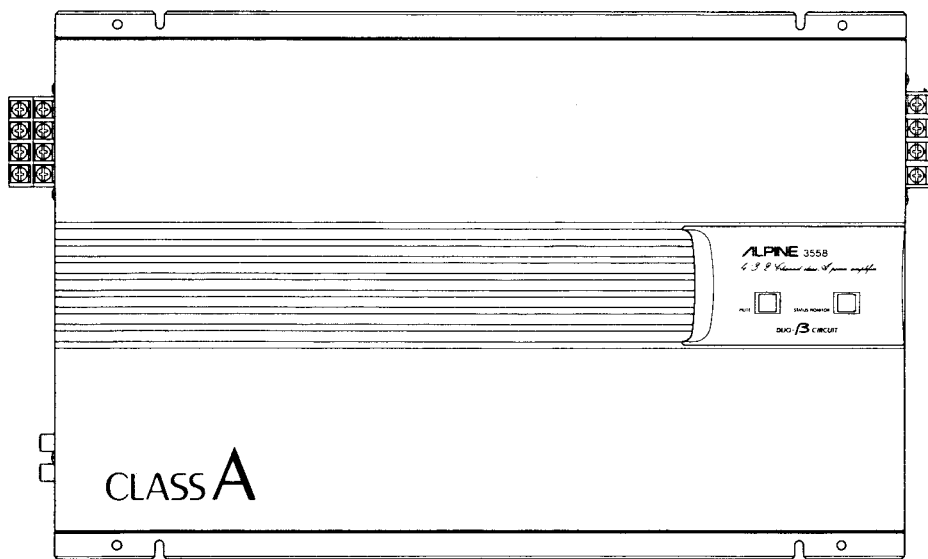


ALPINE SERVICE MANUAL

4/3/2 Channel Class A Power Amplifier



3558

Contents

Specifications	3
Features	4 to 5
Switches and Terminals	6
Connections	7 to 8
Switch Settings	9 to 10
Characteristic Curves	11
Disassembly Instructions	13 to 14
Adjustment Procedures	15
Adjustment Locations	16
Block Diagram	17 to 18
Parts Layout on P.C.Boards and Wiring Diagram (1/2)	19 to 22
Parts Layout on P.C.Boards and Wiring Diagram (2/2)	23 to 26
Schematic Diagram (1/2)	27 to 30
Schematic Diagram (2/2)	31 to 34
Electrical Parts List	35 to 43
Cabinet Assembly Parts List	44
Exploded View (Cabinet)	45 to 46
Packing Assembly Parts List	47
Packing Method View	47
Semi-Conductor Lead Identifications	48

Additional Schematic Diagram Inserted.

Specifications

<4ohm - 4channel stereo mode>

Power Output (20Hz - 20kHz, 0.08% T.H.D.)	40W / ch
Frequency Response (- 1dB, at 1W / ch output)	20Hz - 70kHz
Channel Separation (1kHz, at 40W / ch output)	50dB
Current Drain (No signal input)	7A
Current Drain (at 40W / ch output)	40A
Input Sensitivity (at 40W / ch output)	Fixation : 500mV \pm 20% Variable : 100mV - 2V \pm 30%
Input Impedance	Fixation : 47kohm \pm 20% Variable : 47kohm \pm 20%
S / N Ratio (IHF - A, at 40W / ch output)	100dB
Residual Noise	Fixation : 3mV

<2ohm - 4channel stereo mode>

Power Output (20Hz - 20kHz, 0.15% T.H.D.)	60W / ch
Current Drain (at 80W / ch output)	75A

<4ohm BTL monoral mode>

Power Output (20Hz - 20kHz, 0.15% T.H.D.)	DC14.4V : 140W DC12.5V : 120W
Current Drain (at 160W output)	74A

<General>

Fuse Requirement	20A \times 2 (Battery)
Power Source	DC14.4V
Semiconductors	8 IC's, 96 Transistors, 16 FET's, 59 Diodes, 30 Zener Diodes
Dimension (W \times H \times D)	400 \times 73 \times 232mm
Weight	6kg

Note : Due to continuing product improvement, specifications and designs are subject to change without notice.

FEATURES

- **CLASS A**

Small Signal Class-A operation offers the optimum in sonic transparency by totally eliminating crossover (notch) distortion.

- **4/3/2-CHANNEL OPERATION**

The 3558 can be used as:

- a: 4-Channel amplifier, producing 40W per channel into 4 ohms or 70W per channel into 2 ohms.
- b: 3-Channel amplifier, producing 40W (4 ohms) or 70W (2 ohms) into channels 1 & 2, and 140W (4 ohms) into the third channel.
- c: 2-Channel amplifier, producing 140W per channel into 4 ohms.

- **DUAL INDEPENDENT, OPTICALLY ISOLATED, PWM DC-TO-DC SWITCHING MODE POWER SUPPLIES**

Two independent power supplies prevent any possible intermodulation and crosstalk between the two amplification sections. Each power supply is optically isolated from its audio section, completely eliminating susceptibility to installation-related noises and ground loops. These accurately regulated and high power DC-to-DC converters provide excellent power output throughout the audio band width (20 Hz to 20 kHz). They also possess soft clipping characteristics for superb transient response and musicality.

- **STATUS MONITOR**

This indicator illuminates in green when the amplifier is on and operational. This light will turn orange if any internal protection circuitry is activated.

- **MUTING INDICATOR**

This indicator signals the activation of the speaker output relays. The relays are open when the amplifier is turned on and therefore the indicator will be orange. As soon as the muting function is accomplished and all circuitry is stabilized, the relays are closed and the indicator turns to green.

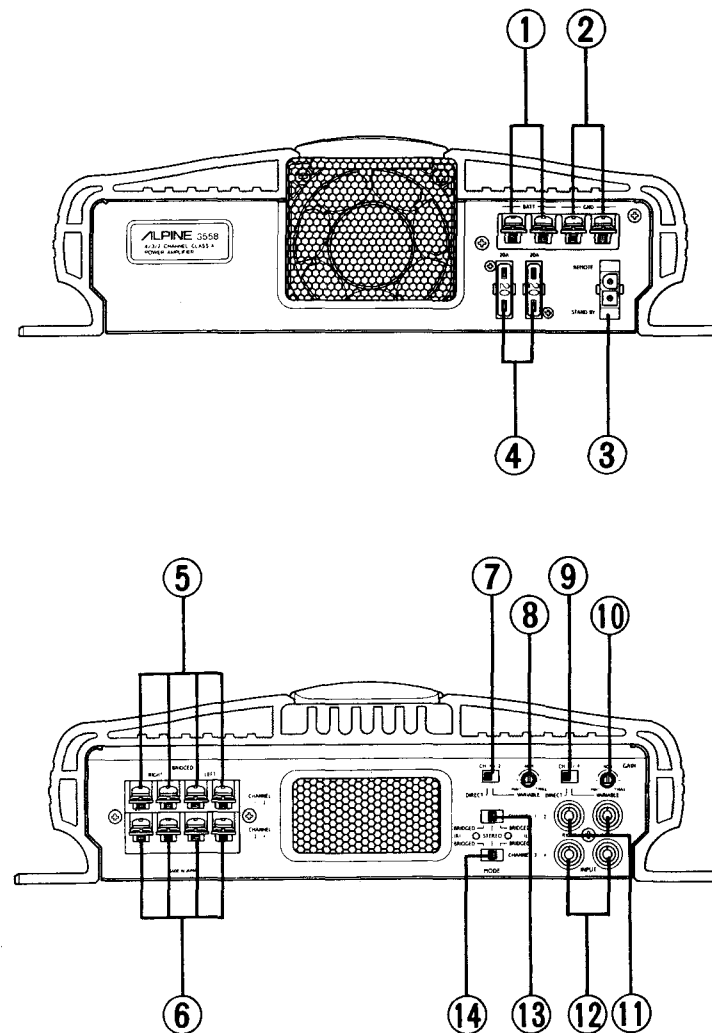
- **DUO- β FEEDBACK CIRCUITRY**

Alpine's proprietary dual feedback circuitry stabilizes the amplifier, removes DC offset, and offers excellent total harmonic distortion (T.H.D.) characteristics. It also provides very low T.I.M., excellent transient response, stability, and musicality quality.

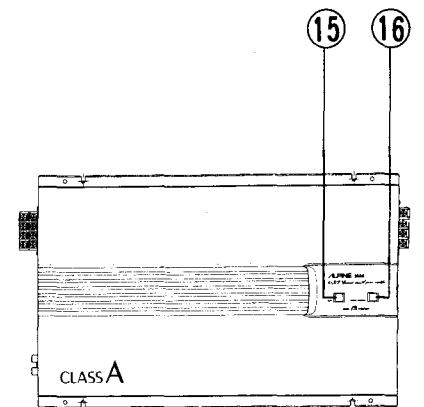
FEATURES

- **NO CURRENT LIMITING**
Absence of current limiters in the audio section ensures low T.I.M., excellent transient response, and superb sonic quality.
- **S.T.A.R. CIRCUITRY**
The Alpine-developed Signal Transit for Accurate Response circuit topology improves sonic properties by reducing interaction between different sections of the circuitry.
- **MODE SELECTOR SWITCH**
Two independent switches, one for channel 1 and 2, the other for channels 3 and 4, configure the amplifier for stereo or bridged mono operation. When in bridged mode, the switch also selects either the right or the left channel input connector.
- **DIRECT INPUT SWITCH**
When in DIRECT mode, this switch bypasses the input section circuitry such as the variable gain control. This allows an even cleaner, sonically pure direct connection, for the purist audiophile. In VARIABLE mode, the variable gain adjustment system not also allows independent level setting for each pair of channels, but also offers excellent compatibility with a variety of signal sources.
- **FULLY DISCRETE, COMPLEMENTARY OUTPUT CIRCUITRY**
- **DUAL MODE, FORCED AIR TUNNEL COOLING FAN SYSTEM**
- **INDEPENDENT, CONTINUOUSLY ADJUSTABLE GAIN CONTROLS FOR CH1/2, CH3/4**
- **GOLD-PLATED RCA INPUT CONNECTORS**
- **GOLD-PLATED, SCREW-DOWN POWER AND SPEAKER TERMINALS**
- **HIGH PERFORMANCE, LOW NOISE, AUDIOPHILE QUALITY ACTIVE AND PASSIVE COMPONENTS**
- **EXTRA HEAVY DUTY CONSTRUCTION**

SWITCHES AND TERMINALS

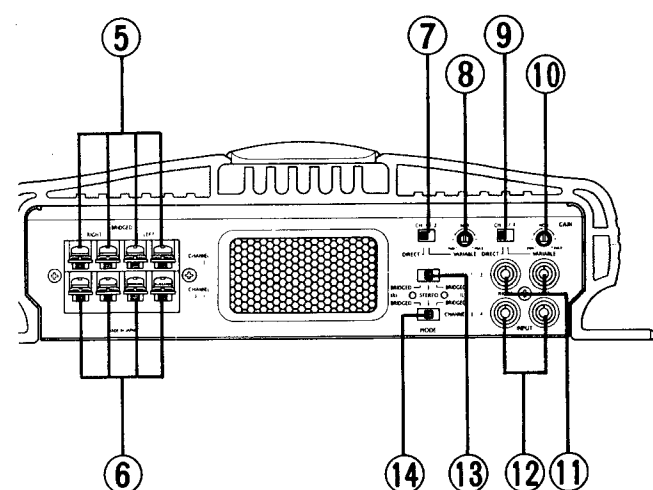
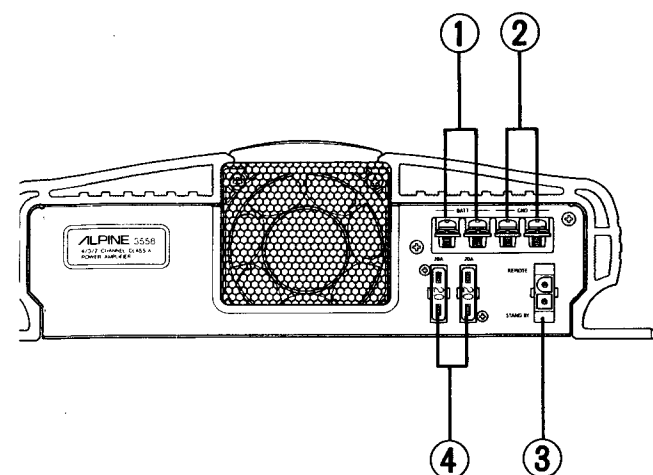


SWITCHES AND TERMINALS

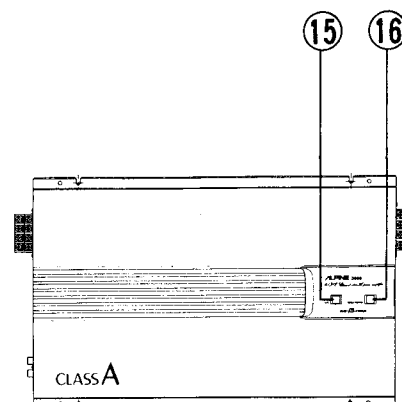


- ① Power Terminals
- ② Ground Lead Terminal
- ③ Remote On Connector/STAND BY Connector
- ④ Fuse Blocks
- ⑤ Speaker Output Terminals (Channels 1/2)
- ⑥ Speaker Output Terminals (Channels 3/4)
- ⑦ Input Gain Selector Switch (Channels 1/2)
- ⑧ Input Gain Adjustment Control (Channels 1/2)
- ⑨ Input Gain Selector Switch (Channels 3/4)
- ⑩ Input Gain Adjustment Control (Channels 3/4)
- ⑪ Input RCA Jacks (Channels 1/2)
- ⑫ Input RCA Jacks (Channels 3/4)
- ⑬ Mode Selector Switch (Channels 1/2)
- ⑭ Mode Selector Switch (Channels 3/4)
- ⑮ Mute Indicator
- ⑯ Status Monitor

SWITCHES AND TERMINALS

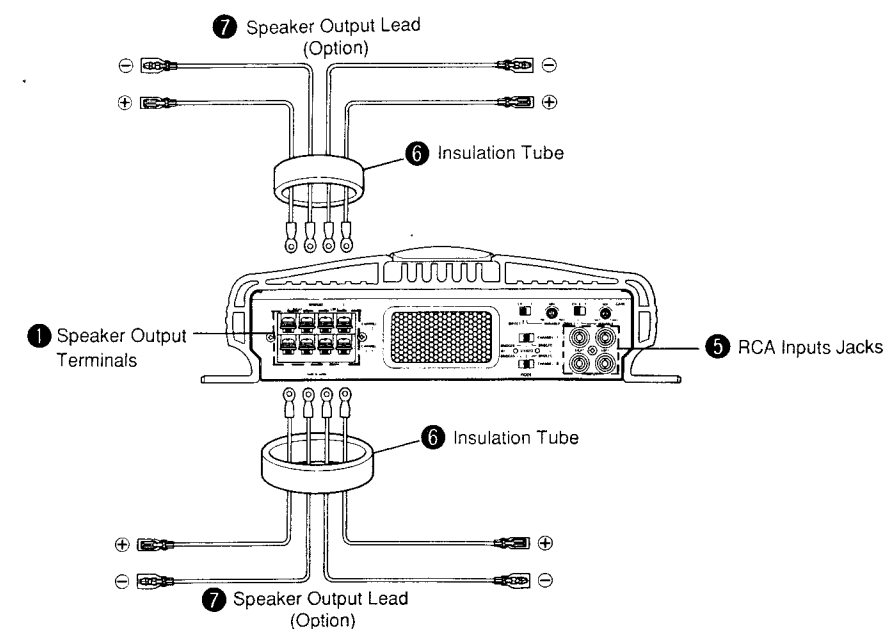
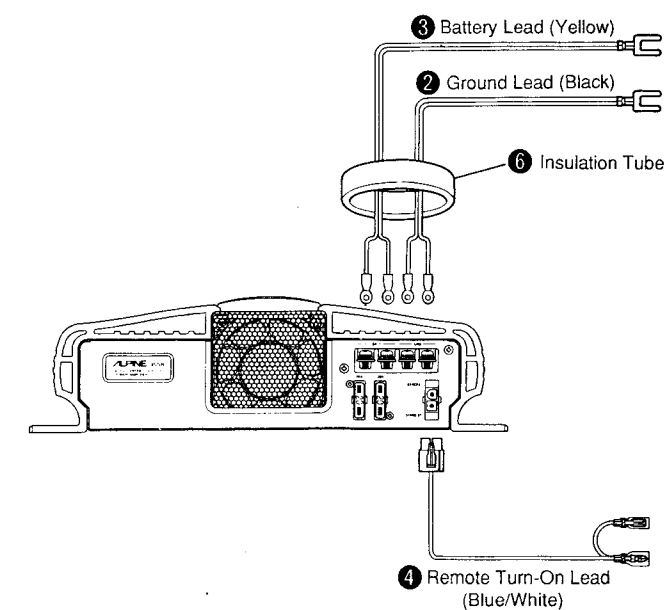


SWITCHES AND TERMINALS



- ① Power Terminals
- ② Ground Lead Terminal
- ③ Remote On Connector/STAND BY Connector
- ④ Fuse Blocks
- ⑤ Speaker Output Terminals (Channels 1/2)
- ⑥ Speaker Output Terminals (Channels 3/4)
- ⑦ Input Gain Selector Switch (Channels 1/2)
- ⑧ Input Gain Adjustment Control (Channels 1/2)
- ⑨ Input Gain Selector Switch (Channels 3/4)
- ⑩ Input Gain Adjustment Control (Channels 3/4)
- ⑪ Input RCA Jacks (Channels 1/2)
- ⑫ Input RCA Jacks (Channels 3/4)
- ⑬ Mode Selector Switch (Channels 1/2)
- ⑭ Mode Selector Switch (Channels 3/4)
- ⑮ Mute Indicator
- ⑯ Status Monitor

CONNECTIONS



CONNECTIONS

Before making connections, be sure to turn the power off to all audio components. Insulation tubes for the speaker leads and the power supply leads are supplied with the 3558, route the speaker leads and the power supply leads separately through these tubes.

