

AV AMPLIFIER

DSP-A492

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.

■ CONTENTS

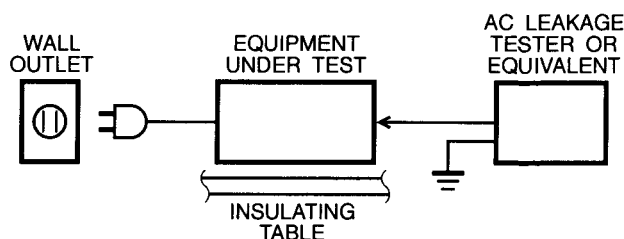
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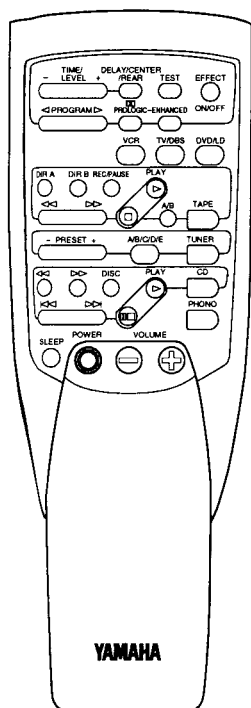
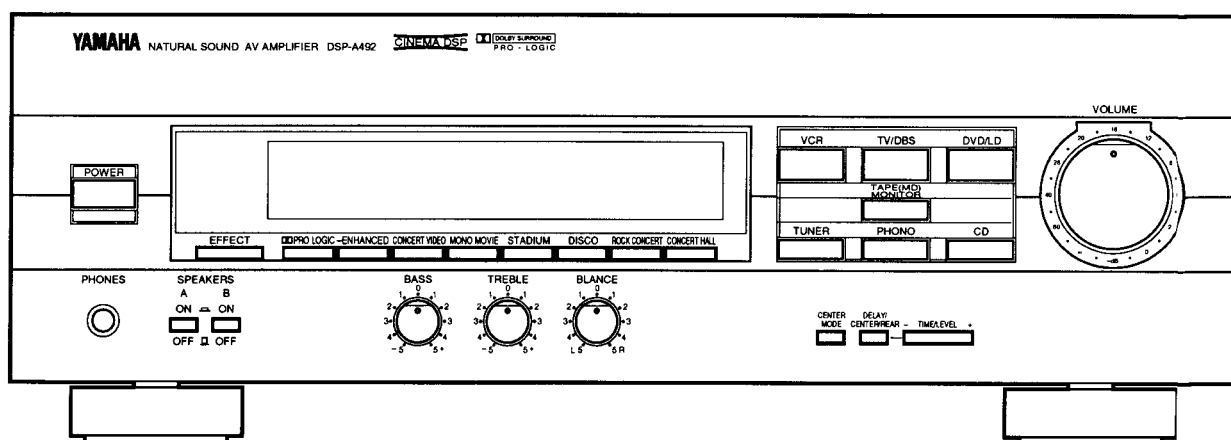
TO SERVICE PERSONNEL

Critical Components Information.

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

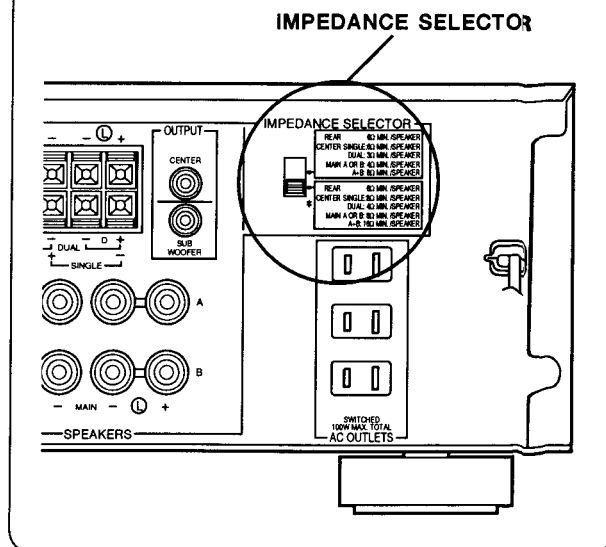


FRONT PANEL



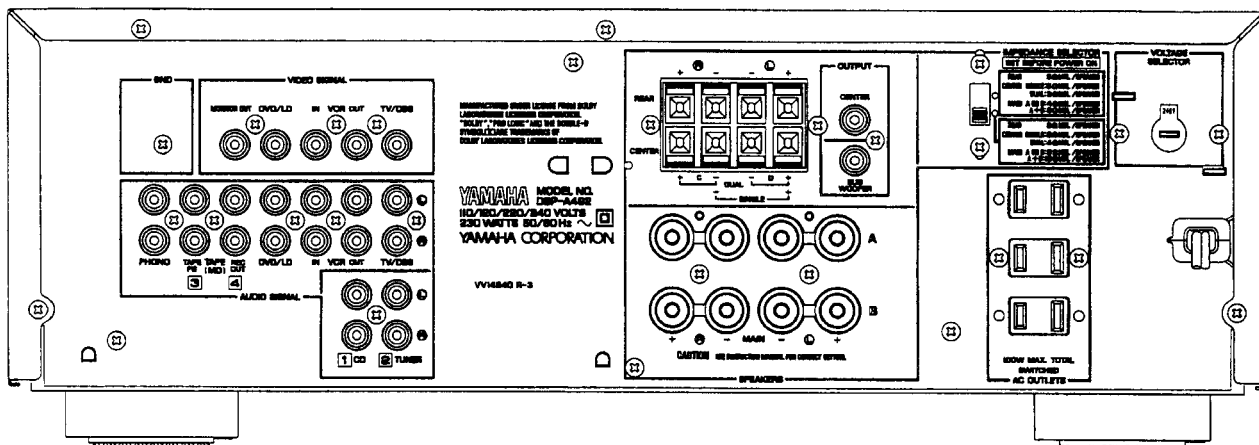
WARNING

Do not change the IMPEDANCE SELECTOR switch setting while the power to this unit is on, otherwise this unit may be damaged.

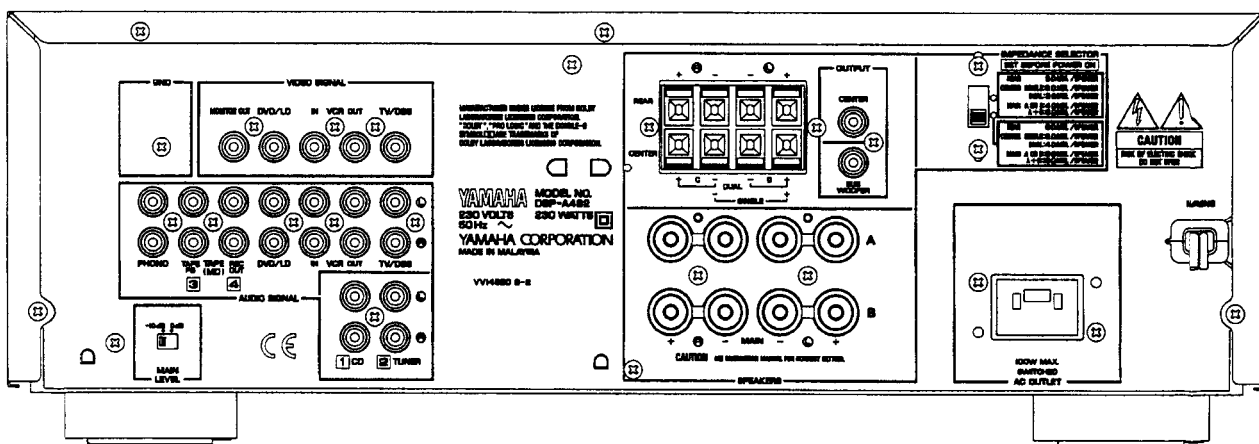


REAR PANELS

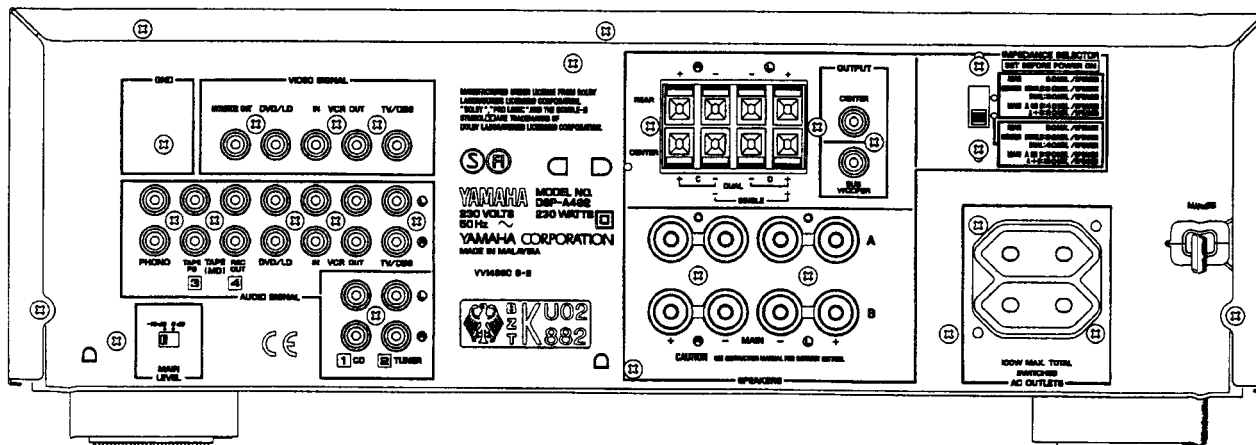
▼ R model



▼ B model



▼ G model



DSP-A492

SPECIFICATIONS

Minimum RMS Output Power Per Channel	
MAIN (20Hz—20kHz, 0.04% THD, 8Ω)	65W
CENTER (1kHz, 0.09% THD, 8Ω)	65W
REAR (1kHz, 0.7% THD, 8Ω)	20W
Maximum Power (R model)	
MAIN/CENTER (1kHz, 10% THD, 8Ω)	100W
REAR (1kHz, 10% THD, 8Ω)	30W
Dynamic Power Per Channel (by IHF Dynamic Headroom Measuring Method)	
MAIN (8Ω/6Ω/4Ω/2Ω)	95W/115W/145W/165W
DIN Standard Output Power Per Channel (G model)	
MAIN (1kHz, 0.7% THD, 4Ω)	95W
IEC Power (G model)	
MAIN (1kHz, 0.1% THD, 8Ω)	80W
Power Band Width	
MAIN (0.1% THD, 30W/8Ω)	10Hz—50kHz
Damping Factor	
MAIN (20Hz—20kHz, 8Ω)	80
Input Sensitivity/Impedance	
PHONO (MM)	2.5mV/47kΩ
CD, etc	150mV/47kΩ
Maximum Input Signal (1kHz, 0.5% THD)	
PHONO (MM)	100mV
CD, etc (Effect off)	2.5V
Output Level/Impedance (Effect off)	
REC OUT	150mV/2.5kΩ
SUB WOOFER	3.5V/1kΩ
Headphone Jack Rated Output/Impedance	
0.04% THD, 8Ω	0.45V/330Ω
Frequency Response (20Hz—20kHz)	
CD, etc.	0±0.5dB
RIAA Equalization Deviation (20Hz—20kHz)	
PHONO (MM)	0±0.5dB
Total Harmonic Distortion (20Hz—20kHz)	
PHONO (MM) to REC OUT 1V	0.02%
CD, etc. to MAIN SP out, 30W/8Ω (Effect off)	0.03%
Signal-to-Noise Ratio (IHF-A-Network)	
PHONO (MM), 5mV Input Shorted	80dB
CD, etc, Input Shorted	93dB
Residual Noise (IHF-A-Network)	
MAIN L, R SP out	140μV
Channel Separation (Vol -30dB, Effect off)	
PHONO (MM), Input Shorted, 1kHz	60dB
CD, etc, Input 5.1kΩ Shorted, 1kHz	60dB
Tone Control Characteristics	
Bass Boost/Cut	±10dB (50Hz)
Turnover frequency	350Hz
Treble Boost/Cut	±10dB (20kHz)
Turnover frequency	3.5kHz
Gain Tracking Error (0dB to -60dB)	
	3dB

Video

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

Power Supply

B, G models	AC230V 50Hz
R model	AC110/120/220/240V 60/50Hz

Power Consumption

230W

AC Outlets

3 Switched Outlets (R model)	100W max. total
2 Switched Outlets (G model)	100W max. total
1 Switched Outlet (B model)	100W max.

Dimensions (W x H x D)

435 x 151 x 299.5mm
(17-1/8" x 5-15/16" x 11-13/16")

Weight

8.7kg (19 lbs. 3 oz)

*Specifications are subject to change without notice.

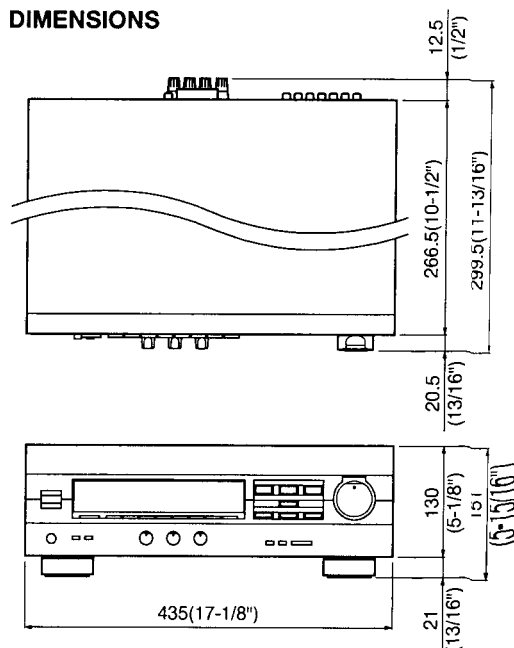
B British model

G European model

R General model

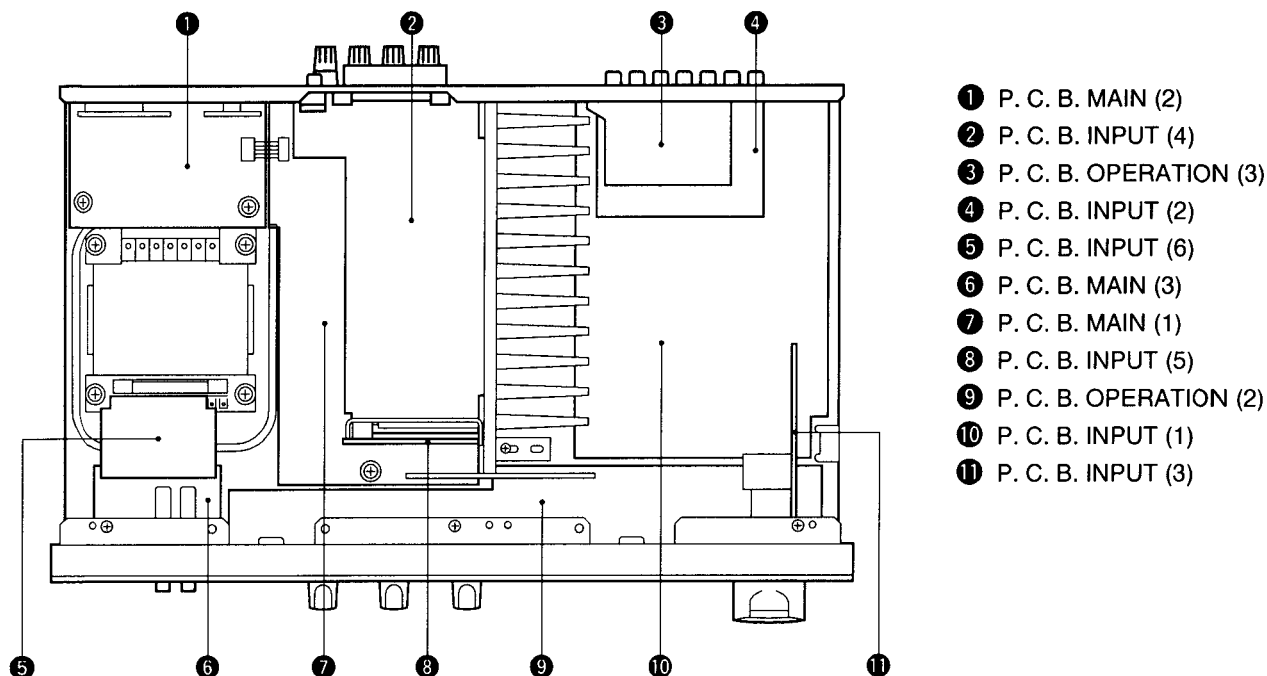
Manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby", "Pro Logic", and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

DIMENSIONS



Unit : mm (inch)

■ INTERNAL VIEW



■ DISASSEMBLY PROCEDURES (Remove parts in disassembly order as numbered.)

1. Removal of Top Cover

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

2. Removal of Front Panel

- a. Remove the knobs.
 b. Remove 6 screws (③) in Fig. 1.

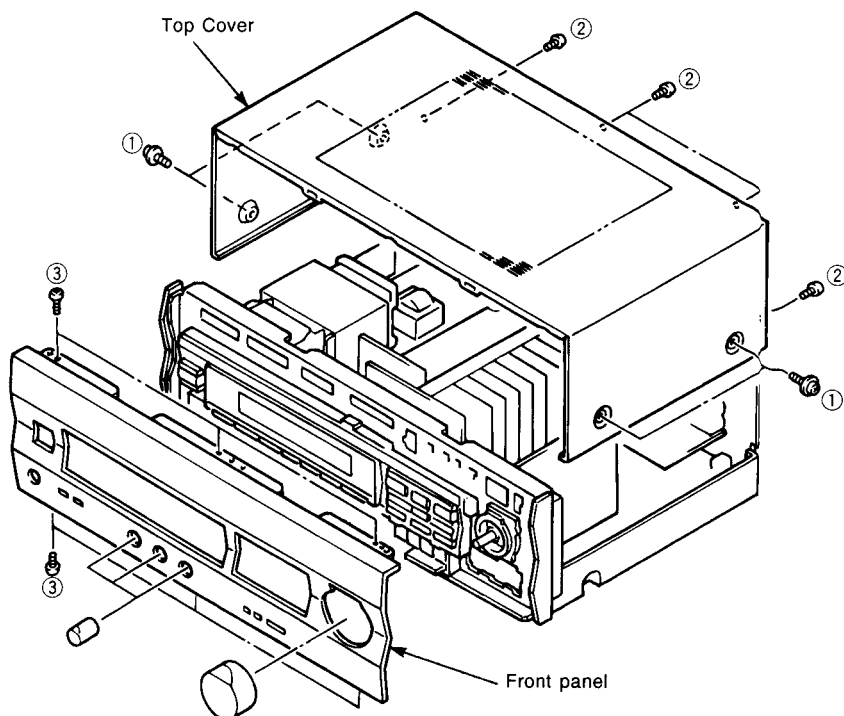


Fig. 1

3. Checking and Parts Replacement of Main Unit

- Disconnect the power cord from the AC outlet.
- Remove 2 screws (④) and 1 screw (⑤) in Fig. 2.
- Detach 1 connector terminal (CB103) in Fig. 2.
- Operating checks can be taken by shorting between following test points in Fig. 2.

Short Point
TP101 and TP102
TP103 and TP104
TP105 and TP106

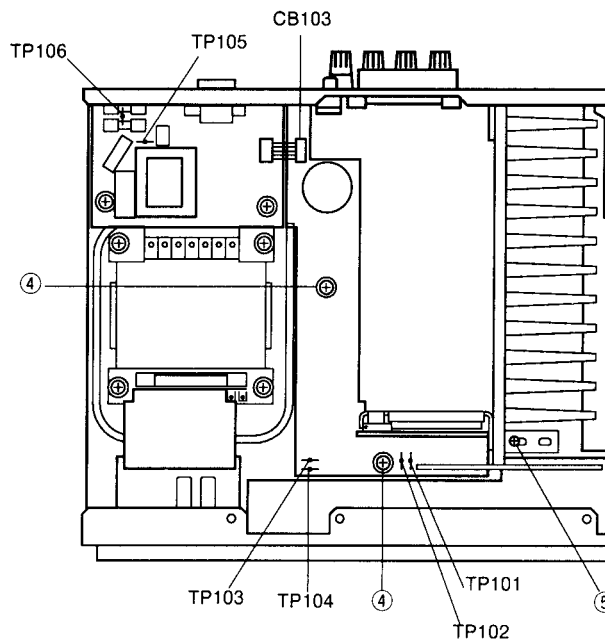


Fig. 2

- Remove 8 screws (⑥), 2 screws (⑦) and 2 screws (⑧) in Fig. 3.
- Place the Main Unit on its side as shown in Fig. 4.
- Connect the power cord and turn ON the POWER switch.

