

DIGITAL WAVE FILTERING SAMPLER

TX16W

SERVICE MANUAL



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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.

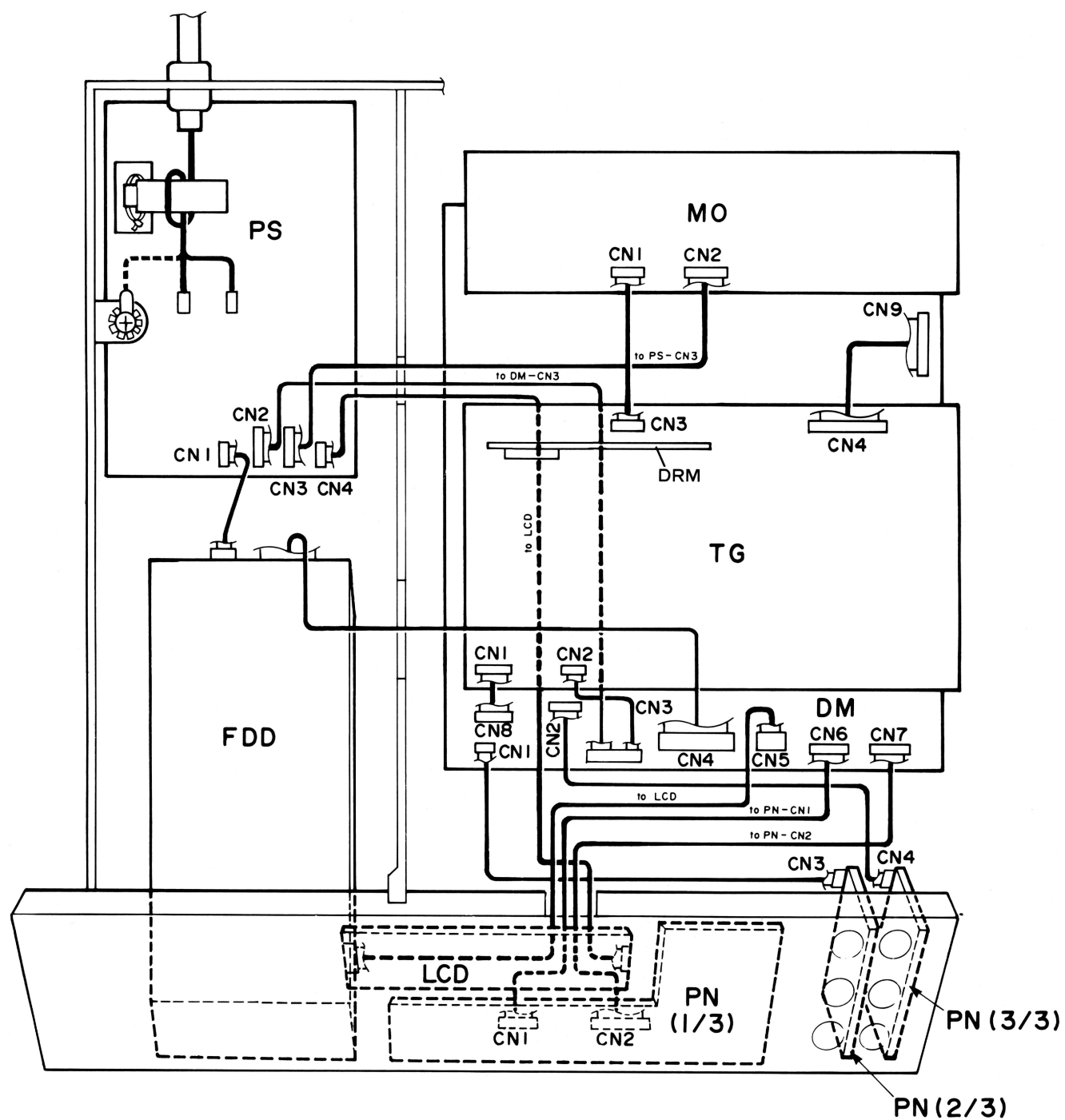
SPECIFICATIONS

Polyphony	16 note, 16 timbre
Sampling Frequencies	33.3 kHz (stereo), 16.7 kHz, 33.3 kHz, 50.0 kHz (mono)
Memory Capacity	1.5 Mbytes wave memory, expandable to 6 Mbytes
Floppy Disk	2DD (720 Kbytes), MSX-DOS format
Keys	PERFORM SELECT, SYSTEM SETUP, PERFORM EDIT, VOICE EDIT, FILTER EDIT, WAVE EDIT, SAMPLE, UTILITY, NUMERIC KEY PAD, ◀▶, +1/-1, ENTER
Controls	GAIN
Display	40-character 2-line Liquid Crystal Display, illuminated.
Terminals	PHONES, FOOT SW, EXT TRIG, SAMPLE, INDIVIDUAL OUT 1-8, MIXED OUT I/II, MIDI IN, MIDI OUT, MIDI THRU, EXT.PORT
Power Consumption	25W
Power Requirements	U.S. and Canadian models: 120 V 50/60 Hz General model: 220 V/240 V 50Hz
Dimensions (D × W × H)	372 × 480 × 94.5 mm (14-5/8" × 18-7/8" × 3-11/16")
Weight	6.8kg (14 lb. 15 oz)
Included Items	MIDI Cable × 1, System Disk, Data Disk × 6, Stereo Adaptor (for stereo sampling input)

総合仕様

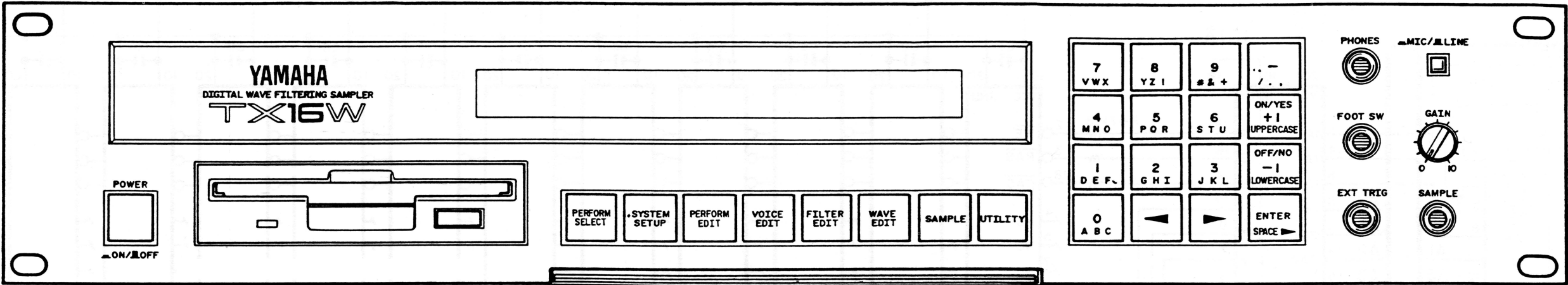
構成	16チャンネル, AWM音源, 同時発音数 最大16音(各音色の合計値) 同時発音可能な音色数 最大16音色, キーアサイン方式 後着優先
サンプリング周波数	33.3kHz (stereo), 16.7kHz, 33.3kHz, 50.0kHz (mono)
メモリー容量	1.5Mバイト WAVE MEMORY (拡張時最大6MB, 1.5MB単位で拡張)
フロッピーディスクドライブ	3.5インチ2DD, 720Kバイト, MSXDOSフォーマット
スイッチ	PERFORM SELECT, SYSTEM SETUP, PERFORM EDIT, VOICE EDIT, FILTER EDIT, WAVE EDIT, SAMPLE, UTILITY, NUMERIC KEY PAD, ◀▶, +1/-1, ENTER
コントロール	GAIN
パネル表示器	40文字×2行 バック照明付 LCD
入力端子	SAMPLE INPUT, EXTERNAL TRIGGER INPUT, FOOT SWITCH
出力端子	INDIVIDUAL OUTPUT 1-8, MIXED OUTPUT I, II, PHONES, MIDI IN, MIDI OUT, MIDI THRU
入出力端子	RS422 コミュニケーション プラグ
定格消費電力	100V 50Hz/60Hz, 17W
外形寸法, 重量	幅480mm×奥行372mm×高さ945mm, 重量6.8kg

■CIRCUIT BOARD LAYOUT(ユニットレイアウト)

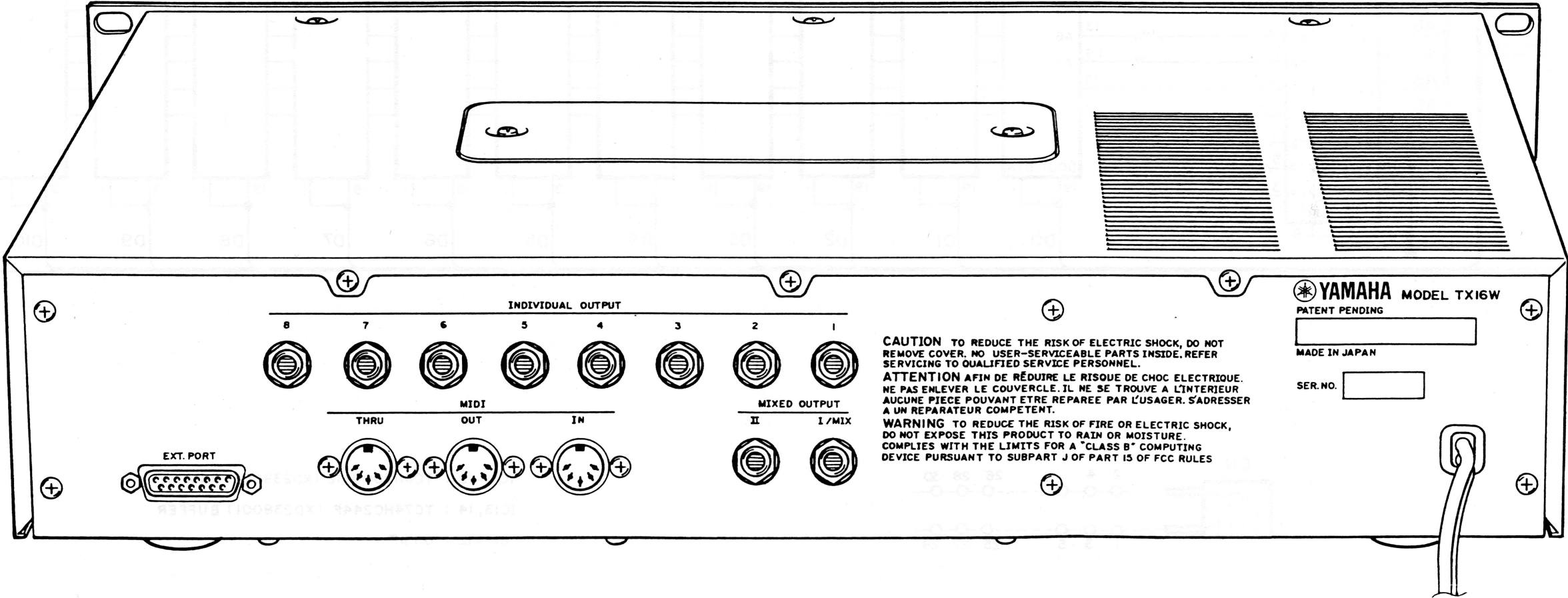


■ PANEL LAYOUT (パネルレイアウト)

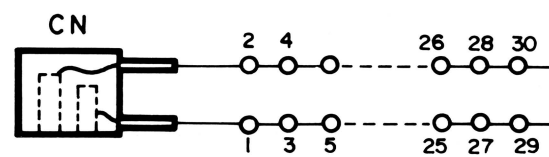
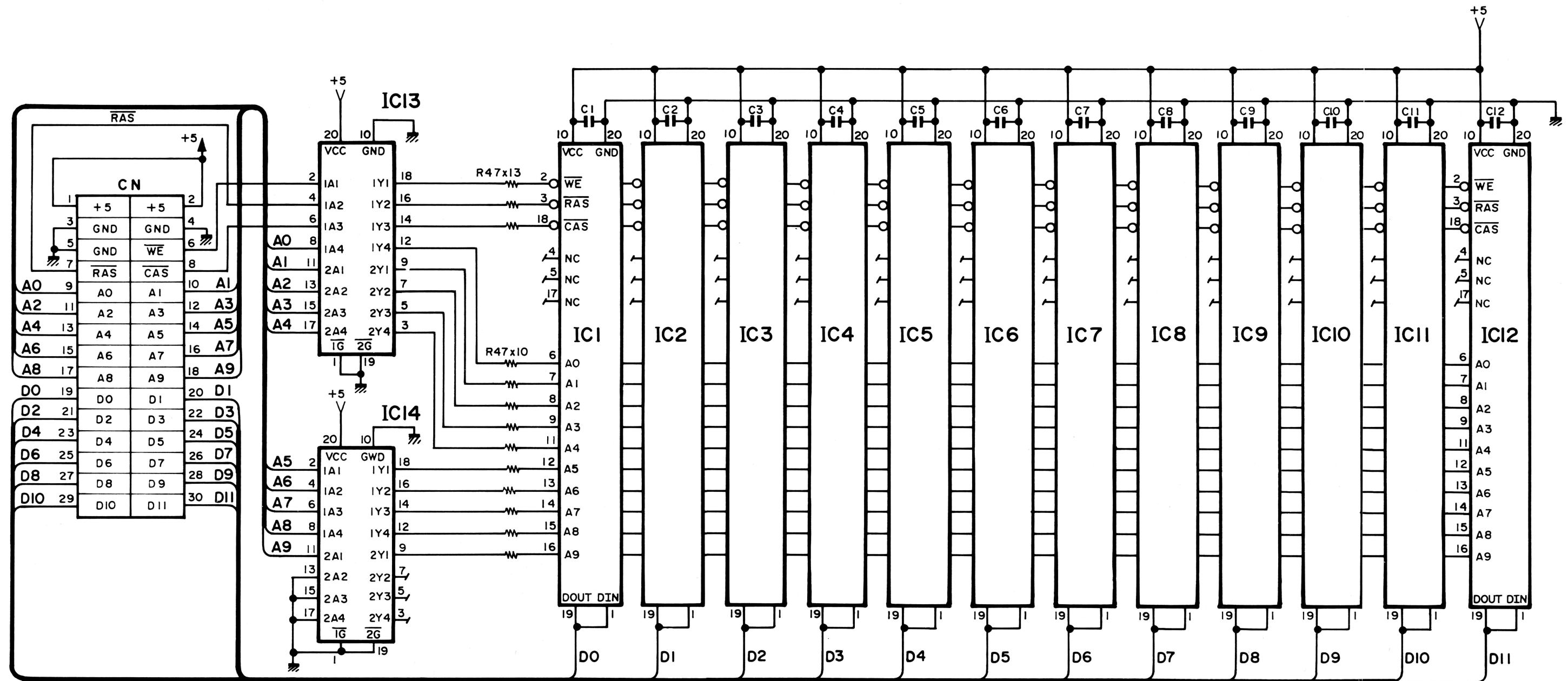
● Front Panel (フロントパネル)



● Rear Panel (リアパネル)

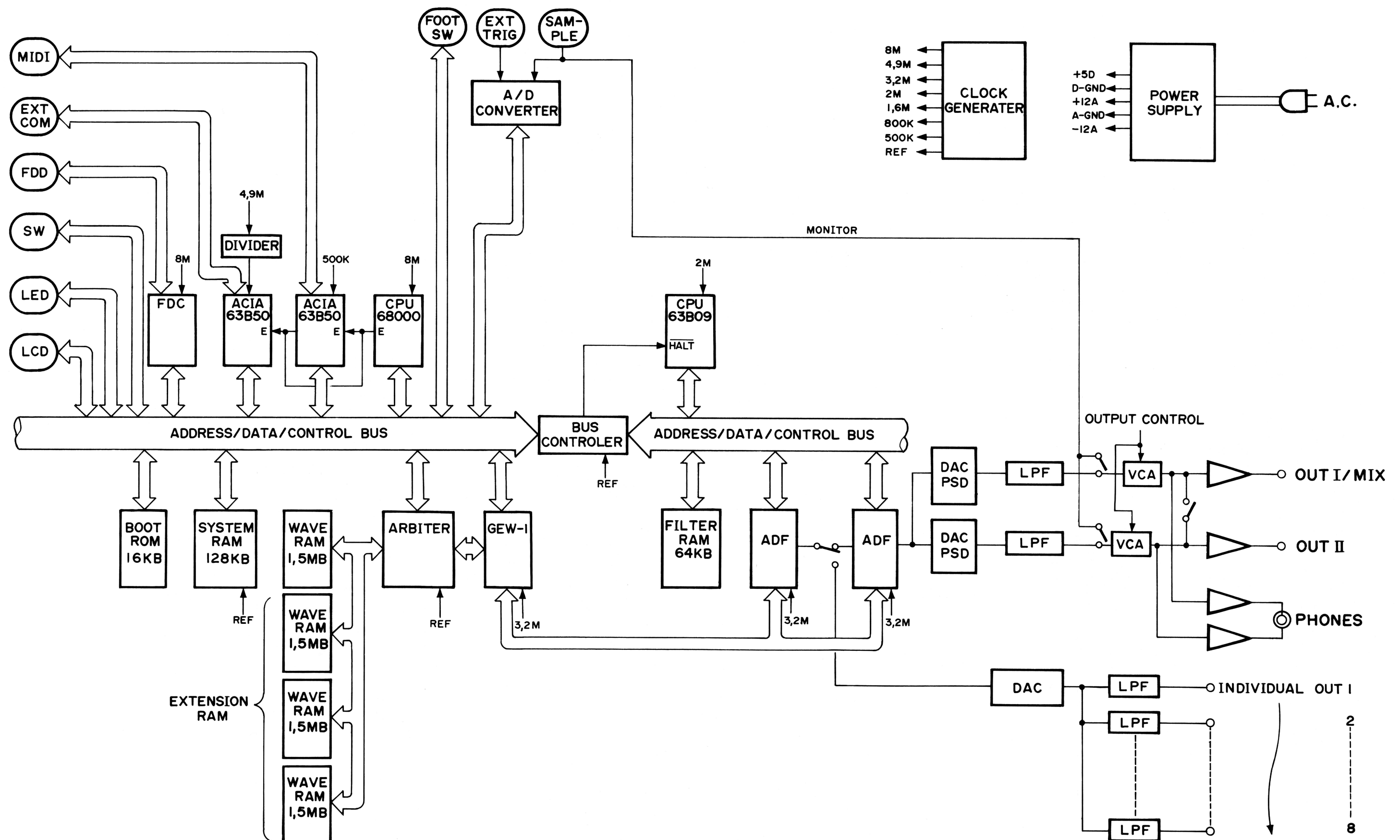


■DRM CIRCUI BOARD DIAGRAM(DRMシート回路図)



