

**C 325BEE**

**STEREO  
AMPLIFIER**

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**STEREO  
AMPLIFIER**

**SERVICE MANUAL**



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# PRODUCT SAFETY SERVICING GUIDELINES

CAUTION : DO NOT ATTEMPT TO MODIFY THIS PRODUCT IN ANY WAY. NEVER PERFORM CUSTOMIZED INSTALLATIONS WITHOUT MANUFACTURER'S APPROVAL. UNAUTHORIZED MODIFICATIONS WILL NOT ONLY VOID THE WARRANTY, BUT MAY LEAD TO YOUR BEING LIABLE FOR ANY RESULTING PROPERTY DAMAGE OR USER INJURY.

SERVICE WORK SHOULD BE PERFORMED ONLY AFTER YOU ARE THOROUGHLY FAMILIAR WITH ALL OF THE FOLLOWING SAFETY CHECKS AND SERVICING GUIDELINES. TO DO OTHERWISE, INCREASES THE RISK OF POTENTIAL HAZARDS AND INJURY TO THE USER.

WHILE SERVICING, USE AN ISOLATION TRANSFORMER FOR PROTECTION FROM AC LINE SHOCK.

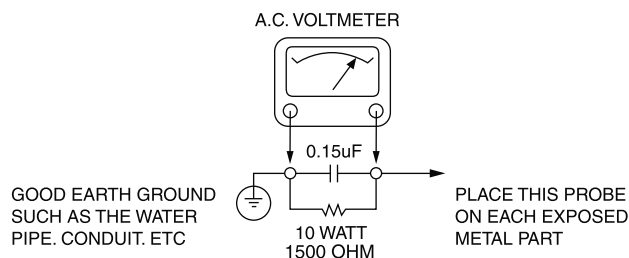
## SAFETY CHECKS

AFTER THE ORIGINAL SERVICE PROBLEM HAS BEEN CORRECTED. A CHECK SHOULD BE MADE OF THE FOLLOWING.

### SUBJECT : FIRE & SHOCK HAZARD

1. BE SURE THAT ALL COMPONENTS ARE POSITIONED IN SUCH A WAY AS TO AVOID POSSIBILITY OF ADJACENT COMPONENT SHORTS. THIS IS ESPECIALLY IMPORTANT ON THOSE MODULES WHICH ARE TRANSPORTED TO AND FROM THE REPAIR SHOP.
2. NEVER RELEASE A REPAIR UNLESS ALL PROTECTIVE DEVICES SUCH AS INSULATORS, BARRIERS, COVERS, SHIELDS, STRAIN RELIEFS, POWER SUPPLY CORDS, AND OTHER HARDWARE HAVE BEEN REINSTALLED PER ORIGINAL DESIGN. BE SURE THAT THE SAFETY PURPOSE OF THE POLARIZED LINE PLUG HAS NOT BEEN DEFEATED.
3. SOLDERING MUST BE INSPECTED TO DISCOVER POSSIBLE COLD SOLDER JOINTS, SOLDER SPLASHES OR SHARP SOLDER POINTS. BE CERTAIN TO REMOVE ALL LOOSE FOREIGN PARTICLES.
4. CHECK FOR PHYSICAL EVIDENCE OF DAMAGE OR DETERIORATION TO PARTS AND COMPONENTS. FOR FRAYED LEADS, DAMAGED INSULATION (INCLUDING AC CORD). AND REPLACE IF NECESSARY FOLLOW ORIGINAL LAYOUT, LEAD LENGTH AND DRESS.
5. NO LEAD OR COMPONENT SHOULD TOUCH A RECEIVING TUBE OR A RESISTOR RATED AT 1 WATT OR MORE. LEAD TENSION AROUND PROTRUDING METAL SURFACES MUST BE AVOIDED.
6. ALL CRITICAL COMPONENTS SUCH AS FUSES, FLAMEPROOF RESISTORS, CAPACITORS, ETC. MUST BE REPLACED WITH EXACT FACTORY TYPES, DO NOT USE REPLACEMENT COMPONENTS OTHER THAN THOSE SPECIFIED OR MAKE UNRECOMMENDED CIRCUIT MODIFICATIONS.
7. AFTER RE-ASSEMBLY OF THE SET ALWAYS PERFORM AN AC LEAKAGE TEST ON ALL EXPOSED METALLIC PARTS OF THE CABINET, (THE CHANNEL SELECTOR KNOB, ANTENNA TERMINALS. HANDLE AND SCREWS) TO BE SURE THE SET IS SAFET TO OPERATE WITHOUT DANGER OF ELECTRICAL SHOCK. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST USE AN AC VOLTMETER, HAVING 5000 OHMS PER VOLT OR MORE SENSITIVITY, IN THE FOLLOWING MANNER; CONNECT A 1500 OHM 10 WATT RESISTOR, PARALLELED BY A .15 MFD, 150V AC TYPE CAPACITOR BETWEEN A KNOWN GOOD EARTH GROUND (WATER PIPE, CONDUIT, ETC.) AND THE EXPOSED METALLIC PARTS, ONE AT A TIME.  
MEASURE THE AC VOLTAGE ACROSS THE COMBINATION OF 1500 OHM RESISTOR AND .15 MFD CAPACITOR.  
REVERSE THE AC PLUG AND REPEAT AC VOLTAGE MEASUREMENTS FOR EACH EXPOSED METALLIC PART.

VOLTAGE MEASURE MUST NOT EXCEED 75 VOLTS R.M.S. THIS CORRESPONDS TO 0.5 MILLIAMPS AC ANY VALUE EXCEEDING THIS LIMIT CONSTITUTES A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED IMMEDIATELY.



## SUBJECT : GRAPHIC SYMBOLS



THE LIGHTNING FLASH WITH ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE USER TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" WITHIN THE PRODUCT'S ENCLOSURE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.



THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE USER TO THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE (SERVICING) INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE APPLIANCE.

## SUBJECT : TIPS ON PROPER INSTALLATION

1. NEVER INSTALL ANY PRODUCT IN A CLOSED-IN RECESS, CUBBYHOLE OR CLOSELY FITTING SHELF SPACE. OVER OR CLOSE TO HEAT DUCT, OR IN THE PATH OF HEATED AIR FLOW.
2. AVOID CONDITIONS OF HIGH HUMIDITY SUCH AS: OUTDOOR PATIO INSTALLATIONS WHERE DEW IS A FACTOR, NEAR STEAM RADIATORS WHERE STEAM LEAKAGE IS A FACTOR, ETC.
3. AVOID PLACEMENT WHERE DRAPERIES MAY OBSTRUCT REAR VENTING. THE CUSTOMER SHOULD ALSO AVOID THE USE OF DECORATIVE SCARVES OR OTHER COVERINGS WHICH MIGHT OBSTRUCT VENTILATION.
4. WALL AND SHELF MOUNTED INSTALLATIONS USING A COMMERCIAL MOUNTING KIT MUST FOLLOW THE FACTORY APPROVED MOUNTING INSTRUCTIONS A PRODUCT MOUNTED TO A SHELF OR PLATFORM MUST RETAIN ITS ORIGINAL FEET (OR THE EQUIVALENT THICKNESS IN SPACERS) TO PROVIDE ADEQUATE AIR FLOW ACROSS THE BOTTOM, BOLTS OR SCREWS USED FOR FASTENERS MUST NOT TOUCH ANY PARTS OR WIRING. PERFORM LEAKAGE TEST ON CUSTOMIZED INSTALLATIONS.
5. CAUTION CUSTOMERS AGAINST THE MOUNTING OF A PRODUCT ON SLOPING SHELF OR A TILTED POSITION, UNLESS THE PRODUCT IS PROPERLY SECURED.
6. A PRODUCT ON A ROLL-ABOUT CART SHOULD BE STABLE ON ITS MOUNTING TO THE CART. CAUTION THE CUSTOMER ON THE HAZARDS OF TRYING TO ROLL A CART WITH SMALL CASTERS ACROSS THRESHOLDS OR DEEP PILE CARPETS.
7. CAUTION CUSTOMERS AGAINST THE USE OF A CART OR STAND WHICH HAS NOT BEEN LISTED BY UNDERWRITERS LABORATORIES, INC. FOR USE WITH THEIR SPECIFIC MODEL OF TELEVISION RECEIVER OR GENERICALLY APPROVED FOR USE WITH T.V.'S OF THE SAME OR LARGER SCREEN SIZE.
8. CAUTION CUSTOMERS AGAINST THE USE OF EXTENSION CORDS, EXPLAIN THAT A FOREST OF EXTENSIONS SPROUTING FROM A SINGLE OUTLET CAN LEAD TO DISASTROUS CONSEQUENCES TO HOME AND FAMILY.

# SERVICING PRECAUTIONS

**CAUTION :** Before servicing the A/V Receiver covered by this service data and its supplements and addends, read and follow the **SAFETY PRECAUTIONS**. **NOTE :** if unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions in this publication, always follow the safety precautions.

*Remember Safety First:*

## General Servicing Precautions

1. Always unplug the A/V Receiver AC power cord from the AC power source before:
  - (1) Removing or reinstalling any component, circuit board, module, or any other assembly.
  - (2) Disconnecting or reconnecting any internal electrical plug or other electrical connection.
  - (3) Connecting a test substitute in parallel with an electrolytic capacitor.

**Caution :** A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
2. Do not spray chemicals on or near this A/V Receiver or any of its assemblies.
3. Unless specified otherwise in this service data, clean electrical contacts by applying an appropriate contact cleaning solution to the contacts with a pipe cleaner, cottontipped swab, or comparable soft applicator.  
Unless specified otherwise in this service data, lubrication of contacts is not required.
4. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.
5. Do not apply AC power to this A/V Receiver and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
6. Always connect test instrument ground lead to the appropriate ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

## Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power on. Connect an insulation resistance meter(500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts (Note 1) should be more than 1M-ohm.

**Note 1 :** Accessible Conductive Parts including Metal panels, Input terminals, Earphone jacks, etc.

## Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical Es devices are integrated circuits and some field effect transistors and semiconductor chip components.

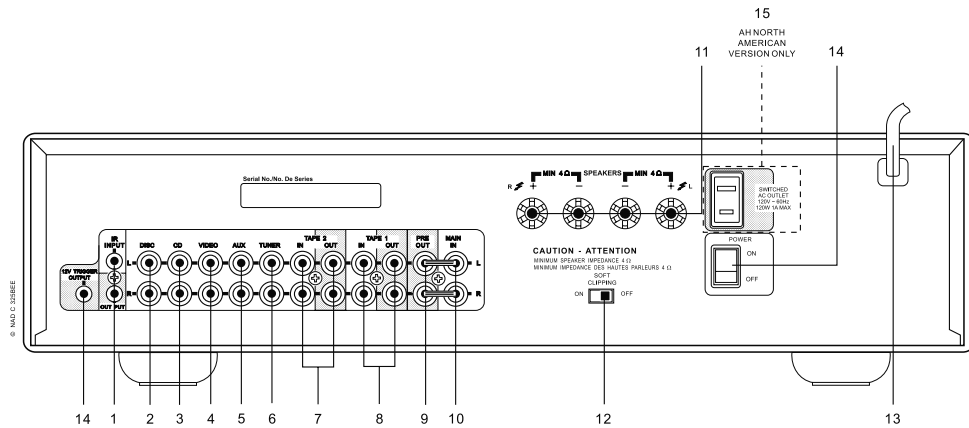
The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified a "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freonpropelled chemicals. These can generate electrical charge sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil, or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

**Caution :** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

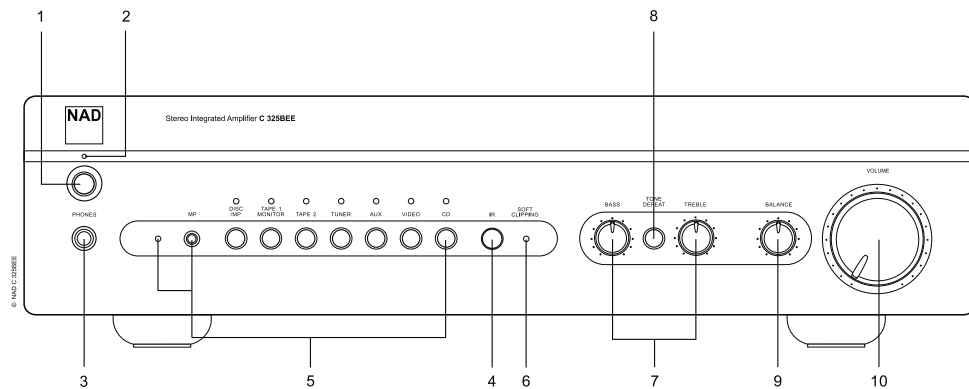
8. Minimize bodily motions when handing unpackaged replacement ES devices. (Normally harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

## REAR PANEL CONNECTIONS



- |                    |                                      |
|--------------------|--------------------------------------|
| 1. IR INPUT/OUTPUT | 9. PRE-OUT                           |
| 2. DISC INPUT      | 10. MAIN IN                          |
| 3. CD INPUT        | 11. SPEAKER OUT                      |
| 4. VIDEO INPUT     | 12. SOFT CLIPPING                    |
| 5. AUX INPUT       | 13. AC LINE CORD                     |
| 6. TUNER INPUT     | 14. +12V TRIGGER OUT                 |
| 7. TAPE 2 IN/OUT   | 15. SWITCHED AC OUTLET (ONLY FOR AH) |
| 8. TAPE 1 IN/OUT   |                                      |

## FRONT PANEL CONTROLS



- |                                 |                      |
|---------------------------------|----------------------|
| 1. POWER                        | 6. SOFT CLIPPING LED |
| 2. POWER/STANDBY/PROTECTION LED | 7. TONE CONTROLS     |
| 3. HEAPHONE                     | 8. TONE DEFEAT       |
| 4. IR RECEIVER                  | 9. BALANCE           |
| 5. INPUT SELECTOR               | 10. VOLUME           |



## PREAMPLIFIER SECTION

### LINE LEVEL INPUTS

(Disk, CD, Video, Auxiliary, Tuner, Tape 1, Tape 2)

|   |   |
|---|---|
| Input impedance (R and C)   | <b>200 kohms + 320 pF</b>   |
| Input sensitivity (ref. rated power)  | <b>220 mV</b>   |
| Maximum input signal  | <b>6 V</b>  |
| Signal / Noise ratio, A-weighted<br>(from CD Input to Speakers Output, Volume Setting<br>for 500mV in , 8ohms 1W out) | <b>93.0 dB ref. 1W</b>  |
| Signal to noise ratio preamp out, IHF "A" weighted  | <b>106 dB re 500mV</b>  |
| Frequency response, 20 Hz – 20 kHz  | <b>&lt; +/-0.1 dB (tone defeat on)<br/>&lt; +/-0.5 dB (tone defeat off)</b> |
| THD + Noise, SMPTE IM   | <b>&lt; 0.01% at 5 V out</b>  |

### LINE LEVEL OUTPUTS

|                          |   |
|--------------------------|---|
| Pre-amp output impedance | <b>80 ohms</b>  |
| Tape output impedance    | <b>Source Z + 1kohms</b>                                      |
| Maximum output level     | pre-amp out : <b>&gt; 12 V</b><br>Tape-out : <b>&gt; 10 V</b> |

### CONTROLS

|        |                           |
|--------|---------------------------|
| Treble | <b>+/- 5 dB at 10 kHz</b> |
| Bass   | <b>+/- 8 dB at 100 Hz</b> |

### IR IN and OUT

|                   |                      |
|-------------------|----------------------|
| Input Resistance  | <b>&gt; 10 kohms</b> |
| Input Voltage     | <b>Min 5 V</b>       |
| Output Resistance | <b>&lt; 30 ohms</b>  |

