

XM-701

SERVICE MANUAL

US Model
Canadian Model
AEP Model
E Model



SPECIFICATIONS

AUDIO POWER SPECIFICATIONS

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POWER OUTPUT AND TOTAL HARMONIC DISTORTION
45 watts per channel minimum continuous average power into 4 ohms, both channels driven from 20–20,000 Hz with no more than 0.5% total harmonic distortion per Car Stereo Ad Hoc Committee standards.

OTHER SPECIFICATIONS

Power supply system	Pulse power supply circuitry
Input	Car stereo input (phono jack)
Outputs	Speaker outputs
Speaker impedance	3.2–8 ohms
Maximum power output	80 watts per channel minimum RMS at 4 ohms* 120 watts (monaural) at 4 ohms*
Frequency response	3–150,000 Hz ± 3 dB (4 ohms, 1 W)
Harmonic distortion	0.005% (at 1 kHz, 4 ohms, 20 W)
Signal-to-noise ratio	106 dB (A-weighted)
Input level adjustment range	0.10/0.5 V
Power requirements	12 V DC car battery (negative ground)
Current drain	20 A (at maximum output)
Mounting dimensions	Approx. 178 x 57.2 x 202 mm (w/h/d) (7 $\frac{1}{8}$ x 2 $\frac{3}{8}$ x 8 inches)
Weight	Approx. 2.5 kg (5 lb 9 oz)
Accessories supplied	Mounting hardware (1 set) Connecting cord (two phono plugs to two phono plugs) (1)

* Measured at 14.4 V



FEATURES

- Maximum power output of 80 watts per channel.
- Power output of 45 watts per channel (20–20,000 Hz, 0.5%, 4 ohms) Ad Hoc Committee standard.
- Wide dynamic range and low distortion (less than 0.005%).
- Equipped with a originally developed flat chemical condenser (with a capacity of 20,000 μ F) for powerful reproduction of lower frequencies.
- The OPERATION switch allows the XM-701 to be used as a monaural amplifier.
- A remote power system automatically switches the amplifier on when a connected car stereo is turned on.
- A protection circuit is provided.
- Pulse power supply* for stable, regulated output power.

* Pulse power supply

This amplifier employs pulse techniques in its power supply section. The use of this original light-weight power supply system provides a high-voltage, a high-efficiency power supply. That is highly regulated under variations in the automobile's electrical voltage.

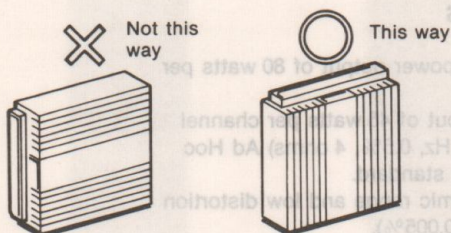
STEREO POWER AMPLIFIER
SONY®

AUD

SECTION 1 OUTLINE

PRECAUTIONS

- This unit is designed for negative ground 12 V DC operation only.
- The nameplate indicating operating voltage, etc. is located on the bottom exterior.
- Use speakers with an impedance of 3.2 to 8 ohms.
- Avoid installing the unit where:
 - It would be subject to high temperatures, such as from direct sunlight or from hot air from the heater.
 - It would be exposed to rain or moisture.
 - It would be subject to dust or dirt.
- If your car is parked in direct sunlight and there is a considerable rise in temperature inside the car, allow the unit to cool off before operating.
- When installing the unit vertically, make sure that the fins of the heat sinks are vertical to the floor.



- If this unit is placed too close to the car radio, an interference may occur. In this case, separate the amplifier from the car radio.
- Be sure that the heat sinks face the surface. Do not cover the heat sinks with the floor carpet.
- If no power is being supplied to the cassette player or tuner, check the connections.
- This power amplifier employs a protection circuit* to protect the transistors and speakers if the amplifier malfunctions. Do not attempt to test the protection circuits by covering the heat sinks or connecting improper loads.

* Protection circuit

This amplifier is provided with a protection circuit which operates in the following cases:

- the unit is overheated
- a DC current is generated
- the speaker terminals are short circuited
- an excessive output signal is generated

When a protection circuit activates, there will be an abrupt loss of sound from the speakers. If this happens, turn off the connected equipment and take out the cassette tape or disc and determine the cause of the malfunction. If the amplifier has overheated, wait until the unit cools off.