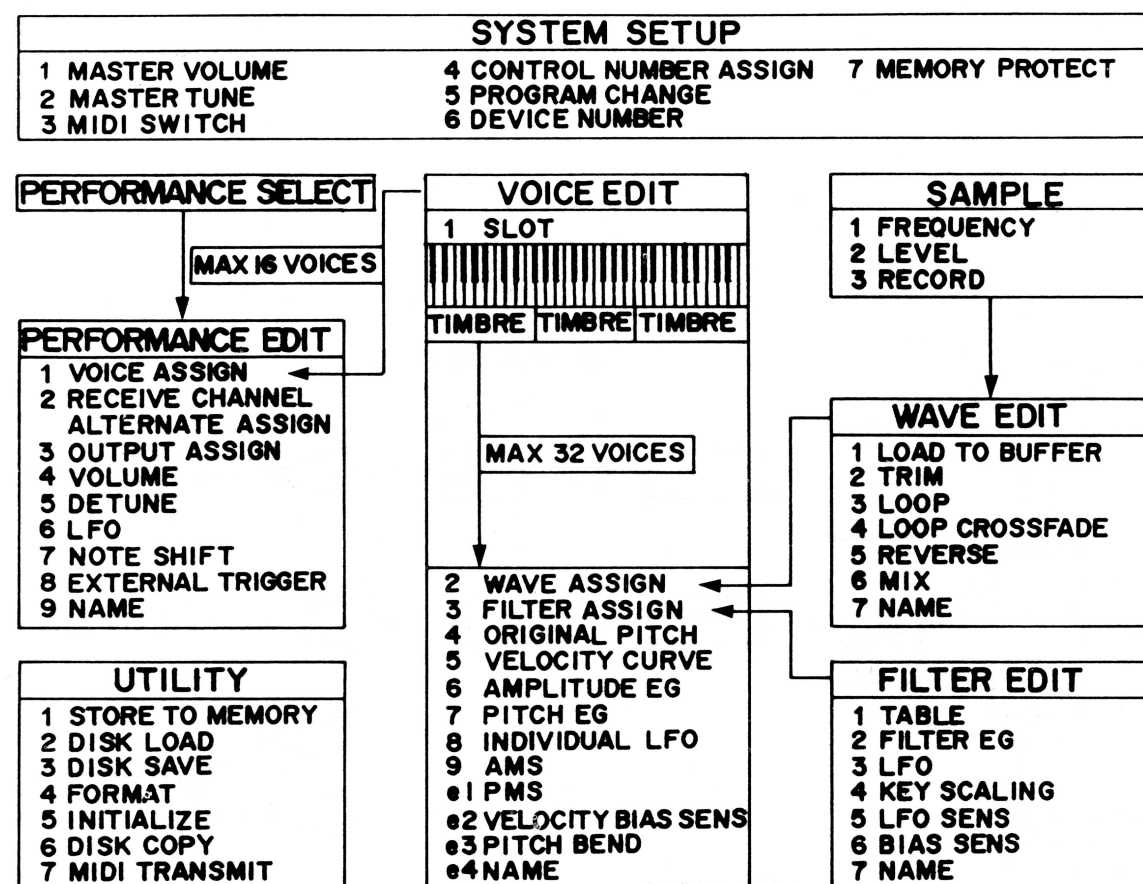
IC1~12 : TC511000 J-12 (XD239001) RAM 1M
 IC13, 14 : TC74HC244F (XD238001) BUFFER
 C1~12 : 0.1 μ F

■ BLOCK DIAGRAM (ブロックダイアグラム)

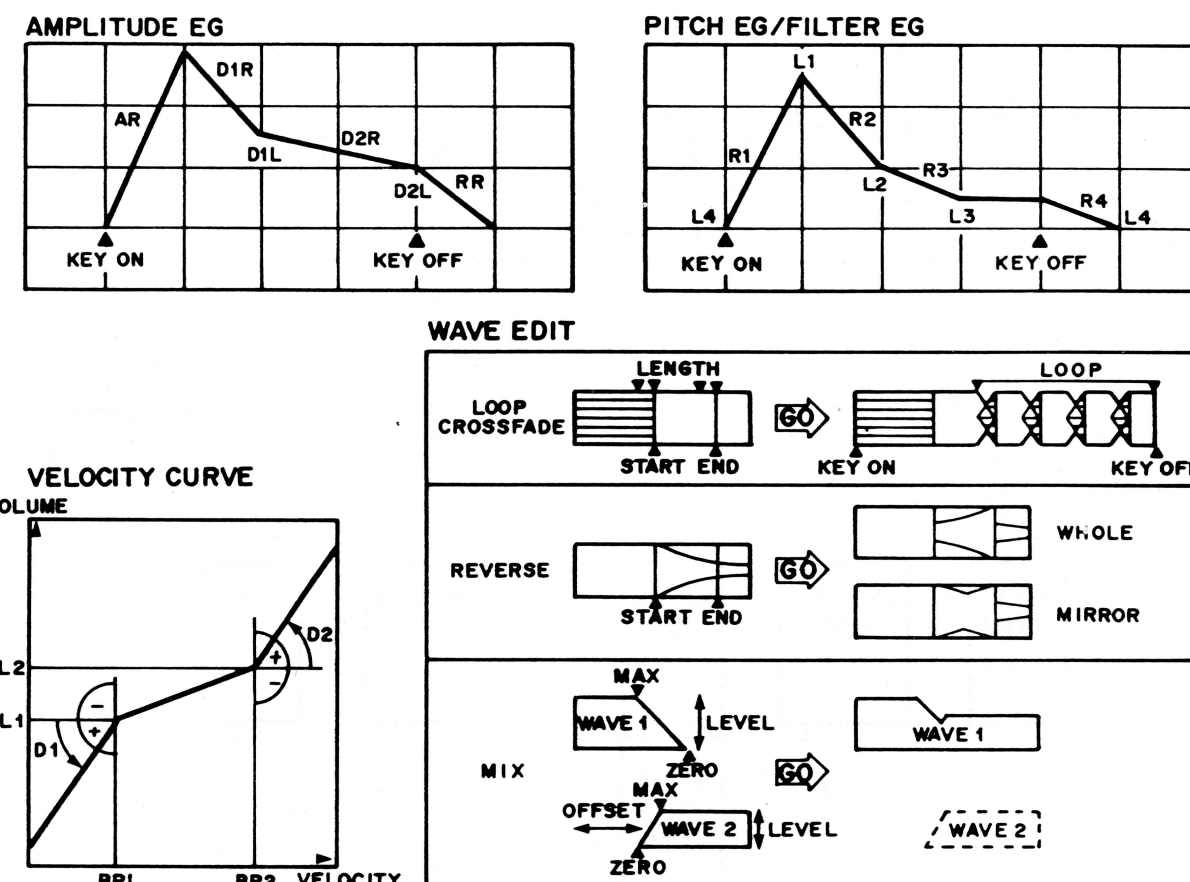


● OPERATION GUIDE SHEET A (OPガイドシートA)

● OPERATION GUIDE SHEET B (OPガイドシートB)



TX16W OPERATION GUIDE



LSI DATA TABLE (LSI端子機能表)

● HD63B09EP (XB233001) CPU

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	Vss		Ground	21	A13	O	Address bus
2	NMI	I	Non-maskable interrupt	22	A14	O	
3	IRQ	I	Interrupt request	23	A15	O	
4	FIRO	I	Fast interrupt request	24	D7	I/O	Data bus
5	BS	O	Bus status	25	D6	I/O	
6	BA	O	Bus available	26	D5	I/O	
7	Vcc		DC supply	27	D4	I/O	
8	A0	O	Address bus	28	D3	I/O	
9	A1	O		29	D2	I/O	
10	A2	O		30	D1	I/O	
11	A3	O		31	D0	I/O	
12	A4	O		32	R/W	O	Read/Write control
13	A5	O		33	BUSY	O	Busy
14	A6	O		34	E	I	System clock
15	A7	O		35	Q	I	System clock
16	A8	O		36	AVMA	O	Advanced valid memory address
17	A9	O		37	RES	I	Reset
18	A10	O		38	LIC	O	Last instruction cycle
19	A11	O		39	TSC	I	Three state control
20	A12	O		40	HALT	I	Halt

● HD63B50P (IG147300) Asynchronous Communications Interface Adaptor

Pin No.	Name	I/O	Function	Pin No.	Name	I/O	Function
1	Vss		Ground	13	R/W	I	Read/Write Enable
2	Rx Data	I	Receive data	14	E	I	
3	Rx CLK	I	Receive clock	15	D7	I/O	Data bus
4	Tx CLK	O	Transmit clock	16	D6	I/O	
5	RTS	I/O	Request to send	17	D5	I/O	
6	Tx Data	O	Transmit data	18	D4	I/O	
7	IRQ	I	Interrupt request	19	D3	I/O	
8	CS0	I	Chip select	20	D2	I/O	
9	CS2	I		21	D1	I/O	
10	CS1	I		22	D0	I/O	
11	RS	I	Resist select	23	DCD	I	Data carrier detect
12	Vcc		DC supply	24	CTS	I	Clear to send

● HD680000PS8 (XB566001) CPU

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	DQ1	I/O	Data inputs/Data outputs	11	A4	I	Address inputs
2	DQ2	I/O		12	A5	I	
3	W	I	Write control input	13	A6	I	
4	RAS	I	Row address strobe input	14	A7	I	
5	N.C.			15	A8	I	Output enable input Column address strobe input
6	A0	I	Address inputs	16	OE	I	
7	A1	I		17	CAS	I	
8	A2	I		18	DQ3	I/O	Data inputs/Data outputs
9	A3	I		19	DQ4	I/O	
10	Vcc		Power supply (5V)	20	Vss		Ground (0V)

● YM2409 (XB022001) Generator of Wave 1 (GEW 1)

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	VDD		Power Supply	33	Vss		Ground
2	Vss		Ground	34	EG OFF	O	Envelope off data
3	MDATA0	I	Voice memory data bus	35	SI0	I	Serial data IN
4	MDATA1	I		36	SI1	I	
5	MDATA2	I		37	SI2	I	
6	MDATA3	I		38	SI3	I	
7	MDATA4	I		39	SI4	I	
8	MDATA5	I		40	SI5	I	Output mode select
9	MDATA6	I		41	OMS	I	
10	MDATA7	I		42	SO5	O	
11	MADR21	O	Voice memory address bus	43	SO4	O	Serial data OUT
12	MADR20	O		44	SO3	O	
13	MADR19	O		45	SO2	O	
14	MADR18	O		46	SO1	O	
15	MADR17	O		47	SO0	O	
16	MADR16	O		48	CLK	I	Master clock
17	MADR15	O		49	SYW IN	I	Synchro pulse IN
18	MADR14	O		50	SYWOUT	I	Synchro pulse OUT
19	MADR13	O		51	D0	I	Data bus
20	MADR12	O		52	D1	I	
21	MADR11	O		53	D2	I	
22	MADR10	O		54	D3	I	
23	MADR9	O		55	D4	I	
24	MADR8	O		56	D5	I	
25	MADR7	O		57	D6	I	
26	MADR6	O		58	D7	I	
27	MADR5	O		59	A/D	I	Address/data parameter select
28	MADR4	O		60	CS	I	Chip select
29	MADR3	O		61	WR	I	Write control
30	MADR2	O		62	M/S	I	Master chip/slave chip mode select
31	MADR1	O		63	SWR	I	Sync write control
32	MADR0	O		64	IC	I	Initial clear

● YM2412 (XB056001) Adaptive Digital Filter (ADF)

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	AB6	I	Address bus for static filtering	33	Vss		Ground
2	AB7	I		34	W	I	Write control
3	AB8	I		35	CS	I	Chip select
4	AB9	I		36	A/D	I	Address/data control
5	AB10	I		37	IC	I	Initial clear
6	AB11	I		38	SYW	I	Synchro pulse
7	AB12	I		39	D/S	I	Filter mode select
8	AB13	I		40	CLK	I	Master clock
9	AB14	I		41	D0	I	Data bus
10	AB15	I		42	D1	I	
11	AB16	I	Test data	43	D2	I	
12	TO	O		44	D3	I	
13	SILO	I		45	D4	I	
14	SIL1	I	Lch input	46	D5	I	
15	SIL2	I		47	D6	I	
16	SOL0	O		48	D7	I	
17	SOL1	O	Lch output	49	DB0	I	Data bus for static filtering
18	SOL2	O		50	DB1	I	
19	SIR0	I		51	DB2	I	
20	SIR1	I	Rch input	52	DB3	I	
21	SIR2	I		53	DB4	I	
22	SOR0	O		54	DB5	I	
23	SOR1	O	Rch output	55	DB6	I	
24	SOR2	O		56	DB7	I	
25	SI0	I	Wave form data IN	57	Vss		Ground
26	SI1	I		58	AB0	I	Address bus for static filtering
27	SI2	I		59	AB1	I	
28	SI3	I		60	AB2	I	
29	PSI1	I		61	AB3	I	
30	PSI2	I	Mode control	62	AB4	I	Power supply
31	M0	I		63	AB5	I	
32	M1	I		64	VDD		

● **YM3021 (XB073001)** Pitch Sync DAC (PSD)

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	MP	I	Middle point 1/2 VDD bias	9	SI1	I	Serial data IN
2	RB	O	Bias-R	10	SI2	I	
3	AGND		Analog ground	11	SYW	I	
4	AVDD		Power Supply	12	SFT0	I	Synchro pulse
5	DVDD		Power Supply	13	SFT1	O	Weight shift IN
6	CLK	I	Master clock	14	S/HO	O	Weight shift OUT
7	DGND		Digital ground	15	S/HI	I	Sample hold gate control
8	SI0	I	Serial data IN	16	TOB	O	
							Analog output to buffer amp.