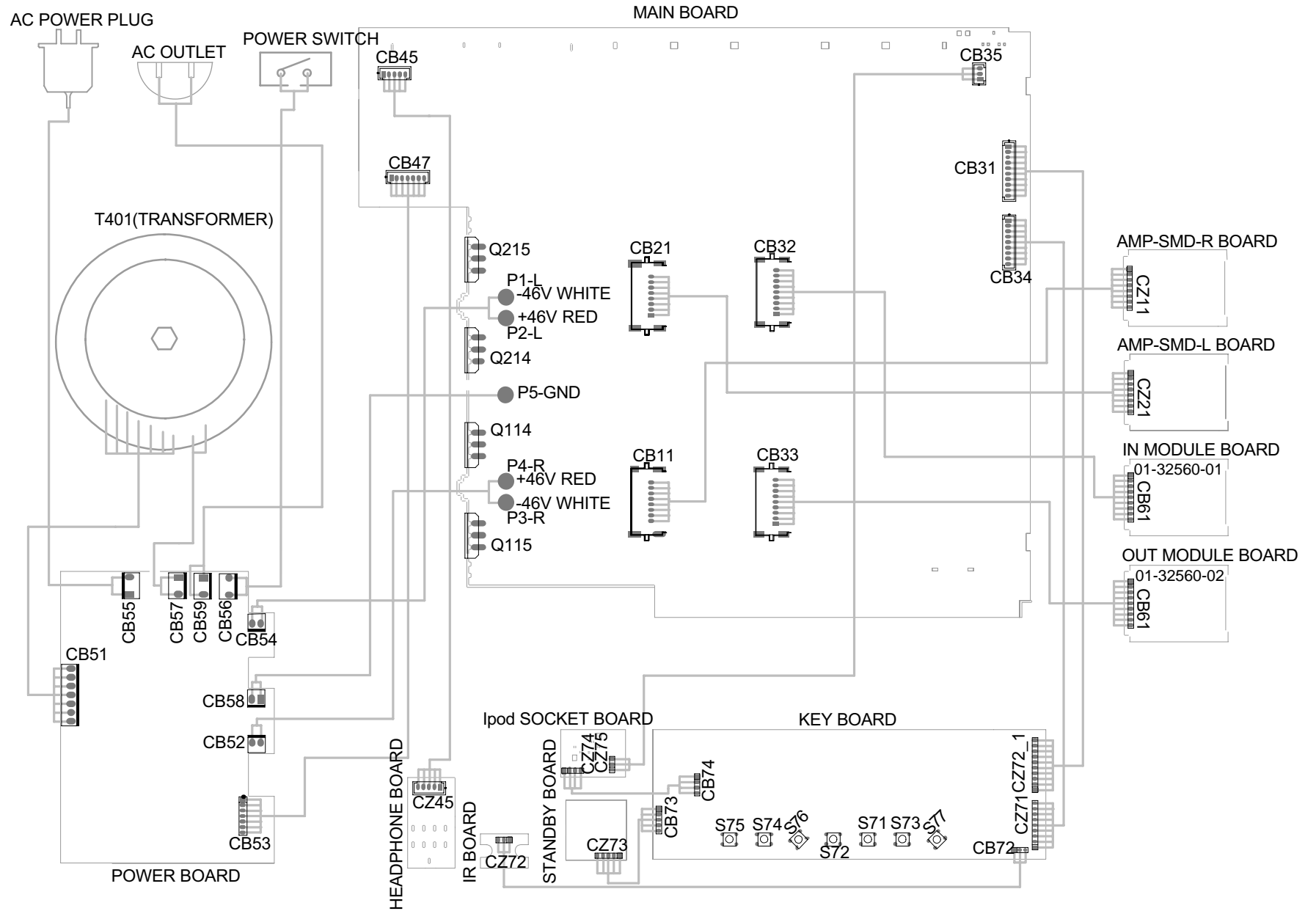
### TRIGGER Out

|                |              |
|----------------|--------------|
| Output Current | <b>50 mA</b> |
| Output Voltage | <b>12 V</b>  |

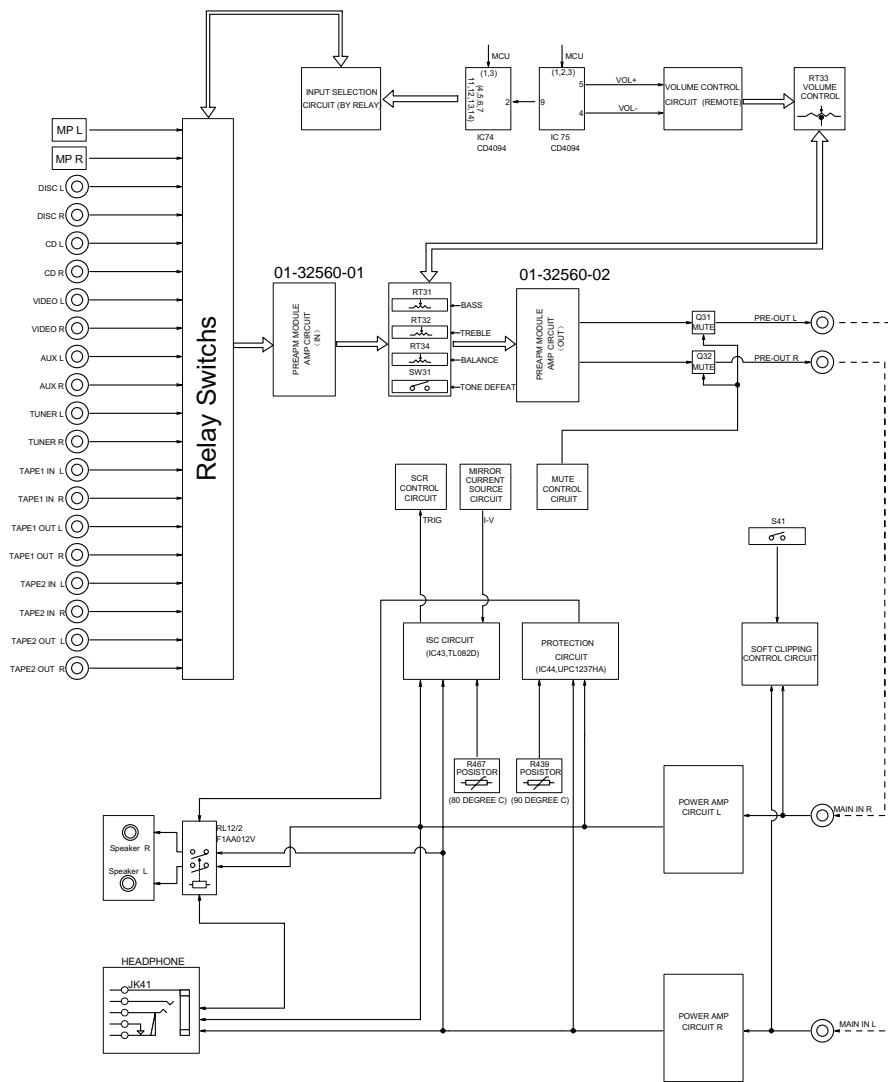
### DIMENSIONS AND WEIGHTS

|                   |                          |
|-------------------|--------------------------|
| Net Weight        | <b>6.5 kg ( 14.3 lb)</b> |
| Shipping Weight   | <b>8 kg ( 17.6 lb)</b>   |
| DIMENSION (W×H×D) | <b>435 × 100 × 290MM</b> |

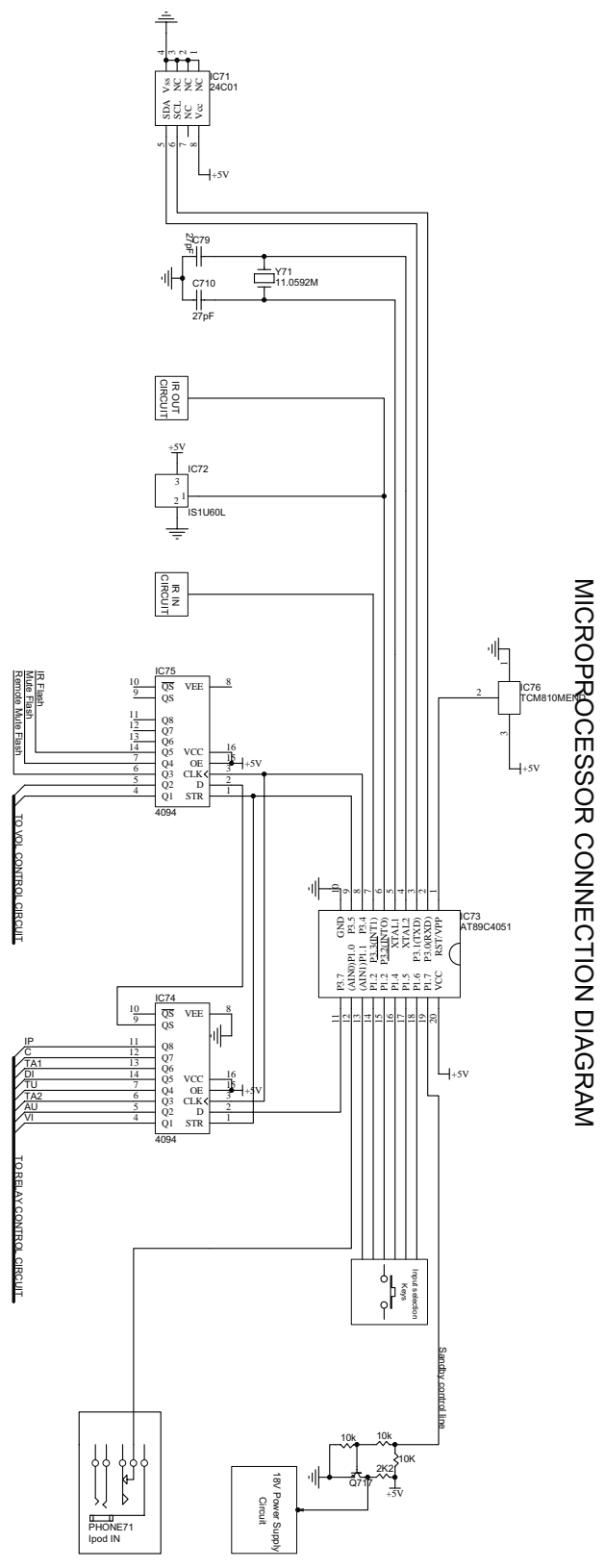
WIRING DIAGRAM







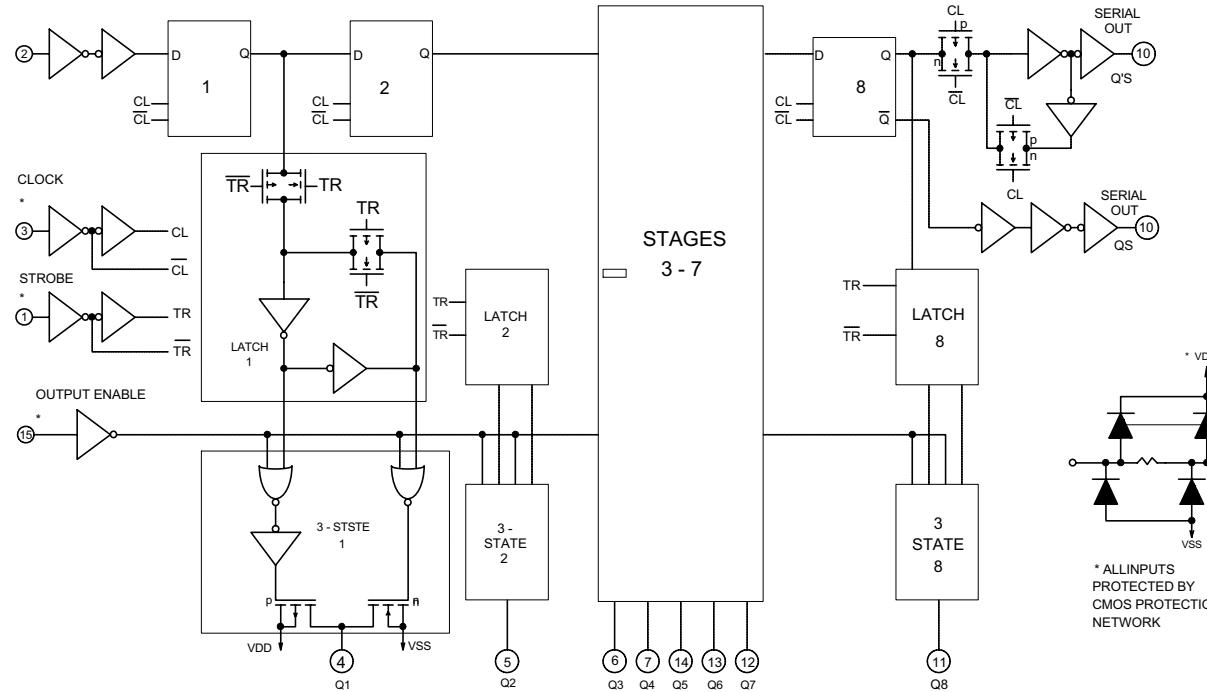
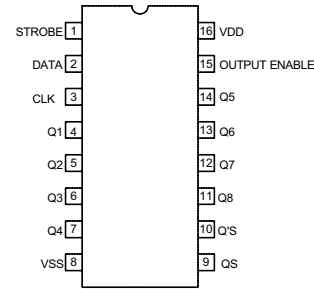
**BLOCK DIAGRAM**