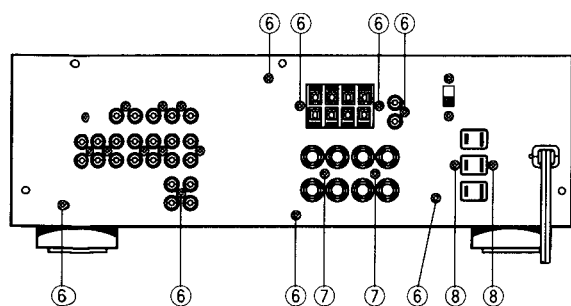


Fig. 3

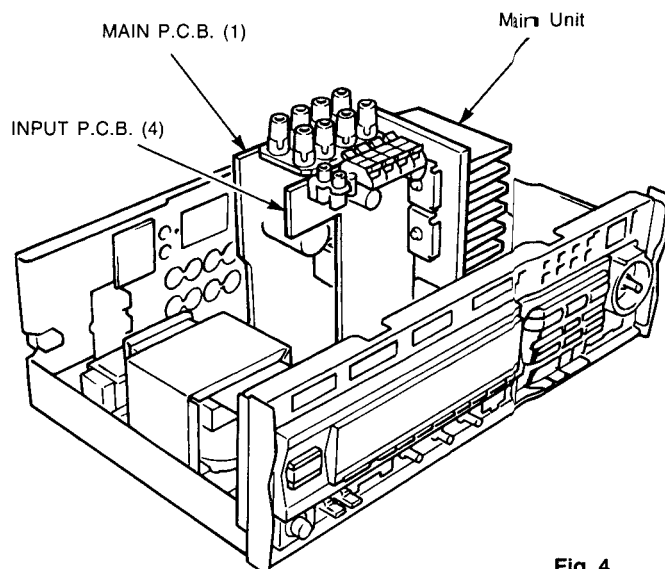


Fig. 4

■ SELF CHECK MODE (SELF)

This machine has the SELF CHECK MODE (SELF) for facilitating inspection and measurement.

HOW TO START & CANCEL

Turn the POWER switch ON while pressing the DVD/LD and CONCERT HALL keys simultaneously, and then the unit enters the SELF CHECK MODE (SELF). FL displays "SELF 1" first.

(The INPUT is CD.)

If the sound field program key of the main unit is pressed, the mode is set to the CHECK mode of that number. It is possible to select the INPUT even during the self check (except for SELF 8). To cancel the SELF CHECK MODE, turn the POWER switch OFF or press the CONCERT HALL key. (The unit enters the normal mode.)

CONTENTS OF SELF CHECK MODE

No.	Menu	Select Key
1	RAM THROUGH A	PRO LOGIC
2	RAM THROUGH B	ENHANCED
3	RAM THROUGH C	CONCERT VIDEO
4	EFFECT OFF/DISCO/FL ALL ON	MONO MOVIE
5	MANUAL TEST	STADIUM
6	DOLBY PRO LOGIC	DISCO
7	MAKER PRESET	ROCK CONCERT
8	EXIT	CONCERT HALL

HOW TO USE SELF CHECK MODE

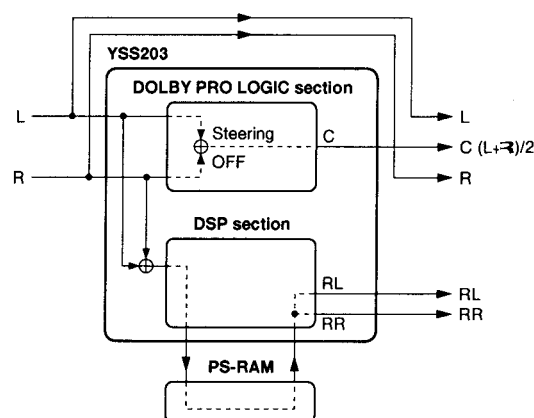
In order to confirm characteristics (specifications) listed in the table below, use SELF NO. 1, 3 and 4. (For specifications, refer to page 3.)

No.	Items
1	- Output Level/Impedance - Frequency Response - Total Harmonic Distortion (Rec Out & MAIN) - S/N
3	- Minimum RMS Output Power Per Channel (Center & Rear) - Total Harmonic Distortion (Rear)
4	- Minimum RMS Output Power Per Channel (MAIN) - Input Sensitivity/Impedance - Headphone Jack Rated Output/Impedance - Channel Separation - Tone Control Characteristics

DETAILS OF SELF CONTENT

SELF 1 RAM THROUGH A

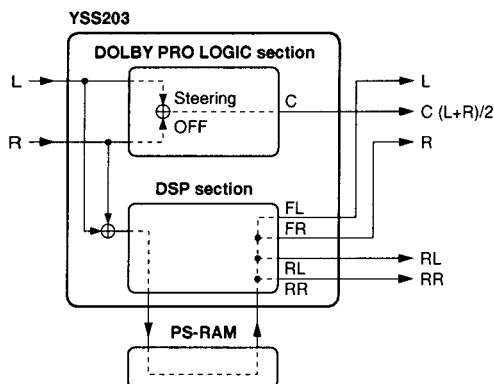
- MAIN L/R is output through the bypass.
- CENTER is output with the steering OFF and by $(L+R)/2$. (WIDE mode)
- RL/RR passes through the PS-RAM and is output through the DSP.
- The electronic volume (for CENTER/REAR) is -10dB.
- FL displays "SELF 1"



CD INPUT	: 1kHz, -20dB
VOLUME	: MAX
SP OUT	: MAIN +22.0dBV±1dB
	: CENTER +24.7dBV±1dB
	: REAR +24.6dBV±1dB

SELF 2 RAM THROUGH B

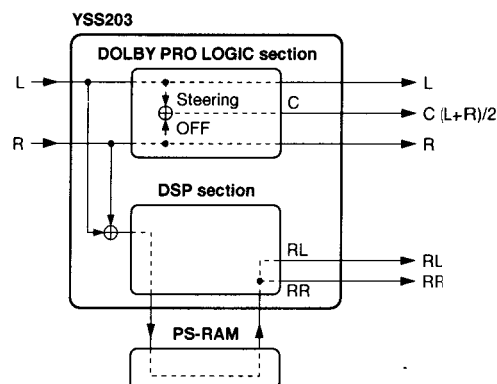
- L/R and RL/RR pass through the PS-RAM and are output through the DSP.
- CENTER is output with the steering OFF and by $(L+R)/2$. (WIDE mode)
- The electronic volume (for CENTER/REAR) is -10dB.
- FL displays "SELF 2"



CD INPUT : 1kHz, -20dB
 VOLUME : MAX
 SP OUT : MAIN +21.8dBV±1dB
 : CENTER -14.9dBV±1dB
 : REAR +14.8dBV±1dB

SELF 3 RAM THROUGH C

- L/R is output with the steering OFF.
- CENTER is output with the steering OFF and by $(L+R)/2$. (WIDE mode)
- RL/RR passes through the PS-RAM and is output through the DSP.
- The electronic volume is +10dB for CENTER and +4dB for REAR.
- FL displays "SELF 3"



CD INPUT : 1kHz, -35dB
 VOLUME : MAX
 SP OUT : MAIN +7.5dBV±1dB
 : CENTER +19.3dBV±1dB
 : REAR +19.6dBV±1dB

SELF 4 EFFECT OFF/DISCO/FL ALL ON

- Every time the MONO MOVIE key is pressed, the menu changes.
- 1: EFFECT OFF
 - 2: DISCO (electronic volume is 0dB.)
 - 3: FL displays all ON

SELF 5 MANUAL TEST

- Every time STADIUM key is pressed, the TEST TONE shifts in the order of $L \rightarrow C \rightarrow R \rightarrow S$ and is output. (The CENTER mode is WIDE)
- The electronic volume (for CENTER/REAR) is 0dB.

SELF 6 DOLBY PRO LOGIC

- The auto input balance which is ON in the normal mode is turned OFF.
- CENTER MODE is changed by pressing the DISCO key or the CENTER MODE key.
- The electronic volume (for CENTER/REAR) is 0dB.
- The FL displays "SELF 6" and the center mode.

CD INPUT : 1kHz, -20dB
 VOLUME : MAX
 SP OUT : MAIN +5.8dBV±1dB
 : CENTER +14.9dBV±1dB
 : REAR -13.0dBV±1dB

SELF 7 MAKER PRESET

- Every time the ROCK CONCERT key is pressed, the mode changes between the KEEP DATA and PRESET modes. Turning OFF the power in the "PRESET" mode will restore the FACTORY PRESET mode.

● **Factory Preset**1) **SURROUND section**

DELAY TIME : ☐ PRO LOGIC 20ms
 : ☐ ENHANCED 20ms
 : ☐ CONCERT VIDEO 28ms
 : ☐ MONO MOVIE 20ms
 : ☐ STADIUM 45ms
 : ☐ DISCO 14ms
 : ☐ ROCK CONCERT 17ms
 : ☐ CONCERT HALL 30ms

CENTER MODE : NORMAL
 VOLUME LEVEL : CENTER 0dB
 : REAR 0dB

2) **SELECTOR section**

INPUT : CD
 VIDEO (BGV) : DVD/LD

SELF 8 EXIT

- "MODEL" is displayed first.
 When the CONCERT HALL key is pressed again, the unit will exit the SELF CHECK mode and enters the NORMAL mode.

PROTECTION OPERATION CHECK FUNCTION

1. Turn the POWER switch ON while pressing the TUNER and CONCERT HALL keys simultaneously, and the protection operation mode and the microprocessor AD input value are displayed for 3 seconds.

Example : PRT-DC [AD value]
 PRT-I

[PRT-DC] indicates detection of an abnormal DC value from the amplifier.

[PRT-I] indicates detection of an abnormal overcurrent from the amplifier.

[PRT-NON] indicates no detection.

When the CONCERT HALL key is pressed during the above display, the input data are retained till they are cleared.
 ("PRT-NON" appears on display when the data are cleared.)

2. Turn the POWER switch ON while pressing the TUNER and the ROCK CONCERT keys simultaneously, and the input value for detection of an abnormal amplifier DC will be displayed.

Example : P - [01] D - [AD value]

[P- 01] is meaningless and therefore should be ignored.

[DC-] indicates detection of an abnormal amplifier DC.

Type of protection	Normal (AD value)	Abnormal (AD value)
Detection of an abnormal amplifier DC	128 - 255	0 - 127

Press any key, and the display will be cancelled.

ADJUSTMENTS

Confirmation of Idling Current

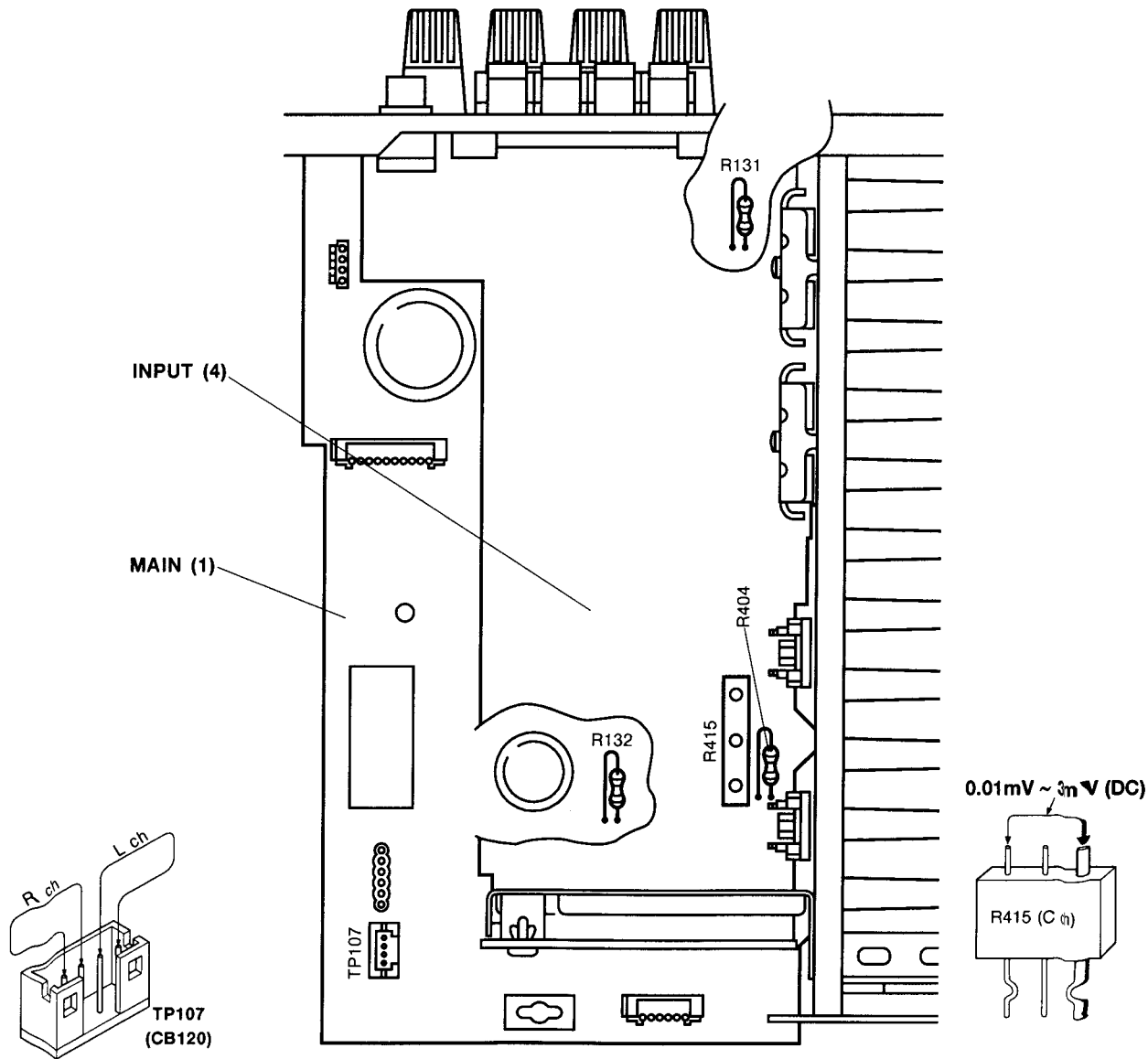
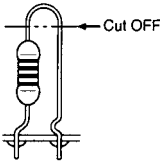
- 1) No signal applied.
- 2) Non-loaded condition.
- 3) Aging is not necessary.

Item	Test Point	Rating (DC)	Note
MAIN L	TP107 (CB120)	0.05mV~2.5mV	If the measured voltage exceeds 2.6mV, cut the lead wires of R131(L ch) and R132(R ch) and then check again if each measured value satisfies the rating.
MAIN R			
CENTER	R415 (Between terminal)	0.01mV~3mV	If the measured voltage exceeds 3.1mV, cut the lead wires of R404(C ch) and then check again if each measured value satisfies the rating.

Note)

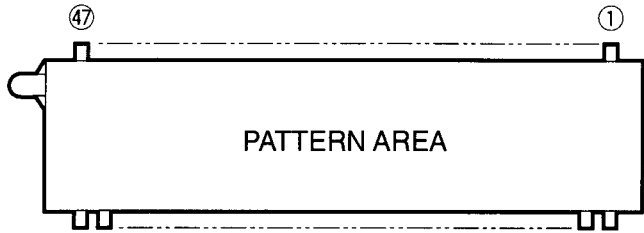
- If R131(L ch), R132(R ch) or R404(C ch) have already been cut off and idling current does not flow, reconnect R131(1kΩ), R132(1kΩ) or R404(8.2kΩ).
- Q107, Q108 and Q320 are transistors for temperature correction. Apply silicone grease to the contact surface with the heat sink.

R131 (L ch)
R132 (R ch)
R404 (C ch)



■ DISPLAY DATA

● V1 : 13-BT-151GK (VV298800)



● PIN CONNECTION

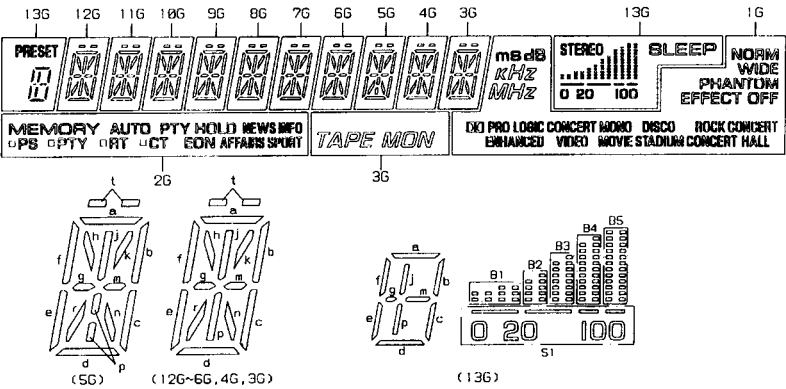
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
CONNECTION	F1	F1	NP	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	NC

PIN NO.	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
CONNECTION	NC	NC	NC	NC	NC	NC	NC	NC	NC	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G

PIN NO.	43	44	45	46	47
CONNECTION	1G	NP	NP	F2	F2

NOTE 1) F1, F2 Filament
2) NP No pin
3) NC No connection
4) P1~P16 ... Datum Line
5) 1G~13G .. Grid

● GRID ASSIGNMENT



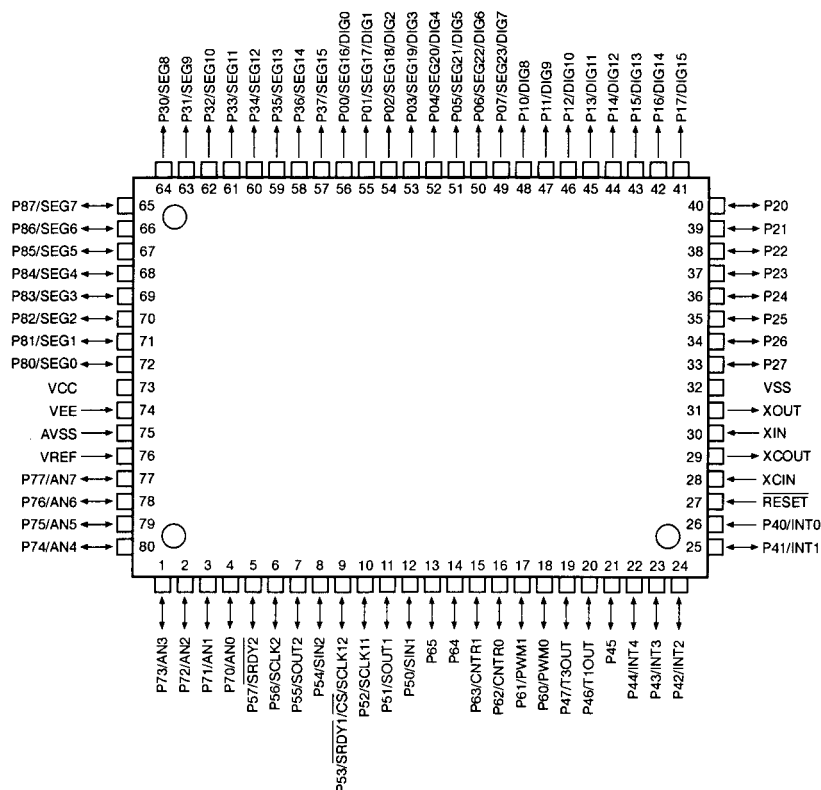
● ANODE CONNECTION

	13G	12G~4G	3G	2G	1G
P1	a	a	a	MEMORY	NORM
P2	b, c	b	b	AUTO	WIDE
P3	d	c	c	PTY HOLD	PHANTOM
P4	e, f	d	d	SPORT	EFFECT OFF
P5	g	e	e	AFFAIRS	ROCK CONCERT
P6	j, p	f	f	INFO	CONCERT HALL
P7	m	g	g	NEWS	DISCO
P8	PRESET	h	h	EON	STADIUM
P9	STEREO	j	j	CT	MONO MOVIE
P10	B1	k	k	□ (CT)	CONCERT VIDEO
P11	B2	m	m	RT	DI PRO LOGIC
P12	B3	n	n	□ (RT)	ENHANCED
P13	B4	p	p	PTY	dB
P14	B5	r	r	□ (PTY)	ms
P15	S1	t	t	PS	KHz
P16	SLEEP	-	TAPE MON	□ (PS)	MHz

IC DATA

IC4 : M38172M4-192FP

8 bit μ -COM



Pin No.	Port	I/O	Function
1	P73	I	KEY AD IN 1 (A-D)
2	P72	I	METER IN (OPEN) (A-D)
3	P71	I	PROTECTION 1 DETECT (not used) (GND)
4	P70	I	PROTECTION 2 DETECT (A-D)
5	P57	I	PROTECTION 3 DETECT
6	P56	O	SCLK 2
7	P55	O	SOUT 2
8	P54	I	DO IN for tuner (OPEN)
9	P53	O	Main L/R mute [L : ON]
10	P52	I	SCLK IN RDS (OPEN)
11	P51	I/O	V2 market / RES OUT RDS
12	P50	I/O	V1 market / SDATA IN RDS
13	P65	I	RDS SELECT IN [H : RDS]
14	P64	I	DSP-A SELECT IN [H : DSPA]
15	P63	I	492 SELECT IN [H : 492]
16	P62	I	V392 SELECT IN [H : V392]
17	P61	O	Center mute [L : ON]
18	P60	O	Rear mute [L : ON]
19	P47	O	CETUN for tuner (OPEN)
20	P46	O	TMUTE for tuner (OPEN) [L : ON]
21	P45	I/O	Standby = Pull up [L : LED ON]
22	P44	I	/ST for tuner (OPEN) [L : STEREO]
23	P43	I	Power switch in [H : ON]
24	P42	I	Power down detect [L : DOWN]
25	P41	I	REMOTE CONTROL IN (INT1)
26	P40	I	START IN RDS (OPEN) (INT0)
27	RES		RESET