CONNECTIONS

Caution

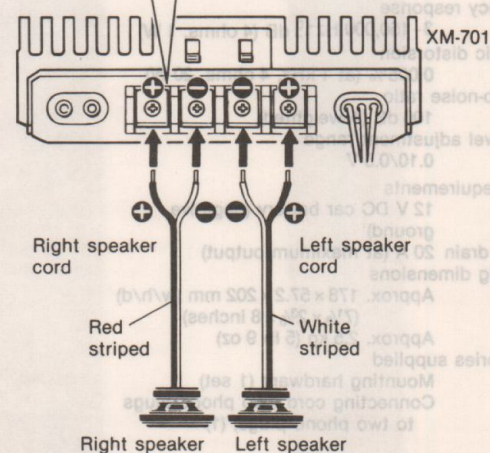
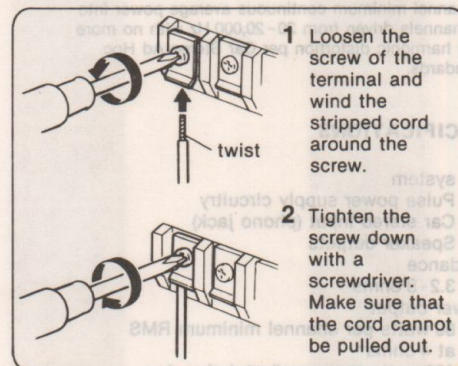
- Before making connections, disconnect the ground terminal of the car battery to avoid short circuits.
- Connect the red power input lead only after all other leads have been connected.
- **Be sure to connect the ground wire of the unit securely to a metal point of the car. A loose connection may cause a malfunction of the amplifier.**

SPEAKER CONNECTION

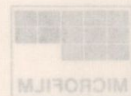
Caution

- Be sure to use speakers with adequate power handling capacities. The maximum power output of this amplifier is 80 watts per channel. If this precaution is not observed, the speakers will be damaged.
- Do not connect the \ominus terminal of the speaker system with the car chassis, and do not connect the \ominus terminal of the right speaker with that of the left speaker.

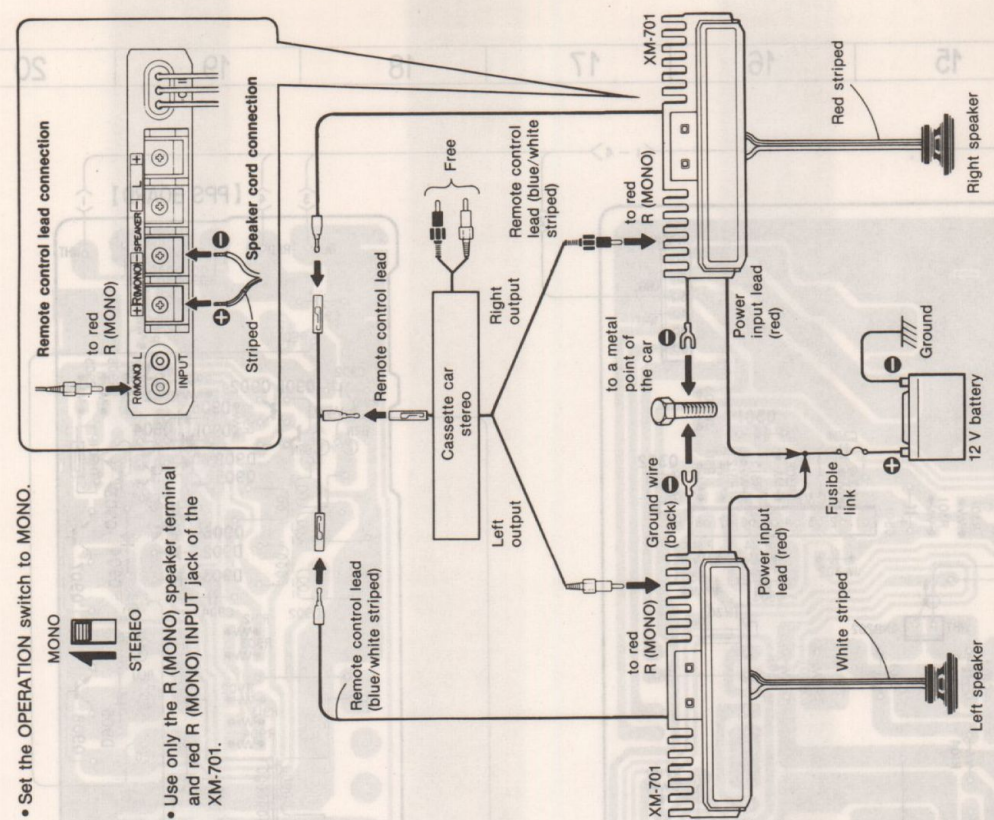
Make terminal connections as illustrated.