● **HA17012PB (XD055001)** Digital Analog Converter

PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	B12	I	Current switch control	11	B2	I	Current switch control
2	B11	I		12	B1	I	
3	B10	I		13	GND		
4	B9	I		14	REF+		Ground
5	B8	I		15	REF-		Reference Voltage (+)
6	B7	I		16	Comp	I	Reference Voltage (-)
7	B6	I		17	-V		Compensation
8	B5	I		18	Io	O	Power supply (-)
9	B4	I		19	Io	O	Output
10	B3	I		20	+V		
							Power supply (+)

● **PCM54HP (XA566001)** Digital Analog Converter

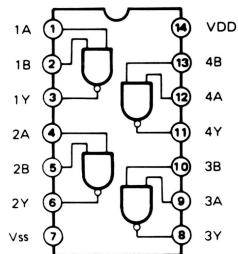
PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	Vpot		Not used	15	DA4		Bit 13
2	DA16		Bit 1 (MSB)	16	DA3		Bit 14
3	DA15		Bit 2	17	DA2		Bit 15
4	NC		Not used	18	DA1		Bit 16 (LSB)
5	DA14		Bit 3	19	Vo	O	Voltage Output
6	DA13		Bit 4	20	FBR		Not used
7	DA12		Bit 5	21	SJ	I	Summing Junction
8	DA11		Bit 6	22	COM		Common
9	DA10		Bit 7	23	Io	O	Current Output
10	DA9		Bit 8	24	NC		Not Used
11	DA8		Bit 9	25	B.OFF		Offset
12	DA7		Bit 10	26	+Vcc		Power Supply (+15V)
13	DA6		Bit 11	27	ADJ		Not Used
14	DA5		Bit 12	28	-Vcc		Power Supply (-15V)

● **WD1772PH-02 (XB623001)** Floppy Disk Controller/formatter

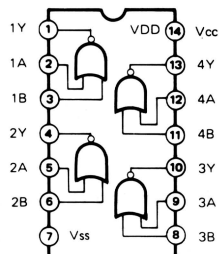
PIN NO.	NAME	I/O	FUNCTION	PIN NO.	NAME	I/O	FUNCTION
1	CS	I	Chip select	15	Vcc		Power supply
2	R/W	I	Read/Write control	16	STEP	O	Step pulse
3	A0	I	Address bus	17	DIRC	O	Direction control
4	A1	I		18	CLK	I	Clock IN
5	DAL0	I/O		19	RD	I	Read data
6	DAL1	I/O	Data access lines	20	MO	O	Motor ON
7	DAL2	I/O		21	WG	O	Write gate
8	DAL3	I/O		22	WD	O	Write data
9	DAL4	I/O		23	TR00	I	Track 00 signal
10	DAL5	I/O		24	IP	I	Index pulse
11	DAL6	I/O		25	WPRT	I	Write protect
12	DAL7	I/O		26	DDEN	I	Double density request
13	MR	I	Master reset	27	DRQ	O	Data request
14	Vss		Ground	28	INTRQ	O	Interrupt request

■ IC BLOCK DIAGRAM (IC ブロック図)

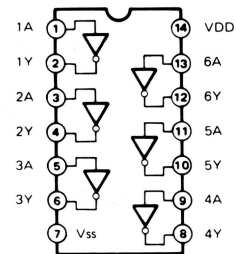
- **SN74HC00N (IR000050)**
Quad 2 Input NAND



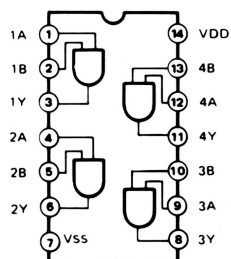
- **SN74HC02N (IR000250)**
Quad 2 Input NOR



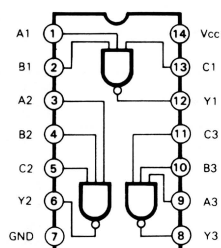
- **SN74HCU04N (IG142250)**
Hex Inverter
- **SN74HC04N (IG000450)**
Hex Inverter



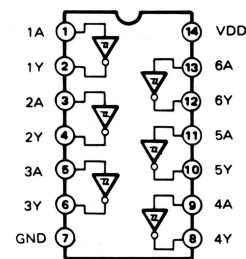
- **SN74HC08N (IR000850)**
Quad 2 Input AND



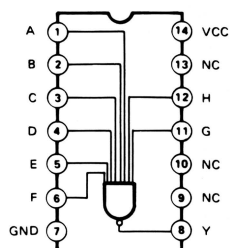
- **TC74HC10N (IR001050)**
Triple 3 Input NAND



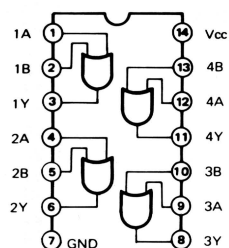
- **SN74HC14N (IR001450)**
Hex Inverter



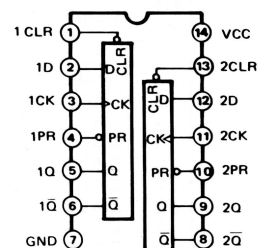
- **SN74HC30N (IR003050)**
8 Input NAND



- **SN74HC32N (IR003250)**
Quad 2 Input OR

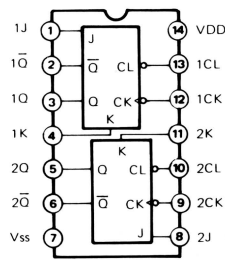


- **SN74HC74N (IR007450)**
Dual D-Type Flip-Flop

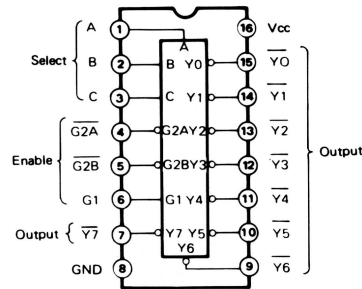


INPUTS				OUTPUTS	
PR	CLR	CLK	D	Q	Q̄
L	H	X	X	H	L
H	L	X	X	L	H
L	L	X	X	H	H
H	H	↑	H	H	L
H	H	↑	L	L	H
H	H	L	X	Q _o	Q̄ _o

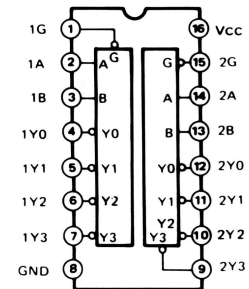
- **SN74HC107N (IR010750)**
Dual J-K Flip-Flop



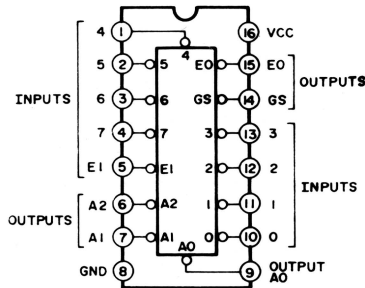
- **SN74HC138N (IR013850)**
3 to 8 Demultiplexer



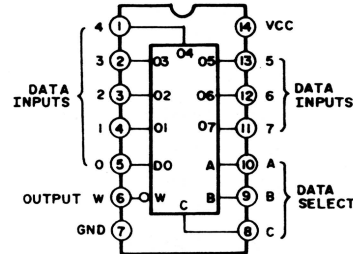
- **SN74HC139N (IR013950)**
Dual 2 to 4 Demultiplexer



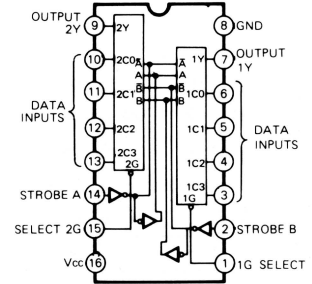
- **SN74HC148N (IR014850)**
8 to 3 Priority Encoder



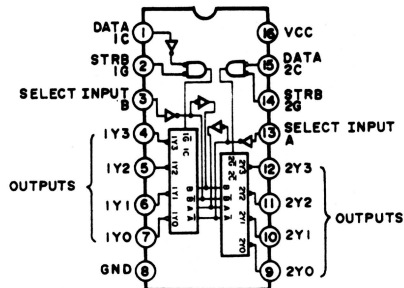
- **SN74HC152N (IR015250)**
8 to 1 Data Selector



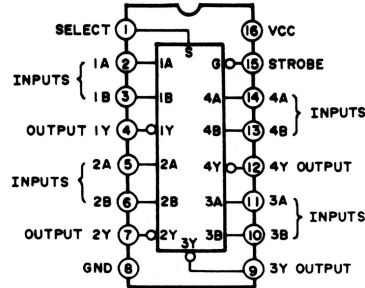
- **SN74HC153N (IR015350)**
Dual 4 to 1 Data Selectors



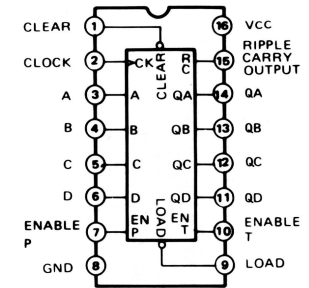
- **HD74LS156P (XB571001)**
Dual 2 to 4 O.C. Demultiplexer



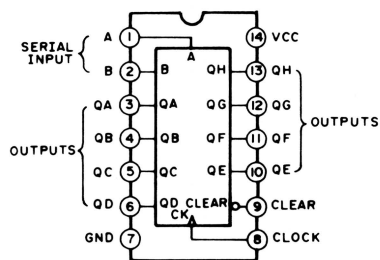
- **SN74HC158N (IR015850)**
Quad 2 to 1 Data Selectors



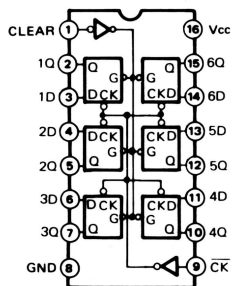
- **SN74HC161N (IR016150)**
- **SN74HC163N (IR016350)**
SYNC. Binary Counter



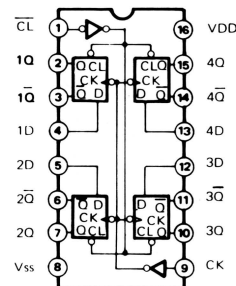
- **SN74HC164N (IR016450)**
8-Bit Shift Register



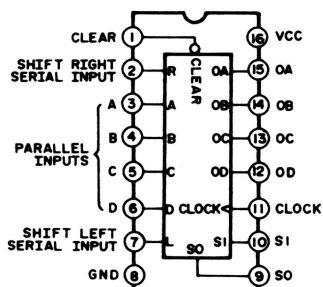
- **SN74HC174N (IR017450)**
Hex D-Type Flip-Flop



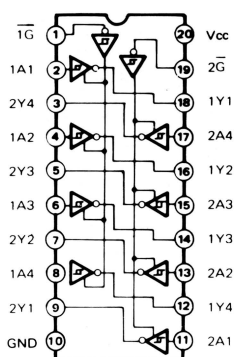
- **SN74HC175N (IR017550)**
Quad D-Type Flip-Flop



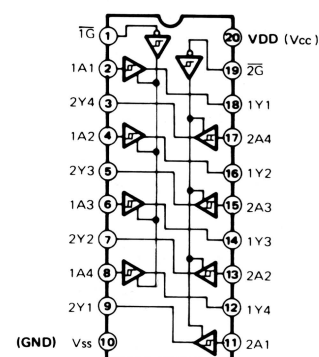
- **SN74HC194N (IR019450)**
4-Bit Shift Register



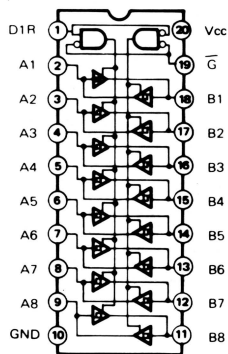
- **SN74HC240N (IR024050)**
Octal Bus Inverter



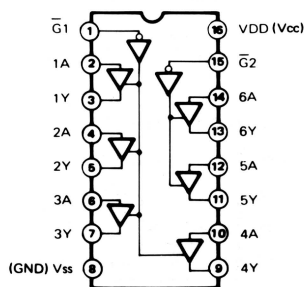
- **SN74HC 244 (IR024450)**
• **TC74HCT244P (XB179001)**
• **TC74HC244F (XD238001)**
Octal 3-State Bus Buffer



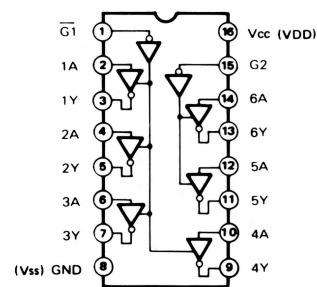
- **SN74HC245N (IR024550)**
Octal 3-State Bus Transceiver



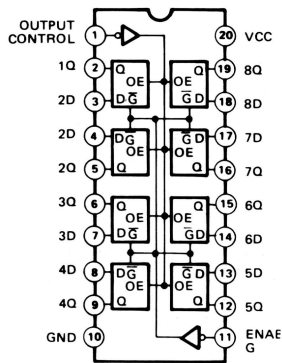
- **SN74HC367N (IR036750)**
Hex 3-State Bus Buffer



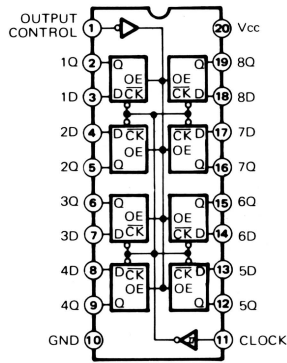
- **SN74HC368N (IR036850)**
Hex 3-State Bus Inverter



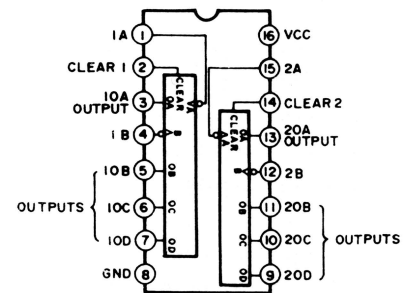
- **SN74HC373N** (IR037350)
 - **SN74HCT373N** (XD119001)
- Octal 3-State D-Type Latch



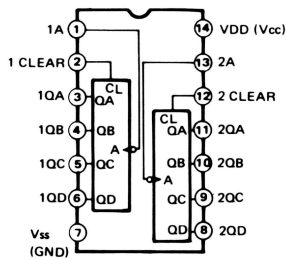
- **SN74HC374N** (IR037450)
 - **SN74HCT374N** (XD121001)
- Octal 3-State D-Type Flip-Flop



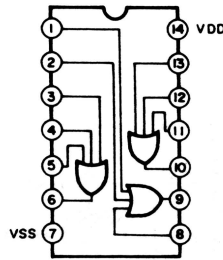
- **SN74HC390N** (IR039050)
- Dual Decade Counters



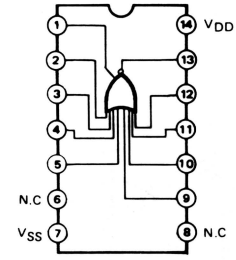
- **SN74HC393N** (IR039350)
- Dual 4-Bit Binary Counter



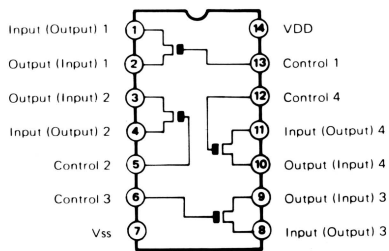
- **TC74HC4075** (IR407500)
- Triple 3-Input OR Gate



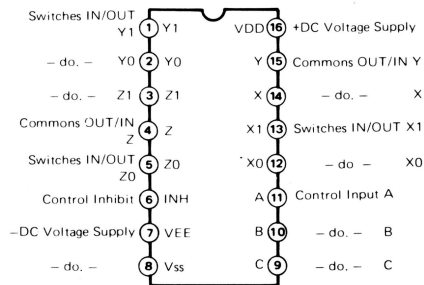
- **TC74HC4078P** (IR407800)
- 8-Input NOR/OR Gate



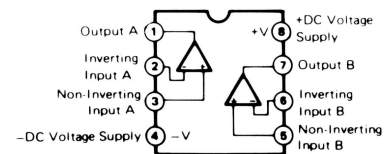
- **TC4066BP** (IG001270)
- Quad Bilateral Switch



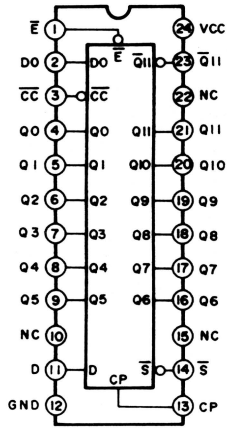
- **TC4053BP** (IG055100)
- Triple 2-Ch. Multiplexer/Demultiplexer



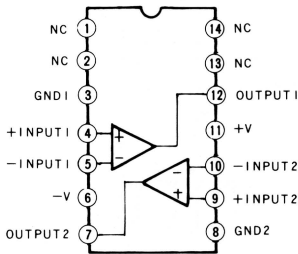
- **NJM072D** (IG107000)
 - **NJM2041DD** (IG069200)
 - **NJM4556D** (IG042500)
 - **NJM4558DV** (IG001390)
 - **NJM4560ED** (IG040000)
- Dual Operational Amplifier



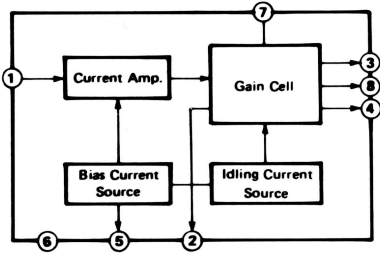
- **AM25L04PC (XD050001)**
12-Bit Successive Approximation Register



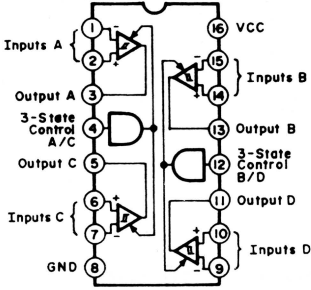
- **μ PC319C (IG086700)**
Voltage Comparator