Pin No.	Port	I/O	Function
28	XCIN		GND
29	XCOUT		OPEN
30	XIN		6.3 MHz IN (CLOCK)
31	XOUT		6.3 MHz OUT (CLOCK)
32	VSS		GND
33	P27	O	VIDEO SELECTOR A (VSEL1)
34	P26	O	VIDEO SELECTOR B (VSEL2)
35	P25	O	NOT VCR SELECT (OPEN) [H : VCR]
36	P24	O	CE VR
37	P23	O	CE SEL
38	P22	O	CE DSP
39	P21	O	VOL UP OUT
40	P20	O	VOL DOWN OUT
41	P17	O	DSP SERIAL SELECT [H : DSP]
42	P16	O	POWER RELAY OUT [H : ON]
43	P15	O	SPEAKER RELAY OUT (MAIN) [H : ON]
44	P14	O	FL DIGIT 1 [H : ON]
45	P13	O	FL DIGIT 2 [H : ON]
46	P12	O	FL DIGIT 3 [H : ON]
47	P11	O	FL DIGIT 4 [H : ON]
48	P10	O	FL DIGIT 5 [H : ON]
49	P07	O	FL DIGIT 6 [H : ON]
50	P06	O	FL DIGIT 7 [H : ON]
51	P05	O	FL DIGIT 8 [H : ON]
52	P04	O	FL DIGIT 9 [H : ON]
53	P03	O	FL DIGIT 10 [H : ON]
54	P02	O	FL DIGIT 11 [H : ON]
55	P01	O	FL DIGIT 12 [H : ON]
56	P00	O	FL DIGIT 13 [H : ON]
57	P37	O	FL SEGMENT 16 [H : ON]
58	P36	O	FL SEGMENT 15 [H : ON]
59	P35	O	FL SEGMENT 14 [H : ON]
60	P34	O	FL SEGMENT 13 [H : ON]
61	P33	O	FL SEGMENT 12 [H : ON]
62	P32	O	FL SEGMENT 11 [H : ON]
63	P31	O	FL SEGMENT 10 [H : ON]
64	P30	O	FL SEGMENT 9 [H : ON]
65	P87	O	FL SEGMENT 8 [H : ON]
66	P86	O	FL SEGMENT 6 [H : ON]
67	P85	O	FL SEGMENT 5 [H : ON]
68	P84	O	FL SEGMENT 4 [H : ON]
69	P83	O	FL SEGMENT 3 [H : ON]
70	P82	O	FL SEGMENT 2 [H : ON]
71	P81	O	FL SEGMENT 1 [H : ON]
72	P80	O	FL SEGMENT 0 [H : ON]
73	VCC		+5V
74	VEE		-21V
75	AVSS		GND
76	VREF		A-D REFERENCE VOLTAGE IN (+5V)
77	P77	I	KEY AD IN 5 (A-D)
78	P76	I	KEY AD IN 4 (A-D)
79	P75	I	KEY AD IN 3 (A-D)
80	P74	I	KEY AD IN 2 (A-D)

Protection 2 (4 pin)

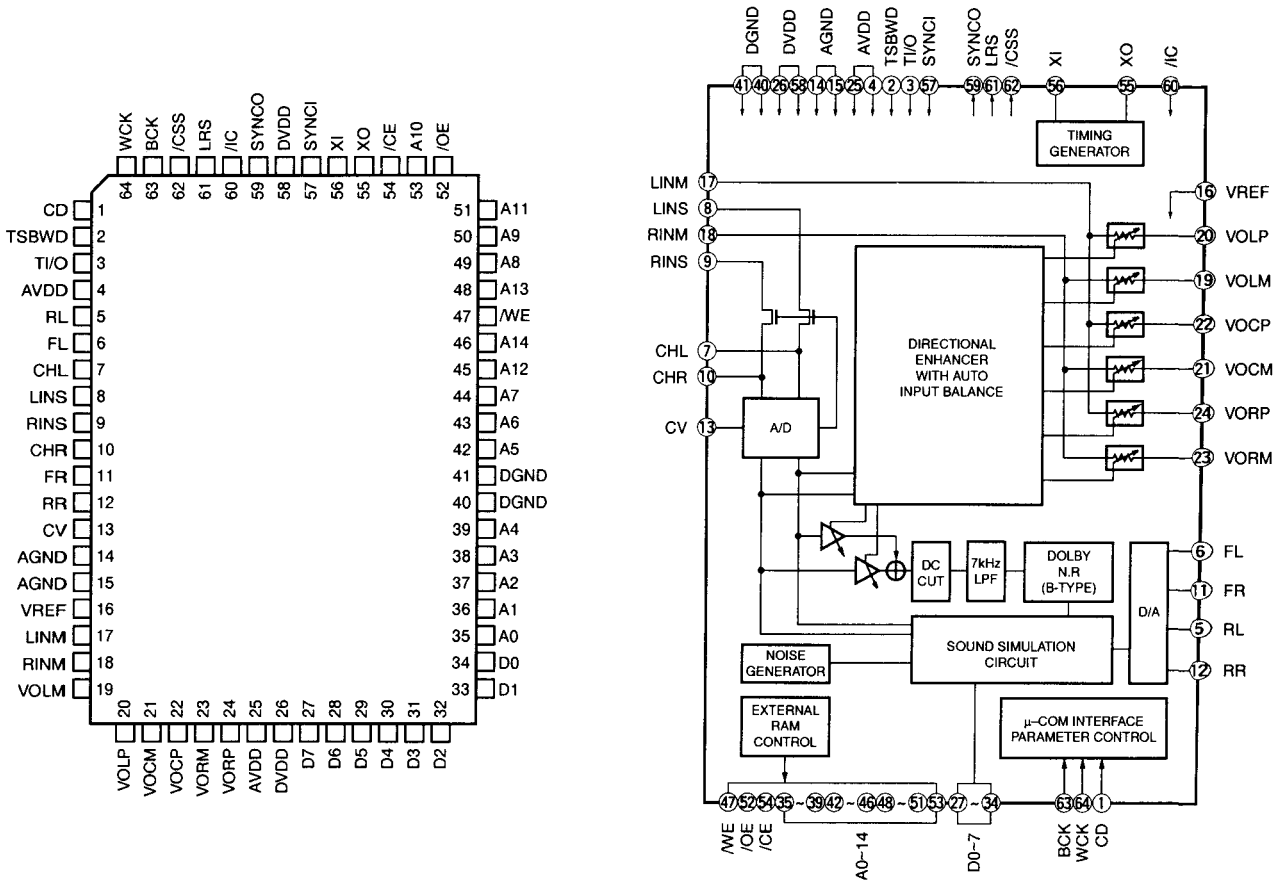
Detection of an abnormal amplifier DC. Normal when AD value (128 - 255)/256.
Detection starts 2 seconds after the power is turned ON.

Protection 3 (5 pin)

Detection of an abnormal amplifier overcurrent. Abnormality detected at H.
Detection starts after the power is turned ON.

DSP-A492

IC16 : YSS203B
Digital Dolby Pro Logic Decoder with Auto Input Balance



No.	Name	I/O	Function
1	CD	Its	Serial data of parameter data input
2	TSBWD	Ic	LSI test terminal Normally connected to DVDD terminal
3	TI/O	Ic	LSI test terminal Normally connected to DVDD terminal
4	AVDD	A—	+5V power supply (D/A, A/D section)
5	RL	AO	RL channel D/A output
6	FL	AO	FL channel D/A output
7	CHL	A—	LINS input Sample/hold Capacitor external terminal
8	LINS	AI	L channel A/D input
9	RINS	AI	R channel A/D input
10	CHR	A—	RINS input Sample/hold Capacitor external terminal
11	FR	AO	FR channel D/A output
12	RR	AO	RR channel D/A output
13	CV	AO	A/D, multiplying DAC center voltage
14	AGND	A—	Ground (D/A, A/D section)
15	AGND	A—	Ground (Multiplying DAC section)
16	VREF	AI	Multiplying DAC reference voltage input
17	LINM	AI	L channel Multiplying DAC input
18	RINM	AI	R channel Multiplying DAC input
19	VOLM	AO	L channel operation amplifier, connected to (–) terminal
20	VOLP	AO	L channel operation amplifier, connected to (+) terminal

No.	Name	I/O	Function
21	VOCM	AO	C channel operation amplifier, connected to (–) terminal
22	VOCP	AO	C channel operation amplifier, connected to (+) terminal
23	VORM	AO	R channel operation amplifier, connected to (–) terminal
24	VORP	AO	R channel operation amplifier, connected to (+) terminal
25	AVDD	A—	+5V power supply (multiplying DAC section)
26	DVDD	—	+5V power supply (digital section)
27	D7	I/Ot	External delay RAM data terminal
28	D6	I/Ot	External delay RAM data terminal
29	D5	I/Ot	External delay RAM data terminal
30	D4	I/Ot	External delay RAM data terminal
31	D3	I/Ot	External delay RAM data terminal
32	D2	I/Ot	External delay RAM data terminal
33	D1	I/Ot	External delay RAM data terminal
34	D0	I/Ot	External delay RAM data terminal
35	A0	O	External data RAM address terminal
36	A1	O	External data RAM address terminal
37	A2	O	External data RAM address terminal
38	A3	O	External data RAM address terminal
39	A4	O	External data RAM address terminal
40	DGND	—	Ground (digital section)
41	DGND	—	Ground (digital section)
42	A5	O	External data RAM address terminal
43	A6	O	External data RAM address terminal
44	A7	O	External data RAM address terminal
45	A12	O	External data RAM address terminal
46	A14	O	External data RAM address terminal
47	/WE	O	External delay RAM write enable terminal
48	A13	O	External delay RAM address terminal
49	A8	O	External delay RAM address terminal
50	A9	O	External delay RAM address terminal
51	A11	O	External delay RAM address terminal
52	/OE	O	External delay RAM output enable terminal
53	A10	O	External delay RAM address terminal
54	/CE	O	External delay RAM chip enable terminal
55	XO	O	Crystal oscillator connecting terminal
56	XI	I	Crystal oscillator connecting terminal
57	SYNCl	It	Test terminal for system synchronization, normally connected to DVDD
58	DVDD	—	+5V power supply (digital section)
59	SYNCO	O	Test terminal for system synchronization, normally unconnected
60	/IC	Ics	Initial clear terminal (Power ON resetting is necessary)
61	LRS	O	External automatic input balance terminal, normally unconnected
62	/CSS	O	External automatic input balance terminal, normally unconnected
63	BCK	I _{ts}	Bit clock for parameter data input
64	WCK	I _{ts}	Word clock for parameter data input

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

I : Input terminal O : Output terminal t : TTL level
c : CMOS level s : Schmitt input A : Analog terminal

PIN CONNECTION DIAGRAM

ICs

AN78N05 1: INPUT 2: COMMON 3: OUTPUT	M5220L 1 8	μPC4570HA 1 9	LB1641 1 10
NJM79M15FA 1: COMMON 2: INPUT 3: OUTPUT	NJM2068L-D NJM4558L-D 1 8	LA7956 1 9	TC9299P 1 8
LH5P832D-10 1 14		LC78213 LC78211 1 15	
YSS203B 1 51		M38172M4-192FP 1 64	

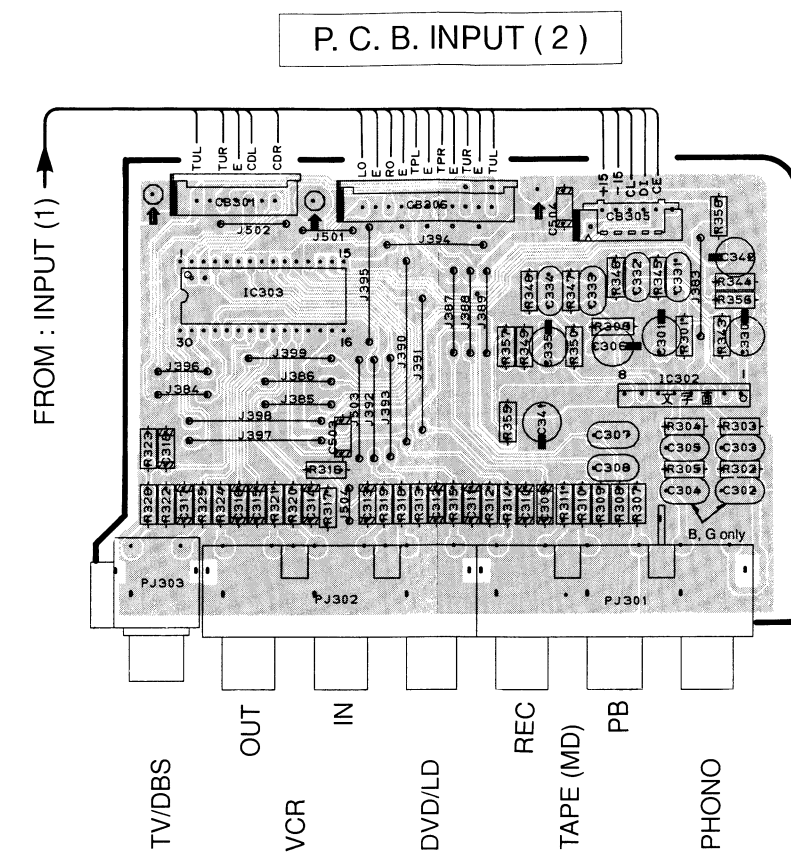
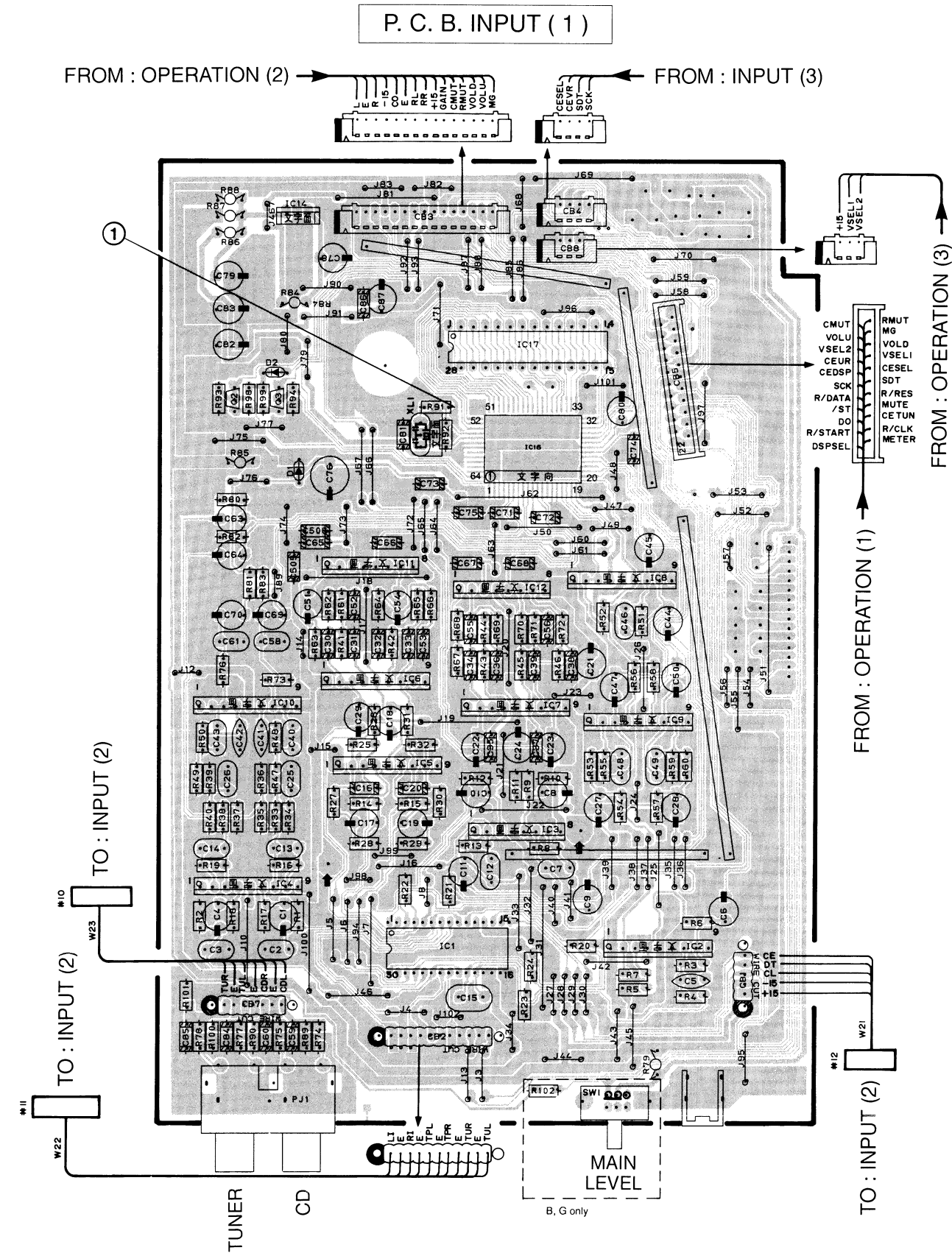
Diodes

1SS133 1SS270A 1T2 2A02M Anode Cathode	HZS5C2TD HZS5B2TD HZS6A2TD HZS7A2TD HZS12B2TD HZS12A2TD HZS152TD HZS242TD
S1NB20 1 2 3	
S4VB20 1 2 3	

Transistors

2SA933S (Q, R) 2SA1740S (R, S) 2SD1915F (S, T) DTA114ES DTC144ES B C E	2SA1708 (S, T) 2SC4488 (S, T) E C B
2SA893A (D, E) 2SA1015 (Y) 2SB647 (C, D) 2SC1815 (Y) E C B	2SC1890A (D, E) 2SC1890E 2SC2229 (O, Y) 2SC2240 (GR, BL) 2SC2878 (A, B) E C B
2SA1694 (O, P, Y) 2SC4467 (O, P, Y) 2SA1695 (O, P, Y) 2SC4468 (O, P, Y) 2SC4466 (O, P, Y) B C E	2SD856 (P, Q) 2SC4495 B C E

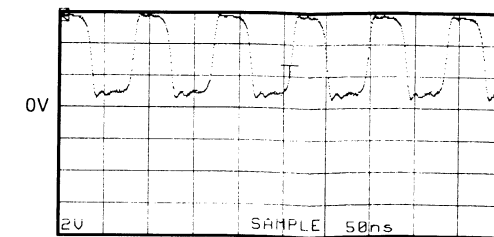
PRINTED CIRCUIT BOARD (Foil side) / シート図 (パターン側)



Point ① (Pin55 of IC16)

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

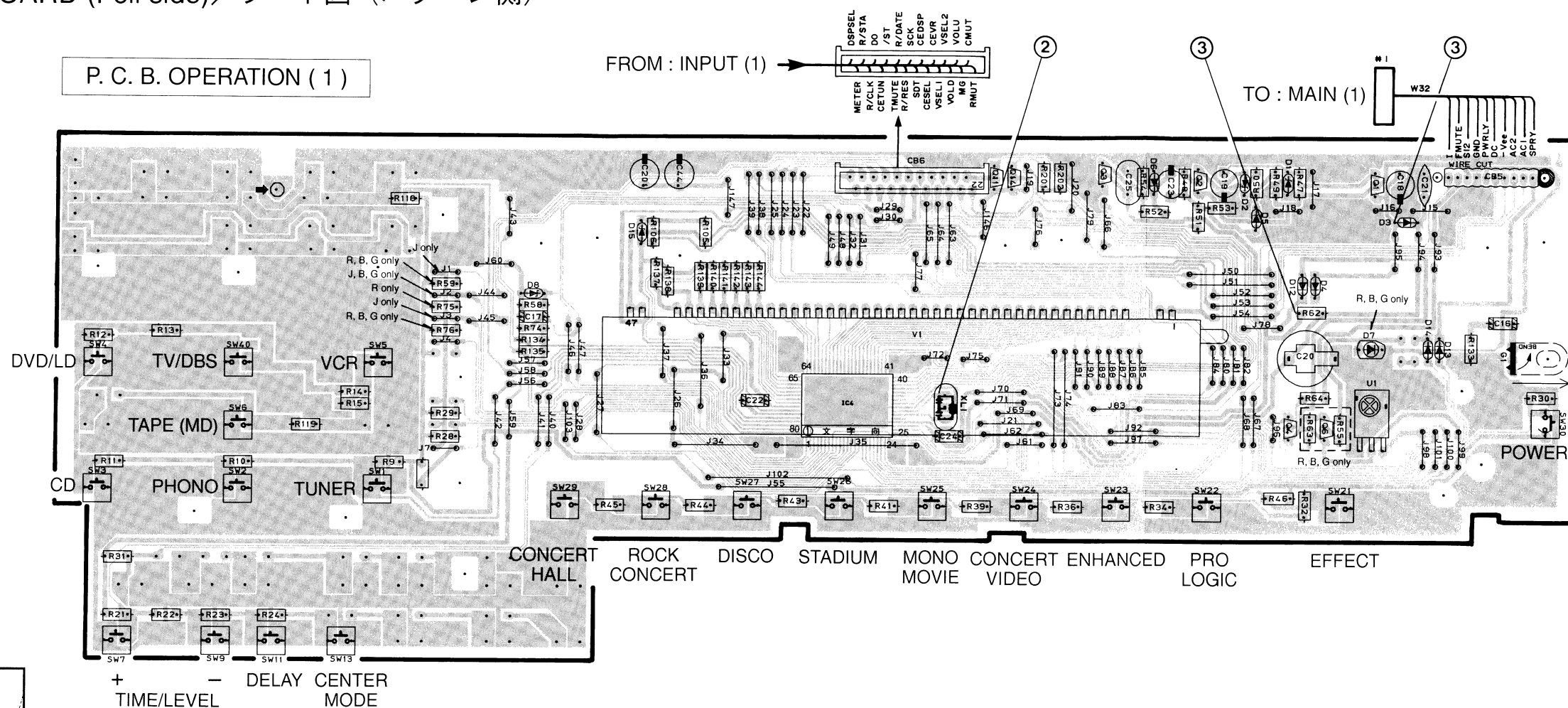
DC range 1 : 1 probe



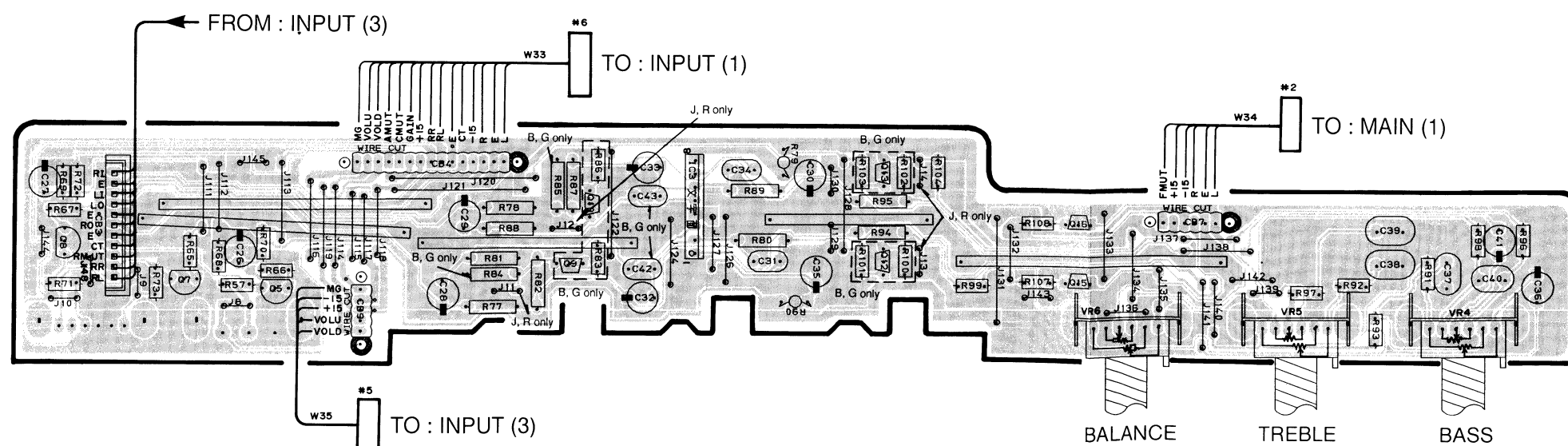
E-18/J-16

PRINTED CIRCUIT BOARD (Foil side) / シート図 (パターン側)