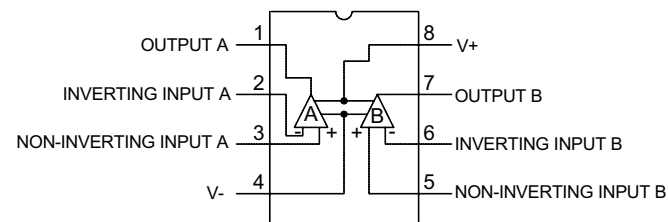
MICROPROCESSOR CONNECTION DIAGRAM

CD4094  
KEY BOARD: IC74&IC75

PIN CONFIGURATION



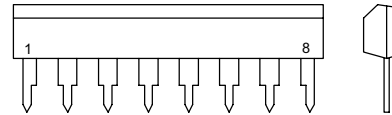
TL082D  
MAIN BOARD: IC41&IC42&IC43



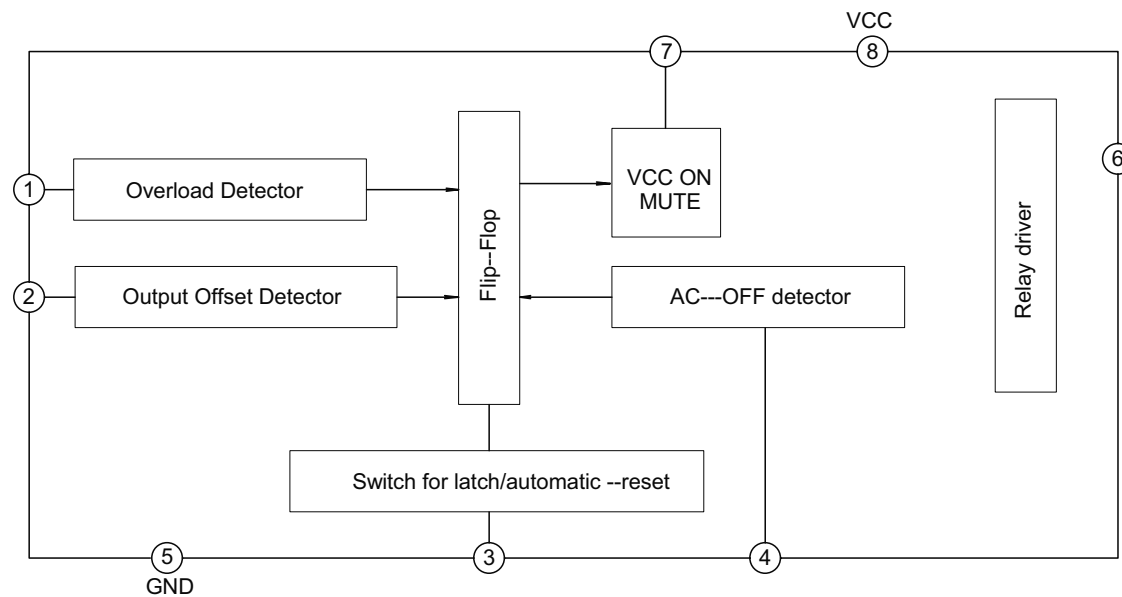
uPC1237HA

MAIN BOARD: IC44

8PIN PLASTIC SLIM SIP



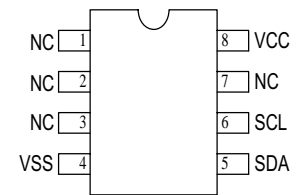
## ICS BLOCK DIAGRAM



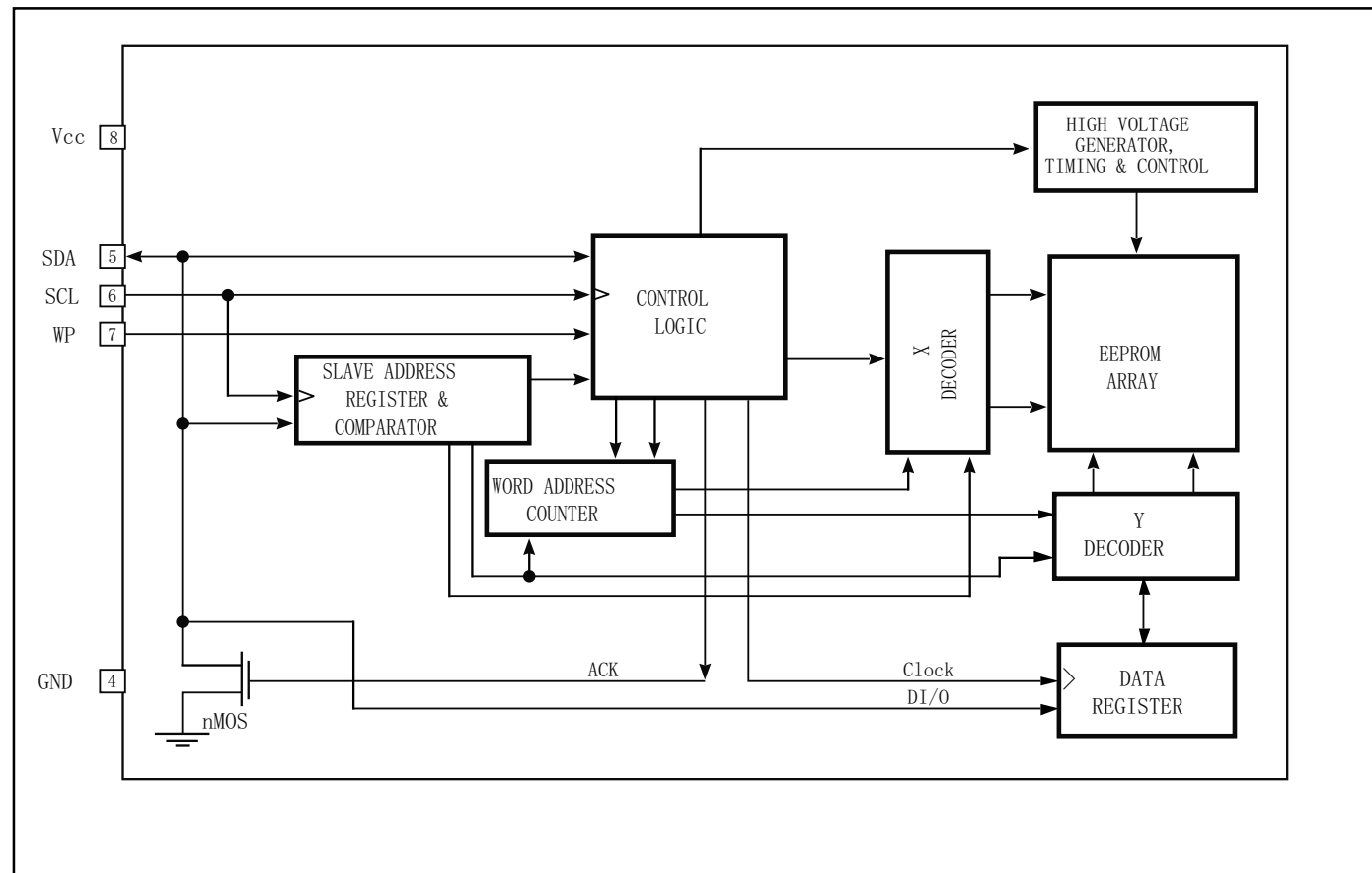
24C01

KEY BOARD: IC71

### PIN CONFIGURATION

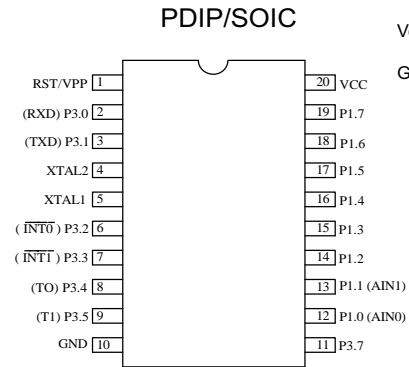


### FUNCTIONAL BLOCK DIAGRAM

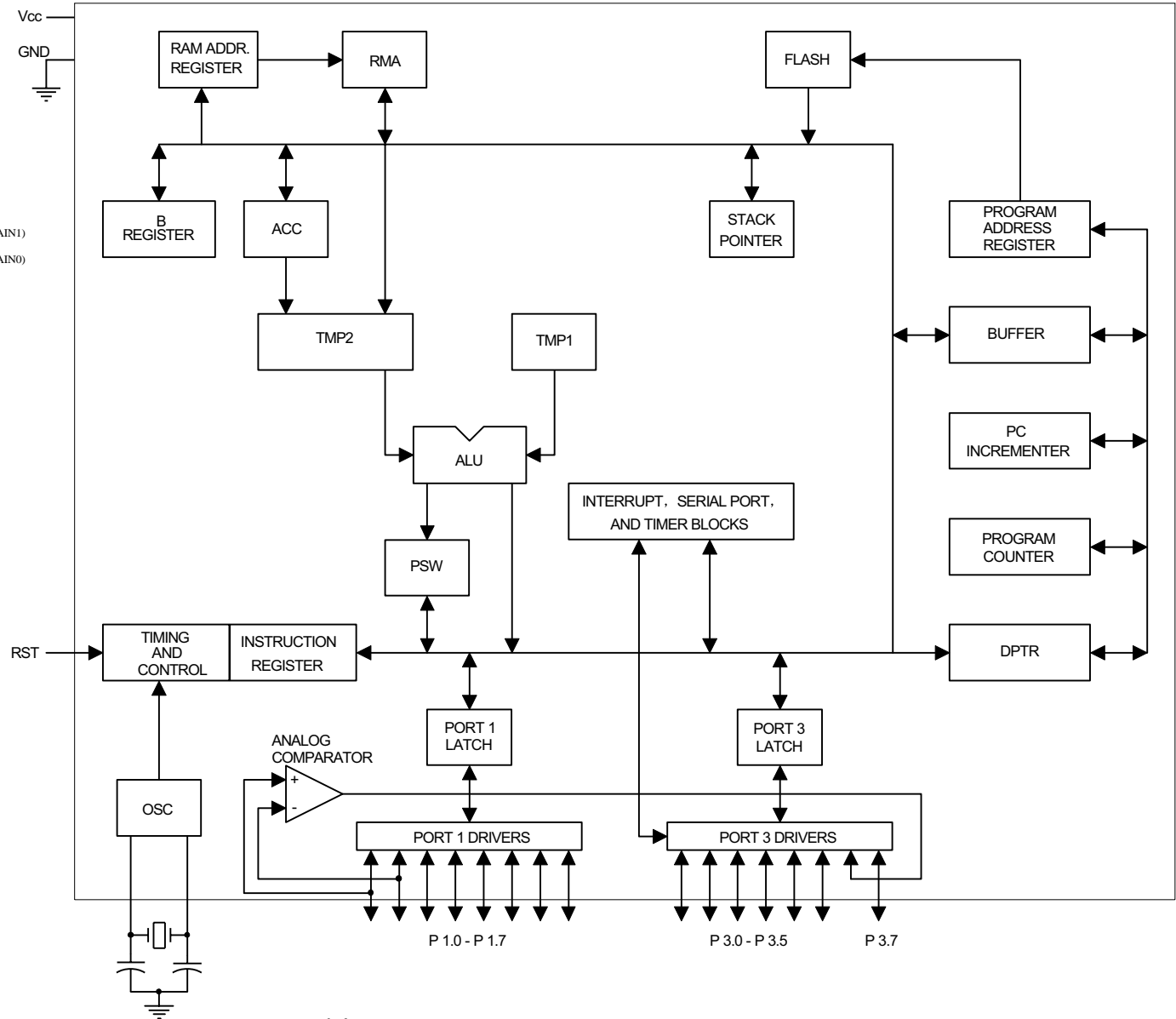


AT89C4051  
KEY BOARD: IC73

### Pin Configuration



### Block Diagram



# ALIGNMENT PROCEDURES

## I. INITIAL

### A. LOWEST VOLUME ADJUSTMENT

1. Tune the volume pot to lowest state.
2. Input a high voltage signal such as 5V from CD input.
3. Connect a oscilloscope to L channel binding posts.
4. Observing the oscilloscope,adjust VR301,make the output of speakers become to the lowest level.
5. Adjusting VR302,make R channel output become to the lowest level by same way.

### B. IDLING CURRENT

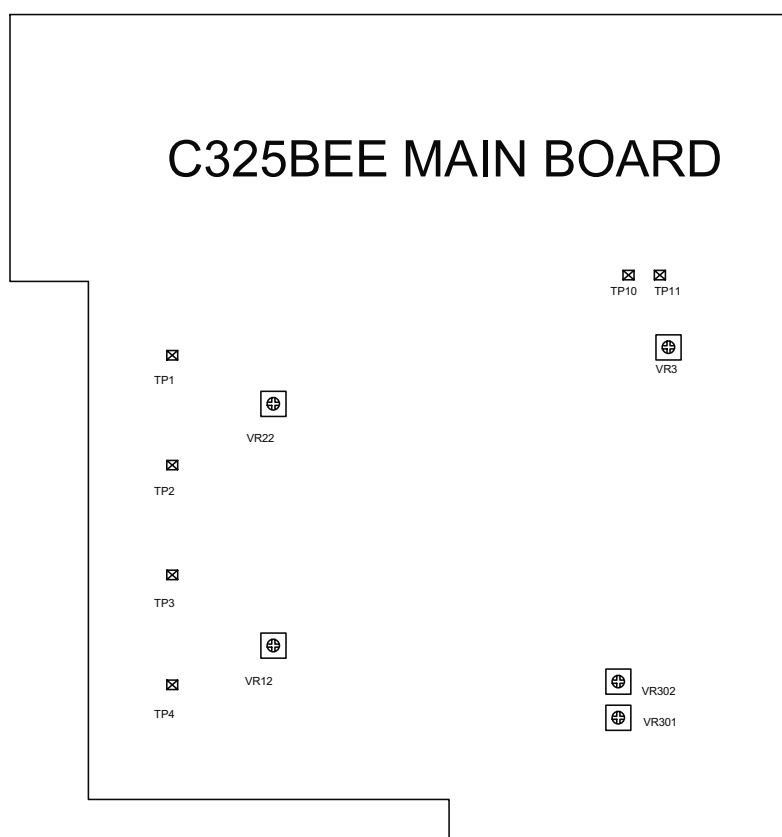
1. Level power on for a minimum of 5 minutes
2. Connect a DC voltmeter toTP1 and TP2 ,adjust VR22 for 4mV reading on voltmeter.
3. Connect a DC voltmeter toTP3 and TP4 ,adjust VR12 for 4mV reading on voltmeter.

### C.ISC CIRCUIT ORIGINAL ADJUSTING

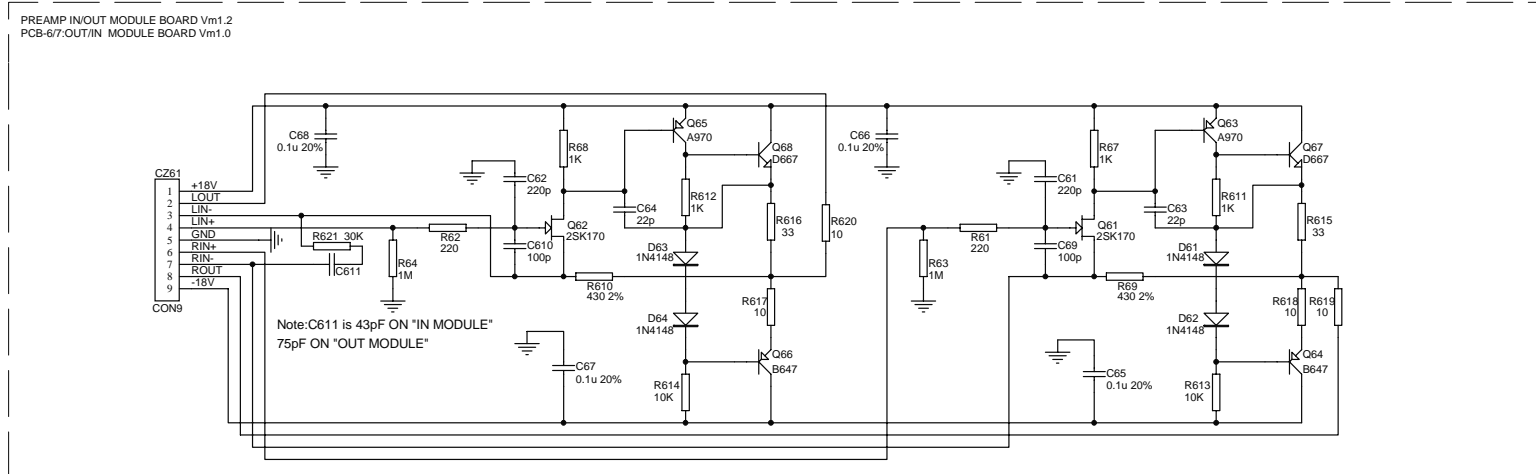
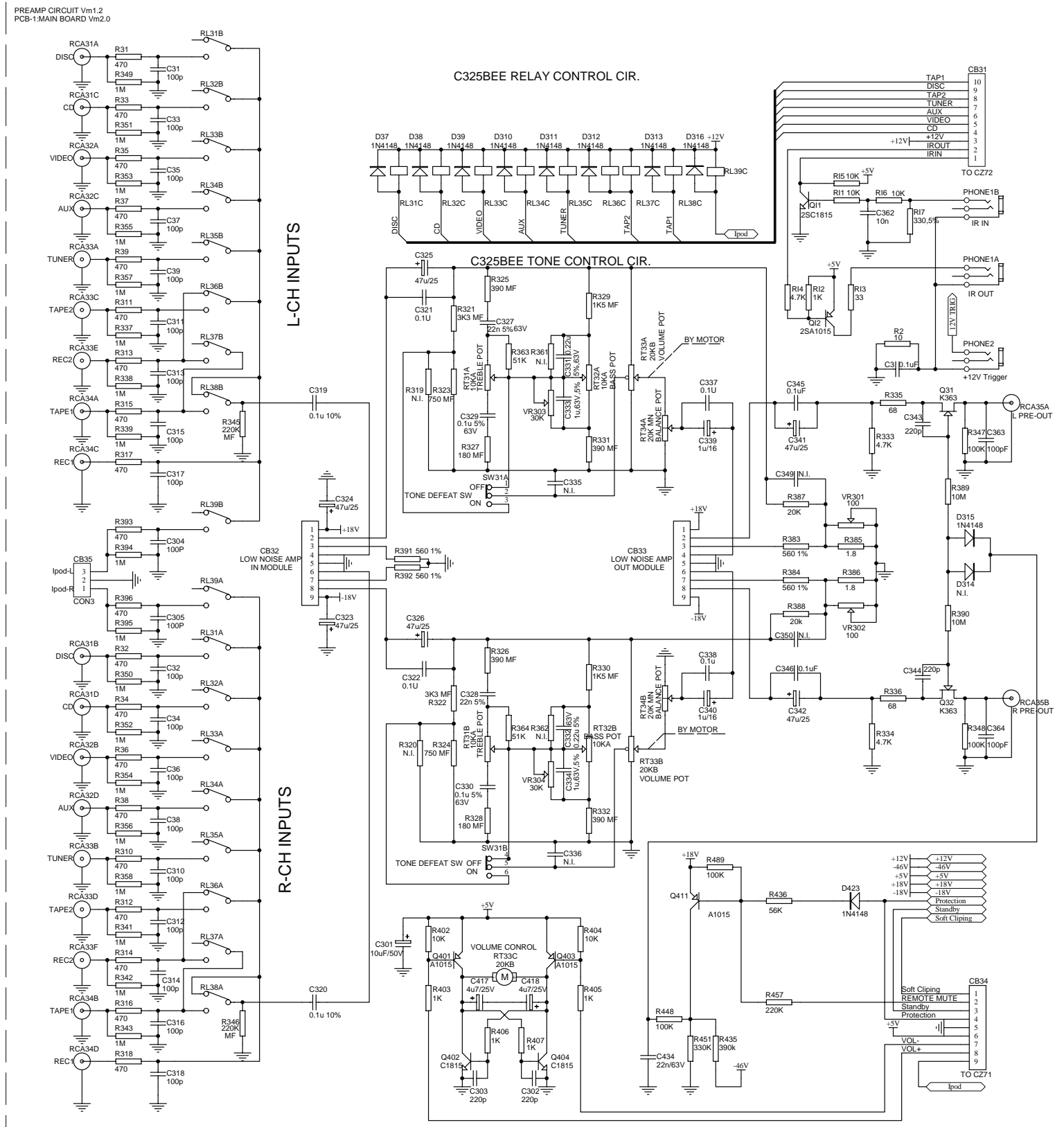
Adjust the pot VR3 to make the DC voltage of the point of TP10 to the same as TP11

## II. FINAL ADJUSTMENT

Repeat procedure A,B and C for the lowest volume level, idling current alignment and ISC original level respectively.



