

JVC

SERVICE MANUAL

STEREO INTEGRATED AMPLIFIER

MODEL No. **AX-90VBK**



Contents

	Page		Page
Safety Precautions	1-2	Handling precautions of LCD panels	1-11
Instruction Book		Servicing Method for AWG # 20 wires with Clamping Terminals	1-12
Block Diagram	1-3	Internal Block Diagrams of Major ICs	1-13
Technical Explanations	1-5	Parts List	Separate-volume Insertion
Removal Procedures	1-9	Schematic Diagram	Insertion
Adjustment Procedures	1-10	Connection Diagram	
Functions of ICs on the Pre-Amplifier PC Board	1-11		

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes.

For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of the service manual. Electrical components having such features are identified by shading on the schematics and by (Δ) on the parts list in the service manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list in the service manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard.

When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

5. Leakage current check

(Electrical shock hazard testing)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

Do not use a line isolation transformer during this check.

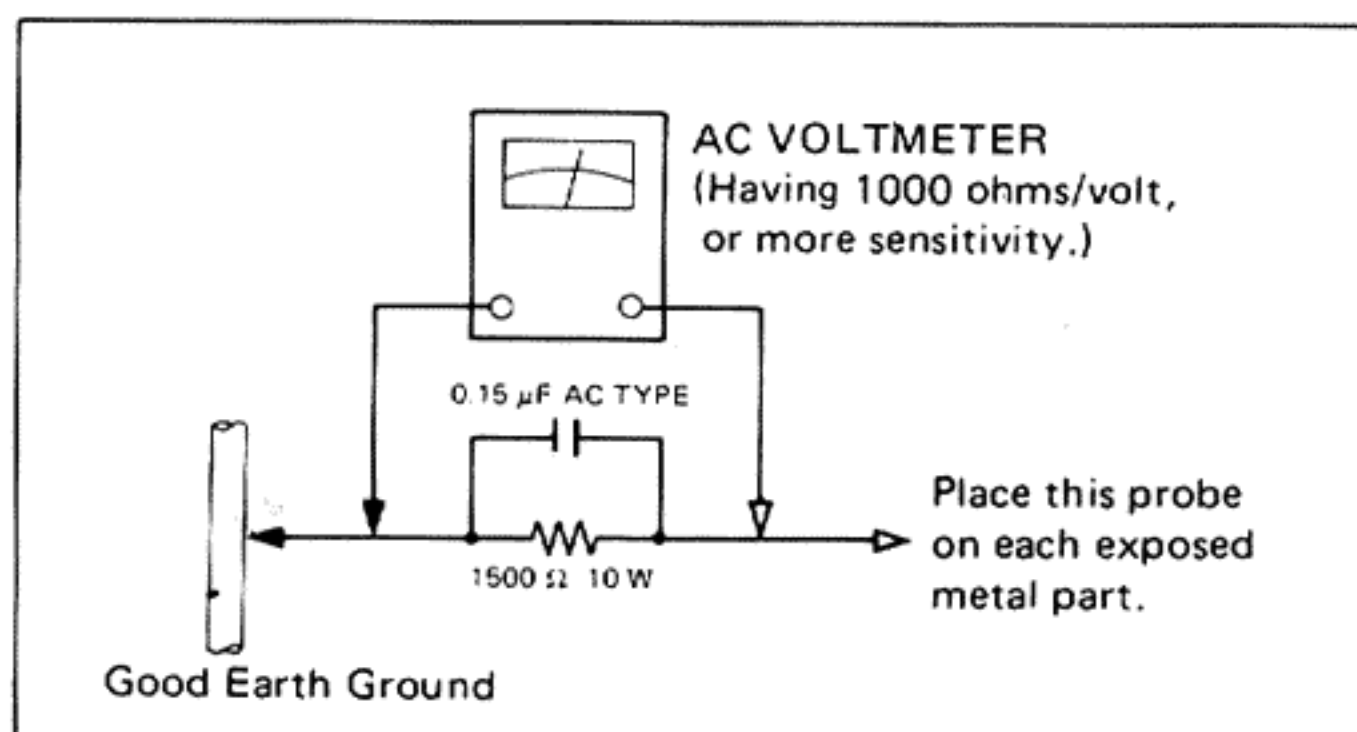
- Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5 AC(r.m.s.).

- Alternate check method

Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500 Ω 10 W resistor paralleled by a 0.15 μ F AC-type capacitor between an exposed metal part and a known good earth ground.

Measure the AC voltage across the resistor with the AC voltmeter.

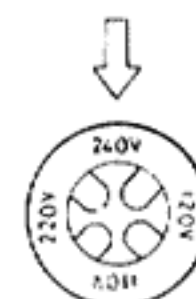
Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC(r.m.s.). This corresponds to 0.5 mA AC(r.m.s.).



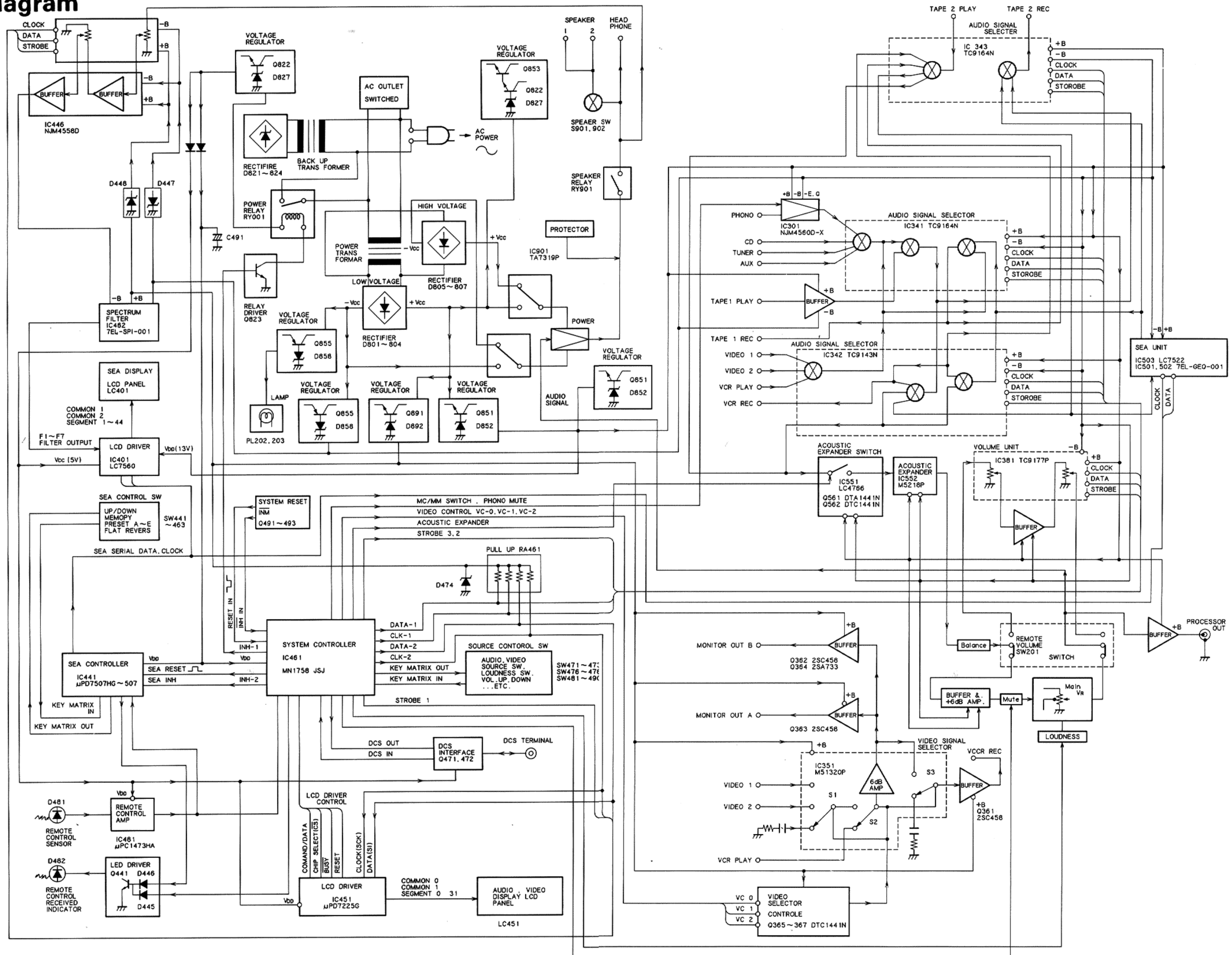
CHECKING YOUR LINE VOLTAGE (Except for U.S.A., Canada, U.K., Continential Europe and Australia)

Before inserting the power plug, please check this setting to see that it corresponds with the line voltage in your area. If it doesn't be sure to adjust the voltage selector switch to the proper setting before operating this equipment. The voltage selector switch is located on the rear panel.

CAUTION: Before setting the "Voltage selector switch" to the proper voltage, disconnect the power plug.