P. C. B. OPERATION (1)



P. C. B. OPERATION (2)



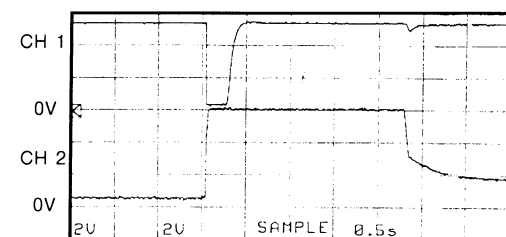
Point ③

CH1 : Pin27 of IC4 V : 2V/div (CH1)

CH2 : Anode of D3 V : 2V/div (CH2)

H : 0.5 sec/div DC range 1 : 1 probe

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

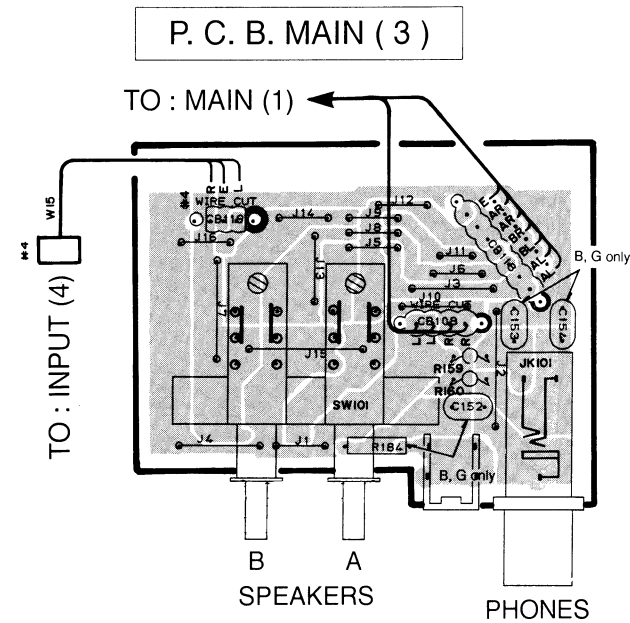


With the POWER ON, disconnect the A/C power cord. Reconnect the A/C power cord and the above waveforms will start.

Disconnect the power cord from the AC outlet.

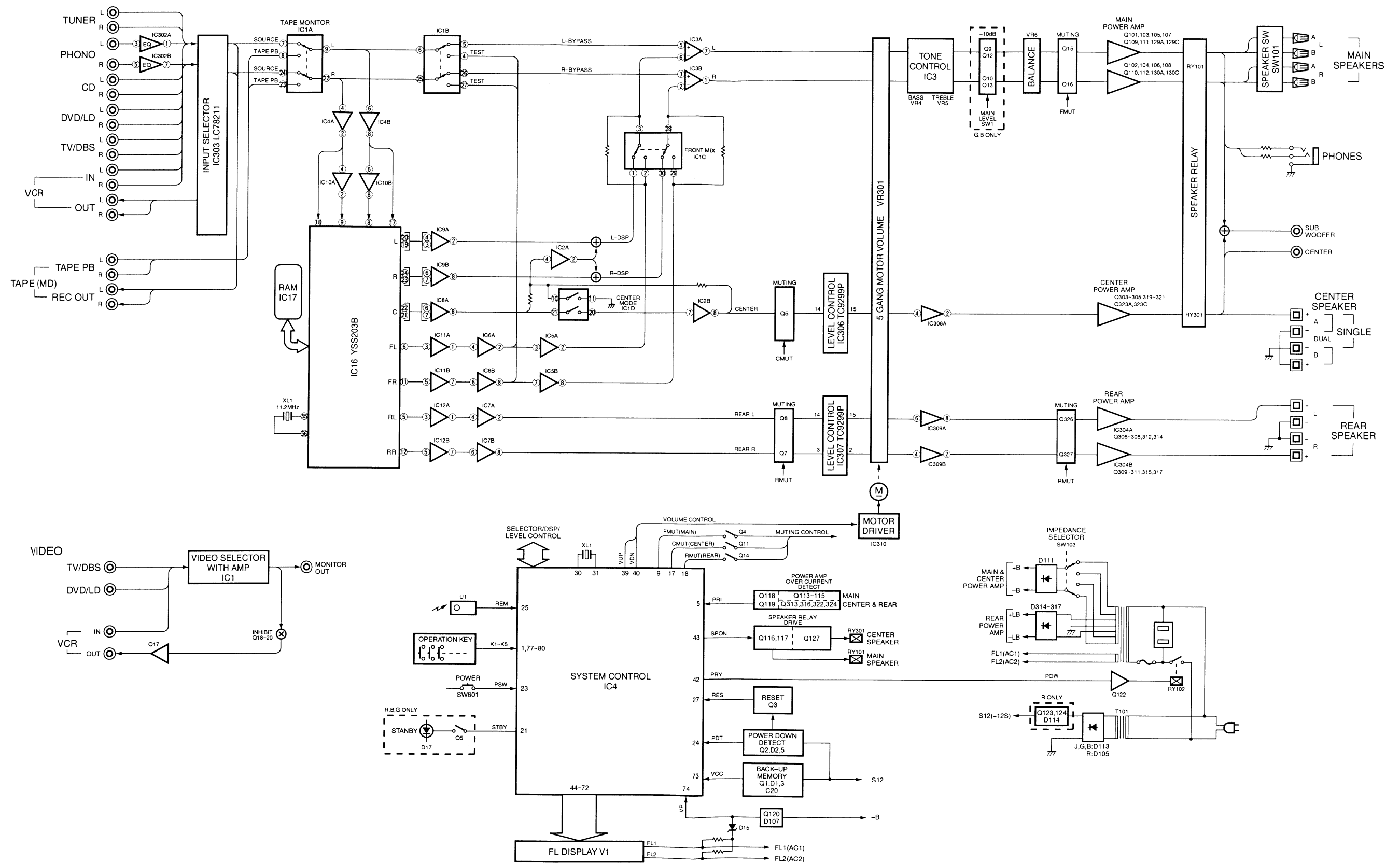
DSP-A492

■ PRINTED CIRCUIT BOARD (Foil side) / シート図 (パターン側)

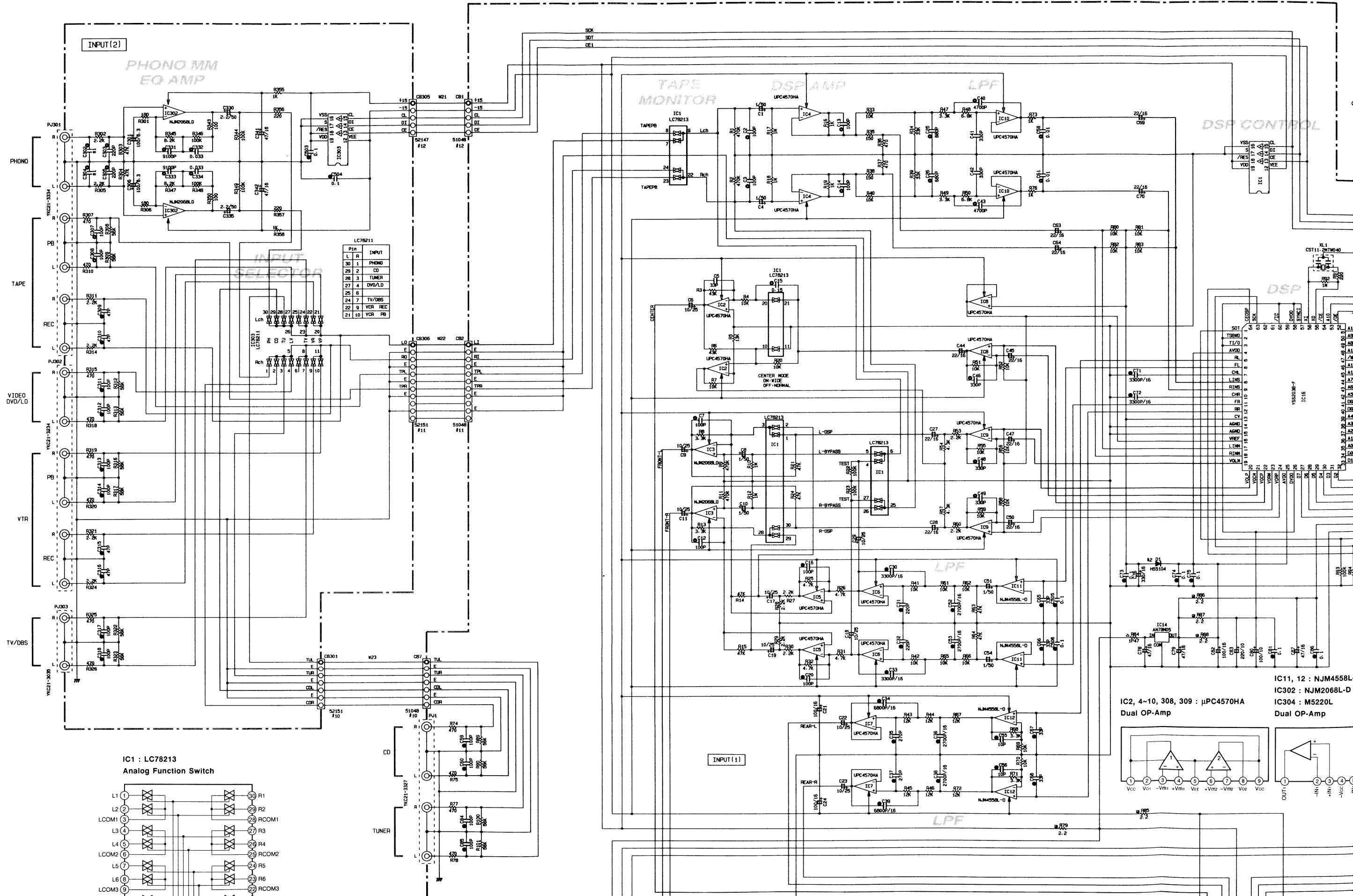


6

■ BLOCK DIAGRAM/ブロックダイアグラム

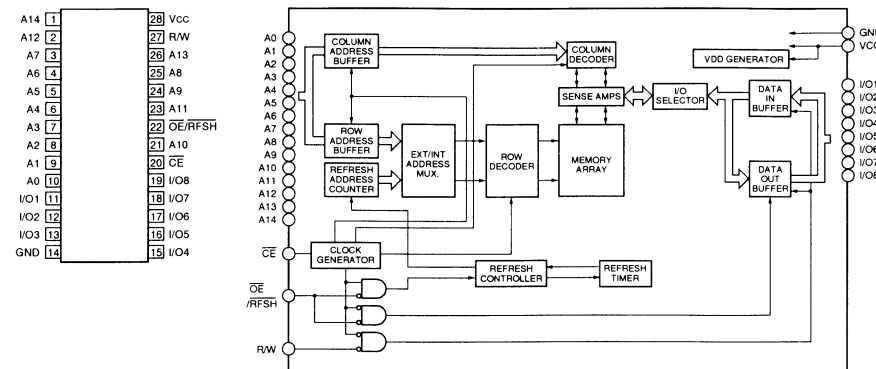


SCHEMATIC DIAGRAM (INPUT)／総回路図



IC17 : LH5P832D-10

32768-word x 8 bit High Speed Pseudo Static RAM



Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
a1	0303-304-320	29C1740S1A/B/1 29C26031E/F/1 29C3311A1A/B/V/3
a2	0326-327	29C26761A/B/1 29D1915F1S/1
a3	1C305	HLK79M19FA AK79M15F
a4	01-305-308 311-312-319	HSS104 HSS133 1SS176

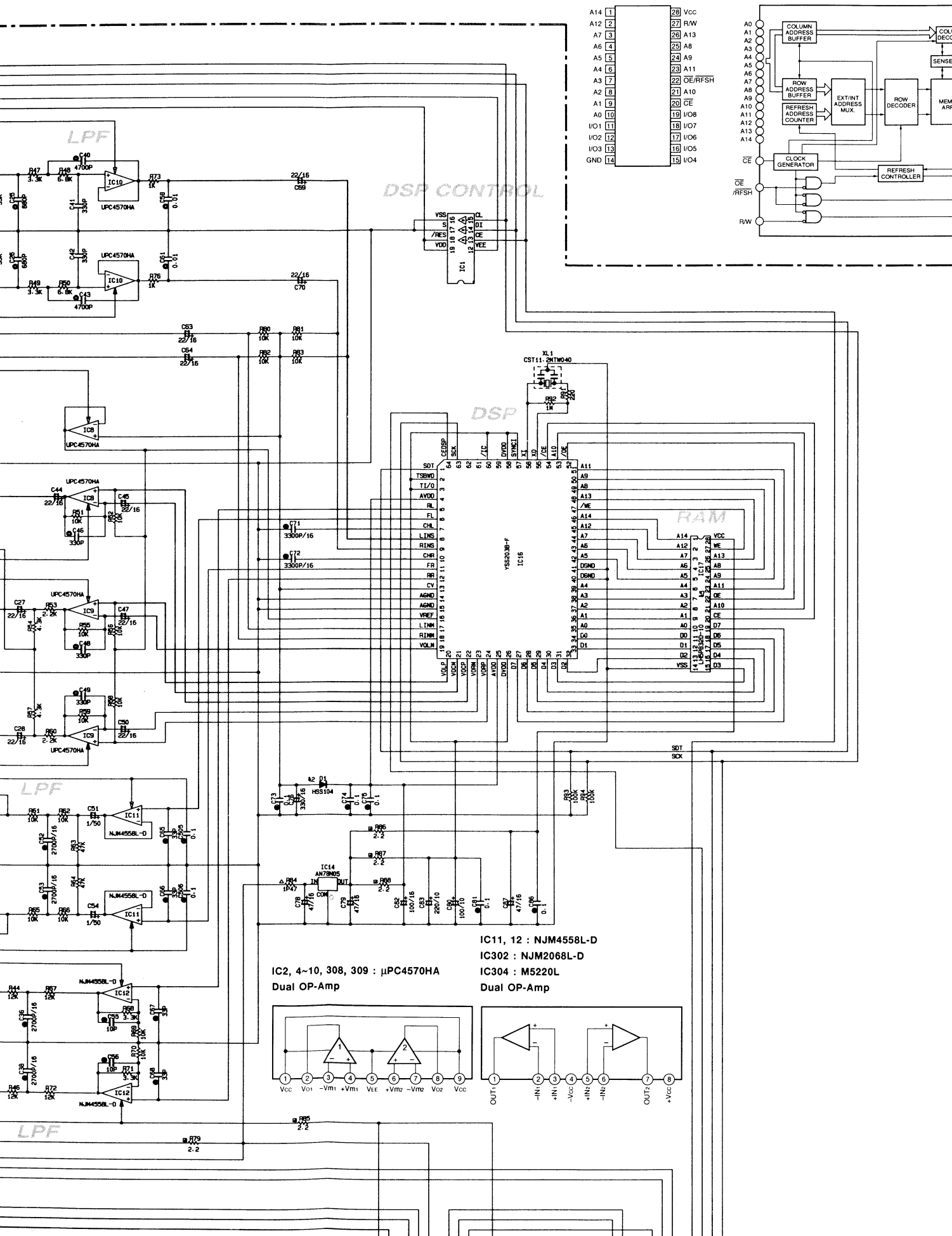
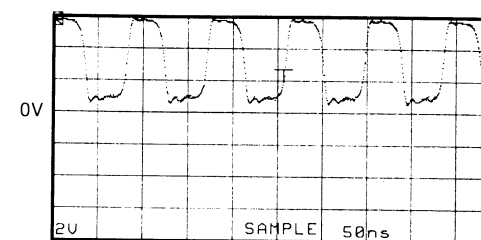
RESISTOR		PARTS NAME
REMARKS		
NO MARK		CARBON FILM RESISTOR (P=5)
☑		CARBON FILM RESISTOR (P=10)
△		METAL OXIDE FILM RESISTOR
▲		METAL FILM RESISTOR
▴		METAL PLATE RESISTOR
☑		FIRE PROOF CARBON FILM RESISTOR
■		CEMENT MOLDED RESISTOR
⊗		SEMI VARIABLE RESISTOR
■		CHIP RESISTOR

CAPACITOR		PARTS NAME
REMARKS		
NO MARK	⊗	ELECTROLYTIC CAPACITOR
⊗		TANTALUM CAPACITOR
NO MARK	⊙	CERAMIC CAPACITOR
⊙		CERAMIC TUBULAR CAPACITOR
⊙		POLYESTER FILM CAPACITOR
○		POLYSTYRENE FILM CAPACITOR
○		MICA CAPACITOR
●		POLYPROPYLENE FILM CAPACITOR
●		SEMICONDUCTIVE CERAMIC CAPACITOR

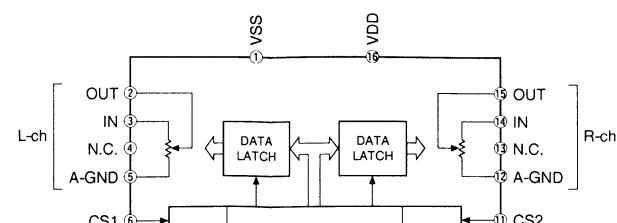
Point ① (Pin55 of IC16)

