

Service  
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# Service Manual

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# PHILIPS



## SPECIFICATIONS

### AMPLIFIER SECTION

|                              |                          |
|------------------------------|--------------------------|
| Total output power FTC ..... | 60 W                     |
| Main speakers L/R .....      | 20W × 2 RMS <b>1</b>     |
| Subwoofer .....              | 20W RMS <b>2</b>         |
| 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 $\Omega$       |
| S-Video Output .....         | Y - 0.714 Vp-p, 75 $\Omega$ |
| .....                        | C - 0.286 Vp-p, 75 $\Omega$ |
| 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 .....              | 120V 60HZ /37                              |
| .....                                  | 110V - 127V 60HZ / 220V - 240V 50HZ /55/98 |
| .....                                  | 220V - 240V 50HZ /79                       |
| Power Consumption                      |  |
| Active .....                           | 30 W                                       |
| Standby .....                          | <1 W /37                                   |
| Standby .....                          | <10 W /55/79/98                            |
| 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 $\Omega$           |
| 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 |

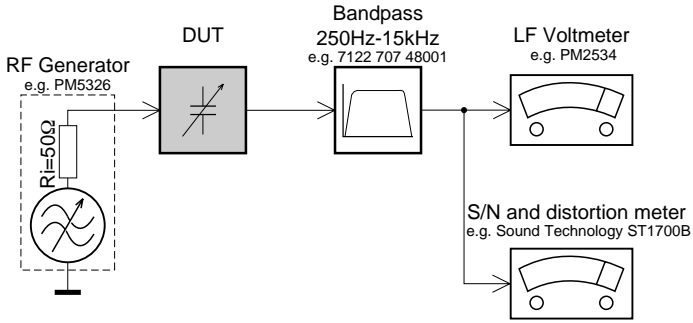
### SUBWOOFER

|                             |                     |
|-----------------------------|---------------------|
| Impedance.....              | 6 $\Omega$          |
| 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

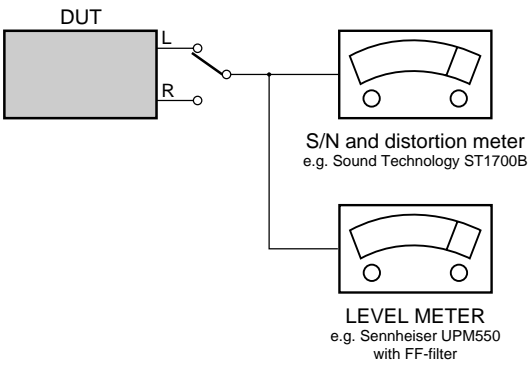
## Tuner FM



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

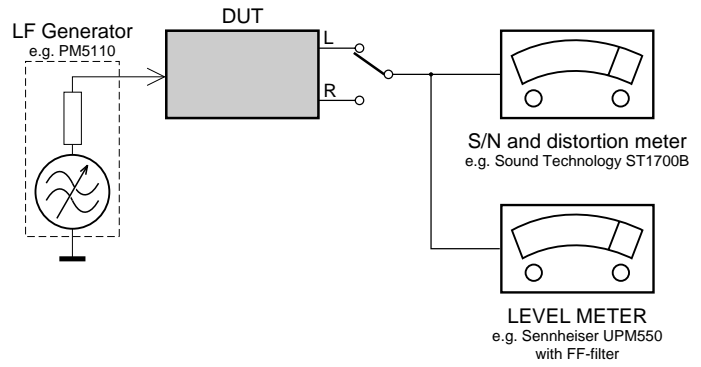
## CD

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



## Recorder

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



# SERVICE AIDS

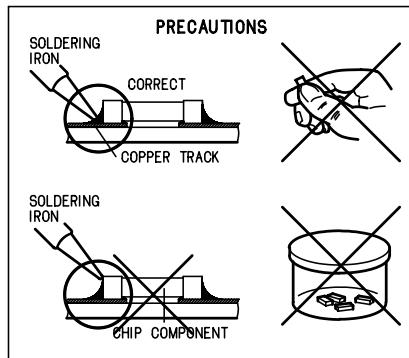
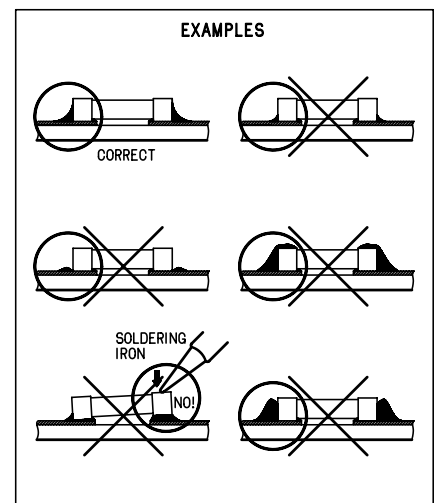
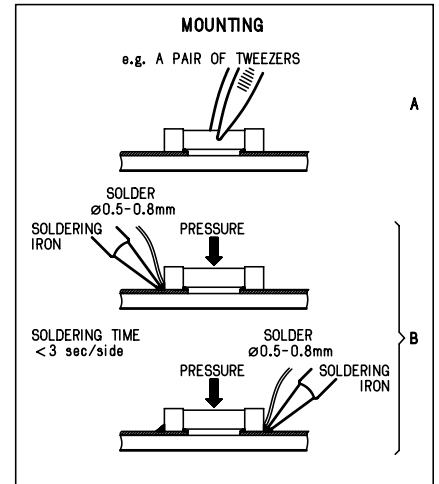
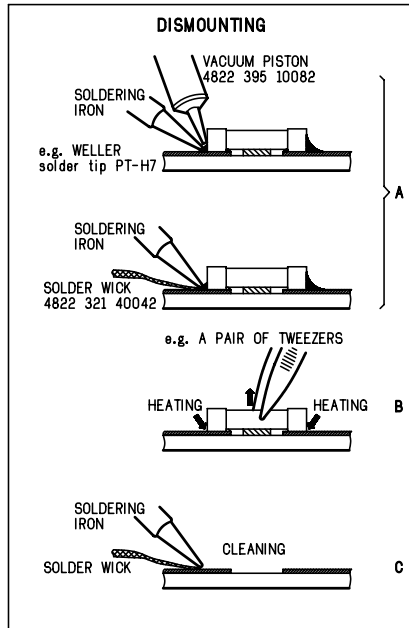
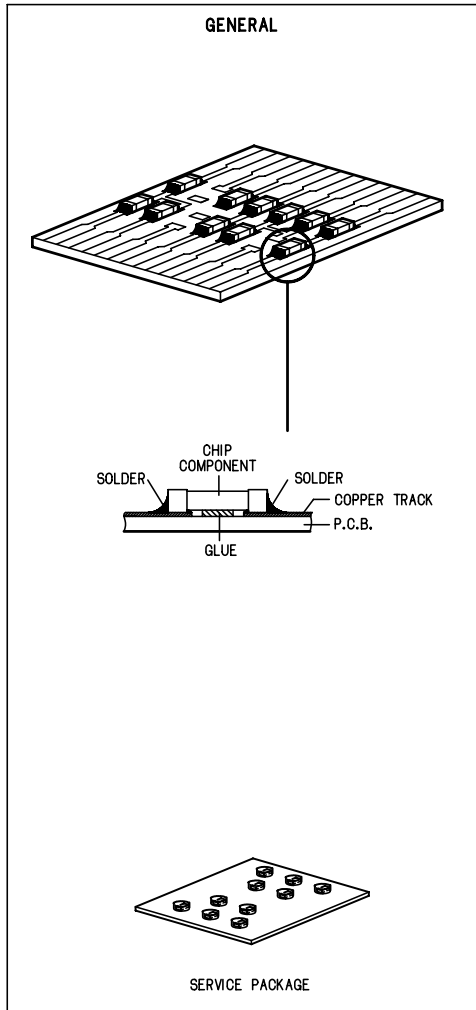
## Service Tools:

- 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

## HANDLING CHIP COMPONENTS



**(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.

**(F) ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.  
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.  
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**(D) WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).  
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.  
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.  
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

**(NL) WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).  
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.  
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.  
Houd componenten en hulpmiddelen ook op hetzelfde potentiaal.

**(I) AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).  
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.  
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.  
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**(GB) ESD PROTECTION EQUIPMENT**

Complete Kit ESD3 (small tablemat, wristband, connection box, estention cable and earth cable ..... 4822 310 10671  
Wristband tester ..... 4822 344 13999

**(GB)**

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

Safety components are marked by the symbol  $\Delta$ .

**(NL)**

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

De Veiligheidsonderdelen zijn aangeduid met het symbol  $\Delta$ .

**(F)**

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisés les pièces de rechange identiques à celles spécifiées.

Less composants de sécurité sont marqués  $\Delta$ .

**(D)**

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original Zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

Sicherheitsbauteile sind durch das Symbol  $\Delta$  markiert.

**(I)**

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

Componenty di sicurezza sono marcati con  $\Delta$ .

**(GB)**

After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist, The leakage current must not exceed 0.5mA.

**ESD****(GB) Warning !**

Invisible laser radiation when open.  
Avoid direct exposure to beam.

**(S) Varning !**

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

**(SF) Varoitus !**

Avatussa laitteessa ja suojaletituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

**(DK) Advarse !**

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

**(F)**

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

## INFORMATION ABOUT LEAD-FREE SOLDERING

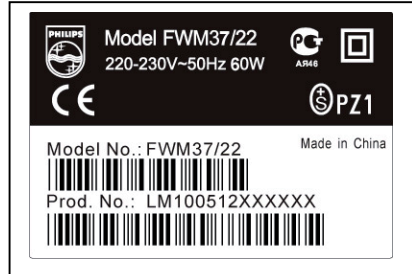
Philips CE is producing lead-free sets from 1.1.2005 onwards.

### IDENTIFICATION:

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



### Example S/N:



Bottom line of typeplate gives a 14-digit S/N. Digit 5&6 is the year, digit 7&8 is the week number, so in this case 2005 wk12

So from 0501 onwards = from 1 Jan 2005 onwards

***Important note: In fact also products of year 2004 must be treated in this way as long as you avoid mixing solder-alloys (leaded/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.***

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
  - To reach at least a solder-temperature of 400°C,
  - To stabilize the adjusted temperature at the solder-tip
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed solder alloy types (leaded and lead-free).  
If one cannot avoid or does not know whether product is lead-free, clean carefully the solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- Special information for BGA-ICs:
  - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use the lead-free temperature profile, in case of doubt)
  - lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. (MSL=Moisture Sensitivity Level). This will be communicated via AYS-website.
  - Do not re-use BGAs at all.
- For sets produced before 1.1.2005 (except products of 2004), containing leaded solder-alloy and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
- On our website [www.atyourservice.ce.Philips.com](http://www.atyourservice.ce.Philips.com) you find more information to:
  - \* BGA-de-/soldering (+ baking instructions)
  - \* Heating-profiles of BGAs and other ICs used in Philips-sets

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

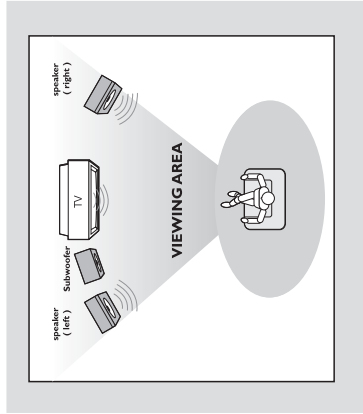
For additional questions please contact your local repair-helpdesk.

## 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.

## Step 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:

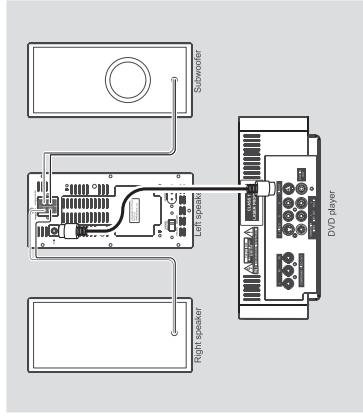
- To avoid magnetic interference, do not position the left and right speakers too close to your TV set.
- Allow adequate ventilation around the DVD System.

### IMPORTANT!

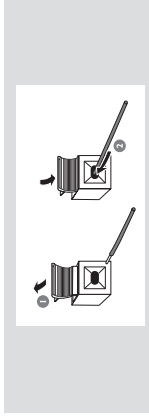
The type placement is located on the bottom of the system.

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

## Step 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.

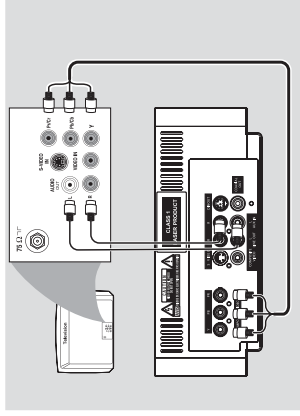
### Notes:

- 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.

## Connections

### Using component Video In jack (Pr-Pb-Y)

- Use the component video cables (red/blue/green, not supplied) to connect the system's **PR/PBY** 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 progressive scan in **PROGRESSIVE** menu of the system setup menu.

### Step 3: Connecting TV set

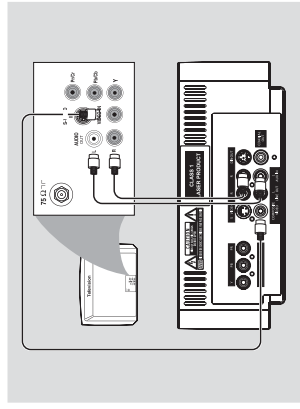
#### IMPORTANT!

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)

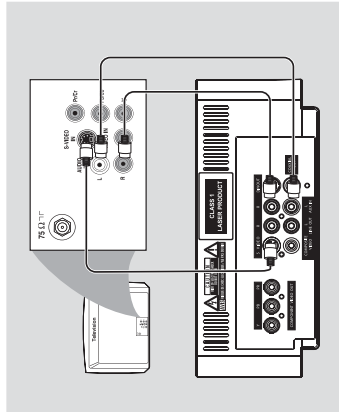


- Use the supplied composite video cable (yellow) to connect the system's **COMPOSITE VIDEO** jack to the video input jack (or labeled as AV In, Video In, Composite or Baseband) on the TV set.
- To listen to TV channels through this system, use the audio cables (white/red, not supplied) to connect **AUX 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.



# Connections

## Using S-Video In jack

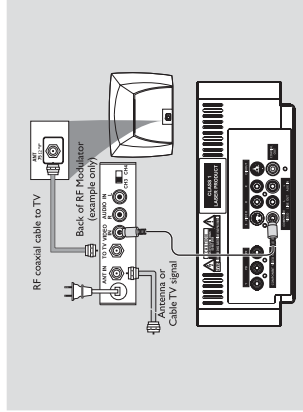


- Use the S-Video cable (not supplied) to connect the system's **S-VIDEO** jack to the S-Video input jack (or labeled as Y/C or S-VHS) on the TV set.
- To listen to TV channels through this system, use the audio cables (white/red, not supplied) to connect **AUX IN (L/R)** jacks to the corresponding **AUDIO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

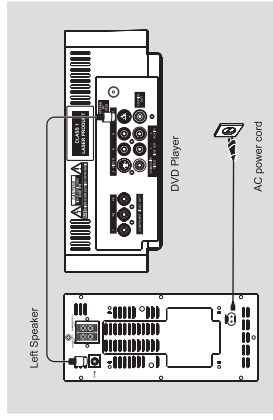
## Step 4: Connecting the FM antenna

- 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.

## Step 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.

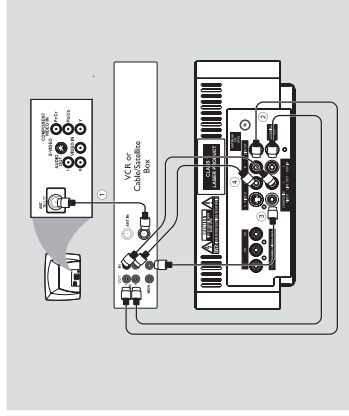
**Never make or change any connection with the power switched on.**

# CONNECTIONS

## Connections

## Step 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

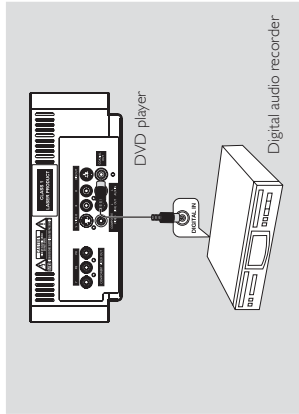
Some DVDs are copyright-protected. You cannot record or dub protected discs using a VCR.

- 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.

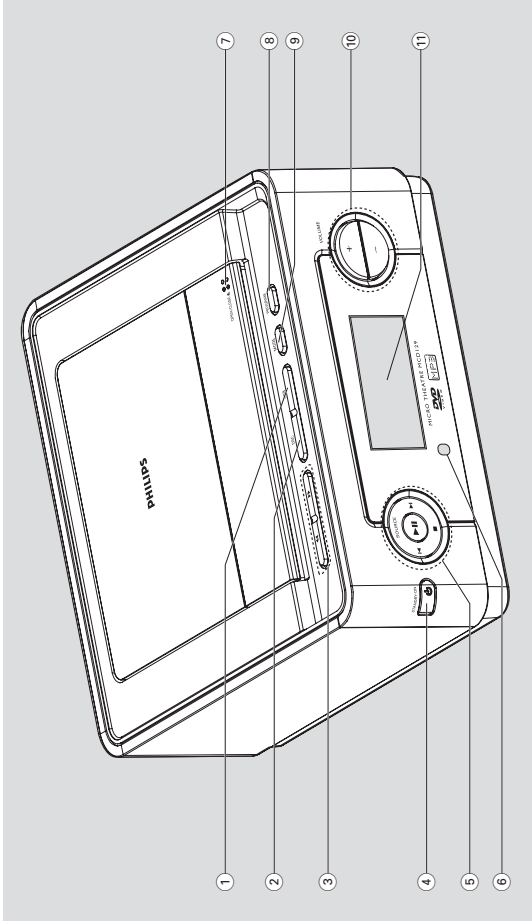
## Step 6: Connecting digital audio equipment



### 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.



### Controls on the 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 **▶ ||**
  - 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**
  - F r VCD/CD nlyoprogram the favourite tracks
- 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 **POWER** - switches the system to standby mode.
- ② **SOURCE (DISC/AUX/TUNER)** - switches on the system
- ③ **A-B** - selects the respective sound source for disc/FM/AUX
- ④ **SYSTEM MENU** - repeats playback of a specific section within a chapter of DVD or a track of VCD/CD.
- ⑤ **MODE** - enters or exits the system menu.
- ⑥ **MODE** - selects variations of continuous playback (For VCD with PBC feature, PBC must be turned off.)
- ⑦ **MODE** - For VCD/CD only, selects to playback in random order (For VCD with PBC feature, PBC must be turned off.)

