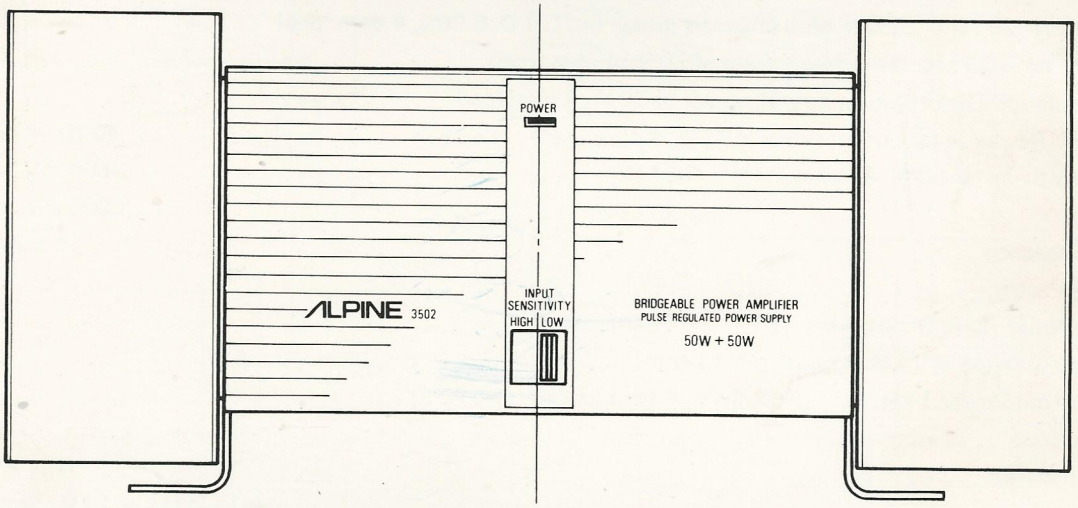
ALPINE SERVICE MANUAL

BRIDGEABLE POWER AMPLIFIER



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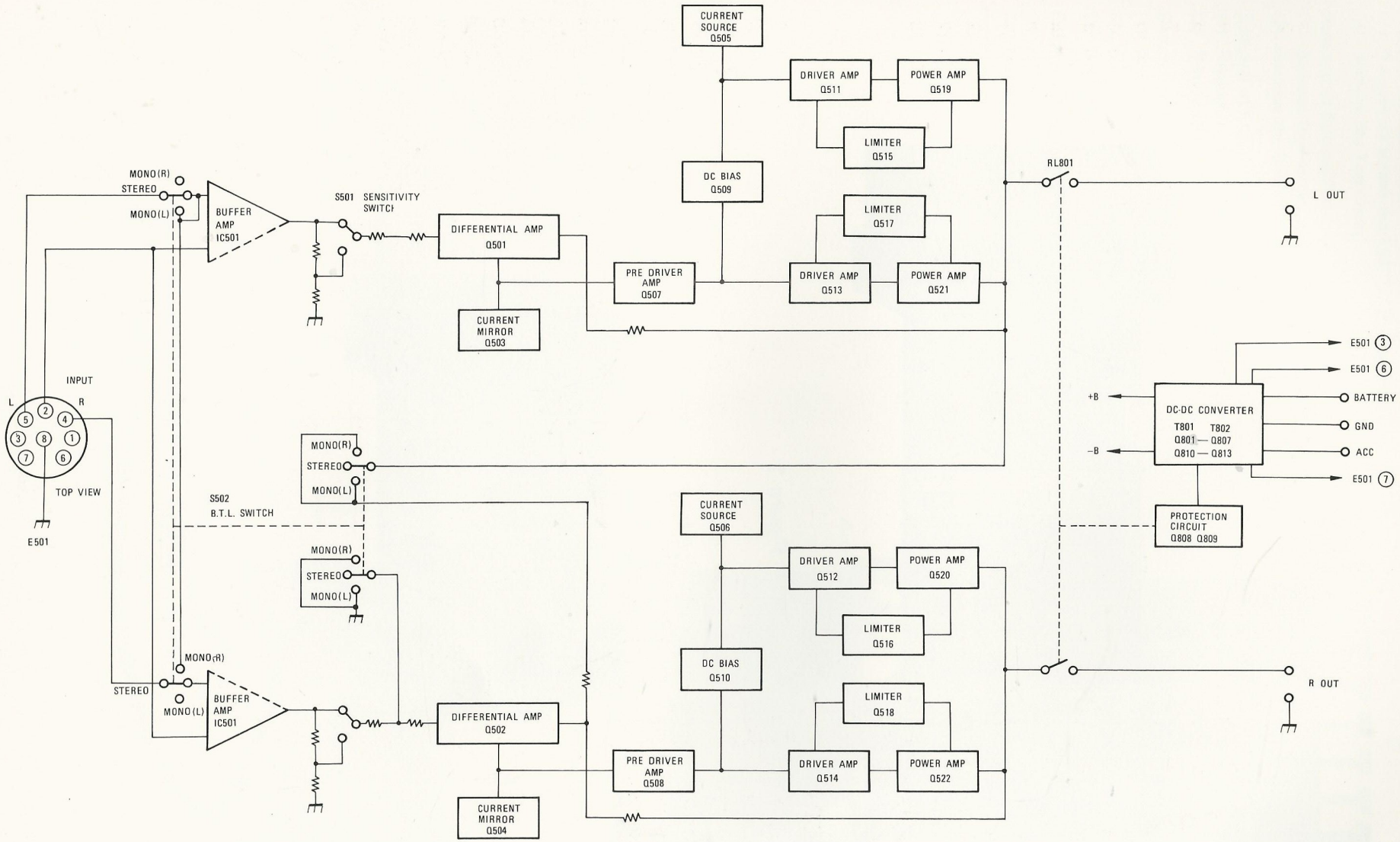
Specifications

Maximum Power 1 kHz both channels driven (at T.H.D. 0.1%, 4 ohm load)	55 W
R.M.S. Power 20 Hz – 20 kHz both channels driven (at T.H.D. 0.08%, 4 ohm load)	50 W
T.H.D. 20 Hz – 20 kHz (at output power of 50 W, 4 ohm load)	0.08%
Intermodulation Distortion (at output power of 50 W, 4 ohm load)	0.2%
Frequency Response (at output power of 1 W, 4 ohm load) ±3 dB	20 Hz – 70 kHz
Input Sensitivity (at 50 W, 40 ohm load) Gain High	500 mV ± 1 dB
Gain Low	1,000 mV ± 1 dB
Input Impedance	10 ± 2k ohm
Damping Factor	40
Signal to Noise Ratio (input short, IHF A weighted)	85 dB
Channel Separation at 1 kHz (input load 1 kohm)	65 dB
B.T.L. Output Power 1 kHz (at T.H.D. 0.1%, 4 ohm load)	100 W
Residual Noise	10 mV
Load Impedance	4 – 16 ohm
Power Source	DC 14 V (11 ~ 16 V allowable)
Dimensions	200(W) x 85(H) x 250(D) mm
Weight	3.4 kg

