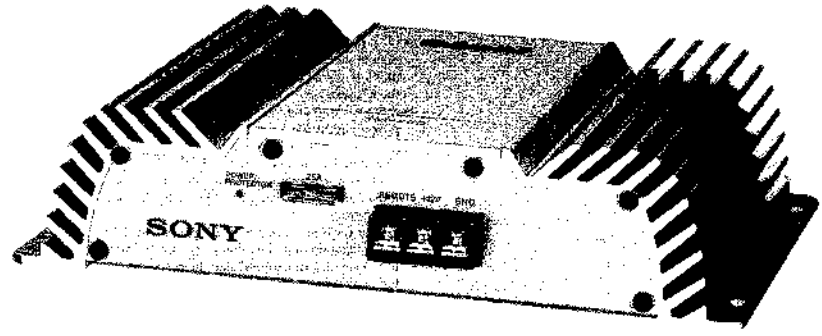
XM-250

SERVICE MANUAL

US Model
Canadian Model



SPECIFICATIONS

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION 50 watts per channel minimum continuous average power into 4 ohms, both channels driven from 20 – 20,000 Hz with no more than 0.04 % total harmonic distortion per Car Audio Ad Hoc Committee standards.

Other Specifications

Circuit system	OTL (output transformerless) circuit pulse power supply
Inputs	RCA pin jacks
Outputs	Speaker terminals
Speaker impedance	2 – 8 ohms (stereo) 4 – 8 ohms (when used as a bridging amplifier)
Maximum output at 4 ohms	100 watts per channel 260 watts (monaural)
Rated outputs (supply voltage at 14.4 V)	50 watts per channel (20 Hz – 20 kHz, 0.04% THD, at 4 ohms) 65 watts per channel (20 Hz – 20 kHz, 0.1% THD, at 2 ohms) Monaural: 130 watts (20 Hz – 20 kHz, 0.1% THD, at 4 ohms)
Frequency response	5 Hz – 100 kHz ($^{+3}_{-3}$ dB)
Harmonic distortion	0.005% or less (at 1 kHz, 4 ohms, 25 watts)
Low-pass filter	80 Hz, – 18 dB/oct
High-pass filter	80 Hz, – 12 dB/oct
Input level adjustment range	0.2 – 2 V
Power requirements	12 V DC car battery (negative ground)
Power supply voltage	10.5 – 16 V
Current drain	at rated output: 12 A (4 ohms, 50 watts x 2) at 10% THD: 16 A Remote input: 5 mA
Dimensions	Approx. 219 x 56 x 182 mm (w/h/d) ($8\frac{5}{8}$ x $2\frac{1}{4}$ x $7\frac{1}{4}$ inches) not incl. projecting parts and controls
Mass	Approx. 2 kg (4 lb. 6 oz.) not incl. accessories
Supplied accessories	Mounting screws (4)

Design and specifications are subject to change without notice.

STEREO POWER AMPLIFIER

SONY®

SECTION 1
GENERAL

This section is extracted from instruction manual.

Features

- Maximum power output of 100 watts per channel (at 4 ohms).
- The XM-235/250 can be used as a monaural amplifier with a maximum output of 260 watts.
- Dual mode connection can be made for a multi-speaker system.
- Provided with a protection circuit.
- Pulse power supply** for stable and regulated output power

**** Pulse power supply**

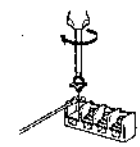
This unit has a built-in convertor which converts the power supply from the DC 12 volt car battery into high speed signals by the use of the semiconductor switch. These signals will be stepped up by the built-in pulse transformer and separated into both positive and negative power supplies before being converted into the direct current again. This is to regulate the otherwise variable voltage of the car battery. The light weight power supply system provides the highly efficient power supply with a low impedance output.

Connections

Caution

- Before making any connections, disconnect the ground terminal of the car battery to avoid short circuits.
- Be sure to use speakers with adequate power handling capacities. If you use speakers with small capacity, they will be damaged.
- Do not connect the ⊖ terminal of the speaker system with the car chassis, and do not connect the ⊖ terminal of the right speaker with that of the left speaker
- Run the input and output cords away from the power supply lead as running them closely can generate some interference noise.
- This unit is a high powered amplifier. Therefore, it may not perform its full potential if used with the existing speaker leads supplied to the car.
- If your car is equipped with a computer system for navigation or some other purposes, be sure not to remove the ground wire from the car battery. If you disconnect the wire, the memory of the computer may be erased. To avoid short circuits when making connections, connect the +12 volt power supply lead only after all the other leads have been connected.

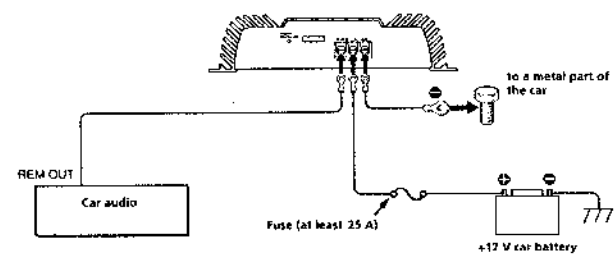
Make the terminal connections as illustrated below.



When you tighten the screw, be careful not to apply too much torque* as doing so may damage the screw.

* The torque value should be less than 1 N•m.

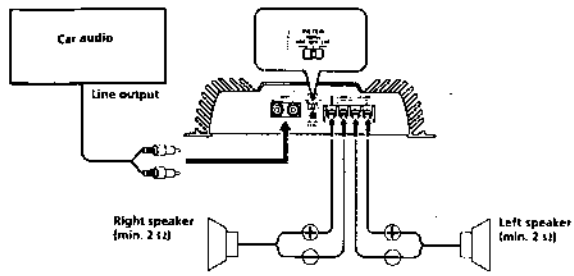
Power Connection Leads



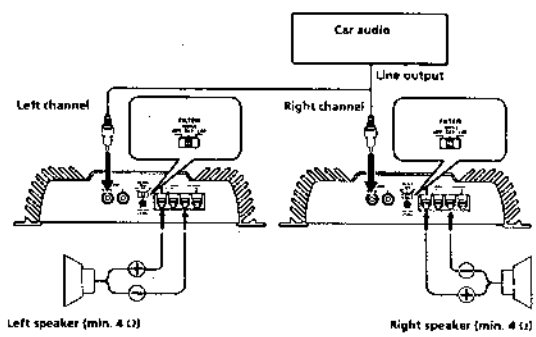
Notes on the power supply

- Connect the +12 volt power supply lead only after all the other leads have been connected.
- **Be sure to connect the ground lead of the unit securely to a metal part of the car. A loose connection may cause a malfunction of the amplifier.**
- Be sure to connect the remote control lead of the car audio to the remote terminal
- Use the power supply lead with a fuse attached (at least 25 A).
- Place the fuse in the power supply lead as close as possible to the car battery.
- Make sure that the leads to be connected to the **+12V** and **GND** terminals of this unit respectively must be larger than 12-Gauge (A.W.G.-12) or with the sectional area of more than 3 mm².