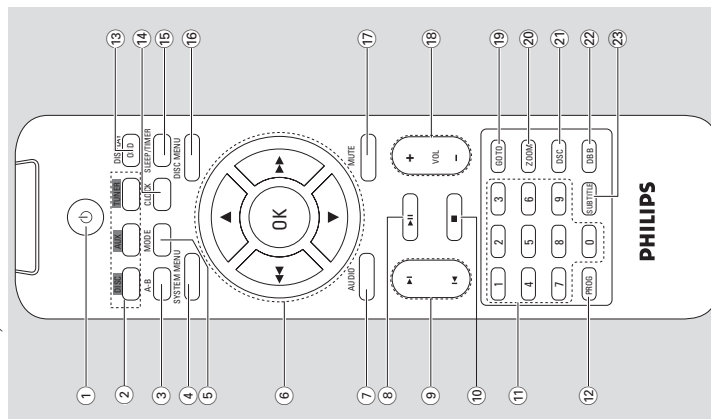
- ⑧ **OK** - confirms a selection.
- ⑨ **UP / DOWN / LEFT / RIGHT** - selects an item in a menu.
- ⑩ **ENLARGE / REDUCE** - moves an enlarged picture up/down/left/right.
- ⑪ **DISC / TRACK** - fast searches backward/forward in a disc at different speeds.
- ⑫ **TUNER** - tunes to a radio station
- ⑬ **CLOCK** - sets the minutes
- ⑭ **AUDIO** - sets Left vocal, Right vocal, Mono left, Mono right or Stereo sound mode.
- ⑮ **FM/AM** - selects an audio language.
- ⑯ **STOP** - starts or interrupts disc playback.
- ⑰ **PREVIOUS / NEXT** - Tuner.....selects a preset radio station  
Disc.....skips to the previous/next chapter/  
title/track
- ⑱ **CLOCK** - sets the hours
- ⑲ **FOR J/PEG** - selects different zooming rates
- ⑳ **STOP** - stops disc playback or erases a program.
- ㉑ **Numeric Keypad (0-9)** - inputs a track/title/chapter number of the disc.
- ㉒ **PROG** - F r VCD/CD nyoprogram the favourite tracks
- ㉓ **DISPLAY (OSD)** - displays disc playback time during playback
- ㉔ **CLOCK** - sets and views the clock
- ㉕ **SLEEP/TIMER** - activates/deactivates or selects the sleep timer
- ㉖ **SLEEP/TIMER** - activates/deactivates or sets the wake-up timer
- ㉗ **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

- ㉘ **MUTE** - disables or enables sound output.
- ㉙ **VOL +/-** - adjusts the volume upward/downward.
- ㉚ **GOTO** - fast searches in a disc by entering a time, title or chapter (For VCD with PBC feature, PBC must be turned off.)
- ㉛ **ZOOM** - DVD/VCD/JPEG: enlarges a picture or active image on the TV screen.  
For JPEG: turns on/off the zooming feature
- ㉜ **DSC** - selects different types of preset sound equalizer settings (CLASSIC, ROCK, JAZZ or POP).
- ㉝ **DBB** - enables or disables bass enhancement.
- ㉞ **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 UP, DOWN, LEFT, RIGHT).



# TROUBLESHOOTING


## Troubleshooting

## 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   |
|---|--|
| <b>No power.</b>  | <ul style="list-style-type: none"> <li>✓ Check if the AC power cord is properly connected.</li> <li>✓ Press STANDBY ON  on the DVD System or on the remote to turn on the power.</li> </ul>   |
| <b>No picture.</b>  | <ul style="list-style-type: none"> <li>✓ Check if the TV is switched on.</li> <li>✓ Check the video connection.</li> <li>✓ Press SOURCE on the DVD player repeatedly to select "DVD" or press DISC on the remote.</li> <li>✓ 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 AV IN channel. See your TV owner's manual for details. Or, change channels at the TV until you see DVD screen on the TV.</li> <li>✓ 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:             <ol style="list-style-type: none"> <li>1) Turn off your TV progressive scan mode or turn on to interlaced mode.</li> <li>2) Select "OFF" in PROGRESSIVE menu of system setup menu to turn off progressive, then press SYSTEM MENU to exit the menu.</li> </ol> </li> </ul> |
| <b>Distorted or poor picture.</b>                           | <ul style="list-style-type: none"> <li>✓ Sometimes a small amount of picture distortion may appear. This is not a malfunction.</li> <li>✓ Clean the disc.</li> </ul>   |
| <b>Completely distorted picture or black/white picture.</b> | <ul style="list-style-type: none"> <li>✓ TV has a colour system standard. If the discs or DVD systems colour system is different than your TV's colour system, the picture may be distorted or colourless.</li> </ul>  |

|  |   |
|--|---|
| <ul style="list-style-type: none"> <li>✓ The aspect ratio is fixed on the DVD disc.</li> <li>✓ Depending on the TV, it may not be possible to change the aspect ratio.</li> </ul>  | <ul style="list-style-type: none"> <li>✓ Adjust the volume.</li> <li>✓ Check that the speakers are connected correctly.</li> <li>✓ Replace the speaker cables.</li> <li>✓ Disconnect the headphones.</li> <li>✓ The system is in pause, slow motion or fast forward/reverse mode, press <b>▶  </b> (or <b>▶  </b> on the remote) to resume normal play mode.</li> </ul> |
| <ul style="list-style-type: none"> <li>✓ Insert a readable disc with the playback side facing down.</li> <li>✓ Check the disc type, colour system and regional code. Check for any scratches or smudges on the disc.</li> <li>✓ Press SYSTEM MENU to turn off the setup menu screen.</li> <li>✓ Cancel the parental control rating function or change the rating level.</li> <li>✓ Moisture has condensed inside the system.</li> <li>✓ Remove the disc and leave the system turned on for about an hour.</li> </ul> | <ul style="list-style-type: none"> <li>✓ Disconnect the power plug from the outlet and insert again.</li> </ul>   |
| <ul style="list-style-type: none"> <li>✓ Multi-language sound or subtitle is not recorded on the DVD.</li> <li>✓ Changing the language for the sound or subtitle is prohibited on the DVD.</li> <li>✓ The features may not be available on the disc.</li> </ul>  | <ul style="list-style-type: none"> <li>✓ If the signal is too weak, adjust the antenna or connect an external antenna for better reception.</li> <li>✓ Increase the distance between the Mini HiFi System and your TV or VCR.</li> </ul>  |

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.

# 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.**

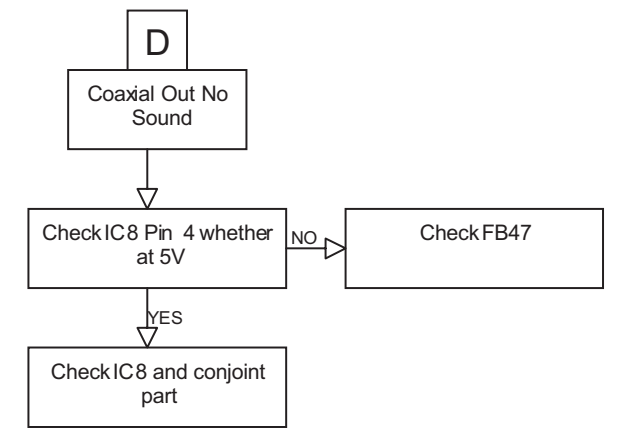
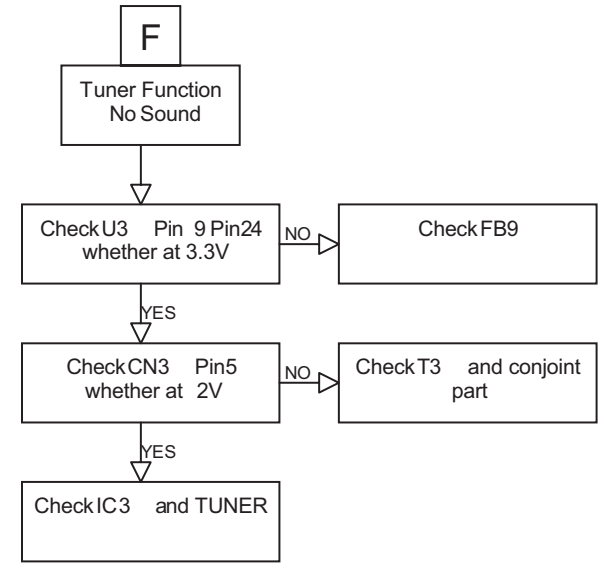
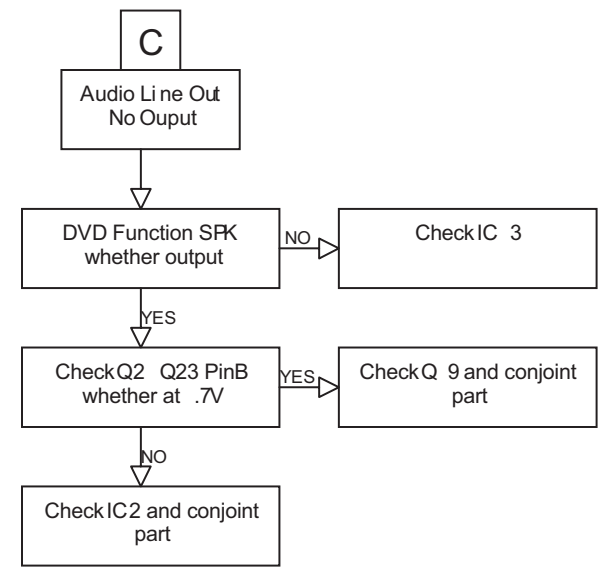
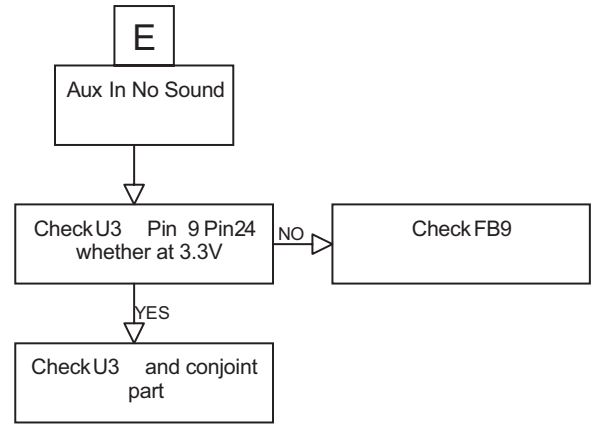
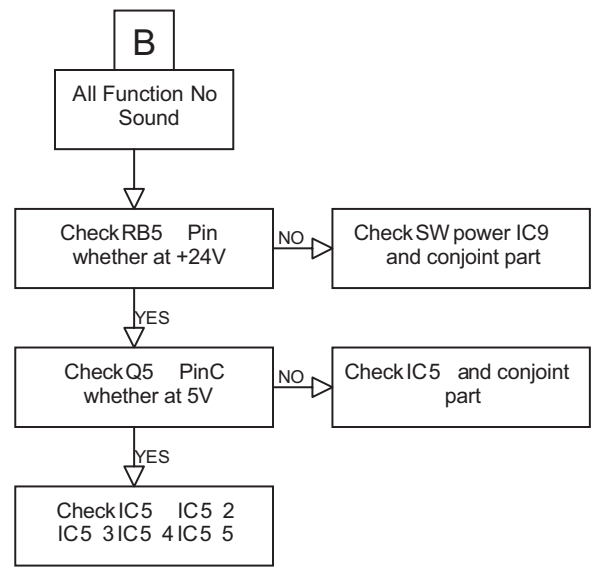
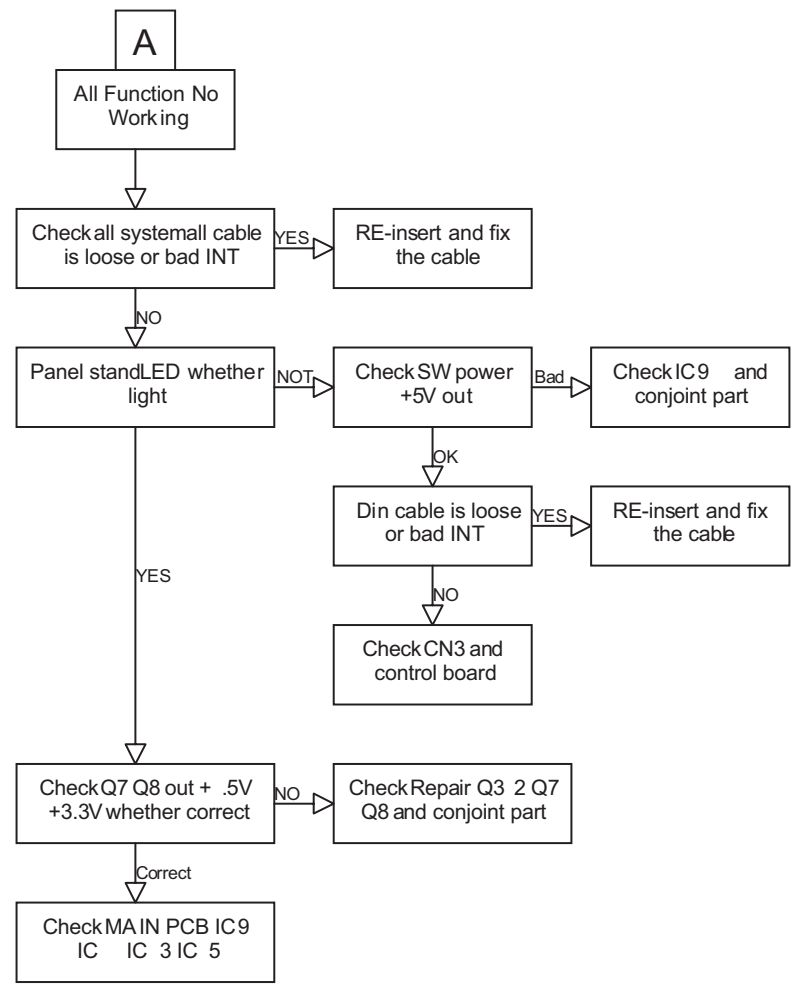
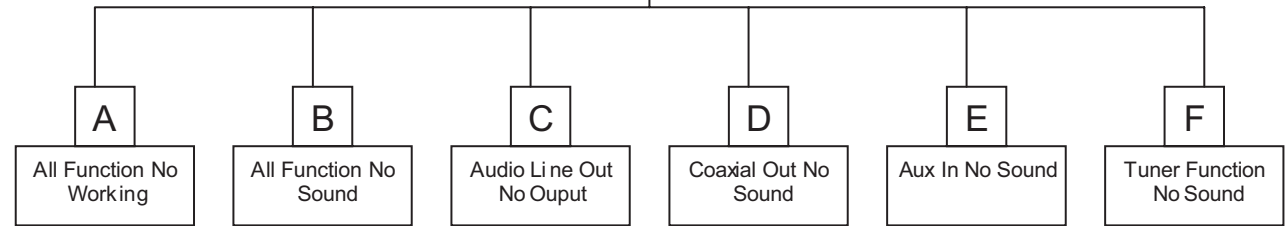
- ✓ Check all speakers for correct polarity.

**Unable to select Progressive Scan**

- ✓ Check that the output of the video signal is switched to 'Ybpr'.