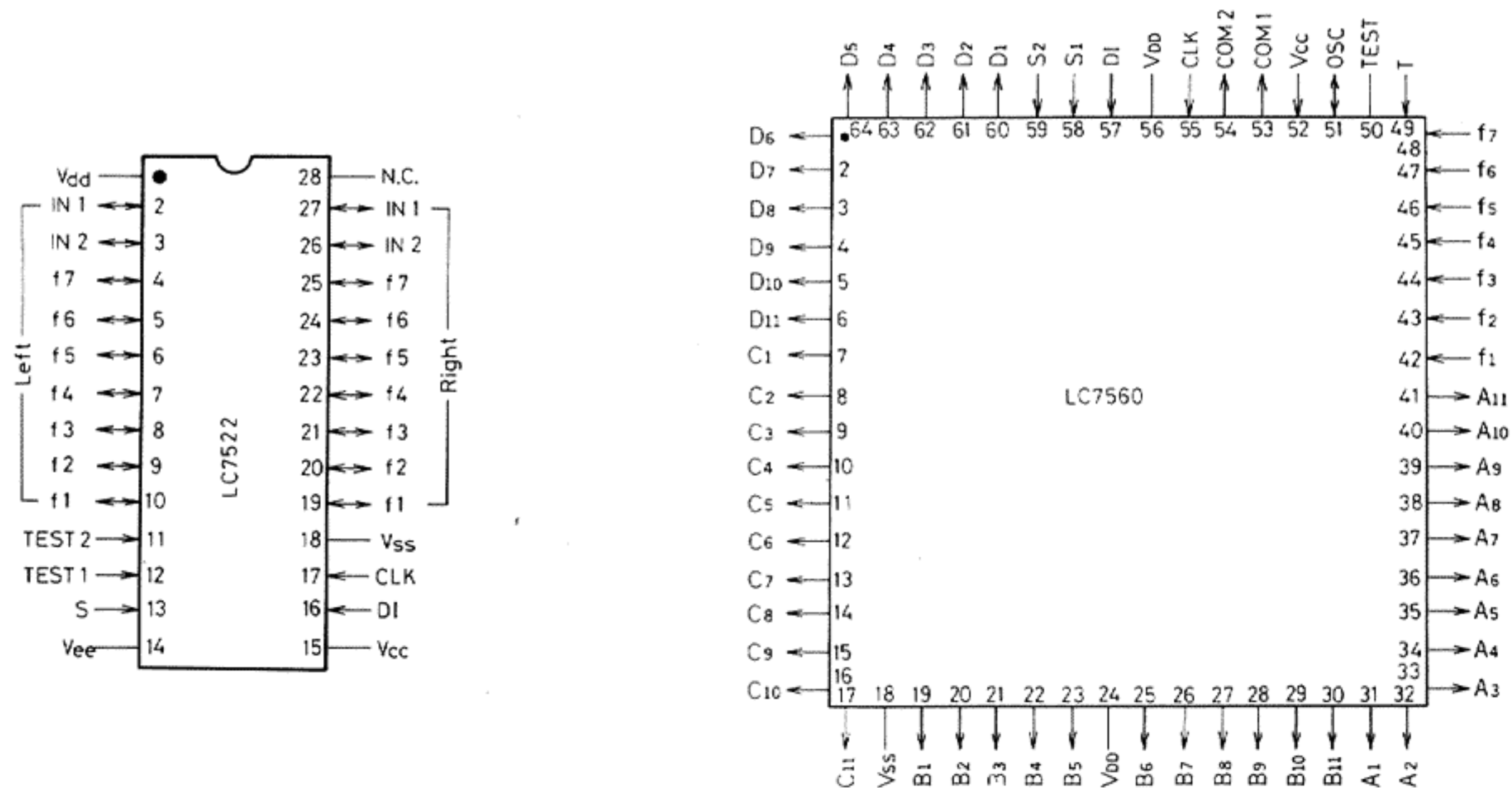
Block Diagram



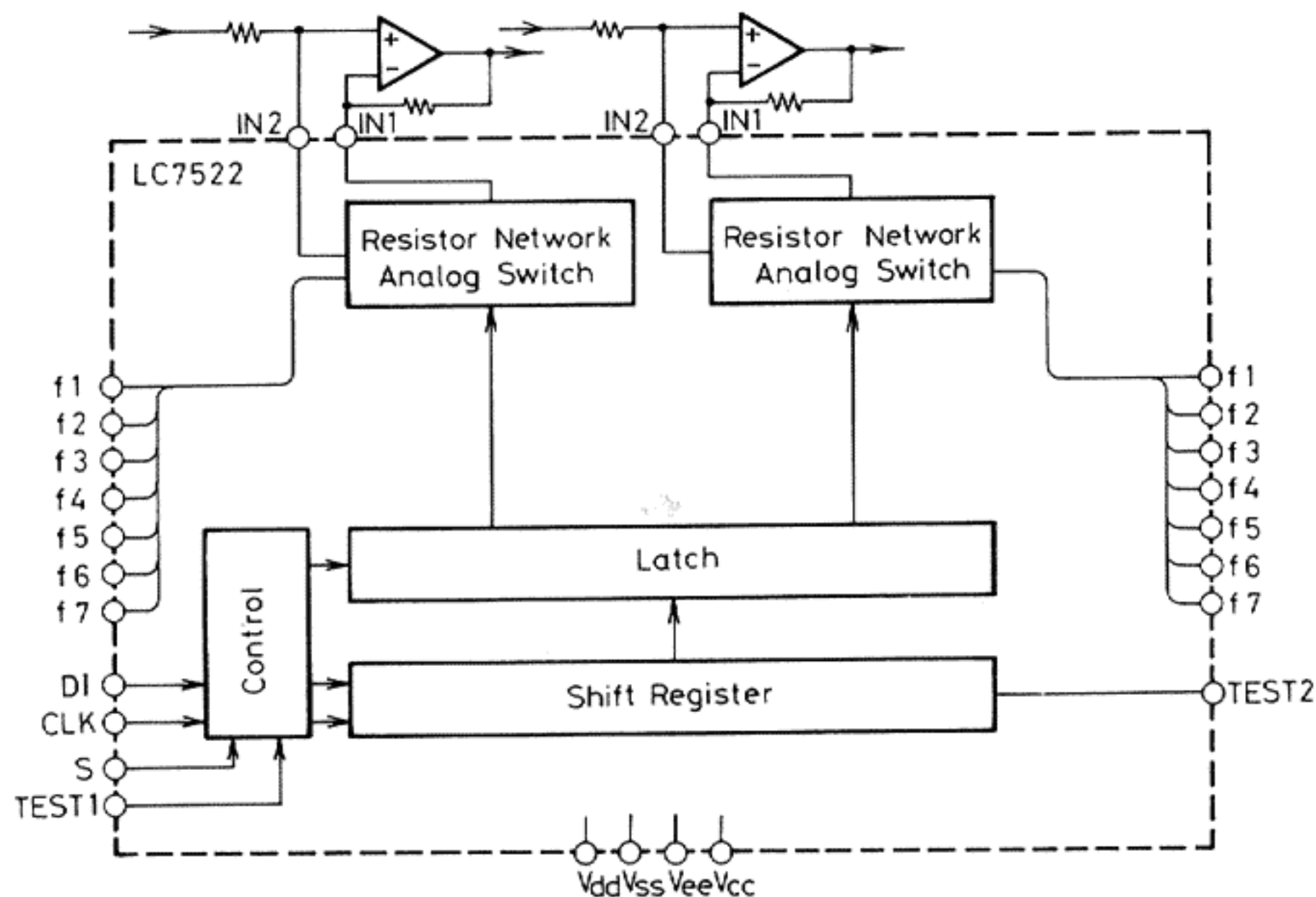
Technical Explanations

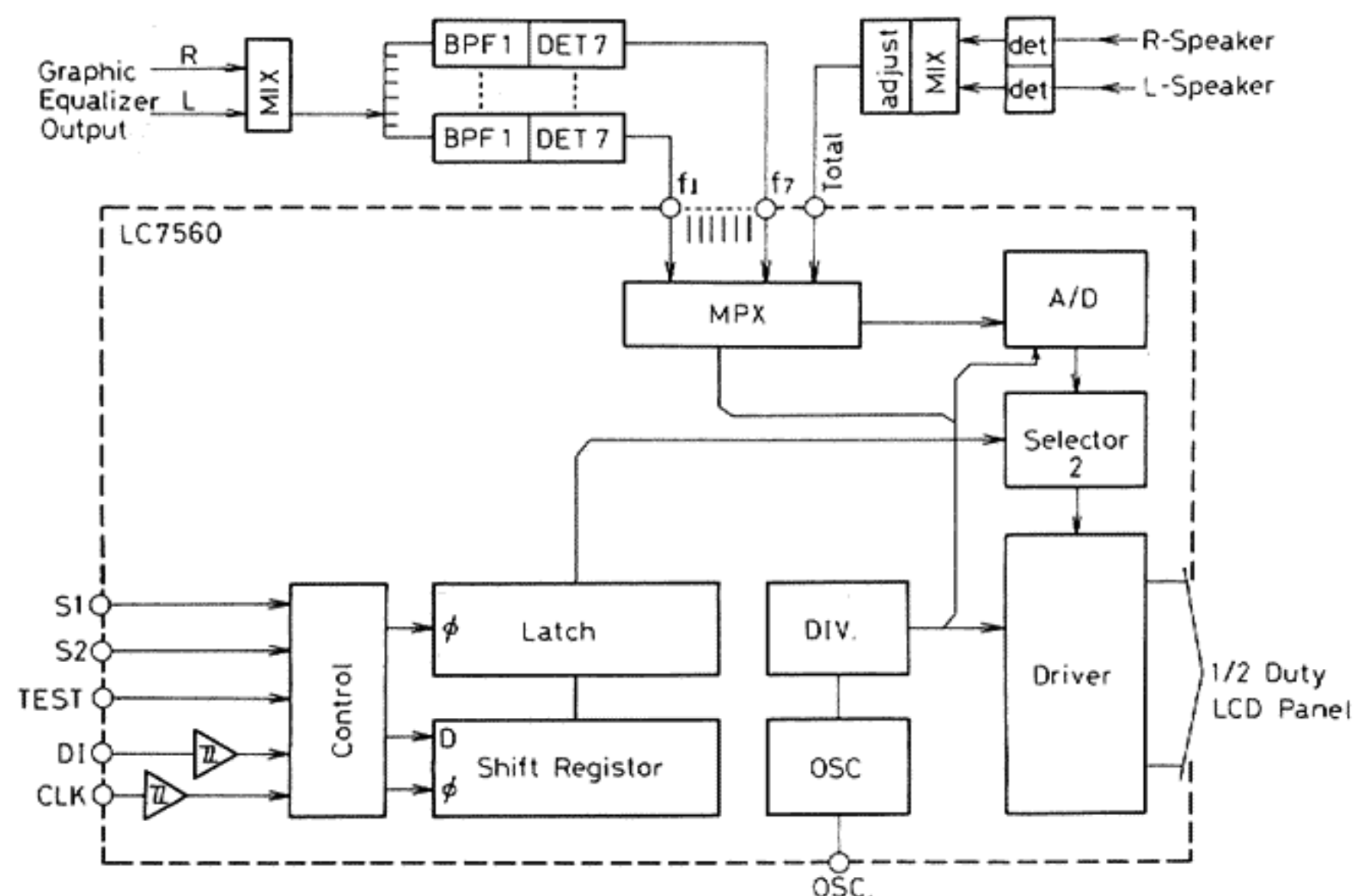
Among the various LSI's adopted on this model, explanations are made in this Section especially on the two types of LSI's assigned to SEA control by the computer. These two LSI's are LC7522 (Symbol No. IC503) and LC7560 (Symbol No. IC401).

■ Terminal Layout Diagram



■ Interior Block Diagram



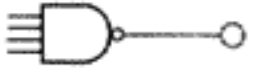
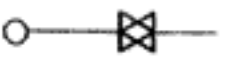
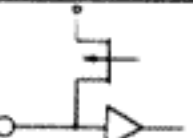
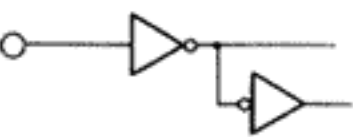


■ Explanation of Each Terminal

LC7522 (Graphic Equalizer) C-MOS LSI, 7 bands, right-side/left-side independent, ± 2 dB step, ± 10 dB variable

Name	Terminal No.	Terminal type	Explanation
VDD	10		Power supply terminal, +18V Power supply for voice signals
Vref	12		Power supply terminal, +13V Power supply for logic drive
Vss	18		Power supply terminal, 0V
VEE	19		Power supply terminal, -18V Power supply for voice signals
DI	17		Terminal for data input from CPU Schmitt inverter type
CLK	16		Terminal for clock input from CPU Schmitt inverter type
GND	—		Voice-signal system GND
IN1	1, 28		Input terminal for voice signals IN1 to be connected to OP amplifier inversion input
IN2	2, 27		IN2 to be connected to OP amplifier noninversion input Provided both on right side and on left side
f1 ~ f7	9 ~ 3 26 ~ 20		Connection terminal for band filter f1 ~ f7 x right side/left side Total 14 terminals
S	11		Select terminal when 2 chips are used Key code: FD under "1" input Key code: FC under "0" input

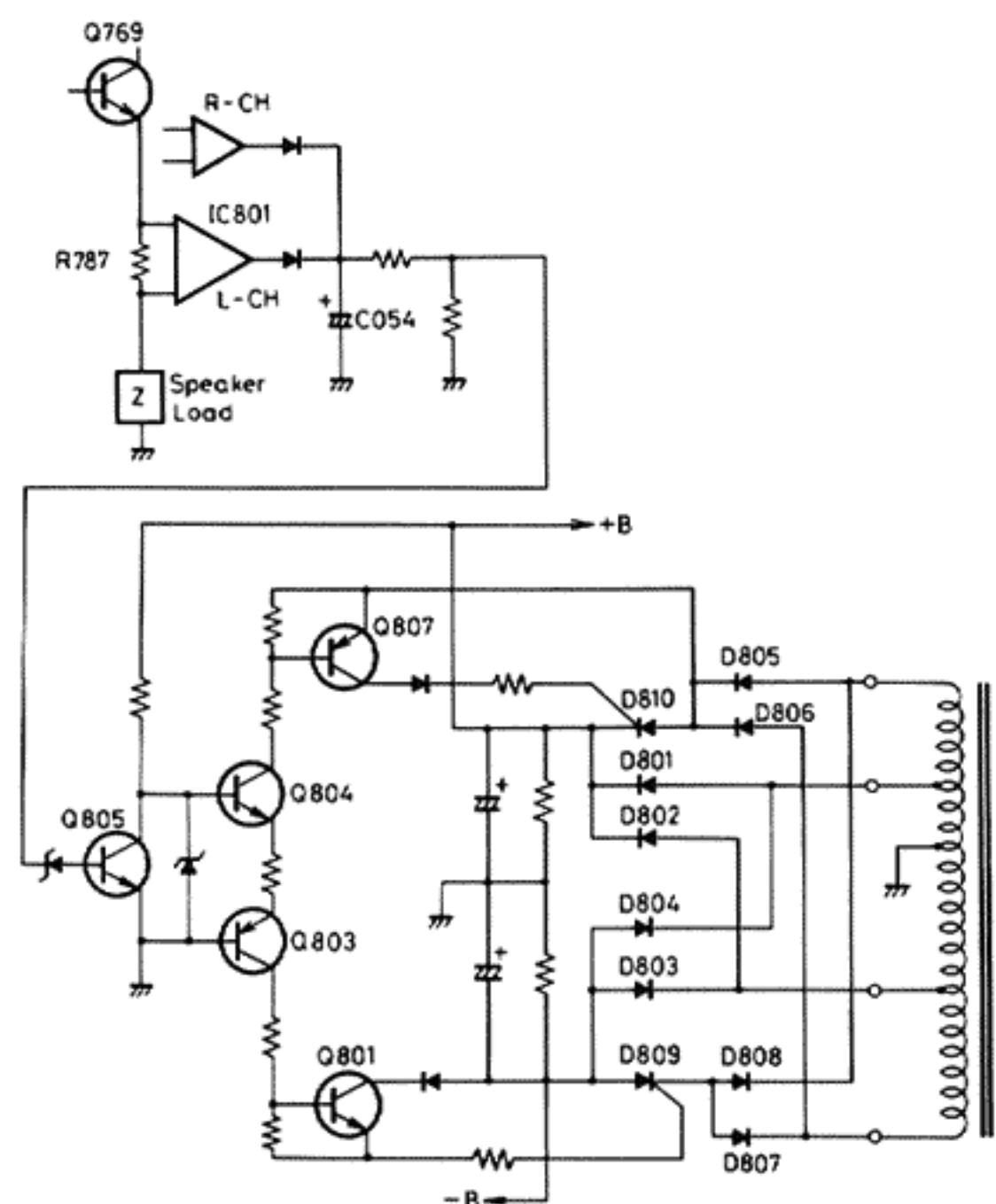
LC7560 (LCD Display Driver) C-MOS LSI, 7 bands, ± 2 db step, 11-point display

Name	Terminal No.	Terminal type	Explanation
VDD	24 56		Power supply terminal, +13V Power supply for A/D conversion
Vcc	52		Power supply terminal, +5V Power supply for logic drive
Vss	18		Power supply terminal, 0V
DI	57		Terminal for data input from CPU Schmitt inverter type
CLK	55		Terminal for clock input from CPU Schmitt inverter type
COM1 COM2	53 54		Output terminal to LCD common
A ₁ ~ A ₁₁	31 ~ 41		Output terminal to LCD segment For bands f ₁ and f ₂
B ₁ ~ B ₁₁	19 ~ 30		Output terminal to LCD segment For bands f ₃ and f ₄
C ₁ ~ C ₁₁	7 ~ 17		Output terminal to LCD segment For bands f ₅ and f ₆
D ₁ ~ D ₁₁	60 ~ 64 1 ~ 6		Output terminal to LCD segment For band f ₇ and total display
f ₁ ~ f ₇	42 ~ 48		Input terminal for voice signal detection output
T	49		Input terminal for total display Inputs signal detection output
OSC	51		Open-drain-type output buffer Connection terminal of exterior-mounted CR for oscillator
S1	58		Select terminal when a plural number of chips is used (max. 4 chips)
S2	59		

S1	S2	Key Code
1	1	FB
0	1	FA
1	0	F9
0	0	F8

■ Power Supply Switching Circuit

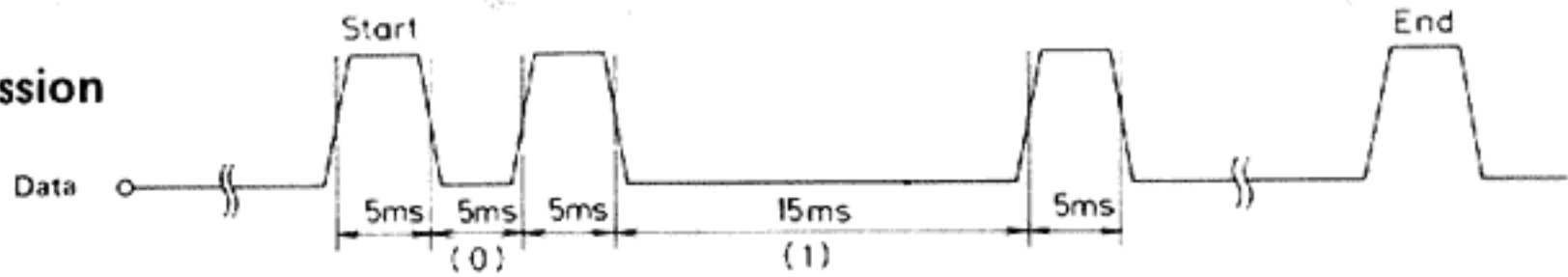
- When the load impedance exceeds 7 ohms, or when the output is small even under 7 ohms, Q804, Q803, Q807, and Q801 go ON because Q805 is OFF. Consequently, current flows to the gates of thyristors D809 and D810, causing these thyristors to be turned ON, and the power amplifier is actuated by high voltage through D805, D806, D807, and D808.
- When output is effected under the load impedance of less than 7 ohms, current and voltage are detected from both ends of R787 (R788 on the right side) to obtain the load impedance, and the detected output is amplified by IC051.
When voltage at both ends of C057 rises above 11V, Q805 is turned ON, while Q804, Q803, Q807, and Q801 are turned OFF. As a result, the gate current at D809 and D810 becomes zero, causing these D809 and D810 also to become OFF. This status causes the power amplifier to start functioning at low voltage through D801, D802, D803, and D804.
- Low-voltage functioning is effected at about 70% of high voltage, contributing to improving efficiency during the low-impedance period.



