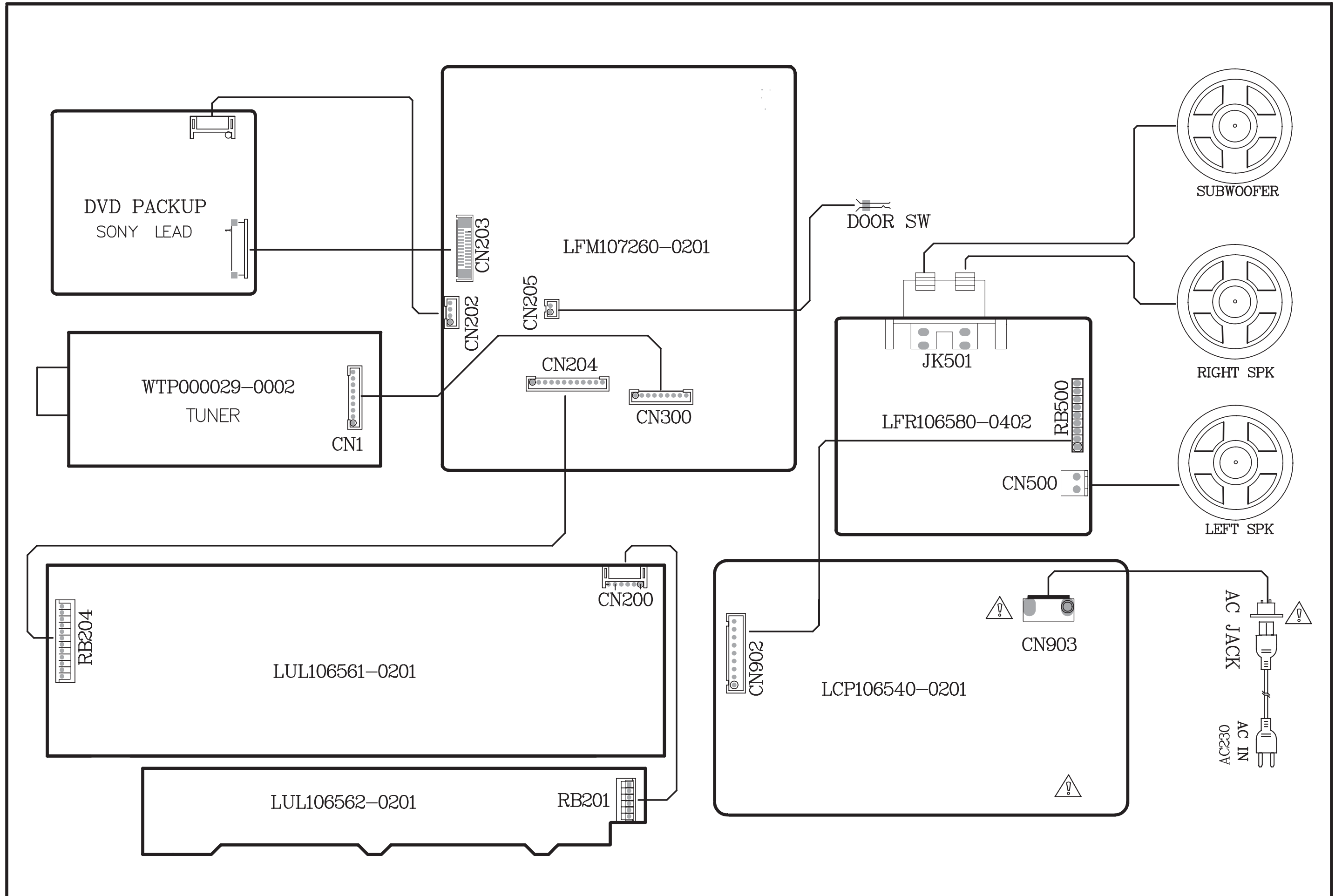
WIRING DIAGRAM



BLOCK DIAGRAM (ONLY FOR /12/05/58)



WIRING DIAGRAM (ONLY FOR /12/05/58)

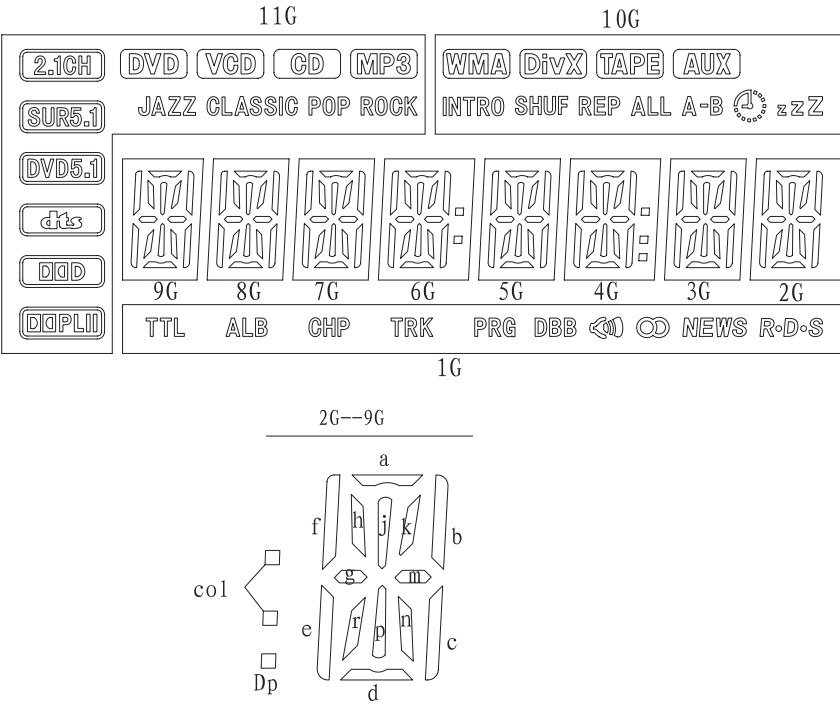


KEY & VFD BOARD

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FTD DISPLAY PIN ASSIGNMENT



	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1						col		col			
P2	ROCK	INTRO	a	a	a	a	a	a	a	a	R-D-S
P3	POP	SHUF	h	h	h	h	h	h	h	h	NEWS
P4	CLASSIC	REP	j	j	j	j	j	j	j	j	CD
P5	JAZZ	ALL	k	k	k	k	k	k	k	k	Q
P6	MP3	A	b	b	b	b	b	b	b	b	DBB
P7	CD	-B	f	f	f	f	f	f	f	f	PRG
P8	VCD	z z Z	m	m	m	m	m	m	m	m	TRK
P9	DVD	z z Z	g	g	g	g	g	g	g	g	CHP
P10	2.1CH	WMA	c	c	c	c	c	c	c	c	ALB
P11	SUR5.1	DivX	e	e	e	e	e	e	e	e	TTL
P12	DVD5.1	TAPE	r	r	r	r	r	r	r	r	
P13	DTS	AUX	p	p	p	p	p	p	p	p	
P14	DDD		n	n	n	n	n	n	n	n	
P15	DOLBY		d	d	d	d	d	d	d	d	
P16								Dp			

PIN CONNECTION

(Pin NO.)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
(Connection)	F1	F1	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14
(Pin NO.)	18	19	20-21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
(Connection)	P15	P16	NX	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	NP	F2	F2

- ## Note ##
1. Fn: Filament pin
2. NP : No Pin
3. NX : No Extended Pin
4. nG : Grid Pin
5. PN : Anode Pin

Voltage

IC200(EM78P447SAMY)																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	0.00	5.00	0.00	0.00	5.18	4.70	3.35	3.38	5.16	5.17	0.00	5.11	0.00	4.88	5.00	0.00	0.00
Pin NO	21	22	23	24	25	26	27	28									
Voltage	5.18	5.18	5.18	0.00	4.80	2.47	2.45	5.18									

IC201(PT6311)																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	5.19	5.19	5.19	0.00	4.82	4.80	0.00	3.30	3.30	0.00	0.00	0.00	0.00	5.18	-20.5	-15	-22.8
Pin NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
Voltage	-16.70	-16.90	-18.80	-15.00	-17.00	-22.70	-23.00	-23.00	-17.00	-23.00	-21.00	-21.00	5.00	-23.00	-21.00	-21.00	-21.00
Pin NO	41	42	43	44	45	46	47	48	49	50	51	52					
Voltage	-21.00	-21.00	-21.00	-21.00	5.00	0.00	0.00	5.00	5.00	5.00	0.00	2.80					

Q200			
Pin NO	1	2	3
Voltage	5.10	4.80	3.60

Q203			
Pin NO	1	2	3
Voltage	0.00	5.10	0.00

Q206			
Pin NO	1	2	3
Voltage	4.80	0.00	3.90

Q209		
Pin NO	1	2
Voltage	2.30	5.00

Q201			
Pin NO	1	2	3
Voltage	5.10	3.30	3.30

Q204			
Pin NO	1	2	3
Voltage	0.70	0.00	0.00

Q207			
Pin NO	1	2	3
Voltage	4.40	5.00	5.10

Q210		
Pin NO	1	2
Voltage	0.10	5.00

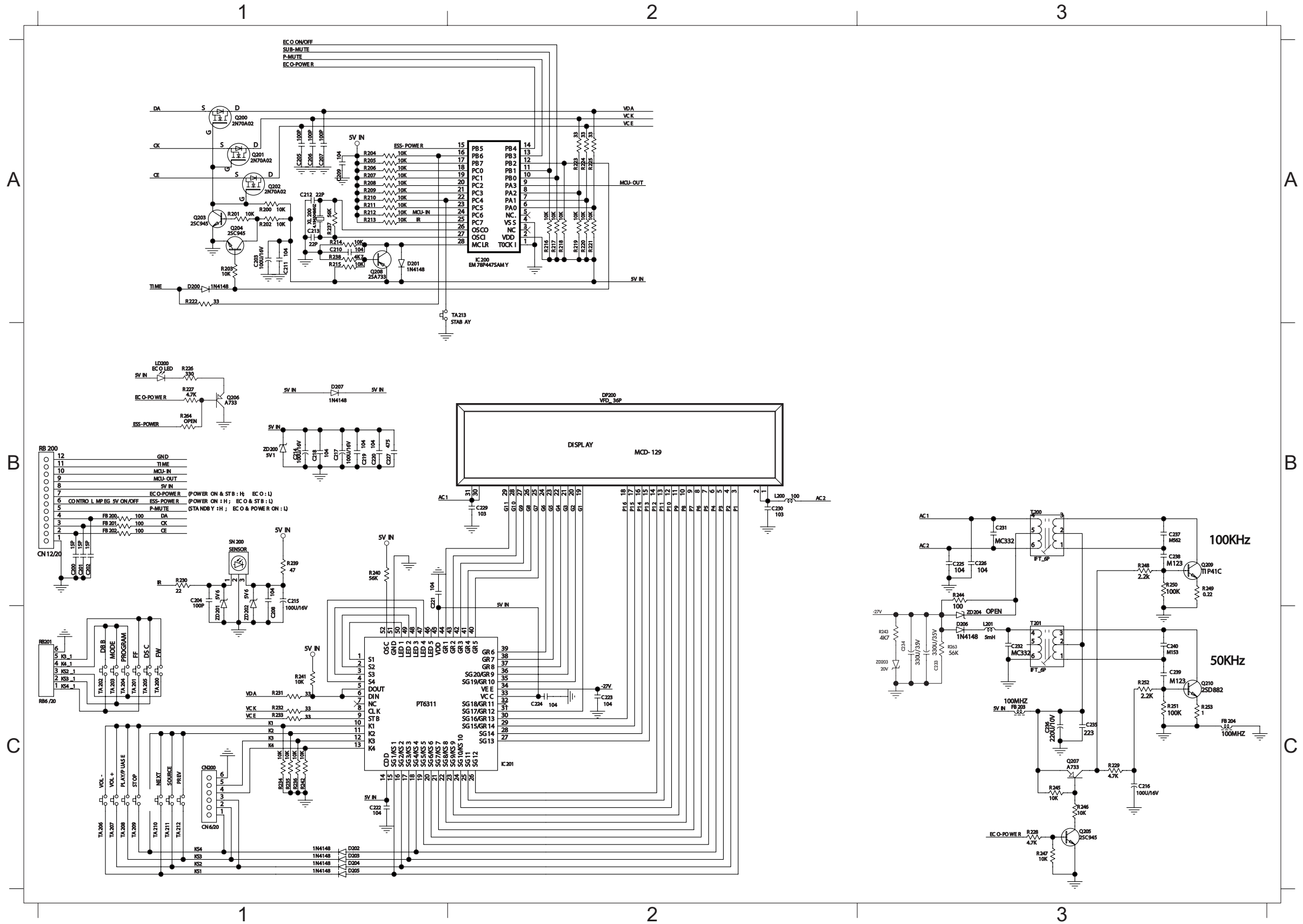
Q202			
Pin NO	1	2	3
Voltage	5.20	3.30	3.20

Q205			
Pin NO	1	2	3
Voltage	0.70	0.00	0.00

Q208			
Pin NO	1	2	3
Voltage	4.50	5.10	5.10

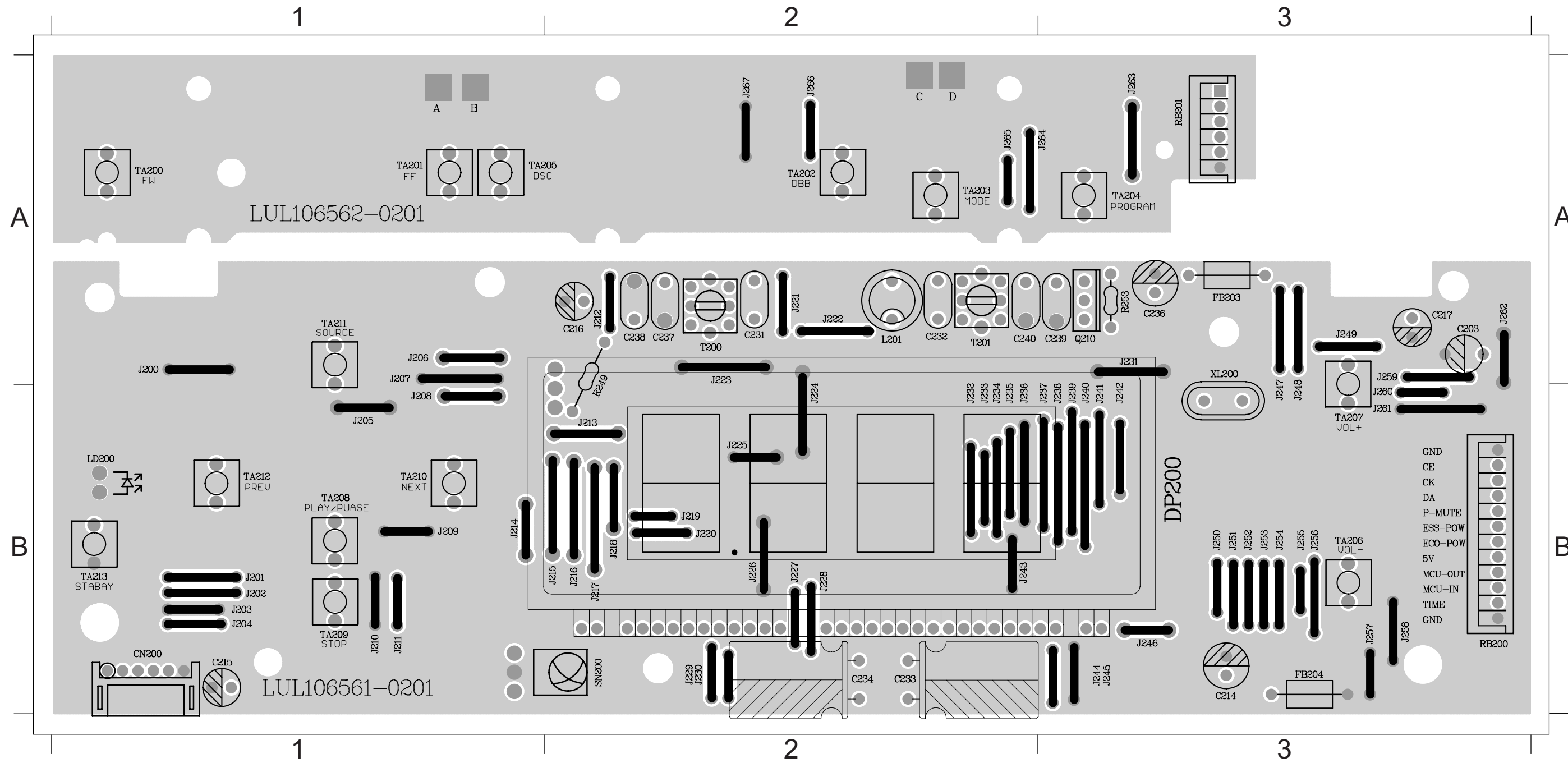
CIRCUIT DIAGRAM - KEY & VFD BOARD

C203	A1	C211	A1	Q201	A1	R201	A1	R208	A1	R214	A1	IC200	A2	R221	A2	C201	B1	C218	B1	FB201	B1	R227	B1	ZD200	B1	C226	B3	R248	B3	CN200	C1	R232	C1	R242	C1	TA204	C1	TA210	C1	C224	C2	C235	C3	FB204	C3	R229	C3	R252	C3
C205	A1	C212	A1	Q202	A1	R202	A1	R209	A1	R215	A1	R216	A2	R223	A2	C202	B1	C219	B1	FB202	B1	R230	B1	C229	B2	C231	B3	R249	B3	D202	C1	R233	C1	RB201	C1	TA205	C1	TA211	C1	IC201	C2	C236	C3	L201	C3	R243	C3	R253	C3
C206	A1	C213	A1	Q203	A1	R203	A1	R210	A1	R222	A1	R217	A2	R224	A2	C204	B1	C220	B1	LD200	B1	R239	B1	C230	B2	C237	B3	R250	B3	D203	C1	R234	C1	TA200	C1	TA206	C1	TA212	C1	C216	C3	C239	C3	Q205	C3	R245	C3	T201	C3
C207	A1	D200	A1	Q204	A1	R204	A1	R211	A1	R237	A1	R218	A2	R225	A2	C214	B1	C221	B1	Q206	B1	R240	B1	DP200	B2	C238	B3	T200	B3	D204	C1	R235	C1	TA201	C1	TA207	C1	ZD201	C1	C232	C3	C240	C3	Q207	C3	R246	C3	ZD203	C3
C209	A1	D201	A1	Q208	A1	R205	A1	R212	A1	R238	A1	R219	A2	TA213	A2	C215	B1	C227	B1	R207	B1	RB200	B1	L200	B2	Q209	B3	C208	C1	D205	C1	R236	C1	TA202	C1	TA208	C1	ZD202	C1	C233	C3	D206	C3	Q210	C3	R247	C3		
C210	A1	Q200	A1	R200	A1	R206	A1	R213	A1	XL200	A1	R220	A2	C200	B1	C217	B1	FB200	B1	R226	B1	SN200	B1	C225	B3	R244	B3	C222	C1	R231	C1	R241	C1	TA203	C1	TA209	C1	C223	C2	C234	C3	FB203	C3	R228	C3	R251	C3		