1 Speaker Output Terminals

The 3558 has two sets of speaker outputs for the Front and Rear speakers. Be sure to observe correct speaker output connections and phasing. In the stereo mode connect the right speaker output to the right speaker and the left to left. Connect the positive output to the positive speaker terminal and the negative to negative. In the bridged mode, connect the left positive to the positive terminal on the speaker and the right positive to the negative terminal of the speaker. Do not use the speaker (-) terminal commonly for the right and left speakers or connect it to the vehicle's chassis ground.

NOTE:

Do not connect speaker leads together or to the chassis ground.

2 Ground Lead (BLACK)

Connect this lead securely to a clean, bare metal spot on the vehicle's chassis. Verify this point to be a true ground by checking for continuity between that point and the negative (-) terminal of the vehicle's battery.

3 Battery Lead (YELLOW)

Connect this lead directly to the positive (+) terminal of the vehicle's battery. *Do not connect this lead to the vehicle's electrical system.*

4 Remote Turn-On Lead (BLUE/WHITE)

Connect this lead to the remote turn-on lead of your head unit.

5 Input RCA Jacks

Connect these jacks to the line out leads on your head unit using optional RCA extension patch cords. Be sure to observe correct channel connections; Left to Left, Right to Right, Front to Front, and Rear to Rear.

6 Insulation Tube

7 Speaker Output Lead (Option)

8 Head Unit with Pre-Fader

9 Extension Cable (Option)

10 Front Speaker

11 Rear Speaker

12 Mode Selector Switch

13 Subwoofer Speaker

14 Head Unit with Pre-Out

15 Left Speaker

16 Right Speaker

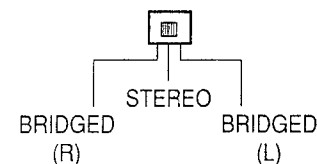
17 Active Divide Network

18 Input Gain Selector Switch

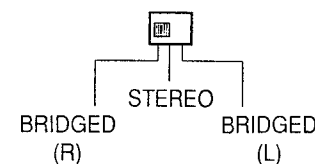
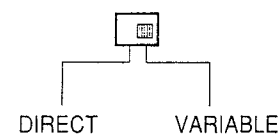
SWITCH SETTINGS

Mode Selector Switches ⑬ and ⑭:

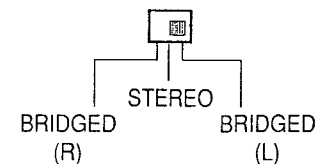
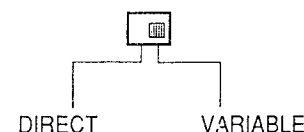
- a) Set to the "STEREO" position (center) when the amplifier is used as a 4-Channel stereo system.



- b) Set to the "VARIABLE" and "BRIDGED(R)" positions when the amplifier is used for right channel of bridged system.



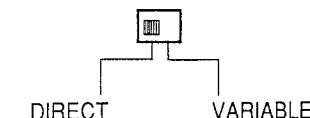
- c) Set to the "VARIABLE" and "BRIDGED(L)" positions when the amplifier is used for left channel of bridged system.



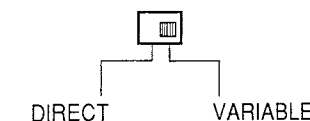
SWITCH SETTINGS

DIRECT/VARIABLE Input Selector Switches ⑦ and ⑨:

- a) Set to the "DIRECT" position when connecting the 3558 to other Alpine products. This position sets the input sensitivity to 500 mV which corresponds to the pre-amp output of Alpine products when amplifier is used as a stereo system. Set to the "VARIABLE" position if the amplifier is used for bridged system.



- b) Set to the "VARIABLE" position when connecting the 3558 to a non-Alpine product with an output voltage other than 500 mV. This position should also be used when adjustment of input sensitivity is required to obtain certain imaging requirements or to compensate for different speaker efficiencies.



Input Gain Adjustment Controls

After setting your head unit's volume 1/4 of a turn down from the maximum output level, rotate the Input Gain Adjustment Controls ③ and ⑩ with a flat blade screwdriver and adjust the input gain to the point where there is maximum volume with no distortion.

Status Monitor

This indicator lights green when the power is on. The 3558 has built-in protection circuitry. If, for some reason, this protection circuit is activated the indicator turns orange. If this happens, turn the system off, find the cause of the problem and remedy the situation. This includes checking all your connections and wiring. If the indicator remains orange when the system is turned on, consult your authorized Alpine dealer.

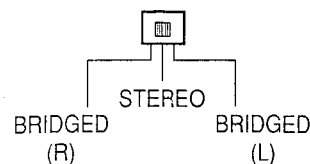
NOTE:

The indicator will illuminate in orange for a few seconds when the power is turned on as the protection circuit will be activated. This is normal.

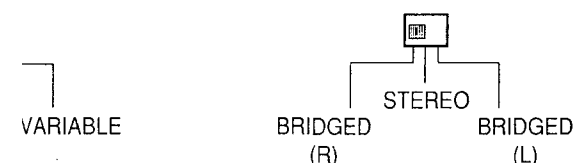
SWITCH SETTINGS

ies ⑬ and ⑭:

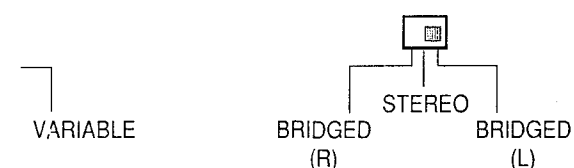
"STEREO" position (center) when the amplifier is used as a stereo system.



"STEREO" and "BRIDGED(R)" positions when the amplifier is used as a stereo system.



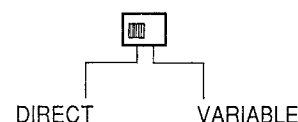
"STEREO" and "BRIDGED(L)" positions when the amplifier is used as a stereo system.



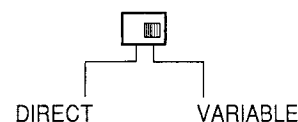
SWITCH SETTINGS

DIRECT/VARIABLE Input Selector Switches ⑦ and ⑨:

- a) Set to the "DIRECT" position when connecting the 3558 to other Alpine products. This position sets the input sensitivity to 500 mV which corresponds to the pre-amp output of Alpine products when the amplifier is used as a stereo system.
Set to the "VARIABLE" position if the amplifier is used for bridged system.



- b) Set to the "VARIABLE" position when connecting the 3558 to a non-Alpine product with an output voltage other than 500 mV. This position should also be used when adjustment of input sensitivity is required to obtain certain imaging requirements or to compensate for different speaker efficiencies.



Input Gain Adjustment Controls

After setting your head unit's volume 1/4 of a turn down from the maximum output level, rotate the Input Gain Adjustment Controls ⑧ and ⑩ with a #0 flat blade screwdriver and adjust the input gain to the point where there is maximum volume with no distortion.

Status Monitor

This indicator lights green when the power is on. The 3558 has built-in protection circuitry. If, for some reason, this protection circuit is activated, the indicator turns orange. If this happens, turn the system off, find the cause of the problem and remedy the situation. This includes checking all your connections and wiring. If the indicator remains orange when the system is turned on, consult your authorized Alpine dealer.

NOTE:

The indicator will illuminate in orange for a few seconds when the power is turned on as the protection circuit will be activated. This is normal.

SWITCH SETTINGS

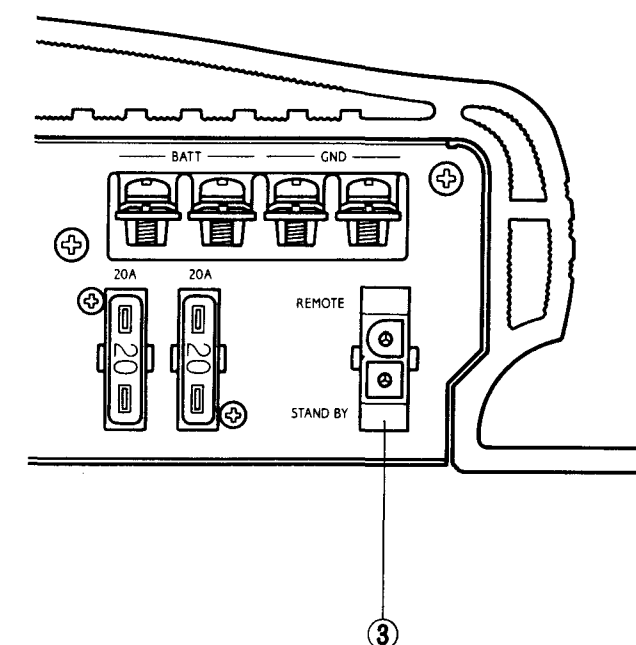
Mute Indicator

The Mute Indicator ⑮ will illuminate in orange for 10 seconds just after the power of the head unit connected to this amplifier is turned on, or the Status Monitor ⑯ (protection circuit indicator) is turned in orange for some reasons or the cause of abnormality is released. In other normal conditions, the mute indicator will illuminate in green.

The amplifier is in standby condition when the mute indicator illuminate in orange and no sound is available for that period.

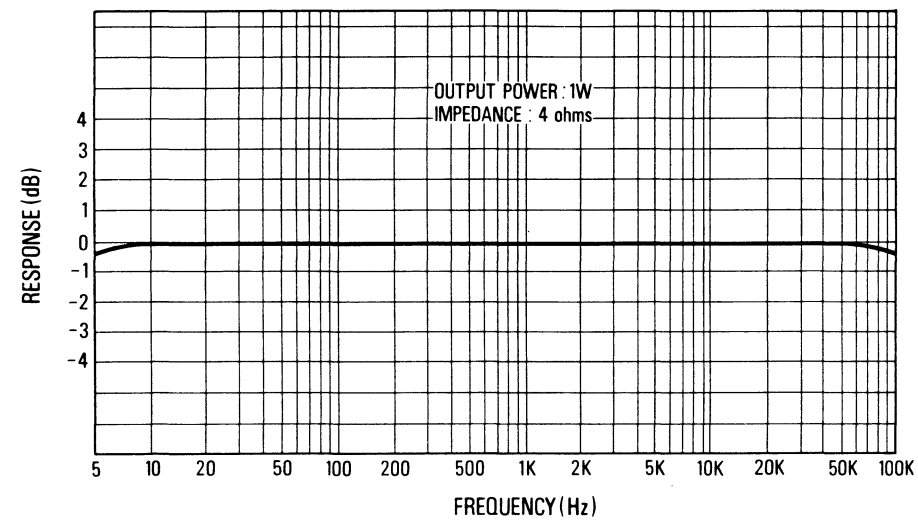
STAND BY Connector ③

When the STANDBY Connector is used with an Alpine's head unit with standby display function, the connector allowing the head unit to display the amplifier is in standby condition when the amplifier is in mute mode. When the connector is used with the head unit with standby display function, use the REMOTE/STANDBY connection cable supplied with the head unit.

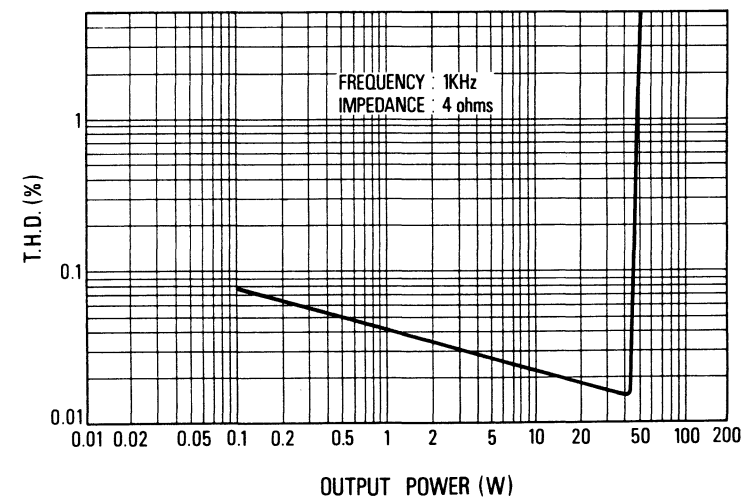


CHARACTERISTIC CURVES

FREQUENCY RESPONSE CURVE



POWER VS. DISTORTION CURVE



Disassembly Instructions

1. Removal of Chassis Side (R)

- (1) After removal of the Bottom Cover, remove four screws marked "○" as shown in Figure 1.
- (2) Disconnect the connector from Fuse P.C.Board. Chassis Side (R) with Fuse and Power P.C.Boards will be removed.

2. Removal of Fuse P.C.Board

- (1) After removal of the Chassis Side (R), remove two screws marked "x" as shown in Figure 2.
- (2) Remove six Hooks (A) as shown in Figure 2.

3. Removal of Chassis Side (L)

- (1) After removal of the Bottom Cover, remove two screws marked "△" as shown in Figure 3.
- (2) Disconnect all connectors from RCA, Speaker and Switch P.C.Boards. Chassis Side (L) with RCA, Speaker and Switch P.C.Boards will be removed.

4. Removal of Common P.C.Board

- (1) After removal of Chassis Side (R), remove four screws marked "□" as shown in Figure 1.
- (2) Disconnect all connectors from Common P.C.Board.

5. Removal of Fan Motor

- (1) After removal of Common P.C.Board, remove three screws marked "●" as shown in Figure 4.
- Fan Motor with Fan Bracket will be removed.

6. Removal of Main · Front P.C.Board

- (1) After removal of Fan Motor and Chassis Side (L), remove three screws marked "▲" as shown in Figure 4.
- (2) Disconnect all connectors from Main · Front P.C.Board. Main · Front P.C.Board with Pre (1) and Pre (2) P.C.Boards will be removed.

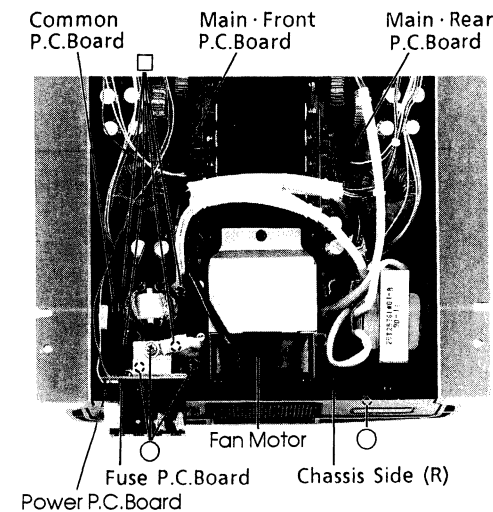


Figure 1

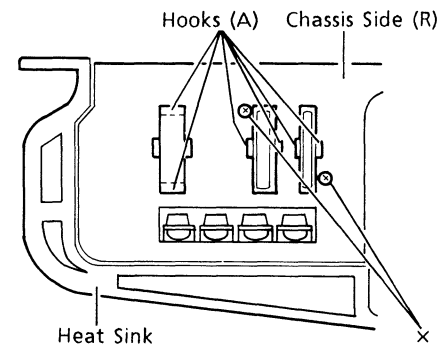


Figure 2

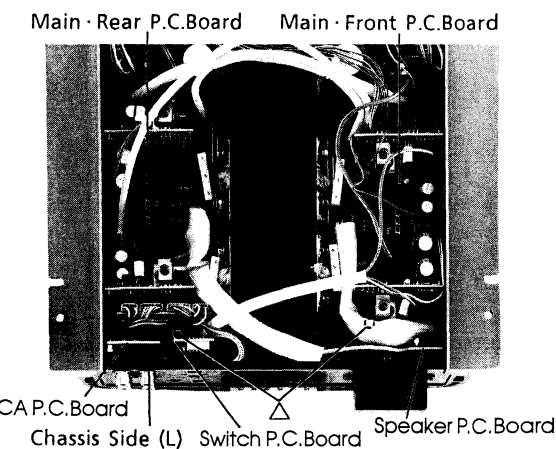


Figure 3

7. Removal of Pre (1) P.C.Board

- (1) After removal of Main · Front P.C.Board, remove solder (B) as shown in Figure 5.
- (2) Disconnect the connector between Pre (1) P.C.Board and Main · Front P.C.Board.

8. Removal of Pre (2) P.C.Board

- (1) After removal of Main · Front P.C.Board, remove solder (C) as shown in Figure 5.
- (2) Disconnect the connector between Pre (2) P.C.Board and Main · Front P.C.Board.

9. Removal of Main · Rear P.C.Board

- (1) After removal of Fan Motor and Chassis Side (L), remove three screws marked "■" as shown in Figure 4.
- (2) Disconnect all connectors from Main · Rear P.C.Board. Main · Rear P.C.Board with Audio, Pre (3) and Pre (4) P.C.Boards will be removed.