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

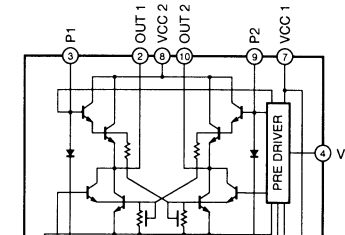
DC range 1 : 1 probe

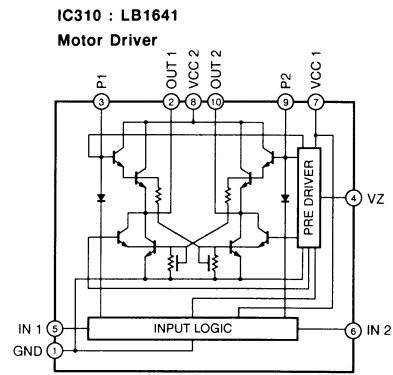
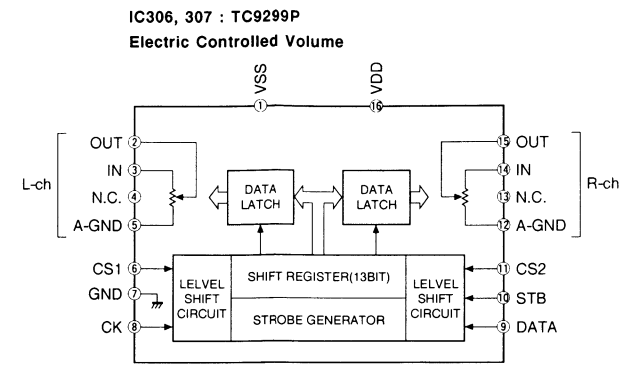
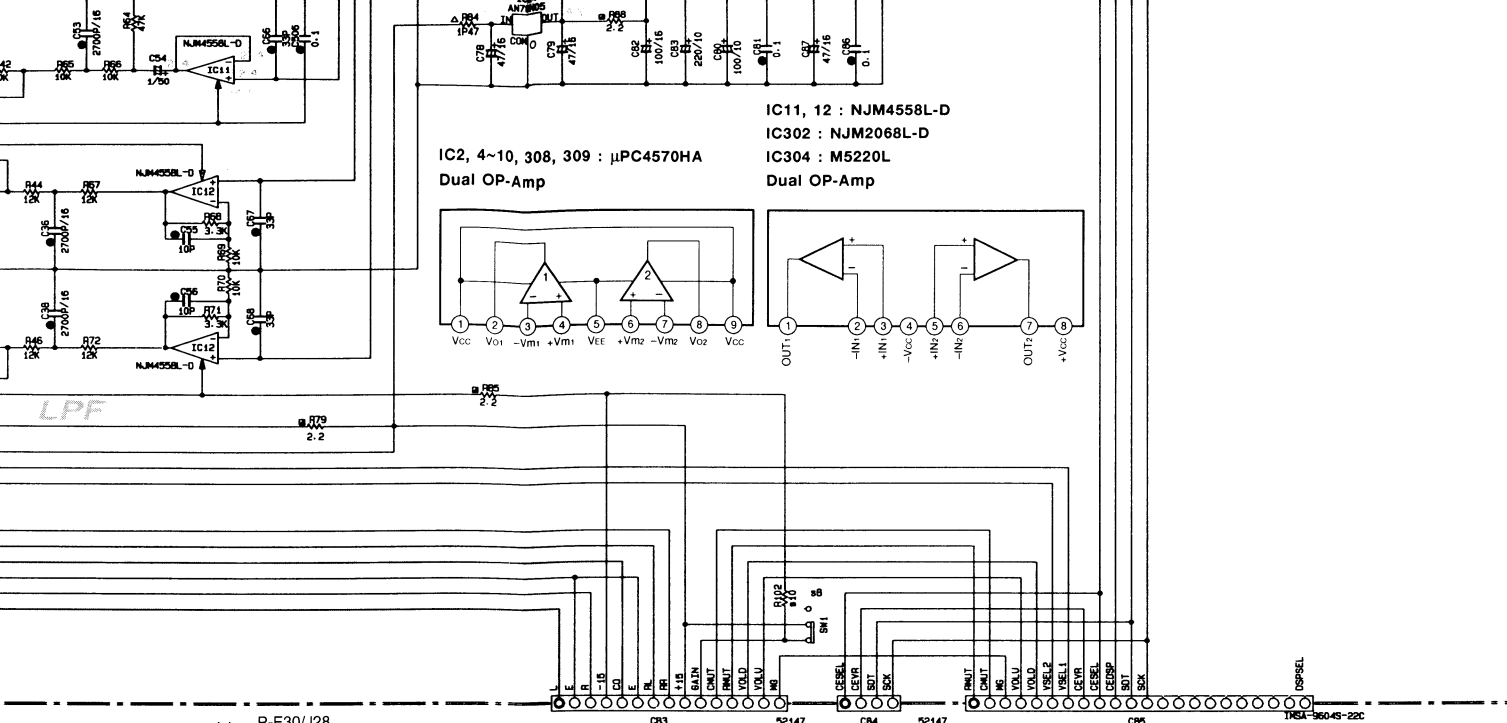
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IC306, 307 : TC9299P
Electric Controlled Volume

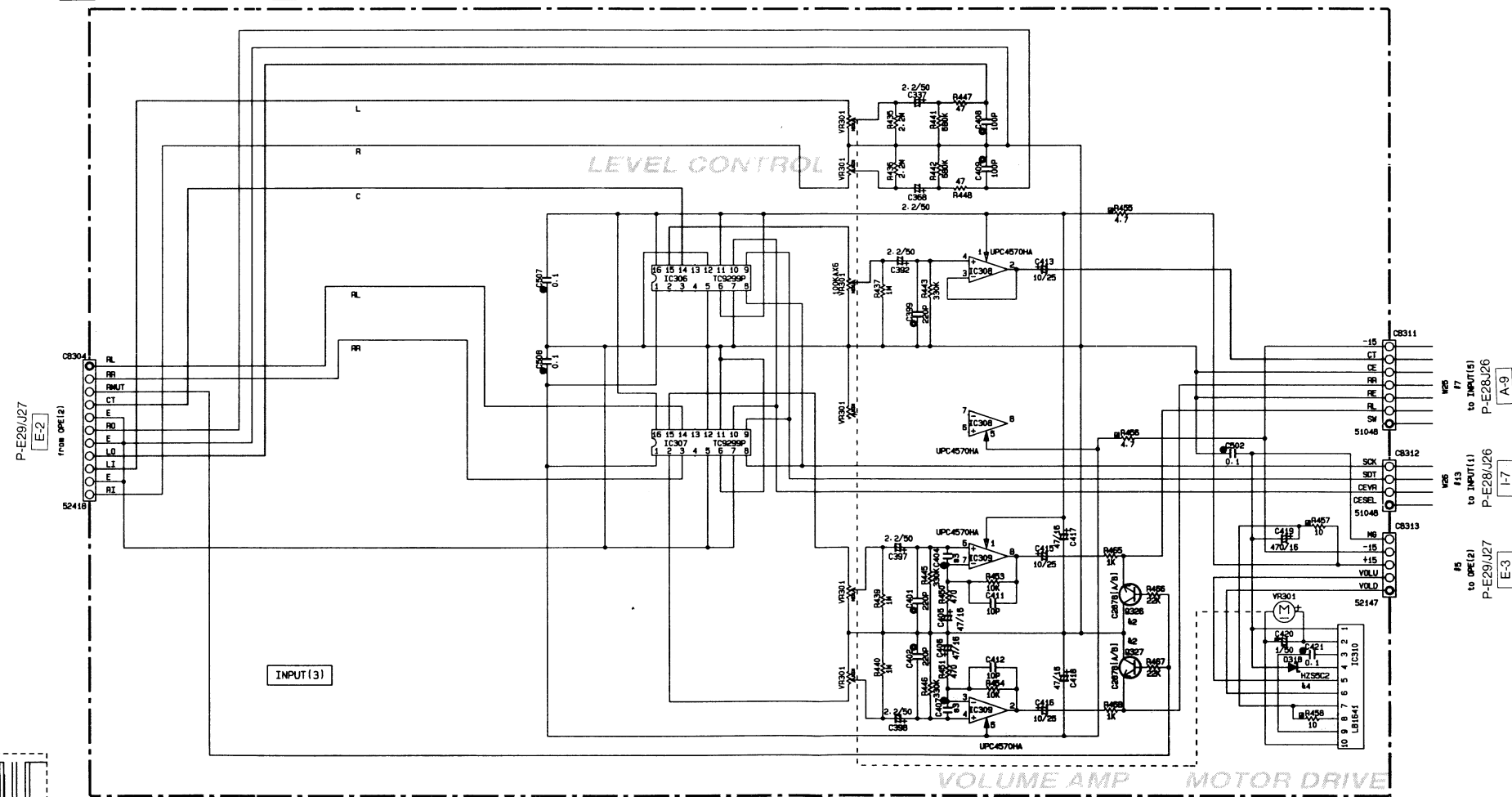
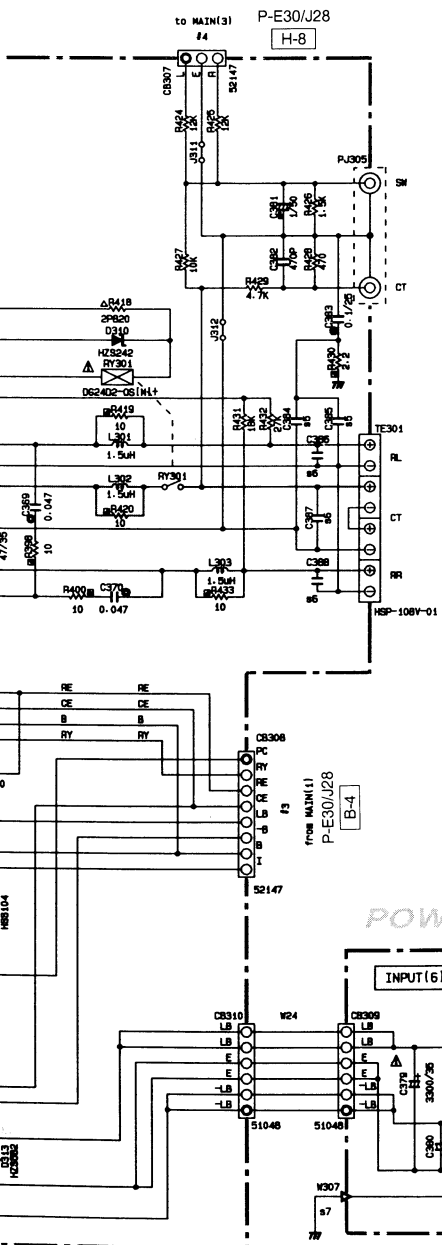


IC310 : LB1641
Motor Driver





Other ICs
● IC16 : YSS203B → See page E-13/J-11

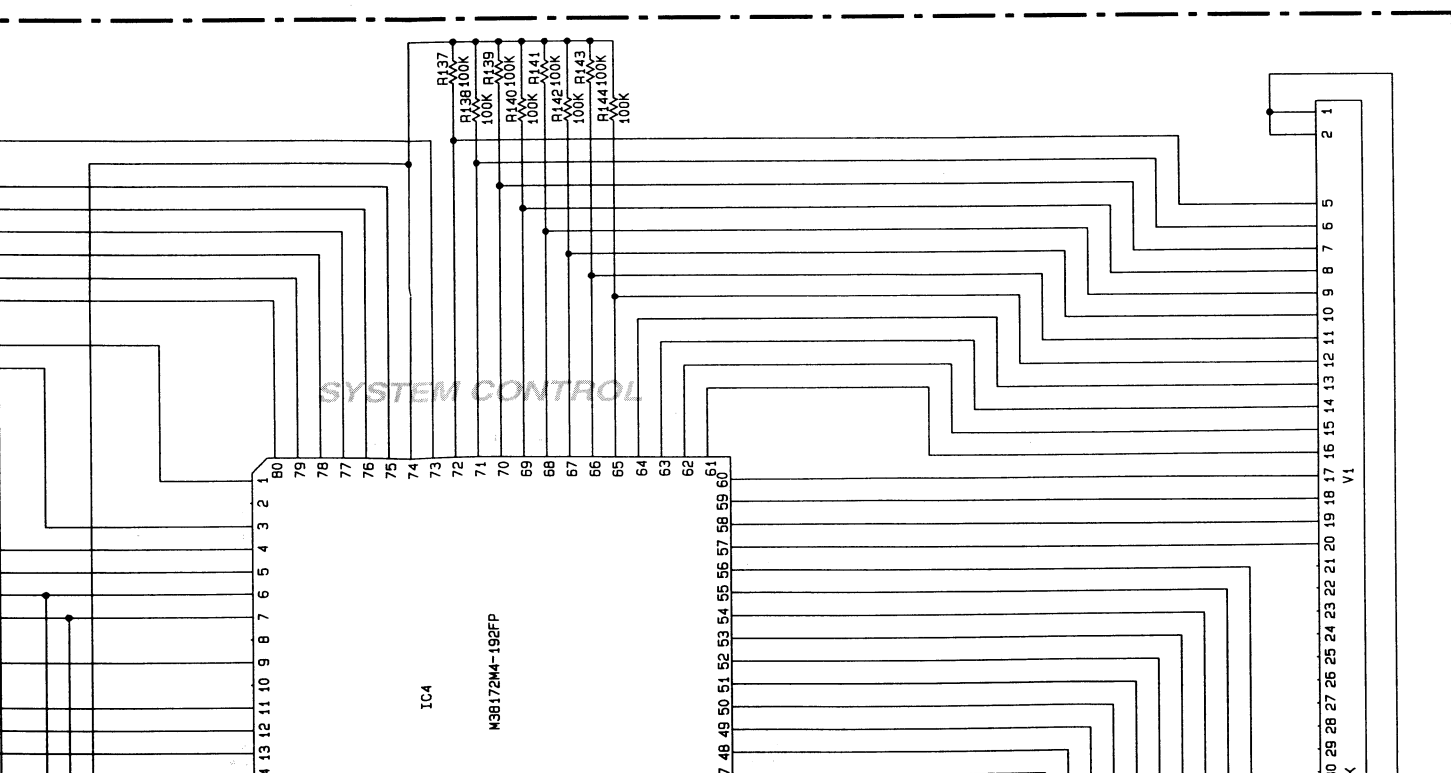


- * All voltage are measured with a 10MΩ/V DC electric volt meter.
- * Components having special characteristics are marked $\triangle$ and must be replaced with parts having specifications equal to those originally installed.
- * Schematic diagram is subject to change without notice.

- 電圧は、内部抵抗10MΩの電圧計で測定したものです。
- $\triangle$ 印のある部品は、安全性確保部品を示しています。部品の交換が必要な場合、パーツリストに記載されている部品を使用してください。
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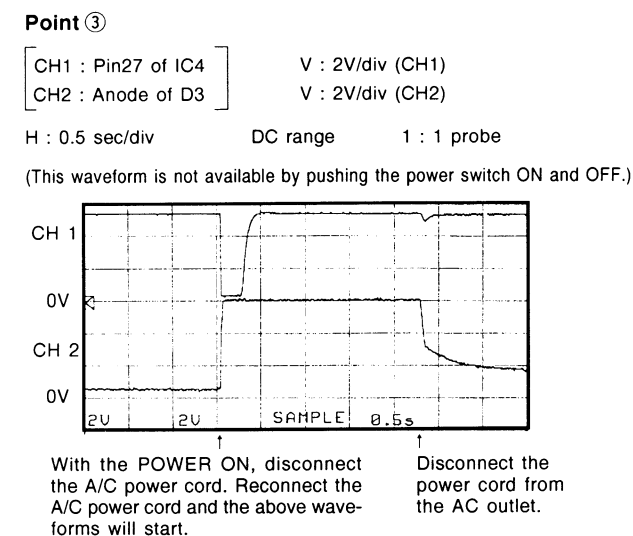
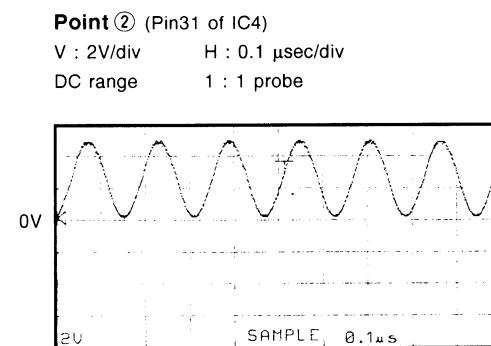
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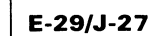


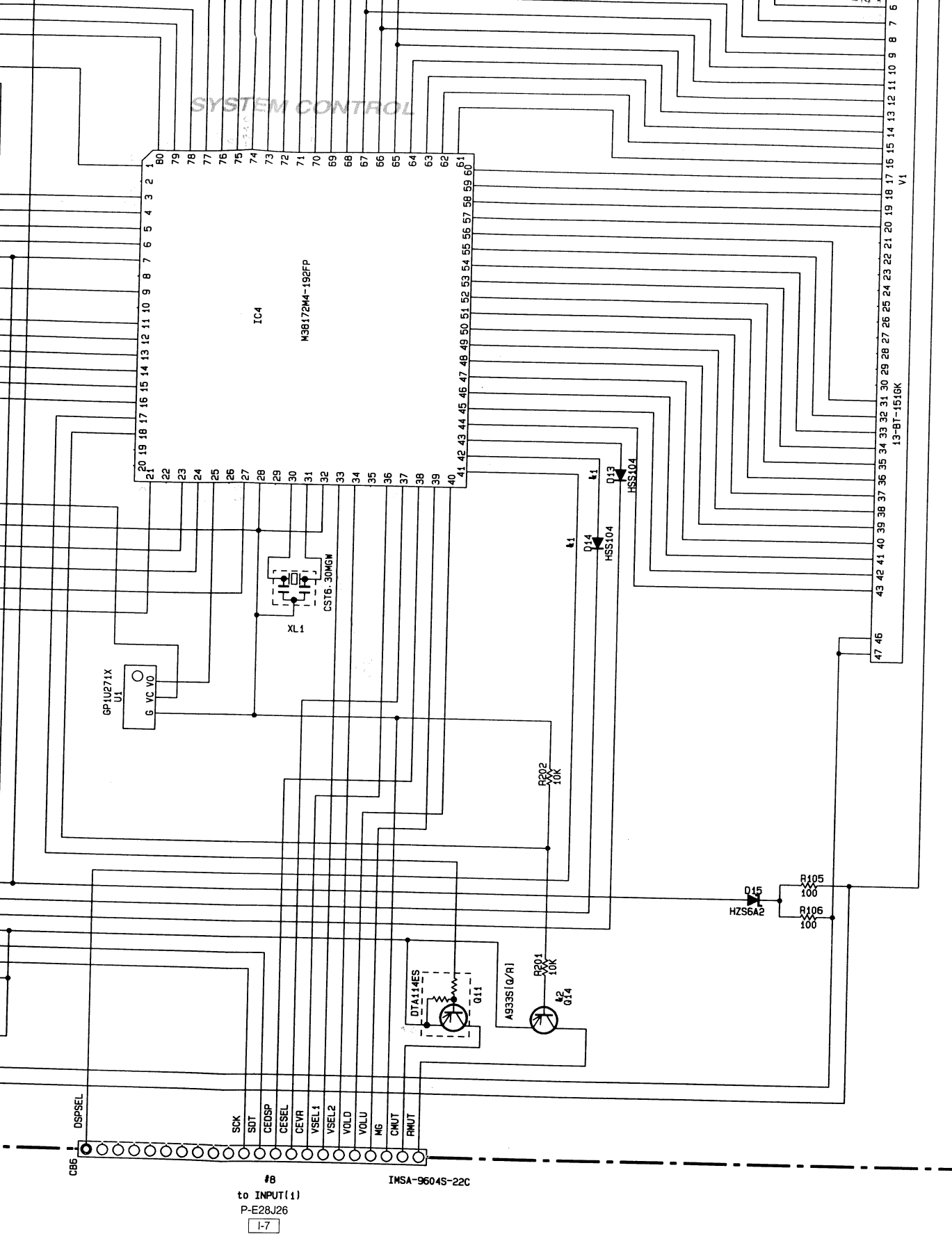
CAPACITOR		
REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	#
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	#
⊙	CERAMIC TUBULAR CAPACITOR	
⊙	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
①	MICA CAPACITOR	
⊕	POLYPROPYLENE FILM CAPACITOR	
⊕	SEMICONDUCTIVE CERAMIC CAPACITOR	

Interchangeable Parts at Manufacture-Stage		
Mark	Reference Parts Number	Parts Name
k1	D3-6. 12-14	HSS104 1SS133 1SS176
k2	Q2. 14	2SA933S[Q/R] 2SA1115[E/F] 2SA1309A[Q/R/S]
k3	Q1. 3. 19-20	2SC1740S[R/S] 2SC2603[E/F] 2SC3311A[Q/R/S]
k4	Q5. 7. 8. 15. 16	2SC2878[A/B] 2SD1915F[S/T]



		J		R		B. G(L)
s1	C42. 43					100P
s2	J11. 12. 13. 14	○		○		
s3	Q9. 10. 12. 13					C2878(A/B) D1915F(S/T)
s4	R83. 86. 101. 103					10K
s5	R84. 85					1. 8K
s6	R100. 102					1. 5K
s8	R59			100K		100K





		J		R		B, G(L)
s1	C42, 43					100P
s2	J11, 12, 13, 14	○		○		
s3	Q9, 10, 12, 13					C2878[A/B] D1915F[S/T]
s4	R83, 86, 101, 103					10K
s5	R84, 85					1.8K
s6	R100, 102					1.5K
s8	R59			100K		100K
s9	J1	○				
s10	R75			100K		
s11	J2	○				○
s12	R76			100K		100K
s13	J3	○				
s15						
s17						
s18						
s19						
s20						
s21						
s22	D7			SLR325VCT31 SLR-305VCA47		SLR325VCT31 SLR-305VCA47
s24	R55			470		470
s25	R63			10K		10K
s26	Q6			A933S[Q/R] A1115[E/F] A1309A[Q/R/S]		A933S[Q/R] A1115[E/F] A1309A[Q/R/S]

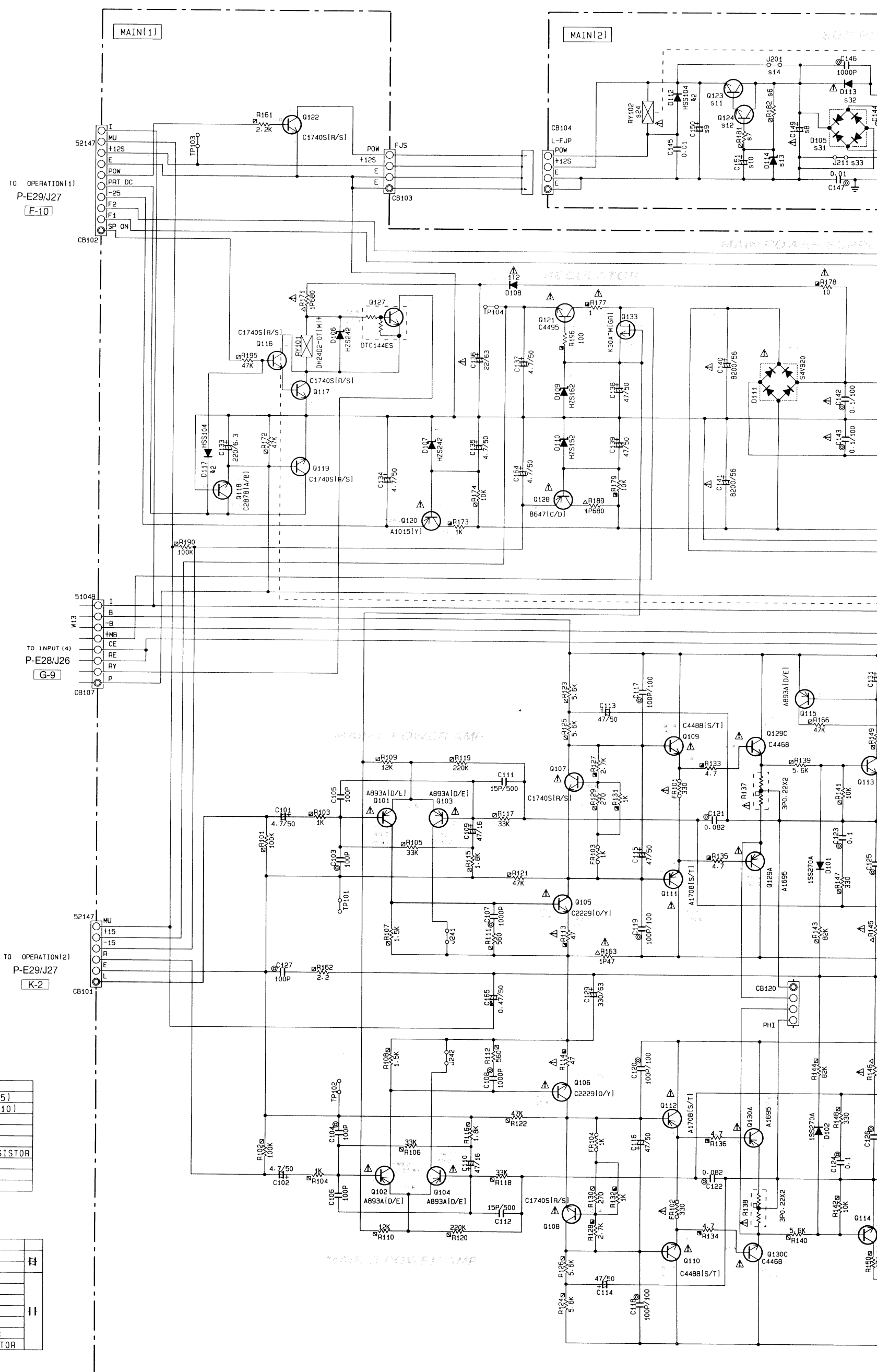
With the POWER ON, disconnect the A/C power cord. Reconnect the A/C power cord and the above wave-forms will start.