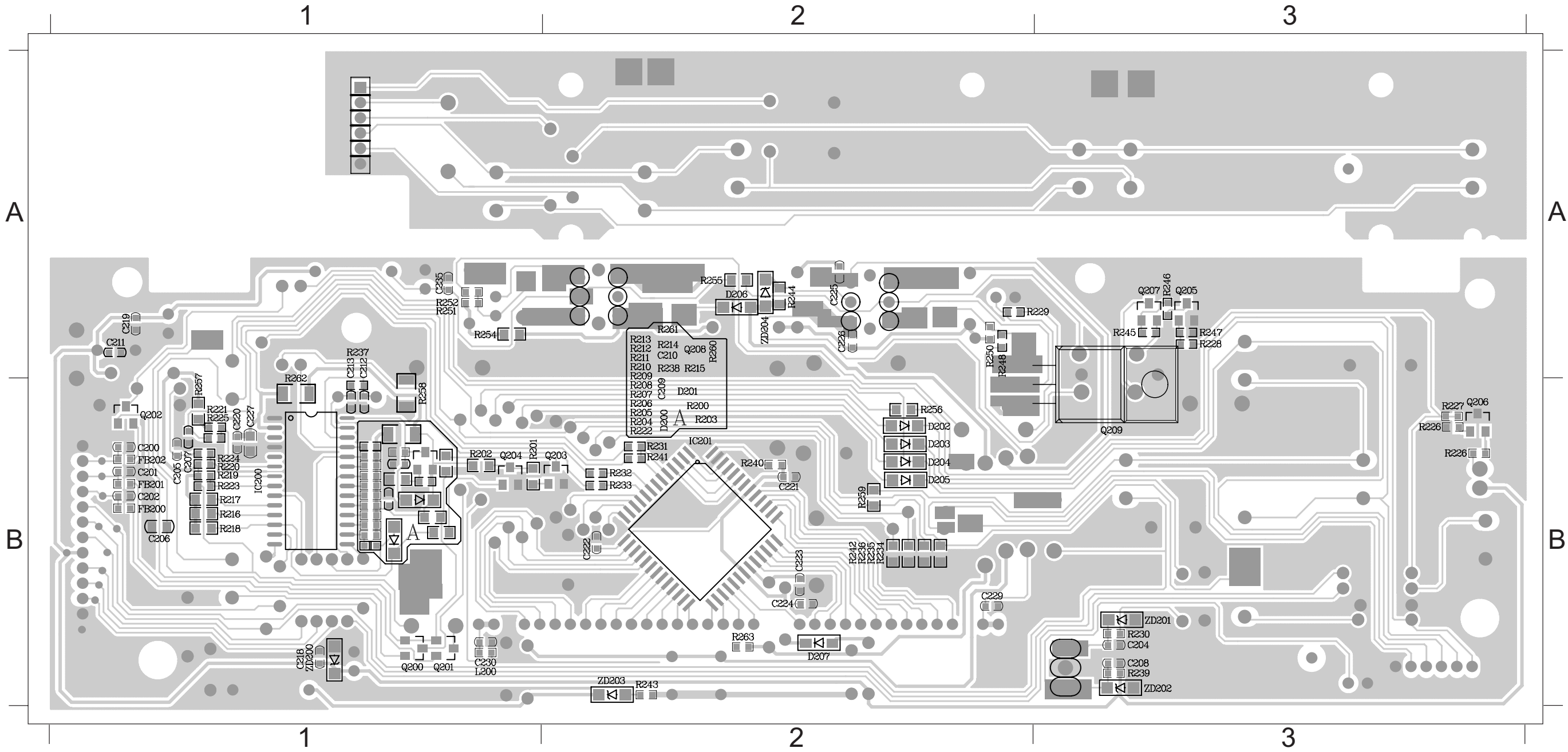
PCB LAYOUT - TOP VIEW

C203	A3	C231	A2	C237	A2	DP200	B2	J202	B1	J207	A1	J212	A2	J217	B2	J222	A2	J227	B2	J232	B2	J237	B3	J242	B3	J247	B3	J252	B3	J257	B3	J262	A3	J267	A2	R253	A3	T201	A2	TA204	A3	TA209	B1	XL200	B3
C214	B3	C232	A2	C238	A2	FB203	A3	J203	B1	J208	B1	J213	B2	J218	B2	J223	A2	J228	B2	J233	B2	J238	B3	J243	B2	J248	B3	J253	B3	J258	B3	J263	A3	L201	A2	RB200	B3	TA200	A1	TA205	A1	TA210	B1		
C215	B1	C233	B2	C239	A3	FB204	B3	J204	B1	J209	B1	J214	B1	J219	B2	J224	B2	J229	B2	J234	B2	J239	B3	J244	B3	J249	A3	J254	B3	J259	B3	J264	A2	LD200	B1	RB201	A3	TA201	A1	TA206	B3	TA211	A1		
C216	A2	C234	B2	C240	A2	J200	A1	J205	B1	J210	B1	J215	B2	J220	B2	J225	B2	J230	B2	J235	B2	J240	B3	J245	B3	J250	B3	J255	B3	J260	B3	J265	A2	Q210	A3	SN200	B2	TA202	A2	TA207	B3	TA212	B1		
C217	A3	C236	A3	CN200	B1	J201	B1	J206	A1	J211	B1	J216	B2	J221	A2	J226	B2	J231	A3	J236	B2	J241	B3	J246	B3	J251	B3	J256	B3	J261	B3	J266	A2	R249	A3	T200	A2	TA203	A2	TA208	B1	TA213	B1		



PCB LAYOUT - BOTTOM VIEW

C200 B1	C206 B1	C211 A1	C220 B1	C225 A2	C235 A1	D204 B2	FB202 B1	Q201 B1	Q206 B3	R201 B1	R206 B2	R211 A2	R216 B1	R221 B1	R226 B3	R231 B2	R236 B2	R241 B2	R246 A3	R252 A1	R258 B1	ZD201 B3
C201 B1	C207 B1	C212 A1	C221 B2	C226 A2	D200 B2	D205 B2	IC200 B1	Q202 B1	Q207 A3	R202 B1	R207 B2	R212 A2	R217 B1	R222 B2	R227 B3	R232 B2	R237 A1	R242 B2	R247 A3	R254 A1	R259 B2	ZD202 B3
C202 B1	C208 B3	C213 A1	C222 B2	C227 B1	D201 B2	D206 A2	IC201 B2	Q203 B2	Q208 A2	R203 B2	R208 B2	R213 A2	R218 B1	R223 B1	R228 A3	R233 B2	R238 A2	R243 B2	R248 A2	R255 A2	R260 A2	ZD203 B2
C204 B3	C209 B2	C218 B1	C223 B2	C229 B2	D202 B2	FB200 B1	L200 B1	Q204 B1	Q209 B3	R204 B2	R209 A2	R214 A2	R219 B1	R224 B1	R229 A2	R234 B2	R239 B3	R244 A2	R250 A2	R256 B2	R261 A2	
C205 B1	C210 A2	C219 A1	C224 B2	C230 B1	D203 B2	FB201 B1	Q200 B1	Q205 A3	R200 B2	R205 B2	R210 A2	R215 A2	R220 B1	R225 B1	R230 B3	R235 B2	R240 B2	R245 A3	R251 A1	R257 B1	ZD200 B1	



ELECTRICAL PARTS LIST - KEY & VFD BOARD

DP200	9940 000 05469	VFD 35P 55x20
IC200	9965 000 41279	IC 28P EM78P447SAMY
IC200	9965 100 04636	IC 28P EM78P447SAMJ-G /12/05/58
IC201	9965 000 29614	IC 52P PT6311
IC201	9965 000 41280	IC 52P ET16311 VFD DRIVER /78
LD200	9940 000 05471	LED 2.94DIA BLUE
LD200	996510000591	LED D3 HI-BLUE /12/05/58
Q200	9965 000 41281	FET 2N7002 60V/115MA
Q201	9965 000 41281	FET 2N7002 60V/115MA
Q202	9965 000 41281	FET 2N7002 60V/115MA
Q203	9940 000 00915	XISTR NPN 2SC1623
Q204	9940 000 00915	XISTR NPN 2SC1623
Q205	9940 000 00915	XISTR NPN 2SC1623
Q206	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
Q207	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
Q208	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
Q209	9940 000 05335	XISTR NPN TIP41C
Q210	△ 9965 000 28742	XISTR NPN 2SD882P
R249	9940 000 05474	FUSEBLE RES 0.22R 1/4W 5%
SN200	9940 000 05472	IRT RECEIVER IRM-2638AF4
SN200	9965 100 04119	IR SENSOR 4.4~5.5V 38kHz /12/05/58
T200	9940 000 05473	OSC COIL 160UH 8% 796KHz
T201	9965 000 22303	OSC COIL REC OSC 3MH
TA200	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA201	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA202	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA203	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA204	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA205	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA206	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA207	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA208	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA209	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA210	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA211	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA212	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
TA213	9965 000 26952	TACT SW 2PIN 160GF 20MA 15V
XL200	9940 000 05352	X'TAL 4.194304MHZ -/+10PPM
ZD200	9940 000 05476	ZENER; 5.6V 0.5W 5% MOT
ZD201	9940 000 05476	ZENER; 5.6V 0.5W 5% MOT
ZD202	9940 000 05476	ZENER; 5.6V 0.5W 5% MOT
ZD203	9965 000 41282	ZENER 21.52-22.63V 5% 0.5W

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

MAIN BOARD

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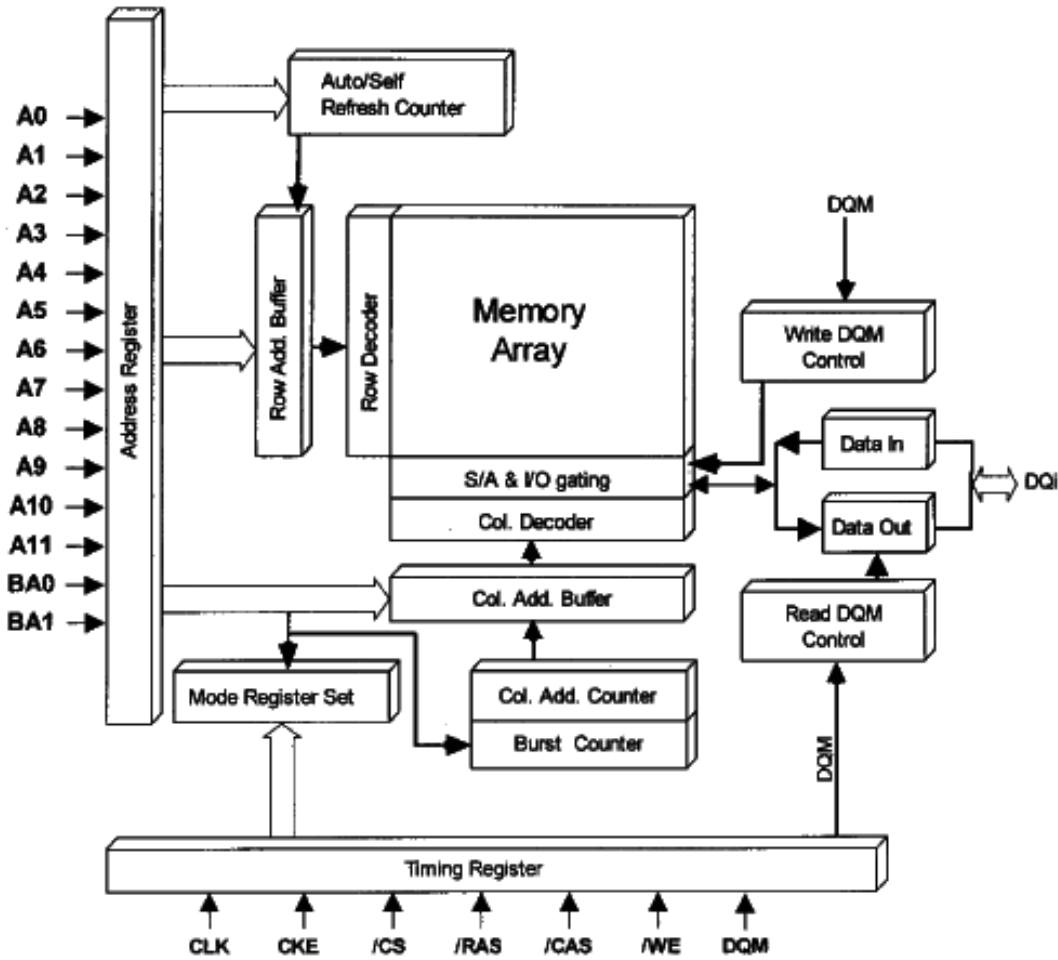
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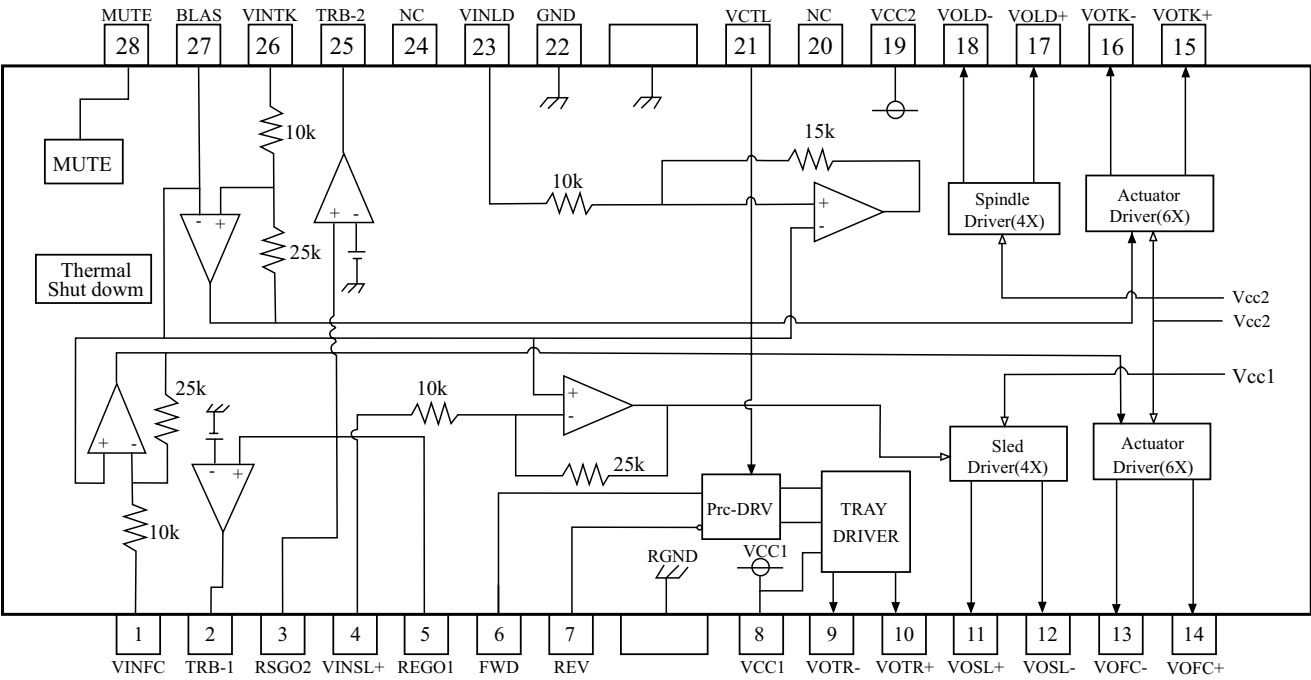
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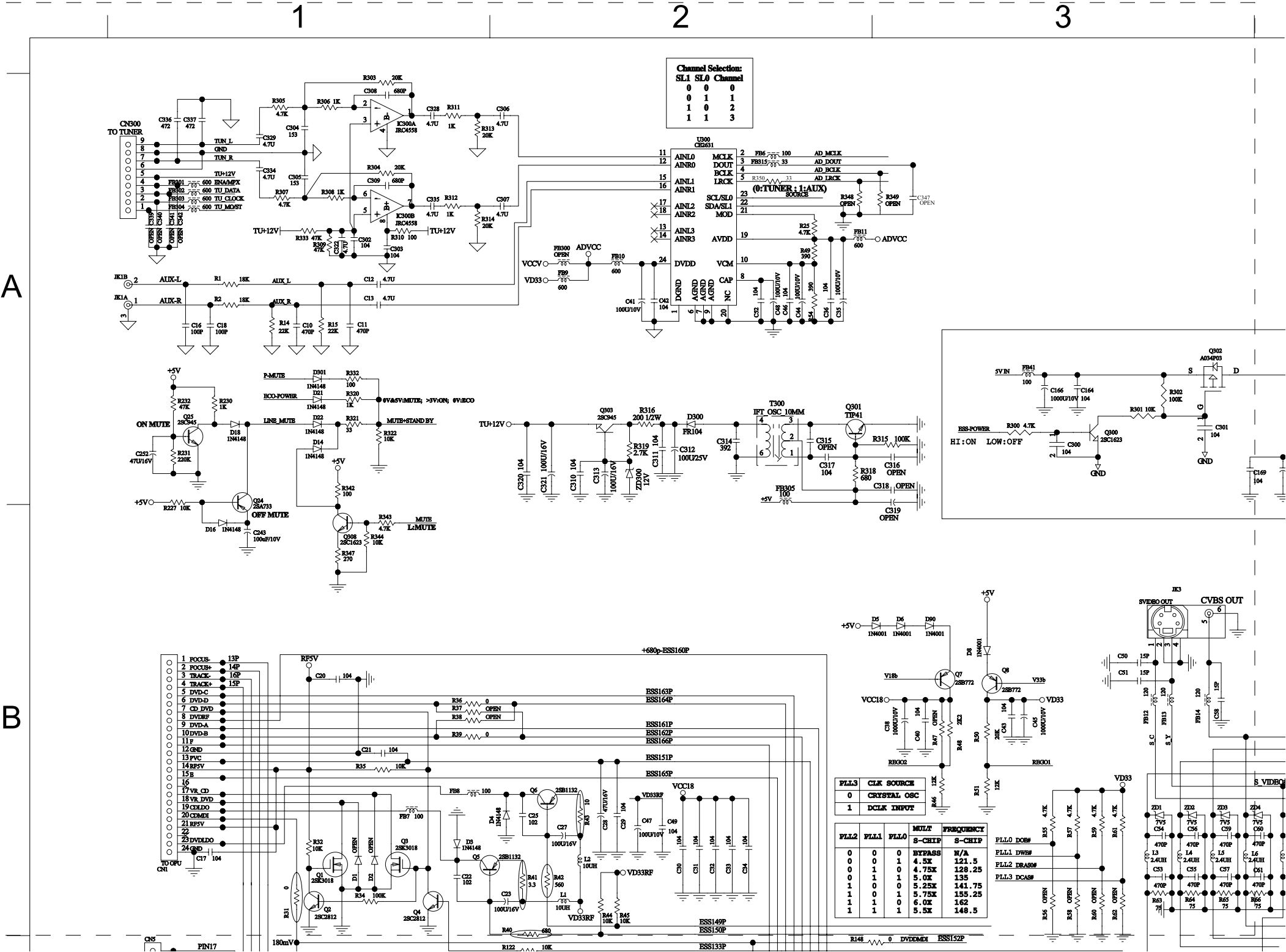