Block Diagram



Parts Locations and Disassembly Instructions

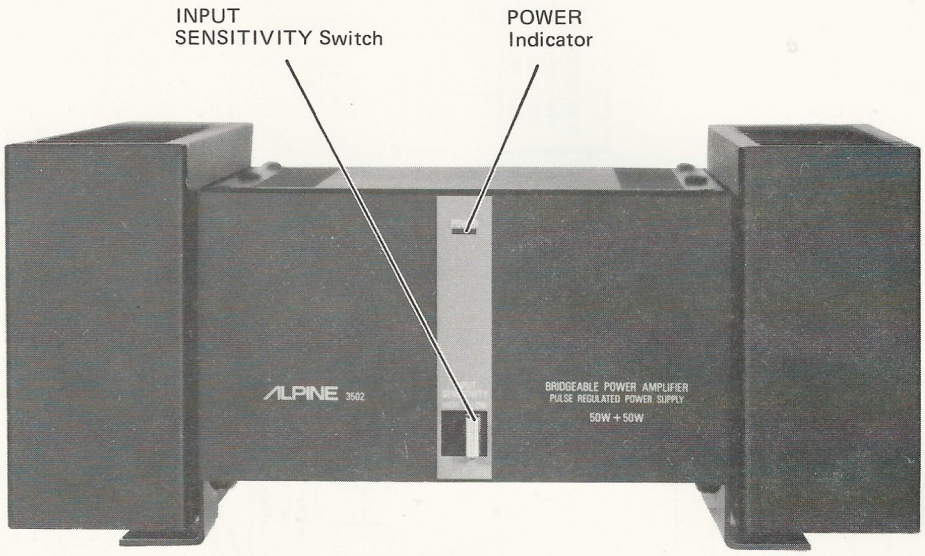


Figure 1

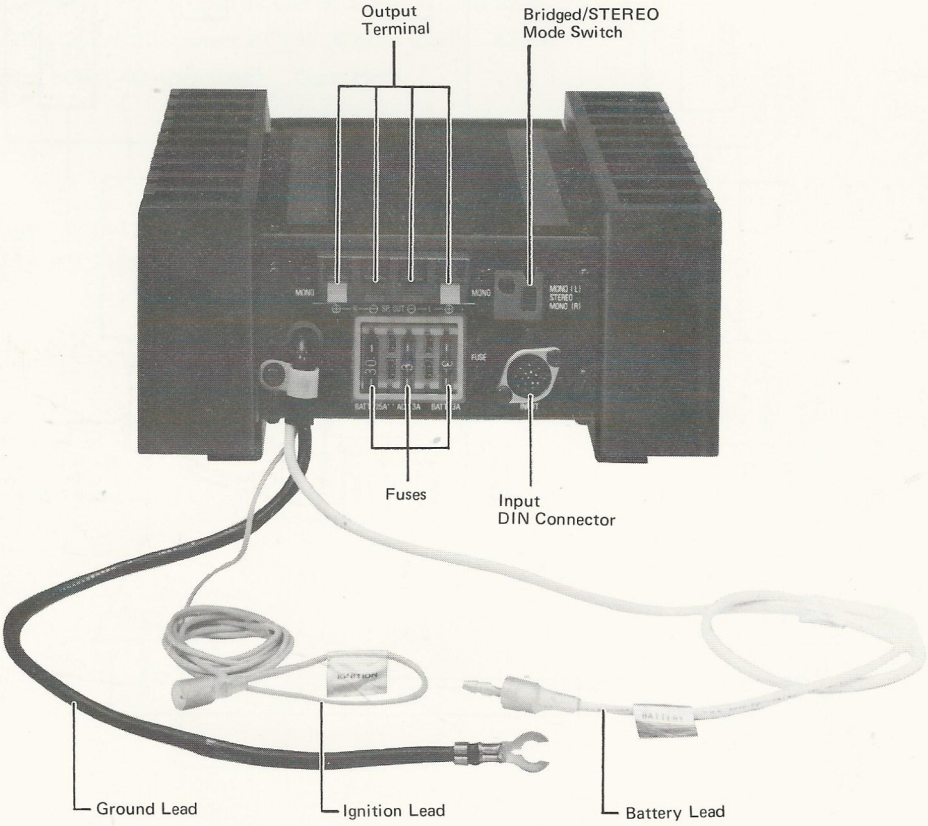


Figure 2

1. Removal of Top Cover
   (1) Remove six screws marked "○" in Figure 3.
   (2) Remove the Top Cover.
2. Removal of Bottom Plate
   (1) Remove four screws marked "△" in Figure 4.
   (2) Remove the Botton Plate.
3. Removal of Front Panel
   (1) Remove LED P.C. Board from the LED Holder.
   (2) Remove the Front Panel.
4. Removal of Power Supply Drive P.C. Board
   (1) Remove two screws marked "□" in Figure 5.
   (2) Disconnect all wires from Main P.C. Board.
   (3) Remove the power supply Drive P.C. Board.
5. Removal of Rear Panel
   (1) Remove eleven screws marked "●" in Figure 6.
   (2) Disconnect Battery Lead, Ignition Lead and Ground Lead.
   (3) Disconnect all wires from the DIN Connector Jack.
   (4) Remove the Rear Panel.

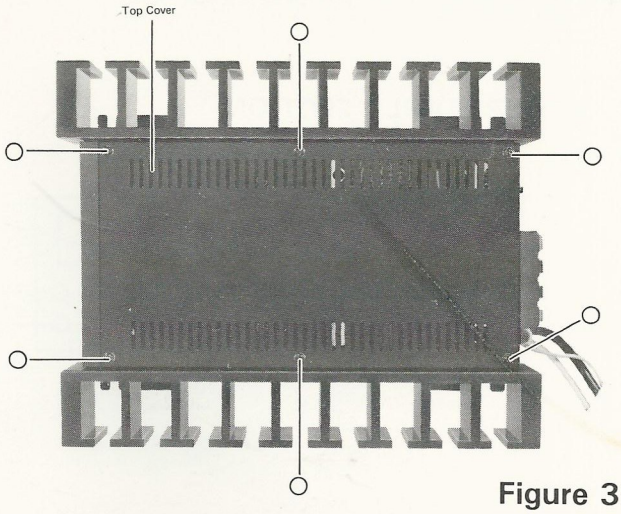


Figure 3

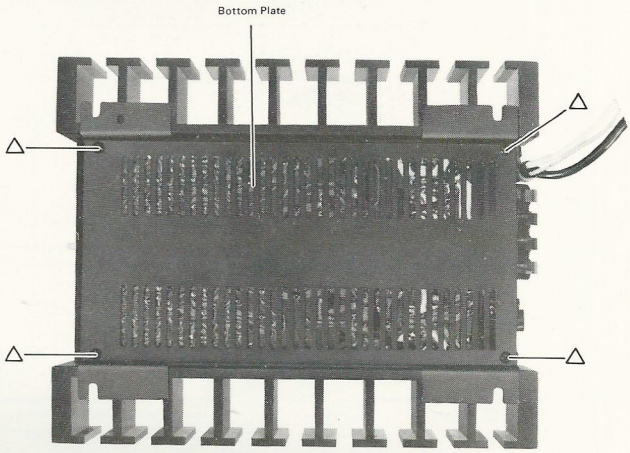


Figure 4

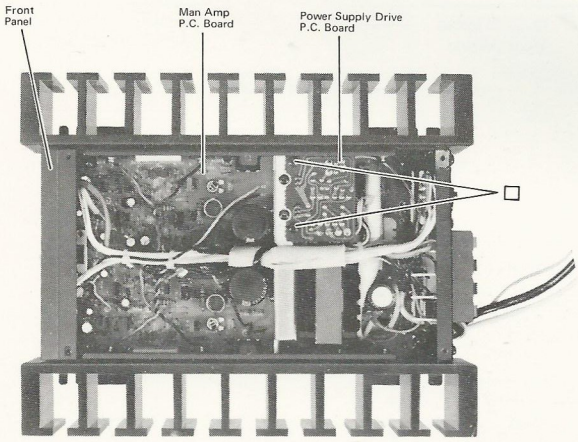


Figure 5

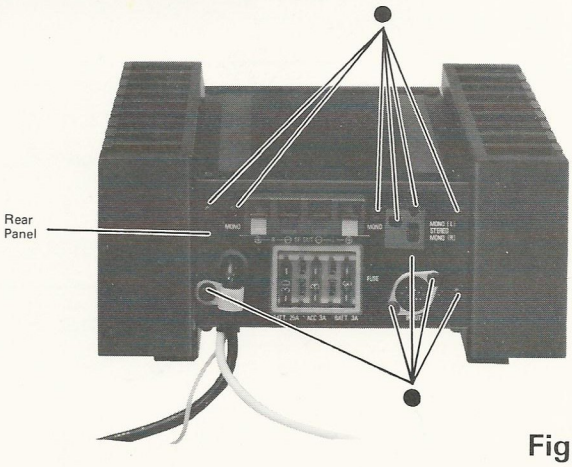


Figure 6

Adjustment Procedures

POWER SUPPLY SECTION

(1) Connection

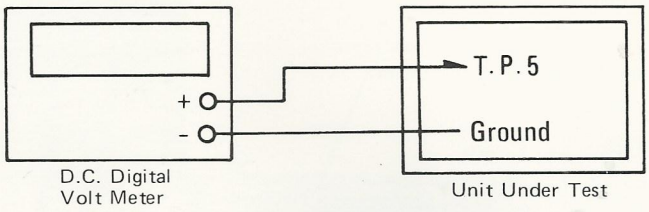


Figure 7

(2) Adjustment Procedures

Step	Description	Connection	Condition	Test Point	Remarks
1	Vcc Adjustment	Figure 7	No Load	T.P.5	VR801 for 28.5V