10. Removal of Audio P.C.Board

- (1) After removal of Main · Rear P.C.Board, remove solder (D) as shown in Figure 6.
- (2) Disconnect the connector between Audio P.C.Board and Main · Rear P.C.Board.

11. Removal of Pre (3) P.C.Board

- (1) After removal of Main · Rear P.C.Board, remove solder (E) as shown in Figure 6.
- (2) Disconnect the connector between Pre (3) P.C.Board and Main · Rear P.C.Board.

12. Removal of Pre (4) P.C.Board

- (1) After removal of Main · Rear P.C.Board, remove solder (F) as shown in Figure 6.
- (2) Disconnect the connector between Pre (4) P.C.Board and Main · Rear P.C.Board.

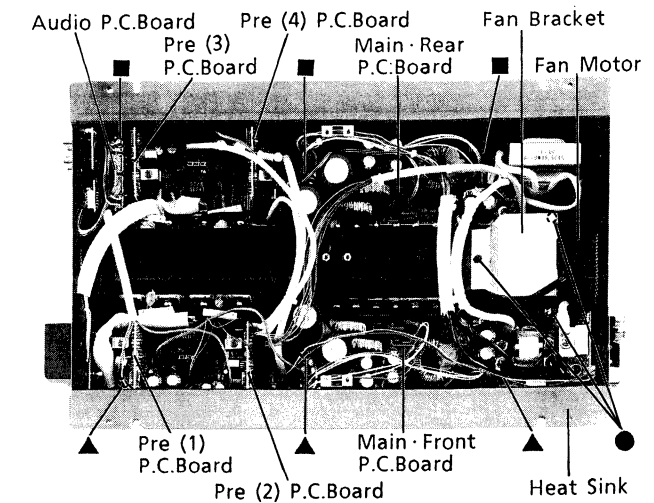


Figure 4

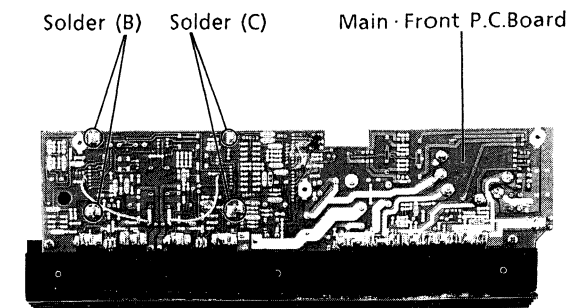


Figure 5

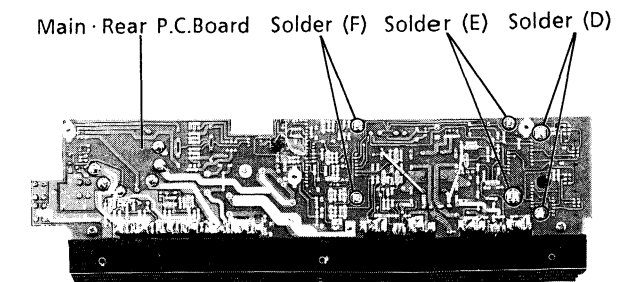


Figure 6

Adjustment Procedures

1. Power Supply Voltage Adjustment

(1) Connections

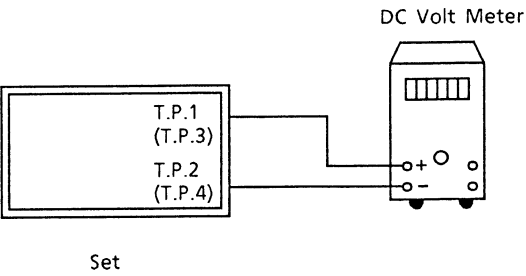


Figure 7

(2) Adjustment Procedures

- ① Front Side : Adjust VR701 so that voltage between T.P.1 and T.P.2 reaches $45V \pm 0.5V$.
- ② Rear Side : Adjust VR801 so that voltage between T.P.3 and T.P.4 reaches $45V \pm 0.5V$.

2. Idling Adjustment

(1) Connections

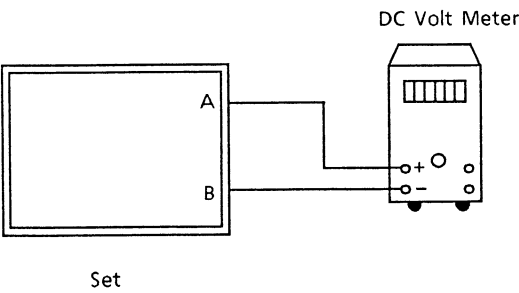


Figure 8

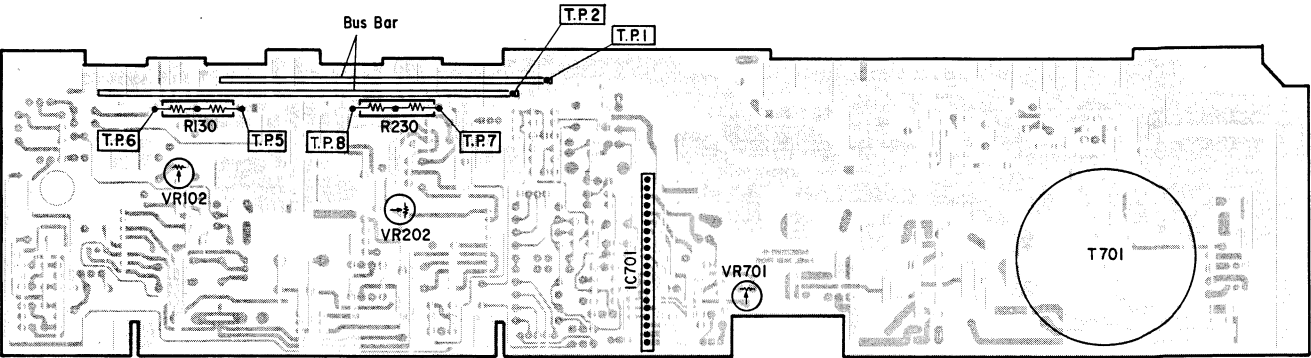
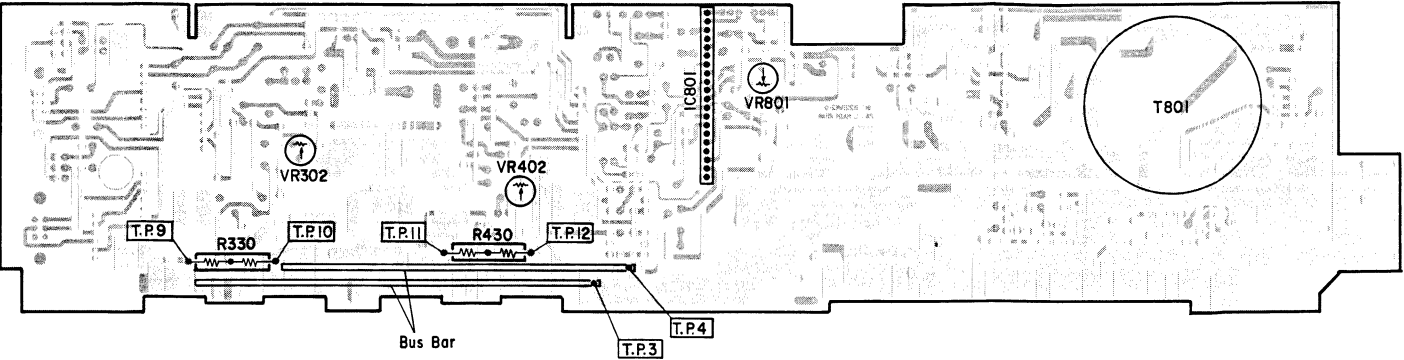
	A	B
Step 1	T.P.5	T.P.6
Step 2	T.P.7	T.P.8
Step 3	T.P.9	T.P.10
Step 4	T.P.11	T.P.12

(2) Adjustment Procedures

- ① Front·Lch Side : Adjust VR102 so that voltage between T.P.5 and T.P.6 reaches $25mV \pm 1mV$.
- ② Front·Rch Side : Adjust VR202 so that voltage between T.P.7 and T.P.8 reaches $25mV \pm 1mV$.
- ③ Rear·Lch Side : Adjust VR302 so that voltage between T.P.9 and T.P.10 reaches $25mV \pm 1mV$.
- ④ Rear·Rch Side : Adjust VR402 so that voltage between T.P.11 and T.P.12 reaches $25mV \pm 1mV$.

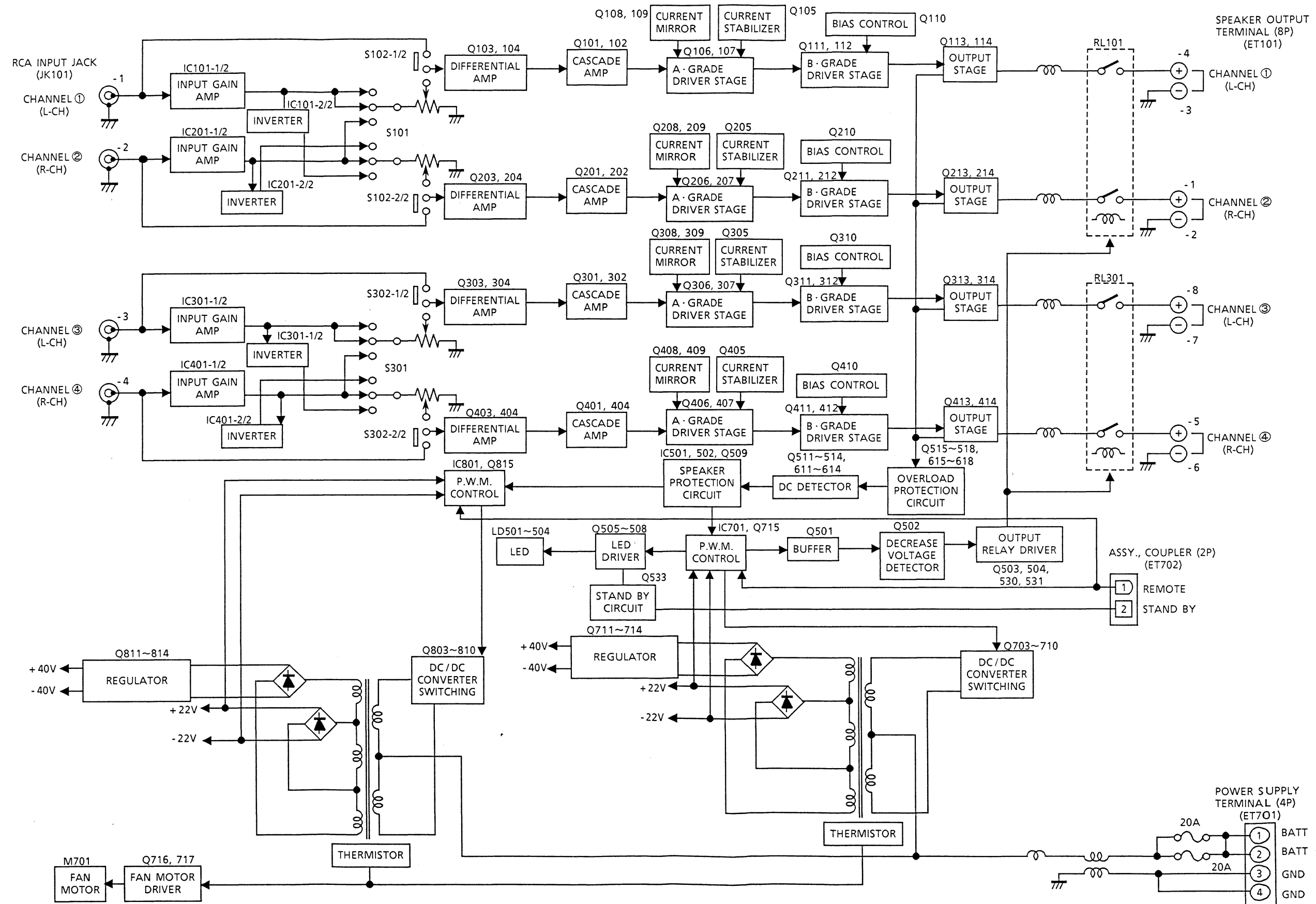
Adjustment Locations

Main·Rear P.C. Board (Component Side)



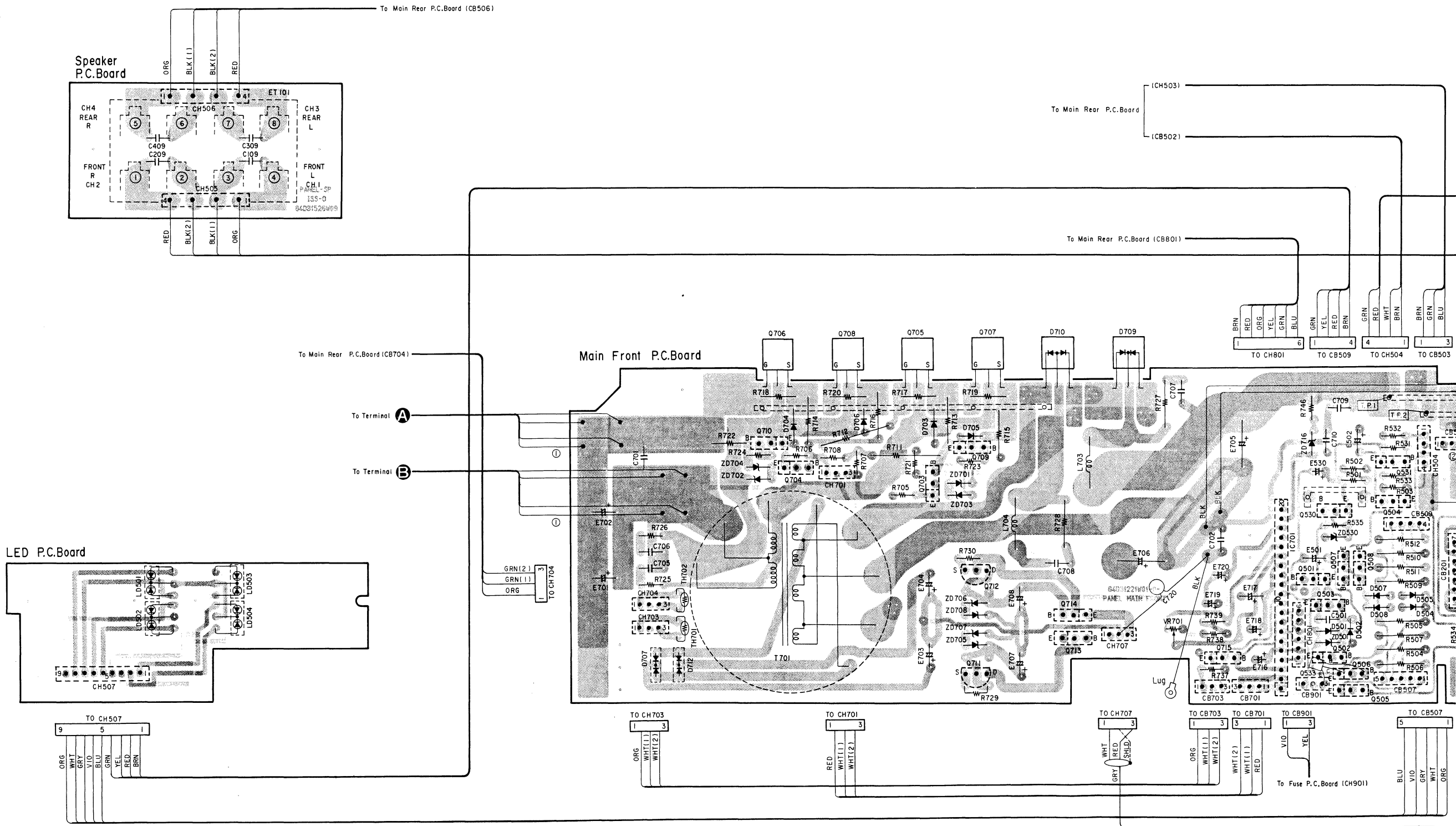
Main·Front P.C. Board (Component Side)

