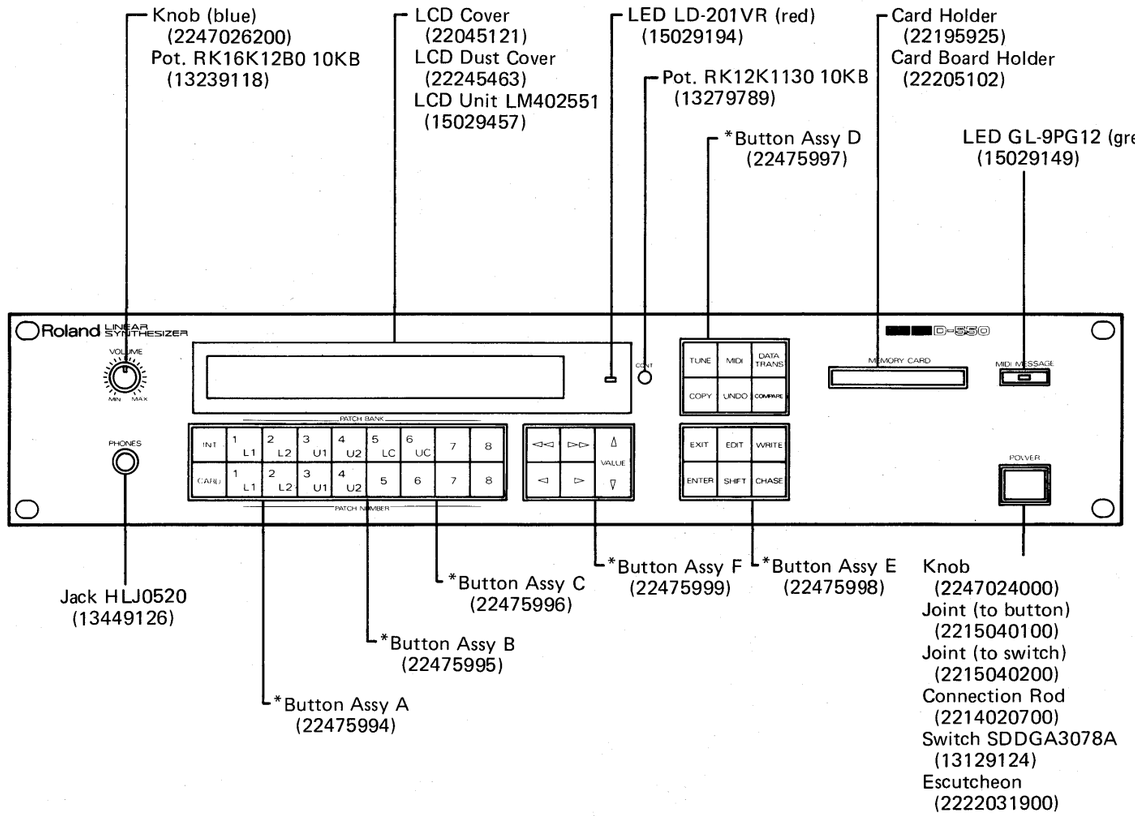
D-550 SERVICE NOTES

First Edition

SPECIFICATIONS

TUNE	MASTER TUNE	±50 cents
	FINE TUNE	±50 cents
PITCH MODULATION	LFO	±600 cents
	ENV	±2400 cents
	BENDER	±2400 cents
	AFTERTOUCH	±2400 cents
ENV TIME	PITCH T1 – T4	9ms – 9s
	TVF T1 – T5	4ms – 80s
	TVA T1 – T5	4ms – 80s
LFO	RATE	0.0004 – 27Hz
	DELAY TIME	0 – 10s
CHORUS LFO	RATE	0.098 – 20Hz
OUTPUT	AUDIO	–4.0dBm
	PHONES	8 – 150Ω Stereo
POWER CONSUMPTION		15W, 12W (Japan)
DIMENSIONS		483(W) x 414(D) x 90(H) mm
		18-7/8" x 16-1/8" x 3-7/16"
WEIGHT		6.3 kg/14 lb 6 oz
ACCESSORY		MEMORY CARD (ROM) PN-D50-00 (12379401)



*Switch SKHHBS (13129733)

*The part No. of each button is as listed bellow. (Button Frame (3P) of each Button Assy: Part No. 2247024000)

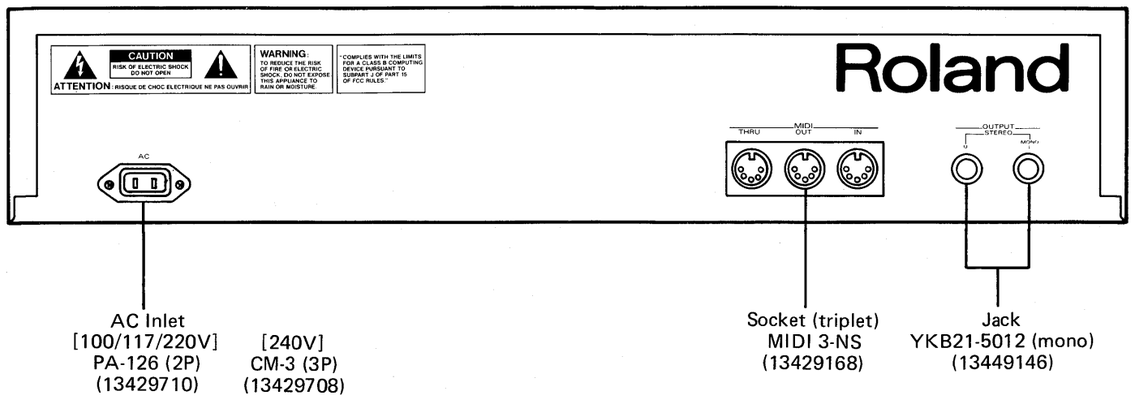
22495562	INT
22495561	CARD
22495563	1 L1
22495560	2 L2
22495559	3 U1
22495558	4 U2

22495557	5
22495556	5 LC
22495555	6
22495554	6 UC
22495553	7
22495552	8

22495551	◁◁
22495550	◁
22495549	▷▷
22495548	▷
22495547	VALUE

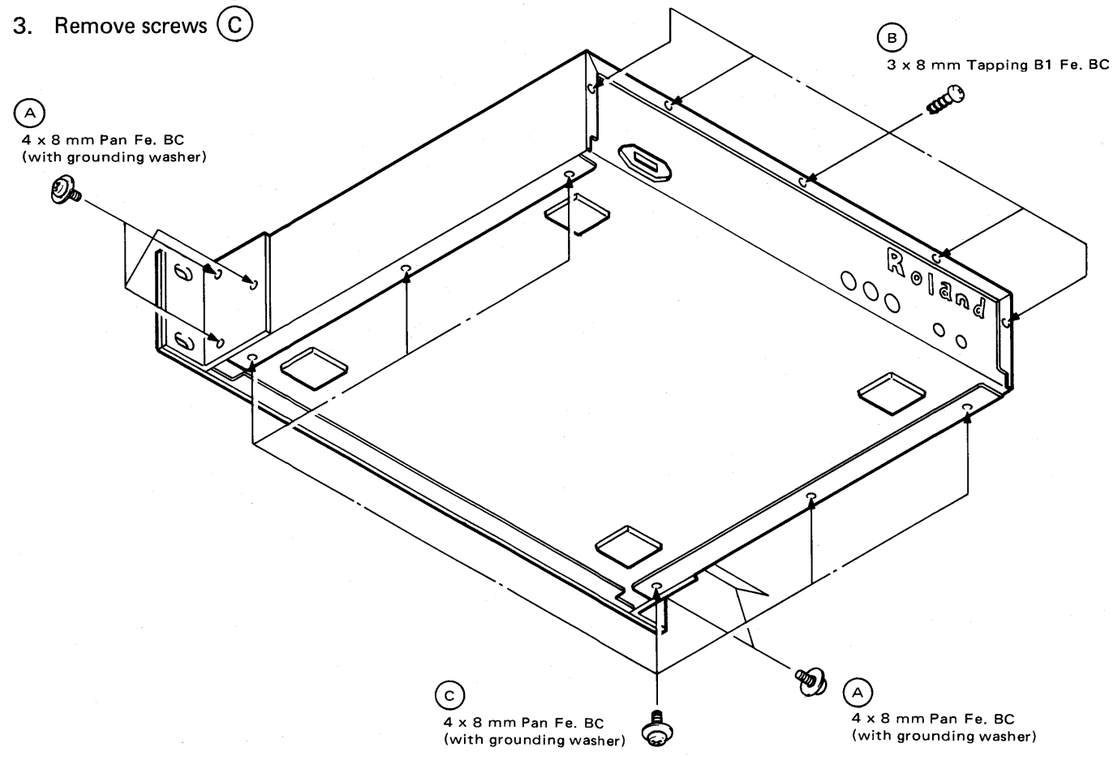
22495546	ENTER
22495545	CHASE
22495544	SHIFT
22495543	WRITE
22495542	EDIT
22495541	EXIT

22495540	COMPARE
22495539	UNDO
22495538	COPY
22495537	DATA TRANS
22495536	MIDI
22495535	TUNE

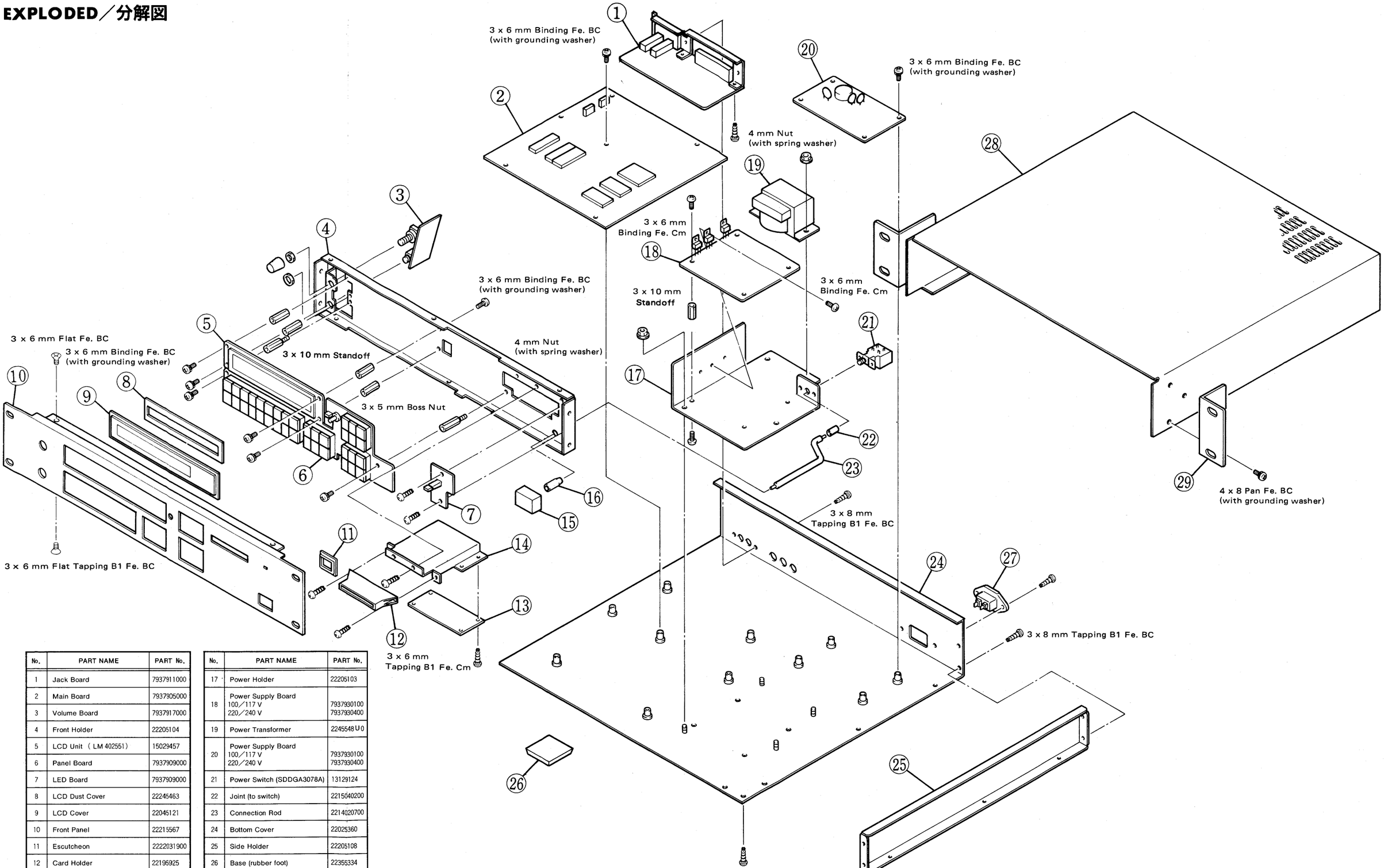


DISASSEMBLING／分解手順

1. Remove screws (A)
2. Remove screws (B)
3. Remove screws (C)



EXPLODED／分解図



No.	PART NAME	PART No.
1	Jack Board	7937911000
2	Main Board	7937905000
3	Volume Board	7937917000
4	Front Holder	22205104
5	LCD Unit （LM 402551）	15029457
6	Panel Board	7937909000
7	LED Board	7937909000
8	LCD Dust Cover	22245463
9	LCD Cover	22045121
10	Front Panel	22215567
11	Escutcheon	22220319 00
12	Card Holder	22195925
13	Memory Card board	7937914000
14	Card Board Holder	22205102
15	Power Knob	2247024000
16	Joint (to button)	2215040100

No.	PART NAME	PART No.
17	Power Holder	22205103
18	Power Supply Board 100／117 V 220／240 V	 7937930100 7937930400
19	Power Transformer	2245548U0
20	Power Supply Board 100／117 V 220／240 V	 7937930100 7937930400
21	Power Switch (SDDGA3078A)	13129124
22	Joint (to switch)	2215040200
23	Connection Rod	2214020700
24	Bottom Cover	22025360
25	Side Holder	22205108
26	Base (rubber foot)	22355334
27	AC Inlet PA126 100/117/220 V CM3 240 V	 13429710 13429708
28	Top Cover	22025364
29	Angle Bracket	22125586

PARTS LIST

Since most of chip components on the main board can be replaced by locally available ones, this list represents special ones only.