■ Data Transmission through Synchro Terminal

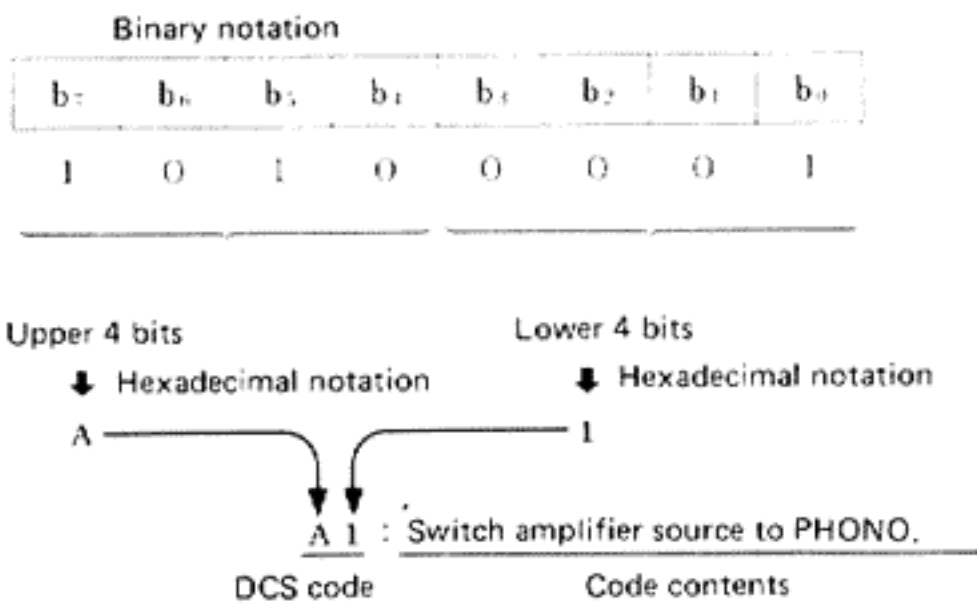
As the synchro terminal has a common bus line to other equipment connected externally, data from both units can be mutually exchanged according to the transmission method shown below.

■ Data transmission



Data signals "0" and "1" are discriminated by different intervals between pulses during transmission. Namely, a pulse interval, of 5 ms "0"
a pulse interval, of 15 ms "1"
Every transmission datum is composed of 8 bits. Therefore, the number of pulses for a datum is nine.

■ Configuration of datum

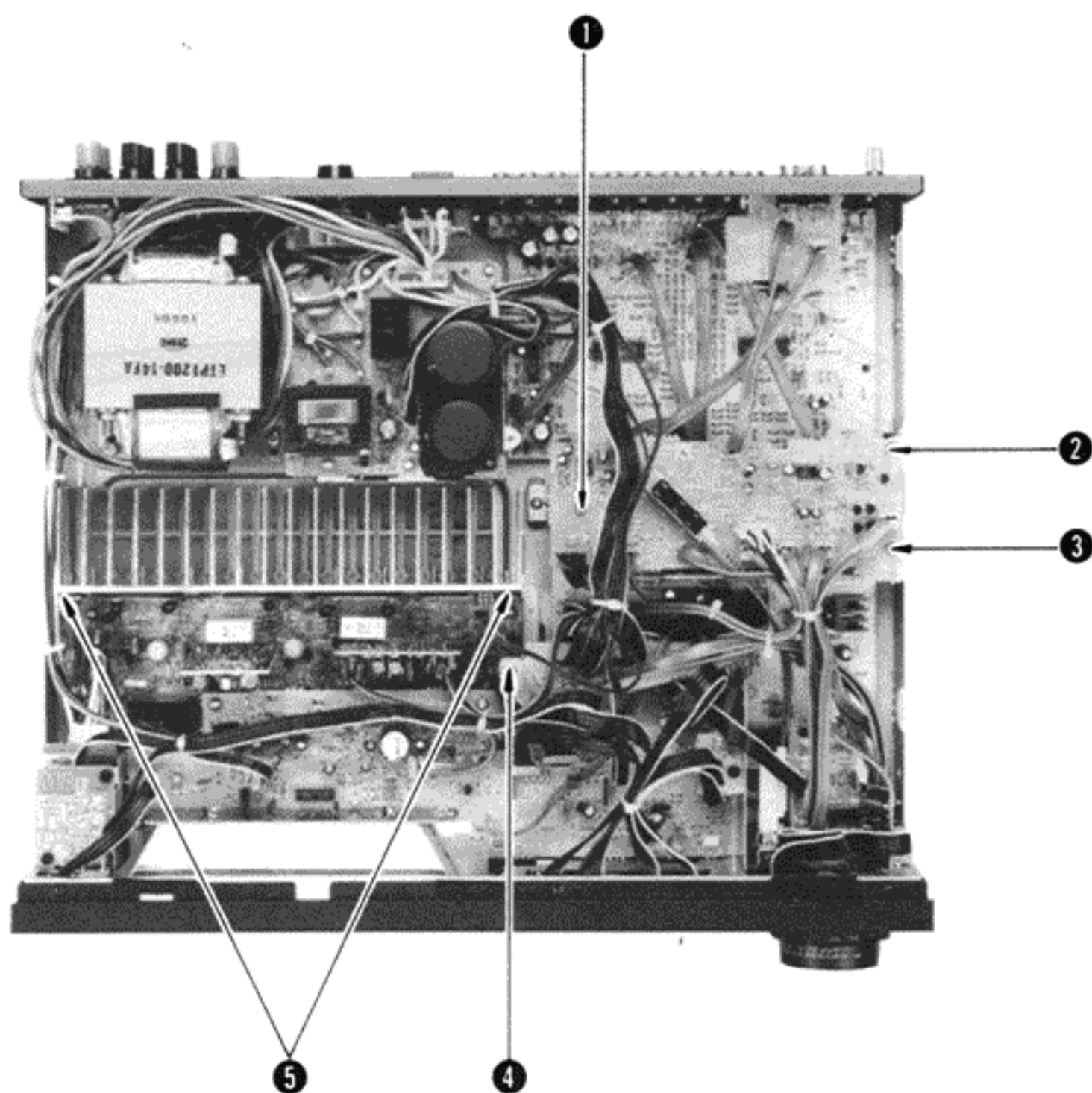


■ Relationship between Remote Control Transmitter (RM-S9) and DCS Codes

SLEEP TIMER	POWER		
	VCR	TV	AUDIO
—	—	—	1) C0 2) C1
63 Hz/1	160 Hz/2	400 Hz/3	SEA CONTROL
3) D1	3) D2	3) D3	—
1 kHz/4	2.5 kHz/5	6.3 kHz/6	FM
3) D4	3) D5	3) D6	C2
16 kHz/7	8	9	AM
3) D7	3) D8	3) D9	C3
0	—	PRESET STATION SEA LEVEL +	TV
3) D0	3) C7	3) C6	—
ACOUSTIC EXPANDER			VIDEO 1/TV
—			—
SOUND SELECTOR	SEA SOURCE	SEA PRESET	
—	—	—	
VCR	PHONO	CD	TAPE
—	A1	A3	A4
—	CHANNEL SKIP +	STOP	PLAY
7) 44 8) 2C	7) 43 8) 2B	6) 86 7) 42 8) 2E	6) 87 7) 41 8) 21
TAPE CONTROL	PAUSE/STILL	STOP	REC
—	9) 25 10) 2D	9) 22	11) 2D 12) 29
VCR CONTROL	◀◀	PLAY	▶▶
—	9) 24	9) 20 10) 29	9) 23
MUTE			VOLUME +
10) 26			—

- Notes:
1) AUDIO (POWER) key is pressed in STANDBY mode.
2) AUDIO (POWER) key is depressed to turn on power.
3) After depressing FM/AM key, another key is pressed.
4) After depressing PHONO key, another key is pressed.
- 5) After depressing CD key, another key is pressed.
6) After depressing TAPE key, another key is pressed.
7) After depressing TAPE CONTROL key, this key is pressed.
8) After depressing TAPE CONTROL key, this key and REC key are pressed
- at the same time.
9) After depressing TAPE CONTROL key, this key and PAUSE/STILL key are pressed at the same time.
10) After depressing TAPE CONTROL key, this key and PLAY key are pressed at the same time.

Removal Procedures



(1) Removing the Front Panel

- Step 1: Demount the top cover by removing four screws from the two sides and two screws from the rear.
- Step 2: Remove there plastic rivets on the upper part of the front panel and three screws from the lower part.
- Step 3: Pull out the volume knob and remove the nut.

(2) Checking the Pre-Amplifier P.C. Board

- Step 1: Remove three screws ❶ through ❸ securing the Buffer & +6 dB Amplifier P.C. Board (ENE-027-1) on its upper side.
- Step 2: Demount the bottom cover by removing three screws from the bottom.

(3) Removing the Front Bracket

- Step 1: Demount the Front Panel (see above item (1)).
- Step 2: Remove a screw ❹ securing the LCD Bracket on its upper side.
- Step 3: Remove three screws securing the Front Bracket on its bottom side.
- Step 4: Remove four screws securing the Front Bracket on its front side.

(4) Checking the Power Amplifier P.C.Board

- Step 1: Demount the top cover (see above item (1), step 1).
- Step 2: Demount the bottom cover by removing two screws from the bottom.

(5) Removing the Power Transistors

- Step 1: Demount the top cover (see above item (1), step 1).
- Step 2: Demount the bottom cover (see above item (4), step 2).
- Step 3: Remove four screws ❺ securing the heat-sink using a bended screwdriver.
- Step 4: Resolder the pins of the power transistors.
- Note:** The part number of the bended screwdriver is "EBSJ-1005".

(6) Removing the Switch P.C. Board

- Step 1: Removing the Front Panel (see above item (1)).
- Step 2: Demount the Switch P.C. Board by removing four plastic rivets.

(7) Removing the LCD Bracket

- Step 1: Demount the Remote Control Sensor P.C. Board by removing two plastic rivets.
- Step 2: Demount the Compu Link P.C. Board by removing a plastic rivet.
- Step 3: Remove three screws securing the Display P.C. Board.
- Step 4: Removing the Switch P.C. Board (see above item (6)).
- Step 5: Remove six screws securing the LCD Bracket on its front side.

(8) Precautions When Installing the Front Panel

- Step 1: Turn the selector knob on the front panel to the -12 dB position.
- Step 2: Rotate the arm clockwise.
- Step 3: After completing the above procedures, install the front panel.

(9) Precautions When Installing the Arm (Fig. 1)

- When the arm is removed for operations such as rotary switch (Gm selector: SW202) replacement, reinstall the arm while following the precautions below.
- Step 1: Turn the rotary switch shaft counter clockwise all the way.
- Step 2: Have the line marking on the top, then insert the arm.

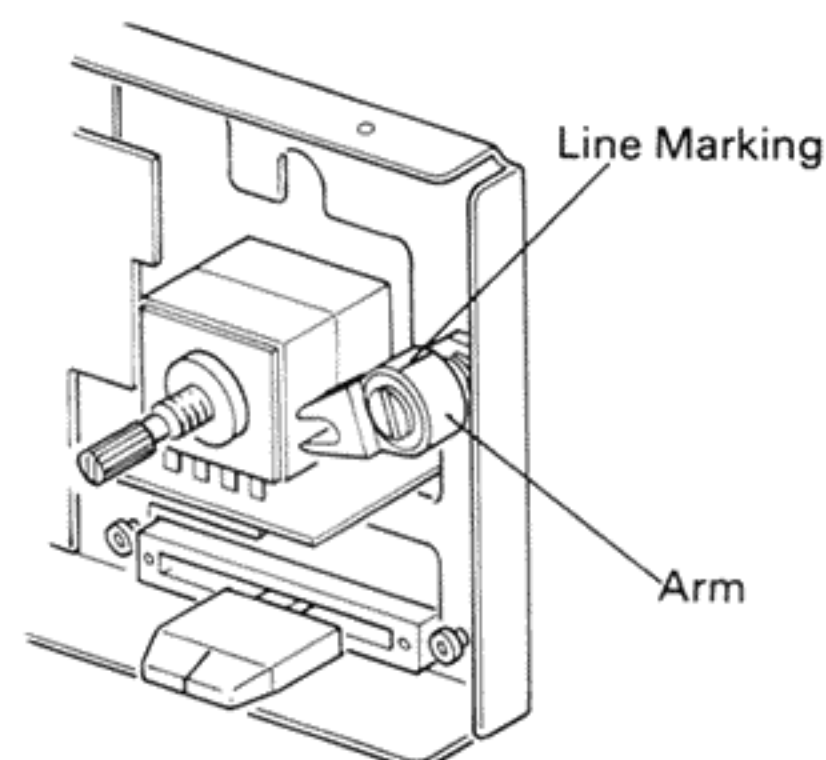


Fig. 1

(10) Gm Selector Knob Replacement (Fig. 2)

- Step 1: Remove the front panel.
- Step 2: Take off the bonds securing the two speed nuts on the inner side of the front panel.
- Step 3: Press the Gm selector knob to prevent the ball bearings from scattering. Remove the two speed nuts and remove the Gm selector knob.