# REPAIR INSTRUCTION

## MAIN UNIT REPAIR CHART



## 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.

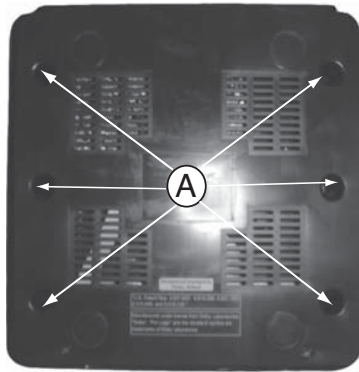


Figure 1

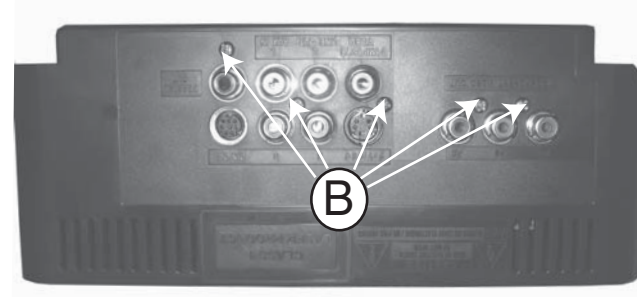


Figure 2

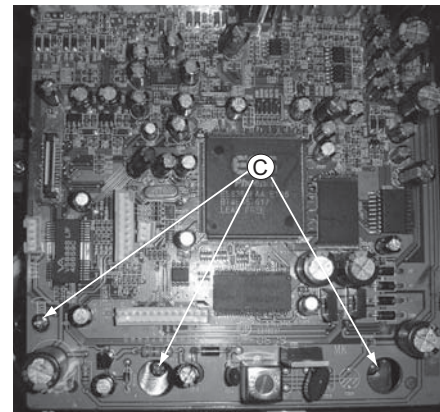


Figure 3

### *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.

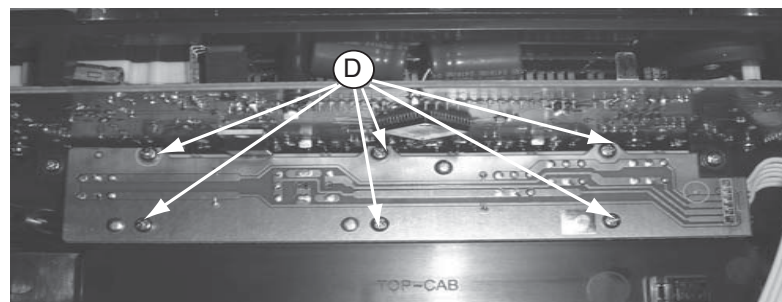


Figure 4

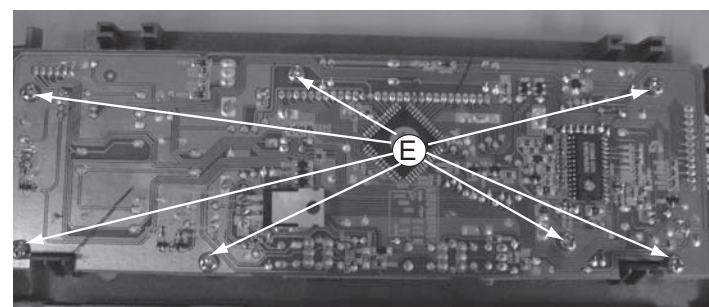


Figure 5

### *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.

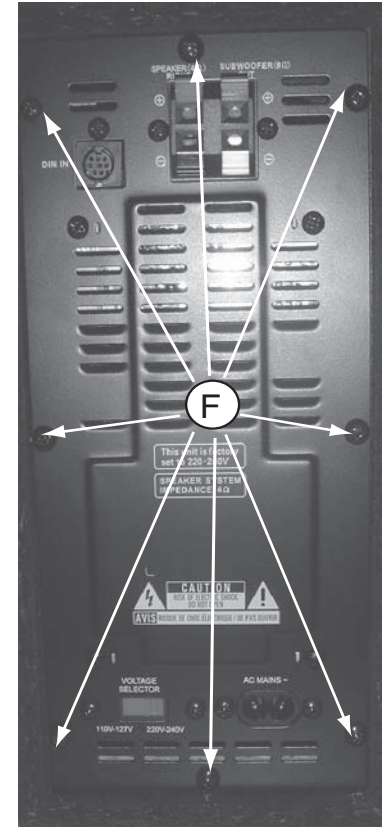


Figure 6

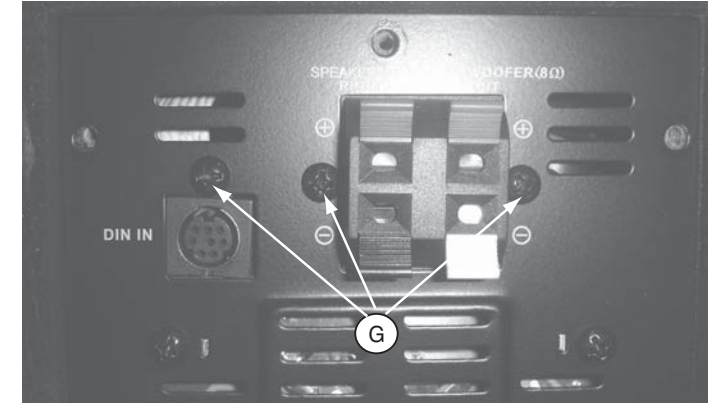


Figure 7

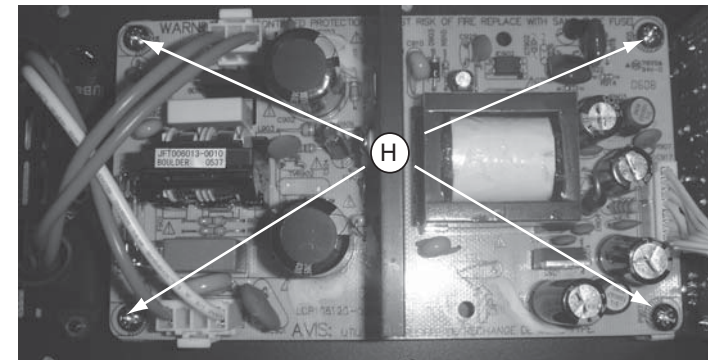


Figure 8

### *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.

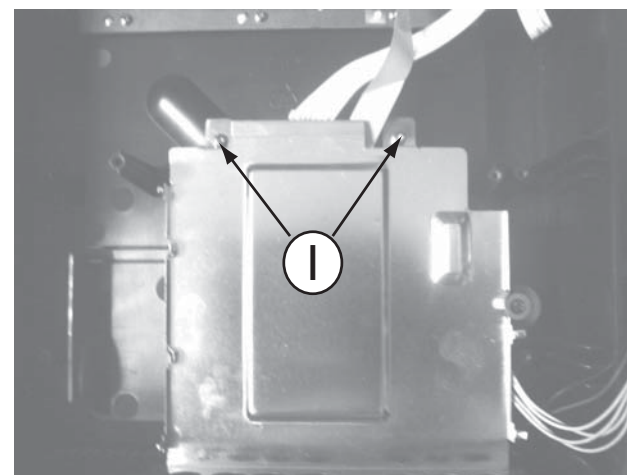


Figure 9

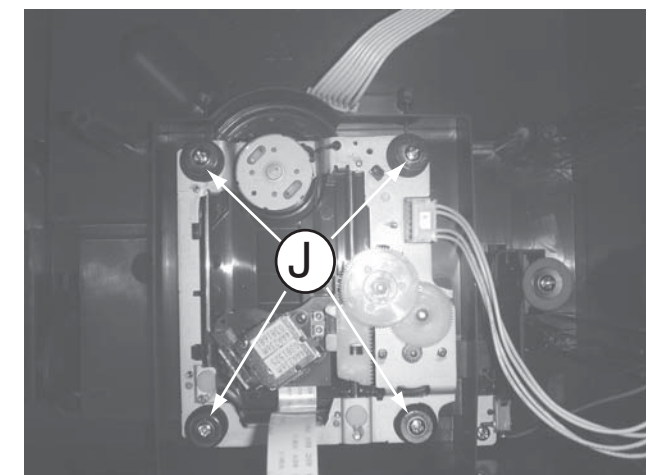


Figure 10

**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.

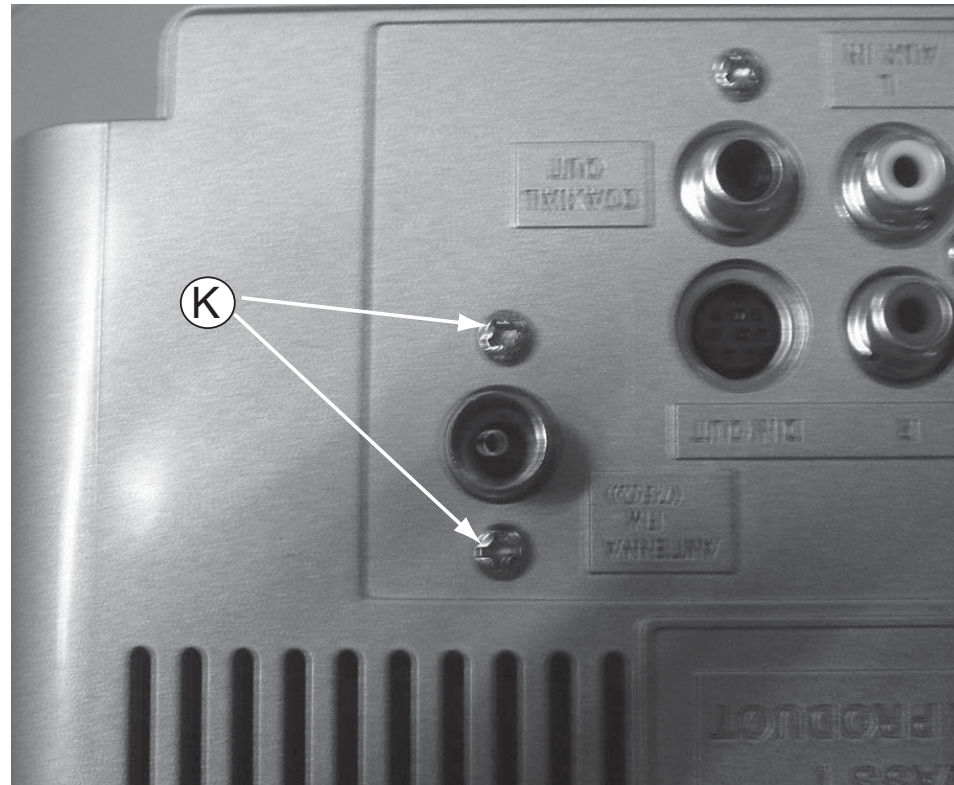


Figure 11

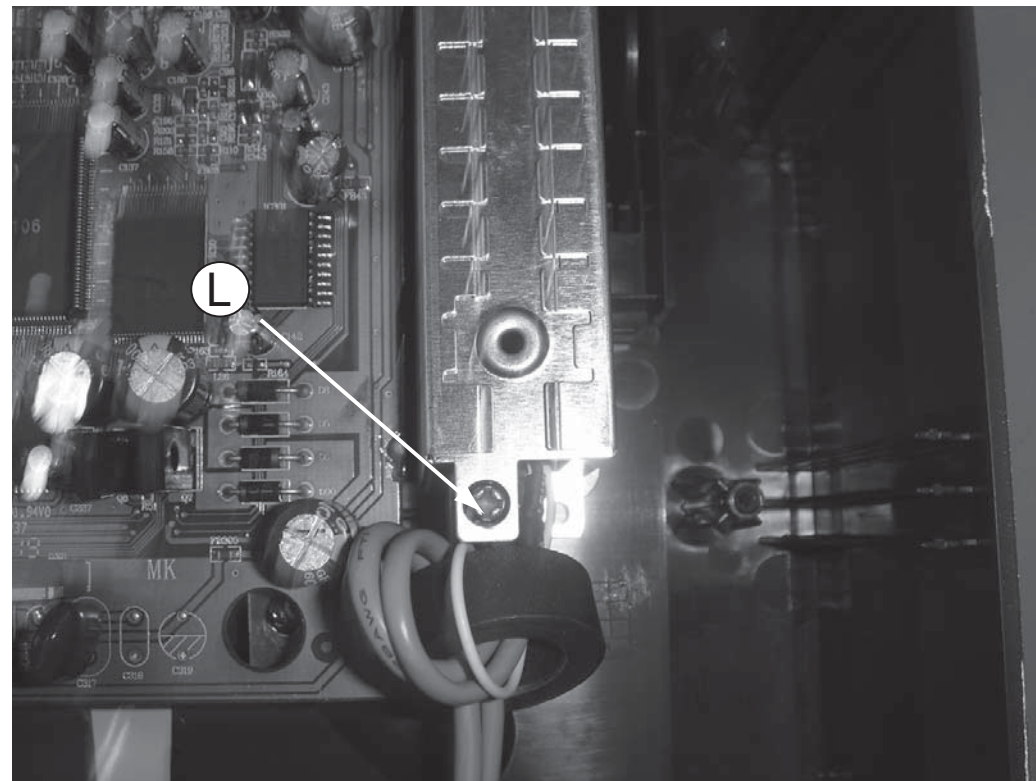
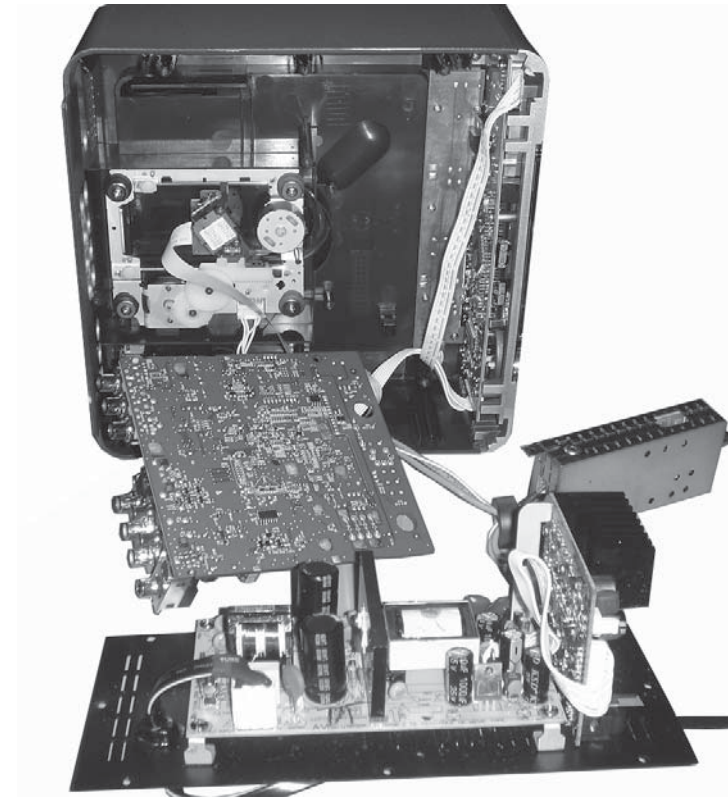


Figure 12

**SERVICE POSITIONS**

Service position A



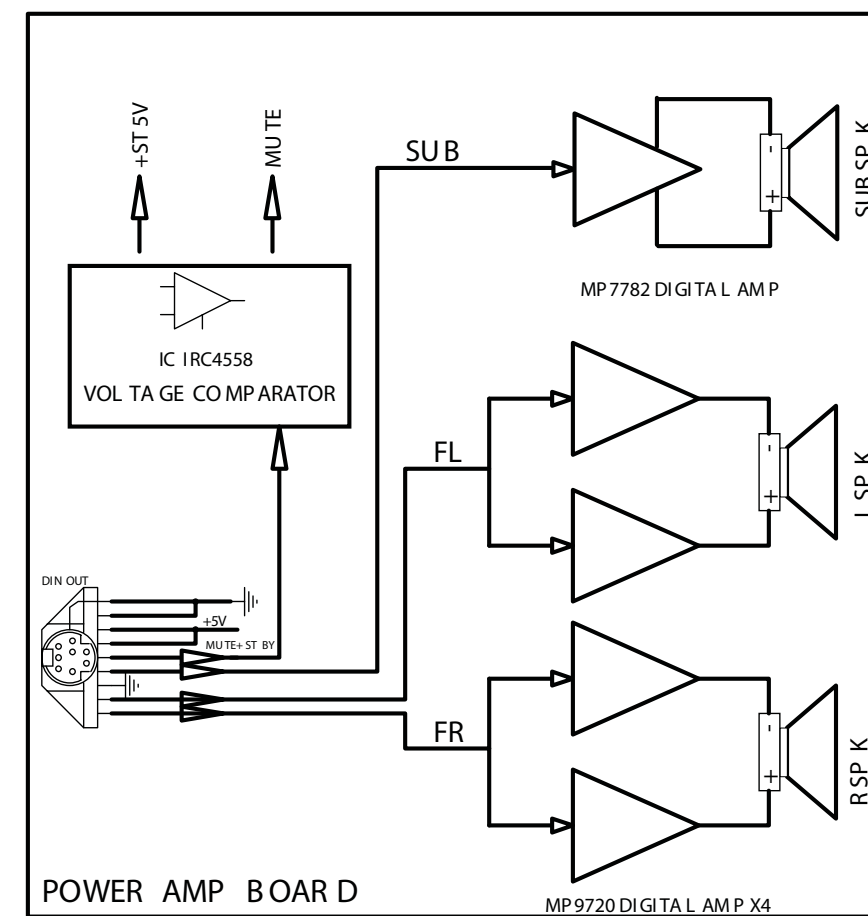
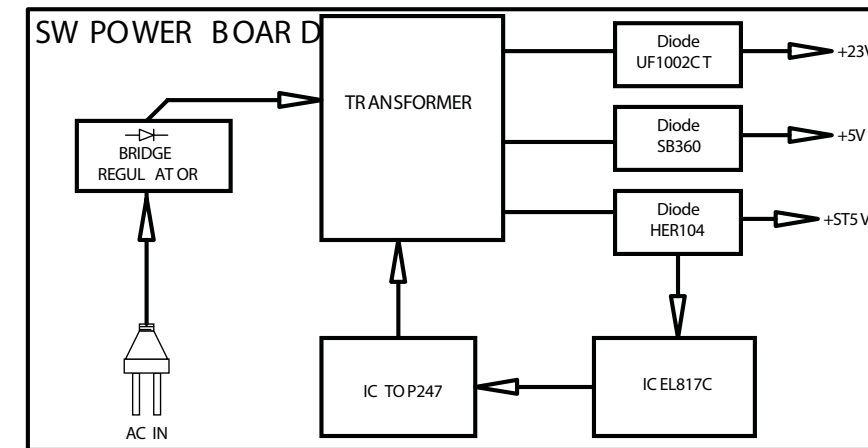
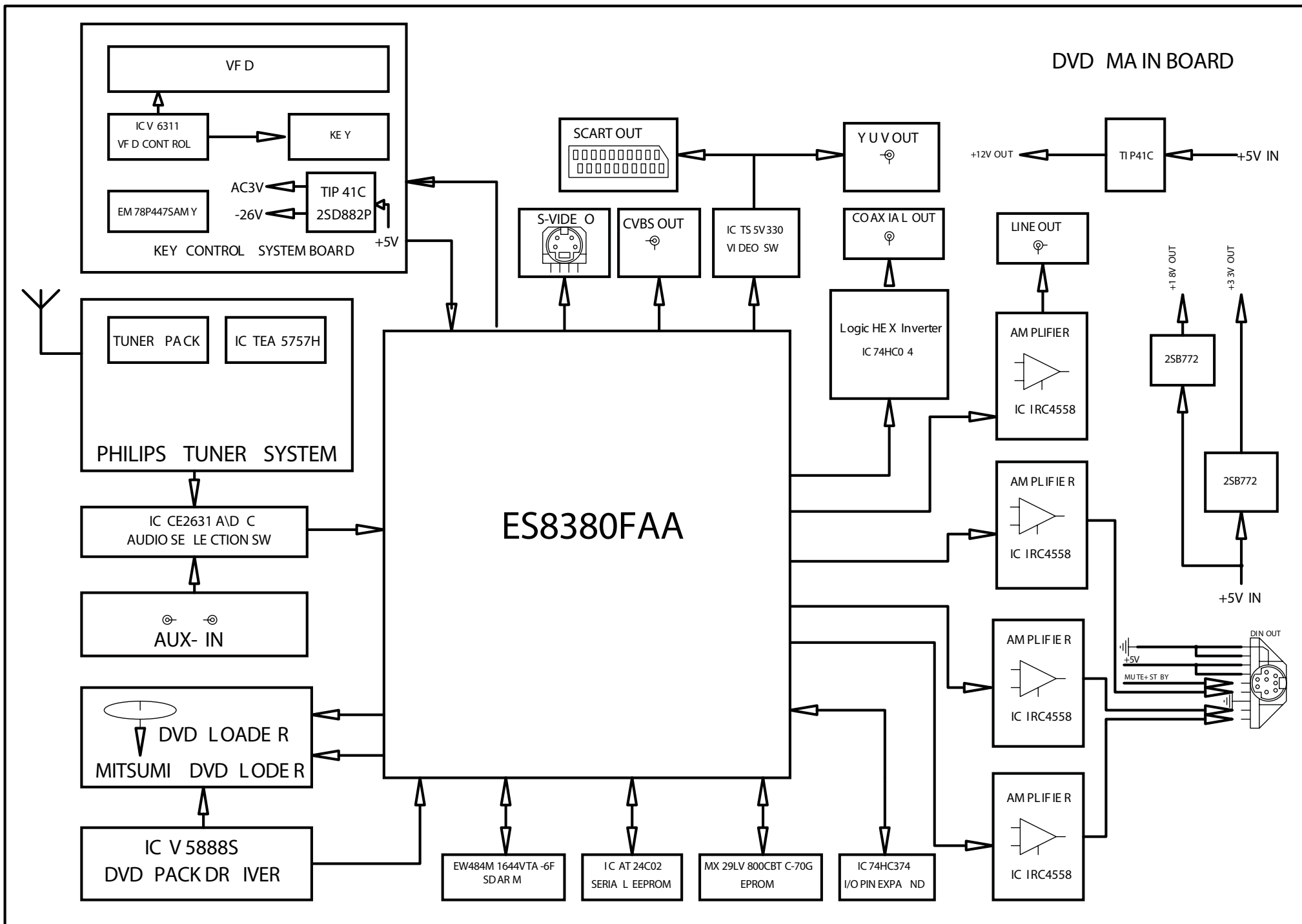
Note: In some service positions the components or copper patterns of one board may risk touching its neighbouring pc boards or metallic parts. To prevent such short-circuit use a piece of hard paper or other insulating material between them.

Service position B

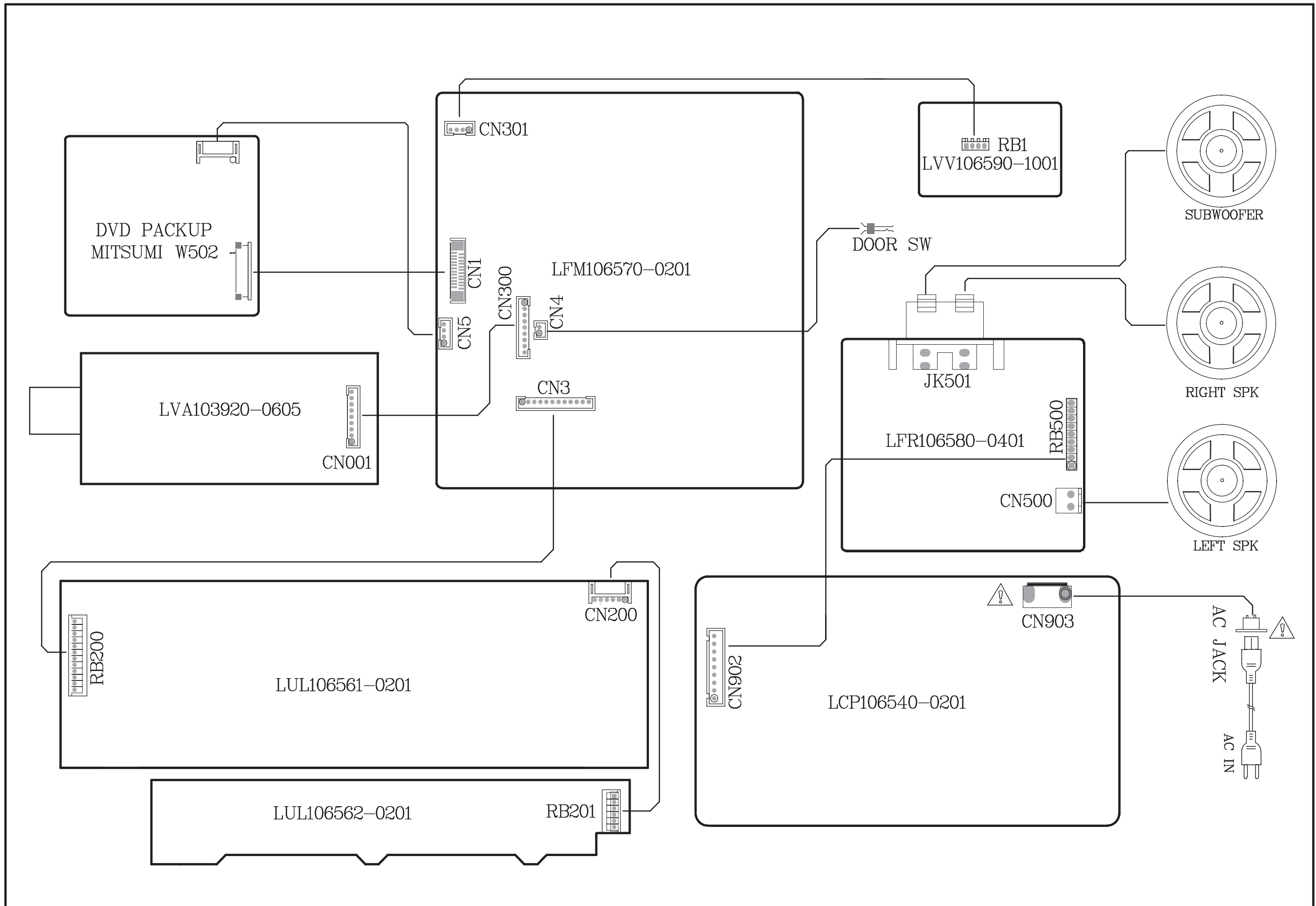




# BLOCK DIAGRAM



# WIRING DIAGRAM

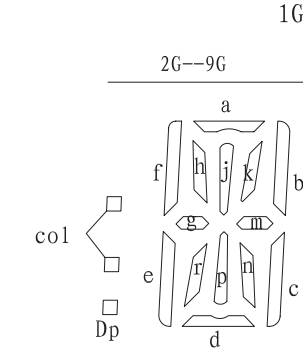
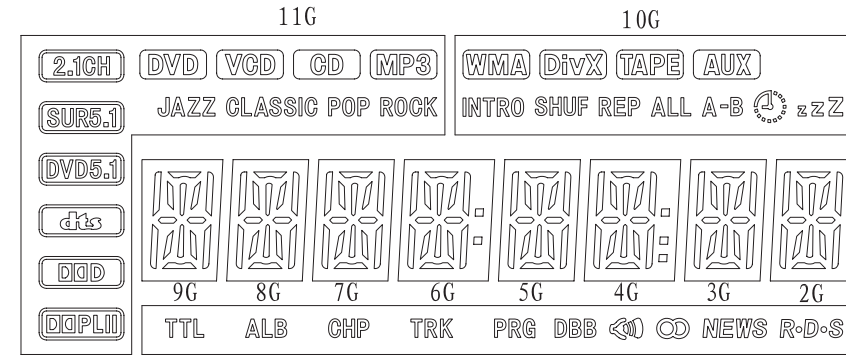