Internal IC diagram -V5888S HSOP



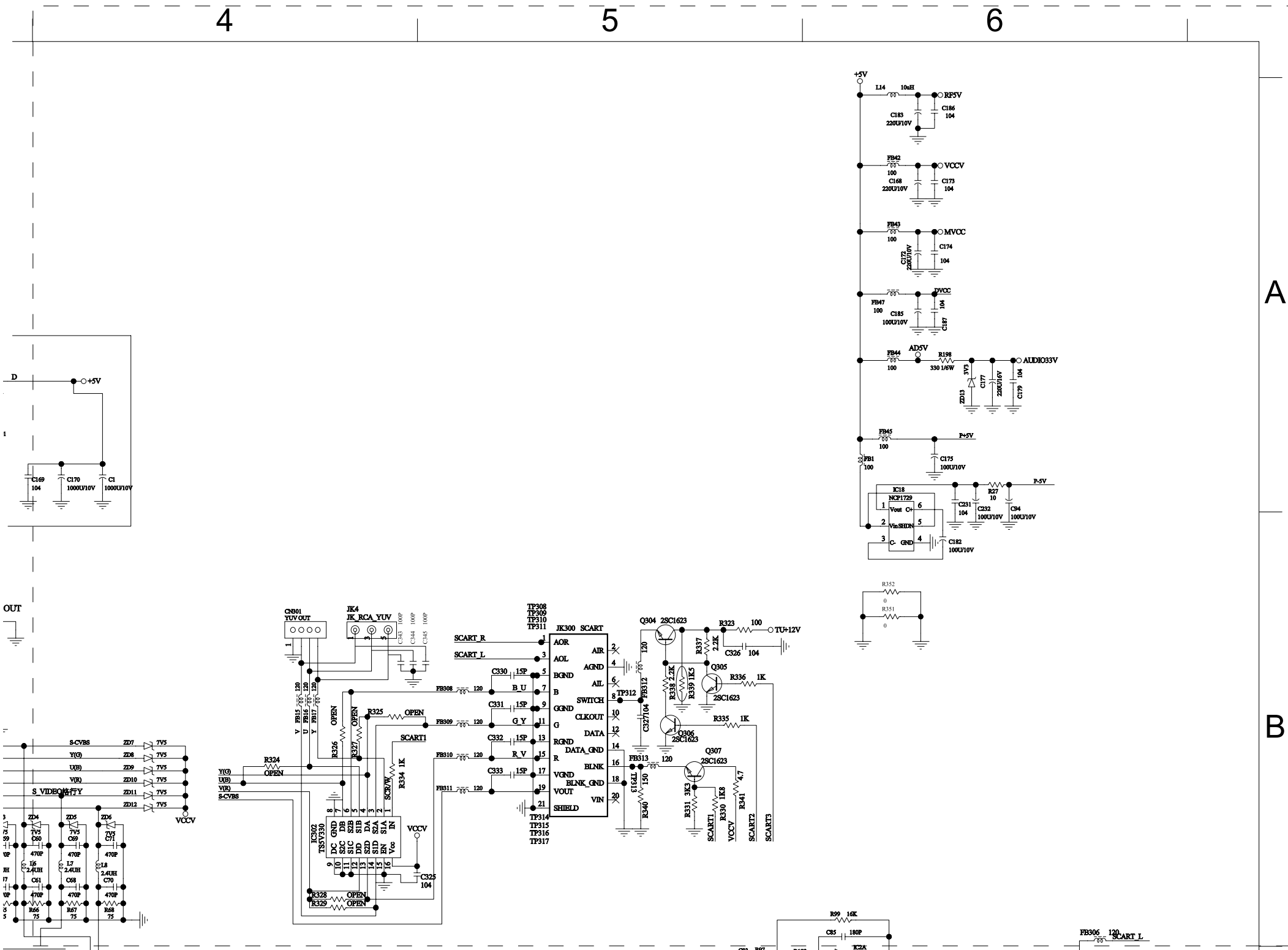
CIRCUIT DIAGRAM - TOP LEFT

C1	A4	C111	C2	C125	C3	C137	C4	C150	C5	C163	C6	C177	A6	C192	D1	C203	D1	C218	D4	C230	C2	C271	D6	C306	A2	C321	A2	C38	B3	C50	B3	C69	B4	C97	C1	D14	A1	FB1	A6	FB301	A1	FB39	C6
C10	A1	C112	C2	C126	C3	C138	C4	C151	C5	C164	A3	C178	D1	C193	D2	C204	D2	C219	D4	C231	A6	C277	C6	C307	A2	C322	A1	C4	D4	C51	B3	C70	B4	C98	C2	D16	B1	FB10	A2	FB302	A1	FB41	A3
C100	C2	C113	C2	C127	C3	C139	C4	C152	D5	C165	C6	C179	A6	C194	D1	C206	D2	C22	B1	C232	A6	C279	D6	C308	A1	C323	D2	C40	B3	C52	A2	C71	B4	C99	C2	D18	A1	FB11	A2	FB303	A1	FB42	A6
C101	C2	C114	C2	C128	C4	C140	D4	C153	C5	C166	A3	C18	A1	C195	D1	C207	C2	C220	D4	C233	C2	C28	B2	C309	A1	C328	A1	C41	A2	C53	B3	C82	C5	CE1	D1	D21	A1	FB12	B3	FB304	A1	FB43	A6
C102	C2	C115	C2	C129	C4	C141	D5	C154	C5	C168	A6	C182	B6	C196	D2	C208	D1	C221	D4	C243	B1	C282	C6	C31	B2	C329	A1	C42	A2	C54	B3	C83	C5	CE2	D1	D22	A1	FB13	B3	FB305	A2	FB44	A6
C103	C2	C116	C2	C13	A1	C142	D5	C155	C6	C169	A4	C183	A6	C197	D2	C209	D2	C222	D5	C244	C3	C29	B2	C310	A2	C33	B2	C43	B3	C55	B3	C84	C5	CE3	D1	D3	B1	FB14	B3	FB31	D1	FB45	A6
C104	C2	C117	C2	C130	C4	C143	C5	C156	C6	C17	B1	C185	A6	C198	D1	C21	B1	C223	D5	C25	B2	C30	B2	C311	A2	C334	A1	C44	A2	C56	B3	C85	B6	CE4	D1	D300	A2	FB15	B4	FB315	A2	FB47	A6
C105	C2	C118	C2	C131	C4	C144	C5	C157	C6	C170	A4	C186	A6	C199	D1	C210	D2	C224	D5	C252	A1	C300	A3	C312	A2	C335	A1	C45	B3	C57	B3	C86	C6	CE5	D1	D301	A1	FB16	B4	FB32	D1	FB49	D3
C106	C2	C119	C3	C132	C4	C145	C5	C158	D6	C171	D1	C187	A6	C2	C6	C211	D2	C225	D5	C253	D5	C301	A3	C313	A2	C336	A1	C46	A2	C58	B3	C87	C6	CN1	B1	D4	B2	FB17	B4	FB33	C4	FB6	A2
C107	C2	C12	A1	C133	C4	C146	C6	C16	A1	C172	A6	C188	D1	C20	B1	C212	D2	C226	D5	C258	D5	C302	A1	C314	A2	C337	A1	C47	B2	C59	B3	C93	D1	CN3	D1	D5	B3	FB26	C6	FB35	C2	FB7	B1
C108	C2	C120	C3	C134	C4	C147	C6	C160	C6	C173	A6	C189	D1	C200	D1	C215	D2	C227	D5	C267	D6	C303	A1	C317	A2	C34	B2	C48	A2	C60	B3	C94	A6	CN300	A1	D6	B3	FB28	D1	FB36	D2	FB8	B1
C109	C2	C121	C3	C135	C4	C148	C5	C161	C6	C174	A6	C190	D1	C201	D1	C216	D2	C228	D2	C268	D6	C304	A1	C32	B2	C35	A2	C49	B2	C61	B3	C95	C1	CN4	C1	D8	B3	FB29	D1	FB37	C2	FB9	A2
C11	A1	C124	C3	C136	C4	C149	C5	C162	C6	C175	A6	C191	D1	C202	D2	C217	D2	C23	B2	C27	B2	C305	A1	C320	A2	C36	A2	C5	D2	C68	B4	C96	D1	CN5	C1	D90	B3	FB30	D1	FB38	C4		



CIRCUIT DIAGRAM - TOP RIGHT

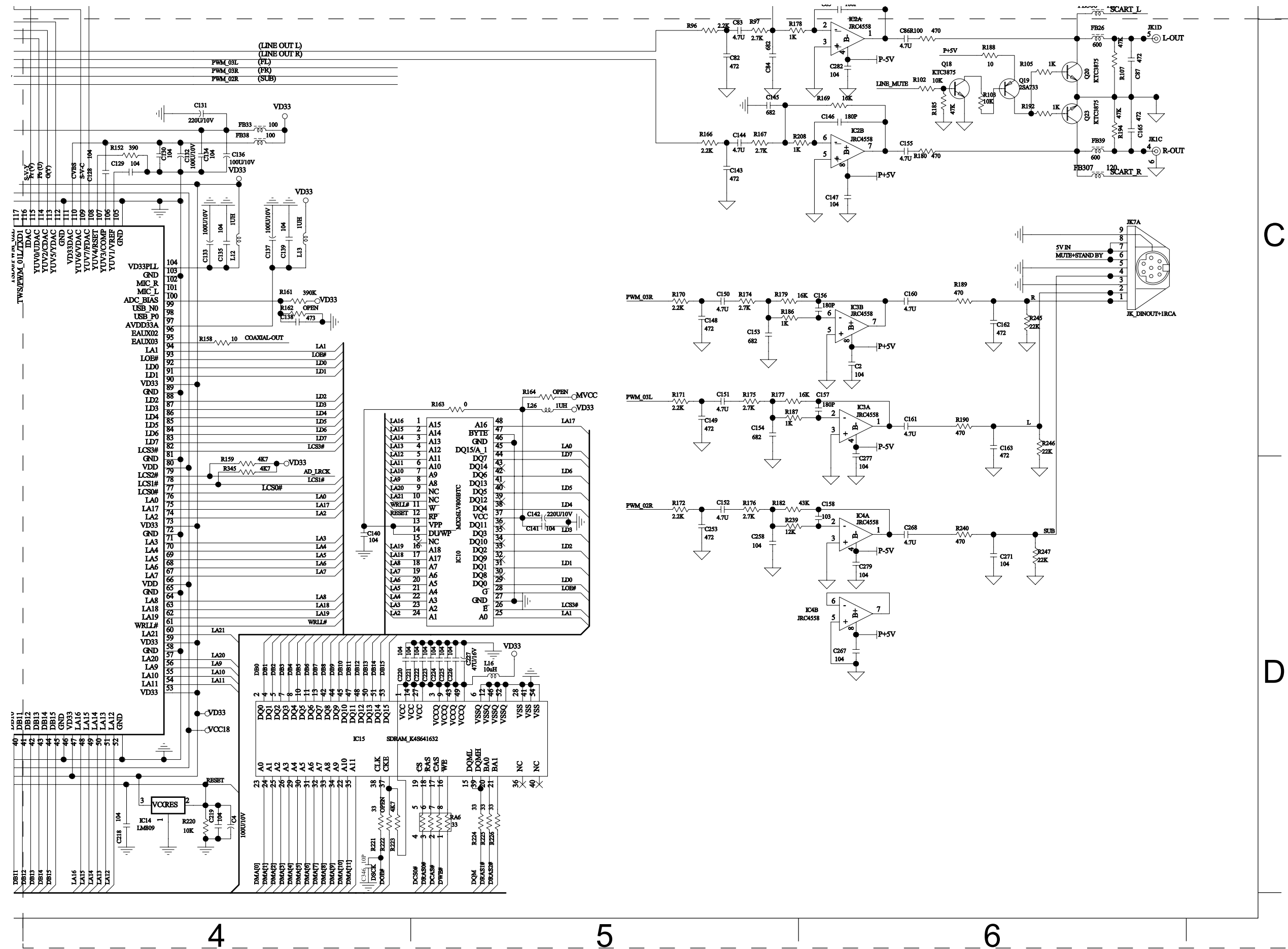
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IC12	D2	JK3	B3	L4	B3	Q25	A1	R100	C6	R123	C2	R135	C2	R149	C3	R172	D5	R189	C6	R207	D2	R224	D5	R26	D2	R309	A1	R321	A1	R347	B1	R50	B3	R71	C2	U300	A2	ZD7	B4
IC13	C3	JK4	B4	L5	B3	Q3	B1	R102	C6	R124	C2	R136	C2	R15	A1	R174	C5	R190	C6	R208	C5	R225	D5	R27	A6	R31	B1	R322	A1	R35	B1	R51	B3	R72	D2	XL1	D2	ZD8	B4
IC14	D4	JK7	D1	L6	B3	Q300	A3	R103	C6	R125	C2	R137	C2	R151	C3	R175	C5	R192	C6	R209	D2	R226	D5	R28	D2	R310	A1	R324	B4	R36	B1	R54	A2	R73	D2	ZD1	B3	ZD9	B4
IC15	D4	L1	B2	L7	B4	Q301	A2	R105	C6	R126	C2	R138	C2	R152	C4	R176	D5	R194	C6	R210	C2	R227	B1	R3	D2	R311	A1	R327	B4	R39	B1	R55	B3	R96	C5	ZD10	B4		
IC18	A6	L10	C2	L8	B4	Q302	A3	R107	C6	R127	C2	R139	C2	R158	C4	R177	C5	R195	D1	R211	C2	R230	A1	R300	A3	R312	A1	R329	B4	R40	B2	R57	B3	R97	C5	ZD11	B4		
IC2	C6	L12	C4	L9	D1	Q303	A2	R109	D2	R128	C2	R14	A1	R159	D4	R178	C5	R196	C3	R212	D2	R231	B1	R301	A3	R313	A1	R332	A1	R41	B2	R59	B3	R99	B6	ZD12	B4		
IC3	C6	L13	C4	Q1	B1	Q308	B1	R110	D1	R129	C2	R140	D2	R161	C4	R179	C5	R198	A6	R214	D2	R232	A1	R302	A3	R314	A1	R333	A1	R42	B2	R61	B3	RA2	D2	ZD13	A6		
IC300	A1	L14	A6	Q18	C6	Q4	B1	R114	D1	R13	C2	R143	C2	R163	C5	R180	C6	R199	C3	R216	D2	R239	D5	R303	A1	R315	A3	R34	B1	R43	B2	R63	B3	RA3	D2	ZD2	B3		
IC301	D2	L16	D5	Q19	C6	Q5	B1	R118	C1	R130	C2	R144	C2	R166	C5	R182	D5	R2	A1	R218	D2	R240	D6	R304	A1	R316	A2	R342	A1	R44	B2	R64	B3	RA300	D2	ZD3	B3		
IC4	D6	L2	B2	Q2	B1	Q6	B2	R119	C1	R131	C2	R145	C2	R167	C5	R185	C6	R200	C3	R219	D2	R245	C6	R305	A1	R318	A2	R343	B1	R45	B2	R65	B3	RA4	D3	ZD300	A2		
IC8	C1	L26	C5	Q20	C6	Q7	B3	R12	C1	R132	C2	R146	C2	R169	C6	R186	C5	R203	D1	R220	D4	R246	C6	R306	A1	R319	A2	R344	B1	R46	B3	R66	B3	RA5	D3	ZD4	B3		
IC9	C1	L3	B3	Q23	C6	Q8	B3	R120	C1	R133	C2	R147	C2	R170	C5	R187	C5	R204	D2	R221	D4	R247	D6	R307	A1	R32	B1	R345	D4	R48	B3	R67	B4	RA6	D5	ZD5	B4		