* Measured at 14.4 V

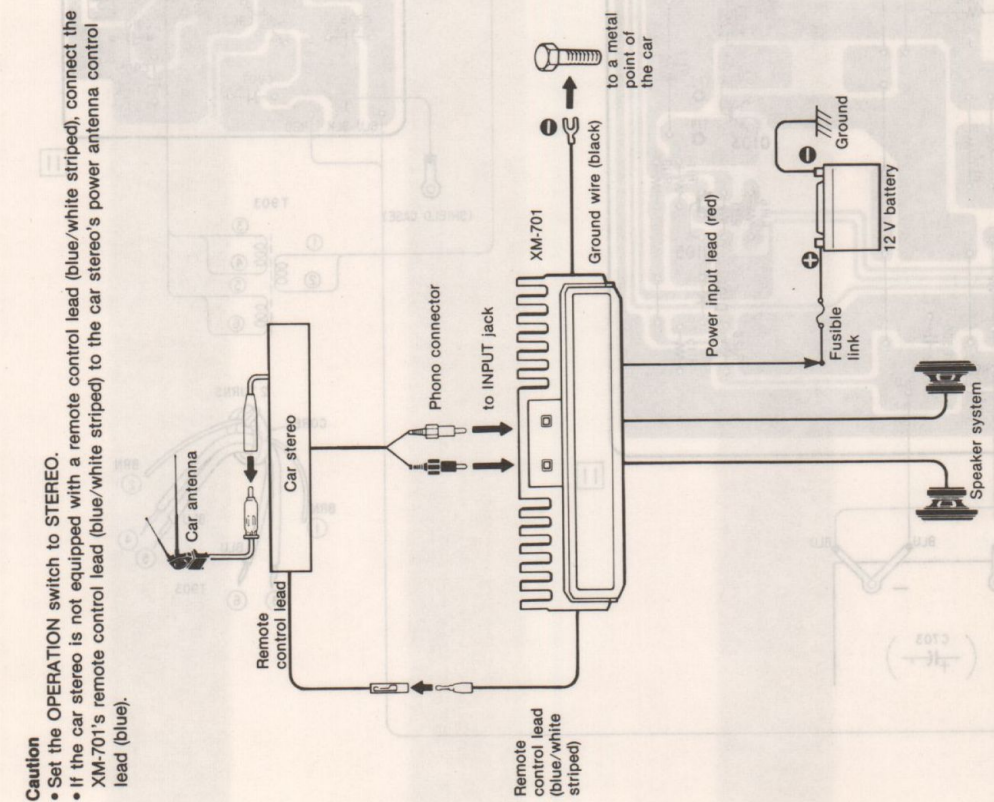


USING THE XM-701 AS A MONAURAL AMPLIFIER



- Set the OPERATION switch to MONO.
- Use only the R (MONO) speaker terminal and red R (MONO) INPUT jack of the XM-701.

CONNECTION OF A 2-SPEAKER SYSTEM



- Caution**
- Set the OPERATION switch to STEREO.
 - If the car stereo is not equipped with a remote control lead (blue/white striped), connect the XM-701's remote control lead (blue/white striped) to the car stereo's power antenna control lead (blue).

LEVEL ADJUSTMENT SWITCH

The input level can be varied with this switch. Use it to adjust the output sound level when using source equipment of other manufacturers.

Be sure to set the switch to SONY STANDARD if the unit is connected to a SONY car stereo. Set it to HIGH when the input level of the cassette car stereo or CD player seems low.

Warning

If MELF components are forcibly removed from the printed circuit board by using pincers or pliers, the circuit board pattern is likely to peel away.

Use 3216 type chip components to replace the MELF capacitor instead of the former lead type.

See XM-700 or XM-700A SERVICE MANUAL for descriptions and removal regarding MELF components.