メイン・ボード上のチップ部品は交換可能です。交換の際は，特殊なチップ部品を除き通常のパーツで代用してください。(パーツ・リストには，代用できないチップ部品のみ記載しています。)

CASING

22215567	Front Panel
22025364	Top Cover
22025360	Bottom Cover
22205104	Front Holder
22205108	Side Holder
22125586	Angle Bracket
22045121	LCD Cover
22195889	MIDI Holder
22205101	Jack Holder
22195925	Card Holder
22205102	Card Board Holder
22205109	Headphone Holder
22205103	Power Holder
2222031900	Escutcheon
22355334	Base (Rubber Foot)

BUTTON/KNOB

** For each button see the front Page.*

それぞれのボタンについては表紙を見て下さい。

22475994	Button Assy A	INT, CARD, PATCH BANK 1/2, PATCH NUMBER 1/2
22475995	Button Assy B	PATCH BAND 3/4/5, PATCH NUMBER 3/4/5
22475996	Button Assy C	PATCH BANK 6/7/8, PATCH NUMBER 6/7/8
22475997	Button Assy D	TUNE, COPY, MIDI, UNDO, DATA TRANSFER, COMPARE
22475998	Button Assy E	EXIT, EDIT, SHIFT, ENTER, WRITE, CHASE
22475999	Button Assy F	◁◁, ▷▷, ▷, ◁, VALUE
2247026200	Knob blue	VOLUME
2247024000	Knob	POWER
2247024000	Button Frame (3P)	

AC CORD SET (detachable)

13439825	DC-320J01	100V
13439812F0	UC-704J01	117V
13439813F	EC-210J06	220V
23495110	BB6742-BB6791	240V England
13439814F0	SC-415J06	240V Australian

SOCKET

13429710	PA-126 2P AC Inlet	100/117/220V
13429708	CM-3 AC Inlet	240V
13429168	MIDI 3-NS (triplet)	MIDI IN/OUT/THRU
13449146	YKB21-5012 (mono)	OUTPUT (U/L)
13449126	HLJ0520	PHONES
13429534	ICE-286-S-TG	EP ROM

SWITCH

13129733	SKHHBS	panel board
13129124	SDDGA3078A	power switch

FUSE

12559411	SD6 315MA	100/117V
12559380	SD6 1.25A-N1	100/117V
12559540	CEE-160MAT BESWICK	220/240V
12559549	CEE-1.25AT BESWICK	220/240V

POWER TRANSFORMER

22455480U0	Power (universal)	100/117/220/240V
12449567	NEL D32-43 (EL inverter)	power supply board

LCD UNIT

15029457	LM402551 with EL, PCB and wiring

**No replacement for individual parts.*

補修品はユニット単位

PCB ASSEMBLY

7937905000	Main Board (PCB 22925445)
7937911000	Jack Board (PCB 22925491)
7937914000	Memory Card Board (PCB 22925491)
7937909000	Panel/LED Board (PCB 22925491)

**Panel board and LED board are supplied together in a set.*

パネル・ボードとLEDボードは，セットで供給します。

7937917000	Volume Board (PCB 2295491)
7937930100	Power Supply Board 100/117V (PCB 22925490)
7937930400	Power Supply Board 220/240V (PCB 22925490)

**The same Assy number is applied to both primary and secondary boards. Specify which of then is required, when ordering.*

一次側と二次側のボードは同じアッセンブリ・ナンバーになっています。
発注の際は，いずれのボードかを明記して下さい。

POTENTIOMETER

13239118	RK16K12B0	10kB	VOLUME
13279789	RK12K1130	10kB	CONTRAST
(trimmer)			
13299197	EVN-D4AA00B15		D/A

INDUCTOR

12449294	BL03RN2-R62T2		main board, jack board, volume board
12449291	BL02RN1-R62		power supply board
12449265	ELE-H102KA	1mH	power supply board
12449301	SN3-300	20μH	main board

FILTER

22445293	TFB-3 fc=14.5kHz	LC filter
13529149	ELXTV103EA	digital noise filter
13529150	DSS310-55B101M	EMI filter
12449298	ESD-R-25D	data line filter (line on Volume board)
12449229	FK0B-160MH15	power supply board

OPT-ISOLATOR

15229718	6N137

CRYSTAL

12389774	HC49/U10	32.768MHz	synthe chip
12289765	TQC-226A-6R	12MHz	CPU

RESISTOR ARRAY

13919185	RKM6L103F	10k x 6
(chip)		
15399910	MNRDM8-JX682E	6.8 x 8
15399908	MNRDM2-JX153E	15k x 2
15399907	MNRDM4-JX153E	15k x 4
15399906	MNRDM8-JX153E	15k x 8

CAPACITOR

13529132	RPE132-901F104Z25	0.1μF/25V	ceramic
13659216M0	ECESIEU682K	6800μF	power supply board
13639194S0	35MV1000H	1000μF/25V	power supply board
13529148	DSR1100-56E222MVA2EA		power supply board
13529104	DE7150F472MVA1	4700pF	power supply board

IC

(main board)		
15179266	μPD78312G-022	CPU
15229851	MB87136	synthe chip
15229842	MB87137	chorus chip
15229866	MB87126-006	reverb chip
15229849	HG61H25B18F	gate array
15229848	μPD6500G-062	gate array
15179835	TC532000P-7469	PCM ROM (A)
15179836	TC532000P-7470	PCM ROM (B)
15449111	MBM27C512	EP ROM

**When ordering EP ROM, specify version number.*

EP ROM を発注される場合は，バージョン・ナンバーを明記してください。

15179369	HM6264ASP	S RAM
15179374H0	HM62256LP	S RAM
15179376	MB81416-10	D RAM
(15179380	μPD41416	D RAM D-50)

**Although MB81416-10 and μPD41416 (for D-50) are interchangeable, mix use of different types on the same PCB will lead to unreliable operation.*

D-50 の DRAM と互換性はありますが，異なった種類を混ぜて使用しないで下さい。

15219162	PCM54	D/A Converter
15259701T0	TC74HC00F-T2	quad 2-input NAND gate
15259709T0	TC74HC10F-T2	triple 3-input NAND gate
15259740T0	TC74HC139F-T2	dual 2-to-4 line decoder
15259757T0	TC74HC174F-T2	hex D-type flip flop with clear
15259102	μPD4066BG	quad bilateral switch
15289106	M5238FP	low noise OP amp (dual in line)
15289105	μPD4570G	low noise OP amp (dual in line)
15289110	μPC4062G	J-FET-OP amp (dual in line)
(jack board)		
15189190	M5216L	OP amp (dual in line)
15189189	μPC4570HA	low noise OP amp (dual in line)
15169304H0	HD74LS04P	hex inverters
(power supply board)		
15199156	M5F78M12	voltage ragulator
15199157	M5F79M12	voltage ragulator
15199155	L78MR05R	voltage ragulator

TRANSISTOR

15129182	2SC3327A	jack board
15119132	2SA1015GR	jack board
15129176	2SC945AQ-T	power supply board
(chip)		
15309101	2SA1037K	main board
15329502	DTC 124EK with built-in resistors	main board

DIODE

15019126D0	ISS-133		panel board, jack board
150196120X	0.5-5.1X 5.1V zener		power board
15019281	1SR35-100A T-93 100V 1A		power board
15019245SN	S1VB10 100V 1A rectifier		power board
15019272	2B4B41 100V 2A bridge rectifier		power board
(chip)			
15339103	MA153		main board
15339105	DAN202K		main board
(LED)			
15029149	GL-9PG12	green	MIDI MESSAGE
15029152	GL-9HD12	red	CHASE
15029194	LD-201VR	red	MONO MODE

CONNECTOR

(straight type)			
13439260	5267-03A	3P	wafer assy
13439263	5267-06A	6P	wafer assy
13439264	5267-07A	7P	wafer assy
13436326	5219-02A	2P	power board
13439306	5566-06A	6P	power board
(straight type)			
13439330	IL-S-3P-S2T2-EF	3P	connector pin header
13439320	IL-S-4P-S2T2-EF	4P	connector pin header
13439332	IL-S-5P-S2T2-EF	5P	connector pin header
13439296	IL-S-7P-S2T2-EF	7P	connector pin header
13439297	IL-S-8P-S2T2-EF	8P	connector pin header
13439345	IL-S-9P-S2T2-EF	9P	connector pin header
13439337	IL-S-13P-S2T2-EF	13P	connector pin header
13439338	IL-S-14P-S2T2-EF	14P	connector pin header
13439339	IL-S-15P-S2T2-EF	15P	connector pin header
13429191		34P	memory card

MISCELLANEOUS

23455314	Grounding Leaf (to Front Holder)
22265226	Dust Cover (to Front Panel)
22245463	LCD Dust Cover
2215040100	Joint (to button)
2215040200	Joint (to switch)
2214020700	Connection Rod
22195450	LED Holder (1 set = triplet)

BATTERY

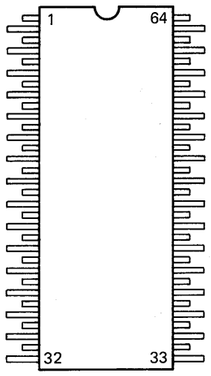
12569249	CR2032 leadless	lithium

MEMORY CARD

12379401	PN-D50-00 ROM	accessory

IC DATA

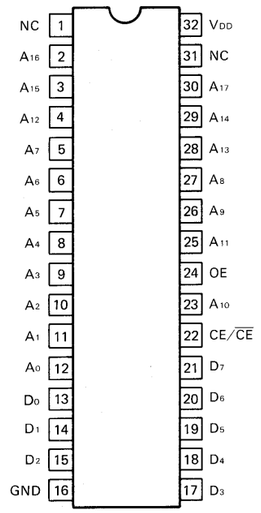
CPU μPD78312



TOP VIEW

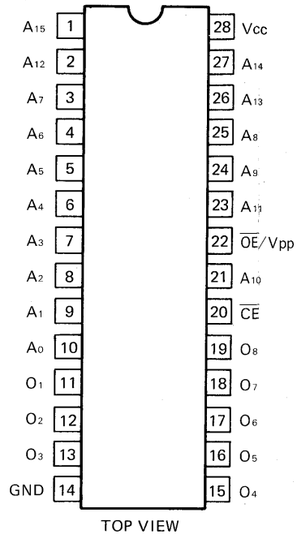
No	NAME	I/O	No	NAME	I/O	No	NAME	I/O	No	NAME	I/O
1	P0.0	O	17	NMI	I	33	AN0	I	49	A14	O
2	P0.1	O	18	INT0	I	34	AN1	I	50	A15	O
3	P0.2	O	19	INT1	I	35	AN2	I	51	$\overline{EA}$	I
4	P0.3	O	20	INT2	I	36	AN3	I	52	$\overline{RESET}$	I
5	P0.4	O	21	TXD	O	37	AVREF	O	53	$\overline{RD}$	O
6	P0.5	O	22	RXD	I	38	AVss	-	54	$\overline{WR}$	O
7	P0.6	O	23	$\overline{SCK}$	O (NC)	39	P3.4	I/O(NC)	55	ALE	O
8	P0.7	O	24	$\overline{CTS}$	I/O	40	P3.5	I/O(NC)	56	AD0	I/O
9	P1.0	I/O	25	$\overline{RFSH}$	O (NC)	41	P3.6	I/O	57	AD1	I/O
10	P1.1	I/O	26	P3.0	I	42	P3.7	I/O	58	AD2	I/O
11	P1.2	I/O	27	P3.1	I	43	A8	O	59	AD3	I/O
12	P1.3	I/O	28	P3.2	I	44	A9	O	60	AD4	I/O
13	P1.4	I/O	29	P3.3	I	45	A10	O	61	AD5	I/O
14	P1.5	I/O	30	X1	I	46	A11	O	62	AD6	I/O
15	P1.6	I/O	31	X2	I	47	A12	O	63	AD7	I/O
16	P1.7	I/O(NC)	32	Vss	-	48	A13	O	64	VDD	-

PCM ROM A/B TC532000



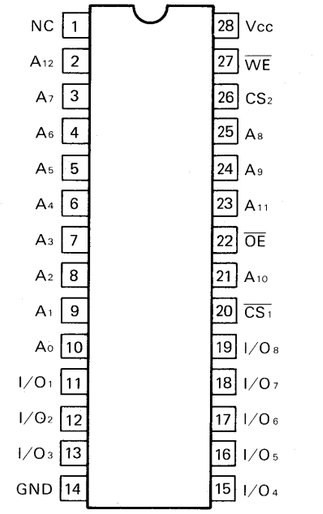
TOP VIEW

EP ROM MBM27C512



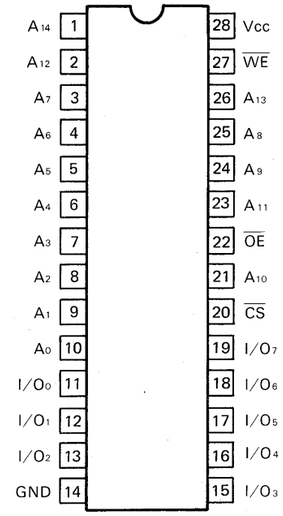
TOP VIEW

S RAM HM6264ASP



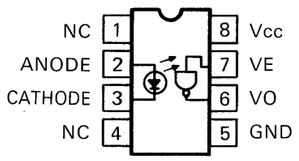
TOP VIEW

S RAM HM62256LP



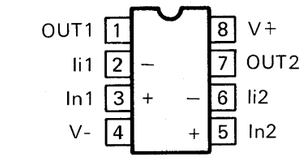
TOP VIEW

6N137



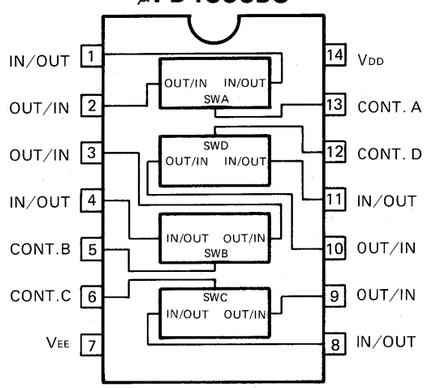
TOP VIEW

μPC4062G μPC4570G M5238FP



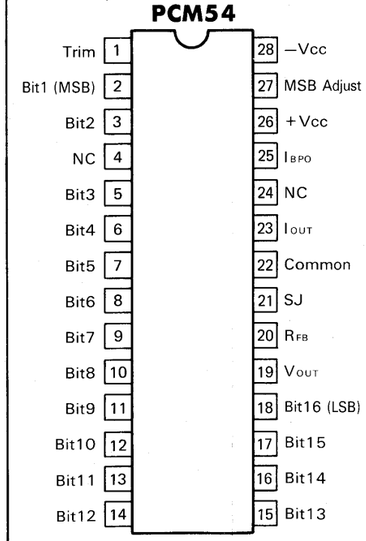
TOP VIEW

μPD4066BG



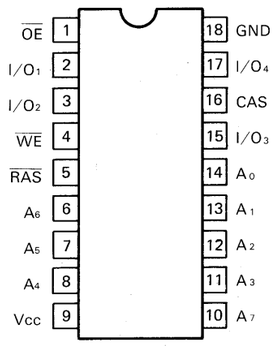
TOP VIEW

D/A CONVERTER PCM54



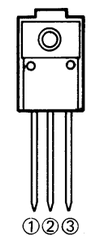
TOP VIEW

D RAM MB81416



TOP VIEW

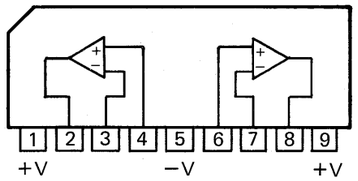
M5F78M12 (M5F79M12)



