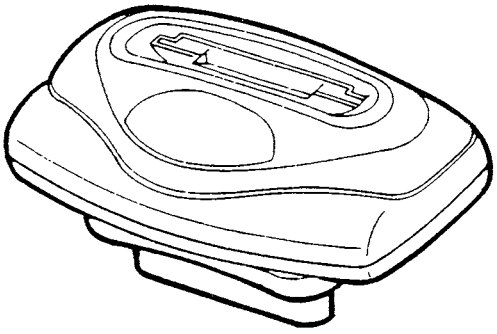
SEGA™ SERVICE MANUAL

GENESIS 32X(VA0,VA1) / MEGA DRIVE 32X



NO.	012
ISSUED	JUNE, 1995

CONTENTS

Sega Enterprises, Ltd.

BEFORE REFERRING TO THE SERVICE MANUAL.

Since the circuit of the Extension Unit used in the GENESIS 32X has been integrated on the main circuit board, an Extension Unit is not necessary for the GENESIS 32X(VA1).
This circuit is built into the MEGA DRIVE 32X from the first unit.

1. SPECIFICATIONS

Ratings

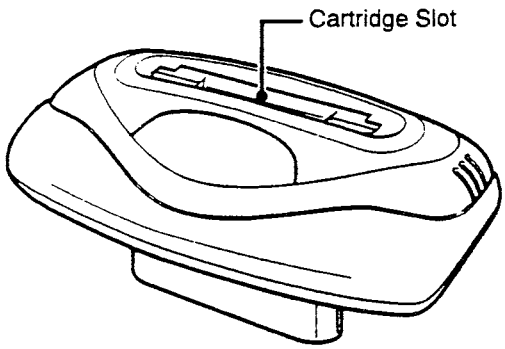
Model	GENESIS 32X	MEGA DRIVE 32X	
		PAL	PAL G/I
Power input	Input: AC120 V, 60 Hz Output: DC10 V, 850 mA	Input: AC230 V, 50 Hz Output: DC10 V, 850 mA	Input: AC240 V, 50 Hz Output: DC9 V, 850 mA
Power consumption	Approx. 4 W	Approx. 4 W	Approx. 4 W
Operating environment	Temperature: 5℃ ~35℃ Humidity: 20%RH~80%RH (no condensation)		
Dimensions	115(W) × 210(L) × 100(H) mm		

Specifications

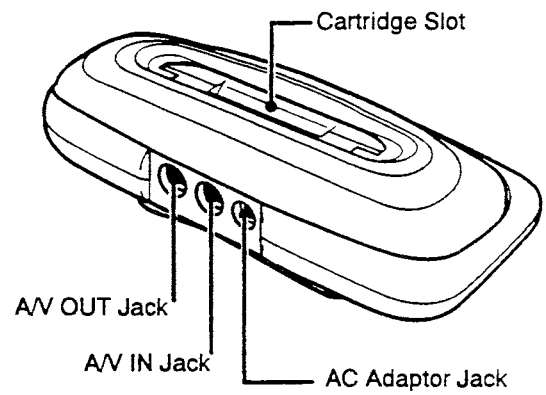
CPU	Master	32bit RISC SH2 23 MHz 20MIPS
	Srave	32bit RISC SH2 23 MHz 20MIPS
Memories	RAM	2Mbit (SDRAM)
	VRAM	2Mbit
Sound	PWM Sound Source (Stereo)	
Display capability	VDP	SEGA custom LSI
	Display	TV
	Color	32,768 colors
	Video Output	VIDEO RF RGB
Slots	Cartridge slots	

2. IDENTIFYING PARTS

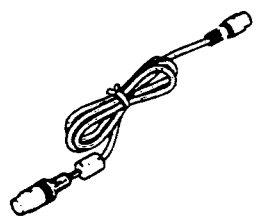
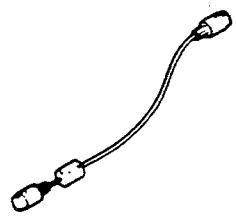
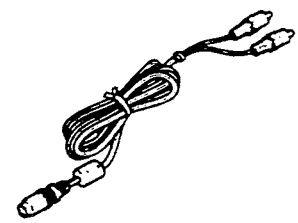
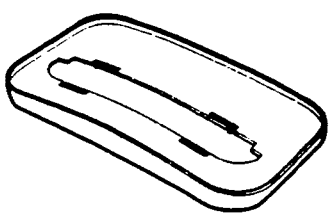
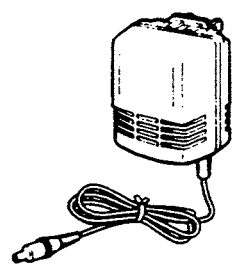
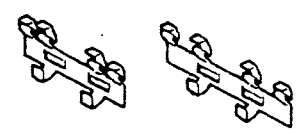
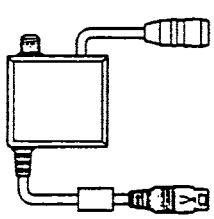
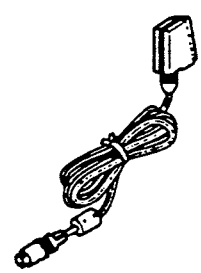
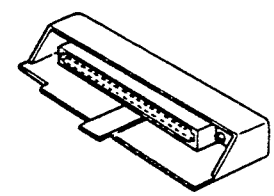
Front View



Rear View



3. ACCESSORIES

 Connector Cable	 Conversion Cable	 Audio/Video Cable (Mono)
 Spacer for GENESIS II /MEGA DRIVE II	 AC Adaptor	 Electromagnetic Shield Plates
 RF Unit (PAL version except for France)	 Mono Cable Scart (France only)	 Extension Unit (Only GENESIS 32X VA0)

4. DISASSEMBLY

4-1. Top Case Removal (See Fig. 4-1)

1) Remove four screws Ⓐ and the top case.

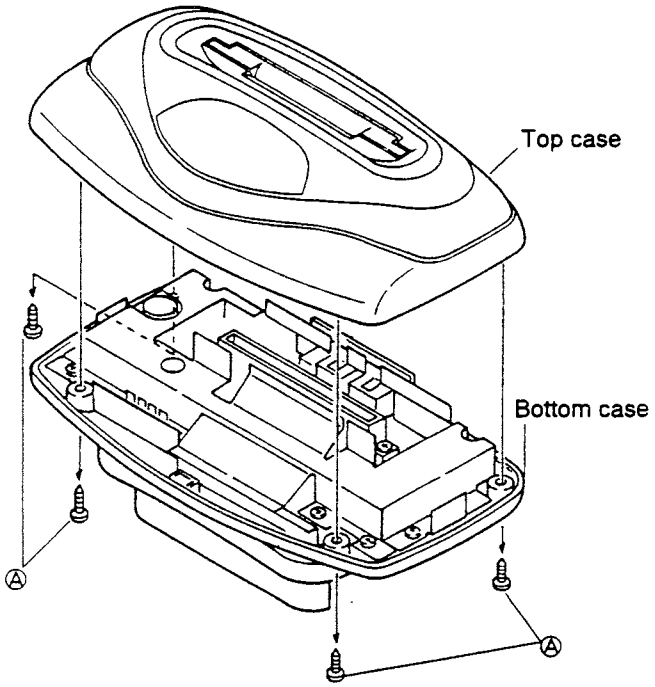


Fig.4-1

4-2. Sub Board Removal (See Fig. 4-2)

1) Remove ten screws Ⓑ attached the top shield case.
2) Remove two screws Ⓒ attached the 64-pin connector.
3) Remove two 40-pin flat cables on the sub board.
4) Remove the sub board showned as arrow.

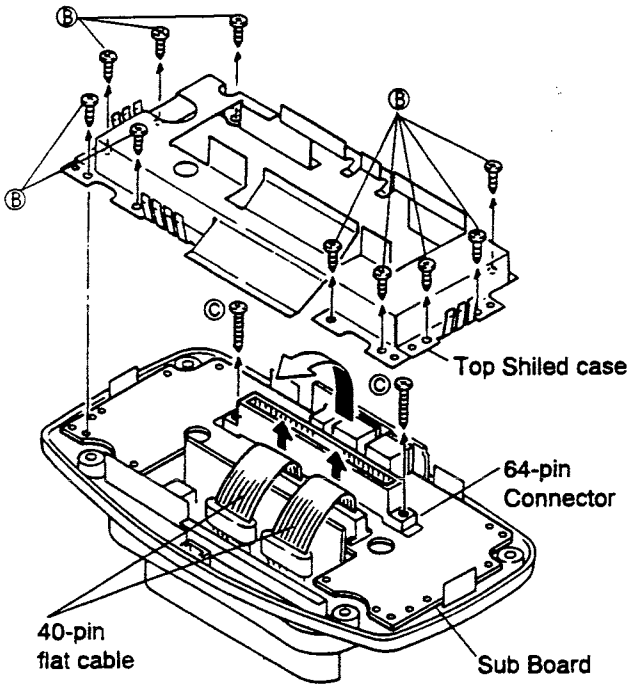


Fig.4-2

4-3. Main Board Removal (See Fig. 4-3, 4-4)

1) Remove four screws Ⓓ attached the front case and rear case on the bottom case and then their showned as arrow.
2) Remove two screws Ⓔ attached the front case and rear case and main board.

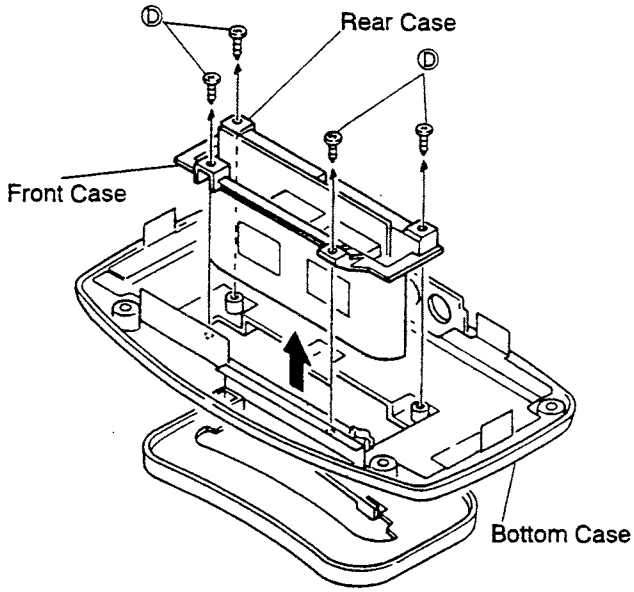


Fig.4-3

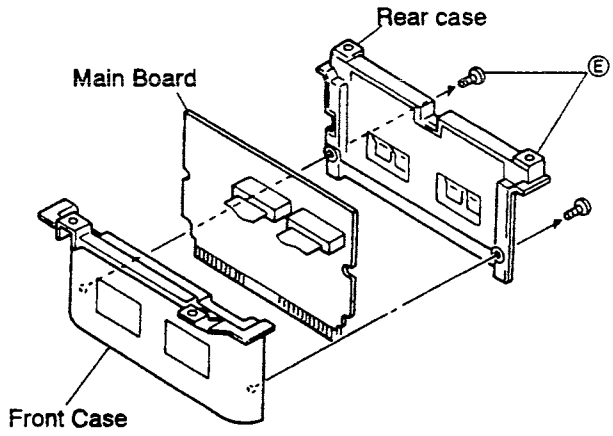


Fig.4-4

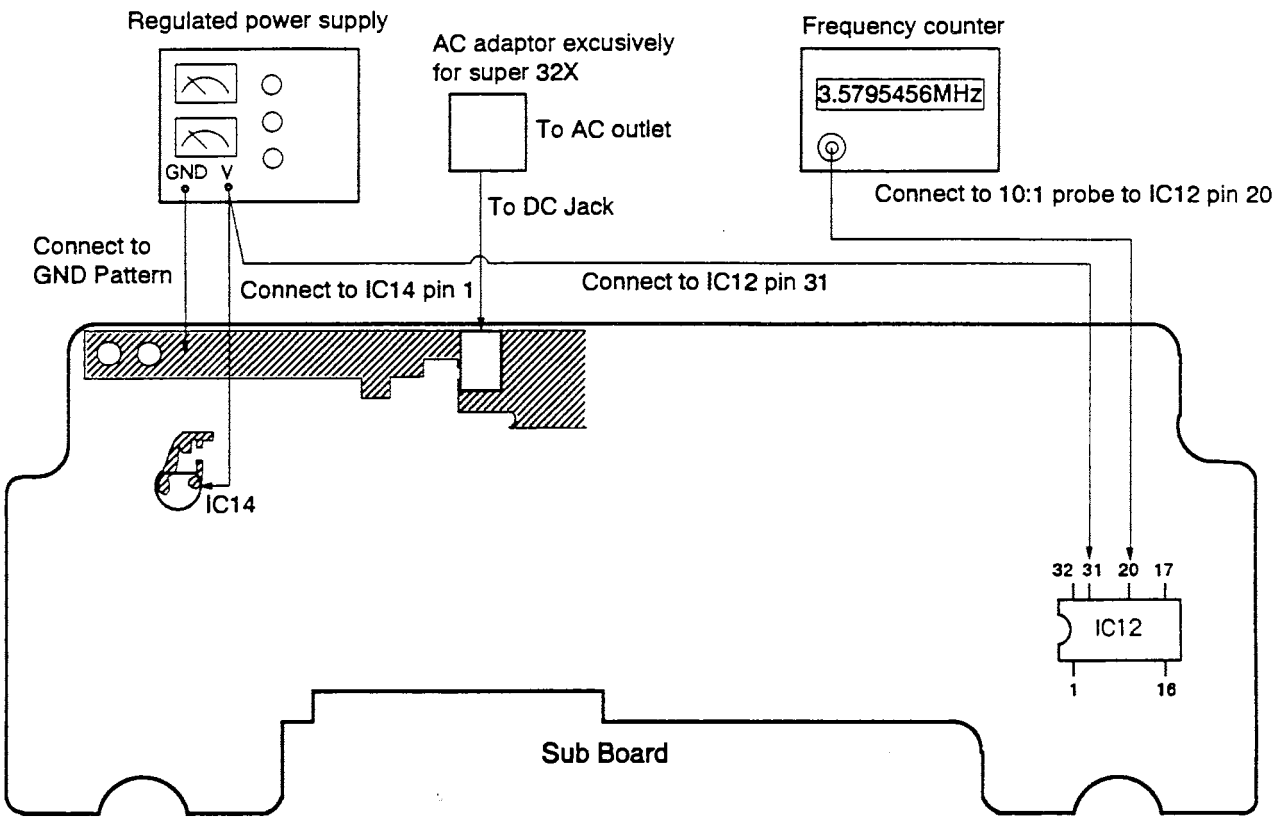
5. ADJUSTMENT

Video Frequency Matching Adjustment

Test equipment and tools for adjustment

1. Regulated power supply (5V DC)
2. Frequency counter (capable of displaying 7 digits or more)
3. 10:1 oscilloscope probe
4. Philips screwdriver
5. Non-metal adjustment driver
6. AC adaptor excusively for super 32X
7. One lead for GND and two leads for 5V

