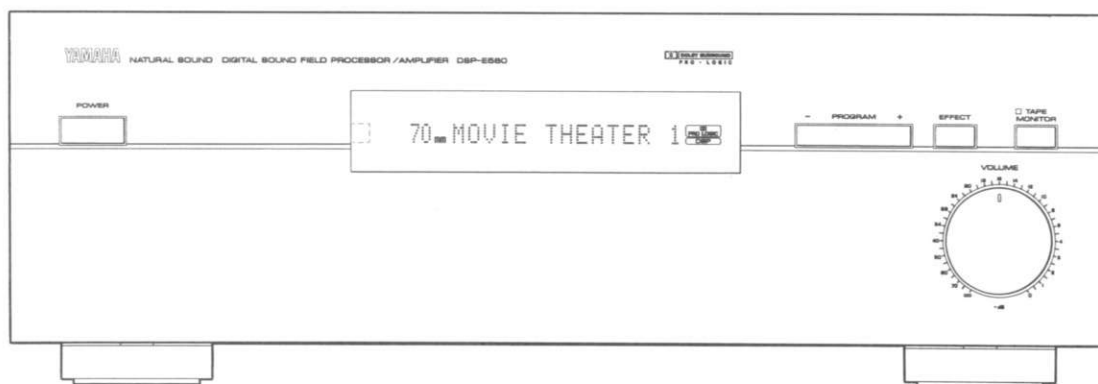


DIGITAL SOUND FIELD PROCESSOR/AMPLIFIER DSP-E580

SERVICE MANUAL



IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that all service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

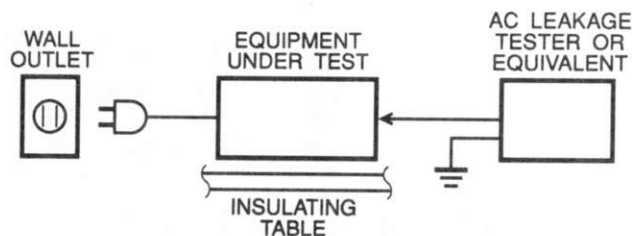
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■ TO SERVICE PERSONNEL

1. Critical Components Information.
Components having special characteristics are marked and must be replaced with parts having specifications equal to those originally installed.
2. Leakage Current Measurement (For 120V Models Only).
When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.
 - Meter impedance should be equivalent to 1500 ohm shunted by 0.15 μ F.
 - Leakage current must not exceed 0.5mA.
 - Be sure to test for leakage with the AC plug in both polarities.



WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

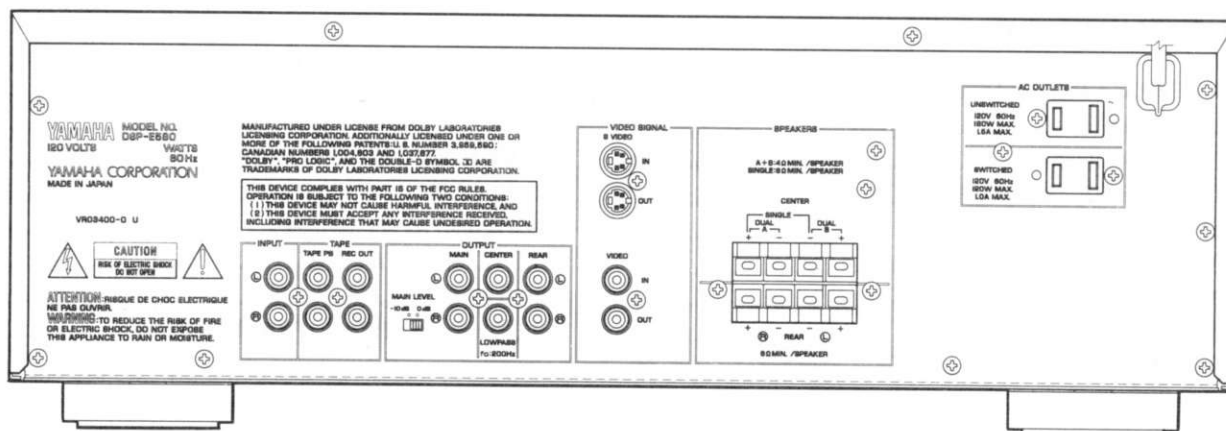
DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

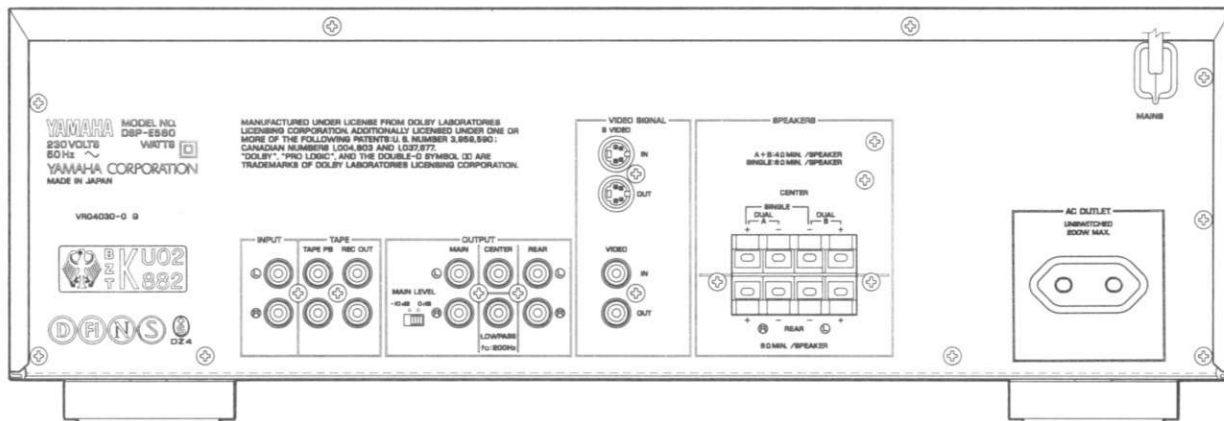
If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

■ REAR PANELS

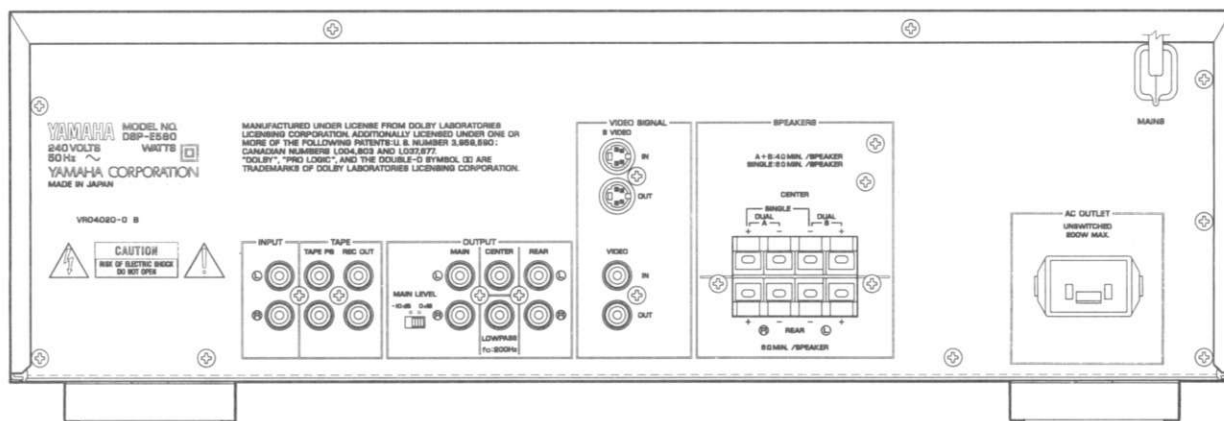
▼ USA model



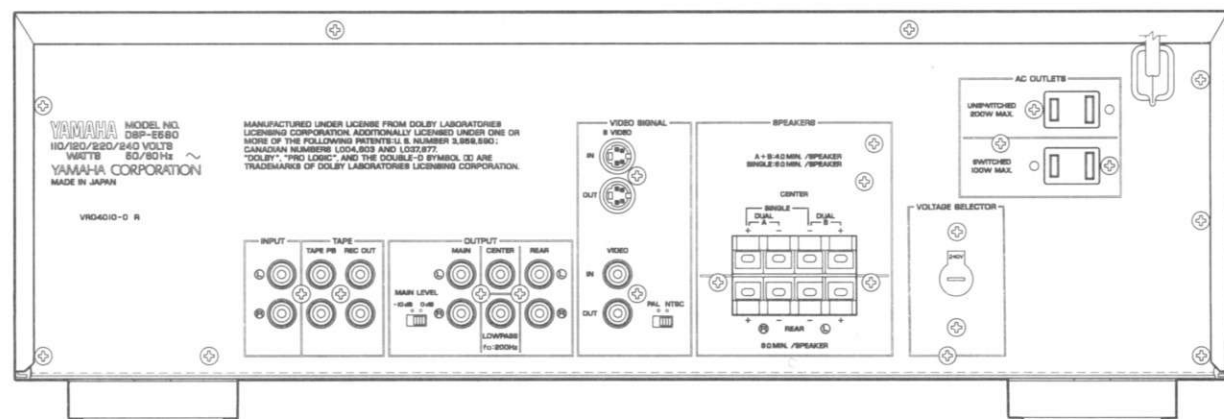
▼ European model



▼ British model



▼ General model



DSP-E580

SPECIFICATIONS

Minimum RMS Output Power Per Channel	
Center, Rear L/R, 1kHz, 0.03% THD, 8Ω	25W x 3

Input Sensitivity/Input Impedance	
INPUT/TAPE PB, Pre Out MAIN L/R 1V	150mV/47kΩ

Maximum Input Signal	
INPUT/TAPE PB, 1kHz, 0.5% THD (effect on)	2.3V

Output Level/Output Impedance	
Rec Out	150mV/1kΩ
Pre Out MAIN L/R	1.0V/1.2kΩ
LOW PASS (effect off)	4.0V/3.3kΩ

Maximum Voltage Output	
20Hz to 20kHz, 1% THD, Pre Out MAIN L/R	3V
1kHz, 1% THD, Center, Rear L/R	1.2V

Frequency Response (20Hz to 20kHz)	
Pre Out MAIN L/R (effect off)	0±1.0dB

Total Harmonic Distortion (20Hz to 20kHz)	
INPUT→Pre Out MAIN L/R (effect off), 1V	0.01%
Center, Rear L/R Power Amp, 10W/8Ω	0.03%

Signal to Noise Ratio (IHF-A-Network)	
Input (Shorted), effect off	98dB

Residual Noise (IHF-A-Network)	
Pre Out MAIN L/R	5μV

Channel Separation (effect off)	
INPUT (Input 5.1kΩ Terminated)	
1kHz/10kHz	65dB/50dB

Filter Characteristics	
LPF	fc=200Hz, 6dB/oct

Video	
Video Signal Type	
U model	NTSC
B, G models	PAL
R model	NTSC/PAL
Video Signal Level	
1Vp-p/75Ω	
S-Video Signal Level	
Y	1Vp-p/75Ω
C	0.286Vp-p/75Ω
Maximum Input Level	
1.5Vp-p	
S/N	
50dB	
Monitor Out Frequency Response	
5Hz to 10MHz, -3dB	

Power Supply	
U model	AC120V 60Hz
B model	AC240V 50Hz
G model	AC230V 50Hz
R model	AC110/120/220/240V 60/50Hz

Power Consumption	85W
--------------------------	-----

AC Outlets

1 Switched Outlets	
U model	120W max. total
R model	100W max. total
1 Unswitched Outlets	
U model	180W max. total
B, G, R models	200W max. total

Dimensions (W x H x D)	
435 x 146 x 400.5 mm	
(17-1/8" x 5-3/4" x 15-3/4")	

Weight	8.5kg (18lbs. 11oz)
---------------	---------------------

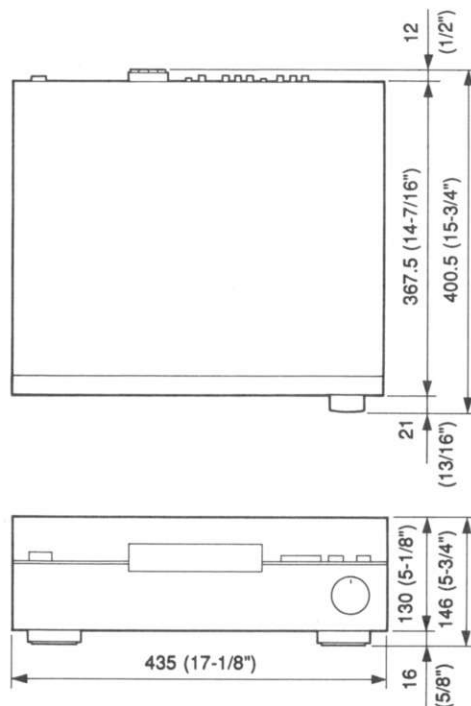
* Specifications are subject to change without notice.

U U. S. A. model
 B British model
 G European model
 R General model



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DIMENSIONS

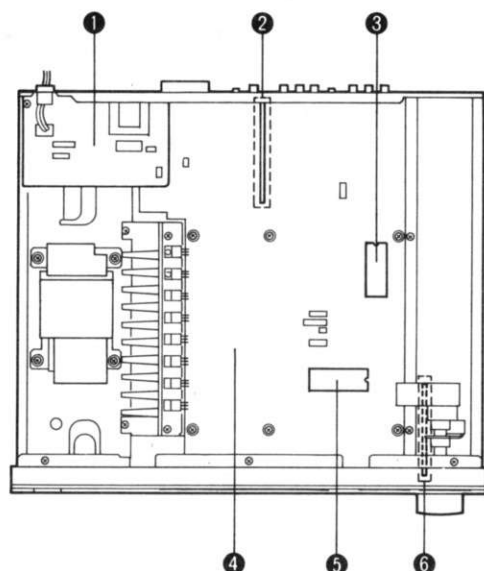


Unit : mm (inch)

■ PROGRAM PARAMETER TABLE

No.	Program Name	Parameter Name	Preset Value	Control Range	Change Value
1	CONCERT HALL	INIT. DLY	45ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
2	CHURCH	INIT. DLY	40ms	1ms~49ms	
		REV. TIME	2.5s	1.0s~5.0s	
		EFCT TRIM	0dB	-3dB~+3dB	
3	JAZZ CLUB	INIT. DLY	18ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
4	ROCK CONCERT	INIT. DLY	37ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
5	CONCERT VIDEO	INIT. DLY	13ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
6	OPERA	INIT. DLY	24ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
7	CLASSIC FILM	INIT. DLY	46ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
8	ANIMATION	INIT. DLY	16ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
9	TV THEATER	INIT. DLY	15ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
10	TV SPORTS	INIT. DLY	9ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
11	GAME	INIT. DLY	13ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
12	KARAOKE	INIT. DLY	45ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
13	70mm MOVIE THEATER 1	INIT. DLY	15ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
14	70mm MOVIE THEATER 2	INIT. DLY	15ms	1ms~49ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	
15	PRO LOGIC	DELAY	20ms	15ms~30ms	
16	PRO LOGIC ENHANCED	DELAY	20ms	15ms~30ms	
		ROOM SIZE	1.0	0.1~2.0	
		EFCT TRIM	0dB	-3dB~+3dB	

INTERNAL VIEW



- ① P. C. B. FUNCTION (3)
- ② P. C. B. FUNCTION (2)
- ③ DSP (IC15 : YSS223)
- ④ P. C. B. MAIN (1)
- ⑤ μ -COM (IC26 : HD6473238A47P)
- ⑥ P. C. B. FUNCTION (1)

DISASSEMBLY PROCEDURES

(Remove parts in disassembly order as numbered.)

1. Removal of Top Cover

- a. Remove 4 screws (①) and 2 screws (②) in Fig. 1.

2. Removal of Bottom Cover

- a. Remove 9 screws (③) in Fig. 1.

3. Removal of Front Panel

- a. Remove the VOLUME knob.
- b. Remove 6 screws (④) in Fig. 1.

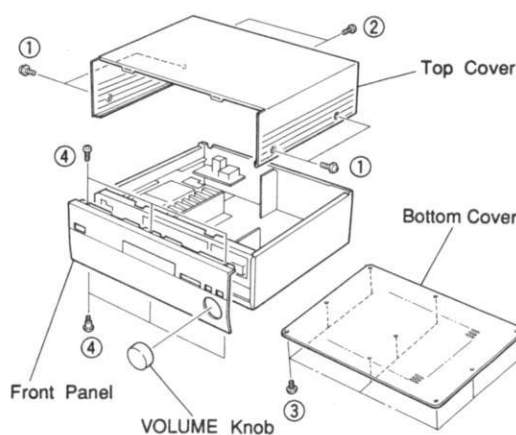


Fig. 1

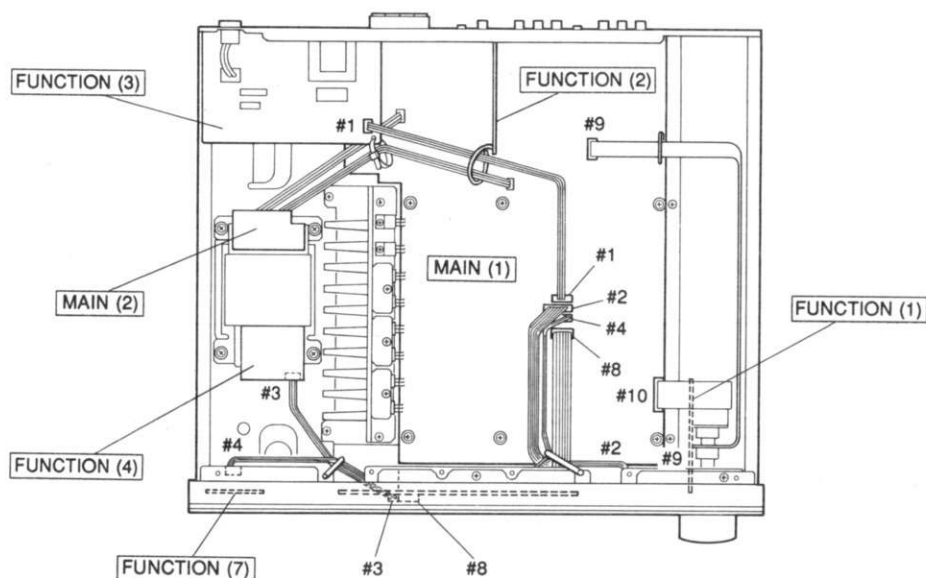


Fig. 2

■ DIAGNOSTICS MODE

The DSP-E580 has a self-diagnosis programs called "DIAGNOSTICS" mode which facilitates inspection and measurement. It can be started according to the following start-up procedure.

1. Start-up Procedure and Diagnosis Content

Turn ON the power while pressing both "PROGRAM +" and "EFFECT" keys simultaneously, and the DIAGNOSTICS mode is set and when the keys are released, the display will appear follows.

Example of display on Main Unit

1.RAM THR.BYPAS DSP

Monitor screen

DIAG. Ver Z 0.5

1. RAM THROUGH 1
2. RAM THROUGH 2
3. RAM THROUGH 3
4. EFCT OFF/DISP
5. MANUAL TEST
6. PRO LOGIC
7. FACTORY PRESET
8. MODE EXIT

The menu of the DIAGNOSTICS mode is displayed on the monitor screen and kept as it is till cancelled.

2. Operation Procedure

There are No.1 to No.8 menu items in the "DIAGNOSTICS" mode and each menu item has sub-menu items.

The menu and sub-menu selection methods are as follows. No sub-menu item belongs to No. 1, 2 and 8 menus.)

- **PROGRAM No. 1 to No. 8 keys on remote control unit.**
No. 1 to No. 8 menu items can be selected directly, Pressing the same No. key twice or more, a sub-menu item can be selected.
- **PROGRAM +/-keys on Main Unit**
Menu items No. 1 to No. 8 can be scrolled up and down.
- **EFFECT key on Main Unit**
Sub-menu items in each menu item can be selected.

3. Cancellation Procedure

The self-diagnosis mode can be cancelled by using either of the following methods and the normal mode will be restored.

- **Turn OFF the power**
- **Select DIAG. No.8 EXIT menu and press the EFFECT key.**

Note) To store the user memory, check to make sure that "7. KEEP DATA" is set for DIAG. No. 7 (where the previously set data will be retained.)

4. Details of Diagnosis Content

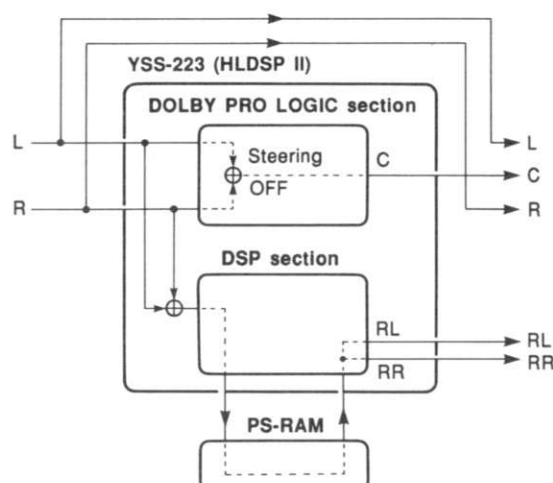
DIAG No. 1 : RAM THROUGH 1

- The MAIN L/R is output through the bypass.
- The CENTER is output with the steering off and at $(L + R)/2$.
- RL/RR is output by way of PS-RAM at DSP THROUGH.
- The electronic volume (CENTER/SURROUND) is -10dB.