Block Diagram



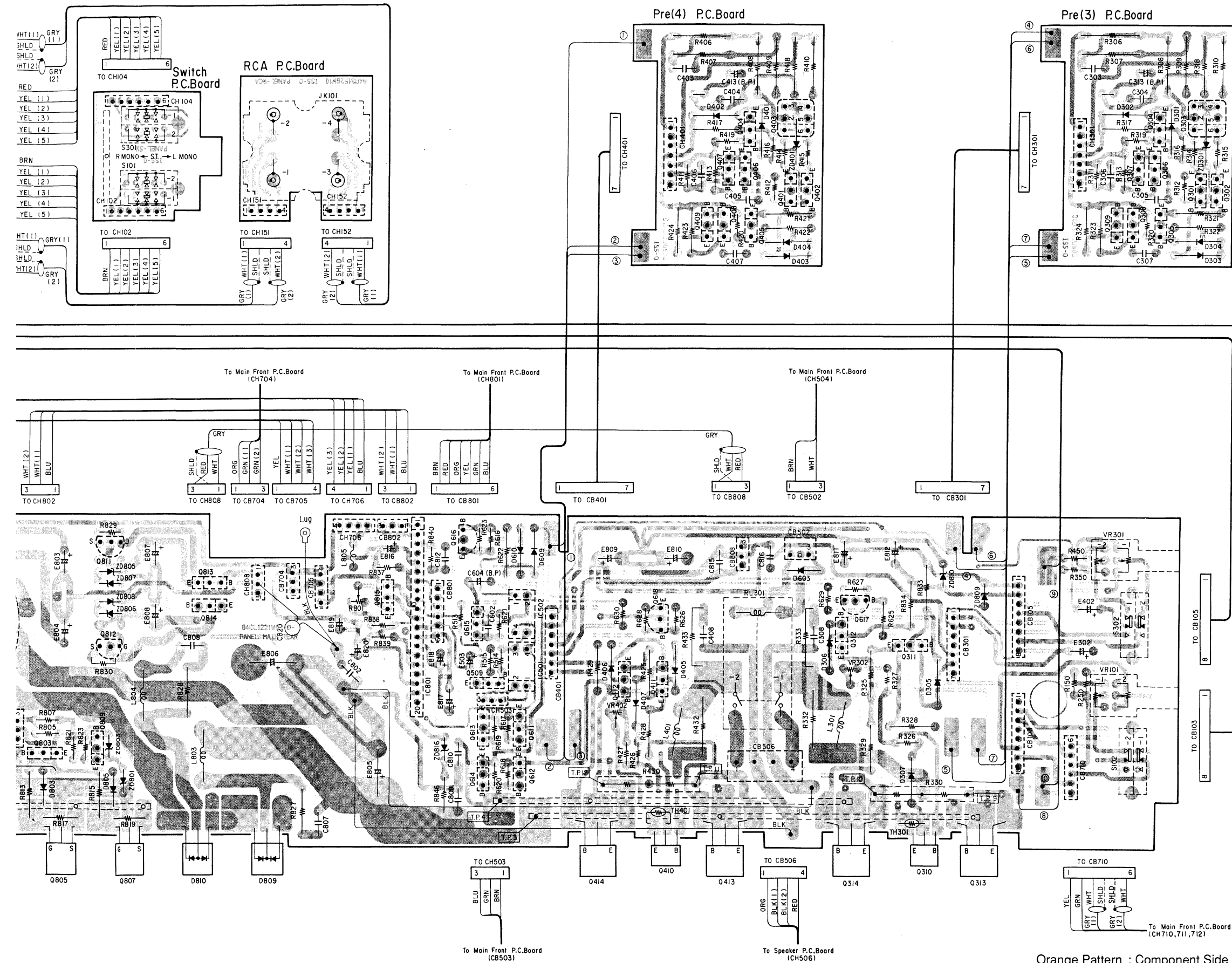
Parts Layout on P.C.Boards and Wiring Diagram (1/2)

All P.C.Boards viewed from soldered side.



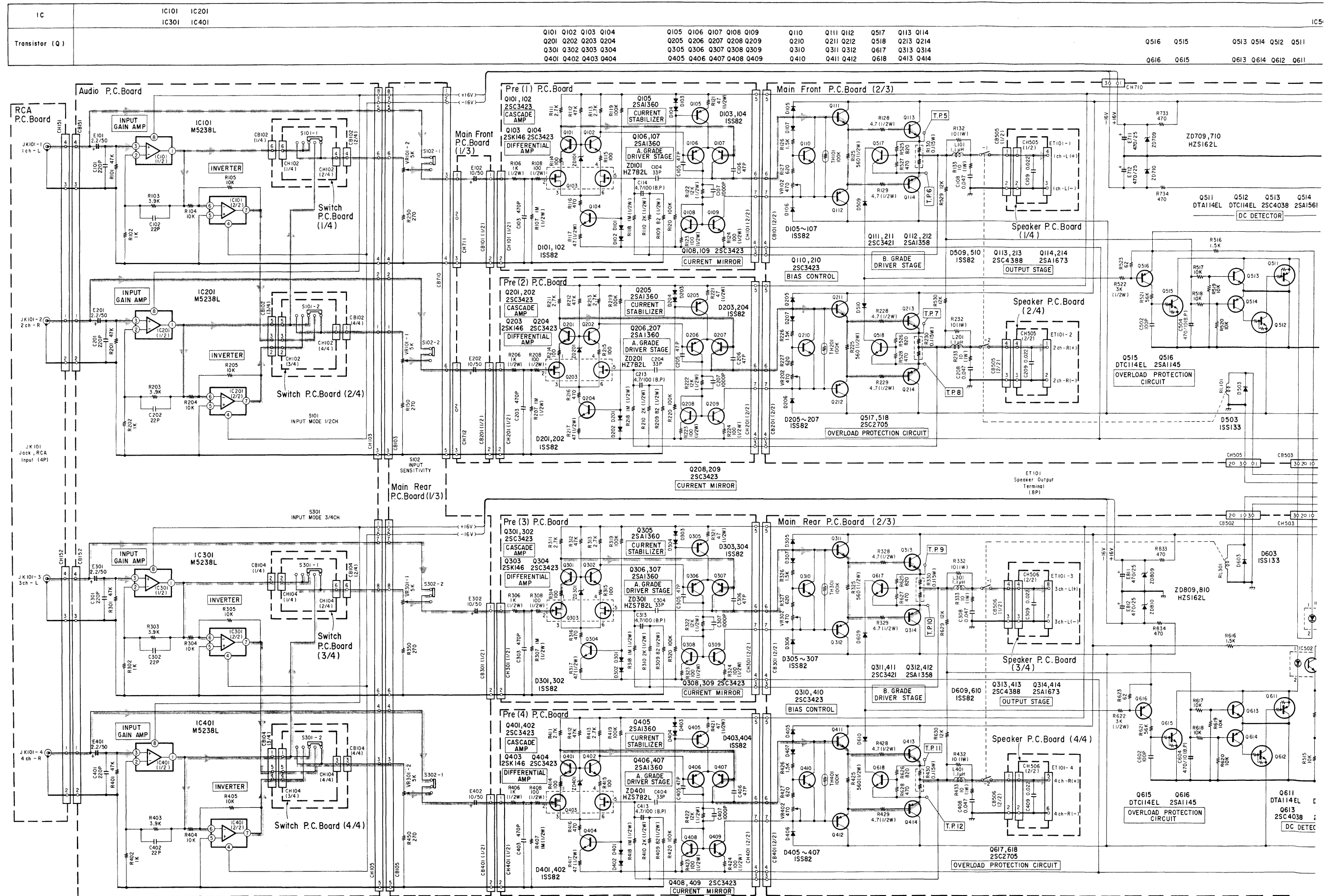
5





Schematic Diagram (1/2)

NOTE:
1. All resistance values are in ohm;
2. All capacitance values are in mc



A

B-27-

C

D

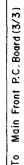
E

F-28-

G

H

1. All resistance values are in ohms. $K = 1,000$ $M = 1,000,000$
2. All capacitance values are in microfarads. $P = 1/1,000,000$



Ref.No. Pin No.	IC501	IC502
1	22.5V	22.6V
2	21.78V	21.9V
3	40.5mV	*40.5mV
4	14.08V	*14.08V

Ref. No. Pin Name	Q109	Q110	Q111	Q112	Q113	Q114
B	-39.8V	-0.49V	1.18V	-1.16V	0.59V	-0.59V
C	-1.16V	1.18V	22.6V	-22.4V	22.6V	-22.4V
E	-40.5V	-1.16V	0.6V	-0.6V	23.1mV	-7.2mV

Ref. No. Pin Name	Q301	Q302	Q304	Q305	Q306	Q307	Q308	Q309	Q310	Q311	Q312	Q313	Q314
B	7.59V	7.59V	-39.8V	40.4V	30.8V	30.8V	-39.9V	-39.9V	-0.49V	1.16V	-1.15V	0.59V	-0.59V
C	30.28V	30.3V	-3.84V	30.8V	7.4V	1.16V	-39.9V	-1.15V	1.16V	22.6V	-22.25V	22.6V	-22.25V
E	7V	7V	-40.5V	41V	30.6V	30.6V	-40.6V	-40.6V	-1.15V	0.59V	-0.6V	18.1mV	-12.5mV

Ref. No. Pin Name	Q509	Q511	Q512	Q513	Q514	Q515	Q516	Q517	Q518
B	*40mV	21.8V	-22.1V	1.38mV	1.4m	0.05V	22.69V	4.3mV	-3.4mV
C	*5.04V	0V	21.8V	21.78V	-22.1V	21.78V	-0.2V	22.4V	22.4V
E	*0V	21.78V	-22.4V	0V	0V	0V	22.6V	-6.3V	-16.1mV

Ref. No. Pin Name	Q611	Q612	Q613	Q614	Q615	Q616	Q617	Q618
B	21.86V	-21.8V	1.22mV	1.23mV	0.08mV	22.6V	-1.09mV	0.91mV
C	0V	21.86V	21.9V	-21.8V	21.9V	0.07mV	22.35V	22.36V
E	21.9V	-22.25V	0V	0V	0V	22.6V	-12.4mV	-9.4mV

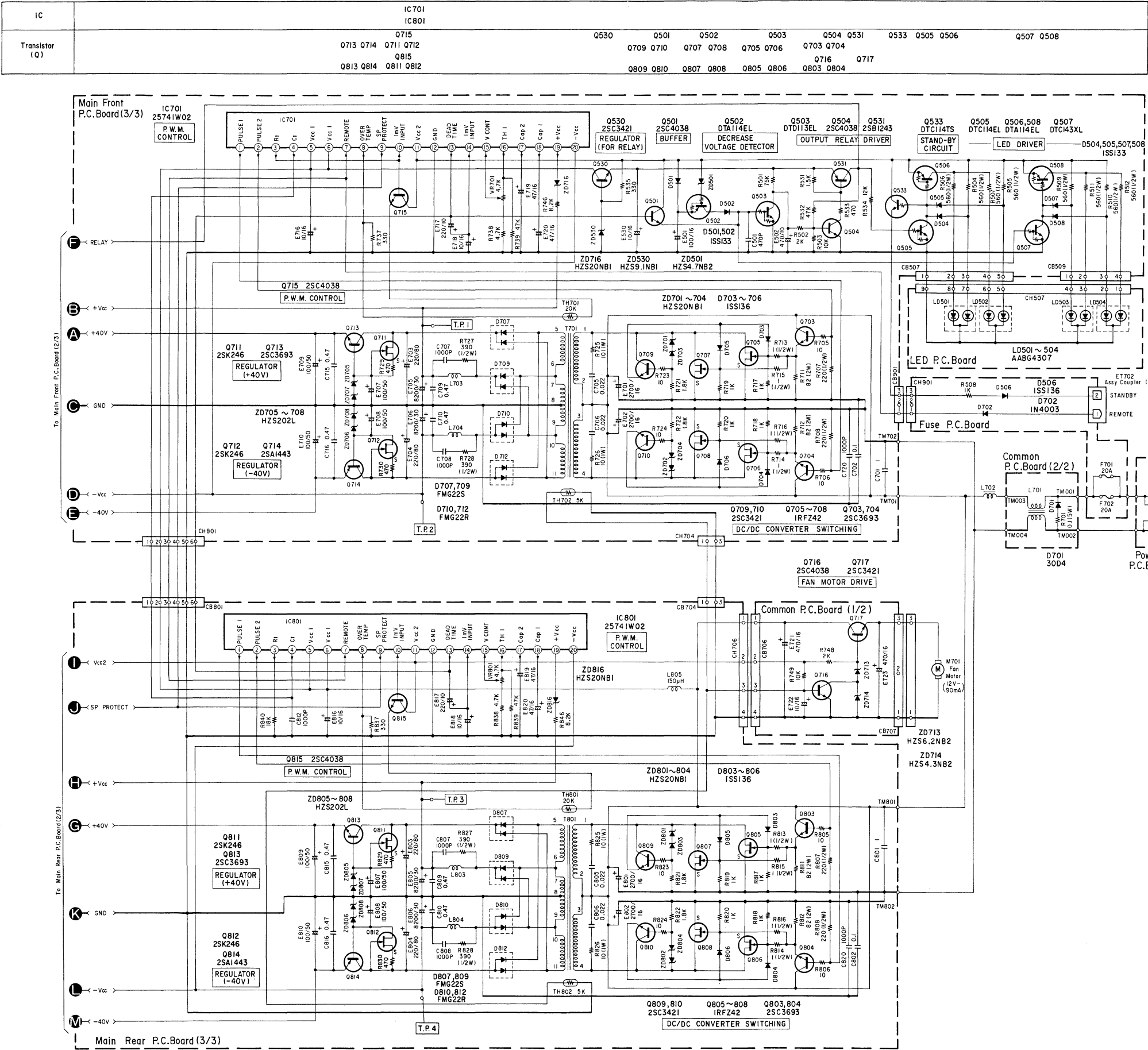
- Voltage Measuring Condition
- | | |
|------------------------------|-----------------------------|
| 1. Power Supply Voltage | : DC14.4V |
| 2. Measuring Meter | : Digital Volt Meter |
| 3. Measuring Point Reference | : Primary Ground (marked *) |
| | : Secondary Ground (others) |
| 4. Measuring Condition | : No Signal Input |

Schematic Diagram (2/2)

3558

3558

NOTE:
1. All resistance values are in ohms. K= 1,000 M= 1,000,000
2. All capacitance values are in microfarads. P= 1/1,000,000



Ref.No. Pin No.	IC701	IC801
1	*0.58V	*0.59V
2	*0.58V	*0.59V
3	*5.02V	*3.87V
4	*1.78V	*1.78V
5	*14.2V	*14.2V
6	*14.2V	*14.2V
7	*13.79V	*13.79V
8	*174.8mV	*188.4mV
9	*5.05V	*5.05V
10	*5.02V	*5.07V
11	*13.66V	*14.09V
12	*0V	*0V
13	*65.4mV	65.4mV
14	*5.02V	*5.07V
15	*0.98V	*0.98V
16	1.42V	*1.38V
17	*11.3V	*11.3V
18	*10.68V	*10.69V
19	-21.25V	-21.03V
20	-22.4V	-22.25V

Ref. No. Pin Name
S
D
G

Ref. No. Pin Name	Q501	Q502	Q503	Q504	Q505	Q506
B	*65.2mV	*13.51V	*53mV	*0.71V	*4.12V	*13.66V
C	*13.66V	*0.66V	*0.91V	*173.8mV	*0.26V	*13.66V
E	*53mV	*13.52V	*0V	*0V	*0V	*13.66V

Ref. No. Pin Name	Q703	Q704	Q709	Q710	Q713	Q717
B	*0.58V	*0.58V	*12.7mV	*10.7mV	41V	-4
C	*14.3V	*14.3V	*Pulse	*Pulse	58.3V	-5
E	*0.6V	*0.6V	*-191mV	*-143mV	40.6V	-4

Ref. No. Pin Name	Q803	Q804	Q809	Q810	Q813	Q817
B	*0.58V	*0.58V	*15.3mV	*14.5mV	41.5V	-4
C	*14.3V	*14.3V	*Pulse	*Pulse	58.2V	-5
E	*0.6V	*0.6V	*-219V	-130mV	41.2V	-4

- Voltage Measuring Condition
- 1. Power Supply Voltage : DC14.4V
 - 2. Measuring Meter : Digital Volt Meter
 - 3. Measuring Point Reference : Primary Ground (marked *)
: Secondary Ground (others)
 - 4. Measuring Condition : No Signal Input

01	IC801
0.58V	*0.59V
0.58V	*0.59V
5.02V	*3.87V
1.78V	*1.78V
14.2V	*14.2V
14.2V	*14.2V
3.79V	*13.79V
0.8mV	*188.4mV
5.05V	*5.05V
5.02V	*5.07V
3.66V	*14.09V
*0V	*0V
0.4mV	65.4mV
5.02V	*5.07V
0.98V	*0.98V
1.42V	*1.38V
11.3V	*11.3V
0.68V	*10.69V
1.25V	−21.03V
22.4V	−22.25V

Ref. No. Pin Name	Q711	Q712	Q811	Q812	Q705 ~ 708	Q805 ~ 808
S	41.17V	−58.1V	41.66V	−58V	*0V	*0V
D	58.3V	−41.3V	58.2V	−41.1V	*Pulse	*Pulse
G	41V	−58.3V	41.5V	−58.2V	*0.61V	*0.62V

Q501	Q502	Q503	Q504	Q505	Q506	Q507	Q508	Q530	Q531	Q532
5.2mV	*13.51V	*53mV	*0.71V	*4.12V	*0.26V	*53mV	*13.58V	*8.87V	*7.64V	*0.26V
13.66V	*−0.66V	*0.91V	*173.8mV	*0.26V	*13.39V	*13.58V	*0.97V	*14.2V	*8.28V	*13.64V
*53mV	*13.52V	*0V	*0V	*0V	*13.64V	*0V	*13.64V	*8.31V	*8.31V	*0.6V