Connections of test equipment

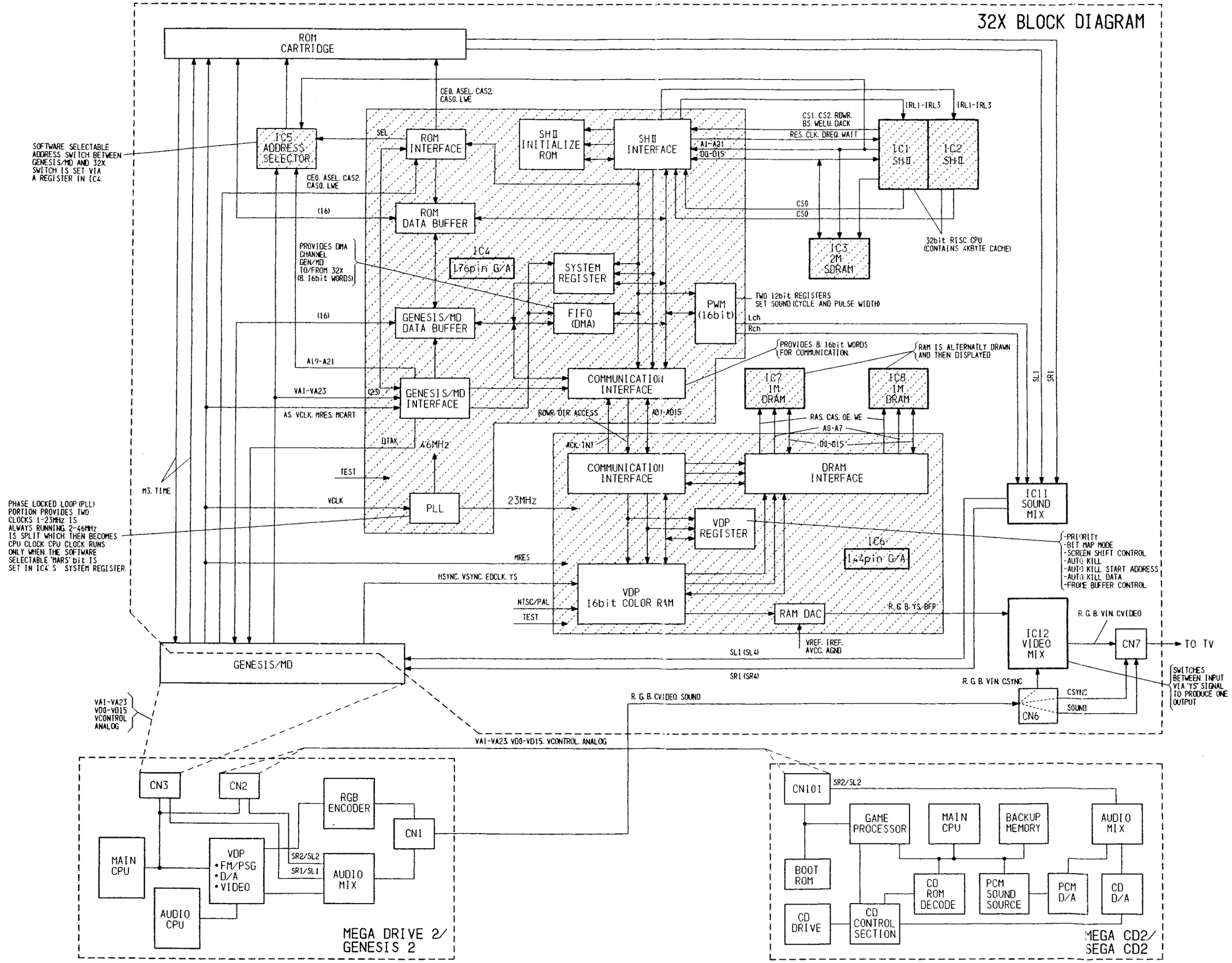


Adjustment procedure

1. Disconnect the super 32X from the Mega Drive.
2. Remove the top case and top shield case from the super 32X.
3. Plug the AC adaptor into an AC outlet and into the DC jack.
4. Set the regulated power supply to 5V DC and connect it to IC14 pin 1. (The super 32X turns on.)
5. Connect 5V DC to IC12 pin 31. (Set to the test mode.)
6. Connect the frequency counter to IC12 pin 20 and adjust C72 so the frequency is 3.579545 MHz ± 10Hz.

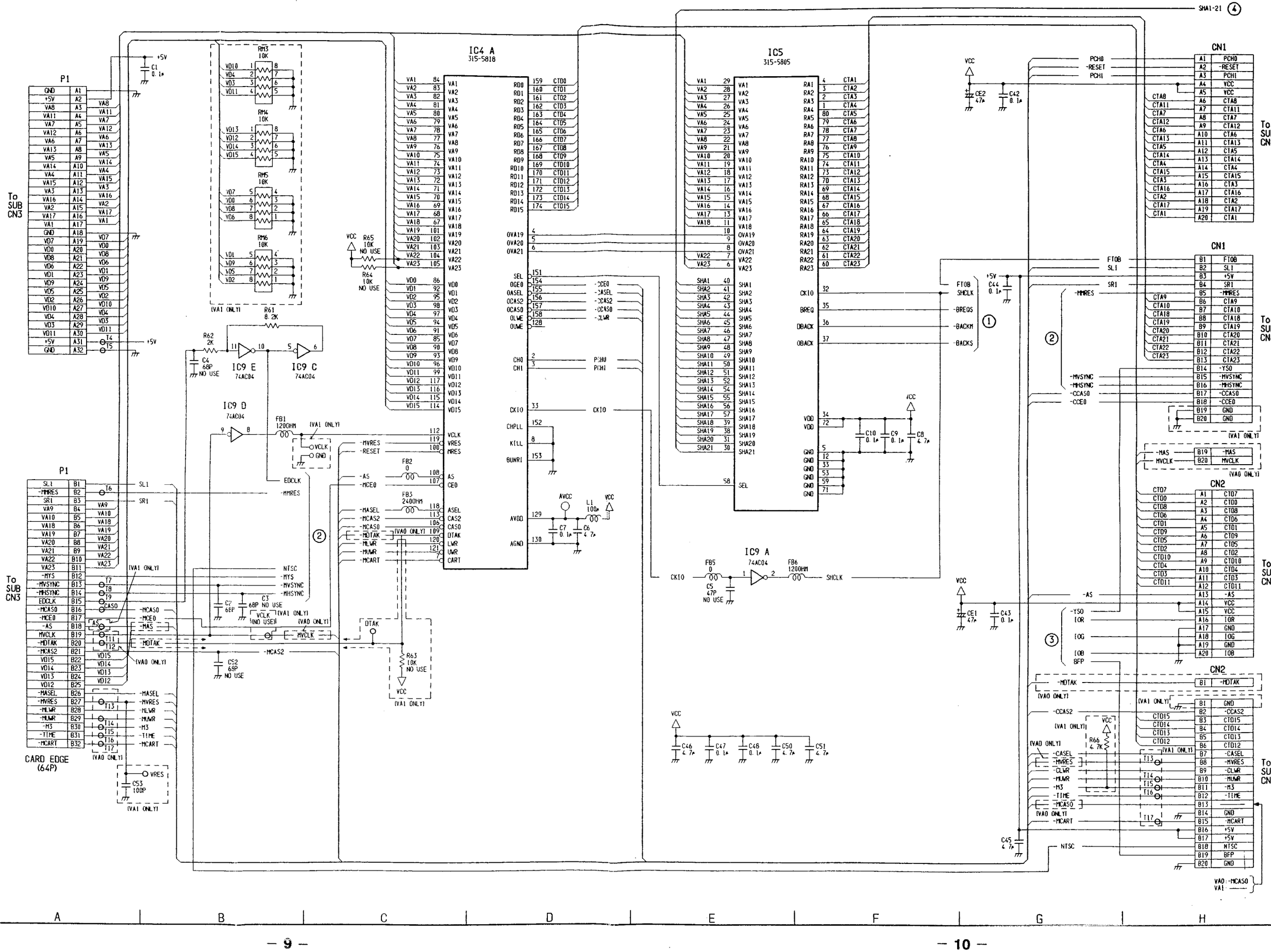
MEMO

6. BLOCK DIAGRAM

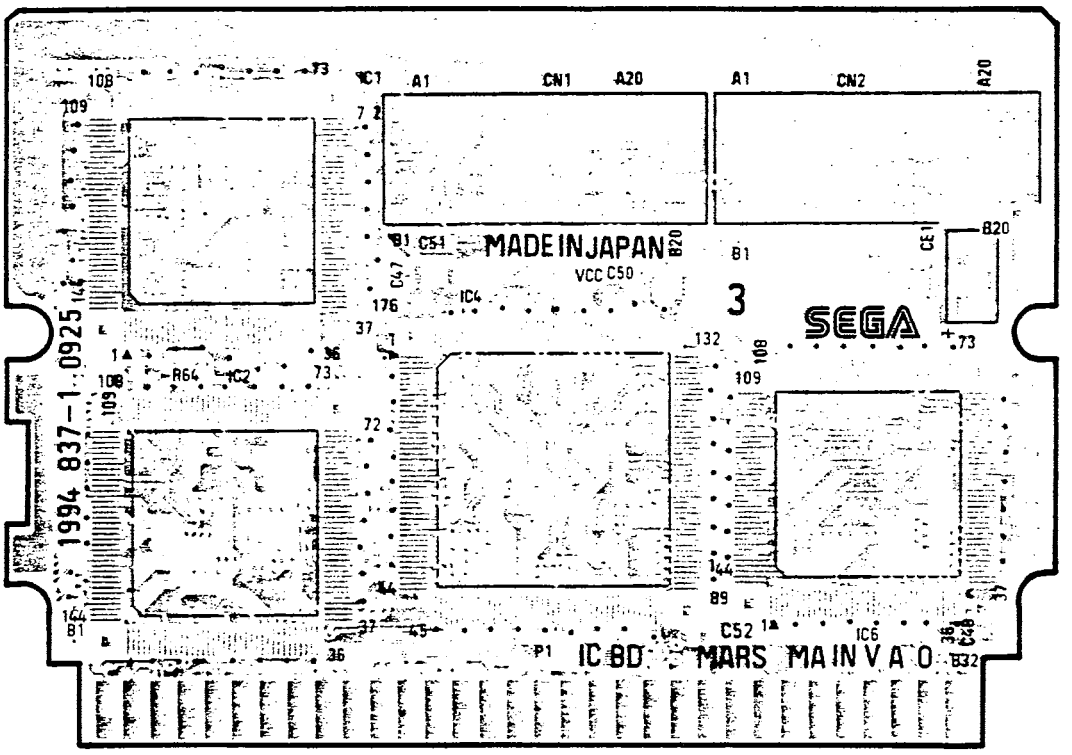


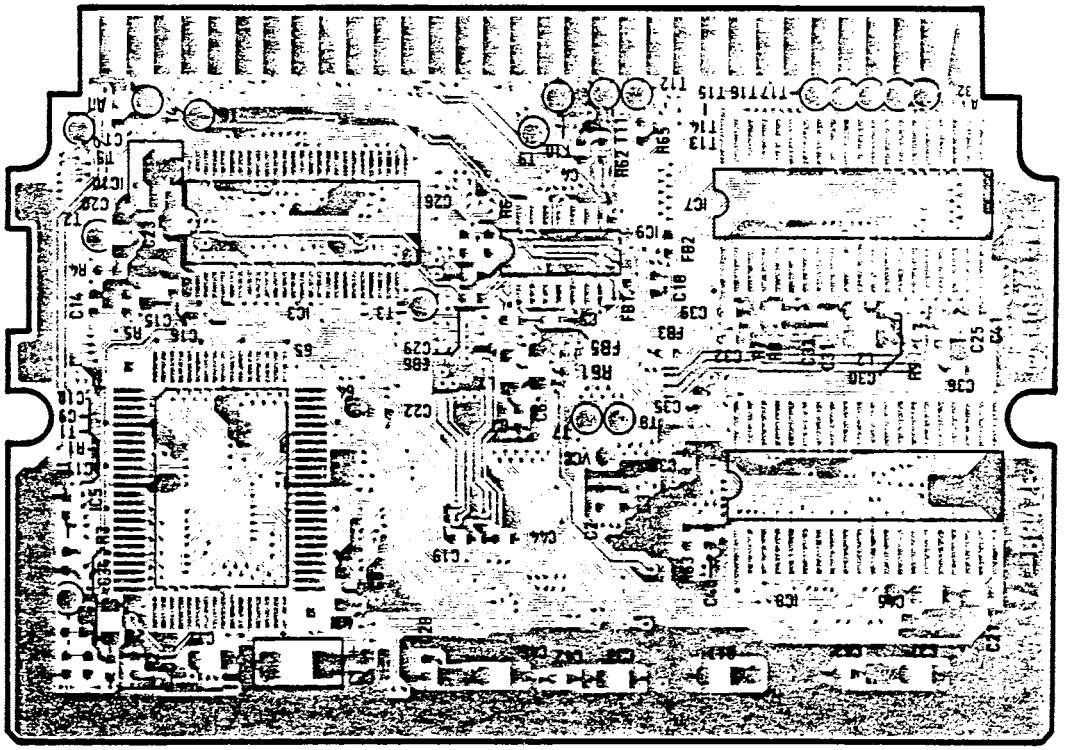
7. SCHEMATIC & CIRCUIT BOARD DIAGRAMS

7-1. Schematic Diagram-1(Main Section - 1/2)

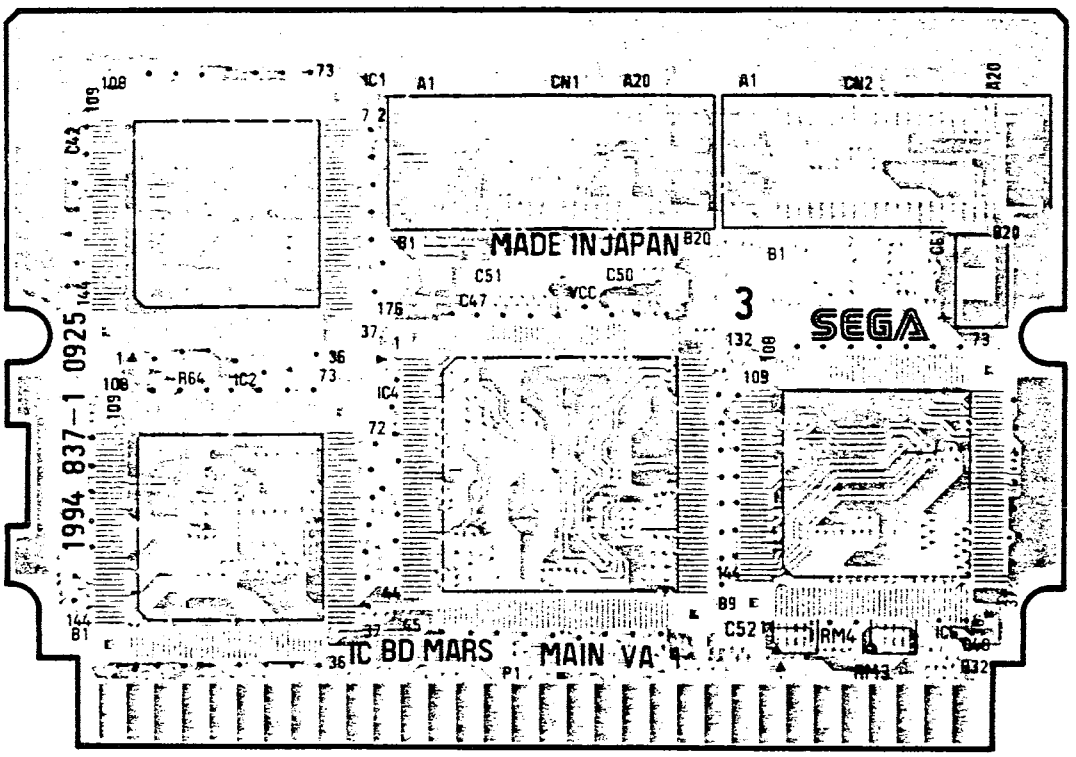


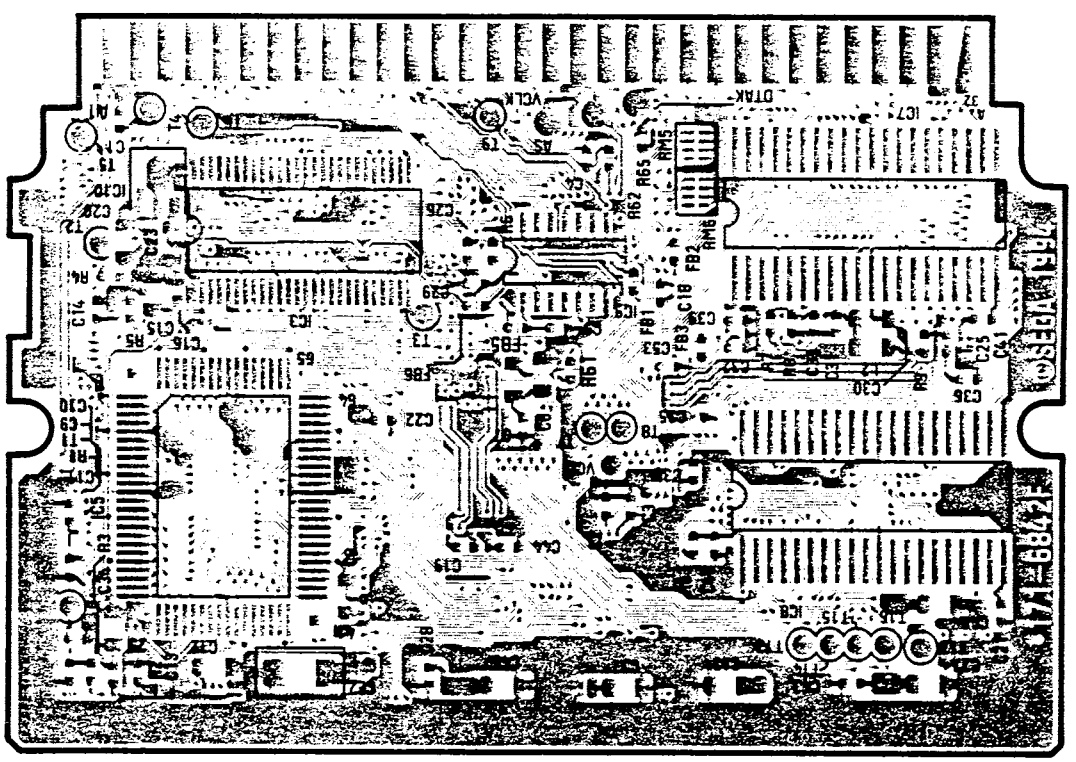
7-2. Circuit Board Diagram (Main Board) VA0