2-Speaker System

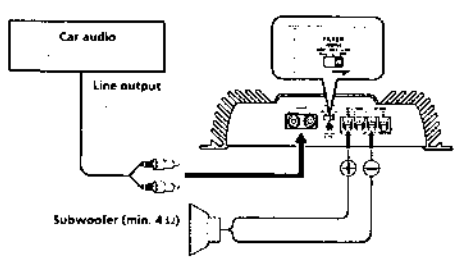


As a Monaural Amplifier



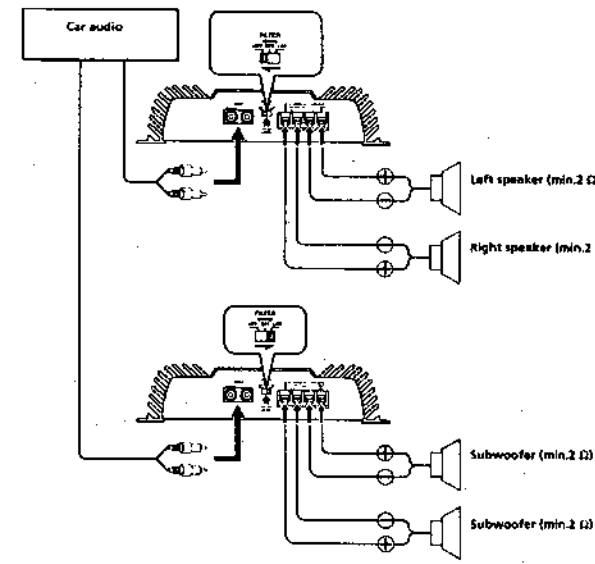
Note
Make sure that the line output from the car audio is connected to the jack marked "R (MONO)" on the unit.

As the Monaural Amplifier for a Subwoofer



Notes
- If you wish to use a subwoofer as a monaural speaker, connect the speaker as illustrated above. The output signals to the subwoofer will be the combination of both right and left output signals.
- As the XM-235 is not equipped with the built-in low-pass filter, use a coil (not supplied) as a substitute for the low-pass filter.

2-Way System



Note
In this system, the volume of the subwoofers will be controlled by the fader control of the car audio.

Dual Mode System (With a Bridged Subwoofer)

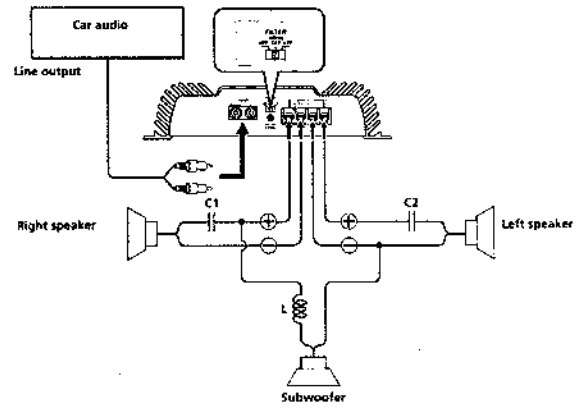


Table of crossover values for 6 dB/octave (4 ohms)

Crossover Frequency unit: Hz	L (coil)* unit: mH	C1/C2 (capacitor)* unit: μF
50	12.7	800
80	8.2	500
100	6.2	400
130	4.7	300
150	4.2	270
200	3.3	200
260	2.4	150
400	1.6	100
600	1.0	68
800	0.8	50
1000	0.6	39

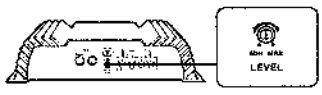
* (not supplied)

Notes

- When using passive crossover networks in a multi-speaker system, care must be taken as the speaker system's impedance should not be lower than that of the suitable impedance for this unit.
- When you are installing a 12 decibels/octave system in your car, the following points must be considered. In a 12 decibels/octave system where both a choke and capacitor are used in series to form a circuit, a great care must be taken when they are connected. In such a circuit, there is going to be an increase in the current which by-passes the speaker with frequencies at around the crossover frequency. If audio signals are continued to be fed into the crossover frequency area, it may cause the amplifier to become abnormally hot or the fuse will be blown. Also if the speaker is disconnected, a series-resonant circuit will be formed by the choke and the capacitor. In this case, the impedance in the resonance area will decrease dramatically resulting in a short circuit like situation causing a damage to the amplifier. Therefore, make sure that a speaker is connected to such a circuit at all times.

Level Adjustment Control

The input level can be varied with this control. Use it to adjust the input sound level when using source equipment of other manufacturers. Turn it to MAX when the output level of the cassette car audio or CD player seems low.



Precautions

- This unit is designed for negative ground 12 volt DC operation only.
- Use speakers with an impedance of 2 to 8 ohms. (4 to 8 ohms when used as a bridging amplifier)
- Do not connect any active speakers (with built-in amplifiers) to the speaker terminals of the unit. Doing so may damage the active speakers. Therefore, be sure to connect the passive speakers to these terminals.
- Avoid installing the unit where:
  - —it would be subject to high temperatures, such as from direct sunlight or 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 horizontally, be sure not to cover the fins with the floor carpet etc.
- 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.
- 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 sink or connecting improper loads.
- Do not use the unit on a weak battery as its optimum performance depends on a good power supply.
- For safety reasons, keep the volume of your car audio moderate so that you can still hear the sound outside your car.

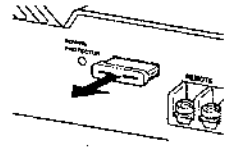
If you have any questions or problems concerning your unit that are not covered in this manual, please consult your nearest Sony dealer.

Fuse Replacement

If the fuse blows, check the power connection and replace the fuse. If the fuse blows again after the replacement, there may be an internal malfunction. In this case, consult your nearest Sony dealer.

Warning

Use the specified fuse with correct amperage. Use of a fuse with higher amperage rating may cause serious damage to the unit.



* **Protection circuit**

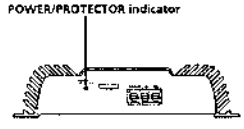
This amplifier is provided with a protection circuit which operates in the following cases when:

— the unit is overheated

— a DC current is generated

— the speaker terminals are short circuited.