SECTION 2 ELECTRICAL ADJUSTMENTS

• Idling Adjustment

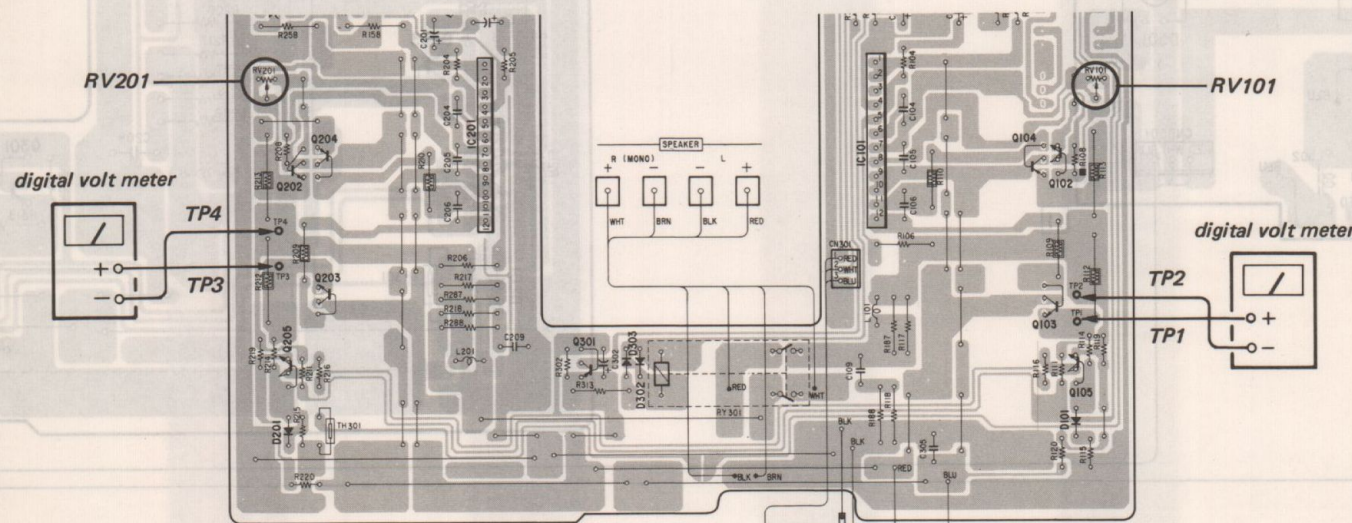
Note: After turning the power switch on, wait several minutes, so that the set normally operates.

Procedure:

1. Connect a VOM between test points TP1, 2 for L-CH and test points TP3, 4 for R-CH.
2. Adjust RV101 (L-CH) and RV201 (R-CH) for 2 mV ±0.5 mV reading on digital volt meter.

Adjustment Location:

- P AMP BOARD -

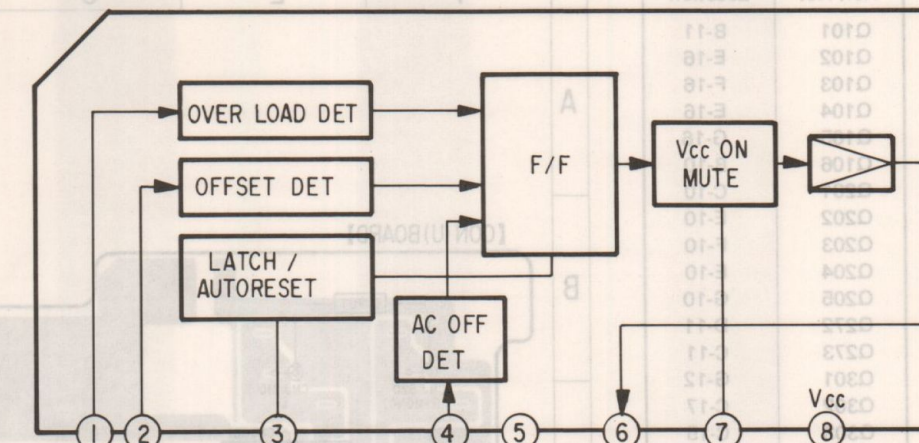


Disassembly

See XM-700 or XM-700A SERVICE MANUAL, as disassembly of this set is applicable to them.

IC Block Diagram

• μPC1237HA



Semiconductor Lead Layouts

μPC1225H 	2SC2673 	RD6.8ES-B2 RD7.5ES-B2 RD13ES-B2 RD16ES-B1 1SS119
μPC1237HA 	2SC2688 	V09G
μPC4570HA 	2SC3623-L 	SLP153B-40 SLP-253B-40
DTA114ES 2SA1048-GR 2SC634SP 	2SD1049A 	
2SA1261 2SC3157 	ESAC31-02D 	

Notes:
 • Color code of sleeve over the end of the jacket.
 • parts extracted from the component side.
 • parts extracted from the conductor side.
 • parts mounted on the conductor side.