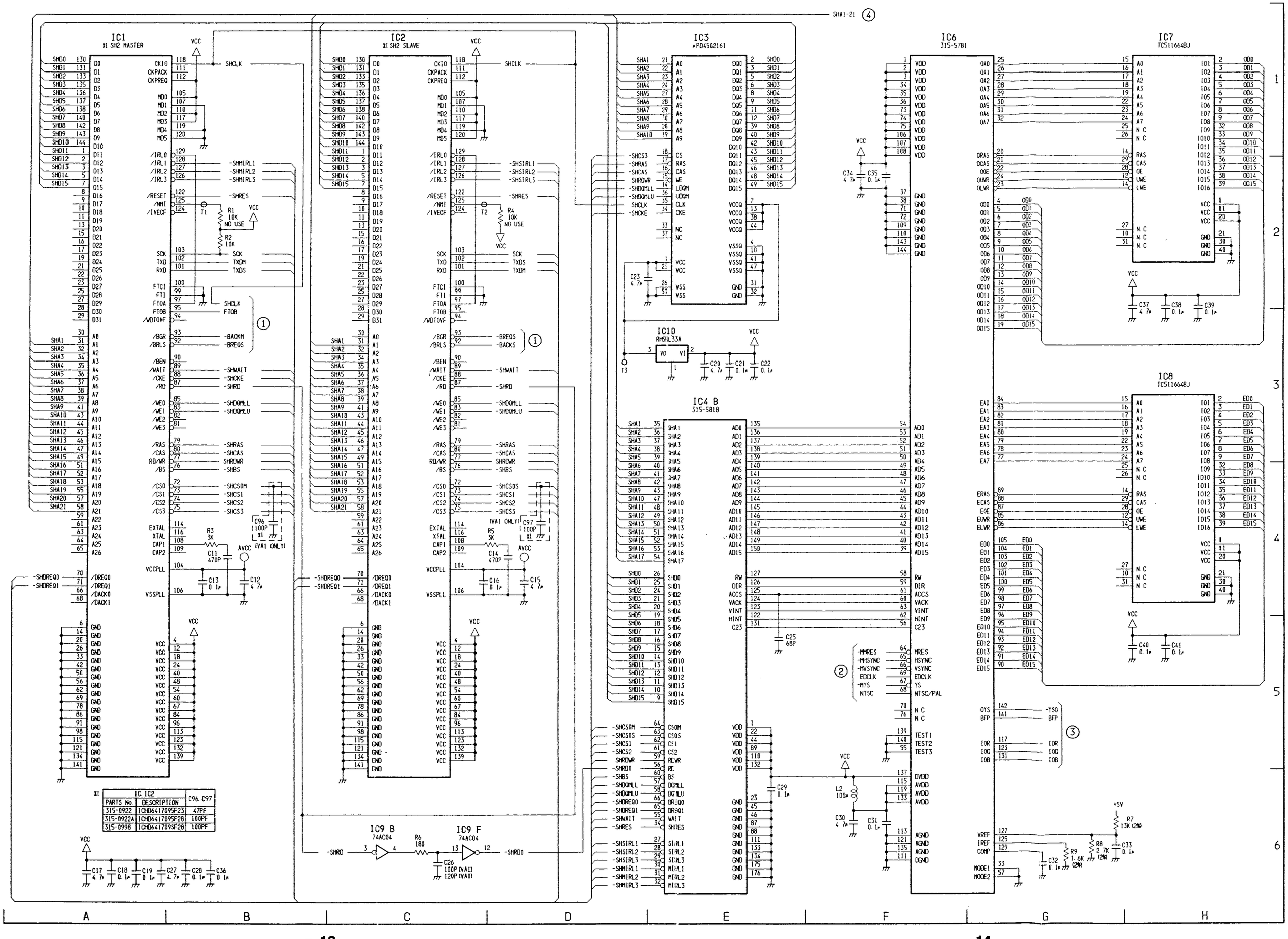


7-2. Circuit Board Diagram (Main Board) VA1

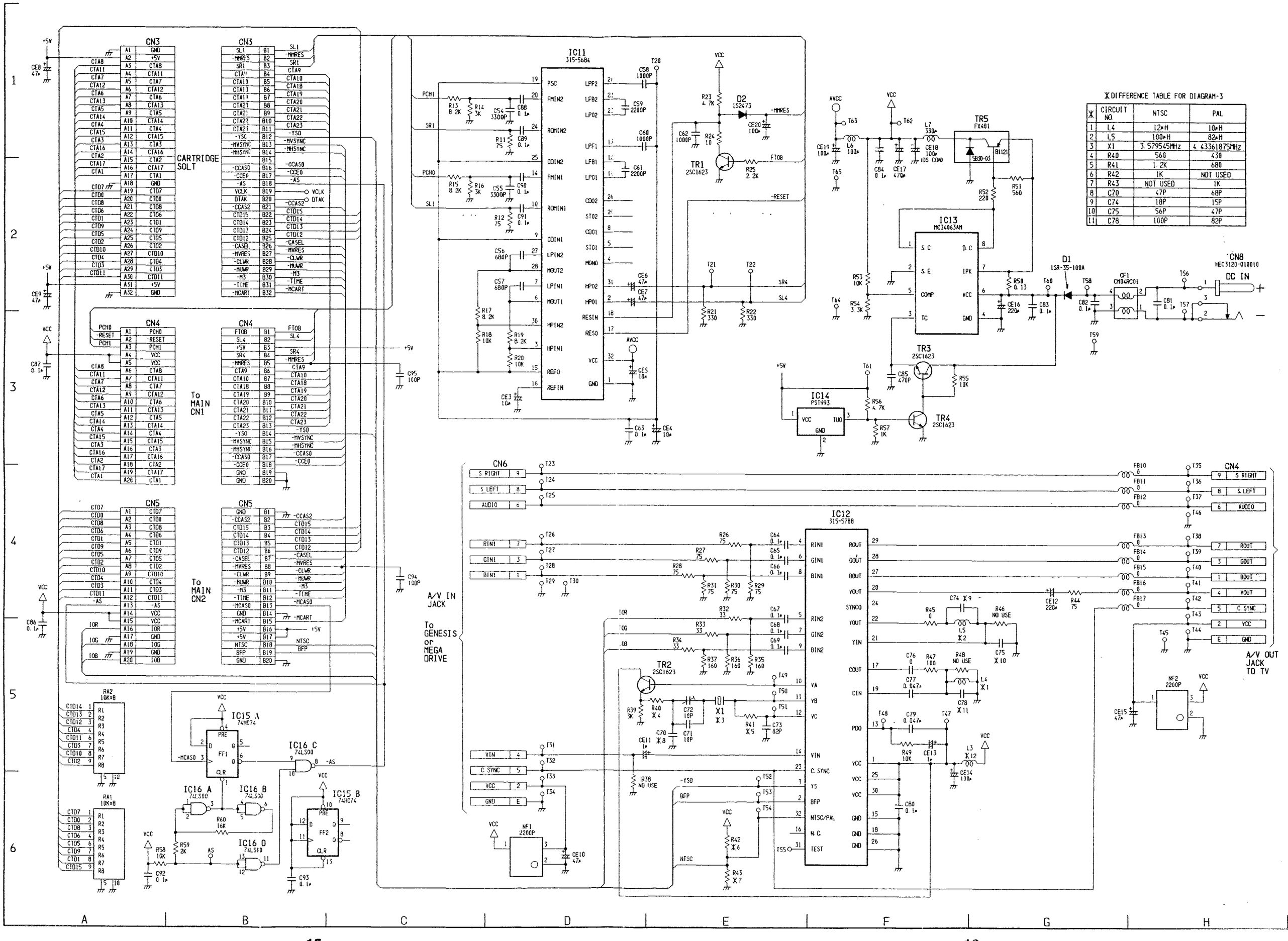




7-3. Schematic Diagram-2 (Main Section – 2/2)



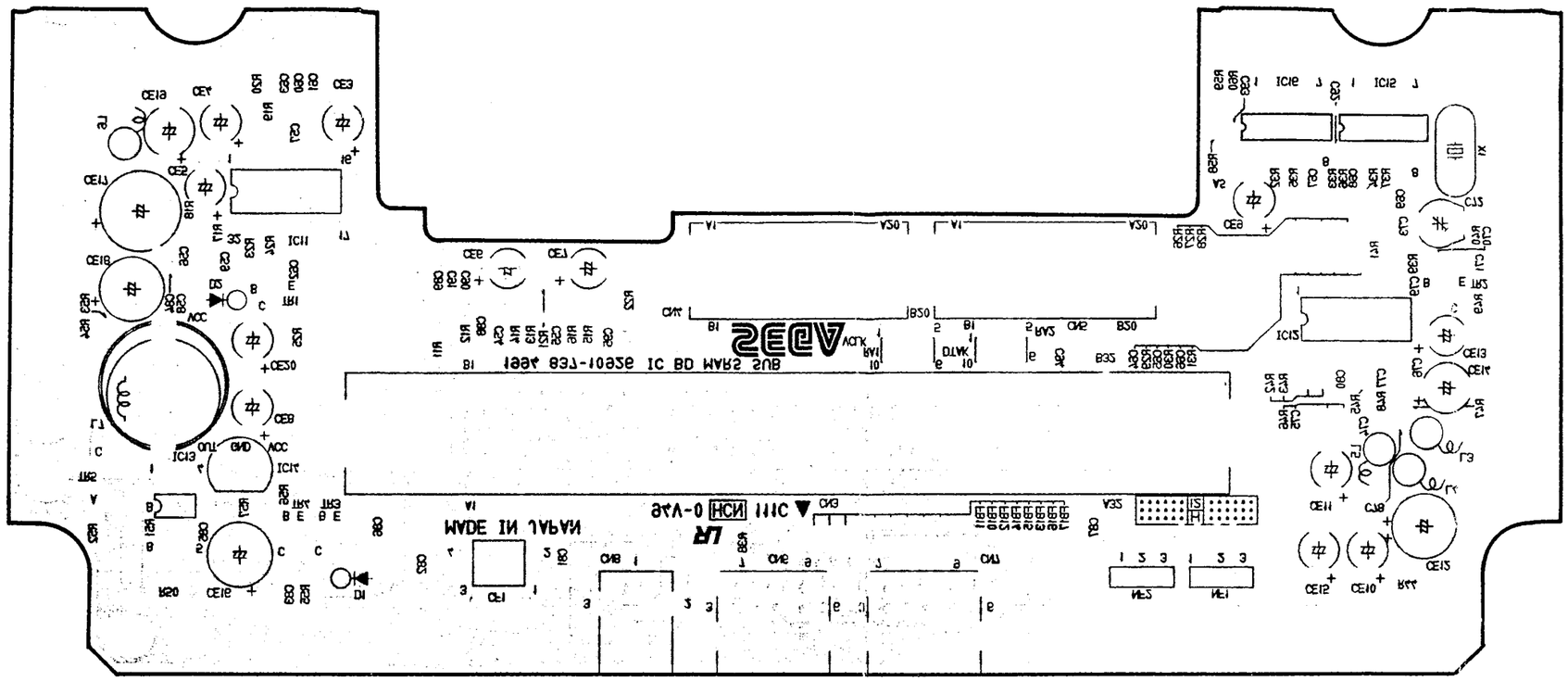
7-4. Schematic Diagram-3 (Sub Section)

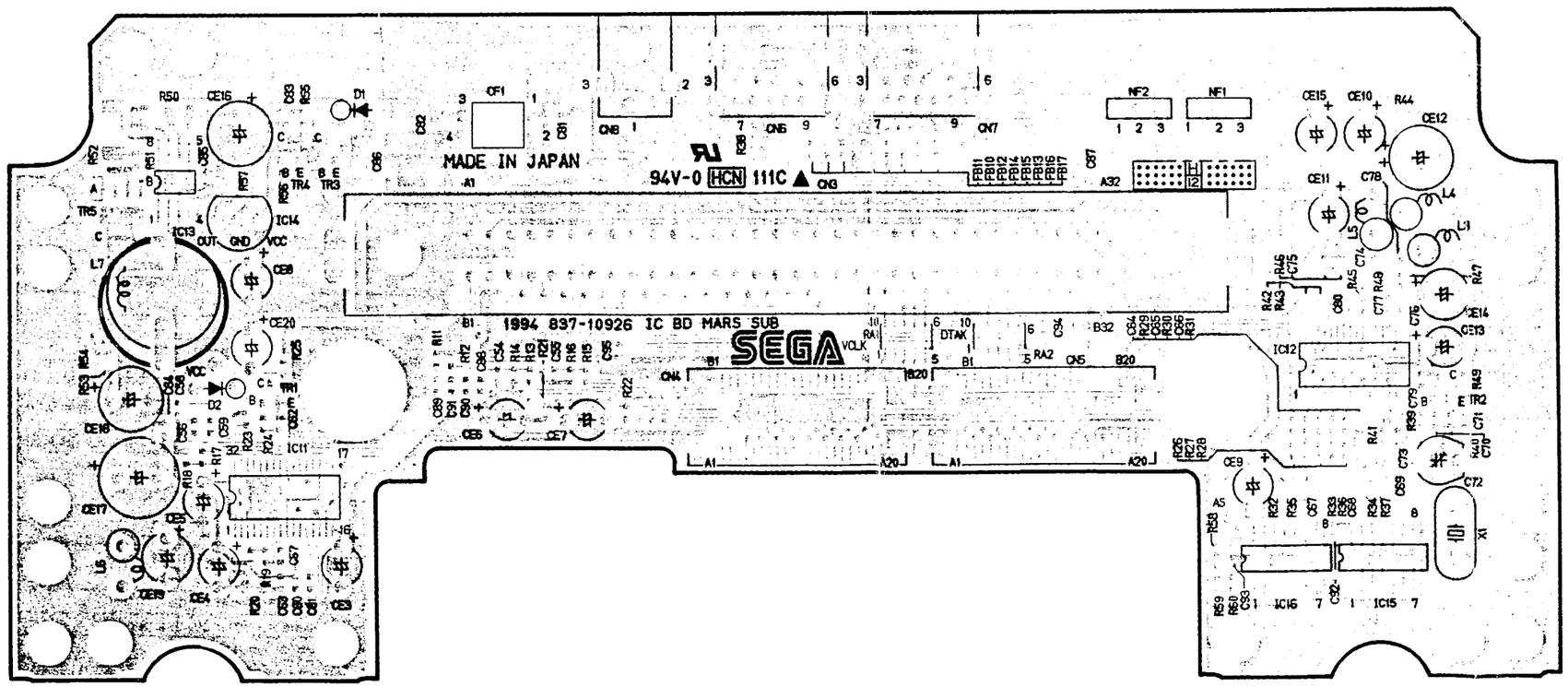


※ DIFFERENCE TABLE FOR DIAGRAM-3

※	CIRCUIT NO	NTSC	PAL
1	L4	12㎌H	10㎌H
2	L5	100㎌H	82㎌H
3	X1	3.579545MHz	4.43361875MHz
4	R40	560	430
5	R41	1.2K	680
6	R42	1K	NOT USED
7	R43	NOT USED	1K
8	C70	47P	68P
9	C74	18P	15P
10	C75	56P	47P
11	C78	100P	82P