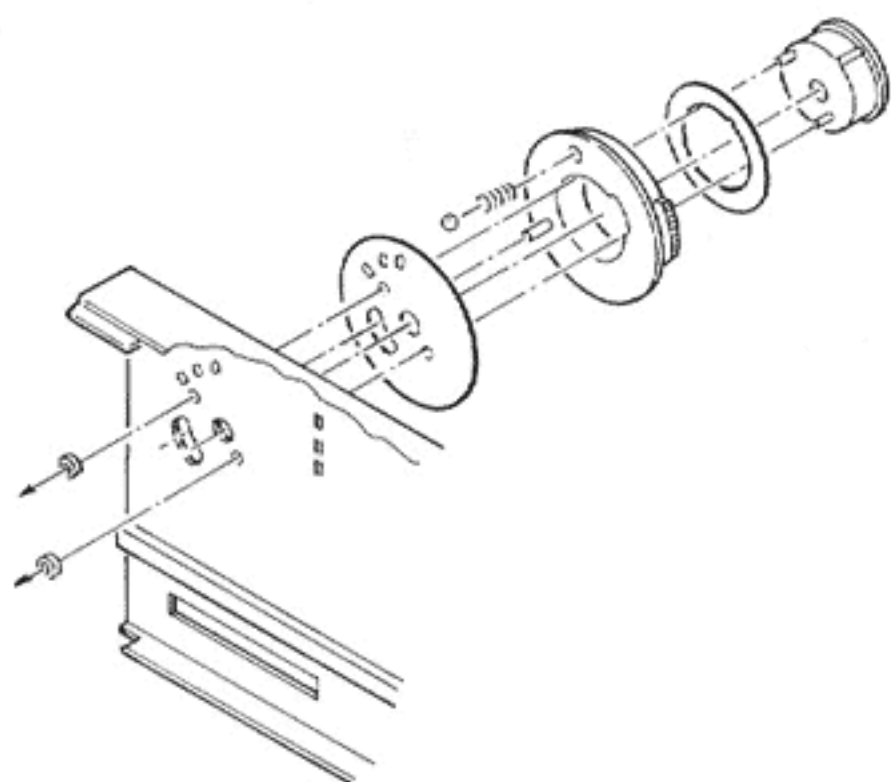
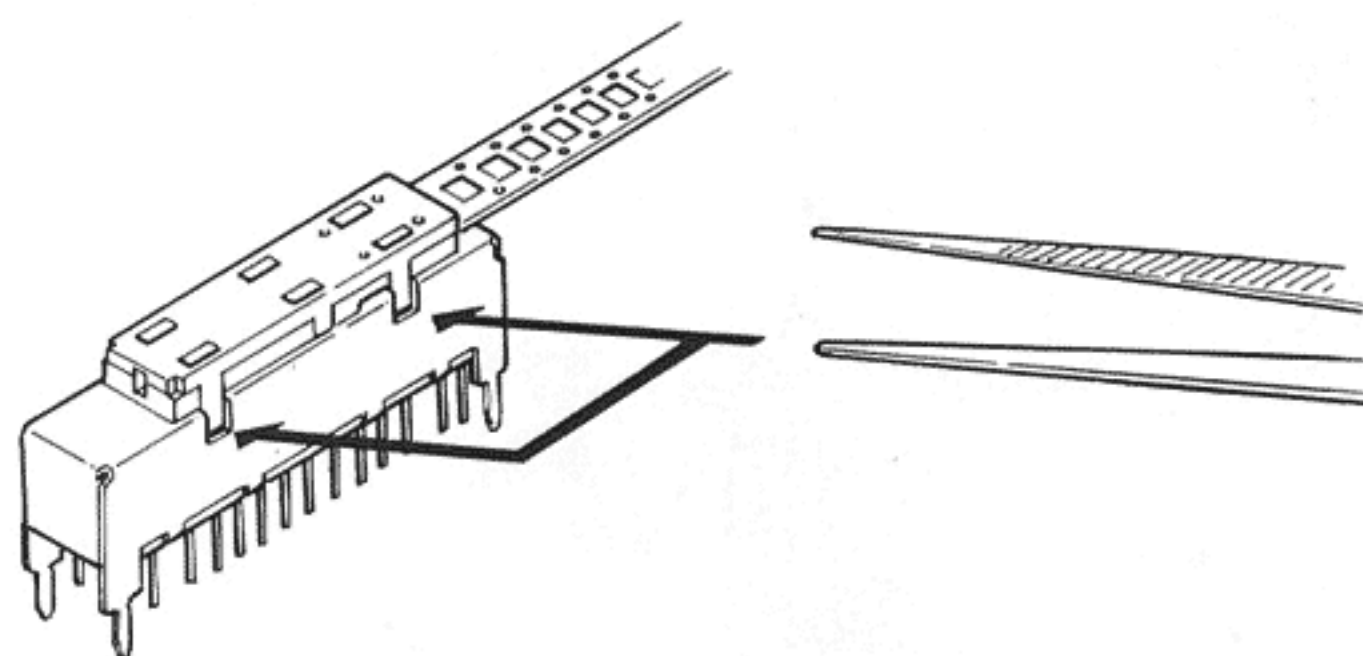


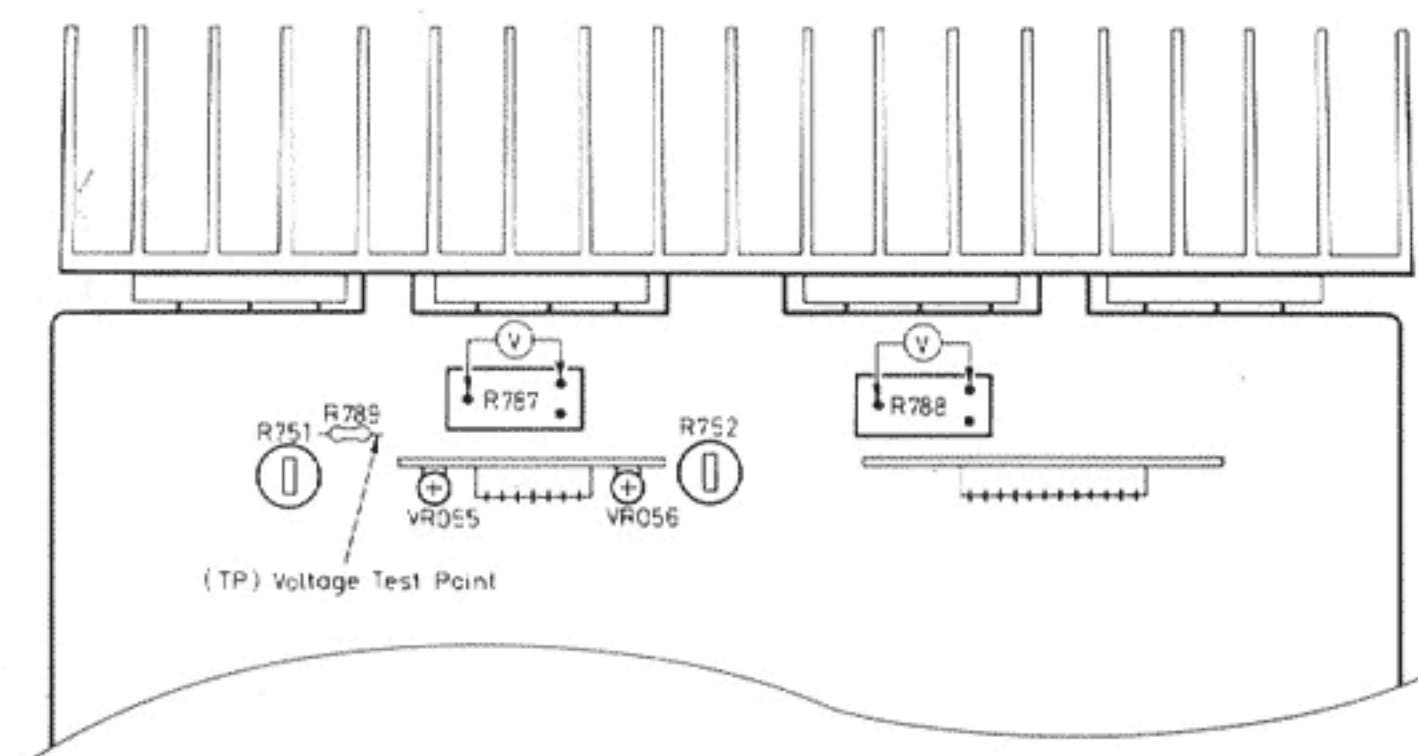
Fig. 2

Remote Control Switch (SW201) Removal

Lift the parts indicated in the figure with the tips of the tweezers and the like.



Adjustments Procedures



Idling Current Adjustment

1. Turn R751 and R752 fully counterclockwise before switching the power on.
2. Allow the set to warm up at least 10 minutes before adjustment.
3. The heatsink must be retained to prevent overheating before adjustment.
4. Set the volume control to minimum during this adjustment.
5. Connect a DC VTVM to R787 resistor's leads for the left channel, or to R788's leads for the right channel.
6. Adjust R751 for the left channel, or R752 for the right channel, so that the DC VTVM reads 5 mV.

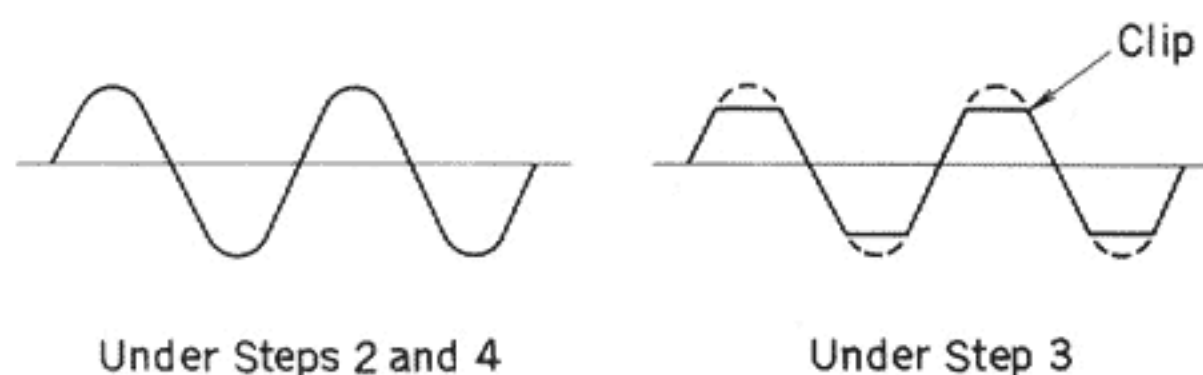
Power Supply Switching Circuit Adjustment

1. Before turning the power ON, turn the semi-fixed resistors (VR055 for Left channel and VR056 for Right channel) of the amplifier circuit board fully counterclockwise.
2. Turn the power ON and input a 20 Hz sine wave to the Left channel (or the Right channel) of the AUX. Then, connect a 7 Ω dummy load to the speaker terminal, adjust either the amplifier's volume or the oscillator's volume to obtain 29 V output.

3. Measure voltage on the R789 (TP) and confirm that the range of "58 V $\pm$ 3 V" exists. Next, slowly rotate clockwise the semi-fixed resistors (VR055/L or VR056/R) and set voltage at the R789 (TP) to the level of 38 V $\pm$ 3 V.
4. Shift the dummy load from 7 ohms to 8 ohms and confirm that voltage at the R789 (TP) is 58 V $\pm$ 3 V. When this voltage is out of the range (58 V $\pm$ 3 V), readjust the semi-fixed resistors.

Note:

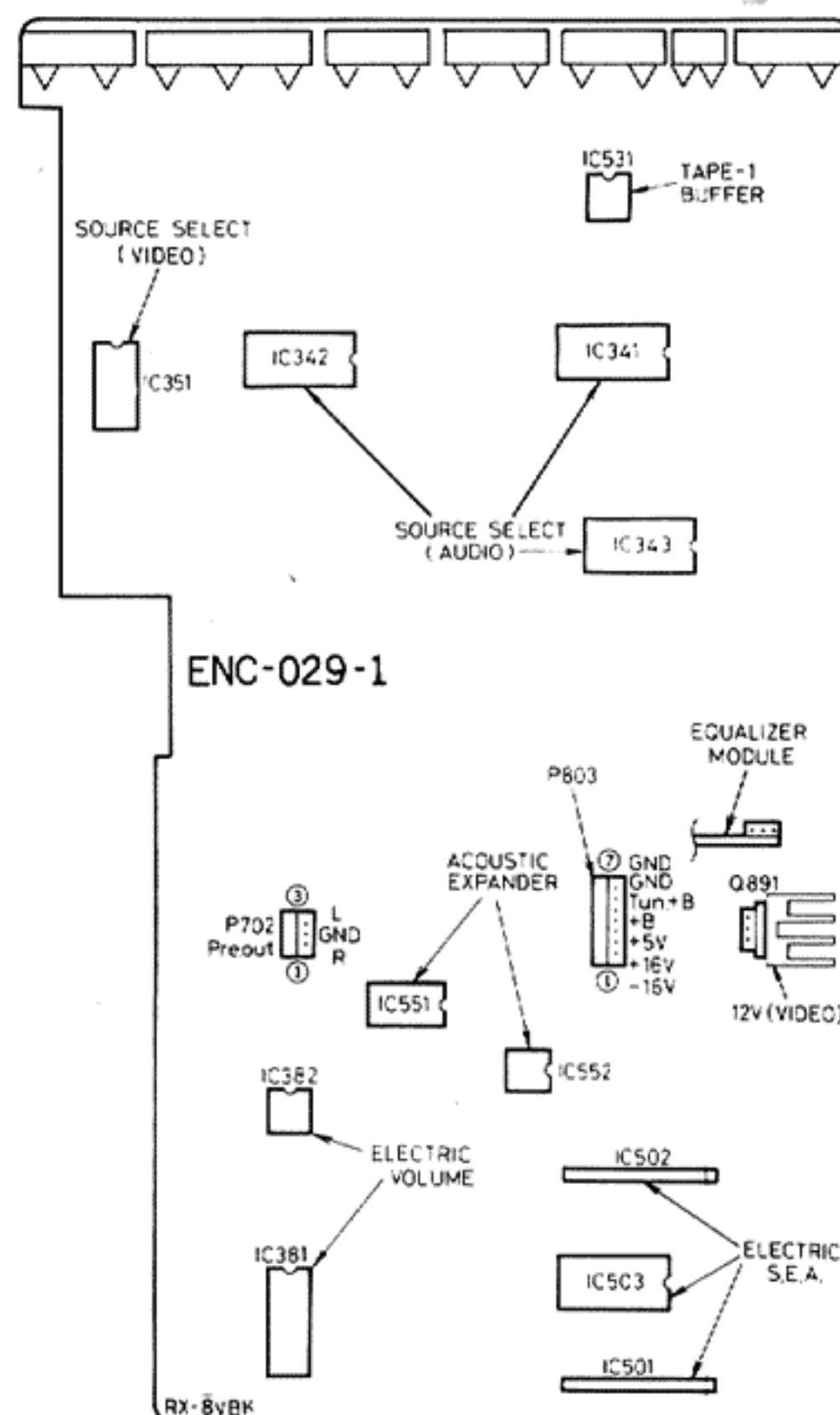
- Adjust on one channel at a time, either on the "L" channel or the "R" channel.
- When you need dummy (7 ohms/8 ohms), consult with JVC.
- When speaker output is observed with an oscilloscope, waveforms present a "clip" status after voltage has been switched (after (TP) has become 38 V $\pm$ 3 V).



Under Steps 2 and 4

Under Step 3

Functions of ICs on the Pre-Amplifier PC Board



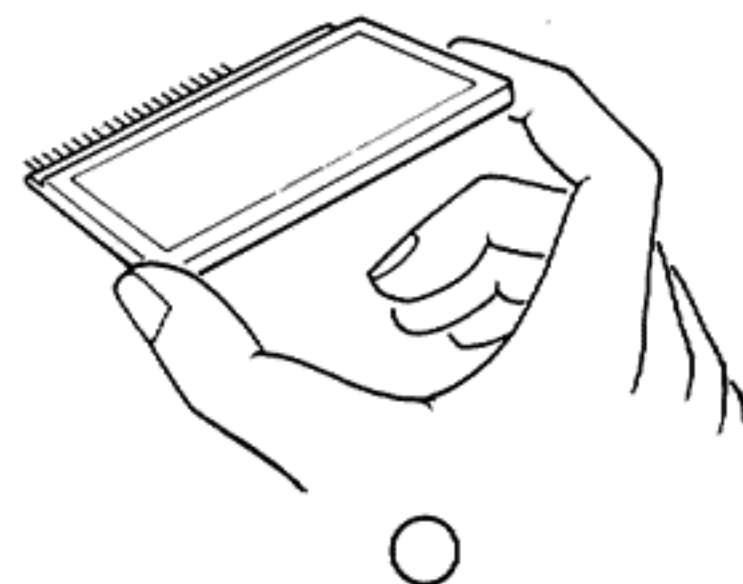
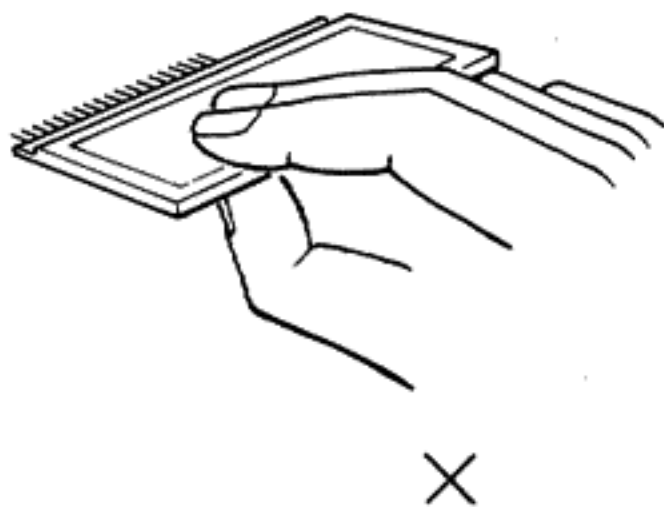
Handling precautions of LCD panels

The LCD (Liquid Crystal Display) panel employed in this device requires the following handling precautions.

