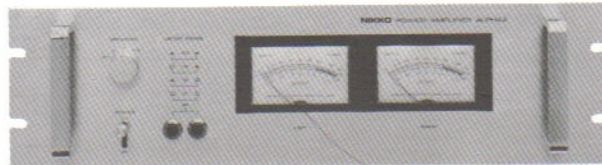

STEREO
POWER AMPLIFIER
ALPHA II



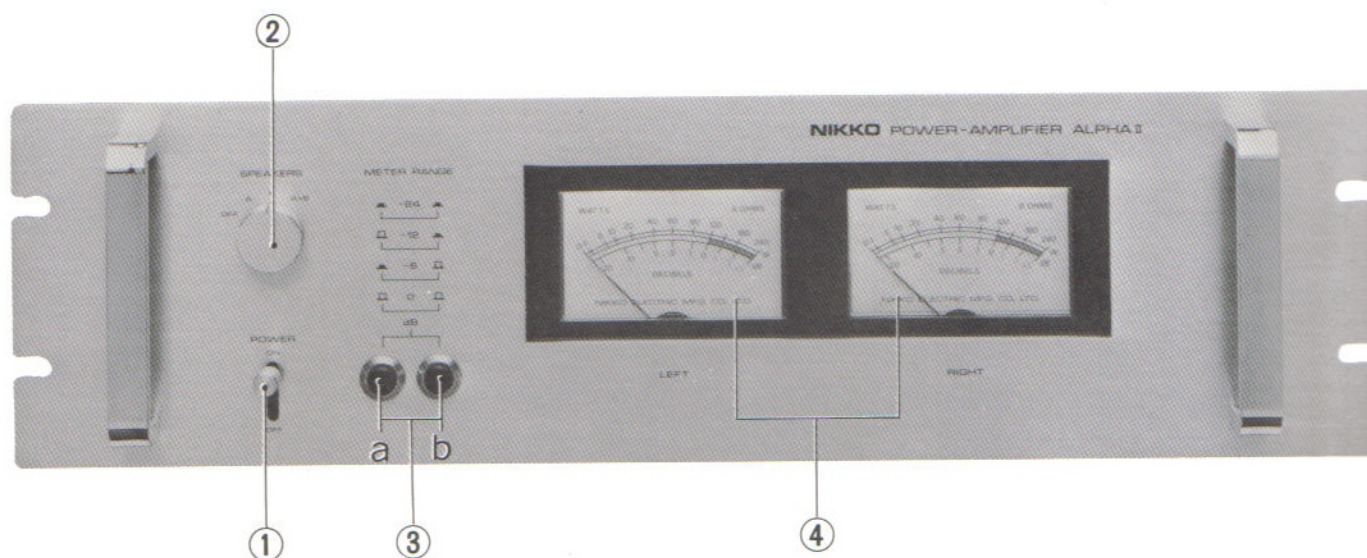
SERVICE MANUAL

TYPE AND VOLTAGE

W-TYPE UL and CSA type	120V
E-TYPE europe standard (universal) type	220/240V
N-TYPE DEMKO and SEMKO type	
D-TYPE DIN type	

NIKKO

OPERATING PARTS



1. POWER

Set the power switch to the ON position and the power is turned on. The power meters will be illuminated, indicating that the power is on. The unit will become active 3 to 6 seconds later because of the employment of a protective circuit and relay.

2. SPEAKERS

This switch is used to select speakers connected to the A and B speaker terminals on the rear panel. When the switch is set to the A+B position, both speakers connected to the A and B terminals are operated at the same time. Speakers may be connected to the A or B terminals only, if desired. At the OFF position of the switch, no speakers will operate.

3. METER RANGE

These two pushbutton switches are used to select the sensitivity of the power meters in 4 steps.

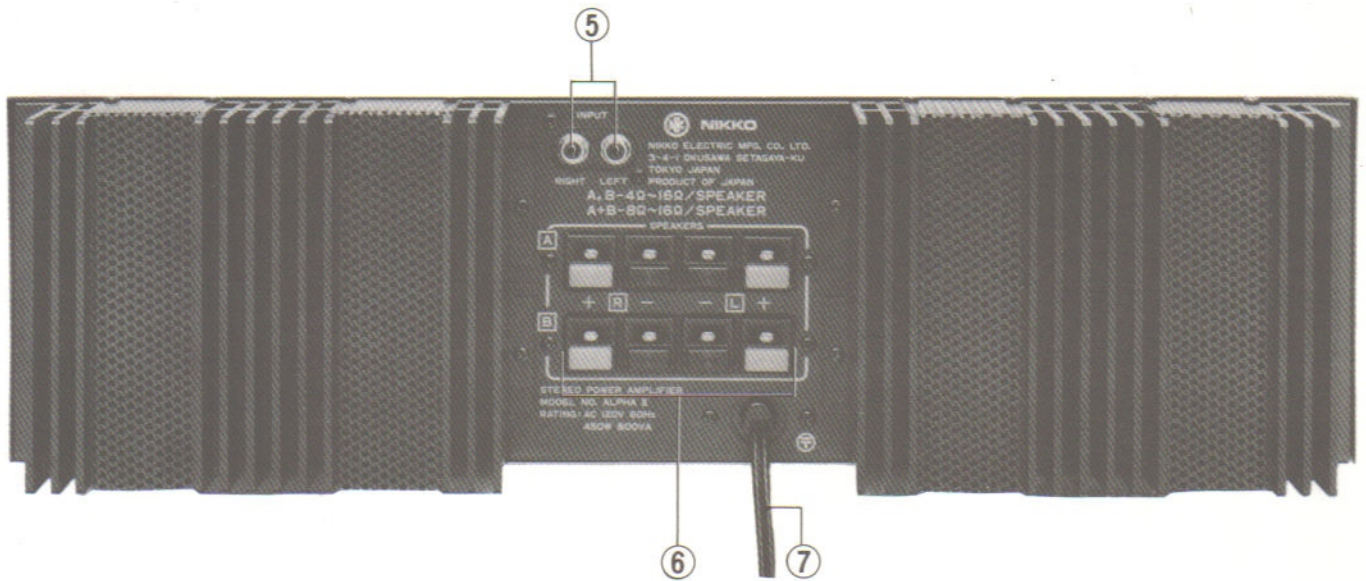
With the switches ('a' and 'b') in the released position ($\square$), the power meters will indicate 0dB when the output power of a single tone sign-wave signal reaches 120W (at 8-ohm load).

By pressing the button switches as shown on the front panel, the 0dB position on the power meters represents 30W for -6dB setting, 7.6W for -12dB setting and 0.48W for -24dB setting, respectively.

4. POWER METER

The power meters indicate the levels of left and right channel output power in dB. Power levels can be read directly on the meters with the meter range switches (3) set in the 0dB (released) position.

TERMINALS ON REAR PANEL



5. INPUT Terminals

Connect the input of the preamplifier using a pin-plug cord.

6. SPEAKERS Terminals

The unit has provision for connecting 2 sets of speaker systems. Connect your right speakers to right speaker terminals and left speakers to left speaker terminals. Each speaker terminal is color coded to indicate polarity; the red mark indicates "positive" and the black one "negative". Use these marks for correct connections of your speakers. When connecting, make sure that the bare portions of connecting cords are not in contact with any metallic parts such as the panel of the unit.

* Your speakers must have more than 4 ohms of impedance. If 2 sets of speaker systems are connected, each speaker must have at least 8-ohm impedance.

* Use connecting cords having sufficient current capacity. Connect the cords firmly. If the cords have insufficient capacity or they are loosely connected, the result is deterioration of sound quality, overheating or breaks in cords.

7. AC Power Cord

Connect the AC power cord to your convenient wall-outlet. The power switch must be turned to OFF before connecting. The unit is rated at 450W of power consumption. If it becomes necessary to use an extension power cord, it must be the same in size as the AC power cord, or larger. When the power cord is connected to the AC outlet provided on the preamplifier, the power cord of the preamplifier must be connected to a wall-outlet having sufficient capacity.

CONTENTS

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SPECIFICATIONS (W-TYPE, E-TYPE, N-TYPE)

	UNIT	NOMINAL	LIMIT
Continuous Power Output per channel 8 ohm loads:			
15Hz-20KHz @ 0.03% THD	.watts.	.120.	110
1KHz @ 0.03% THD	.watts.	.130.	110
TH Distortion, 8 ohm loads, 15Hz-20KHz:			
@ Continuous Power Output	..%		< 0.03
@ 1 watt Power Output	..%		< 0.02
IM Distortion, 8 ohm loads:			
@ Continuous Power Output	..%		< 0.03
@ 1 watt Power Output	..%		< 0.02
IHF Power Bandwidth, 8 ohm loads	.Hz-KHz	.5 - 60.	5 - 50
Damping Factor, 8 ohm loads, 1KHz.		.80	.70
Frequency Response, 8 ohm loads:			
@ 1 watt Power Output	.dB@Hz-KHZ.		+ 0, -2 @10 - 100
Input Sensitivity	.mV	.1000.	1000 ± 2dB
Signal-to-Noise Ratio, IHF	.dB	.105.	100
Residual Hum & Noise, 8 ohm load.	.mV	.0.2	.0.25
Idling Current.	.mA.	.100.	.60 - 150
Midpoint Voltage	.mV	.0	± 50
Power Switch Muting Delay Time	.second.	.4	4 ± 2

SPECIFICATIONS (D - TYPE)

	UNIT	NOMINAL	LIMIT
Continuous Power Output per channel 4 ohm loads:			
15Hz-20KHz @ 0.08% THD	.watts.	.130.	120
1KHz @ 1% THD	.watts.	.150.	140
TH Distortion, 4 ohm loads, 15Hz-20KHz:			
@ Continuous Power Output	..%		< 0.08
@ 1 watt Power Output	..%		< 0.05
IM Distortion, 4 ohm loads:			
@ Continuous Power Output	..%		< 0.08
@ 1 watt Power Output	..%		< 0.05
Power Bandwidth, 4 ohm loads	.Hz-KHz	.5 - 50.	10 - 30
Damping Factor, 4 ohm loads, 1KHz.		.45	.40
Frequency Response, 4 ohm loads:			
@ 1 watt Power Output	.dB@Hz-KHZ.		+ 0, -3 @ 5 - 80
Input Sensitivity	.mV	.800.	.800 ± 2dB
Signal-to-Noise Ratio, DIN	.dB	.85	.80
Residual Hum & Noise, 4 ohm load.	.mV	.0.2	.0.25
Idling Current.	.mA.	.100.	.60 - 150
Midpoint Voltage	.mV	.0	± 50
Power Switch Muting Delay Time	.second.	.4	4 ± 2

INSTRUMENT DISASSEMBLY AND PARTS REPLACEMENT

NOTE: Numbers of three figures put a (○) around on Photo 1 thru 7 relate to "KEY NO." marked with a (★) on parts list.

CABINET TOP STEEL COVER

Remove four (4) tapping screws (116) (1 thru 4), remove four (4) tapping screws (114) (5 thru 8), lift steel cover (113) up and out of the instrument (Photo 1).

Do not lose these screws and four (4) washers.
To reassemble, reverse above procedure.



Photo 1

BOTTOM PLATE REMOVAL

Remove twelve (12) tapping screws (118) from the bottom of the cabinet, lift Bottom Plate (117) up and out of the instrument.

To reassemble, reverse above procedure.

FRONT PANEL REMOVAL

1. Using hexagonal wrench, remove SPEAKERS knob.
2. Remove POWER knob by pulling it out Front Panel.
3. Remove six (6) nuts (1 thru 6), lift the Front Panel out of the instrument (Photo 2).
4. To reassemble, reverse above procedure.