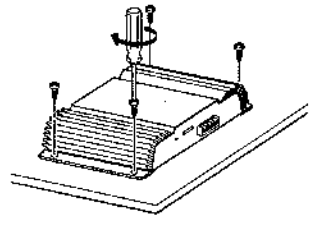
The color of the POWER/PROTECTOR indicator will change from green to red and the unit will shut down. If this happens, turn off the connected equipment and take out the cassette tape or disc and determine the cause of the malfunction. If the amplifier has overheated, wait until the unit cools off.



Installation

Before Installation

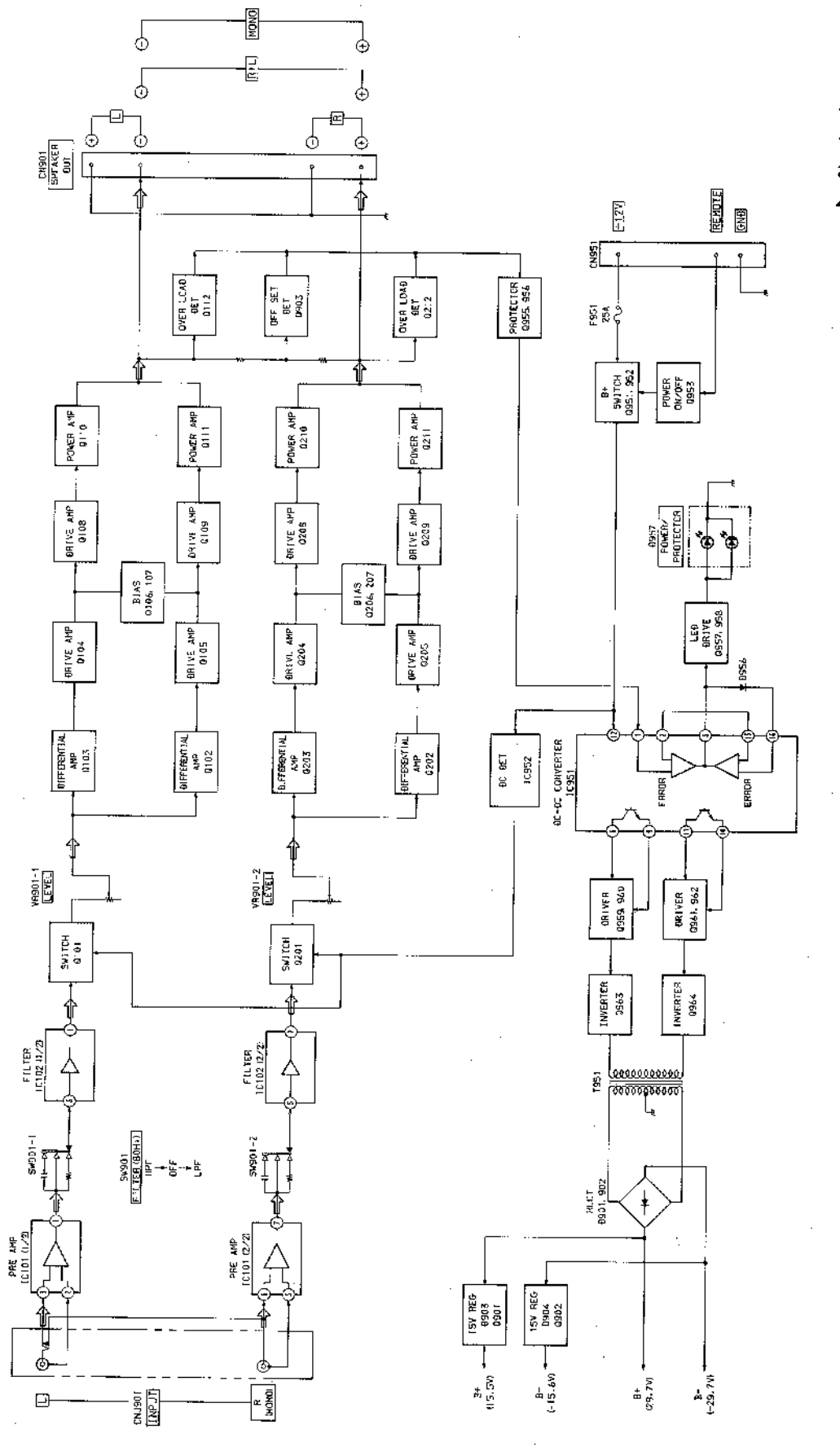
- Mount the unit either inside the trunk room or under a seat.
- Choose the mounting location carefully so that the unit will not interfere with the normal driving functions of the driver and it will not be exposed to direct sunlight or hot air from the heater.
- Do not install the unit under the floor carpet, where the heat dissipation from the unit will be considerably impaired.



Firstly, use the template printed on the back of the carton to mark the positions of the four screw holes on the surface of the mounting board (not supplied). Then drill the holes whose diameter should be approximately 3 millimeters (mm) and mount the unit onto the board with the supplied mounting screws. The supplied mounting screws are 15 mm long. Therefore, make sure that the mounting board is thicker than 15 mm.

SECTION 2
DIAGRAMS

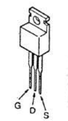
2-1. BLOCK DIAGRAMS



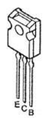
⇧ : Signal path.

● SEMICONDUCTOR LEAD LAYOUTS

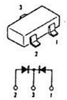
MTAJ30N06HD



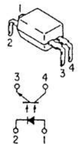
2SA1358-Y
2SC3421-Y



1SS184



PS2501-1L



2SB1115A-YQ

F10P20FR

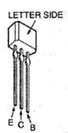
2SC2021-Q

F10P20F (R)

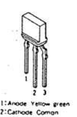
RN1405
2SA1162-YG
2SC2712-YG

2SC2785-HFE

LETTER SIDE

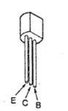


GL9ED4



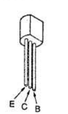
1:Anode Yellow green
2:Cathode Comon
3:Anode Red