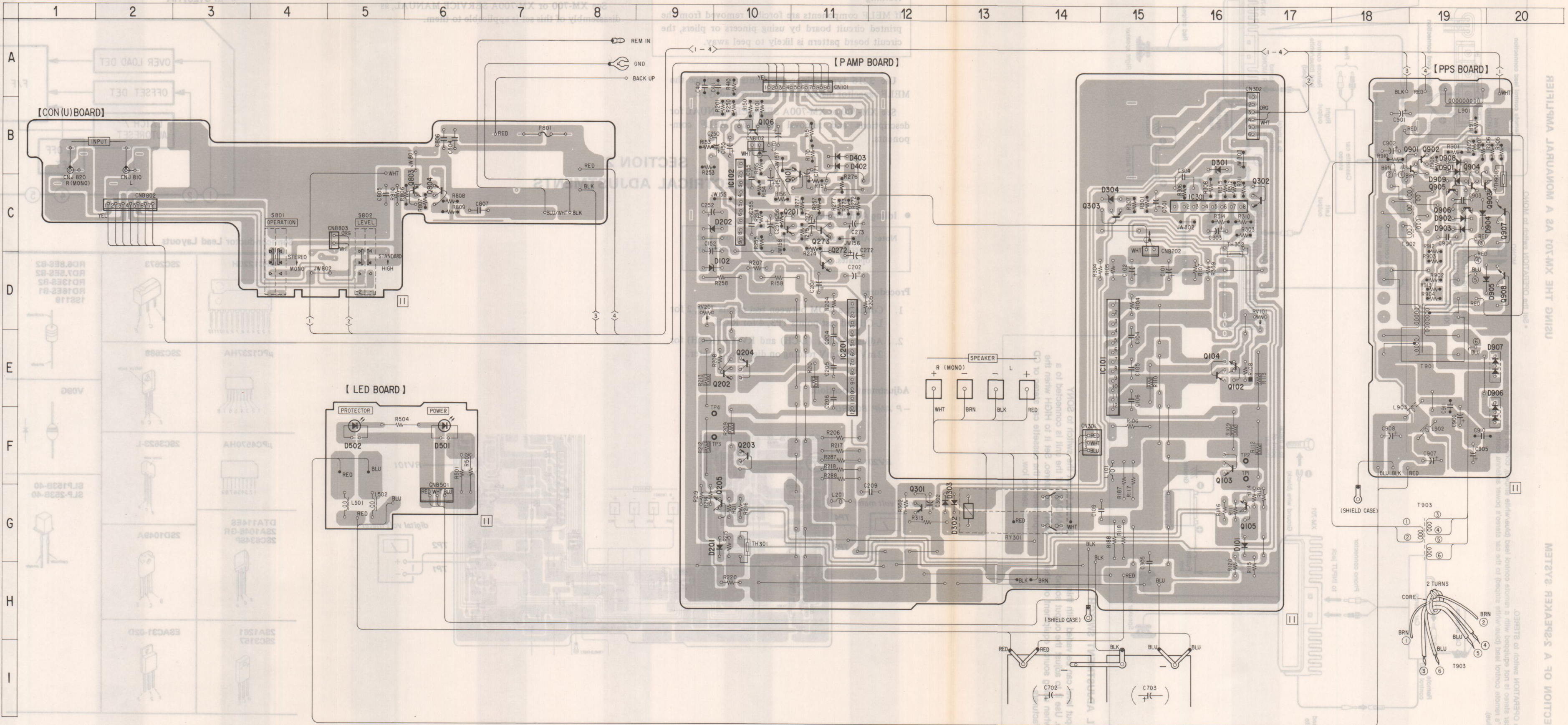
**SECTION 3
DIAGRAMS**

SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D101	G-16	Q101	B-11
D102	D-10	Q102	E-16
D201	G-10	Q103	F-16
D202	C-10	Q104	E-16
D301	B-16	Q105	G-16
D302	G-13	Q106	B-10
D303	G-13	Q201	C-10
D304	C-15	Q202	E-10
D402	B-11	Q203	F-10
D403	B-11	Q204	E-10
D501	F-6	Q205	G-10
D502	F-5	Q272	D-11
D901	B-19	Q273	C-11
D902	C-19	Q301	G-12
D903	C-19	Q302	C-17
D904	C-19	Q303	C-15
D905	D-20	Q803	C-6
D906	E-20	Q804	C-6
D907	E-20	Q901	B-19
D908	B-19	Q902	B-19
D909	C-19	Q903	C-20
		Q904	B-19
IC101	E-15	Q905	C-19
IC102	C-10	Q906	C-19
IC201	E-11	Q907	C-20
IC301	C-16	Q908	D-20

3-1. MOUNTING DIAGRAM — Conductor Side —

See page 5 for Semiconductor lead layouts.