Example of display on Main Unit

1.RAM THR.BYPAS DSP

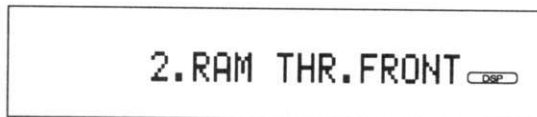
There is no sub-menu



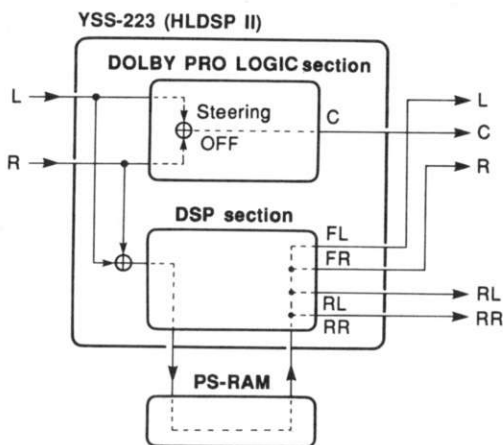
DIAG No. 2 : RAM THROUGH 2

- RL/RR is output by way of PS-RAM at DSP THROUGH.
- FL/FR is output by way of PS-RAM to Main L/R at DSP THROUGH.
- CENTER is output with the steering off and at $(L + R)/2$.
- The electronic volume (CENTER / SURROUND) is -10dB.

Example of display on Main Unit



There is no sub-menu

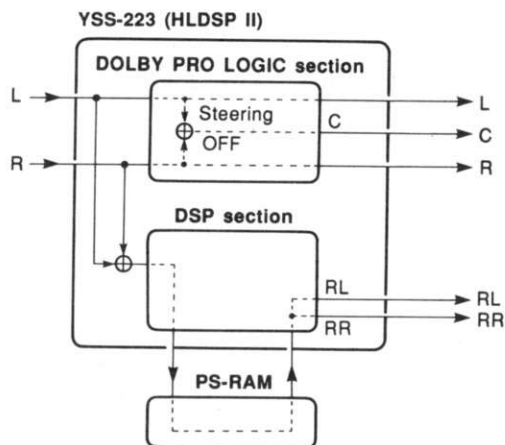


DIAG No. 3 : RAM THROUGH 3

- Main L/R is output at DSP THROUGH.
- RL/RR is output by way of PS-RAM at DSP THROUGH.
- CENTER is output with the steering off and at $(L + R)/2$.
- With the sub-menu, the electronic volume (CENTER / SURROUND) can be selected +10dB and -10dB.

	Content of sub-menu	FL display
1	Electronic volume (CENTER/SURROUND) : +10dB	"3. RAM THR. FULL"
2	Electronic volume (CENTER/SURROUND) : -10dB	"3. RAM THR. -10dB"

Example of display on Main Unit

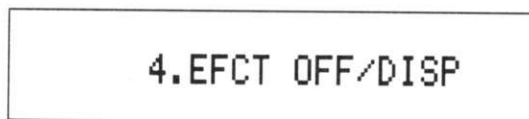


DIAG No. 4 : DISPLAY CHECK (EFFECT OFF)

- Selecting sub-menu 1 will set EFFECT OFF.
- Selecting sub-menu 2 will cause the volume LED and the tape monitor LED to flash, meanwhile, all FL's will light and then the FL display appears as shown below 2.

	Content of sub-menu	FL display
1	EFFECT OFF	"4. EFCT OFF/DISP"
2	DISPLAY CHECK	"4. EFCT OFF/DISP"

Example of display on Main Unit



DIAG No. 5 : MANUAL TEST

- WIDE is selected for the CENTER mode.
- The test noise shifts in the order of $\rightarrow L \rightarrow C \rightarrow R \rightarrow S$ according to the sub-menu.
- The electronic volume (CENTER / SURROUND) is -10dB.

	Content of sub-menu	FL display
1	TEST NOISE : LEFT	"5. TEST : LEFT"
2	TEST NOISE : CENTER	"5. TEST : CENTER"
3	TEST NOISE : RIGHT	"5. TEST : RIGHT"
4	TEST NOISE : SURROUND	"5. TEST : SURROUND"

Example of display on Main Unit

**DIAG No. 6 : PRO LOGIC**

- The automatic input balance which is ON in the normal state is turned OFF.
- With the sub-menu, selection from among CENTER NORMAL/CENTER WIDE/CENTER PHANTOM/BYPASS.
- The electronic volume (CENTER / SURROUND) is -10dB.

	Content of sub-menu	FL display
1	Center MODE : NORMAL	"6. CENTER : NRML"
2	Center MODE : WIDE	"6. CENTER : WD"
3	Center MODE : PHANTOM	"6. CENTER : PHNTM"
4	EFFECT OFF	"6. BYPASS"

Example of display on Main Unit

**DIAG No. 7 : FACTORY PRESET (See page 4)**

- By selecting the sub-menu, whether or not FACTORY PRESET is necessary (initialization of back-up RAM content) is set.
- * FACTORY PRESET is performed with the power turned "OFF" after setting.

	Content of sub-menu	FL display
1	PRESET CONTENT KEPT	"7. KEEP DATA"
2	FACTORY PRESET	"7. PRESET"

Example of display on Main Unit

**DIAG No. 8 : DIAG. MODE EXIT**

- By using the EFFECT key, the self-diagnosis mode is cancelled and the normal mode is restored.

Example of display on Main Unit



There is no sub-menu

■ PROTECTION FUNCTION

The protection function is activated and the power turns OFF when :

1. DC occurs in the output of any power amplifier channel.
2. An abnormal current flows to any power amplifier due to such a reason as a short circuit in the speaker
3. $\pm 15V$ is abnormal
4. $\pm 5V$ is abnormal
5. $\pm B$ is abnormal

Also, there are cases when the power is turned OFF due to an error in detecting the above conditions or abnormality in the protection circuit itself.

The protection circuit consists of a microcomputer (IC26), IC25 and a peripheral diode.

The function of each element is as follows.

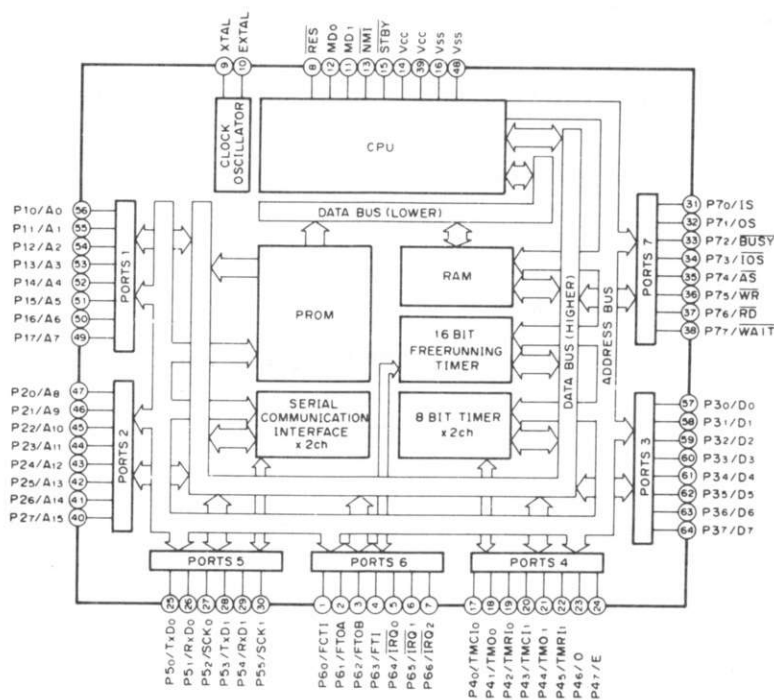
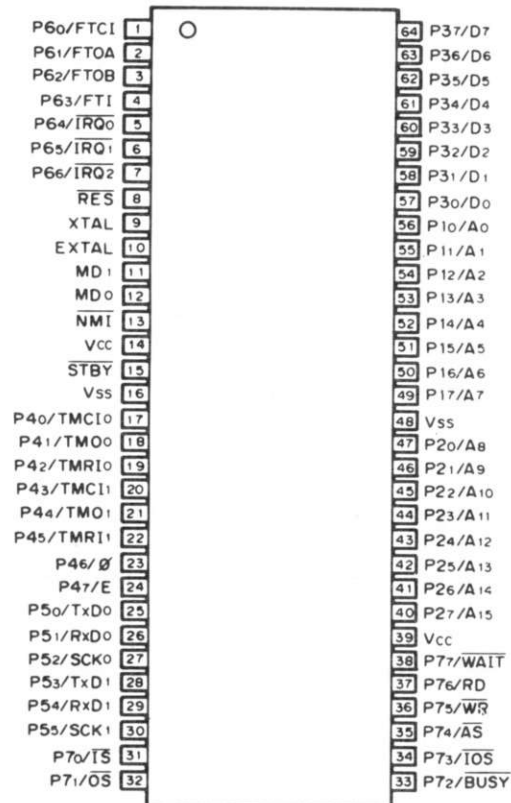
- a) IC25 :
Detecting abnormality and sending that signal to the microcomputer (IC26)
- b) PRT (7) terminal of microcomputer (IC26):
Input terminal of the signal from IC25
- c) PRY (41) terminal of microcomputer (IC26):
Output terminal for the signal to the power ON/OFF relay

The microcomputer and interface does not detect abnormality for 2 seconds after the power is turned ON. During this time, abnormality can be located by checking the above listed conditions 1 to 5. Before this check, however, make sure to check that there is no danger or smoke.

IC DATA

IC26 : HD6473238A47P

8 bit μ -COM



No.	Name	Function	POWER ON	POWER OFF	BACK UP
1	P60	—			
2	P61	—			
3	P62- $\overline{I/\bar{E}}$	INT/EXT detect	I	I	I
4	P63-PAL/NTSC	PAL/NTSC detect	I (pu)	OL	→
5	P64- $\overline{REM}$ IN	Remote control input interrupt	I	→	→
6	P65-PWR DET	Power detect interrupt	I	→	→
7	P66-PRT	Protection detect	I	→	→
8	$\overline{RES}$	RESET			
9	XTAL	10MHz			
10	EXTAL	OSC			
11	MD 1	H			
12	MD 0	H			
13	$\overline{NMI}$	H			
14	VCC	+5V			
15	$\overline{SYBY}$	H			
16	VSS	GND			
17	P40- $\overline{VERG}$	MARKET 0 (L : G)	I (pu)	→	OL
18	P41- $\overline{VERR}$	MARKET 1 (L : R)	I (pu)	→	OL
19	P42-780/580	PRODUCT MODE	I (pu)	→	OL
20	P43-SP RELAY	Speaker relay	O	OL	→
21	P44-CE0	CE	O	OL	→

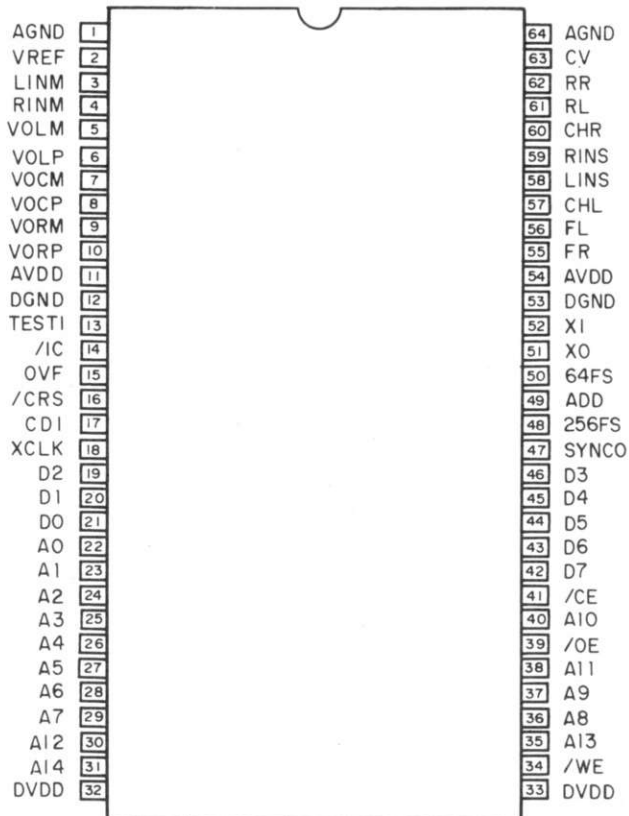
Note) In the above table, — means negative logic and (pu) the internal pulled-up state.

No.	Name	Function	POWER ON	POWER OFF	BACK UP
22	P45-CEFL	CE VFD	O	OL	→
23	P46	—			
24	P57-FMT	FULL MUTE	O	OL	→
25	P50-SDT	Serial data	Serial 0	OL	→
26	P51-CES	On screen CE	O	OL	→
27	P52-SCK	Serial clock	Serial clk	OL	→
28	P53-CD0	DSP serial data	Serial 0	OL	→
29	P54-CRS	DSP reset	O	OL	→
30	P55-XCLK	DSP serial clock	Serial clk	OL	→
31	P70	—			
32	P71	—			
33	P72	—			
34	P73	—			
35	P74	—			
36	P75	—			
37	P76	—			
38	P77	—			
39	VCC	+5V			
40	P27	—			
41	P26-PWR	Power relay	OH	OL	→
42	P25-FLRST	VFD RESET	OH	OL	→
43	P24-V DN	VOLUME DOWN	O	OL	→
44	P23-V UP	VOLUME UP	O	OL	→
45	P22-VIND	VOLUME LED	O	I	→
46	P21-SIND	STANDBY LED	O	O	→
47	P20-TIND	TAPE MONITOR LED	O	I	→
48	VSS	GND			
49	P17-K3	KEY 3	I (pu)	OL	→
50	P16-K2	KEY 2	I (pu)	OL	→
51	P15-K1	KEY 1	I (pu)	OL	→
52	P14-K0	KEY 0	I (pu)	OL	→
53	P13	—			
54	P12	—			
55	P11	—			
56	P10	—			
57	P30	—			
58	P31	—			
59	P32-PSW	POWER SW	I	→	→
60	P33	—			
61	P34	—			
62	P35	—			
63	P36	—			
64	P37	—			

Note) In the above table, — means negative logic and (pu) the internal pulled-up state.

IC15 : YSS223

Digital Dolby Pro Logic Decoder with Auto Input Balance



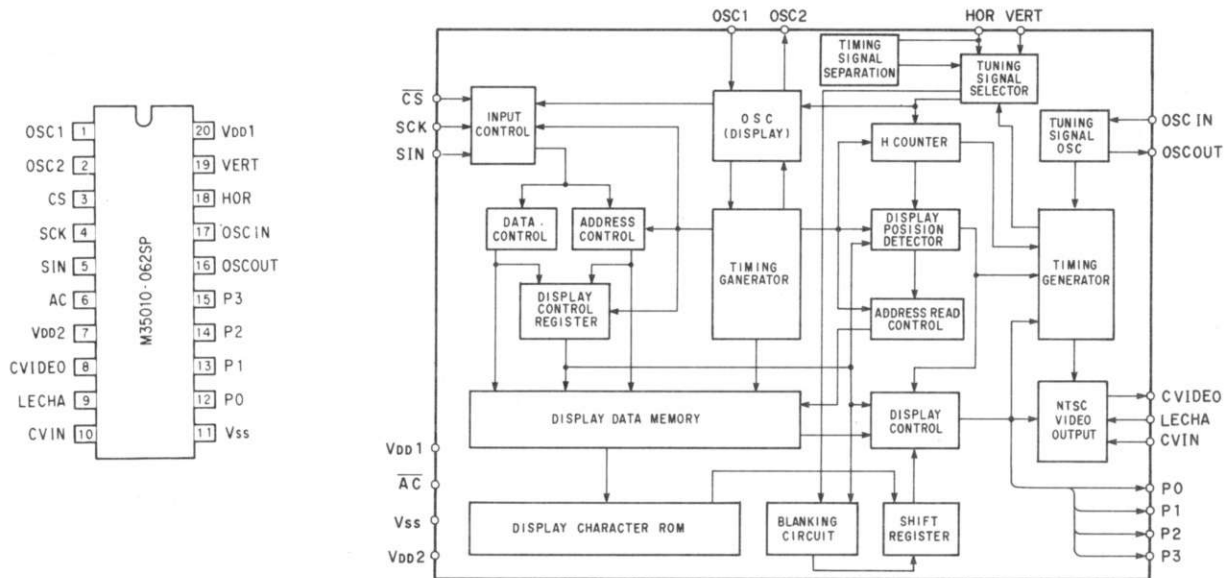
Pin No.	Pin Name	I/O	Function
1	AGND	A—	Ground (Analog section)
2	VREF	AI	Multiplying DAC reference voltage input
3	LINM	AI	L channel Multiplying DAC input
4	RINM	AI	R channel Multiplying DAC input
5	VOLM	AO	L channel operation amplifier, connected to (–) terminal
6	VOLP	AO	L channel operation amplifier, connected to (+) terminal
7	VOCM	AO	C channel operation amplifier, connected to (–) terminal
8	VOCP	AO	C channel operation amplifier, connected to (+) terminal
9	VORM	AO	R channel operation amplifier, connected to (–) terminal
10	VORP	AO	R channel operation amplifier, connected to (+) terminal
11	AVDD	A—	+5V power supply (Analog section)
12	DGND	—	Ground (digital section)
13	TESTI	Ic	LSI test terminal Normally connected to DGND
14	/IC	Ics	Initial clear terminal (Power ON resetting is necessary)
15	OVF	O	A/D Converter, Overflow detect terminal
16	/CRS	Its	Microprocessor interface reset terminal
17	CDI	Its	Microprocessor interface data input terminal
18	XCLK	Its	Microprocessor interface clock input terminal
19	D2	I/Ot	External delay RAM data terminal
20	D1	I/Ot	External delay RAM data terminal
21	D0	I/Ot	External delay RAM data terminal
22	A0	O	External data RAM address terminal

No.	Pin Name	I/O	Function
23	A1	O	External data RAM address terminal
24	A2	O	External data RAM address terminal
25	A3	O	External data RAM address terminal
26	A4	O	External data RAM address terminal
27	A5	O	External data RAM address terminal
28	A6	O	External data RAM address terminal
29	A7	O	External data RAM address terminal
30	A12	O	External data RAM address terminal
31	A14	O	External data RAM address terminal
32	DVDD	—	+5V power supply (digital section)
33	DVDD	—	+5V power supply (digital section)
34	/WE	O	External delay RAM write enable terminal
35	A13	O	External delay RAM address terminal
36	A8	O	External delay RAM address terminal
37	A9	O	External delay RAM address terminal
38	A11	O	External delay RAM address terminal
39	/OE	O	External delay RAM output enable terminal
40	A10	O	External delay RAM address terminal
41	/CE	O	External delay RAM chip enable terminal
42	D7	I/Ot	External delay RAM data terminal
43	D6	I/Ot	External delay RAM data terminal
44	D5	I/Ot	External delay RAM data terminal
45	D4	I/Ot	External delay RAM data terminal
46	D3	I/Ot	External delay RAM data terminal
47	SYNCO	O	External A/D converter word clock terminal
48	256FS	O	External A/D converter 256fs clock terminal
49	ADD	It	External A/D converter data input terminal
50	64FS	O	External A/D converter 64fs clock terminal
51	XO	O	Crystal oscillator connecting terminal
52	XI	I	Crystal oscillator connecting terminal
53	DGND	—	Ground (digital section)
54	AVDD	A—	+5V power supply (Analog section)
55	FR	AO	FR channel D/A input
56	FL	AO	FL channel D/A output
57	CHL	A—	LINS input Sample/hold Capacitor external terminal
58	LINS	AI	L channel A/D input
59	RINS	AI	R channel A/D input
60	CHR	A—	RINS input Sample/hold Capacitor external terminal
61	RL	AO	RL channel D/A output
62	RR	AO	RR channel D/A input
63	CV	AO	A/D, multiplying DAC center voltage
64	AGND	A—	Ground (Analog section)

Note : Alphabets used in the above I/O column represent as follows.