2SC1841-PAFAEA
2SA733-K



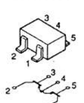
2SC3327-A

2SA988-PAFAEA

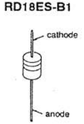


2SC4207-YGR-TE85L

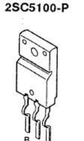
2SA1618Y



HZS16-1LT2
MTZJ3.6A
RD8.8ES-B2
1SS120
RD18ES-B1



2SA1908-P
2SC5100-P



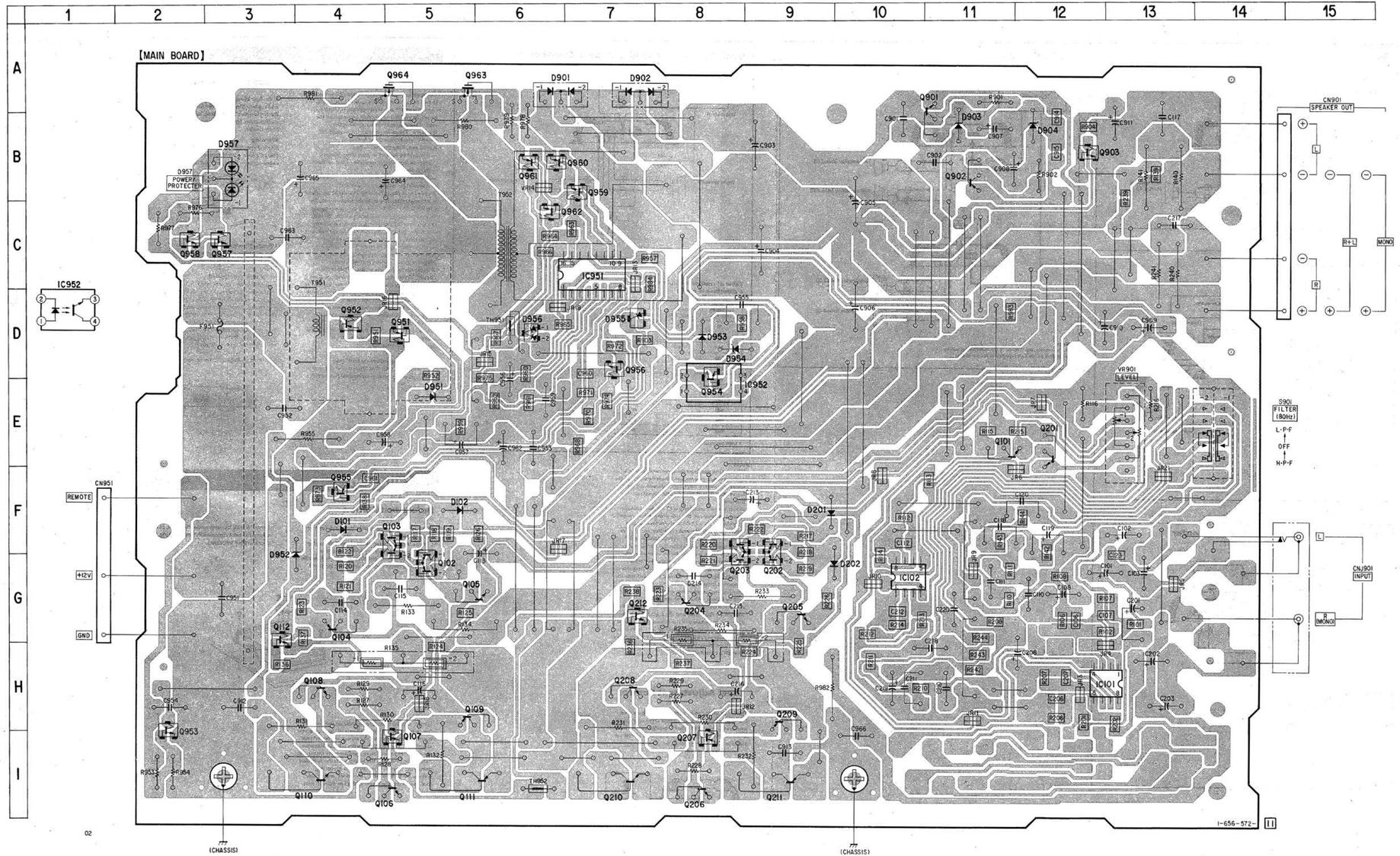
● SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D101	F-4	Q112	G-3
D102	F-5	Q201	E-12
D201	F-9	Q202	G-9
D202	G-9	Q203	G-8
D901	A-6	Q204	G-8
D902	A-7	Q205	G-9
D903	B-11	Q206	I-8
D904	B-12	Q207	I-8
D951	E-5	Q208	H-7
D952	G-3	Q209	H-9
D953	D-8	Q210	I-7
D954	D-8	Q211	I-9
D955	D-7	Q212	G-7
D956	D-6	Q901	B-11
D957	B-3	Q902	B-11
IC101	H-12	Q903	B-12
IC102	G-10	Q951	D-5
IC951	C-7	Q952	D-4
IC952	E-8	Q953	I-2
Q101	E-11	Q954	E-8
Q102	G-5	Q955	F-4
Q103	F-5	Q956	D-7
Q104	G-4	Q957	C-3
Q105	G-5	Q958	C-2
Q106	I-4	Q959	B-7
Q107	I-5	Q960	B-6
Q108	H-4	Q961	B-6
Q109	H-5	Q962	C-6
Q110	I-4	Q963	A-5
Q111	I-5	Q964	A-5