# KEY & VFD BOARD

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 PCB Layout Bottom View ..... 5-5  
 Electrical Parts List ..... 5-6

## 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  | ☺     |
| 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     | ☺     | 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 | DDPLII  |       | 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 |

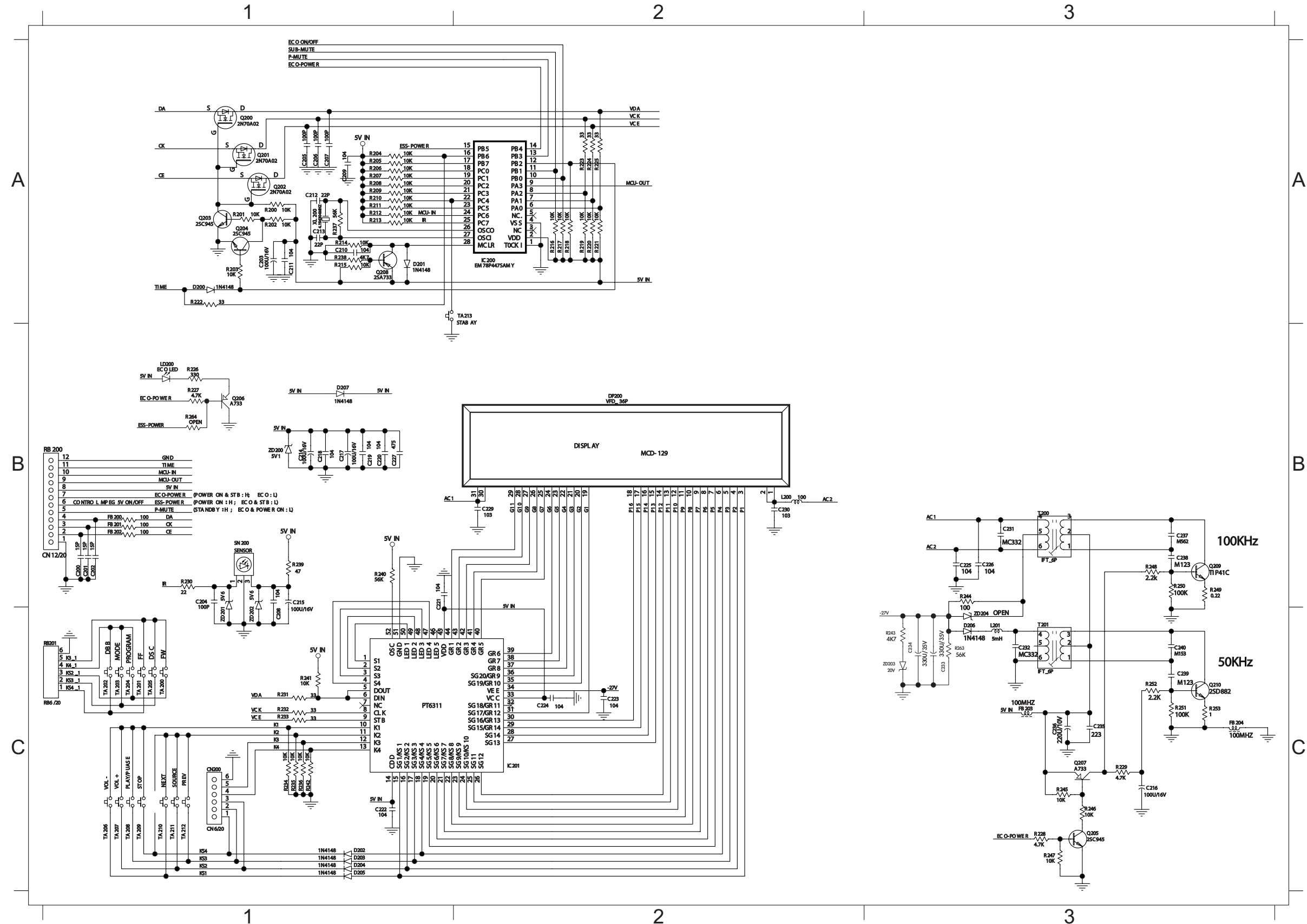
| Q202    |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 5.20 | 3.30 | 3.20 |

| 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 |

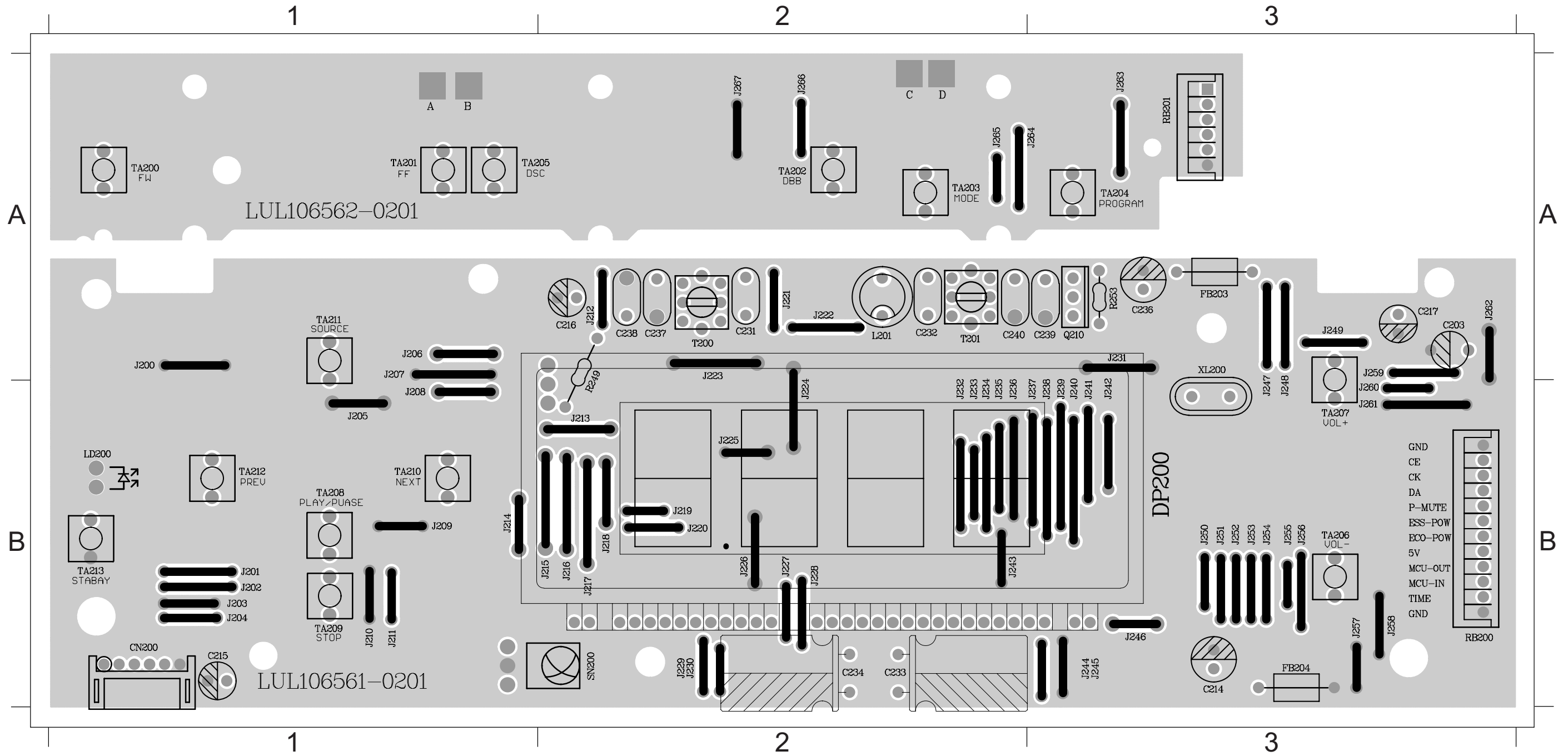
# CIRCUIT DIAGRAM - KEY & VFD BOARD

|      |    |      |    |      |    |      |    |      |    |       |    |       |    |       |    |      |    |       |    |       |    |       |    |       |    |      |    |      |    |       |    |      |    |       |    |       |    |       |    |       |    |       |    |       |    |      |    |       |    |
|------|----|------|----|------|----|------|----|------|----|-------|----|-------|----|-------|----|------|----|-------|----|-------|----|-------|----|-------|----|------|----|------|----|-------|----|------|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|------|----|-------|----|
| 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 |       |    |



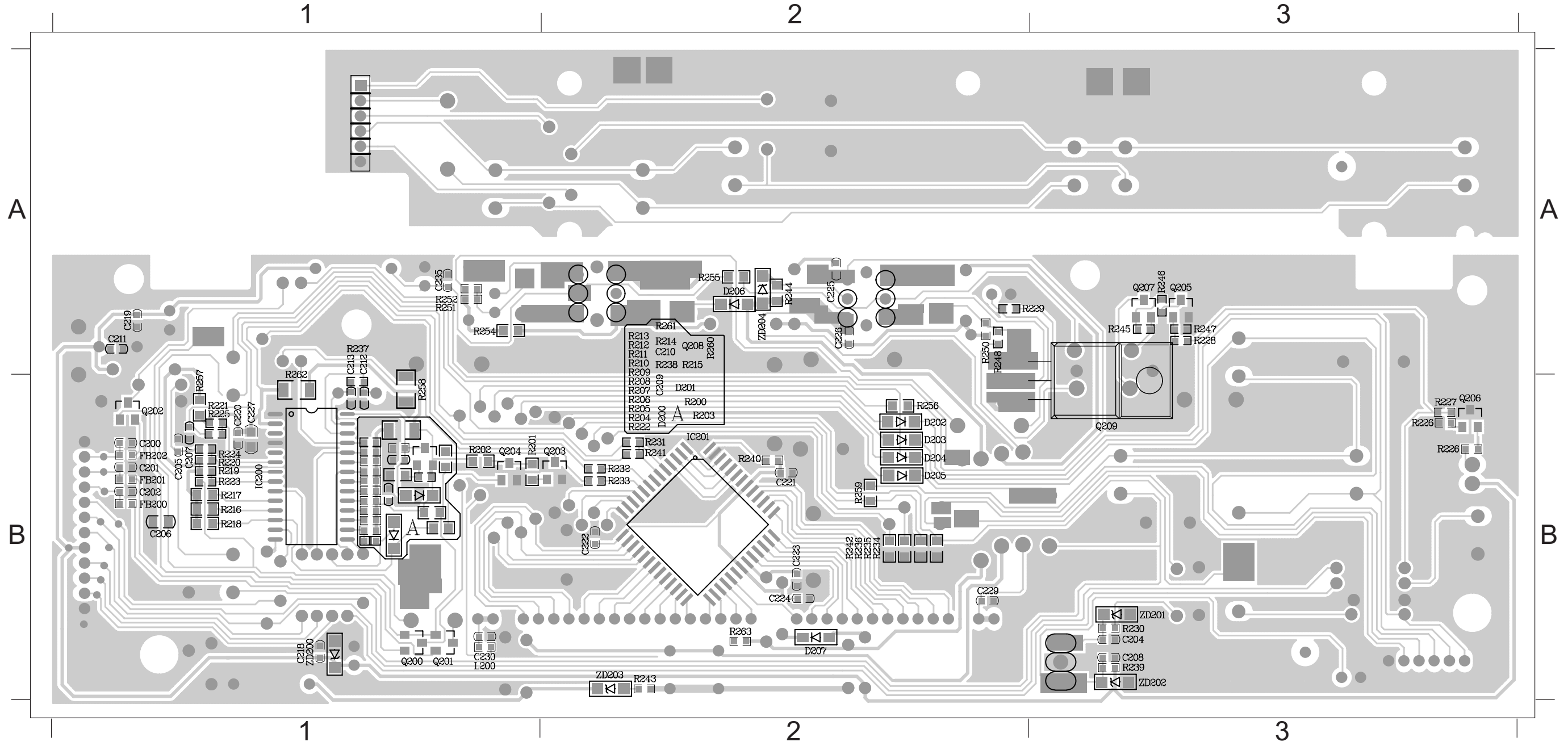
# PCB LAYOUT - TOP VIEW

|      |    |      |    |       |    |       |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |       |    |       |    |       |    |       |    |       |    |       |    |
|------|----|------|----|-------|----|-------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|
| 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 | LD200 | 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**

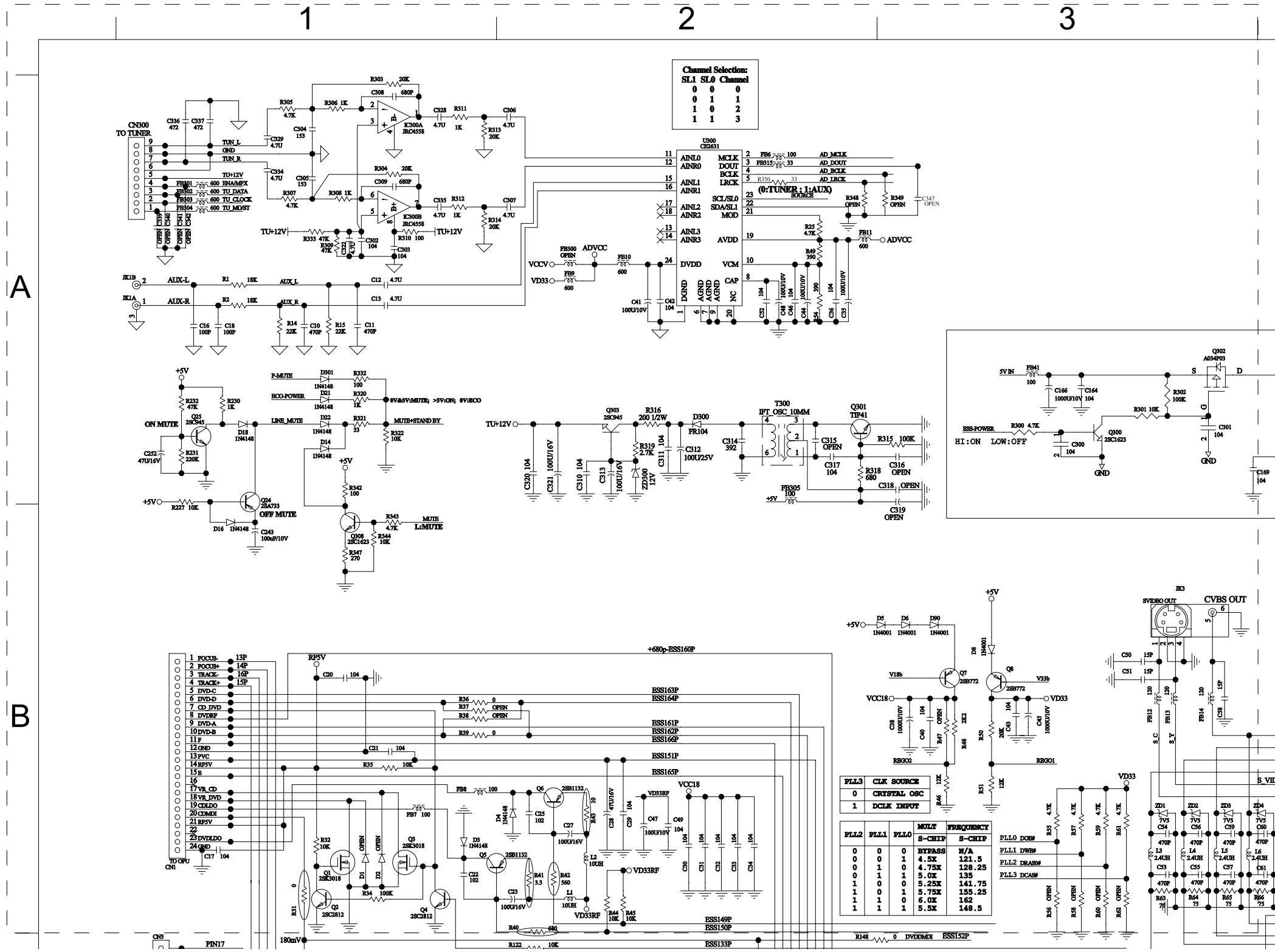
|       |                 |                              |              |   |                            |
|-------|-----------------|------------------------------|--------------|---|----------------------------|
| DP200 | 9940 000 05469  | VFD 35P 55x20                | XL200        | 9940 000 05352                                    | X'TAL 4.194304MHZ +/-10PPM |
| IC200 | 9965 000 41279  | IC 28P EM78P447SAMY          | ZD200        | 9940 000 05476                                    | ZENER; 5.6V 0.5W 5% MOT    |
| IC201 | 9940 000 01564  | IC 52P PT6311                | ZD201        | 9940 000 05476                                    | ZENER; 5.6V 0.5W 5% MOT    |
| IC201 | 9965 000 41280  | IC 52P ET16311 VFD DRIVER    | ZD202        | 9940 000 05476                                    | ZENER; 5.6V 0.5W 5% MOT    |
| LD200 | 9940 000 05471  | LED 2.94DIA BLUE             | ZD203        | 9965 000 41282                                    | ZENER 21.52-22.63V 5% 0.5W |
|       |                 |                              |              |   |                            |
| 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     |              |   |                            |
| T200  | 9940 000 05473  | OSC COIL 160 uH 8% 796 KHz   |              |   |                            |
| T201  | 9965 000 22303  | OSC COIL REC OSC 3mH         |              |   |                            |
|       |                 |                              |              |   |                            |
| TA200 | 4822 276 13648  | TACT SW SKHVBE3520           |              |   |                            |
| TA200 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
| TA201 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
| TA202 | 4822 276 13648  | TACT SW SKHVBE3520           |              |   |                            |
| TA202 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
|       |                 |                              |              |   |                            |
| TA203 | 4822 276 13648  | TACT SW SKHVBE3520           |              |   |                            |
| TA203 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
| TA204 | 4822 276 13648  | TACT SW SKHVBE3520           |              |   |                            |
| TA204 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
| TA205 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
|       |                 |                              |              |   |                            |
| TA206 | 4822 276 13648  | TACT SW SKHVBE3520           |              |   |                            |
| TA206 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
| TA207 | 4822 276 13648  | TACT SW SKHVBE3520           |              |   |                            |
| TA207 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
| TA208 | 4822 276 13648  | TACT SW SKHVBE3520           |              |   |                            |
|       |                 |                              |              |   |                            |
| TA208 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  | <b>Note:</b> | <b>Only these parts mentioned in the list are</b> |                            |
| TA209 | 4822 276 13648  | TACT SW SKHVBE3520           |              | <b>normal service parts.</b>                      |                            |
| TA209 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
| TA210 | 4822 276 13648  | TACT SW SKHVBE3520           |              |   |                            |
| TA210 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
|       |                 |                              |              |   |                            |
| TA211 | 4822 276 13648  | TACT SW SKHVBE3520           |              |   |                            |
| TA211 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
| TA212 | 4822 276 13648  | TACT SW SKHVBE3520           |              |   |                            |
| TA212 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |
| TA213 | 4822 276 13648  | TACT SW SKHVBE3520           |              |   |                            |
|       |                 |                              |              |   |                            |
| TA213 | 9965 000 26952  | TACT SW 2PIN 160GF 20MA 15V  |              |   |                            |