7-5. Circuit Board Diagram-2 (Sub Board)





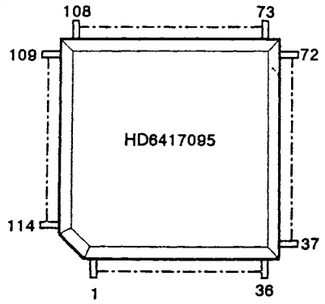
8. PARTS SPECIFICATIONS

IC1/2 CPU

IC HD6417095F23 QFP
Parts No. : 315-0922

IC HD6417095F28 QFP
Parts No. : 315-0922A

■ Top View

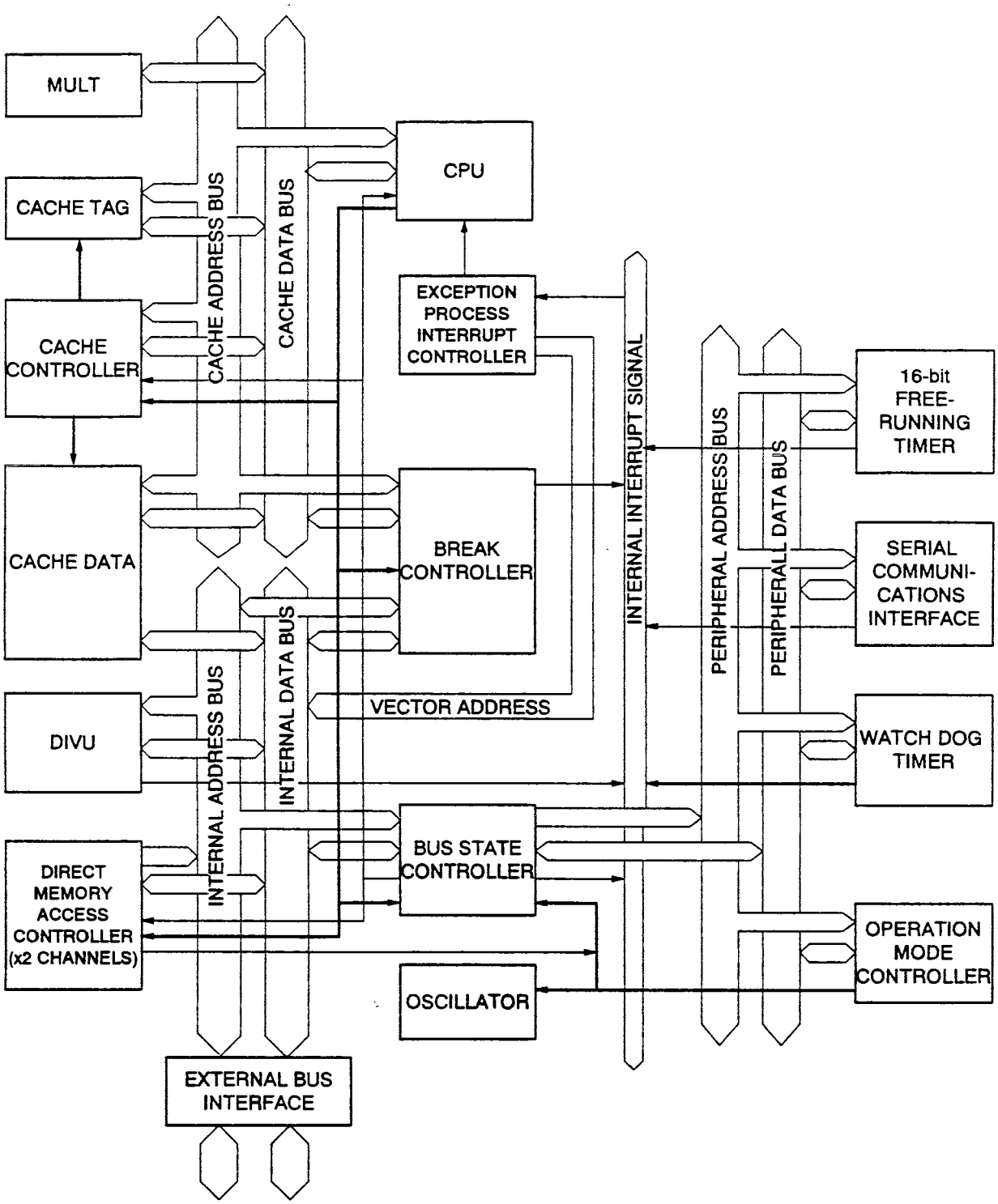


■ Description

No.	I/O	Pin Name	Function
1	I/O	D11	Data bus
2		D12	
3		D13	
4	–	VCC1	Power supply (5V)
5	I/O	D14	Data bus
6	–	VSS1	Power supply (0V)
7	I/O	D15	Data bus
8		D16	
9		D17	
10		D18	
11		D19	
12	–	VCC2	Power supply (5V)
13	I/O	D20	Data bus
14	–	VSS2	Power supply (0V)
15	I/O	D21	Data bus
16		D22	
17		D23	
18	–	VCC3	Power supply (5V)
19	I/O	D24	Data bus
20	–	VSS3	Power supply (0V)
21	I/O	D25	Data bus
22		D26	
23		D27	
24	–	VCC4	Power supply (5V)
25	I/O	D28	Data bus
26	–	VSS4	Power supply (0V)
27	I/O	D29	Data bus
28		D30	
29		D31	
30	I/O	A0	Address bus
31		A1	
32		A2	
33	–	VSS5	Power supply (0V)
34	I/O	A3	Address bus
35		A4	
36		A5	
37		A6	
38		A7	
39		A8	
40	–	VCC5	Power supply (5V)
41	I/O	A9	Address bus
42	–	VSS6	Power supply (5V)
43	I/O	A10	Address bus
44		A11	
45		A12	
46		A13	
47		A14	
48	–	VCC6	Power supply (5V)
49	I/O	A15	Address bus
50	–	VSS7	Power supply (0V)
51	I/O	A16	Address bus
52		A17	
53		A18	
54	–	VCC7	Power supply (5V)
55	I/O	A19	Address bus
56	–	VSS8	Power supply (0V)
57	I/O	A20	Address bus
58		A21	
59		A22	
60	–	VCC8	Power supply (5V)
61	I/O	A23	Address bus
62	–	VSS9	Power supply (0V)
63	I/O	A24	Address bus
64		A25	
65		A26	
66	O	DACK0	DMAC0 acknowledge
67	–	VCC9	Power supply (5V)
68	O	DACK1	DMAC1 acknowledge
69	–	VSS10	Power supply (0V)
70	I	DREQ0	DMAC0 request
71	I	DREQ1	DMAC1 request
72	O	$\overline{CS0}$	Chip select 0
73	O	$\overline{CS1}$	Chip select 1
74	O	$\overline{CS2}$	Chip select 2
75	O	$\overline{CS3}$	Chip select 3
76	I/O	$\overline{BS}$	Bus cycle start
77	I/O	RD/$\overline{WR}$	Read write
78	–	VSS11	Power supply (0V)
79	O	$\overline{RAS}$, $\overline{CE}$	RAS for DRAM/SDRAM/CE for PSRAM
80	O	$\overline{CAS}$, $\overline{OE}$	CAS for SDRAM/OE for PSRAM
81	O	$\overline{CASHH}$, DQMUU, $\overline{WE3}$	Each memory most significant byte select signal
82	O	$\overline{CASHL}$, DQMUL, $\overline{WE2}$	Each memory 2nd byte select signal
83	O	$\overline{CASLH}$, DWMLU, $\overline{WE1}$	Each memory 3rd byte select signal
84	–	VCC10	Power supply (5V)
85	O	$\overline{CASLL}$, DQMLL, $\overline{WE0}$	Each memory least significant byte select signal
86	–	VSS12	Power supply (0V)
87	O	$\overline{RD}$	Read pulse
88	O	CKE	SDRAM clock enable control
89	I	$\overline{WAIT}$	Hardware wait request.
90	O	$\overline{BEN}$	Reserve
91	–	VSS13	Power supply (0V)
92	I	$\overline{BACK}$, $\overline{BRLS}$	Bus right permission in slave mode./Bus right acknowledge in master mode.
93	O	$\overline{BREQ}$, $\overline{BGR}$	Bus right request in slave mode./Bus right acknowledge in master mode.
94	O	$\overline{WDTOVF}$	Watch dog timer qutput.
95	O	FTOB	Free-running timer output B.
96	–	VCC11	Power supply (5V)
97	O	FTOA	Free-running timer output A.
98	–	VSS14	Power supply (0V)
99	I	FTI	Free-running timer input.
100	I	FTCI	Free-running timer clock input.
101	I	RXD	Serial data input.
102	O	TXD	Serial data output.
103	I/O	SCK	Serial clock input/output.

No.	I/O	Pin Name	Function
104	–	VCC (PLL) 12	Power supply (5V) of built-in PLL
105	I	MD0	Operation mode pin
106	–	VSS (PLL) 15	Power supply (0V) of built-in PLL
107	I	MD1	Operation mode pin
108	O	CAP1	External capacitor connection pin for PLL
109		CAP2	
110	I	MD2	Operation mode pin
111	O	$\overline{\text{CKPACKN}}$	Clock pause acknowledge output.
112	I	$\overline{\text{CKPREQN}}$	Clock pause request input.
113	–	VCC13	Power supply (5V)
114	I	N.C	Not connectes.
115	–	VSS16	Power supply (0V)
116	O	N.C	Not connectes.
117	I	MD3	Operation mode pin
118	I/O	CKIO	System clock input/output.
119	I	MD4	Operation mode pin
120		MD5	
121	–	VSS17	Power supply (0V)
122	I	$\overline{\text{RES}}$	Reset
123	–	VCC14	Power supply (5V)
124	O	$\overline{\text{IVECF}}$	Interrupt vector fetch cycle
125	I	$\overline{\text{NMI}}$	Non-maskable interrupt request.
126	I	$\overline{\text{IRL3}}$	External interrupt factor input.
127		$\overline{\text{IRL2}}$	
128		$\overline{\text{IRL1}}$	
129		$\overline{\text{IRL0}}$	
130	I/O	D0	Data bus
131		D1	
132	–	VCC15	Power supply (5V)
133	I/O	D2	Data bus
134	–	VSS18	Power supply (0V)
135	I/O	D3	Data bus
136		D4	
137		D5	
138		D6	
139	–	VCC16	Power supply (5V)
140	I/O	D7	Data bus
141	–	VSS19	Power supply (0V)
142	I/O	D8	Data bus
143		D9	
144		D10	

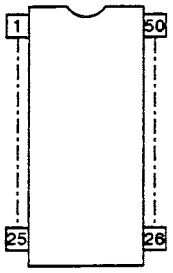
■ Block Diagram



IC3 2Mbit SDRAM

IC UPD4502161G5-A12 TSOP
Parts No. : 315-0910-12

■ Top View



■ Description

No.	I/O	Pin Name	Function
35	I	CLK	CLK is the master clock input pin. The other inputs signals are referenced at CLK rising edge.
18	I	$\overline{CS}$	$\overline{CS}$ low start the command input cycle. When $\overline{CS}$ is high, all input are not referenced. But even if $\overline{CS}$ is high, internal operations i.e. bank active or burst are not changed.
15	I	$\overline{WE}$	$\overline{RAS}$ $\overline{CAS}$ $\overline{WE}$ have the same names with conventional DRAM. But these pins have deferent definitions with conventional ones. All of these pins only define command cycle definition. For detail information see command table.
16		$\overline{CAS}$	
17		$\overline{RAS}$	
21	I	A0	Row address(AX0-AX6, AX8) is determined by A0-A8 input signal level at the rising edge CLK signal at the bank active command cycle (state of AX7 is not applicable). Column address (AY0-AY7) is determined by A0-A7 input signal level at a read or write command cycle. The column address will be used as the burst access start address. A8 define precharge mode, – Precharge command cycle: A8 = Low: Both bank precharged. A8 = High: One bank prechartged (depends on state of A9) – Read/write command cycle: A8 = High: Precharge cycle is started automatically following the end of data transfer in burst mode.
22		A1	
23		A2	
24		A3	
27		A4	
28		A5	
29		A6	
30		A7	
20		A8	
19	I	A9	A9 is bank select signal (BS). In command cycle, A9=low select bank A and A9=High select bank B.
34	I	CKE	CKE determine next CLK is valid or not. If CKE is high next CLK rising edge is valid. But if CKE is low, next CLK is invalid. If CLK rising edge is invalid, internal clock is not asserted and μ PD4504161 becomes halt operation. And when μ PD4502161 dose not in burst mode and CKE is negated, μ PD4502161 enter power down mode. During power down mode CKE must keep low level.
36	I	DQMU	DQMU control Upper byte and DQML controls Lower byte input/output buffers. In read mode, DQMU, DQML control output buffer impedance like conventional $\overline{OE}$. If DQMU DQML is High, output buffers become high impedance. If DQMU, DQML is Low, output buffers become low impedance. And when device in write mode, DQMU, DQML control word mask. If DQMU, DQML is High input data is not written to memory cell. If DQMU, DQML is Low input data is written to memory cell.
14		DQML	

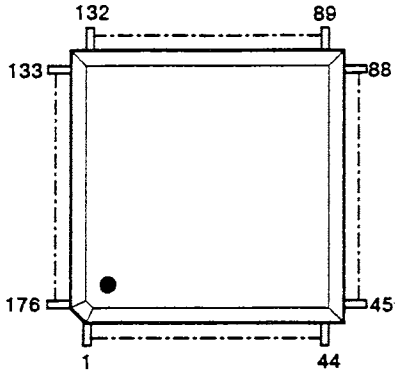
No.	I/O	Pin Name	Function
2	I/O	DQ0	I/O pins are the same as conventional DRAM.
3		DQ1	
5		DQ2	
6		DQ3	
8		DQ4	
9		DQ5	
11		DQ6	
12		DQ7	
39		DQ8	
40		DQ9	
42		DQ10	
43		DQ11	
45		DQ12	
46		DQ13	
48		DQ14	
49		DQ15	
1	–	V_{CC}	Power supply of internal circuits.
7			
13			
25			
38			
44			
4	–	V_{SS}	Power supply of internal circuits.
10			
26			
41			
47			
50			
31, 32	–	GND	Ground pins