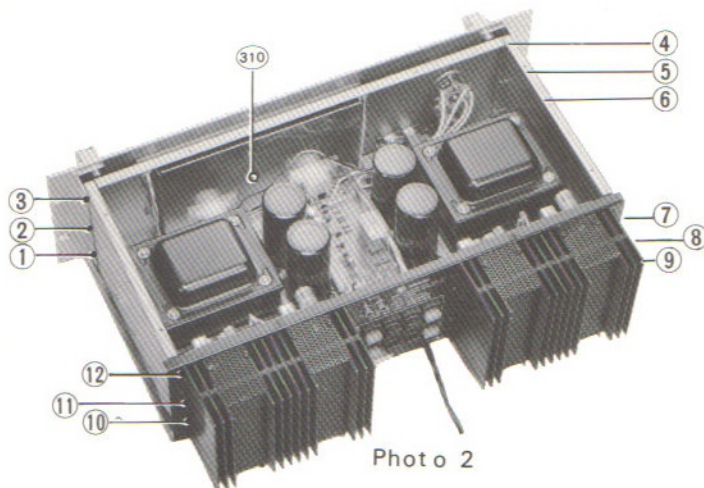


Photo 2

METER REMOVAL

1. Two meters are held by "meter holder".

To remove the meter holder, remove six (6) tapping screws (1 thru 3, 8 thru 10) (Photo 3). Then, while moving Front Plate slightly, remove four (4) tapping screws (5,6,12,13) from the rear of the Front Plate (Photo 3). Lift the meter holder up and out of the Front Plate.

2. The meters are now free to be pulled off. Disconnect cables connecting to the meters.
3. To reassemble, reverse above procedure

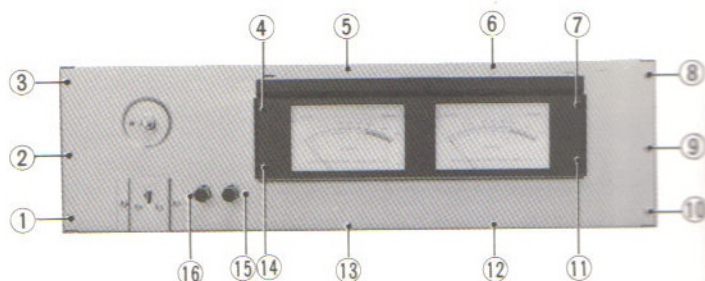


Photo 3

LAMP REPLACEMENT AND LAMP CIRCUIT BOARD REMOVAL

1. Remove "meter holder" as shown in the procedure 1 of "Meter Removal".
2. Remove four (4) tapping screws (4,7,11,14), lift Back Ground Panel out of Front Plate (Photo 3).
3. To replace lamps, use soldering iron.
4. Push the center of "push rivet" from the rear of front panel by small screwdriver (See Figure 1), then pull three (3) push rivets (1 thru 3) (Photo 4).
5. Disconnect cables, lift the Lamp Circuit Board up and out of the Front Panel.
6. To reassemble, reverse above procedure.



PUSH RIVET (314)

Fig. 1

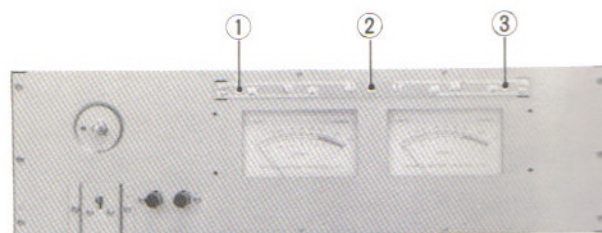


Photo 4

METER SWITCH CIRCUIT BOARD REMOVAL

Disconnect all cables. Remove two (2) tapping screws (15,16) (Photo 3). Pull Circuit Board back, lift up and out of chassis.

To reassemble, reverse above procedure.

REGULATOR CIRCUIT BOARD REMOVAL AND PART REPLACEMENT

1. To replace regulator circuit's parts, dismount Regulator Circuit Board from "PCB Support Pin". Then lift the front of the Regulator Circuit Board as upward as possible for service as indicated in Photo 5.
2. To remove the Regulator Circuit Board, disconnect all cables, lift the Regulator Circuit Board up and out of chassis.
3. To reassemble, reverse above procedure.

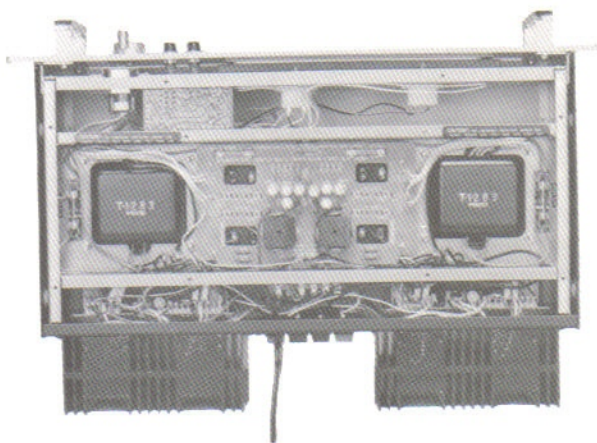


Photo 5

PROTECTOR CIRCUIT BOARD REMOVAL AND PARTS REPLACEMENT

1. To replace protector circuit's parts, dismount Protector Circuit Board from "PCB Support Pin". Then, lift the Protector Circuit Board up for service.
2. To remove the Protector Circuit Board, disconnect all cables, lift the Protector Circuit Board up and out of chassis.
3. To reassemble, reverse above procedure.

POWER TRANSISTOR REMOVAL (Q2R only)

1. To remove Heatsink Cover, remove four (4) tapping screws (1 thru 4) (Photo 6).
2. To remove Power Transistor, remove two (2) screws (5,6) (Photo 6). Pull the Power Transistor out Power Transistor socket.
3. To reassemble, reverse above procedure.



Photo 6

PARTS REPLACEMENT

1. To replace main amp circuit's parts, it is necessary to remove six (6) tapping screws (7 thru 12) (Photo 2) and incline Back Plate Assembly as indicated in Photo 7.

WARNING: Do not pull the Back Plate Assembly back strongly, if so, circuit boards may be broken or cables are cut.

2. Dismount the Main Amp Circuit Board from "PCB Support Pin", lift the top of the Main Amp Circuit Board forward for service as indicated in Photo 7.

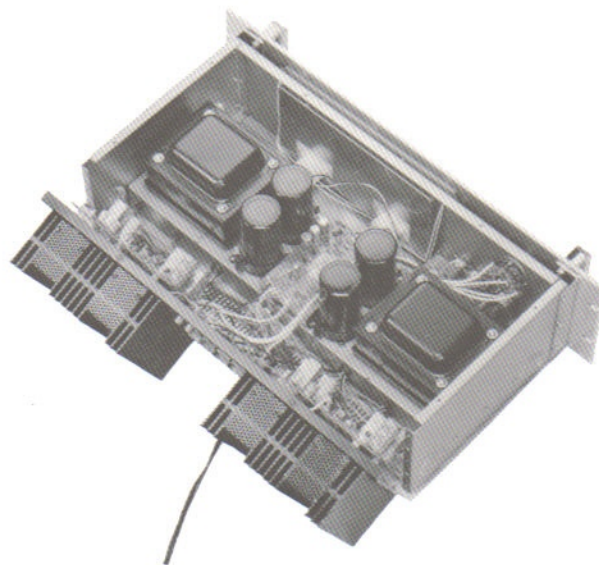
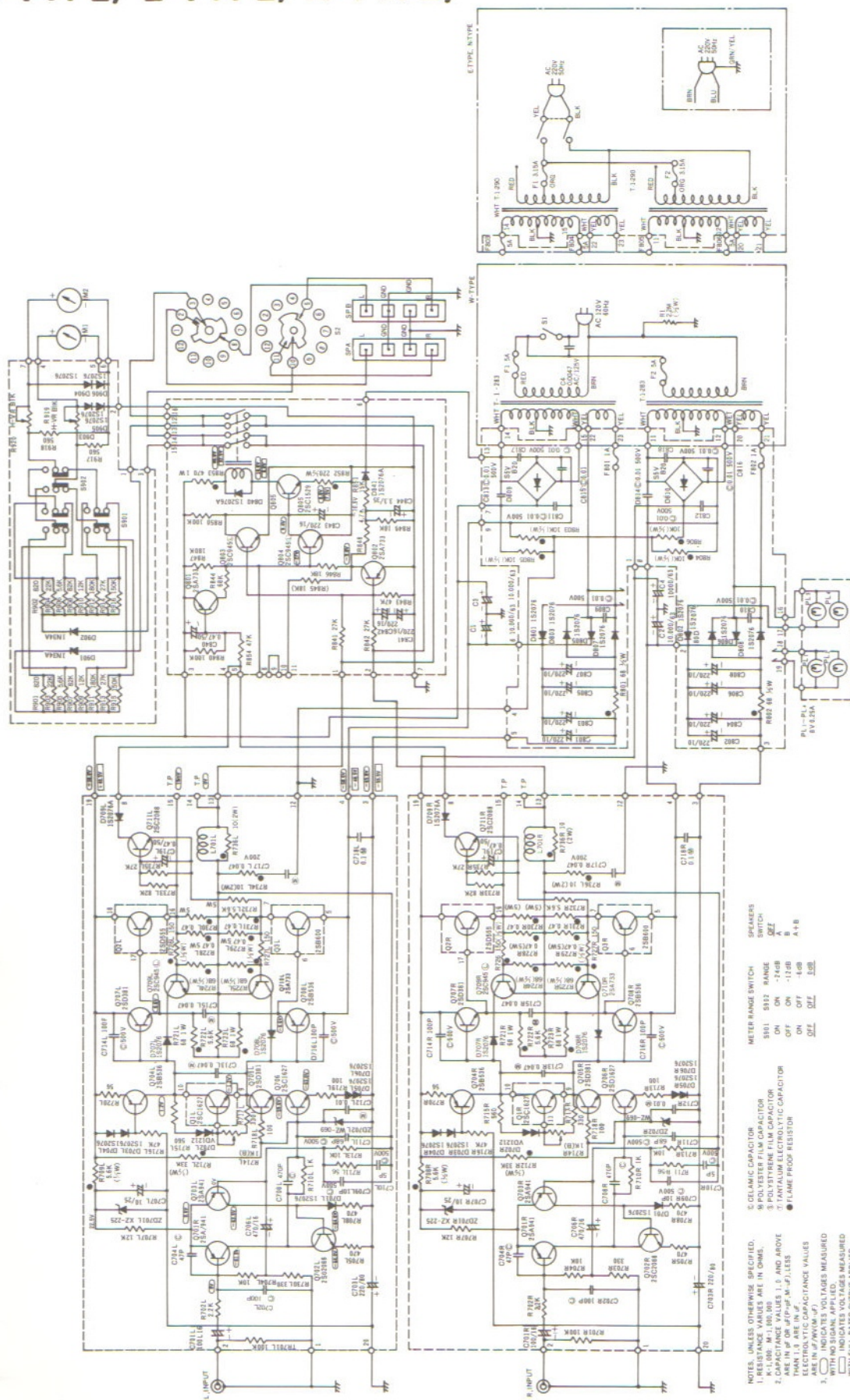


Photo 7

OVERALL SCHEMATIC DIAGRAM AND CIRCUIT BOARDS (W-TYPE, E-TYPE, N-TYPE)