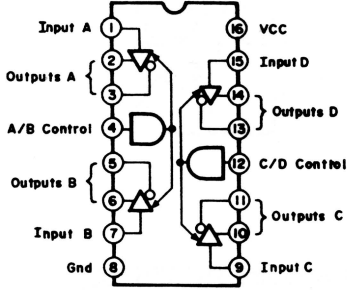
- **μ PC1252H2 (IG062500)**
VCA



- **MC3486 (XB016001)**
Quad Line Receiver with 3-State Outputs

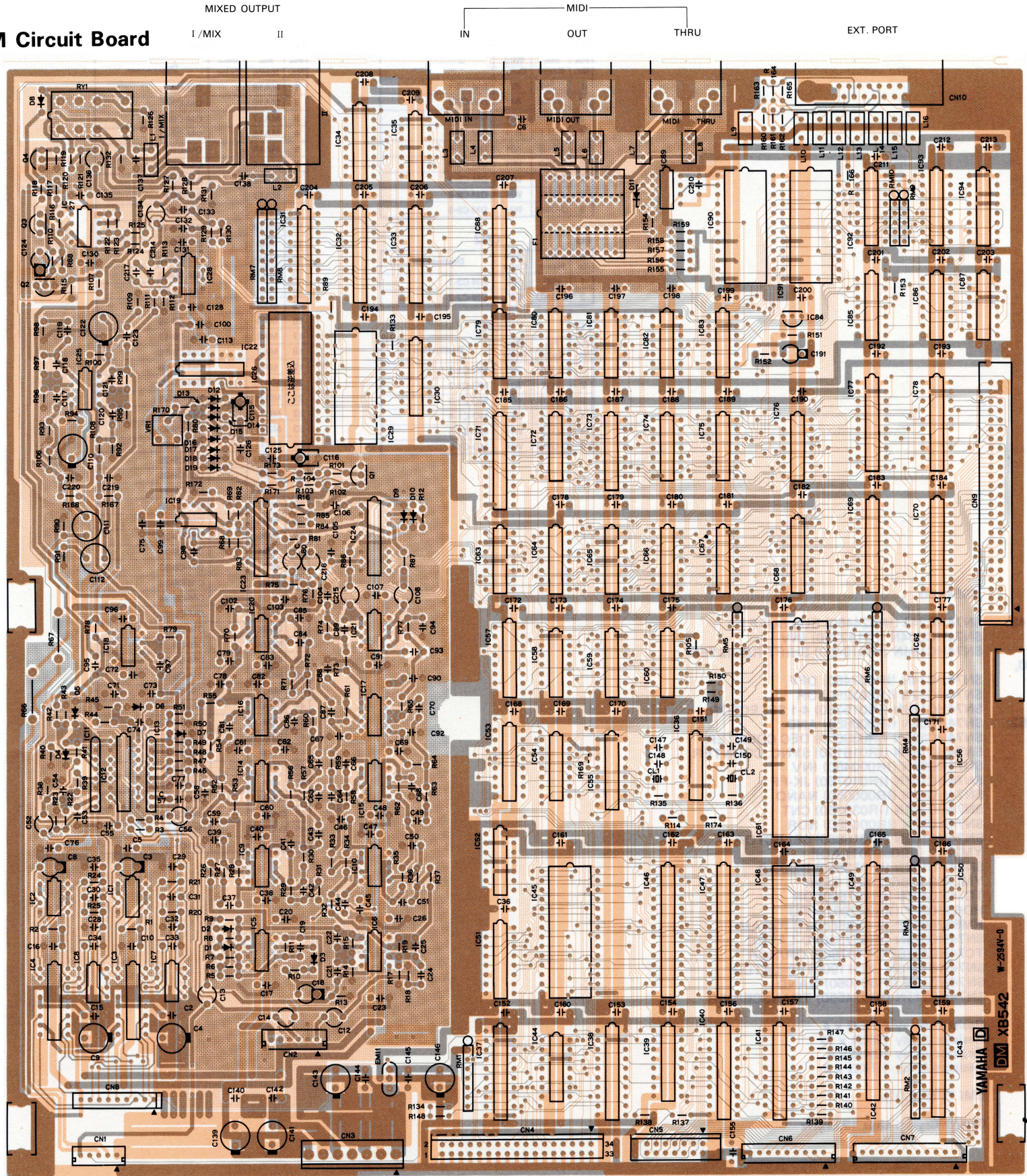


- **MC3487 (XB015001)**
Quad Line Driver with 3-State Outputs



■CIRCUIT BOARDS (シート基板図)

●DM Circuit Board



Components side (部品側)

TX16W

Notes)

Circuit Board:

- IC1, 2:
3, 4:
5, 6, 9, 10, 14 ~ 18,
20, 21, 27, 28:
7, 8, 19:
11, 13:
12, 23, 24:
22:
25:
26:
29:
30:
31, 32, 41, 88:
33:
34:
35, 52, 63, 65, 81:
36:
37, 43, 56, 62, 77, 78:
38:
39, 94:
40, 70:
42:
44, 82, 87:
45:
46, 47, 49, 50:
51:
53:
54, 67, 74, 75, 80:
55:
57:
58:
59, 72:
60, 85:
61:
64:
66, 79:
68, 73:
69, 71:
76:
83:
84:
86:
89:
90, 91:
92:
93:

Q1:

2, 3, 4:

D1 ~ 11:

R26 ~ 31, 52 ~ 57,
60, 70 ~ 72:
32 ~ 34, 58, 59, 61,
73, 74:
35 ~ 37, 62 ~ 65, 77:
66, 67:

RM1:

2:

3 ~ 6:

7, 8:

9:

L1 ~ 16:

EMI 1:

F1:

CL1:

2:

RY1:

CN10:

XB542B0

NJM4560ED (IG040000) OP AMP.
YM3021 (XB073001) PSD

NJM4558DV (IG001390) OP AMP.
NJM072D (IG107000) OP AMP.
 μ PC1252H2 (IG062500) VCA
TC4053BP (IG055100) MPX
 μ PC319C (IG086700) COMPARATOR
NJM4556 (IG042500) OP AMP.
PCM54HP (XA566001) DAC
AM25L04PC (XD050001) SAR
SN74LS174N (XD122001) DFF
SN74HC374N (IR037450) DFF
TC74HCT244P (XB179001) 3 BUS BUFF
SN74HC163N (IR016350) CNT
SN74HC74N (IR007450) DFF
SN74HCJ04N (IG142250) INV
SN74HC244 (IR024450) BUS BUFF
HD74LS240P (IG044500) BUS BUFF
SN74HC174N (IR017450) DFF
SN74HC245N (IR024550) TRANSCEIVER
HD74LS156P (XB571001) DE-MPX
SN74HC393N (IR039350) CNT
WD1772PH-02 (XB623001) FDC
HM65256BSP-12 (XB561001) PSRAM
89530002 BOOT (XD049B00) EPROM
SN74HC368N (IR036850) BUS INV
SN74HC138N (IR013850) DECO 3
SN74HC32N (IR003250) OR
SN74HC148N (IR014850) ENCODER
SN74HC175N (IR017550) DFF
SN74HC164N (IR016450) SHIFT REGISTER
SN74HC04N (IR000450) INV
SN74HC00N (IR000050) NAND
HD68000PS8 (XB566001) CPU
SN74HC08N (IR000850) AND
SN74HC02N (IR000250) NOR
SN74HC139N (IR013950) DECO 2
SN74HCT374N (XD121001) DFF
SN74HC21N (IR002150) AND
SN74HC14N (IR001450) INV
PST518B-2 (IG116200) SYSTEM RESET
SN74HC152N (IR015250) SELECTOR
Photo Coupler TLP522
HD63B50P (IG147300) ACIA
MC3486 (XB016001) LINE RECEIVER
MC3487 (XB015001) LINE DRIVER

2SA1015 O, Y
2SC1815 Y, GR

1SS176

Metal Film Resistor 6.2K Ω 1/6W

Metal Film Resistor 4.3K Ω 1/6W
Metal Film Resistor 13K Ω 1/6W
Metal Oxide Film Resistor 47 Ω 1W

Resistor Array 1K Ω x 6
Resistor Array 4.7K Ω x 8
Resistor Array 10K Ω x 12
Resistor Ladder Network RKC B8L 10KJ
Resistor Array 4.7K x 4

FL Coil 20 μ H

EMI Filter 0.01 μ

Noise Filter D-03C

Ceramic Resonator 4.915MHz
Ceramic Resonator 16MHz

Relay DC RY5W 5V

D-SUB 15P SE

TX16W

DM		CN1	
Pin No.	Pin Name	Wire Color	Destination
1	A-GND	RE	PN-C3-1
2	R PHONE	WH	PN-C3-2
3	L PHONE	WH	PN-C3-3
4	FSW	WH	PN-C3-4
5	TIN	WH	PN-C3-5

DM		CN2	
Pin No.	Pin Name	Wire Color	Destination
1	L IN	SWH	PN-C4-1
2	A-GND	SWHS	PN-C4-2
3	R IN	SRE	PN-C4-3
4	A-GND	SRES	PN-C4-4
5	+12A	BR	PN-C4-5
6	-12A	YE	PN-C4-6

DM		CN3	
Pin No.	Pin Name	Wire Color	Destination
1	+5D	RE	TG-C2-1
2	D-GND	GY	TG-C2-2
3	+5D	RE	PS-C2-1
4	D-GND	GY	PS-C2-2
5	+12A	BR	PS-C2-3
6	A-GND	BL	PS-C2-4
7	-12A	YE	PS-C2-5

DM		CN4	
Pin No.	Pin Name	Wire Color	Destination
1	GND		FDD
2	DSKC		FDD
3	GND		FDD
4	NC		FDD
5	GND		FDD
6	NC		FDD
7	GND		FDD
8	IDX		FDD
9	GND		FDD
10	SEL 1		FDD
11	GND		FDD
12	SEL 2		FDD
13	GND		FDD
14	NC		FDD
15	GND		FDD
16	MO		FDD
17	GND		FDD
18	DIRC		FDD
19	GND		FDD
20	STEP		FDD
21	GND		FDD
22	WD		FDD
23	GND		FDD
24	WG		FDD
25	GND		FDD
26	TROO		FDD
27	GND		FDD
28	WPRT		FDD
29	GND		FDD
30	RD		FDD
31	GND		FDD
32	SIDE		FDD
33	GND		FDD
34	READY		FDD

DM		C5	
Pin No.	Pin Name	Wire Color	Destination
1	D-GND		LCD
2	+5D		LCD
3	Vo		LCD
4	MAI		LCD
5	MR/W		LCD
6	LCD		LCD
7	MD0		LCD
8	MD1		LCD
9	MD2		LCD
10	MD3		LCD
11	MD4		LCD
12	MD5		LCD
13	MD6		LCD
14	MD7		LCD

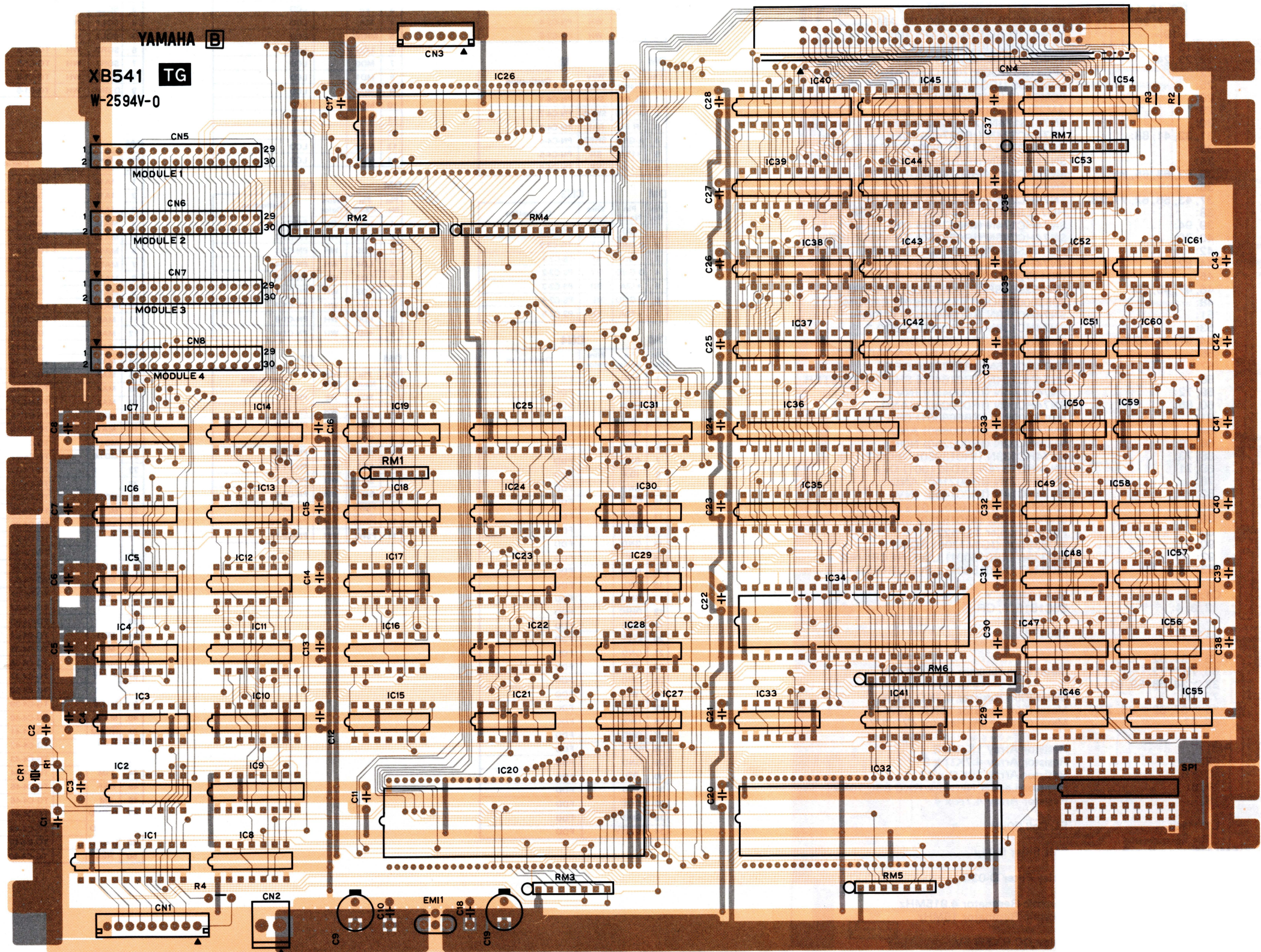
DM		C6	
Pin No.	Pin Name	Wire Color	Destination
1	LD7	RE	PN-C1-1
2	LD6	WH	PN-C1-2
3	LD5	WH	PN-C1-3
4	LD4	WH	PN-C1-4
5	LD3	WH	PN-C1-5
6	LD2	WH	PN-C1-6
7	LD1	WH	PN-C1-7
8	LD0	WH	PN-C1-8
9	+5D	WH	PN-C1-9

DM		C7	
Pin No.	Pin Name	Wire Color	Destination
1	SD7	RE	PN-C2-1
2	SD6	WH	PN-C2-2
3	SD5	WH	PN-C2-3
4	SD4	WH	PN-C2-4
5	SD3	WH	PN-C2-5
6	SD2	WH	PN-C2-6
7	SD1	WH	PN-C2-7
8	SD0	WH	PN-C2-8
9	PSW3	WH	PN-C2-9
10	PSW2	WH	PN-C2-10
11	PSW1	WH	PN-C2-11

DM		C8	
Pin No.	Pin Name	Wire Color	Destination
1	3.2M	RE	TG-C1-1
2	SYW	WH	TG-C1-2
3	SOL0	WH	TG-C1-3
4	SOL1	WH	TG-C1-4
5	SOL2	WH	TG-C1-5
6	SOR0	WH	TG-C1-6
7	SOR1	WH	TG-C1-7
8	SOR2	WH	TG-C1-8
9	D-GND	WH	TG-C1-9

DM		C9	
Pin No.	Pin Name	Wire Color	Destination
1	MA19		TG-C4-1
2	MA18		TG-C4-2
3	MA17		TG-C4-3
4	MA16		TG-C4-4
5	MA15		TG-C4-5
6	MA14		TG-C4-6
7	MA13		TG-C4-7
8	MA12		TG-C4-8
9	MA11		TG-C4-9
10	MA10		TG-C4-10
11	MA9		TG-C4-11
12	MA8		TG-C4-12
13	MA7		TG-C4-13
14	MA6		TG-C4-14
15	MA5		TG-C4-15
16	MA4		TG-C4-16
17	MA3		TG-C4-17
18	MA2		TG-C4-18
19	MA1		TG-C4-19
20	MD15		TG-C4-20
21	MD14		TG-C4-21
22	MD13		TG-C4-22
23	MD12		TG-C4-23
24	MD11		TG-C4-24
25	MD10		TG-C4-25
26	MD9		TG-C4-26
27	MD8		TG-C4-27
28	MD7		TG-C4-28
29	MD6		TG-C4-29
30	MD5		TG-C4-30
31	MD4		TG-C4-31
32	MD3		TG-C4-32
33	MD2		TG-C4-33
34	MD1		TG-C4-34
35	MD0		TG-C4-35
36	MA20		TG-C4-36
37	MR/W		TG-C4-37
38	MA21		TG-C4-38
39	MLDS		TG-C4-39
40	MA22		TG-C4-40
41	WRAM		TG-C4-41
42	TGBD		TG-C4-42
43	TGDTA		TG-C4-43
44	TIM		TG-C4-44
45	REF		TG-C4-45
46	8M		TG-C4-46
47	D-GND		TG-C4-47
48	D-GND		TG-C4-48
49	D-GND		TG-C4-49
50	RES		TG-C4-50

●TG Circuit Board



Components side (部品側)

Notes)

Circuit Board: XB541B0

- IC1, 38, 39, 42, 44, 45: SN74HC244 (IR024450) BUS BUFF
2: SN74HC04N (IG142250) INV
3: SN74HC194N (IR019450) SHIFT REGISTER
4, 5, 21, 29, 30, 50, 51, 59 ~ 61: SN74HC74N (IR007450) DFF
6, 55, 57: SN74HC32N (IR003250) OR
7, 14, 19, 25, 31: SN74HC153N (IR015350) 4-1 SELECTOR
8, 23, 27, 28, 48, 52: SN74HC08N (IR000850) AND
9: SN74HC390N (IR039050) DEC COUNTER
10: SN74HC161N (IR016150) SYNC. COUNTER
11, 47, 56: SN74HC04N (IR000450) INV
12: SN74HC107N (IR010750) JK-FF
13, 16, 22, 58: SN74HC00N (IR000050) NAND
15: SN74HC393N (IR039350) CNT
17, 49: SN74HC02N (IR000250) NOR
18: SN74HC158N (IR015850) SELECTOR
20, 32: YM2412 (XB056001) ADF
24, 53: SN74HC139N (IR013950) DECO 2
26: YM2409 (XB022001) GEW1
33: TC74HC4075 (IR407500) OR
34: HD63B09EP (XB233001) CPU
35, 36: HM65256BSP-12 (XB561001) PSRAM
37, 40: SN74HC373N (IR037350) D-LATCH
41: TC74HC4078P (IR407800) OR/NOR
43: SN74HCT373N (XD119001) D-LATCH
46: SN74HC10N (IR001050) NAND
54: SN74HC245N (IR024550) TRANSCEIVER