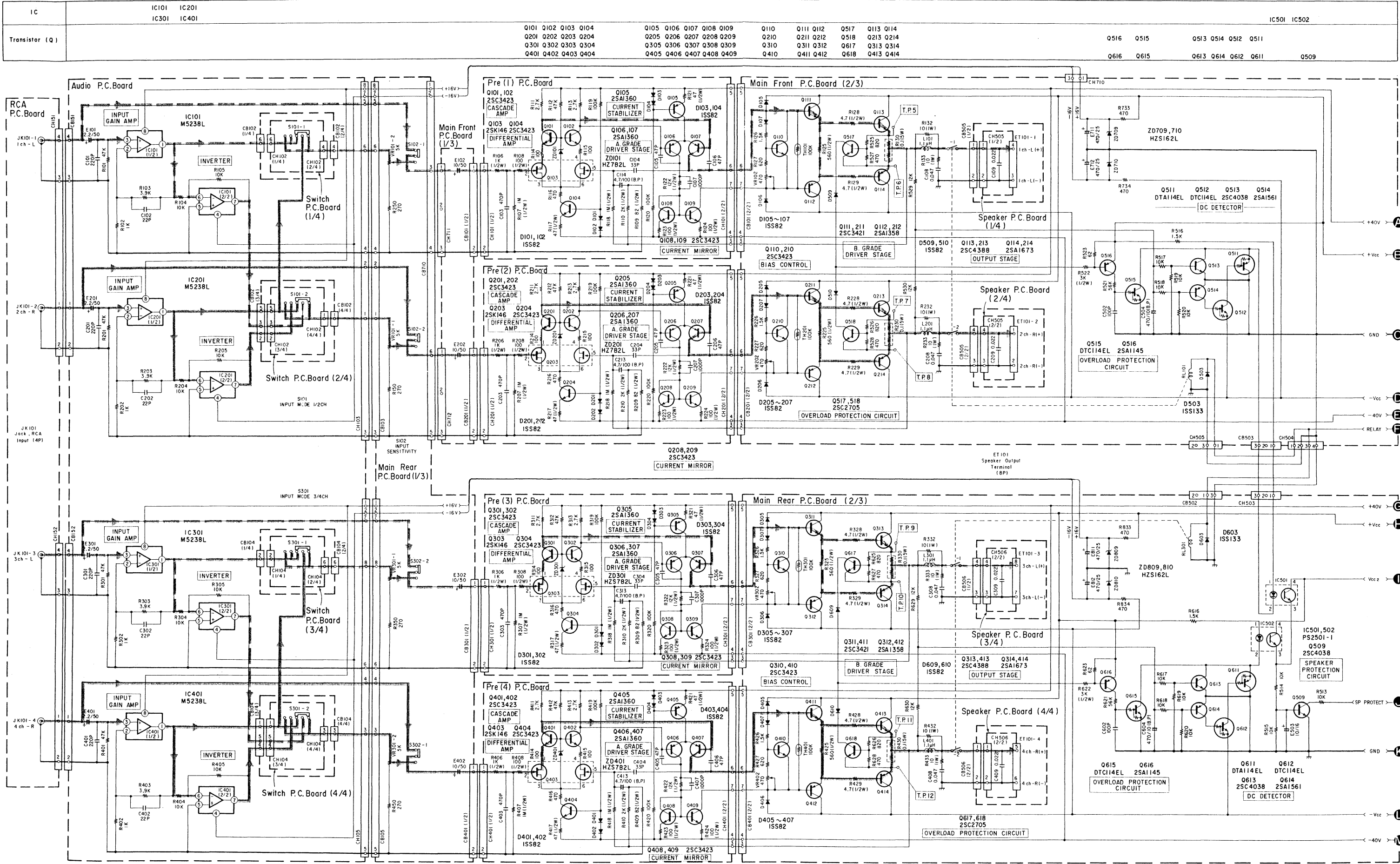
Q703	Q704	Q709	Q710	Q713	Q714	Q715	Q716	Q717
0.58V	*0.58V	*12.7mV	*10.7mV	41V	−41.3V	*5.02V	*0.74V	*8.1V
14.3V	*14.3V	*Pulse	*Pulse	58.3V	−53.3V	*13.64V	*49.7mV	*14.3V
*0.6V	*0.6V	*−191mV	*−143mV	40.6V	−40.9V	4.49V	*0V	*7.4V

Q803	Q804	Q809	Q810	Q813	Q814	Q815
*0.58V	*.058V	*15.3mV	*14.5mV	41.5V	−41.1V	*5.07V
*14.3V	*14.3V	*Pulse	*Pulse	58.2V	−58.2V	*14.08V
*0.6V	*0.6V	*−219V	−130mV	41.2V	−40.8V	*4.52V

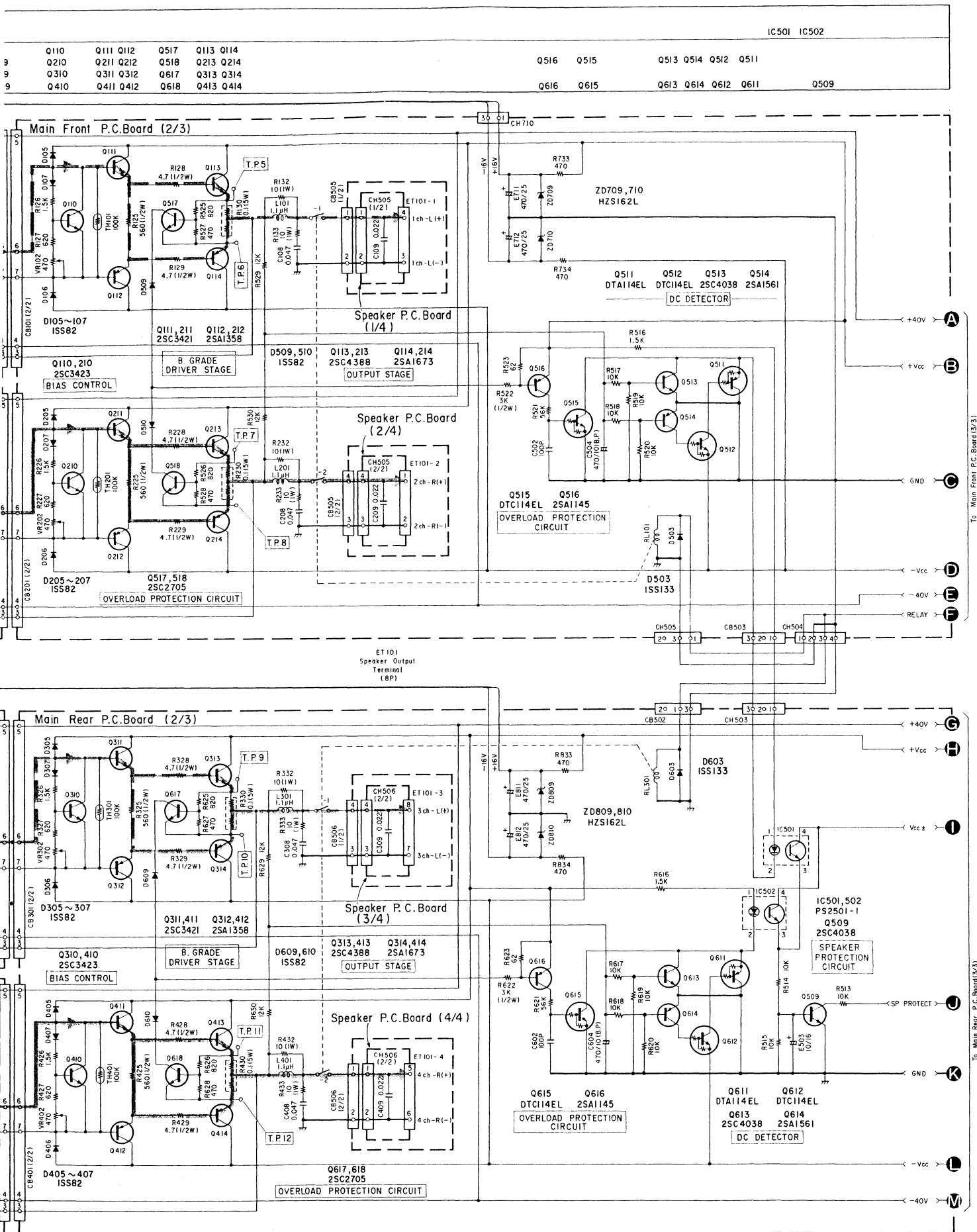
ing Condition
oltage : DC14.4V
r : Digital Volt Meter
Reference : Primary Ground (marked *)
: Secondary Ground (others)
lition : No Signal Input

Schematic Diagram (1/2)

NOTE:
1. All resistance values are in ohms. K= 1,000 M= 1,000,000
2. All capacitance values are in microfarads. P= 1/1,000,000



NOTE:
1. All resistance values are in ohms. K= 1,000 M= 1,000,000
2. All capacitance values are in microfarads. P= 1/1,000,000



Ref.No.	IC101	IC201	IC301	IC401
Pin No.				
1	-21mV	-16mV	22mV	-15.3mV
2	-4.2mV	-3.2mV	4.6mV	-2.9mV
3	0.2mV	0.2mV	-0.8mV	-0.5mV
4	-16.64V	-16.64V	-16.41V	-16.41V
5	0V	0V	0V	0V
6	0.64mV	3.59mV	-0.95mV	-2.8mV
7	22.1mV	22.9mV	-24.0V	9.5mV
8	16.69V	16.69V	16.43V	16.43V

Ref.No.	IC501	IC502
Pin No.		
1	22.5V	22.6V
2	21.78V	21.9V
3	40.5mV	*40.5mV
4	14.08V	*14.08V

Ref. No.	Q101	Q102	Q104	Q105	Q106	Q107	Q108
Pin Name							
B	7.49V	7.49V	-39.6V	39.8V	30.4V	30.4V	-39.8V
C	29.8V	29.8V	-4.18V	30.4V	9.71V	1.18V	-39.8V
E	6.89V	6.9V	-40.2V	40.4V	29.5V	29.5V	-40.5V

Ref. No.	Q109	Q110	Q111	Q112	Q113	Q114
Pin Name						
B	-39.8V	-0.49V	1.18V	-1.16V	0.59V	-0.59V
C	-1.16V	1.18V	22.6V	-22.4V	22.6V	-22.4V
E	-40.5V	-1.16V	0.6V	-0.6V	23.1mV	-7.2mV

Ref. No.	Q103	Q203	Q303	Q403
Pin No.				
1	6.5V	6.6V	6.6V	6.54V
2	0.37mV	0.81mV	0.4mV	0.46mV
3	0.26V	0.35V	0.36V	0.32V
4	6.5V	6.6V	6.6V	6.54V
5	7.9mV	1.6mV	3.2mV	5.1mV
6	0.26V	0.35V	0.36V	0.32V

Ref. No.	Q201	Q202	Q204	Q205	Q206	Q207	Q208	Q209	Q210	Q211	Q212	Q213	Q214
Pin Name													
B	7.59V	7.59V	-39.7V	39.8V	30.9V	30.9V	-39.9V	-39.9V	-0.5V	1.17V	-1.16V	0.59V	-0.59V
C	30.3V	30.3V	-4.04V	30.9V	8.31V	1.17V	-39.9V	-1.16V	1.17V	22.6V	-22.4V	22.6V	-22.4V
E	7V	7V	-40.2V	40.4V	30.3V	30.3V	-40.5V	-40.5V	-1.16V	0.61V	-0.61V	18.5mV	-16.1mV

Ref. No.	Q301	Q302	Q304	Q305	Q306	Q307	Q308	Q309	Q310	Q311	Q312	Q313	Q314
Pin Name													
B	7.59V	7.59V	-39.8V	40.4V	30.8V	30.8V	-39.9V	-39.9V	-0.49V	1.16V	-1.15V	0.59V	-0.59V
C	30.28V	30.3V	-3.84V	30.8V	7.4V	1.16V	-39.9V	-1.15V	1.16V	22.6V	-22.25V	22.6V	-22.25V
E	7V	7V	-40.5V	41V	30.6V	30.6V	-40.6V	-40.6V	-1.15V	0.59V	-0.6V	18.1mV	-12.5mV

Ref. No.	Q401	Q402	Q404	Q405	Q406	Q407	Q408	Q409	Q410	Q411	Q412	Q413	Q414
Pin Name													
B	7.55V	7.55V	-39.9V	40.4V	30.97V	30.97V	-39.9V	-39.9V	-0.5V	1.16V	-1.15V	0.58V	-0.59V
C	30.4V	30.4V	-3.76V	30.97V	6.58V	1.16V	-39.9V	-1.15V	1.16V	22.6V	-22.25V	22.6V	-22.25V
E	6.95V	6.95V	-40.5V	41V	31.1V	31.1V	-40.6V	-40.56V	-1.15V	0.59V	-0.59V	18.7mV	-9.3mV

Ref. No.	Q509	Q511	Q512	Q513	Q514	Q515	Q516	Q517	Q518
Pin Name									
B	*40mV	21.8V	-22.1V	1.38mV	1.4m	0.05V	22.69V	4.3mV	-3.4mV
C	*5.04V	0V	21.8V	21.78V	-22.1V	21.78V	-0.2V	22.4V	22.4V
E	*0V	21.78V	-22.4V	0V	0V	0V	22.6V	-6.3V	-16.1mV

Ref. No.	Q611	Q612	Q613	Q614	Q615	Q616	Q617	Q618
Pin Name								
B	21.86V	-21.8V	1.22mV	1.23mV	0.08mV	22.6V	-1.09mV	0.91mV
C	0V	21.86V	21.9V	-21.8V	21.9V	0.07mV	22.35V	22.36V
E	21.9V	-22.25V	0V	0V	0V	22.6V	-12.4mV	-9.4mV

- Voltage Measuring Condition
- Power Supply Voltage : DC14.4V
 - Measuring Meter : Digital Volt Meter
 - Measuring Point Reference : Primary Ground (marked *)
: Secondary Ground (others)
 - Measuring Condition : No Signal Input

Schematic Diagram (2/2)

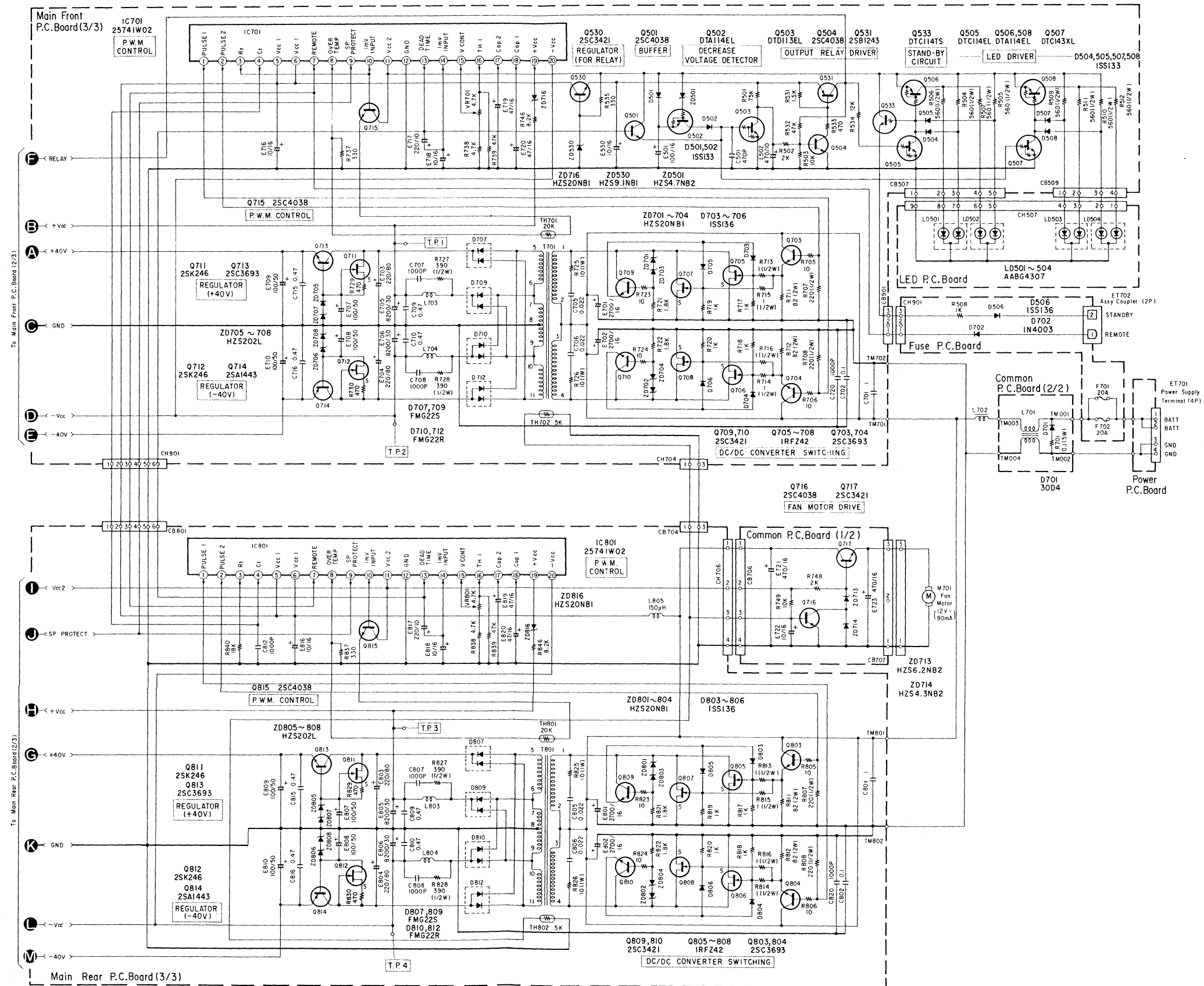
3558

3558

NOTE:

1. All resistance values are in ohms. K= 1,000 M= 1,000,000
2. All capacitance values are in microfarads. P= 1/1,000,000

IC	IC701	IC801	Q530	Q501	Q502	Q503	Q504	Q531	Q533	Q505	Q506	Q507	Q508
Transistor (Q)	Q713 Q714 Q711 Q712 Q815 Q813 Q814 Q811 Q812	Q709 Q710 Q707 Q708 Q705 Q706 Q703 Q704 Q716 Q717											



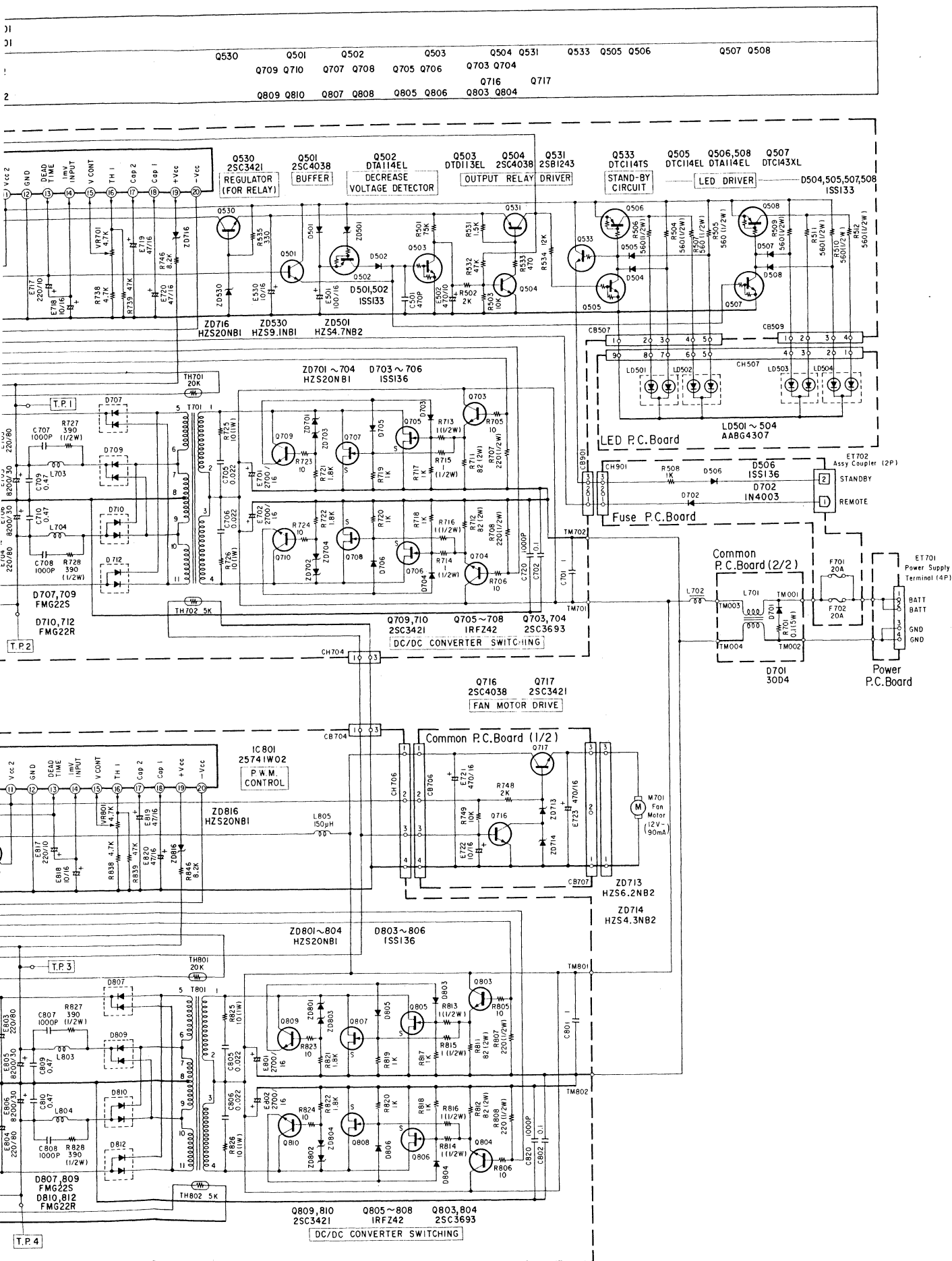
Ref.No.	IC701	IC801
1	*0.58V	*0.59V
2	*0.58V	*0.59V
3	*5.02V	*3.87V
4	*1.78V	*1.78V
5	*14.2V	*14.2V
6	*14.2V	*14.2V
7	*13.79V	*13.79V
8	*174.8mV	*188.4mV
9	*5.05V	*5.05V
10	*5.02V	*5.07V
11	*13.66V	*14.09V
12	*0V	*0V
13	*65.4mV	65.4mV
14	*5.02V	*5.07V
15	*0.98V	*0.98V
16	1.42V	*1.38V
17	*11.3V	*11.3V
18	*10.68V	*10.69V
19	-21.25V	-21.03V
20	-22.4V	-22.25V

Ref. No.	Q501	Q502	Q503
Pin Name	B	C	D
B	*65.2mV	*13.51V	
C	*13.66V	*-0.66V	
E	*53mV	*13.52V	

Ref. No.	Q703	Q704	Q705
Pin Name	B	C	D
B	*0.58V	*0.58V	*12.3V
C	*14.3V	*14.3V	
E	*0.6V	*0.6V	*-1.3V

Ref. No.	Q803	Q804	Q805
Pin Name	B	C	D
B	*0.58V	*0.58V	*12.3V
C	*14.3V	*14.3V	
E	*0.6V	*0.6V	*-1.3V

- Voltage Measuring Condition
- 1. Power Supply Voltage : DC1
- 2. Measuring Meter : Digi
- 3. Measuring Point Reference : Prin
- 4. Measuring Condition : No



Ref.No. Pin No.	IC701	IC801
1	*0.58V	*0.59V
2	*0.58V	*0.59V
3	*5.02V	*3.87V
4	*1.78V	*1.78V
5	*14.2V	*14.2V
6	*14.2V	*14.2V
7	*13.79V	*13.79V
8	*174.8mV	*188.4mV
9	*5.05V	*5.05V
10	*5.02V	*5.07V
11	*13.66V	*14.09V
12	*0V	*0V
13	*65.4mV	65.4mV
14	*5.02V	*5.07V
15	*0.98V	*0.98V
16	1.42V	*1.38V
17	*11.3V	*11.3V
18	*10.68V	*10.69V
19	-21.25V	-21.03V
20	-22.4V	-22.25V

Ref. No. Pin Name	Q711	Q712	Q811	Q812	Q705 ~ 708	Q805 ~ 808
S	41.17V	-58.1V	41.66V	-58V	*0V	*0V
D	58.3V	-41.3V	58.2V	-41.1V	*Pulse	*Pulse
G	41V	-58.3V	41.5V	-58.2V	*0.61V	*0.62V

Ref. No. Pin Name	Q501	Q502	Q503	Q504	Q505	Q506	Q507	Q508	Q530	Q531	Q532
B	*65.2mV	*13.51V	*53mV	*0.71V	*4.12V	*0.26V	*53mV	*13.58V	*8.87V	*7.64V	*0.26V
C	*13.66V	*-0.66V	*0.91V	*173.8mV	*0.26V	*13.39V	*13.58V	*0.97V	*14.2V	*8.28V	*13.64V
E	*53mV	*13.52V	*0V	*0V	*0V	*13.64V	*0V	*13.64V	*8.31V	*8.31V	*0.6V

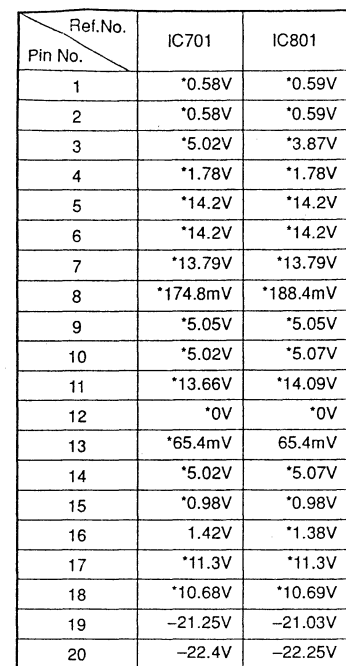
Ref. No. Pin Name	Q703	Q704	Q709	Q710	Q713	Q714	Q715	Q716	Q717
B	*0.58V	*0.58V	*12.7mV	*10.7mV	41V	-41.3V	*5.02V	*0.74V	*8.1V
C	*14.3V	*14.3V	*Pulse	*Pulse	58.3V	-53.3V	*13.64V	*49.7mV	*14.3V
E	*0.6V	*0.6V	*-191mV	*-143mV	40.6V	-40.9V	4.49V	*0V	*7.4V

Ref. No. Pin Name	Q803	Q804	Q809	Q810	Q813	Q814	Q815
B	*0.58V	*.058V	*15.3mV	*14.5mV	41.5V	-41.1V	*5.07V
C	*14.3V	*14.3V	*Pulse	*Pulse	58.2V	-58.2V	*14.08V
E	*0.6V	*0.6V	*-219V	-130mV	41.2V	-40.8V	*4.52V

- Voltage Measuring Condition

- | | |
|------------------------------|-----------------------------|
| 1. Power Supply Voltage | : DC14.4V |
| 2. Measuring Meter | : Digital Volt Meter |
| 3. Measuring Point Reference | : Primary Ground (marked *) |
| | : Secondary Ground (others) |
| 4. Measuring Condition | : No Signal Input |

3558	3558
------	------



Ref. No. Pin Name	Q501	Q502	Q503	Q504	Q505	Q506	Q507	Q508	Q530	Q531	Q532
B	*65.2mV	*13.51V	*53mV	*0.71V	*4.12V	*0.26V	*53mV	*13.58V	*8.87V	*7.64V	*0.26V
C	*13.66V	*-0.66V	*0.91V	*173.8mV	*0.26V	*13.39V	*13.58V	*0.97V	*14.2V	*8.28V	*13.64V
E	*53mV	*13.52V	*0V	*0V	*0V	*13.64V	*0V	*13.64V	*8.31V	*8.31V	*0.6V

Ref. No. Pin Name	Q703	Q704	Q709	Q710	Q713	Q714	Q715	Q716	Q717
B	*0.58V	*0.58V	*12.7mV	*10.7mV	41V	-41.3V	*5.02V	*0.74V	*8.1V
C	*14.3V	*14.3V	*Pulse	*Pulse	58.3V	-53.3V	*13.64V	*49.7mV	*14.3V
E	*0.6V	*0.6V	*-191mV	*-143mV	40.6V	-40.9V	4.49V	*0V	*7.4V

Ref. No. Pin Name	Q803	Q804	Q809	Q810	Q813	Q814	Q815
B	*0.58V	*.058V	*15.3mV	*14.5mV	41.5V	—41.1V	*5.07V
C	*14.3V	*14.3V	*Pulse	*Pulse	58.2V	—58.2V	*14.08V
E	*0.6V	*0.6V	*-219V	—130mV	41.2V	—40.8V	*4.52V

- 32 - F | G | H | I | - 33 - J | K | L | M

Q711	Q712	Q811	Q812	Q705 ~ 708	Q805 ~ 808
1.17V	-58.1V	41.66V	-58V	*0V	*0V
58.3V	-41.3V	58.2V	-41.1V	*Pulse	*Pulse
41V	-58.3V	41.5V	-58.2V	*0.61V	*0.62V

Q6	Q507	Q508	Q530	Q531	Q532
26V	*53mV	*13.58V	*8.87V	*7.64V	*0.26V
39V	*13.58V	*0.97V	*14.2V	*8.28V	*13.64V
64V	*0V	*13.64V	*8.31V	*8.31V	*0.6V

Q4	Q715	Q716	Q717
3V	*5.02V	*0.74V	*8.1V
3V	*13.64V	*49.7mV	*14.3V
9V	4.49V	*0V	*7.4V

Q4	Q815
.1V	*5.07V
.2V	*14.08V
.8V	*4.52V

Electrical Parts List

Resistor : Carbon resistors under 1/4 watts are not mentioned in the parts list, please confirm them by schematic diagram.

Capacitor : μ F = microfarads, pF = picofarads

Abbreviations			Symbol No.	Part No.	Description
RES. = Resistor	CAP. = Capacitor		Q711	48T66948F03	FET, 2SK246
C.F. = Carbon Film	ELY. = Electrolytic		Q712	48T66948F03	FET, 2SK246
M.F. = Metal Film	CER. = Ceramic		Q713	48T35056W01	2SC3693
M.O. = Metal Oxide Film	MYL. = Mylar		Q714	48T35055W01	2SA1443
M.P. = Metal Plate	TAN. = Tantalum		Q715	48T82758F03	2SC4038
TR. = Transistor	POLY. = Polystyrol				
TRANS. = Transformer	PP. = Polypropylene				
CP. = Chip	PLT. = Polyethylene				
	PF. = Polyester Film				
Symbol No.	Part No.	Description			
Main · Front P.C.Board					
IC					
IC701	51T25741W02	25741W02	Diodes		
			D105	48T73079F02	1SS82
			D106	48T73079F02	1SS82
			D107	48T73079F02	1SS82
			D205	48T73079F02	1SS82
			D206	48T73079F02	1SS82
			D207	48T73079F02	1SS82
			D501	48T68828F01	1SS133
			D502	48T68828F01	1SS133
			D503	48T68828F01	1SS133
			D504	48T68828F01	1SS133
			D505	48T68828F01	1SS133
			D507	48T68828F01	1SS133
			D508	48T68828F01	1SS133
			D509	48T73079F02	1SS82
			D510	48T73079F02	1SS82
			D703	48T70933F01	1SS136
			D704	48T70933F01	1SS136
			D705	48T70933F01	1SS136
			D706	48T70933F01	1SS136
			D707	48T80987F01	FMG22S
			D712	48T80987F02	FMG22R
			ZD501	48T90517F21	Zener, HZS4.7NB2
			ZD530	48T90517F41	Zener, HZS9.1NB1
			ZD701	48T90517F65	Zener, HZS20NB1
			ZD702	48T90517F65	Zener, HZS20NB1
			ZD703	48T90517F65	Zener, HZS20NB1
			ZD704	48T90517F65	Zener, HZS20NB1
			ZD705	48T83128F56	Zener, HZS202L
			ZD706	48T83128F56	Zener, HZS202L
			ZD707	48T83128F56	Zener, HZS202L
			ZD708	48T83128F56	Zener, HZS202L
			ZD709	48T83128F50	Zener, HZS162L
			ZD710	48T83128F50	Zener, HZS162L
			ZD716	48T90517F65	Zener, HZS20NB1
Transistors					
Q111	48T69176F01	2SC3421			
Q112	48T69177F01	2SA1358			
Q211	48T69176F01	2SC3421			
Q212	48T69177F01	2SA1358			
Q501	48T82758F03	2SC4038			
Q502	48T82762F02	DTA114EL			
Q503	48T82763F24	DTD113EL			
Q504	48T82758F05	2SC4038			
Q505	48T82763F02	DTC114EL			
Q506	48T82762F02	DTA114EL			
Q507	48T82763F05	DTC143XL			
Q508	48T82762F02	DTA114EL			
Q511	48T82762F02	DTA114EL			
Q512	48T82763F02	DTC114EL			
Q513	48T82758F03	2SC4038			
Q514	48T82757F01	2SA1561			
Q515	48T82763F02	DTC114EL			
Q516	48T60751F01	2SA1145			
Q517	48T60752F01	2SC2705			
Q518	48T60752F01	2SC2705			
Q530	48T69176F01	2SC3421			
Q531	48T84366F03	2SB1243			
Q533	48T72415F05	DTC114TS			
Q703	48T35056W01	2SC3693			
Q704	48T35056W01	2SC3693			
Q709	48T69176F01	2SC3421			
Q710	48T69176F01	2SC3421			