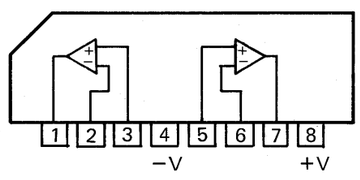
1. INPUT (GND)
2. GND (INPUT)
3. OUTPUT

FRONT VIEW

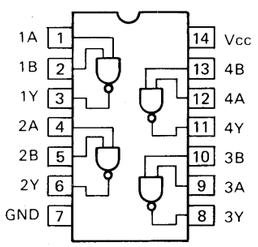
μPC4570HA



M5216L

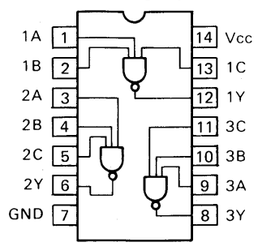


74HC00



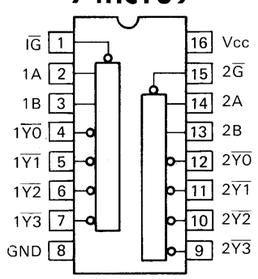
TOP VIEW

74HC10



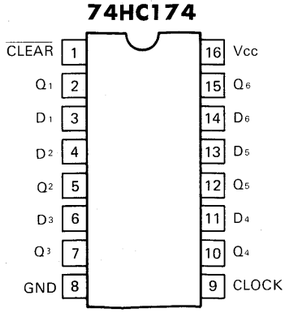
TOP VIEW

74HC139



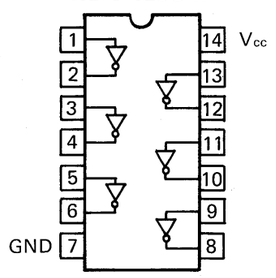
TOP VIEW

74HC174



TOP VIEW

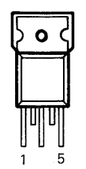
HD 74LS04P



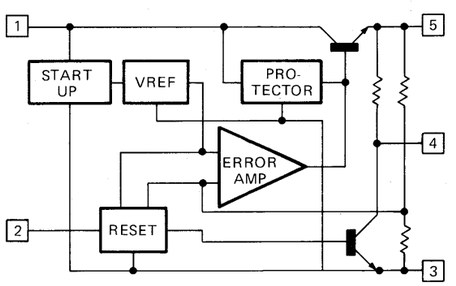
TOP VIEW

L78MR05R

FRONT VIEW

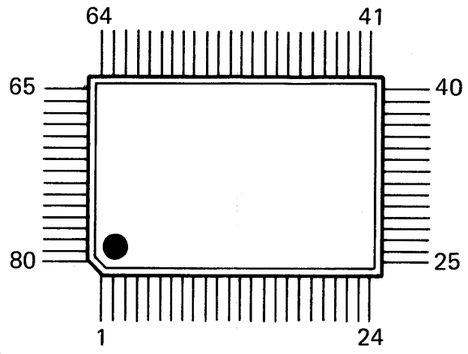


1 INPUT
2 DELAY CAPACITOR
3 GND
4 RESET OUTPUT
5 OUTPUT



IC DATA

REVERB CUSTOM IC
MB87126-006

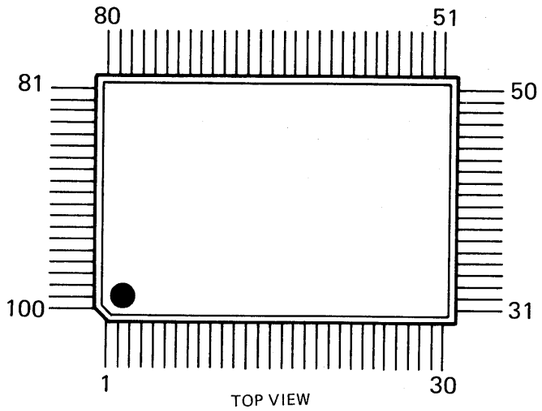


TOP VIEW

PIN.NO.	PIN NAME	I/O	DESCRIPTION
1，2，66～72，74～80	DC0-15	O	Data output for chorus chip and DAC D/A へのデータ，コーラス・データ出力端子
3	STRT	I	Pulled low GND にプルダウン
4	DIN	I	Pulled low GND にプルダウン
5	CLEA	I	Pulled low GND にプルダウン
6～10	RD0-4	O	Control output for enable and for S/H and Lower for bit D/A Conversion コントロール出力端子 イネーブル，S/H，D/A（下 4 bit）
11	RSET	I	Pulled low GND にプルダウン
12, 15, 36 52, 65	Vss	—	GND
13	SLRQ	I	Pulled low GND にプルダウン
14	MSCK	I	Master clock input マスター・クロック入力端子
16	SLCK	O	Not used 未使用
17	TEST	I	Pulled low GND にプルダウン
18	TMB	O	Time base signal output タイム・ベース信号出力端子
19, 33, 73	VDD	—	＋5 V

PIN.NO.	PIN NAME	I/O	DESCRIPTION
20	$\overline{\text{LOAD}}$	O	Sync signal output シンク信号出力端子
21	SYNC	I	Sync signal input シンク信号入力端子
22	INCK	I	Data latch clock input for initialization イニシャライズ時のデータ・ラッチ・クロック入力端子
23	ERCL	I	Busy veset output Busy 解除用端子
24	BUSY	O	Serial data transfer errov output (Parity check) シリアル・データ転送エラー出力 （パリティー・チェック）
25	SXD	I	Serial data input シリアル・データ入力端子
26	SCK	I	Serial data read-in clock input シリアル・データ取込みクロック入力端子
27 - 32, 34, 35,	DAO-7	O	Connect to RAM address bus RAM アドレス・バス
37	$\overline{\text{RAS}}$	O	Row address strobe output ロー・アドレス・ストローブ
38	$\overline{\text{WE}}$	O	DRAM write pulse output DRAM ライト・パルス出力端子
39	$\overline{\text{CAS}}$	O	Column address strobe output カラム・アドレス・ストローブ
40 - 51, 53 - 64,	DRO-23	I/O	Connect to RAM data bus, Synth and Chorus data input/output RAMデータ・バス，シンセ，コーラスデータ入出力端子

CHORUS CUSTOMIC
MB87137



TOP VIEW

PIN.NO.	PIN NAME	I/O	DESCRIPTION
1	RES	I	Reset input ； pulled up to V_{DD} リセット入力端子 V_{DD}にプルアップ
2	E	I	Chip enable input ； pulled up to V_{DD} チップ・イネーブル入力端子 V_{DD}にプルアップ
3，28，53 78	V_{DD}	—	＋5V
4	CS	I	Chip select input ； pulled up to V_{DD} チップ・セレクト入力端子 V_{DD}にプルアップ
5	$\overline{\text{RW}}$	I	Write pulse input ライト・パルス入力端子
6	$\overline{\text{RD}}$	I	Read pulse input リード・パルス入力端子
7	$\overline{\text{CS}}$	I	Chip select input チップ・セレクト(LOW)入力端子
8 - 10	A0-2	I	Connect to CPU address bus CPU とのアドレス・バス
11 - 14, 16 - 19,	D0-7	I/O	Connect to CPU data bus CPU とのデータ・バス
15, 40, 65 87, 90	Vss	—	GND
20	$\overline{\text{DOE}}$	I	Data out enable input データ・アウトプット・イネーブル入力端子
21	INCK	I	Input data latch clock input データ入力用ラッチクロック入力端子
22	SIN	I	Sync input ； pulled up to V_{DD} シンク信号入力端子 V_{DD}にプルアップ
23	SOUT	O	Sync output シンク信号出力端子
24	LRS	I	L/R select input L/R セレクト
25 - 27, 29 - 39, 41 - 42,	IO-15	I	Data input データ入力端子
43 - 52, 54 - 59	O0-15	O	Data input データ出力端子
60, 62 - 64, 66 - 70, 72 - 74, 76 - 79	RAO-13	O	Connect to SRAM address bus RA13 not used SRAM アドレス・バス RA13 未使用
77 80 - 86	PD7-O	I/O	Connect to SRAM data bus SRAM データ・バス
88	X1	I	Master clock input マスター・クロック入力端子
89	X2	O	Not used 未使用
91	ROMT	I	Pulled low テスト端子 GND にプルダウン
92	RAMT	I	
93	CTRT	I	
94	THRU	I	
95	ECTL	I	External control select input ； pulled up to V_{DD} エクスターナル・コントロール・セレクト入力端子 V_{DD}にプルアップ
96	ADDA	I	Pulled low テスト端子 GND にプルダウン
97	OFST	I	OFFset binary select input ； pulled up to V_{DD} オフセット・バイナリー・セレクト V_{DD}にプルアップ
98	PSFT	I	Pulled low テスト端子 GND にプルダウン
99	LHLD	O	Signal output for S/H ； not used S/H 用信号出力端子 未使用
100	RHLD	O	Signal output for S/H ； not used S/H 用信号出力端子 未使用

IC DATA

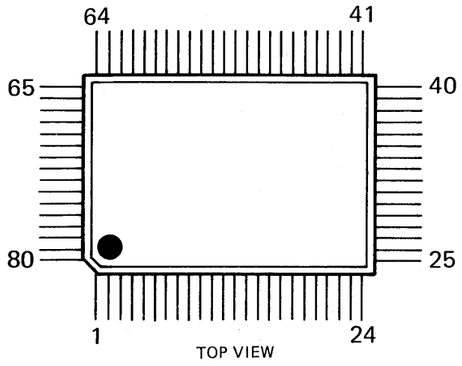
SYNTHE CUSTOMIC
MB87136

34	33	32	31	30	29	28	27	26	25	24	23
35	72	71	70	69	68	67	66	65	64	63	22
36	73				86	85				62	21
37	74									61	20
38	75									60	19
39	76	87							84	59	18
40	77	88							83	58	17
41	78									57	16
42	79									56	15
43	80				81	82				55	14
44	45	46	47	48	49	50	51	52	53	54	13
1	2	3	4	5	6	7	8	9	10	11	12

INDEX PIN　　TOP VIEW

PIN.NO.	PIN NAME	I/O	DESCRIPTION	PIN.NO.	PIN NAME	I/O	DESCRIPTION
1	$\overline{CS}$	I	Chip select チップ・セレクト入力端子	44	$\overline{INT}$	O	Interrupt output インタラプト　出力端子
2 - 6、 46 - 49、	A0-8	I	Connect to CPU address bus CPU とのアドレス・バス	45	$\overline{OE}$	I	Output enable input アウトプット・イネーブル入力端子
7 - 10、 50 - 53、	D0-7	I/O	Connect to CPU data bus CPU とのデータ・バス	75	——	—	Not used 未使用
11 - 14、 54 - 57、	PD0-7	I	Connect to ROM data bus ROM とのデータ・バス	76	X2	I/O	Xtal input 水晶振動子（32.768 MHz ）接続端子
15 - 26、 58 - 65、	RA0-19	O	Connect to ROM address bus ROM とのアドレス・バス	77	16M	O	Output frequency is one half of master clock マスター・クロックを 1 回分周した周波数を出力
27 - 35、 66 - 72、	O0-15	O	Data output データ・アウトプット・バス	78	CKIN	I	lutput frequency is a combination of the master clock and one half of master clock マスター・クロックと 1 回分周した周波数を入力
36 - 37、 73 - 74、	SH0-3	O	Not used 未使用	79	——	—	Not used 未使用
38	——	—	Not used 未使用	80	$\overline{RD}$	I	Read pulse input リード・パルス入力端子
39	X1	I/O	Xtal input（32.768 MHz ） 水晶振動子（32.768 MHz ）接続端子	81、84、 85、88、	Vss	—	GND
40	32M	O	The same frequency as that of master clock マスター・クロックと同じ周波数を出力	82、83、 86、87、	VDD	—	＋5 V
41	——	—	Not used 未使用				
42	$\overline{SYI}$	I	Sync signal input シンク信号入力端子				
43	$\overline{WR}$	I	Write pulse input ライト・パルス入力端子				

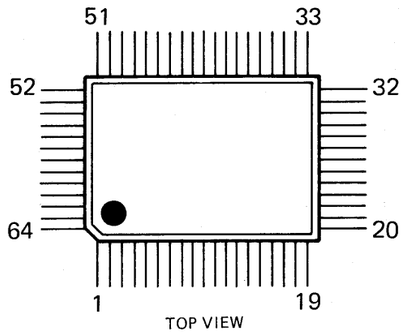
GATE ARRAY
HG61H25B18F



TOP VIEW

PIN NO.	NAME	I/O	PIN NO.	NAME	I/O	PIN NO.	NAME	I/O	PIN NO.	NAME	I/O
1	SYNT2	O (NC)	21	ALE	I	41	EC	O	61	R2	I
2	IRAM	O (NC)	22	$\overline{WR}$	I	42	O0	O	62	R3	I
3	RAM	O	23	$\overline{RD}$	I	43	O1	O	63	R4	I
4	A7	O	24	$\overline{RESET}$	I	44	O2	O	64	R5	I
5	A6	O	25	A15	I	45	O3	O	65	R6	I
6	A5	O	26	A14	I	46	O4	O	66	R7	I
7	A4	O	27	A13	I	47	O5	O	67	CORUS	O
8	A3	O	28	A12	I	48	O6	O	68	SCK	O
9	A2	O	29	A11	I	49	O7	O	69	SXD	O
10	A1	O	30	A10	I	50	S0	O	70	BUSY	I
11	A0	O	31	A9	I	51	S1	O	71	ERCL	O
12	Vss	-	32	A8	I	52	Vss	-	72	LOAD	I
13	AD7	I/O	33	VDD	-	53	S2	O	73	VDD	-
14	AD6	I/O	34	ARS	I (HIGH)	54	S3	O	74	TMB	I
15	AD5	I/O	35	INT1	O (NC)	55	S4	O	75	SINT1	I (LOW)
16	AD4	I/O	36	INT2	O	56	S5	O	76	SINT2	I (LOW)
17	AD3	I/O	37	DSCAN	O	57	S6	O	77	TEST1	I (LOW)
18	AD2	I/O	38	$\overline{ERAM}$	O	58	S7	O	78	CLK	I
19	AD1	I/O	39	ERAM	O (NC)	59	R0	I	79	TEST2	I (LOW)
20	AD0	I/O	40	RS	O	60	R1	I	80	SYNT1	O