Disconnect the power cord from the AC outlet.

- * All voltage are measured with a 10MΩ/V DC electric volt meter.
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- * Schematic diagram is subject to change without notice.

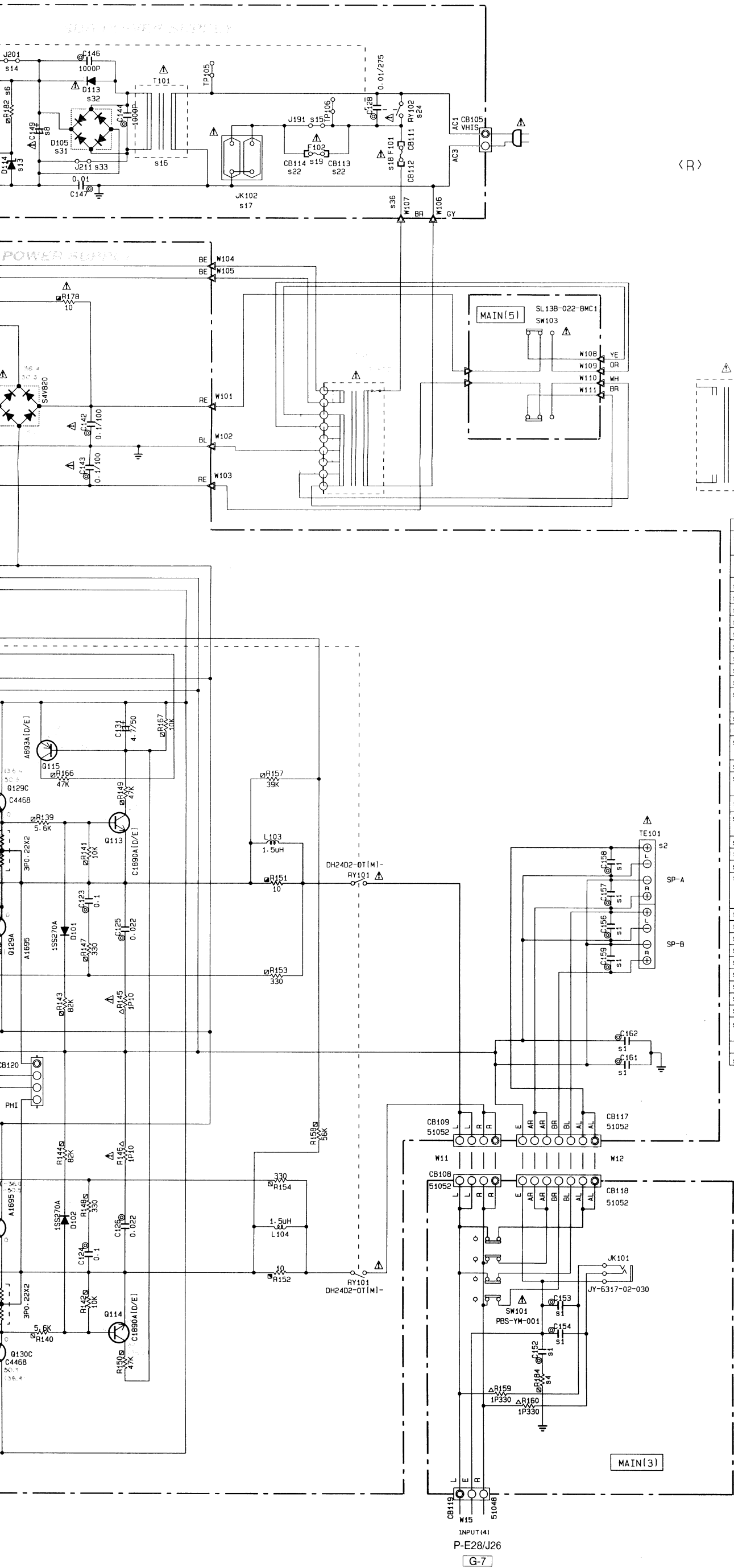
- 電圧は、内部抵抗10MΩの電圧計で測定したものです。
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■ SCHEMATIC DIAGRAM (MAIN)／総回路図

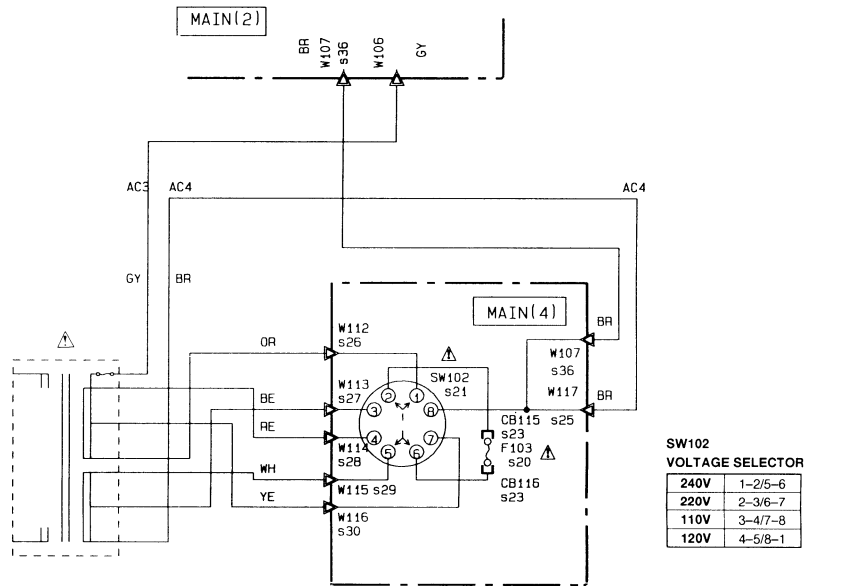


RESISTOR	
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
☒	CARBON FILM RESISTOR (P=10)
☐	METAL OXIDE FILM RESISTOR
☐	METAL FILM RESISTOR
☒	METAL PLATE RESISTOR
☒	FIRE PROOF CARBON FILM RESISTOR
☐	CEMENT MOLDED RESISTOR
☒	SEMI VARIABLE RESISTOR
☐	CHIP RESISTOR

CAPACITOR		
REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	H
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	H
⊙	CERAMIC TUBULAR CAPACITOR	
⊙	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
①	MICA CAPACITOR	
⊕	POLYPROPYLENE FILM CAPACITOR	
⊕	SEMICONDUCTIVE CERAMIC CAPACITOR	



(R)



SW102 VOLTAGE SELECTOR	
240V	1-2/5-6
220V	2-3/6-7
110V	3-4/7-8
120V	4-5/8-1

		J		R		G	B
s1	C152-153-154-156 157-158-159-161 162	X		X		0-01	0-01
s2	TE101		VC31370		VC31370	VU81970 VK50620	VU81970 VK50620
s4	R184	X		X		2-2	2-2
s5							
s6	R182	X		18K		X	X
s7	R181	X		100		X	X
s8	C149		330/25		47/63		330/25
s9	C150	X			220/16	X	X
s10	C151	X			10/16	X	X
s11	Q123	X			C4466[D/P/Y]	X	X
s12	Q124	X			C1890A[D/E]	X	X
s13	D114	X			HZS12A2TD	X	X
s14	J201	0		x		0	0
s15	J191	0		0		X	0
s16	T101		XS597 XC542		XT331 XT341	XQ486 XC084	XQ486 XC084
s17	JK102		VV11880		VV11880	VU54340	VU54330
s18	F101		5-0A125V VS82300		5-0A125V VS82300	T1-6AL250V KB00166	T1-6AL250V KB00166
s19	F102	X			X	T2-5AL250V	X
s20	F103	X			T1-6AL250V KB00166	X	X
s21	SW102	X			VA96180	X	X
s22	CB113- CB114	X			X	VP20650	X
s23	CB115- 116	X			VP20650	X	X
s24	RY102		VU39850 VU34980 VH23080		VY73530	VU39850 VU34980 VH23080	VU39850 VU34980 VH23080
s25	W117	X			MH01220	X	X
s26	W112	X			MH03220	X	X
s27	W113	X			MH06220	X	X
s28	W114	X			MH02220	X	X
s29	W115	X			MH09220	X	X
s30	W116	X			MH04220	X	X
s31	D105	X			VR25370	X	X
s32	D113		VS99780		X	VS99780	VS99780
s33	J211	0			X	0	0
s34							
s36	W107		MH01220		MH01018	MH01220	MH01220

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
42	D112-117	HSS104 ISS133 ISS176
45	Q129-130	A1695/C4468[D/P/Y] A1633/C4278[D/E/F]

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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 part Nos. of the carbon resistors, refer to the 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. OPERATION

Schm Ref.	PART NO.	Description
* *	VV591300	P. C. B.
	VV591400	P. C. B.
CB1	Vi878100	CN. BS. PIN 3P
CB3	VQ963200	CN. BS. PIN 11P
CB4	Vi879300	CN. BS. PIN 15P
CB5	Vi878800	CN. BS. PIN 10P
CB6	VU272200	CN 22P
CB7	Vi878400	CN. BS. PIN 6P
CB9	Vi878300	CN. BS. PIN 5P
C1	VF466800	C. CE. TUBLR 100pF 50V
C2	VF466800	C. CE. TUBLR 100pF 50V
C3	VF637900	C. EL 1000uF 10V
C4	VJ836900	C. EL 10uF 16V
C5	VJ836900	C. EL 10uF 16V
C6	VJ836900	C. EL 10uF 16V
C7	VF637900	C. EL 1000uF 10V
C8	VH053100	C. CE. TUBLR 0.1uF 50V
C9	UJ638330	C. EL 330uF 16V
C16	VH053100	C. CE. TUBLR 0.1uF 50V
C17	VF467300	C. CE. TUBLR 0.01uF 16V
C18	VJ836900	C. EL 10uF 16V
C19	VJ839100	C. EL 1uF 50V
C20	VU545000	C. EL 47000uF 5.5V
C21	VD930900	C. CE. SMI 0.1uF 25V
C22	VH053100	C. CE. TUBLR 0.1uF 50V
C23	VJ839100	C. EL 1uF 50V
C24	VH053100	C. CE. TUBLR 0.1uF 50V
C25	UA655330	C. MYLAR 0.33uF 50V
C26	VJ839200	C. EL 2.2uF 50V
C27	VJ839200	C. EL 2.2uF 50V
C28	VJ839000	C. EL 0.47uF 50V
C29	VJ839000	C. EL 0.47uF 50V
C30	VJ837200	C. EL 47uF 16V
C31	FG211470	C. CE 47pF 50V
C32	VJ839200	C. EL 2.2uF 50V
C33	VJ839200	C. EL 2.2uF 50V
C34	FG211470	C. CE 47pF 50V
C35	VJ837200	C. EL 47uF 16V
C36	UM407220	C. EL 22uF 16V
C37	UA655120	C. MYLAR 0.12uF 50V
C38	UA654330	C. MYLAR 0.033uF 50V
C39	UA654330	C. MYLAR 0.033uF 50V
C40	UA655120	C. MYLAR 0.12uF 50V
C41	UM407220	C. EL 22uF 16V
C42	UA652100	C. MYLAR 100pF 50V (BG)
C43	UA652100	C. MYLAR 100pF 50V (BG)
C44	VE117600	C. EL 220uF 10V
C201	VE117600	C. EL 220uF 10V
D1	VM974600	DIODE. ZENR HZS7A2TD 7.0V
D2	VM974200	DIODE. ZENR HZS5C2TD 5.0V
D3	VD631600	DIODE 1SS133, 176, HSS104
D4	VD631600	DIODE 1SS133, 176, HSS104
D5	VD631600	DIODE 1SS133, 176, HSS104

* New Parts

Schm Ref.	PART NO.	Description
D6	VD631600	DIODE 1SS133, 176, HSS104
D7	VS132300	LED(re) SLR-325VCT31 (BG)
D7	VS132300	LED(re) SLR-325VCT31
D8	VM974100	DIODE. ZENR HZS5B2TD 5.0V
D12	VD631600	DIODE 1SS133, 176, HSS104
D13	VD631600	DIODE 1SS133, 176, HSS104
D14	VD631600	DIODE 1SS133, 176, HSS104
D15	VM974300	DIODE. ZENR HZS6A2TD 6.0V
G1	VR463400	TERM. GND D3.5 TP00385
IC1	XH436A00	IC LA7956
IC3	XM356A00	IC NJM2068LD
IC4	XS983A00	IC M38172M4-192FP CPU
PJ1	VJ695900	JACK. PIN 3P
PJ2	VR110100	JACK. PIN 2P
Q1	iC174020	TR 2SC1740S R, S
Q2	iA093320	TR 2SA933S Q, R
Q3	iC174020	TR 2SC1740S R, S
Q4	VD678500	TR. DGT DTA114ES
Q5	iC287820	TR 2SC2878 A, B
Q6	iA093320	TR 2SA933S Q, R (BG)
Q6	iA093320	TR 2SA933S Q, R
Q7	iC287820	TR 2SC2878 A, B
Q8	iC287820	TR 2SC2878 A, B
Q9	iC287820	TR 2SC2878 A, B (BG)
Q10	iC287820	TR 2SC2878 A, B (BG)
Q11	VD678500	TR. DGT DTA114ES
Q12	iC287820	TR 2SC2878 A, B (BG)
Q13	iC287820	TR 2SC2878 A, B (BG)
Q14	iA093320	TR 2SA933S Q, R
Q15	iC287820	TR 2SC2878 A, B
Q16	iC287820	TR 2SC2878 A, B
Q17	iC1815C0	TR 2SC1815 Y
Q18	iC1815C0	TR 2SC1815 Y
Q19	iC174020	TR 2SC1740S R, S
Q20	iC174020	TR 2SC1740S R, S
R20	HV453220	R. CAR. FP 2.2Ω 1/4W
R79	HV455100	R. CAR. FP 100Ω 1/4W
R90	HV455100	R. CAR. FP 100Ω 1/4W
SW1	VG392900	SW. TACT SKHVAA
SW2	VG392900	SW. TACT SKHVAA
SW3	VG392900	SW. TACT SKHVAA
SW4	VG392900	SW. TACT SKHVAA
SW5	VG392900	SW. TACT SKHVAA
SW6	VG392900	SW. TACT SKHVAA
SW7	VG392900	SW. TACT SKHVAA
SW9	VG392900	SW. TACT SKHVAA
SW11	VG392900	SW. TACT SKHVAA
SW13	VG392900	SW. TACT SKHVAA
SW21	VG392900	SW. TACT SKHVAA
SW22	VG392900	SW. TACT SKHVAA
SW23	VG392900	SW. TACT SKHVAA
SW24	VG392900	SW. TACT SKHVAA
SW25	VG392900	SW. TACT SKHVAA

* New Parts

P.C.B. OPERATION & MAIN

Schm Ref.	PART NO.	Description
SW26	VG392900	SW. TACT SKHVAA
SW27	VG392900	SW. TACT SKHVAA
SW28	VG392900	SW. TACT SKHVAA
SW29	VG392900	SW. TACT SKHVAA
SW30	VG392900	SW. TACT SKHVAA
SW40	VG392900	SW. TACT SKHVAA
U1	VU591000	L. DTCT GP1U271X
V1	VV298800	FL. DSPLY 13-BT-151GK
VR4	VP741800	VR B20K Ω
VR5	VP741900	VR G25K Ω
VR6	VP742000	VR MN100K Ω
XL1	VR891500	RSNR. CE 6.30MHz
	VJ828000	PIN IMSA-6024-03E
	VQ859800	SHEET. FL
	VV499900	SPACER FL-T7.5
*	VV591600	P. C. B. MAIN(R)
	VV591700	P. C. B. MAIN(B)
	VV591800	P. C. B. MAIN(G)
CB101	VF728300	CN 6P
CB102	VF728200	CN. BS. PIN 10P
CB103	VS839400	CN. BS. PIN 4P
CB104	VS839500	CN 4P
CB105	VG879900	CN. BS. PIN 2P
CB107	Vi878600	CN. BS. PIN 8P
CB108	VR428900	CN. BS. PIN 4P
CB109	VR428900	CN. BS. PIN 4P
CB111	VP206500	HOLDER. FUS EYF-52BC
CB112	VP206500	HOLDER. FUS EYF-52BC
CB113	VP206500	HOLDER. FUS EYF-52BC(G)
CB114	VP206500	HOLDER. FUS EYF-52BC(G)
CB115	VP206500	HOLDER. FUS EYF-52BC(R)
CB116	VP206500	HOLDER. FUS EYF-52BC(R)
CB117	VQ584900	CN. BS. PIN 7P
CB118	VQ584900	CN. BS. PIN 7P
CB119	Vi878100	CN. BS. PIN 3P
CB120	VD004700	CN. BS. PIN 4P
C101	UM416470	C. EL 4.7uF 50V
C102	UM416470	C. EL 4.7uF 50V
C103	UA652100	C. MYLAR 100pF 50V
C104	UA652100	C. MYLAR 100pF 50V
C105	FG212100	C. CE 100pF 50V
C106	FG212100	C. CE 100pF 50V
C107	UA653100	C. MYLAR 1000pF 50V
C108	UA653100	C. MYLAR 1000pF 50V
C109	VJ837200	C. EL 47uF 16V
C110	VJ837200	C. EL 47uF 16V
C111	VR516400	C. CE 15p 500V
C112	VR516400	C. CE 15p 500V
C113	UJ667470	C. EL 47uF 50V
C114	UJ667470	C. EL 47uF 50V