MAIN AMP SECTION

(2) Connection

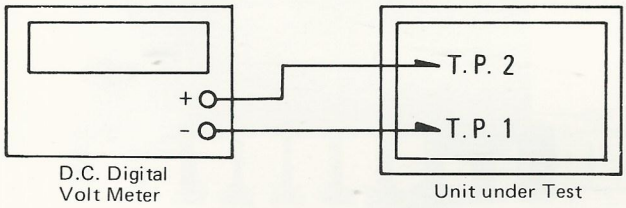


Figure 8

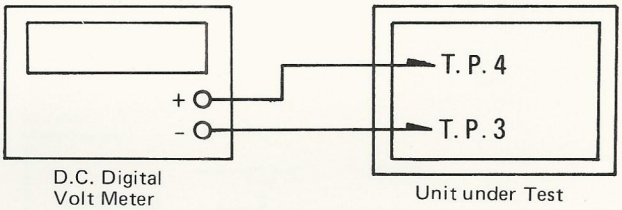
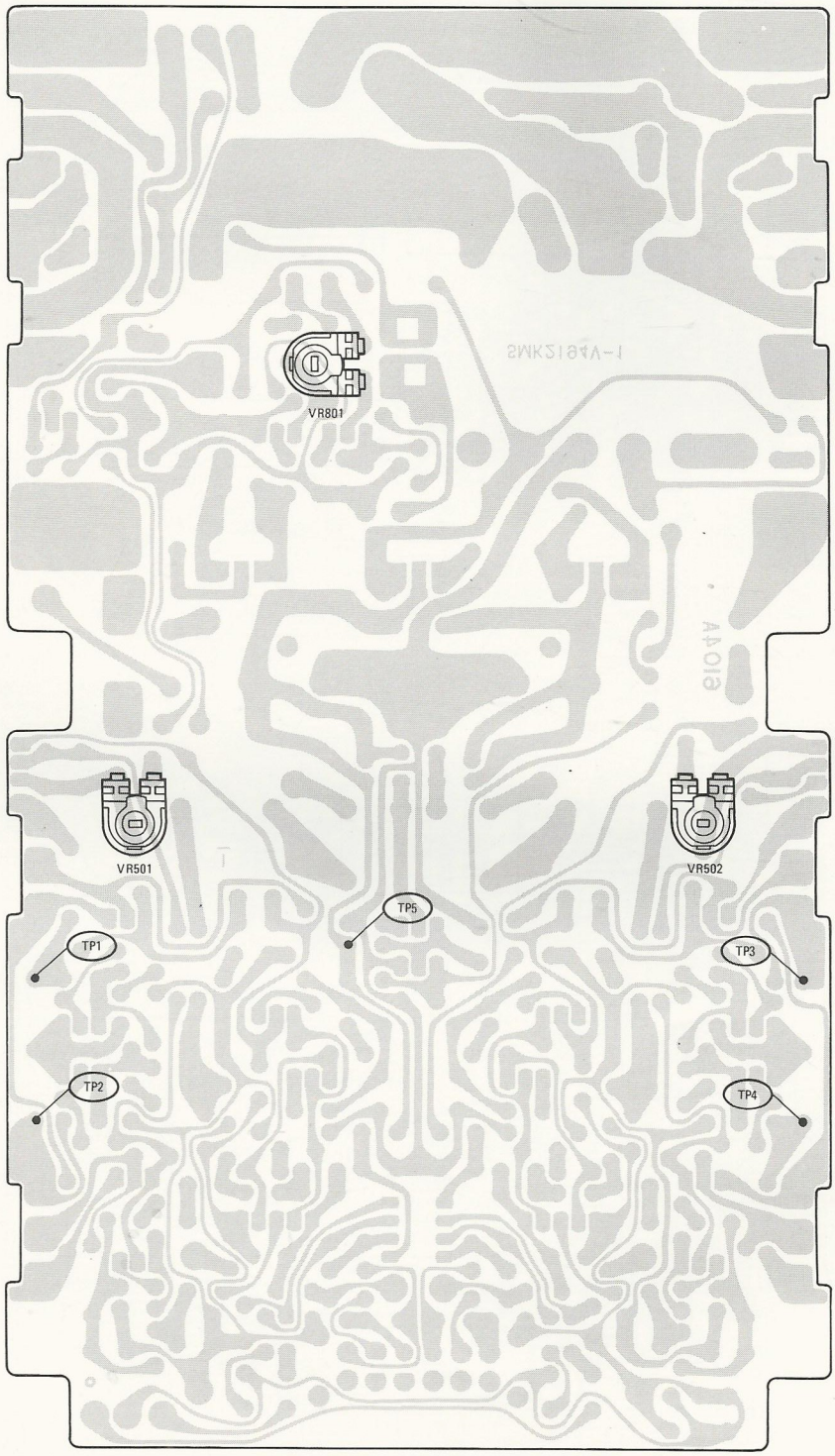


Figure 9

(2) Adjustment Procedures

Step	Description	Connection	Condition	Test Point	Remarks
1	Idling Current Adjustment (L Channel)	Figure 8	No Load	T.P. 1 T.P. 2	VR501 for 0.7mV
2	Idling Current Adjustment (R Channel)	Figure 9	No Load	T.P. 3 T.P. 4	VR502 for 0.7mV