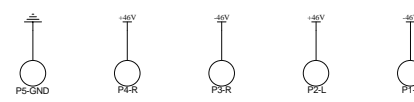
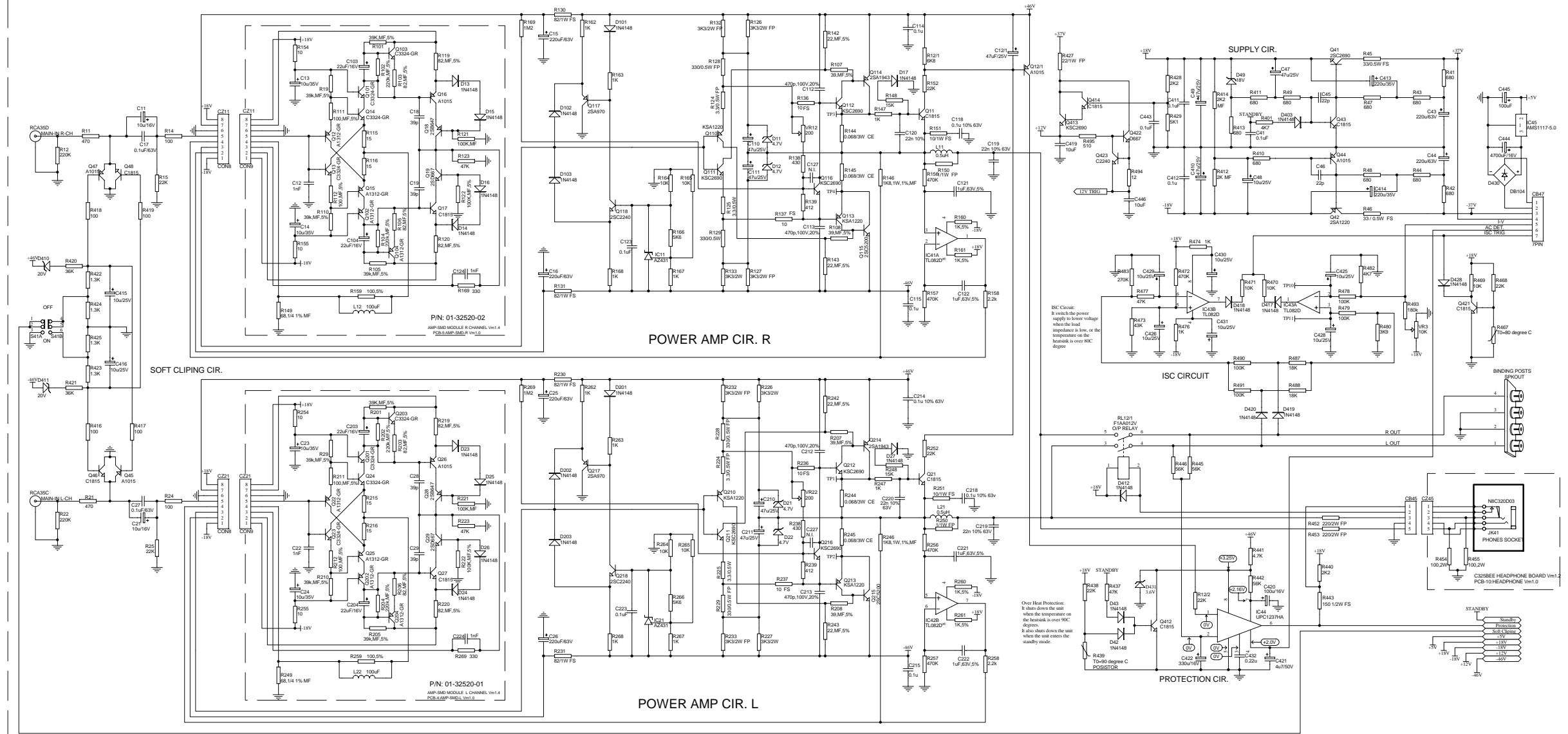
SCHEMATICS DIAGRAM



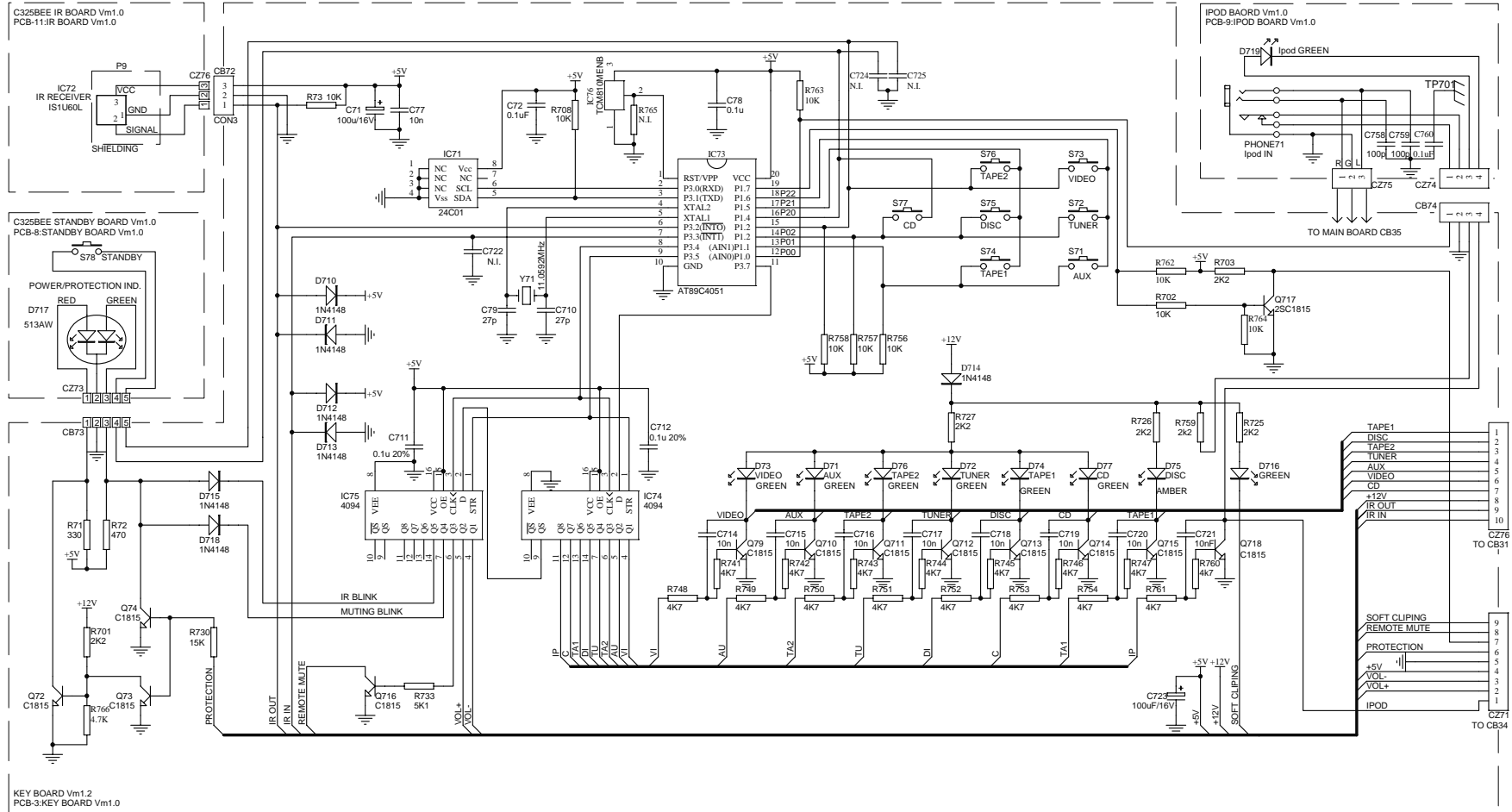


SCHEMATICS DIAGRAM (1/4)

AMP CIRCUIT Vnt.4  
PCB-1 MAIN BOARD Vnt.2

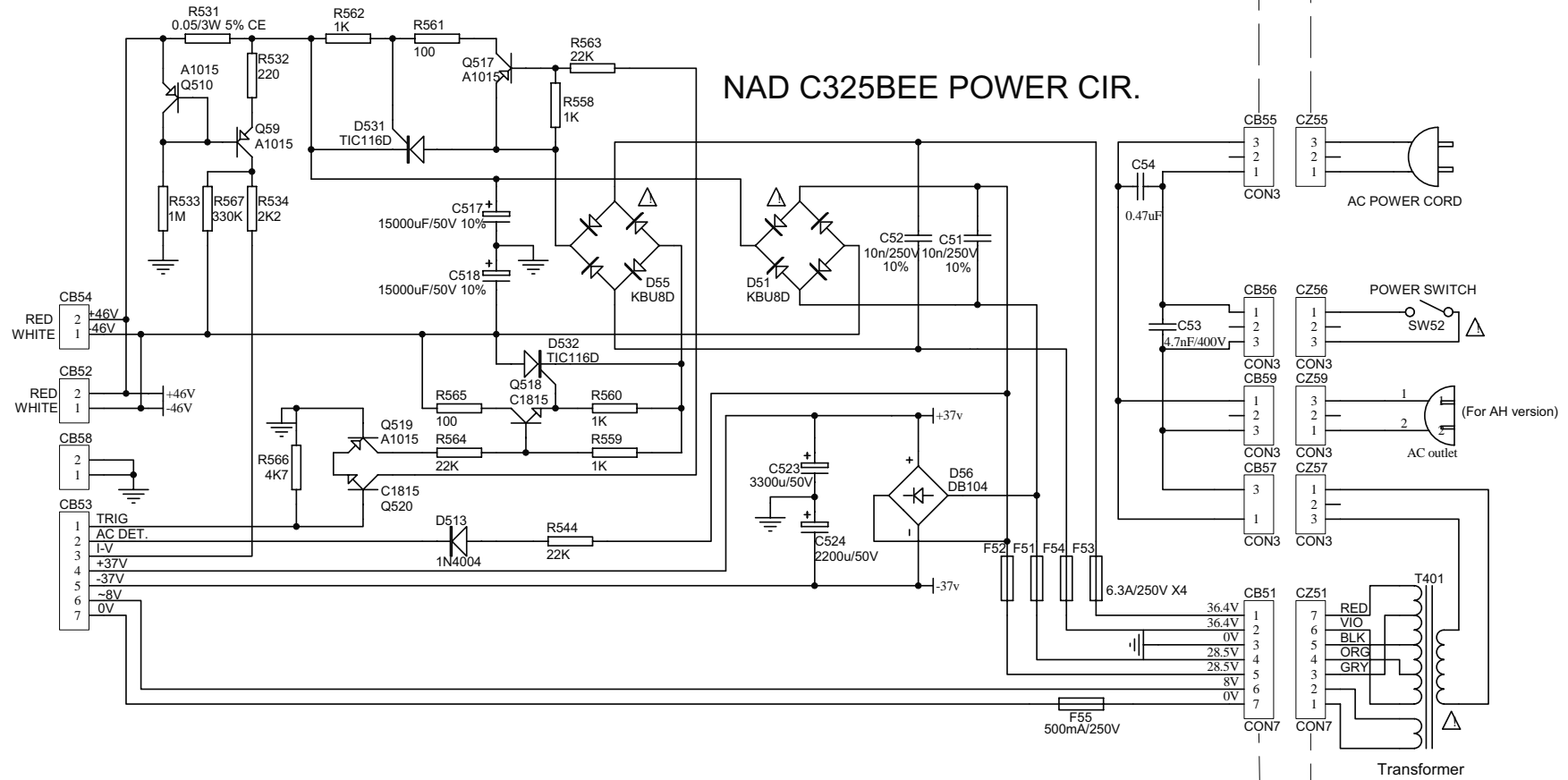


SCHEMATICS DIAGRAM(4/4)



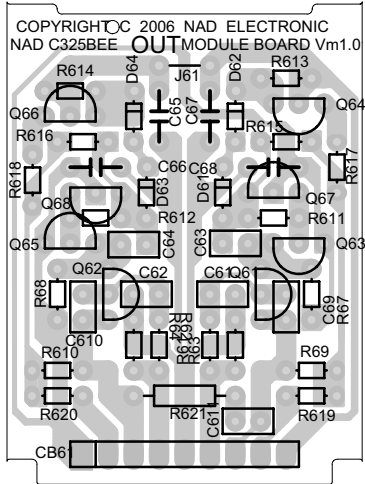
SCHEMATICS DIAGRAM (3/4)