OVERALL SCHEMATIC DIAGRAM

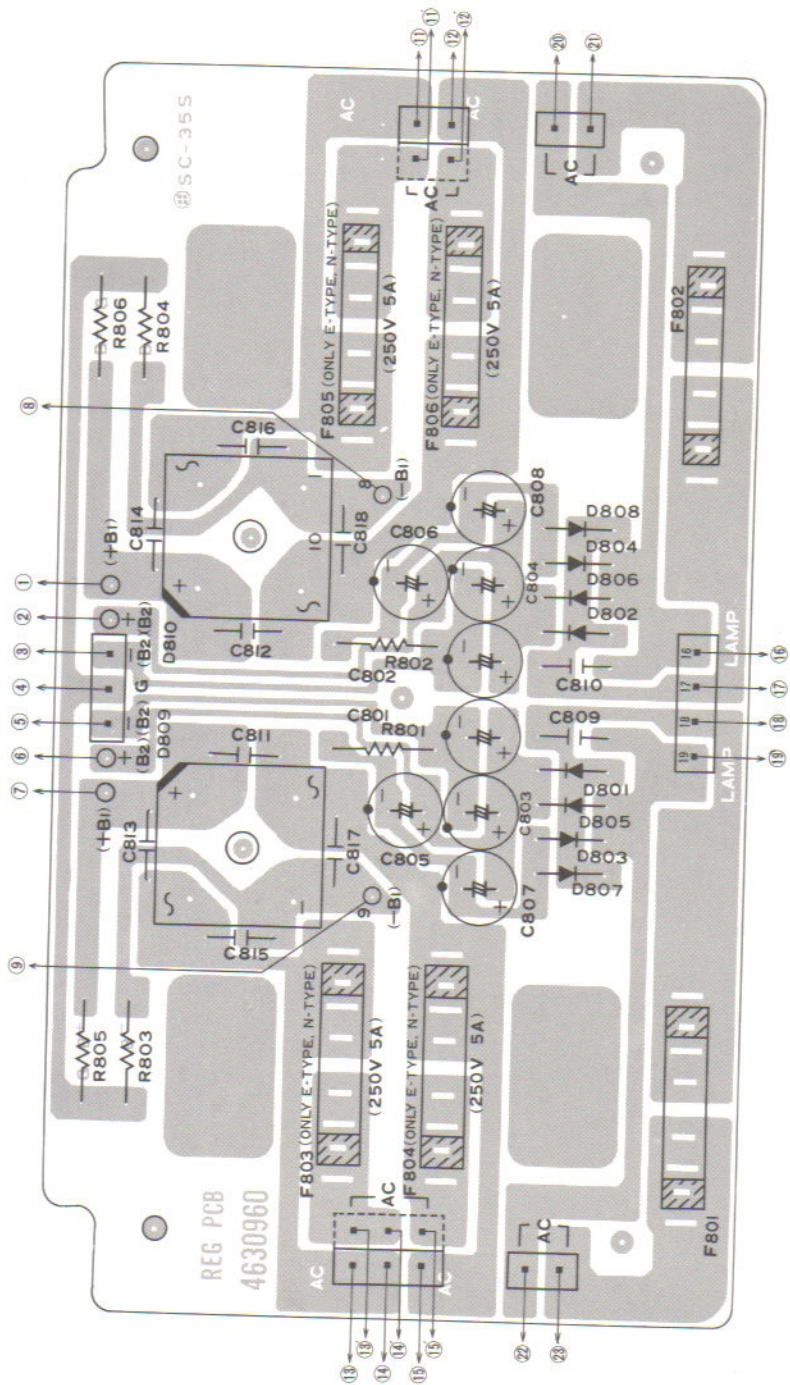


METER RANGE SWITCH
5001 5002 RANGE
ON ON -24dB
OFF OFF -12dB
OFF OFF 0dB

5. CERAMIC CAPACITOR
6. POLYESTER FILM CAPACITOR
7. TANTALUM ELECTROLYTIC CAPACITOR
8. FLAME PROOF RESISTOR

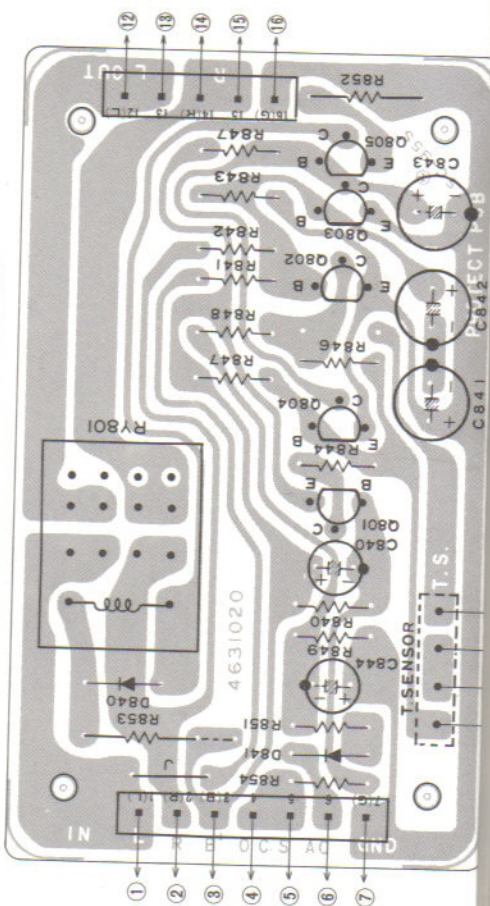
NOTES: UNLESS OTHERWISE SPECIFIED,
1. RESISTANCE VALUES ARE IN OHMS,
K=1,000, M=1,000,000
2. CAPACITANCE VALUES 1.0 AND ABOVE
ARE IN P.F./W/V, .01 AND .001 ARE IN P.F./W/V,
AND .0001 AND .00001 ARE IN P.F./W/V.
3. INDICATES VOLTAGES MEASURED
WITH FULL RATED OUTPUT APPLIED.
4. VOLTAGE MEASUREMENTS ARE SUBJECT
TO CHANGE WITHOUT NOTICE.

REGULATOR CIRCUIT BOARD (BOTTOM VIEW)

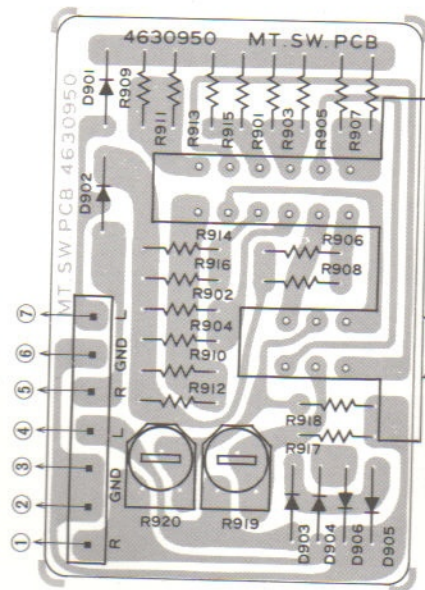


- 1 To C4+
- 2 To C2-
- 3 To MAIN AMP C.B. (R1)3
- 4 To R-CH EARTH LUG
- 5 To MAIN AMP C.B. (L)3
- 6 To C1-
- 7 To C3+
- 8 To C2-
- 9 To C1-
- 10
- 11 To R-CH P.T. (WHT)
- 12 (Only W-TYPE, D-TYPE)
- 11' To R-CH P.T. (WHT)
- 12' (Only E-TYPE, N-TYPE)
- 13 To PROTECTOR C.B.
- 13' (Only W-TYPE, D-TYPE)
- 14 To PROTECTOR C.B.
- 14' (Only E-TYPE, N-TYPE)
- 15 To L-CH P.T. (WHT)
- 15' (Only W-TYPE, D-TYPE)
- 16 To L-CH P.T. (WHT)
- 17 (Only E-TYPE, N-TYPE)
- 18 To R-CH LAMP
- 19
- 20 To R-CH P.T. (YEL)
- 21
- 22 To L-CH P.T. (YEL)
- 23

PROTECTOR CIRCUIT BOARD (BOTTOM VIEW)



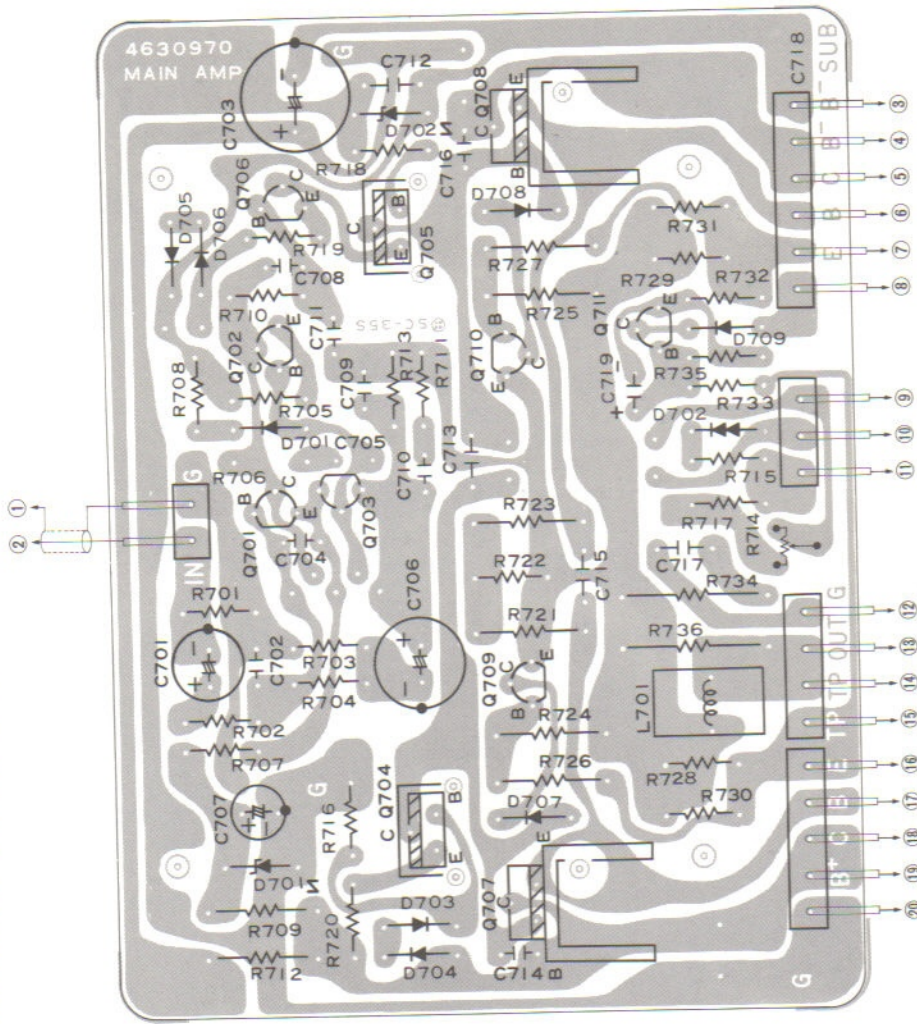
METER SWITCH CIRCUIT BOARD (BOTTOM VIEW)



- ① To MAIN AMP C.B. (L) ⑬
- ② To MAIN AMP C.B. (R) ⑬
- ③ To C3+
- ④ To MAIN AMP C.B. (L) ⑧
- ⑤ To MAIN AMP C.B. (R) ⑧
- ⑥ To REGULATOR C.B. ⑬
- ⑦ To EARTH LUG (L)
- ⑧ To THERMOSTAT
- ⑨
- ⑩ To THERMOSTAT
- ⑪ To SPEAKER SWITCH
- ⑫ To METER SWITCH
- ⑬ C.B. ①
- ⑭ To SPEAKER SWITCH
- ⑮ To METER SWITCH
- ⑯ C.B. ③
- ⑰ To METER SWITCH
- ⑱ C.B. ②

- ① To PROTECTOR C.B. ⑬
- ② To PROTECTOR C.B. ⑬
- ③ To PROTECTOR C.B. ⑬
- ④ To METER (L) ⊕
- ⑤ To METER (L) ⊖
- ⑥ To METER (R) ⊕
- ⑦ To METER (R) ⊕

MAIN AMP CIRCUIT BOARD (BOTTOM VIEW)