1. Since the LCD is made of plate glass, never apply strong mechanical impact to it.

Do not forcibly press the light-polarizing plate.

When handling, grip it as shown in the figure below.



2. When handling the LCD, wear gloves whenever possible.
3. When the light-polarizing plate (surface other than silk-printed areas) becomes contaminated, use an applicator wet with isopropyl alcohol to gently wipe it clean. As for the silk-printed areas, use a soft cloth also to gently wipe it clean.
NOTE: The light-polarizing-plate attached to the LCD surface and the silk-printed areas are made of soft material.
4. As much as possible, avoid exposing the LCD to irradiation of harmful light (direct sunlight or ultraviolet rays), especially when the device is not in use.
5. Do not imprint DC voltage on pins of the LCD (characteristics will be degraded).
6. When the LCD is damaged, resulting in leakage of liquid crystal, be very cautious to avoid the liquid from penetrating one's mouth or being swallowed. Should liquid crystal contact the hands or clothing, immediately wash with water, using soap or other appropriate cleanser.

Servicing Method for AWG #20 Wires with Clamping Terminals

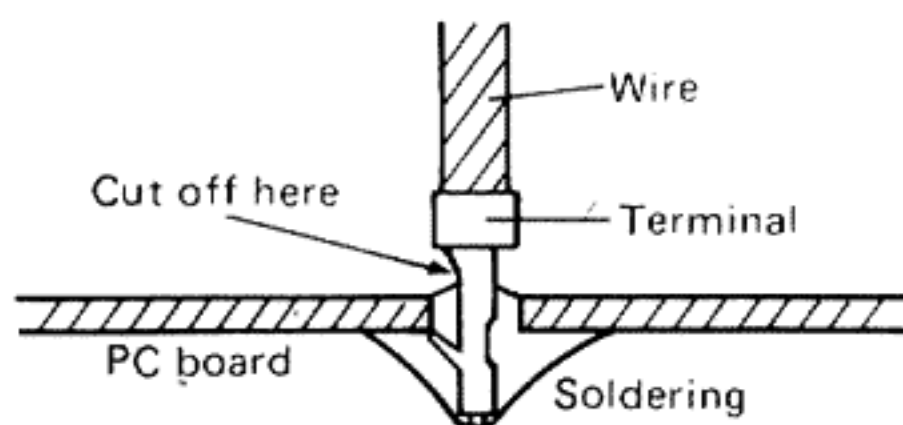
(1) Application objective → Confirmation of safety
Used to prevent breakage/disconnection troubles of primary and secondary wires within PC boards (or between PC boards). Even when wire breakage/disconnection has actually occurred, a safe air-gap distance between the primary wire and the secondary wire/possibly contacting metal surface can be maintained because the terminal retains the wire sheathing.

(2) Type of wire used

- ① 1015 AWG- #20 (single-coated)
- ② 1672 AWG- #20 (double-coated)

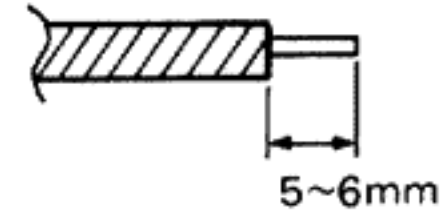
(3) Servicing precautions

- ① The structural design of this terminal causes its catch to hook onto the PC board, preventing the wire from being easily pulled out. As shown in the figure, use cutting pliers or a similar tool to cut off the ends of the terminal and wire; then remove the remaining terminal clip by melting the soldering.

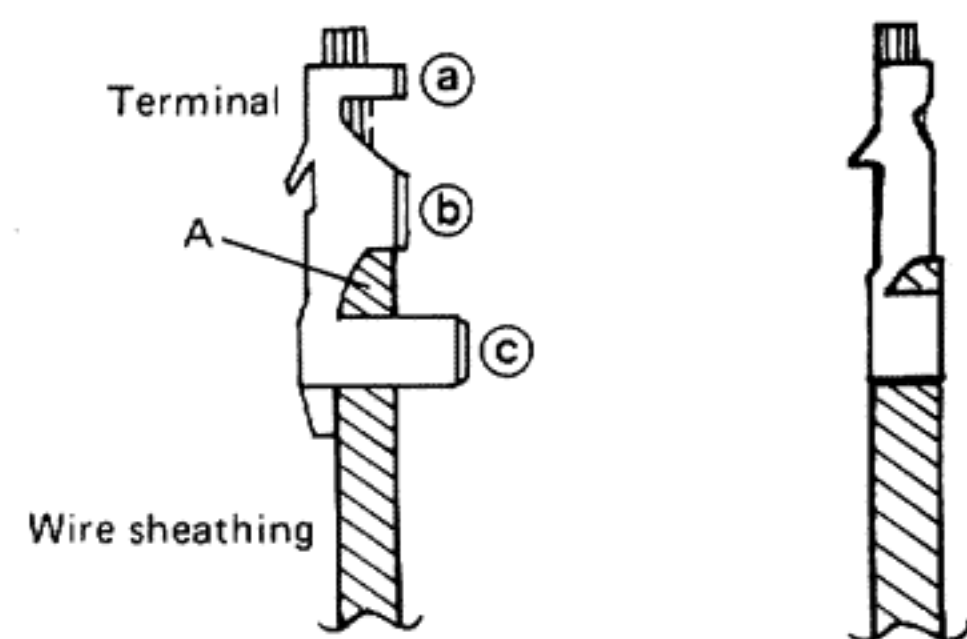


② Prior to soldering the wire onto the PC board, confirm safety by pressure-fitting the terminal to the wire by observing the following procedures.

- 1. Strip off the wire 5 ~ 6 mm from its end.



- 2. Insert the wire until its sheathing contacts section "A" of the terminal and pressure-fit the terminal clamp at three sections of (a), (b), and (c) (section (c) is especially important to assure safety. Exercise particular care to achieve secure clamping).



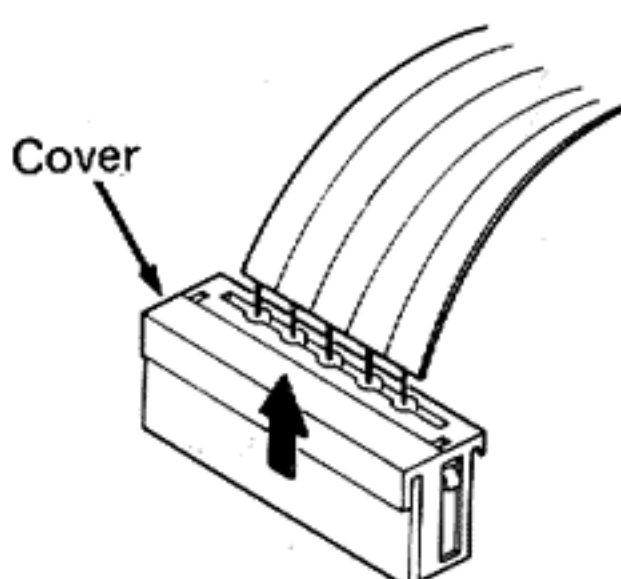
③ Part No., and name

Part No. : 5298T
Name : CRIMP PIN

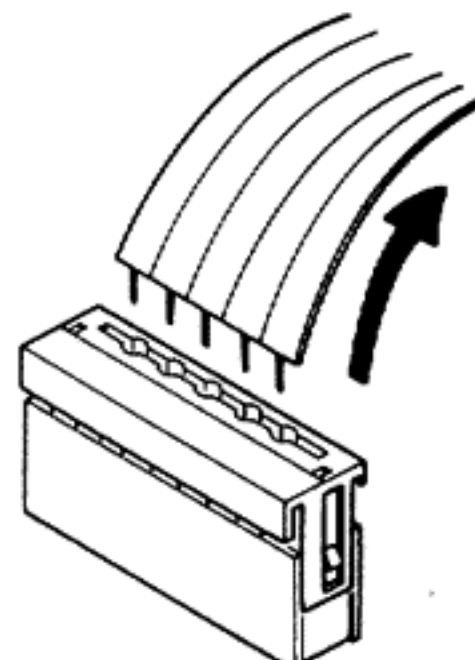


■ Use of new-type connector

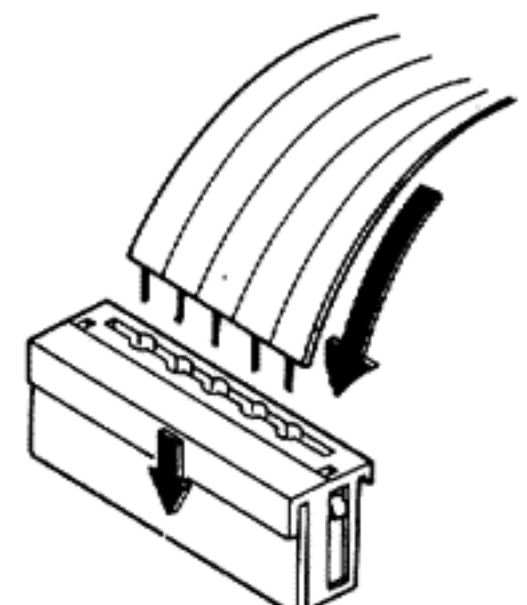
(1) Slide the cover upward.



(2) Extract the wires.

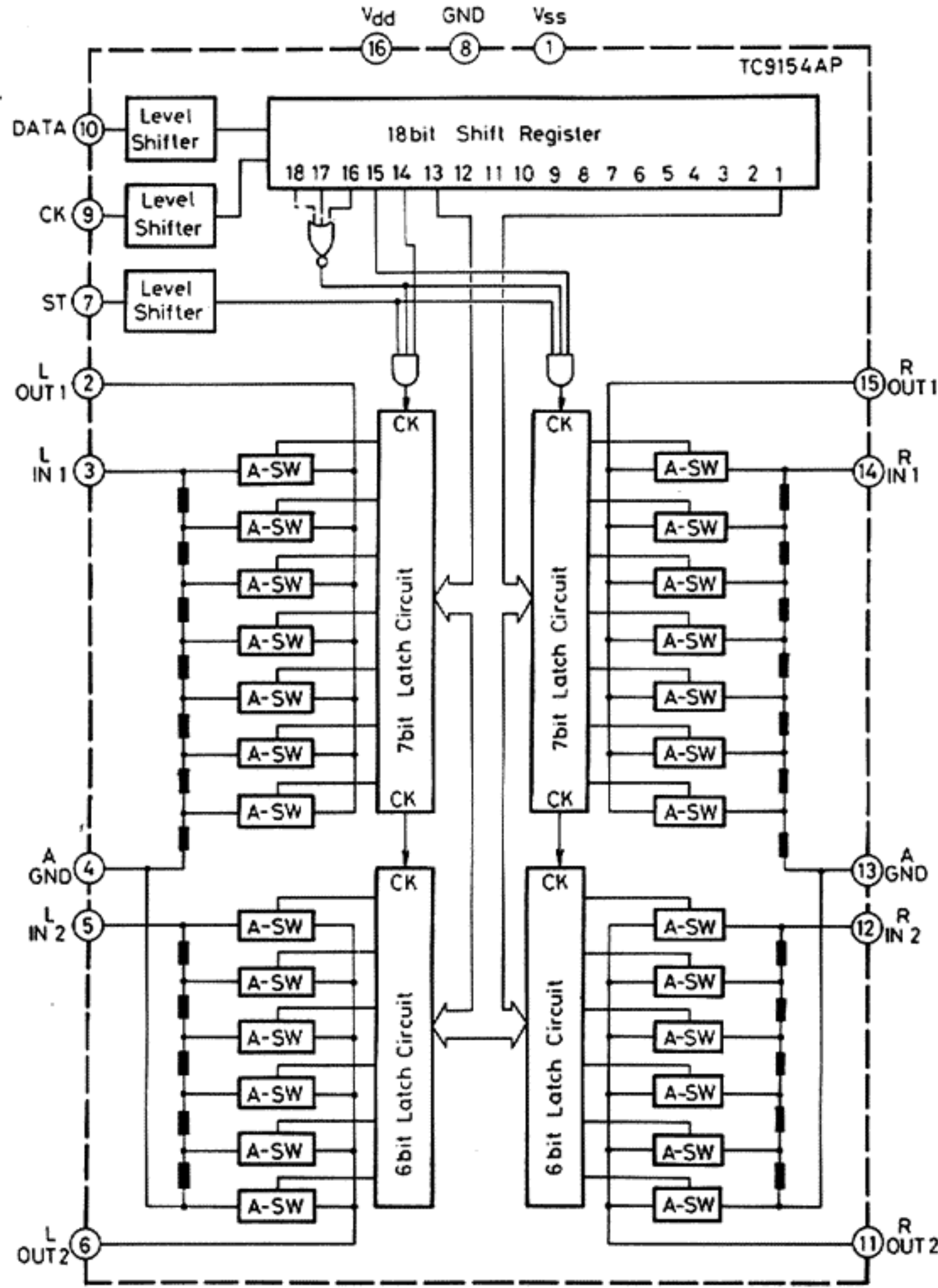


(3) Insert the wires after pushing in the cover.