* New Parts

Schm Ref.	PART NO.	Description
C115	VG291200	C. EL 47uF 50V
C116	VG291200	C. EL 47uF 50V
C117	VR325000	C. MYLAR 100pF 100V
C118	VR325000	C. MYLAR 100pF 100V
C119	VR325000	C. MYLAR 100pF 100V
C120	VR325000	C. MYLAR 100pF 100V
C121	UA654820	C. MYLAR 0.082uF 50V
C122	UA654820	C. MYLAR 0.082uF 50V
C123	UA655100	C. MYLAR 0.1uF 50V
C124	UA655100	C. MYLAR 0.1uF 50V
C125	UA654220	C. MYLAR 0.022uF 50V
C126	UA654220	C. MYLAR 0.022uF 50V
C127	UA652100	C. MYLAR 100pF 50V
C128	VS741700	C. CE. SAFTY 0.01uF 275V
C129	VK182500	C. EL 330uF 63V
C131	UM416470	C. EL 4.7uF 50V
C133	VC815000	C. EL 220uF 6.3V
C134	UM416470	C. EL 4.7uF 50V
C135	UM416470	C. EL 4.7uF 50V
△ C136	Vi846000	C. EL 22uF 63V
C137	UM416470	C. EL 4.7uF 50V
C138	UJ667470	C. EL 47uF 50V
C139	UJ667470	C. EL 47uF 50V
△ * C140	VV951800	C. EL 6800uF 56V
△ * C141	VV951800	C. EL 6800uF 56V
△ C142	VR325400	C. MYLAR 0.1uF 100V
△ C143	VR325400	C. MYLAR 0.1uF 100V
C144	UA653100	C. MYLAR 1000pF 50V
C145	FG214100	C. CE 0.01uF 50V
C146	UA653100	C. MYLAR 1000pF 50V
C147	UA654100	C. MYLAR 0.01uF 50V
△ C149	Ui377470	C. EL 47uF 63V(R)
△ C149	VK457600	C. EL 330uF 25V(BG)
C150	UJ648220	C. EL 220uF 25V(R)
C151	VJ836900	C. EL 10uF 16V(R)
C152	UA654100	C. MYLAR 0.01uF 50V(BG)
C153	UA654100	C. MYLAR 0.01uF 50V(BG)
C154	UA654100	C. MYLAR 0.01uF 50V(BG)
C156	UA654100	C. MYLAR 0.01uF 50V(BG)
C157	UA654100	C. MYLAR 0.01uF 50V(BG)
C158	UA654100	C. MYLAR 0.01uF 50V(BG)
C159	UA654100	C. MYLAR 0.01uF 50V(BG)
C161	UA654100	C. MYLAR 0.01uF 50V(BG)
C162	UA654100	C. MYLAR 0.01uF 50V(BG)
C164	UM416470	C. EL 4.7uF 50V
C165	UK665470	C. EL 0.47uF 50V
D101	VN008700	DIODE 1SS270A
D102	VN008700	DIODE 1SS270A
△ D105	VR253700	DIODE. BRG SINB20 1A 20V(R)
D106	VM976300	DIODE. ZENR HZS242TD 24V
D107	VM976300	DIODE. ZENR HZS242TD 24V
△ D108	VS997800	DIODE 1T2
D109	VM975900	DIODE. ZENR HZS162TD 16V

* New Parts

P.C.B. MAIN & INPUT

Schm Ref.	PART NO.	Description
△ D110	VM975800	DIODE. ZENR HZS152TD 15V
△ D111	iH001090	DIODE. BRG S4VB20 2.6A 200V
△ D112	VD631600	DIODE 1SS133, 176, HSS104
△ D113	VS997800	DIODE 1T2 (BG)
△ D114	VM975500	DIODE. ZENR HZS12A2TD 12V(R)
△ D117	VD631600	DIODE 1SS133, 176, HSS104
△ F101	KB001660	FUSE T1.60A 250V(BG)
△ F101	VS823000	FUSE T5.0A 125V(R)
△ F102	KB000690	FUSE T2.5A 250V(G)
△ F103	KB001660	FUSE T1.60A 250V(R)
△ FR101	VK188400	R. FUS 330Ω 1/4W
△ FR102	VK188400	R. FUS 330Ω 1/4W
△ FR103	VK189000	R. FUS 1KΩ 1/4W
△ FR104	VK189000	R. FUS 1KΩ 1/4W
* JK101	VY687200	JACK. PHONE JY-6317-02-030 NUT
△ JK102	VU543300	OUTLET. AC 1P(B)
△ JK102	VU543400	OUTLET. AC 2P(G)
△ JK102	VV118800	OUTLET. AC 3P(R)
△ L103	VP575600	COIL 1.5uH
△ L104	VP575600	COIL 1.5uH
△ Q101	VP883000	TR 2SA893A D, E
△ Q102	VP883000	TR 2SA893A D, E
△ Q103	VP883000	TR 2SA893A D, E
△ Q104	VP883000	TR 2SA893A D, E
△ Q105	VR325600	TR 2SC2229 O, Y
△ Q106	VR325600	TR 2SC2229 O, Y
△ Q107	iC174020	TR 2SC1740S R, S
△ Q108	iC174020	TR 2SC1740S R, S
△ Q109	VP872700	TR 2SC4488 S, T
△ Q110	VP872700	TR 2SC4488 S, T
△ Q111	VP872600	TR 2SA1708 S, T
△ Q112	VP872600	TR 2SA1708 S, T
△ Q113	VP883100	TR 2SC1890A D, E
△ Q114	VP883100	TR 2SC1890A D, E
△ Q115	VP883000	TR 2SA893A D, E
△ Q116	iC174020	TR 2SC1740S R, S
△ Q117	iC174020	TR 2SC1740S R, S
△ Q118	iC287820	TR 2SC2878 A, B
△ Q119	iC174020	TR 2SC1740S R, S
△ Q120	iA101521	TR 2SA1015 Y
△ Q121	VN996900	TR 2SC4495
△ Q122	iC174020	TR 2SC1740S R, S
△ Q123	VP768300	TR 2SC4466 O, P, Y(R)
△ Q124	VP883100	TR 2SC1890A D, E(R)
△ Q127	VG722000	TR. DGT DTC144ES
△ Q128	VR402300	TR 2SB647 C, D
△ Q129A	iX630850	TR 2SA1695 O, P, Y
△ Q129C	iX630860	TR 2SC4468 O, P, Y
△ Q130A	iX630850	TR 2SA1695 O, P, Y
△ Q130C	iX630860	TR 2SC4468 O, P, Y
△ Q133	iE000020	FET 2SK30ATM GR
△ R113	HV454470	R. CAR. FP 47Ω 1/4W
△ R114	HV454470	R. CAR. FP 47Ω 1/4W

* New Parts

Schm Ref.	PART NO.	Description
R127	HV456270	R. CAR. FP 2.7KΩ 1/4W
R128	HV456270	R. CAR. FP 2.7KΩ 1/4W
R131	HV456100	R. CAR. FP 1KΩ 1/4W
R132	HV456100	R. CAR. FP 1KΩ 1/4W
R133	HV453470	R. CAR. FP 4.7Ω 1/4W
R134	HV453470	R. CAR. FP 4.7Ω 1/4W
R135	HV453470	R. CAR. FP 4.7Ω 1/4W
R136	HV453470	R. CAR. FP 4.7Ω 1/4W
△ R137	VU981700	R. MTL. PLAT 0.22Ω+0.22 3W
△ R138	VU981700	R. MTL. PLAT 0.22Ω+0.22 3W
△ R145	HL314100	R. MTL. OXD 10Ω 1W
△ R146	HL314100	R. MTL. OXD 10Ω 1W
△ R151	HV454100	R. CAR. FP 10Ω 1/4W
△ R152	HV454100	R. CAR. FP 10Ω 1/4W
△ R159	HL315330	R. MTL. OXD 330Ω 1W
△ R160	HL315330	R. MTL. OXD 330Ω 1W
△ R163	HL314470	R. MTL. OXD 47Ω 1W
△ R171	HL315680	R. MTL. OXD 680Ω 1W
△ R173	HV456100	R. CAR. FP 1KΩ 1/4W
△ R177	HV453100	R. CAR. FP 1Ω 1/4W
△ R178	HV454100	R. CAR. FP 10Ω 1/4W
△ R179	HV457100	R. CAR. FP 10KΩ 1/4W
△ R189	HL315680	R. MTL. OXD 680Ω 1W
△ R196	HV455100	R. CAR. FP 100Ω 1/4W
△ RY101	VK438300	RELAY DH24D2-OT/12
△ RY102	VU398500	RELAY DC LK1AF-12V (BG)
△ * RY102	VY735300	RELAY DC G5P-1 (R)
△ SW101	VV523900	SW. PUSH PBS-YM-001
△ SW102	VA961800	VOLT. SELECT ESE-37247-1 (R)
△ SW103	VV523800	SW. SLIDE SL13B-022-IMC 1
△ T101	XQ486B00	TRANS. PWR (BG)
△ T101	XT331A00	TRANS. PWR (R)
△ TE101	VC313700	TERM. SP 8P (R)
△ TE101	VU819700	TERM. SP 8P (BG)
* VJ828000		PIN IMSA-6024-3E
BB071360		SCR. TERM 8.3x13
VR264300		PLATE. GND
VP753100		HEAT. SINK IC-1625-MMI
Ei330166		SCR. BND. HD 3x16 ICRM3-BL
VY834500		SUPRT (BG)
* VV592000	P. C. B.	INPUT (BG)
* VY805600	P. C. B.	INPUT (R)
CB1	Vi878300	CN. BS. PIN 5P
CB2	Vi878900	CN. BS. PIN 11P
CB3	VF667600	CN. BS. PIN 15P
CB4	VK024800	CN. BS. PIN 4P
CB5	VU272200	CN 22P
CB7	Vi878500	CN. BS. PIN 7P
CB8	VK024700	CN. BS. PIN 3P

* New Parts

P.C.B. INPUT

Schm Ref.	PART NO.	Description		
CB301	VK026600	CN. BS. PIN	7P	
CB302	VK026600	CN. BS. PIN	7P	
CB304	VQ961400	CN. BS. PIN	11P	
CB305	VK024900	CN. BS. PIN	5P	
CB306	VK027000	CN. BS. PIN	11P	
CB307	VK024700	CN. BS. PIN	3P	
CB308	VK025200	CN. BS. PIN	8P	
CB309	Vi878400	CN. BS. PIN	6P	
CB310	Vi878400	CN. BS. PIN	6P	
CB311	Vi878500	CN. BS. PIN	7P	
CB312	Vi878200	CN. BS. PIN	4P	
CB313	VK024900	CN. BS. PIN	5P	
C1	VJ839100	C. EL	1uF	50V
C2	UA652100	C. MYLAR	100pF	50V
C3	UA652100	C. MYLAR	100pF	50V
C4	VJ839100	C. EL	1uF	50V
C5	FG251330	C. CE	33pF	50V
C6	UM417100	C. EL	10uF	50V
C7	UA652100	C. MYLAR	100pF	50V
C8	VJ839100	C. EL	1uF	50V
C9	UM417100	C. EL	10uF	50V
C10	VJ839100	C. EL	1uF	50V
C11	UM417100	C. EL	10uF	50V
C12	UA652100	C. MYLAR	100pF	50V
C13	UA652100	C. MYLAR	100pF	50V
C14	UA652100	C. MYLAR	100pF	50V
C15	UA655150	C. MYLAR	0.15uF	50V
C16	VF466800	C. CE. TUBLR	100pF	50V
C17	UM417100	C. EL	10uF	50V
C18	UM417100	C. EL	10uF	50V
C19	UM417100	C. EL	10uF	50V
C20	VF466800	C. CE. TUBLR	100pF	50V
C21	VF964800	C. EL	100uF	16V
C22	UM417100	C. EL	10uF	50V
C23	UM417100	C. EL	10uF	50V
C24	VF964800	C. EL	100uF	16V
C25	UA652680	C. MYLAR	680pF	50V
C26	UA652680	C. MYLAR	680pF	50V
C27	UM407220	C. EL	22uF	16V
C28	UM407220	C. EL	22uF	16V
C29	UM417100	C. EL	10uF	50V
C30	VG279600	C. CE. TUBLR	3300pF	16V
C31	VG278400	C. CE. TUBLR	220pF	50V
C32	VG278400	C. CE. TUBLR	220pF	50V
C33	VG279600	C. CE. TUBLR	3300pF	16V
C34	VG279900	C. CE. TUBLR	6800pF	16V
C35	VG278500	C. CE. TUBLR	270pF	50V
C36	VG279500	C. CE. TUBLR	2700pF	16V
C37	VG278500	C. CE. TUBLR	270pF	50V
C38	VG279500	C. CE. TUBLR	2700pF	16V
C39	VG279900	C. CE. TUBLR	6800pF	16V
C40	UA653470	C. MYLAR	4700pF	50V
C41	FG212330	C. CE	330pF	50V

* New Parts

Schm Ref.	PART NO.	Description		
C42	FG212330	C. CE	330pF	50V
C43	UA653470	C. MYLAR	4700pF	50V
C44	UM407220	C. EL	22uF	16V
C45	UM407220	C. EL	22uF	16V
C46	UA652330	C. MYLAR	330pF	50V
C47	UM407220	C. EL	22uF	16V
C48	UA652330	C. MYLAR	330pF	50V
C49	UA652330	C. MYLAR	330pF	50V
C50	UM407220	C. EL	22uF	16V
C51	VJ839100	C. EL	1uF	50V
C52	VG279500	C. CE. TUBLR	2700pF	16V
C53	VG279500	C. CE. TUBLR	2700pF	16V
C54	VJ839100	C. EL	1uF	50V
C55	VF466600	C. CE. TUBLR	10pF	50V
C56	VF466600	C. CE. TUBLR	10pF	50V
C58	UA654100	C. MYLAR	0.01uF	50V
C59	VF466800	C. CE. TUBLR	100pF	50V
C60	VF466800	C. CE. TUBLR	100pF	50V
C61	UA654100	C. MYLAR	0.01uF	50V
C63	UM407220	C. EL	22uF	16V
C64	UM407220	C. EL	22uF	16V
C65	VG277000	C. CE. TUBLR	33pF	50V
C66	VG277000	C. CE. TUBLR	33pF	50V
C67	VG277000	C. CE. TUBLR	33pF	50V
C68	VG277000	C. CE. TUBLR	33pF	50V
C69	UM407220	C. EL	22uF	16V
C70	UM407220	C. EL	22uF	16V
C71	VG279600	C. CE. TUBLR	3300pF	16V
C72	VG279600	C. CE. TUBLR	3300pF	16V
C73	VH053100	C. CE. TUBLR	0.1uF	50V
C74	VH053100	C. CE. TUBLR	0.1uF	50V
C75	VH053100	C. CE. TUBLR	0.1uF	50V
C76	UJ638330	C. EL	330uF	16V
C78	VJ837200	C. EL	47uF	16V
C79	VJ837200	C. EL	47uF	16V
C80	VF760000	C. EL	100uF	10V
C81	VH053100	C. CE. TUBLR	0.1uF	50V
C82	VF964800	C. EL	100uF	16V
C83	VE117600	C. EL	220uF	10V
C84	VF466800	C. CE. TUBLR	100pF	50V
C85	VF466800	C. CE. TUBLR	100pF	50V
C86	VH053100	C. CE. TUBLR	0.1uF	50V
C87	VJ837200	C. EL	47uF	16V
C301	VF760000	C. EL	100uF	10V
C302	UA652220	C. MYLAR	220pF	50V (BG)
C303	UA652220	C. MYLAR	220pF	50V
C304	UA652220	C. MYLAR	220pF	50V (BG)
C305	UA652220	C. MYLAR	220pF	50V
C306	VF760000	C. EL	100uF	10V
C307	UA652100	C. MYLAR	100pF	50V
C308	UA652100	C. MYLAR	100pF	50V
C309	VF466700	C. CE. TUBLR	47pF	50V
C310	VF466700	C. CE. TUBLR	47pF	50V

* New Parts

P.C.B. INPUT

Schm Ref.	PART NO.	Description
C311	VF466800	C. CE. TUBLR 100pF 50V
C312	VF466800	C. CE. TUBLR 100pF 50V
C313	VF466800	C. CE. TUBLR 100pF 50V
C314	VF466800	C. CE. TUBLR 100pF 50V
C315	VF466700	C. CE. TUBLR 47pF 50V
C316	VF466700	C. CE. TUBLR 47pF 50V
C317	VF466800	C. CE. TUBLR 100pF 50V
C318	VF466800	C. CE. TUBLR 100pF 50V
C319	UA652470	C. MYLAR 470pF 50V(R)
C319	UA653100	C. MYLAR 1000pF 50V(BG)
C321	UA652470	C. MYLAR 470pF 50V(R)
C321	UA653100	C. MYLAR 1000pF 50V(BG)
C323	VH053100	C. CE. TUBLR 0.1uF 50V
C324	UJ668100	C. EL 100uF 50V
C325	UM417100	C. EL 10uF 50V
C326	VE117600	C. EL 220uF 10V
C327	FG212100	C. CE 100pF 50V
C328	Ui367220	C. EL 22uF 50V
C329	VH053100	C. CE. TUBLR 0.1uF 50V
C330	VJ839200	C. EL 2.2uF 50V
C331	UA653910	C. MYLAR 9100pF 50V
C332	UA654330	C. MYLAR 0.033uF 50V
C333	UA653910	C. MYLAR 9100pF 50V
C334	UA654330	C. MYLAR 0.033uF 50V
C335	VJ839200	C. EL 2.2uF 50V
C336	UJ668100	C. EL 100uF 50V
C337	VJ839200	C. EL 2.2uF 50V
C338	FG212220	C. CE 220pF 50V
C339	UA653330	C. MYLAR 3300pF 50V
C340	UH178100	C. EL 100uF 63V
C341	VJ837200	C. EL 47uF 16V
C342	VJ837200	C. EL 47uF 16V
C343	FH611220	C. CE 22pF 500V
C344	UM417100	C. EL 10uF 50V
C345	VF466800	C. CE. TUBLR 100pF 50V(BG)
C347	UM407220	C. EL 22uF 16V
C348	UM417100	C. EL 10uF 50V
C349	UM417100	C. EL 10uF 50V
C350	UM407220	C. EL 22uF 16V
C352	VF466800	C. CE. TUBLR 100pF 50V(BG)
C353	UM417100	C. EL 10uF 50V
C354	FG212100	C. CE 100pF 50V
C355	UA654100	C. MYLAR 0.01uF 50V
C356	FG210500	C. CE 5pF 50V(BG)
C356	FG251220	C. CE 22pF 50V(R)
C357	UJ668100	C. EL 100uF 50V
C358	VF466800	C. CE. TUBLR 100pF 50V
C359	FG212100	C. CE 100pF 50V
C360	FG212100	C. CE 100pF 50V
C361	VF466800	C. CE. TUBLR 100pF 50V
C362	UJ668100	C. EL 100uF 50V
C363	FG210500	C. CE 5pF 50V(BG)
C363	FG251220	C. CE 22pF 50V(R)

* New Parts

Schm Ref.	PART NO.	Description
C364	UA654100	C. MYLAR 0.01uF 50V
C365	FG212100	C. CE 100pF 50V
C366	VF964800	C. EL 100uF 16V
C367	VF964800	C. EL 100uF 16V
C368	VJ839200	C. EL 2.2uF 50V
C369	UA654470	C. MYLAR 0.047uF 50V
C370	UA654470	C. MYLAR 0.047uF 50V
C371	VR325000	C. MYLAR 100pF 100V
C372	VJ839100	C. EL 1uF 50V
C373	Ui367220	C. EL 22uF 50V
C374	VR325000	C. MYLAR 100pF 100V
C375	VJ839100	C. EL 1uF 50V
C376	UA654470	C. MYLAR 0.047uF 50V
C377	VE117600	C. EL 220uF 10V
C378	UJ648100	C. EL 100uF 25V
C379	VL544800	C. EL 3300uF 35V
C380	VG289900	C. EL 2200uF 35V
C381	VG722100	C. EL 1uF 50V
C382	FG212470	C. CE 470pF 50V
C383	VD930900	C. CE. SMI 0.1uF 25V
C384	FG244220	C. CE 0.022uF 50V(BG)
C385	FG244220	C. CE 0.022uF 50V(BG)
C386	FG214100	C. CE 0.01uF 50V(BG)
C387	FG214100	C. CE 0.01uF 50V(BG)
C388	FG214100	C. CE 0.01uF 50V(BG)
C389	UA654470	C. MYLAR 0.047uF 50V
C390	UA654470	C. MYLAR 0.047uF 50V
C391	VH053100	C. CE. TUBLR 0.1uF 50V
C392	VJ839200	C. EL 2.2uF 50V
C395	UJ667470	C. EL 47uF 50V
C396	VJ839000	C. EL 0.47uF 50V
C397	VJ839200	C. EL 2.2uF 50V
C398	VJ839200	C. EL 2.2uF 50V
C399	UA652220	C. MYLAR 220pF 50V
C401	UA652220	C. MYLAR 220pF 50V
C402	UA652220	C. MYLAR 220pF 50V
C404	VF466800	C. CE. TUBLR 100pF 50V(BG)
C405	VJ837200	C. EL 47uF 16V
C406	VJ837200	C. EL 47uF 16V
C407	VF466800	C. CE. TUBLR 100pF 50V(BG)
C408	UA652100	C. MYLAR 100pF 50V
C409	UA652100	C. MYLAR 100pF 50V
C411	FG211100	C. CE 10pF 50V
C412	FG211100	C. CE 10pF 50V
C413	UM417100	C. EL 10uF 50V
C415	UM417100	C. EL 10uF 50V
C416	UM417100	C. EL 10uF 50V
C417	VJ837200	C. EL 47uF 16V
C418	VJ837200	C. EL 47uF 16V
C419	UJ638470	C. EL 470uF 16V
C420	VG722100	C. EL 1uF 50V
C421	VH053100	C. CE. TUBLR 0.1uF 50V
C501	UJ638330	C. EL 330uF 6V