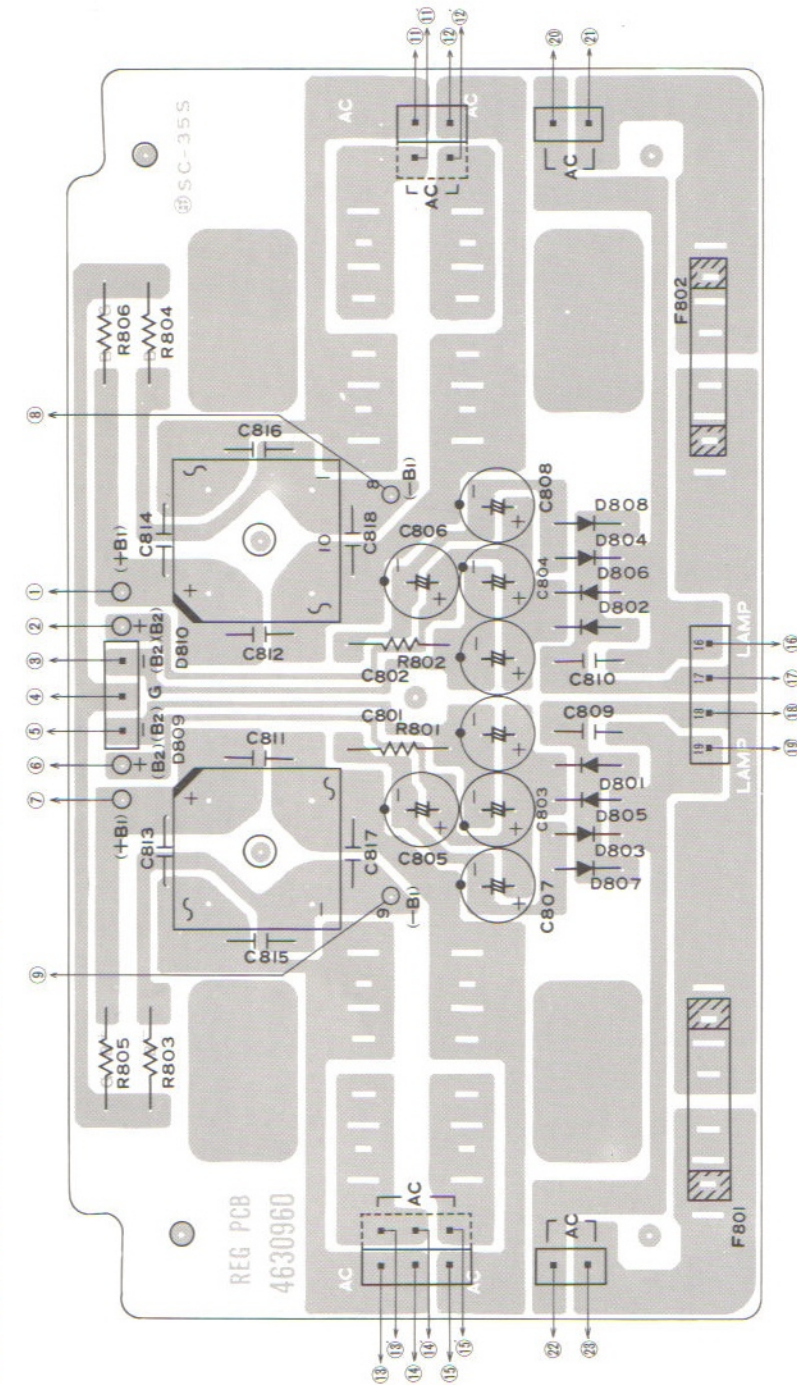


- | | |
|---|---|
| <p>L-CHANNEL</p> <ol style="list-style-type: none"> ① To INPUT TERMINAL L (GROUND) ② To INPUT TERMINAL L ③ To REGULATOR C.B. ⑤ ④ To C1 ⊖ ⑤ To Q3L(2SB600) C ⑥ To Q3L(2SB600) B ⑦ To Q3L(2SB600) E ⑧ To PROTECTOR C.B. ④ ⑨ To Q1L(2SC1627) E ⑩ To Q1L(2SC1627) C ⑪ To Q1L(2SC1627) B ⑫ To EARTH LUG ⑬ To PROTECTOR C.B. ① ⑭ To TEST POINT (FOR IDLING CURRENT ADJUSTMENT) ⑮ To Q2L(2SD555) E ⑯ To Q2L(2SD555) B ⑰ To Q2L(2SD555) C ⑱ To C3 ⊕ ⑳ To EARTH LUG | <p>R-CHANNEL</p> <ol style="list-style-type: none"> ① To INPUT TERMINAL R (GROUND) ② To INPUT TERMINAL R ③ To REGULATOR C.B. ③ ④ To C2 ⊖ ⑤ To Q3R(2SB600) C ⑥ To Q3R(2SB600) B ⑦ To Q3R(2SB600) E ⑧ To PROTECTOR C.B. ⑤ ⑨ To Q1R(2SC1627) E ⑩ To Q1R(2SC1627) C ⑪ To Q1R(2SC1627) B ⑫ To EARTH LUG ⑬ To PROTECTOR C.B. ② ⑭ To TEST POINT (FOR IDLING CURRENT ADJUSTMENT) ⑮ To Q2L(2SD555) E ⑯ To Q2L(2SD555) B ⑰ To Q2L(2SD555) C ⑱ To C4 ⊕ ⑳ To EARTH LUG |
|---|---|

OVERALL SCHEMATIC DIAGRAM

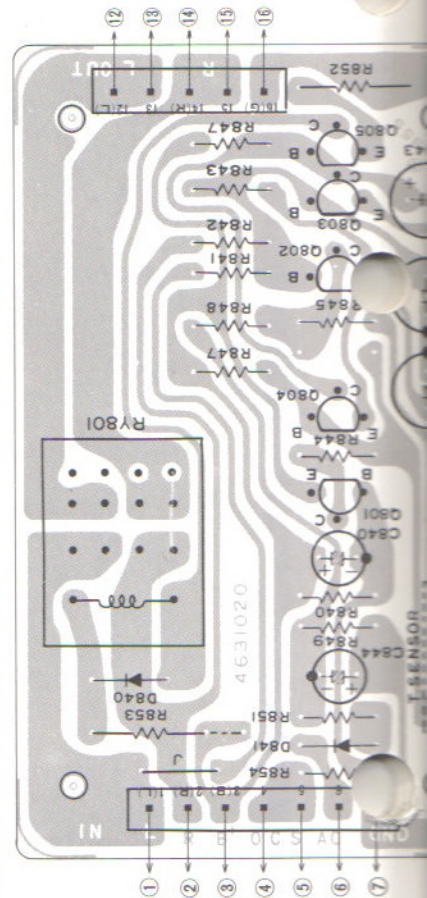


REGULATOR CIRCUIT BOARD (BOTTOM VIEW)

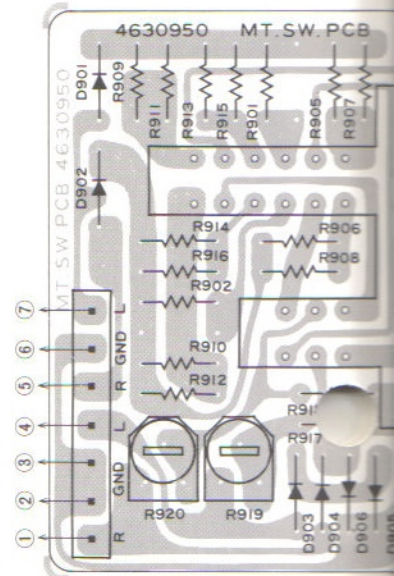


- 1 To C4+
- 2 To C2-
- 3 To MAIN AMP C.B. (R) 3
- 4 To R-CH EARTH LUG
- 5 To MAIN AMP C.B. (L) 3
- 6 To C1-
- 7 To C3+
- 8 To C2-
- 9 To C1-
- 10
- 11 To R-CH P.T. (WHT)
- 12
- 13 To PROTECTOR C.B.
- 14 To L-CH P.T. (WHT)
- 15
- 16 To R-CH LAMP
- 17 To R-CH P.T. (YEL)
- 18
- 19 To L-CH P.T. (YEL)
- 20
- 21
- 22
- 23

PROTECTOR CIRCUIT BOARD (BOTTOM VIEW)

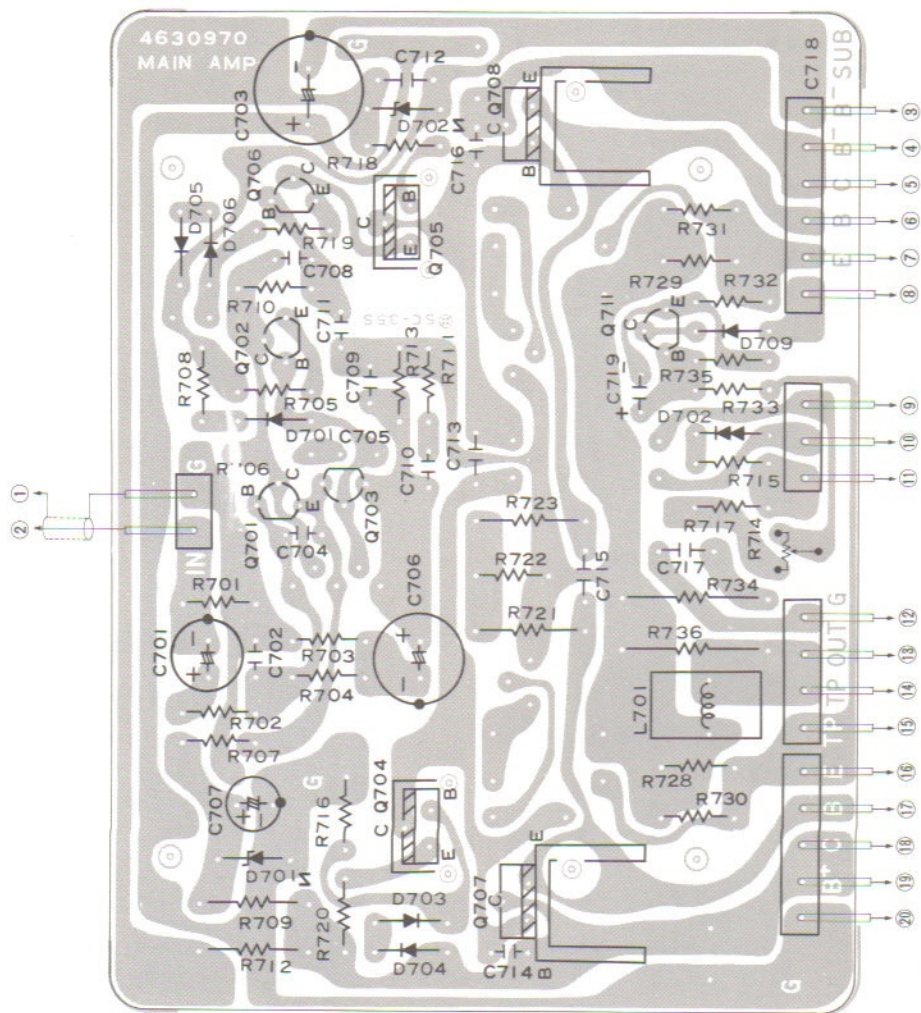


METER SWITCH CIRCUIT BOARD (BOTTOM VIEW)



- 1 To MAIN AMP C.B. (L) 13
- 2 To MAIN AMP C.B. (R) 13
- 3 To C3⊕
- 4 To MAIN AMP C.B. (L) 8
- 5 To MAIN AMP C.B. (R) 8
- 6 To REGULATOR C.B. 13
- 7 To EARTH LUG (L)
- 8 To THERMOSTAT
- 9 To THERMOSTAT
- 10 To THERMOSTAT
- 11 To THERMOSTAT
- 12 To SPEAKER SWITCH
- 13 To METER SWITCH
- 14 To SPEAKER SWITCH
- 15 To METER SWITCH
- 16 To METER SWITCH
- 17 To METER SWITCH
- 18 To METER SWITCH
- 19 To METER SWITCH
- 20 To METER SWITCH