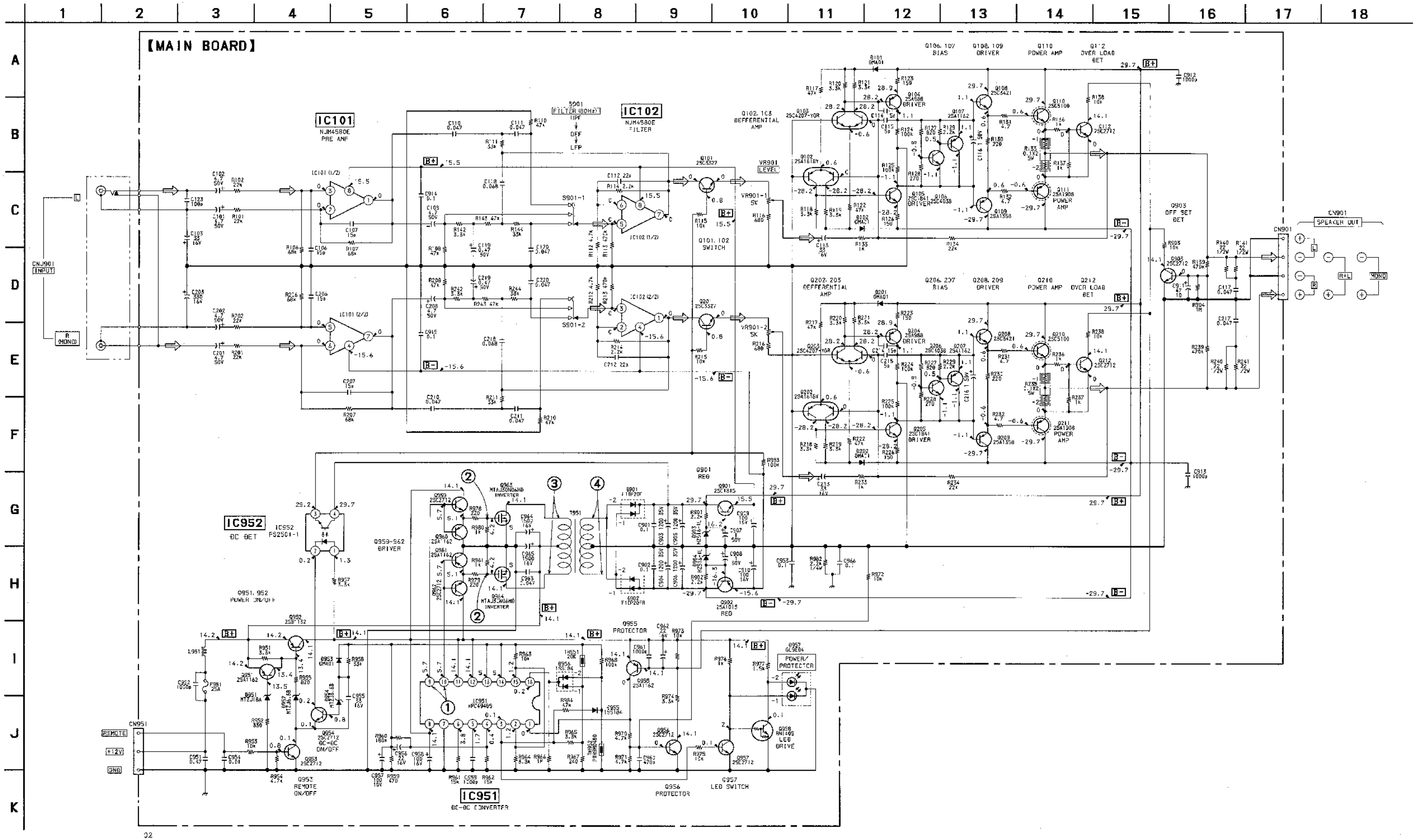
Note:

- ○— : parts extracted from the component side.
- ▒▒ : Pattern on the side which is seen.

2-2. PRINTED WIRING BOARD

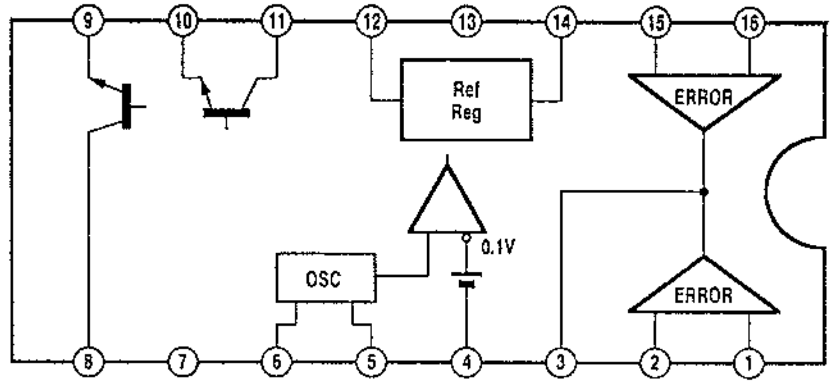


2-3. SCHEMATIC DIAGRAM

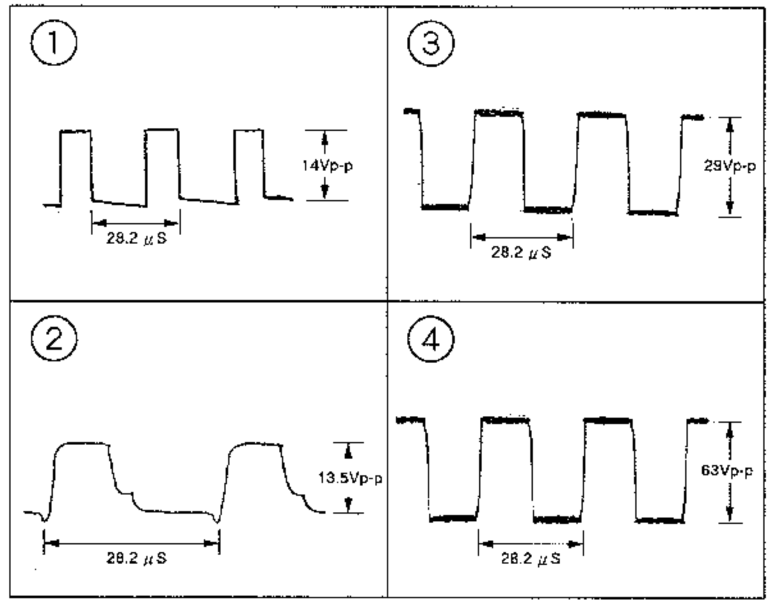


• IC BLOCK DIAGRAM

IC951 μPC494GS



• WAVEFORMS



Note :