- RM1: Resistor Array 4.7K Ω x 4
2, 4, 6: Resistor Array 10K Ω x 12
3, 5: Resistor Array 10K Ω x 6
7: Resistor Array 4.7K Ω x 8

EMI 1: EMI Filter 0.01 μ

CR1: Quartz Crystal Unit 12.8MHz

TG		CN1	
Pin No.	Pin Name	Wire Color	Destination
1	3.2M	RE	DM-C8-1
2	SYW	WH	DM-C8-2
3	SOL0	WH	DM-C8-3
4	SOL1	WH	DM-C8-4
5	SOL2	WH	DM-C8-5
6	SOR0	WH	DM-C8-6
7	SOR1	WH	DM-C8-7
8	SOR2	WH	DM-C8-8
9	D-GND	WH	DM-C8-9

TG		CN2	
Pin No.	Pin Name	Wire Color	Destination
1	+5D	RE	DM-C3-1
2	D-GND	GY	DM-C3-2

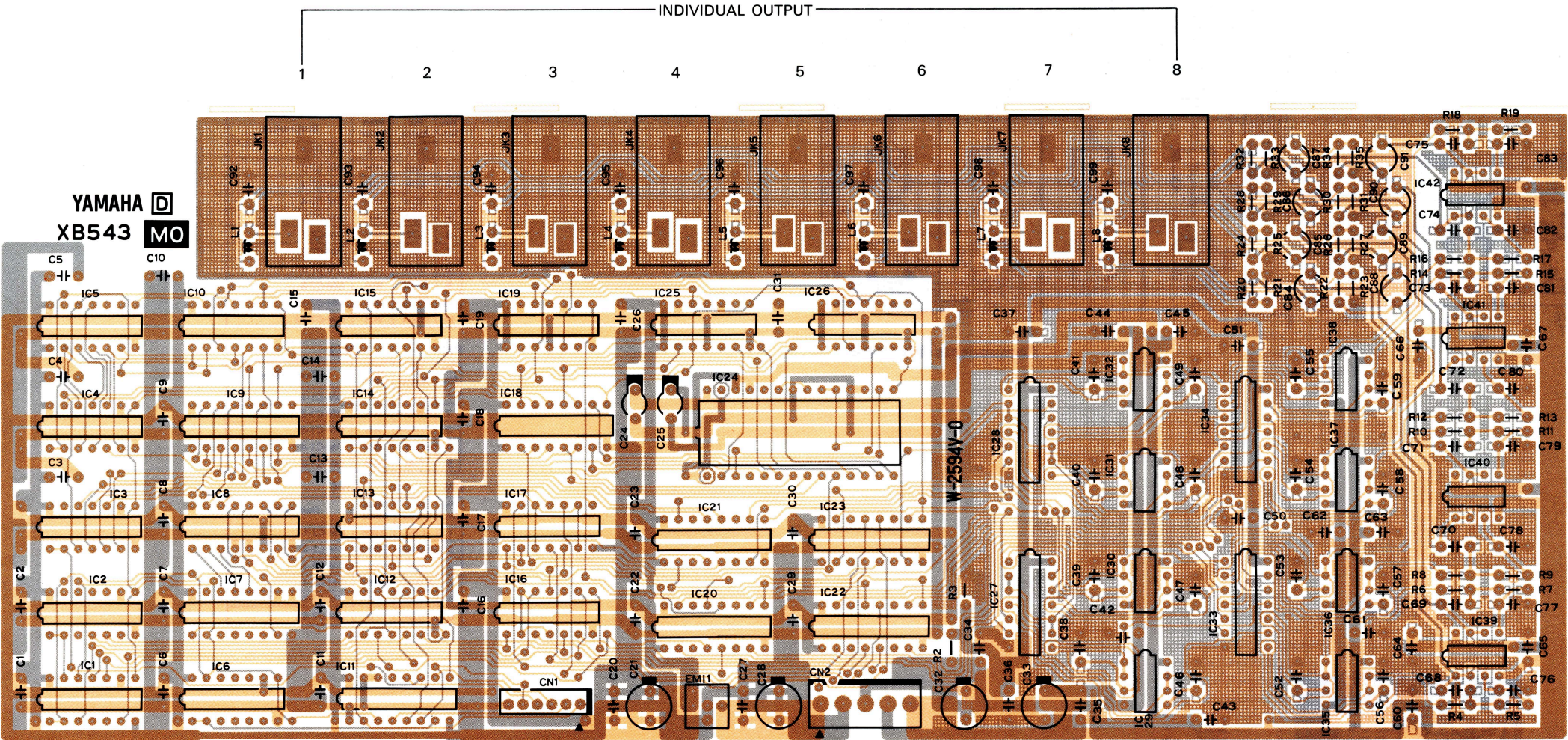
TG		CN3	
Pin No.	Pin Name	Wire Color	Destination
1	3.2M	RE	MO-C1-1
2	SYW	WH	MO-C1-2
3	SOL0	WH	MO-C1-3
4	SOL1	WH	MO-C1-4
5	SOL2	WH	MO-C1-5
6	D-GND	WH	MO-C1-6

TG		CN4	
Pin No.	Pin Name	Wire Color	Destination
1	MA19		DM-C9-1
2	MA18		DM-C9-2
3	MA17		DM-C9-3
4	MA16		DM-C9-4
5	MA15		DM-C9-5
6	MA14		DM-C9-6
7	MA13		DM-C9-7
8	MA12		DM-C9-8
9	MA11		DM-C9-9
10	MA10		DM-C9-10
11	MA9		DM-C9-11
12	MA8		DM-C9-12
13	MA7		DM-C9-13
14	MA6		DM-C9-14
15	MA5		DM-C9-15
16	MA4		DM-C9-16
17	MA3		DM-C9-17
18	MA2		DM-C9-18
19	MA1		DM-C9-19
20	MD15		DM-C9-20
21	MD14		DM-C9-21
22	MD13		DM-C9-22
23	MD12		DM-C9-23
24	MD11		DM-C9-24
25	MD10		DM-C9-25
26	MD9		DM-C9-26
27	MD8		DM-C9-27
28	MD7		DM-C9-28
29	MD6		DM-C9-29
30	MD5		DM-C9-30
31	MD4		DM-C9-31
32	MD3		DM-C9-32
33	MD2		DM-C9-33
34	MD1		DM-C9-34
35	MD0		DM-C9-35
36	MA20		DM-C9-36
37	MR/W		DM-C9-37
38	MA21		DM-C9-38
39	MLD5		DM-C9-39
40	MA22		DM-C9-40
41	WRAM		DM-C9-41
42	TGBD		DM-C9-42
43	TGDTA		DM-C9-43
44	TIM		DM-C9-44
45	REF		DM-C9-45
46	8M		DM-C9-46
47	D-GND		DM-C9-47
48	D-GND		DM-C9-48
49	D-GND		DM-C9-49
50	RES		DM-C9-50

● MO Circuit Board

MO		CN1	
Pin No.	Pin Name	Wire Color	Destination
1	3.2M	RE	TG-C3-1
2	SYW	WH	TG-C3-2
3	SOL0	WH	TG-C3-3
4	SOL1	WH	TG-C3-4
5	SOL2	WH	TG-C3-5
6	D-GND	WH	TG-C3-6

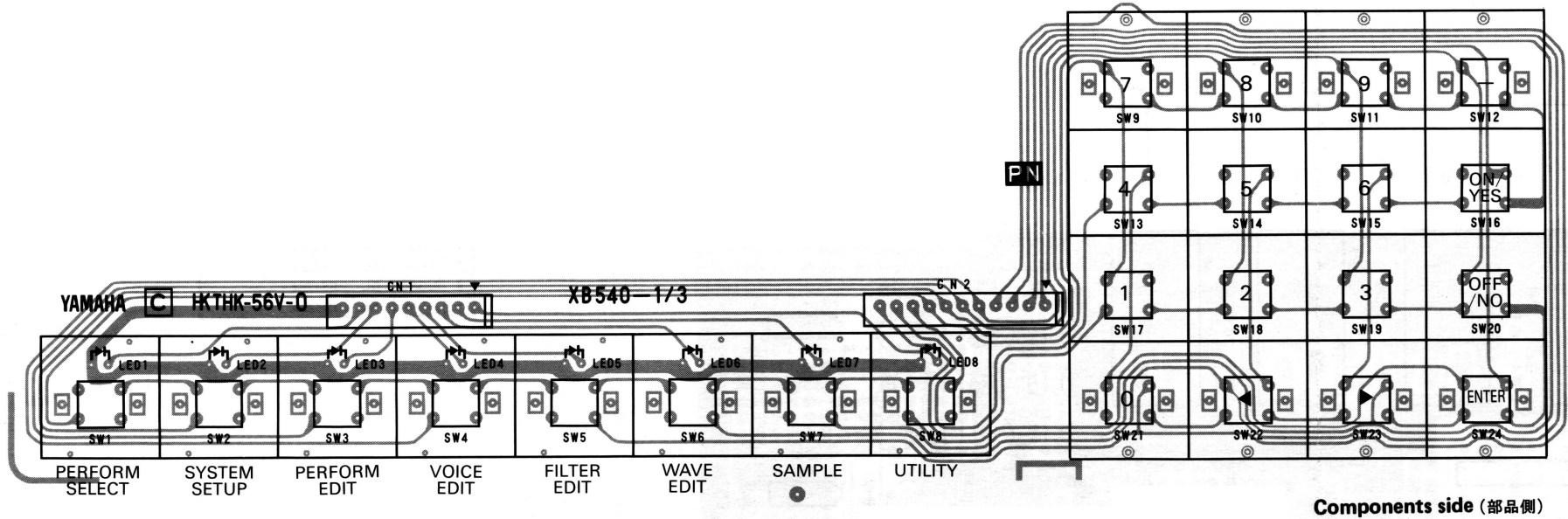
MO		CN2	
Pin No.	Pin Name	Wire Color	Destination
1	+5D	RE	PS-C3-1
2	D-GND	GY	PS-C3-2
3	+12A	BR	PS-C3-3
4	A-GND	BL	PS-C3-4
5	-12A	YE	PS-C3-5



Components side (部品側)

- Notes)
- Circuit Board: XB543B0
- IC1 ~ 4, 6, 14: SN74HC164N (IR016450) SHIFT REGISTER
- 5: SN74HC30N (IR003050) NAND
- 7: SN74HC163N (IR016350) CNT
- 8: SN74HC138N (IR013850) DECO 3
- 9, 18: SN74HC174N (IR017450) DFF
- 10, 12, 16: SN74HC08N (IR000850) AND
- 11: SN74HC367N (IR036750) BUS DRIVER
- 13, 17: SN74HC02N (IR000250) NOR
- 15: SN74HC04N (IR000450) INV
- 19, 25, 26: SN74HC74N (IR007450) DFF
- 20 ~ 23: SN74HC175N (IR017550) DFF
- 24: PCM54HP (XA566001) DAC
- 27, 28, 33, 34: TC4066BP (IG001270) ANALOG SW
- 29 ~ 32, 35 ~ 38: NJM072D (IG107000) OP AMP.
- 39 ~ 42: NJM4558DV (IG001390) OP AMP.
- L1 ~ 8: FL Coil 20μH
- EMI 1: EMI Filter 0.01μ

● PN Circuit Board



Components side (部品側)

PN		CN1	
Pin No.	Pin Name	Wire Color	Destination
1	LD7	RE	DM-C6-1
2	LD6	WH	DM-C6-2
3	LD5	WH	DM-C6-3
4	LD4	WH	DM-C6-4
5	LD3	WH	DM-C6-5
6	LD2	WH	DM-C6-6
7	LD1	WH	DM-C6-7
8	LD0	WH	DM-C6-8
9	+5D	WH	DM-C6-9

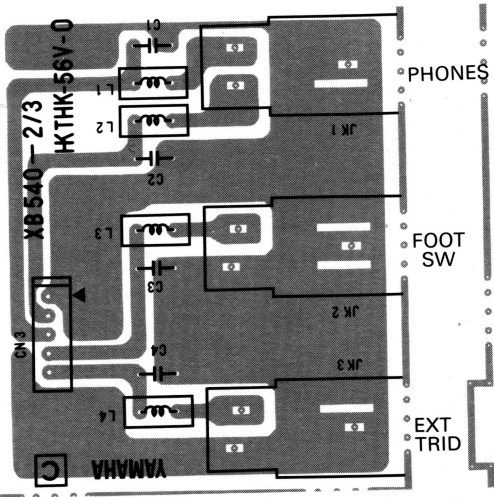
PN		CN2	
Pin No.	Pin Name	Wire Color	Destination
1	SD7	RE	DM-C7-1
2	SD6	WH	DM-C7-2
3	SD5	WH	DM-C7-3
4	SD4	WH	DM-C7-4
5	SD3	WH	DM-C7-5
6	SD2	WH	DM-C7-6
7	SD1	WH	DM-C7-7
8	SD0	WH	DM-C7-8
9	PSW3	WH	DM-C7-9
10	PSW2	WH	DM-C7-10
11	PSW1	WH	DM-C7-11

PN		CN3	
Pin No.	Pin Name	Wire Color	Destination
1	A-GND	RE	DM-C1-1
2	R PHONE	WH	DM-C1-2
3	L PHONE	WH	DM-C1-3
4	FSW	WH	DM-C1-4
5	TIN	WH	DM-C1-5

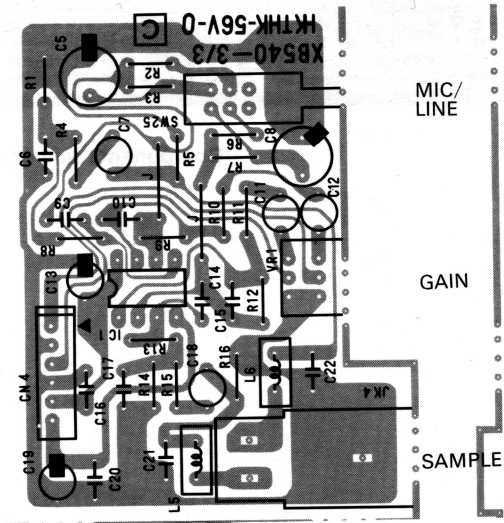
PN		CN4	
Pin No.	Pin Name	Wire Color	Destination
1	LIN	SWH	DM-C2-1
2	A-GND	SWHS	DM-C2-2
3	RIN	SRE	DM-C2-3
4	A-GND	SRES	DM-C2-4
5	+12A	BR	DM-C2-5
6	-12A	YE	DM-C2-6

PN 2/3

PN 3/3



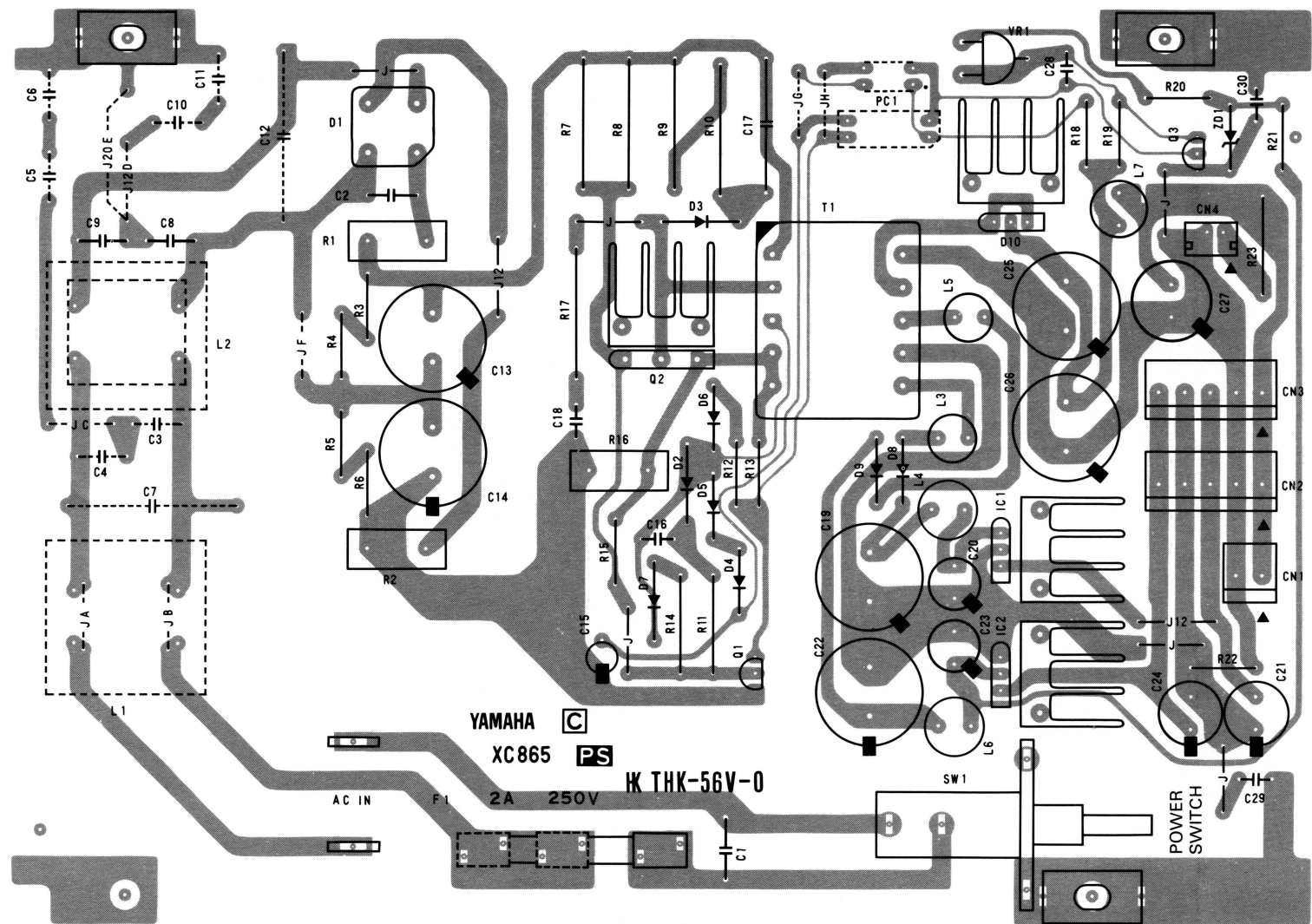
Components side (部品側)