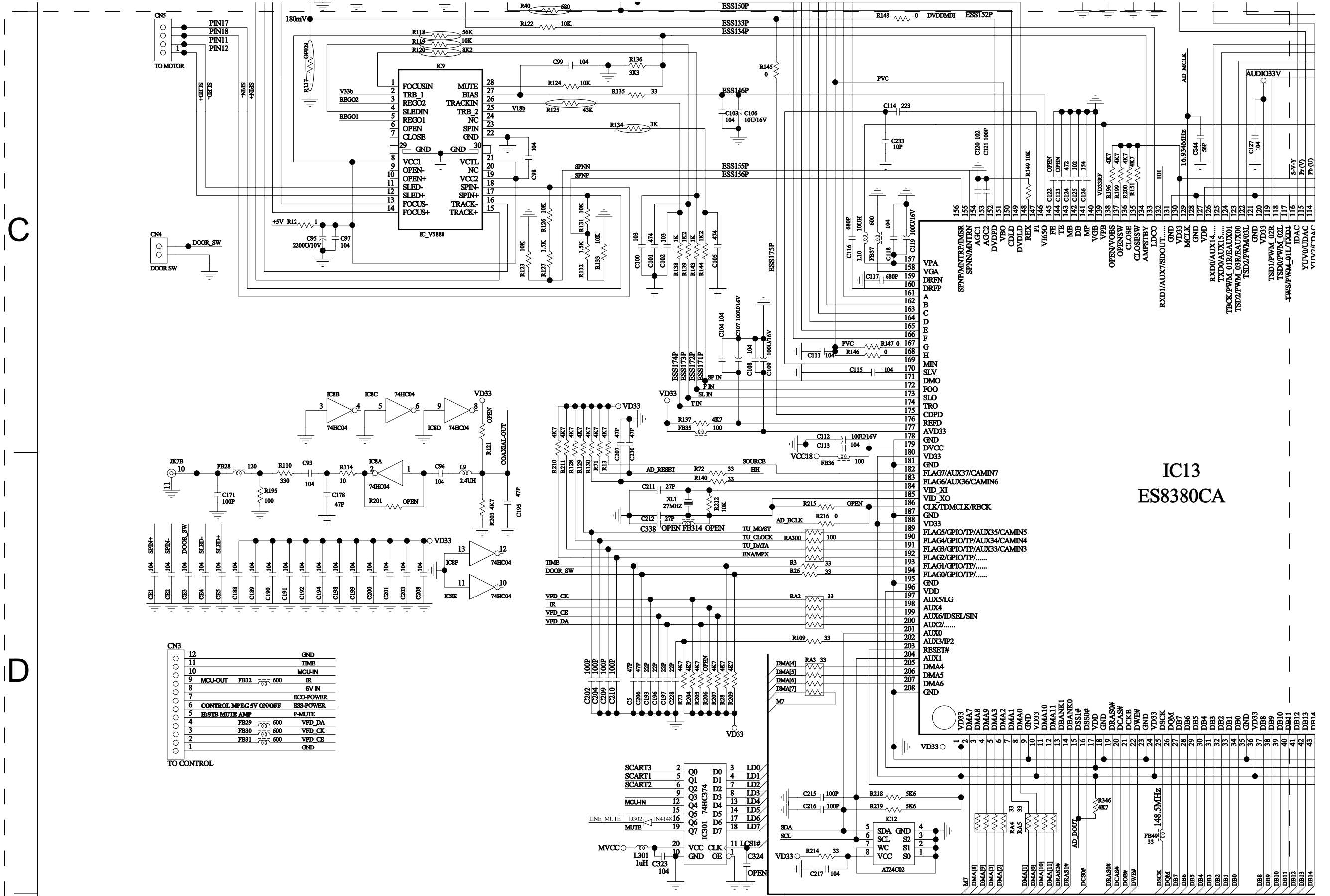
# CIRCUIT DIAGRAM - TOP LEFT

|      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |     |    |     |    |     |    |       |    |      |    |      |    |       |    |      |    |
|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|-----|----|-----|----|-----|----|-------|----|------|----|------|----|-------|----|------|----|
| 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 - BOTTOM LEFT



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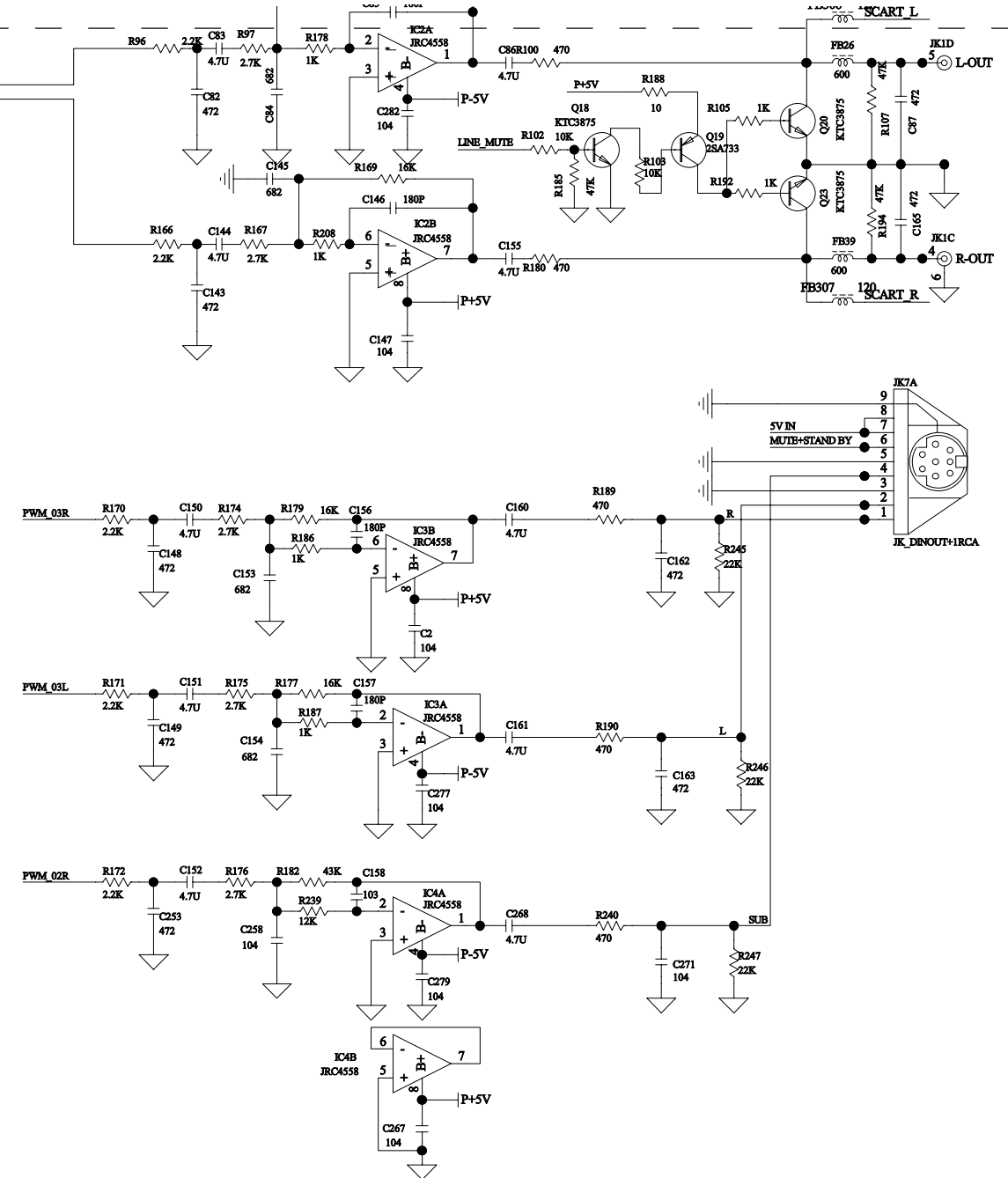
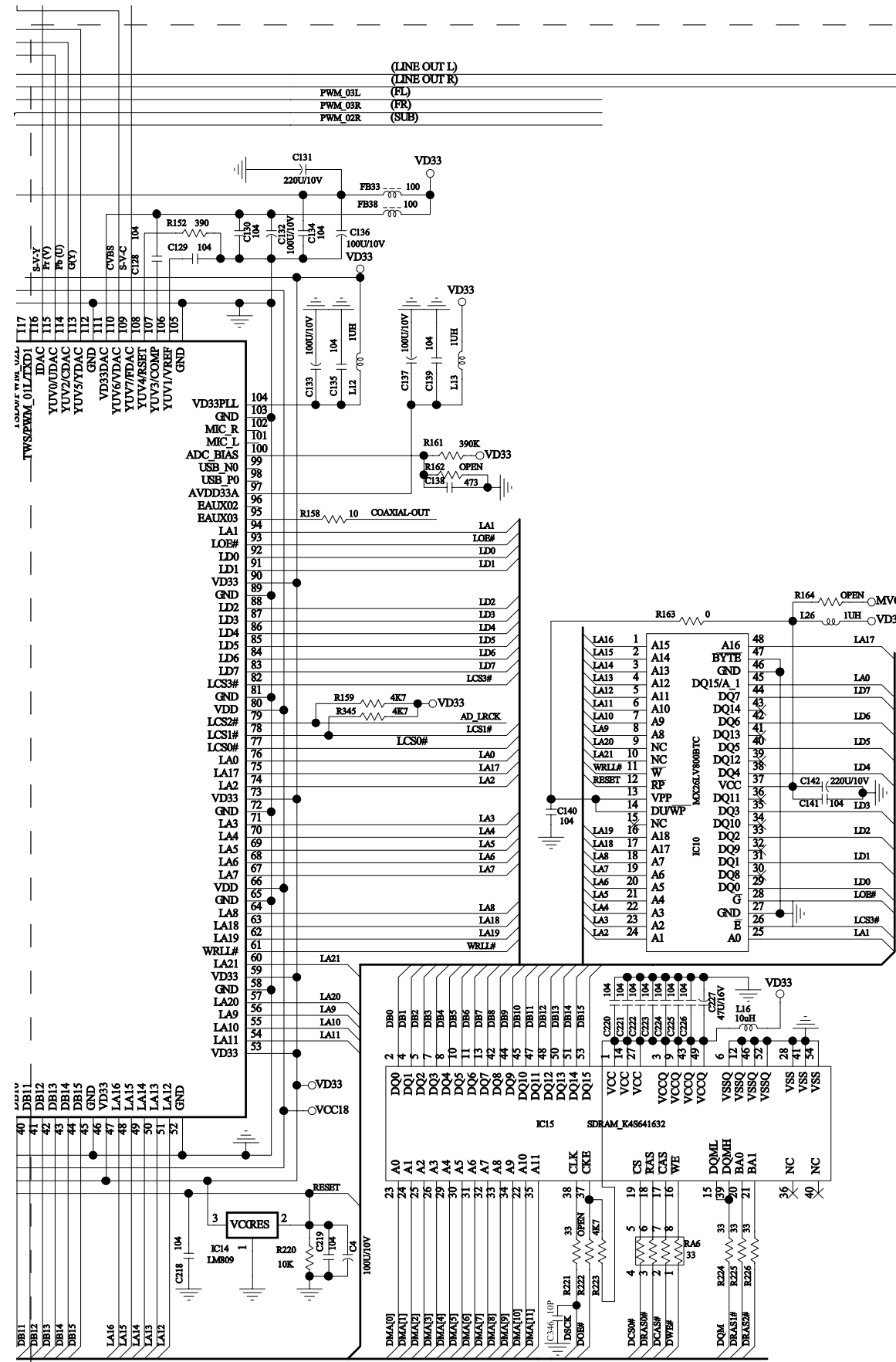
D

1

2

3

# CIRCUIT DIAGRAM - BOTTOM RIGHT



4

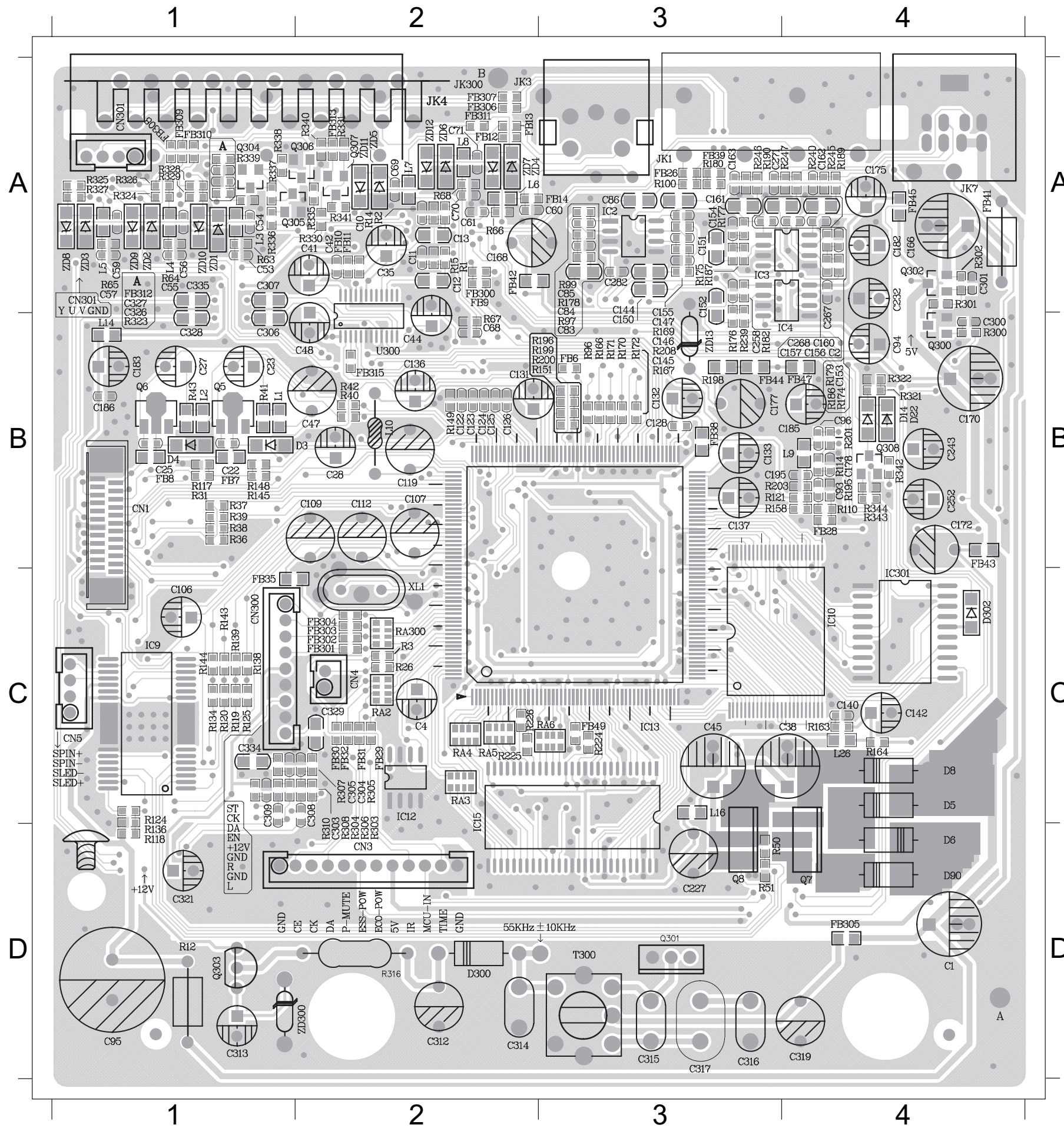
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6

C

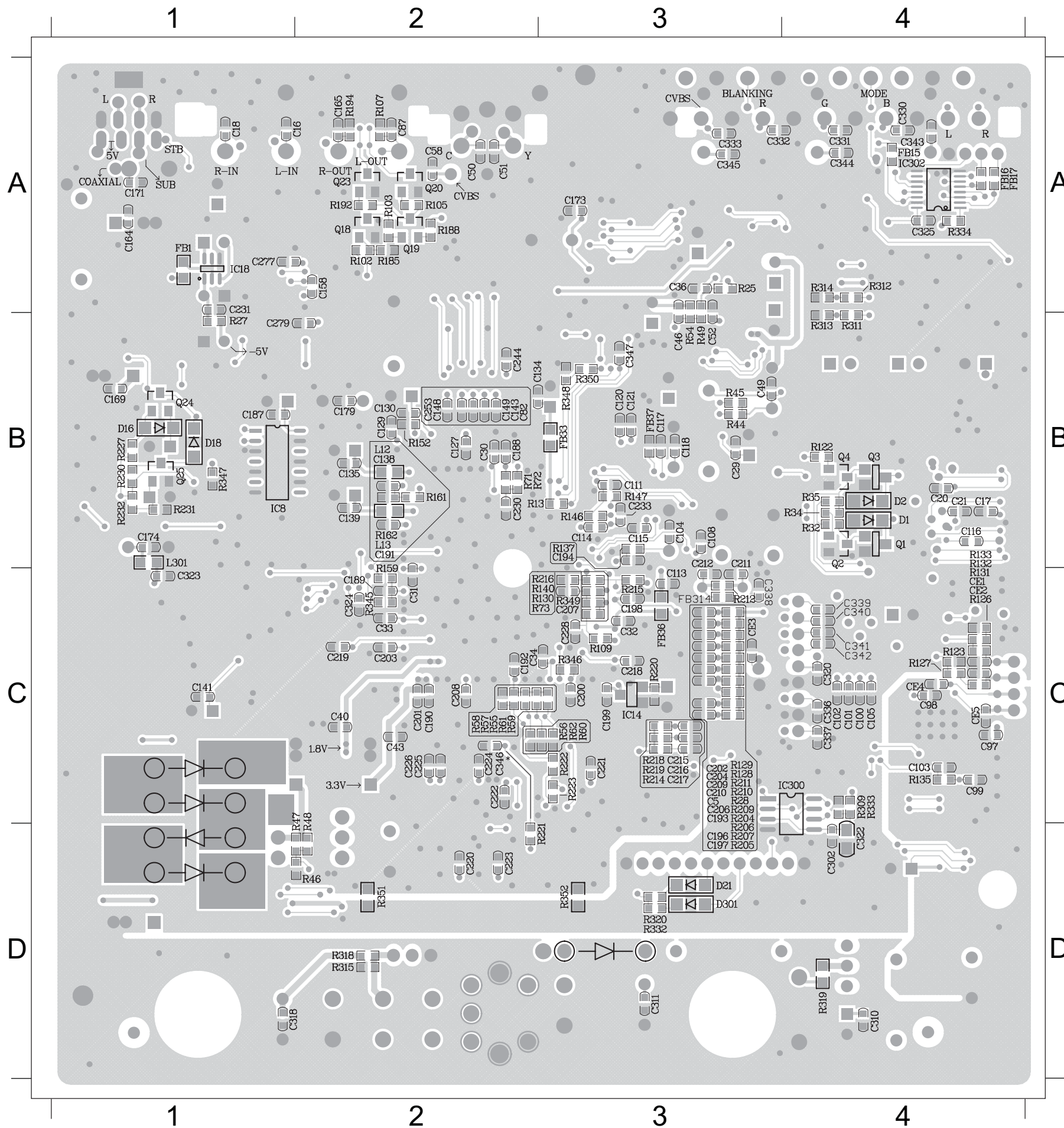
D

# PCB LAYOUT - TOP VIEW



|      |    |       |    |       |    |       |    |       |    |
|------|----|-------|----|-------|----|-------|----|-------|----|
| C1   | D4 | C313  | D1 | FB45  | A4 | R178  | A3 | ZD12  | A2 |
| 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 |       |    |
| 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 |       |    |
| C27  | B1 | FB302 | C2 | R149  | B2 | R97   | A3 |       |    |
| C271 | A3 | FB303 | C2 | R151  | B3 | R99   | A3 |       |    |
| C28  | B2 | FB304 | C2 | R158  | B4 | RA2   | C2 |       |    |
| C282 | A3 | FB305 | D4 | R163  | C4 | RA3   | C2 |       |    |
| C300 | B4 | FB31  | C2 | R166  | B3 | RA300 | C2 |       |    |
| C301 | A4 | FB315 | B2 | R167  | A3 | RA4   | C2 |       |    |
| C303 | C2 | FB32  | C2 | R169  | A3 | RA5   | C2 |       |    |
| C304 | C2 | FB35  | C1 | R170  | B3 | RA6   | C2 |       |    |
| C305 | C2 | FB38  | B3 | R171  | B3 | T300  | D3 |       |    |
| C306 | B1 | FB39  | A3 | R172  | B3 | U300  | B2 |       |    |
| C307 | A1 | FB41  | A4 | R174  | B4 | XL1   | C2 |       |    |
| C308 | C2 | FB42  | A2 | R175  | A3 | ZD1   | A1 |       |    |
| C309 | C1 | FB43  | B4 | R176  | B3 | ZD10  | A1 |       |    |
| C312 | D2 | FB44  | B3 | R177  | A3 | ZD11  | A2 |       |    |