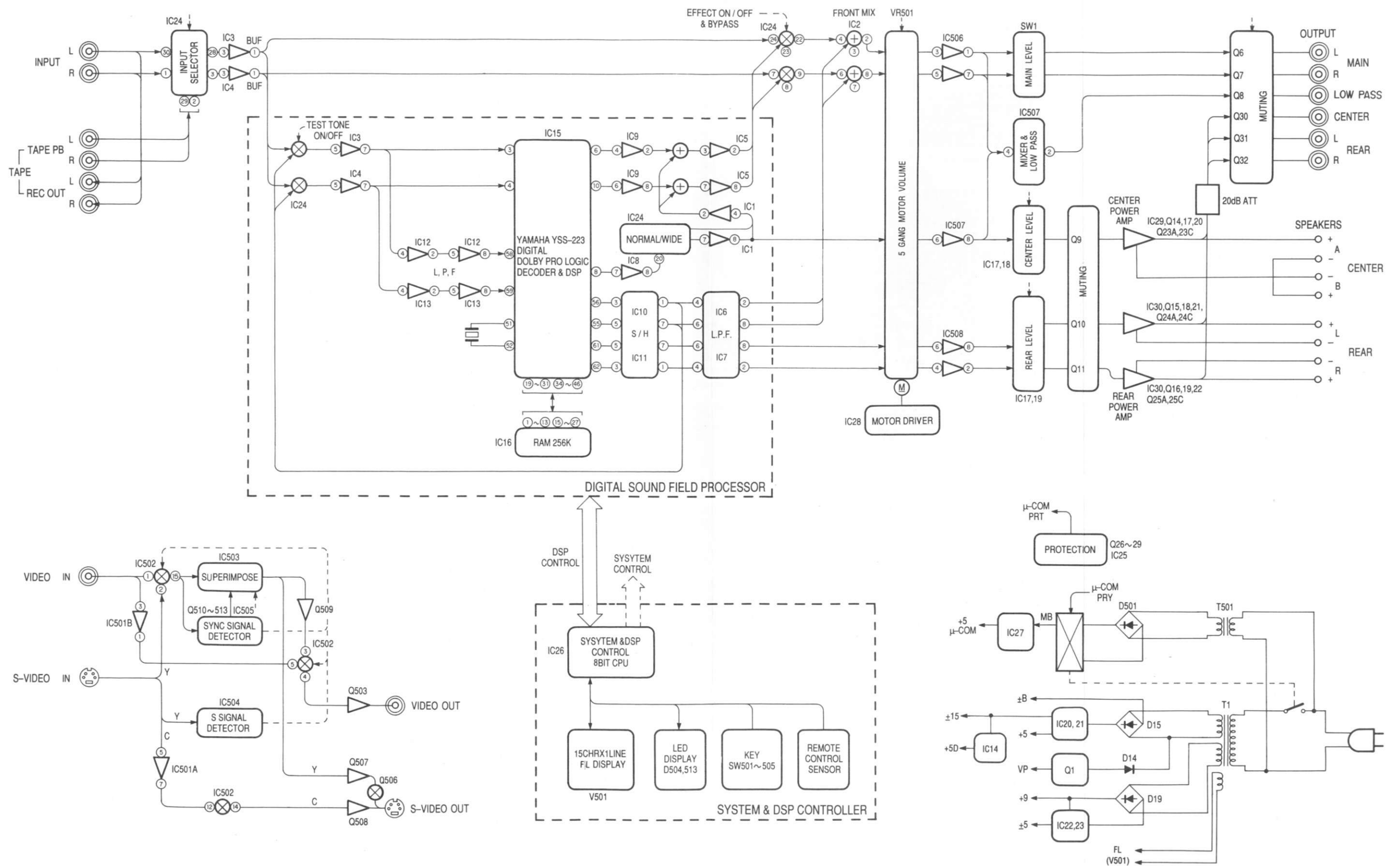
I : Input terminal O : Output terminal t : TTL level
C : CMOS level S : Schmidt input A : Analog

IC503 : M35010-062SP
Super Impose



Pin No.	Symbol	Terminal name	Function
1	OSC1	External terminal for oscillation circuit	External terminal of oscillation circuit for display. The standard oscillation frequency is about 7MHz.
2	OSC2		The display position in the horizontal direction and width of characters on the TV screen are determined according to this oscillation frequency.
3	$\overline{CS}$	Chip select input	Chip select terminal "L" is set when the serial data is transferred. Hysteresis input. A pull-up resistor is built in.
4	SCK	Serial clock input	When $\overline{CS}$ terminal is "L", the SIN serial data is taken in at the SCK rise. Hysteresis input. A pull-up resistor is built in.
5	SIN	Serial data input	The data and addresses for the display control register and display data memory are inputted in the serial form. Hysteresis input. A pull-up resistor is built in.
6	$\overline{AC}$	Auto clear input	The IC internal circuit is reset when in "L" state. Hysteresis input. A pull-up resistor is built in.
7	VDD2	Power supply terminal	Analog type power supply terminal that should be connected to +5V.
8	CVIDEO	Composite video signal output	Output terminal for composite video signal 2Vp-p composite video signal is output. When making a superimposition, the character output and other features are superimposed on the composite video signals inputted through the CVIN terminal.
9	LECHA	Character level input	Input terminal to determine the output level for the characters in the composite video signals. The color of characters is white.
10	CVIN	Video input	Input terminal for external composite video signals. When making a superimposition, the character output and other features are superimposed on these composite video signals.
11	VSS	Ground terminal	Connection to GND is made by using this terminal.
12	P0	Port 0 output	Port terminal output or character background signals (BLNK1) are output. The polarity can be selected when determining the font ROM.
13	P1	Port 1 output	Port terminal output or character background signals (CO1) are output. The polarity can be selected when determining the font ROM.
14	P2	Port 2 output	Port terminal output or character background signals (BLNK2) are output. The polarity can be selected when determining the font ROM.
15	P3	Port 3 output	Port terminal output or character background signals (CO2) are output. The polarity can be selected when determining the font ROM.
16	OSCOUT	Oscillation circuit for generation of synchronous signals	External terminal of the oscillation circuit for generation of synchronous signals. The oscillation frequency is 14.32MHz when the NTSC system is used and 17.73MHz when the PAL system is used.
17	OSCIN		
18	HOR	Horizontal synchronous signal input	Horizontal synchronous signals are inputted. Hysteresis input The polarity can be selected when determining the font ROM.
19	VERT	Vertical synchronous signal input	Vertical synchronous signals are inputted. Hysteresis input The polarity can be selected when determining the font ROM.
20	VDD1	Power supply terminal	Digital type power supply terminal that should be connected to +5V.

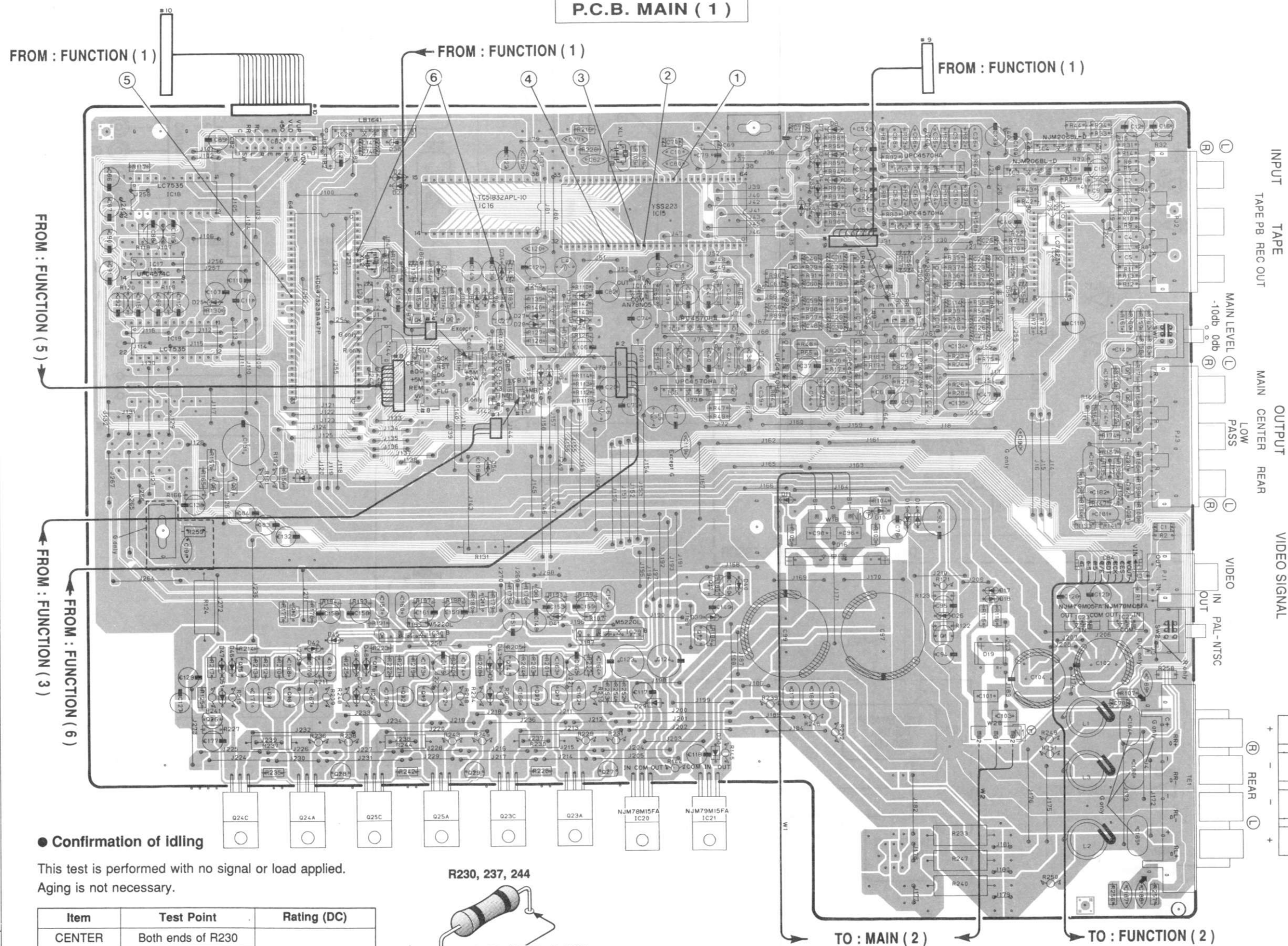
■ BLOCK DIAGRAM



PRINTED CIRCUIT BOARD (Foil side)

① to ⑥ : TEST POINT WAVEFORMS (See page 22)

P.C.B. MAIN (1)



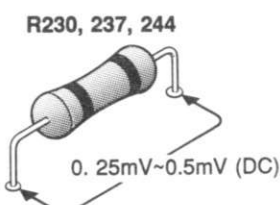
Semiconductor Location

Ref. No.	Location	Ref. No.	Location
IC1	E3	Q1	E4
IC2	E3	Q2	C3
IC3	F2	Q3	B3
IC4	F2	Q4	C3
IC5	D3	Q5	B3
IC6	E3	Q6	F3
IC7	E3	Q7	F3
IC8	D3	Q8	F3
IC9	D3	Q9	C4
IC10	E3	Q10	B4
IC11	E2	Q11	C4
IC12	E2	Q12	D4
IC13	E2	Q13	D4
IC14	D3	Q14	C4
IC15	D2	Q15	B4
IC16	C2	Q16	B4
IC17	A2	Q17	C4
IC18	A2	Q18	B4
IC19	A3	Q19	C4
IC20	D5	Q20	C4
IC21	D5	Q21	B4
IC22	F4	Q22	C4
IC23	F4	Q23A	C5
IC24	F2	Q23C	C5
IC25	C3	Q24A	B5
IC26	B3	Q24C	B5
IC27	C3	Q25A	C5
IC28	B2	Q25C	B5
IC29	D4	Q26	B5
IC30	C4	Q27	D5
		Q28	B5
		Q29	C5
		Q30	F3
		Q31	F4
		Q32	F3

Confirmation of idling

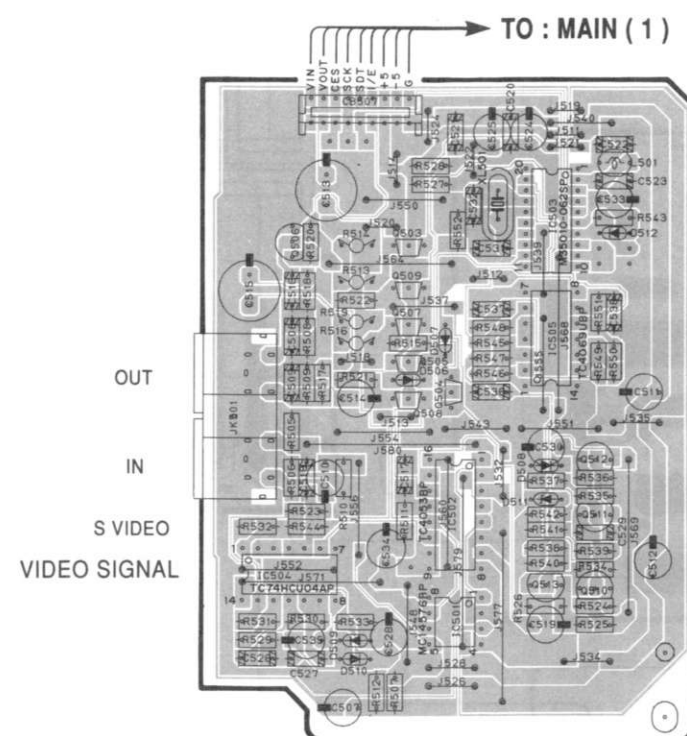
This test is performed with no signal or load applied.
Aging is not necessary.

Item	Test Point	Rating (DC)
CENTER	Both ends of R230	0. 25mV~0. 5mV
REAR L	Both ends of R237	
REAR R	Both ends of R244	

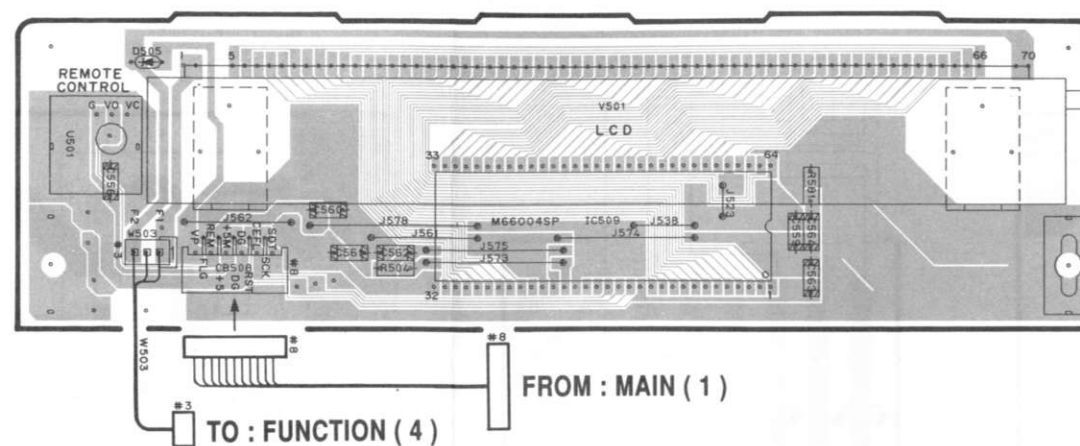


■ PRINTED CIRCUIT BOARD (Foil side)

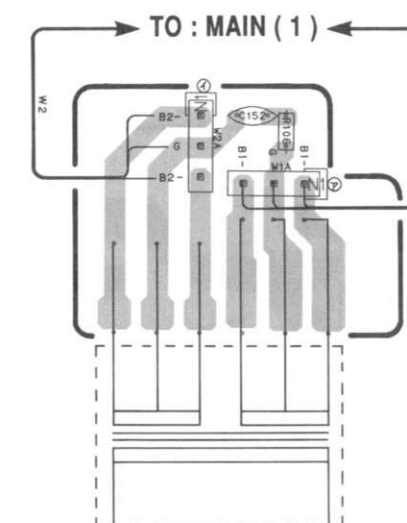
P.C.B. FUNCTION (2)



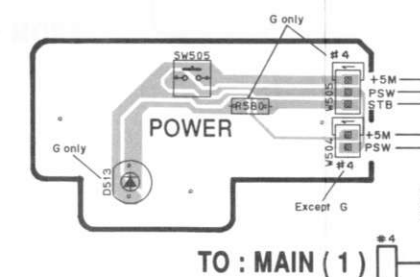
P.C.B. FUNCTION (5)



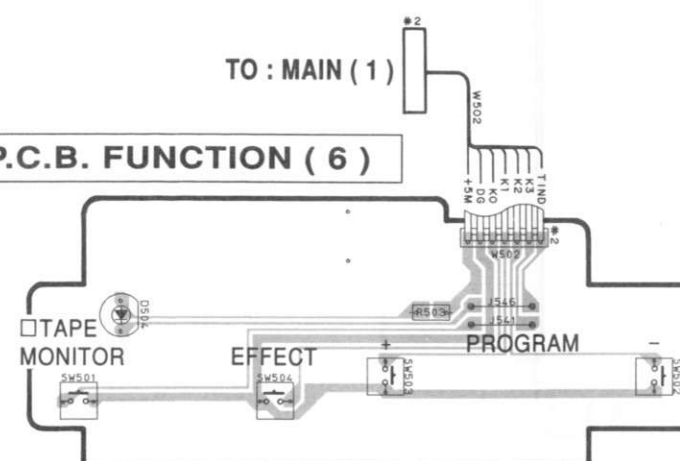
P.C.B. MAIN (2)



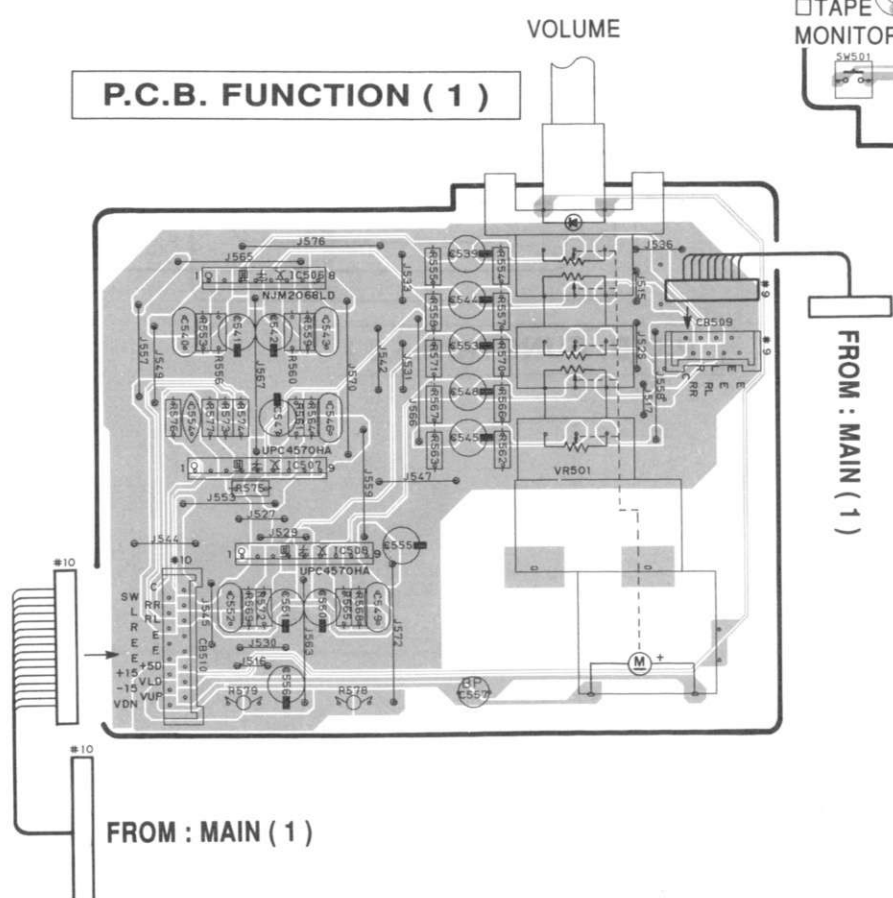
P.C.B. FUNCTION (7)



P.C.B. FUNCTION (6)

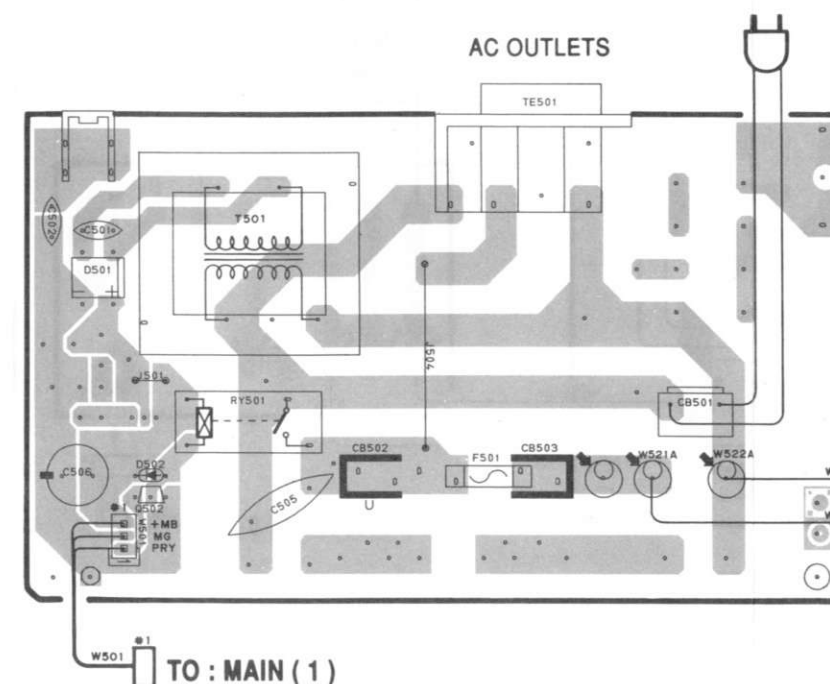


P.C.B. FUNCTION (1)

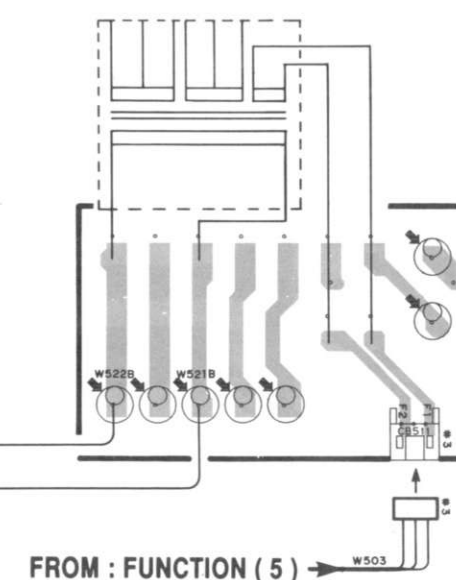


● U model

P.C.B. FUNCTION (3)



P.C.B. FUNCTION (4)

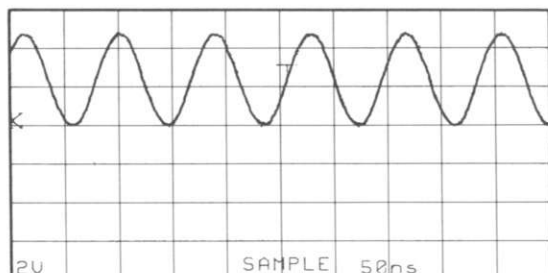


■ TEST POINT WAVEFORMS

Point ① (Pin 52 of IC15)

V : 2V/div H : 50nsec/div

DC range 1 : 1 probe



Point ④ (Pin 24 of IC15)

V : 2V/div H : 5μsec/div

DC range 1 : 1 probe

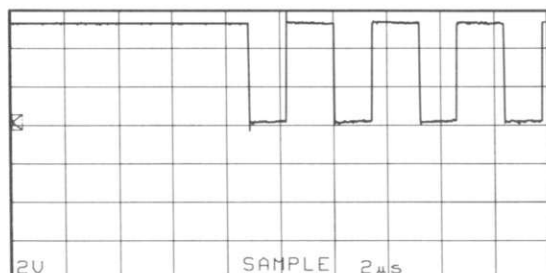


Point ② (Pin 18 of IC15)

* This waveform is produced when the sound field program is changed.