IC4

IC CUSTOM CHIP G/A MARS I/F
Parts No. : 315-5818

IC CUSTOM CHIP SCA MARS I/F
Parts No.: 315-5818A

Top View



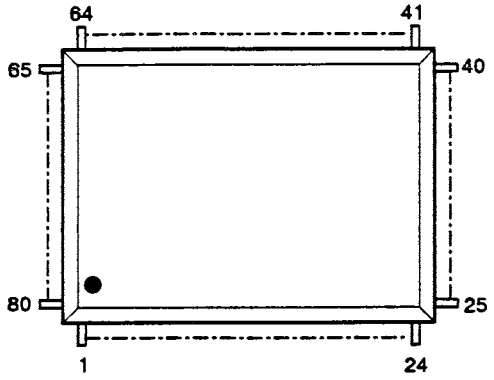
Discription

No.	I/O	Pin Name	No.	I/O	Pin Name	No.	I/O	Pin Name	No.	I/O	Pin Name
1	–	VDD	45	–	GND	89	–	VDD	133	–	GND
2	O	CH0	46	–	GND	90	I/O	VD8	134	–	GND
3	O	CH1	47	I	SHA10	91	I/O	VD6	135	I/O	AD0
4	O	OVA19	48	I	SHA11	92	I/O	VD1	136	I/O	AD1
5	O	OVA20	49	I	SHA12	93	I/O	VD9	137	I/O	AD2
6	I	OVA21	50	I	SHA13	94	I/O	VD5	138	I/O	AD3
7	I	CART	51	I	SHA14	95	I/O	VD2	139	I/O	AD4
8	I/O	KILL	52	I	SHA15	96	I/O	VD10	140	I/O	AD5
9	I/O	SHD15	53	I	SHA16	97	I/O	VD4	141	I/O	AD6
10	I/O	SHD14	54	I	SHA17	98	I/O	VD3	142	I/O	AD7
11	I/O	SHD13	55	O	WAIT	99	I/O	VD11	143	I/O	AD8
12	I/O	SHD12	56	I	RD	100	I	MRES	144	I/O	AD9
13	I/O	SHD11	57	I	DQMLL	101	I	VA19	145	I/O	AD10
14	I/O	SHD10	58	I	DQMLU	102	I	VA20	146	I/O	AD11
15	I/O	SHD9	59	I	RDXWR	103	I	VA21	147	I/O	AD12
16	I/O	SHD8	60	I	BS	104	I	VA22	148	I/O	AD13
17	I/O	SHD7	61	I	CS2	105	I	VA23	149	I/O	AD14
18	I/O	SHD6	62	I	CS1	106	I	CAS0	150	I/O	AD15
19	I/O	SHD5	63	I	CS0S	107	I	CE0	151	O	SEL
20	I/O	SHD4	64	I	CS0M	108	I	AS	152	I	CHPLL
21	I/O	SHD3	65	O	DREQ1	109	O	DTACK	153	I	BURNI
22	–	VDD	66	O	DREQ0	110	–	VDD	154	O	OCE0
23	–	GND	67	I	VA18	111	–	GND	155	O	OASEL
24	I/O	SHD2	68	I	VA17	112	I	VCLK	156	O	OCAS2
25	I/O	SHD1	69	I	VA16	113	I	CAS2	157	O	OCAS0
26	I/O	SHD0	70	I	VA15	114	I/O	VD15	158	O	OLWR
27	O	SIPL1	71	I	VA14	115	I/O	VD14	159	I/O	RD0
28	O	SIRL2	72	I	VA13	116	I/O	VD13	160	I/O	RD1
29	O	SIRL3	73	I	VA12	117	I/O	VD12	161	I/O	RD2
30	O	MIRL1	74	I	VA11	118	I	ASEL	162	I/O	RD3
31	O	MIRL2	75	I	VA10	119	I	VRES	163	I/O	RD4
32	O	MIRL3	76	I	VA9	120	I	LWR	164	I/O	RD5
33	O	CKIO	77	I	VA8	121	I	UWR	165	I/O	RD6
34	O	SHRES	78	I	VA7	122	I	HINT	166	I/O	RD7
35	I	SHA1	79	I	VA6	123	I	VINT	167	I/O	RD8
36	I	SHA2	80	I	VA5	124	I	VACK	168	I/O	RD9
37	I	SHA3	81	I	VA4	125	O	ACCS	169	I/O	RD10
38	I	SHA4	82	I	VA3	126	O	DIR	170	I/O	RD11
39	I	SHA5	83	I	VA2	127	O	RW	171	I/O	RD12
40	I	SHA6	84	I	VA1	128	O	OUWR	172	I/O	RD13
41	I	SHA7	85	I/O	VD7	129	–	AVDD	173	I/O	RD14
42	I	SHA8	86	I/O	VD0	130	–	AGND	174	I/O	RD15
43	I	SHA9	87	–	GND	131	O	C23	175	–	GND
44	–	VDD	88	–	GND	132	–	VDD	176	–	GND

IC5 ADDRESS SELECTOR

IC CUSTOM CHIP MARS ADSE
Parts No. : 315-5805

■ Top View



■ Description

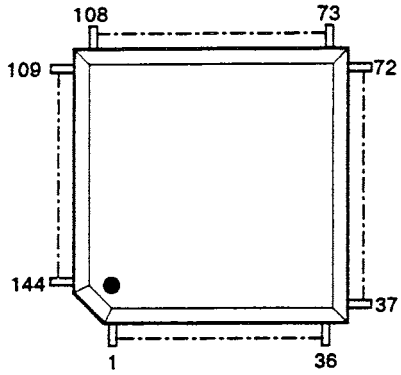
No.	I/O	Pin Name	No.	I/O	Pin Name	No.	I/O	Pin Name	No.	I/O	Pin Name
1	O	RA4	21	I	VA9	41	I	SHA2	61	O	RA22
2	O	RA3	22	I	VA8	42	I	SHA3	62	O	RA21
3	O	RA2	23	I	VA7	43	I	SHA4	63	O	RA20
4	O	RA1	24	I	VA6	44	I	SHA5	64	O	RA19
5	–	GND	25	I	VA5	45	I	SHA6	65	O	RA18
6	I	VA23	26	I	VA4	46	I	SHA7	66	O	RA17
7	I	VA22	27	I	VA3	47	I	SHA8	67	O	RA16
8	I	OVA21	28	I	VA2	48	I	SHA9	68	O	RA15
9	I	OVA20	29	I	VA1	49	I	SHA10	69	O	RA14
10	I	OVA19	30	I	SHA21	50	I	SHA11	70	O	RA13
11	I	VA18	31	I	SHA20	51	I	SHA12	71	–	GND
12	–	GND	32	I	CKI0	52	I	SHA13	72	–	VDD
13	I	VA17	33	–	GND	53	–	GND	73	O	RA12
14	I	VA16	34	–	VDD	54	I	SHA14	74	O	RA11
15	I	VA15	35	I	BREQ	55	I	SHA15	75	O	RA10
16	I	VA14	36	I	IBACK	56	I	SHA16	76	O	RA9
17	I	VA13	37	O	OBACK	57	I	SHA17	77	O	RA8
18	I	VA12	38	I	SHA19	58	I	SEL	78	O	RA7
19	I	VA11	39	I	SHA18	59	–	GND	79	O	RA6
20	I	VA10	40	I	SHA1	60	O	RA23	80	O	RA5

IC6 8bit 20MHz D/A CONVERTER

IC CUSTOM CHIP G/A MARS VDPNEC
Parts No. : 315-5781

IC CUSTOM CHIP SCA MARS VDP
Parts No. : 315-5781A

Top View



Description

No.	I/O	Pin Name	No.	I/O	Pin Name	No.	I/O	Pin Name	No.	I/O	Pin Name
1	–	VDD	37	–	GND	73	–	VDD	109	–	GND
2	–	VDD	38	–	GND	74	–	VDD	110	–	GND
3	–	VDD	39	I/O	AD15	75	–	VDD	111	I	DGND
4	I/O	OD0	40	I/O	AD14	76	–	N.C	112	–	N.C
5	I/O	OD1	41	I/O	AD13	77	O	EA7	113	I	AGND1
6	I/O	OD2	42	I/O	AD12	78	O	EA6	114	–	N.C
7	I/O	OD3	43	I/O	AD11	79	O	EA5	115	I	AVDD1
8	I/O	OD4	44	I/O	AD10	80	O	EA4	116	–	N.C
9	I/O	OD5	45	I/O	AD9	81	O	EA3	117	O	IOR
10	I/O	OD6	46	I/O	AD8	82	O	EA2	118	–	N.C
11	I/O	OD7	47	I/O	AD7	83	O	EA1	119	I	AVDD2
12	I/O	OD8	48	I/O	AD6	84	O	EA0	120	–	N.C
13	I/O	OD9	49	I/O	AD5	85	O	EUWE	121	I	AGND2
14	I/O	OD10	50	I/O	AD4	86	O	ELWE	122	–	N.C
15	I/O	OD11	51	I/O	AD3	87	O	EOE	123	O	IOG
16	I/O	OD12	52	I/O	AD2	88	O	ECAS	124	–	N.C
17	I/O	OD13	53	I/O	AD1	89	O	ERAS	125	I	IREF
18	I/O	OD14	54	I	AD0	90	I/O	ED15	126	–	N.C
19	I/O	OD15	55	I	TEST3	91	I/O	ED14	127	I	VREF
20	O	ORAS	56	I	C23	92	I/O	ED13	128	–	N.C
21	O	OCAS	57	I	MODE2	93	I/O	ED12	129	I	COMP
22	O	OOE	58	I	RW	94	I/O	ED11	130	–	N.C
23	O	OLWE	59	I	DIR	95	I/O	ED10	131	O	IOB
24	O	OUWE	60	O	VACK	96	I/O	ED9	132	–	N.C
25	O	OA0	61	I	ACCS	97	I/O	ED8	133	I	AVDD3
26	O	OA1	62	O	HINT	98	I/O	ED7	134	–	N.C
27	O	OA2	63	O	VINT	99	I/O	ED6	135	I	AGND3
28	O	OA3	64	I	MRES	100	I/O	ED5	136	–	N.C
29	O	OA4	65	I	HSYNC	101	I/O	ED4	137	I	DVDD
30	O	OA5	66	I	VSYNC	102	I/O	ED3	138	–	N.C
31	O	OA6	67	I	YS	103	I/O	ED2	139	I	TEST1
32	O	OA7	68	I	NTSC	104	I/O	ED1	140	I	TEST2
33	I	MODE1	69	I	EDCLK	105	I/O	ED0	141	O	BFP
34	–	VDD	70	–	N.C	106	–	VDD	142	O	OYS
35	–	VDD	71	–	GND	107	–	VDD	143	–	GND
36	–	VDD	72	–	GND	108	–	VDD	144	–	GND

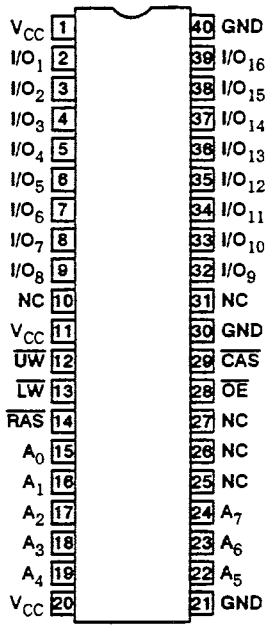
IC7/8 1Mbit CMOS DRAM

IC TC511664BJ-80 SOJ TOSHIBA
Parts No. : 315-0745-80

IC LC321664AJ-80 SOJ SANYO
Parts No. : 315-0961-80

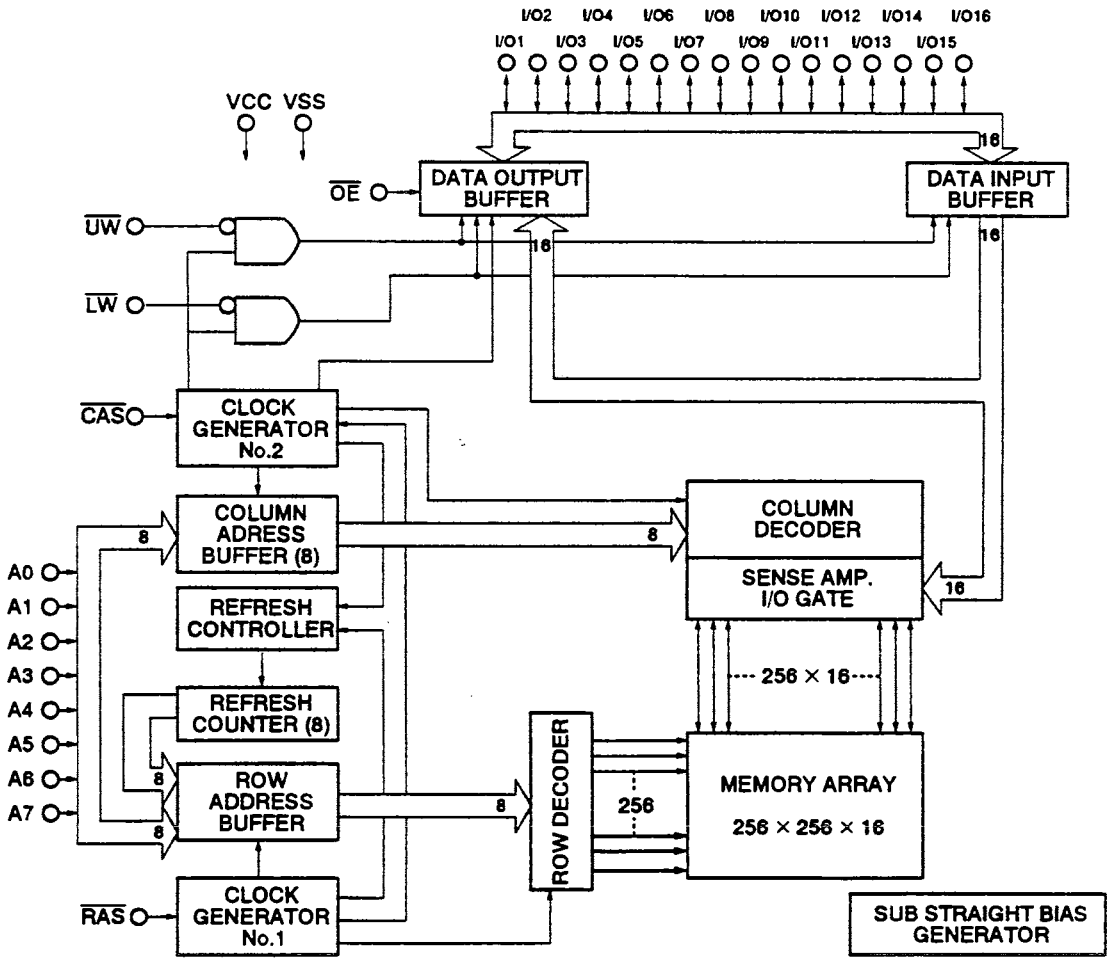
IC LC321664AM-80 SOP SANYO
Parts No. : 315-0962-80

■ Top View



A0-A7 : Address inputs
I/O1 – I/O16 : Data input/outputs
$\overline{RAS}$: Row address strobe
$\overline{CAS}$: Column address strobe
$\overline{UW}$: Upper byte write enable
$\overline{LW}$: Lower byte write enable
$\overline{OE}$: Output enable
VCC : Power supply
GND : Ground
NC : Not connected