POWER CIRCUIT Vm1.2  
PCB-2:POWER BOARD Vm2.0

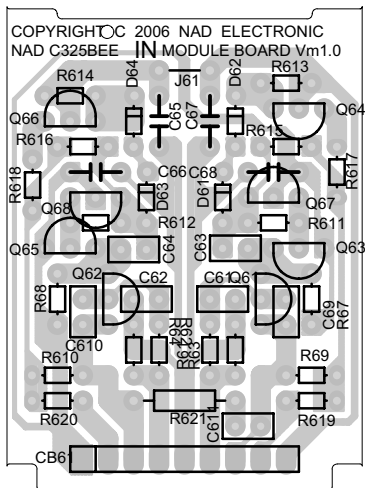




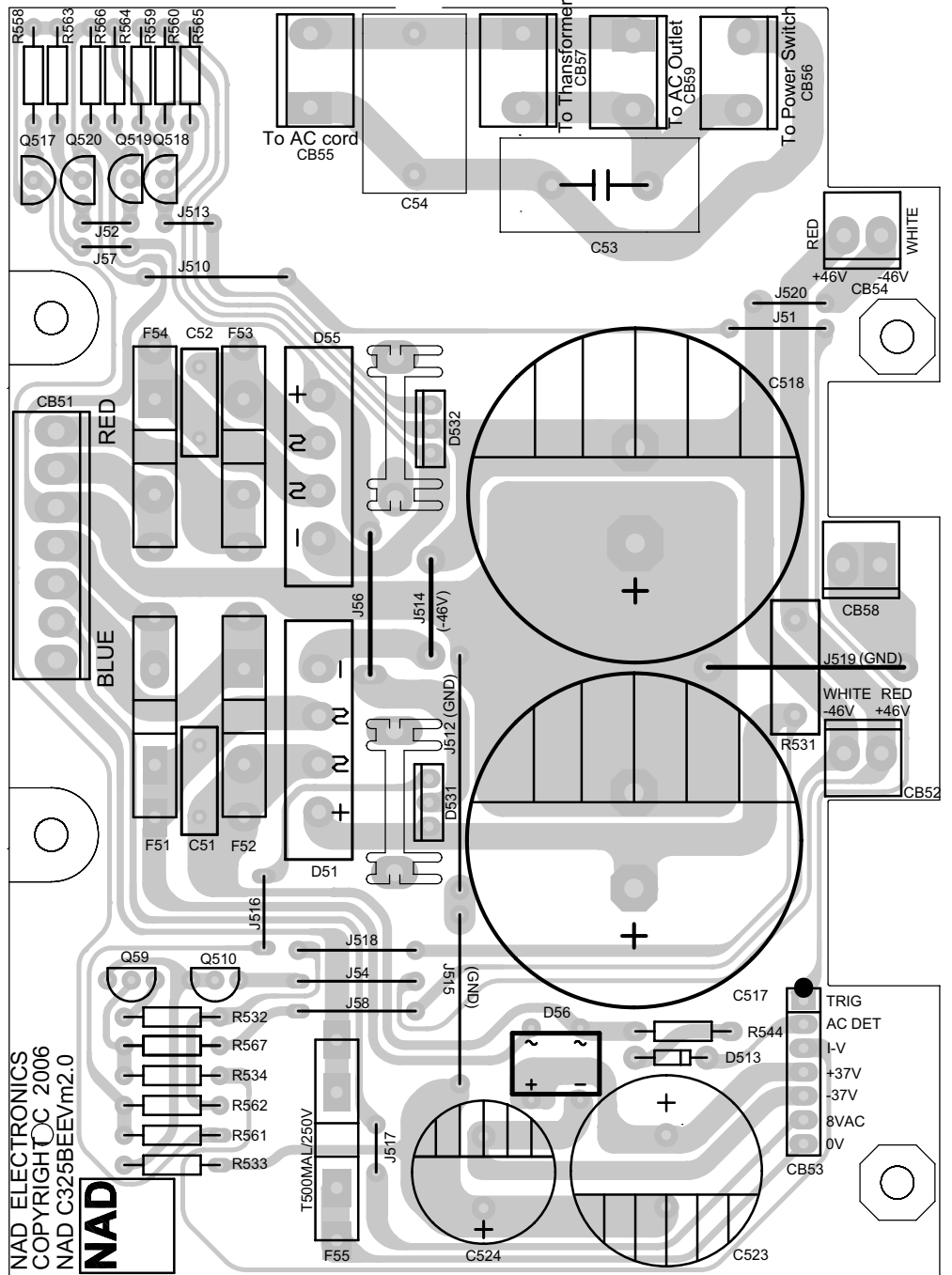
PCB-7:IN MODULE Vm1.0



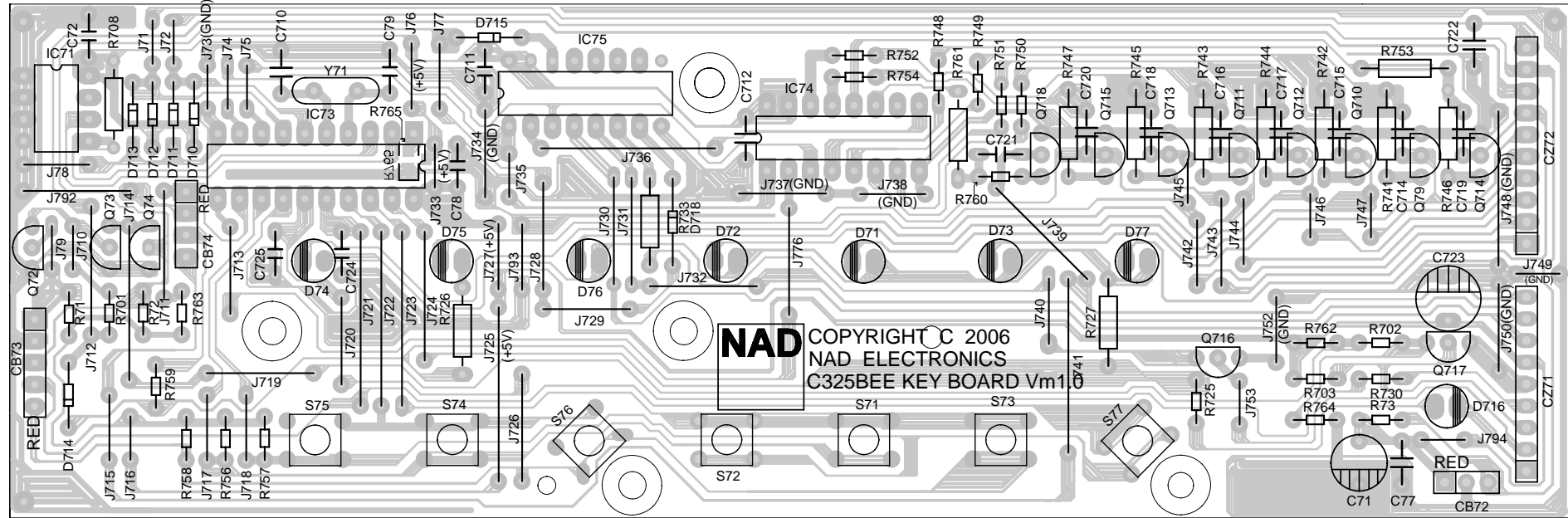
PCB-6:OUT MODULE Vm1.0



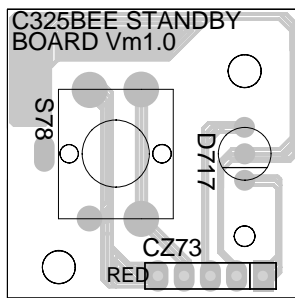
PCB-2:POWER BOARD Vm1.0



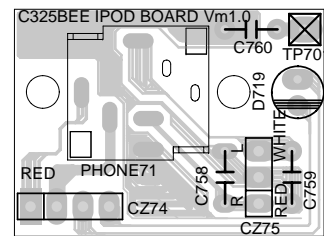
PCB-3:KEY BOARD Vm1.0



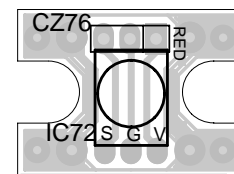
PCB-8:STANDBY BOARD Vm1.0



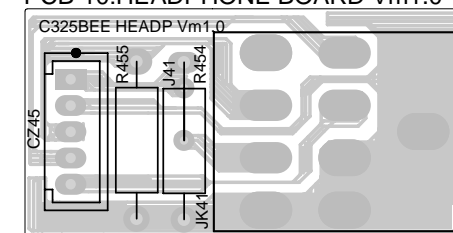
PCB-9:IPOD BOARD Vm1.0



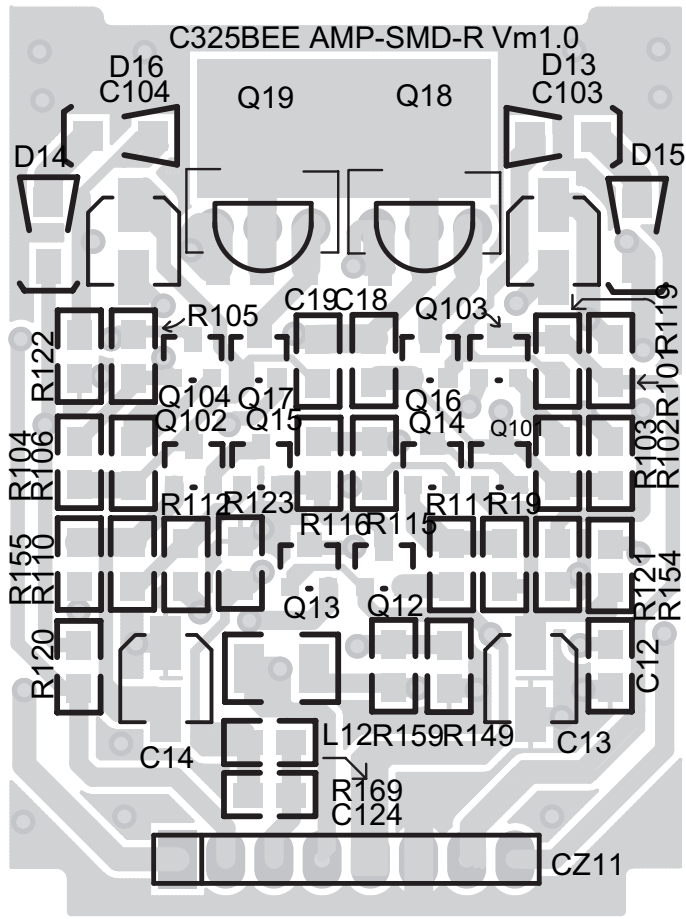
PCB-11:IR BOARD Vm1.0



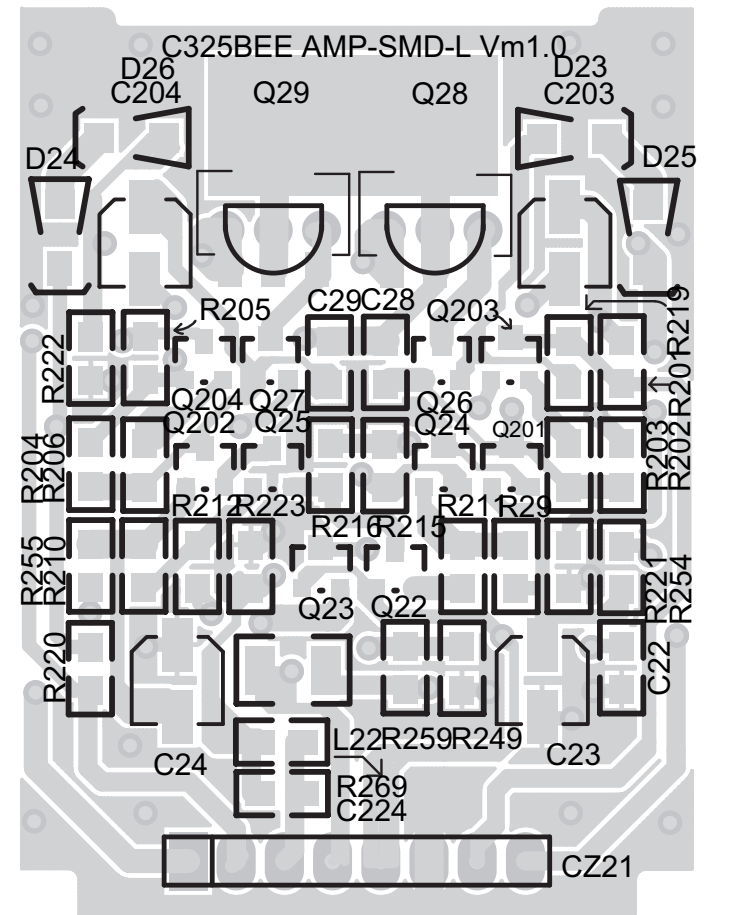
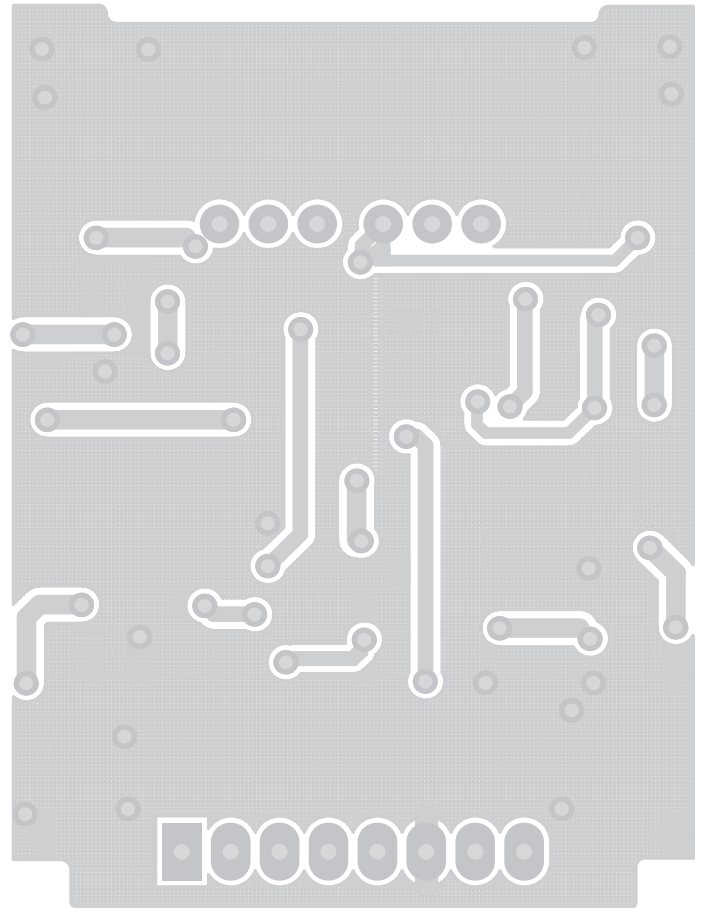
PCB-10:HEADPHONE BOARD Vm1.0



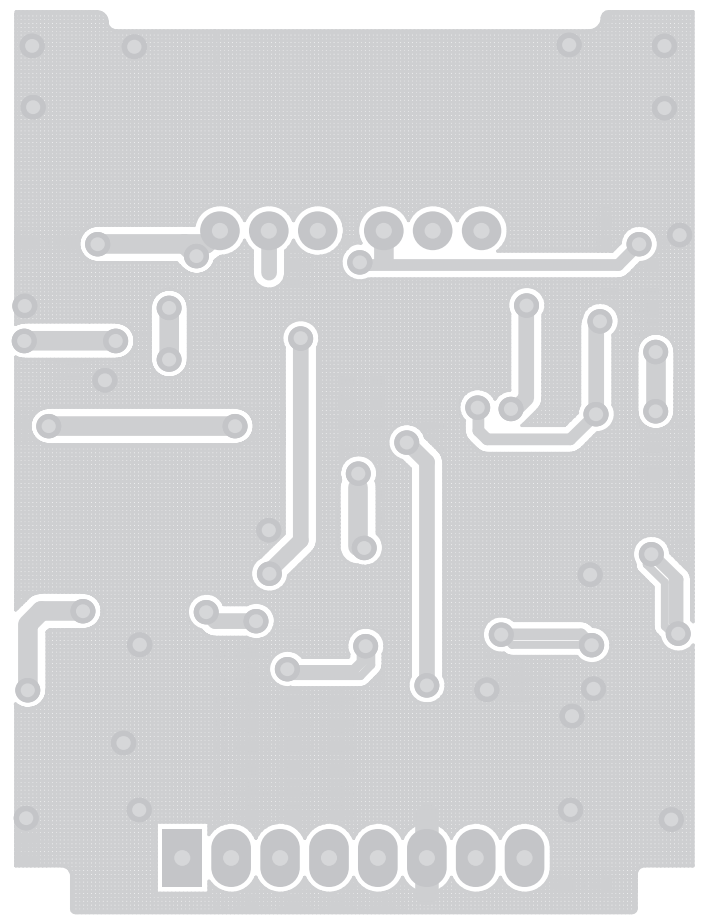
PCB-5:AMP-SMD-R BOARD Vm1.0  
(TOP VIEW)



P/N: 01-32520-02  
(BOTTOM VIEW)

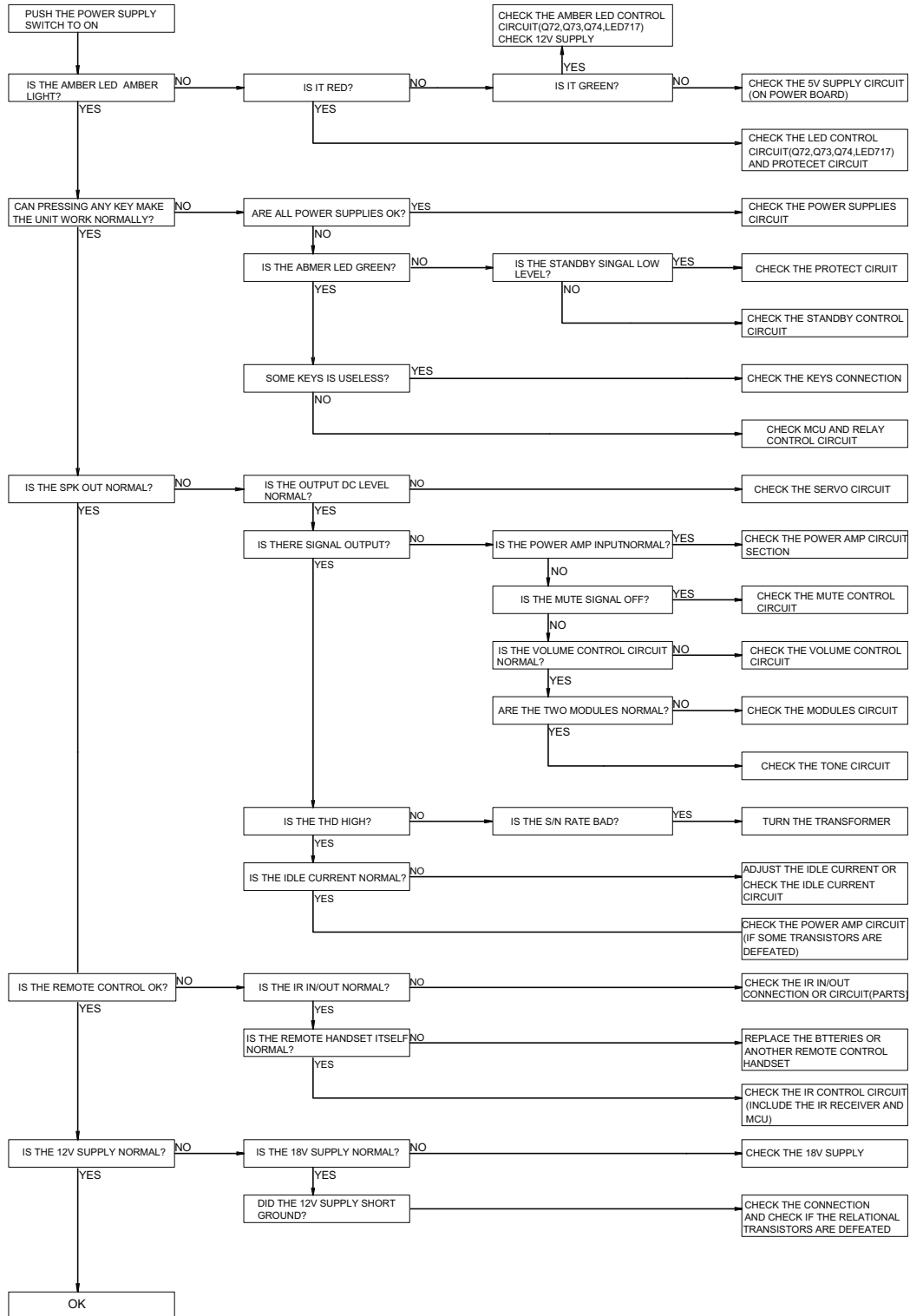


PCB-4:AMP-SMD-L BOARD Vm1.0  
(TOP VIEW)



P/N: 01-32520-01  
(BOTTOM VIEW)