Internal Block Diagrams of Major ICs

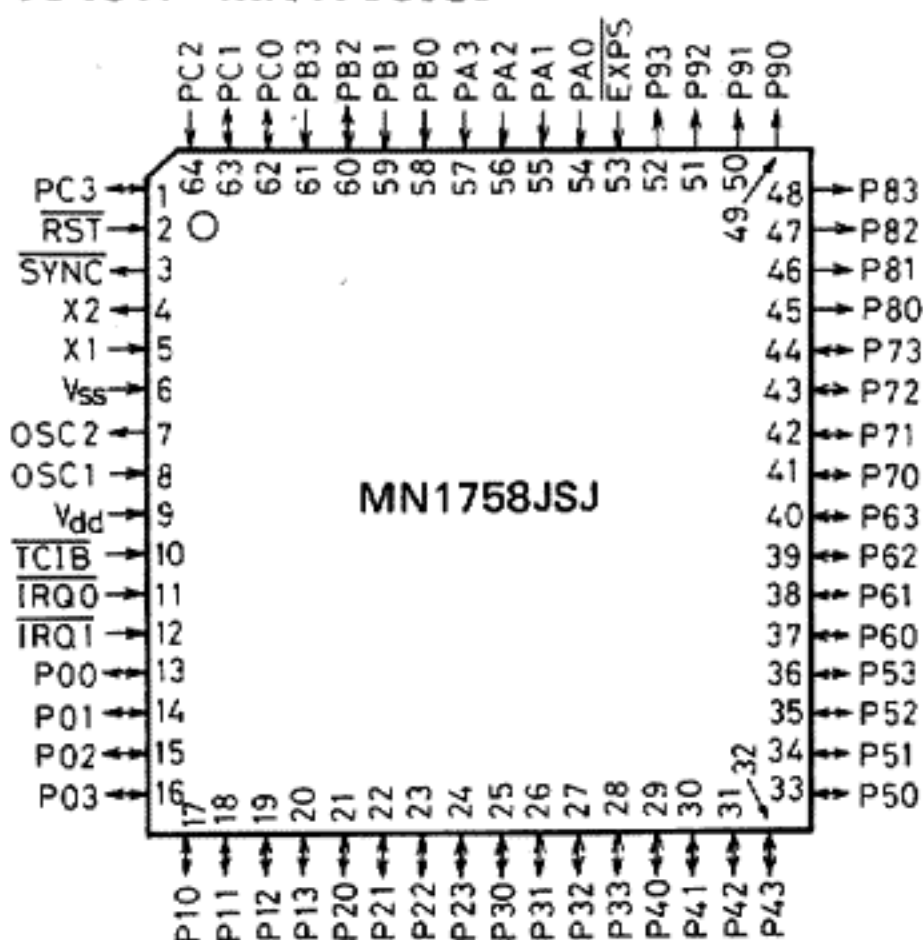
IC445: TC9154AP



IC445: TC9154AP

Pin No.	Symbol	Function
1	Vss	(-)Power Supply
2	L-OUT1	10dB Step Attenuator Output
3	L-IN 1	10dB Attenuator Input
4	A-GND	Ground (Power Supply)
5	L-IN 2	2dB Attenuator Input
6	L-OUT2	2dB Step Attenuator Output
7	ST	Strobe Input
8	GND	Ground
9	CK	Clock Input
10	DATA	Data Input
11	R-OUT2	2dB Step Attenuator Output
12	R-IN 2	2dB Attenuator Input
13	A-GND	Ground (Power Supply)
14	R-IN 1	10dB Attenuator Input
15	R-OUT1	10dB Step Attenuator Output
16	Vdd	(+)Power Supply

IC461: MN1758JSJ

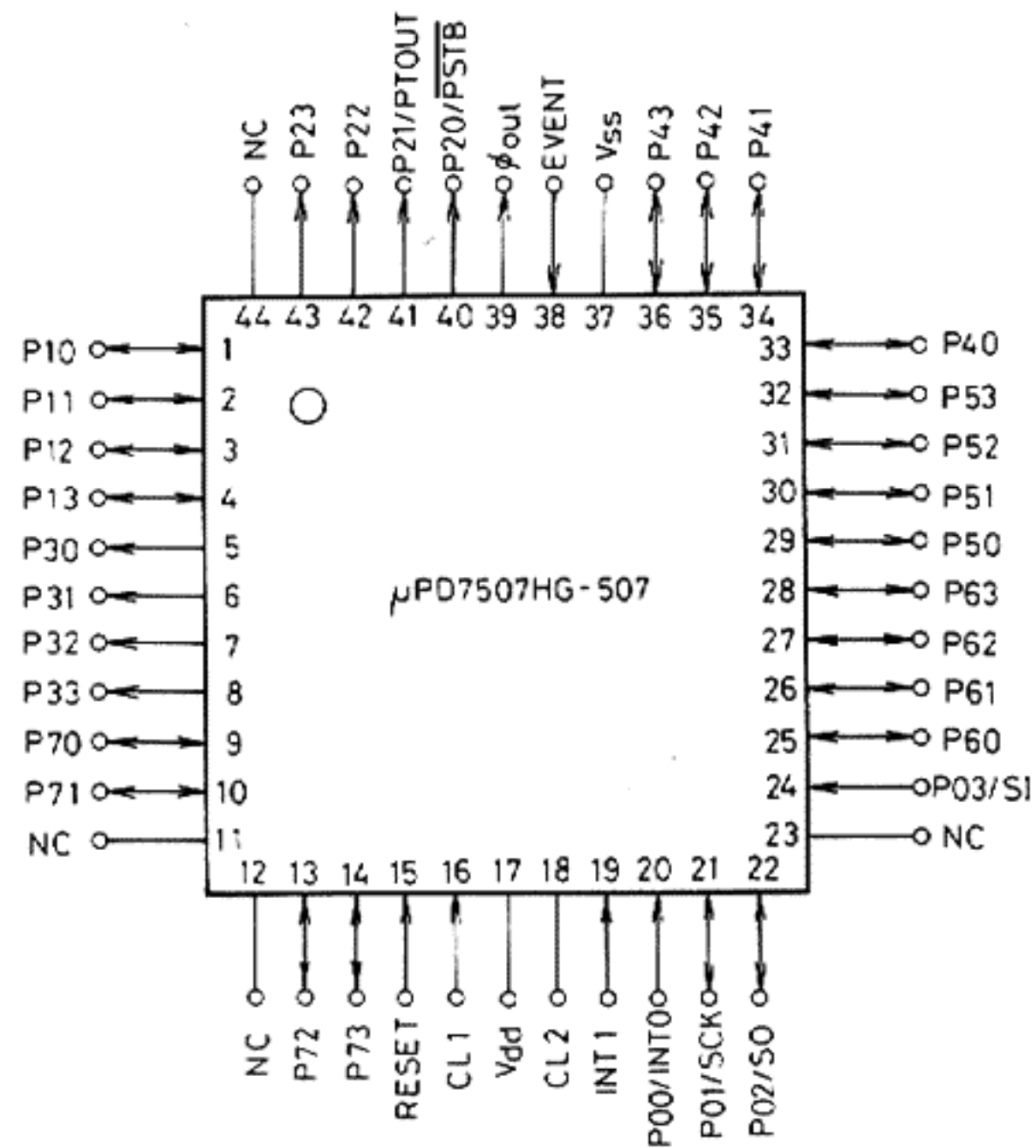


IC461: MN1758JSJ

Pin No.	Name	I/O	Terminal Function	
1	<u>SBOA</u>	O	Serial A-DATA OUT-PORT	[R to PULL UP]
2	<u>RST</u>	I	RESET IN-PORT	
3	<u>SYNC</u>	(O)	NO OUT-PORT → NO-USE.	[OPEN]
4	X2	(O)	32 kHz OSC OUT-PORT → NO-USE.	[OPEN]
5	X1	(I)	32 kHz OSC IN-PORT → NO-USE.	[R to PULL UP]
6	Vss	—	GND	
7	OSC2	O	7.2 MHz OSC OUT-PORT	
8	OSC1	I	7.2 MHz OSC IN-PORT	
9	Vdd	—	Vcc 5.0V (± 10%)	
10	<u>TCIB</u>	(I)	Counter-B IN-PORT → NO-USE.	[Vss]
11	<u>IRQ0</u>	I	INH to INT-0 IN-PORT	
12	<u>IRQ1</u>	(I)	INT-1 IN-PORT → NO-USE.	[Vss]
13	P00	I	RM to IN-PORT	[NO-USE. = Vss]
14	P01	I	INH to IN-PORT	
15	P02	I	<u>DCS</u> IN-PORT	[NO-USE. = R to PULL UP]
16	P03	O	DCS. OUT-PORT	[NO-USE. = R to PULL DOWN]
17	P10	O	RM to IND. OUT-PORT	[NO-USE. = R to PULL DOWN]
18	P11	O	LCD (UPD7225) C/D Select OUT-PORT	[NO-USE. = R to PULL DOWN]
19	P12	O	LCD (UPD7225) CS OUT-PORT	[NO-USE. = R to PULL DOWN]
20	P13	(O)	NO-USE. → R to PULL DOWN	
21	P20	I	Tuner REQ. IN-PORT	[NO-USE. = R to PULL DOWN]
22	P21	O	Tuner Muting OUT-PORT	[NO-USE. = R to PULL DOWN]
23	P22	O	Tuner REQ. OUT-PORT	[NO-USE. = R to PULL DOWN]
24	P23	O	Tuner OUT DATA-0	[NO-USE. = R to PULL DOWN]
25	P30	O	Tuner OUT DATA-1	[NO-USE. = R to PULL DOWN]
26	P31	O	* + Q or AX-90 → Muting OUT-PORT Tuner OUT DATA-2	[NO-USE. = R to PULL DOWN]
27	P32	O	* + Q or AX-90 → Loudness OUT-PORT	
28	P33	O	Tuner OUT DATA-3	[NO-USE. = R to PULL DOWN]
29	P40	O	Tuner OUT DATA-4	[NO-USE. = R to PULL DOWN]
30	P41	O	<u>INH-1</u> OUT-PORT → AC-RELAY & TUNER INH	
31	P42	O	<u>INH-2</u> OUT-PORT → SEA & MX-TUNER INH	
32	P43	O	SEA = RESET OUT-PORT	[NO-USE. = R to PULL DOWN]
33	P50	O	LCD (UPD7225) Reset OUT-PORT	[NO-USE. = R to PULL DOWN]
34	P51	O	Video (TV) OUT-PORT	[NO-USE. = R to PULL DOWN]
35	P52	O	Video (VHD) OUT-PORT	[NO-USE. = R to PULL DOWN]
36	P53	O	Video (VCR) OUT-PORT	[NO-USE. = R to PULL DOWN]
37	P60	(O)	NO-USE. ——— R to PULL DOWN	
38	P61	O	Phono = MM OUT-PORT	[NO-USE. = R to PULL DOWN]
39	P62	O	Phono = MC OUT-PORT	[NO-USE. = R to PULL DOWN]
40	P63	O	Phono = MUT. OUT-PORT	[NO-USE. = R to PULL DOWN]
41	P70	O	A/EXP. OUT-PORT	[NO-USE. = R to PULL DOWN.]
42	P71	O	S/LOCK IND. OUT-PORT	[NO-USE. = R to PULL DOWN]
43	P72	O	TC9154 ST OUT-PORT	[NO-USE. = R to PULL DOWN]
44	P73	O	TC9164N ST OUT-PORT	[NO-USE. = R to PULL DOWN]
45	P80	O	TC9163N/64N/77 ST OUT-PORT	[NO-USE. = R to PULL DOWN]
46	P81	O	Key out-0	
47	P82	O	1	
48	P83	O	2	

Pin No.	Name	I/O	Terminal Function	
49	P90	O	Key out-4	
50	P91	O	5	
51	P92	O	6	
52	P93	O	7	
53	EXPS	(I)	[[NO-USE. ———> OPEN ———> INT. R to PULL UP]]	
54	PA0	I	Key In-0	[R to PULL UP]
55	PA1	I	1	[R to PULL UP]
56	PA2	I	2	[R to PULL UP]
57	PA3	I	3	[R to PULL UP]
58	PB0	I	LCD (UPD7225) BUSY IN-PORT	[R to PULL UP]
59	PB1	I	TEST Mode IN-PORT	[R to PULL DOWN]
60	SBTB	O	Serial-B SCK OUT-PORT	[R to PULL UP]
61	PB3	(I)	* + Q AX-90 ———> VOLUME Mode IN-PORT	[NO-USE. = Vss]
			IN = Hi-LEVEL —————>	Mechanical VOLUME
			IN = Low-LEVEL —————>	TC9177
62	SBOB	O	Serial-B DATA OUT-PORT	[R to PULL UP]
63	SBTA	O	Serial-A SCK OUT-PORT	[R to PULL UP]
64	PC2	(I)	NO-USE. ———> Vss	