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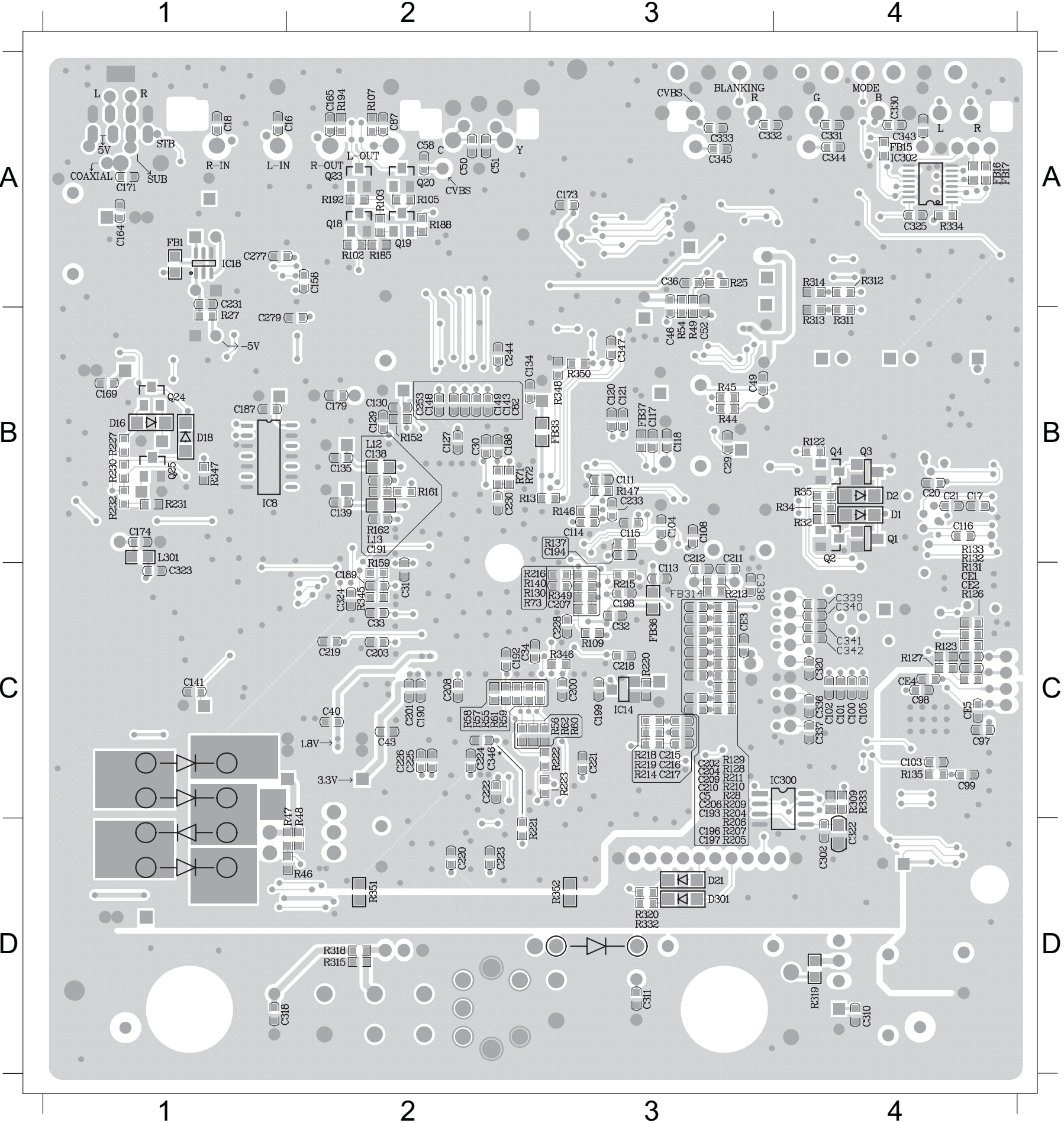


CIRCUIT DIAGRAM - BOTTOM RIGHT

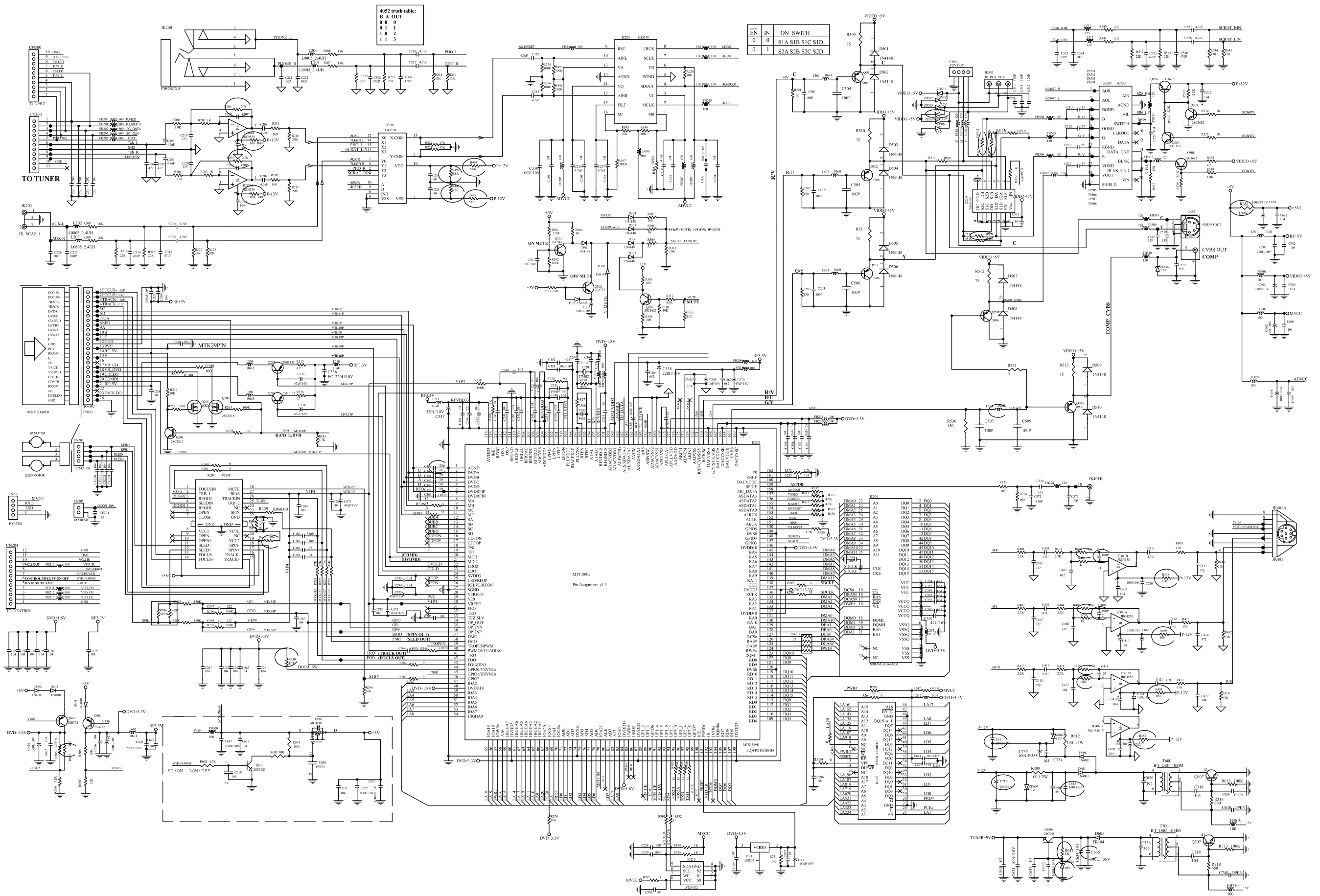


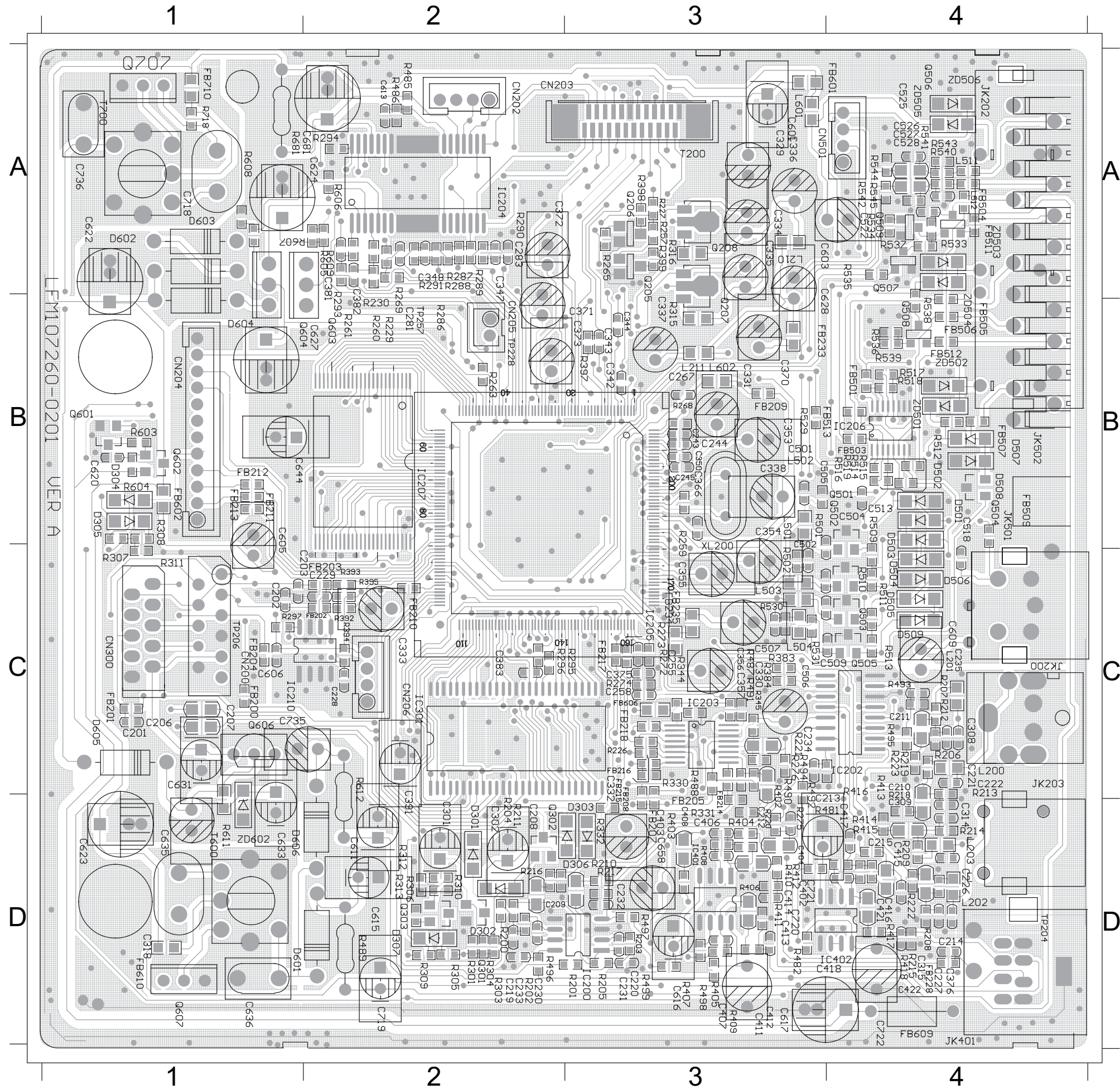
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C10	A2	C314	D2	FB47	B4	R179	B4	ZD13	B3
C106	C1	C317	D3	FB49	C3	R180	A3	ZD2	A1
C107	B2	C321	D1	FB6	B3	R182	B3	ZD3	A1
C109	B1	C328	B1	FB7	B1	R186	B4	ZD300	D1
C11	A2	C329	C2	FB8	B1	R187	A3	ZD4	A2
C112	B2	C334	C1	FB9	A2	R189	A4	ZD5	A2
C119	B2	C335	A1	IC10	C3	R190	A3	ZD6	A2
C12	A2	C35	A2	IC12	C2	R195	B4	ZD7	A2
C124	B2	C38	C4	IC13	C3	R196	B3	ZD8	A1
C125	B2	C4	C2	IC15	C2	R198	B3	ZD9	A1
C126	B2	C41	A2	IC2	A3	R199	B3		
C128	B3	C42	A2	IC3	A3	R2	A2		
C13	A2	C44	B2	IC301	C4	R200	B3		
C131	B2	C45	C3	IC4	A4	R203	B4		
C132	B3	C47	B2	IC9	C1	R208	A3		
C133	B3	C48	B2	JK1	A3	R224	C3		
C136	B2	C53	A1	JK3	A2	R225	C2		
C137	B3	C54	A1	JK4	A2	R226	C2		
C140	C4	C55	A1	JK7	A4	R239	B3		
C142	C4	C56	A1	L1	B1	R240	A4		
C144	A3	C57	A1	L10	B2	R245	A4		
C145	A3	C59	A1	L14	B1	R246	A3		
C146	A3	C60	A2	L16	C3	R247	A3		
C147	A3	C61	A2	L2	B1	R26	C2		
C150	A3	C68	B2	L26	C4	R3	C2		
C151	A3	C69	A2	L3	A1	R300	B4		
C152	A3	C70	A2	L4	A1	R301	A4		
C153	B4	C71	A2	L5	A1	R302	A4		
C154	A3	C83	A3	L6	A2	R303	C2		
C155	A3	C84	A3	L7	A2	R304	C2		
C156	A4	C85	A3	L8	A2	R305	C2		
C157	A4	C86	A3	L9	B4	R306	C2		
C160	A4	C93	B4	Q300	B4	R307	C2		
C161	A3	C94	B4	Q301	D3	R308	C2		
C162	A4	C95	D1	Q302	A4	R31	B1		
C163	A3	C96	B4	Q303	D1	R310	C2		
C166	A4	CN1	B1	Q308	B4	R316	D2		
C168	A2	CN3	D2	Q5	B1	R321	B4		
C169	A3	CN300	C1	Q6	B1	R322	B4		
C170	B4	CN4	C2	Q7	D4	R324	A1		
C172	B4	CN5	C1	Q8	D3	R327	A1		
C175	A4	D14	B4	R1	A2	R329	A1		
C177	B3	D22	B4	R100	A3	R342	B4		
C178	B4	D3	B1	R110	B4	R343	B4		
C182	A4	D300	D2	R114	B4	R344	B4		
C183	B1	D4	B1	R118	D1	R36	B1		
C185	B4	D5	C4	R119	C1	R39	B1		
C186	B1	D6	D4	R12	D1	R40	B2		
C195	B4	D8	C4	R120	C1	R41	B1		
C2	A4	D90	D4	R124	C1	R42	B2		
C22	B1	FB10	A2	R125	C1	R43	B1		
C227	D3	FB11	A2	R134	C1	R50	D3		
C23	B1	FB12	A2	R136	C1	R51	D3		
C232	A4	FB13	A2	R138	C1	R63	A1		
C243	B4	FB14	A2	R139	C1	R64	A1		
C25	B1	FB26	A3	R14	A2	R65	A1		
C252	B4	FB28	B4	R143	C1	R66	A2		
C258	B3	FB29	C2	R144	C1	R67	A2		
C267	A4	FB30	C2	R145	B1	R68	A2		
C268	A4	FB301	C2	R148	B1	R96	B3		

PCB LAYOUT - BOTTOM VIEW

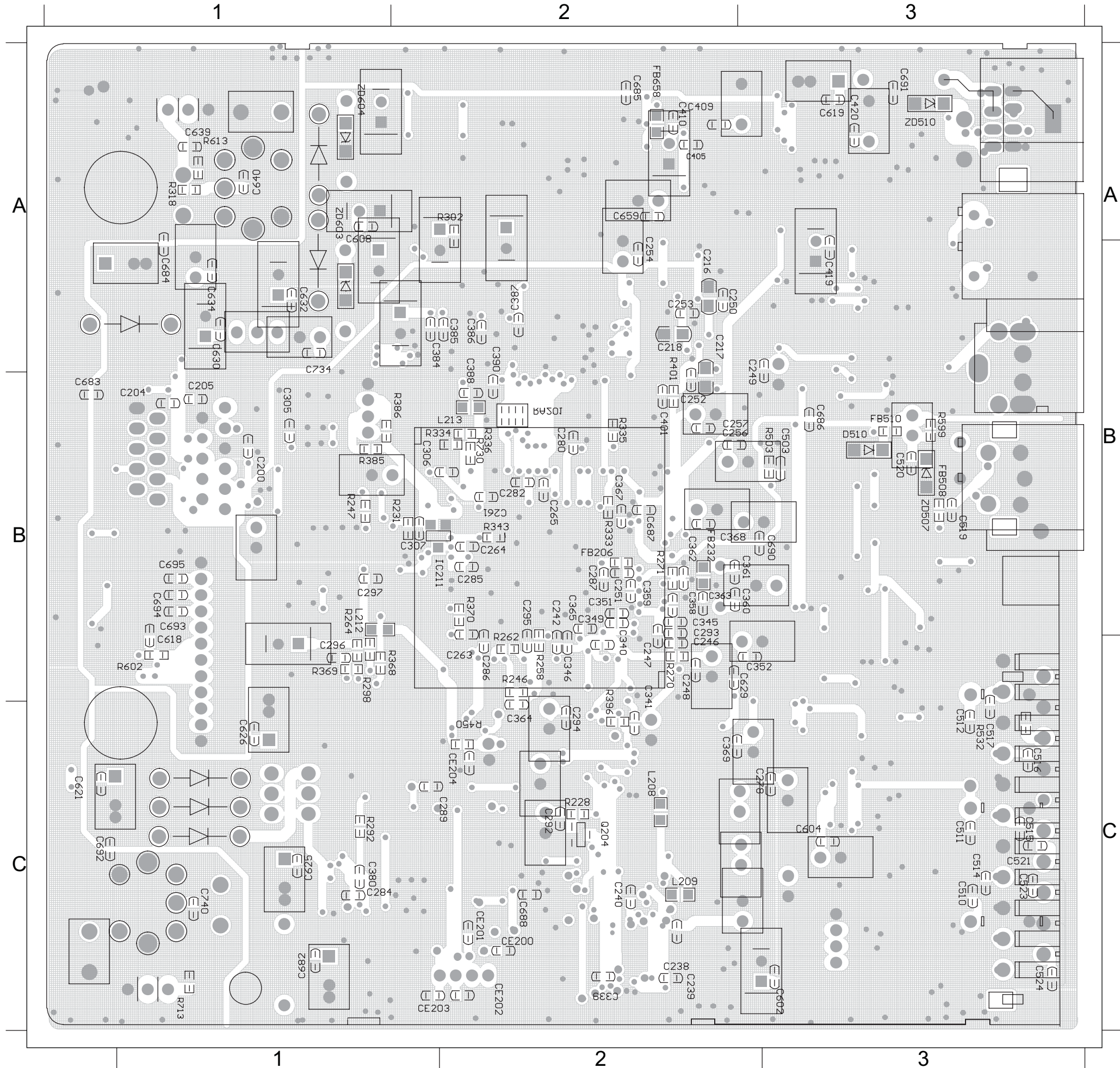


C100	C4	C228	C3	R122	B4
C101	C4	C230	B2	R123	C4
C102	C4	C231	A1	R126	C4
C103	C4	C233	B3	R127	C4
C104	B3	C244	B2	R128	C3
C105	C4	C253	B2	R129	C3
C108	B3	C277	A1	R13	B2
C111	B3	C279	B1	R130	C3
C113	B3	C29	B3	R131	C4
C114	B3	C30	B2	R132	C4
C115	B3	C302	D4	R133	C4
C116	B4	C31	C2	R135	C4
C117	B3	C310	D4	R137	B3
C118	B3	C311	D3	R140	C3
C120	B3	C32	C3	R146	B3
C121	B3	C320	C4	R147	B3
C127	B2	C322	D4	R15	A2
C129	B2	C323	B1	R152	B2
C130	B2	C33	C2	R159	B2
C134	B2	C336	C4	R161	B2
C135	B2	C337	C4	R185	A2
C138	B2	C34	C2	R188	A2
C139	B2	C36	A3	R192	A2
C141	C1	C40	C2	R194	A2
C143	B2	C43	C2	R204	C3
C148	B2	C46	A3	R205	C3
C149	B2	C49	B3	R207	C3
C158	A2	C5	C3	R209	C3
C16	A1	C50	A2	R210	C3
C164	A1	C51	A2	R211	C3
C165	A2	C52	A3	R212	C3
C17	B4	C58	A2	R214	C3
C171	A1	C82	B2	R216	C3
C173	A3	C87	A2	R218	C3
C174	B1	C97	C4	R219	C3
C179	B2	C98	C4	R220	C3
C18	A1	C99	C4	R221	D2
C187	B1	CE1	C4	R223	C3
C188	B2	CE2	C4	R227	B1
C189	C2	CE3	C3	R230	B1
C190	C2	CE4	C4	R231	B1
C191	B2	CE5	C4	R232	B1
C192	C2	D16	B1	R25	A3
C193	C3	D18	B1	R27	B1
C194	B3	D21	D3	R28	C3
C196	C3	D301	D3	R309	C4
C197	C3	FB1	A1	R311	A4
C198	C3	FB15	A4	R312	A4
C199	C3	FB16	A4	R313	A4
C20	B4	FB17	A4	R314	A4
C200	C3	FB33	B3	R315	D2
C201	C2	FB36	C3	R318	D2
C202	C3	FB37	B3	R319	D4
C203	C2	IC14	C3	R32	B4
C204	C3	IC18	A1	R320	D3
C206	C3	IC300	C3	R332	D3
C207	C3	IC8	B1	R333	C4
C208	C2	L12	B2	R34	B4
C209	C3	L13	B2	R345	C2
C21	B4	L301	B1	R346	C3
C210	C3	Q1	B4	R347	B1
C211	B3	Q18	A2	R35	B4
C212	B3	Q19	A2	R44	B3
C215	C3	Q2	B4	R45	B3
C216	C3	Q20	A2	R46	D1
C217	C3	Q23	A2	R48	C2
C218	C3	Q24	B1	R49	A3
C219	C2	Q25	B1	R54	A3
C220	D2	Q3	B4	R55	C2
C221	C3	Q4	B4	R57	C2
C222	C2	R102	A2	R59	C2
C223	D2	R103	A2	R61	C2
C224	C2	R105	A2	R71	B2
C225	C2	R107	A2	R72	B2
C226	C2	R109	C3	R73	C3