Components side (部品側)

- Notes)
- Circuit Board: X8540B0
- IC1: NJM2041DD (IG069200) OP AMP.
- LED1 ~ 8: LN242RP RED
- L1 ~ 6: FL Coil 20μH
- SW1 ~ 24: Push Switch KHH10908
- 25: Push Switch SUJ

●PS Circuit Board



Components side (部品側)

Notes)

- Circuit Board: XC865C0
- IC1: μ PC7812H (IG033250) 12V 1A
2: μ PC7912H (IG038050) -12V 1A
- PC1: Photo Coupler PC817 (J, U, C)
Photo Coupler PC511 (H, D)
- Q1: 2SC2655 O, Y
2: 2SC3153
3: 2SC2634 R, S, T
- D1: Diode Stack S2VB60
2, 7: ERB43-02
3: ERB44-06
4 ~ 6: 1SS84
8, 9: ERB44-02
10: Diode Stack C8P04Q
- ZD1: Zener Diode RD6.2EB2

- R1, 2: Wire Wound Resistor 4.3 Ω 5W
7, 8: Metal Oxide Film Resistor 120K Ω 2W
9, 10: Metal Oxide Film Resistor 22K Ω 3W
11: Metal Oxide Film Resistor 56 Ω 1W
14, 23: Metal Oxide Film Resistor 10 Ω 1W
16: Wire Wound Resistor 1 Ω 3W
17: Metal Oxide Film Resistor 220 Ω 3W
18: Flame Proof C. Resistor 100 Ω 1/4W
21: Flame Proof C. Resistor 820 Ω 1/4W
- L1: Coil 40mH (D)
2: Coil 40mH
3, 5: FL Coil 20 μ H
4, 6: FL Coil 150 μ H
7: FL Coil 47 μ H
- T1: Power Transformer TYA027

PS		CN1	
Pin No.	Pin Name	Wire Color	Destination
1	+5D	RE	FDD
2	D-GND	GY	FDD

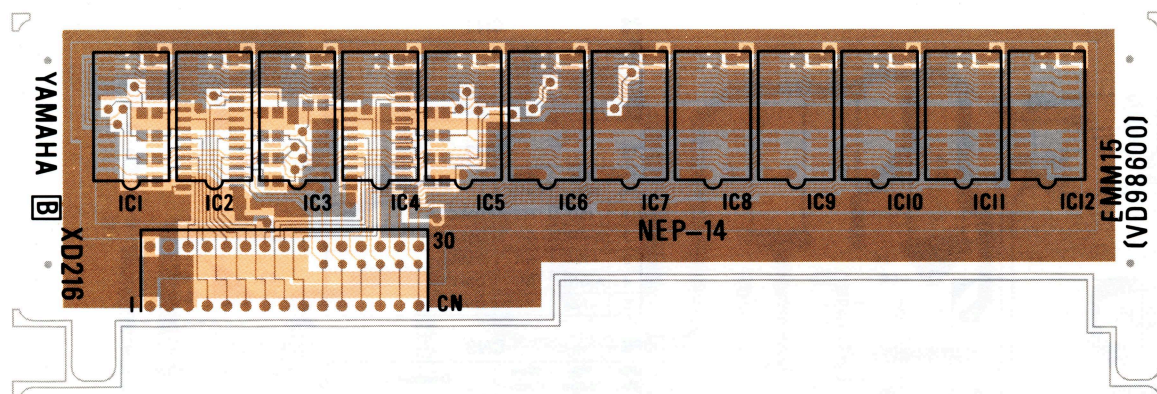
PS		CN2	
Pin No.	Pin Name	Wire Color	Destination
1	+5D	RE	DM-C3-3
2	D-GND	GY	DM-C3-4
3	+12A	BR	DM-C3-5
4	A-GND	BL	DM-C3-6
5	-12A	YE	DM-C3-7

PS		CN3	
Pin No.	Pin Name	Wire Color	Destination
1	+5D	RE	MO-C2-1
2	D-GND	GY	MO-C2-2
3	+12A	BR	MO-C2-3
4	A-GND	BL	MO-C2-4
5	-12A	YE	MO-C2-5

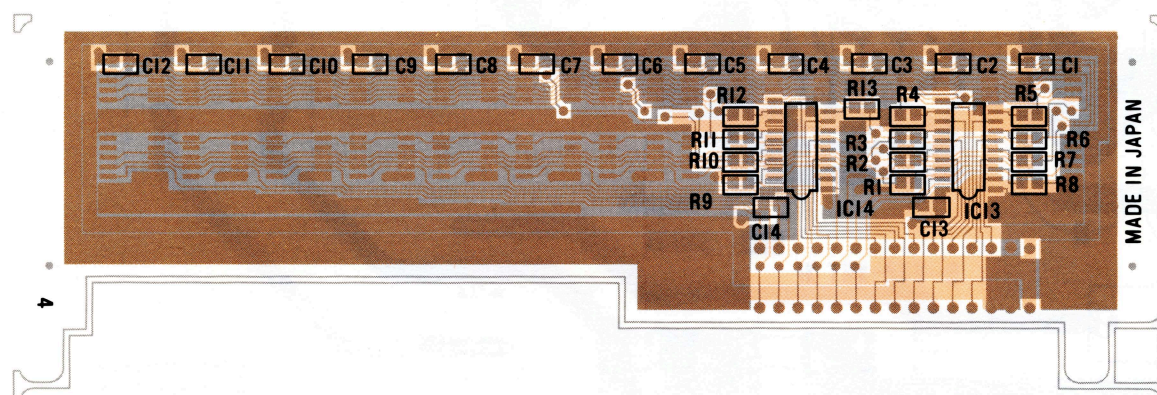
PS		CN4	
Pin No.	Pin Name	Wire Color	Destination
1	A	RE	LCD
2	K	WH	LCD

Market		Japanese (VD173800)	U.S. & Canadian (VD174000)	North European (VD174300)	West German (VD495800)
Ceramic Cap.	C3				2200P 400V
	C4				2200P 400V
	C5				2200P 400V
	C6				2200P 400V
	C7	0.22 μ 250V	←		0.22 μ 250V
	C10			2200P 400V	←
	C11			2200P 400V	←
	C12			0.22 μ 250V	←
Fuse	F1	2A 250V	2A 250V	T1.25A 250V	←

● DRM Circuit Board



Component side (部品側)



Pattern side (パターン側)

Notes)

Circuit Board: XPD216B0

IC1 ~ 12: TC511000J-12 (XD239001)
13, 14: TC74HC244F (XD238001)

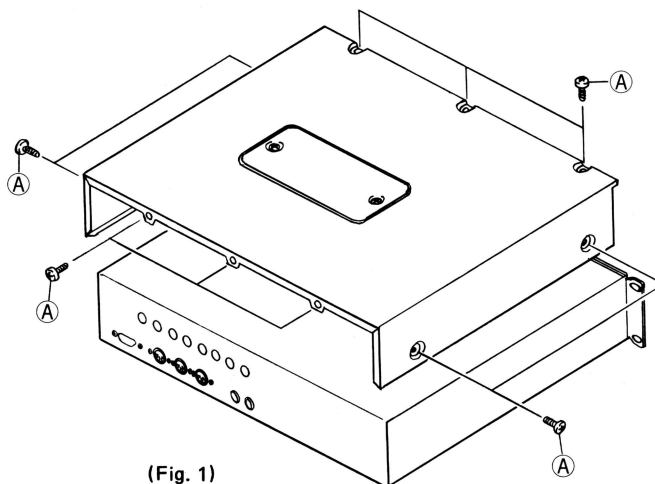
■ DISASSEMBLY PROCEDURE (分解手順)

1. Removal of Top Cover

Remove the 10 bind head screws ① (3 × 6). (Fig. 1)

1. トップカバーのはずしかた

バインド小ネジ①(3 × 6)10本をはずし、トップカバーをはずします。(Fig.1)



(Fig. 1)

2. Removal of Bottom Cover

Remove the 10 bind head screws ② (3 × 8). (Fig. 2)

* Remove the bottom cover, you can check the DM circuit board's pattern side. (Fig. 3)

* Remove the insulation sheet ③, you can check the PS circuit board's pattern side. (Fig. 3)

2. ボトムカバーのはずしかた

バインド小ネジ②(3 × 8)10本をはずし、ボトムカバーをはずします。(Fig.2)

※ボトムカバーをはずすと、DMシートのパターン面をチェック出来ます。(Fig.3)

※絶縁シート③をはずすと、P Sシートのパターン面をチェック出来ます。(Fig.3)

3. Removal of FDD Unit

3-1. Remove the bottom cover.

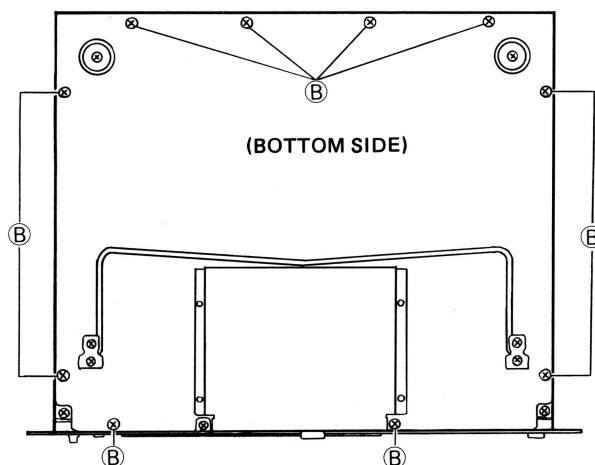
(Refer to 2. Removal of Bottom Cover.)

3-2. Remove the 4 bind head screws ④ (3 × 8). (Fig. 3)

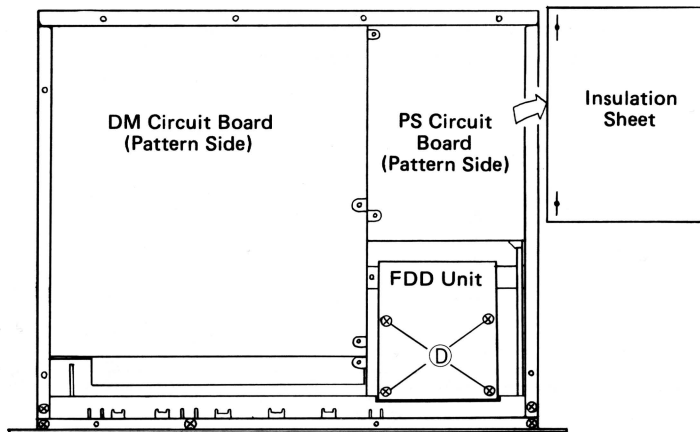
3. FDDユニットのはずしかた

3-1 ボトムカバーをはずします。(2. ボトムカバーのはずしかた参照)

3-2 バインド小ネジ④(3 × 8) 4本をはずすと、FDDユニットがはずれます。(Fig.3)



(Fig. 2)



(Fig. 3)

4. Removal of MO Circuit Board

- 4-1. Remove the top cover.
(Refer to 1. Removal of Top Cover)
- 4-2. Remove the 2 bind head screws ⑤ (3 x 8) and 8 hexagonal nuts ⑥ (φ9). (Fig. 4)

5. Removal of TG Circuit Board

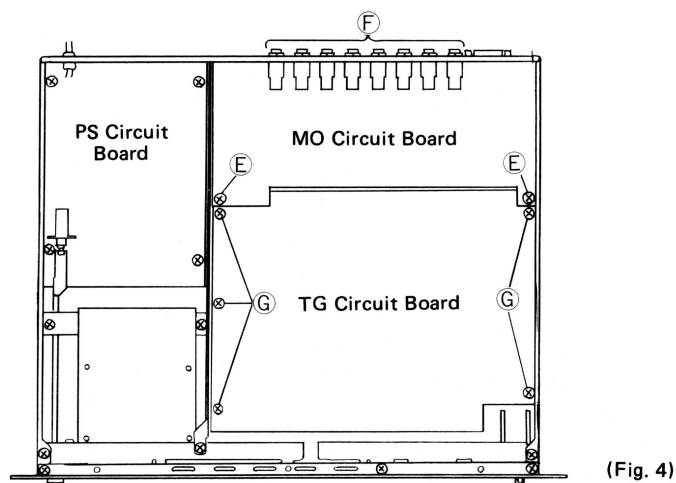
- 5-1. Remove the top cover.
(Refer to 1. Removal of Top Cover)
- 5-2. Remove the 5 bind head screws ③ (3 x 8). (Fig. 4)

4. MOシートのはずしかた

- 4-1 トップカバーをはずします。
(1. トップカバーのはずしかた参照)
- 4-2 バインド小ネジ⑤(3×8) 2本と、六角ナット⑥(φ9) 8個をはずし、MOシートを、はずします。(Fig.4)

5. TGシートのはずしかた

- 5-1 トップカバーをはずします。
(1. トップカバーのはずしかた参照)
- 5-2 バインド小ネジ③(3×8) 5本をはずし、TGシートをはずします。(Fig.4)



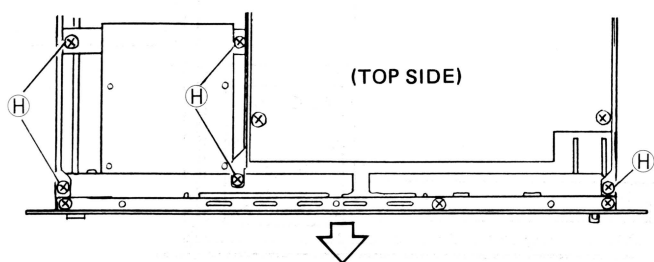
(Fig. 4)

6. Removal of Front Panel Ass'y

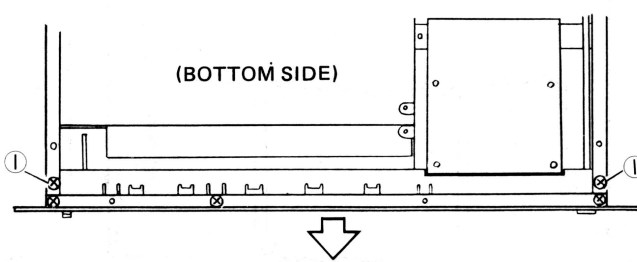
- 6-1. Remove the top cover.
(Refer to 1. Removal of Top Cover)
- 6-2. Remove the bottom cover.
(Refer to 2. Removal of Bottom Cover)
- 6-3. Remove the 5 bind head screws ⑧ (3 x 8) from upper side.
Remove the 2 bind head screws ① (3 x 8) from bottom side.
And pull out the front panel ass'y. (Fig. 5, 6)
(Refer to 9. Removal of Front Panel)

6. フロントパネルASS'Yのはずしかた

- 6-1 トップカバーをはずします。
(1. トップカバーのはずしかた参照)
- 6-2 ボトムカバーをはずします。
(2. ボトムカバーのはずしかた参照)
- 6-3 上側よりバインド小ネジ⑧(3×8) 5本、下側よりバインド小ネジ①(3×8) 2本をはずし、フロントパネルASS'Yを前方へ引き抜きます。(Fig.5,6)
(9. フロントパネルのはずしかた参照)



(Fig. 5)



(Fig. 6)

7. Removal of DM Circuit Board

- 7-1. Remove the top cover.
(Refer to 1. Removal of Top Cover)
- 7-2. Remove the bottom cover.
(Refer to 2. Removal of Bottom Cover)
- 7-3. Remove the front panel ass'y.
(Refer to 6. Removal of Front Panel Ass'y)
- 7-4. Remove the 4 bind head screws **J** (3 x 8), 2 hexagonal nuts **K** ($\phi 9$), 6 bind head screws **L** (3 x 8) and 2 connector's screws **M**. (Fig. 7)