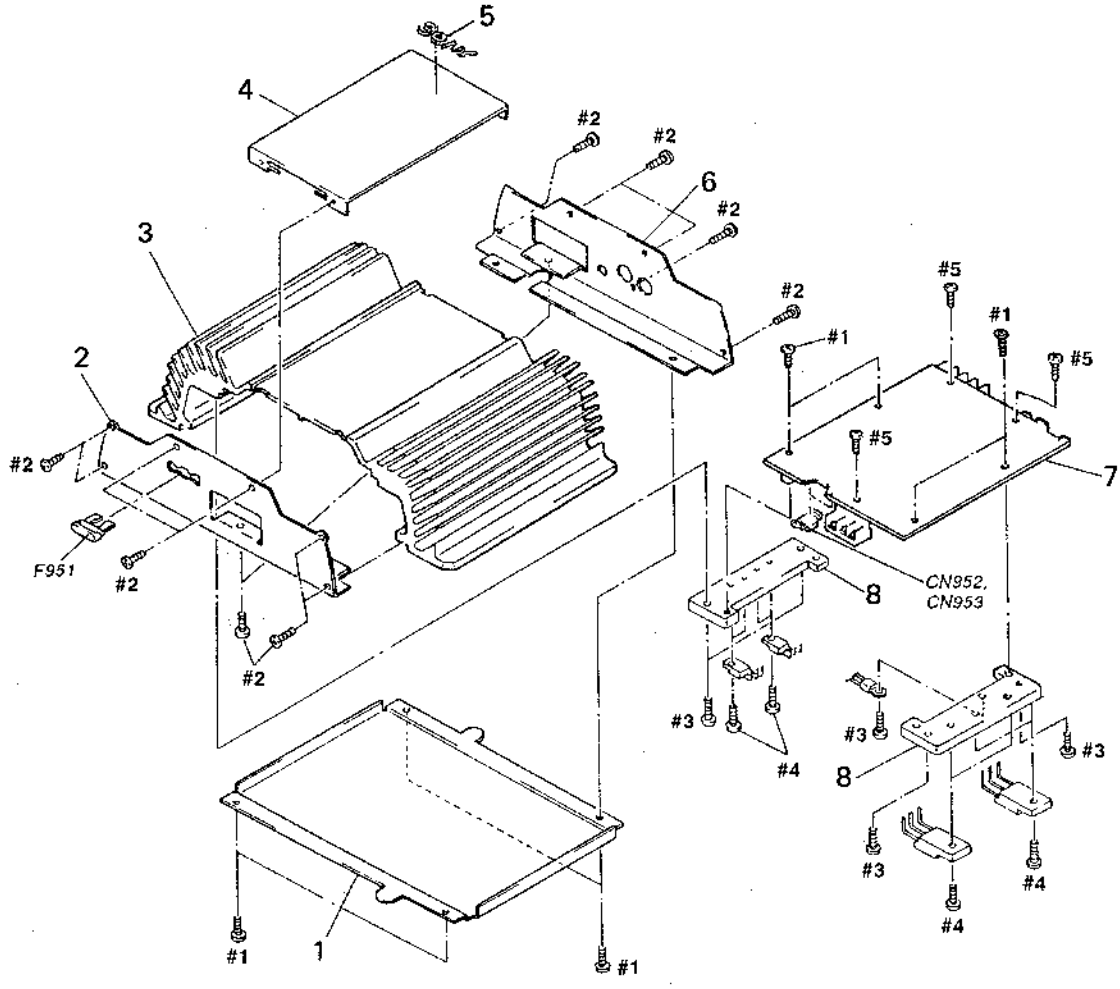
- All capacitors are in μ F unless otherwise noted, pF: μ μ F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- —[W]— : nonflammable resistor.
- [B+] : B+ Line
- [B −] : B − Line
- Power voltage is dc 14.4 V and fed with regulated dc power supply from +12V / REMOTE / GND terminal (CNP951).
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path. ⇨

SEE ADDITIONAL INFORMATION

SECTION 3
EXPLODED VIEW

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.



Ref. No.	Part No.	Description	Remark
* 1	3-913-004-01	PLATE, BOTTOM	
* 2	3-923-241-01	PANEL (FRONT)	
* 3	3-923-240-01	HEAT SINK	
* 4	3-923-243-01	PLATE, ORNAMENTAL	
5	3-704-176-51	EMBLEM (NO.6), SONY	
* 6	3-923-242-01	PANEL (REAR)	
* 7	A-3298-665-A	MAIN BOARD, COMPLETE	
* 8	3-385-420-01	HEAT SINK (SUB)	
CN952	1-537-479-11	TERMINAL (for F951)	
CN953	1-537-479-11	TERMINAL (for F951)	
F951	1-576-256-11	FUSE (BLADE TYPE) (AUTO FUSE) (25A)	

SECTION 4
ELECTRICAL PARTS LIST

MAIN

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items..
- SEMICONDUCTORS
  In each case, u : μ , for example .
  uA.... : μ A.... , uPA.... : μ PA....
  uPB.... : μ PB.... , uPC.... : μ PC....
  uPD.... : μ PD....
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H

When indicating parts by reference number, please include the board.

Ref.No.	Part No.	Description			Remark
*	A-3298-665-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-126-163-11	ELECT	4.7uF	20%	50V
C102	1-126-163-11	ELECT	4.7uF	20%	50V
C103	1-126-007-11	ELECT	33uF	20%	16V
C106	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C107	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C108	1-126-163-11	ELECT	4.7uF	20%	50V
C110	1-136-161-00	FILM	0.047uF	5%	50V
C111	1-136-161-00	FILM	0.047uF	5%	50V
C112	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C113	1-126-021-11	ELECT	33uF	20%	16V
C114	1-102-951-00	CERAMIC	15PF	5%	50V
C115	1-107-585-11	CERAMIC	5PF	0.25PF	500V
C116	1-126-044-11	ELECT	1uF	20%	50V
C117	1-136-161-00	FILM	0.047uF	5%	50V
C118	1-136-163-00	FILM	0.068uF	5%	50V
C119	1-126-043-11	ELECT	0.47uF	20%	50V
C120	1-136-161-00	FILM	0.047uF	5%	50V
C123	1-163-251-11	FILM	100P	5%	50V
C201	1-126-163-11	ELECT	4.7uF	20%	50V
C202	1-126-163-11	ELECT	4.7uF	20%	50V
C203	1-126-011-11	ELECT	330uF	20%	16V
C206	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C207	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C208	1-126-163-11	ELECT	4.7uF	20%	50V
C210	1-136-161-00	FILM	0.047uF	5%	50V
C211	1-136-161-00	FILM	0.047uF	5%	50V
C212	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C213	1-126-021-11	ELECT	33uF	20%	16V
C214	1-102-951-00	CERAMIC	15PF	5%	50V
C215	1-107-585-11	CERAMIC	5PF	0.25PF	500V
C216	1-126-044-11	ELECT	1uF	20%	50V
C217	1-136-161-00	FILM	0.047uF	5%	50V
C218	1-136-163-00	FILM	0.068uF	5%	50V
C219	1-126-043-11	ELECT	0.47uF	20%	50V
C220	1-136-161-00	FILM	0.047uF	5%	50V
C901	1-136-165-00	FILM	0.1uF	5%	50V
C902	1-136-165-00	FILM	0.1uF	5%	50V
C903-906					
	1-126-363-51	ELECT	1200uF	20%	35V
C907	1-126-044-11	ELECT	1uF	20%	50V
C908	1-126-044-11	ELECT	1uF	20%	50V
C909	1-126-023-11	ELECT	100uF	20%	16V
C910	1-126-023-11	ELECT	100uF	20%	16V
C911	1-124-126-00	ELECT	47uF	20%	10V
C912	1-130-471-00	MYLAR	0.001uF	5%	50V
C913	1-130-471-00	MYLAR	0.001uF	5%	50V
C914	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C915	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C951	1-136-173-00	FILM	0.47uF	5%	50V
C952	1-130-471-00	MYLAR	0.001uF	5%	50V
C953	1-136-165-00	FILM	0.1uF	5%	50V
C954	1-136-153-00	FILM	0.01uF	5%	50V
C955	1-107-716-11	ELECT	33uF	20%	16V
C956	1-126-006-11	ELECT	22uF	20%	16V
C957	1-124-443-00	ELECT	100uF	20%	10V
C958	1-126-101-11	ELECT	100uF	20%	16V
C959	1-130-471-00	MYLAR	0.001uF	5%	50V
C960	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C961	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C962	1-126-006-11	ELECT	22uF	20%	16V
C963	1-136-161-00	FILM	0.047uF	5%	50V
C964	1-126-241-11	ELECT	1500uF	20%	16V
C965	1-126-241-11	ELECT	1500uF	20%	16V
C966	1-136-165-00	FILM	0.1uF	5%	50V