PCB LAYOUT BOTTOM VIEW (ONLY FOR /12/05/58)



ELECTRICAL PARTS LIST - MAIN BOARD

D300	9940 000 00941	DIODE HER104 1A 300V 50NS	Q206	9965 100 04117	FET 2SK3018 30V/0.1A SC-70
IC10	9965 000 41283	IC 48P MX29LV800CBTC-70G	Q23	9965 000 13683	TRANSISTOR KTC3875Y-RTK
IC12	9940 000 05208	IC 8P TU24C02CS2BF	Q24	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
IC13	9940 000 05207	IC 208P ES8380FAA PQFP	Q25	9940 000 00915	XISTR NPN 2SC1623
IC14	9940 000 05209	IC 3P AZ809NSTR-E1 SOT23	Q3	3141 018 51690	TRA SM 2SK3018
IC14	9965 000 41284	IC 3P STM809SWX6F 3.0V	Q300	9940 000 00915	XISTR NPN 2SC1623
IC15	9940 000 05465	IC 54P EW484M1644VTA-6F	Q301	9940 000 05335	XISTR NPN TIP41C
IC15	9965 000 41285	IC 54P K4S641632K-UC75	Q302	9965 000 41288	FET AO34P03 ALPHA -30V/-2.6A
IC18	9940 000 05466	IC 6P NCP1729SN35T1	Q303	4822 130 41198	2SC945P
IC2	9965 000 29611	IC 8P CO4558A SO8	Q308	9940 000 00915	XISTR NPN 2SC1623
IC2	9965 000 41286	IC 8P 4558	Q4	9940 000 00915	XISTR NPN 2SC1623
IC202	9965 100 04287	IC 16P 4052L-S16-R /12/05/58	Q5	9965 000 26927	XISTR PNP 2SB1132RT100
IC203	9940 000 05212	IC 16P CS5340-CZ /12/05/58	Q6	9965 000 26927	XISTR PNP 2SB1132RT100
IC204	9940 000 05214	IC 28P V5888S /12/05/58	Q602	9965 000 41969	FET AO3403 ALPHA -30V/-2.6A
IC205	9965 100 04110	IC 216P MT1389E LQFP /12/05/58	Q607	9940 000 05335	XISTR NPN TIP41C
IC206	9965 100 04634	IC 16P TS5V330DBQR /12/05/58	Q7	9965 000 26946	XISTR PNP 2SB772P/Q
IC207	9940 000 05337	IC 48P EN29LV160AB-70T /12/05/5	Q707	9940 000 05335	XISTR NPN TIP41C
IC210	9965 100 04289	IC 8P TU24C16CS2 /12/05/58	Q8	9965 000 26946	XISTR PNP 2SB772P/Q
IC211	9965 000 41284	IC 3P STM809SWX6F 3.0V /12/05/5	RA201	9940 000 05231	RES.ARRAY 33R 1/16W 5%
IC3	9965 000 29611	IC 8P CO4558A SO8 CERAMATE	T300	9965 000 41289	OSC COIL 1000UH /-8% 796KHZ
IC3	9965 000 41286	IC 8P 4558	T300	9965 000 41290	OSC COIL 680UH /-4% 50KHZ
IC300	9965 000 29611	IC 8P CO4558A SO8 CERAMATE	T600	996500041290	OSC COIL 680UH /-4% 50KHZ /12/05/58
IC300	9965 000 41286	IC 8P 4558	T700	996500041290	OSC COIL 680UH /-4% 50KHZ /12/05/58
IC301	9940 000 05211	IC 20PIN 74HC374	U300	9965 000 41287	IC 24P CE2631 4-CH STEREO
IC301	9965 100 04635	IC 54P K4S641632K-UC60 /12/05/5	XL1	9965 000 17371	27.0000MHZ HC-49US +/-20PPM
IC4	9965 000 29611	IC 8P CO4558A SO8 CERAMATE	ZD1	9965 000 26931	ZENER 7.5V 0.05 0.5W
IC401	9965 000 29611	IC 8P CO4558A SO8 CERAMATE	ZD10	9965 000 26931	ZENER 7.5V 0.05 0.5W
IC402	9965 000 29611	IC 8P CO4558A SO8 CERAMATE	LZD11	9965 000 26931	ZENER 7.5V 0.05 0.5W
IC8	9965 000 23948	IC 14PIN 74HCU04D	ZD12	9965 000 26931	ZENER 7.5V 0.05 0.5W
IC9	9940 000 05214	IC 28P V5888S	ZD13	9940 000 05463	DIODE ZENR 3.2-3.4V 0.5W
JK1	9940 000 00859	RCA JACK 4P W-W/R-R AUDIO IN	ZD2	9965 000 26931	ZENER 7.5V 0.05 0.5W
JK3	9965 000 23599	RCA+DIN JK 1RCA+4P DIN YEL	ZD3	9965 000 26931	ZENER 7.5V 0.05 0.5W
JK4	9965 000 12609	RCA JACK R/G/B	ZD300	9940 000 05204	DIODE ZENR 12.6-13.1V 0.5W
JK200	9965 000 28774	PHONE JACK D3.5 7P /12/05/58	ZD4	9965 000 26931	ZENER 7.5V 0.05 0.5W
JK202	9965 000 29232	SCART SOCK 21P /12/05/58	ZD5	9965 000 26931	ZENER 7.5V 0.05 0.5W
JK203	9965 100 04632	RCA JACK 2P WHT-RED STAND	ZD6	9965 000 26931	ZENER 7.5V 0.05 0.5W
JK401	9940 000 00861	RCA+DIN JK 1RCA+8P DIN /12/05/5	ZD7	9965 000 26931	ZENER 7.5V 0.05 0.5W
JK501	9965 000 23599	RCA+DIN JK 1RCA+4P DIN	ZD8	9965 000 26931	ZENER 7.5V 0.05 0.5W
JK7	9940 000 00861	RCA+DIN JACK 1RCA+8P DIN	ZD9	9965 000 26931	ZENER 7.5V 0.05 0.5W
Q1	3141 018 51690	TRA SM 2SK3018			
Q18	9965 000 13683	TRANSISTOR KTC3875Y-RTK	Note:	Only these parts mentioned in the list are normal service parts.	
Q19	9940 000 00921	XISTR PNP 2SA812 HFE:200-400			
Q2	9940 000 00915	XISTR NPN 2SC1623			
Q20	9965 000 13683	TRANSISTOR KTC3875Y-RTK			
Q205	9965 100 04117	FET 2SK3018 30V/0.1A SC-70			

AMPLIFIER BOARD

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Voltage

IC500(4558 SOP8)																	
Pin NO	1	2	3	4	5	6	7	8									
Voltage	1.20	3.40	3.20	0.00	1.90	3.20	1.20	5.30									

IC501(MP9720DS)																	
Pin NO	1	2	3	4	5	6	7	8									
Voltage	12.80	12.70	0.00	5.30	19.00	26.00	12.70	0.00									

IC502(MP9720DS)																	
Pin NO	1	2	3	4	5	6	7	8									
Voltage	12.60	12.70	0.00	5.30	19.00	26.00	12.70	0.00									

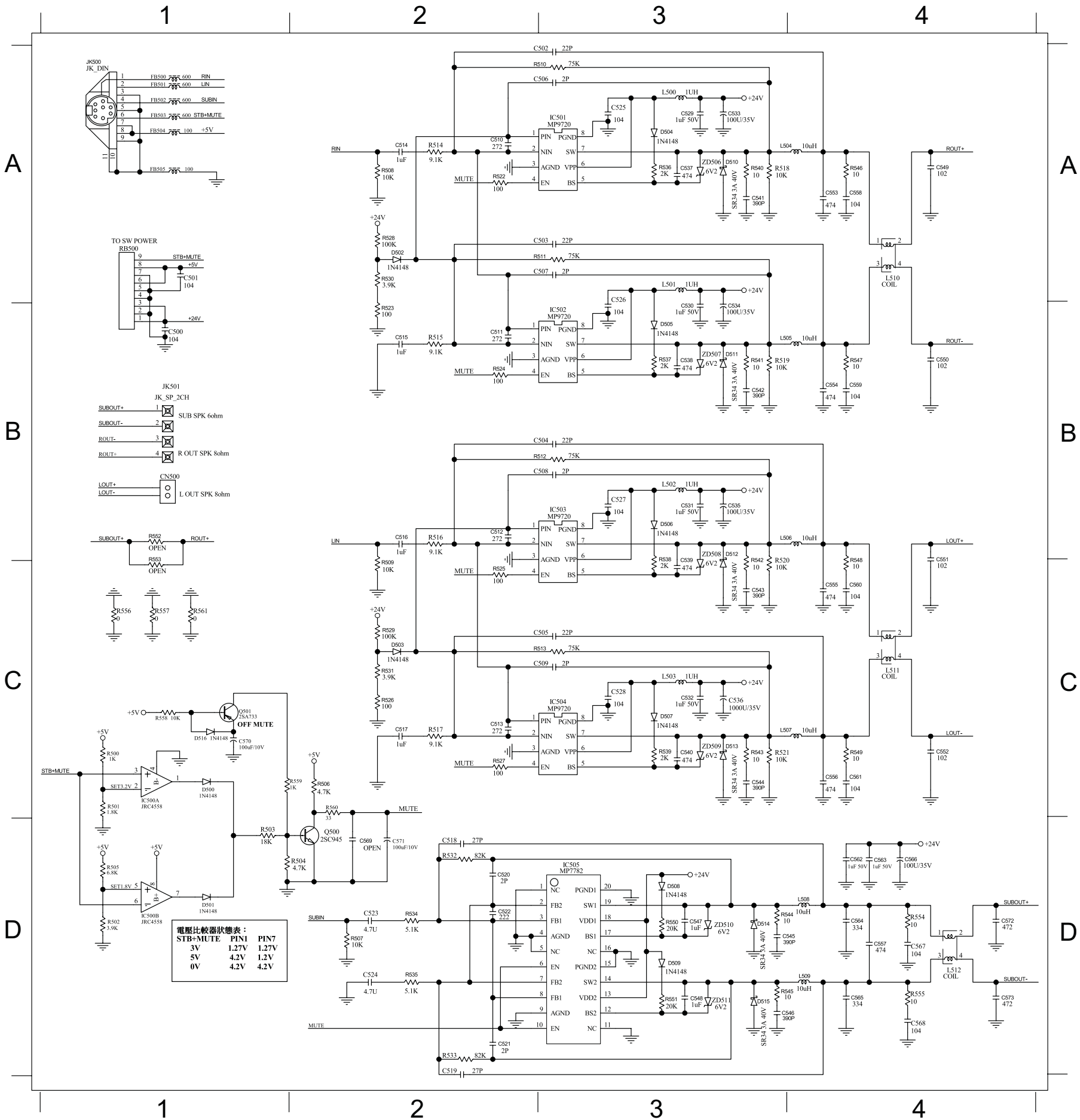
IC503((MP9720DS))																	
Pin NO	1	2	3	4	5	6	7	8									
Voltage	12.00	12.00	0.00	5.30	18.40	26.00	12.00	0.00									

IC504((MP9720DS))																	
Pin NO	1	2	3	4	5	6	7	8									
Voltage	12.00	12.00	0.00	5.30	18.40	26.00	12.00	0.00									

IC505(MP7782DF)																	
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Voltage	0.00	13.10	13.10	0.00	0.00	5.30	13.00	13.00	0.00	5.30	0.00	18.50	26.00	13.00	0.00	0.00	18.50
Q500				Q902				Q904				Q906					
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3		
Voltage	0.00	5.30	0.00	Voltage	-5.50	-5.00	-5.00	Voltage	-1.00	1.10	1.30	Voltage	0.00	0.00	0.00		

Q501				Q903				Q905			
Pin NO	1	2	3	Pin NO	1	2	3	Pin NO	1	2	3
Voltage	5.30	0.00	5.10	Voltage	0.00	45.00	0.00	Voltage	45.00	5.00	45.00

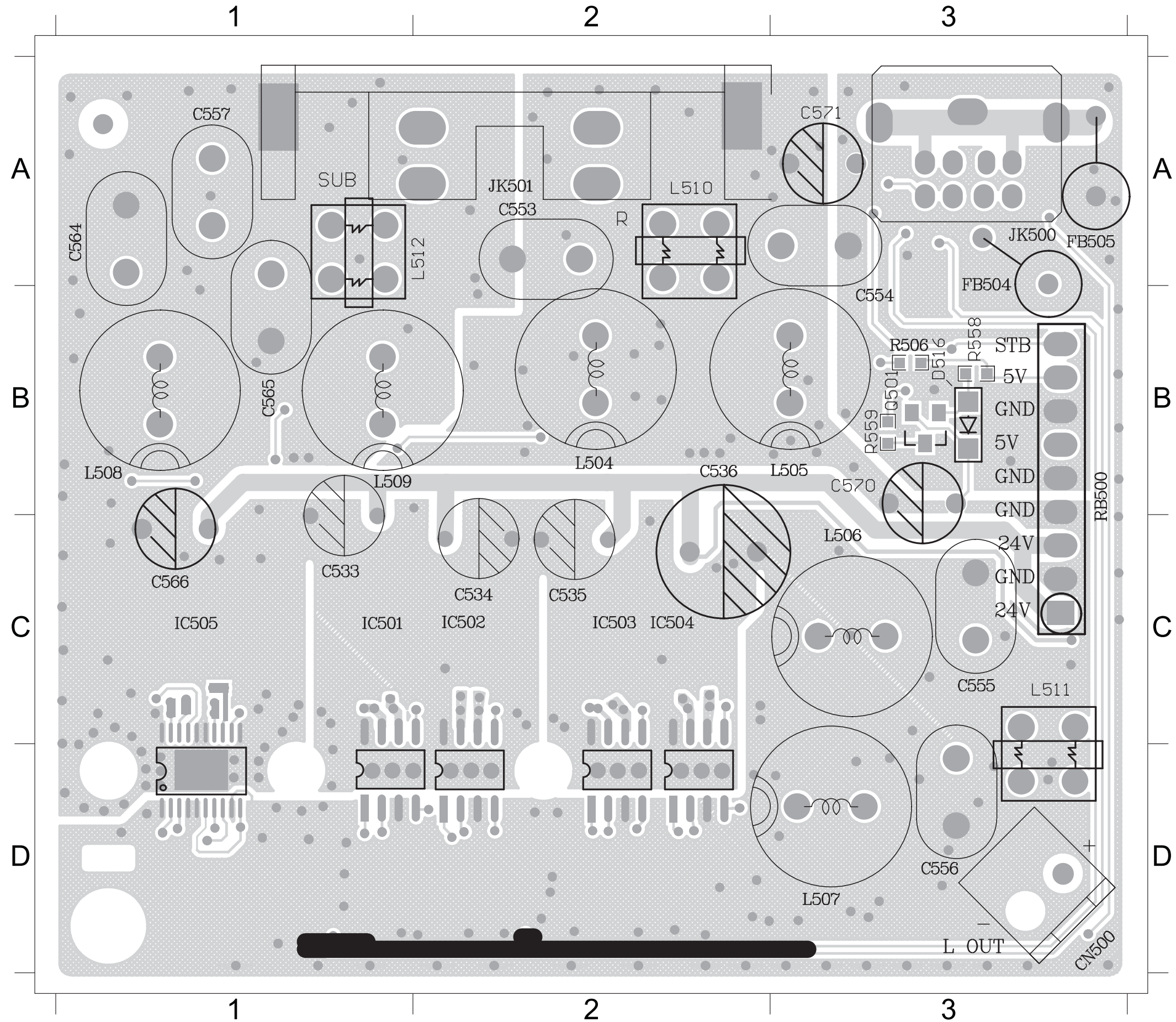
CIRCUIT DIAGRAM - AMPLIFIER BOARD



C500	B1	D500	C1	R535	D2
C501	A1	D501	D1	R536	A3
C502	A3	D502	A2	R537	B3
C503	A3	D503	C2	R538	C3
C504	B3	D504	A3	R539	C3
C505	C3	D505	B3	R540	A3
C506	A3	D506	B3	R541	B3
C507	A3	D507	C3	R542	C3
C508	B3	D508	D3	R543	C3
C509	C3	D509	D3	R544	D3
C510	A2	D510	A3	R545	D3
C511	B2	D511	B3	R546	A4
C512	B2	D512	C3	R547	B4
C513	C2	D513	C3	R548	C4
C514	A2	D514	D3	R549	C4
C515	B2	D515	D3	R550	D3
C516	B2	D516	C1	R551	D3
C517	C2	IC500	C1	R554	D4
C518	D2	IC501	A3	R555	D4
C519	D2	IC502	B3	R556	C1
C520	D2	IC503	B3	R557	C1
C521	D2	IC504	C3	R558	C1
C522	D2	IC505	D3	R559	C1
C523	D2	JK500	A1	R560	C2
C524	D2	JK501	B1	RB500	A1
C525	A3	L500	A3	ZD506	A3
C526	B3	L501	A3	ZD507	B3
C527	B3	L502	B3	ZD508	C3
C528	C3	L503	C3	ZD509	C3
C529	A3	L504	A4	ZD510	D3
C530	B3	L505	B4	ZD511	D3
C531	B3	L506	B4		
C532	C3	L507	C4		
C533	A3	L508	D4		
C534	B3	L509	D3		
C535	B3	Q500	D2		
C536	C3	Q501	C1		
C537	A3	R500	C1		
C538	B3	R501	C1		
C539	C3	R502	D1		
C540	C3	R503	D1		
C541	A3	R504	D1		
C542	B3	R505	D1		
C543	C3	R506	C2		
C544	C3	R507	D2		
C545	D3	R508	A2		
C546	D3	R509	C2		
C547	D3	R510	A3		
C548	D3	R511	A3		
C549	A4	R512	B3		
C550	B4	R513	C3		
C551	C4	R514	A2		
C552	C4	R515	B2		
C553	A4	R516	B2		
C554	B4	R517	C2		
C555	C4	R518	A3		
C556	C4	R519	B3		
C557	D4	R520	C3		
C558	A4	R521	C3		
C559	B4	R522	A2		
C560	C4	R523	B2		
C561	C4	R524	B2		
C562	D4	R525	C2		
C563	D4	R526	C2		
C564	D4	R527	C2		
C565	D4	R528	A2		
C566	D4	R529	C2		
C567	D4	R530	A2		
C568	D4	R531	C2		
C570	C1	R532	D2		
C571	D2	R533	D2		
CN500	B1	R534	D2		