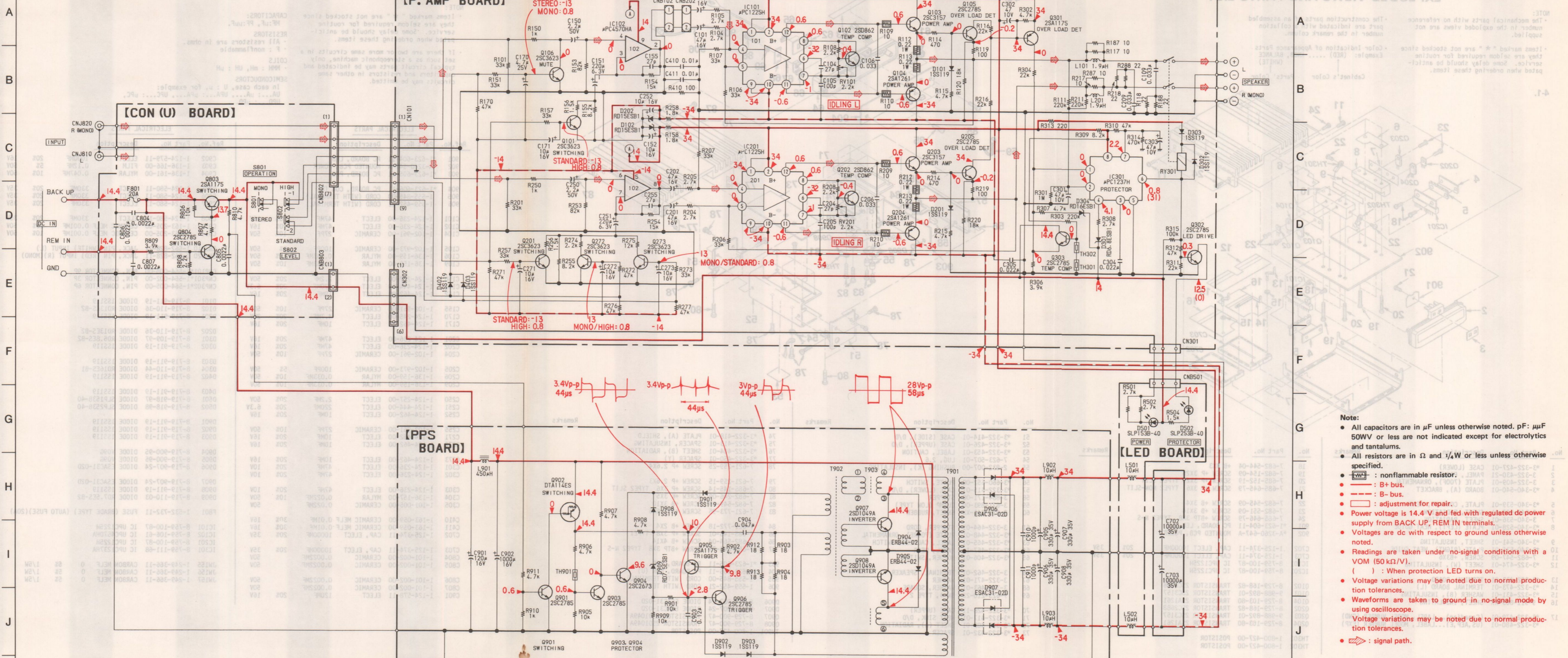


Note:

- Color code of sleeving over the end of the jacket.
- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : part mounted on the conductor side.

CONNECTION OF A 25-250V 20W SPEAKER

3-2. SCHEMATIC DIAGRAM



ELECTRICAL PARTS

Ref.No.	Part No.	Description	0	5%	1/5W
JW158	1-249-366-11	CARBON MELF	0	5%	1/5W
JW302	1-249-366-11	CARBON MELF	0	5%	1/5W
JW303	1-249-366-11	CARBON MELF	0	5%	1/5W
L101	*1-420-872-00	COIL, AIR CORE 1.9UH			
L201	*1-420-872-00	COIL, AIR CORE 1.9UH			
L501	1-421-441-00	COIL, CHOKE 10UH			
L502	1-421-441-00	COIL, CHOKE 10UH			
L901	1-421-961-11	COIL, CHOKE 450UH			
L902	1-421-441-00	COIL, CHOKE 10UH			
L903	1-421-441-00	COIL, CHOKE 10UH			
Q101	8-729-107-77	TRANSISTOR 2SC3623-L			
Q102	8-729-168-82	TRANSISTOR 2SC2688			
Q103	9-988-892-01	TRANSISTOR 2SC3157			
Q104	8-729-103-80	TRANSISTOR 2SA1261			
Q105	8-729-600-27	TRANSISTOR 2SC634SP			
Q106	8-729-107-77	TRANSISTOR 2SC3623-L			
Q201	8-729-107-77	TRANSISTOR 2SC3623-L			
Q202	8-729-168-82	TRANSISTOR 2SC2688			
Q203	9-988-892-01	TRANSISTOR 2SC3157			
Q204	8-729-103-80	TRANSISTOR 2SA1261			
Q205	8-729-600-27	TRANSISTOR 2SC634SP			
Q272	8-729-107-77	TRANSISTOR 2SC3623-L			
Q273	8-729-107-77	TRANSISTOR 2SC3623-L			
Q301	8-729-204-83	TRANSISTOR 2SA1048-GR			
Q302	8-729-600-27	TRANSISTOR 2SC634SP			
Q303	8-729-600-27	TRANSISTOR 2SC634SP			
Q803	8-729-204-83	TRANSISTOR 2SA1048-GR			
Q804	8-729-600-27	TRANSISTOR 2SC634SP			
Q901	8-729-600-27	TRANSISTOR 2SC634SP			
Q902	8-729-900-61	TRANSISTOR DTA114ES			
Q903	8-729-967-32	TRANSISTOR 2SC2673			
Q904	8-729-600-27	TRANSISTOR 2SC634SP			
Q905	8-729-204-83	TRANSISTOR 2SA1048-GR			
Q906	8-729-600-27	TRANSISTOR 2SC634SP			
Q907	8-729-900-47	TRANSISTOR 2SD1049A			
Q908	8-729-900-47	TRANSISTOR 2SD1049A			
R101	1-249-435-11	CARBON MELF	33K	5%	1/5W
R104	1-215-431-00	METAL	2.7K	1%	1/6W
R105	1-215-431-00	METAL	2.7K	1%	1/6W
R106	1-215-457-00	METAL	33K	1%	1/6W
R107	1-215-457-00	METAL	33K	1%	1/6W
R108	1-249-421-11	CARBON	2.2K	5%	1/4W
R109	1-247-688-11	CARBON	10	5%	1/4W F
R110	1-247-688-11	CARBON	10	5%	1/4W F
R111	1-247-887-00	CARBON	220K	5%	1/4W