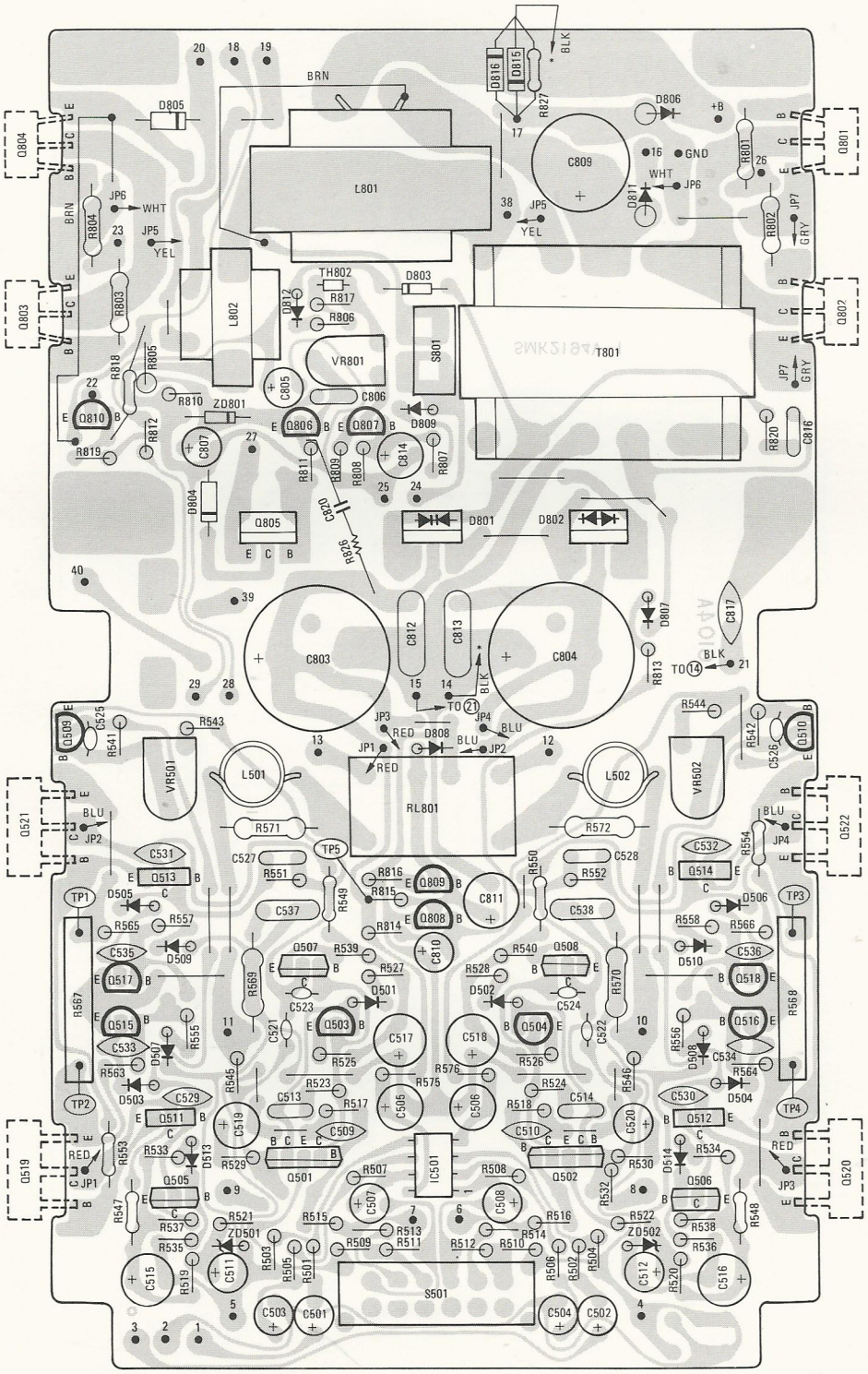
Adjustment Locations



Main P.C. Board

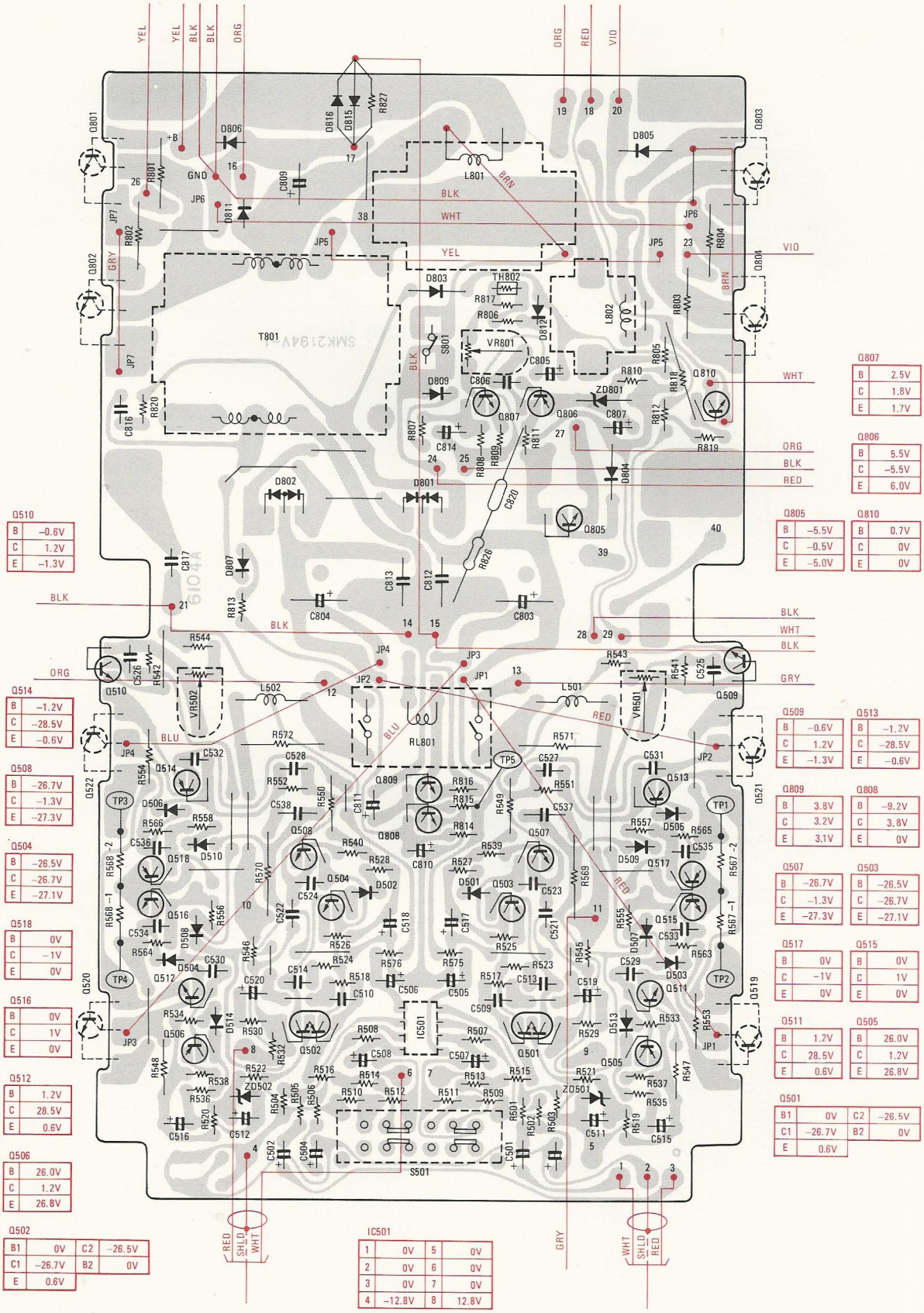
Parts Layout on P.C. Boards

Main Amp P.C. Board



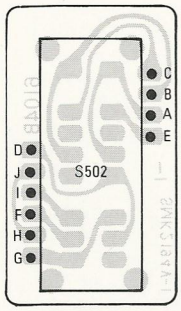
Top View

Main Amp P.C. Board

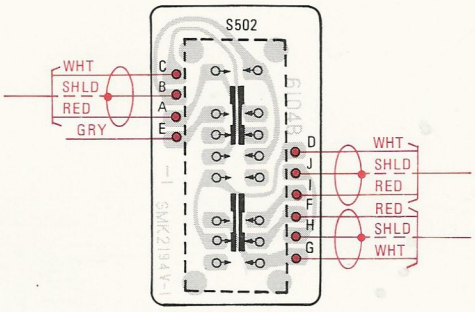


Bottom View

Switch P.C. Board

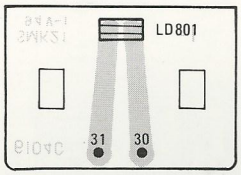


Top View

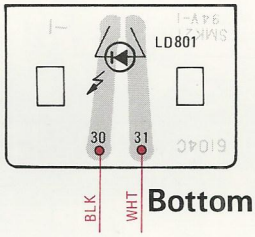


Bottom View

LED P.C. Board

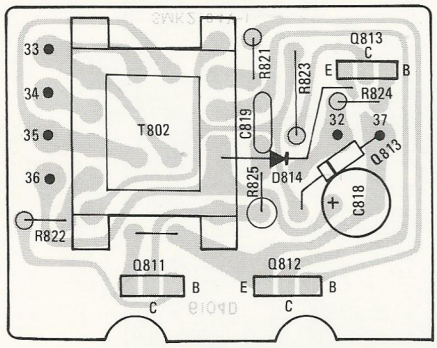


Top View

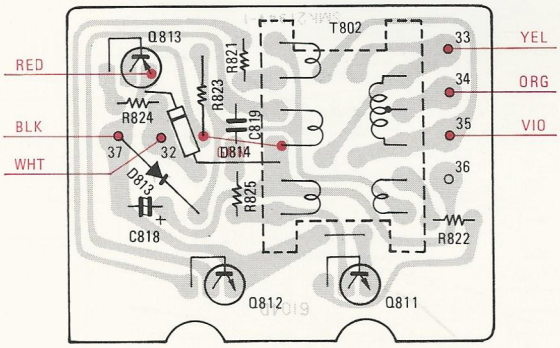


Bottom View

Power Supply Drive P.C. Board



Top View



Bottom View

Q813

B	13.6V
C	14.2V
E	14.4V

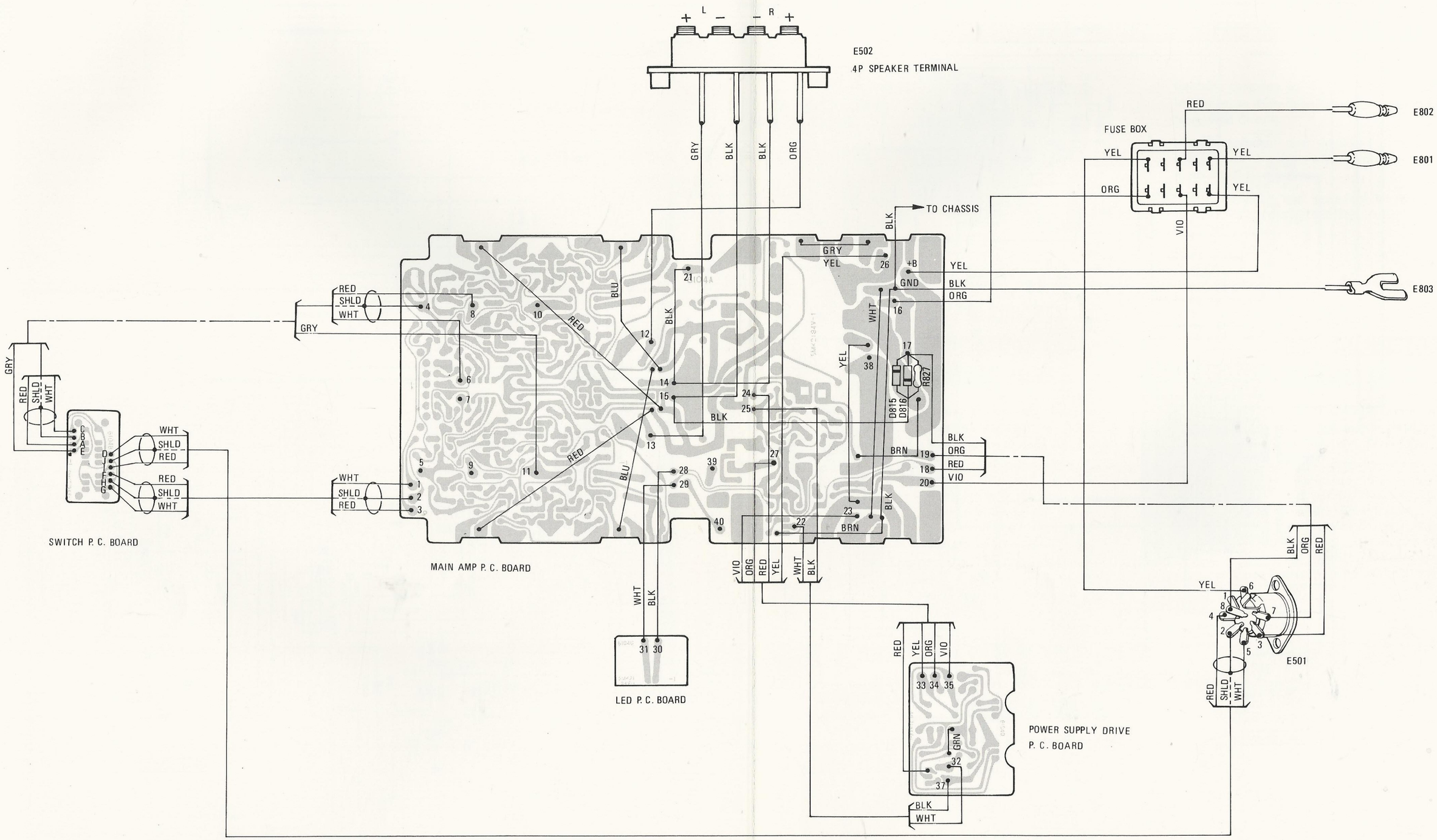
Q

B	−1V
C	14.2V
E	0V

Q811

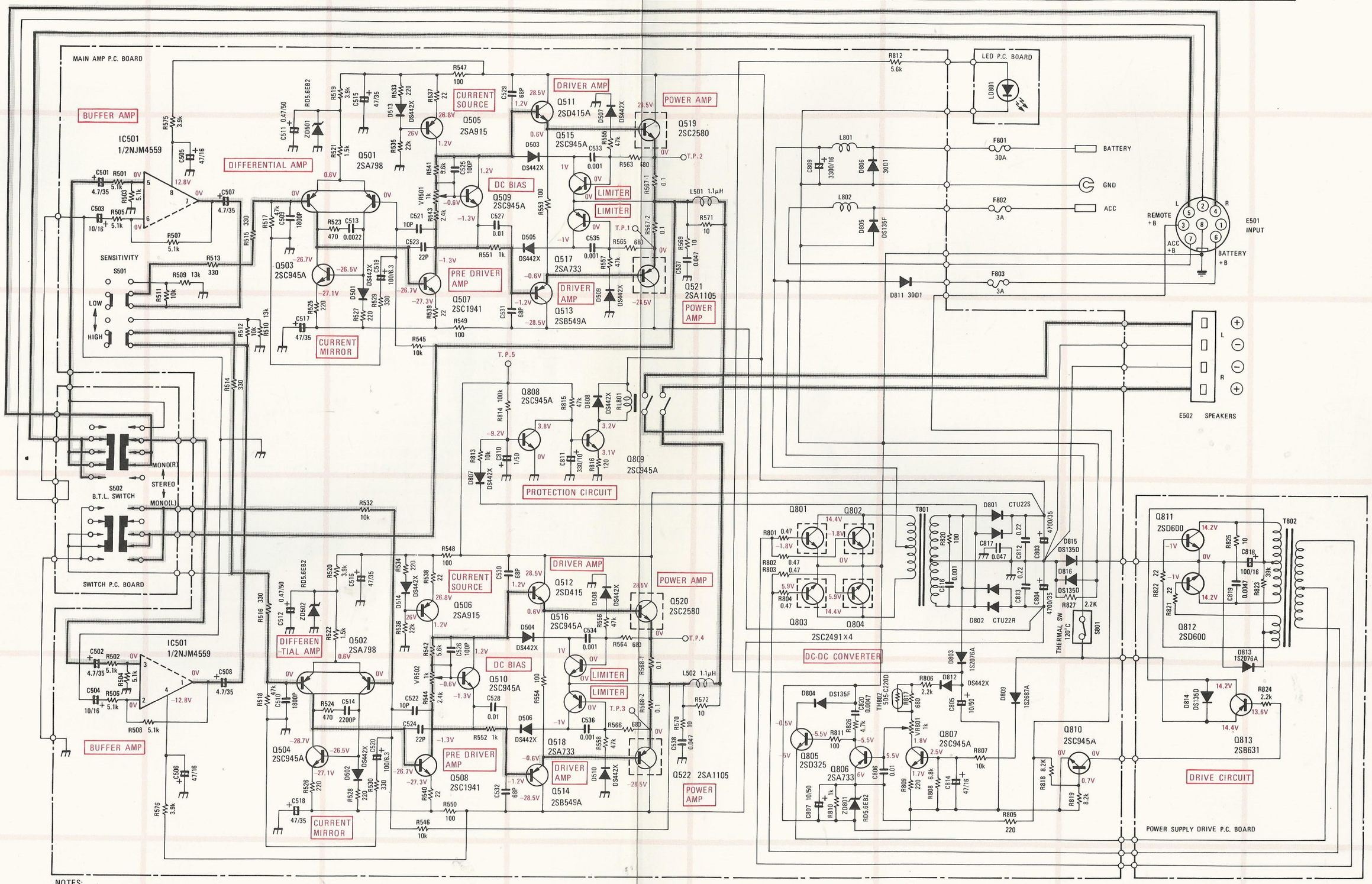
B	−1
C	14.2V
E	0V

Wiring Diagram



Schematic Diagram

IC	IC501
TRANSISTOR	Q501 ∿ Q504 Q505 ∿ Q508 Q509 Q510 Q808 Q511∿Q514 Q515∿Q518 Q809 Q519∿Q522 Q801 ∿ Q807 Q810 Q811 Q812 Q813
DIODE	ZD501 ZD502 D501 D502 D513 D514 D807 D503∿D506 D808 D507∿D510 D804 ZD801 D805 D806 D811 D812 D803 LD801 D801 D802 D809 D815 D816 D814 D813



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

Electrical Parts List

Resisters (All resisters are carbon film, 1/4W, ±5% unless otherwise noted.)
μF = microfarads, pF = picofarads

Symbol No.	Part No.	Description
Main Amp P.C. Board		
IC		
IC501	51E00342S01	NJM4559
Transistors		
Q501	48T43816F01	2SA798-F, G
Q502	48T43816F01	2SA798-F, G
Q503	48E00237S01	2SC945A-P
or	48E00237S02	2SC945A-Q
Q504	48E00237S01	2SC945A-P
or	48E00237S02	2SC945A-Q
Q505	48E00343S01	2SA915-L
or	48E00343S02	2SA915-K
Q506	48E00343S01	2SA915-L