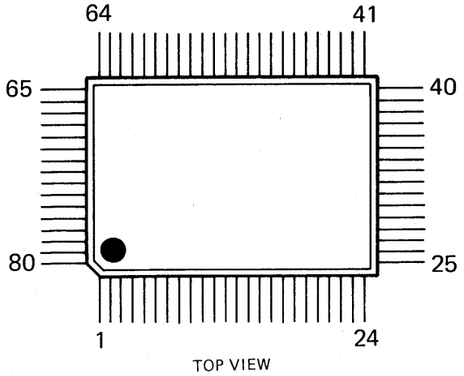
GATE ARRAY
μPD65005G-062



TOP VIEW

PIN NO.	NAME	I/O	PIN NO.	NAME	I/O	PIN NO.	NAME	I/O	PIN NO.	NAME	I/O
1	NC	-	17	NC	-	33	NC	-	49	NC	-
2	NC	-	18	NC	-	34	NC	-	50	CD0	I/O
3	AD7	I/O	19	A13	I	35	CA5	O	51	CD1	I/O
4	AD6	I/O	20	A12	I	36	CA6	O	52	CD2	I/O
5	AD5	I/O	21	A11	I	37	CA7	O	53	CD3	I/O
6	AD4	I/O	22	A10	I	38	CA8	O	54	CD4	I/O
7	AD3	I/O	23	A9	I	39	CA9	O	55	CD5	I/O
8	AD2	I/O	24	A8	I	40	CA10	O	56	CD6	I/O
9	AD1	I/O	25	SEL	I (LOW)	41	CA11	O	57	CD7	I/O
10	AD0	I/O	26	Vss	-	42	CA12	O	58	Vss	-
11	Vss	-	27	VDD	-	43	CA13	O	59	VDD	-
12	VDD	-	28	CA0	O	44	CA14	O	60	BATT	I (LOW)
13	ALE	I	29	CA1	O	45	MR	O	61	SENS	I (NC)
14	$\overline{WR}$	I	30	CA2	O	46	CWR	O	62	RCS	I
15	$\overline{RD}$	I	31	CA3	O	47	CCS	O	63	$\overline{CS}$	I
16	A14	I	32	CA4	O	48	CRD	O	64	NC	-

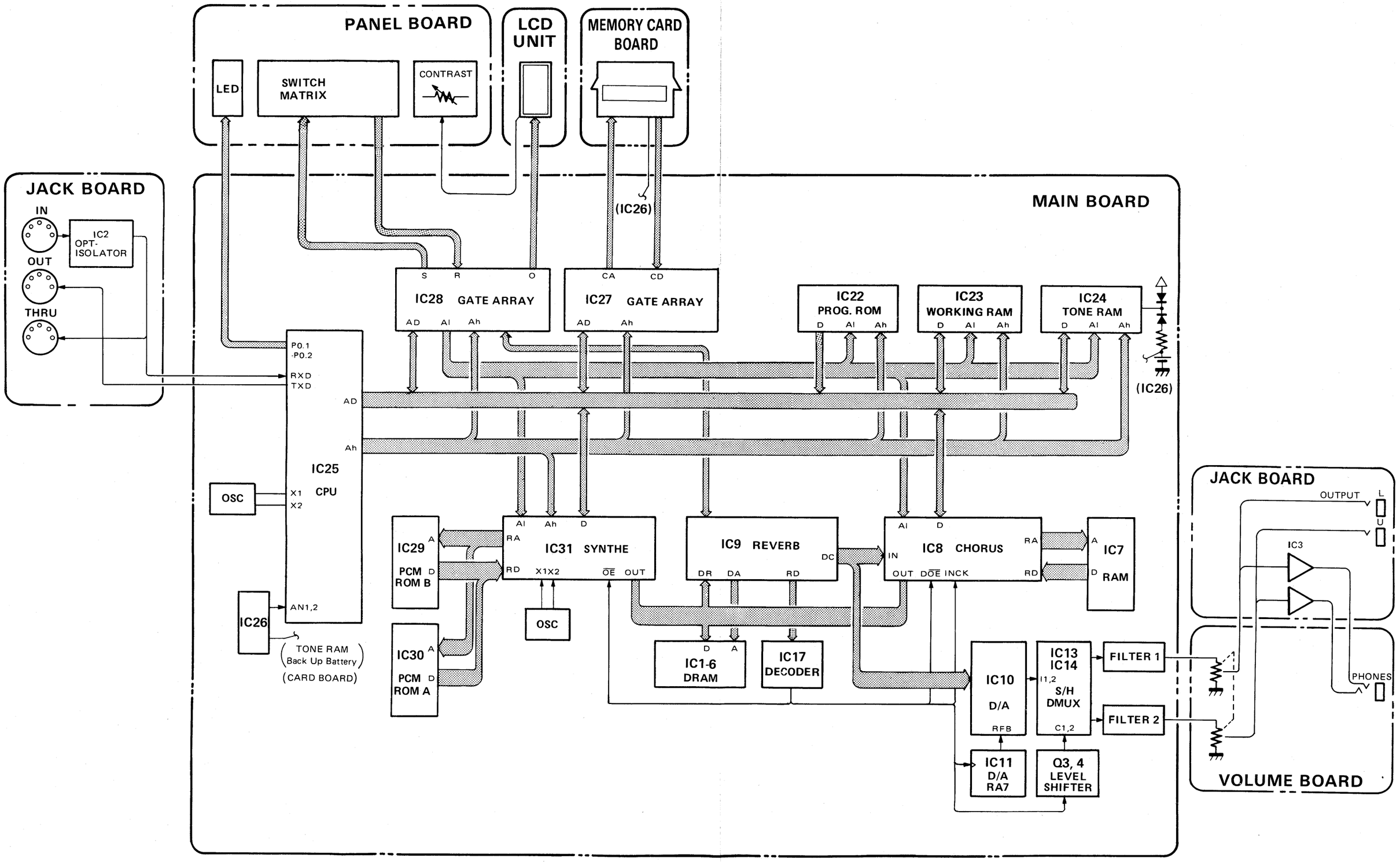
GATE ARRAY
MB63H149



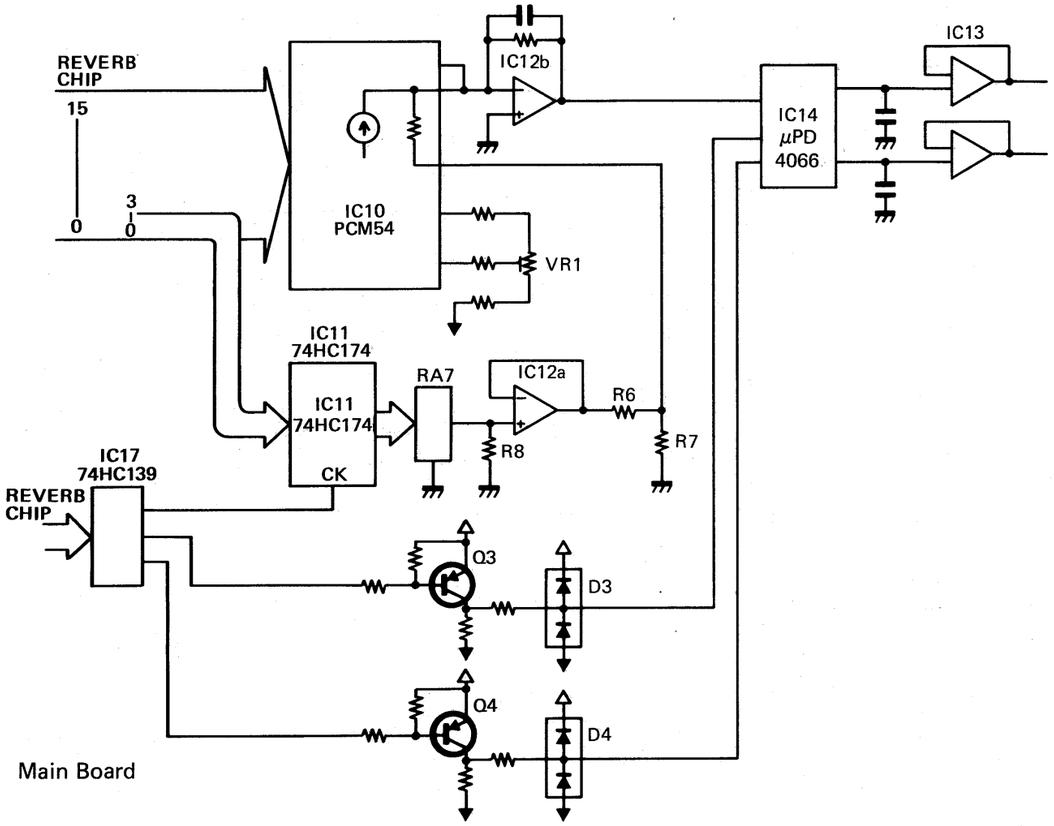
TOP VIEW

PIN NO.	NAME	I/O	PIN NO.	NAME	I/O	PIN NO.	NAME	I/O	PIN NO.	NAME	I/O
1	T7	O	21	BR9	I	41	AD7	I/O	61	RA1	O
2	BR0	I	22	MK9	I	42	CA8	I	62	RA10	O
3	MK0	I	23	BR10	I	43	CA9	I	63	RA2	O
4	BR1	I	24	MK10	I	44	CA10	I (LOW)	64	$\overline{ROE}$	I/O
5	MK1	I	25	RES	I	45	CS	I	65	RA3	O
6	BR2	I	26	$\overline{EXCK}$	I/O	46	XT1	I	66	$\overline{RWE}$	O
7	MK2	I	27	E	I (HIGH)	47	XT2	O (NC)	67	RA4	O
8	BR3	I	28	INT	O	48	ASEL	O (NC)	68	RA9	O
9	MK3	I	29	AS	I	49	MOD1	I (HIGH)	69	RA5	O
10	BR4	I	30	$\overline{CRES}$	O (NC)	50	MOD2	I (LOW)	70	RA8	O
11	MK4	I	31	$\overline{CRNW}$	I	51	RD3	I/O	71	RA6	O
12	Vss	-	32	SRCK	O (NC)	52	Vss	-	72	RA7	O
13	BR5	I	33	VDD	-	53	RD4	I/O	73	VDD	-
14	MK5	I	34	AD0	I/O	54	RD2	I/O	74	T0	O
15	BR6	I	35	AD1	I/O	55	RD5	I/O	75	T1	O
16	MK6	I	36	AD2	I/O	56	RD1	I/O	76	T2	O
17	BR7	I	37	AD3	I/O	57	RD6	I/O	77	T3	O
18	MK7	I	38	AD4	I/O	58	RD0	I/O	78	T4	O
19	BR8	I	39	AD5	I/O	59	RD7	I/O	79	T5	O
20	MK8	I	40	AD6	I/O	60	RA0	O	80	T6	O

D-550 BLOCK DIAGRAM



Digital to Analog Conversion (20bits)

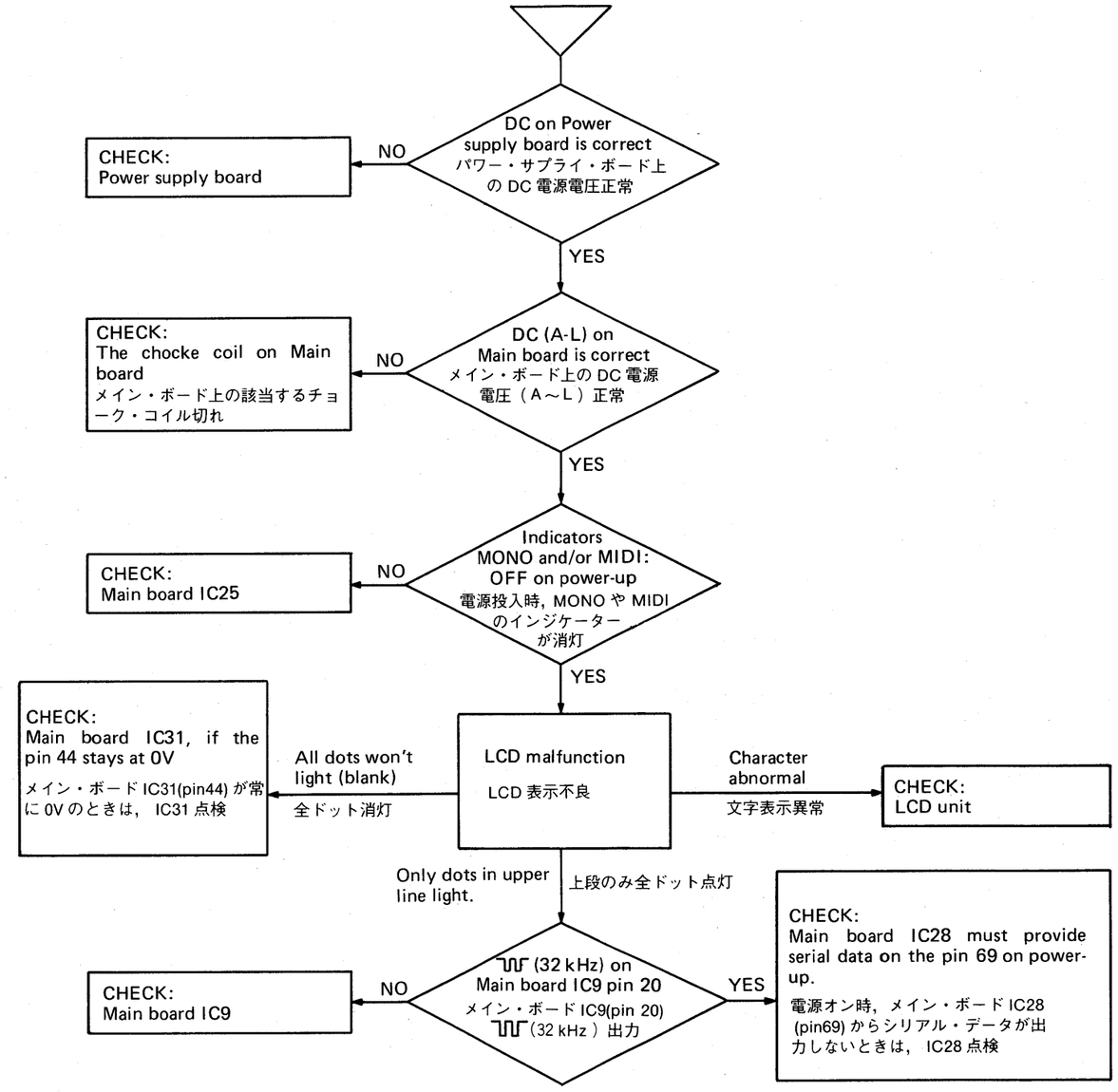


Main Board

IC10	Upper 16 bits D/A Conversion 上位16 bit D/A 変換
IC11	Lower 4 bits data latch 下位 4 bit データ・ラッチ
RA7	Lower 4 bits D/A Conversion 下位 4 bit D/A 変換
IC12a R6 R7 R8	Lower 4 bits Weighing 下位 4 bit の重み付け
VR1	MSB Weight adjuster MSB 重み調整
IC12b	I/V Conversion I/V 変換
IC14	Analog switch ; separates UPPER and LOWER UPPER と LOWERの信号に分ける アナログ・スイッチ
Q3 , D3 Q4 , D4	LEVEL SHIFTER
IC17	DECODER
IC13	S/H

TROUBLESHOOTING LOGIC TREE／暴走時のトラブル・ガイド

The below will help in some failure conditions.
暴走時，下記のチェックである程度の不良箇所を推測することができる。



INDENTIFYING ROM (IC22) VERSION NUMBER

Hold PATCH BANK 6, PATCH NUMBER 6 and EXIT then switch the power on. The first line of the display should show the current ROM version number, then the instrument will enter into normal play mode.