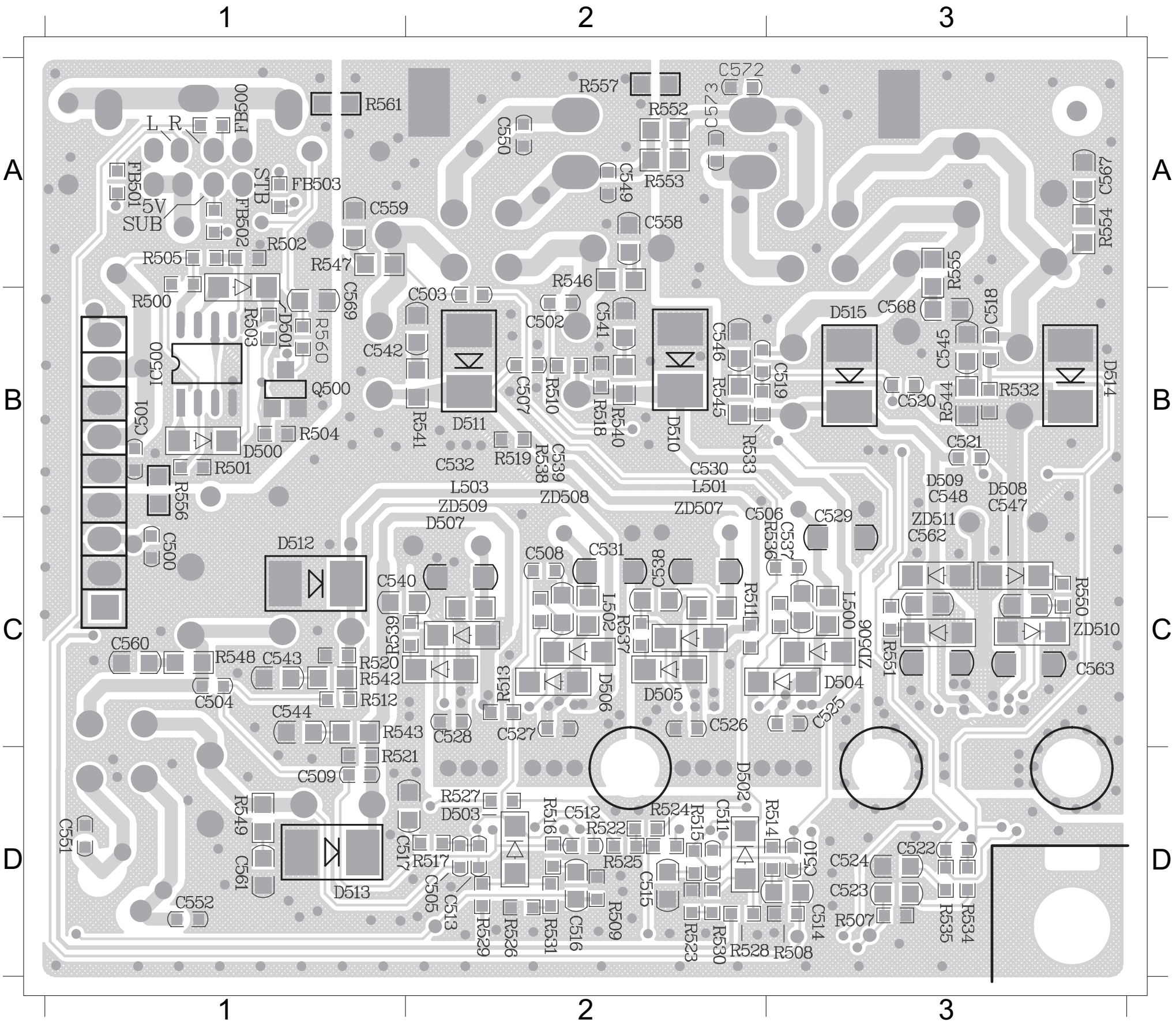
PCB LAYOUT -AMPLIFIER TOP BOARD

C533	C1	C535	C2	C553	A2	C555	C3	C557	A1	C565	B1	C570	B3	CN500	D3	IC501	C1	IC503	C2	IC505	C1	JK501	A2	L505	B3	L507	D3	L509	B1	R506	B3	R559	B3
C534	C2	C536	B2	C554	A3	C556	D3	C564	A1	C566	C1	C571	A3	D516	B3	IC502	C2	IC504	C2	JK500	A3	L504	B2	L506	C3	L508	B1	Q501	B3	R558	B3	RB500	B3



PCB LAYOUT -AMPLIFIER BOTTOM BOARD

C500	C1	C506	C3	C512	D2	C518	B3	C524	D3	C530	B2	C540	C1	C546	B2	C552	D1	C563	C3	D503	D2	D509	B3	D515	B3	Q500	B1	R505	A1	R512	C1	R518	B2	R524	D2	R530	D2	R536	C3	R542	C1	R548	C1	R556	B1	ZD509	B2
C501	B1	C507	B2	C513	D2	C519	B3	C525	C3	C531	C2	C541	B2	C547	C3	C558	A2	C567	A3	D504	C3	D510	B2	IC500	B1	R500	A1	R507	D3	R513	C2	R519	B2	R525	D2	R531	D2	R537	C2	R543	C1	R549	D1	R557	A2	ZD510	C3
C502	B2	C508	C2	C514	D3	C520	B3	C526	C2	C532	B2	C542	B1	C548	B3	C559	A1	C568	B3	D505	C2	D511	B2	L500	C3	R501	B1	R508	D3	R514	D3	R520	C1	R526	D2	R532	B3	R538	B2	R544	B3	R550	C3	R560	B1	ZD511	C3
C503	B2	C509	D1	C515	D2	C521	B3	C527	C2	C537	C3	C543	C1	C549	A2	C560	C1	D500	B1	D506	C2	D512	C1	L501	B2	R502	A1	R509	D2	R515	D2	R521	D1	R527	D2	R533	B2	R539	C1	R545	B2	R551	C3	ZD506	C3		
C504	C1	C510	D3	C516	D2	C522	D3	C528	C2	C538	C2	C544	C1	C550	A2	C561	D1	D501	A1	D507	C2	D513	D1	L502	C2	R503	B1	R510	B2	R516	D2	R522	D2	R528	D2	R534	D3	R540	B2	R546	A2	R554	A3	ZD507	B2		
C505	D2	C511	D2	C517	D1	C523	D3	C529	C3	C539	B2	C545	B3	C551	D1	C562	C3	D502	D2	D508	C3	D514	B3	L503	B2	R504	B1	R511	C2	R517	D2	R523	D2	R529	D2	R535	D3	R541	B2	R547	A1	R555	A1	ZD508	B2		



ELECTRICAL PARTS LIST - AMP BOARD

D510	9965 000 41291	RECTIFIER SR34 SMB/DO-214AA
D511	9965 000 41291	RECTIFIER SR34 SMB/DO-214AA
D512	9965 000 41291	RECTIFIER SR34 SMB/DO-214AA
D513	9965 000 41291	RECTIFIER SR34 SMB/DO-214AA
D514	9965 000 41291	RECTIFIER SR34 SMB/DO-214AA
D515	9965 000 41291	RECTIFIER SR34 SMB/DO-214AA
D510	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
D511	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
D512	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
D513	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
D514	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
D515	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
D517	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
D518	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
D519	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
D520	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
D521	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
D522	9965 100 04631	DIODE FM140-M SOD123 /12/05/58
IC500	9965 000 29611	IC 8P CO4558A SO8 CERAMATE
IC500	9965 000 41286	IC 8P 4558
IC501	9940 000 05455	IC 8P MP9720DS MPS 20W
IC502	9940 000 05455	IC 8P MP9720DS MPS 20W
IC503	9940 000 05455	IC 8P MP9720DS MPS 20W
IC504	9940 000 05455	IC 8P MP9720DS MPS 20W
IC505	9965 000 41292	IC 20PIN MP7782DF
JK500	9940 000 05447	DIN JACK 8P
JK501	9940 000 05448	SPK JACK 4P R-G/B-W
L504	9940 000 05449	IND. 10UH 20% 1KHZ
L505	9940 000 05449	IND. 10UH 20% 1KHZ
L506	9940 000 05449	IND. 10UH 20% 1KHZ
L507	9940 000 05449	IND. 10UH 20% 1KHZ
L508	9940 000 05449	IND. 10UH 20% 1KHZ
L509	9940 000 05449	IND. 10UH 20% 1KHZ
Q500	9965 000 41293	XISTR NPN PMBT3904
Q501	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
ZD506	9965 000 41294	DIODE BZV55-C6V2 SOD80C
ZD507	9965 000 41294	DIODE BZV55-C6V2 SOD80C
ZD508	9965 000 41294	DIODE BZV55-C6V2 SOD80C
ZD509	9965 000 41294	DIODE BZV55-C6V2 SOD80C
ZD510	9965 000 41294	DIODE BZV55-C6V2 SOD80C
ZD511	9965 000 41294	DIODE BZV55-C6V2 SOD80C

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

Voltage

IC901(TOP247Y)																		
Pin NO	1	2	3	4	5	6												
Voltage	3.30	0.00	0.00	0.00	0.00	0.00												

IC902(CTR:200~400)																		
Pin NO	1	2	3	4														
Voltage	-20.00	-20.00	3.80	4.50														

IC903(TL431)																		
Pin NO	1	2	3															
Voltage	3.30	0.00	2.20															

POWER BOARD

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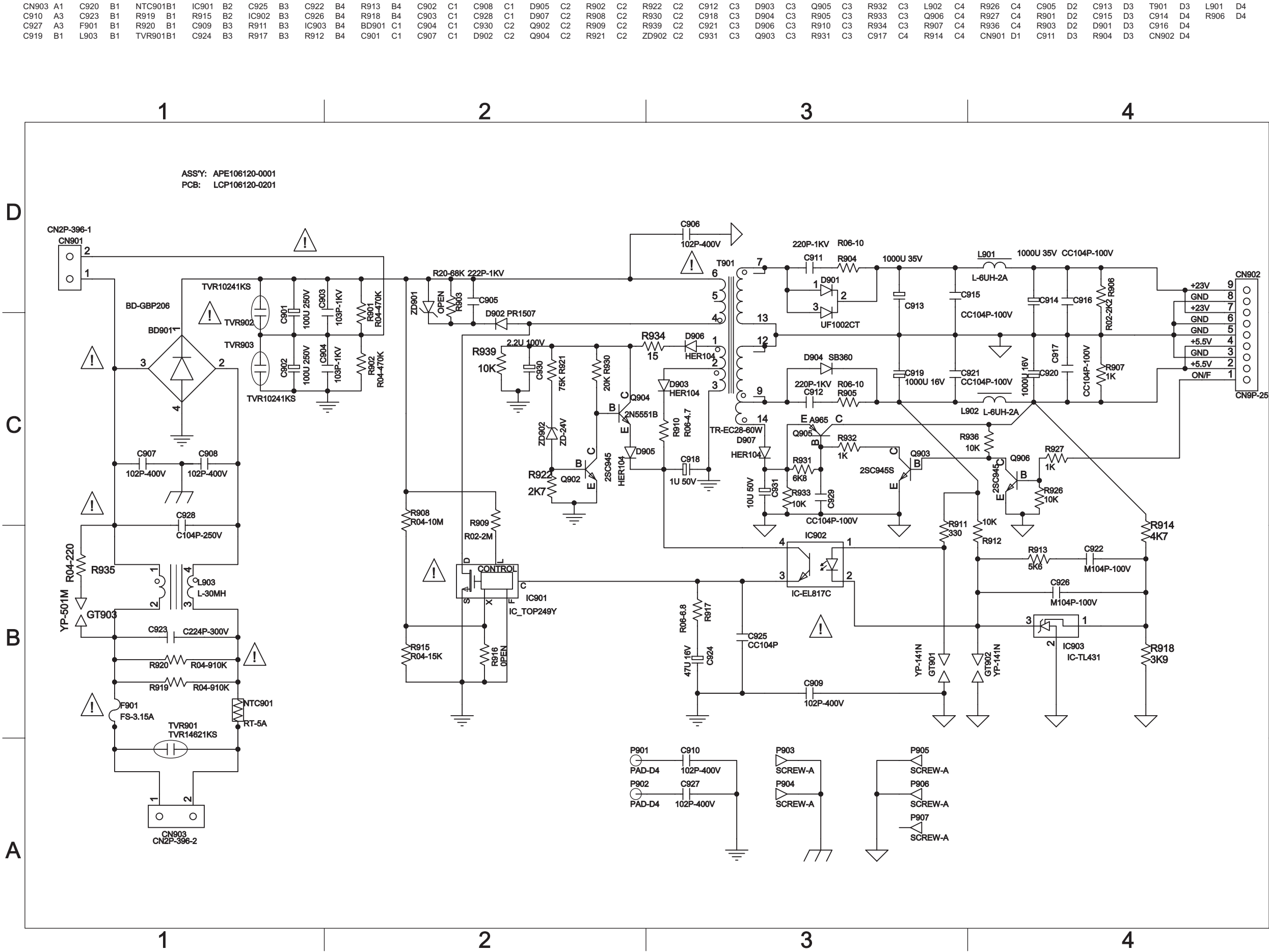
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PCB Layout View8-3

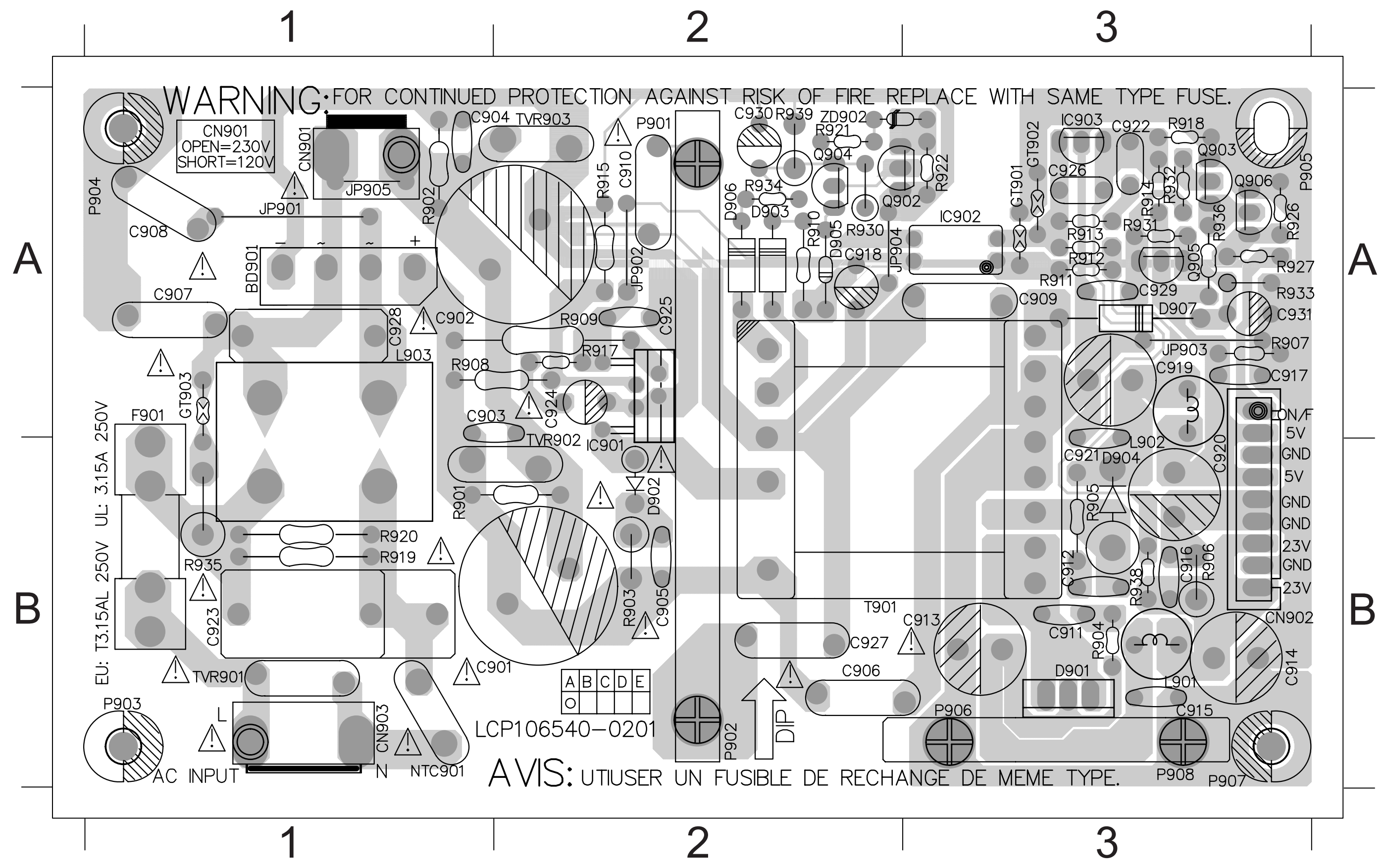
Electrical Parts List8-4

CIRCUIT DIAGRAM - POWER BOARD



PCB LAYOUT - POWER BOARD

BD901	A1	C907	A1	CN903	A1	R902	A1	C924	A2	D905	A2	Q902	A2	R915	A2	R934	A2	C917	A3	C931	A3	JP903	A3	R907	A3	R914	A3	R927	A3	R936	A3	R919	B1	C905	B2	R903	B2	C913	B3	C920	B3	D904	B3	R905	B3		
C902	A1	C908	A1	F901	A1	R908	A1	C925	A2	D906	A2	Q904	A2	R917	A2	R939	A2	C919	A3	D907	A3	Q903	A3	R911	A3	R918	A3	R931	A3	C923	B1	R920	B1	C927	B2	T901	B2	C914	B3	C921	B3	L901	B3	R906	B3		
C903	A1	C928	A1	JP901	A1	C910	A2	C930	A2	JP902	A2	R909	A2	R921	A2	ZD902	A2	C922	A3	IC902	A3	Q905	A3	R912	A3	R922	A3	R932	A3	NTC901	B1	TVR901	B1	D902	B2	C911	B3	C915	B3	CN902	B3	L902	B3				
C904	A1	CN901	A1	L903	A1	C918	A2	D903	A2	JP904	A2	R910	A2	R930	A2	C909	A3	C926	A3	IC903	A3	Q906	A3	R913	A3	R926	A3	R933	A3	R901	B1	C901	B2	IC901	B2	C912	B3	C916	B3	D901	B3	R904	B3				