■ Description

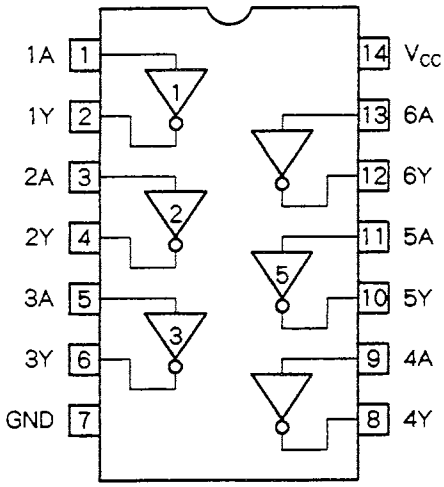


IC9 INVERTER

IC 74AC04 SOP 300MLL HITACHI
Parts No. : 314-0623

IC 74AC04 SOP 300MLL TOSHIBA
Parts No. : 314-0694

Top View



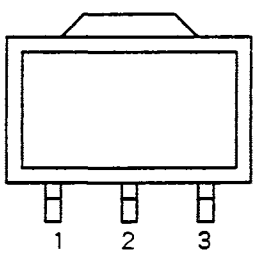
Truth Table

A	Y
L	H
H	L

IC10 3PIN REGULATOR

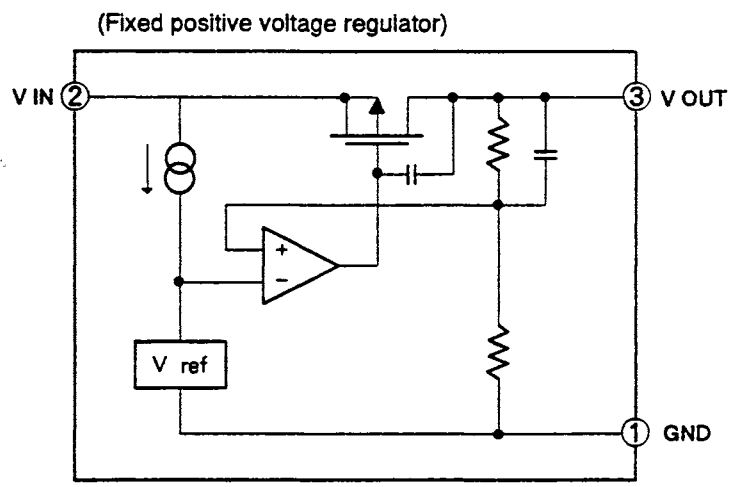
IC RH5RL33A
Parts No.: 313-5320

Top View



1: GND
2: IN
3: OUT

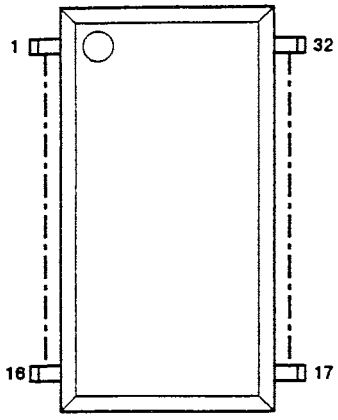
Block Diagram



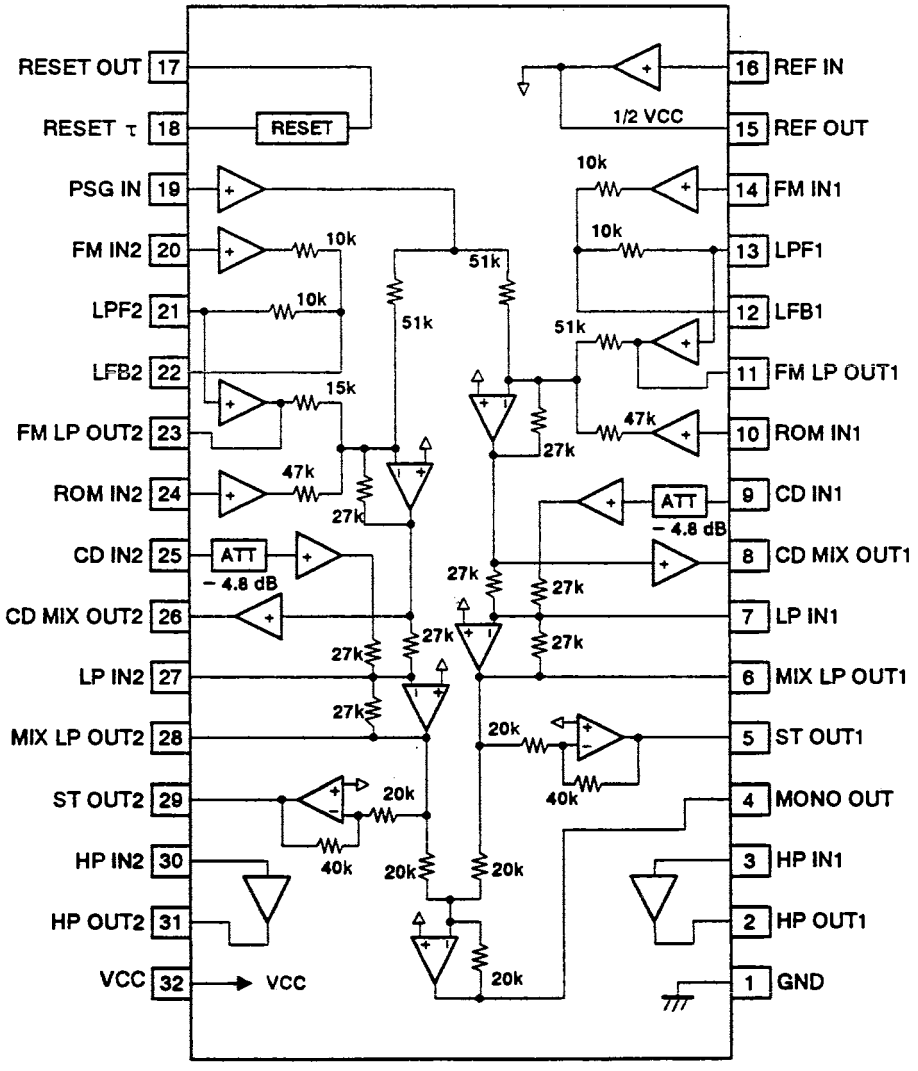
IC11 SOUND NETWORK/HEADPHONE AMP.

IC CUSTOM CP BA6166FS SOP ROHM
Parts No. : 315-5684

■ Top View



■ Pin Description and Block Diagram

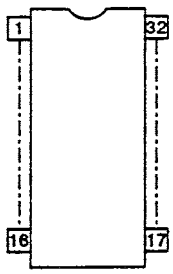


IC12 VIDEO MIX

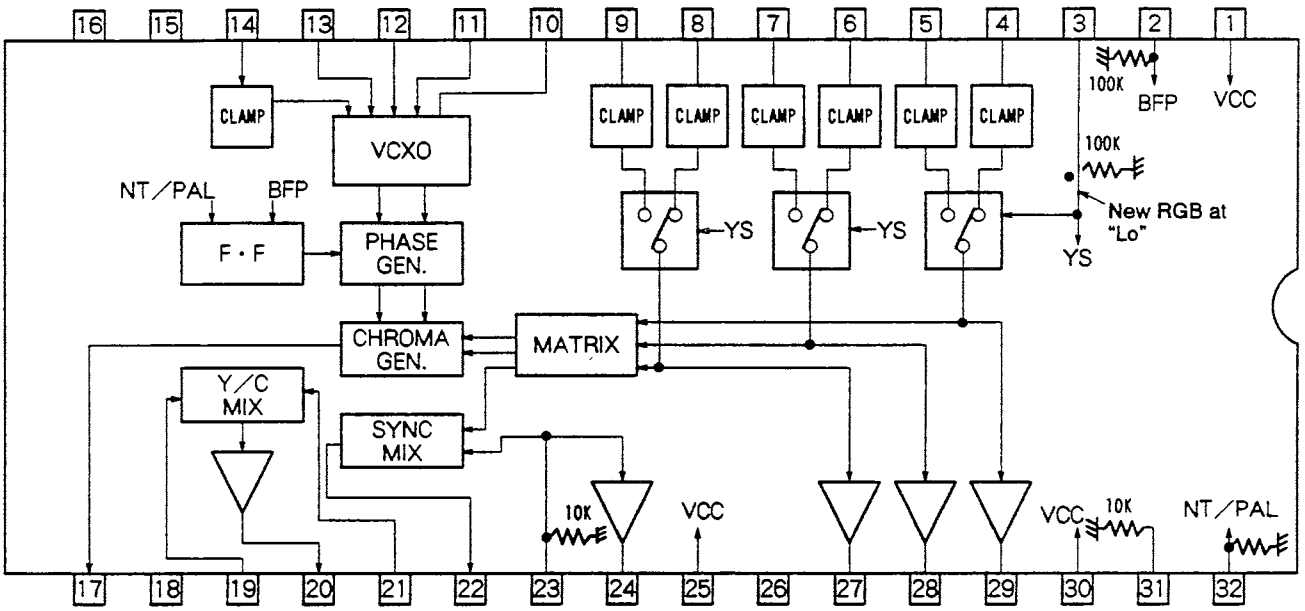
IC BA7237FS
Parts No. : 315-5788

IC BA7237FSA
Parts No. : 315-5788A

■ Top View



■ Block Diagram

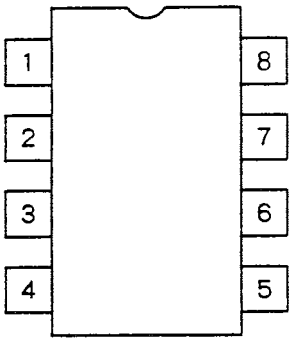


IC13 SWITCHING REGURATOR IC

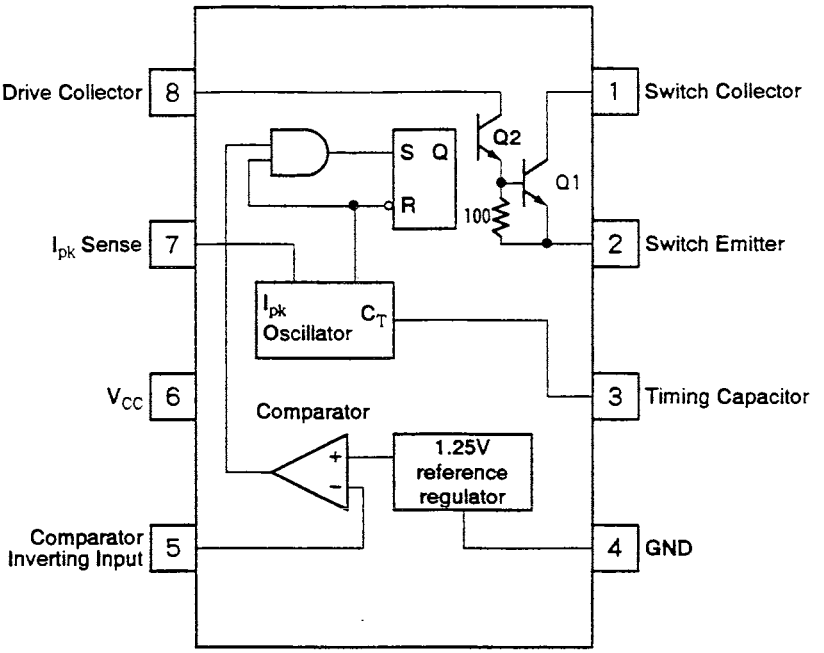
IC MC34063A SOP 8P
Parts No. : 313-5244

IC IR3MO3AN SOP 8P
Parts No. : 313-5335

■ Top View



■ Block Diagram

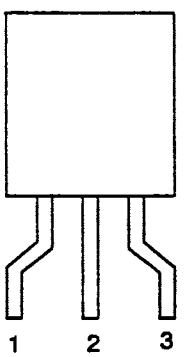


IC14 RESET IC

IC PST993E
Parts No. :313-5319

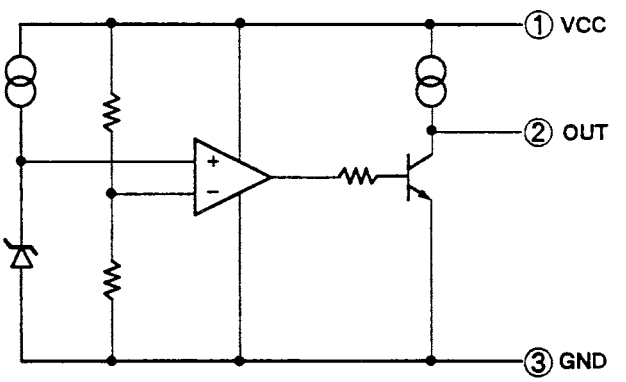
■ Top View

■ Front View



1: VCC
2: OUT
3: GND

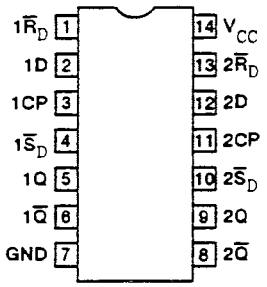
■ Block Diagram



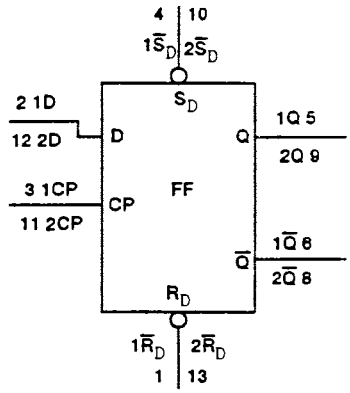
IC15

IC 74HC74 SOP 225MIL
Parts No. : 314-0647

■ Top View



■ Logic Symbol Diagram



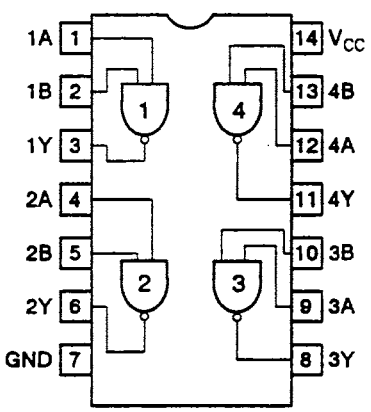
■ Pin Description

No.	I/O	Pin Name	Function
1, 13	I	1$\overline{R}_D$, 2$\overline{R}_D$	A synchronous reset direct inputs (active "Low").
2, 12	I	1D, 2D	Data inputs.
3, 11	I	1CP, 2CP	Clock inputs ("Low" to "High", triggered by edge).
4, 10	I	1$\overline{S}_D$, 2$\overline{S}_D$	A synchronous set direct inputs (active "Low").
5, 9	O	1Q, 2Q	True flip-flop outputs.
6, 8	O	1$\overline{Q}$, 2$\overline{Q}$	Complement flip-flop outputs.
7	–	GND	GND(0V)
14	–	V_{CC}	Positive (+) supply voltage

IC16

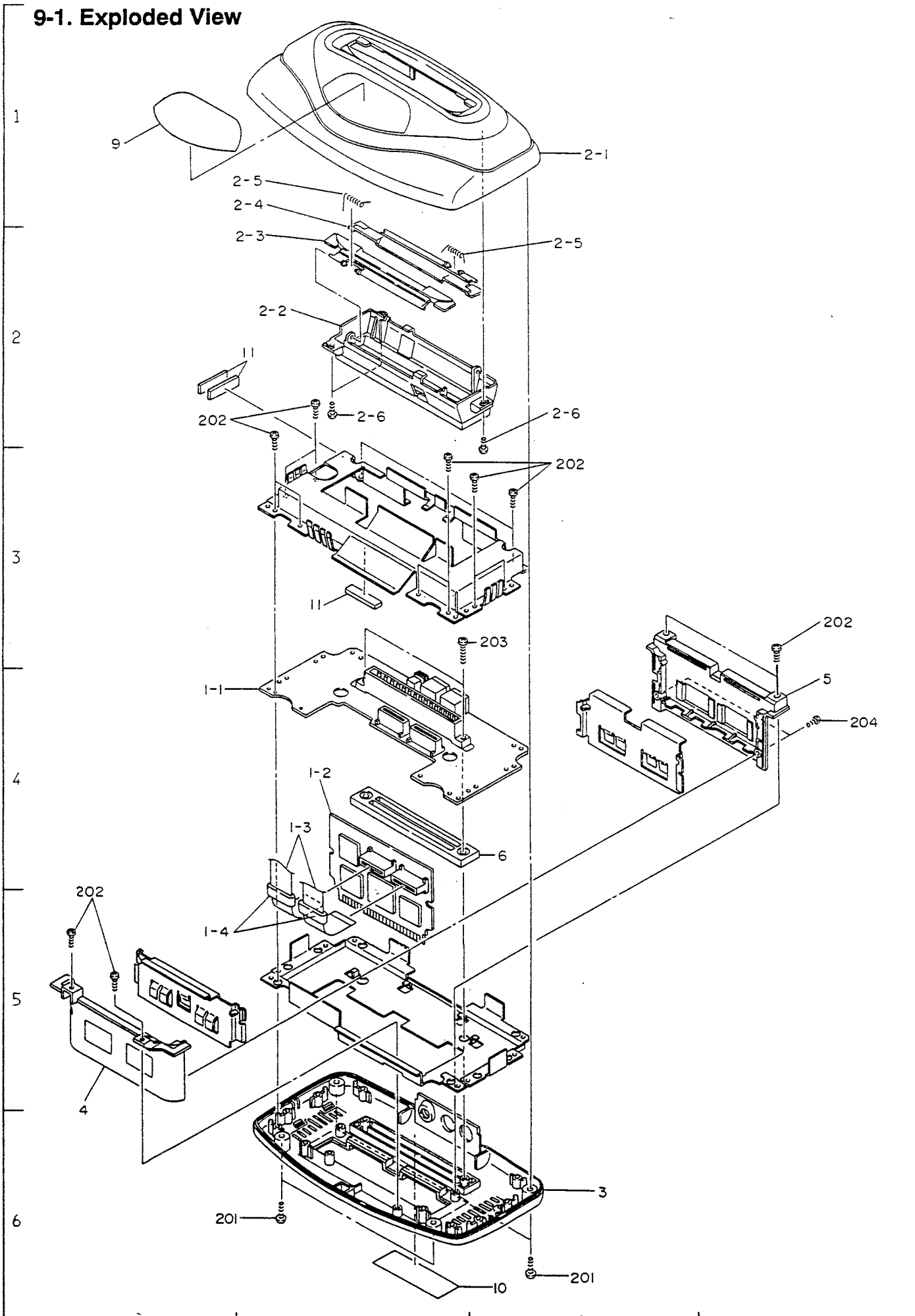
IC 74LS00 SOP 225MIL
Parts No. : 314-0646