MAIN AMP CIRCUIT BOARD (BOTTOM VIEW)

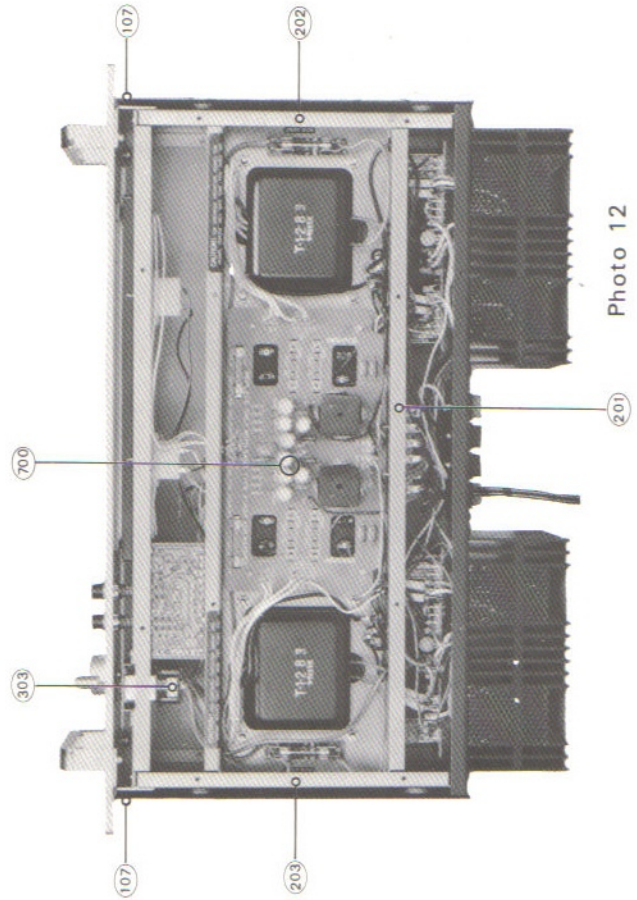
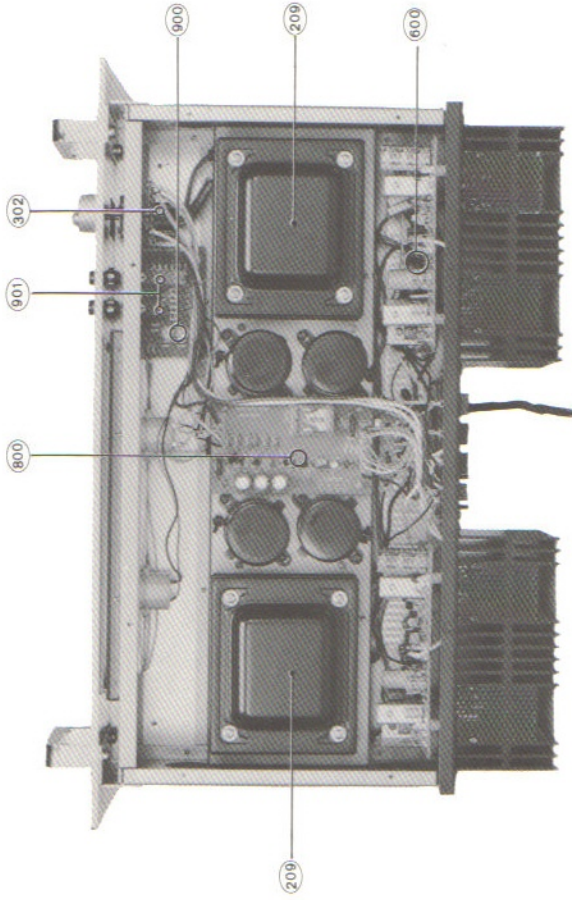
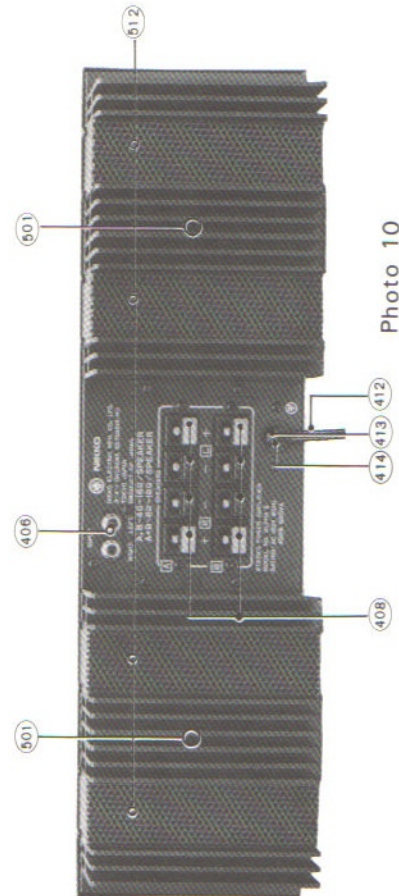
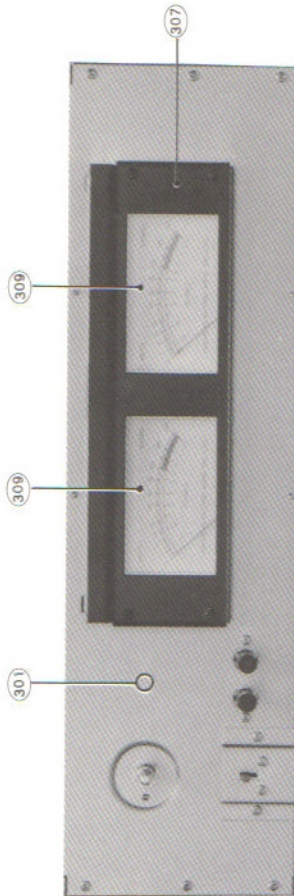
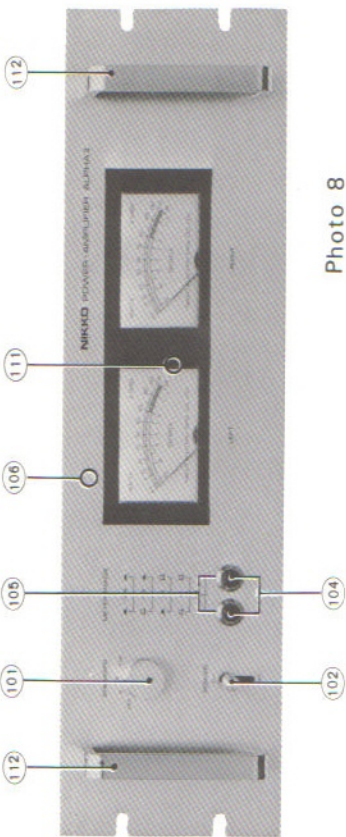


- 1 To PROTECTOR C.B. 13
- 2 To PROTECTOR C.B. 16
- 3 To PROTECTOR C.B. 15
- 4 To METER (L)⊕
- 5 To METER (L)⊖
- 6 To METER (R)⊕
- 7 To METER (R)⊖

- L-CHANNEL**
- 1 To INPUT TERMINAL L (GROUND)
 - 2 To INPUT TERMINAL L
 - 3 To REGULATOR C.B. 5
 - 4 To C1⊖
 - 5 To Q3L(2SB600) C
 - 6 To Q3L(2SB600) B
 - 7 To Q3L(2SB600) E
 - 8 To PROTECTOR C.B. 4
 - 9 To Q1L(2SC1627) E
 - 10 To Q1L(2SC1627) C
 - 11 To Q1L(2SC1627) B
 - 12 To EARTH LUG
 - 13 To PROTECTOR C.B. 1
 - 14 To TEST POINT (FOR IDLING CURRENT ADJUSTMENT)
 - 15 To Q2L(2SD555) E
 - 16 To Q2L(2SD555) B
 - 17 To Q2L(2SD555) C
 - 18 To C3⊕
 - 19 To EARTH LUG
 - 20 To EARTH LUG

- R-CHANNEL**
- 1 To INPUT TERMINAL R (GROUND)
 - 2 To INPUT TERMINAL R
 - 3 To REGULATOR C.B. 3
 - 4 To C2⊖
 - 5 To Q3R(2SB600) C
 - 6 To Q3R(2SB600) B
 - 7 To Q3R(2SB600) E
 - 8 To PROTECTOR C.B. 5
 - 9 To Q1R(2SC1627) E
 - 10 To Q1R(2SC1627) C
 - 11 To Q1R(2SC1627) B
 - 12 To EARTH LUG
 - 13 To PROTECTOR C.B. 2
 - 14 To TEST POINT (FOR IDLING CURRENT ADJUSTMENT)
 - 15 To Q2L(2SD555) E
 - 16 To Q2L(2SD555) B
 - 17 To Q2L(2SD555) C
 - 18 To C4⊕
 - 19 To EARTH LUG
 - 20 To EARTH LUG

PARTS LOCATION



PARTS LIST

NOTES

1. "KEY NO." marked with a (★) on parts list relate to numbers of three figures put a (○) around on Photo 1 thru 12.
2. + Numbers in file indicate the quantity of parts used in one type.
3. ++ TR: Transistor
FET: Field effect transistor
IC: Integrated circuit
VR: Volume control (Variable resistor)
POT: Potentiometer (Semi-fixed variable resistor)
RES: Carbon film fixed resistor
MO-RES: Metal oxide film fixed resistor
CEM-RES: Cemented wire-wound fixed resistor
FP: Flame proof
C-CAP: Ceramic capacitor
E-CAP: Aluminium electrolytic capacitor

M-CAP: Polyester film capacitor
S-CAP: Polystyrene film capacitor
T-CAP: Tantalum electrolytic capacitor
BP-CAP: Bipolar electrolytic capacitor

E-CAP, T-CAP and BP-CAP values (1x10uF) are in (1)uF, (10)V.

4. Assemblies and parts is subject to change without notice.
5. Parts ordering procedure:
Include in any order
a. Part number.
b. Part description.
c. Model number.
(any of the above lacking from an order may delay shipment of the order.)

KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.
---------	------------	---	---------------------------	----------

PACKING MATERIALS & ACCESSORIES

001	1 1 1 1	CARTON BOX	9825290
002	2 2 2 2	STYROL PAD	9840670
003	1 1 1 1	VINYL CLOTH BAG-POLY SACK	9640660
004	1 1 1 1	VINYL CLOTH BAG-POLY SACK #13	9640320
005a	1 - - -	INSTRUCTION MANUAL E	960187E
005b	- 1 1 -	INSTRUCTION MANUAL K	960199K
005c	- - - 1	INSTRUCTION MANUAL G	960202G
006	1 - - -	WARRANTY CARD (N)	967003A
007	1 1 1 1	POLISHING CLOTH	9690040
008	1 1 1 1	DRYER SILICA GEL	9690010

CABINET ASSEMBLY

(CHAMPAGNE-GOLD TYPE)

★101a	1 1 1 1	KNOB 2GL-26D (speakers)	7851470
★102a	1 1 1 1	KNOB PC-16 (power)	7850590
103	1 1 1 1	DUST COVER	7001760
★104	2 2 2 2	PUSHBUTTON P10B (meter)	7851680
★105	2 2 2 2	PUSHBUTTON GUIDE	7851690
★106a	1 1 1 1	FRONT PANEL-PNL ALPHA II G	7883650
★107	2 2 2 2	PANEL BRACKET	7031250
108	4 4 4 4	SCREW PMS 5 x 14	810514S
109	4 4 4 4	WASHER TW (I) 5φ	893405U
110	6 6 6 6	SCREW PTS 3 x 8	814308S
★111	1 1 1 1	PANEL SMOKE (meter)	7802220
★112a	2 2 2 2	HANDLE A-42-A-6	7890140
★113a	1 1 1 -	STEEL COVER-COV ALPHA II W-E-N	7820730
113b	- - - 1	STEEL COVER-COV ALPHA II D	7820760
114	4 4 4 4	SCREW Tfts 4 x 10 B	887410W
115	4 4 4 4	WASHER W 4φ B	893104W
116	4 4 4 4	SCREW PTS 3 x 6 B	814306W
★117	1 1 1 1	BOTTOM PLATE	7324650
118	6 6 6 6	SCREW PTS 3 x 6	814306S
118	6 6 6 6	SCREW PTS 3 x 6	814306S

KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.
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(BLACK TYPE)

101b	1 1 1 1	KNOB 2BK-26D (speakers)	7851760
102b	1 1 1 1	KNOB PC-16B (power)	7851790
103	1 1 1 1	DUST COVER	7001760
104	2 2 2 2	PUSHBUTTON P10B (meter)	7851680
105	2 2 2 2	PUSHBUTTON GUIDE	7851690
106b	- - - 1	FRONT PANEL-PNL ALPHA II BY	7883720
106c	1 1 1 -	FRONT PANEL-PNL ALPHA II BW	7883750
107	2 2 2 2	PANEL BRACKET	7031250
108	4 4 4 4	SCREW PMS 5 x 14	810514S
109	4 4 4 4	WASHER TW (I) 5φ	893405U
110	6 6 6 6	SCREW PTS 3 x 8	814308S
111	1 1 1 1	PANEL SMOKE (meter)	7802220
112b	2 2 2 2	HANDLE (B) A-42	7890150
113a	1 1 1 -	STEEL COVER-COV ALPHA II W-E-N	7820730
113b	- - - 1	STEEL COVER-COV ALPHA II D	7820760
114	4 4 4 4	SCREW Tfts 4 x 10 B	887410W
115	4 4 4 4	WASHER W 4φ B	893104W
116	4 4 4 4	SCREW PTS 3 x 6 B	814306W
117	1 1 1 1	BOTTOM PLATE	7324650
118	6 6 6 6	SCREW PTS 3 x 6	814306S
118	6 6 6 6	SCREW PTS 3 x 6	814306S

CHASSIS ASSEMBLY

200a	1 - - -	COMPLETE ASSEMBLY-CHASS ASS W	9534390
200b	- 1 - -	COMPLETE ASSEMBLY-CHASS ASS E	9534400
200c	- - 1 -	COMPLETE ASSEMBLY-CHASS ASS N	9534410
200d	- - - 1	COMPLETE ASSEMBLY-CHASS ASS D	9534550
★201	1 1 1 1	CHASSIS	7324660
★202	1 1 1 1	SIDE ANGLE (R)	7226240
★203	1 1 1 1	SIDE ANGLE (L)	7226250
204	6 6 6 6	SCREW PTS 3 x 6 (FRONT PLATE ASSEMBLY)	814306S
205	6 6 6 6	SCREW PTS 3 x 6 (BACK PLATE ASSEMBLY)	814306S
206	6 6 6 6	SCREW PTS 3 x 6 (REG PCB ASS)	814306S
207	5 5 5 5	PCB SUPPORT PIN (PROTECT PCB ASS)	7401320
208	4 4 4 4	PCB SUPPORT PIN	7401320
★209a	2 - - -	POWER TRANSFORMER T-1-283 120V	1102830

PART ORDERING PROCEDURE Include in any order: A. Part number, B. Part description, C. Model number.
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KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.	KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.
209b		- 2 2 -	POWER TRANSFORMER T-290 220V/240V	1102900	400b		- 1 - -	COMPLETE ASSEMBLY-BACK PLT ASS E	9512890
209c		- - - 2	POWER TRANSFORMER T-297 220V/240V	1102970	400c		- - 1 -	COMPLETE ASSEMBLY-BACK PLT ASS Nd	9512900
210		8 8 8 8	NUT IN 4φ	892014S	400d		- - - 1	COMPLETE ASSEMBLY-BACK PLT ASS D	9513060
211		8 8 8 8	WASHER TW (I) 4φ	893404U					
212	C1 C4	4 4 4 4	E-CAP 63R10000uF	212650S	★401a		1 - - -	BACK PLATE W	7324680
213		8 8 8 8	SCREW BLTS 3 x 6	874306S	401b		- 1 - -	BACK PLATE E	7324890
214a		2 - - -	FUSE 5A 250V (UL)	4700540	401c		- - 1 -	BACK PLATE N	
215a		2 - - -	FUSE HOLDER 1P	4581840	401d		- - - 1	BACK PLATE D (MAIN AMP PCB ASS)	7324880
216a		2 - - -	SCREW PTS 3 x 8	814308S					
214b		- 2 2 2	MIDGET FUSE (S) 3.15A	4720390	402		8 8 8 8	PCB SUPPORT PIN LCBS-8	7401310
215b		- 2 2 2	MIDGET FUSE HOLDER 1P	4581430	403		4 4 4 4	SNAP BUSHING (HEATSINK S. ASS)	7401090
216b		- 2 2 2	SCREW PTS 3 x 6	814306S	404		8 8 8 8	SCREW PTS 3 x 8 B	814308W
217		3 3 3 3	SNAP BUSHING B-500-375	7401090	405		8 8 8 8	WASHER W 3φ	893103S
218		4 4 4 4	SNAP BUSHING B-312-250	7401100	★406		1 1 1 1	WP PIN TERMINAL 2P (SE) (input)	4442020
219		2 2 2 2	EARTH LUG 4P WP	4400100	407		2 2 2 2	SCREW PMS 3 x 8 B	810308W
220		2 2 2 2	SCREW PTS 3 x 6	814306S	★408		2 2 2 2	4P PUSH TERMINAL (speaker)	814310W
221		2 2 2 2	WASHER TW(I) 3φ	893403U	409		4 4 4 4	SCREW PTS 3 x 10 B	814310W
222	R1	1 - - -	RES 2.2M-ohm 5% 1/2W	325225K	★412a		1 - - -	POWER SUPPLY CORD KP-2	606006A
223		1 1 1 1	T-LUG 2L4P (W)	442241W	412b		- 1 1 -	POWER SUPPLY CORD CEE-2T	600506J
224		2 2 2 2	SCREW PTS 3 x 6	814306S	412c		- - - 1	POWER SUPPLY CORD CEE-3T	601809A
FRONT PLATE ASSEMBLY					★413a		1 - - -	CORD STOPPER SR-3P-4	7400620
300a		1 - - -	COMPLETE ASSEMBLY FRONT PLT ASS W	9521820	413b		- 1 1 -	CORD STOPPER SR-4N-4	7400690
300b		- 2 - -	COMPLETE ASSEMBLY FRONT PLT ASS E	9521830	413c		- - - 1	CORD STOPPER SR-6W-1	7400740
300c		- - 1 -	COMPLETE ASSEMBLY FRONT PLT ASS N	9521840	★414a		1 - - -	CORD BRACKET (UL)	7029300
300d		- - - 1	COMPLETE ASSEMBLY FRONT PLT ASS D	9521920	414b		- 1 1 1	CORD BRACKET (EH)	7029800
					415		2 2 2 2	SCREW PTS 3 x 6 B	814306W
					HEATSINK ASSEMBLY				
★301		1 1 1 1	FRONT PLATE	7324670	500a		1 1 1 -	COMPLETE ASSEMBLY H-SINK S. ASS	
★302a	S2	1 1 1 -	ROTARY SWITCH 1-2-4 (speakers)	4051130	500b		- - - 1	COMPLETE ASSEMBLY H-SINK S. Ass	
302b	S2	- - - 1	ROTARY SWITCH 1-4-4 (speakers)	4051170					
★303a	S1	1 - - -	LEVER ACTION SWITCH LV SW SY02 U74SM (power)	4025090	★501		2 2 2 2	HEATSINK	7480310
303b	S1	- 1 1 1	LEVER ACTION SWITCH LV SW SY02 80DB (power)	4025150	502	Q2L	1 1 1 1	TR 2SD555 (Q,R)	513768S
304		2 2 2 2	SCREW PMS 3 x 6	810306S	503	Q2R	1 1 1 1	TR 2SD555 (Q,R)	513768S
305		1 1 1 1	POWER SWITCH BRACKET	7031260	504	Q3L	1 1 1 1	TR 2SB600 (Q,R)	513067S
306		2 2 2 2	SCREW PTS 3 x 6	814306S	505	Q3R	1 1 1 1	TR 2SB600 (Q,R)	513067S
★307		1 1 1 1	BACK GROUND PANEL	7226260	506		4 4 4 4	POWER TRANSISTOR SOCKET	4510080
308		4 4 4 4	SCREW PTS 3 x 6	814306S	507		8 8 8 8	SCREW PMS 3 x 16	810316S
★309a		2 2 2 -	METER 677 (8OHM)	4582040	508		8 8 8 8	WASHER TW(I) 3φ	893403U
309b		- - - 2	METER 677 (4OHM)	4582130	509		2 2 2 2	BIAS CONTROL PCB	4630940
★310		1 1 1 1	METER HOLDER	7226270	510	Q1L	1 1 1 1	TR 2SC1627 (O,Y)	511017S
311		4 4 4 4	SCREW PTS 3 x 6	814306S	511	Q1R	1 1 1 1	TR 2SC1627 (O,Y)	511017S
312		1 1 1 1	LAMP PCB	4630930	★512		4 4 4 4	HEATSINK COVER	7226280
313		4 4 4 4	LAMP PL-8 8V 0.25A BLUE	5808130	513		8 8 8 8	SCREW PTS 3 x 6 B	814306W
★314		3 3 3 3	PUSH RIVET FNRP 3 x 4.5 (MT SW PCB S. ASS)	7401240	514		8 8 8 8	SCREW PTS 3 x 6 B	814306W
315		2 2 2 2	SCREW PMS 3 x 6	810306S	515		8 8 8 8	SCREW PTS 3 x 8 B (heatsink)	814308W
316	C4	1 - - -	C-CAP 0.0047uF	239472C	516		8 8 8 8	WASHER W 3φ	893103S
317		1 - - -	C-CAP COVER (M)	7400980	517		- - - 2	THERMOSTAT US-601-80	4900720
					518		- - - 4	SCREW PTS 3 x 6 B	814306W
BACK PLATE ASSEMBLY					MAIN AMP CIRCUIT BOARD (only left channel)				
400a		1 - - -	COMPLETE ASSEMBLY-BACK PLT ASS W	9512880	★600a		1 1 1 -	COMPLETE CIRCUIT BOARD-MAIN AMP PCB ASS WEN	9430640