## TROUBLESHOOTING GUIDE





## ELECTRIAL PARTS LIST

### PCB-1: MAIN BOARD

| CIRCUIT NO.  | PART NO.       | DESCRIPTION                   |
|--|----------------|-------------------------------|
| <b>ICS</b>   |                |                               |
| IC41, IC42, IC43   | 03-00082-00    | TL082CP/CN/D                  |
| IC44   | 03-01237-00    | UPC1237HA                     |
| IC45   | 03-01117-01    | AMS1117-5.0/<br>LM1117MPX-5.0 |
| IC11, IC21   | 03-00431-03    | AZ431BZ-B                     |
| <b>DIODES</b>  |                |                               |
| D430   |                | DB104                         |
| D17, D27, D101, D102,<br>D103, D201, D202, D203,<br>D37, D38, D39, D310,<br>D311, D312, D313, D315,<br>D316, D42, D43, D403,<br>D412, D417, D418 |                | 1N4148 (Pitch=7.5mm)          |
| D419, D420, D423, D428   |                | 1N4148 (Pitch=10mm)           |
| D11, D12, D21, D22   |                | 4.7V, 0.5W                    |
| D410, D411   |                | 20V, 0.5W                     |
| D49  |                | 18V, 0.5W                     |
| <b>TRANSISTORS</b>   |                |                               |
| Q31, Q32   | 31-00363-00    | 2SK363                        |
| Q31, Q32   | or 31-00369-00 | 2SK369                        |
| Q31, Q32   | or 31-00170-00 | 2SK170                        |
| Q12, Q12/1, Q44, Q45, Q47,<br>Q401, Q403, Q411   | 31-01015-00    | 2SA1015 GR                    |
| Q11, Q11, Q21, Q43, Q46,<br>Q48, Q402, Q404, Q412,<br>Q414, Q421   | 31-01815-00    | 2SC1815                       |
| Q117, Q217   | 31-00970-00    | 2SA970 GR                     |
| Q423, Q118, Q218   | 31-02240-00    | 2SC2240                       |
| Q422   | 31-00667-00    | 2SD667A                       |
| Q413, Q41, Q216, Q211,<br>Q212, Q112, Q116, Q111   | 31-02690-00    | KSC2690AYSTU                  |
| Q42, Q213, Q210, Q110,<br>Q113   | 31-01220-00    | KSA1220AYSTU                  |
| <b>CAPACITORS</b>  |                |                               |
| C45, C46   | 05-22012-00    | 22p, 100V, ±10%               |
| C31, C32, C33, C34, C35,<br>C36, C37, C38, C39, C304,<br>C305, C310, C311, C312,<br>C313, C314, C315, C316,<br>C317, C318, C363, C364            | 05-10151-01    | 100p, 50V, ±10%               |
| C343, C344, C302, C303   | 05-22151-01    | 220p, 50V, ±10%               |
| C112, C113, C212, C213   | 05-47112-00    | 470p, 100V, ±10%              |
| C362   | 05-10312-00    | 10n, 100V, +50%-20%           |
| C120, C220, C434   | 24-22312-04    | 22n, 100V, ±10%               |
| C123, C223, C3, C41, C443  | 24-10461-00    | 0.1uF, 63V, ±20%              |
| C432   | 24-22461-00    | 0.22uF, 63V, ±20%             |

|   |             |                       |
|---|-------------|-----------------------|
| C327, C328, C119, C219  | 25-22361-01 | 22n, 63V, ±5%         |
| C329, C330  | 25-10461-05 | 0.1uF, 63V, ±5%       |
| C114, C115, C118, C214,<br>C215, C218, C411, C412   | 25-10461-01 | 0.1uF, 63V, ±10%      |
| C17, C27, C322, C321,<br>C345, C346, C337, C338,<br>C319, C320  | 25-10461-06 | 0.1uF, 63V, ±10%      |
| C331, C332  | 25-22461-02 | 0.22uF, 63V, ±5%      |
| C121, C122, C221, C222,<br>C333, C334   | 25-10561-02 | 1u, 63V ±5%           |
| C339, C340  | 06-10951-08 | 1uF, 50V, ±20%        |
| C421, C417, C418  | 06-47951-00 | 4.7uF, 50V, ±20%      |
| C301, C48, C415, C416,<br>C419, C425, C426, C428,<br>C429, C430, C431, C446   | 06-10051-00 | 10uF, 50V, ±20%       |
| C11, C21  | 06-10051-08 | 10uF, 50V, ±20%       |
| C12/1, C110, C111, C210,<br>C211, C323, C324, C47,<br>C49, C410   | 06-47021-00 | 47uF, 25V, ±20%       |
| C12/1, C110, C111, C210,<br>C211, C323, C324, C47,<br>C49, C410   | 06-47021-08 | 47uF, 25V, ±20%       |
| C325, C326, C341, C342  | 06-47021-06 | 47uF, 25V, ±20%       |
| C325, C326, C341, C342  | 06-47021-09 | 47uF, 25V, ±20%       |
| C420, C445  | 06-10111-00 | 100uF, 16V, ±20%      |
| C125, C126, C225, C226  |             | 100uF, 63V, ±20%(N.I) |
| C413, C414  | 06-22131-00 | 220uF, 35V, ±20%      |
| C15, C16, C25, C26, C43,<br>C44   | 06-22161-00 | 220uF, 63V, ±20%      |
| C422  | 06-33111-01 | 330uF, 16V, ±20%      |
| C444  | 06-47211-00 | 4700u, 16V, ±20%      |
| <b>RESISTORS</b>  |             |                       |
| R169, R269  | 07-91204-02 | 1M2 Ω, ±1%            |
| R385, R386  | 07-10189-50 | 1R8, 1/6W, ±5%        |
| R2  | 07-10100-50 | 10R, 1/6W, ±5%        |
| R494  | 07-10120-50 | 12R, 1/6W, ±5%        |
| R142, R143, R242, R243,   | 07-10220-51 | 22R, 1/4W, ±5%        |
| RI3   | 07-10330-50 | 33R, 1/6W, ±5%        |
| R107, R108, R207, R208  | 07-10390-51 | 39R, 1/4W, ±5%        |
| R335, R336  | 07-10680-51 | 68R, 1/4W, ±5%        |
| R14, R24, R416, R417,<br>R418, R419   | 07-10101-50 | 100R, 1/6W, ±5%       |
| RI7   | 07-10331-50 | 330R, 1/6W, ±5%       |
| R138, R238  | 07-10431-51 | 430R, 1/4W, ±5%       |
| R11, R21  | 07-10471-50 | 470R, 1/6W, ±5%       |
| R31, R32, R33, R34, R35,<br>R36, R37, R38, R39, R310,<br>R311, R312, R313, R314,<br>R315, R316, R317, R318,<br>R393, R396 | 07-10471-51 | 470R, 1/4W, ±5%       |
| R495  | 07-10511-50 | 510R, 1/6W, ±5%       |
| R41, R42, R43, R44, R47,<br>R48, R49, R410, R411,<br>R413,  | 07-10681-51 | 680R, 1/4W, ±5%       |
| RI2, R162, R163, R167,<br>R168, R262, R263, R267,<br>R268   | 07-10102-50 | 1K, 1/6W, ±5%         |
| R147, R160, R161, R247,<br>R260, R261, R403, R406,<br>R405, R407, R474, R476  | 07-10102-51 | 1K, 1/4W, ±5%         |

|  |             |                     |
|--|-------------|---------------------|
| R422, R423, R424, R425   | 07-10132-50 | 1K3, 1/6W, ±5%      |
| R428, R440, R158, R258   | 07-10222-51 | 2K2, 1/4W, ±5%      |
| R480   | 07-10392-51 | 3K9, 1/4W, ±5%      |
| R401, R482, R333, R334,  | 07-10472-51 | 4K7, 1/4W, ±5%      |
| RI4  | 07-10472-50 | 4K7, 1/6W, ±5%      |
| R429   | 07-10512-51 | 5K1, 1/4W, ±5%      |
| R166, R266   | 07-10562-50 | 5K6, 1/6W, ±5%      |
| R12/1  | 07-10682-51 | 6K8, 1/4W, ±5%      |
| RI1, RI5, RI6, R164, R264,<br>R165, R265   | 07-10103-50 | 10K, 1/6W, ±5%      |
| R470, R471, R469, R402,<br>R404  | 07-10103-51 | 10K, 1/4W, ±5%      |
| R148, R248   | 07-10153-50 | 15K, 1/6W, ±5%      |
| R441   | 07-10153-51 | 15K, 1/4W, ±5%      |
| R487, R488   | 07-10183-51 | 18K, 1/4W, ±5%      |
| R387, R388   | 07-10203-50 | 20K, 1/6W, ±5%      |
| R15, R25, R152, R252   | 07-10223-50 | 22K, 1/6W, ±5%      |
| R12/2, R468  | 07-10223-51 | 22K, 1/4W, ±5%      |
| R420, R421   | 07-10363-50 | 36K, 1/6W, ±5%      |
| R473   | 07-10433-51 | 43K, 1/4W, ±5%      |
| R477, R437   | 07-10473-51 | 47K, 1/4W, ±5%      |
| R436, R442, R445, R446   | 07-10563-51 | 56K, 1/4W, ±5%      |
| R347, R348, R448, R478,<br>R479, R489, R490, R491  | 07-10104-51 | 100K, 1/4W, ±5%     |
| R438, R493   | 07-10184-51 | 180K, 1/4W, ±5%     |
| R12, R22   | 07-10224-50 | 220K, 1/6W, ±5%     |
| R457, R345, R346   | 07-10224-51 | 220K, 1/4W, ±5%     |
| R483   | 07-10274-51 | 270K, 1/4W, ±5%     |
| R451   | 07-10334-51 | 330K, 1/4W, ±5%     |
| R435   | 07-10394-51 | 390K, 1/4W, ±5%     |
| R472, R156, R157, R256,<br>R257  | 07-10474-51 | 470K, 1/4W, ±5%     |
| R337, R338, R339, R341,<br>R342, R343, R349, R350,<br>R351, R352, R353, R354,<br>R355, R356, R357, R358,<br>R394, R395 | 07-10105-51 | 1M, 1/4W, ±5%       |
| R327, R328   | 07-20181-51 | 180R, 1/4W, ±5%     |
| R325, R326   | 07-23900-51 | 390R, 1/4W, ±1%     |
| R331, R332   | 07-23900-50 | 390R, 1/6W, ±1%     |
| R139, R239   | 07-24120-51 | 412R, 1/4W, ±1%     |
| R383, R384, R391, R392   | 07-25600-50 | 560R, 1/6W, ±1%     |
| R323, R324   | 07-27500-51 | 750R, 1/4W, ±1%     |
| R329, R330   | 07-21501-50 | 1K5, 1/6W, ±1%      |
| R412   | 07-20202-51 | 2K, 1/4W, ±5%       |
| R414   | 07-20222-51 | 2K2, 1/4W, ±5%      |
| R321, R322   | 07-20332-51 | 3K3, 1/4W, ±5%      |
| R363, R364   | 07-20513-50 | 51K, 1/6W, ±5%      |
| R389, R390   | 07-20106-50 | 10M, 1/6W, ±5%      |
| R150, R250   | 07-30109-01 | 1R, 1W, ±5%         |
| R124, R125, R224, R225   | 07-30339-00 | 3R3, 1/2W, ±5%      |
| R427   | 07-30220-01 | 22 Ω, 1W ±5%        |
| R452, R453   | 07-30221-03 | 220 Ω /2W 5%        |
| R128, R129, R228, R229   | 07-30331-00 | 330R, 1/2W, ±5%     |
| R146, R246   | 07-30182-02 | 1K8, 2W, FP, ±5%    |
| R126, R127, R132, R133<br>R226, R227, R232, R233   | 07-30332-12 | 3K3, 2W, FP, ±5%    |
| R136, R137, R236, R237   | 07-50100-10 | 10 Ω, 1/4W, ±5%     |
| R151, R251   | 07-50100-01 | 10R, 1W, FS, ±5%    |
| R45, R46   | 07-50330-00 | 33R, 1/2W, ±5%, FS  |
| R130, R131, R230, R231   | 07-50820-02 | 82R, 1W, FS, ±5%    |
| R443   | 07-50151-00 | 150R, 1/2W, ±5%     |
| R144, R145, R244, R245   | 07-40687-03 | 0.068R, 3W, CE, ±5% |
| <b>INDUCTORS</b>   |             |                     |
| L11, L21   | 08-01005-00 | 0.5uH               |
| <b>POTS</b>  |             |                     |

|   |             |  |
|---|-------------|--|
| VR301, VR302  | 09-02101-00 | 100R   |
| VR12, VR22  | 09-02201-02 | 200R   |
| VR3   | 09-02103-00 | 10K  |
| VR304, VR303  | 09-02303-00 | 30K  |
| RT31, RT32  | 09-01103-01 | RK163121A2CA 10KAx2  |
| RT33  | 09-01203-01 | RK16812MG 20KBx2   |
| RT34  | 09-01203-03 | RK163121A10D 20KMN   |
| <b>SWITCHS</b>  |             |  |
| S41   | 11-05202-02 | SK-22F03G7   |
| SW31  | 11-02202-02 | SPUN190700   |
| <b>RELAYS</b>   |             |  |
| RL31, RL32, RL33, RL34,<br>RL35, RL36, RL37,<br>RL38,RL39 | 12-02101-02 | JRC-27F/012/S  |
| RL12/1  | 12-01101-02 | F1AA012V   |
| <b>CONNECTERS</b>   |             |  |
| MAIN BOARD--CB58  | 14-32501-00 | VH 3.96A-2Y plug, 16AWG,<br>UL1015#,black,130mm length.            |
| MAIN BOARD--CB52 CB54                                     | 14-32502-00 | VH 3.96A-2Y plug, 16AWG,<br>UL1015# red and white,130mm<br>length. |
| R-OUT   | 14-32502-01 | UL 2468 , 16AWG, blue and white.<br>155mm length.                  |
| L-OUT   | 14-32502-02 | UL 2468 , 16AWG, blue and red<br>. 100mm length                    |
| TP1, TP2, TP3, TP4, TP10,<br>TP11                         | 13-10001-00 | Test-1®  |
| CB35  | 13-22503-00 | XHB2.5A-3A   |
| CB45  | 13-22505-00 | XHB2.5A-5A   |
| CB47  | 13-22507-00 | XHB2.5A-7A   |
| CB34  | 13-22509-00 | XHB2.5A-9A   |
| CB31  | 13-22510-00 | XHB2.5A-10A  |
| RCA31,RCA32,RCA34   | 17-01004-00 | 4 holes red and white, gilt  |
| RCA33   | 17-01006-00 | 6 holes red and white, gilt  |
| PHONE2  | 17-02001-04 | ST-323B-04<br>CKK-3.5-02-3P  |
| PHONE1  | 17-02002-00 | PHONEJACK2   |
| Binding Post Assy   | 02-03001-20 | C VERSION  |
| Binding Post Assy   | 02-03001-10 | AH VERSION   |
| Binding Post(Red)   | 17-03002-01 | C VERSION  |
| Binding Post(Red)   | 17-03002-11 | AH VERSION   |
| Binding Post(Red)   | 73-001003-0 | HS4-C320-B009V1-P003   |
| BDP CAP(Red)  | 73-001005-0 | HS4-C320-B009V1-P007   |
| Shaft   | 69-001001-0 | HS4-C320-B009V1-M024   |
| Binding Post  | 69-001002-0 | HS4-C320-B009V1-M025   |
| Binding Post(Black)                                       | 17-03002-02 | C VERSION  |
| Binding Post(Black)                                       | 17-03002-12 | AH VERSION   |
| Binding Post(Black)                                       | 73-001004-0 | HS4-C320-B009V1-P004   |
| BDP Cap(Black)  | 73-001006-0 | HS4-C320-B009V1-P008   |
| Shaft   | 69-001001-0 | HS4-C320-B009V1-M024   |
| Binding Post  | 69-001002-0 | HS4-C320-B009V1-M025   |
| BDP SUPPORT   | 66-001006-1 | HS4-C320-B009V1-M015 B   |
| BDP PIN   | 69-001010-0 | HS4-C320-B009V1-M017   |
| <b>LINKS</b>  |             |  |