■ Top View



9. EXPLODED VIEW & PARTS LIST

9-1. Exploded View



9-2. Mechanical Parts List

Ref. No.	Parts No.	Description	
1	837-11294-01	IC BD MARS VA1 PAL	[3]
1	837-10924	IC BD MARS VA0 NTSC	[2]
1	837-11292-01	IC BD MARS VA1 NTSC	[4]
1	837-11533	IC BD MARS VA1 ASIA NTSC	[1]
1-1	837-11293-01	IC BD MARS VA1 MAIN	[3, 4]
1-1	837-10925	IC BD MARS VA0 MAIN	[2]
1-1	837-11534	IC BD MARS VA1 MAIN JPN/ASIA	[1]
1-2	837-10928-01	IC BD MARS VA1 PAL SUB	[1, 3]
1-2	837-10926	IC BD MARS VA0 NTSC SUB	[2, 4]
1-3	600-6413	FFC 40P L=70MM	
1-4	270-5092	FERITE CORE BP53RD065270080M	
2	610-5714	ASSY TOP CASE MARS JPN	[1]
2	610-5765	ASSY TOP CASE MARS USA	[2]
2	610-5800	ASSY TOP CASE MARS EXPORT	[3]
2-1	253-6902	TOP CASE MARS	[1]
2-1	253-6902-02	TOP CASE MARS USA	[2]
2-1	253-6902-01	TOP CASE MARS EXPORT	[3]
2-2	253-6906	COVER MARS	
2-3, 4	253-6907	DOOR MARS	[1]
2-3	253-6908	FRONT DOOR MARS EXPORT	[2, 3]
2-4	253-6909	BACK DOOR MARS EXPORT	[2, 3]
2-5	125-5128	SPRING MARS	
2-6	029-000034	B-TITE SCR PH 3X8	
3	253-6903	BOTTOM CASE MARS	
4	610-5807	ASSY FRONT CASE MARS	[1, 2, 3]
4	253-6904	FRONT CASE MARS	
4-2	250-5410	UNDER PLATE MARS	
5	610-5808	ASSY REAR CASE MARS	
5	253-6905	REAR CASE MARS	
5-2	250-5410	UNDER PLATE MARS	
6	253-6599	64P COVER MD2 EXPORT	
9	670-5338	LABEL MD 32X LOGO ASIA	[1]
9	670-5339	LABEL MD 32X LOGO MUL	[3]
10	670-5864	LABEL INDICATION MARS ASIA PAL	[1]
10	670-5341	LABEL INDICATION MARS USA	[2]
10	670-5341-01	LABEL INDICATION GEN 32X USA 01	[4]
10	670-5341-01A	LABEL INDICATION 32X USA 01A	[4]
10	670-5342	LABEL INDICATION MARS 32X MUL	[3]
11	601-7738	TOP SHIELD SPACER MARS	
201	029-000035-0B	B-TITE SCR PH BLK 3X10	
202	029-000034	B-TITE SCR PH 3X8	
203	029-000047	B-TITE SCR PH 3X16	
204	029-000048-0B	B-TITE SCR PH BLK 2X6	

9-3. Electrical Parts List

Circuit No.	Parts No.	Description	
9-3-1. Main Circuit Board			
IC1	315-0922	IC HD6417095F23 QFP	
IC1	315-0922A	IC HD6417095F28 QFP	
IC1	315-0998	IC HD6417095SF28 QFP	
IC2	315-0922	IC HD6417095F23 QFP	
IC2	315-0922A	IC HD6417095F28 QFP	
IC2	315-0998	IC HD6417095SF28 QFP	
IC3	315-0910-12	IC UPD4502161G5-A12 TSOP	
IC3	315-1013	IC UPD4502161G5-VDP1-MARS TSOP	
IC4	315-5818	IC CUSTOM CHIP G/A MARS I/F	
IC4	315-5818A	IC CUSTOM CHIP SCA MARS I/F	
IC5	315-5805	IC CUSTOM CHIP MARS ADSE	
IC6	315-5781	IC CUSTOM CHIP G/A MARS VDP	
IC6	315-5781A	IC CUSTOM CHIP SCA MARS VDP	
IC7	315-0745-80	IC TC511664BJ-80 SOJ	
IC7	315-0961-80	IC LC321664AJ-80 SOJ	
IC7	315-0962-80	IC LC321664AM-80 SOP	
IC8	315-0745-80	IC TC511664BJ-80 SOJ	
IC8	315-0961-80	IC LC321664AJ-80 SOJ	
IC8	315-0962-80	IC LC321664AM-80 SOP	
IC9	314-0694	IC 74AC04 SOP 300MIL	
IC10	313-5320	IC RH5RL33A	
CE1	153-0119	CAP TANT CHIP 47UF 10V	
CE1	153-0119-01	CAP TANT CHIP 47UF 10V	
CE2	153-0119	CAP TANT CHIP 47UF 10V	
CE2	153-0119-01	CAP TANT CHIP 47UF 10V	
CN1	209-5076	FFC CNN 40P SOP	
CN1	209-5076-01	FFC CNN 40P SOP	<VA1>
CN1	209-5076-02	FFC CNN 40P SOP	<VA1>
CN2	209-5076	FFC CNN 40P SOP	
CN2	209-5076-01	FFC CNN 40P SOP	<VA1>
CN2	209-5076-02	FFC CNN 40P SOP	<VA1>
FB1	271-0092	BEADS INDUCTOR CP BK1608HS121	
FB2	476-1000-J-16	RES CHIP 0 OHM 1/16W	
FB3	271-0075	BEADS INDUCTOR CP BK1608HS241	
FB5	476-1000-J-16	RES CHIP 0 OHM 1/16W	
FB6	271-0092	BEADS INDUCTOR CP BK1608HS121	
L1	180-5137-01	P.COIL CHIP 100UH ELJFA101KF	
L1	180-5137-02	P.COIL CHIP 100UH LEM3225T101K	
L1	180-5137-03	P.COIL CP 100UH NL322522-101J	
L1	180-5137	CHIP INDUCTOR 100UH 10%	<VA1>
L2	180-5137-01	P.COIL CHIP 100UH ELJFA101KF	
L2	180-5137-02	P.COIL CHIP 100UH LEM3225T101K	
L2	180-5137-03	P.COIL CP 100UH NL322522-101J	
L2	180-5137	CHIP INDUCTOR 100UH 10%	<VA1>
RM3	477-0175	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
RM3	477-0175-01	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
RM3	477-0175-02	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
RM4	477-0175	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
RM4	477-0175-01	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
RM4	477-0175-02	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
RM5	477-0175	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
RM5	477-0175-01	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
RM5	477-0175-02	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
RM6	477-0175	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
RM6	477-0175-01	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
RM6	477-0175-02	R-PK CP 4*10KOHM 1/8W 5%	<VA1>
R1	NOT USED	NOT USED	

【Note】 [1]····ASIA PAL [2]····USA, CANADA VA0
[3]····PAL G/I [4]····USA, CANADA VA1

Circuit No.	Parts No.	Description
R2	476-1103-J-16	RES CHIP 10KOHM 1/16W 5%
R3	476-1302-J-16	RES CHIP 3KOHM 1/16W 5%
R4	NOT USED	NOT USED
R5	476-1302-J-16	RES CHIP 3KOHM 1/16W 5%
R6	476-1181-J-16	RES CHIP 180 OHM 1/16W 5%
R7	476-1133-G-16	RES CHIP 13KOHM 1/16W 2%
R8	476-1272-G-16	RES CHIP 2.7KOHM 1/16W 2%
R9	476-1162-G-16	RES CHIP 1.6KOHM 1/16W 2%
R61	476-1822-J-16	RES CHIP 8.2KOHM 1/16W 5%
R62	476-1202-J-16	RES CHIP 2KOHM 1/16W 5%
R63	NOT USED	NOT USED
R64	NOT USED	NOT USED
R65	NOT USED	NOT USED
R66	479-0472	RES 4.7KOHM 1/6W 5%
C1	151-0405	CAP CER CP 0.1UF 16V ZF1608
C2	151-0613	CAP CER CP 68PF 25V CH1608
C3	NOT USED	NOT USED
C4	NOT USED	NOT USED
C5	NOT USED	NOT USED
C6	151-0614	CAP CER CP 4.7UF 10V ZF3216
C6	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C6	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C6	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C7	151-0405	CAP CER CP 0.1UF 16V ZF1608
C8	151-0614	CAP CER CP 4.7UF 10V ZF3216
C8	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C8	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C8	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C9	151-0405	CAP CER CP 0.1UF 16V ZF1608
C10	151-0405	CAP CER CP 0.1UF 16V ZF1608
C11	151-0612	CAP CER CP 470PF 50V CH1608
C12	151-0614	CAP CER CP 4.7UF 10V ZF3216
C12	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C12	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C12	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C13	151-0405	CAP CER CP 0.1UF 16V ZF1608
C14	151-0612	CAP CER CP 470PF 50V CH1608
C15	151-0614	CAP CER CP 4.7UF 10V ZF3216
C15	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C15	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C15	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C16	151-0405	CAP CER CP 0.1UF 16V ZF1608
C17	151-0614	CAP CER CP 4.7UF 10V ZF3216
C17	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C17	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C17	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C18	151-0405	CAP CER CP 0.1UF 16V ZF1608
C19	151-0405	CAP CER CP 0.1UF 16V ZF1608
C20	151-0614	CAP CER CP 4.7UF 10V ZF3216
C20	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C20	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C20	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C21	151-0405	CAP CER CP 0.1UF 16V ZF1608
C22	151-0405	CAP CER CP 0.1UF 16V ZF1608
C23	151-0614	CAP CER CP 4.7UF 10V ZF3216
C23	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C23	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C23	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C25	151-0613	CAP CER CP 68PF 25V CH1608
C26	151-0610	CAP CER CP 120PF 25V CH1608 <VA0>
C26	151-0620	CAP CER CP 100PF 50V CH1608 <VA1>
C27	151-0614	CAP CER CP 4.7UF 10V ZF3216
C27	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C27	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C27	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C28	151-0405	CAP CER CP 0.1UF 16V ZF1608
C29	151-0405	CAP CER CP 0.1UF 16V ZF1608
C30	151-0614	CAP CER CP 4.7UF 10V ZF3216
C30	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C30	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C30	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C31	151-0405	CAP CER CP 0.1UF 16V ZF1608
C32	151-0405	CAP CER CP 0.1UF 16V ZF1608
C33	151-0405	CAP CER CP 0.1UF 16V ZF1608
C34	151-0614	CAP CER CP 4.7UF 10V ZF3216
C34	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C34	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C34	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C35	151-0405	CAP CER CP 0.1UF 16V ZF1608
C36	151-0405	CAP CER CP 0.1UF 16V ZF1608
C37	151-0614	CAP CER CP 4.7UF 10V ZF3216
C37	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C37	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C37	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C38	151-0405	CAP CER CP 0.1UF 16V ZF1608
C39	151-0405	CAP CER CP 0.1UF 16V ZF1608
C40	151-0405	CAP CER CP 0.1UF 16V ZF1608
C41	151-0405	CAP CER CP 0.1UF 16V ZF1608
C42	151-0405	CAP CER CP 0.1UF 16V ZF1608
C43	151-0405	CAP CER CP 0.1UF 16V ZF1608
C44	151-0405	CAP CER CP 0.1UF 16V ZF1608
C45	151-0614	CAP CER CP 4.7UF 10V ZF3216
C45	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C45	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C45	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C46	151-0614	CAP CER CP 4.7UF 10V ZF3216
C46	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C46	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C46	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C47	151-0405	CAP CER CP 0.1UF 16V ZF1608
C48	151-0405	CAP CER CP 0.1UF 16V ZF1608
C50	151-0614	CAP CER CP 4.7UF 10V ZF3216
C50	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C50	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C50	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C51	151-0614	CAP CER CP 4.7UF 10V ZF3216
C51	151-0614-01	CAP CER CP 4.7UF EMK316F475Z <VA1>
C51	151-0615	CAP CER CP 3.3UF 16V ZF3216NEC
C51	151-0615-01	CAP CER CP 3.3UF 16V Z3216TOKI <VA1>
C52	NOT USED	NOT USED
C53	151-0620	CAP CER CP 100PF 50V CH1608 <VA1>
C53	151-0253	CAP CER AX 100PF 50V <VA0>
C53	151-0629	CAP CER AXIAL 120PF 50V BK <VA0>
C96	151-0251	CAP CER AX 47PF 50V
C96	151-0253	CAP CER AX 100PF 50V <VA1>
C97	151-0251	CAP CER AX 47PF 50V
C97	151-0253	CAP CER AX 100PF 50V <VA1>