バージョン・ナンバーの確認

PATCH BANK 6 と PATCH NUMBER 6 と EXIT を押しながら，電源オン。
しばらくバージョン・ナンバーが表示（ディスプレイ上段）された後，プレイ・モードの表示になる。

DAC ADJUSTMENT

With monitor system connected to OUTPUT jack (U or L). Start with the unit turned off.

1. Hold PATCH BANK 2, PATCH NUMBER 6 and WRITE then switch the power on. The LCD should read:

   **with ROM Ver. 1.00 the display automatically shows a test title.*

****** L.A. Chip Test Mode V▽□□□□******
Press [COMPARE] for D/A Adjustment mode.

2. Press COMPARE and the instrument will enter into adjustment mode. The unit will show a test titie while generating a low level test sound.

****** L.A. Chip Test Mode V▽□□□□******
/*D/A Adjustment */

3. Raise VOLUME to top.
4. Adjust VR1 (Main board) for the minimum distortion.
5. Turn the power off.

D／A調整

アウトプット・ジャクにアンプを接続。

① PATCH BANK 2 と PATCH NUMBER 6 と WRITE を押しながら電源オン。

＊ ROM の Ver. 1.00のときは，直接②の画面になる。

****** L.A. Chip Test Mode V▽□□□□******
Press [COMPARE] for D/A Adjustment mode.

② COMPARE を押すと，調整モードになる。
（下表の表示になるとともに，微小レベルの調整音が発音される。）

****** L.A. Chip Test Mode V▽□□□□******
/*D/A Adjustment */

③ VOLUME ツマミを最大にする。

④ VR1 で，歪が最小になるように調整。

⑤調整終了後は，電源をオフにする。

RECOVERING TONE RAM DATA

When the backup battery or RAM (IC24) has been replaced, take the following steps.
Start with unit turned off.

1. (Refer to D-550 Owner's Manual, Page 105)
   Transfer PATCH and REVERB TYPE (17-32) data from the Memory Card (PN-D-50-00).
2. Hold PATCH BANK 2, PATCH NUMBER 6 and ENTER, then turn the power on. TUNE/FUNCTION and MIDI function data will be stored into the RAM. The LCD will read "Complete" and then normal play mode message.

データの設定

バッテリーや TONE RAM (IC24) の交換などで，TONE RAM のデータが失われた場合に次の操作を行なう。

1．パッチやリバーブ・タイプ (17-32) のデータは， D-550 のオーナーズ・マニュアル（ P 105）を参照の上，メモリー・カード (PN-D50-00) からデータの転送を行なう。

2．チューン／ファンクションや MIDI ファンクションのデータは， PATCH BANK 2 と PATCH NUMBER 6 と ENTER を押しながら，電源オンにしてイニシャライズする。
Complete としばらく表示された後，プレイ・モードの表示になる。

TEST MODE

CAUTION
Leave card slot disengaged.

Hold PATCH BANK 2, PATCH NUMBER 6 and EDIT then turn the power on. The display will show Test Mode menu.

D-550 Test Mode. Select Type . . .
▶ Memory Panel Card

Flashing

If an error message, as shown below is displayed instead of the test mode menu, check the IC and related circuits.

"Reverb Error" → IC9　　"Chorus Error" → IC8

To ignore the error, press EXIT to display the menu.

テスト・モード

テストを行なう前は，メモリー・カードを挿入しない。

PATCH BANK 2， PATCH NUMBER 6 と EXIT を押しながら，電源を入れると，テスト・モードのメニュー画面が表示される。

D-550 Test Mode. Select Type . . .
▶ Memory Panel Card

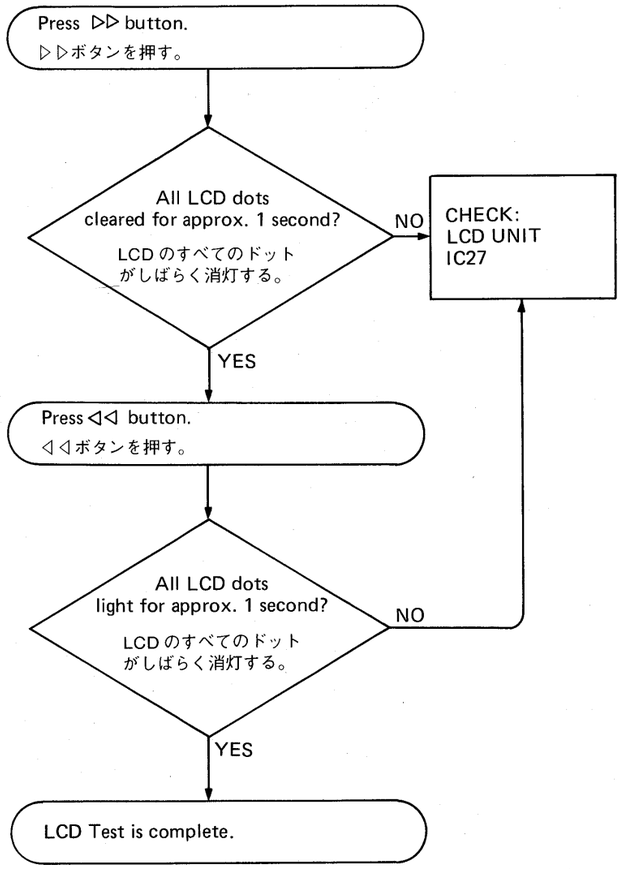
点滅

“ Reverb Error !! ”“ Chorus Error !! ”のエラー・メッセージが表示された時は，該当する IC 周辺の不良。

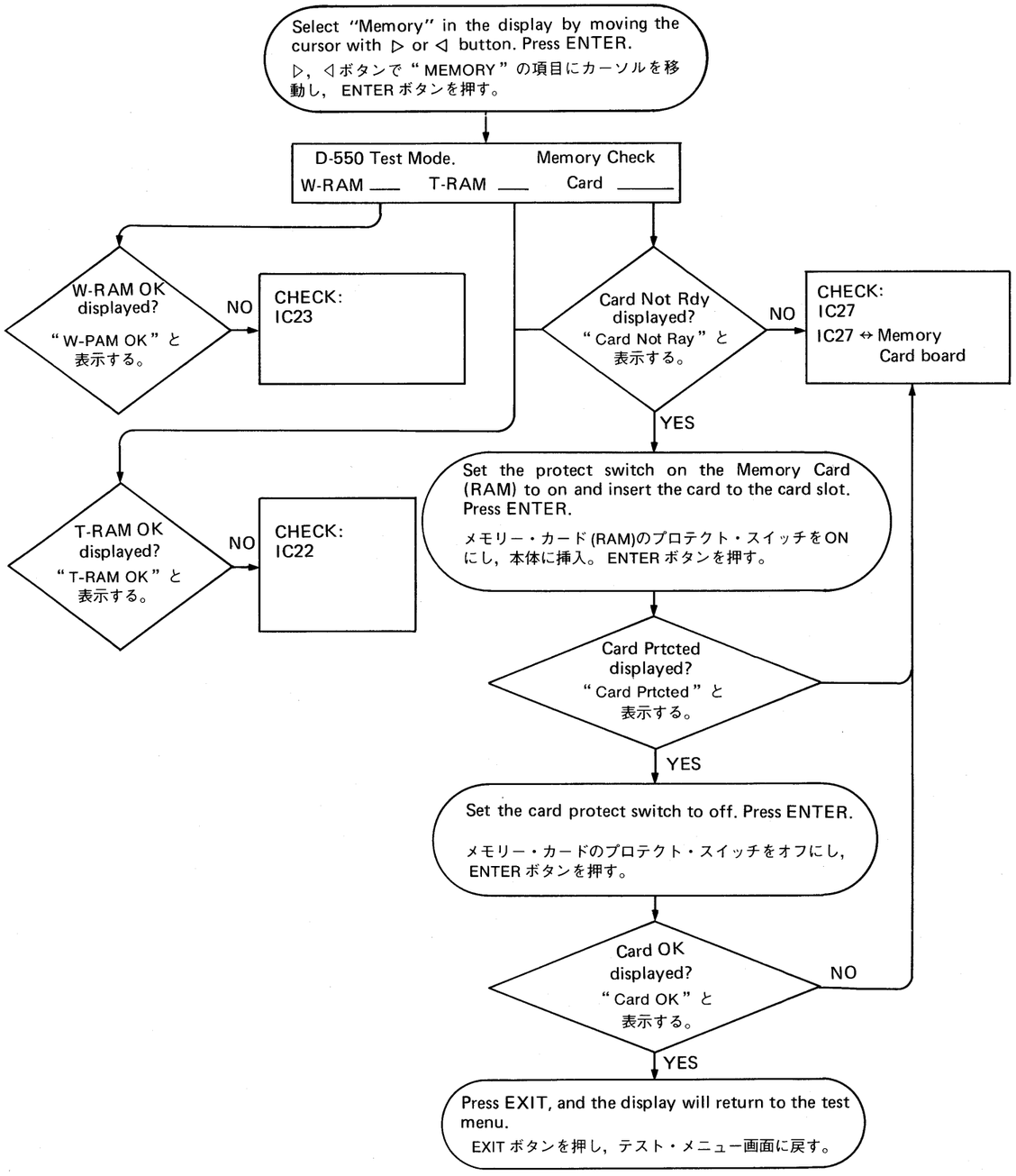
“ Reverb Error ” → IC9　　“ Chorus Error ” → IC8

そのまま次のステップへ進む時は EXIT を押し，テスト・メニュー画面にする。

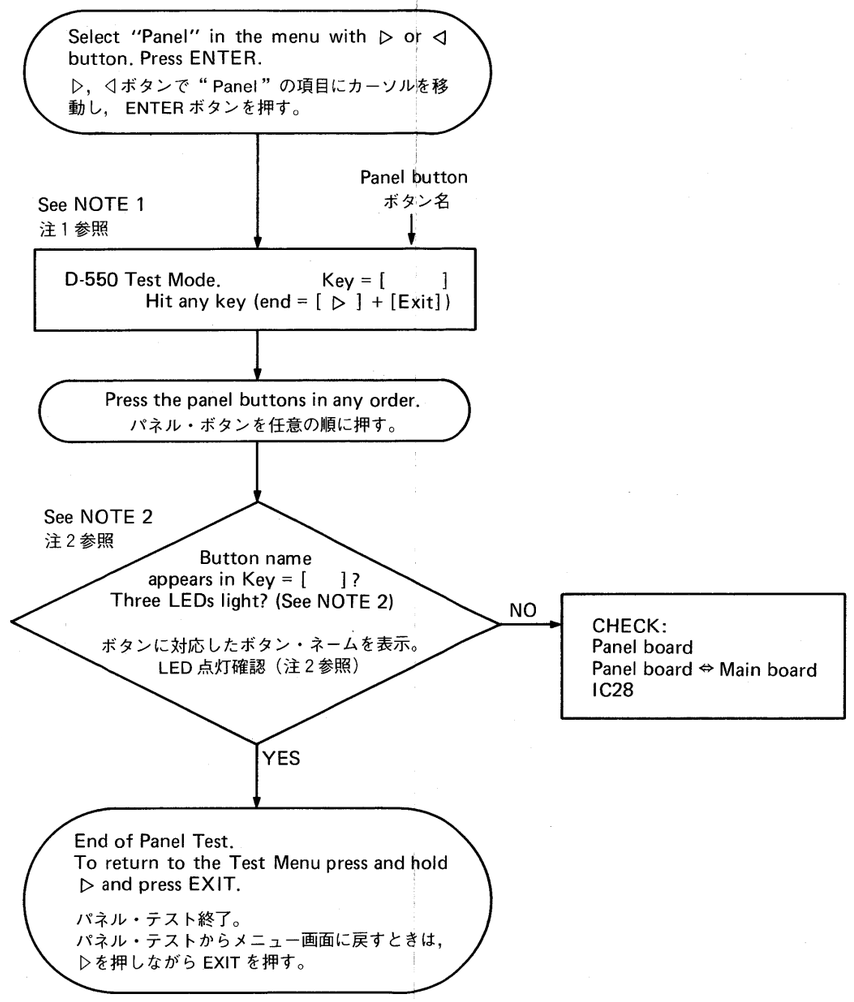
〔LCD TEST〕



(MEMORY TEST)



(PANEL TEST)



NOTE 1:
Default values should be empty. Any figure indicates defective in corresponding circuit.

NOTE 2:
LED lights corresponding to the following button.

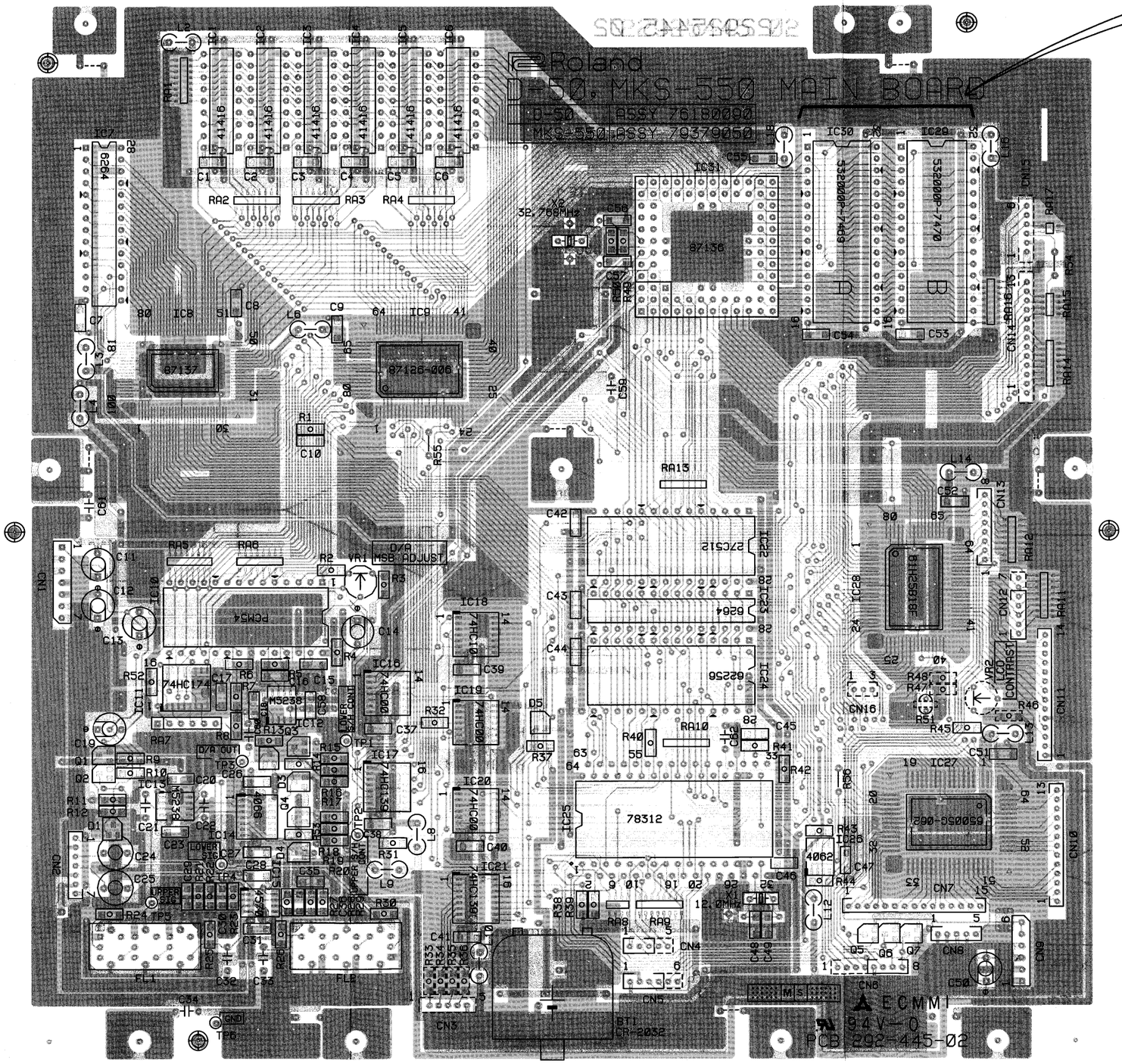
Button	Indicator
CHASE	CHASE
ENTER	MIDI
SHIFT	MONO

注 1 :
画面を呼び出した時は, ボタン名は表示されない。
何らかのボタン名が表示された時は, 該当する箇所をチェック。

注 2 :
LED は次のボタンに対応して点灯。

ボ タ ン	インジケーター
CHASE	CHASE
ENTER	MIDI
SHIFT	MONO

MAIN BOARD 76180090 (pcb 22925445)



View from component side

PIGGYBACKED ROM PCB

Some PCM ROMs A(IC30) and B(IC29) are mounted on a piggybacked pcb (call this PCM ROM PCB ASSY):
They are level-for-level incompatible with regular PCM ROMs and will not work if directly installed on the main board.
When replacing, use one listed on the parts list and discard of the PCM ROM PCB ASSY.