V : 2V/div H : 2μsec/div

DC range 1 : 1 probe

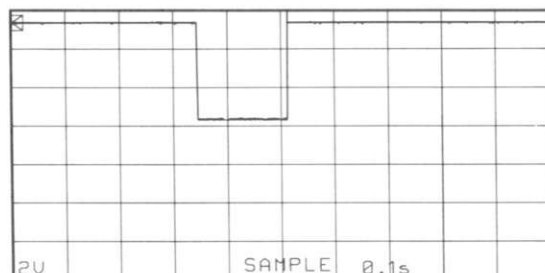


Point ⑤ (Pin 50 of IC26)

* This waveform is produced when the sound field program is "—" changed.

V : 2V/div H : 0.1sec/div

DC range 1 : 1 probe



Point ③ (Pin 19 of IC15)

V : 2V/div H : 5μsec/div

DC range 1 : 1 probe

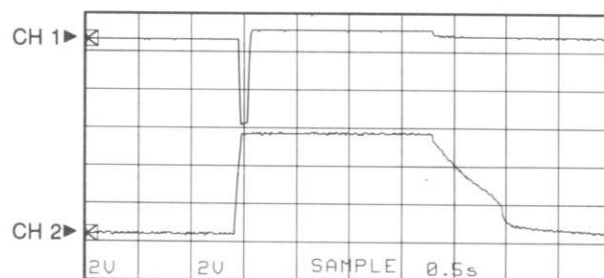


Point ⑥

[CH 1 : Pin 8 of IC26
CH 2 : OUT terminal of IC27]

V : 2V/div H : 0.5sec/div

DC range 1 : 1 probe

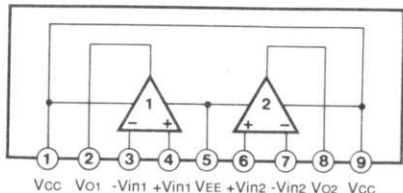


With the POWER switch turned ON, connect the power cord to the AC outlet. Disconnect the power cord from the AC outlet.

* This waveform is not available by pushing the power switch ON and OFF.

■ IC BLOCK (MAIN)

IC1, 2, 5~9, 12, 13 : μ PC4570HA
Dual OP-Amp



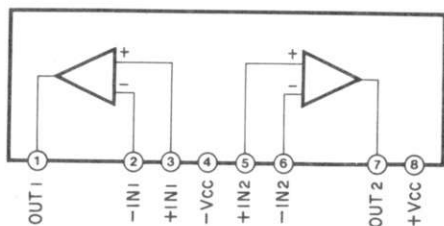
IC3, 4 : NJM2068L-D

IC10, 11 : NJM2082L

IC25 : NJM2904L

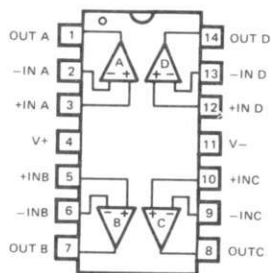
IC29, 30 : M5220L

Dual OP-Amp



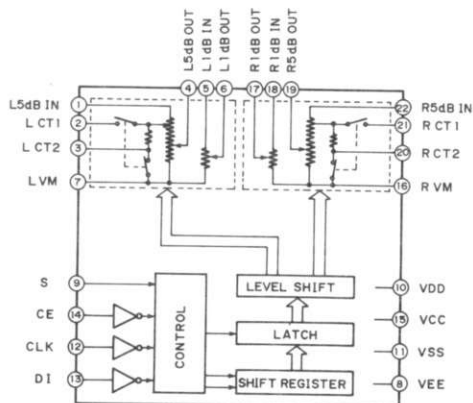
IC17 : μ PC4574C

4-Channel OP-Amp



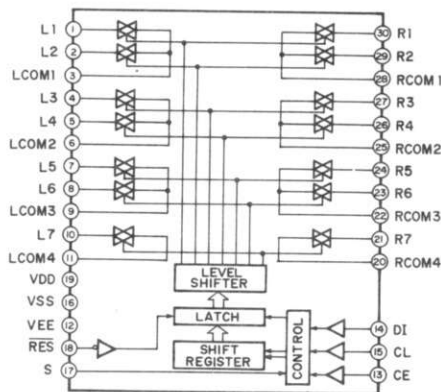
IC18, 19 : LC7535

Electric Controlled Volume



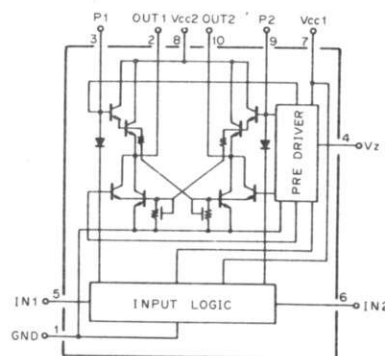
IC24 : LC7823N

Analog Function Switch



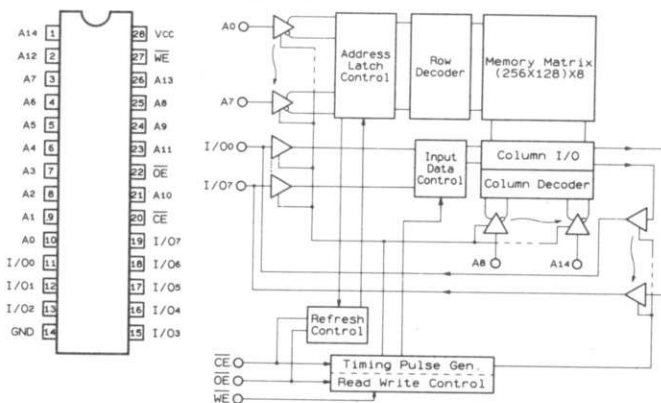
IC28 : LB1641

Motor Driver



IC16 : TC51832APL-10

32768-word x 8 bit High Speed Pseudo Static RAM



Other ICs

● IC26 : HD6473238A47P → See page 9

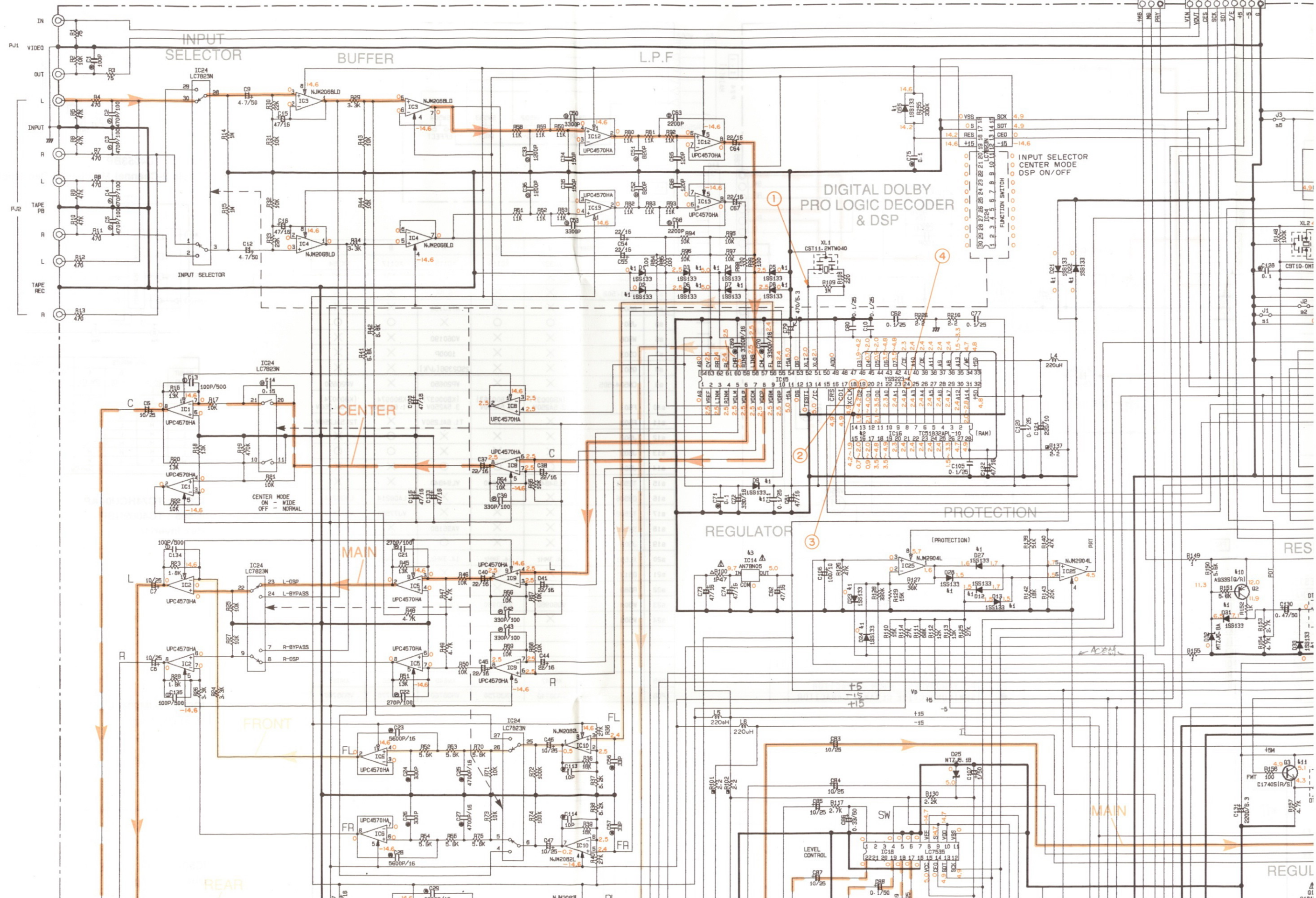
● IC15 : YSS223 → See page 11

■ SCHEMATIC DIAGRAM (MAIN)

① to ⑥ : TEST POINT WAVEFORMS (See page 22)

Condition

● PROGRAM→70mm MOVIE THEATER 1



PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (1/6W)
□	CARBON FILM RESISTOR (1/4W)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
■	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊗	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
●	AXIAL LEAD CERAMIC CAPACITOR
⊙	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
⊖	MICA CAPACITOR
⊕	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
41	D1-9, 12, 13, 17, 18, 21-24, 27, 28, 31, 33, 34, 36, 37, 43, 44, 46-52, 55	199133 H98104TD
42	IC16	TC51832APL-10 H965266LP-10 TC51832PL-10
43	IC14	AN78N05 L78N05
44	IC20	NJM78M15FA AN78M15F
45	IC21	NJM79M15FA AN79M15F
46	IC22	NJM78M05FA AN78M05F
47	IC23	NJM79M05FA AN79M05F
48	IC27	NJM78L05A AN78L05
49	D16	RBV-602(LF-A) D68BA20
410	02	2SA933S(Q,R) 2SA1115(E,F) 2SA1309A(Q,R/S)
411	03	2SC1740S(R/S) 2SC2603(E,F) 2SC3311A(Q,R/S)
412	014-16, 27-29	2SC2459(GR,BL) 2SC2240(GR,BL)

2SA933S (Q, R)
2SC1740S (R, S)
2SC2459 (GR, BL)
2SD1915 (F, S, T)
DTC144ES
DTA143ES

2SA970 (GR, BL)
2SA1015 (Y)
2SB560 (E, F)
2SC1815 (Y)
2SD438 (E, F)

2SA1726 (O, P, Y)
2SC4512 (O, P, Y)