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
Coils			C707	08T52714F01	CER., 1000pF
L101	24T74372F01	1.1 μ H	E707	23T00207L01	ELY., 100 μ F / 50V
L201	24T74372F01	1.1 μ H	C708	08T52714F01	CER., 1000pF
L703	25T45072W01	Choke	E708	23T00207L01	ELY., 100 μ F / 50V
L704	25T45072W01	Choke	C709	08T90316F37	TF, 0.47 μ F
Thermistors			E709	23T00181L48	ELY., 100 μ F / 50V
TH101	48T57369F21	100K ohm	C710	08T50579F21	TF, 0.47 μ F
TH201	48T57369F21	100K ohm	E710	23T00181L48	ELY., 100 μ F / 50V
TH701	48T60670F01	20K ohm	E711	23T35463W37	ELY., 470 μ F / 25V
TH702	48S42931U33	5K ohm	E712	23T35463W37	ELY., 470 μ F / 25V
Relay / Transformer			C715	08T90316F37	TF, 0.47 μ F
RL101	80T95141F08	DE2T	C716	08T90316F37	TF, 0.47 μ F
T701	25T35582W01	Transformer, DC-DC	E716	23T15412W13	ELY., 10 μ F / 16V
Capacitors			E717	23T35463W15	ELY., 220 μ F / 10V
E102	23T00180L25	ELY., 10 μ F / 50V	E718	23T15412W13	ELY., 10 μ F / 16V
C108	08T90316F25	TF, 0.047 μ F	E719	23T16360W34	ELY., 47 μ F / 16V
E202	23T00180L25	ELY., 10 μ F / 50V	C720	08T50579F26	TF, 1000pF
C208	08T90316F25	TF, 0.047 μ F	E720	23T35462W18	ELY., 47 μ F / 16V
C501	08S65480F45	CER., 470pF	Resistors		
E501	23T35463W24	ELY., 100 μ F / 16V	R125	06S81094F59	M.F., 560 ohm 1/2W
C502	08S65480F37	CER., 100pF	R128	06S81094F09	M.F., 4.7 ohm 1/2W
E502	23T16360W22	ELY., 470 μ F / 10V	R129	06S81094F09	M.F., 4.7 ohm 1/2W
C504	23T16387W17	ELY., (B.P) 470 μ F / 10V	R130	06T67397F02	Cement, 0.1ohm 5W \times 2
E530	23T15412W13	ELY., 10 μ F / 16V	R132	06T92263F01	M.F., 10 ohm 1W
C701	08T50579F25	TF, 1 μ F	R133	06T92263F01	M.F., 10 ohm 1W
E701	23T95135F76	ELY., 2700 μ F / 16V	R225	06S81094F59	M.F., 560 ohm 1/2W
C702	08T90316F29	TF, 0.1 μ F	R228	06S81094F09	M.F., 4.7 ohm 1/2W
E702	23T95135F76	ELY., 2700 μ F / 16V	R229	06S81094F09	M.F., 4.7 ohm 1/2W
E703	23Q32161W01	ELY., 220 μ F / 80V	R230	06T67397F02	Cement, 0.1ohm 5W \times 2
E704	23Q32161W01	ELY., 220 μ F / 80V	R232	06T92263F01	M.F., 10 ohm 1W
C705	08T90316F21	TF, 0.022 μ F	R233	06T92263F01	M.F., 10 ohm 1W
E705	23T35639W02	ELY., 8200 μ F / 30V	R504	06S81094F59	M.F., 560 ohm 1/2W
C706	08T90316F21	TF, 0.022 μ F	R505	06S81094F59	M.F., 560 ohm 1/2W
E706	23T35639W02	ELY., 8200 μ F / 30V	R506	06S81094F59	M.F., 560 ohm 1/2W
			R507	06S81094F59	M.F., 560 ohm 1/2W
			R509	06S81094F59	M.F., 560 ohm 1/2W
			R510	06S81094F59	M.F., 560 ohm 1/2W
			R511	06S81094F59	M.F., 560 ohm 1/2W
			R512	06S81094F59	M.F., 560 ohm 1/2W
			R522	06S81094F76	M.F., 3K ohm 1/2W
			R707	06T93535F49	M.F., 220 ohm 1/2W
			R708	06T93535F49	M.F., 220 ohm 1/2W
			R711	06T92264F23	M.F., 82 ohm 2W
			R712	06T92264F23	M.F., 82 ohm 2W

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
R713	06S81095F08	M.F., 1 ohm 1/2W	Diodes		
R714	06S81095F08	M.F., 1 ohm 1/2W	D305	48T73079F02	1SS82
R715	06S81095F08	M.F., 1 ohm 1/2W	D306	48T73079F02	1SS82
R716	06S81095F08	M.F., 1 ohm 1/2W	D307	48T73079F02	1SS82
R725	06C44652G26	M.F., 10 ohm 1W	D405	48T73079F02	1SS82
R726	06C44652G26	M.F., 10 ohm 1W	D406	48T73079F02	1SS82
R727	06S81094F55	M.F., 390 ohm 1/2W	D407	48T73079F02	1SS82
R728	06S81094F55	M.F., 390 ohm 1/2W	D603	48T68828F01	1SS133
VR102	18T45040F05	Variable, 470 ohm	D609	48T73079F02	1SS82
VR202	18T45040F05	Variable, 470 ohm	D610	48T73079F02	1SS82
VR701	18T45040F11	Variable, 4.7K ohm	D803	48T70933F01	1SS136
Main · Rear P.C.Board			D804	48T70933F01	1SS136
IC's			D805	48T70933F01	1SS136
IC501	51T35529W01	PS2501-1	D806	48T70933F01	1SS136
IC502	51T35529W01	PS2501-1	D807	48T80987F01	FMG22S
IC801	51T25741W02	25741W02	D812	48T80987F02	FMG22R
Transistors			ZD801	48T90517F65	Zener, HZS20NB1
Q311	48T69176F01	2SC3421	ZD802	48T90517F65	Zener, HZS20NB1
Q312	48T69177F01	2SA1358	ZD803	48T90517F65	Zener, HZS20NB1
Q411	48T69176F01	2SC3421	ZD804	48T90517F65	Zener, HZS20NB1
Q412	48T69177F01	2SA1358	ZD805	48T83128F56	Zener, HZS202L
Q509	48T82758F03	2SC4038	ZD806	48T83128F56	Zener, HZS202L
Q611	48T82762F02	DTA114EL	ZD807	48T83128F56	Zener, HZS202L
Q612	48T82763F02	DTC114EL	ZD808	48T83128F56	Zener, HZS202L
Q613	48T82758F03	2SC4038	ZD809	48T83128F50	Zener, HZS162L
Q614	48T82757F01	2SA1561	ZD810	48T83128F50	Zener, HZS162L
Q615	48T82763F02	DTC114EL	ZD816	48T90517F65	Zener, HZS20NB1
Q616	48T60751F01	2SA1145	Coils		
Q617	48T60752F01	2SC2705	L301	24T74372F01	1.1μH
Q618	48T60752F01	2SC2705	L401	24T74372F01	1.1μH
Q803	48T35056W01	2SC3693	L803	25T45072W01	Choke
Q804	48T35056W01	2SC3693	L804	25T45072W01	Choke
Q809	48T69176F01	2SC3421	L805	24T93437F15	Inductor, 150μH
Q810	48T69176F01	2SC3421	Relay / Transformer		
Q811	48T66948F03	FET, 2SK246	RL301	80T95141F08	DE2T
Q812	48T66948F03	FET, 2SK246	T801	25T35582W02	Transformer, DC-DC
Q813	48T35056W01	2SC3693			
Q814	48T35055W01	2SA1443			
Q815	48T82758F03	2SC4038			

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
Switches					
S102	40T25473W02	Slide, SSSF12 (INPUT SENSITIVITY · 1 / 2CH)	E811	23T35463W37	ELY., 470 μ F / 25V
S302	40T25473W02	Slide, SSSF12 (INPUT SENSITIVITY · 3 / 4CH)	C812	08T90316F05	TF, 1000pF
			E812	23T35463W37	ELY., 470 μ F / 25V
			C815	08T90316F37	TF, 0.47 μ F
			C816	08T90316F37	TF, 0.47 μ F
			E816	23T15412W13	ELY., 10 μ F / 16V
			E817	23T35463W15	ELY., 220 μ F / 10V
			E818	23T15412W13	ELY., 10 μ F / 16V
			E819	23T35462W18	ELY., 47 μ F / 16V
			C820	08T50579F26	TF, 1000pF
			E820	23T16360W34	ELY., 47 μ F / 16V
Thermistors					
TH301	48T57369F21	100K ohm			
TH401	48T57369F21	100K ohm			
TH801	48T60670F01	20K ohm			
TH802	48S42931U33	5K ohm			
Capacitors			Resistors		
E302	23T00180L25	ELY., 10 μ F / 50V	R325	06S81094F59	M.F., 560 ohm 1/2W
C308	08T90316F25	TF, 0.047 μ F	R328	06S81094F09	M.F., 4.7 ohm 1/2W
E402	23T00180L25	ELY., 10 μ F / 50V	R329	06S81094F09	M.F., 4.7 ohm 1/2W
C408	08T90316F25	TF, 0.047 μ F	R330	06T67397F02	Cement, 0.1ohm 5W \times 2
E503	23T15412W13	ELY., 10 μ F / 16V	R332	06T92263F01	M.F., 10 ohm 1W
C602	08S65480F37	CER., 100pF	R333	06T92263F01	M.F., 10 ohm 1W
C604	23T16387W17	ELY., (B.P) 470 μ F / 10V	R425	06S81094F59	M.F., 560 ohm 1/2W
C801	08T50579F25	TF, 1 μ F	R428	06S81094F09	M.F., 4.7 ohm 1/2W
E801	23T95135F76	ELY., 2700 μ F / 16V	R429	06S81094F09	M.F., 4.7 ohm 1/2W
C802	08T90316F29	TF, 0.1 μ F	R430	06T67397F02	Cement, 0.1ohm 5W \times 2
E802	23T95135F76	ELY., 2700 μ F / 16V	R432	06T92263F01	M.F., 10 ohm 1W
E803	23Q32161W01	ELY., 220 μ F / 80V	R433	06T92263F01	M.F., 10 ohm 1W
E804	23Q32161W01	ELY., 220 μ F / 80V	R622	06S81094F76	M.F., 3K ohm 1/2W
C805	08T90316F21	TF, 0.022 μ F	R807	06T93535F49	M.F., 220 ohm 1/2W
E805	23T35639W02	ELY., 8200 μ F / 30V	R808	06T93535F49	M.F., 220 ohm 1/2W
C806	08T90316F21	TF, 0.022 μ F	R811	06T92264F23	M.F., 82 ohm 2W
E806	23T35639W02	ELY., 8200 μ F / 30V	R812	06T92264F23	M.F., 82 ohm 2W
C807	08T52714F01	CER., 1000pF	R813	06S81095F08	M.F., 1 ohm 1/2W
E807	23T00207L01	ELY., 100 μ F / 50V	R814	06S81095F08	M.F., 1 ohm 1/2W
C808	08T52714F01	CER., 1000pF	R815	06S81095F08	M.F., 1 ohm 1/2W
E808	23T00207L01	ELY., 100 μ F / 50V	R816	06S81095F08	M.F., 1 ohm 1/2W
C809	08T90316F37	TF, 0.47 μ F	R825	06C44652G26	M.F., 10 ohm 1W
E809	23T00181L48	ELY., 100 μ F / 50V	R826	06C44652G26	M.F., 10 ohm 1W
C810	08T90316F37	TF, 0.47 μ F	R827	06S81094F55	M.F., 390 ohm 1/2W
E810	23T00181L48	ELY., 100 μ F / 50V	R828	06S81094F55	M.F., 390 ohm 1/2W
			VR101	18T16289W02	Rotary, Volume 5K ohm
			VR301	18T16289W02	Rotary, Volume 5K ohm

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
VR302	18T45040F05	Variable, 470 ohm	R201	06S53330F93	47K ohm
VR402	18T45040F05	Variable, 470 ohm	R202	06S53330F53	1K ohm
VR801	18T45040F11	Variable, 4.7K ohm	R203	06S53330F67	3.9K ohm
Audio P.C.Board IC's IC101 51T80136F02 M5238L IC201 51T80136F02 M5238L IC301 51T80136F02 M5238L IC401 51T80136F02 M5238L Capacitors C101 08S53332F27 CP., 220pF E101 23T25149W06 ELY., 2.2 μ F / 50V C102 08S53332F15 CP., 22pF C201 08S53332F27 CP., 220pF E201 23T25149W06 ELY., 2.2 μ F / 50V C202 08S53332F15 CP., 22pF C301 08S53332F27 CP., 220pF E301 23T25149W06 ELY., 2.2 μ F / 50V C302 08S53332F15 CP., 22pF C401 08S53332F27 CP., 220pF E401 23T25149W06 ELY., 2.2 μ F / 50V C402 08S53332F15 CP., 22pF Resistors (All resistors are chip 1/8W \pm 5% unless otherwise noted.) R101 06S53330F93 47K ohm R102 06S53330F53 1K ohm R103 06S53330F67 3.9K ohm R104 06S53330F77 10K ohm R105 06S53330F77 10K ohm			R204	06S53330F77	10K ohm
			R205	06S53330F77	10K ohm
			R301	06S53330F93	47K ohm
			R302	06S53330F53	1K ohm
			R303	06S53330F67	3.9K ohm
			R304	06S53330F77	10K ohm
			R305	06S53330F77	10K ohm
			R401	06S53330F93	47K ohm
			R402	06S53330F53	1K ohm
			R403	06S53330F67	3.9K ohm
			R404	06S53330F77	10K ohm
			R405	06S53330F77	10K ohm
			Pre (1) P.C.Board		
			Transistors		
			Q101	48T64376F01	2SC3423
			Q102	48T64376F01	2SC3423
			Q103	48T52146F03	FET, 25K146
			Q104	48T64376F01	2SC3423
			Q105	48T64375F01	2SA1360
			Q106	48T64375F01	2SA1360
			Q107	48T64375F01	2SA1360
			Q108	48T64376F01	2SC3423
			Q109	48T64376F01	2SC3423
			Diodes		
			D101	48T73079F02	1SS82
			D102	48T73079F02	1SS82
			D103	48T73079F02	1SS82
			D104	48T73079F02	1SS82
			ZD101	48T52741F14	Zener, HZ7B2L

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
Capacitors			Diodes		
C103	08T90316F01	TF, 470pF	D201	48T73079F02	1SS82
C104	08T81196F19	Mica, 33pF	D202	48T73079F02	1SS82
C105	08T81196F25	Mica, 47pF	D203	48T73079F02	1SS82
C106	08T81196F25	Mica, 47pF	D204	48T73079F02	1SS82
C107	08T00151L13	PP., 1000pF	ZD201	48T52741F14	Zener, HZ7B2L
C114	23T61177F06	ELY., (B.P) 4.7 μ F / 100V			
Resistors			Capacitors		
R106	06T00147L65	C.F., 1K ohm 1/2W	C203	08T90316F01	TF, 470pF
R107	06T00148L38	C.F., 1M ohm 1/2W	C204	08T81196F19	Mica, 33pF
R108	06T00147L41	C.F., 100 ohm 1/2W	C205	08T81196F25	Mica, 47pF
R109	06T00147L39	C.F., 82 ohm 1/2W	C206	08T81196F25	Mica, 47pF
R110	06T00147L72	C.F., 2K ohm 1/2W	C207	08T00151L13	PP., 1000pF
R117	06S81094F33	M.F., 47 ohm 1/2W	C213	23T61177F06	ELY., (B.P) 4.7 μ F / 100V
R118	06T00148L38	C.F., 1M ohm 1/2W			
R121	06S81094F33	M.F., 47 ohm 1/2W	Resistors		
R122	06S81094F91	M.F., 12K ohm 1/2W	R206	06T00147L65	C.F., 1K ohm 1/2W
R123	06S81094F41	M.F., 100 ohm 1/2W	R207	06T00148L38	C.F., 1M ohm 1/2W
R124	06S81094F41	M.F., 100 ohm 1/2W	R208	06T00147L41	C.F., 100 ohm 1/2W
Pre (2) P.C.Board			R209	06T00147L39	C.F., 82 ohm 1/2W
Transistors			R210	06T00147L72	C.F., 2K ohm 1/2W
Q201	48T64376F01	2SC3423	R217	06S81094F33	M.F., 47 ohm 1/2W
Q202	48T64376F01	2SC3423	R218	06T00148L38	C.F., 1M ohm 1/2W
Q203	48T52146F03	FET, 2SK146	R221	06S81094F33	M.F., 47 ohm 1/2W
Q204	48T64376F01	2SC3423	R222	06S81094F91	M.F., 12K ohm 1/2W
Q205	48T64375F01	2SA1360	R223	06S81094F41	M.F., 100 ohm 1/2W
Q206	48T64375F01	2SA1360	R224	06S81094F41	M.F., 100 ohm 1/2W
Q207	48T64375F01	2SA1360	Pre (3) P.C.Board		
Q208	48T64376F01	2SC3423	Transistors		
Q209	48T64376F01	2SC3423	Q301	48T64376F01	2SC3423
			Q302	48T64376F01	2SC3423
			Q303	48T52146F03	FET, 2SK146
			Q304	48T64376F01	2SC3423

Symbol No.	Part No.	Description
Q305	48T64375F01	2SA1360
Q306	48T64375F01	2SA1360
Q307	48T64375F01	2SA1360
Q308	48T64376F01	2SC3423
Q309	48T64376F01	2SC3423
Diodes		
D301	48T73079F02	1SS82
D302	48T73079F02	1SS82
D303	48T73079F02	1SS82
D304	48T73079F02	1SS82
ZD301	48T52741F14	Zener, HZ7B2L
Capacitors		
C303	08T90316F01	TF, 470pF
C304	08T81196F19	Mica, 33pF
C305	08T81196F25	Mica, 47pF
C306	08T81196F25	Mica, 47pF
C307	08T00151L13	PP., 1000pF
C313	23T61177F06	ELY., (B.P) 4.7 μ F / 100V
Resistors		
R306	06T00147L65	C.F., 1K ohm 1/2W
R307	06T00148L38	C.F., 1M ohm 1/2W
R308	06T00147L41	C.F., 100 ohm 1/2W
R309	06T00147L39	C.F., 82 ohm 1/2W
R310	06T00147L72	C.F., 2K ohm 1/2W
R317	06S81094F33	M.F., 47 ohm 1/2W
R318	06T00148L38	C.F., 1M ohm 1/2W
R321	06S81094F33	M.F., 47 ohm 1/2W
R322	06S81094F91	M.F., 12K ohm 1/2W
R323	06S81094F41	M.F., 100 ohm 1/2W
R324	06S81094F41	M.F., 100 ohm 1/2W