|   |                 |                     |
|---|-----------------|---------------------|
| J3, J7, J28, J29, J38, J42,<br>J46, J49, J50, J56, J57,<br>J58, J59, J65, J88, J93,<br>J94, J95, 101, J102, J105,<br>J106, J107, J108, J110,<br>J119, J120, J121, J126,<br>J127, J128, J129, J130,<br>J131, J135, J138, J139,<br>J140, J141, J150, J151,<br>J152, J154, J155, J159,<br>J160, J161, J162, J163,<br>J172, J174, J175, J176,<br>J183, J184, J186, J187,<br>J197, J198, J199, J200,<br>J205 | 21-06000-00     | L=5mm               |
| J9, J10, J11, J13, J25, J26,<br>J32, J35, J36, J37, J39,<br>J40, J41, J44, J45, J47,<br>J48, J53, J62, J63, J64,<br>J67, J73, J99, J100, J104,<br>J117, J125, J143, J146,<br>J147, J164, J165, J166,<br>J168, J169, J170, J173,<br>J185, J192, J202, J203,<br>J204, J207  | 21-06000-00     | L=7.5mm             |
| J4, J43, J51, J52, J66, J87,<br>J89, J90, J91, J96, J111,<br>J113, J118, J122, J171,<br>J179, J180, J190, J201  | 21-06000-00     | L=10mm              |
| J12, J27, J61, J68, J69,<br>J72, J116, J123, J124,<br>J133, J134, J136, J137,<br>J142, J145, J149, J156,<br>J157, J158, J178, J191  | 21-06000-00     | L=12.5mm            |
| J30, J31, J54, J55, J80,<br>J132, J181, J182, J188,<br>J189, J193   | 21-06000-00     | L=15mm              |
| J8, J14, J15, J16, J17, J18,<br>J19, J20, J21, J33, J34,<br>J60, J76, J82, J112, J206   | 21-06000-00     | L=18mm              |
| J22, J23, J24, J75, J81,<br>J83, J92, J97, J98, J103,<br>J109, J144, J153, J195,<br>J196  | 21-06000-00     | L=20mm              |
| J74, J114, J115   | 21-06000-00     | L=22.5mm            |
| J70, J71, J77, J78, J84,<br>J85, J86, J177  | 21-06000-00     | L=25mm              |
| J2, J5  | 21-10750-00     | L=7.5 (thick links) |
| J79   | 21-10101-00     | L=10 (thick links)  |
| J167  | 21-10201-00     | L=20 (thick links)  |
| J1, J6, J148  | 21-10251-00     | L=25 (thick links)  |
| <b>PCB-6:OUT MODULE ; PCB-7: IN MODULE Line Out: 01-32560-02 and Line In: 01-32560-01</b>   |                 |                     |
| <b>CIRCUIT NO.</b>  | <b>PART NO.</b> | <b>DESCRIPTIONS</b> |
| <b>TRANSISTORS</b>  |                 |                     |
| Q61, Q62  | 31-00170-00     | 2SK170              |
| Q63, Q65  | 31-00970-00     | 2SA970              |
| Q64, Q66  | 31-00647-00     | 2SB647A             |
| Q67, Q68  | 31-00667-00     | 2SD667A             |
| <b>DIODES</b>   |                 |                     |
| D61, D62, D63, D64  | 33-44148-00     | 1N4148              |
| <b>CAPACITORS</b>   |                 |                     |
| C63, C64,   | 05-22012-01     | 22p, 100V, ±10%     |
| C611(IN MODULE)   | 05-43012-01     | 43p, 100V, ±10%     |
| C611(OUT MODULE)  | 05-75012-00     | 75p, 100V, ±10%     |
| C69, C610   | 05-10151-00     | 100p, 50V, ±10%     |
| C61, C62  | 05-22151-00     | 220p, 50V, ±20%     |








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|--|-----------------|----------------------|
| C65, C66, C67, C68                         | 24-10461-00     | 0.1uF, 63V, ±20%     |
| <b>RESISTORS</b>                           |                 |                      |
| R617, R618, R619, R620                     | 07-20100-50     | 10 Ω, 1/6W, ±5%      |
| R615, R616                                 | 07-20330-50     | 33 Ω, 1/6W, ±5%      |
| R61, R62                                   | 07-20221-50     | 220 Ω, 1/6W, ±5%     |
| R69, R610                                  | 07-24300-50     | 430 Ω, 1/6W, ±1%     |
| R67, R68, R611, R612                       | 07-20102-50     | 1K Ω, 1/6W, ±5%      |
| R613, R614                                 | 07-20103-50     | 10K Ω, 1/6W, ±5%     |
| R621                                       | 07-20303-51     | 30K Ω, 1/4W, ±5%     |
| R63, R64                                   | 07-20105-50     | 1M Ω, 1/6W, ±5%      |
| <b>CONNECTER</b>                           |                 |                      |
| S006                                       | 13-12509-01     | CZ61                 |
| J61  | 21-06000-00     | L=5                  |
| <b>PCB-4: AMP MODULE L SMD</b> 01-32520-01 |                 |                      |
| <b>CIRCUIT NO.</b>                         | <b>PART NO.</b> | <b>DESCRIPTION</b>   |
| <b>TRANSISTORS</b>                         |                 |                      |
| Q26  | 31-01015-01     | 2SA1015              |
| Q27  | 31-01815-01     | 2SC1815              |
| Q22, Q25, R202, Q204                       | 31-01312-00     | 2SA1312-GR           |
| Q23, Q24, Q201, Q203                       | 31-03324-00     | 2SC3324-GR           |
| Q28  | 31-00647-00     | 2SB647A              |
| Q29  | 31-00667-00     | 2SD667A              |
| <b>DIODES</b>                              |                 |                      |
| D23, D24, D25, D26                         | 33-44148-11     | LL4148               |
| <b>RESISTORS</b>                           |                 |                      |
| R254, R255                                 | 07-90100-01     | 10 Ω, ±5%            |
| R215, R216                                 | 07-91509-01     | 15 Ω, ±1%            |
| R249                                       | 07-96809-01     | 68 Ω, ±1%            |
| R203, R206, R219, R220                     | 07-98209-01     | 82 Ω, ±1%            |
| R211, R212, R259                           | 07-91000-01     | 100 Ω, ±1%           |
| R269                                       | 07-93300-01     | 330 Ω, ±1%           |
| R29, R201, R205, R210                      | 07-93902-01     | 39K Ω, ±1%           |
| R223                                       | 07-94702-01     | 47K Ω, ±1%           |
| R221, R222                                 | 07-91003-01     | 100K Ω, ±1%          |
| R202, R204                                 | 07-92203-01     | 220K Ω, ±1%          |
| <b>CAPACITORS</b>                          |                 |                      |
| C28, C29                                   | 26-39051-01     | 39pF, 50V, ±5%       |
| C22, C224                                  | 26-10251-11     | 1nF, 50V, ±5%        |
| C23, C24                                   | 06-10031-02     | VSS, 10uF, 35V, ±20% |
| C203, C204                                 | 06-22011-05     | VSS, 22uF, 16V, ±20% |
| <b>INDUCTORS</b>                           |                 |                      |
| L22  | 08-04101-00     | 100uH                |
| <b>CONNECTER</b>                           |                 |                      |
| S006                                       | 13-12508-11     | CZ21                 |
| <b>PCB-5: AMP MODULE R SMD</b> 01-32520-02 |                 |                      |
| <b>CIRCUIT NO.</b>                         | <b>PART NO.</b> | <b>DESCRIPTION</b>   |
| <b>TRANSISTORS</b>                         |                 |                      |
| Q16  | 31-01015-01     | 2SA1015              |
| Q17  | 31-01815-01     | 2SC1815              |
| Q12, Q15, Q102, Q104                       | 31-01312-00     | 2SA1312-GR           |
| Q13, Q14, Q101, Q103                       | 31-03324-00     | 2SC3324-GR           |
| Q18  | 31-00647-00     | 2SB647A              |
| Q19  | 31-00667-00     | 2SD667A              |
| <b>DIODES</b>                              |                 |                      |
| D13, D14, D15, D16                         | 33-44148-11     | LL4148               |
| <b>RESISTORS</b>                           |                 |                      |
| R154, R155                                 | 07-90100-01     | 10 Ω, ±5%            |
| R115, R116                                 | 07-91509-01     | 15 Ω, ±1%            |
| R149                                       | 07-96809-01     | 68 Ω, ±1%            |
| R103, R106, R119, R120                     | 07-98209-01     | 82 Ω, ±1%            |
| R111, R112, R159                           | 07-91000-01     | 100 Ω, ±1%           |

|                             |                 |  |
|-----------------------------|-----------------|--|
| R169                        | 07-93300-01     | 330 Ω , ±1%                                      |
| R19, R101, R105, R110       | 07-93902-01     | 39K Ω , ±1%                                      |
| R123                        | 07-94702-01     | 47K Ω , ±1%                                      |
| R121, R122                  | 07-91003-01     | 100K Ω , ±1%                                     |
| R102, R104                  | 07-92203-01     | 220K Ω , ±1%                                     |
| <b>CAPACITORS</b>           |                 |  |
| C18, C19                    | 26-39051-01     | 39pF, 50V, ±5%                                   |
| C12, C124                   | 26-10251-11     | 1nF, 50V, ±5%                                    |
| C13, C14                    | 06-10031-02     | VSS, 10uF, 35V, ±20%                             |
| C103, C104                  | 06-22011-05     | VSS, 22uF, 16V, ±20%                             |
| <b>INDUCTORS</b>            |                 |  |
| L12                         | 08-04101-00     | 100uH  |
| <b>CONNECTER</b>            |                 |  |
| CZ11                        | 13-12508-11     | S006   |
| <b>PCB-8: STANDBY BOARD</b> |                 |  |
| <b>CIRCUIT NO.</b>          | <b>PART NO.</b> | <b>DESCRIPTION</b>                               |
| <b>DIODES</b>               |                 |  |
| D717                        | 33-50525-00     | Φ5 DUAL COLOR                                    |
| <b>SWITCHS</b>              |                 |  |
| S78                         | 11-04101-10     | DTSG (P) -24N                                    |
| <b>CONNECTER</b>            |                 |  |
| CB73——CZ73                  | 14-32505-10     | 26AWG UL2468# white, 70mm length                 |
| <b>PCB-2: POWER BOARD</b>   |                 |  |
| <b>CIRCUIT NO.</b>          | <b>PART NO.</b> | <b>DESCRIPTION</b>                               |
| <b>TRANSISTORS</b>          |                 |  |
| Q59, Q510, Q517, Q519       | 31-01015-00     | 2SA1015 GR                                       |
| Q518, Q520                  | 31-01815-00     | 2SC1815 GR                                       |
| <b>DIODES</b>               |                 |  |
| D513                        | 33-24004-02     | 1N4004   |
|                             | 33-24004-00     | 1N4004   |
| D56                         | ⚠ 33-30142-00   | DB104  |
| D51, D55                    | ⚠ 33-30822-00   | 8A/200V  |
| D531, D532                  | 33-60116-00     | TIC116D/BT151-500R                               |
| <b>CAPACITORS</b>           |                 |  |
| C54                         | ⚠ 25-47422-00   | MKP62, 275V, 0.47uF 10%<br>MPX 275VAC 0.47uF 10% |
| C53                         | ⚠ 05-47242-00   | 4n7p, 400V, ±20%                                 |
|                             | 78-001001-0     | 811810-23  |
| C51, C52                    | 25-10322-00     | 10n/250V 10%                                     |
| C524                        | 06-22251-00     | 2200u/50V 20%                                    |
| C523                        | 06-33251-00     | 3300u/50V 20%                                    |
| C517, C518                  | 06-15351-01     | 15000u/50V 10%, two foods                        |
| C517, C518                  | 06-15351-02     | 15000u/50V 10%, two fods                         |
| <b>RESISTORS</b>            |                 |  |
| R561, R565                  | 07-10101-51     | 100 Ω , ±5%, 1/4W                                |
| R532                        | 07-10221-51     | 220 Ω , ±5%, 1/4W                                |
| R558, R559, R560, R562      | 07-10102-51     | 1K Ω , ±5%, 1/4W                                 |
| R534                        | 07-10222-51     | 2.2K Ω , ±5%, 1/4W                               |
| R566                        | 07-10472-51     | 4.7K Ω , ±5%, 1/4W                               |
| R544, R563, R564            | 07-10223-51     | 22K Ω , ±5%, 1/4W                                |
| R567                        | 07-10334-51     | 330K Ω , ±5%, 1/4W                               |
| R533                        | 07-10105-51     | 1M Ω , ±5%, 1/4W                                 |
| R531                        | 07-40507-03     | 0.05 Ω , 3W, ±5%                                 |
| <b>FUSES</b>                |                 |  |
| F51, F52, F53, F54          | ⚠ 20-12632-00   | T6.3AL250V                                       |
| F55                         | 20-12501-00     | T500mAL/250V                                     |
| F51, F52, F53, F54          | ⚠ 20-20000-00   | HF-004   |
| <b>CONNECTERS</b>           |                 |  |
| CB52, CB54, CB58            | 13-23902-00     | VH 3.96A-2A                                      |
| CB55, CB56, CB59            | ⚠ 13-23903-01   | VH 3.96A-3A(delete the center needle)            |
| CB57                        | ⚠ 13-23903-11   | VH 3.96A-3A(delete the center needle)            |
| CB51                        | 13-23907-10     | VH 3.96A-7A                                      |

|  |                 |   |
|--|-----------------|---|
| CB53—CB47  | 14-32507-10     | SCN 2.5A-7D needles,XHB 2.5A-7Y plug. 26AWG UL2468# white, 230mm length |
| <b>LINKS</b>   |                 |   |
| J52, J57, J513, J517   | 21-06000-00     | L=5   |
| J516, J520   | 21-06000-00     | L=7.5   |
| J51  | 21-06000-00     | L=10  |
| J514   | 21-10101-00     | L=10  |
| J54, J58, J518   | 21-06000-00     | L=12.5  |
| J510   | 21-06000-00     | L=15  |
| J56  | 21-10151-00     | L=15  |
| J515   | 21-06000-00     | L=18  |
| J519   | 21-10201-00     | L=20  |
| J512   | 21-06000-00     | L=25  |
| <b>PCB-3: KEY BOARD</b>  |                 |   |
| <b>CIRCUIT NO.</b>   | <b>PARTS NO</b> | <b>DESCRIPTION</b>  |
| <b>ICS</b>   |                 |   |
| IC71   | 03-02402-00     | 24C01A/24C02(A)/24C04(A)  |
| IC74, IC75   | 03-04094-00     | CD4094/HEF4094  |
| IC73   | 03-04051-22     | AT89C4051-12PU  |
| IC73   | 03-04051-12     | AT89C4051-12PU  |
| IC76   | 03-00810-02     | TCM810MENB  |
| <b>TRANSISTORS</b>   |                 |   |
| Q72, Q73, Q74, Q79, Q710,<br>Q711, Q712, Q713, Q714,<br>Q715, Q716, Q717, Q718 | 31-01815-00     | 2SC1815   |
| <b>DIODES</b>  |                 |   |
| D710, D711, D712, D713,<br>D714, D715  | 33-44148-00     | 1N4148  |
| D718   | 33-44148-00     | 1N4148  |
| D71 ,D72, D73, D74, D76,<br>D77, D716  | 33-50350-00     | φ 3 GREEN LED   |
| D75  | 33-50340-00     | φ 3 AMBER LED   |
| <b>CRYSTAL</b>   |                 |   |
| Y71  | 04-11102-00     | 11.0592MHz, CL=15pF   |
| <b>CAPACITORS</b>  |                 |   |
| C79, C710  | 05-27051-00     | 27p, 50V, ±10%  |
| C724, C725   |                 | N.I.  |
| C77, C714, C715, C716,<br>C717, C718, C719, C720,<br>C721                      | 24-10312-00     | 10nF, 100V, ±20%  |
| C72, C78, C711, C712   | 24-10461-00     | 100nF, 63V, ±20%  |
| C722   |                 | N.I.  |
| C71, C723  | 06-10111-00     | 100uF, 16V, ±20%  |
| <b>RESISTORS</b>   |                 |   |
| R71  | 07-10331-50     | 330 Ω , 1/6W, ±5%   |
| R72  | 07-10471-50     | 470 Ω , 1/6W, ±5%   |
| R701, R703, R725, R759   | 07-10222-50     | 2K2 Ω , 1/6W, ±5%   |
| R726, R727   | 07-10222-51     | 2K2 Ω , 1/4W, ±5%   |
| R748, R749, R750, R751,<br>R752, R754, R760, R766                              | 07-10472-50     | 4K7 Ω , 1/6W, ±5%   |
| R741, R742, R743, R744,<br>R745, R746, R747, R753,<br>R761                     | 07-10472-51     | 4K7 Ω , 1/4W, ±5%   |
| R733   | 07-10512-51     | 5K1 Ω , 1/4W, ±5%   |
| R702, R73, R756, R757,<br>R758, R762, R763, R764                               | 07-10103-50     | 10K Ω , 1/6W, ±5%   |
| R708   | 07-10103-51     | 10K Ω , 1/4W, ±5%   |
| R730   | 07-10153-50     | 15K Ω , 1/6W, ±5%   |
| <b>SWITCHS</b>   |                 |   |
| S71, S72, S73, S74, S75,<br>S76, S77   | 11-04101-00     | IT-1102D-1160   |
| <b>CONNECTERS</b>  |                 |   |