PCM ROM A (IC30)/B (IC29)

1部のロットでは代用に，PCM ROM PCB ASSY が実装されているものがあります。
その際，PCM ROM を交換される場合は，PCM ROM PCB ASSY を取り外し，パーツ・リストに記載されている PCM ROM に交換してください。
なお，PCM ROM PCB ASSY の PCM ROM は，メイン・ボードに直接実装しても働きません。

ADVARSEL!

Lithiumbatteri. Eksplosionsfare.
Udskiftning må kun foretages af en sagkyndig, og som beskrevet i servicemanual.

Lithium batteri må kun udskiftes med samme type og fabrikat.

VARNING!

Lithiumbatteri. Explosionsrisk.
Får endast bytas av behörig servicetekniker.
Se instruktioner i servicemanualen.

Lithium batteri för endast ersättes med samme typ och fabrikat.

ADVARSEL!

Lithiumbatteri. Fare for eksplotion.
Ma bare skiftes av kvalifisert tekniker som beskrevet i servicemanualen.

Lithium batteri må kun utskiftes med samme type og fabrikat.

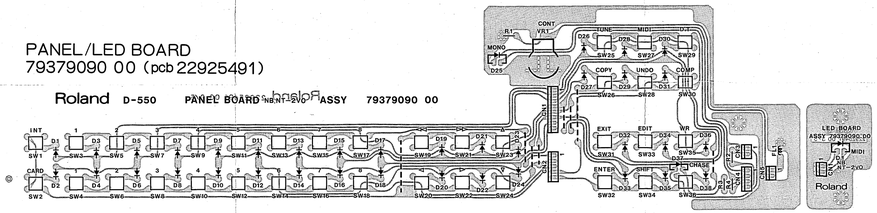
VAROITUS!

Lithiumpariston. Räjähdysvaara.
Pariston saa vaihtaa ainoastaan alan ammottimies.

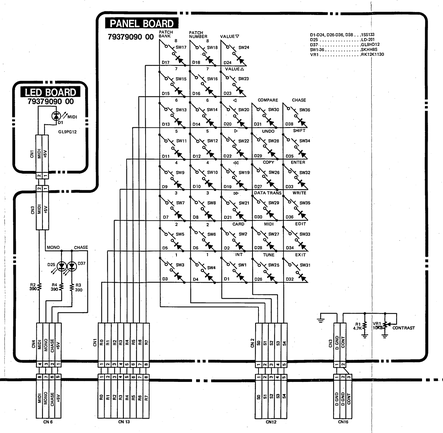
Kun vaihat lithium pariston KÄYTÄ saman valmistajan samaa tyyppiä.

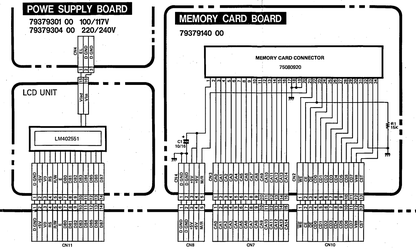

PANEL BOARD
79379090 00
LCD UNIT
MEMORY CARD BOARD 79379140 00
MAIN BOARD
79379050 00
POWER BOARD
79379301 00 100/117V
79379304 00 220/240V
JACK BOARD
79379110 00
VOLUME BOARD
79379170 00
IC25 CPU
μPD78312
IC21 : 74HC139
IC28 GATE ARRAY
HG61H25B18F
IC27 GATE ARRAY
μPD65005G-062
IC22 PROG. ROM
MBM27C512
IC23 WORKING RAM
HM6264ASP-15
IC24 TONE RAM
HM62256LP-12
IC16 : 74HC00
IC17 : 74HC139
IC18 : 74HC10
IC19 : 74HC00
IC20 : 74HC00
IC31 SYNTHE
MB87136
IC29 PCM ROM B
TC532000P-7470
IC30 PCM ROM A
TC532000P-7469
μPD41416C-12
RAM
IC9 REVERB
MB87126-006
IC8 CHORUS
MB87137-001
IC7 RAM
HM6264ASP-15
IC10
PCM54
IC11
IC11 : 74HC174
IC12 : M5238
IC13 : M5238
IC15 : μPC4570
D/A
D/A OUT
S/H DMUX
TP 1
TP 2
TP 3
TP 4
TP 5
LOWER SIGNAL
UPPER SIGNAL
UPPER S/H CONT
LOWER S/H CONT
LEVEL SHIFTER
D/A MSB ADJ
IC26
μPD4062
IC26 : μPC4062
IC12, IC13 : M5238
IC15 : μPC4570
IC16 : 74HC00
IC18 : 74HC10
IC19 : 74HC00
IC20 : 74HC00
Top view

PANEL/LED BOARD
79379090 00 (pcb 22925491)

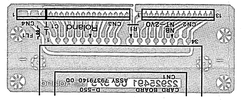


View from component side

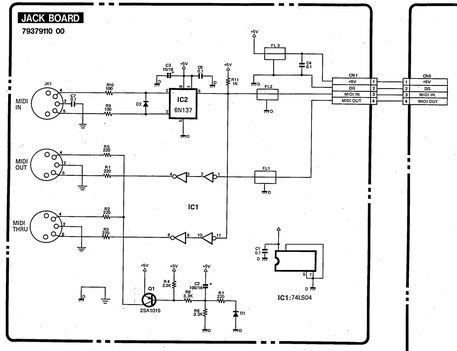




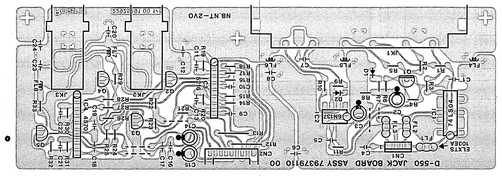
MEMORY CARD BOARD
79379140 00 (pcb 22925491)



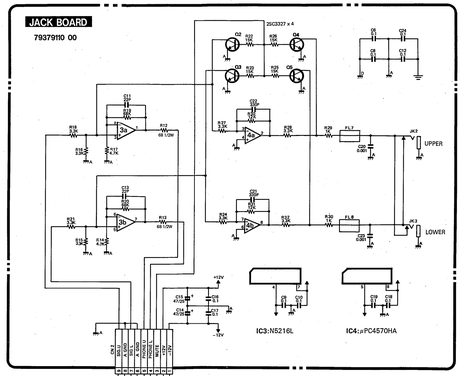
View from component side



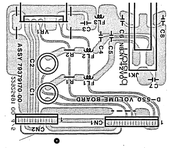
JACK BOARD
79379110 00 (pcb 22925491)



View from component side



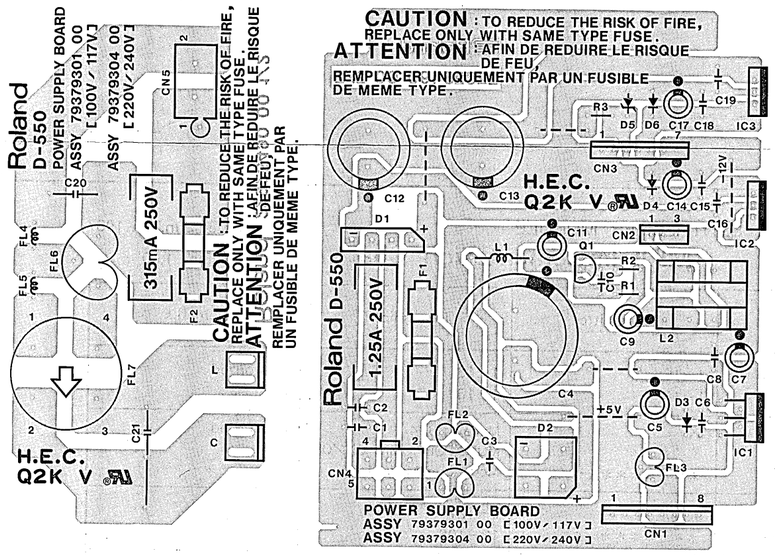
VOLUME BOARD
79379170 00 (pcb 2295491)



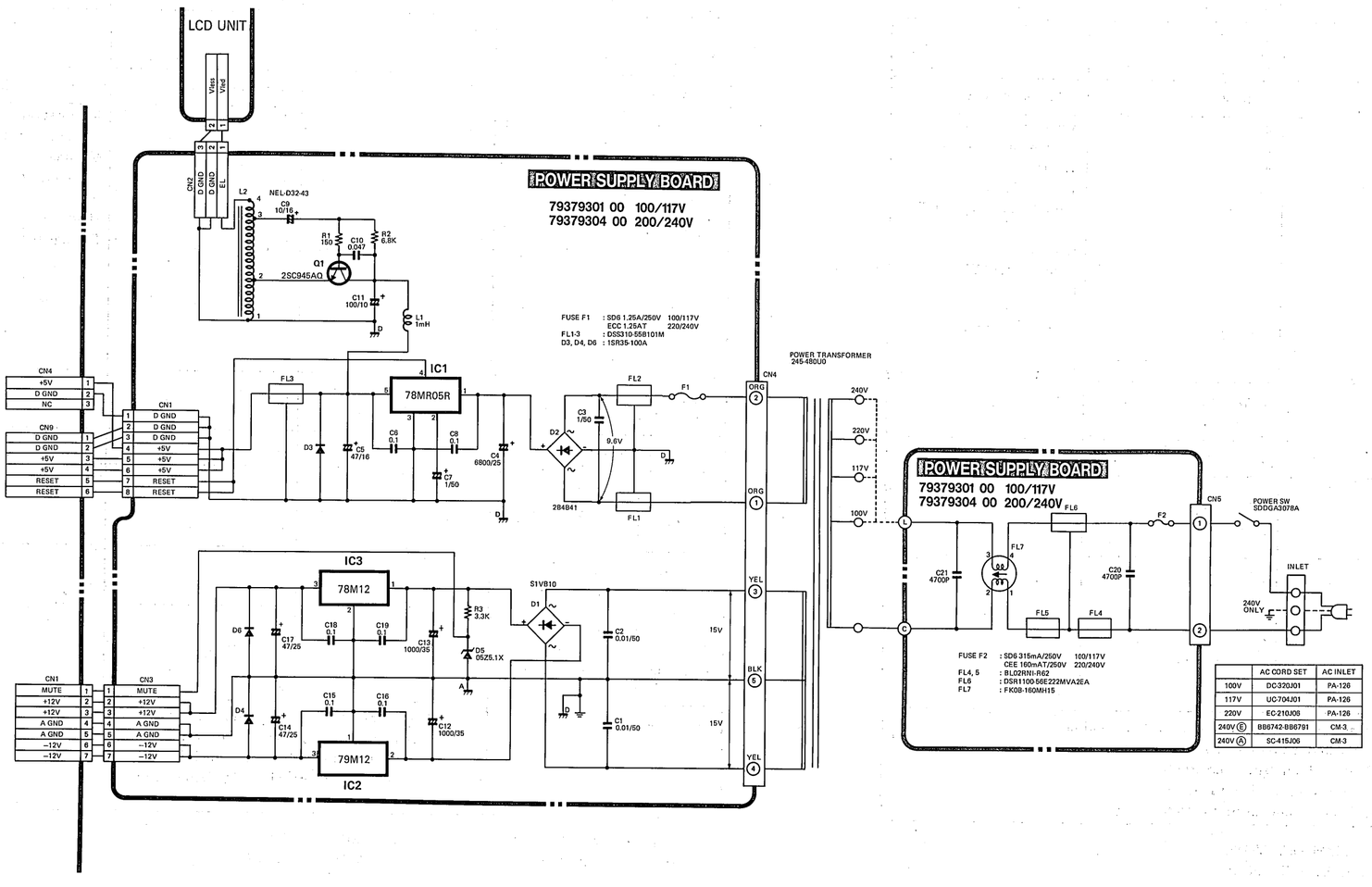
View from component side

POWER SUPPLY BOARD

(pcb 22925490)



View from component side



	AC CORD SET	AC INLET
100V	DC-320J01	PA-126
117V	UC-704J01	PA-126
220V	EC-210J08	PA-126
240V (E)	BB6742-BB6791	CM-3
240V (A)	SC-415J06	CM-3

8−16 VOICE LINEAR SYNTHESIZER MODULE

MODEL D−550 **MIDI Implementation Chart**

Date : Jun. 27. 1987
Version : 1.00

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default	1−16	1−16	Memorized
	Changed	1−16	1−16	
Mode	Default	×	Mode 1, 3, 4	Memorized
	Messages		MONO,POLY,OMNI ON/OFF	
	Altered	*********	Mode 2 → Mode 1	
Note Number		×	0−127	
	True Voice	*********	12−108	
Velocity	Note ON	×	○ v=1−127	
	Note OFF	×	×	
After Touch	Key's	×	×	
	Ch's	×	*	
Pitch Bender		×	* 0−12 semi	9 bit resolution
Control Change	1	×	*	Modulation
	5	×	*	Portamento Time
	7	×	*	Volume
	0, 2−4, 8−31	×	○	Tone Balance
	6, 38	×	**	Data Entry (MSB, LSB)
	64	×	*	Hold 1
	65	×	*	Portamento SW
	66−95	×	○	Chase
	100, 101	×	** (0, 1)	RPC (LSB, MSB)
Prog Change		×	* 0−127	
	True #	*********	0−127	
System Exclusive		*	*	
System Common	Song Pos	×	×	
	Song sel	×	×	
	Tune	×	×	
System Real Time	Clock	×	×	
	Commands	×	×	
Aux Message	Local ON/OFF	×	×	
	All Notes OFF	×	○ (123−127)	
	Active Sense	×	○	
	Reset	×	×	
Notes		* Can be set to ○ or × manually, and memorized. ** RPC=Registered parameter control number. RPC#0 : Pitch bend sensitivity RPC#1 : Master fine tuning Parameter values are given by Data Entry.		