ELECTRICAL PARTS LIST - POWER BOARD

BD901	9965 000 41295	BRIDGE RS406 4A 600V UL
C901	9965 000 41298	CAP.E 100UF 250V 105' 20%
C902	9965 000 41298	CAP.E 100UF 250V 105' 20%
C903	9965 000 18042	COND DISC 0.01UF 1KV 20%
C904	9965 000 18042	COND DISC 0.01UF 1KV 20%
C905	9965 000 27125	COND DISC 0.0022UF 1KV 20%
C907	△9965 000 27115	CAP.SAFTY Y1 102PF 250V 20%
C908	△9965 000 27115	CAP.SAFTY Y1 102PF 250V 20%
C909	△9965 000 27115	CAP.SAFTY Y1 102PF 250V 20%
C909	△9965 000 38398	CAP. SAFTY 152PF 250V 20%/12/05/58
C910	△9965 000 27115	CAP.SAFTY Y1 102PF 250V 20%
C911	9940 000 05236	COND DISC 220PF 1KV 10%
C912	9940 000 05236	COND DISC 220PF 1KV 10%
C923	△9940 000 05343	COND SAF. 0.22UF 275V 20%
C923	△9965 100 04626	COND SAF. 0.47UF 275V 20%/12/05/58
C927	△9965 000 27115	CAP.SAFTY Y1 102PF 250V 20%
C928	△9940 000 05707	COND SAFTY 0.1UF 250V 20%
D901	9940 000 05459	DIODE STPR1020CT
D901	9965 000 41296	DIODE STPR1020CT 10A
D902	9940 000 00938	DIODE PR1507 1.5A 1000V
D903	9940 000 00941	DIODE HER104 1A 300V 50NS
D904	9965 000 41297	DIODE SB560 CTC 5A 60
F901	△9965 000 17388	FUSE 3.15A 250V SLOW
IC901	9940 000 05462	IC 6P TOP247Y PWM SWITCH
IC901	9965 100 04628	IC 6P TOP247YN POWER INT /12/05/58
IC902	9940 000 00946	OPTICAL SENSOR 4P
IC903	9965 000 29312	IC 3 PIN TL431 TO-92 CHANG JI
L903	9940 000 05457	AC FILTER ET-24 D0.45 30MH
NTC901	9940 000 05232	THERMISTOR NTC 5R 5A
T901	△9965 000 40980	TRASFO. ER-28 6 8PIN
TVR901	9965 000 32754	THERMIST 50A 561V D13.5XT4.9MM
TVR901	9965 100 04625	VARISTORS 50A 560V /12/05/58

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

TUNER BOARD

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TUNER ADJUSTMENT TABLE

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (50kHz grid)			108MHz	check		7.5V ±1V
			87.5MHz	check		1.4V ±0.2V
	1602KHz		check	7.2V ±1V		
	531KHz		T005	1.1V ±0.2V		
	1700KHz		check	7.2V ±1V		
	531KHz		T005	1.1V ±0.2V		
	FM - RF					
FM	108MHz	mod=1kHz Δf=± 22.5kHz	106MHz	VC001	MAX	MAX
	87.5MHz		90.1MHz	L001		

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

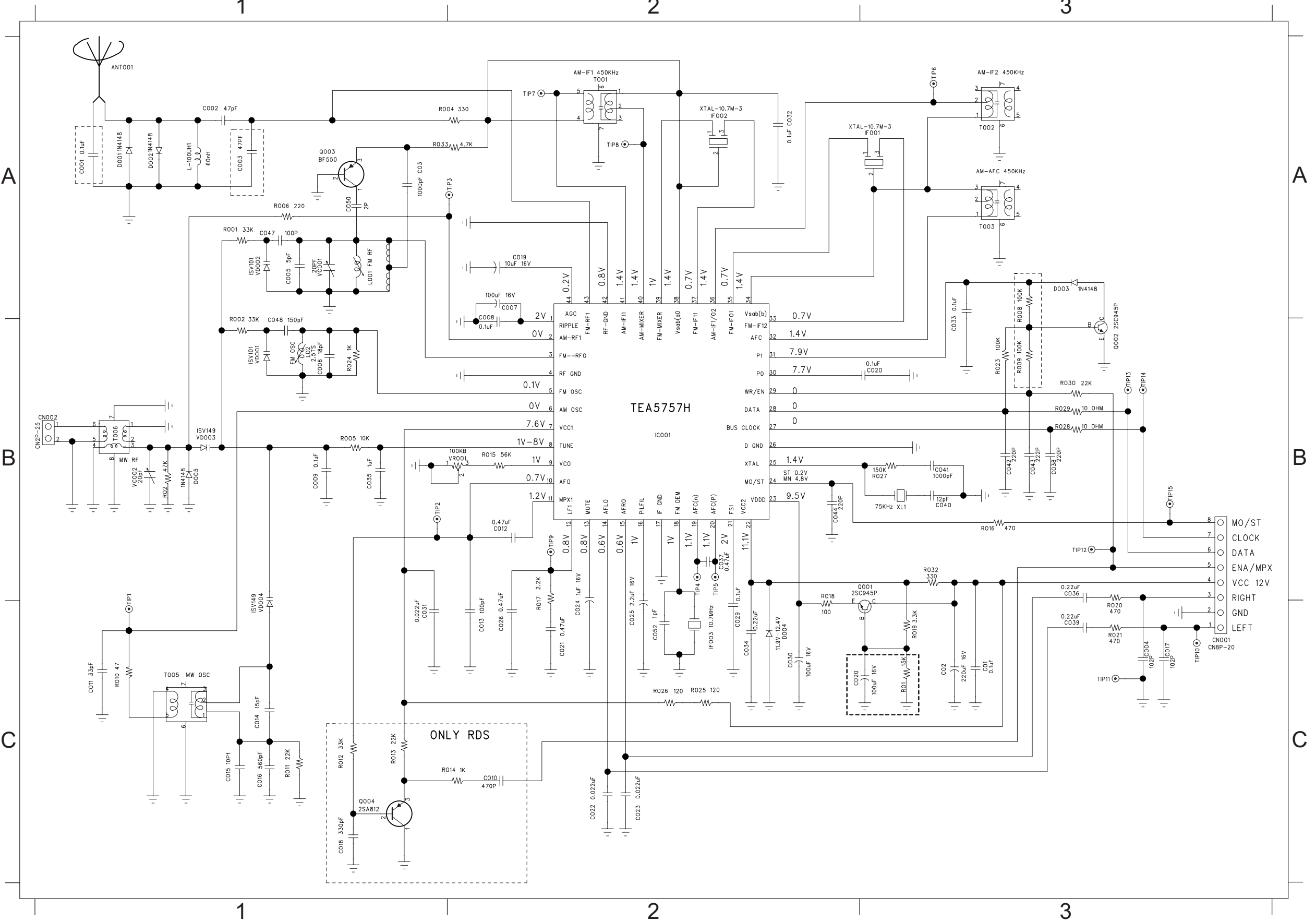
1) If sensitivity of frequency counter is too low adjust to max. channel separation
(input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used!

CIRCUIT DIAGRAM : TUNER BOARD

ANT001	A1	C007	A2	C012	B2	C022	C2	C029	B2	C033	A3	C038	B3	C043	B3	CN001	C3	D003	A3	IF003	C2	Q003	A1	R015	B2	R020	C3	R026	C2	R032	B3	VD002	A1
C002	A1	C008	A2	C013	C2	C023	C2	C03	A1	C034	C2	C039	C3	C044	B2	CO2	C3	D004	C2	L001	A1	R001	A1	R016	B3	R021	C3	R027	B3	R033	A1	VR001	B2
C004	C3	C009	B1	C019	A2	C024	C2	C030	C2	C035	B1	C040	B3	C048	B1	CO47	A1	IC001	B2	L02	B1	R002	B1	R017	B2	R023	B3	R028	B3	T003	A3	XL1	B3
C005	A1	C01	C3	C020	B3	C025	B2	C031	C1	C036	B3	C041	B3	C050	A1	D001	A1	IF001	A3	Q001	B2	R004	A2	R018	B2	R024	B1	R029	B3	VC001	A1		
C006	B1	C010	C2	C021	C2	C026	C2	C032	A2	C037	B2	C042	B3	C052	C2	D002	A1	IF002	A2	Q002	A3	R005	B1	R019	C3	R025	B3	R030	B3	VD001	B1		



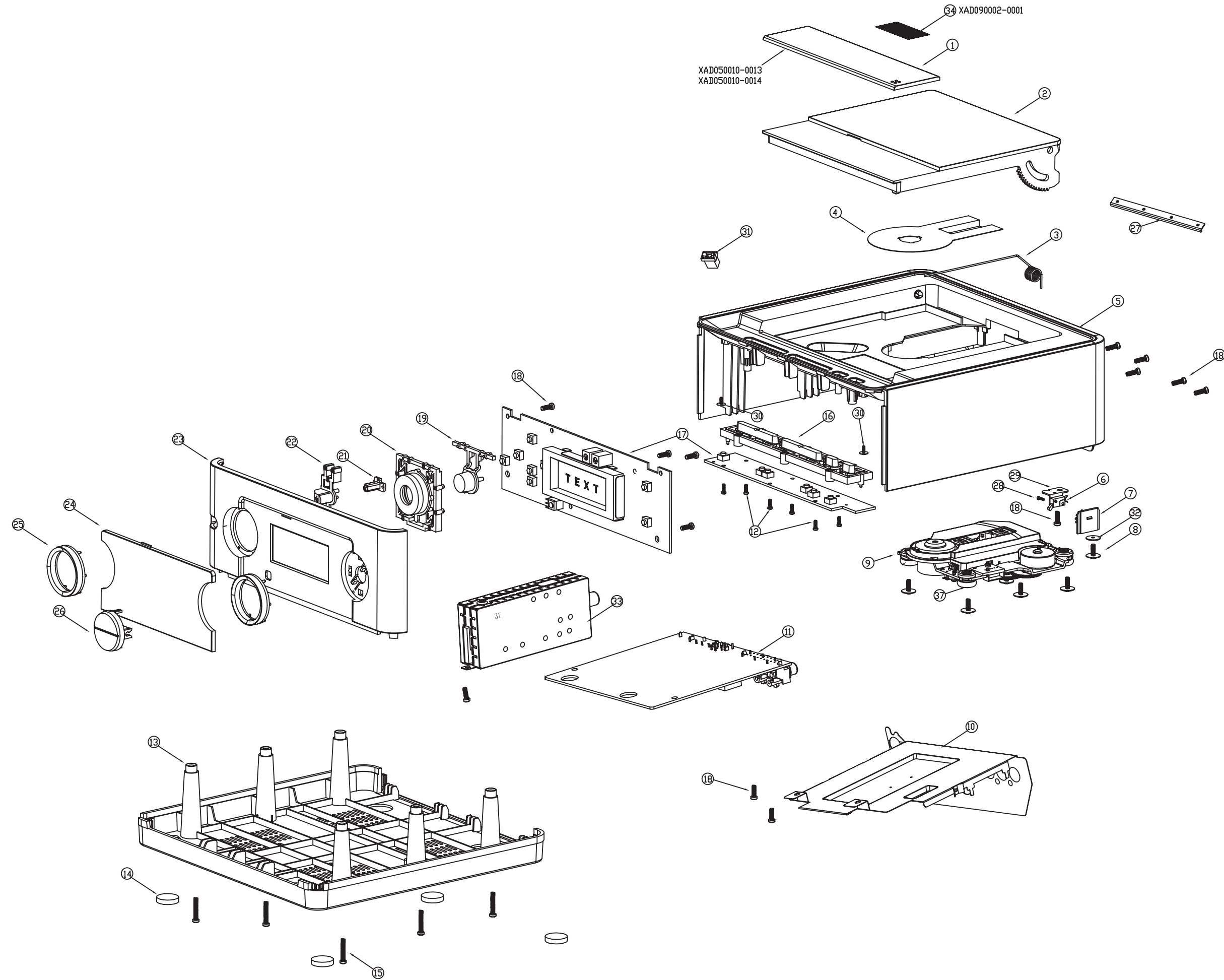
ANT001	A1
C005	A1
C006	A1
C007	A1
C009	A1
C019	A1
C047	A1
D001	A1
D002	A1
IC001	A1
IF001	A1
IF002	A1
JWP2	A1
L001	A1
L02	A1
T003	A1
VC001	A1
VD001	A1
VD002	A1
C024	A2
C025	A2
C030	A2
C035	A2
CN001	A2
C02	A2
D003	A2
D004	A2
IF003	A2
JWP3	A2
JWP4	A2
JWP5	A2
JWP6	A2
JWP7	A2
JWP8	A2
JWP9	A2
Q001	A2
Q002	A2
R018	A2
VR001	A2
XL1	A2

C002	A1
C005	A1
C008	A1
C010	A1
C03	A1
C032	A1
C048	A1
C050	A1
Q003	A1
R001	A1
R002	A1
R004	A1
R005	A1
R007	A1
R024	A1
R031	A1
R033	A1
R034	A1
C01	A2
C012	A2
C013	A2
C020	A2
C022	A2
C023	A2
C026	A2
C029	A2
C031	A2
C033	A2
C034	A2
C036	A2
C037	A2
C038	A2
C039	A2
C041	A2
C042	A2
C043	A2
C044	A2
C052	A2
R015	A2
R016	A2
R017	A2
R019	A2
R020	A2
R021	A2
R023	A2
R025	A2
R026	A2
R027	A2
R028	A2
R029	A2
R030	A2
R032	A2

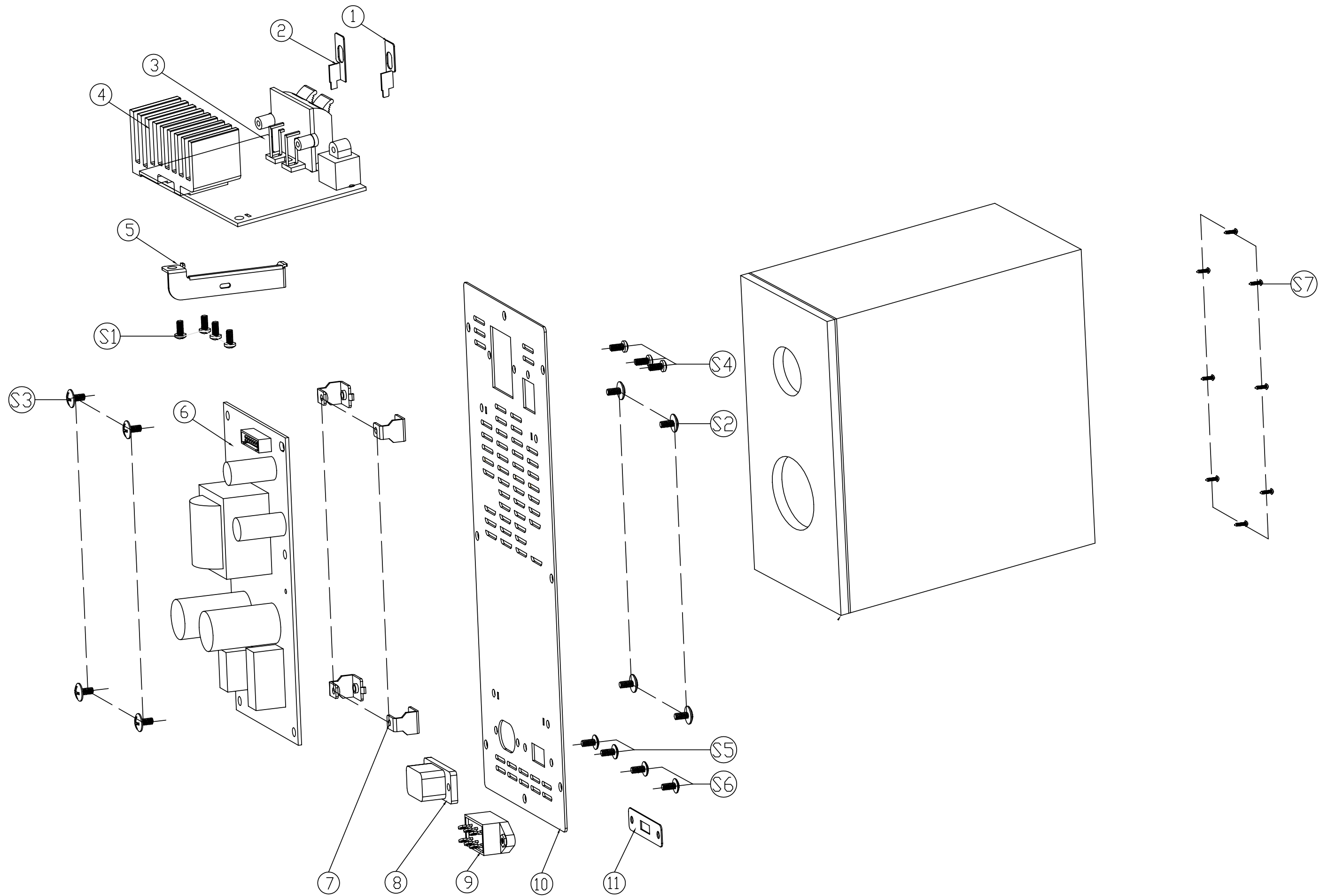
ELECTRICAL PARTS LIST - TUNER BOARD (ONLY FOR REFERENCE)