ELECTRICAL PARTS

Ref.No.	Part No.	Description	0.22	5%	1W
R112	1-212-352-00	METAL OXIDE	0.22	5%	1W F
R113	1-212-352-00	METAL OXIDE	0.22	5%	1W F
R114	1-249-413-11	CARBON	470	5%	1/4W
R115	1-249-425-11	CARBON	4.7K	5%	1/4W
R116	1-249-433-11	CARBON	22K	5%	1/4W
R117	1-247-688-11	CARBON	10	5%	1/4W
R118	1-247-692-11	CARBON	22	5%	1/4W
R119	1-249-405-11	CARBON	100	5%	1/4W
R120	1-249-432-11	CARBON	18K	5%	1/4W
R150	1-249-417-11	CARBON MELF	1K	5%	1/5W
R151	1-249-435-11	CARBON MELF	33K	5%	1/5W
R153	1-249-440-11	CARBON MELF	82K	5%	1/5W
R154	1-249-431-11	CARBON MELF	15K	5%	1/5W
R155	1-249-428-11	CARBON MELF	8.2K	5%	1/5W
R156	1-249-419-11	CARBON MELF	1.5K	5%	1/5W
R157	1-249-435-11	CARBON MELF	33K	5%	1/5W
R158	1-247-716-11	CARBON	1.8K	5%	1/4W
R170	1-249-437-11	CARBON MELF	47K	5%	1/5W
R187	1-247-688-11	CARBON	10	5%	1/4W
R188	1-247-692-11	CARBON	22	5%	1/4W
R201	1-249-435-11	CARBON MELF	33K	5%	1/5W
R204	1-215-431-00	METAL	2.7K	1%	1/6W
R205	1-215-431-00	METAL	2.7K	1%	1/6W
R206	1-215-457-00	METAL	33K	1%	1/6W
R207	1-215-457-00	METAL	33K	1%	1/6W
R208	1-249-421-11	CARBON	2.2K	5%	1/4W
R209	1-247-688-11	CARBON	10	5%	1/4W F
R210	1-247-688-11	CARBON	10	5%	1/4W F
R211	1-247-887-00	CARBON	220K	5%	1/4W
R212	1-212-352-00	METAL OXIDE	0.22	5%	1W F
R213	1-212-352-00	METAL OXIDE	0.22	5%	1W F
R214	1-249-413-11	CARBON	470	5%	1/4W
R215	1-249-425-11	CARBON	4.7K	5%	1/4W
R216	1-249-433-11	CARBON	22K	5%	1/4W
R217	1-247-688-11	CARBON	10	5%	1/4W
R218	1-247-692-11	CARBON	22	5%	1/4W
R219	1-249-405-11	CARBON	100	5%	1/4W
R220	1-249-432-11	CARBON	18K	5%	1/4W
R250	1-249-417-11	CARBON MELF	1K	5%	1/5W
R253	1-249-440-11	CARBON MELF	82K	5%	1/5W
R254	1-249-431-11	CARBON MELF	15K	5%	1/5W
R255	1-249-428-11	CARBON MELF	8.2K	5%	1/5W
R256	1-249-419-11	CARBON MELF	1.5K	5%	1/5W
R257	1-249-435-11	CARBON MELF	33K	5%	1/5W
R258	1-247-716-11	CARBON	1.8K	5%	1/4W