# 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 |

VOLTGE

| IC13(ES8380FAA) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Pin NO          | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   |
| Voltage         | 3.24 | 1.14 | 1.76 | 0.00 | 1.50 | 0.50 | 0.20 | 0.02 | 0.00 | 3.24 | 0.00 | 0.00 | 0.00 | 0.06 | 3.18 | 3.08 |
| Pin NO          | 21   | 22   | 23   | 24   | 25   | 26   | 27   | 28   | 29   | 30   | 31   | 32   | 33   | 34   | 35   | 36   |
| Voltage         | 3.20 | 3.16 | 0.00 | 3.20 | 1.82 | 0.04 | 1.39 | 1.42 | 1.40 | 1.20 | 1.30 | 1.32 | 1.20 | 1.20 | 0.00 | 3.20 |
| Pin NO          | 41   | 42   | 43   | 44   | 45   | 46   | 47   | 48   | 49   | 50   | 51   | 52   | 53   | 54   | 55   | 56   |
| Voltage         | 1.20 | 1.20 | 1.20 | 1.60 | 0.00 | 3.23 | 0.00 | 2.20 | 1.20 | 0.00 | 2.10 | 0.00 | 0.00 | 1.10 | 1.10 | 1.60 |
| Pin NO          | 61   | 62   | 63   | 64   | 65   | 66   | 67   | 68   | 69   | 70   | 71   | 72   | 73   | 74   | 75   | 76   |
| Voltage         | 3.20 | 0.00 | 0.00 | 1.10 | 0.00 | 1.40 | 1.70 | 1.40 | 1.60 | 1.70 | 1.60 | 0.00 | 3.20 | 1.63 | 0.00 | 1.60 |
| Pin NO          | 81   | 82   | 83   | 84   | 85   | 86   | 87   | 88   | 89   | 90   | 91   | 92   | 93   | 94   | 95   | 96   |
| Voltage         | 0.00 | 0.00 | 1.50 | 1.40 | 1.80 | 1.40 | 0.90 | 1.30 | 0.00 | 3.20 | 1.40 | 1.03 | 0.00 | 1.50 | 0.00 | 1.43 |
| Pin NO          | 101  | 102  | 103  | 104  | 105  | 106  | 107  | 108  | 109  | 110  | 111  | 112  | 113  | 114  | 115  | 116  |
| Voltage         | 0.80 | 0.80 | 0.00 | 3.21 | 0.00 | 1.30 | 3.22 | 1.30 | 3.15 | 0.00 | 3.00 | 0.00 | 0.00 | 3.20 | 3.15 | 3.15 |
| Pin NO          | 121  | 122  | 123  | 124  | 125  | 126  | 127  | 128  | 129  | 130  | 131  | 132  | 133  | 134  | 135  | 136  |
| Voltage         | 3.21 | 0.00 | 1.60 | 1.60 | 1.60 | 1.60 | 1.60 | 0.00 | 0.00 | 1.59 | 3.20 | 0.00 | 0.00 | 0.00 | 0.00 | 3.16 |
| Pin NO          | 141  | 142  | 143  | 144  | 145  | 146  | 147  | 148  | 149  | 150  | 151  | 152  | 153  | 154  | 155  | 156  |
| Voltage         | 3.20 | 0.00 | 1.98 | 1.24 | 1.23 | 1.63 | 2.15 | 1.55 | 3.27 | 2.18 | 1.99 | 0.23 | 1.39 | 1.17 | 1.94 | 0.04 |
| Pin NO          | 161  | 162  | 163  | 164  | 165  | 166  | 167  | 168  | 169  | 170  | 171  | 172  | 173  | 174  | 175  | 176  |
| Voltage         | 2.18 | 2.10 | 2.10 | 2.11 | 2.18 | 2.17 | 1.99 | 1.99 | 1.50 | 3.20 | 1.19 | 1.62 | 0.00 | 1.56 | 0.17 | 2.30 |
| Pin NO          | 181  | 182  | 183  | 184  | 185  | 186  | 187  | 188  | 189  | 190  | 191  | 192  | 193  | 194  | 195  | 196  |
| Voltage         | 0.00 | 0.00 | 3.30 | 1.70 | 1.75 | 1.65 | 0.00 | 3.30 | 3.20 | 3.25 | 3.20 | 3.20 | 0.22 | 0.20 | 0.20 | 1.60 |
| Pin NO          | 201  | 202  | 203  | 204  | 205  | 206  | 207  | 208  |      |      |      |      |      |      |      |      |
| Voltage         | 3.20 | 3.20 | 3.20 | 3.20 | 1.50 | 1.44 | 1.35 | 0.00 |      |      |      |      |      |      |      |      |

| IC14(STM809SW) |      |      |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------|------|------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Pin NO         | 1    | 2    | 3    |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Voltage        | 3.35 | 3.36 | 0.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |

| IC12(TU24C02CS2BF) |   |      |      |      |      |      |      |      |  |  |  |  |  |  |  |  |
|--------------------|---|------|------|------|------|------|------|------|--|--|--|--|--|--|--|--|
| Pin NO             | 1 | 2    | 3    | 4    | 5    | 6    | 7    | 8    |  |  |  |  |  |  |  |  |
| Voltage            | 0 | 0.00 | 0.00 | 0.00 | 3.30 | 3.30 | 0.00 | 3.30 |  |  |  |  |  |  |  |  |

| IC301(74HC374) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Pin NO         | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   |
| Voltage        | 0.00 | 5.00 | 1.10 | 1.43 | 0.00 | 5.00 | 1.20 | 0.00 | 5.00 | 0.00 | 0.00 | 5.00 | 1.40 | 1.80 | 5.00 | 0.00 |

| IC4(CO4558A) |      |      |      |       |      |      |      |      |  |  |  |  |  |  |  |  |
|--------------|------|------|------|-------|------|------|------|------|--|--|--|--|--|--|--|--|
| Pin NO       | 1    | 2    | 3    | 4     | 5    | 6    | 7    | 8    |  |  |  |  |  |  |  |  |
| Voltage      | 0.00 | 0.00 | 0.00 | -4.70 | 0.00 | 0.00 | 0.00 | 5.00 |  |  |  |  |  |  |  |  |

| IC3(4558) |      |      |      |       |      |      |      |      |  |  |  |  |  |  |  |  |
|-----------|------|------|------|-------|------|------|------|------|--|--|--|--|--|--|--|--|
| Pin NO    | 1    | 2    | 3    | 4     | 5    | 6    | 7    | 8    |  |  |  |  |  |  |  |  |
| Voltage   | 0.00 | 0.00 | 0.00 | -4.70 | 0.00 | 0.00 | 0.00 | 5.00 |  |  |  |  |  |  |  |  |

| U300(CO4558A) |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |
|---------------|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|
| Pin NO        | 1    | 2    | 3    | 4    | 5     | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   |
| Voltage       | 0.00 | 1.60 | 0.67 | 1.60 | -0.40 | 0.00 | 0.00 | 1.60 | 0.00 | 1.60 | 1.65 | 1.65 | 1.65 | 1.65 | 1.65 | 1.65 |
| Pin NO        | 21   | 22   | 23   | 24   |       |      |      |      |      |      |      |      |      |      |      |      |
| Voltage       | 2.87 | 0.00 | 3.36 | 3.30 |       |      |      |      |      |      |      |      |      |      |      |      |

| IC9(V5888S) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Pin NO      | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   |
| Voltage     | 1.60 | 3.50 | 1.20 | 1.57 | 1.28 | 0.00 | 0.00 | 4.80 | 0.00 | 0.00 | 2.30 | 2.39 | 2.00 | 2.50 | 2.30 | 2.30 |
| Pin NO      | 21   | 22   | 23   | 24   | 25   | 26   | 27   | 28   |      |      |      |      |      |      |      |      |
| Voltage     | 4.80 | 0.00 | 1.20 | 4.70 | 2.00 | 1.58 | 1.57 | 2.90 |      |      |      |      |      |      |      |      |

| IC15(K4S541632K-UC75) |       |      |      |      |      |      |      |      |      |      |        |      |      |      |      |      |
|-----------------------|-------|------|------|------|------|------|------|------|------|------|--------|------|------|------|------|------|
| Pin NO                | 1     | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11     | 12   | 13   | 14   | 15   | 16   |
| Voltage               | -0.50 | 0.90 | 3.30 | 1.00 | 1.30 | 0.00 | 0.90 | 1.00 | 3.30 | 1.00 | 1.00   | 0.00 | 1.20 | 3.30 | 0.00 | 3.20 |
| Pin NO                | 21    | 22   | 23   | 24   | 25   | 26   | 27   | 28   | 29   | 30   | 31     | 32   | 33   | 34   | 35   | 36   |
| Voltage               | 0.00  | 0.10 | 0.00 | 0.40 | 0.30 | 1.50 | 3.30 | 0.00 | 1.80 | 1.69 | 130.00 | 1.38 | 0.37 | 0.00 | 0.15 | 0.00 |
| Pin NO                | 41    | 42   | 43   | 44   | 45   | 46   | 47   | 48   | 49   | 50   | 51     | 52   | 53   | 54   |      |      |
| Voltage               | 0.00  | 1.10 | 3.30 | 0.00 | 1.16 | 0.00 | 1.05 | 0.85 | 3.30 | 0.90 | 1.10   | 0.00 | 1.30 | 0.00 |      |      |

| IC10(EN29L) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Pin NO      | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   |
| Voltage     | 0.00 | 2.35 | 1.20 | 2.00 | 1.90 | 0.00 | 1.05 | 1.59 | 0.00 | 3.20 | 3.20 | 0.00 | 3.23 | 0.04 | 0.00 | 0.00 |
| Pin NO      | 21   | 22   | 23   | 24   | 25   | 26   | 27   | 28   | 29   | 30   | 31   | 32   | 33   | 34   | 35   | 36   |
| Voltage     | 1.59 | 1.80 | 1.60 | 1.63 | 0.00 | 0.00 | 0.00 | 0.00 | 1.05 | 0.06 | 1.41 | 0.05 | 1.12 | 0.06 | 0.88 | 0.02 |
| Pin NO      | 41   | 42   | 43   | 44   | 45   | 46   | 47   | 48   |      |      |      |      |      |      |      |      |
| Voltage     | 0.07 | 1.33 | 0.06 | 1.40 | 1.58 | 0.00 | 0.00 | 0.02 |      |      |      |      |      |      |      |      |

| IC300(4558) |      |      |      |      |      |      |      |       |  |  |  |  |  |  |  |  |
|-------------|------|------|------|------|------|------|------|-------|--|--|--|--|--|--|--|--|
| Pin NO      | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8     |  |  |  |  |  |  |  |  |
| Voltage     | 6.20 | 6.20 | 6.20 | 0.00 | 6.30 | 6.20 | 6.20 | 12.00 |  |  |  |  |  |  |  |  |

| IC8(74CU04D) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|--|
| Pin NO       | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   |  |  |
| Voltage      | 2.70 | 2.40 | 0.00 | 5.00 | 0.00 | 5.00 | 0.00 | 5.00 | 0.00 | 5.00 | 0.00 | 5.00 | 0.00 | 5.00 |  |  |

| Q1      |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 0.04 | 0.18 | 0.00 |

| Q23     |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 0.00 | 0.00 | 0.00 |

| Q301    |      |      |       |
|---------|------|------|-------|
| Pin NO  | 1    | 2    | 3     |
| Voltage | 0.00 | 4.96 | -2.96 |

| Q5      |      |
|---------|------|
| Pin NO  | 1    |
| Voltage | 2.42 |

| Q18     |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 0.00 | 4.15 | 0.00 |

| Q24     |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 5.00 | 0.00 | 4.94 |

| Q302    |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 5.20 | 5.05 | 0.40 |

| Q8      |      |
|---------|------|
| Pin NO  | 1    |
| Voltage | 4.20 |

| Q19     |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 4.50 | 0.00 | 5.00 |

| Q25     |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 0.64 | 0.00 | 0.00 |

| Q303    |       |       |       |
|---------|-------|-------|-------|
| Pin NO  | 1     | 2     | 3     |
| Voltage | 12.41 | 24.20 | 13.00 |

| Q6      |      |
|---------|------|
| Pin NO  | 1    |
| Voltage | 3.30 |

| Q2      |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 0.60 | 0.04 | 0.00 |

| Q3      |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 4.40 | 0.00 | 0.00 |

| Q308    |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 3.30 | 3.80 | 2.60 |

| Q7      |      |
|---------|------|
| Pin NO  | 1    |
| Voltage | 2.68 |

| Q20     |       |      |      |
|---------|-------|------|------|
| Pin NO  | 1     | 2    | 3    |
| Voltage | -0.20 | 0.00 | 0.00 |

| Q300    |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 0.00 | 0.00 | 0.60 |

| Q4      |      |      |      |
|---------|------|------|------|
| Pin NO  | 1    | 2    | 3    |
| Voltage | 0.00 | 4.42 | 0.00 |



## ELECTRICAL PARTS LIST - MAIN BOARD

|       |                |                              |              |   |                             |
|-------|----------------|------------------------------|--------------|---|-----------------------------|
| D300  | 9940 000 00941 | DIODE HER104 1A 300V 50NS    | XL1          | 9965 000 17371  | 27.0000MHZ HC-49US +/-20PPM |
| IC10  | 9965 000 41283 | IC 48P MX29LV800CBTC-70G     | ZD1          | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC12  | 9940 000 05208 | IC 8P TU24C02CS2BF           | ZD10         | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC13  | 9940 000 05207 | IC 208P ES8380FAA PQFP       | ZD11         | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC14  | 9940 000 05209 | IC 3P AZ809NSTR-E1 SOT23     | ZD12         | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC14  | 9965 000 41284 | IC 3P STM809SWX6F 3.0V       | ZD13         | 9940 000 05463  | DIODE ZENR 3.2-3.4V 0.5W    |
| IC15  | 9940 000 05465 | IC 54P EW484M1644VTA-6F      | ZD2          | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC15  | 9965 000 41285 | IC 54P K4S641632K-UC75       | ZD3          | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC18  | 9940 000 05466 | IC 6P NCP1729SN35T1          | ZD300        | 9940 000 05204  | DIODE ZENR 12.6-13.1V 0.5W  |
| IC2   | 9965 000 29611 | IC 8P CO4558A SO8            | ZD4          | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC2   | 9965 000 41286 | IC 8P 4558                   | ZD5          | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC3   | 9965 000 29611 | IC 8P CO4558A SO8 CERAMATE   | ZD6          | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC3   | 9965 000 41286 | IC 8P 4558                   | ZD7          | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC300 | 9965 000 29611 | IC 8P CO4558A SO8 CERAMATE   | ZD8          | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC300 | 9965 000 41286 | IC 8P 4558                   | ZD9          | 9965 000 26931  | ZENER 7.5V 0.05 0.5W        |
| IC301 | 9940 000 05211 | IC 20PIN 74HC374             |              |   |                             |
| IC4   | 9965 000 29611 | IC 8P CO4558A SO8 CERAMATE   |              |   |                             |
| IC4   | 9965 000 41286 | IC 8P 4558                   |              |   |                             |
| IC8   | 9965 000 23948 | IC 14PIN 74HCU04D            |              |   |                             |
| IC9   | 9940 000 05214 | IC 28P V5888S                |              |   |                             |
| JK1   | 9940 000 00859 | RCA JACK 4P W-W/R-R AUDIO IN |              |   |                             |
| JK3   | 9965 000 23599 | RCA+DIN JK 1RCA+4P DIN YEL   |              |   |                             |
| JK4   | 9965 000 12609 | RCA JACK R/G/B               |              |   |                             |
| JK7   | 9940 000 00861 | RCA+DIN JACK 1RCA+8P DIN BLK |              |   |                             |
| Q1    | 3141 018 51690 | TRA SM 2SK3018               |              |   |                             |
| Q18   | 9965 000 13683 | TRANSISTOR KTC3875Y-RTK      |              |   |                             |
| Q19   | 9940 000 00921 | XISTR PNP 2SA812 HFE:200-400 |              |   |                             |
| Q2    | 9940 000 00915 | XISTR NPN 2SC1623            |              |   |                             |
| Q20   | 9965 000 13683 | TRANSISTOR KTC3875Y-RTK      |              |   |                             |
| Q23   | 9965 000 13683 | TRANSISTOR KTC3875Y-RTK      |              |   |                             |
| Q24   | 9940 000 00921 | XISTR PNP 2SA812 HFE:200-400 |              |   |                             |
| Q25   | 9940 000 00915 | XISTR NPN 2SC1623            |              |   |                             |
| Q3    | 3141 018 51690 | TRA SM 2SK3018               |              |   |                             |
| Q300  | 9940 000 00915 | XISTR NPN 2SC1623            |              |   |                             |
| Q301  | 9940 000 05335 | XISTR NPN TIP41C             |              |   |                             |
| Q302  | 9965 000 41288 | FET AO34P03 ALPHA -30V/-2.6A | <b>Note:</b> | <b>Only these parts mentioned in the list are normal service parts.</b> |                             |
| Q303  | 4822 130 41198 | 2SC945P                      |              |   |                             |
| Q308  | 9940 000 00915 | XISTR NPN 2SC1623            |              |   |                             |
| Q4    | 9940 000 00915 | XISTR NPN 2SC1623            |              |   |                             |
| Q5    | 9965 000 26927 | XISTR PNP 2SB1132RT100       |              |   |                             |
| Q6    | 9965 000 26927 | XISTR PNP 2SB1132RT100       |              |   |                             |
| Q7    | 9965 000 26946 | XISTR PNP 2SB772P/Q          |              |   |                             |
| Q8    | 9965 000 26946 | XISTR PNP 2SB772P/Q          |              |   |                             |
| T300  | 9965 000 41289 | OSC COIL 1000UH /-8% 796KHZ  |              |   |                             |
| T300  | 9965 000 41290 | OSC COIL 680UH /-4% 50KHZ    |              |   |                             |
| U300  | 9965 000 41287 | IC 24P CE2631 4-CH STEREO    |              |   |                             |