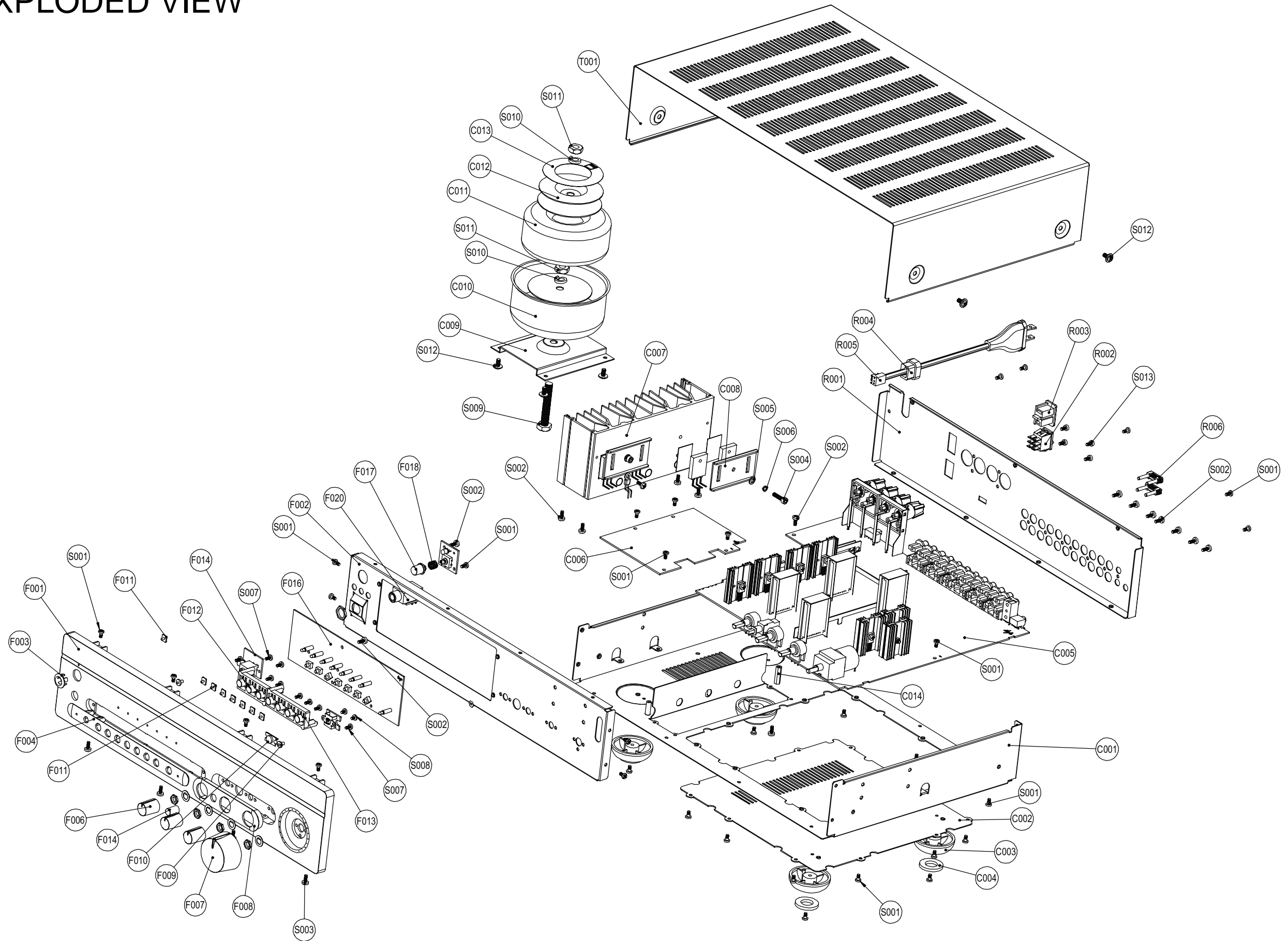


|  |                 |   |
|--|-----------------|---|
| CZ71--CB34   | 14-32509-00     | SCN 2.5A-9D needle,XHB 2.5A-9Y plug. 26AWG UL2468#, white , 400mm length                  |
| CZ72--CB31   | 14-32510-00     | SCN 2.5A-10D needle,XHB 2.5A-10Y plug. 26AWG UL2468#, white , 430mm length                |
| <b>LINKS</b>   |                 |   |
| J71, J72, J73, J74, J75, J79, J710, J716, J733, J735, J745, J746, J747, J749, J753, J794 | 21-06000-00     | L=5   |
| J76, J77, J78, J715, J717, J718, J727, J738, J740, J742, J744, J752, J793                | 21-06000-00     | L=7.5   |
| J713, J720, J729, J734, J737, J743, J750   | 21-06000-00     | L=10  |
| J711, J719, J726, J728, J730, J731, J732, J776, J792                                     | 21-06000-00     | L=12.5  |
| J712, J724, J739   | 21-06000-00     | L=15  |
| J714, J748   | 21-06000-00     | L=18  |
| J721, J722, J723, J725, J736, J741   | 21-06000-00     | L=20  |
| <b>PCB-9: IPOD BOARD</b>   |                 |   |
| <b>CIRCUIT NO.</b>   | <b>PART NO.</b> | <b>DESCRIPTION</b>  |
| <b>DIODES</b>  |                 |   |
| D719   | 33-50350-00     | φ 3 GREEN LED   |
| <b>CAPACITORS</b>  |                 |   |
| C758, C759   | 05-10151-01     | 100p, 50V, ±10%   |
| C760   | 24-10461-00     | 0.1uF, 63V, ±20%  |
| <b>RESISTORS</b>   |                 |   |
| R766   | 07-10100-50     | 10 Ω, 1/6W, ±5%   |
| <b>CONNECTER</b>   |                 |   |
| PHONE71  | 17-02001-02     | SCJ340R0GBS0B00   |
| TP701--front panel   | 14-32501-12     | 1007#, 24AWG, black, 55mm length  |
| CZ75—CB35  | 14-32503-11     | SCN 2.5A-3D needles,XHB 2.5A-3Y plug. UL1691, 24AWG/26AWG, white/red/black, 675mm length. |
| CB74—CZ74  | 14-32504-10     | SCN 2.5A-4D needles. 26AWG UL2468# ,red/white, 70mm length.                               |
| <b>PCB-10: HEADPHONE BOARD</b>   |                 |   |
| <b>CIRCUIT NO.</b>   | <b>PART NO.</b> | <b>DESCRIPTION</b>  |
| <b>RESISTORS</b>   |                 |   |
| R454, R455   | 07-30101-04     | 100 Ω 2W ±5%  |
| <b>CONNECTER</b>   |                 |   |
| CZ45--CB45   | 14-32505-01     | XHB 2.5A-5Y plug,26AWG UL2468# white, 410mm length  |
| CZ45   | 13-22505-00     | XHB2.5A-5A  |
| <b>LINKS</b>   |                 |   |
| J41  | 21-06000-00     | L=5mm   |
| <b>PCB-11: IR BOARD</b>  |                 |   |
| <b>CIRCUIT NO.</b>   | <b>PART NO.</b> | <b>DESCRIPTION</b>  |
| <b>ICS</b>   |                 |   |
| IC72   | 03-00038-40     | HS0038B4  |
| <b>CONNECTER</b>   |                 |   |
| CZ72--CB72   | 14-32503-10     | SCN 2.5A-3D needles; 26AWG UL2468# ,red/white, 60mm length                                |
| <b>OTHERS</b>  |                 |   |
| <b>CIRCUIT NO.</b>   | <b>PART NO.</b> | <b>DESCRIPTION</b>  |
| <b>TRANSFORMER</b>   |                 |   |
| C VERSION  | ⚠ 18-32515-20   | TD-230-0150G  |
| AH VERSION   | ⚠ 18-32515-10   | TD-120-0150G  |
| <b>METAL PARTS</b>   |                 |   |
| Busbar   | 69-065001-0     | T2Y2 T=1mm  |
| Heatsink (SMALL1)  | 70-065001-0     | ALU 6063 BLACK  |

|                   |   |                    |
|-------------------|---|--------------------|
| Heatsink (SMALL2) | 70-065002-0   | ALU 6063 BLACK     |
| Machine Screw     | 61-022510-5   | MB2.5×10           |
| Machine Screw     | 61-022514-5   | MB2.5×14           |
| Nut               | 62-010202-5   | M2.5               |
| RIVET             | 61-382003-5   | GB975-86-2.5×3     |
| <b>CONNECTERS</b> |   |                    |
| 14-32502-23       |  VH 3.96A-3Y(delete center needle) plug. 18AWG UL1672#, red/blue,180mm length. | CB59—AC OUTLET(AH) |
| 14-32502-33       |  VH3.96A-3Y(delete center needle) plug,18AWG UL1672# . red/blue,160mm length.  | CB56—POWER SWITCH  |
| 15-02251-20       |  WB01HS-001  | AC CORD (C)        |
| 15-10121-10       |  WB05HS-001  | AC CORD (AH)       |
| 15-02251-30       |  2GTJ1   | AC CORD (CCC)      |
| 17-07002-10       |  JY0647A   | AC Outlets(AH)     |
| 11-01101-03       |  RF-1003-BB2, 10A 250V, TV-5   | SW52               |

|             |              |              |
|-------------|--------------|--------------|
| NOTES:      | AH           | C            |
| TRANSFORMER | TD-120-0150L | TD-230-0150C |
| AC CORE     | WB05HS-001   | WB01HS-001   |

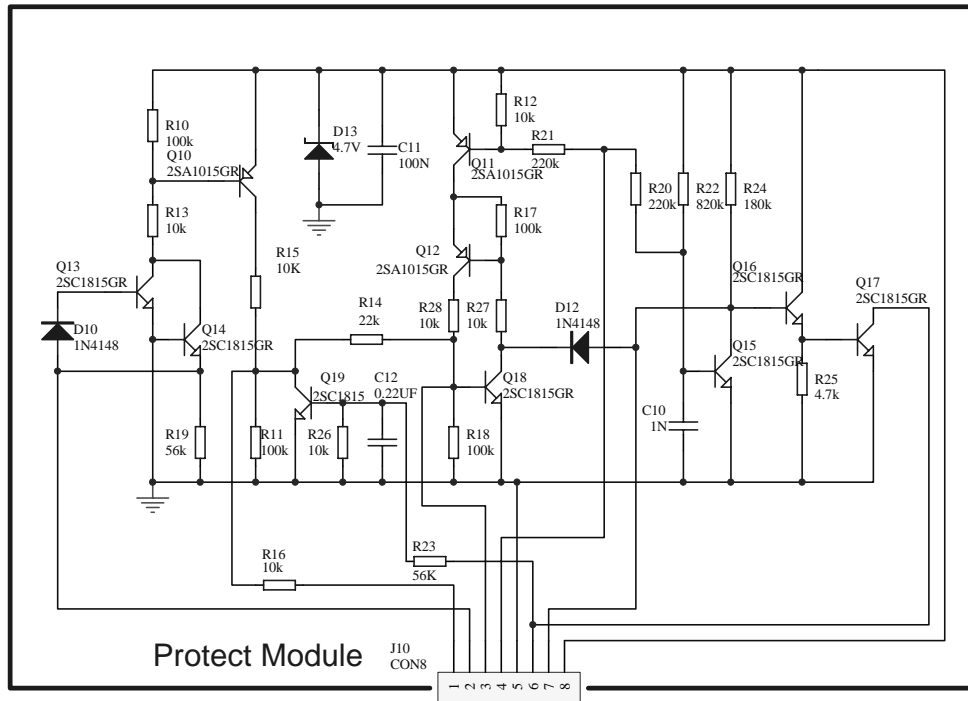
# EXPLODED VIEW



# EXPLODED VIEW PARTS LIST

| REF.NO | PART NO.      | DESCRIPTION          | Qty. | REF.NO | PART NO.      | DESCRIPTION                | Qty. |
|--------|---------------|----------------------|------|--------|---------------|----------------------------|------|
| C001   | 66-065001-0   | Chassis              | 1    | F016   | 01-32503-00   | KEYBOARD ASSEMBLY          | 1    |
| C002   | 66-001004-1   | Base Cover           | 1    | F017   | 74-065001-0   | Power Button               | 1    |
| C003   | 75-010004-0   | Foot                 | 4    | F018   | 92-048001-0   | Spring For Button          | 1    |
| C004   | 78-001002-0   | Foot Pad             | 4    | F019   | 01-32508-00   | Standby Board Assy         | 1    |
| C005   | 01-32501-10   | Main Board Assy(AH)  | 1    | F020   | 01-32504-00   | Phone Board Assy           | 1    |
|        | 01-32501-20   | Main Board Assy(C)   | 1    |        |               |                            |      |
| C006   | 01-32505-10   | Power PCB (AH)       | 1    |        |               |                            |      |
|        | 01-32505-20   | Power PCB (C)        | 1    |        |               |                            |      |
| C007   | 70-065003-0   | Heatsink             | 1    | R001   | 67-065001-0   | Rear Panel (AH)            | 1    |
| C008   | 66-001009-0   | Clamper              | 1    |        | 67-065002-0   | Rear Panel (C)             | 1    |
| C009   | 66-001010-0   | Transformer Bracket  | 1    | R002   | △ 11-01101-03 | Rocker Switch              | 1    |
| C010   | 67-003006-0   | Shielding Box        | 1    | R003   | △ 17-07002-10 | AC Outlet (AH)             | 1    |
| C011   | △ 18-32515-10 | Transformer(AH)      | 1    | R004   | 84-001002-0   | Relief Bushing             | 1    |
|        | △ 18-32515-20 | Transformer(C)       | 1    | R005   | △ 15-02251-20 | AC CORD (C)                | 1    |
| C012   | 66-001008-0   | Metal Disc           | 1    |        | △ 15-10121-10 | AC CORD (AH)               | 1    |
| C013   | 94-001004-2   | Transformer Label    | 1    | R006   | 30-63200-00   | Shorting Plug              | 2    |
| C014   | 75-065001-0   | PCB Spacer           | 1    |        |               |                            |      |
|        |               |                      |      | T001   | 67-065004-0   | Top cover                  | 1    |
| F001   | 77-065002-0   | Fascia               | 1    |        |               |                            |      |
| F002   | 66-065002-0   | Subfascia            | 1    |        |               |                            |      |
| F003   | 77-001007-1   | Power Button Bezel   | 1    |        |               |                            |      |
| F004   | 77-065001-0   | Input Button Lozenge | 1    | S001   | 61-023106-0   | Self Taping Screw STB3X6   | 38   |
| F005   | 74-001001-1   | Tone Button          | 1    | S002   | 61-023208-0   | Self Taping Screw BTB3X8   | 21   |
| F006   | 73-014001-1   | Tone Knob            | 3    | S003   | 61-023108-0   | Self Taping Screw STB3X8   | 4    |
| F007   | 73-014002-1   | Volume Knob          | 1    | S004   | 61-224516-0   | Machine screw HM4×16       | 2    |
| F008   | 77-001001-1   | Tone Control Lozenge | 1    | S005   | 63-010410-0   | Plain Washer ϕ 4           | 2    |
| F009   | 76-003001-0   | LED Lens             | 2    | S006   | 63-020411-0   | Spring Washer ϕ 4          | 2    |
| F010   | 76-001001-0   | IR Lens              | 1    | S007   | 61-022206-6   | Self Taping Screw BTB2.6X6 | 13   |
| F011   | 76-001002-0   | LED Lens             | 8    | S008   | 61-022204-6   | Self Taping Screw BTB2.6×4 | 2    |
| F012   | 74-047001-0   | Trio Buttons         | 1    | S009   | 64-108050-0   | Bolt M8×50                 | 1    |
| F013   | 74-001008-0   | Quad Buttons         | 1    | S010   | 63-020820-0   | Spring Washer ϕ 8          | 2    |
| F014   | 01-32509-00   | IPOD BOARD PCB       | 1    | S011   | 62-010802-0   | Nut M8                     | 2    |
| F015   | 01-32507-00   | IR BOARD ASSY        | 1    | S012   | 61-084108-0   | Self Taping Screw STPW4×8  | 2    |
|        |               |                      |      | S013   | 61-023206-0   | Self Taping Screw BTB3X6   | 4    |

# PROTECT IC CHANGE



This Protect Module replaces Protection IC 44

**Remove part below:**

R442 Remove 56K Ohm resistor

**Replace and change orientation the part below:**

C421 From 4.7uF/50V to 0.47uF/50V.

Reverse mount the new C421.

**Change orientation for the part below:**

D513 Reverse mount the 1N4004