1SS133
MA185
1SR139-100
MTZJ4.3C
MTZJ5.1B
MTZJ6.8A
MTZJ15.0B
MTZJ24.0B
MTZJ33.0D

RBV-602

SINB20

NJM78L05A

1: OUTPUT
2: COMMON
3: INPUT

AN78N05

1: INPUT
2: COMMON
3: OUTPUT

NJM79M05FA
NJM79M15FA

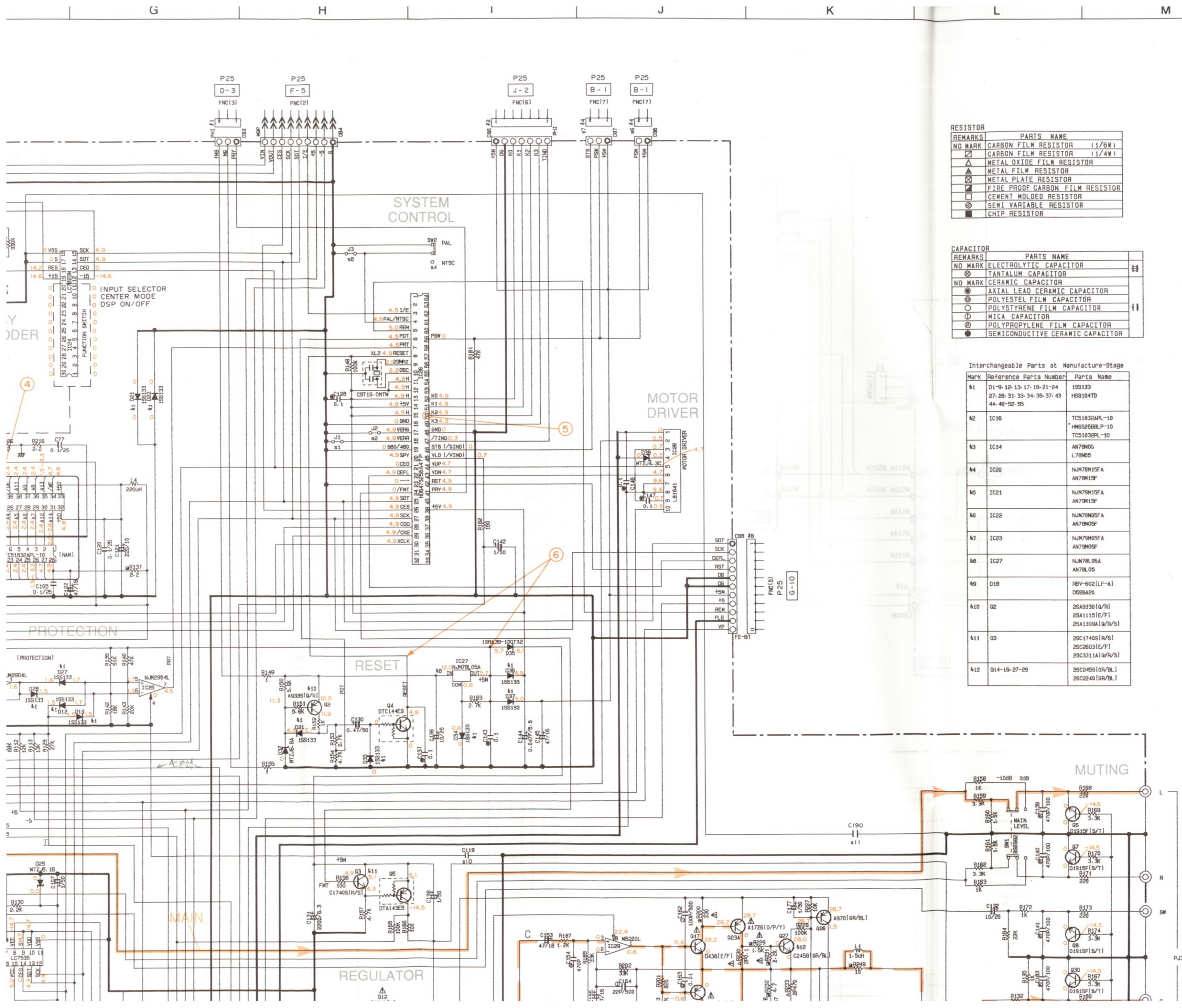
1: OUTPUT
2: INPUT
3: COMMON

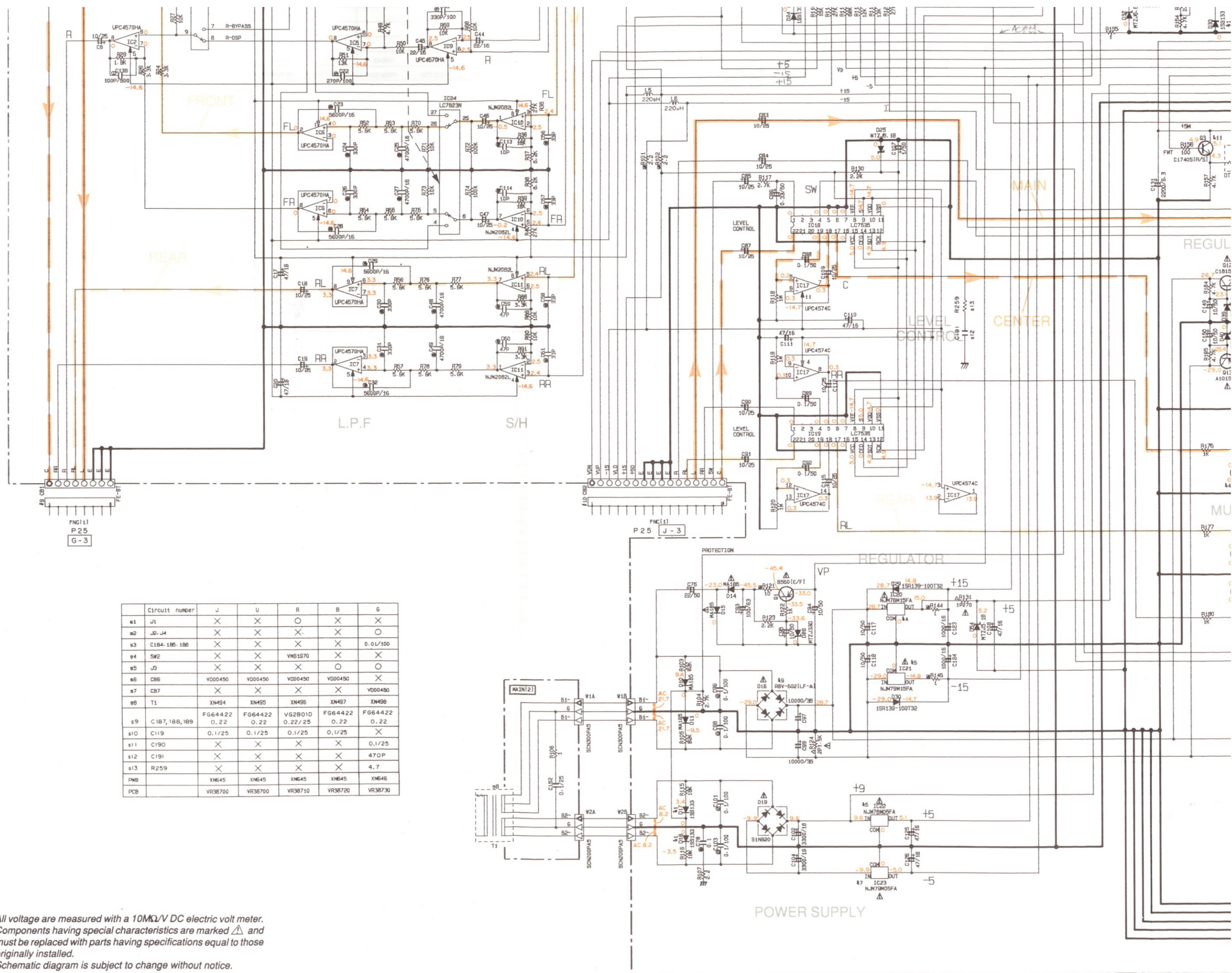
NJM78M15FA
NJM78M05FA

1: OUTPUT
2: COMMON
3: INPUT

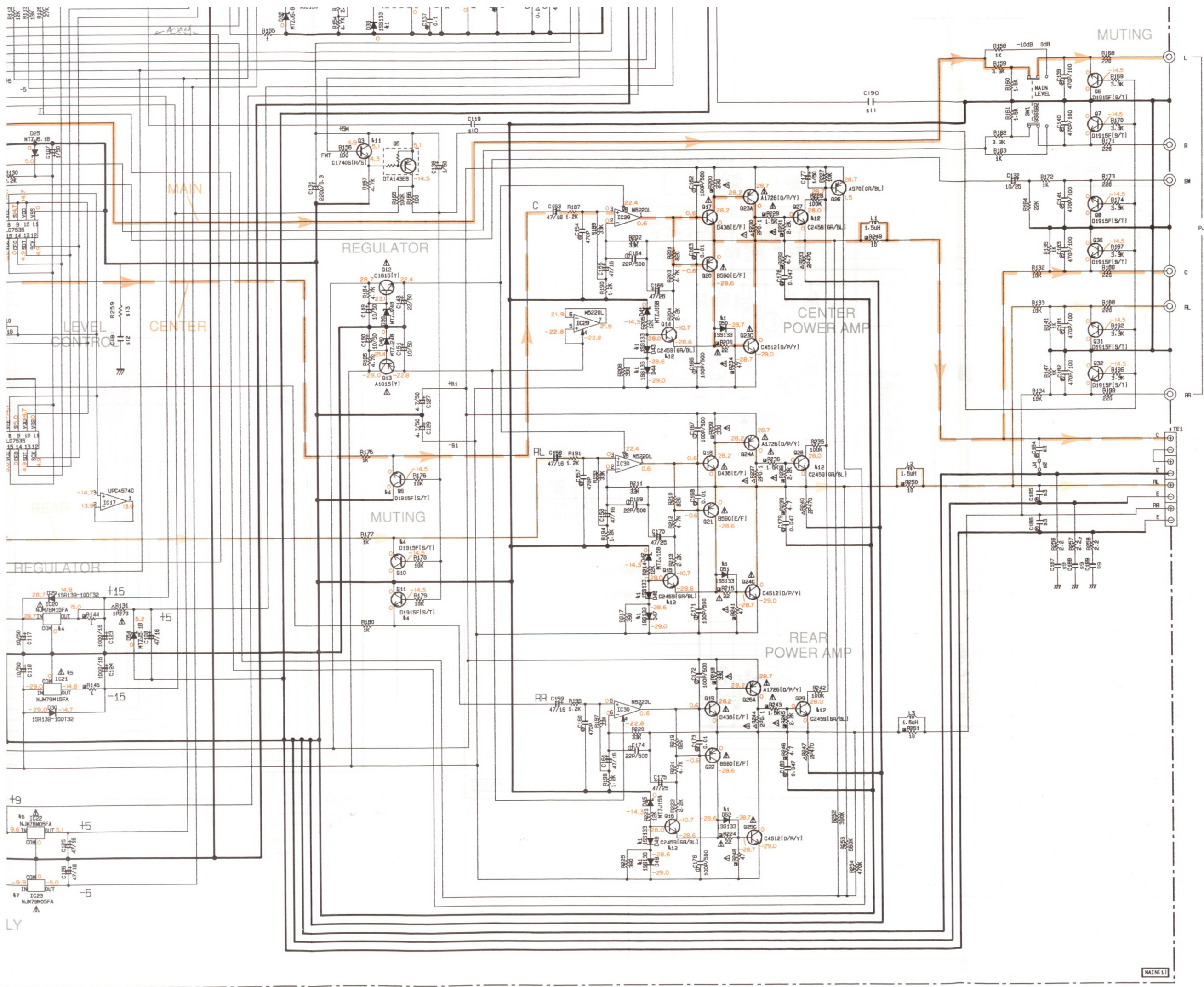
M5220L

NJM2904L



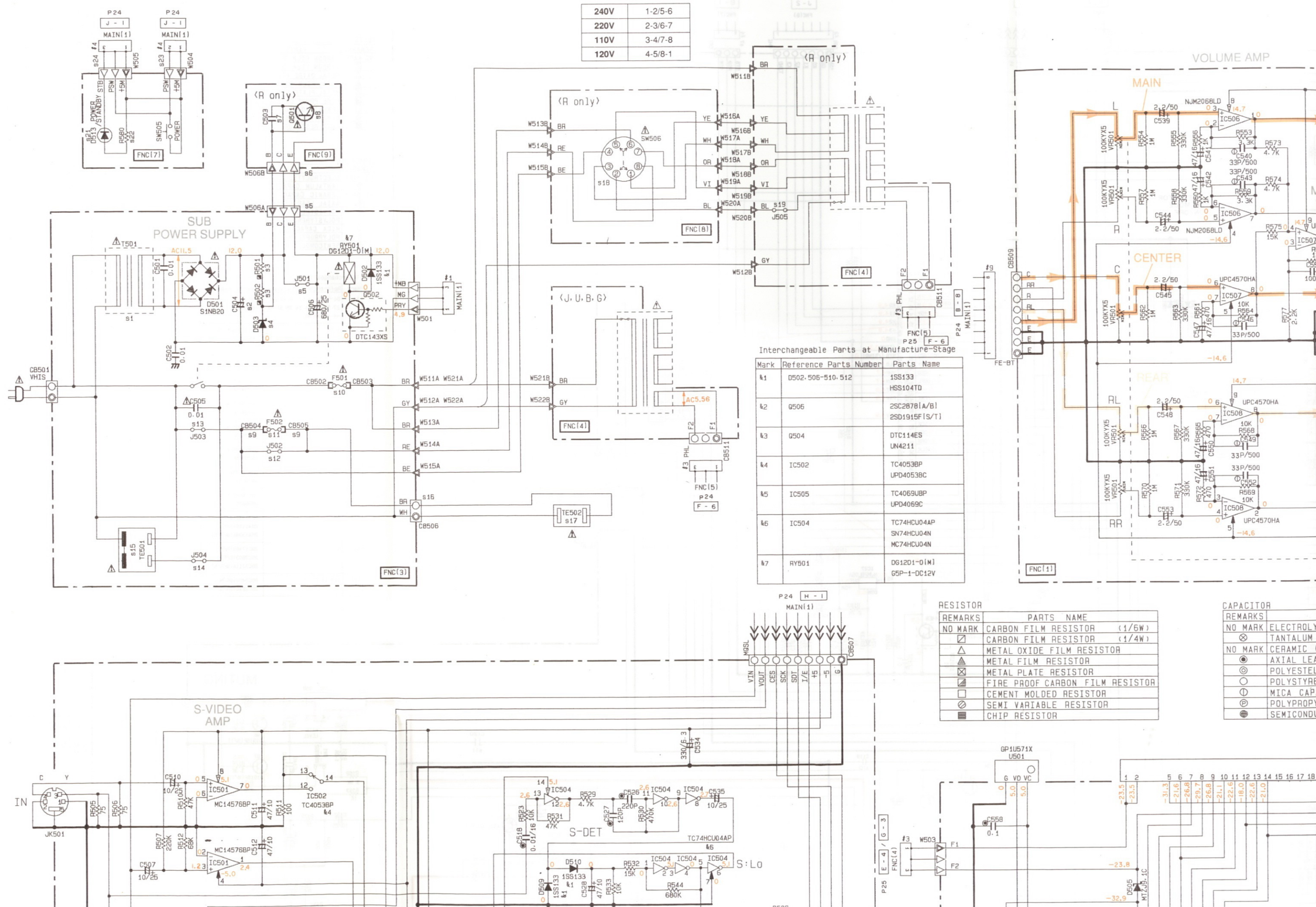


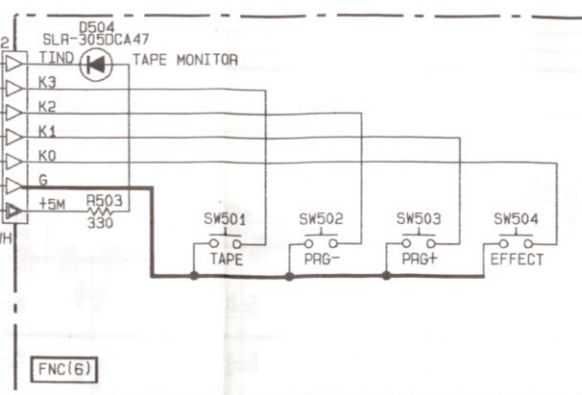
- * All voltage are measured with a 10M Ω /V DC electric volt meter.
- * Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
- * Schematic diagram is subject to change without notice.



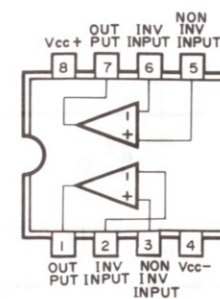
- NJM79M05FA
NJM79M15FA
- NJM78M15FA
NJM78M05FA
- M5220L
- NJM2904L
NJM2068L-D
NJM2082L
- μPC4570HA
- LB1641
- μPC4574C
- LC7535
- TC51832APL-10
- LC7823N
- HD6473238A47P
YSS223

■ SCHEMATIC DIAGRAM (FUNCTION)

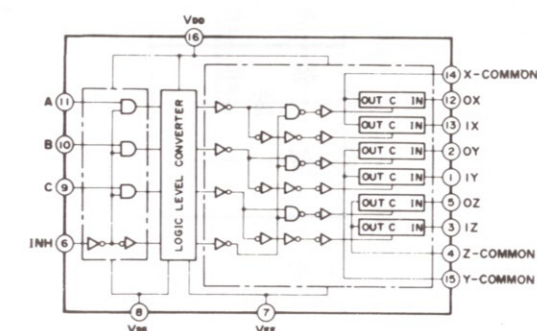




IC501 : MC14576BP
Dual Video Amp



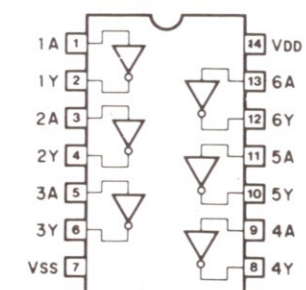
IC502 : TC4053BP
Triple 2-Channel Multiplexer/Demultiplexer



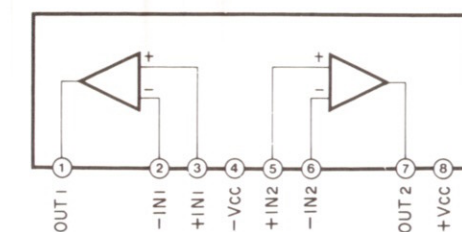
CONTROL INPUTS				"ON" CHANNEL
INHBIT (Pin 6)	C (Pin 9)	B (Pin 10)	A (Pin 11)	OX (Pin 12), OY (Pin 2), OZ (Pin 5) 1X (Pin 13), 1Y (Pin 1), 1Z (Pin 3)
L	L	L	L	OX, OY, OZ
L	L	L	H	1X, OY, OZ
L	L	H	L	OX, 1Y, OZ
L	L	H	H	1X, 1Y, OZ
L	H	L	L	OX, OY, 1Z
L	H	L	H	1X, OY, 1Z
L	H	H	L	OX, 1Y, 1Z
L	H	H	H	1X, 1Y, 1Z
H	※	※	※	NONE

※ : Don't Care

IC504 : TC74HCU04AP
IC505 : TC4069UBP
Hex Inverter



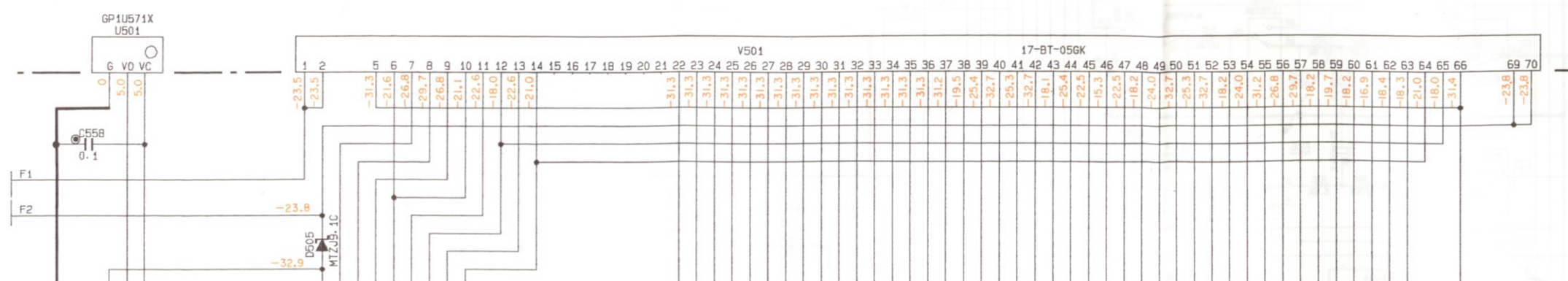
IC506 : NJM2068L-D
Dual OP-Amp



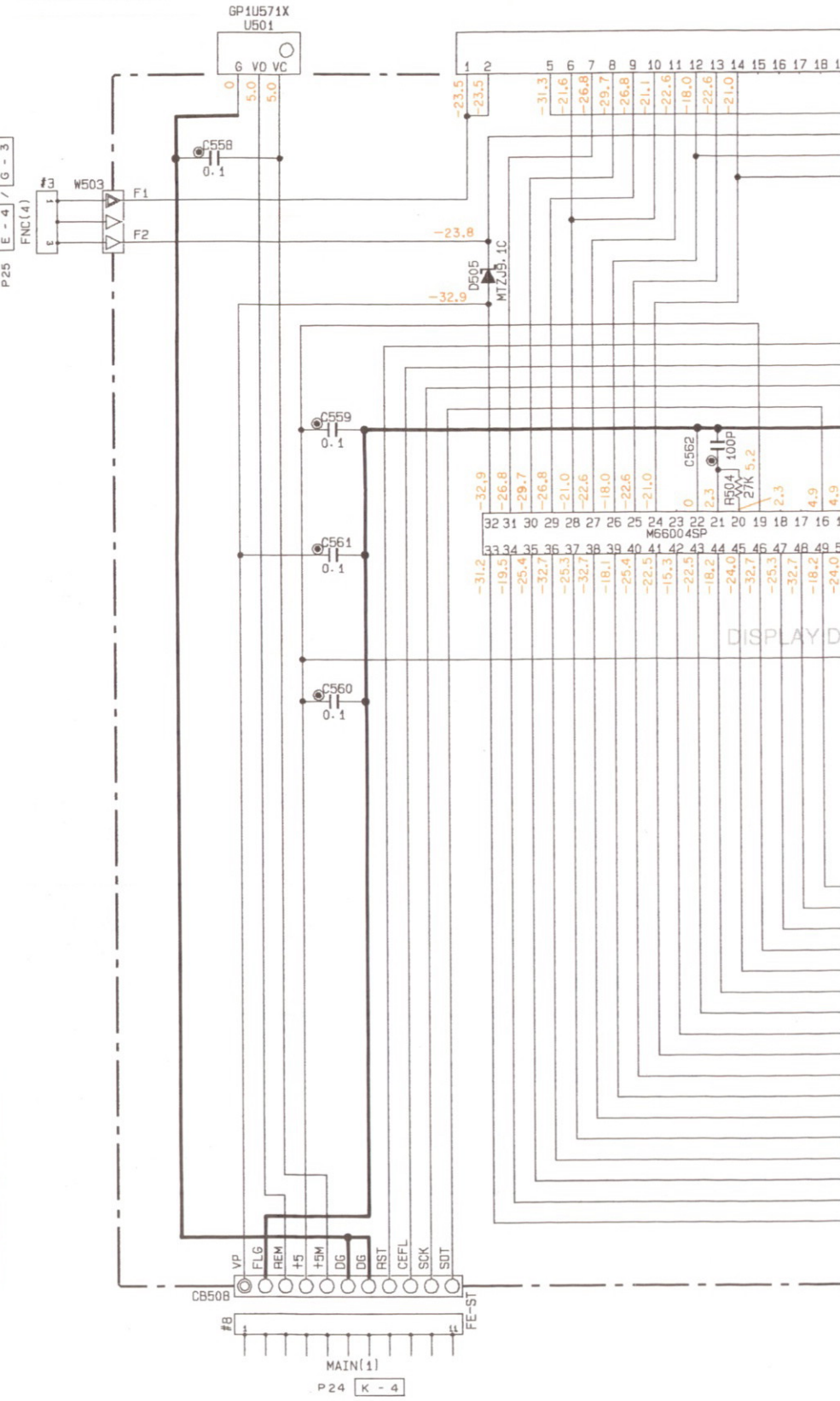
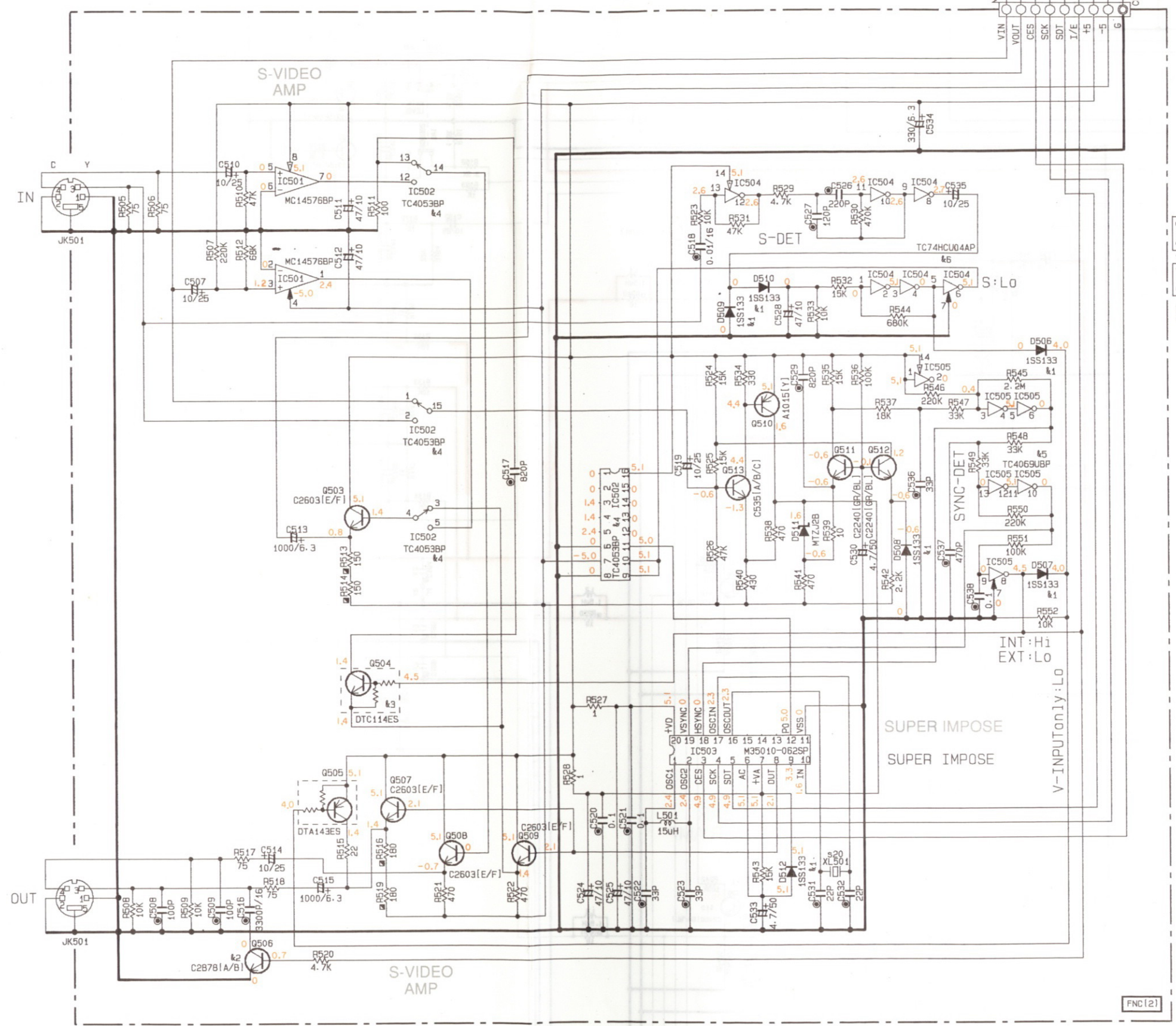
IC507 , 508 : μ PC4570HA
Dual OP-Amp

ESISTOR	
REMARKS	PARTS NAME
VO MARK	CARBON FILM RESISTOR (1/6W)
	CARBON FILM RESISTOR (1/4W)
	METAL OXIDE FILM RESISTOR
	METAL FILM RESISTOR
	METAL PLATE RESISTOR
	FIRE PROOF CARBON FILM RESISTOR
	CEMENT MOLDED RESISTOR
	SEMI VARIABLE RESISTOR
	CHIP RESISTOR