8. Removal of PS Circuit Board

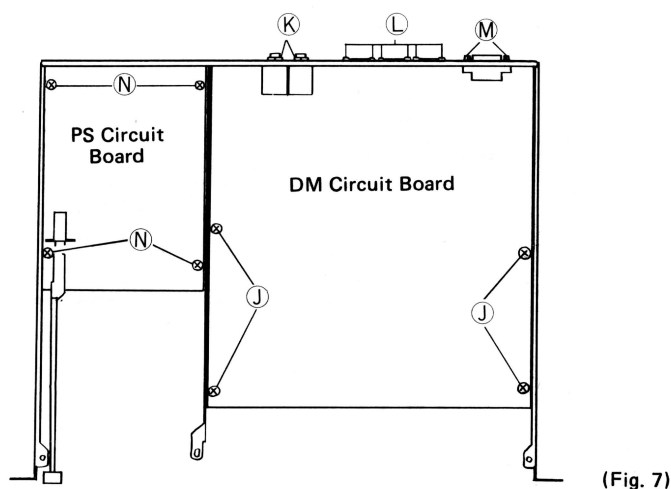
- 8-1. Remove the top cover.
(Refer to 1. Removal of Top Cover)
- 8-2. Remove the bottom cover.
(Refer to 2. Removal of Bottom Cover)
- 8-3. Remove the front panel ass'y.
(Refer to 6. Removal of Front Panel Ass'y)
- 8-4. Remove the 4 bind head screws **N** (3 x 8). (Fig. 7)

7. DMシートのはずしかた

- 7-1 トップカバーをはずします。
(1. トップカバーのはずしかた参照)
- 7-2 ボトムカバーをはずします。
(2. ボトムカバーのはずしかた参照)
- 7-3 フロントパネルASS'Yをはずします。
(6. フロントパネルASS'Yのはずしかた参照)
- 7-4 バインド小ネジ**J**(3×8) 4本と、六角ナット**K**($\phi 9$) 2個、バインド小ネジ**L**(3×8) 6本、コネクター止めネジ**M** 2本をはずし、DMシートをはずします。(Fig.7)

8. PSシートのはずしかた

- 8-1 トップカバーをはずします。
(1. トップカバーのはずしかた参照)
- 8-2 ボトムカバーをはずします。
(2. ボトムカバーのはずしかた参照)
- 8-3 フロントパネルASS'Yをはずします。
(6. フロントパネルASS'Yのはずしかた参照)
- 8-4 バインド小ネジ**N**(3×8) 4本をはずし、PSシートをはずします。(Fig.7)



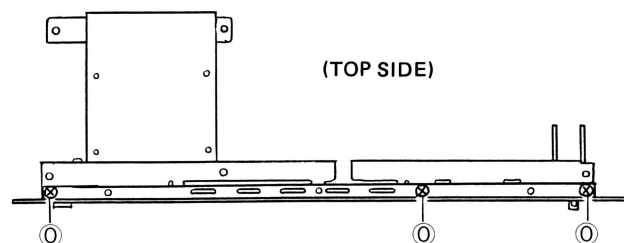
(Fig. 7)

9. Removal of Front Panel

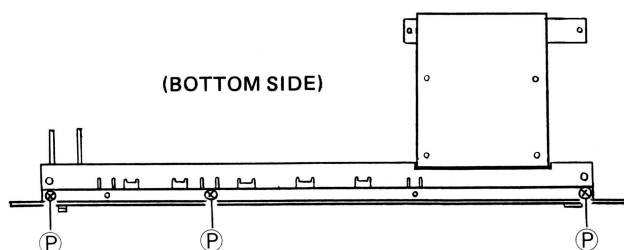
- 9-1. Remove the top cover.
(Refer to 1. Removal of Top Cover)
- 9-2. Remove the bottom cover.
(Refer to 2. Removal of Bottom Cover)
- 9-3. Remove the front panel ass'y.
(Refer to 6. Remove of Front Panel Ass'y)
- 9-4. Remove the 3 bind head screws ① (3 x 8) from upper side.
Remove the 3 bind head screws ② (3 x 6) from bottom side.
And remove the front panel. (Fig. 8, 9)
- 9-5. PN (1/3) circuit board
Can be removed by removal of front panel. (Fig. 10)
- 9-6. PN (2/3) circuit board
Remove the 3 hexagonal nuts ③ (φ9).
- 9-7. PN (3/3) circuit board
Remove the hexagonal nut ④ (φ7) and ⑤ (φ9).
(Fig. 10)

9. フロントパネルのはずしかた

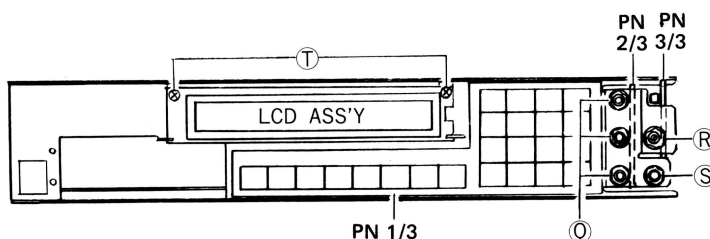
- 9-1 トップカバーをはずします。
(1. トップカバーのはずしかた参照)
- 9-2 ボトムカバーをはずします。
(2. ボトムカバーのはずしかた参照)
- 9-3 フロントパネルASS'Yをはずします。
(6. フロントパネルASS'Yのはずしかた参照)
- 9-4 フロントパネルASS'Yの上側より、バインド小ネジ①(3×8)3本、下側よりバインド小ネジ②(3×6)3本をはずし、フロントパネルをはずします。(Fig.8,9)
- 9-5 PN(1/3)シートは、フロントパネルをはずすと、はずれます。(Fig.10)
- 9-6 PN(2/3)シートは、六角ナット③(φ9)3個をはずして、はずします。(Fig.10)
- 9-7 PN(3/3)シートは、六角ナット④(φ7)1個と、六角ナット⑤(φ9)1個をはずして、はずします。(Fig.10)



(Fig. 8)



(Fig. 9)



(Fig. 10)

[Digital Wave Filtering Sampler]

Model TX16W MIDI Implementation Chart Version : 1.0

Function ...		Transmitted	Recognized	Remarks
Basic	Default	x	1, OMNI on	
Channel	Changed	x	1-16, OMNI on/off	
Mode	Default	x	1	
	Messages	x	x	
	Altered	*****	x	
Note		x	0 - 127	
Number	True voice	*****	13 - 108	
Velocity	Note ON	x	o v=1-127	
	Note OFF	x	x	
After	Key's	x	x	
Touch	Ch's	x	o	
Pitch Bender		x	o 0-12semi *1	9 bit resolution
	1	x	o	*2 Modulation wheel
	2	x	o	*2 Breath control
	4	x	o	*2 Foot control
Control	7	x	o	*2 Volume
Change	64	x	o	*2 Sustain
	96	x	o	*2 Data entry +1
	97	x	o	*2 Data entry -1
Prog		x	o 0 - 127 *3	
Change	True #	*****	0 - 31	
System Exclusive		o	*4	o *4
System	Song Pos	x	x	
	Song Sel	x	x	
Common	Tune	x	x	
System	Clock	x	x	
Real Time	Commands	x	x	
Aux	Local ON/OFF	x	x	
	All Notes OFF	x	x	
Mes-	Active Sense	x	o	
sages	Reset	x	x	
Notes: *1 = receive if pitch bend switch is on.				
*2 = receive if control change sw is on. Ctrl # is redefinable.				
*3 = receive if program change switch is on. For program #0 -				
127, performance 1 - 32 is assigned.				
*4 = wave data based on Sample Dump Standard and voice data.				

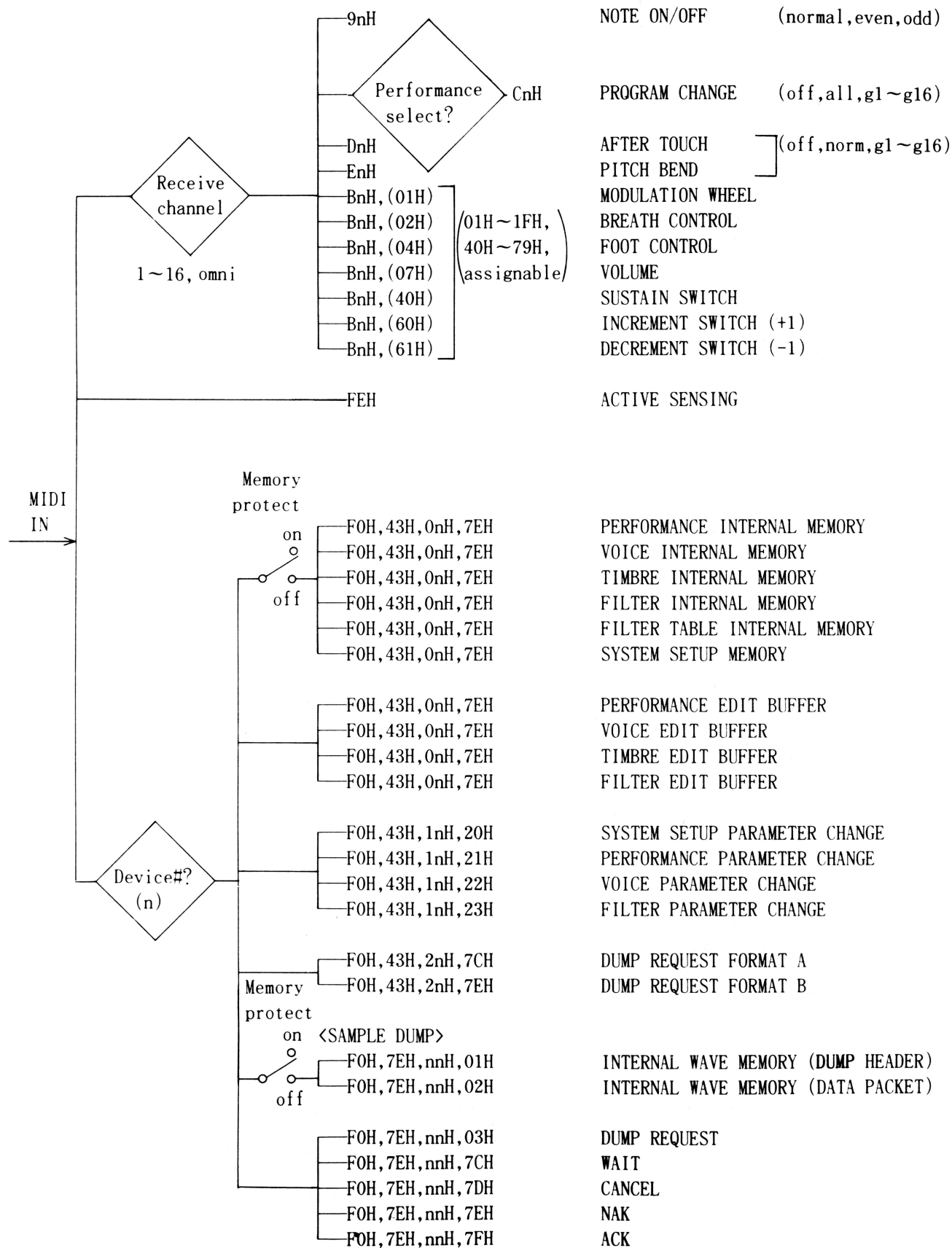
Mode 1 : OMNI ON, POLY
 Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO
 Mode 4 : OMNI OFF, MONO

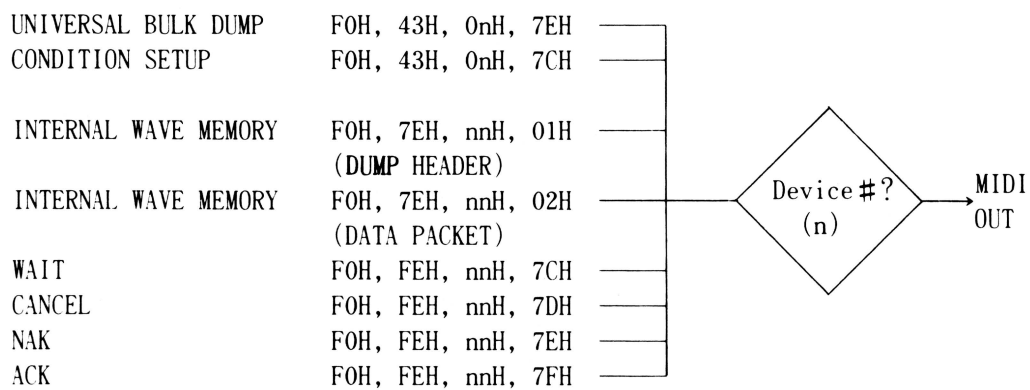
o : Yes
 x : No

MIDI

1. Reception Conditions (受信条件)



2. Transmission Conditions (送信条件)

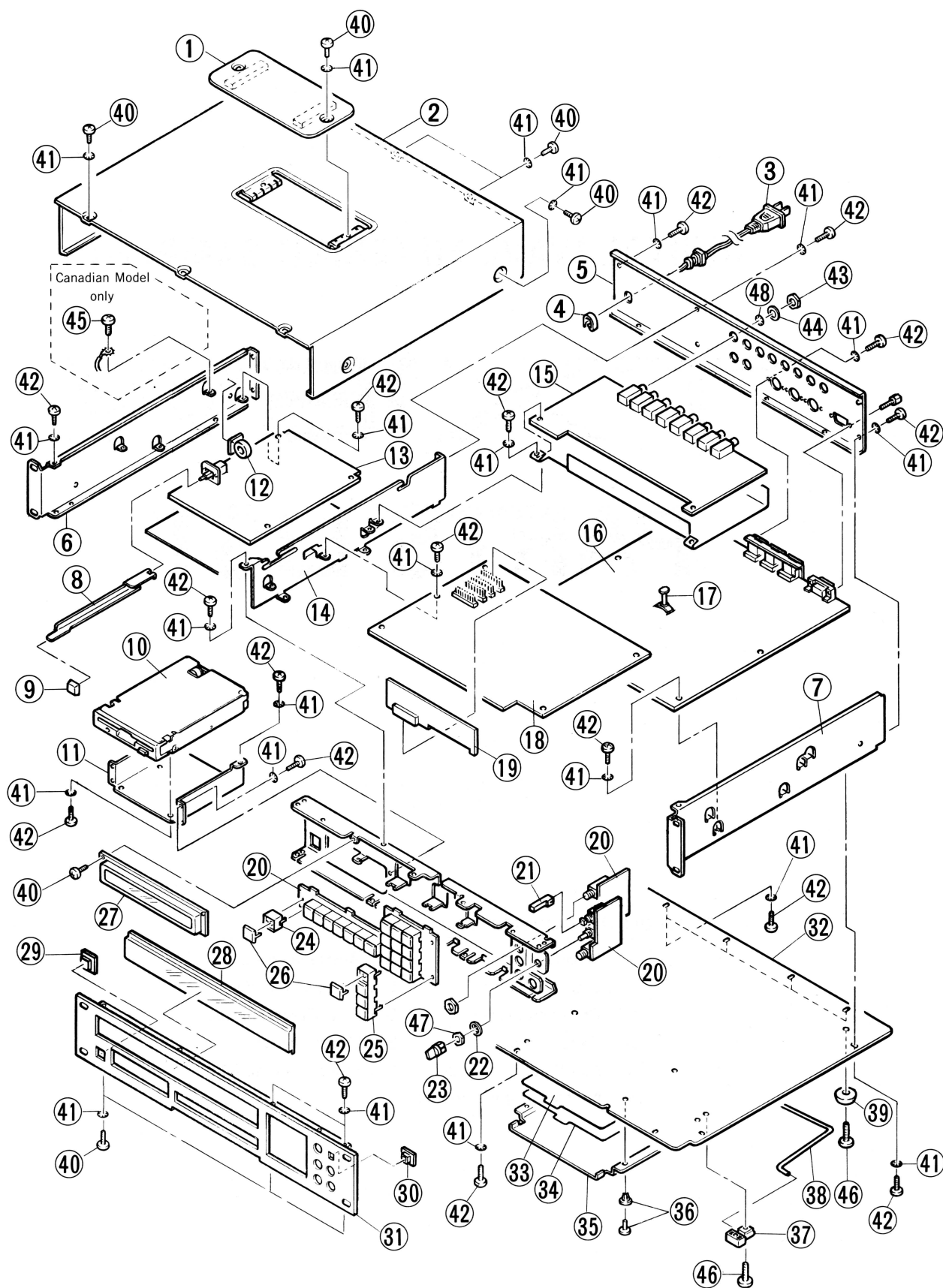


DIGITAL WAVE FILTERING SAMPLER

TX16W PARTS LIST

Note) DESTINATION ABBREVIATIONS

J : Japanese model	A : Australian model
U : U.S. model	E : European model
C : Canadian model	D : West German model
X : General model	B : British model
M : South African model	I : Indonesian model
H : North European model	

OVERALL ASSEMBLY (総組立)