or	48E00343S02	2SA915-K
Q507	48E00347S01	2SC1941-L
or	48E00347S02	2SC1941-K
Q508	48E00347S01	2SC1941-L
or	48E00347S02	2SC1941-K
Q509	48E00237S01	2SC945A-P
or	48E00237S02	2SC945A-Q
Q510	48E00237S01	2SC945A-P
or	48E00237S02	2SC945A-Q
Q511	48E00344S01	2SD415A-Q
or	48E00344S02	2SD415A-R
Q512	48E00344S01	2SD415A-Q
or	48E00344S02	2SD415A-R
Q513	48E00345S01	2SB549A-Q
or	48E00345S02	2SB549A-R
Q514	48E00345S01	2SB549A-Q
or	48E00345S02	2SB549A-R
Q515	48E00237S01	2SC945A-P
or	48E00237S02	2SC945A-Q
Q516	48E00237S01	2SC945A-P
or	48E00237S02	2SC945A-Q
Q517	48T40081T03	2SA733-P
or	48T40081T02	2SA733-Q
Q518	48T40081T03	2SA733-P
or	48T40081T02	2SA733-Q
Q805	48E00346S01	2SD325-E
or	48E00346S02	2SD325-F
Q806	48E00346S01	2SD325-E
or	48E00346S02	2SD325-F
Q807	48E00237S01	2SC945A-P
or	48E00237S02	2SC945A-Q
Q808	48E00237S01	2SC945A-P
or	48E00237S02	2SC945A-Q
Q809	48E00237S01	2SC945A-P
or	48E00237S02	2SC945A-Q
Q810	48E00237S01	2SC945A-P
or	48E00237S02	2SC945A-Q
Diodes		
D501	48T51305F01	DS442X
D502	48T51305F01	DS442X
D503	48T51305F01	DS442X
D504	48T51305F01	DS442X
D505	48T51305F01	DS442X
D506	48T51305F01	DS442X
D507	48T51305F01	DS442X
D508	48T51305F01	DS442X
D509	48T51305F01	DS442X
D510	48T51305F01	DS442X
D513	48T51305F01	DS442X
D514	48T51305F01	DS442X
D801	48E00288S05	CTU-22S
D802	48E00288S06	CTU-22R
D803	48E00177S03	IS2076A
D804	48E00358S01	DS135F
D805	48E00358S01	DS135F
D806	48S40870U01	30D1
D807	48T51305F01	DS442X
D808	48T51305F01	DS442X
D809	48T51305F01	DS442X
D811	48S40870U01	30D1
D812	48T51305F01	DS442X
ZD501	48T40732F21	Zener RD5.6EB2
ZD502	48T40732F21	Zener RD5.6EB2
ZD801	48T40732F21	Zener RD5.6EB2