Symbol No.	Part No.	Description
Pre (4) P.C.Board		
Transistors		
Q401	48T64376F01	2SC3423
Q402	48T64376F01	2SC3423
Q403	48T52146F03	FET, 2SK146
Q404	48T64376F01	2SC3423
Q405	48T64375F01	2SA1360
Q406	48T64375F01	2SA1360
Q407	48T64375F01	2SA1360
Q408	48T64376F01	2SC3423
Q409	48T64376F01	2SC3423
Diodes		
D401	48T73079F02	1SS82
D402	48T73079F02	1SS82
D403	48T73079F02	1SS82
D404	48T73079F02	1SS82
ZD401	48T52741F14	Zener, HZ7B2L
Capacitors		
C403	08T90316F01	TF, 470pF
C404	08T81196F19	Mica, 33pF
C405	08T81196F25	Mica, 47pF
C406	08T81196F25	Mica, 47pF
C407	08T00151L13	PP., 1000pF
C413	23T61177F06	ELY., (B.P) 4.7 μ F / 100V
Resistors		
R406	06T00147L65	C.F., 1K ohm 1/2W
R407	06T00148L38	C.F., 1M ohm 1/2W
R408	06T00147L41	C.F., 100 ohm 1/2W
R409	06T00147L39	C.F., 82 ohm 1/2W
R410	06T00147L72	C.F., 2K ohm 1/2W

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
R417	06S81094F33	M.F., 47 ohm 1/2W	Speaker P.C.Board		
R418	06T00148L38	C.F., 1M ohm 1/2W	Capacitors		
R421	06S81094F33	M.F., 47 ohm 1/2W	C109	08T90316F21	TF, 0.022 μ F
R422	06S81094F91	M.F., 12K ohm 1/2W	C209	08T90316F21	TF, 0.022 μ F
R423	06S81094F41	M.F., 100 ohm 1/2W	C309	08T90316F21	TF, 0.022 μ F
R424	06S81094F41	M.F., 100 ohm 1/2W	C409	08T90316F21	TF, 0.022 μ F
Common P.C.Board			LED P.C.Board		
Transistors			LED's		
Q716	48T82758F02	2SC4038	LD501	48T72180F01	AABG4307 (ORG / GRN)
Q717	48T69176F01	2SC3421	LD502	48T72180F01	AABG4307 (ORG / GRN)
Diodes			LD503	48T72180F01	AABG4307 (ORG / GRN)
D701	48T68079F03	30D4	LD504	48T72180F01	AABG4307 (ORG / GRN)
ZD713	48T90517F39	Zener, HZS8.2NB2	Fuse P.C.Board		
ZD714	48T90517F18	Zener, HZS4.3NB2	Diodes		
Coil			D506	48T70933F01	1SS136
L701	25T35113W01	Choke	D702	48S40477U01	1N4003
Capacitors			Miscellaneous		
E721	23T35463W27	ELY., 470 μ F / 16V	D709	48T80987F01	Diode, FMG22S
E722	23T15412W13	ELY., 10 μ F / 16V	D710	48T80987F02	Diode, FMG22R
E723	23T35463W27	ELY., 470 μ F / 16V	D809	48T80987F01	Diode, FMG22S
Resistor			D810	48T80987F02	Diode, FMG22R
R701	06T71921F03	Cement, 0.1ohm 5W	ET101	29T35595W08	Speaker Output Terminal (8P)
			ET701	29T73269F02	Power Supply Terminal (4P)
			ET702	01T74571F01	Assy., Coupler (2P)
			F701	65S58596F06	Fuse, Auto 20A (For BATT Line)
			F702	65S58596F06	Fuse, Auto 20A (For BATT Line)
			JK101	09T81475F04	Jack, RCA Input (4P)

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
L702	25T25761W01	Choke, Coil			
M701	59T25036W02	Motor, Fan (12V-90mA)			
Q110	48T64376F01	Transistor, 2SC3423			
Q113	48T95042F01	Transistor, 2SC4388			
Q114	48T95041F01	Transistor, 2SA1673			
Q210	48T64376F01	Transistor, 2SC3423			
Q213	48T95042F01	Transistor, 2SC4388			
Q214	48T95041F01	Transistor, 2SA1673			
Q310	48T64376F01	Transistor, 2SC3423			
Q313	48T95042F01	Transistor, 2SC4388			
Q314	48T95041F01	Transistor, 2SA1673			
Q410	48T64376F01	Transistor, 2SC3423			
Q413	48T95042F01	Transistor, 2SC4388			
Q414	48T95041F01	Transistor, 2SA1673			
Q705	48T25760W01	FET, IRFZ42			
Q706	48T25760W01	FET, IRFZ42			
Q707	48T25760W01	FET, IRFZ42			
Q708	48T25760W01	FET, IRFZ42			
Q805	48T25760W01	FET, IRFZ42			
Q806	48T25760W01	FET, IRFZ42			
Q807	48T25760W01	FET, IRFZ42			
Q808	48T25760W01	FET, IRFZ42			
S101	40T35512W03	Switch, Slide SSSF02 (INPUT MODE · 1 / 2CH)			
S301	40T35512W03	Switch, Slide SSSF02 (INPUT MODE · 3 / 4CH)			

Cabinet Assembly Parts List

Note : The parts without parts list are not supplied.

Symbol No.	Index	Part No.	Description	Symbol No.	Index	Part No.	Description
4	5-A	27B31270W01	Assy., Chassis Side (L)				
5	3-G	27B31267W01	Assy., Chassis Side (R)				
6		07T35398W01	Support, P.C.Board				
8	2-E	46A31467W02	Stad, Screw				
9		03S71677F07	Screw, Flange (M2.6×8)				
10		03S71677F06	Screw, Flange (M2.6×6)				
11		03S71677F45	Screw, Flange (M2.6×12)				
12	4-E	03S68555F16	Screw, Pan (M2.6×8)				
13		03D40121T32	Screw, W/Double Washer (M3×6)				
14	4-G	03D40121T33	Screw, W/Double Washer (M4×10)				
15		03S44205G05	Screw, Pan (M3×5)				
16		03S44205G53	Screw, Countersink (M2.6×5)				
17	4-E	04S40075G13	Washer, Polyslider (M3.1)				
18	4-G	01T15215W64	Assy., Connector (1P)				
19	4-G	01T15215W65	Assy., Connector (1P)				
20	4-F	01T15215W66	Assy., Connector (1P)				
21	2-C	01T15215W67	Assy., Connector (1P)				
22	4-F	01T15215W68	Assy., Connector (1P)				
23	4-F	01T15215W69	Assy., Connector (1P)				
25		03S71031F03	Screw, Bind (M3×6)				
27		01T15031W02	Assy., Chassis Wire GND				
33		03D40014G49	Screw, W/Washer (M3×8)				
35		43T15941W01	Bushing				
36		43T94356F01	Spacer				
40		03S40012G41	Screw, Tapping (M3×8)				
47	3-G	09T70751F01	Holder, Auto Fuse (1P)				
49	3-H	03S68555F02	Screw, Pan (M2×5.5)				
56	1-F	03S44205G71	Screw, Bind (M3×30)				
58	5-D	36A13427W01	Lens, Base				
59	5-D	36A13426W01	Lens, LED				
60	2-D	15A13539W01	Lens, Guide				
61	5-E	03S68555F09	Screw, Pan (M2×6)				
67		03S72235F36	Screw, Bind (M3×10)				
72	5-G	46A31467W01	Stad, Screw				
73		03D40121T49	Bolt, Hex. W/Double Washer (M3×10)				
74		29T94619F01	Terminal				
77	1-E	01T15031W03	Assy., Chassis Wire GND				

Exploded View (Cabinet)

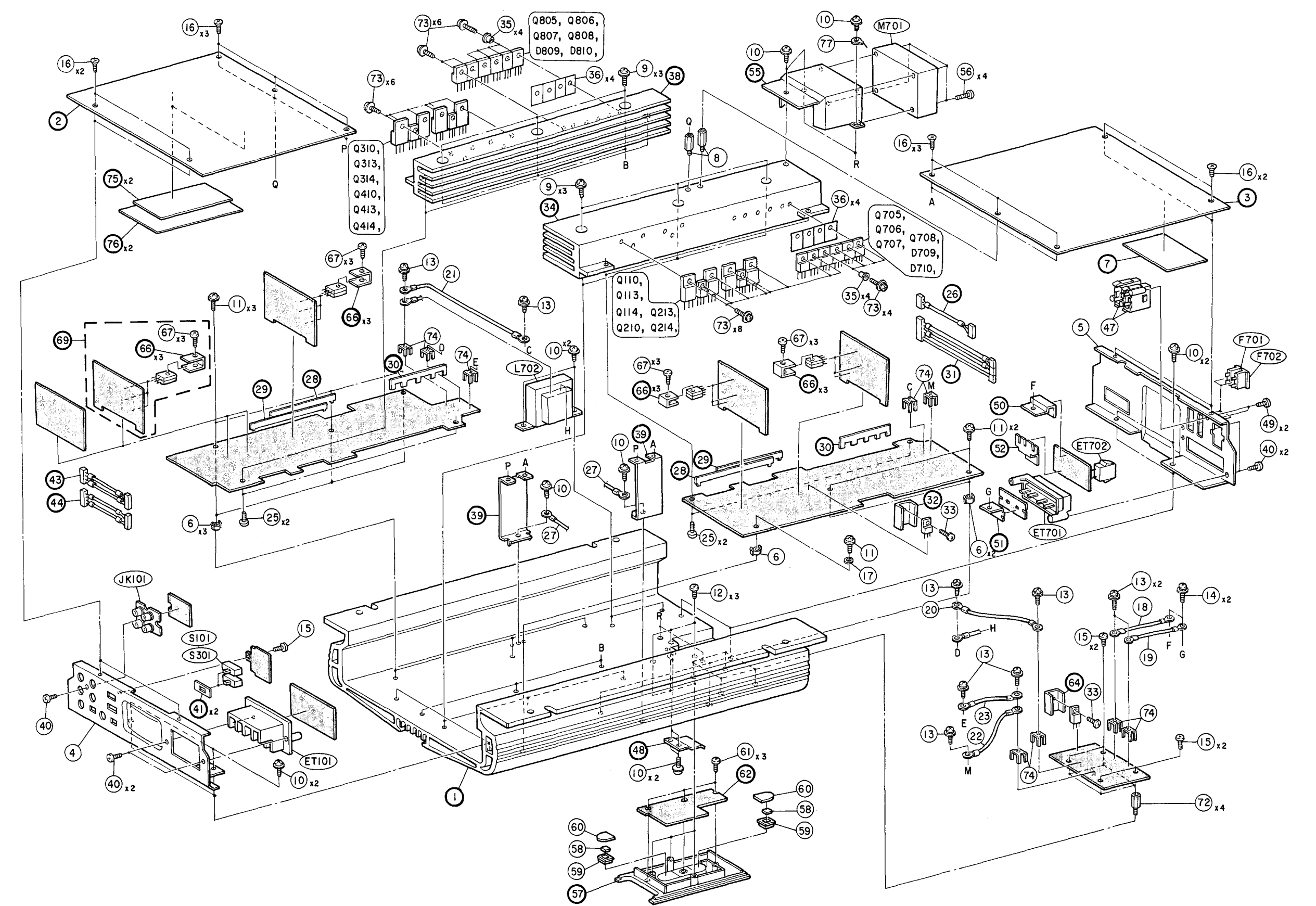
1

2

3

4

5



A

B

C

D

E

F

G

H

- 45 -

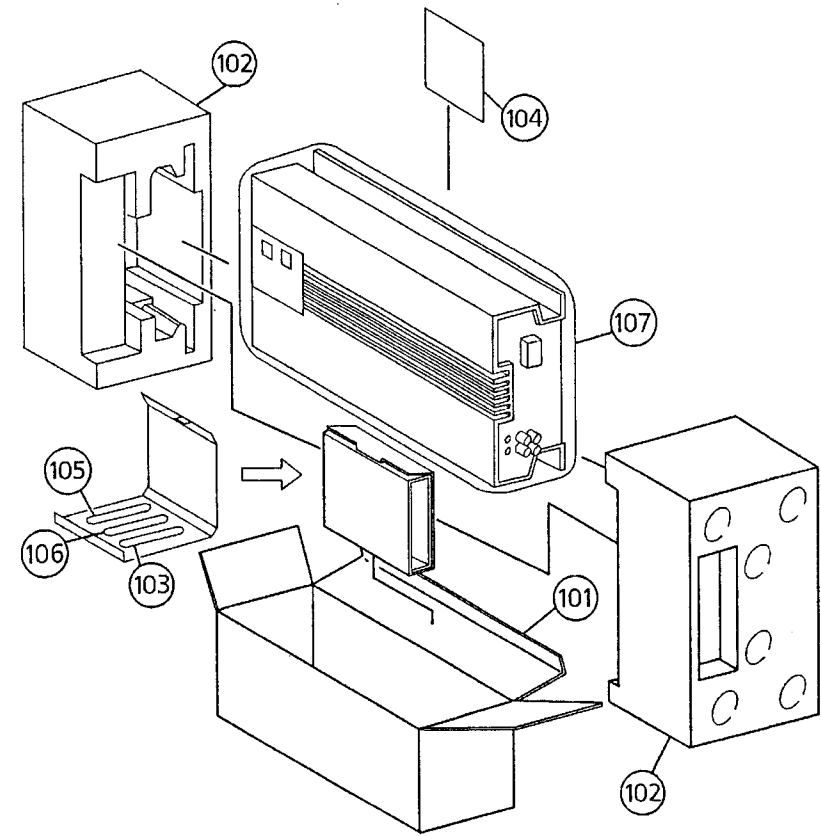
- 46 -

Packing Assembly Parts List

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
○	101	56S30003W81 Carton, Packing (Individual)	△	104	68P32052W60 Owner's Manual
●	101	56S30003W81 Carton, Packing (Individual)	●	104-1	68P32052W59 Owner's Manual
△	101	56S30003W82 Carton, Packing (Individual)	●	104-2	68P32052W65 Owner's Manual
	102	56D31470W01 Tray, Packing		105	01T73276F03 Assy., Kit Wire
	103	01V33400W27 Assy., Kit (Installation)		106	01T95123F01 Assy., Kit Wire (2P)
△	103-1	03S40018G07 Screw, Tapping (M4 x 14)		107	56B72811F09 Sack, Polyethylene
△	103-2	15A81064F01 Housing, Rubber			
△	103-3	15T35397W01 Housing, Rubber			
△	103-4	65S58596F06 Fuse, Auto 20A (For BATT Line)			
○	104	68P32052W59 Owner's Manual			

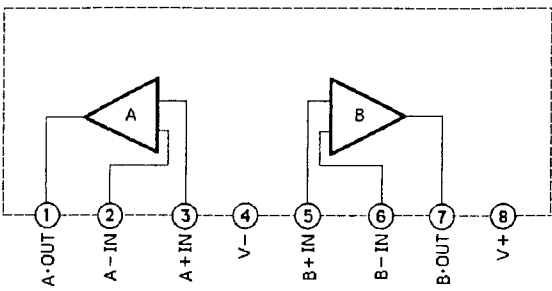
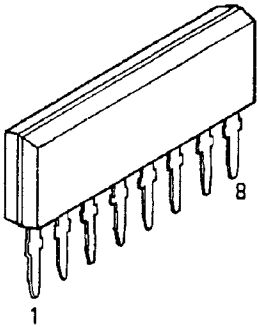
Note :○: For North American Model Only, ●: For Canadian Model Only,
△: For General Foreign Model Only, Others : Common.

Packing Method View

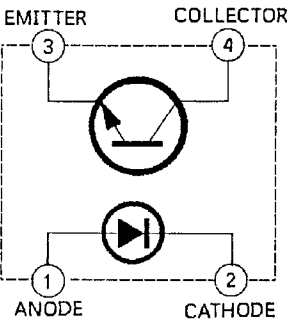
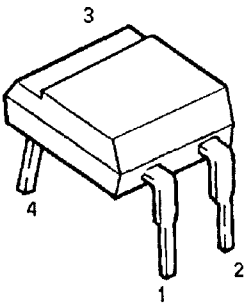


Semi - Conductor Lead Identifications

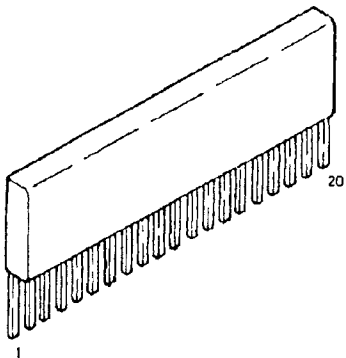
M5238L : IC101, 201, 301, 401



PS2501 - 1 : IC501, 502



25741W02 : IC701, 801



PIN NO.	CORD ADDRESS	I/O
1	PULSE 1	0
2	PULSE 2	0
3	RT	0
4	CT	0
5	V _{CC} 1	—
6	V _{CC} 1	—
7	REMOTE	1
8	OVER TEMP	1
9	SP PROTECT	0
10	1mV INPUT	1
11	V _{CC} 2	—
12	GND	—
13	DEAD TIME	0
14	1mV INPUT	1
15	V CONT	1
16	TH	0
17	CAP 2	0
18	CAP 1	0
19	+ V _{CC}	—
20	- V _{CC}	—