9-3-2. Sub Circuit Board

Circuit No.	Parts No.	Description	
IC11	315-5684	IC CUSTOM CP BA6166FS SOP	
IC12	315-5788	IC BA7237FS	
IC12	315-5788A	IC BA7237FSA	
IC13	313-5244	IC MC34063A SOP 8P	
IC13	313-5335	IC IR3M03AN SOP 8P	
IC14	313-5319	IC PST993E 3P DIP	
IC15	314-0647	IC 74HC74 SOP 225MIL	
IC16	314-0646	IC 74LS00 SOP 225MIL	
D1	481-5170	DIODE 1SR139-100T-62 AXIAL	
D2	481-0149-01	DIODE 1S2473 RADIAL	
CE3	150-0023	CAP E 10UF 16V U-TYPE 20%	
CE4	150-0023	CAP E 10UF 16V U-TYPE 20%	
CE5	150-0023	CAP E 10UF 16V U-TYPE 20%	
CE6	150-0062	CAP E 47UF 10V U-TYPE	
CE7	150-0062	CAP E 47UF 10V U-TYPE	
CE8	150-0062	CAP E 47UF 10V U-TYPE	
CE9	150-0062	CAP E 47UF 10V U-TYPE	
CE10	150-0062	CAP E 47UF 10V U-TYPE	
CE11	150-0009	CAP E 1UF 50V U-TYPE 20%	
CE12	150-0159	CAP E 220UF 16V U-TYPE	
CE13	150-0009	CAP E 1UF 50V U-TYPE 20%	
CE14	150-0047	CAP E 100UF 10V U-TYPE	
CE15	150-0062	CAP E 47UF 10V U-TYPE	
CE16	150-0159	CAP E 220UF 16V U-TYPE	
CE17	150-0484	CAP E 470UF 10V U-TYPE	
CE18	150-0498	CAP OS 100UF 10V 20% 10SA100M	
CE19	150-0047	CAP E 100UF 10V U-TYPE	
CE20	150-0047	CAP E 100UF 10V U-TYPE	
CF1	270-5086	COMMON FILTER CM04RC01T	
CN3	209-5026	EDGE CONNECTOR 64P	
CN3	209-5061	EDGE CONNECTOR 64P PSB4D32K-7R	
CN3	209-5063	EDGE CONNECTOR 64P	
CN4	209-5076	FFC CNN 40P SOP	
CN5	209-5076	FFC CNN 40P SOP	
CN6	212-5364	MINI DIN CONN 9P TCS7913-43	
CN6	212-5364-01	MINI DIN CONN 9P/C MD-S9200-90	
CN7	212-5364	MINI DIN CONN 9P TCS7913-43	
CN7	212-5364-01	MINI DIN CONN 9P/C MD-S9200-90	
CN8	212-5353	CONN DC JACK EIAJ3 HEC3100	
CN8	212-5353-01	CONN DC JACK EIAJ3 UC0086	
FB10	476-1000-J-16	RES CHIP 0 OHM 1/16W	
FB11	476-1000-J-16	RES CHIP 0 OHM 1/16W	
FB12	476-1000-J-16	RES CHIP 0 OHM 1/16W	
FB13	476-1000-J-16	RES CHIP 0 OHM 1/16W	
FB14	476-1000-J-16	RES CHIP 0 OHM 1/16W	
FB15	476-1000-J-16	RES CHIP 0 OHM 1/16W	
FB16	476-1000-J-16	RES CHIP 0 OHM 1/16W	
FB17	476-1000-J-16	RES CHIP 0 OHM 1/16W	
L3	180-5059	PEAKING COIL 12UH LAL03	
L3	180-5158	PEAKING COIL 12UH ELEPK120KA	
L4	180-5059	PEAKING COIL 12UH LAL03	[B]
L4	180-5147	PEAKING COIL 10UH LAL03	[A]
L4	180-5159	PEAKING COIL 10UH ELEPK100KA	[A]
L5	180-5060	PEAKING COIL 100UH 03RA	[B]
L5	180-5151	PEAKING COIL 82UH LAL03	[A]
L5	180-5157	PEAKING COIL 100UH ELEPK101KA	[B]
L5	180-5160	PEAKING COIL 82UH ELEPK820KA	[A]
L6	180-5059	PEAKING COIL 12UH LAL03	
L6	180-5157		[B]
L7	180-5141	CHOKE COIL 300UH	
L7	180-5141-01	CHOKE COIL 330UH LHL13TB331K	
L7	180-5148	CHOKE COIL 330UH	
NF1	271-0007	EMI FILTER STX222MB	
NF2	271-0007	EMI FILTER STX222MB	
RA1	477-0170	R-PK CP 8*10KOHM 1/16W 5% W/C	
RA1	477-0170-02	R-PK CP 8*10KOHM 1/16W 5% W/C	
RA2	477-0170	R-PK CP 8*10KOHM 1/16W 5% W/C	
RA2	477-0170-02	R-PK CP 8*10KOHM 1/16W 5% W/C	
TR1	482-5126	XSTR 2SC1623 L5..7 CHIP	
TR2	482-5126	XSTR 2SC1623 L5..7 CHIP	
TR3	482-5126	XSTR 2SC1623 L5..7 CHIP	
TR4	482-5126	XSTR 2SC1623 L5..7 CHIP	
TR5	313-5321	IC FX401	
X1	230-5187	XTAL 3.579545MHZ 20PPM	[B]
X1	230-5191	XTAL 4.43361875MHZ 20PPM	[A]
R11	476-1750-J-16	RES CHIP 75 OHM 1/16W 5%	
R12	476-1750-J-16	RES CHIP 75 OHM 1/16W 5%	
R13	476-1822-J-16	RES CHIP 8.2KOHM 1/16W 5%	
R14	476-1302-J-16	RES CHIP 3KOHM 1/16W 5%	
R15	476-1822-J-16	RES CHIP 8.2KOHM 1/16W 5%	
R16	476-1302-J-16	RES CHIP 3KOHM 1/16W 5%	
R17	476-1822-J-16	RES CHIP 8.2KOHM 1/16W 5%	
R18	476-1103-J-16	RES CHIP 10KOHM 1/16W 5%	
R19	476-1822-J-16	RES CHIP 8.2KOHM 1/16W 5%	
R20	476-1103-J-16	RES CHIP 10KOHM 1/16W 5%	
R21	476-1331-J-16	RES CHIP 330 OHM 1/16W 5%	
R22	476-1331-J-16	RES CHIP 330 OHM 1/16W 5%	
R23	476-1472-J-16	RES CHIP 4.7KOHM 1/16W 5%	
R24	476-1100-J-16	RES CHIP 10 OHM 1/16W 5%	
R25	476-1222-J-16	RES CHIP 2.2KOHM 1/16W 5%	
R26	476-1750-J-16	RES CHIP 75 OHM 1/16W 5%	
R27	476-1750-J-16	RES CHIP 75 OHM 1/16W 5%	
R28	476-1750-J-16	RES CHIP 75 OHM 1/16W 5%	
R29	476-1750-J-16	RES CHIP 75 OHM 1/16W 5%	
R30	476-1750-J-16	RES CHIP 75 OHM 1/16W 5%	
R31	476-1750-J-16	RES CHIP 75 OHM 1/16W 5%	
R32	476-1330-J-16	RES CHIP 33 OHM 1/16W 5%	
R33	476-1330-J-16	RES CHIP 33 OHM 1/16W 5%	
R34	476-1330-J-16	RES CHIP 33 OHM 1/16W 5%	
R35	476-1161-J-16	RES CHIP 160 OHM 1/16W 5%	
R36	476-1161-J-16	RES CHIP 160 OHM 1/16W 5%	
R37	476-1161-J-16	RES CHIP 160 OHM 1/16W 5%	
R38	NOT USED	NOT USED	
R39	476-1302-J-16	RES CHIP 3KOHM 1/16W 5%	
R40	476-1431-J-16	RES CHIP 430 OHM 1/16W 5%	[A]
R40	476-1561-J-16	RES CHIP 560 OHM 1/16W 5%	[B]
R41	476-1122-J-16	RES CHIP 1.2KOHM 1/16W 5%	[B]
R41	476-1681-J-16	RES CHIP 680 OHM 1/16W 5%	[A]
R42	476-1102-J-16	RES CHIP 1KOHM 1/16W 5%	[B]
R42	NOT USED	NOT USED	[A]
R43	476-1102-J-16	RES CHIP 1KOHM 1/16W 5%	[A]
R43	NOT USED	NOT USED	[B]
R44	476-1750-J-16	RES CHIP 75 OHM 1/16W 5%	
R45	476-1000-J-16	RES CHIP 0 OHM 1/16W	
R46	NOT USED	NOT USED	
R47	476-1101-J-16	RES CHIP 100 OHM 1/16W 5%	
R48	NOT USED	NOT USED	
R49	476-1103-J-16	RES CHIP 10KOHM 1/16W 5%	
R50	476-8R13-J-01	RES CHIP 0.130HM 1W 5%	
R51	476-1561-J-16	RES CHIP 560 OHM 1/16W 5%	

【Note】 [A]····PAL [B]····NTSC

9-4. Accessories/Package List

Circuit No.	Parts No.	Description	
R52	476-8221-J-01	RES CHIP 220 OHM 1W 5%	
R53	476-1103-G-16	RES CHIP 10KOHM 1/16W 2%	
R54	476-1332-G-16	RES CHIP 3.3KOHM 1/16W 2%	
R55	476-1103-J-16	RES CHIP 10KOHM 1/16W 5%	
R56	476-1472-J-16	RES CHIP 4.7KOHM 1/16W 5%	
R57	476-1102-J-16	RES CHIP 1KOHM 1/16W 5%	
R58	476-1103-J-16	RES CHIP 10KOHM 1/16W 5%	
R59	476-1202-J-16	RES CHIP 2KOHM 1/16W 5%	
R60	476-1163-J-16	RES CHIP 16KOHM 1/16W 5%	
C54	151-0604	CAP CER CP 3300PF 50V BK1608	
C55	151-0604	CAP CER CP 3300PF 50V BK1608	
C56	151-0410	CAP CER CP 680PF 50V BK1608	
C57	151-0410	CAP CER CP 680PF 50V BK1608	
C58	151-0409	CAP CER CP 1000PF 50V BK1608	
C59	151-0413	CAP CER CP 2200PF 50V KB1608	
C60	151-0409	CAP CER CP 1000PF 50V BK1608	
C61	151-0413	CAP CER CP 2200PF 50V KB1608	
C62	151-0409	CAP CER CP 1000PF 50V BK1608	
C63	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C64	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C65	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C66	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C67	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C68	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C69	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C70	151-0432	CAP CER CP 47PF 50V CH1608	[B]
C70	151-0613	CAP CER CP 68PF 25V CH1608	[A]
C71	151-0430	CAP CER CP 10PF 50V CH1608	
C72	151-5003-01	CAP CER TRIMMER 10PF	
C73	151-0482	CAP CER CP 82PF 50V CH1608	
C74	151-0436	CAP CER CP 15PF 50V JCH1608	[A]
C74	151-0619	CAP CER CP 18PF 50V CH1608	[B]
C75	151-0432	CAP CER CP 47PF 50V CH1608	[A]
C75	151-0611	CAP CER CP 56PF 50V CH1608	[B]
C76	476-1000-J-16	RES CHIP 0 OHM 1/16W	
C77	151-0607	CAP CER CP 0.047UF 16V BK1608	
C78	151-0482	CAP CER CP 82PF 50V CH1608	[A]
C78	151-0620	CAP CER CP 100PF 50V CH1608	[B]
C79	151-0607	CAP CER CP 0.047UF 16V BK1608	
C80	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C81	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C82	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C83	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C84	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C85	151-0612	CAP CER CP 470PF 50V CH1608	
C86	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C87	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C88	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C89	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C90	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C91	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C92	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C93	151-0405	CAP CER CP 0.1UF 16V ZF1608	
C94	NOT	NOT USED	
C95	151-0620	CAP CER CP 100PF 50V CH1608	

9-4-1. USA,CANADA

No.	Parts No.	Description
1	400-5135A	AC ADAPTOR AC120V/DC10V 0.85A
1	400-5135A-01	AC ADAPTOR AC120V/DC10V 0.85A
1	400-5135A-02	AC ADAPTOR AC120V/DC10V 0.85A
2	253-6923	MD2 HOLDER MARS
3	250-5408	FRONT CONNECTOR MARS
4	250-5409	REAR CONNECTOR MARS
5	600-6323	VIDEO CABLE MD2 MONO W/CORE
6	600-6412	A/V CABLE 8P/9P W/CORE
7	600-6411	A/V CABLE 9P/9P W/CORE
8	671-5440-03	BOX&PACK MARS USA DP 84003(W/STAR WARS)
8	671-5440-02	BOX&PACK MARS USA DP 84002
9	671-5659-03	BOX&PACK MARS USA PM 84003(W/STAR WARS)
9	671-5659-02	BOX&PACK MARS USA PM 84002
10	671-5611-02	MA CTN MARS USA 84002
10	671-5611-03	MA CTN MARS USA 84003(W/STAR WARS)
11	670-5874	MANUAL HARD GENESIS 32X USA
12	670-5726	BUSINESS REPLY MAIL MARS USA
13	SGM-4216	POLY BAG 260*320*0.05 EXP 6
14	SGM-4217	POLY BAG 200*300*0.05 EXP 6
15	SGM-4282	POLY BAG 95*165*0.03
16	670-5777	PERIPHERAL CATALOG GENESIS 32X
17	610-5796	ASSY MARS EXTENSION UNIT
18	SGM-4324	POLY BAG 70*180*0.04
19	670-5862	INFOR SHEET EXTENSION UNIT

9-4-2. PAL

No.	Parts No.	Description
1	400-5208	AC ADAP. 240V 50HZ/10VDC 0.85A[F]
1	400-5209	AC ADAP. 230V 50HZ/10VDC 0.85A[A,B,D,G]
1	400-5211	AC ADAP. 240V/DC9V 0.85A [C,E]
2	610-5473	RF UNIT MD2 MDU-UD3631 [C,D,F]
2	610-5473-01	RF UNIT MD2 MDQT4E801A [C,D,F]
2	610-5473-02	RF UNIT MD2 TOWA PAL-G/I [C,D,F]
2	610-5493	RF UNIT MD2 PAL-B [E]
3	253-6923	MD2 HOLDER MARS
4	250-5408	FRONT CONNECTOR MARS
5	250-5409	REAR CONNECTOR MARS
6	600-6412	A/V CABLE 8P/9P W/CORE [C,D,E,F,G]
7	600-6411	A/V CABLE 9P/9P W/CORE
8	671-5438-09	B&P SET MD 32X SWE 84204 DP [A]
8	671-5658-09	B&P SET MD 32X SWE 84204 PM [A]
9	671-5610-05	MA CTN MD 32X ASIA 84204 [A]
8	671-5438-08	B&P SET MD 32X MUL 84204 DP [B]
8	671-5658-08	B&P SET MD 32X MUL 84204 PM [B]
9	671-5610-05	MA CTN MD 32X ASIA 84204 [B]
8	671-5438-02	B&P SET MD 32X MUL 84203 DP [C,E,F,G]
8	671-5658-02	B&P SET MD 32X MUL 84203 PM [C,E,F,G]
9	671-5610-02	MA CTN MD 32X MUL 84203 [C,E,F,G]
8	671-5438-01	B&P SET MD 32X MUL 84201 DP [C,D,E,F]
8	671-5658-01	B&P SET MD 32X MUL 84201 PM [C,D,E,F]
9	671-5610-01	MA CTN MD 32X MUL 84201 [C,D,E,F]
10	672-2147	MANUAL HARD MD 32X MUL
11	670-0863-03	MEMBERSHIP CARD SWEDEN 03 [A]
12	670-6036	INFOR SHEET CONTENTS 32X 84204 [A,B]
13	670-6066	WARRANTY CARD OZI MD 32X AUS[C]
13	670-6067	WARRANTY CARD OZI MD 32X NZL[E]
14	670-5815	GUARANTEE CARD SOE MD 32X [D,F,G]
15	SGM-4216	POLY BAG 260*320*0.05 EXP 6
15	SGM-4331	POLY BAG 260*310*0.05 EXP 6

【Note】 [A]····PAL [B]····NTSC

No.	Parts No.	Description
16	SGM-4217	POLY BAG 200*300*0.05 EXP 6
16	SGM-4245	POLY BAG 200*310*0.05 EXP 6
17	SGM-4282	POLY BAG 95*165*0.03
18	670-6561	INFOR SHEET SET UP 32X MUL [A, B, D, F]
18	670-6697	INFOR SHEET SET UP 32X SOZ [C, E]
19	670-6588	LABEL CAUTION MARS MUL [C, D, E, F]

【Note】 [A]····NORTHERN EUROPE [B]····EAST EUROPE
[C]····AUSTRALIA [D]····GERMAN, SOE
[E]····NEW ZEALAND [F]····UK
[G]····SOE

9-4-3. ASIA PAL

No.	Parts No.	Description
1	400-5209	AC ADAP. 230V 50HZ/10VDC 0.85A
2	253-6923	MD2 HOLDER MARS
3	600-6187	VIDEO CABLE MD2 JAP MONO 2M [A]
4	600-6412	A/V CABLE 8P/9P W/CORE [A]
5	600-6411	A/V CABLE 9P/9P W/CORE
6	210-5030	CONVERSION PLUG E-5 [C]
7	671-5438-03	B&P SET MD 32X ASIA 84202 DP [A]
8	671-5658-03	B&P SET MD 32X ASIA 84202 PM [A]
9	671-5610-03	MA CTN MD 32X ASIA 84202 [A]
7	671-5438-05	B&P SET MD 32X ASIA 84204 DP [B]
8	671-5658-05	B&P SET MD 32X ASIA 84204 PM [B]
9	671-5610-05	MA CTN MD 32X ASIA 84204 [B, C, D]
7	671-5438-10	B&P SET MD 32X S.A 84204 DP [C]
8	671-5658-10	B&P SET MD 32X S.A 84204 PM [C]
7	671-5438-11	B&P SET MD 32X KSA 84204 DP [D]
8	671-5658-11	B&P SET MD 32X KSA 84204 PM [D]
10	672-2161	MANUAL HARD MD 32X ASIA
11	SGM-4181	POLY BAG 260*320*0.05
12	SGM-4185	POLY BAG 160*240*0.05

【Note】 [A]····HONG KONG, SOUTHEAST ASIA
[B]····SINGAPORE, HONG KONG
[C]····SOUTH AFRICA
[D]····SAUDI ARABIA, ISRAEL

SEGA™

Printed in Japan (I)
50620