Symbol No.	Part No.	Description		
Coils & Transformer				
L501	24E00351S01	Choke Coil 1.1μH		
L502	24E00351S01	Choke Coil 1.1μH		
L801	25E00352S01	Choke Coil		
L802	25C40894G11	Choke Coil		
T801	25E00348S01	Converter Trans.		
Switches				
S501	40E00354S01	Slide (Sensitivity)		
S801	48E00350S01	Thermal 120°C		
Thermal Protector				
TH802	48E00349S01	Thermal Protector TD5-C220D		
Relay				
RL801	80E00353S01	G2Z-222P-US		
Capacitors				
C501	23D44333G06	Electrolytic	4.7μF	35V
C502	23D44333G06	Electrolytic	4.7μF	35V
C503	23T43247F09	Electrolytic	10μF	16V
C504	23T43247F09	Electrolytic	10μF	16V
C505	23S40657F13	Electrolytic	47μF	16V
C506	23S40657F13	Electrolytic	47μF	16V
C507	23D44333G06	Electrolytic	4.7μF	35V
C508	23D44333G06	Electrolytic	4.7μF	35V
C509	21E00205S10	Ceramic	0.0018μF	50V
C510	21E00205S10	Ceramic	0.0018μF	50V
C511	23T43247F04	Electrolytic	0.47μF	50V
C512	23T43247F04	Electrolytic	0.47μF	50V
C513	8C44833J05	Mylar	0.0022μF	50V
C514	8C44833J05	Mylar	0.0022μF	50V
C515	23S40657F26	Electrolytic	47μF	35V
C516	23S40657F26	Electrolytic	47μF	35V
C517	23S40657F26	Electrolytic	47μF	35V
C518	23S40657F26	Electrolytic	47μF	35V
C519	23S40657F26	Electrolytic	100μF	6.3V
C520	23S40657F26	Electrolytic	100μF	6.3V
C521	21C45322G10	Ceramic	10PF	50V
C522	21C45322G10	Ceramic	10PF	50V
C523	21C45322G14	Ceramic	22PF	50V
C524	21C45322G14	Ceramic	22PF	50V
C525	21C45322G22	Ceramic	100PF	50V

Symbol No.	Part No.	Description		
C526	21C45322G22	Ceramic	100PF	50V
C527	8C44833J13	Mylar	0.01μF	50V
C528	8C44833J13	Mylar	0.01μF	50V
C529	21C45322G20	Ceramic	68PF	500V
C530	21C45322G20	Ceramic	68PF	500V
C531	21C45322G20	Ceramic	68PF	500V
C532	21C45322G20	Ceramic	68PF	500V
C533	21E00205S04	Ceramic	0.001μF	50V
C534	21E00205S04	Ceramic	0.001μF	50V
C535	21E00205S04	Ceramic	0.001μF	50V
C536	21E00205S04	Ceramic	0.001μF	50V
C537	8C44833J21	Mylar	0.047μF	50V
C538	8C44833J21	Mylar	0.047μF	50V
C803	23E00316S01	Electrolytic	4700μF	35V
C804	23E00316S01	Electrolytic	4700μF	35V
C805	23S40657F32	Electrolytic	10μF	50V
C806	8C44833J13	Mylar	0.01μF	50V
C807	23S40657F32	Electrolytic	10μF	50V
C809	23E00316S02	Electrolytic	3300μF	16V
C810	23T43247F05	Electrolytic	1μF	50V
C811	23S41198U47	Electrolytic	330μF	10V
C812	8E00364S02	Mylar	0.22μF	50V
C813	8E00364S02	Mylar	0.22μF	50V
C814	23S40657F13	Electrolytic	47μF	16V
C816	8E00364S03	Mylar	0.001μF	100V
C817	21E00205S05	Ceramic	0.047μF	25V
C820	8C44833J09	Mylar	0.0047μF	50V
Resistors				
VR501	18E00360S01	Variable 1K ohm		
VR502	18E00360S01	Variable 1K ohm		
VR801	18E00360S02	Variable 1K ohm		
R501	6S40150T82	5.1K ohm		
R502	6S40150T82	5.1K ohm		
R503	6S40150T82	5.1K ohm		
R504	6S40150T82	5.1K ohm		
R505	6S40150T82	5.1K ohm		
R506	6S40150T82	5.1K ohm		
R507	6S40150T82	5.1K ohm		
R508	6S40150T82	5.1K ohm		
R509	6S40150T92	13K ohm		
R510	6S40150T92	13K ohm		

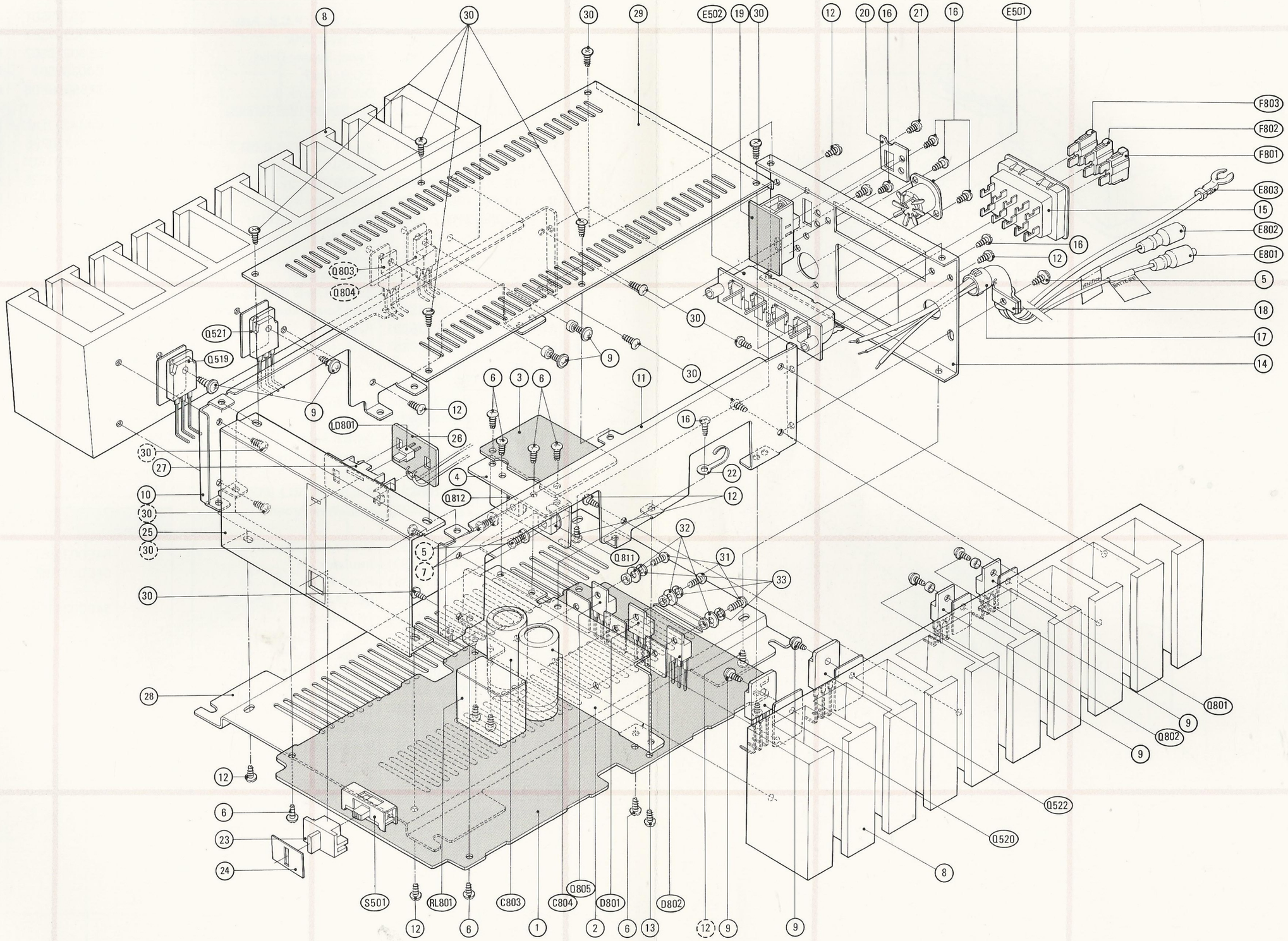
Symbol No.	Part No.	Description
R511	6S41801P44	10K ohm
R512	6S41801P44	10K ohm
R513	6S41801P26	330 ohm
R514	6S41801P26	330 ohm
R515	6S41801P26	330 ohm
R516	6S41801P26	330 ohm
R517	6S41801P52	47K ohm
R518	6S41801P52	47K ohm
R519	6S41801P39	3.9K ohm
R520	6S41801P39	3.9K ohm
R521	6S41801P34	1.5K ohm
R522	6S41801P34	1.5K ohm
R523	6S41801P28	470 ohm
R524	6S41801P28	470 ohm
R525	6S41801P24	220 ohm
R526	6S41801P24	220 ohm
R527	6S41801P24	220 ohm
R528	6S41801P24	220 ohm
R529	6S41801P26	330 ohm
R530	6S41801P26	330 ohm
R532	6S41801P44	10K ohm
R533	6S41801P24	220 ohm
R534	6S41801P24	220 ohm
R535	6S41801P48	22K ohm
R536	6S41801P48	22K ohm
R537	6S41801P12	22 ohm
R538	6S41801P12	22 ohm
R539	6S41801P12	22 ohm
R540	6S41801P12	22 ohm
R541	6S41801P41	5.6K ohm
R542	6S41801P41	5.6K ohm
R543	6S40150T74	2.4K ohm
R544	6S40150T74	2.4K ohm
R545	6S41801P44	10K ohm
R546	6S41801P44	10K ohm
R547	6E00362S01	Fail Safe 100 ohm 1/4W
R548	6E00362S01	Fail Safe 100 ohm 1/4W
R549	6E00362S01	Fail Safe 100 ohm 1/4W
R550	6E00362S01	Fail Safe 100 ohm 1/4W
R551	6S41801P32	1K ohm
R552	6S41801P32	1K ohm
R553	6E00362S01	Fail Safe 100 ohm 1/4W
R554	6E00362S01	Fail Safe 100 ohm 1/4W
R555	6S41801P52	47K ohm
R556	6S41801P52	47K ohm