Mode 1 : OMNI ON, POLY
Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY
Mode 4 : OMNI OFF, MONO

○ : Yes
× : No

MODEL D−550 **MIDI Implementation Chart** (Separate CH)

*Recognized if key mode in patch function is 'Sep' or 'Sep−S'.

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default		1−16	Memorized
	Changed		1−16	
Mode	Default		Mode 3, 4 (M=1)	Memorized
	Messages		×	
	Altered	*********		
Note Number		*********	0−127	
	True Voice		12−108	
Velocity	Note ON		○ v=1−127	
	Note OFF		×	
After Touch	Key's		×	
	Ch's		*	
Pitch Bender			* 0−12 semi	9 bit resolution
Control Change	1		*	Modulation
	5		*	Portamento Time
	7		×	Volume
	6, 38		**	Data Entry (MSB, LSB)
	64		*	Hold 1
	65		*	Portamento SW
	100, 101		** (0)	RPC (LSB, MSB)
Prog Change			×	
	True #	*********		
System Exclusive			×	
System Common	Song Pos		×	
	Song sel		×	
	Tune		×	
System Real Time	Clock		×	
	Commands		×	
Aux Message	Local ON/OFF		×	
	All Notes OFF		○ (123)	
	Active Sense		○	
	Reset		×	
Notes		* Can be set to ○ or × manually, and memorized. ** RPC=Registered parameter control number. RPC#0 : Pitch bend sensitivity Parameter values are given by Data Entry.		

Mode 1 : OMNI ON, POLY
Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY
Mode 4 : OMNI OFF, MONO

○ : Yes
× : No

8-16 VOICE LINEAR SYNTHESIZER MODULE

MODEL D-550

MIDI Implimentation

Date : Jun. 27. 1987

Version : 1.00

1. TRANSMITTED DATA

■System Exclusive

Exclusive

Status	
F0H	: System Exclusive
F7H	: EOX (End Of Exclusive)

Transmitted in the following two cases.
1) Operating Bulk-Dump
2) If Exclu of MIDI function is "I- Dump", this unit transmits all parameters in the patch when PATCH GROUP, PATCH BANK or PATCH NUMBER button is pressed.

Refer to Section 4, to see details.

2. RECOGNIZED RECEIVE DATA (MAIN CHANNEL)

■Note Event

Note Off

Status	Second	Third
8nH	kkH	vvH
9nH	kkH	00H

kk=Note Number 00H-7FH (00-127)
vv=Velocity ignored
n= MIDI Channel 0H-FH (1-16)

Note On

Status	Second	Third
9nH	kkH	vvH

vv=Velocity 01H-7FH (1-127)

Note numbers outside of the range 12-108 are transposed to the nearest octave inside this range.

■Control Change

Modulation Depth (receive/ingnore selectable)

Status	Second	Third
BnH	01H	vvH

vv=Modulation Depth 0H-7FH (0-127)

Portamento Time (receive/ignore selection)

Status	Second	Third
BnH	05H	vvH

vv=Portamento Time 0H-7FH (0-127)

Data Entry MSB

Status	Second	Third
BnH	06H	vvH

MSB of value that corresponds to the parameter specified by RPC. (Refer to RPC MSB)

Main Volume (receive/ignore selectable)

Status	Second	Third
BnH	07H	vvH

vv=Volume Value 0H-7FH (0-127)

The volume of the sound can be controlled by main volume message within the level adjusted by the panel volume knob.

Tone Balance (receive/ignore selectable)

Status	Second	Third
BnH	ccH	vvH

cc= (Control Change Number)
01H,21H-41H,61H-7FH (0,2-4,8-31)
vv=Tone Balance Valu 0H-7FH (0-127)

Control change number for Tone Balnce can be selected from 0, 2-4, 8-31 in the MIDI Function.

Data Entry LSB

Status	Second	Third
BnH	26H	vvH

vv= LSB of value that corresponds to the parameter specified by RPC. (Refer to RPC MSB)

Hold1 (receive/ignore selectable)

Status	Second	Third
BnH	40H	vvH

vv=00H-3FH : Off
vv=40H-7FH : On

Portamento (receive/ignore selectable)

Status	Second	Third
BnH	41H	vvH

vv=00H-3FH : Off
vv=40H-7FH : On

Chase

Status	Second	Third
BnH	ccH	vvH

cc=42H-5FH (66-95).
: (Control Change Number)
vv=00H-3FH : Off
vv=40H-7FH : On

Control change number for Chase can be selected from 66-95 in the MIDI Function.

RPC LSB

Status	Second	Third
BnH	64H	vvH

vv=LSB of parameter number controlled by RPC (Refer to RPC MSB)

PRC MSB

Status	Second	Third
BnH	65H	vvH

vv=MSB of parameter number controlled by RPC.

Using MIDI RPC, parameters can be changed by control change messages. RPC MSB and RPC LSB specify the parameter to be controlled, and Dara Entry MSB and Data Entry LSB show the parameter value.

RPC MSB	RPC LSB	Data Entry MSB	Data Entry LSB	Description
00H	00H	vvH	ignored	Bender Range vv=0-12 (semitone step, max one octave)
00H	01H	vvH	vvH	Fine Tuning
		00H	00H	-50 cent
		20H	00H	-50 cent
		40H	00H	0 cent
		5FH	7FH	+50 cent
		7FH	7FH	+50 cent

■Program Change

Patch Change (receive/ignore selectable)

Status	Second
CnH	ppH

pp=Patch Number (0-127)

Recognized in play mode only.
Internal Memory or Memory Card is selected according to the Patch number

0-63 : Internal Mmeory Group
64-127 : Memory Card Group

■Channel After Touch

After Touch (receive/ignore selectable)

Status	Second
DnH	vvH

vv=After Touch Value 0-7FH (0-127)

■Pitch Bender Change

Pitch Bender (receive/ignore selectable)

Status	Second	Third
EnH	vvH	vvH

vv vv=Pitch Bender Change Value

■Mode Message

All Note Off

Status	Second	Third
BnH	7BH	00H

When ALL NOTES OFF is recognized, all the notes which have been turned ON by MIDI IN note ON messages are turned OFF.

OMNI OFF

Status	Second	Third
BnH	7CH	00H

OMNI ON

Status	Second	Third
BnH	7DH	00H

MONO

Status	Second	Third
BnH	7EH	mmH

mm=MONO Channel Range 0-10H (0-16)

Channel range is recognized as follows.

mm	Channel Range
0	8
1-8	1-8
9-16	8
17-127	ignored

In MONO mode, each message is recognized on the channel shown below.

Message	Control in MIDI function B.CH	G.CH
Note on/off	individual	individual
Control Change	basic	global
Mode Message	basic	basic *
Program Change	basic	global
After Touch	basic	global
Pitch Bender Change	individual	individual
Exclusive	basic	basic

*Global channel is equal to"basic channel-1".
And if basic channel is 1, global channel is 16.

POLY

Status	Second	Third
BnH	7FH	00H

These Mode Messages (2nd byte=123-127) are also recognized as ALL NOTES OFF.

■Exclusive

Status	
F0H	: System Exclusive
F7H	: EOX (End Of Exclusive)

Exclusive message can change either each parameter individually or all parameters, of a patch or tone. (receive/ignore selectable)
Also used for BULK LOAD operation.
Refer to Section 4.

■Active Sensing

Status	
FEH	: Active Sensing

3. RECOGNIZED RECEIVE DATA (SEPARATE CHANNEL)

■Note Event

Note Off

Status	Second	Third
8nH	kkH	vvH
9nH	kkH	00H

kk=Note Number 00H-7FH (00-127)
vv=Velocity ignored
n=MIDI Channel 0H-FH (1-16)

Note On

Status	Second	Third
9nH	kkH	vvH

vv=Velocity 01H-7FH (1-127)

Note numbers outside of the range 12-108 are transposed to the nearest octave inside this range.

■Control Change

Modulation (receive/ignore selectable)

Status	Second	Third
BnH	01H	vvH

vv=Modulation Depth 0H-7FH (0-127)

Portamento (receive/ignore selectable)

Status	Second	Third
BnH	05H	vvH

vv=Portamento Time 0H-7FH (0-127)

Data Entry MSB

Status	Second	Third
BnH	06H	vvH

vv= MSB of value that corresponds to the parameter specified by RPC.(Refer to RPC MSB)

Data Entry LSB

Status	Second	Third
BnH	26H	vvH

vv= LSB of value that corresponds to the paaramter specified by RPC. (Refer to RPC MSB)

Hold 1 (recieve/ignore selectable)

Status	Second	Third
BnH	40H	vvH

vv=00H-3FH : Off
vv=40H-7FH : On

Portamento (recieve/ignore selectable)

Status	Second	Third
BnH	41H	vvH

vv=00H-3FH : Off
vv=40H-7FH : On

RPC LSB

Status	Second	Third
BnH	64H	vvH

vv=LSB of parameter number controlled by RPC (Refer to RPC MSB)

PRC MSB

Status	Second	Third
BnH	65H	vvH

vv=MSB of parameter number controlled by RPC.

Using MIDI RPC, parameters can be changed by control change message. RPC MSB and RPC LSB specify the parameter to be controlled, and Data Entry MSB and Data Entry LSB show the parameter value.

RPC MSB	RPC LSB	Data Entry MSB	Data Entry LSB	Description
00H	00H	vvH	ignored	Bender Range vv=0-12 (semitone step, max one octave)

■Channel After Touch

After Touch (receive/ignore selectable)

Status	Second
DnH	vvH

vv=After Touch Value 0-7FH (0-127)

■Pitch Bender Change

Pitch Bender (receive/ignore selectable)

Status	Second	Third
EnH	vvH	vvH

vv vv=Pitch Bender Value

■Mode Message

All Note Off

Status	Second	Third
BnH	7BH	00H

When ALL NOTES OFF is recognized, all the which have been turned ON by MIDI IN note ON message are turned OFF.

■Active Sensing

Status	
FEH	: Active Sensing

4. EXCLUSIVE COMMUNICATION

The D-550's model ID uses 14H.

4.1 Address Maping

Temporary area

Address	Description	
[00-00-00]	Upper Partial-1	temp・area
[00-00-40]	Upper Partial-2	temp・area
[00-01-00]	Upper Common	temp・area
[00-01-40]	Lower Partial-1	temp・area
[00-02-00]	Lower Partial-2	temp・area
[00-02-40]	Lower Common	temp・area
[00-03-00]	Patch	

*Transmitted and recognized in NORMAL MODE.

Memory area (Back up internal memory)

Address	Description
[02-00-00]	Patch Memory1-1
[02-03-40]	Patch Memory1-2
:	:
[03-5C-40]	Patch Memory8-8
[03-60-00]	Reverb Data 17
[03-62-78]	Reverb Data 18
:	:
[04-0C-08]	Reverb Data 32

Tranmitted and recognized in DATA TRANSFER MODE.
Each patch memory consists of the following.

Offset	Description
[00-00-00]	Upper Partial-1
[00-00-40]	Upper Partial-2
[00-01-00]	Upper Common
[00-01-40]	Lower Partial-1
[00-02-00]	Lower Partial-2
[00-02-40]	Lower Common
[00-03-00]	Patch

System area

Address	Description
[00-20-00]	System・Control

4.2 Partial Parameter

Offset Address		Description	
00H	0vvv vvvv	WG PITCH COARSE	0 72 (C1,C#1 -C7)
01H	0vvv vvvv	WG PITCH FINE	0-100 (-50-+50)
02H	0vvv vvvv	WG PITCH KEYFOLLOW	0 : -1 1 : -1/2 2 : -1/4 3 : 0 4 : 1/8 5 : 1/4 6 : 3/8 7 : 1/2 8 : 5/8 9 : 3/4 10 : 7/8 11 : 1 12 : 5/4 13 : 3/2 14 : 2 15 : s1 16 : s2
03H	0vvv vvvv	WG MOD LFO MODE	0 : OFF 1 : (+) 2 : (-) 3 : A&L
04H	0vvv vvvv	WG MOD P-ENV MODE	0 : OFF 1 : (+) 2 : (-)
05H	0vvv vvvv	WG MOD BEND MODE	0 : OFF 1 : Keyfollow 2 : Normal
06H	0vvv vvvv	WG WAVE FORM	0 : Square 1 : Sawtooth
07H	0vvv vvvv	WG PCM WAVE NO.	0-99 (1-100)
08H	0vvv vvvv	WG PULSE WIDTH	0-100
09H	0vvv vvvv	WG PW VELOCITY RANGE	0-14 (-7-+7)
0AH	0vvv vvvv	WG PW LFO SELECT	0 : +LFO1 1 : -LFO1 2 : +LFO2 3 : -LFO2 4 : +LFO3 5 : -LFO3
0BH	0vvv vvvv	WG PW LFO DEPTH	0-100
0CH	0vvv vvvv	WG PW AFTERTOUCH RANGE	0-14 (-7-+7)
0DH	0vvv vvvv	TVF CUTOFF FREQUENCY	0-100
0EH	0vvv vvvv	TVF RESONANCE	0-30
0FH	0vvv vvvv	TVF KEYFOLLOW	0 : -1 1 : -1/2 2 : -1/4 3 : 0 4 : 1/8 5 : 1/4 6 : 3/8 7 : 1/2 8 : 5/8 9 : 3/4 10 : 7/8 11 : 1 12 : 5/4 13 : 3/2 14 : 2
10H	0vvv vvvv	TVF BIAS POINT DIR	0-63,64-127 <A1-<C7, >A1->C7
11H	0vvv vvvv	TVF BIAS LEVEL	0-14 (-7-+7)
12H	0vvv vvvv	TVF ENV DEPTH	0-100
13H	0vvv vvvv	TVF ENV VELOCITY RANGE	0-100
14H	0vvv vvvv	TVF ENV DEPTH KEYFOLLOW	0-4
15H	0vvv vvvv	TVF ENV TIME KEYFOLLOW	0-4
16H	0vvv vvvv	TVF ENV TIME 1	0-100
17H	0vvv vvvv	TVF ENV TIME 2	0-100
18H	0vvv vvvv	TVF ENV TIME 3	0-100
19H	0vvv vvvv	TVF ENV TIME 4	0-100
1AH	0vvv vvvv	TVF ENV TIME 5	0-100
1BH	0vvv vvvv	TVF ENV LEVEL 1	0-100
1CH	0vvv vvvv	TVF ENV LEVEL 2	0-100
1DH	0vvv vvvv	TVF ENV LEVEL 3	0-100
1EH	0vvv vvvv	TVF ENV SUSTAIN LEVEL	0-100
1FH	0vvv vvvv	TVF ENV END LEVEL	0 : 0 1 : 100
20H	0vvv vvvv	TVF MOD LFO SELECT	0 : +LFO1 1 : -LFO1 2 : +LFO2 3 : -LFO2 4 : +LFO3 5 : -LFO3
21H	0vvv vvvv	TVF MOD LFO DEPTH	0-100
22H	0vvv vvvv	TVF MOD AFTERTOUCH RANGE	0-14 (-7-+7)
23H	0vvv vvvv	TVA LEVEL	0-160
24H	0vvv vvvv	TVA VELOCITY RANGE	0 100