# AMPLIFIER BOARD

## 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    |
| 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 |

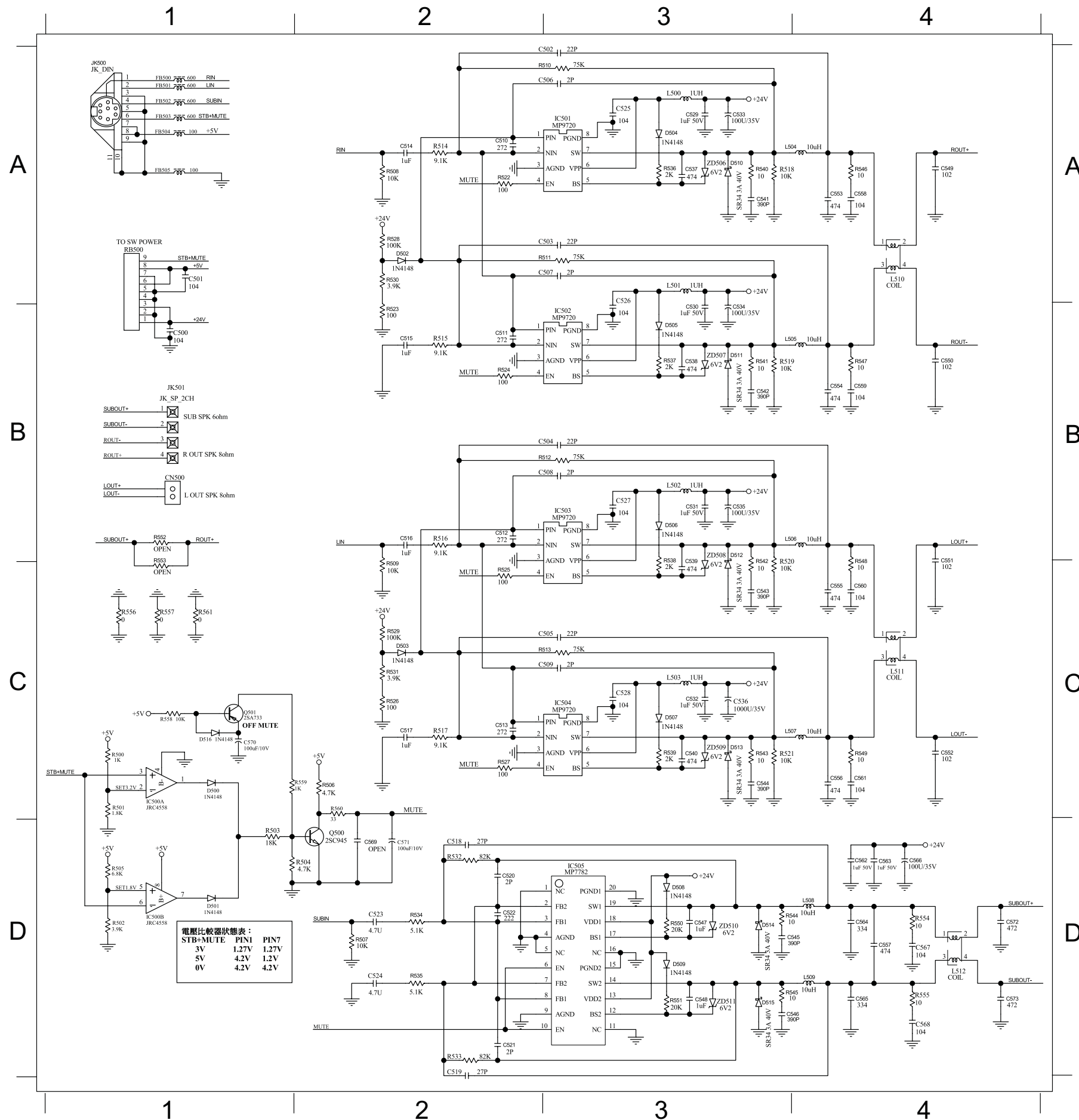
  

| Q501    |      |      | Q903 |         |      | Q905  |      |         |       |      |       |
|---------|------|------|------|---------|------|-------|------|---------|-------|------|-------|
| Pin NO  | 1    | 2    | 3    | Pin NO  | 1    | 2     | 3    | Pin NO  | 1     | 2    | 3     |
| Voltage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

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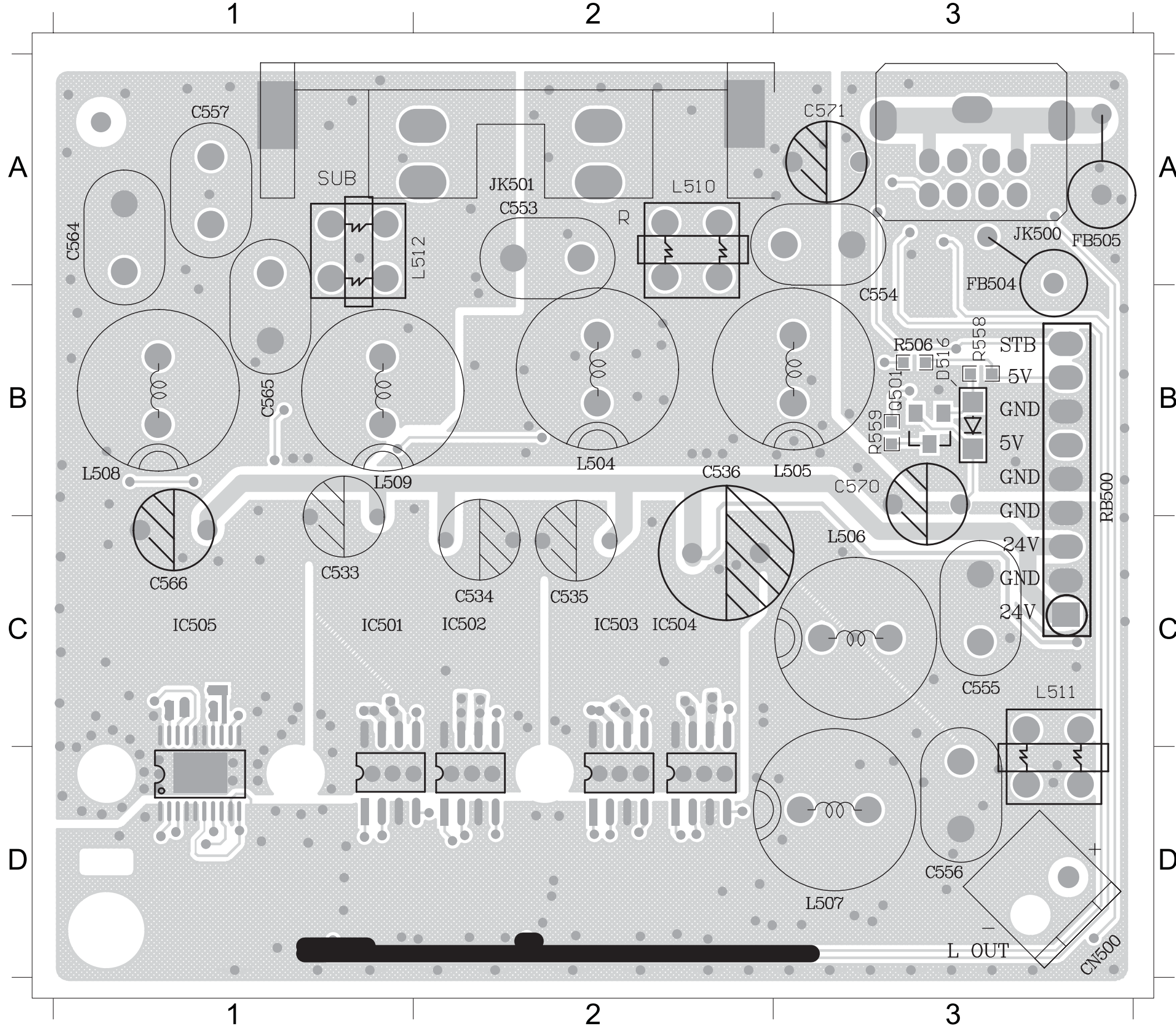
# CIRCUIT DIAGRAM - AMPLIFIER BOARD



|       |    |       |    |       |    |
|-------|----|-------|----|-------|----|
| 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 |       |    |

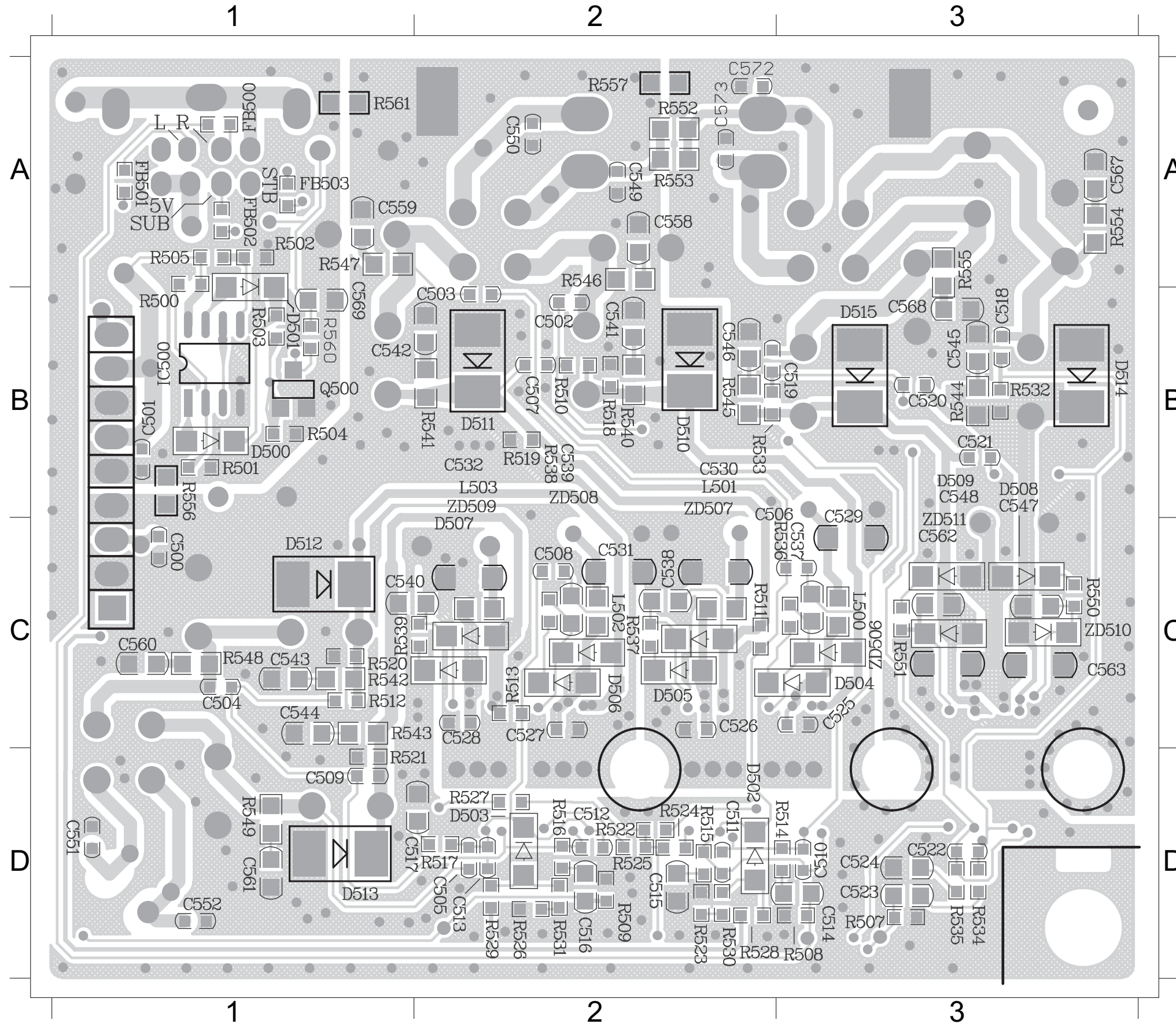
# PCB LAYOUT -AMPLIFIER TOP BOARD

|         |         |         |         |         |         |         |          |          |          |          |          |         |         |         |         |          |
|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|---------|---------|---------|---------|----------|
| 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 B2 |
| 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 - AMPLIFIER 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  |
| 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 |  |  |  |  |  |  |  |  |  |  |

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# POWER BOARD

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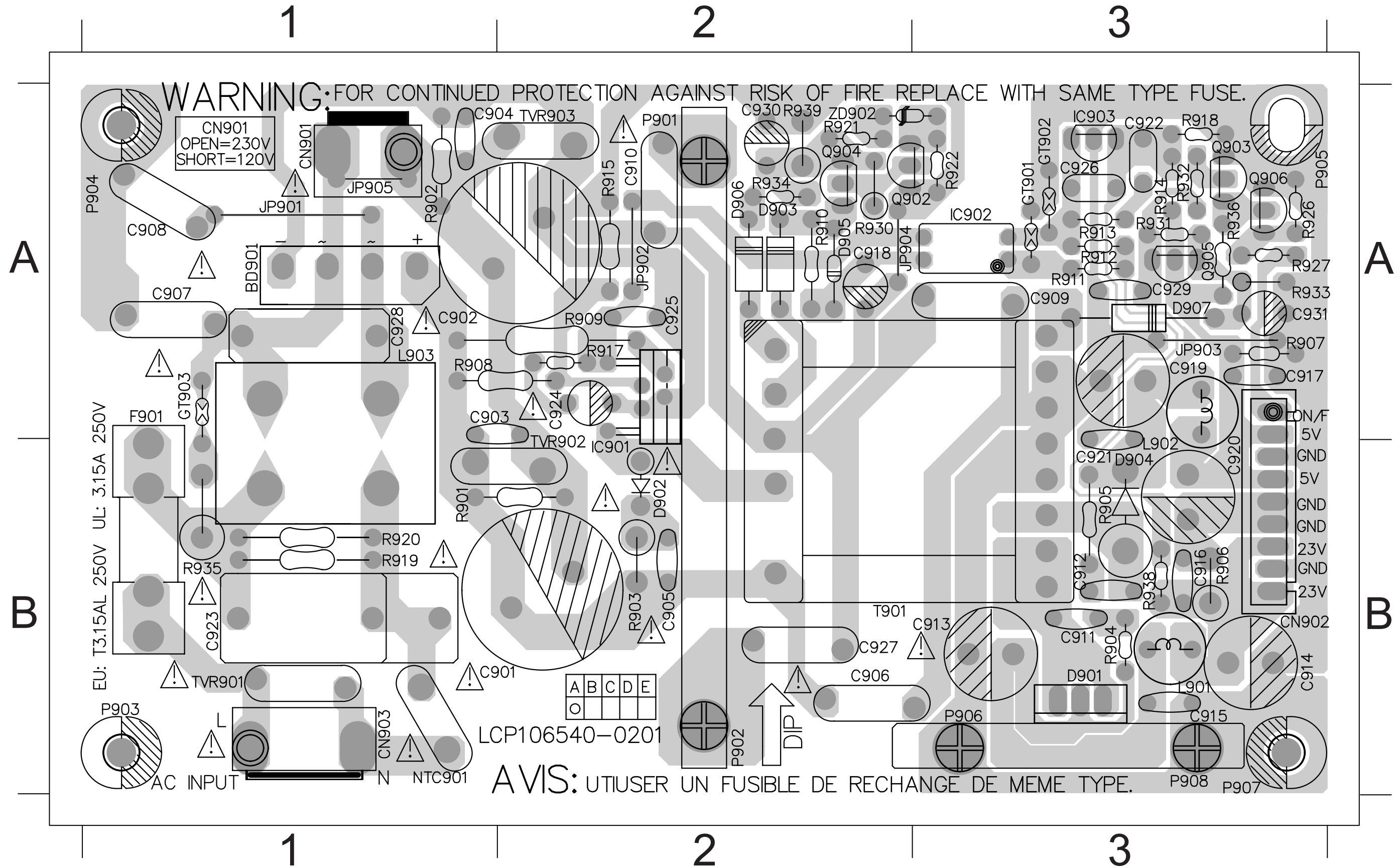
Voltage ..... 8-1  
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 PCB Layout View ..... 8-3  
 Electrical Parts List ..... 8-4





# 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 | R902 | 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%    |
| 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%      |
| 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       |
| IC902  | 9940 000 00946  | OPTICAL SENSOR 4P              |
| IC903  | 9940 000 01572  | IC 3P TL431                    |
| 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 |

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

**TUNER ADJUSTMENT TABLE**

| Waverange                                  | Input frequency | Input                    | Tuned to | Adjust | Output | Scope/Voltmeter |
|--|-----------------|--------------------------|----------|--------|--------|-----------------|
| <i>VARICAP ALIGNMENT</i>                   |                 |                          |          |        |        |                 |
| <b>FM</b><br>87.5 - 108MHz<br>(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      |
| <i>FM - RF</i>                             |                 |                          |          |        |        |                 |
| <b>FM</b>                                  | 108MHz          |                          | 106MHz   | VC001  | MAX    | MAX             |
|  | 87.5MHz         | mod=1kHz<br>Δf=± 22.5kHz | 90.1MHz  | L001   |        |                 |

# TUNER BOARD

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

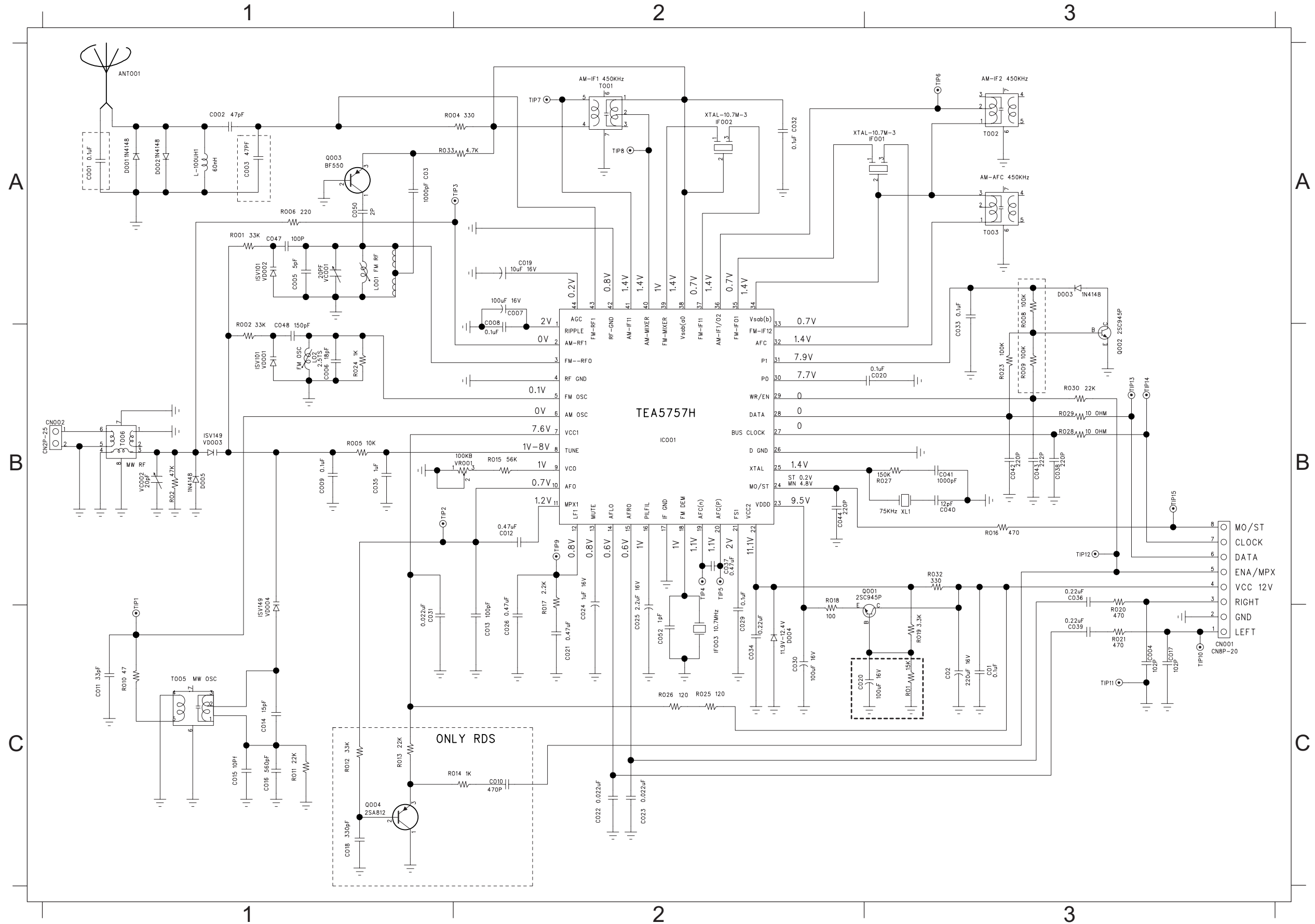
1) If sensitivity of frequency counter is too low adjust to max. channel separation  
 (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