Symbol No.	Part No.	Description
R557	6S41801P52	47K ohm
R558	6S41801P52	47K ohm
R563	6S41801P30	680 ohm
R564	6S41801P30	680 ohm
R565	6S41801P30	680 ohm
R566	6S41801P30	680 ohm
R567-1 R567-2	6E00363S01	Plate 0.1 ohm x 2
R568-1 R568-2	6E00363S01	Plate 0.1 ohm x 2
R569	6E00215S06	Metal 10 ohm 1W
R570	6E00215S06	Metal 10 ohm 1W
R571	6E00215S06	Metal 10 ohm 1W
R572	6E00215S06	Metal 10 ohm 1W
R575	6S41801P39	3.9K ohm
R576	6S41801P39	3.9K ohm
R801	6E00215S08	Metal 0.47 ohm 1/2W
R802	6E00215S08	Metal 0.47 ohm 1/2W
R803	6E00215S08	Metal 0.47 ohm 1/2W
R804	6E00215S08	Metal 0.47 ohm 1/2W
R805	6E00215S09	Metal 220 ohm 1/2W
R806	6S41801P36	2.2K ohm
R807	6S41801P44	10K ohm
R808	6S41801P42	6.8K ohm
R809	6S41801P24	220 ohm
R810	6S41801P32	1K ohm
R811	6S41801P20	100 ohm
R812	6S41801P41	5.6K ohm
R813	6S41801P44	10K ohm
R814	6S41801P56	100K ohm
R815	6S41801P52	47K ohm
R816	6S41801P12	120 ohm
R817	6S41801P30	680 ohm
R818	6S41801P43	8.2K ohm
R819	6S41801P43	8.2K ohm
R820	6E00215S07	Metal 100 ohm 1W
R826	6S41801P40	4.7K ohm

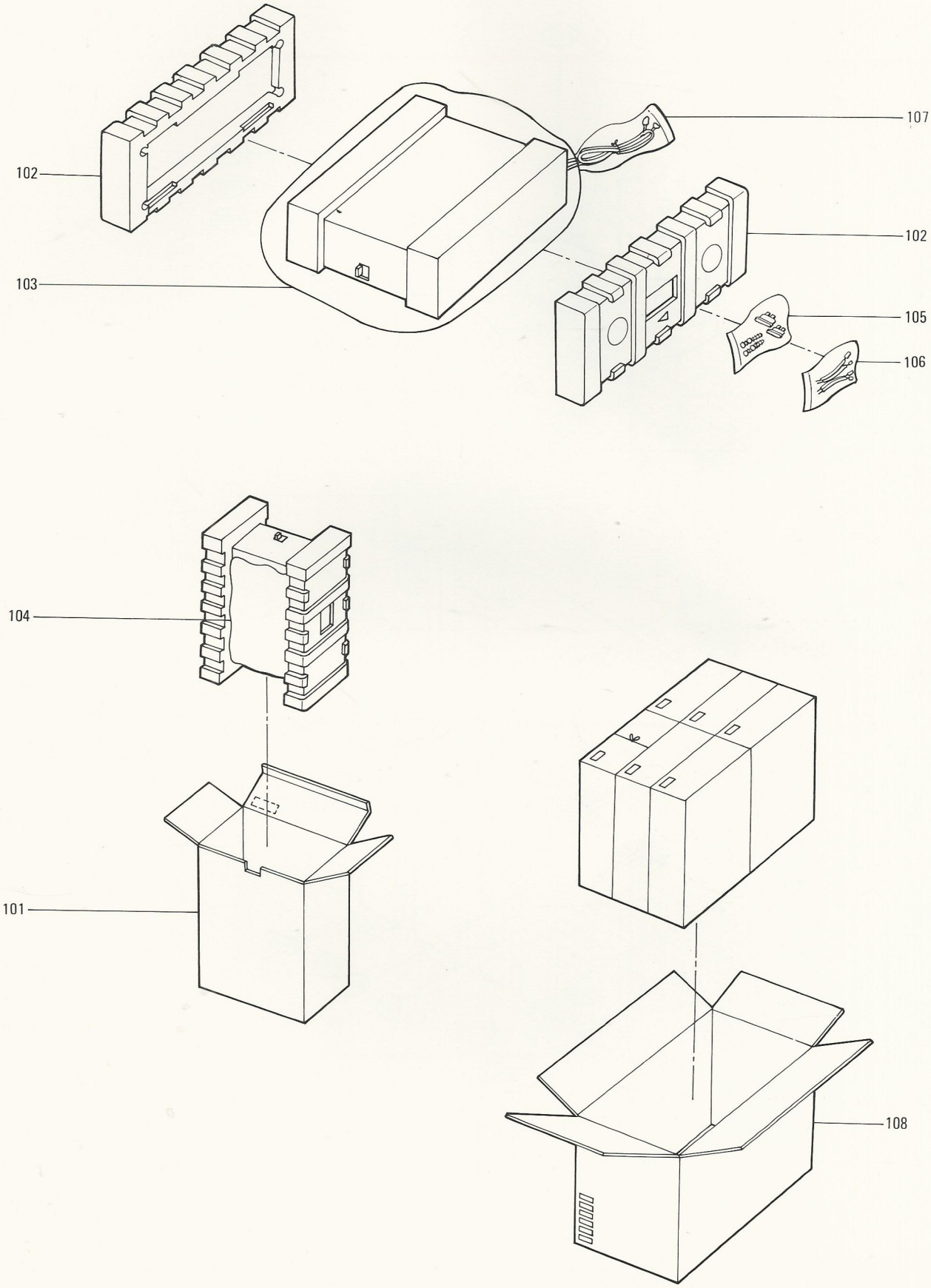
Symbol No.	Part No.	Description
Power Supply Drive P.C. Board		
Transistors		
Q811	48E00322S01	2SD600K-E
or	48E00322S02	2SD600K-F
Q812	48E00322S01	2SD600K-E
or	48E00322S02	2SD600K-F
Q813	48E00234S01	2SB631K-E
or	48E00234S02	2SB631K-F
Diodes		
D813	48E00177S03	1S2076A
D814	48T44992F01	DS135D
Transformer		
T802	25E00355S01	Drive Trans
Capacitors		
C818	23S40657F14	Electrolytic 100 μF 16V
C819	8E00364S01	Mylar 0.0047 μF 100V
Resistors		
R821	6S41801P12	22 ohm
R822	6S41801P12	22 ohm
R823	6S41801P51	39K ohm
R824	6S41801P36	2.2K ohm
R825	6E00215S10	Metal 10 ohm 2W
Miscellaneous Parts		
Q519	48E00319S01	Transistor 2SC2580-O
or	48E00319S02	Transistor 2SC2580-Y
Q520	48E00319S01	Transistor 2SC2580-O
or	48E00319S02	Transistor 2SC2580-Y
Q521	48E00320S01	Transistor 2SA1105-O
or	48E00320S02	Transistor 2SA1105-Y
Q522	48E00320S01	Transistor 2SA1105-O
or	48E00320S02	Transistor 2SA1105-Y
Q801	48E00321S01	Transistor 2SC2491-O
or	48E00321S02	Transistor 2SC2491-Y
Q802	48E00321S01	Transistor 2SC2491-O
or	48E00321S02	Transistor 2SC2491-Y