* New Parts

P.C.B. INPUT

Schm Ref.	PART NO.	Description
C502	VH053100	C. CE. TUBLR 0.1uF 50V
C503	VH053100	C. CE. TUBLR 0.1uF 50V
C504	VH053100	C. CE. TUBLR 0.1uF 50V
C505	VH053100	C. CE. TUBLR 0.1uF 50V
C506	VH053100	C. CE. TUBLR 0.1uF 50V
C507	VH053100	C. CE. TUBLR 0.1uF 50V
C508	VH053100	C. CE. TUBLR 0.1uF 50V
D1	VD631600	DIODE 1SS133, 176, HSS104
D301	VM975600	DIODE. ZENR HZS12B2TD 12V
D302	VM975600	DIODE. ZENR HZS12B2TD 12V
D303	VM975600	DIODE. ZENR HZS12B2TD 12V
D304	VM975600	DIODE. ZENR HZS12B2TD 12V
D305	VD631600	DIODE 1SS133, 176, HSS104
D306	VD631600	DIODE 1SS133, 176, HSS104
D307	VD631600	DIODE 1SS133, 176, HSS104
D308	VD631600	DIODE 1SS133, 176, HSS104
△ D309	VN008700	DIODE 1SS270A
D310	VM976300	DIODE. ZENR HZS242TD 24V
D311	VD631600	DIODE 1SS133, 176, HSS104
D312	VD631600	DIODE 1SS133, 176, HSS104
D313	VM974100	DIODE. ZENR HZS5B2TD 5.0V
△ * D314	VV731400	DIODE 2A02M
△ * D315	VV731400	DIODE 2A02M
△ * D316	VV731400	DIODE 2A02M
△ * D317	VV731400	DIODE 2A02M
D318	VM974200	DIODE. ZENR HZS5C2TD 5.0V
D319	VD631600	DIODE 1SS133, 176, HSS104
D501	VS997800	DIODE 1T2
IC1	XP896A00	IC LC78213
IC2	XB247301	IC uPC4570HA
IC3	XM356A00	IC NJM2068LD
IC4	XB247301	IC uPC4570HA
IC5	XB247301	IC uPC4570HA
IC6	XB247301	IC uPC4570HA
IC7	XB247301	IC uPC4570HA
IC8	XB247301	IC uPC4570HA
IC9	XB247301	IC uPC4570HA
IC10	XB247301	IC uPC4570HA
IC11	XQ212A00	IC NJM4558LD
IC12	XQ212A00	IC NJM4558LD
IC14	XA507A00	IC AN78N05
IC16	Xi022B00	IC YSS203B-F
IC17	XS881A00	IC LH5P832D-10 PSRAM
IC302	XM356A00	IC NJM2068LD
IC303	XP894A00	IC LC78211
IC304	iG092000	IC M5220L
IC305	XG505A00	IC NJM79M15FA
IC306	XR040A00	IC TC9299P
IC307	XR040A00	IC TC9299P
IC308	XB247301	IC uPC4570HA
IC309	XB247301	IC uPC4570HA
IC310	XF494A00	IC LB1641
L301	VP575600	COIL 1.5uH

* New Parts

Schm Ref.	PART NO.	Description
L302	VP575600	COIL 1.5uH
L303	VP575600	COIL 1.5uH
PJ1	VN308200	JACK. PIN 4P
PJ301	VN308700	JACK. PIN 6P
PJ302	VU857800	JACK. PIN 6P
PJ303	VJ695600	JACK. PIN 2P
PJ305	VP768000	JACK. PIN 2P
Q303	iC174020	TR 2SC1740S R, S
Q304	iC174020	TR 2SC1740S R, S
△ Q305	VP883000	TR 2SA893A D, E
Q306	VP872700	TR 2SC4488 S, T
Q307	VP872600	TR 2SA1708 S, T
Q308	iC224030	TR 2SC2240 GR, BL
Q309	iC224030	TR 2SC2240 GR, BL
Q310	VP872600	TR 2SA1708 S, T
Q311	VP872700	TR 2SC4488 S, T
* Q312	VV855300	TR 2SD856 Q, P
Q313	iC1815C0	TR 2SC1815 Y
* Q314	VV855300	TR 2SD856 Q, P
* Q315	VV855300	TR 2SD856 Q, P
Q316	iC1815C0	TR 2SC1815 Y
* Q317	VV855300	TR 2SD856 Q, P
△ Q319	VP872700	TR 2SC4488 S, T
△ Q320	iC174020	TR 2SC1740S R, S
△ Q321	VP872600	TR 2SA1708 S, T
Q322	VP883000	TR 2SA893A D, E
△ Q323A	iX615750	TR 2SA1694 O, P, Y
△ Q323C	iX615760	TR 2SC4467 O, P, Y
Q324	VP882900	TR 2SC1890 E
Q326	iC287820	TR 2SC2878 A, B
Q327	iC287820	TR 2SC2878 A, B
R79	HV453220	R. CAR. FP 2.2Ω 1/4W
R84	HL314470	R. MTL. OXD 47Ω 1W
R85	HV453220	R. CAR. FP 2.2Ω 1/4W
R86	HV453220	R. CAR. FP 2.2Ω 1/4W
R87	HV453220	R. CAR. FP 2.2Ω 1/4W
R88	HV453220	R. CAR. FP 2.2Ω 1/4W
R353	HV454100	R. CAR. FP 10Ω 1/4W
R360	HV455470	R. CAR. FP 470Ω 1/4W
R365	HV455470	R. CAR. FP 470Ω 1/4W
R370	HV455330	R. CAR. FP 330Ω 1/4W
R376	HV455220	R. CAR. FP 220Ω 1/4W
R377	HV455100	R. CAR. FP 100Ω 1/4W
R378	HV455100	R. CAR. FP 100Ω 1/4W
R379	HV455220	R. CAR. FP 220Ω 1/4W
R385	HV455330	R. CAR. FP 330Ω 1/4W
R386	HV456150	R. CAR. FP 1.5KΩ 1/4W
R387	VE869300	R. MTL. OXD 0.1Ω 2W
R389	HV454220	R. CAR. FP 22Ω 1/4W
R390	HV454220	R. CAR. FP 22Ω 1/4W
R392	HV456150	R. CAR. FP 1.5KΩ 1/4W
R394	VE869300	R. MTL. OXD 0.1Ω 2W
R398	HV454100	R. CAR. FP 10Ω 1/4W

* New Parts

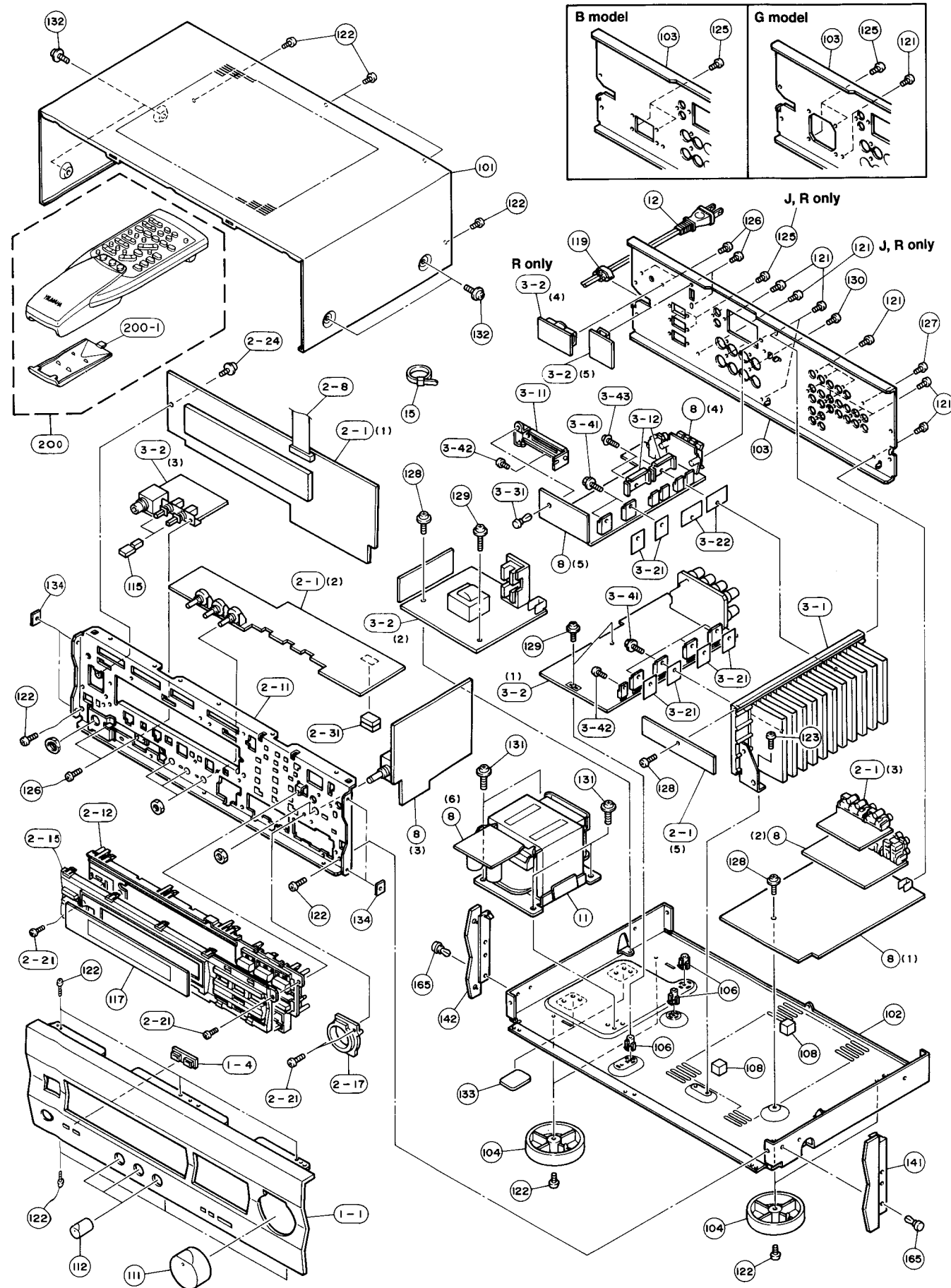
P.C.B. INPUT

Schm Ref.	PART NO.	Description
R400	HV454100	R. CAR. FP 10Ω 1/4W
△ R401	VK188600	R. FUS 470Ω 1/4W
R402	HV456270	R. CAR. FP 2.7KΩ 1/4W
R403	HV455470	R. CAR. FP 470Ω 1/4W
R404	HV456820	R. CAR. FP 8.2KΩ 1/4W
R405	HV456150	R. CAR. FP 1.5KΩ 1/4W
R410	HV453470	R. CAR. FP 4.7Ω 1/4W
R412	HV457100	R. CAR. FP 10KΩ 1/4W
△ R415	VU981700	R. MTL. PLAT 0.22Ω+0.22 3W
R416	HV453470	R. CAR. FP 4.7Ω 1/4W
R417	HV454100	R. CAR. FP 10Ω 1/4W
R418	HL425820	R. MTL. OXD 820Ω 2W
R419	HV454100	R. CAR. FP 10Ω 1/4W
R420	HV454100	R. CAR. FP 10Ω 1/4W
R430	HV453220	R. CAR. FP 2.2Ω 1/4W
R433	HV454100	R. CAR. FP 10Ω 1/4W
R434	HL314680	R. MTL. OXD 68Ω 1W
R455	HV453470	R. CAR. FP 4.7Ω 1/4W
R456	HV453470	R. CAR. FP 4.7Ω 1/4W
R457	HV454100	R. CAR. FP 10Ω 1/4W
R458	HV454100	R. CAR. FP 10Ω 1/4W
R501	HL314680	R. MTL. OXD 68Ω 1W
R504	HV454100	R. CAR. FP 10Ω 1/4W
R505	HV454100	R. CAR. FP 10Ω 1/4W
R506	HL314220	R. MTL. OXD 22Ω 1W
△ RY301	VU566700	RELAY DG24D2-OS/M
SW1	VS602600	SW. SLIDE SS070-P022 A(BG)
TE301	VS578600	TERM. SP 8P
VR301	VV412800	VR A100KΩ
XL1	VK175200	RSNR. CE 11.28MHz
	VJ828000	PIN IMSA-6024-03E
	BB071360	SCR. TERM 8.3x13

* New Parts

DSP-A492

EXPLODED VIEW



MECHANICAL PARTS

Ref. No.	PART NO.	Description	Remarks	Markets
* 1- 1	VV142800	FRONT PANEL	BL	
* 1- 1	VV142900	FRONT PANEL	TI	
* 1- 4	VV123700	ESCUTCHEON, 3/8	2P	
* 1- 4	VV123800	ESCUTCHEON, 3/8	2P	
* 2- 1	VV591300	P.C.B. ASS'Y	OPERATION	(R)
* 2- 1	VV591400	P.C.B. ASS'Y	OPERATION	(BG)
2- 8	MF122400	FLEXIBLE FLAT CABLE C&C	22P 400mm	
* 2-11	VV140700	SUB CHASSIS	130	
* 2-12	VV137100	BUTTON CASE		BL
* 2-12	VV137200	BUTTON CASE		TI
* 2-15	VV309700	SUB PANEL CASE	7	BL
* 2-15	VV309800	SUB PANEL CASE	7	TI
* 2-17	VV149500	ESCUTCHEON, VOL		BL
* 2-17	VV149600	ESCUTCHEON, VOL		TI
2-21	Ei330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL	
2-24	VT669300	PW HEAD B-TITE SCREW	3x8-8 MFC2	
2-31	VZ092400	DAMPER	6x5x10	
* 3- 1	VV143200	HEAT SINK ASS'Y		
* 3- 2	VV591600	P.C.B. ASS'Y	MAIN	(R)
* 3- 2	VV591700	P.C.B. ASS'Y	MAIN	(B)
* 3- 2	VV591800	P.C.B. ASS'Y	MAIN	(G)
* 3-11	VV491300	SUPPORT, PCB		
* 3-12	VV901900	SUPPORT, TR		
* 3-21	VV849300	RADIATION SHEET	BFG-20ADH-3 19X24	
* 3-22	VV901800	RADIATION SHEET		
3-31	VQ368500	PUSH RIVET	P3545-B	
3-41	VK173200	SCREW, TRANSISTOR	3x15 SP FCM3	
3-42	Ei330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL	
3-43	VT669400	PW HEAD B-TITE SCREW	3x15-8 MFC2	
* 8	VV592000	P.C.B. ASS'Y	INPUT	(BG)
* 8	VV805600	P.C.B. ASS'Y	INPUT	(R)
△ * 11	XT077A00	POWER TRANSFORMER		(R)
△ * 11	XT079B00	POWER TRANSFORMER		(BG)
△ 12	VL238100	POWER CORD ASS'Y		(R)
△ 12	VN363700	POWER CORD ASS'Y		(G)
△ 12	VV437300	POWER CORD ASS'Y		(B)
15	VU590000	BINDING TIE	CBTD001B	
* 101	VV140400	TOP COVER		BL
* 101	VV140500	TOP COVER		TI
* 102	VQ794000	CHASSIS		
* 103	VV148400	REAR PANEL		(R)
* 103	VV148500	REAR PANEL		(B)
* 103	VV148600	REAR PANEL		(G)
104	VS025000	LEG	D60xH21	
106	VR264400	SPACER	H8	
108	VQ366100	DAMPER, PCB		
* 111	VV148800	KNOB	D40	BL
* 111	VV148900	KNOB	D40	TI
* 112	VV123300	KNOB	D14	BL
* 112	VV123400	KNOB	D14	TI
* 115	VV123500	BUTTON, 3/8		BL
* 115	VV123600	BUTTON, 3/8		TI
* 117	VV140000	SHEET, WINDOW		

* New Parts

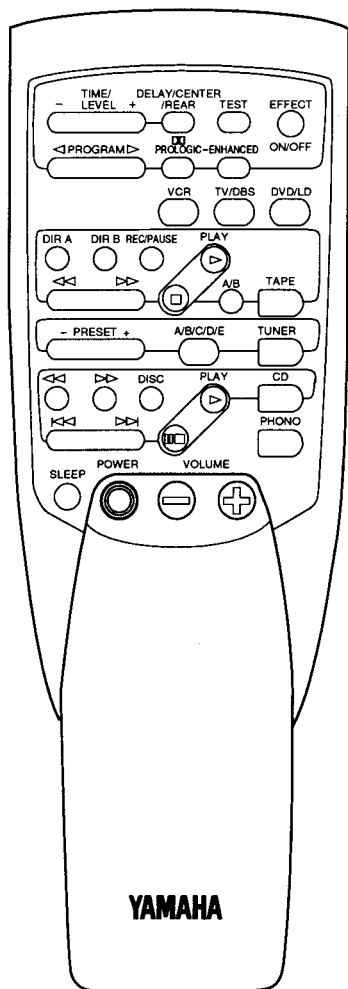
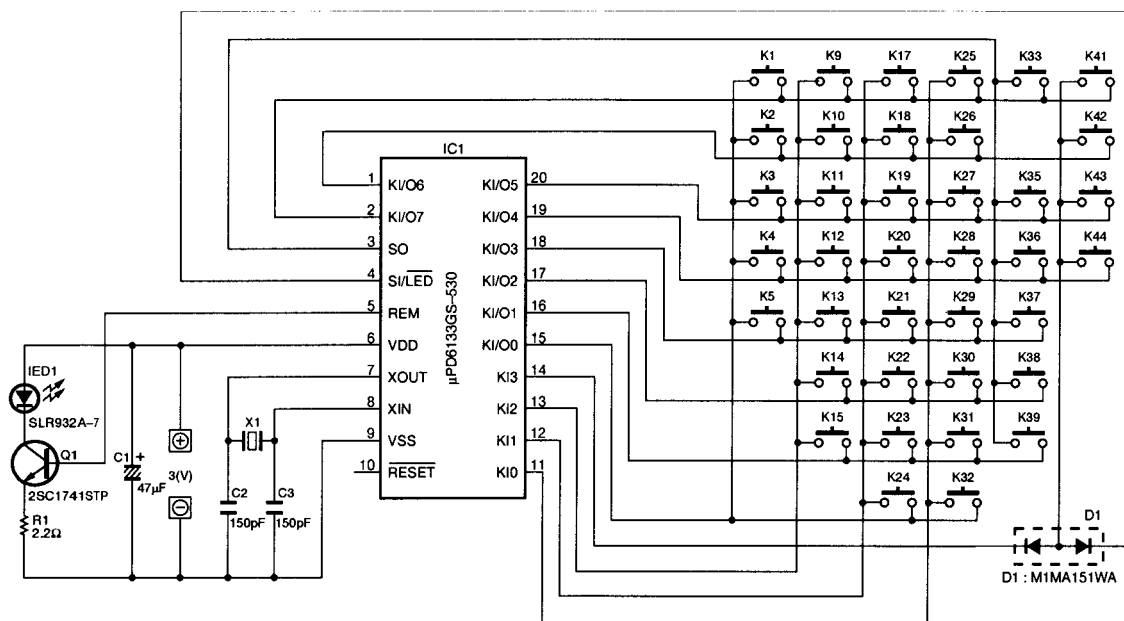
Ref. No.	PART NO.	Description	Remarks	Markets
119	VN158600	CORD STOPPER	No. 2104	
121	EN301010	BIND HEAD BONDING TAP. SCREW	3x8 FCRM3-BL	
122	Ei330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL	
123	Ei030046	BIND HEAD TAPPING SCREW	3x4 ZMC2-Y	
125	Ei030086	BIND HEAD B-TITE SCREW	3x8 ZMC2-Y	
126	ED330066	BIND HEAD SCREW	3x6 FCRM3-BL	
127	AA627310	GROUND TERMINAL		
128	VT669300	PW HEAD B-TITE SCREW	3x8-8 MFC2	
129	VT669400	PW HEAD B-TITE SCREW	3x15-8 MFC2	
* 130	VY731200	BONDING HEAD TAPPING SCREW	3x10 MFNI33	
131	EK365090	PW HEAD S-TITE SCREW	4x8-10 FCRM3-BL	
132	EK365090	PW HEAD S-TITE SCREW	4x8-10 FCRM3-BL	BL
132	EX601150	BW HEAD S-TITE SCREW	4x8-10 FNM3-BL	TI
* 133	VY731400	DAMPER	HOLE	
* 134	VY989400	DAMPER	SIDE	
* 141	VV124500	PLATE SIDE R	130	BL
* 141	VV124600	PLATE SIDE R	130	TI
* 142	VV124300	PLATE SIDE L	130	BL
* 142	VV124400	PLATE SIDE L	130	TI
165	VQ368600	PUSH RIVET	P3555-B	
		ACCESSORIES		
200	VV486300	REMOTE CONTROL TRANSMITTER	SBGH20018A RAV3	
200-1	CX679050	LID	74x34BLALPS	
		BATTERY, MANGANESE	SUM-3, AA, R06	

* New Parts

DSP-A492

REMOTE CONTROL TRANSMITTER

■ SCHEMATIC DIAGRAM



Key No.	FUNCTION	CUSTOM (BIN)	DATA (HEX)
1	EFFECT ON/OFF	7A	56
2	PROGRAM ◀	7A	59
3	PROGRAM ▶	7A	58
4	PROLOGIC	7A	88
5	ENHANCED	7A	89
9	VCR	7A	0F
10	TV/DBS	7A	54
11	DVD/LD	7A	17
12	DIR A	7A	07
13	DIR B	7A	40
14	REC/PAUSE	7A	04
15	PLAY (TAPE)	7A	00
17	◀◀ (TAPE)	7A	01
18	▶▶ (TAPE)	7A	02
19	□ (TAPE)	7A	03
20	DECK A/B	7A	06
21	TAPE	7A	18
22	PRESET -	7A	11
23	PRESET +	7A	10
24	A/B/C/D/E	7A	12
25	TUNER	7A	16
26	◀◀ (CD)	7A	0D
27	▶▶ (CD)	7A	0C
28	DISC	7A	4F
29	PLAY (CD)	7A	08
30	CD	7A	15
31	◀◀ (CD)	7A	0B
32	▶▶ (CD)	7A	0A
33	PAUSE	7A	09
35	PHONO	7A	14
36	SLEEP	7A	57
37	POWER	7A	1F
38	VOLUME -	7A	1B
39	VOLUME +	7A	1A
41	TIME/LEVEL -	7A	53
42	TIME/LEVEL +	7A	52
43	DELAY/CENTER/REAR	7A	86
44	TEST	7A	85

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			

1/4W Type

10mm

1/4W Type

10mm

1/6W Type

5mm

1/6W Type

5mm

DSP-A492

YAMAHA