CAPACITOR		
REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	#
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	#
●	AXIAL LEAD CERAMIC CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
①	MICA CAPACITOR	
⊕	POLYPROPYLENE FILM CAPACITOR	
⊗	SEMICONDUCTIVE CERAMIC CAPACITOR	



	METAL OXIDE FILM RESISTOR		AXIAL LEAD SEMICONDUCTOR
	METAL PLATE RESISTOR		POLYESTER CAPACITOR
	FIRE PROOF CARBON FILM RESISTOR		POLYSTYRENE CAPACITOR
	CEMENT MOLDED RESISTOR		MICA CAPACITOR
	SEMI VARIABLE RESISTOR		POLYPROPYLENE CAPACITOR
	CHIP RESISTOR		SEMICONDUCTOR



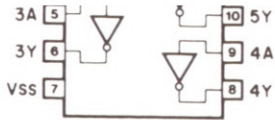
PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

2SA1015 (Y) 2SC2240 (GR, BL) 2SC2878 (A, B)	2SC535 (A, B, C) 2SC2603 (E, F) DTA143ES DTC143XS DTC114ES	1SS133 MTZJ2.0B MTZJ9.1C MTZJ13.0A	SINB20	MC14576BP	NJM2068L-D	μPC4570HA	TC4069UBP TC74HCU04AP	TC4053BP	M35010-062SP	M66004SP

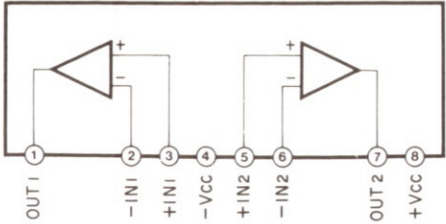
	METAL OXIDE FILM RESISTOR
	METAL PLATE RESISTOR
	FIRE PROOF CARBON FILM RESISTOR
	CEMENT MOLDED RESISTOR
	SEMI VARIABLE RESISTOR
	CHIP RESISTOR

	AXIAL LEAD CERAMIC CAPACITOR
	POLYESTEL FILM CAPACITOR
	POLYSTYRENE FILM CAPACITOR
	MICA CAPACITOR
	POLYPROPYLENE FILM CAPACITOR
	SEMICONDUCTIVE CERAMIC CAPACITOR

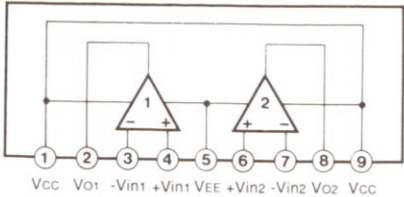
PWB		XN647	XN648	XN649	XN650
PCB		VR38740	VR38750	VR38760	VR38770
					VR38780



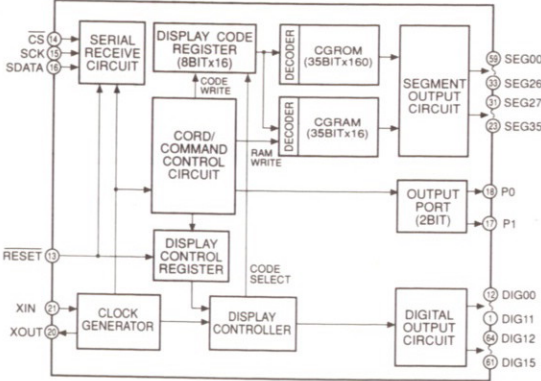
IC506 : NJM2068L-D
Dual OP-Amp



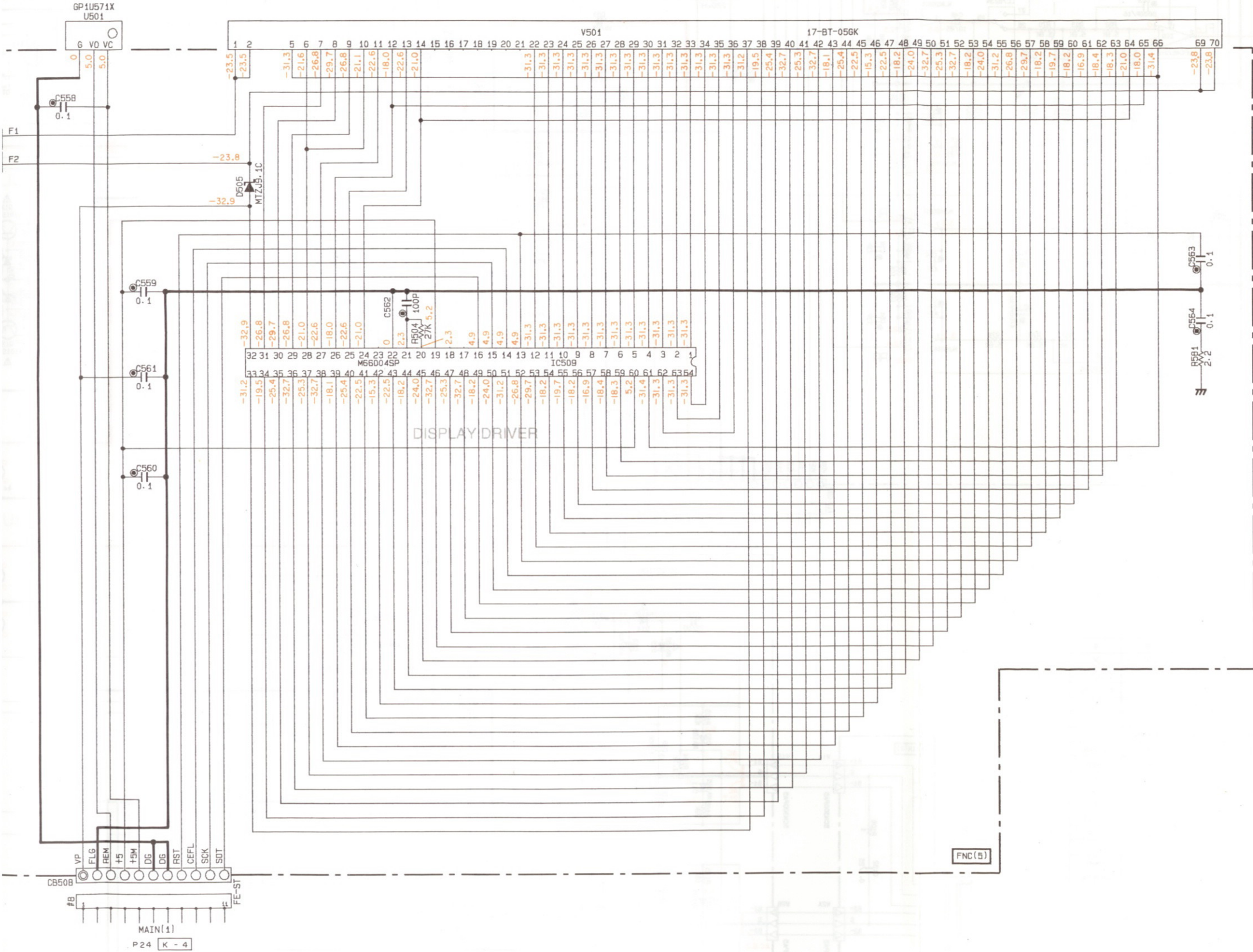
IC507 , 508 : μ PC4570HA
Dual OP-Amp



IC509 : M66004SP
Display Drive



Other IC
● IC503 : M35010-062SP→See Page 13



* All voltage are measured with a 10M Ω /V DC electric volt meter.
* Components having special characteristics are marked and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

■ DISPLAY DATA (VQ905900)

● V501 : 17-BT-05GK

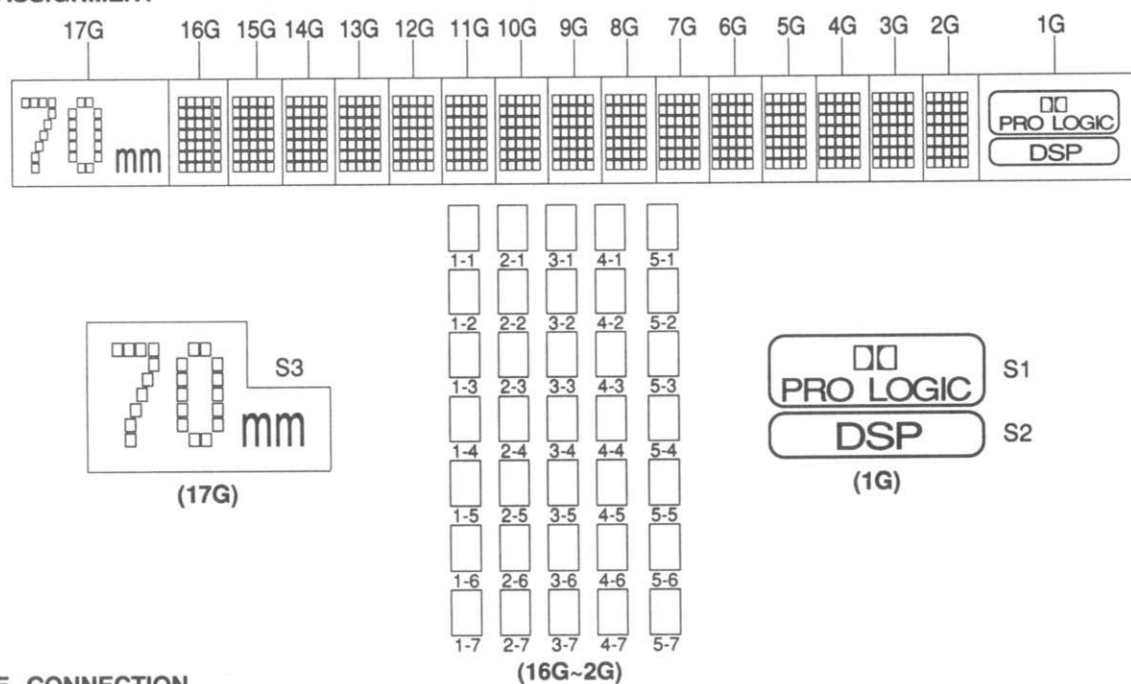


PIN CONNECTION

Pin No.	Connection	Pin No.	Connection	Pin No.	Connection	Pin No.	Connection	Pin No.	Connection	Pin No.	Connection	Pin No.	Connection
1	F1	11	P32	21	NC	31	7G	41	P23	51	P13	61	P3
2	F2	12	P33	22	16G	32	6G	42	P22	52	P12	62	P2
3	NP	13	P34	23	15G	33	5G	43	P21	53	P11	63	P1
4	NP	14	P35	24	14G	34	4G	44	P20	54	P10	64	P37
5	17G	15	NC	25	13G	35	3G	45	P19	55	P9	65	P36
6	P38	16	NC	26	12G	36	2G	46	P18	56	P8	66	1G
7	P28	17	NC	27	11G	37	P27	47	P17	57	P7	67	NP
8	P29	18	NC	28	10G	38	P26	48	P16	58	P6	68	NP
9	P30	19	NC	29	9G	39	P25	49	P15	59	P5	69	F2
10	P31	20	NC	30	8G	40	P24	50	P14	60	P4	70	F2

Note : F1, F2 : Filament NP : No Connection DL : Datum Line 1G~16G : Grid

GRID ASSIGNMENT



ANODE CONNECTION

	17G	16G~2G	1G		17G	16G~2G	1G		17G	16G~2G	1G		17G	16G~2G	1G
P1	—	1-1	—	P11	—	1-3	—	P21	—	1-5	—	P31	—	1-7	—
P2	—	2-1	—	P12	—	2-3	—	P22	—	2-5	—	P32	—	2-7	—
P3	—	3-1	—	P13	—	3-3	—	P23	—	3-5	—	P33	—	3-7	—
P4	—	4-1	—	P14	—	4-3	—	P24	—	4-5	—	P34	—	4-7	—
P5	—	5-1	—	P15	—	5-3	—	P25	—	5-5	—	P35	—	5-7	—
P6	—	1-2	—	P16	—	1-4	—	P26	—	1-6	—	P36	—	—	S1
P7	—	2-2	—	P17	—	2-4	—	P27	—	2-6	—	P37	—	—	S2
P8	—	3-2	—	P18	—	3-4	—	P28	—	3-6	—	P38	S3	—	—
P9	—	4-2	—	P19	—	4-4	—	P29	—	4-6	—				
P10	—	5-2	—	P20	—	5-4	—	P30	—	5-6	—				

PARTS LIST

■ ELECTRICAL PARTS

■ WARNING

Components having special characteristics are marked $\triangle$ and must be replaced with parts having specifications equal to those originally installed.

- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the parts No. of the carbon resistors, refer to last page.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	: CHIP ALUMI. ELECTROLYTIC CAP	L.EMIT	: LIGHT EMITTING MODULE
C.CE	: CERAMIC CAP	LED.DSPLY	: LED DISPLAY
C.CE.ARRAY	: CERAMIC CAP ARRAY	LED.INFRD	: LED, INFRARED
C.CE.CHP	: CHIP CERAMIC CAP	MODUL.RF	: MODULATOR, RF
C.CE.ML	: MULTILAYER CERAMIC CAP	PHOT.CPL	: PHOTO COUPLER
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP	PHOT.INTR	: PHOTO INTERRUPTER
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP	PHOT.RFLCT	: PHOTO REFLECTOR
C.CE.TUBLR	: CERAMIC TUBULAR CAP	PIN.TEST	: PIN, TEST POINT
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP	PLST.RIVET	: PLASTIC RIVET
C.EL	: ELECTROLYTIC CAP	R.ARRAY	: RESISTOR ARRAY
C.MICA	: MICA CAP	R.CAR	: CARBON RESISTOR
C.ML.FLM	: MULTILAYER FILM CAP	R.CAR.CHP	: CHIP RESISTOR
C.MP	: METALLIZED PAPER CAP	R.CAR.FP	: FLAME PROOF CARBON RESISTOR
C.MYLAR	: MYLAR FILM CAP	R.FUS	: FUSABLE RESISTOR
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP	R.MTL.CHP	: CHIP METAL FILM RESISTOR
C.PAPER	: PAPER CAPACITOR	R.MTL.FLM	: METAL FILM RESISTOR
C.PLS	: POLYSTYRENE FILM CAP	R.MTL.OXD	: METAL OXIDE FILM RESISTOR
C.POL	: POLYESTER FILM CAP	R.MTL.PLAT	: METAL PLATE RESISTOR
C.POLY	: POLYETHYLENE FILM CAP	RSNR.CE	: CERAMIC RESONATOR
C.PP	: POLYPROPYLENE FILM CAP	RSNR.CRYS	: CRYSTAL RESONATOR
C.TNTL	: TANTALUM CAP	R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
C.TNTL.CHP	: CHIP TANTALUM CAP	R.WW	: WIRE WOUND RESISTOR
C.TRIM	: TRIMMER CAP	SCR.BND.HD	: BIND HEAD B-TITE SCREW
CN	: CONNECTOR	SCR.BW.HD	: BW HEAD TAPPING SCREW
CN.BS.PIN	: CONNECTOR, BASE PIN	SCR.CUP	: CUP TITE SCREW
CN.CANNON	: CONNECTOR, CANNON	SCR.TERM	: SCREW TERMINAL
CN.DIN	: CONNECTOR, DIN	SCR.TR	: SCREW, TRANSISTOR
CN.FLAT	: CONNECTOR, FLAT CABLE	SUPRT.PCB	: SUPPORT, P.C.B.
CN.POST	: CONNECTOR, BASE POST	SURG.PRTCT	: SURGE PROTECTOR
COIL.MX.AM	: COIL, AM MIX	SW.TACT	: TACT SWITCH
COIL.AT.FM	: COIL, FM ANTENNA	SW.LEAF	: LEAF SWITCH
COIL.DT.FM	: COIL, FM DETECT	SW.LEVER	: LEVER SWITCH
COIL.MX.FM	: COIL, FM MIX	SW.MICRO	: MICRO SWITCH
COIL.OUTPT	: OUTPUT COIL	SW.PUSH	: PUSH SWITCH
DIOD.ARRAY	: DIODE ARRAY	SW.RT.ENC	: ROTARY ENCODER
DIODE.BRG	: DIODE BRIDGE	SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
DIODE.CHP	: CHIP DIODE	SW.RT	: ROTARY SWITCH
DIODE.VAR	: VARACTOR DIODE	SW.SLIDE	: SLIDE SWITCH
DIOD.Z.CHP	: CHIP ZENER DIODE	TERM.SP	: SPEAKER TERMINAL
DIODE.ZENR	: ZENER DIODE	TERM.WRAP	: WRAPPING TERMINAL
DSCR.CE	: CERAMIC DISCRIMINATOR	THRMST.CHP	: CHIP THERMISTOR
FER.BEAD	: FERRITE BEADS	TR.CHP	: CHIP TRANSISTOR
FER.CORE	: FERRITE CORE	TR.DGT	: DIGITAL TRANSISTOR
FET.CHP	: CHIP FET	TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
FL.DSPLY	: FLUORESCENT DISPLAY	TRANS	: TRANSFORMER
FLTR.CE	: CERAMIC FILTER	TRANS.PULS	: PULSE TRANSFORMER
FLTR.COMB	: COMB FILTER MODULE	TRANS.PWR	: POWER TRANSFORMER ASS'y
FLTR.LC.RF	: LC FILTER, EMI	TUNER.AM	: TUNER PACK, AM
GND.MTL	: GROUND PLATE	TUNER.FM	: TUNER PACK, FM
GND.TERM	: GROUND TERMINAL	TUNER.PK	: FRONT-END TUNER PACK
HOLDER.FUS	: FUSE HOLDER	VR	: ROTARY POTENTIOMETER
IC.PRTCT	: IC PROTECTOR	VR.MTR	: POTENTIOMETER WITH MOTOR
JUMPER.CN	: JUMPER CONNECTOR	VR.SW	: POTENTIOMETER WITH ROTARY SW
JUMPER.TST	: JUMPER, TEST POINT	VR.SLIDE	: SLIDE POTENTIOMETER
L.DTCT	: LIGHT DETECTING MODULE	VR.TRIM	: TRIMMER POTENTIOMETER

Note) Those parts marked with "#" are not included in the P.C.B. ass'y.

P. C. B. MAIN

Schm Ref.	PART NO.	Description
* VR387000	P. C. B.	MAIN (U)
* VR387100	P. C. B.	MAIN (R)
* VR387200	P. C. B.	MAIN (B)
* VR387300	P. C. B.	MAIN (G)
CB1	VN922900	CN 8P
CB2	VN923700	CN FE 16P TE
CB3	VD004600	CN. BS. PIN 3P
CB4	VB994900	CN 9P
CB5	VD005000	CN. BS. PIN 7P
CB6	VD004500	CN. BS. PIN 2P (URB)
CB7	VD004600	CN. BS. PIN 3P (G)
* CB8	VN923200	CN 11P
C1	VF466800	C. CE. TUBLR 100pF 50V
C2	UT452470	C. PP 470pF 100V
C3	UT452470	C. PP 470pF 100V
C4	UT452470	C. PP 470pF 100V
C5	UT452470	C. PP 470pF 100V
C6	Vi845900	C. EL 10uF 63V
C7	Vi845900	C. EL 10uF 63V
C8	Vi845900	C. EL 10uF 63V
C9	Vi845200	C. EL 4.7uF 50V
C10	FZ005880	C. CE. ML 0.1uF 25V
C11	FZ005880	C. CE. ML 0.1uF 25V
C12	Vi845200	C. EL 4.7uF 50V
C13	FU452100	C. MICA 100pF 500V
C14	UA655150	C. MYLAR 0.15uF 50V
C15	Vi845600	C. EL 47uF 50V
C16	Vi845600	C. EL 47uF 50V
C17	Vi845600	C. EL 47uF 50V
C18	Vi845900	C. EL 10uF 63V
C19	Vi845900	C. EL 10uF 63V
C20	Vi845600	C. EL 47uF 50V
C21	UT452270	C. PP 270pF 100V
C22	UT452270	C. PP 270pF 100V
C23	VG279800	C. CE. TUBLR 5600pF 16V
C24	VG278600	C. CE. TUBLR 330pF 50V
C25	VF467100	C. CE. TUBLR 4700pF 16V
C26	VG278600	C. CE. TUBLR 330pF 50V
C27	VF467100	C. CE. TUBLR 4700pF 16V
C28	VG279800	C. CE. TUBLR 5600pF 16V
C29	VG279800	C. CE. TUBLR 5600pF 16V
C30	VG278600	C. CE. TUBLR 330pF 50V
C31	VG278600	C. CE. TUBLR 330pF 50V
C32	VG279800	C. CE. TUBLR 5600pF 16V
C33	UA653120	C. MYLAR 1200pF 50V
C34	FG212150	C. CE 150pF 50V
C35	FG212150	C. CE 150pF 50V
C36	UA653120	C. MYLAR 1200pF 50V
C37	Vi846000	C. EL 22uF 63V
C38	Vi846000	C. EL 22uF 63V
C39	UT452330	C. PP 330pF 100V
C40	Vi846000	C. EL 22uF 63V
C41	Vi846000	C. EL 22uF 63V