MAIN

Ref.No.	Part No.	Description	Remark
		< TERMINAL >	
CN901	1-537-478-11	TERMINAL BOARD (4P) (SPEAKER OUT)	
CN951	1-537-477-11	TERMINAL BOARD (3P) (REMOTE/+12V/GND)	
CN952	1-537-479-11	TERMINAL (for F951)	
CN953	1-537-479-11	TERMINAL (for F951)	
		< JACK >	
CNJ901	1-770-068-21	JACK, PIN 2P (INPUT)	
		< DIODE >	
D101	8-719-912-20	DIODE 1SS120	
D102	8-719-912-20	DIODE 1SS120	
D201	8-719-912-20	DIODE 1SS120	
D202	8-719-912-20	DIODE 1SS120	
D901	8-719-210-30	DIODE F10P20F (R)	
D902	8-719-210-38	DIODE F10P20FR	
D903	8-719-934-91	DIODE HZS16-1LT2	
D904	8-719-934-91	DIODE HZS16-1LT2	
D951	8-719-110-48	DIODE RD18ES-B1	
D952	8-719-109-97	DIODE RD6.8ES-B2	
D953	8-719-912-20	DIODE 1SS120	
D954	8-719-982-03	DIODE MTZJ-3.6A	
D955	8-719-801-78	DIODE 1SS184	
D956	8-719-801-78	DIODE 1SS184	
D957	8-719-989-31	LED GL9ED4 (POWER/PROTECTOR)	
		< IC >	
IC101	8-759-711-82	IC NJM4580E	
IC102	8-759-711-82	IC NJM4580E	
IC951	8-759-144-88	IC uPC494GS	
IC952	8-719-156-73	DIODE PS2501-1L	
		< JUMPER RESISTOR >	
JR1	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR2	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR3-9			
	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR10	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR11-13			
	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR14	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR15	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR16	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR17-20			
	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR21	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< COIL >	
L951	1-411-180-11	COIL, CHOKE	

Ref.No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q101	8-729-203-48	TRANSISTOR 2SC3327-A	
Q102	8-729-232-66	TRANSISTOR 2SA1618Y	
Q103	8-729-014-86	TRANSISTOR 2SC4207-YGR-TE85L	
Q104	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q105	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
Q106	8-729-902-11	TRANSISTOR 2SC2021-Q	
Q107	8-729-230-46	TRANSISTOR 2SA1162-YG	
Q108	8-729-207-82	TRANSISTOR 2SC3421-Y	
Q109	8-729-207-89	TRANSISTOR 2SA1358-Y	
Q110	8-729-024-79	TRANSISTOR 2SC5100-P	
Q111	8-729-024-76	TRANSISTOR 2SA1908-P	
Q112	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q201	8-729-203-48	TRANSISTOR 2SC3327-A	
Q202	8-729-232-66	TRANSISTOR 2SA1618Y	
Q203	8-729-014-86	TRANSISTOR 2SC4207-YGR-TE85L	
Q204	8-729-140-82	TRANSISTOR 2SA988-PAFAEA	
Q205	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
Q206	8-729-902-11	TRANSISTOR 2SC2021-Q	
Q207	8-729-230-46	TRANSISTOR 2SA1162-YG	
Q208	8-729-207-82	TRANSISTOR 2SC3421-Y	
Q209	8-729-207-89	TRANSISTOR 2SA1358-Y	
Q210	8-729-024-79	TRANSISTOR 2SC5100-P	
Q211	8-729-024-76	TRANSISTOR 2SA1908-P	
Q212	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q901	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q902	8-729-173-38	TRANSISTOR 2SA733-K	
Q903	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q951	8-729-230-46	TRANSISTOR 2SA1162-YG	
Q952	8-729-106-60	TRANSISTOR 2SB1115A-YQ	
Q953	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q954	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q955	8-729-230-46	TRANSISTOR 2SA1162-YG	
Q956	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q957	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q958	8-729-207-60	TRANSISTOR RN1405	
Q959	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q960	8-729-230-46	TRANSISTOR 2SA1162-YG	
Q961	8-729-230-46	TRANSISTOR 2SA1162-YG	
Q962	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q963	8-729-030-73	TRANSISTOR MTAJ30N06HD	
Q964	8-729-030-73	TRANSISTOR MTAJ30N06HD	
		< RESISTOR >	
R101	1-208-814-11	METAL GLAZE 22K 2% 1/10W	
R102	1-208-814-11	METAL GLAZE 22K 2% 1/10W	
R106	1-208-826-11	METAL GLAZE 68K 2% 1/10W	
R107	1-208-826-11	METAL GLAZE 68K 2% 1/10W	

Ref. No.	Part No.	Description			Remark
R108	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
R110	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
R111	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R112	1-216-667-11	METAL CHIP	4.7K	0.5%	1/10W
R113	1-216-113-00	METAL CHIP	470K	5%	1/10W
R114	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W
R115	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R116	1-259-424-11	CARBON	680	5%	1/6W
R117	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
R118-121					
	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R122	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
R123	1-216-631-11	METAL CHIP	150	0.5%	1/10W
R124	1-216-699-11	METAL CHIP	100K	0.5%	1/10W
R125	1-216-699-11	METAL CHIP	100K	0.5%	1/10W
R126	1-216-631-11	METAL CHIP	150	0.5%	1/10W
R127	1-259-426-11	CARBON	820	5%	1/6W
R128	1-259-414-11	CARBON	270	5%	1/6W
R129	1-259-436-11	CARBON	2.2K	5%	1/6W
R130	1-247-704-11	CARBON	220	5%	1/4W
R131	1-249-455-11	CARBON	4.7	5%	1/4W
R132	1-249-455-11	CARBON	4.7	5%	1/4W
R133	1-247-713-11	CARBON	1K	5%	1/4W
R134	1-249-462-11	CARBON	22K	5%	1/4W
R135	1-205-991-11	METEL PLATE	0.1	10%	5W F
R136	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R137	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R138	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R139	1-216-113-00	METAL CHIP	470K	5%	1/10W
R140	1-249-633-11	CARBON	22	5%	1/2W
R141	1-249-633-11	CARBON	22	5%	1/2W
R142	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R143	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
R144	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R145	1-259-462-11	CARBON	27K	5%	1/6W
R201	1-208-814-11	METAL GLAZE	22K	2%	1/10W
R202	1-208-814-11	METAL GLAZE	22K	2%	1/10W
R206	1-208-826-11	METAL GLAZE	68K	2%	1/10W
R207	1-208-826-11	METAL GLAZE	68K	2%	1/10W
R208	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
R210	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
R211	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R212	1-216-667-11	METAL CHIP	4.7K	0.5%	1/10W
R213	1-216-113-00	METAL CHIP	470K	5%	1/10W
R214	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W
R215	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R216	1-259-424-11	CARBON	680	5%	1/6W
R217	1-216-691-11	METAL CHIP	47K	0.5%	1/10W