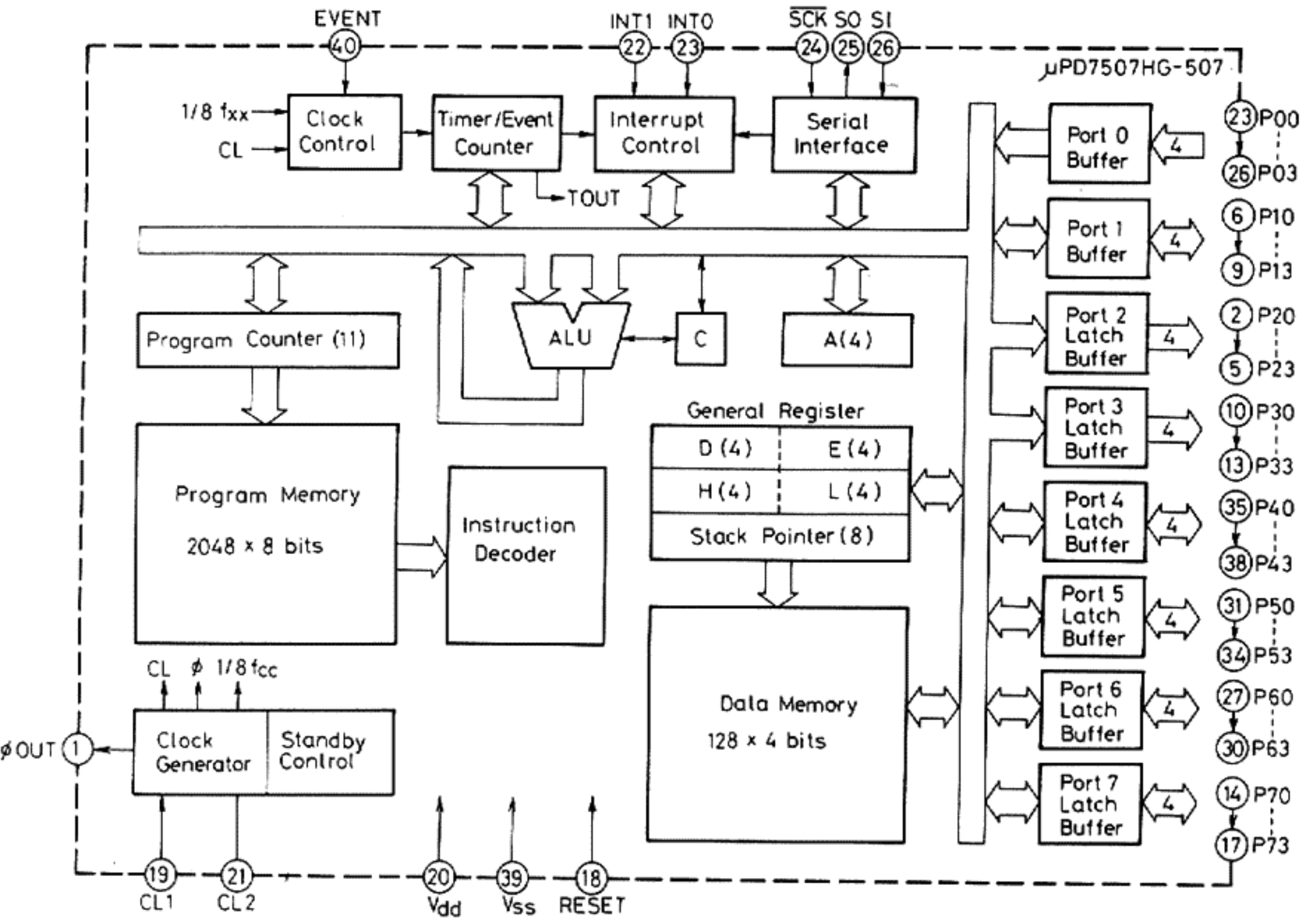
IC441: μ PD7507HG-507



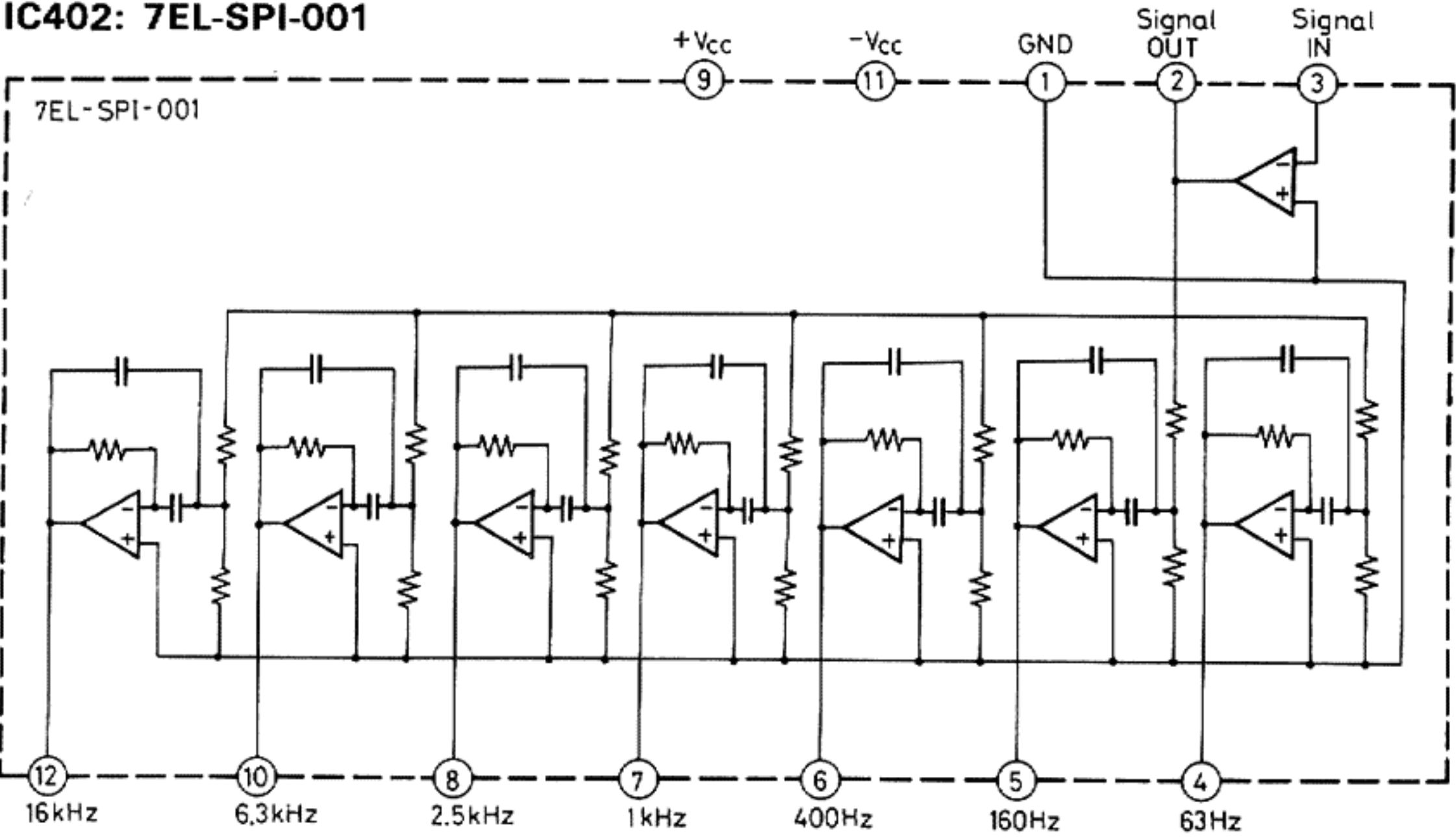
IC441: μ PD7507HG-507

Pin No.	Symbol	Name	I/O	Terminal Function
1	P10	P10	I	Key input; Composed the key matrix with P30 → P33.
2	P11	P11	I	Key input; Composed the key matrix with P30 → P33.
3	P12	P12	I	Key input; Composed the key matrix with P30 → P33.
4	P13	P13	I	Key input; Composed the key matrix with P30 → P33.
5	P30	P30	O	Key output
6	P31	P31	O	Key output
7	P32	P32	O	Key output
8	P33	P33	O	Key output
9	P70	P70	I	Key input; Composed the key matrix with P30 → P33.
10	P71	P71	I	Key input; Composed the key matrix with P30 → P33.
11	NC	NC	---	Non connection
12	NC	NC	---	Non connection
13	P72	P72	I	Key input; Composed the key matrix with P30 → P33.
14	P73	P73	I	Key input; Composed the key matrix with P30 → P33.
15	RESET	RESET	I	Connect the RESET of MN1758JSI.
16	CL1	X'tal in	I	Connect the ceramic oscillator.
17	Vdd	Vdd	---	+5V
18	CL2	X'tal out	O	Connect the ceramic oscillator.
19	INT1	INT1	---	Not use. (GND)
20	P00/INT1	RM IN	I	Remote control signal input
21	P01/SCK	P01/SCK	---	Not use. (Vdd)
22	P02/S0	INH	I	Connect the INH2 of MN1758JSI.
23	NC	NC	---	Non connection.
24	P03/SI	TEST	I	SEA volume UP/DOWN test mode
25	P60	CLK	O	Serial CLOCK OUT
26	P61	DATA	O	Serial DATA OUT
27	P62	RM IND	O	"H" output when remote control signal received.
28	P63	P63	---	Not use. (open)
29	P50	P50	---	Not use. (GND)
30	P51	P51	---	Not use. (GND)
31	P52	P52	---	Not use. (GND)
32	P53	P53	---	Not use. (GND)
33	P40	P40	---	Not use. (GND)
34	P41	P41	---	Not use. (GND)
35	P42	P42	---	Not use. (GND)
36	P43	P43	---	Not use. (GND)
37	Vss	Vss	---	GND
38	EVENT	EVENT	---	Not use. (GND)
39	φ OUT	φ OUT	---	Not use. (open)
40	P20	P20	---	Not use. (open)
41	P21	P21	---	Not use. (open)
42	P22	P22	---	Not use. (open)
43	P23	P23	---	Not use. (open)
44	NC	NC	---	Non connect.

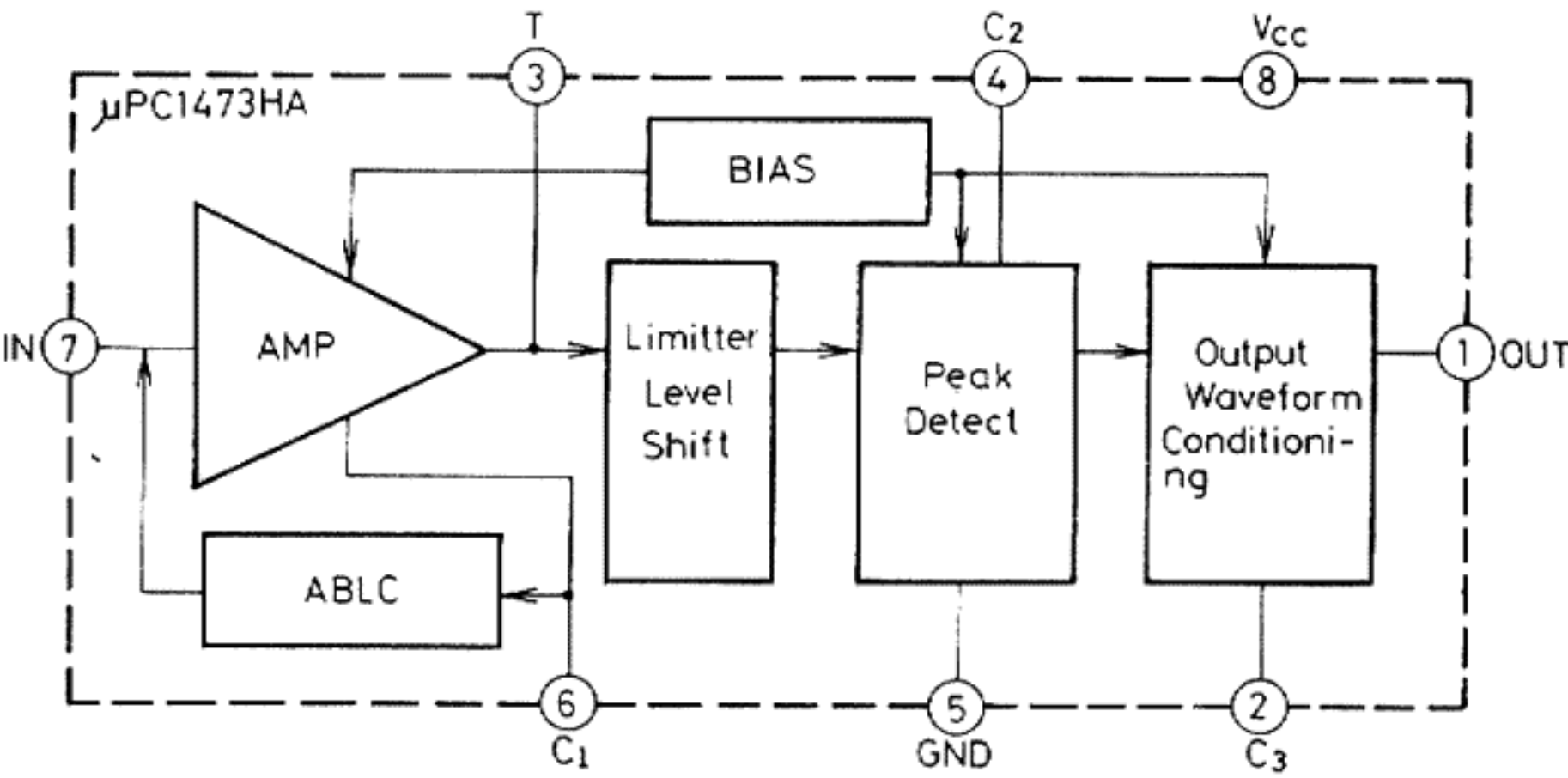
IC441: μ PD7507HG-507



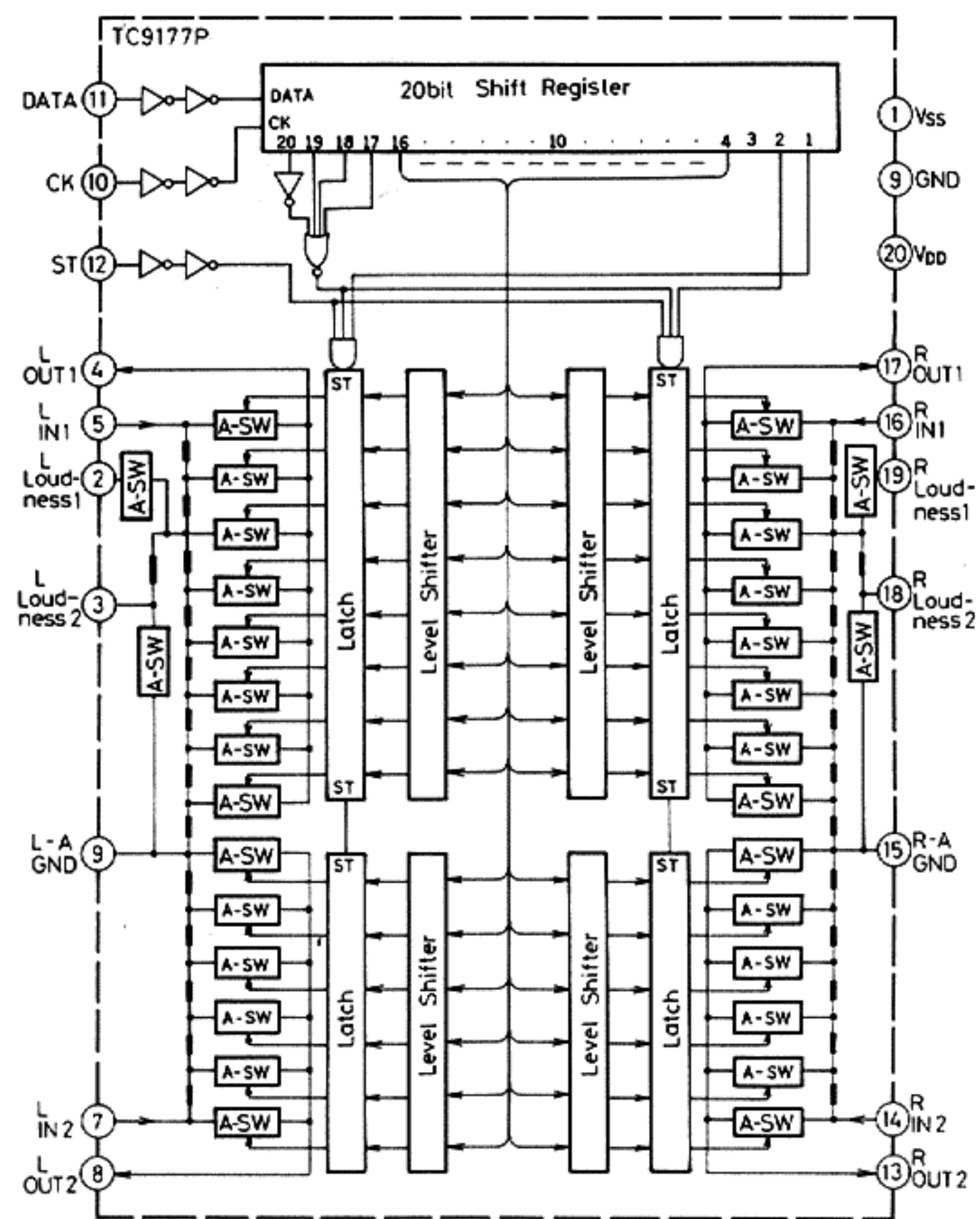
IC402: 7EL-SPI-001



IC481: μ PC1473HA



IC381: TC9177P



IC381: TC9177P

Pin No.	Symbol	Function
1	Vss	(-)Power Supply
2	L-Loudness1	Terminal for Loudness (L-ch)
3	L-Loudness2	Terminal for Loudness (L-ch)
4	L-OUT1	10dB Step Attenuator Output
5	L-IN 1	10dB Attenuator Input
6	A-GND	Ground (Power Supply)
7	L-IN 2	2dB Attenuator Input
8	L-OUT2	2dB Step Attenuator Output
9	GND	Ground (Signal)
10	CK	Clock Input
11	DATA	Data Input
12	ST	Strobe Input
13	R-OUT2	2dB Step Attenuator Output
14	R-IN 2	2dB Attenuator Input
15	A-GND	Ground (Power Supply)
16	R-IN 1	10dB Attenuator Input
17	R-OUT1	10dB Step Attenuator Output
18	R-Loudness2	Terminal for Loudness (R-ch)
19	R-Loudness1	Terminal for Loudness (R-ch)
20	Vdd	(+)Power Supply

Block diagram of the TA7317P relay driver IC. The diagram shows the internal functional blocks: Power ON/OFF Detector, Over Current Detector, DC Voltage Detector, Muting Circuit, Regulator, OR Circuit, Schmitt trigger, Relay Drive, Discharge, and Substrate. External pins are numbered 1 through 9. Pin 1 is Power ON/OFF Load Short IN, Pin 2 is DC Detect IN, Pin 3 is DC Detect IN, Pin 4 is GND, Pin 5 is Substrate, Pin 6 is Relay Drive OUT, Pin 7 is Discharge IN, Pin 8 is Muting IN, Pin 9 is Vcc. The diagram is enclosed in a dashed box labeled TA7317P.