* New Parts

Schm Ref.	PART NO.	Description
C42	UT452330	C. PP 330pF 100V
C43	UT452330	C. PP 330pF 100V
C44	Vi846000	C. EL 22uF 63V
C45	Vi846000	C. EL 22uF 63V
C46	Vi845900	C. EL 10uF 63V
C47	Vi845900	C. EL 10uF 63V
C48	VF467100	C. CE. TUBLR 4700pF 16V
C49	VF467100	C. CE. TUBLR 4700pF 16V
C50	UA653330	C. MYLAR 3300pF 50V
C51	UA652820	C. MYLAR 820pF 50V
C52	UA652820	C. MYLAR 820pF 50V
C53	UA653330	C. MYLAR 3300pF 50V
C54	Vi846000	C. EL 22uF 63V
C55	Vi846000	C. EL 22uF 63V
C56	VG277000	C. CE. TUBLR 33pF 50V
C57	VG277000	C. CE. TUBLR 33pF 50V
C58	VG277000	C. CE. TUBLR 33pF 50V
C59	VF466700	C. CE. TUBLR 47pF 50V
C60	VF466700	C. CE. TUBLR 47pF 50V
C61	VG277000	C. CE. TUBLR 33pF 50V
C62	FZ005880	C. CE. ML 0.1uF 25V
C63	UA653220	C. MYLAR 2200pF 50V
C64	Vi846000	C. EL 22uF 63V
C65	FG212120	C. CE 120pF 50V
C66	FG212120	C. CE 120pF 50V
C67	Vi846000	C. EL 22uF 63V
C68	UA653220	C. MYLAR 2200pF 50V
C69	VG279600	C. CE. TUBLR 3300pF 16V
C70	VG279600	C. CE. TUBLR 3300pF 16V
C71	VH053100	C. CE. TUBLR 0.1uF 50V
C72	Vi842800	C. EL 330uF 16V
C73	Vi845600	C. EL 47uF 50V
C74	Vi845600	C. EL 47uF 50V
C75	VH053100	C. CE. TUBLR 0.1uF 50V
* C76	Vi845400	C. EL 22uF 50V
C77	FZ005880	C. CE. ML 0.1uF 25V
C78	VH053100	C. CE. TUBLR 0.1uF 50V
C79	Vi841300	C. EL 470uF 6.3V
C80	FZ005880	C. CE. ML 0.1uF 25V
C81	Vi845600	C. EL 47uF 50V
C82	Vi845600	C. EL 47uF 50V
C83	Vi845900	C. EL 10uF 63V
C84	Vi845900	C. EL 10uF 63V
C85	Vi845900	C. EL 10uF 63V
C86	Vi844700	C. EL 0.33uF 50V
C87	Vi845900	C. EL 10uF 63V
C88	Vi844500	C. EL 0.1uF 50V
C89	Vi844500	C. EL 0.1uF 50V
C90	Vi845900	C. EL 10uF 63V
C91	Vi845900	C. EL 10uF 63V
C92	Vi844500	C. EL 0.1uF 50V
* C93	Vi846300	C. EL 100uF 63V
C94	Vi845900	C. EL 10uF 63V

* New Parts

P. C. B. MAIN

Schm Ref.	PART NO.	Description
C95	Vi845900	C. EL 10uF 63V
C96	Vi862200	C. POLY 0.1uF 100V
C97	VQ119900	C. EL 10000uF 35V
C98	Vi862200	C. POLY 0.1uF 100V
C99	VQ119900	C. EL 10000uF 35V
C100	Vi845600	C. EL 47uF 50V
C101	Vi862200	C. POLY 0.1uF 100V
C102	VK180600	C. EL 3300uF 16V
C103	Vi862200	C. POLY 0.1uF 100V
C104	VK180600	C. EL 3300uF 16V
C105	FZ005880	C. CE. ML 0.1uF 25V
C106	Vi841800	C. EL 100uF 10V
C107	Vi844900	C. EL 1uF 50V
C108	Vi845600	C. EL 47uF 50V
C109	Vi845900	C. EL 10uF 63V
C110	Vi845600	C. EL 47uF 50V
C111	Vi845600	C. EL 47uF 50V
C112	Vi845900	C. EL 10uF 63V
C113	VF466600	C. CE. TUBLR 10pF 50V
C114	VF466600	C. CE. TUBLR 10pF 50V
C115	Vi845900	C. EL 10uF 63V
C116	Vi845600	C. EL 47uF 50V
C117	Vi845900	C. EL 10uF 63V
C118	Vi845900	C. EL 10uF 63V
C119	FZ005880	C. CE. ML 0.1uF 25V (URB)
C120	FZ005880	C. CE. ML 0.1uF 25V
C121	Vi841900	C. EL 220uF 10V
C122	Vi845600	C. EL 47uF 50V
C123	VK180400	C. EL 1000uF 16V
C124	VK180400	C. EL 1000uF 16V
C125	VH620800	C. EL 47uF 25V
C126	Vi845600	C. EL 47uF 50V
C127	Vi845200	C. EL 4.7uF 50V
C128	VH053100	C. CE. TUBLR 0.1uF 50V
C129	Vi845200	C. EL 4.7uF 50V
C130	Vi844800	C. EL 0.47uF 50V
C131	VK179200	C. EL 2200uF 6.3V
C132	Vi845900	C. EL 10uF 63V
C133	Vi845600	C. EL 47uF 50V
C134	FU452100	C. MICA 100pF 500V
C135	FU452100	C. MICA 100pF 500V
C136	Vi845900	C. EL 10uF 63V
C137	VH053100	C. CE. TUBLR 0.1uF 50V
C138	Vi844900	C. EL 1uF 50V
C139	UT452470	C. PP 470pF 100V
C140	UT452470	C. PP 470pF 100V
C141	UT452470	C. PP 470pF 100V
C142	Vi844900	C. EL 1uF 50V
C143	VH053100	C. CE. TUBLR 0.1uF 50V
C144	VE632800	C. EL 0.047F 5.5V
C145	Vi845600	C. EL 47uF 50V
C146	VH053100	C. CE. TUBLR 0.1uF 50V
C147	VH053100	C. CE. TUBLR 0.1uF 50V

* New Parts

Schm Ref.	PART NO.	Description
* C148	Vi845400	C. EL 22uF 50V
C149	Vi845900	C. EL 10uF 63V
C150	Vi845900	C. EL 10uF 63V
C151	Vi845900	C. EL 10uF 63V
C152	FZ005880	C. CE. ML 0.1uF 25V
C153	Vi845600	C. EL 47uF 50V
C154	UA652470	C. MYLAR 470pF 50V
C155	Vi845600	C. EL 47uF 50V
C156	Vi845600	C. EL 47uF 50V
C157	UA652470	C. MYLAR 470pF 50V
C158	Vi845600	C. EL 47uF 50V
C159	Vi845600	C. EL 47uF 50V
C160	UA652470	C. MYLAR 470pF 50V
C161	Vi845600	C. EL 47uF 50V
C162	FU452100	C. MICA 100pF 500V
C163	UA654100	C. MYLAR 0.01uF 50V
C164	FU351220	C. MICA 22pF 500V
C165	Vi845600	C. EL 47uF 50V
C166	FU452100	C. MICA 100pF 500V
C167	FU452100	C. MICA 100pF 500V
C168	UA654100	C. MYLAR 0.01uF 50V
C169	FU351220	C. MICA 22pF 500V
C170	Vi845600	C. EL 47uF 50V
C171	FU452100	C. MICA 100pF 500V
C172	FU452100	C. MICA 100pF 500V
C173	UA654100	C. MYLAR 0.01uF 50V
C174	FU351220	C. MICA 22pF 500V
C175	Vi845600	C. EL 47uF 50V
C176	FU452100	C. MICA 100pF 500V
C177	Vi844900	C. EL 1uF 50V
C178	UA654470	C. MYLAR 0.047uF 50V
C179	UA654470	C. MYLAR 0.047uF 50V
C180	UA654470	C. MYLAR 0.047uF 50V
C181	UT452470	C. PP 470pF 100V
C182	UT452470	C. PP 470pF 100V
C183	UT452470	C. PP 470pF 100V
C184	UT454100	C. PP 0.01uF 100V(G)
C185	UT454100	C. PP 0.01uF 100V(G)
C186	UT454100	C. PP 0.01uF 100V(G)
C187	FG244220	C. CE 0.022uF 50V (UBG)
C187	VG280100	C. CE. TUBLR 0.022uF 25V(R)
C188	FG244220	C. CE 0.022uF 50V (UBG)
C188	VG280100	C. CE. TUBLR 0.022uF 25V(R)
C189	FG244220	C. CE 0.022uF 50V (UBG)
C189	VG280100	C. CE. TUBLR 0.022uF 25V(R)
C190	FZ005880	C. CE. ML 0.1uF 25V(G)
C191	FG212470	C. CE 470pF 50V(G)
D1	iF004600	DIODE 1SS133
D2	iF004600	DIODE 1SS133
D3	iF004600	DIODE 1SS133
D4	iF004600	DIODE 1SS133
D5	iF004600	DIODE 1SS133
D6	iF004600	DIODE 1SS133

* New Parts

P. C. B. MAIN

Schm Ref.	PART NO.	Description
D7	iF004600	DIODE 1SS133
D8	iF004600	DIODE 1SS133
D9	iF004600	DIODE 1SS133
D10	VC398400	DIODE MA185
D11	VC398400	DIODE MA185
D12	iF004600	DIODE 1SS133
D13	iF004600	DIODE 1SS133
△ D14	VC398400	DIODE MA185
△ D15	VC398400	DIODE MA185
△ D16	Vi711600	DIODE. BRG RBV-602 LF-A
D17	iF004600	DIODE 1SS133
D18	iF004600	DIODE 1SS133
△ * D19	VR253700	DIODE. BRG S1NB20 1.0A 200V
D21	iF004600	DIODE 1SS133
D22	iF004600	DIODE 1SS133
D23	iF004600	DIODE 1SS133
D24	iF004600	DIODE 1SS133
D25	VG437400	DIODE. ZENR MTZJ5.1B 5.1V
* D26	VG443900	DIODE. ZENR MTZJ33D 33V
D27	iF004600	DIODE 1SS133
D28	iF004600	DIODE 1SS133
D29	VH770800	DIODE 1SR139-100
D30	VH770800	DIODE 1SR139-100
D31	iF004600	DIODE 1SS133
D32	VG438200	DIODE. ZENR MTZJ6.8A 6.8V
D33	iF004600	DIODE 1SS133
D34	iF004600	DIODE 1SS133
D35	VH770800	DIODE 1SR139-100
D36	iF004600	DIODE 1SS133
D37	iF004600	DIODE 1SS133
D38	VG436900	DIODE. ZENR MTZJ4.3C 4.3V
D39	VG442500	DIODE. ZENR MTZJ24B 24V
D40	VG442500	DIODE. ZENR MTZJ24B 24V
D41	VG440800	DIODE. ZENR MTZJ15B 15V
D42	VG440800	DIODE. ZENR MTZJ15B 15V
D43	iF004600	DIODE 1SS133
D44	iF004600	DIODE 1SS133
D45	VG440800	DIODE. ZENR MTZJ15B 15V
D46	iF004600	DIODE 1SS133
D47	iF004600	DIODE 1SS133
D48	iF004600	DIODE 1SS133
D49	iF004600	DIODE 1SS133
D50	iF004600	DIODE 1SS133
D51	iF004600	DIODE 1SS133
D52	iF004600	DIODE 1SS133
D54	VG437400	DIODE. ZENR MTZJ5.1B 5.1V
D55	iF004600	DIODE 1SS133
IC1	XB247301	IC uPC4570HA
IC2	XB247301	IC uPC4570HA
IC3	XM356A00	IC NJM2068LD
IC4	XM356A00	IC NJM2068LD
IC5	XB247301	IC uPC4570HA
IC6	XB247301	IC uPC4570HA

* New Parts

Schm Ref.	PART NO.	Description
IC7	XB247301	IC uPC4570HA
IC8	XB247301	IC uPC4570HA
IC9	XB247301	IC uPC4570HA
* IC10	XN796A00	IC NJM2082L
* IC11	XN796A00	IC NJM2082L
IC12	XB247301	IC uPC4570HA
IC13	XB247301	IC uPC4570HA
△ IC14	XA507A00	IC AN78N05
IC15	XL816A00	IC YSS223-K
IC16	XL978A00	IC TC51832APL-10
IC17	XF971A00	IC uPC4574C
IC18	XE536001	IC LC7535
IC19	XE536001	IC LC7535
△ IC20	XJ603A00	IC NJM78M15FA
△ IC21	XG505A00	IC NJM79M15FA
△ IC22	XJ604A00	IC NJM78M05FA
△ IC23	XE436A00	IC NJM79M05FA
IC24	XG758A00	IC LC7823N
* IC25	Xi358A00	IC NJM2904L
* IC26	XN493A00	IC HD6433238
IC27	XJ757A00	IC NJM78L05A-T3
IC28	XF494A00	IC LB1641
IC29	iG092000	IC M5220L
IC30	iG092000	IC M5220L
L1	GD900470	COIL 1.5uH
L2	GD900470	COIL 1.5uH
L3	GD900470	COIL 1.5uH
L4	VB109600	COIL 220uH
L5	VB109600	COIL 220uH
L6	VB109600	COIL 220uH
* PJ1	VQ790900	JACK. PIN 2P
* PJ2	VR662400	JACK. PIN 6P
* PJ3	VR245000	JACK. PIN 6P
△ Q1	iB056020	TR 2SB560 E, F
Q2	iA093320	TR 2SA933S Q, R
Q3	iC174020	TR 2SC1740S R, S
Q4	VG722000	TR. DGT DTC144ES
Q5	VH964100	TR. DGT DTA143ES
Q6	VK432900	TR 2SD1915F S, T
Q7	VK432900	TR 2SD1915F S, T
Q8	VK432900	TR 2SD1915F S, T
Q9	VK432900	TR 2SD1915F S, T
Q10	VK432900	TR 2SD1915F S, T
Q11	VK432900	TR 2SD1915F S, T
△ Q12	iC1815C0	TR 2SC1815 Y
△ Q13	iA101521	TR 2SA1015 Y
Q14	VQ282200	TR 2SC2459 GR, BL
Q15	VQ282200	TR 2SC2459 GR, BL
Q16	VQ282200	TR 2SC2459 GR, BL
△ Q17	iD043820	TR 2SD438 E, F
△ Q18	iD043820	TR 2SD438 E, F
△ Q19	iD043820	TR 2SD438 E, F
△ Q20	iB056020	TR 2SB560 E, F

* New Parts

P. C. B. MAIN & FUNCTION

Schm Ref.	PART NO.	Description
△ Q21	iB056020	TR 2SB560 E, F
△ Q22	iB056020	TR 2SB560 E, F
△ Q23A	iX619590	TR 2SA1726 O, P, Y
△ Q23C	iX619600	TR 2SC4512 O, P, Y
△ Q24A	iX619590	TR 2SA1726 O, P, Y
△ Q24C	iX619600	TR 2SC4512 O, P, Y
△ Q25A	iX619590	TR 2SA1726 O, P, Y
△ Q25C	iX619600	TR 2SC4512 O, P, Y
Q26	iA097000	TR 2SA970 GR, BL
Q27	VQ282200	TR 2SC2459 GR, BL
Q28	VQ282200	TR 2SC2459 GR, BL
Q29	VQ282200	TR 2SC2459 GR, BL
Q30	VK432900	TR 2SD1915F S, T
Q31	VK432900	TR 2SD1915F S, T
Q32	VK432900	TR 2SD1915F S, T
△ R100	HL314470	R. MTL. OXD 47 Ω 1W
R101	HV453220	R. CAR. FP 2.2 Ω 1/4W
R102	HV453220	R. CAR. FP 2.2 Ω 1/4W
R121	HV454100	R. CAR. FP 10 Ω 1/4W
△ R124	HL326150	R. MTL. OXD 1.5K Ω 2W
△ R131	HL315270	R. MTL. OXD 270 Ω 1W
R137	HV453220	R. CAR. FP 2.2 Ω 1/4W
R144	HV453100	R. CAR. FP 1 Ω 1/4W
R145	HV453100	R. CAR. FP 1 Ω 1/4W
△ R200	HV455330	R. CAR. FP 330 Ω 1/4W
△ R206	HV454220	R. CAR. FP 22 Ω 1/4W
△ R209	HV455330	R. CAR. FP 330 Ω 1/4W
△ R215	HV454220	R. CAR. FP 22 Ω 1/4W
△ R218	HV455330	R. CAR. FP 330 Ω 1/4W
△ R224	HV454220	R. CAR. FP 22 Ω 1/4W
△ R229	HV456150	R. CAR. FP 1.5K Ω 1/4W
△ R230	VE869300	R. MTL. OXD 0.1 Ω 2W
△ R231	HV456220	R. CAR. FP 2.2K Ω 1/4W
R232	HV453470	R. CAR. FP 4.7 Ω 1/4W
R233	HL325470	R. MTL. OXD 470 Ω 2W
△ R234	HV454470	R. CAR. FP 47 Ω 1/4W
△ R236	HV456150	R. CAR. FP 1.5K Ω 1/4W
△ R237	VE869300	R. MTL. OXD 0.1 Ω 2W
△ R238	HV456220	R. CAR. FP 2.2K Ω 1/4W
R239	HV453470	R. CAR. FP 4.7 Ω 1/4W
R240	HL325470	R. MTL. OXD 470 Ω 2W
△ R241	HV454470	R. CAR. FP 47 Ω 1/4W
△ R243	HV456150	R. CAR. FP 1.5K Ω 1/4W
△ R244	VE869300	R. MTL. OXD 0.1 Ω 2W
△ R245	HV456220	R. CAR. FP 2.2K Ω 1/4W
R246	HV453470	R. CAR. FP 4.7 Ω 1/4W
R247	HL325470	R. MTL. OXD 470 Ω 2W
△ R248	HV454470	R. CAR. FP 47 Ω 1/4W
R249	HV454100	R. CAR. FP 10 Ω 1/4W
R250	HV454100	R. CAR. FP 10 Ω 1/4W
R251	HV454100	R. CAR. FP 10 Ω 1/4W
SW1	VM619700	SW. SLIDE SSSS92
SW2	VM619700	SW. SLIDE SSSS92 (R)

* New Parts

Schm Ref.	PART NO.	Description
TE1	VN286300	TERM. SP 8P
XL1	VK175200	RSNR. CE 11.28MHz
* XL2	VQ791000	RSNR. CE 10MHz
	BB069510	GND. MTL No. 6951
	VB966900	CN IMSA-6024
*	VR387500	P. C. B. FUNCTION (U)
*	VR387600	P. C. B. FUNCTION (R)
*	VR387700	P. C. B. FUNCTION (B)
*	VR387800	P. C. B. FUNCTION (G)
CB501	VG879900	CN. BS. PIN 2P
CB502	LB201880	HOLDER. FUS PC-FH1
CB503	LB201880	HOLDER. FUS PC-FH1
CB504	VP206500	HOLDER. FUS EYF-52BC (RG)
CB505	VP206500	HOLDER. FUS EYF-52BC (RG)
CB506	LA002140	TERM. WRAP 2P (BG)
* CB508	VP360300	CN. BS. PIN 11P
CB509	VN922900	CN 8P
CB510	VN923700	CN 16P
CB511	VB858200	CN. BS. PIN 3P
C501	FG214100	C. CE 0.01uF 50V
C502	FG214100	C. CE 0.01uF 50V
C503	FG213100	C. CE 1000pF 50V (R)
C504	Vi846200	C. EL 47uF 63V (R)
△ C505	Fi414100	C. CE. SAFTY 0.01uF VA-1
C506	VP795900	C. EL 680uF 25V
C507	Vi845900	C. EL 10uF 63V
C508	VF466800	C. CE. TUBLR 100pF 50V
C509	VF466800	C. CE. TUBLR 100pF 50V
C510	Vi845900	C. EL 10uF 63V
C511	Vi845600	C. EL 47uF 50V
C512	Vi845600	C. EL 47uF 50V
C513	Vi841400	C. EL 1000uF 6.3V
C514	Vi845900	C. EL 10uF 63V
C515	Vi841400	C. EL 1000uF 6.3V
C516	VG279600	C. CE. TUBLR 3300pF 16V
C517	VG279000	C. CE. TUBLR 820pF 50V
C518	VF467300	C. CE. TUBLR 0.01uF 16V
C519	Vi845900	C. EL 10uF 63V
C520	VH053100	C. CE. TUBLR 0.1uF 50V
C521	VH053100	C. CE. TUBLR 0.1uF 50V
C522	VG277000	C. CE. TUBLR 33pF 50V
C523	VG277000	C. CE. TUBLR 33pF 50V
C524	Vi845600	C. EL 47uF 50V
C525	Vi845600	C. EL 47uF 50V
C526	VG278400	C. CE. TUBLR 220pF 50V
C527	VG278100	C. CE. TUBLR 120pF 50V
C528	Vi845600	C. EL 47uF 50V
C529	VG279000	C. CE. TUBLR 820pF 50V
C530	Vi845200	C. EL 4.7uF 50V
C531	VG276600	C. CE. TUBLR 22pF 50V