Ref. No.	Part No.	Description			Remark
R218-221					
	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R222	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
R223	1-216-631-11	METAL CHIP	150	0.5%	1/10W
R224	1-216-699-11	METAL CHIP	100K	0.5%	1/10W
R225	1-216-699-11	METAL CHIP	100K	0.5%	1/10W
R226	1-216-631-11	METAL CHIP	150	0.5%	1/10W
R227	1-259-426-11	CARBON	820	5%	1/6W
R228	1-259-414-11	CARBON	270	5%	1/6W
R229	1-259-436-11	CARBON	2.2K	5%	1/6W
R230	1-247-704-11	CARBON	220	5%	1/4W
R231	1-249-455-11	CARBON	4.7	5%	1/4W
R232	1-249-455-11	CARBON	4.7	5%	1/4W
R233	1-247-713-11	CARBON	1K	5%	1/4W
R234	1-249-462-11	CARBON	22K	5%	1/4W
R235	1-205-991-11	METEL PLATE	0.1	10%	5W F
R236	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R237	1-216-651-11	METAL CHIP	1K	0.5%	1/10W
R238	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R239	1-216-113-00	METAL CHIP	470K	5%	1/10W
R240	1-249-633-11	CARBON	22	5%	1/2W
R241	1-249-633-11	CARBON	22	5%	1/2W
R242	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R243	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
R244	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R901	1-259-436-11	CARBON	2.2K	5%	1/6W
R902	1-259-436-11	CARBON	2.2K	5%	1/6W
R903	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R904	1-218-776-11	METAL GLAZE	1M	2%	1/10W
R951	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R952	1-216-186-00	METAL GLAZE	330	2%	1/8W
R953	1-249-429-11	CARBON	10K	5%	1/4W
R954	1-249-425-11	CARBON	4.7K	5%	1/4W
R955	1-247-712-11	CARBON	820	5%	1/4W
R957	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R958	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R959	1-208-774-11	METAL GLAZE	470	2%	1/10W
R960	1-216-103-00	METAL CHIP	180K	5%	1/10W
R961	1-208-810-11	METAL GLAZE	15K	2%	1/10W
R962	1-208-810-11	METAL GLAZE	15K	2%	1/10W
R963	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R964	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R965	1-216-663-11	METAL CHIP	3.3K	0.5%	1/10W
R966	1-218-776-11	METAL GLAZE	1M	2%	1/10W
R967	1-208-767-11	METAL GLAZE	240	2%	1/10W
R968	1-216-699-11	METAL CHIP	100K	0.5%	1/10W
R970	1-216-667-11	METAL CHIP	4.7K	0.5%	1/10W
R971	1-216-667-11	METAL CHIP	4.7K	0.5%	1/10W
R972	1-216-675-11	METAL CHIP	10K	0.5%	1/10W

MAIN

Ref. No.	Part No.	Description			Remark
R973	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R974	1-216-210-00	METAL GLAZE	3.3K	2%	1/8W
R975	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R976	1-249-417-11	CARBON	1K	5%	1/4W
R977	1-249-419-11	CARBON	1.5K	5%	1/4W
R978	1-259-412-11	CARBON	220	5%	1/6W
R979	1-259-412-11	CARBON	220	5%	1/6W
R980	1-247-713-11	CARBON	1K	5%	1/4W
R981	1-247-713-11	CARBON	1K	5%	1/4W
R982	1-247-717-11	CARBON	2.2K	5%	1/4W
R983	1-208-575-11	METAL GLAZE	100K	2%	1/8W
R984	1-216-691-11	METAL CHIP	47K	0.5%	1/10W
		< SWITCH >			
S901	1-572-949-11	SWITCH, SLIDE (FILTER 80Hz)			
		< TRANSFORMER >			
T951	1-427-892-11	TRANSFORMER, DC-DC CONVERTER			
		< THERMISTOR >			
TH951	1-808-779-11	THERMISTOR			
TH952	1-809-789-71	THERMISTOR, POSITIVE			
		< VARIABLE RESISTOR >			
VR901	1-223-667-11	RES, VAR, CARBON 5K/5K (LEVEL)			

****

MISCELLANEOUS
****

F951	1-576-256-11	FUSE (BLADE TYPE) (AUTO FUSE) (25A)

****

ACCESSORIES & PACKING MATERIALS
****

	3-798-602-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH)

****

****
HARDWARE LIST
****

#1	7-685-545-11	SCREW +BTP 3×6 TYPE2 N-S
#2	7-685-546-19	SCREW +BTP 3×8 TYPE2 N-S
#3	7-685-546-14	SCREW +BTP 3×8 TYPE2 N-S
#4	7-682-949-01	SCREW +PSW 3×10
#5	7-685-146-01	SCREW +P 3×8 TYPE4

9-959-928-11

Sony Corporation
Mobile Electronics Company

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Quality Engineering Dept.

XM-250

SONY

SERVICE MANUAL

Serial No. 520,001 and later

US Model

Canadian Model

SUPPLEMENT-1

File this supplement with the service manual.

Subject : Change of Ornamental Plate

(ENG-96004)

____ (Under line) : indicates changed portion.

Page	Former Type			New Type		
	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
12	* 4	3-923-243-01	PLATE, ORNAMENTAL	* 4	3-923-243-11	PLATE, ORNAMENTAL
	5	3-704-176-51	EMBLEM (NO.6), SONY	5	————	————

* Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

9-959-928-81

Sony Corporation
Mobile Electronics Company

English
96C0413-1D
Printed in Japan

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Quality Engineering Dept.