Symbol No.	Part No.	Description
Q803	48E00321S01	Transistor 2SC2491-O
or	48E00321S02	Transistor 2SC2491-Y
Q804	48E00321S01	Transistor 2SC2491-O
or	48E00321S02	Transistor 2SC2491-Y
LD801	48E00356S01	LED SLP-151B
S502	40E00354S02	Switch, Slide (BTL)
F801	65E00292S04	Auto Fuse 30A
F802	65E00292S05	Auto Fuse 3A
F803	65E00292S05	Auto Fuse 3A
E501	9E00357S01	Din Socket
E502	29E00303S02	4P SP Push Terminal
E801	30E00318S01	Battery Lead
E802	30E00317S01	Acc Lead
E803	30E00316S01	Ground Lead

Exploded View



Packing Method View



Cabinet Assembly Parts List

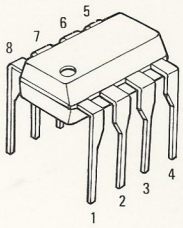
Symbol No.	Index	Part No.	Description
1	5B	1E00323S01	Main Amp. P.C.B. Assy
2	5C	7E00324S01	Sub Heat Sink
3	3B	1E00326S01	Power Supply Drive P.C.B. Assy
4	3B	7E00325S01	Sub Heat Sink B
5	2E,4B	3E00214S22	Pan Sems-F(BL) (M3x8)
6		3E00214S23	Bind Screw Tite-B (BL) (M3x6)
7	4B	4E00062S05	Washer (M3, 2)
8	1B,5D	7E00327S01	Heat Sink
9	3C,4E	3E00214S24	Pan Sems-B (M3x10)
10	3A	*	Side Chassis L
11	3C	*	Side Chassis R
12		3E00214S25	Brazer Tite-C (M3x8) Boss
13	5C	3E00214S29	Bind Screw Tite-B (M3x8)
14	3E	15E00328S01	Rear Panel
15	2E	15E00329S01	Fuse Holder
16		3E00214S26	Bind Screw Tite-B (M3x8)
17	3E	42E00369S01	Snap Bushing
18	3E	42B41424G04	Clamp Cord
19	1C	*	Switch Panel
20	1D	7E00368S02	Switch Fit Plate
21	1D	3E00108S21	Pan Screw (BL) (M2.6x4)
22	3C	29C41045P03	Lug, Wrap Around
23	5A	36E00330S01	Slide Knob (Sensitivity)
24	5A	14E00331S01	Insulator
25	3A	64E00332S01	Front Panel Assy
26	3B	84E00333S01	LED Panel
27	3A	15E00334S01	LED Holder
28	4B	*	Bottom Plate
29	1C	15E00338S01	Top Cover
30		3E00214S27	Oval Screw Tite-B (M3x8)
31	4C	3E00214S28	Bind Screw Tite-B (M3x10)
32	3C	4E00365S01	Washer (M3)
33	4C	4E00366S01	Spring Wahser (M3) (Rear Panel)

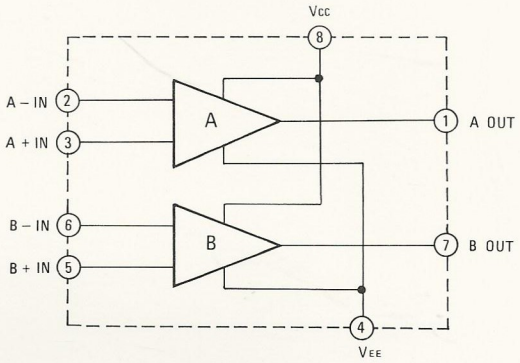
Packing Assembly Parts List

Symbol No.	Part No.	Description
101	56E00335S01	Carton, Packing (Individual)
102	56E00337S01	Tray, Packing (L, R)
103	56E00216S07	Poly Bag
104	1E00336S01	Assembly, Pamphlet
104-1	68P55888F08	Owners Manual
104-2	54A44217U02	Business Reply Card
104-3	68P44370P26	Limited Warranty
104-4	54A40001F01	Service Facilities
104-5	68P55888F25	Acc System Comb
104-6	54A57197F01	Card Note
104-7	*	Poly Bag
105	1E00341S01	Assembly, Kit Installation & Kit Fuse
105-1	3E00213S08	Tap(1) Screw(M4x12) Flange
105-2	65E00292S05	Auto Fuse 3A
105-3	65E00292S04	Auto Fuse 30A
105-4	*	Poly Bag
106	1E00309S05	Assembly, Kit Wire
106-1	30E00378S01	Speaker Cord Green
106-2	30E00378S02	Speaker Cord Gray
106-3	*	Poly Bag
107	*	Poly Bag
108	*	Master Carton
Labels		
	54E00340S01	Serial No. Label (Chassis)
	54E00370S01	Serial No. Label (Individual Carton)
	54E00371S01	Fuse Label 30A (Rear Panel)

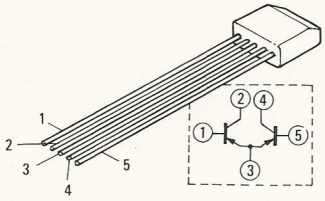
Semiconductors Lead Identifications

NJM4559 : IC501



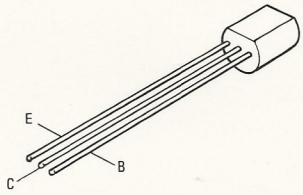


2SA798 : Q501 Q502



2SA733 : Q517 Q518 Q806 Q810

2SC945 : Q503 Q504 Q509 Q510 Q515 Q516 Q807 Q808 Q809 Q810



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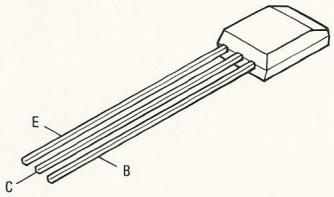

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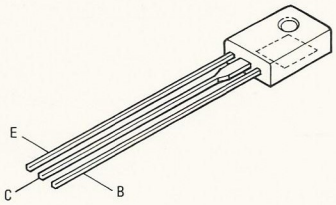
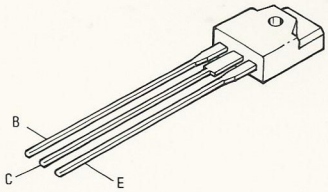
2SD415 : Q511 Q512

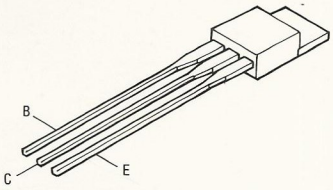


2SA1105 : Q519 Q520

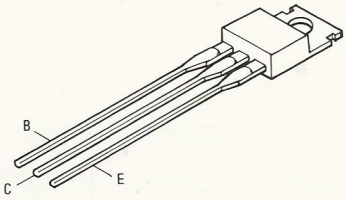
2SC2580 : Q521 Q522



2SC2491 : Q801 Q802 Q803 Q804

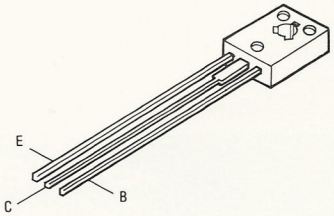


2SD325 : Q805 Q806



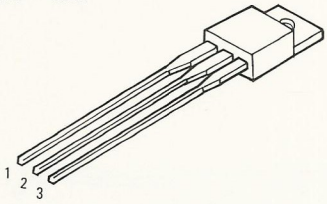
2SD600K : Q811 Q812

2SB631K : Q813



CTU-22S : D801

CTU-22R : D802



	1	2	3
CTU-22S	Anode	Cathode	Anode
CTU-22R	Cathode	Anode	Cathode