ANT001	9965 000 41299	FM JACK FC-11
D004	9965 000 26940	DIODE ZENR 11.9-12.4V 0.5W
IC001	9965 000 27003	IC 44 PIN TEA5757H QFP44 PHILIPS
IF001	9965 000 41300	CERAM IC FILTER 3P LT10.7MA5
IF002	9965 000 41301	CERAMIC FILTER 3P LT10.7MS2A10
IF003	9965 000 41302	CERAMIC FILTER 2P JT10.7MG18
L001	9965 000 23587	MOULDED COIL 2.5T 57-89NH
L02	9965 000 23586	SPRING COIL 0.8X4.5DX(1-2)2.5T
Q001	4822 130 41198	2SC945P
Q002	4822 130 41198	2SC945P
Q003	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
Q003	9965 000 27004	XISTR PNP BF550 SOT23
T003	9965 000 24673	AM IFT 450KHZ 180PF Q=80MIN
VC001	9965 000 24676	CONDTRIM 3-10PF
VD001	9965 000 27006	DIODE TUNG FM TOSHIBA 1SV101
VD002	9965 000 27006	DIODE TUNG FM TOSHIBA 1SV101
VR001	9965 000 27005	CNTL TRIMR 30KR P=5X5MM
XL1	9965 000 41303	CRYSTAL 75.000KHZ /-20PPM

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



EXPLODED DRAWING- LEFT SPEAKER BOX



MECHANICAL & ACCESSORIES PARTS LIST (ONLY FOR MCD139/37/79 & HTM139/55/78 & MME239/37 & MCD139B/37/12/05/58)

1	9965 000 40969	DOOR LENS	△9965 000 41278	MAINS CORD 2P 2M /79
2	9965 000 40966	CD DOOR	△9965 000 40973	LINE CORD 2P 1980MM /37
2	9965 000 41079	CD DOOR /MME239/37	△9940 000 05444	LINE CORD 2P 1500MM /55/78
3	9940 000 05438	CD DOOR SPRING LEFT	△9965 000 38338	LINE CORD 2P 1980mm /12/58
4	9965 000 40965	TOP CABINET /37/55	△9965 100 04980	LINE CORD 3P 2M /05
4	9965 000 41078	TOP CABINET /MME239/37	9965 000 41304	MAIN SPK-L ASS'Y W/AMP /55
4	9965 000 41275	TOP CABINET /79/78	9965 000 41274	MAIN SPK-L ASS'Y W/AMP /79
4	9965 100 04620	TOP CABINET /12/05/58	9965 000 41857	MAIN SPK-L ASS'Y W/AMP /78
6	9965 000 19374	SW LEAF KFC-101 AM200	9965 000 40963	MAIN SPK-L ASS'Y W/AMP /37
7	9965 000 22120	DAMPER-ASSY-MODULE-0.8	9965 000 40970	MAIN SPK-R 25W 8R
9	9940 000 05479	DVD MODULE	9965 100 04615	MAIN SPK-R 25W 8R 4" /05/12/58
9	9965 100 04624	DVD MODULE /12/05/58	9965 000 41859	MAIN SPK-R 25W 8R /78
13	9965 000 40964	BOTTOM CAB	9965 100 04614	SPK ASS'Y 25WX2+SUB /12/58
13	9965 000 41077	BOTTOM CAB /MME239/37	9965 100 04968	SPK ASS'Y 25WX2+SUB /05
13	9965 100 04619	BOTTOM CAB /12/58	9965 100 04616	SUBF 6R 50W 5 1/4" /05/12/58
13	9965 100 04981	BOTTOM CAB /05	9940 000 02731	FM ANTENNA 1500MM
14	9940 000 05437	RUBBER FOOT D18.5XT2MM	9940 000 05446	DIN CABLE 8PIN 1500MM
16	9940 000 05486	FUNC BUTTON	9965 100 04623	DIN CABLE 8P 1500mm /12/05/58
19	9940 000 05429	FUNC- PLAY BUTTON	9965 000 23580	RCA CABLE 1500MM OD2.6MM
20	9940 000 05431	FUNC- STOP BUTTON	9965 000 23889	RCA CABLE 1500MM
21	9940 000 05435	STANDBY LENS	9965 000 40971	SUBWOOFER 6R 50W
22	9940 000 05428	FUNC- POWER KNOB /37	9965 000 41860	SUBWOOFER 6R 50W /78
22	9965 000 41277	FUNC- POWER KNOB	9965 100 04176	FFC CABLE 10P 160MM /12/05/58
23	9965 000 40967	FRONT PANEL /37	9965 000 40972	FFC CABLE 24P 300MM
23	9965 100 04621	FRONT PANEL /12/05/58	9965 000 40974	REMOTE CONTROL 38KEY
23	9965 000 41276	FRONT PANEL /55/78/79	9965 100 04617	REMOTE CONTROL /12/05/58
24	9965 000 40968	DISPLAY LENS /37/55/79		
24	9965 000 41858	DISPLAY LENS /78		
24	9965 000 41081	DISPLAY LENS /MME239/37		
24	9965 100 04622	DISPLAY LENS /12/05/58		
25	9940 000 05436	CHORME RING	8 △9965 000 12443	AC SOCKET
26	9940 000 05432	FUNC- VOL BUTTON	9 9940 000 01059	SW SLIDE 6PIN /55
31	9940 000 05481	DOOR LOCK OP/CL		
33	9965 100 04618	TUNER PANASONIC /12/05/58		

ELECTRICAL PARTS - LEFT SPEAKER BOX

ELECTRICAL PARTS - MISCELLANEOUS

	9965 000 40975	TUNER PCB ASS'Y /37
	9965 000 40976	POWER PCB ASS'Y /37
	9965 000 40977	VFD KEY PCB ASS'Y /37
	9965 000 40978	MAIN PCB ASS'Y /37
	9965 200 31903	MAIN PCB ASS'Y /79
	9965 000 40979	AMPLIFIER PCB ASS'Y /37
JK4	9965 000 12609	RCA JACK R/G/B /12/05/58

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

ONLY FOR MCD139B/55 & /98 & /79**MECHANICAL & ACCESSORIES PARTS LIST ELECTRICAL PARTS LIST - POWER BOARD**

1	996500040969	DOOR LENS	C905	996500018042	COND DISC 0.01UF 1KV 20%
2	996500040966	CD DOOR	C907	△ 996500027115	CAP.SAFTY Y1 102PF 250V 20%
3	994000005438	CD DOOR SPRING	C908	△ 996500027115	CAP.SAFTY Y1 102PF 250V 20%
4	996510009890	TOP CABINET /55/98	C909	△ 996500038398	CAP. SAFTY 152PF 250V 20%
4	996500041275	TOP CABINET /79	C910	△ 996500027115	CAP.SAFTY Y1 102PF 250V 20%
7	996500022120	DAMPER-ASSY-MODULE-0.8	C911	994000005236	COND DISC 220PF 1KV 10%
9	996510004624	DVD MODULE /55/98	C912	994000005236	COND DISC 220PF 1KV 10%
9	994000005479	DVD MODULE /79	C923	△ 996510004626	COND SAFTY 0.47UF 275V 20%
13	996510009889	BOTTOM CAB /55/98	C927	△ 996500027115	CAP. SAFTY 102PF 250V 20%
13	994000005423	BOTTOM CAB /79	C928	△ 994000005707	COND SAFTY 0.1UF 250V 20%
16	994000005486	FUNC BUTTON	D901	994000005252	DIODE RECTIFIER BYQ28E-200
19	994000005429	FUNC - PLAY BUTTON	D901	994000005459	DIODE STPR1020CT
20	994000005431	FUNC-STOP BUTTON	D902	994000000938	DIODE PR1507 1.5A 1000V
21	994000005435	STANDBY LENS	D903	994000000941	DIODE HER104 1A 300V 50NS
22	996500041277	FUNC- POWER KNOB	D904	996510006070	DIODE SB540 5A 40V DO-201AD
23	996510004621	FRONT PANEL /55/98	D906	994000000941	DIODE HER104 1A 300V 50NS
23	996500041276	FRONT PANEL /79	D907	994000000941	DIODE HER104 1A 300V 50NS
24	996510004622	DISPLAY LENS /55/98	F901	△ 996500017388	FUSE 3.15A 250V SLOW
24	996500040968	DISPLAY LENS /79	IC901	996510004628	IC 6P TOP247YN POWER INT
25	994000005436	CHORME RING	IC902	994000000946	OPTICAL SENSOR 4P
26	994000005432	FUNC -VOL BUTTON	IC903	996500029312	IC 3PIN TL431 TO-92 CHANG JI
31	994000005481	DOOR LOCK OP/CL FUNCTION	L903	996510004100	LINE FILTER 40MH ET-24 D0.35
33	996510008725	TUNER	NTC901	994000005232	THERMIST. NTC 5R 5A
POWC	△ 996510002650	MAINS CORD /55/98	T901	△ 996500040980	TRASFO. ER-28 6 8PIN
POWC	△ 996500041278	MAINS CORD 2P 2M SAA /79	TVR901	996500032754	THERMIST 50A 561V D13.5XT4.9MI

CN203	996500040972	FFC CABLE 24P 300mm P=0.5mm
CN300	996510004176	FFC CABLE 10P 160MM
CN300	996510009891	FFC CABLE 10P 160mm P=1.25mm
DIN	996510004623	DIN CABLE 8PIN 1500mm D5.0MM
FM	994000002731	FM ANTENNA 1500MM

MSPK	996510004615	MAIN SPK-R 25W 8R 4"
RC	996510004617	REMOTE CONTROL 38 KEY
SPK	996510004614	SPK ASS'Y SAT 25WX2+SUB 50W
SUBF	996510004616	SUBF 6R 50W 5 1/4" 1WAY
VIDEO	996500020577	RCA CABLE 1500MM OD2.6MM

SPK	996510006067	SPEAK-R 25W+SUB50W /79
MSPK	996510006068	MAIN SPK-R 25W 8R 4" /79
TUN	996510006069	TUNER BOARD ASS'Y
MAB	996520031903	MAIN BOARD ASS'Y /79

ELECTRICAL PARTS LIST - MAIN BOARD

C318	996510004633	COND MYLAR 0.1uF 100V 5%
C636	996510009893	COND MYLAR 0.0039uF 100V 5%
C718	996510004633	COND MYLAR 0.1uF 100V 5%
C736	996500013068	CAP 0.0015 UF 100V 5%
D601	994000000941	DIODE HER104 1A 300V 50NS
D605	994000000941	DIODE HER104 1A 300V 50NS
D606	994000000941	DIODE HER104 1A 300V 50NS
IC200	996500029611	IC 8P CO4558A SO8 CERAMATE
IC202	994000000841	IC 16PIN TC4052BFN
IC202	996510004287	IC 16P 4052L-S16-R SOP 4CH SW
IC202	996510009894	IC 16P CD4052BM SOIC TI 4-CH
IC203	994000005212	IC 16 PIN CS5340-CZ
IC204	994000005214	IC 28P V5888S
IC205	996510007739	IC 216P MT1389DE/E LQFP
IC207	994000005337	IC 48P EN29LV160AB-70TCP TSOF

ELECTRICAL PARTS LIST - POWER BOARD

BD901	996500041295	BRIDGE RS406 4A 600V UL	IC207	996510004114	IC 48P KH29LV160CBTC-70G TSOF
C903	996500018042	COND DISC 0.01UF 1KV 20%	IC210	996510004289	IC 8P TU24C16CS2 SOIC TURBO
C904	996500018042	COND DISC 0.01UF 1KV 20%	IC211	994000005209	IC 3P AZ809NSTR-E1 SOT23

ONLY FOR MCD139B/55 & /98 & /79
ELECTRICAL PARTS LIST - MAIN BOARD

IC211	996500041284	IC 3P STM809SWX6F 3.0V	TA213	996500026952	TACT SW H5.0MM 2PIN 160GF 20M
IC301	996500032752	IC 54P HY57V641620ETP-7	XL200	994000005352	X'TAL 4.194304MHZ +/-10PPM
IC301	996510004115	IC 54P AS81F641642C-6P TSOPII			
IC301	996510004635	IC 54P K4S641632K-UC60 TSOPII			
IC301	996510009895	IC 54P A641604L-6T TSOP II			

ELECTRICAL PARTS LIST - AMP BOARD

IC301	996510009896	IC 54PIN K4S641632H-UC 75 TSOP D510	996510004631	CHIP DIODE FM140-M SOD123
IC401	996500029611	IC 8P CO4558A SO8 CERAMATE LID511	996510004631	CHIP DIODE FM140-M SOD123
IC402	996500029611	IC 8P CO4558A SO8 CERAMATE LID512	996510004631	CHIP DIODE FM140-M SOD123
Q205	996510004117	FET 2SK3018 30V/0.1A SC-70 D513	996510004631	CHIP DIODE FM140-M SOD123
Q206	996510004117	FET 2SK3018 30V/0.1A SC-70 D514	996510004631	CHIP DIODE FM140-M SOD123
Q602	996500041969	FET AO3403 ALPHA -30V/-2.6A D515	996510004631	CHIP DIODE FM140-M SOD123
Q607	994000005335	XISTR NPN TIP41C D517	996510004631	CHIP DIODE FM140-M SOD123
Q707	994000005335	XISTR NPN TIP41C D518	996510004631	CHIP DIODE FM140-M SOD123
T600	996500041290	OSC COIL 680UH +/-4% 50KHZ D519	996510004631	CHIP DIODE FM140-M SOD123
T700	996500041290	OSC COIL 680UH +/-4% 50KHZ D520	996510004631	CHIP DIODE FM140-M SOD123
XL200	994000005201	CRYST 27MHZ +/-20PPM H=3.5MM D521	996510004631	CHIP DIODE FM140-M SOD123
XL200	996500017371	27.0000MHZ HC-49US +/-20PPM D522	996510004631	CHIP DIODE FM140-M SOD123
		IC500	996500029611	IC 8P CO4558A SO8 CERAMATE L
		IC500	996500041286	IC 8P 4558
		IC501	994000005455	IC 8P MP9720DS SOIC MPS 20W

ELECTRICAL PARTS LIST - VFD+KEY BOARD

DP200	994000005469	VFD 35P AOTOM:33082-1A01	IC502	994000005455	IC 8P MP9720DS SOIC MPS 20W
IC200	996500041279	IC 28P EM78P447SAMY	IC503	994000005455	IC 8P MP9720DS SOIC MPS 20W
IC201	996500029614	IC 52 PIN PT6311(PTC)	IC504	994000005455	IC 8P MP9720DS SOIC MPS 20W
LD200	996510000591	LED 3 DIA HI-BLUE ROUND LENS	IC505	996500041292	IC 20PIN MP7782DF
Q200	996500041281	FET 2N7002 60V/115MA	JK500	996500022220	DIN JACK 8 PIN
Q201	996500041281	FET 2N7002 60V/115MA	JK501	994000005448	SPK JACK 4P RED-GRN/BLK-WHT
Q202	996500041281	FET 2N7002 60V/115MA	Q500	996500041293	XISTR NPN PMBT3904
Q209	994000005335	XISTR NPN TIP41C			
Q210	996500028742	XISTR NPN 2SD882P			
SN200	994000005472	IRT RECEIVER IRM-2638AF4			

ELECTRICAL PARTS LIST - LEFT SPEAKER BOX

T200	994000005473	OSC COIL 160 UH 8% 796 KHZ			
T201	996500022303	OSC COIL REC OSC 3MH	8	996500012443	AC SOCKET
TA200	996500026952	TACT SW H5.0MM 2PIN 160GF 20M	9	994000001059	SLIDE SWITCH 6PIN /55/79
TA201	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA			
TA202	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA			

Notes: Only these parts mentioned in the list are normal service parts

TA203	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA
TA204	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA
TA205	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA
TA206	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA
TA207	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA
TA208	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA
TA209	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA
TA210	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA
TA211	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA
TA212	996500026952	TACT SW H5.0MM 2PIN 160GF 20MA

REVISION LIST

1.0 Manual 3141 785 31110

Initial Service Manual released.

1.1 Manual 3141 785 31111

In this version, the type version HTM139/78 are added and the CTN MCD139/55 changed to HTM139/55.
P10-2 : Mechanical Partslist updated

1.2 Manual 3141 785 31112

In this version, the type version MCD139B/37 are added.
P10-2 : Mechanical Partslist updated

1.3 Manual 3141 785 31113

In this version, the type version MCD139B/12 is added.
1) Mechanical Partslist and all Electrical Partslists updated.
2) New pages P6-8 to P6-10 Main Board are added.

1.4 Manual 3141 785 31114

In this version, the type version MCD139B/05/58 are added.
1) Mechanical Partslist and all Electrical Partslists updated.
2) P4-1B & P4-2B new block diagram & wiring diagram are added.

1.5 Manual 3141 785 31115

In this version, the type version MCD139B/55/98/79 are added.
Page 10-4 to 10-5: Mechanical Partslist and all Electrical Partslists added.

1.6 Manual 3141 785 31116

In this version, the item Main Board Ass'y of MCD139B/79 is added.
Page 10-4 Mechanical Partslist updated.

1.7 Manual 3141 785 31117

In this version,
Page 10-3 & Page 10-4 : detailed version number marked as per respective type number.

1.8 Manual 3141 785 311198

In this version, on Page 1-2, Version Variations added.