Ref. No.	Part No.	Description	部 品 名	Remarks	ランク
1	VE237200	Cover	蓋		
2	VC055900	Top Cover	トップカバー		
3	MG001820	AC Cord	電源コード	J	05
3	MG000100	AC Cord	電源コード	U	08
3	MG000270	AC Cord	電源コード	C	09
3	VC309900	AC Cord	電源コード	H	06
3	MG000450	AC Cord	電源コード	D	
4	CB811230	Cord Strain Relief	コードストッパー	U	02
4	CB806850	Cord Strain Relief	コードストッパー	C	02
4	CB072750	Cord Strain Relief	コードストッパー	H	01
4	CB032840	Cord Strain Relief	コードストッパー	D	01
5	VC047400	Rear Panel	リアパネル	J	
5	VC047500	Rear Panel	リアパネル	U	
5	VC047600	Rear Panel	リアパネル	C	
5	VC047700	Rear Panel	リアパネル	H	
5	VD173700	Rear Panel	リアパネル	D	
6	VC047200	Side Board	側板(左)		
7	VC047300	Side Board	側板(右)		
8	VC047900	Rod	ロッド		
9	CB812380	Push Button	プッシュボタン	POWER SWITCH	01
10	VC212400	FDD Unit	FDDユニット		
11	VC048600	Holder, FDD	FDDホルダー		
12	GE300830	Ferrite Ring	フェライトリング		
13	VD173800	Circuit Board	PSシート	J	07
13	VD174000	Circuit Board	PSシート	U,C	
13	VD174300	Circuit Board	PSシート	H	
13	VD495800	Circuit Board	PSシート	D	
14	VC047800	Stay	ステー		
15	VC018900	Circuit Board	MOシート		
16	VC018800	Circuit Board	DMシート		
17	VE228800	Spacer	カードスパーサー		
18	VC018700	Circuit Board	TGシート		
19	VD989300	Circuit Board	DRMシート		
20	VC018600	Circuit Board	PNシート		
21	VA029400	Knob	ノブ	MIC/LINE	01
22	ET800160	Toothed Lock Washer	歯付座金		01
23	VA029300	Knob	ノブ	GAIN	01
24	VD756600	Escutcheon, Switch	スイッチエスカッション	SINGLE	
25	VD289600	Escutcheon, Switch	スイッチエスカッション	QUADRUPLE	
26	VC054700	Key Top	トップキャップ	PERFORM SELECT	
26	VC052800	Key Top	トップキャップ	SYSTEM SETUP	
26	VC052900	Key Top	トップキャップ	PERFORM EDIT	
26	VC053600	Key Top	トップキャップ	VOICE EDIT	
26	VC053200	Key Top	トップキャップ	FILTER EDIT	
26	VC054300	Key Top	トップキャップ	WAVE EDIT	
26	VC053300	Key Top	トップキャップ	SAMPLE	
26	VD380400	Key Top	トップキャップ	UTILITY	
26	VD872600	Key Top	トップキャップ	7/VWX	
26	VD872700	Key Top	トップキャップ	4/MNO	
26	VD872800	Key Top	トップキャップ	1/DEF	
26	VD872900	Key Top	トップキャップ	0/ABC	
26	VD873100	Key Top	トップキャップ	8/YZ!	
26	VD873200	Key Top	トップキャップ	5/PQR	
26	VD873300	Key Top	トップキャップ	2/GHI	
26	VD866800	Key Top	トップキャップ	◀	
26	VD873400	Key Top	トップキャップ	9/#&+	
26	VD873500	Key Top	トップキャップ	6/STU	
26	VD873600	Key Top	トップキャップ	3/JKL	
26	VD866900	Key Top	トップキャップ	▶	
26	VD873700	Key Top	トップキャップ	- / . ,	
26	VD873900	Key Top	トップキャップ	+1/UPPERCASE	
26	VD874000	Key Top	トップキャップ	-1/LOWERCASE	
26	VD874100	Key Top	トップキャップ	ENTER/SPACE▶	
27	VD176700	LCD Assembly	LCD Ass'y		
28	VC048400	Cover, Meter	メーターカバー		
29	VA029600	Escutcheon, Switch	(L) スwitchエスカッション	POWER SWITCH	02
30	VA029500	Escutcheon, Switch	(S) スwitchエスカッション	MIC/LINE	
31	VC048300	Front Panel	フロントパネル		
32	VC055800	Bottom Cover	ボトムカバー		
33	VD774600	Operation Guide Sheet-A	OPガイドシート(A)		
34	VE623200	Operation Guide Sheet-B	OPガイドシート(B)		
35	VC075400	Operation Guide Holder	OPガイドホルダー		04
36	VC089400	Nylon Rivet	ナイロンリベット		
37	CB834960	Holder, Stand	スタンドホルダー		02
38	VD774400	Stand	チルトスタンド		
39	CB801270	Foot	ゴム脚		01
40	ED330066	Bind Head Screw	バインド小ネジ		01
41	EV413036	Toothed Lock Washer	歯付座金		01
42	ED330086	Bind Head Screw	バインド小ネジ		01

* New Parts (新規部品)

ランク: Japan only

ELECTRICAL PARTS (電気部品)

Ref. No.	Part No.	Description	部 品 名	Remarks	ランク
	VC018800	Circuit Board	DM	DM シート	65
	VC018700	Circuit Board	TG	TG シート	52
	VC018900	Circuit Board	MO	MO シート	27
	VD173800	Circuit Board	PS	PS シート	20
	VD174000	Circuit Board	PS	PS シート	20
	VD174300	Circuit Board	PS	PS シート	21
	VD495800	Circuit Board	PS	PS シート	22
	VC018600	Circuit Board	PN	PN シート	16
	VD989300	Circuit Board	DRM	DRM シート	
	VC018800	Circuit Board	DM	DM シート	65
	IG001390	IC	NJM4558DV	IC	OP AMP.
	IG040000	IC	NJM4560ED	IC	OP AMP.
	IG042500	IC	NJM4556D	IC	OP AMP.
	IG107000	IC	NJM072D	IC	OP AMP.
	IG062500	IC	μ PC1252H2	IC	VCA
	IG116200	IC	PST518B-2	IC	SYSTEM RESET
	IG086700	IC	μ PC319C	IC	COMPARATOR
	IG055100	IC	TC4053BP	IC	MPX
	IG142250	IC	SN74HC04N	IC	INV
	IR000050	IC	SN74HC00N	IC	NAND
	IR000250	IC	SN74HC02N	IC	NOR
	IR000450	IC	SN74HC04N	IC	INV
	IR000850	IC	SN74HC08N	IC	AND
	IR001450	IC	SN74HC14N	IC	INV
	IR002150	IC	SN74HC21N	IC	AND
	IR003250	IC	SN74HC32N	IC	OR
	IR007450	IC	SN74HC74N	IC	DFF
	IR013850	IC	SN74HC138N	IC	DECO 3
	IR013950	IC	SN74HC139N	IC	DECO 2
	IR014850	IC	SN74HC148N	IC	ENCODER
	IR015250	IC	SN74HC152N	IC	SELECTOR
	IR016350	IC	SN74HC163N	IC	COUNTER
	IR016450	IC	SN74HC164N	IC	SHIFT REGISTER
	IR017450	IC	SN74HC174N	IC	DFF
	XD122001	IC	SN74LS174N	IC	DFF
	IR017550	IC	SN74HC175N	IC	DFF
	IR024450	IC	SN74HC244	IC	BUS BUFF
	IR024550	IC	SN74HC245N	IC	TRANSCIEVER
	IR036850	IC	SN74HC368N	IC	BUS INV
	IR037450	IC	SN74HC374N	IC	DFF
	XD121001	IC	SN74HCT374N	IC	DFF
	IR039350	IC	SN74HC393N	IC	COUNTER
	XB179001	IC	TC74HCT244P	IC	3 BUS BUFF
	XB571001	IC	HD74LS156P	IC	DE-MPX
	IG044500	IC	HD74LS240P	IC	BUS BUFF
	XB015001	IC	MC3487	IC	LINE DRIVER
	XB016001	IC	MC3486	IC	LINE RECEIVER
	IG147300	IC	HD63B50P	IC	ACIA
	XB073001	IC	YM3021	IC	PSD
	XB566001	IC	HD68000PS8	IC	CPU
	XB623001	IC	WD1772PH-02	IC	FDC
	XB561001	IC	HM65256BSP-12	IC	PSRAM
	XD049B00	IC	89530002 BOOT	IC	EPROM
	XD050001	IC	AM25L04PC	IC	SAR
	XA566001	IC	PCMS4HP	IC	DAC
	IK000470	Photo Coupler	TLP552	フォトカプラ	06
	IA101570	Transistor	2SA1015 O,Y	トランジスタ	03
	IC181580	Transistor	2SC1815 Y,GR	トランジスタ	03
	VA240700	Diode	1SS176	ダイオード	01
	HU576430	Metal Film Resistor	4.3K Ω 1/4W	金属被膜抵抗	02
	HU576620	Metal Film Resistor	6.2K Ω 1/4W	金属被膜抵抗	02
	HU577100	Metal Film Resistor	10K Ω 1/4W	金属被膜抵抗	02
	HU597130	Metal Film Resistor	13K Ω 1/4W	金属被膜抵抗	04
	HL314470	Metal Oxide Film Resistor	47 Ω 1W J	酸化金属被膜抵抗	01
	HZ004710	Resistor Array	RMLS12-103J	抵抗アレイ	01
	VA069700	Resistor Array	RMLS4-472J	抵抗アレイ	01
	VB594000	Resistor Array	RMLS8-472J	抵抗アレイ	01
	VC895100	Resistor Array	1K Ω \times 6	抵抗アレイ	01
	VD805900	Resistor Ladder Network	RKCB8L 10KJ	ラダー抵抗	04
	VB135500	Trimmer Potentiometer	B30K 3P EVN	半固定ボリューム	01
	FZ005030	Semiconductive Cera. Cap.	0.1 μ 25V Z	半導体セラコン	01
	VB835000	Coil	FL 20 μ H	コイル	01
	VD962000	EMI Filter	EXC-EMT103DT	LC フィルター EMI	01
	VA928000	Noise Filter	D-03C	ノイズフィルタ DIP	07
	VB650600	Ceramic Resonator	16MHz	セラミック振動子	03
	VC026000	Ceramic Resonator	4.915MHz	セラミック振動子	02
	LB201230	Phone Jack	HLJ0259	ホーンジャック	03
	LB302360	Phone Jack	HLJ0259	ホーンジャック	03

* New Parts (新規部品)

ランク: Japan only

Ref. No.	Part No.	Description	部 品 名	Remarks	ランク
	LB500520 KC001770 VC026500	DIN Jack Relay Connector	5P TCS4650 DC RY5W 5V D-SUB 15P SE	D I N ジャック リレー コネクタ	MIDI JACK 03 07
	VC018700	Circuit Board	TG	T G シート	52
	IG142250 IR000050 IR000250 IR000450 IR000850	IC IC IC IC IC	SN74HC004N SN74HC00N SN74HC02N SN74HC04N SN74HC08N	I C I C I C I C I C	INV NAND NOR INV AND 01 03 03 03 03
	IR001050 IR003250 IR007450 IR010750 IR013950	IC IC IC IC IC	SN74HC10N SN74HC32N SN74HC74N SN74HC107N SN74HC139N	I C I C I C I C I C	NAND OR DFF JK-FF DECO 2 02 03 04 02 05
	IR015350 IR015850 IR016150 IR019450 IR024450	IC IC IC IC IC	SN74HC153N SN74HC158N SN74HC161N SN74HC194N SN74HC244	I C I C I C I C I C	4-1 SELECTOR SELECTOR SYNC.COUNTER SHIFT REGISTER BUS BUFF 03 03 03 03 07
	IR024550 IR037350 XD119001 IR039050 IR039350	IC IC IC IC IC	SN74HC245N SN74HC373N SN74HCT373N SN74HC390N SN74HC393N	I C I C I C I C I C	TRANSCEIVER D-LATCH D-LATCH DEC COUNTER COUNTER 06 05 04 04 04
	IR407500 IR407800 XB022001 XB056001 XB233001	IC IC IC IC IC	TC74HC4075 TC74HC4078P YM2409 YM2412 HD63B09EP	I C I C I C I C I C	OR OR/NOR GEW1 ADF CPU 02 02 18 17 11
	XB561001 HZ004650 HZ004710 VA069700 VB594000	IC Resistor Array Resistor Array Resistor Array Resistor Array	HM65256BSP-12 RMLS6-103J RMLS12-103J RMLS4-472J RMLS8-472J	I C 抵抗 アレイ 抵抗 アレイ 抵抗 アレイ 抵抗 アレイ	PSRAM 02 01 01 01
	FZ005030 VD962000 VD323800	Semiconductive Cera. Cap. EMI Filter Quartz Crystal Unit	0.1 μ 25V Z EXC-EMT103DT 12.8MHz AT-51	半 導 体 セラコン L C フィルター E M I 水 晶 振 動 子	01 01 03
	VC018900	Circuit Board	MO	M O シート	27
	IG001390 IG107000 IG001270 IR000250 IR000450	IC IC IC IC IC	NJM4558DV NJM072D TC4066BP SN74HC02N SN74HC04N	I C I C I C I C I C	OP AMP. OP AMP. ANALOG SW NOR INV 03 04 05 03 03
	IR000850 IR003050 IR007450 IR013850 IR016350	IC IC IC IC IC	SN74HC08N SN74HC30N SN74HC74N SN74HC138N SN74HC163N	I C I C I C I C I C	AND NAND DFF DECO 3 COUNTER 03 02 04 05 03
	IR016450 IR017450 IR017550 IR036750 XA566001	IC IC IC IC IC	SN74HC164N SN74HC174N SN74HC175N SN74HC367N PCM54HP	I C I C I C I C I C	SHIFT REGISTER DFF DFF BUS DRIVER DAC 05 05 04 06 12
	FZ005030 VB835000 VD962000 LB301800	Semiconductive Cera. Cap. Coil EMI Filter Phone Jack	0.1 μ 25V Z FL 20 μ H EXC-EMT103DT HLJ0544 MONO	半 導 体 セラコン コイル L C フィルター E M I ホーンジャック	01 01 01 03

Ref. No.	Part No.	Description	部 品 名	Remarks	ランク
**	VD173800	Circuit Board	PS シート	J	20
	VD174000	Circuit Board	PS シート	U,C	20
	VD174300	Circuit Board	PS シート	H	21
	VD495800	Circuit Board	PS シート	D	22
	IG033250	IC	μ PC7812H	12V 1A	05
**	IG038050	IC	μ PC7912H	-12V 1A	06
	IK000480	Photo Coupler	PC817	J,U,C	03
	IK000490	Photo Coupler	PC511	H,D	05
	IC263400	Transistor	2SC2634 R,S,T		03
	IC265500	Transistor	2SC2655 O,Y		03
**	VA088300	Transistor	2SC3153		
	IF001380	Diode	1SS84		01
	IF008590	Diode	ERB44-02		01
	IH001740	Diode	ERB44-06		01
	IH001750	Diode	ERB43-02		01
**	IX552930	Diode Stack	C8P04Q 8A 40V		
	IX801360	Diode Stack	S2VB60 2A 600V		04
	IF001470	Zener Diode	RD6.2EB2 6.2V		01
	HL314100	Metal Oxide Film Resistor	10 Ω 1W J		01
	HL314560	Metal Oxide Film Resistor	56 Ω 1W J		01
**	HL328120	Metal Oxide Film Resistor	120K Ω 2W J		01
	HL335220	Metal Oxide Film Resistor	220 Ω 3W J		01
	VD772100	Metal Oxide Film Resistor	22K Ω 3W J		01
	HV555100	Flame Proof C. Resistor	100 Ω 1/4W J		01
	HV555820	Flame Proof C. Resistor	820 Ω 1/4W J		01
**	VD337500	Wire Wound Resistor	1 Ω 3W K		01
	VD492600	Wire Wound Resistor	4.3 Ω 5W K		01
	HT370010	Trimmer Potentiometer	B1.0K Ω 3P EVN		02
	FH213100	Ceramic Cap.	1000P 500V K		01
	FX551100	Ceramic Cap.	220P 1KV K		03
**	FI494100	Ceramic Cap.	0.01 μ 400V		01
	FR203100	Ceramic Cap.	0.1 μ		03
	FR203220	Ceramic Cap.	0.22 μ 250V		
	VA879900	Ceramic Cap.	2200P 400V		01
	FZ006880	Electrolytic Cap.	100 μ 200V		04
**	UJ169100	Electrolytic Cap.	1000 μ 50V		03
	FJ239100	Electrolytic Cap.	1000 μ 16V		02
	UJ129220	Electrolytic Cap.	2200 μ 10V		02
	VD492800	Coil	FL 20 μ H		01
	VD492900	Coil	FL 47 μ H		02
**	GE300820	Coil	FL 150 μ H		02
	VC096100	Coil	NFR5EA403 40mH		06
	KA803610	Push Switch	ESB-8213A		03
	KB000350	Fuse	T2A 250V		01
	KB001240	Fuse	T2A 250V		03
**	KB000680	Fuse	T1.25A 250V S		
	LB201530	Fuse Holder	PC-FH1		01
	XC886002	Power Transformer	TYA027		08
	VA803700	Switch Panel			02
**	VC018600	Circuit Board	PN		16
	IG069200	IC	NJM2041DD		05
	VA262300	LED	LN242RP RED		01
	VD214500	Rotary Pot.	A10K Ω		04
	FZ005030	Semiconductive Cera. Cap.	0.1 μ 25V Z		01
**	VB971100	Coil	FL 20 μ H		01
	KA907030	Push Switch	KHH10908		01
	VA025500	Push Switch	SUJ		02
	LB301800	Phone Jack	HLJ0544 MONO		03
	LB302070	Phone Jack	HLJ0544 STEREO		03
**	VD989300	Circuit Board	DRM		
	XD238001	IC	TC74HC244F-TP1		04
	XD239001	IC	TC511000J-12		17
**	VD176700	LCD Assembly	40 \times 2 with LED		
	VC004500	LCD Display	DMC40267UV-YGR		22
	MG001820	AC Cord	7A 3.0m		05
	MG000100	AC Cord	10A 12FT		08
	MG000270	AC Cord	10A 3.3m		09
**	VC309900	AC Cord	2.5A 3.3m		06
	MG000450	AC Cord	6A 3.5m		

* New Parts (新規部品)

ランク: Japan only