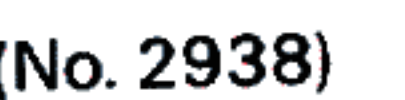
The diagram shows the internal circuitry of the VC5022-2 integrated circuit. It features a multi-stage design with several transistors and resistors. The circuit is organized into two main vertical sections. The left section contains a series of transistors connected in a ladder-like fashion, with pins 1, 2, 3, 4, and 5 on the left edge. The right section contains a more complex arrangement of transistors and resistors, with pins 6, 7, 8, and 9 on the right edge. A central horizontal line runs through the middle of the circuit, connecting various components. The overall layout is symmetrical, with components mirrored across the central axis.

(1) Pre-Amplifier Section

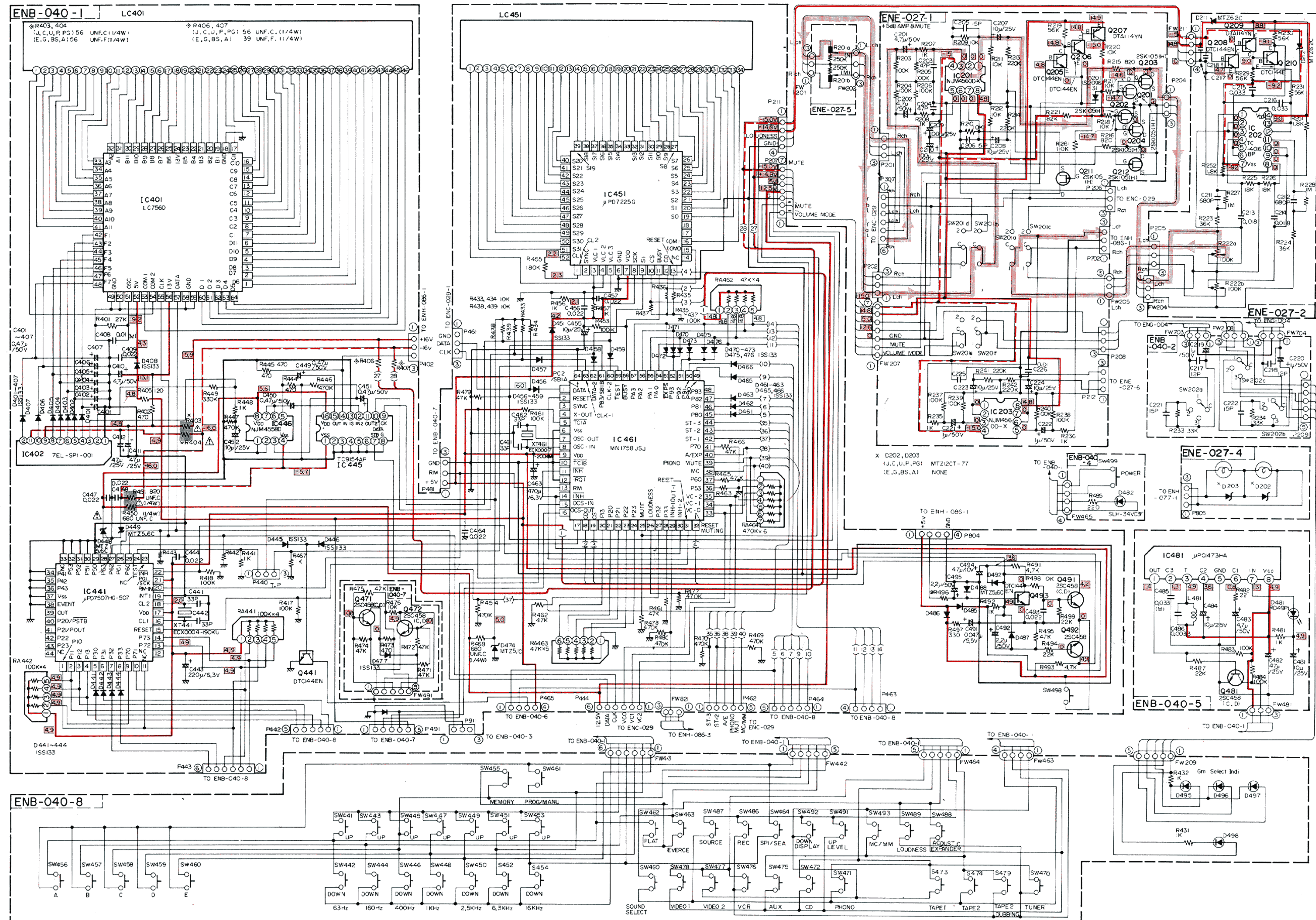
(1) Pre-Amplifier Section

1.  shows DC voltage to the chassis with no signal input.
2.  indicates positive B power supply.
3.  indicates negative B power supply.
4.  indicates signal path.

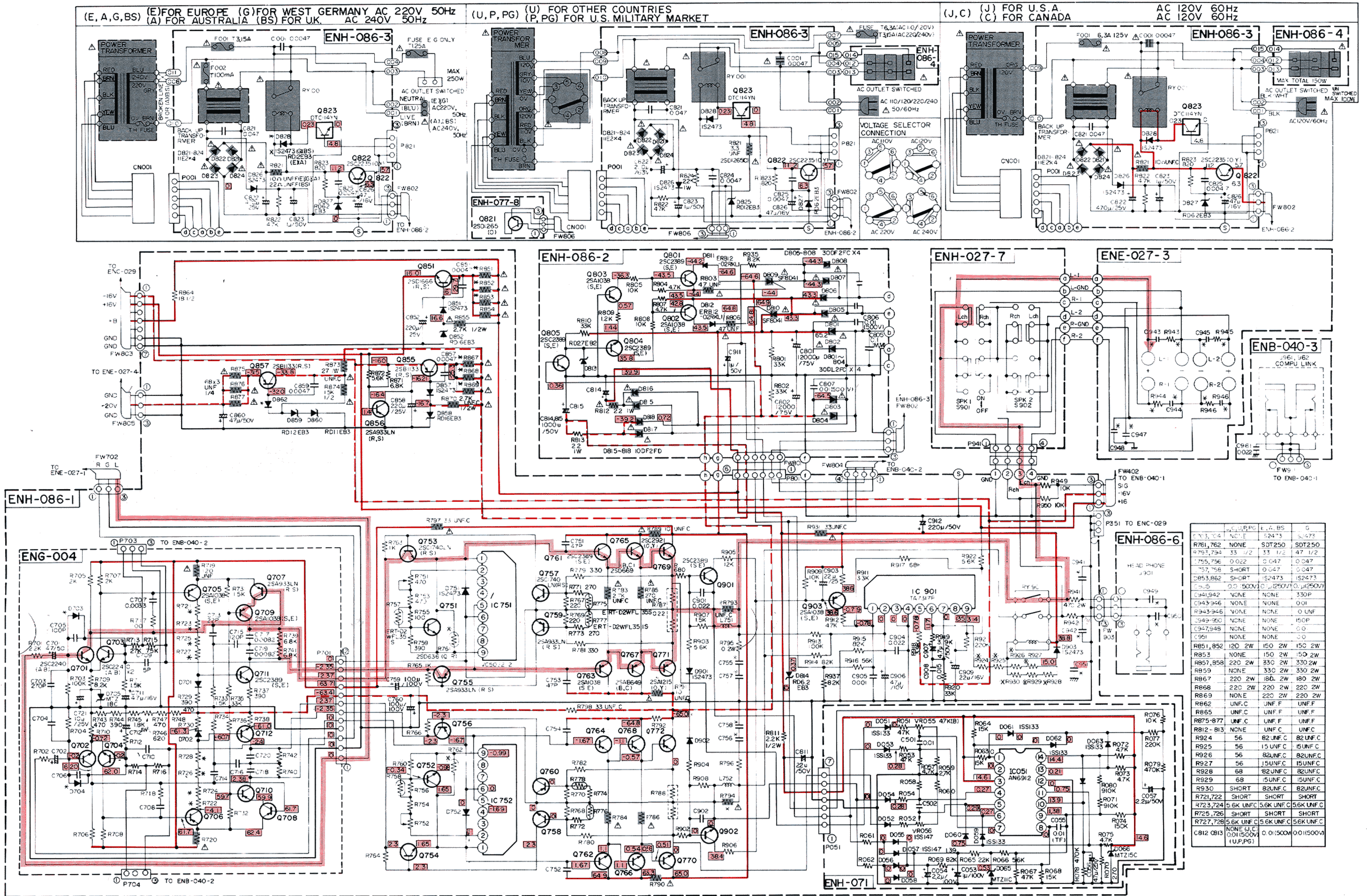
The design and contents are subject to change without notice.



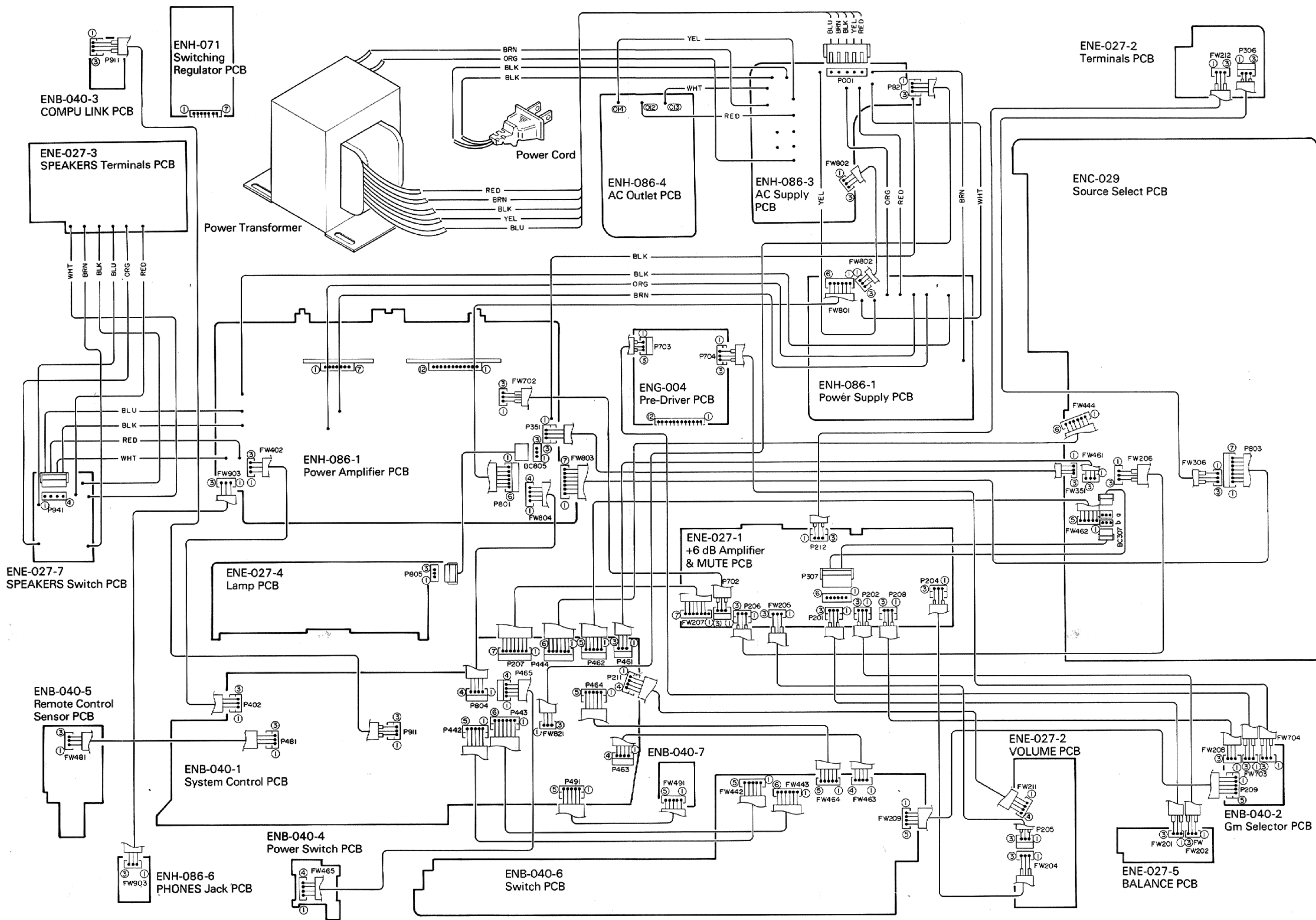
(2) Logic Section

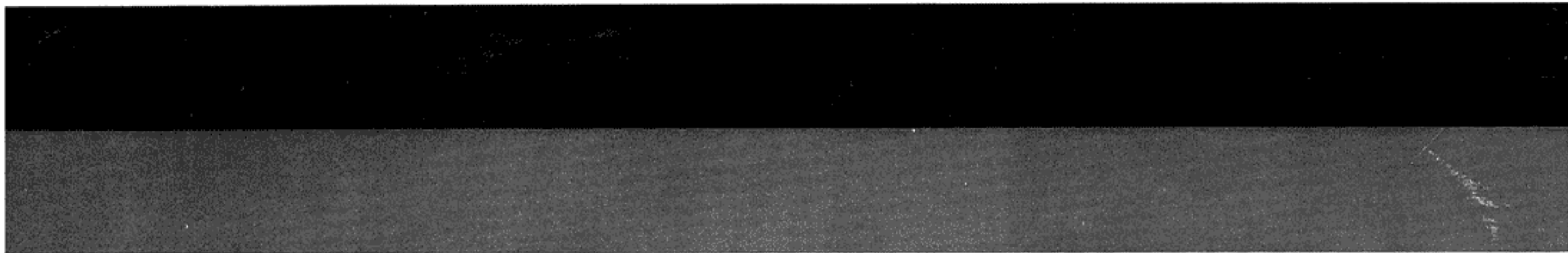


(3) Power Amplifier Section



Connection Diagram





JVC

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(No. 2938)



Printed in Japan
6106-G