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

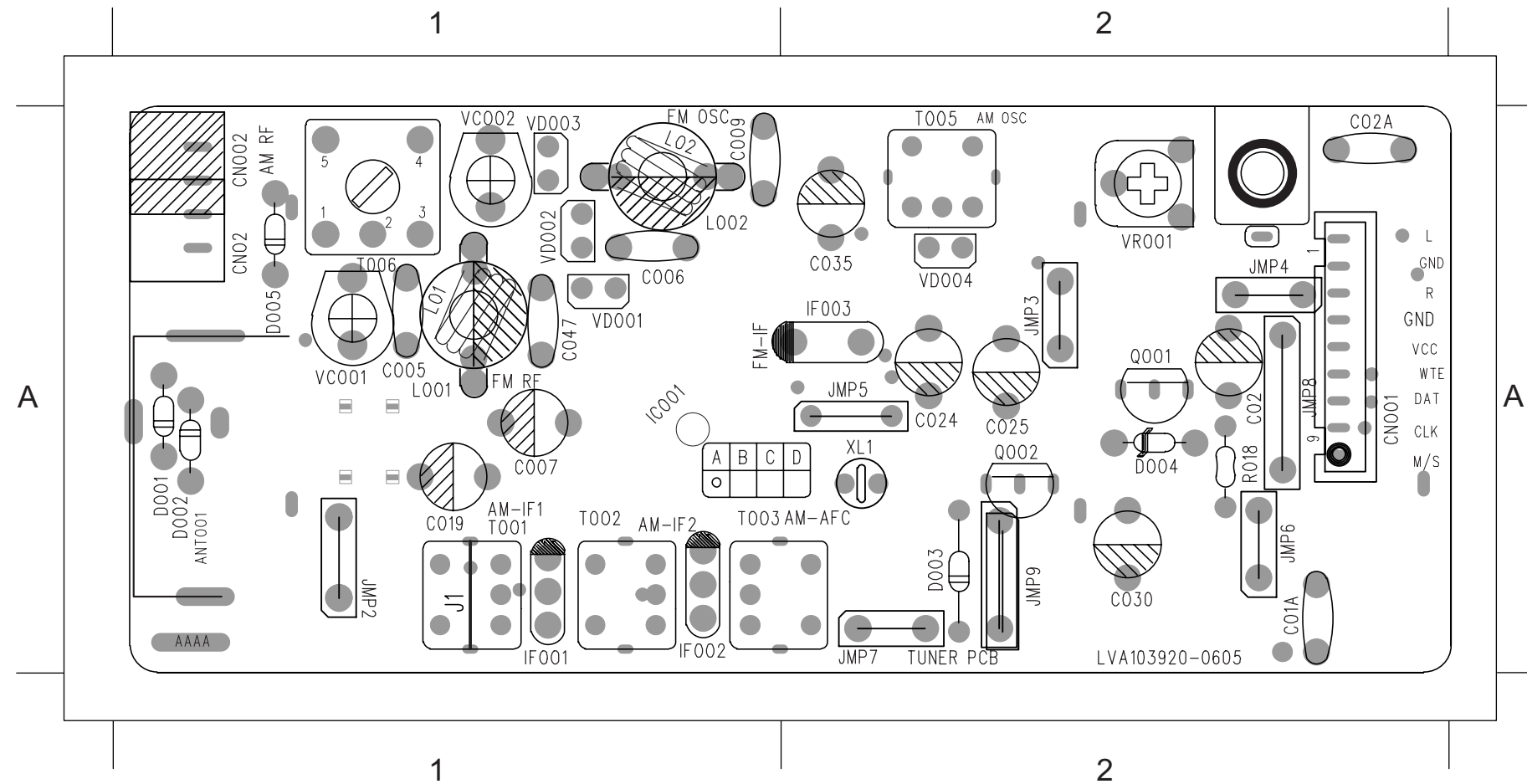
3) For AM RF adjustments the original frame antenna has to be used!

# 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 | C2 | R030 | B3 | VD001 | B1 |       |    |

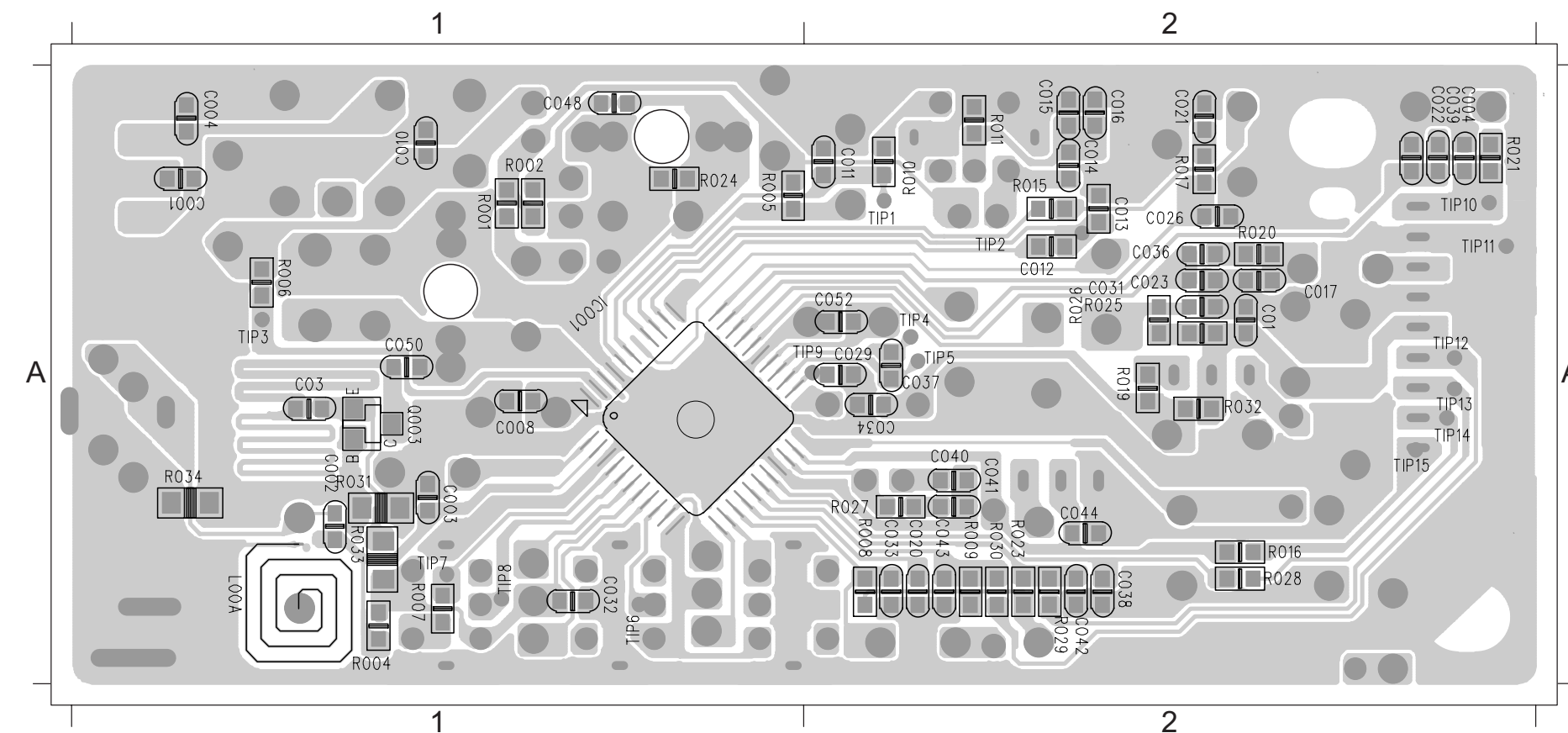


### PCB LAYOUT - TUNER BOARD (TOP VIEW)



- ANT001 A1
- C005 A1
- C006 A1
- C007 A1
- C009 A1
- C019 A1
- CO47 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
- CO2 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

### PCB LAYOUT - TUNER BOARD (BOTTOM VIEW)



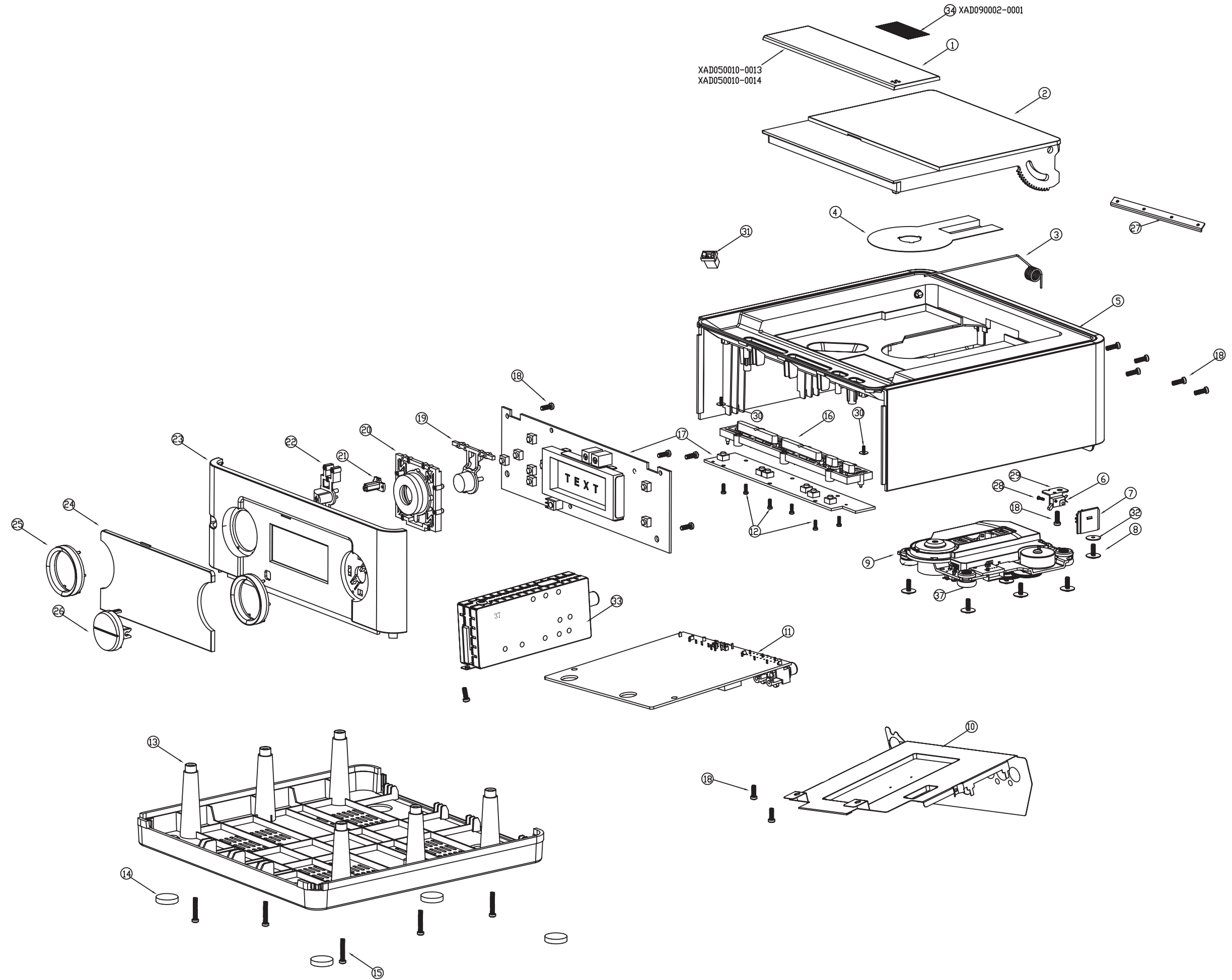
- C002 A1
- C004 A1
- C008 A1
- C010 A1
- C03 A1
- C032 A1
- C048 A1
- C050 A1
- Q003 A1
- R001 A1
- R002 A1
- R004 A1
- R005 A1
- R007 A1
- R024 A1
- R031 A1
- R033 A1
- R034 A1
- C01 A2
- C012 A2
- C013 A2
- C020 A2
- C021 A2
- C022 A2
- C023 A2
- C026 A2
- C029 A2
- C031 A2
- C033 A2
- C034 A2
- C036 A2
- C037 A2
- C038 A2
- C039 A2
- C040 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**

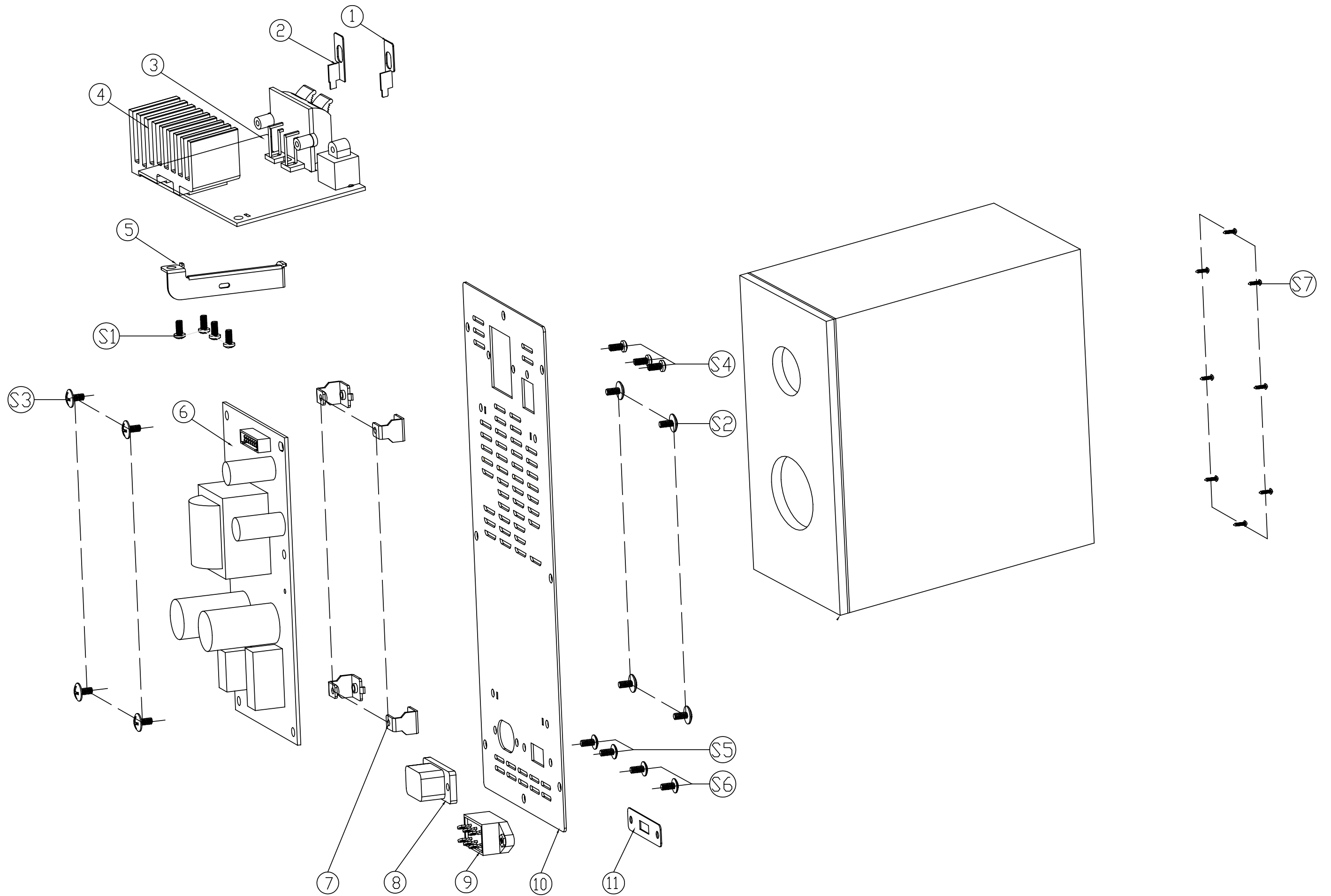
|        |                |                                  |
|--------|----------------|----------------------------------|
| ANT001 | 9965 000 41299 | FM JACK FC-11                    |
| D004   | 9965 000 26940 | DIODE ZENR 11.9-12.4V 0.5W       |
| IC001  | 9965 000 27003 | IC 44 PIN TEA5757H QFP44 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- MAIN UNIT



# EXPLODED DRAWING- LEFT SPEAKER BOX





**MECHANICAL & ACCESSORIES PARTS LIST**

|    |                |                         |                    |                            |
|----|----------------|-------------------------|--------------------|----------------------------|
| 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    |
| 3  | 9940 000 05438 | CD DOOR SPRING LEFT     | 9965 000 41304     | MAIN SPK-L ASS'Y W/AMP /55 |
| 4  | 9965 000 40965 | TOP CABINET /37/55      | 9965 000 41274     | MAIN SPK-L ASS'Y W/AMP /79 |
| 4  | 9965 000 41078 | TOP CABINET /MME239/37  | 9965 000 40963     | MAIN SPK-L ASS'Y W/AMP /37 |
| 4  | 9965 000 41275 | TOP CABINET /79         | 9965 000 40970     | MAIN SPK-R 25W 8R          |
| 6  | 9965 000 19374 | SW LEAF KFC-101 AM200   | 9940 000 02731     | FM ANTENNA 1500MM          |
| 7  | 9965 000 22120 | DAMPER-ASSY-MODULE-0.8  | 9940 000 05446     | DIN CABLE 8PIN 1500MM      |
| 9  | 9940 000 05479 | DVD MODULE              | 9965 000 23580     | RCA CABLE 1500MM OD2.6MM   |
| 13 | 9965 000 40964 | BOTTOM CAB              | 9965 000 23889     | RCA CABLE 1500MM           |
| 13 | 9965 000 41077 | BOTTOM CAB /MME239/37   | 9965 000 40971     | SUBWOOFER 6R 50W           |
| 14 | 9940 000 05437 | RUBBER FOOT D18.5XT2MM  | 9965 000 40972     | FFC CABLE 24P 300MM        |
| 16 | 9940 000 05486 | FUNC BUTTON             | 9965 000 40974     | REMOTE CONTROL 38KEY       |
| 19 | 9940 000 05429 | FUNC- PLAY BUTTON       |                    |                            |
| 20 | 9940 000 05431 | FUNC- STOP BUTTON       |                    |                            |
| 21 | 9940 000 05435 | STANDBY LENS            |                    |                            |
| 22 | 9940 000 05428 | FUNC- POWER KNOB /37    |                    |                            |
| 22 | 9965 000 41277 | FUNC- POWER KNOB /55/79 |                    |                            |
| 23 | 9965 000 40967 | FRONT PANEL /37         |                    |                            |
| 24 | 9965 000 40968 | DISPLAY LENS            |                    |                            |
| 24 | 9965 000 41081 | DISPLAY LENS /MME239/37 | 8 △ 9965 000 12443 | AC SOCKET                  |
| 25 | 9940 000 05436 | CHORME RING             | 9 9940 000 01059   | SW SLIDE 6PIN /55          |
| 26 | 9940 000 05432 | FUNC- VOL BUTTON        |                    |                            |
| 31 | 9940 000 05481 | DOOR LOCK OP/CL         |                    |                            |

**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 000 40979 | AMPLIFIER PCB ASS'Y /37 |

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