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KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.	KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.
600b	---	1	COMPLETE CIRCUIT BOARD-MAIN AMP PCB ASS D	9430650	R736L	1 1 1 1	FP-MO-RES	10ohm 5% 2W	362100L
C701L	1 1 1 1	E-CAP	16R100uF	211230Q	Q701L	1 1 1 1	TR	2SA941 (BL)	510048S
C702L	1 1 1 1	C-CAP	100pF 10% 50V SL	232101K	Q702L	1 1 1 1	TR	2SC2088 (BL)	511023S
C703L	1 1 1 1	E-CAP	80R220uF	211732Q	Q703L	1 1 1 1	TR	2SA941 (BL)	510048S
C704L	1 1 1 1	C-CAP	47pF 10% 50V SL	232470K	Q704L	1 1 1 1	TR	2SB536 (L,M)	510039S
C705L		Out of use				1 1 1 1	HEATSINK		7081820
C706L	1 1 1 1	E-CAP	16uF470uF	211235Q		1 1 1 1	SCREW	PMS 3 x 5	810305S
C707L	1 1 1 1	E-CAP	25R10uF	211320V	Q705L	1 1 1 1	TR	2SD381 (L,M)	510038S
C708L	1 1 1 1	C-CAP	47pF 10% 50V SL	232470K		1 1 1 1	HEATSINK		7081820
C709L	1 1 1 1	C-CAP	10pF 10% 500V SL	234100K		1 1 1 1	SCREW	PMS 3 x 5	810305S
C710L	1 1 1 1	C-CAP	5pF ±0.5pF 500V SL	234509D	Q706L	1 1 1 1	TR	2SC1627 (O,Y)	511017S
C711L	1 1 1 1	C-CAP	68pF 10% 500V SL	234680K	Q707L	1 1 1 1	TR	2SD381 (L,M)	510038S
C712L	1 1 1 1	M-CAP	0.01uF 10% 50V	222103K		1 1 1 1	HEATSINK	1627NT	7780270
C713L	1 1 1 1	M-CAP	0.047uF 10% 50V	222473K		2 2 2 2	SCREW	PMS 3 x 5	810305S
C714L	1 1 1 1	C-CAP	100pF 10% 500V SL	234101K	Q708L	1 1 1 1	TR	2SB536 (L,M)	510039S
C715L	1 1 1 1	M-CAP	0.047uF 10% 50V	222473K		1 1 1 1	HEATSINK	1627NT	7480270
C716L	1 1 1 1	C-CAP	100pF 10% 500V SL	234101K		2 2 2 2	SCREW	PMS 3 x 5	810305S
C717L	1 1 1 1	M-CAP	0.047uF 1-1% 200V	272473K	Q709L	1 1 1 -	TR	2SC945 (P,Q)	515077S
C718L	1 1 1 1	M-CAP	0.1uF 20% 50V	222104M	Q710L	1 1 1 -	TR	2SA733 (R,Q)	514074S
C719L	1 1 1 1	E-CAP	50R 0.47uF	211505Q	Q711L	1 1 1 1	TR	2SC2088 (BL)	511023S
D701L	1 1 1 1	DIODE	1S2076 (LIGHT BLUE)	501019S	Z701L	1 1 1 1	ZENER DIODE	XZ-225	502036S
D702L	1 1 1 1	DIODE	VD1212	505016S	Z702L	1 1 1 1	ZENER DIODE	WZ-069	502035S
D703L	1 1 1 1	DIODE	1S2076 (LIGHT BLUE)	501019S					
D704L	1 1 1 1	DIODE	1S2076 (LIGHT BLUE)	501019S	700a	1 - - -	COMPLETE CIRCUIT BOARD- REG PCB ASS W		9450660
D705L	1 1 1 1	DIODE	1S2076 (LIGHT BLUE)	501019S	700b	- 1 1 -	COMPLETE CIRCUIT BOARD- REG PCB ASS EN		9450670
D706L	1 1 1 1	DIODE	1S2076 (LIGHT BLUE)	501019S	700c	- - - 1	COMPLETE CIRCUIT BOARD- REG PCB ASS D		9450700
D707L	1 1 1 1	DIODE	1S2076 (LIGHT BLUE)	501019S					
D708L	1 1 1 1	DIODE	1S2076 (LIGHT BLUE)	501019S					
D709L	1 1 1 1	DIODE	1S2076A (NAVY BLUE)	501020S					
L701L	1 1 1 1	CHOKO COIL		1210830					
R701L	1 1 1 1	RES	100Kohm 5% 1/4W	328104J					
R702L	1 1 1 1	RES	22Kohm 5% 1/4W	328223J					
R703L	1 1 1 1	RES	330Kohm 5% 1/4W	328331J	C801				
R704L	1 1 1 1	RES	10Kohm 5% 1/4W	328103J	~C808	8 8 8 8	E-CAP	10R220uF	211132Q
R705L	1 1 1 1	RES	470ohm 5% 1/4W	328471J	C809	1 1 1 1	C-CAP	0.01uF 100, -0% 500V	238103P
R706L	1 1 1 1	Out of use			C810	1 1 1 1	C-CAP	0.01uF 100, -0% 500V	238103P
R707L	1 1 1 1	RES	12Kohm 5% 1/4W	328123J	C811				
R708L	1 1 1 1	RES	470ohm 5% 1/4W	328471J	~C818	8 8 8 8	C-CAP	0.01uF 100, -0% 500V	238103P
R709L	1 1 1 1	FP-MO-RES	5.6Kohm 5% 1/2W	360562L					
R710L	1 1 1 1	RES	1Kohm 5% 1/4W	328102J	D801				
R711L	1 1 1 1	RES	56Kohm 5% 1/4W	328563J	~D808	8 8 8 8	DIODE	1S2076	501019S
R712L	1 1 1 1	FP-MO-RES	33Kohm 5% 1/2W	360333L	D809	1 1 1 1	DIODE	S5VB20	560042S
R713L	1 1 1 1	RES	10Kohm 5% 1/4W	328103J	D810	1 1 1 1	DIODE	S5VB20	560042S
R714L	1 1 1 1	POT-H-VR	SR29R207 B 1Kohm	4300620					
R715L	1 1 1 1	RES	560ohm 5% 1/4W	328561J	F801	1 - - -	FUSE	1A 125V (-B SUB)	4700020
R716L	1 1 1 1	RES	47Kohm 5% 1/4W	328473J	F802	1 - - -	FUSE	1A 125V (-B SUB)	4700020
R717L	1 1 1 1	RES	330ohm 5% 1/4W	328331J		4 - - -	FUSE HOLDER		7050420
R718L	1 1 1 1	RES	100ohm 5% 1/4W	328101J	F801	- 1 1 1	MIDGET FUSE (S) 1AT (-B SUB)		4720330
R719L	1 1 1 1	RES	100ohm 5% 1/4W	328101J	F802	- 1 1 1	MIDGET FUSE (S) 1AT (-B SUB)		4720330
R720L	1 1 1 1	RES	56ohm 5% 1/4W	328560J		- 4 4 4	MIDGET FUSE HOLDER		7050430
R721L	1 1 1 1	FP-MO-RES	68ohm 5% 1/4W	360680J	F803				
R722L	1 1 1 1	RES	5.6Kohm 5% 1/4W	328562J	F806	- 4 4 -	MIDGET FUSE (S) 5AT (+B/-B)		4720410
R723L	1 1 1 1	FP-MO-RES	68ohm 5% 1/4W	360680L		- 8 8 -	MIDGET FUSE HOLDER		7050430
R724L	1 1 1 -	FP-MO-RES	68ohm 5% 1/2W	360680L					
R725L	1 1 1 -	FP-MO-RES	68ohm 5% 1/2W	360680L	R801	1 1 1 1	FP-MO-RES	68ohm 5% 1/2W	360680L
R726L	1 1 1 -	FP-MO-RES	150ohm 5% 1/2W	360151L	R802	1 1 1 1	FP-MO-RES	68ohm 5% 1/2W	360680L
R727L	1 1 1 -	FP-MO-RES	150ohm 5% 1/2W	360151L	R803				
R728L	1 1 1 1	FP-CEM-RES	0.47ohm 10% 1/2W	384479W	R806	4 4 4 4	FP-MO-RES	10Kohm 1/2W	360103L
R729L	1 1 1 1	FP-CEM-RES	0.47ohm 10% 1/2W	384479W					
R730L	1 1 1 1	FP-CEM-RES	0.47ohm 10% 1/2W	384479W					
R731L	1 1 1 1	FP-CEM-RES	0.47ohm 10% 1/2W	384479W					
R732L	1 1 1 1	RES	5.6Kohm 5% 1/4W	328562J					
R733L	1 1 1 1	RES	82Kohm 5% 1/4W	328823J					
R734L	1 1 1 1	FP-MO-RES	10ohm 5% 2W	362100L					
R735L	1 1 1 1	RES	27Kohm 5% 1/4W	328273L					

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PROTECTOR CIRCUIT BOARD				
800a	1 1 1 -		COMPLETE CIRCUIT BOARD PROTECT PCB ASS WEN	9450680
800b	- - - 1		COMPLETE CIRCUIT BOARD PROTECT PCB ASS D	9450690
C840	1 1 1 1		E-CAP 50R0.47uF	211505Q
C841	1 1 1 1		E-CAP 16R220uF	211232Q
C842	1 1 1 1		E-CAP 16R220uF	211232Q
C843	1 1 1 1		E-CAP 16R220uF	211232Q
C844	1 1 1 1		E-CAP 35R3.3uF	211413Q
D840	1 1 1 1		DIODE 1S2076A	501020S
D841	1 1 1 1		DIODE 1S2076A	501020S
R840	1 1 1 1		RES 100Kohm 5% 1/4W	328104J
R841	1 1 1 1		RES 27Kohm 5% 1/4W	328273J
R842	1 1 1 1		RES 27Kohm 5% 1/4W	328273J
R843	1 1 1 1		RES 47Kohm 5% 1/4W	328473J
R844	1 1 1 1		RES 68Kohm	328683J
R845	- - - 1		RES 18Kohm 5% 1/4W	328183J
R846	1 1 1 -		RES 18Kohm 5% 1/4W	328183J
R847	1 1 1 1		RES 180Kohm 5% 1/4W	328184J
R848	1 1 1 1		RES 4.7Kohm 5% 1/4W	328472J
R849	1 1 1 1		RES 18Kohm 5% 1/4W	328183J
R850	1 1 1 1		RES 100Kohm 5% 1/4W	328104J
R851	1 1 1 1		RES 15Kohm 5% 1/4W	328153J
R852	1 1 1 1		MO-RES 220ohm 5% 1/2W	360221L
R853	1 1 1 1		MO-RES 470ohm 5% 1W	361471L
Q801	1 1 1 1		TR 2SA733 (Q,R)	514074S
Q802	1 1 1 1		TR 2SA733 (Q,R)	514074S
Q803	1 1 1 1		TR 2SC945 L (P,Q)	515077S
Q804	1 1 1 1		TR 2SC945 L (P,Q)	515077S
Q805	1 1 1 1		TR 2SC1627 (O,Y)	511017S
801	1 1 1 1		RELAY MAT48-211R	1700210
METER SWITCH CIRCUIT BOARD				
★900a	1 1 1 -		COMPLETE CIRCUIT BOARD-- MT SW PCB S.ASS W-E-N	9492380

KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.
900b	- - - 1		COMPLETE CIRCUIT BOARD-- MT SW PCB S.ASS D	9492490
D901	1 1 1 1		DIODE 1N34A	500010G
D902	1 1 1 1		DIODE 1N34A	500010G
D903	1 1 1 1		DIODE 1S2076	501019S
D904	1 1 1 1		DIODE 1S2076	501019S
D905	1 1 1 1		DIODE 1S2076	501019S
D906	1 1 1 1		DIODE 1S2076	501019S
R919	1 1 1 1		POT 1Kohm-H-VR RVA-7B	4300750
R920	1 1 1 1		POT 1Kohm-H-VR RVA-7B	4300750
R901	1 1 1 -		RES 820ohm 5% 1/4W	328821J
R901	- - - 1		RES 390ohm 5% 1/4W	328391J
R902	1 1 1 -		RES 820ohm 5% 1/4W	328821J
R902	- - - 1		RES 390ohm 5% 1/4W	328391J
R903	1 1 1 1		RES 22Kohm 5% 1/4W	328223J
R904	1 1 1 1		RES 22Kohm 5% 1/4W	328223J
R905	1 1 1 -		RES 5.6Kohm 5% 1/4W	328562J
R905	- - - 1		RES 3.9Kohm 5% 1/4W	328392J
R906	1 1 1 -		RES 5.6Kohm 5% 1/4W	328562J
R906	- - - 1		RES 3.9Kohm 5% 1/4W	328392J
R907	1 1 1 -		RES 82Kohm 5% 1/4W	328823J
R907	- - - 1		RES 68Kohm 5% 1/4W	328683J
R908	1 1 1 -		RES 82Kohm 5% 1/4W	328823J
R908	- - - 1		RES 68Kohm 5% 1/4W	328683J
R909	1 1 1 -		RES 12Kohm 5% 1/4W	328123J
R909	- - - 1		RES 8.2Kohm 5% 1/4W	328822J
R910	1 1 1 -		RES 12Kohm 5% 1/4W	328123J
R910	- - - 1		RES 8.2Kohm 5% 1/4W	328822J
R911	1 1 1 -		RES 180Kohm 5% 1/4W	328184J
R911	- - - 1		RES 270Kohm 5% 1/4W	328274J
R912	1 1 1 -		RES 180Kohm 5% 1/4W	328184J
R912	- - - 1		RES 270Kohm 5% 1/4W	328274J
R913	1 1 1 -		RES 27Kohm 5% 1/4W	328273J
R913	- - - 1		RES 18Kohm 5% 1/4W	328183J
R914	1 1 1 -		RES 27Kohm 5% 1/4W	328273J
R914	- - - 1		RES 18Kohm 5% 1/4W	328183J
R915	1 1 1 -		RES 150Kohm 5% 1/4W	328154J
R915	- - - 1		RES 220Kohm 5% 1/4W	328224J
R916	1 1 1 -		RES 150Kohm 5% 1/4W	328154J
R916	- - - 1		RES 220Kohm 5% 1/4W	328224J
R917	1 1 1 1		RES 560ohm 5% 1/4W	328561J
R918	1 1 1 1		RES 560ohm 5% 1/4W	328561J
901	S901, S902	1 1 1 1	TWIN PUSH BUTTON SWITCH SUE-24 (meter)	4040910

CHASSIS ALIGNMENT

TEST EQUIPMENT

Generator — Audio Frequency
DC Voltmeter — High Sensitivity
Vacuum Tube Voltmeter
(Oscilloscope)

Connect Generator to INPUT of the instrument to be tested. Connect two (2) 8 ohm (D-type: 4 ohm) dummy loads to L-channel and R-channel speaker terminals.

Apply AC power to the instrument.

Allow minimum of 10 minute warm-up period for the instrument and test equipment.

Maintain line voltage at rated voltage.

MIDPOINT VOLTAGE ADJUSTMENT

Left Channel: Using DC Voltmeter, make certain that the voltage between TP 12 and TP 13 on Main Amp Circuit Board is $0\text{mV} \pm 20\text{mV}$.

Right Channel: The same procedure as left channel.

IDLING CURRENT ADJUSTMENT

Left Channel: Using DC Voltmeter, adjust potentiometer R714 so that the voltage between TP 14 and TP 15 on Main Amp Circuit Board is $19\text{mV} \pm 3\text{mV}$.

Right Channel: The same procedure as left channel.

METER SENSITIVITY ADJUSTMENT

Left Channel:

1. Connect VTVM to speaker terminals. Set Meter Range Switches (S901, S902) to 0dB position. Set Generator frequency to 1KHz.
2. Set Generator to produce 120 watts (D-type: 130 watts) power output, Adjust potentiometer R919 on Meter Switch Circuit Board so that Meters are $0\text{dB} \pm 0.5\text{dB}$.

Right Channel: The same procedure as left channel. Adjust potentiometer R920 instead of potentiometer R919.

SEMICONDUCTORS DATA

TRANSISTORS DATA

NOTES†

Ge : Germanium
Si : Silicon

A : Alloy
B : Base
D : Diffused
Dd : Double-diffused

Df : Drift-field
E : Epitaxial
G : Grown
J : Junction

M : Mesa
P : Planar
Pc : Point-contact
Td : Triple-diffused

DEVICE TYPE	APPLICATIONS	STRUCTURE†	MAXIMUM RATINGS Absolute-Maximum Values: (TA=25°C unless otherwise specified)					ELECTRICAL CHARACTERISTICS Typical Values: (TA=25°C unless otherwise specified)														MANUFACTURER	
			Collector-to-Base Voltage VCB0	Emitter-to-Base Voltage VEB0	Collector Current IC	Collector Dissipation PC	Junction Temperature Tj	Collector Cutoff Current		Static Forward Current Transfer Ratio			Collector-Emitter Saturation Voltage			Gain-Bandwidth Product		Base Spreading Resistance		Output Capacitance Cob			
								ICBO	VCB	hFE	VCE	IC	VCE(sat)	IC	IB	fT	VCE VCB*	IE IC*	rbb/ hie(Real)*		VCE VCB*		IE
2SA733 (Q,R)	AF	PNP Si-E	-50	-5	-100	250	125	-0.1	-40	90 -270	-	-1	-0.5	-30	-3	180	-6	10			8	NEC	
2SA817 (Q,Y)	AF, Voltage amp., Driver	PNP Si-E	-80	-5	-300	600	150	-0.1	-50	70 -240	-	-50	-0.4	-200	-20	100	-10	10			14	TOSHIBA	
2SA872 (D,E)	AF, Low noise small signal	PNP Si-E	-90	-5	-50	300	125	-0.5	-75	250 -800	-12	-2	-0.5	-10	-1.0							HITACHI	
2SA941 (B,L)	AF, Low noise	PNP Si-E	-120	-5	-50	300	125	-0.1	-120	350 -700	-6	-2	-0.4	-10	-1	40	-5	0.1A			5.0 max	TOSHIBA	
2SB536 (Q,R)	AF, Driver	PNP Si-E	-200	-5	-1.5A	20W (TC=25°C)	150	-1	-120	60 -160	-5	-3A	-2	-1A	-0.1A	40	-5	0.1A			35	NEC	
2SB600 (Q,R)	AF, Power	PNP Si-E	-200	-5	-10A	200W (TC=25°C)	150	-100	-200	60 -200	-5	-2A	-3	-10A	-1A	4	-10	1A			400	NEC	
2SC9450 (P,Q)	AF, Low noise general	NPN Si-E	60	5	100	250	125	100	60	135 -400	6	1	0.15	100	10	250	6	-10			3.5	NEC	
2SC1627 (Q,Y)	AF, Voltage amp., Driver	NPN Si-E	80	5	300	600	150	0.1	50	70 -240	12	50	0.5	200	10	100	10	-1			10	TOSHIBA	
2SC1775 (D,E)	AF, Low noise Small Signal	NPN Si-E	90	5	50	300	125	0.5	75	250 -800	12	2	0.5	10	1.0							HITACHI	
2SC2088 (B,L)	AF, Low noise	NPN Si-E	120	5	50	300	125	0.1	120	350 -700	6	2	0.3	10	1	150	6	-1			3.0 max	TOSHIBA	
2SD381 (L,M)	AF, Driver	NPN Si-E	130	5	1.5A	20W (TC=25°C)	150	1	120	60 -160	5	3A	2	1A	0.1A	45	5	-0.1A			25	NEC	
2SD555 (Q,R)	AF, Power	NPN Si-TdM	250	5	10A	200W (TC=25°C)	150	100	200	60 -200	5	2A	3	10A	1A	6	10	-1A			300	NEC	

FIELD EFFECT TRANSISTORS DATA

DEVICE TYPE	APPLICATIONS	STRUCTURE†	MAXIMUM RATINGS Absolute-Maximum Values: (TA = 25 °C unless otherwise specified)						ELECTRICAL CHARACTERISTICS Typical Values: (TA = 25°C unless otherwise specified)														MANUFACTURE		
			Gate-to-Drain Voltage	Gate-to-Source Voltage	Gate Current	Drain Current	Total Power Dissipation	Junction Temperature	Drain Leakage Current	Gate-to-Drain Breakdown Voltage	Drain Current	Gate-to-Source Cutoff Voltage	Forward Transfer Admittance	Feed back Capacitance	Power Gain (Common source)	Noise Figure									
			VGDO	BGSC	IG	ID	Tj	Tj	Test Conditions	IGSS	Test Conditions	V(BR) GDO	Test Conditions	IDSS	Test Conditions	VGS	Test Conditions	yfs	Test Conditions	CRSS	Test Conditions	GPS		Test Conditions	NF
			(V)	(V)	(mA)	(mA)	(mW)	(°C)	(nA)	(V)	(mA)	(V)	(S)	(pF)	(dB)	(dB)									
2SK98A (L,M)	AF, Low noise	N-channel Junction FET	-50	-50	10	20	250	125	VGS= -10V VDS= -20V VDS= 0	-1.0 max	VDS= 10V VGS= 0 ID= 12 max	VDS= 10V ID= 10μA VGS= -0.5	VDS= 10V ID= 0.5mA f= 1KHz	5.2	VDS= 10V ID= 1μA f= 1MHz	2.6				VDS= 10V ID= 10Hz VGS= 0 RG= 1Kohm	10 max (10Hz) 0 1.5 max (1KHz)	NEC			

ZENER DIODES DATA

DEVICE TYPE	APPLICATIONS	STRUCTURE†	MAXIMUM RATINGS Absolute-Maximum Values: (TA= 25°C unless otherwise specified)			ELECTRICAL CHARACTERISTICS Typical Values: (TA = 25° C unless otherwise specified)												MANUFACTURE	
			Total Power Dissipation Pd (mW)	Zener Current IZ (A)	Junction Temperature Tj (°C)	Zener Voltage			Differential Resistance		Temperature Coefficient		Reverse Current						
						VZ	Test Condition	rd	Test Condition	γz	Test Condition	IR	Test Condition						
														MIN (V)		TYP (V)	MAX (V)		IZ (mA)
WZ069			500			6.5	6.9	7.3	10	10		10	0.041			1	2		JRC
XZ122			500			11.6	12.2	12.8	5	15		5	0.069			1	10		JRC
XZ225			500			21.4	22.5	23.6	5	30		5	0.0845			1	19.5		JRC

DIODES LEDS DATA

DEVICE TYPE	APPLICATIONS	STRUCTURE†	MAXIMUM RATINGS Absolute-Maximum Values: (TA=25°C unless otherwise specified)							ELECTRICAL CHARACTERISTICS Typical Values: (TA=25°C unless otherwise specified)										MANUFACTURE
			Reverse Surge Voltage VR surge	Peak Reverse Voltage VRM	Reverse Voltage VR	Peak Forward Voltage VFM	Peak Forward Current IFM	Average Rectified Current IO	Forward Surge Current IF surge	Junction Temperature Tj	Total Power Dissipation PD	Forward Current IF min	Forward Voltage VF	Reverse Current IR max	Test Condition	Test Condition	Test Condition	Test Condition	Test Condition	
			(V)	(V)	(V)	(V)	(mA)	(mA)	(A)	(°C)	(mW)	(mA)	(V)	(μA)	(V)	(V)	(V)	(V)	(V)	
SSV820	Rectifier	Si-D		-200				6A	200 (TC=25°C)	150			1.05	3A	10					SHINDENGEN
VD1212		Si-D					30				50		1.24	1.5						NEC
IN34A	Logical circuit	Ge-P		-75	-60		150	50	0.5 (1 sec.)	70		5	1			30	-10			HITACHI
1S1885		Si-A		-100		70		1A (Ta=65°C)	60				1.2	1.5A	10	100				TOSHIBA
1S2076	Various Detector, Modulator, Demodulator	Si-EP		-35	-30		450	150	1	175	250		0.8	10	1	-30				HITACHI
1S2076A	Various detector, Modulator, Demodulator	Si-EP		-70	-60		450	150	1	175	250		0.8	10	1	-30				HITACHI
GD-4-207RD	LED			-3				IFDC = 50		100	100		1.7	20	100	3	Brightness MIN. 25ft-L (IF=20mA) TYP. 45ft-L			STANLEY

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