			(−50 − +50)
25H	0vvv vvvv	TVA BIAS POINT	0 63,64−127
			<A1 − <C7,
			>A1 − >C7
26H	0vvv vvvv	TVA BIAS LEVEL	0 − 12
			(−12 − 0)
27H	0vvv vvvv	TVA ENV TIME 1	0 − 100
28H	0vvv vvvv	TVA ENV TIME 2	0 − 100
29H	0vvv vvvv	TVA ENV TIME 3	0 − 100
2AH	0vvv vvvv	TVA ENV TIME 4	0 − 100
2BH	0vvv vvvv	TVA ENV TIME 5	0 − 100
2CH	0vvv vvvv	TVA ENV LEVEL 1	0 − 100
2DH	0vvv vvvv	TVA ENV LEVEL 2	0 − 100
2EH	0vvv vvvv	TVA ENV LEVEL 3	0 − 100
2FH	0vvv vvvv	TVA ENV SUSTAIN LEVEL	0 − 100
30H	0vvv vvvv	TVA ENV END LEVEL	0 : 0
			1 : 100
31H	0vvv vvvv	TVA ENV VELOCITY FOLLOW	0 − 4
32H	0vvv vvvv	TVA ENV TIME KEYFOLLOW	0 − 4
33H	0vvv vvvv	TVA MOD LFO SELECT	0 : +LFO1
			1 : −LFO1
			2 : +LFO2
			3 : −LFO2
			4 : +LFO3
			5 : −LFO3
34H	0vvv vvvv	TVA MOD LFO DEPTH	0 − 100
35H	0vvv vvvv	TVA MOD AFTERTOUCH RANGE	0 − 14
			(−7 − +7)
36H	0vvv vvvv	EXTENSION	0 − 127
37H	0vvv vvvv	EXTENSION	0 − 127
38H	0vvv vvvv	EXTENSION	0 − 127
39H	0vvv vvvv	EXTENSION	0 − 127
3AH	0vvv vvvv	EXTENSION	0 − 127
3BH	0vvv vvvv	EXTENSION	0 − 127
3CH	0vvv vvvv	EXTENSION	0 − 127
3DH	0vvv vvvv	EXTENSION	0 − 127
3EH	0vvv vvvv	EXTENSION	0 − 127
3FH	0vvv vvvv	EXTENSION	0 − 127

4.3 Common Parameter

Offset Address		Description	
00H	0vvv vvvv	TONE NAME 1	0−63
:			(' ','A'−'Z','a'−'z','1'−'9','0','−')
:			
09H	0vvv vvvv	TONE NAME 10	0−63
0AH	0vvv vvvv	STRUCTURE NO.	0−6
			(1−7)
0BH	0vvv vvvv	P−ENV VELOCITY RANGE	0−2
0CH	0vvv vvvv	P−ENV TIME KEYFOLLOW	0−4
0DH	0vvv vvvv	P−ENV TIME 1	0−50
0EH	0vvv vvvv	P−ENV TIME 2	0−50
0FH	0vvv vvvv	P−ENV TIME 3	0−50
10H	0vvv vvvv	P−ENV TIME 4	0−50
11H	0vvv vvvv	P−ENV LEVEL 0	0−100
			(−50−+50)
12H	0vvv vvvv	P−ENV LEVEL 1	0−100
			(−50−+50)
13H	0vvv vvvv	P−ENV LEVEL 2	0−100
			(−50−+50)
14H	0vvv vvvv	P−ENV SUSTAIN LEVEL	0−100
			(−50−+50)
15H	0vvv vvvv	P−ENV END LEVEL	0−100
			(−50−+50)
16H	0vvv vvvv	P−MOD LFO DEPTH	0−100
17H	0vvv vvvv	P−MOD LEVER	0−100
18H	0vvv vvvv	P−MOD AFTERTOUCH	0−100
19H	0vvv vvvv	LFO−1 WAVE FORM	0 : TRI
			1 : SAW
			2 : SQU
			3 : RND
1A	0vvv vvvv	LFO−1 RATE	0−100
1B	0vvv vvvv	LFO−1 DELAY TIME	0−100
1C	0vvv vvvv	LFO−1 SYNC	0 : OFF
			1 : ON
1D	0vvv vvvv	LFO−2 WAVE FORM	2 : KEY
			0 : TRI
			1 : SAW
			2 : SQU
			3 : RND
1EH	0vvv vvvv	LFO−2 RATE	0−100
1F	0vvv vvvv	LFO−2 DELAY TIME	0−100
20H	0vvv vvvv	LFO−2 SYNC	0 : OFF
			1 : ON
21H	0vvv vvvv	LFO−3 WAVE FORM	0 : TRI
			1 : SAW
			2 : SQU
			3 : RND
22H	0vvv vvvv	LFO−3 RATE	0−100
23H	0vvv vvvv	LFO−3 DELAY TIME	0−100
24H	0vvv vvvv	LFO−3 SYNC	0 : OFF
			1 : ON
25H	0vvv vvvv	LOW EQ FREQUENCY	0 : 63
			1 : 75
			2 : 86
			3 : 105
			4 : 125
			5 : 150
			6 : 175
			7 : 210
			8 : 250
			9 : 300
			10 : 350
			11 : 420
			12 : 500
			13 : 600
			14 : 700
			15 : 840
26H	0vvv vvvv	LOW EQ GAIN	0−24
			(−12− +12)
27H	0vvv vvvv	LOW EQ FREQUENCY	0 : 250
			1 : 300
			2 : 350
			3 : 420
			4 : 500
			5 : 600
			6 : 700
			7 : 840
			8 : 1.0
			9 : 1.2
			10 : 1.4
			11 : 1.7
			12 : 2.0
			13 : 2.4
			14 : 2.8
			15 : 3.4
			16 : 4.0
			17 : 4.8
			18 : 5.7
			19 : 6.7
			20 : 8.0
			21 : 9.5
28H	0vvv vvvv	HIGH EQ Q	0 : 0.3
			1 : 0.5
			2 : 0.7
			3 : 1.0
			4 : 1.4
			5 : 2.0
			6 : 3.0
			7 : 4.2
			8 : 6.0
29H	0vvv vvvv	HIGH EQ GAIN	0−24
			(−12− +12)
2AH	0vvv vvvv	CHORUS TYPE	0−7
			(1−8)
2BH	0vvv vvvv	CHORUS RATE	0−100
2CH	0vvv vvvv	CHORUS DEPTH	0−100
2DH	0vvv vvvv	CHORUS BALANCE	0−100
2EH	0vvv vvvv	PARTIAL MUTE	0 : 00
			1 : 01
			2 : 10
			3 : 11
2FH	0vvv vvvv	PARTIAL BALANCE	0−100
30H	0vvv vvvv	EXTENSION	0−127
31H	0vvv vvvv	EXTENSION	0−127
32H	0vvv vvvv	EXTENSION	0−127
33H	0vvv vvvv	EXTENSION	0−127
34H	0vvv vvvv	EXTENSION	0−127
35H	0vvv vvvv	EXTENSION	0−127
36H	0vvv vvvv	EXTENSION	0−127
37H	0vvv vvvv	EXTENSION	0−127
38H	0vvv vvvv	EXTENSION	0−127
39H	0vvv vvvv	EXTENSION	0−127
3AH	0vvv vvvv	EXTENSION	0−127
3BH	0vvv vvvv	EXTENSION	0−127
3CH	0vvv vvvv	EXTENSION	0−127
3DH	0vvv vvvv	EXTENSION	0−127
3EH	0vvv vvvv	EXTENSION	0−127
3FH	0vvv vvvv	EXTENSION	0−127

4.4 Patch Parameter

Offset Address		Description	
00H	0vvv vvvv	PATCH NAME 1	0−63
:			(' ','A'−'Z','a'−'z','1'−'9','0','−')
:			
11H	0vvv vvvv	PATCH NAME 18	0−63
12H	0vvv vvvv	KEY MODE	0 : WHOLE
			1 : DUAL
			2 : SPLIT
			3 : SEPARATE
			4 : WHOLE−S
			5 : DUAL−S
			6 : SPLIT−US
			7 : SPLIT−LS
			8 : SEPARATE −S
13H	0vvv vvvv	SPLIT POINT	0−60 (C2,C#2−C7)
14H	0vvv vvvv	PORTAMENTO	0 : UPPER
			1 : LOWER
			2 : UPPER/LOWER
15H	0vvv vvvv	HOLD MODE	0 : UPPER
			1 : LOWER
			2 : UPPER/LOWER

16H	0vvv vvvv	UPPER TONE KEY SHIFT	0−48 (−24 − +24)
17H	0vvv vvvv	LOWER TONE KEY SHIFT	0−48 (−24 − +24)
18H	0vvv vvvv	UPPER TONE FINE TUNE	0−100 (−50 − +50)
19H	0vvv vvvv	LOWER TONE FINE TUNE	0−100 (−50 − +50)
1AH	0vvv vvvv	BENDER RANGE	0−12
1BH	0vvv vvvv	AFTERTOUCH BEND RANGE	0−24 (−12− +12)
1CH	0vvv vvvv	PORTAMENTO TIME	0−100
1DH	0vvv vvvv	OUTPUT MODE	0−3 (1−4)
1EH	0vvv vvvv	REVERB TYPE	0−31 (1−32)
1FH	0vvv vvvv	REVERB BALANCE	0−100
20H	0vvv vvvv	TOTAL VOLUME	0−100
21H	0vvv vvvv	TONE BALANCE	0−100
22H	0vvv vvvv	CHASE MODE	0 : UL
			1 : ULL
			2 : ULU
23H	0vvv vvvv	CHASE LEVEL	0−100
24H	0vvv vvvv	CHASE TIME	0−100
25H	0vvv vvvv	MIDI TRANSMIT CHANNEL	0 : BASIC CH. 1−16 : CH.1−16
26H	0vvv vvvv	MIDI SEPARATE RECEIVE CHANNEL	0 : OFF 1−100 : NO.1−100
27H	0vvv vvvv	MIDI TRANSMIT PROGRAM CHANGE	0 : OFF 1 : ON
28H	0vvv vvvv	CHASE SWITCH	0 : OFF 1 : ON
29H	0vvv vvvv	MAIN CH PORTAMENTO SWITCH	0 : OFF 1 : ON
2AH	0vvv vvvv	SEP CH PORTAMENTO SWITCH	0 : OFF 1 : ON
2BH	0vvv vvvv	EXTENSION	0−127
2CH	0vvv vvvv	EXTENSION	0−127
2DH	0vvv vvvv	EXTENSION	0−127
2EH	0vvv vvvv	EXTENSION	0−127
2FH	0vvv vvvv	EXTENSION	0−127
30H	0vvv vvvv	EXTENSION	0−127
31H	0vvv vvvv	EXTENSION	0−127
32H	0vvv vvvv	EXTENSION	0−127
33H	0vvv vvvv	EXTENSION	0−127
34H	0vvv vvvv	EXTENSION	0−127
35H	0vvv vvvv	EXTENSION	0−127
36H	0vvv vvvv	EXTENSION	0−127
37H	0vvv vvvv	EXTENSION	0−127
38H	0vvv vvvv	EXTENSION	0−127
39H	0vvv vvvv	EXTENSION	0−127
3AH	0vvv vvvv	EXTENSION	0−127
3BH	0vvv vvvv	EXTENSION	0−127
3CH	0vvv vvvv	EXTENSION	0−127
3DH	0vvv vvvv	EXTENSION	0−127
3EH	0vvv vvvv	EXTENSION	0−127
3FH	0vvv vvvv	EXTENSION	0−127

4.5 Reverb Block

Offset Address		Description	
00 00H	0000 aaaa	REVERB DATA 1	
00 01H	0000 bbbb	aaaa bbbb	0−255
00 02H	0000 aaaa	REVERB DATA 2	
00 03H	0000 bbbb	aaaa bbbb	0−255
:			
:			
02 76H	0000 aaaa	REVERB DATA 188	
02 77H	0000 bbbb	aaaa bbbb	0−255

376 bytes of data is mutually related, and each one has no meating individually.

4.6 System area

Offset Address		Description
00H	0000 0000	PATCH MEMORY WRITE
01H	0000 0000	

Temporary area data will be written in the patch memory which had been selected before editing. If a card patch had been selected, PATCH MEMORY WRITE will be ignored.

5. TRANSMITTED EXCLUSIVE MESSAGES IN NORMAL MODE

5.1 Data set (One Way) DT1 12H

Transmitted in the following two cases.

1) When Request Data (RQ1) is recognized, Data set is transmitted on the channel set with Basic CH of MIDI func., regardless of the transmit channel set in the patch. The size of the Data set is according to the address size specified by Request Data (RQ1).

2) When any one of Patch group, bank, number button is pressed, all data in the Temporarty area (all parameters of selected patch and tones) is transmitted if Exclu of MIDI Function is set "P−Dump".
In this case, it is transmitted on the transmit channel set in the patch.

6. RECOGNIZED EXCLUSIVE MESSAGES IN NORMAL MODE

6.1 Request Data (One way) RQ1 11H

Recognized if Exclu in the MIDI function is ON or P−Dump.

6.2 Data set (One Way) DT1 12H

Recognized if Exclu in the MIDI function is ON or P−Dump.

7. TRANSMITTED EXCLUSIVE MESSAGES IN DATA TRANSFER MODE

Transmitted on the channel set with Basic CH of MIDI Function, regardless of the transmit channel set in the patch.

Address of first Data set command (DT1), Want to send data (WSD) or Request data (RQD) is [02−00−00] (top of memory area)

7.1 One way transfer

7.1.1 Data set DT1 12H

Transmitted when "Enter" button is pressed in "Bulk Dump, 0".

7.2 Handshaking Communication

7.2.1 Want to send data WSD 40H

Transmitted when "ENTER" button is pressed in "Bulk Dump" mode.

7.2.2 Request Data RQD 41H

Transmitted when "ENTER" button is pressed in "Bulk Load" mode.

8. RECOGNIZED EXCLUSIVE MESSAGES IN DATA TRANSFER MODE

If the assinged address exceeds Memory area, it is ignored.
The size that exceeds Mmeory area should not be assinged.

8.1 One Way Transfer

8.1.1 Data set DT1 12H

8.2 Handshaking Communication

8.2.1 Want to send data WSD 40H

8.2.2 Request Data RQD 41H

8.2.3 Data set DAT 42H

8.2.4 Acknowledge ACK 43H

8.2.5 End of Data EOD 45H

8.2.6 Communication Error ERR 4EH

8.2.7 Rejection RJC 4FH

Address Map