ELECTRICAL PARTS

Ref.No.	Part No.	Description	47K	5%	1/5W
R271	1-249-437-11	CARBON MELF	47K	5%	1/5W
R272	1-249-437-11	CARBON MELF	47K	5%	1/5W
R273	1-249-435-11	CARBON MELF	33K	5%	1/5W
R274	1-249-421-11	CARBON MELF	2.2K	5%	1/5W
R275	1-249-430-11	CARBON MELF	12K	5%	1/5W
R276	1-249-437-11	CARBON MELF	47K	5%	1/5W
R277	1-249-437-11	CARBON MELF	47K	5%	1/5W
R287	1-247-688-11	CARBON	10	5%	1/4W
R288	1-247-692-11	CARBON	22	5%	1/4W
R301	1-215-493-00	CARBON MELF	1M	5%	1/5W
R302	1-249-425-11	CARBON	4.7K	5%	1/4W
R303	1-215-477-00	CARBON MELF	220K	5%	1/5W
R304	1-249-433-11	CARBON	22K	5%	1/4W
R306	1-249-424-11	CARBON MELF	3.9K	5%	1/5W
R307	1-249-425-11	CARBON MELF	4.7K	5%	1/5W
R308	1-249-422-11	CARBON MELF	2.7K	5%	1/5W
R309	1-249-428-11	CARBON	8.2K	5%	1/4W
R310	1-249-437-11	CARBON MELF	47K	5%	1/5W
R311	1-249-433-11	CARBON MELF	22K	5%	1/5W
R312	1-249-437-11	CARBON MELF	47K	5%	1/5W
R313	1-247-704-11	CARBON	220	1%	1/4W
R314	1-215-485-00	CARBON MELF	470K	5%	1/5W
R315	1-249-441-11	CARBON	100K	5%	1/4W
R410	1-249-405-11	CARBON MELF	100	5%	1/5W
R501	1-247-718-11	CARBON	2.7K	5%	1/4W
R502	1-247-718-11	CARBON	2.7K	5%	1/4W
R504	1-247-715-11	CARBON	1.5K	5%	1/4W
R806	1-249-429-11	CARBON MELF	10K	5%	1/5W
R807	1-249-425-11	CARBON MELF	4.7K	5%	1/5W
R808	1-249-421-11	CARBON MELF	2.2K	5%	1/5W
R809	1-249-424-11	CARBON MELF	3.9K	5%	1/5W
R810	1-249-425-11	CARBON	4.7K	5%	1/4W
R901	1-249-429-11	CARBON MELF	10K	5%	1/5W
R902	1-249-425-11	CARBON MELF	4.7K	5%	1/5W
R903	1-249-396-11	CARBON MELF	18	5%	1/5W
R904	1-249-396-11	CARBON MELF	18	5%	1/5W
R905	1-249-429-11	CARBON MELF	10K	5%	1/5W
R906	1-249-425-11	CARBON MELF	4.7K	5%	1/5W
R907	1-249-425-11	CARBON MELF	4.7K	5%	1/5W
R908	1-249-425-11	CARBON MELF	4.7K	5%	1/5W
R909	1-249-429-11	CARBON MELF	10K	5%	1/5W
R910	1-249-417-11	CARBON MELF	1K	5%	1/5W
R911	1-249-425-11	CARBON MELF	4.7K	5%	1/5W
R912	1-249-396-11	CARBON MELF	18	5%	1/5W
R913	1-249-396-11	CARBON MELF	18	5%	1/5W

ELECTRICAL PARTS

Ref.No.	Part No.	Description
RV101	1-230-521-11	RES, ADJ, SOLID 2.2K
RV201	1-230-521-11	RES, ADJ, SOLID 2.2K
RY301	1-515-533-11	RELAY
S801	1-554-958-11	SWITCH, SLIDE (PC BOARD)(OPERATION)
S802	1-554-958-11	SWITCH, SLIDE (PC BOARD)(LEVEL)
T901	1-447-931-11	TRANSFORMER, CONVERTER
T902	1-433-241-00	TRANSFORMER, OSCILLATOR
T903	1-543-100-00	CORE
TH301	1-800-427-00	POSISTOR
TH302	1-800-427-00	POSISTOR
TH901	1-800-427-00	POSISTOR

ACCESSORY & PACKING MATERIAL

Part No.	Description
1-556-167-00	CORD, CONNECTION
2-259-753-00	BAG, PROTECTION
*3-310-611-00	BRACKET
3-322-435-01	CUSHION (L)
3-322-438-01	CUSHION (R)
3-340-521-01	INDIVIDUAL CARTON
*3-764-460-01	(AEP,E)...LABEL, DBP
3-701-613-00	BAG, POLYETHYLENE (FOR FUSE)
3-701-623-00	BAG, POLYETHYLENE (FOR CORD)
3-769-047-11	(Canadian,E)...MANUAL, INSTRUCTION
3-769-047-21	(US).....MANUAL, INSTRUCTION
3-769-047-41	(AEP,E).....MANUAL, INSTRUCTION
X-3302-101-0	SCREW ASSY