* New Parts

P. C. B. FUNCTION

Schm Ref.	PART NO.	Description
C532	VG276600	C. CE. TUBLR 22pF 50V
C533	Vi845200	C. EL 4.7uF 50V
C534	Vi841200	C. EL 330uF 6.3V
C535	Vi845900	C. EL 10uF 63V
C536	VG277000	C. CE. TUBLR 33pF 50V
C537	VF466900	C. CE. TUBLR 470pF 50V
C538	VH053100	C. CE. TUBLR 0.1uF 50V
C539	Vi845000	C. EL 2.2uF 50V
C540	FU451330	C. MICA 33pF 500V
C541	Vi845600	C. EL 47uF 50V
C542	Vi845600	C. EL 47uF 50V
C543	FU451330	C. MICA 33pF 500V
C544	Vi845000	C. EL 2.2uF 50V
C545	Vi845000	C. EL 2.2uF 50V
C546	FU451330	C. MICA 33pF 500V
C547	Vi845600	C. EL 47uF 50V
C548	Vi845000	C. EL 2.2uF 50V
C549	FU451330	C. MICA 33pF 500V
C550	Vi845600	C. EL 47uF 50V
C551	Vi845600	C. EL 47uF 50V
C552	FU451330	C. MICA 33pF 500V
C553	Vi845000	C. EL 2.2uF 50V
C554	FG212100	C. CE 100pF 50V
C555	Vi845600	C. EL 47uF 50V
C556	Vi845600	C. EL 47uF 50V
C557	VG722100	C. EL 1uF 50V
C558	VH053100	C. CE. TUBLR 0.1uF 50V
C559	VH053100	C. CE. TUBLR 0.1uF 50V
C560	VH053100	C. CE. TUBLR 0.1uF 50V
C561	VH053100	C. CE. TUBLR 0.1uF 50V
C562	VF466800	C. CE. TUBLR 100pF 50V
C563	VH053100	C. CE. TUBLR 0.1uF 50V
C564	VH053100	C. CE. TUBLR 0.1uF 50V
△ *	D501	VR253700 DIODE. BRG SINB20 1.0A 200V
	D502	iF004600 DIODE 1SS133
	D503	VG440400 DIODE. ZENR MTZJ13A 13V(R)
	D504	VP593800 LED(or) SLR-305DCA47
	D505	VG439300 DIODE. ZENR MTZJ9.1C 9.1V
	D506	iF004600 DIODE 1SS133
	D507	iF004600 DIODE 1SS133
	D508	iF004600 DIODE 1SS133
	D509	iF004600 DIODE 1SS133
	D510	iF004600 DIODE 1SS133
	D511	VG435100 DIODE. ZENR MTZJ2B 2.0V
	D512	iF004600 DIODE 1SS133
	D513	VP594000 LED(re) SLR-305VCA47(G)
△	F501	KB000370 FUSE T3.5A 250V(R)
△	F501	KB000740 FUSE T1.6A 250V(BG)
△	F501	KB002630 FUSE 3.5A 250V(U)
△	F502	KB000740 FUSE T1.6A 250V(R)
△	F502	KB002980 FUSE T2.5A 250V(G)
	IC501	Xi109C00 IC MC14576BP
	IC502	iG055100 IC TC4053BP

* New Parts

Schm Ref.	PART NO.	Description
IC503	XL314A00	IC M35010-062SP
IC504	iG142200	IC TC74HCU04AP
IC505	iG001720	IC TC4069UBP
IC506	XM356A00	IC NJM2068LD
IC507	XB247301	IC uPC4570HA
IC508	XB247301	IC uPC4570HA
* IC509	XN173A00	IC M66004SP
	JK501	VP113600 CN. DIN 2P
	L501	VM703900 COIL 15uH
△ *	Q501	VR510800 TR 2SD2396 J, K(R)
	Q502	VD488500 TR. DGT DTC143XS
	Q503	iC260320 TR 2SC2603 E, F
	Q504	VD678700 TR. DGT DTC114ES
	Q505	VH964100 TR. DGT DTA143ES
	Q506	iC287820 TR 2SC2878 A, B
	Q507	iC260320 TR 2SC2603 E, F
	Q508	iC260320 TR 2SC2603 E, F
	Q509	iC260320 TR 2SC2603 E, F
	Q510	iA101521 TR 2SA1015 Y
	Q511	iC224030 TR 2SC2240 GR, BL
	Q512	iC224030 TR 2SC2240 GR, BL
	Q513	iC053540 TR 2SC535 A, B, C
	R501	HV456560 R. CAR. FP 5.6KΩ 1/4W(R)
	R502	HV456560 R. CAR. FP 5.6KΩ 1/4W(R)
	R513	HV455150 R. CAR. FP 150Ω 1/4W
	R514	HV455150 R. CAR. FP 150Ω 1/4W
	R516	HV455180 R. CAR. FP 180Ω 1/4W
	R519	HV455180 R. CAR. FP 180Ω 1/4W
	R578	HV453330 R. CAR. FP 3.3Ω 1/4W
	R579	HV453330 R. CAR. FP 3.3Ω 1/4W
△	RY501	VD506000 RELAY AC DG12D1-OM
	SW501	VG392900 SW. TACT SKHVAA
	SW502	VG392900 SW. TACT SKHVAA
	SW503	VG392900 SW. TACT SKHVAA
	SW504	VG392900 SW. TACT SKHVAA
	SW505	VG392900 SW. TACT SKHVAA
△	SW506	VA961800 VOLT. SELECT ESE-37247-F(R)
△	T501	XC115A00 TRANS. PWR (R)
△	T501	XC116A00 TRANS. PWR (U)
△	T501	XC117A00 TRANS. PWR (B)
△	T501	XK354A00 TRANS. PWR (G)
△	TE501	VL948400 OUTLET. AC (UR)
*	U501	VM626600 L. DETCT GP1U571X
*	V501	VQ905900 FL. DSPLY 17-BT-05GK
	VR501	VM929700 VR. MTR 100KYΩ x5
	XL501	VD980900 RSNR. CRYST 14.3181MHz (UR)
	XL501	VF066800 RSNR. CRYST 17.7344MHz (BG)
		BB071360 SCR. TERM 8.3x13
		VB966900 CN IMSA-6024
*		VR056300 SUPPORT
*		BB069510 GND. MTL No. 6951
		VR041400 SHEET PVC0.2

* New Parts

A

B

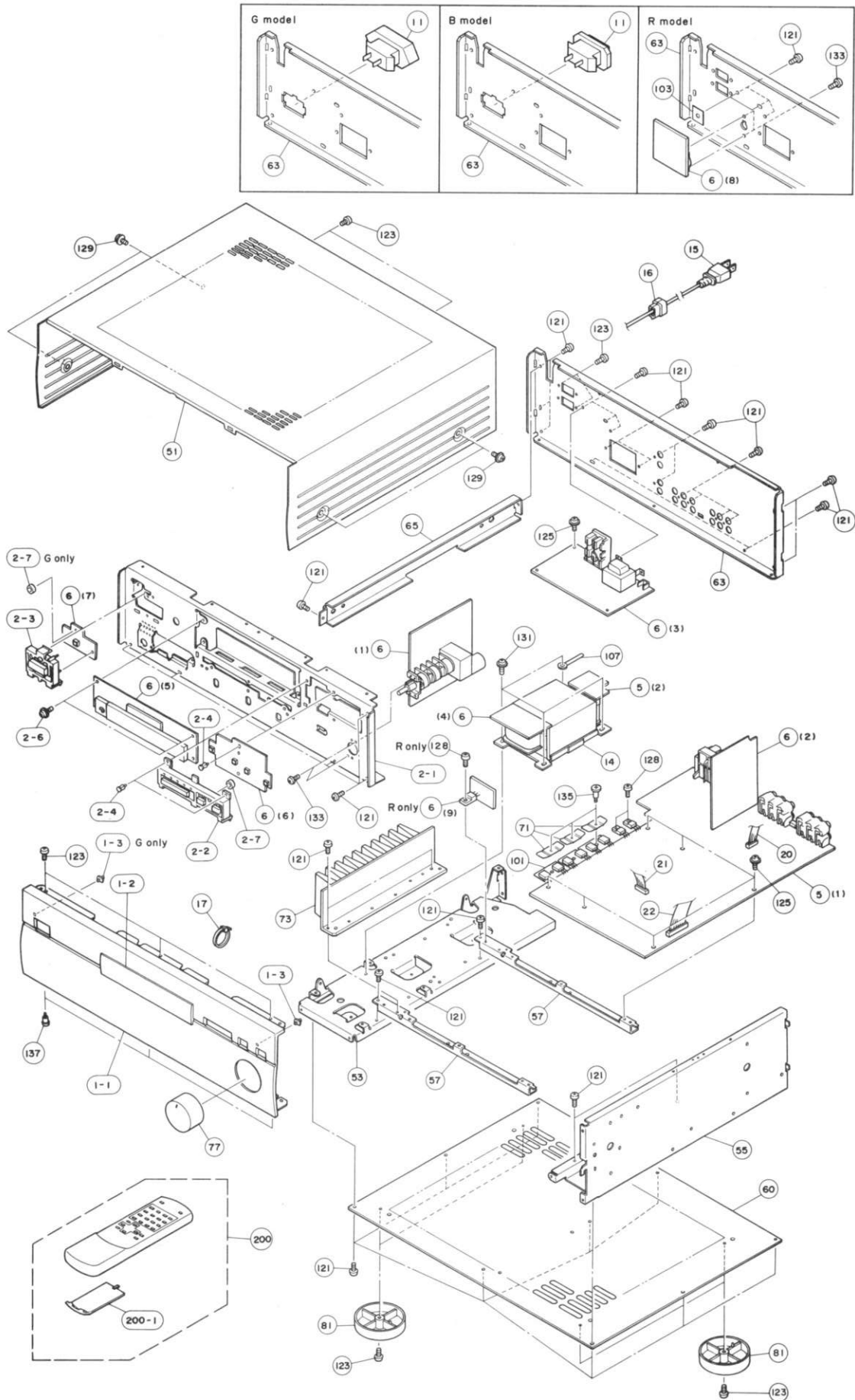
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D

E

DSP-E580

EXPLODED VIEW



MECHANICAL PARTS

Ref. No.	PART NO.	Description	Remarks	Markets
* 1- 1	VR040600	FRONT PANEL	TI	
* 1- 1	VR040700	FRONT PANEL	BL	(G)
* 1- 1	VR071200	FRONT PANEL	BL	(URB)
* 1- 2	VR041000	WINDOW PANEL		
1- 3	Vi777100	LENS		
* 2- 1	VR039800	SUB CHASSIS		
* 2- 2	VR041100	BUTTON, 4P	PROG.EFFECT BL	
* 2- 2	VR041200	BUTTON, 4P	PROG.EFFECT TI	
* 2- 3	VR056100	BUTTON	POWER BL	
* 2- 3	VR056200	BUTTON	POWER TI	
2- 4	CB605620	PLASTIC RIVET	No.1781	
2- 6	EK930010	BW HEAD TAPPING SCREW	3x8-8 FCRM3-BL	
* 2- 7	VR528400	DAMPER		
* 5	VR387000	P.C.B. ASS'Y	MAIN	(U)
* 5	VR387100	P.C.B. ASS'Y	MAIN	(R)
* 5	VR387200	P.C.B. ASS'Y	MAIN	(B)
* 5	VR387300	P.C.B. ASS'Y	MAIN	(G)
* 6	VR387500	P.C.B. ASS'Y	FUNCTION	(U)
* 6	VR387600	P.C.B. ASS'Y	FUNCTION	(R)
* 6	VR387700	P.C.B. ASS'Y	FUNCTION	(B)
* 6	VR387800	P.C.B. ASS'Y	FUNCTION	(G)
△ 11	VJ775000	AC OUTLET	2P	
△ 11	VJ775100	AC OUTLET	2P	
△ * 14	XN495A00	POWER TRANSFORMER		(U)
△ * 14	XN496A00	POWER TRANSFORMER		(R)
△ * 14	XN497A00	POWER TRANSFORMER		(B)
△ * 14	XN498A00	POWER TRANSFORMER		(G)
△ 15	VL012900	POWER CORD ASS'Y		(UC)
△ 15	VL238900	POWER CORD ASS'Y		(G)
△ 15	VN804500	POWER CORD ASS'Y		(B)
△ 15	VQ458400	POWER CORD ASS'Y		(R)
16	VN158600	CORD STOPPER	No. 2104	
17	CB069250	BINDING TIE	BK-1	
* 20	VR245100	CONNECTOR, FLAT CABLE	8P 400mm	
* 21	VR245200	CONNECTOR, FLAT CABLE	11P 320mm	
* 22	VR245300	CONNECTOR, FLAT CABLE	16P 180mm	
* 51	VR039600	TOP COVER	BL	
* 51	VR039700	TOP COVER	TI	
53	VP866300	FRAME	L	
55	VP866400	FRAME	R	
* 57	VR040400	FRAME, CENTER		
60	VP866200	BOTTOM COVER		
* 63	VR040000	REAR PANEL		(U)
* 63	VR040100	REAR PANEL		(R)
* 63	VR040200	REAR PANEL		(B)
* 63	VR040300	REAR PANEL		(G)
65	VP866700	FRAME	SIDE	
* 71	VR424000	SUPPORT	TR	
* 73	VR040900	HEAT SINK		
* 77	VQ945500	KNOB WITH LED	φ 42	VOLUME BL
* 77	VQ945700	KNOB WITH LED	φ 42	VOLUME TI
* 81	VQ780300	LEG	D60xH16	
* 101	VR041700	SHEET, RADIATOR	20x114	

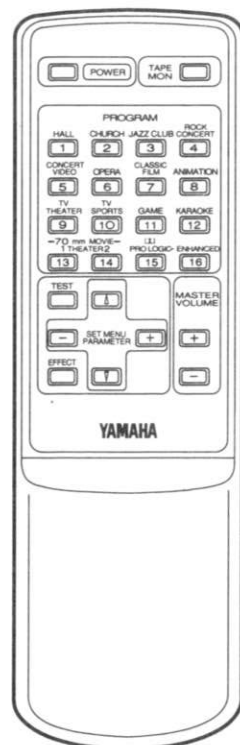
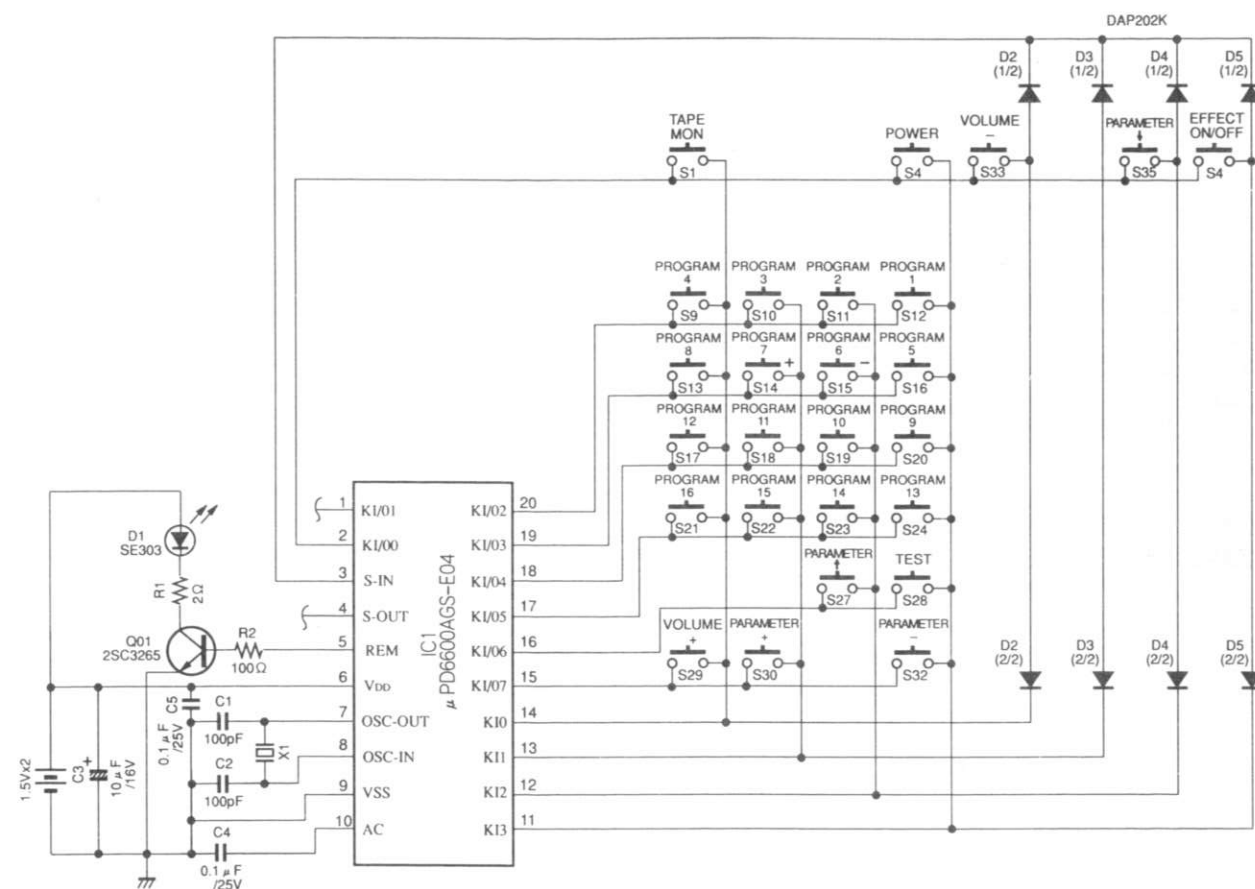
* New Parts

Ref. No.	PART NO.	Description	Remarks	Markets
103	Vi707300	DAMPER		
107	CB040540	BINDING TIE	S-72B	
121	EN301010	BIND HEAD BONDING TAP. SCREW	3x8 FCRM3-BL	
123	Ei330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL	
125	EK930010	BW HEAD TAPPING SCREW	3x8-8 FCRM3-BL	
128	VK697600	BIND HEAD B-TITE SCREW	3x10 SP ZMC2-Y	
129	EL300470	BW HEAD S-TITE SCREW	4x8-10 FCRM3-BL	BL
129	EX601150	BW HEAD S-TITE SCREW	4x8-10 FNM3-BL	TI
131	EL300470	BW HEAD S-TITE SCREW	4x8-10 FCRM3-BL	
133	ED330066	BIND HEAD SCREW	3x6 FCRM3-BL	
* 135	VR428100	SPECIAL SCREW	3B-8	
* 137	VR602100	SPECIAL SCREW	3B-8	
		ACCESSORIES		
* 200	VR112700	REMOTE CONTROL TRANSMITTER		(7D)
200-1	CX675300	LID	70x31BLSMK	103RRS-028-01MR
* 200-1	VR382500	PIN-PLUG CORD	1P 1.0m	
	VG718700	PIN-PLUG CORD	2P 1.0m	
		BATTERY, MANGANESE	SUM-3, AA, R06	

* New Parts

REMOTE CONTROL TRANSMITTER

■ SCHEMATIC DIAGRAM



KEY No.	FUNCTION	HEX	
		CUSTOM	DATA
1	TAPE MON	7D	8C
4	POWER	7D	8F
9	PROGRAM 4	7D	D3
10	PROGRAM 3	7D	D2
11	PROGRAM 2	7D	D1
12	PROGRAM 1	7D	D0
13	PROGRAM 8	7D	D7
14	PROGRAM 7	7D	D6
15	PROGRAM 6	7D	D5
16	PROGRAM 5	7D	D4
17	PROGRAM 12	7D	DB
18	PROGRAM 11	7D	DA
19	PROGRAM 10	7D	D9

KEY No.	FUNCTION	HEX	
		CUSTOM	DATA
20	PROGRAM 9	7D	D8
21	PROGRAM 16	7D	DF
22	PROGRAM 15	7D	DE
23	PROGRAM 14	7D	DD
24	PROGRAM 13	7D	DC
27	PARAMETER ↑	7D	C5
28	TEST	7D	CA
29	VOLUME +	7D	8D
30	PARAMETER +	7D	C6
32	PARAMETER -	7D	C7
33	VOLUME -	7D	8E
35	PARAMETER ↓	7D	C4
36	EFFECT ON/OFF	7D	C1

Parts List for Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	10 kΩ	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	*	11 kΩ	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 kΩ	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 kΩ	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 kΩ	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 kΩ	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 kΩ	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 kΩ	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 kΩ	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 kΩ	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 kΩ	HF45 7330	HF45 7330
39 Ω	HJ35 4470	HF85 4390	36 kΩ	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 kΩ	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 kΩ	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 kΩ	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 kΩ	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 kΩ	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 kΩ	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 kΩ	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 kΩ	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 kΩ	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 kΩ	HF45 8110	HF45 8110
160 Ω	HJ35 5160	*	120 kΩ	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 kΩ	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 kΩ	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 kΩ	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 kΩ	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 kΩ	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 kΩ	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 kΩ	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 kΩ	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 kΩ	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 kΩ	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 kΩ	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 MΩ	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 MΩ	HJ35 9120	*
1.0 kΩ	HF45 6100	HF45 6100	1.5 MΩ	HJ35 9150	HF85 9150
1.2 kΩ	HF45 6120	HF45 6120	1.8 MΩ	HJ35 9180	HF85 9180
1.5 kΩ	HF45 6150	HF45 6150	2.2 MΩ	HJ35 9220	HF85 9220
1.8 kΩ	HF45 6180	HF45 6180	3.3 MΩ	HJ35 9330	HF85 9330
2.0 kΩ	HJ35 6200	HF85 6200	3.9 MΩ	HJ35 9390	*
2.2 kΩ	HF45 6220	HF45 6220	4.7 MΩ	HJ35 9470	HF85 9470
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270			
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910			

