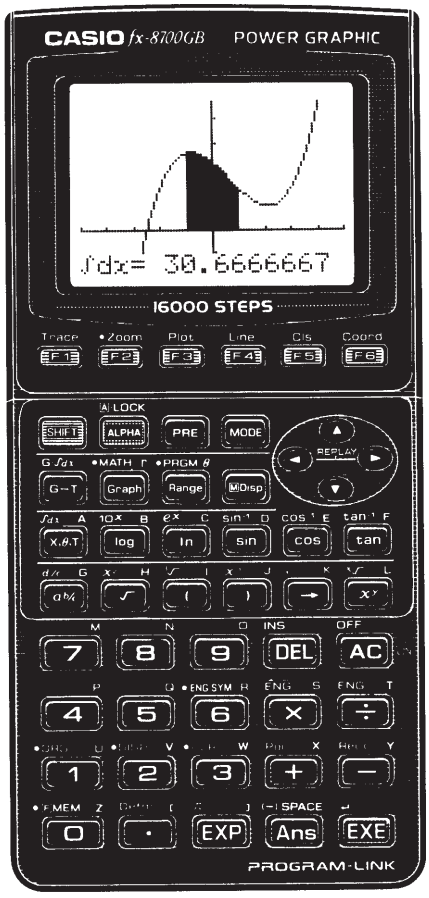
SERVICE MANUAL
& PARTS LIST (without price)

fx-8700GB(LX-388)

JUN. 1992



fx-8700GB

CASIO®

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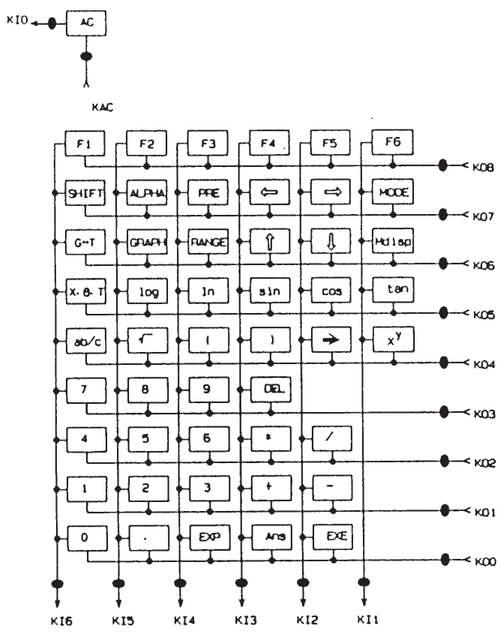
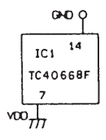
1. SCHEMATIC DIAGRAM

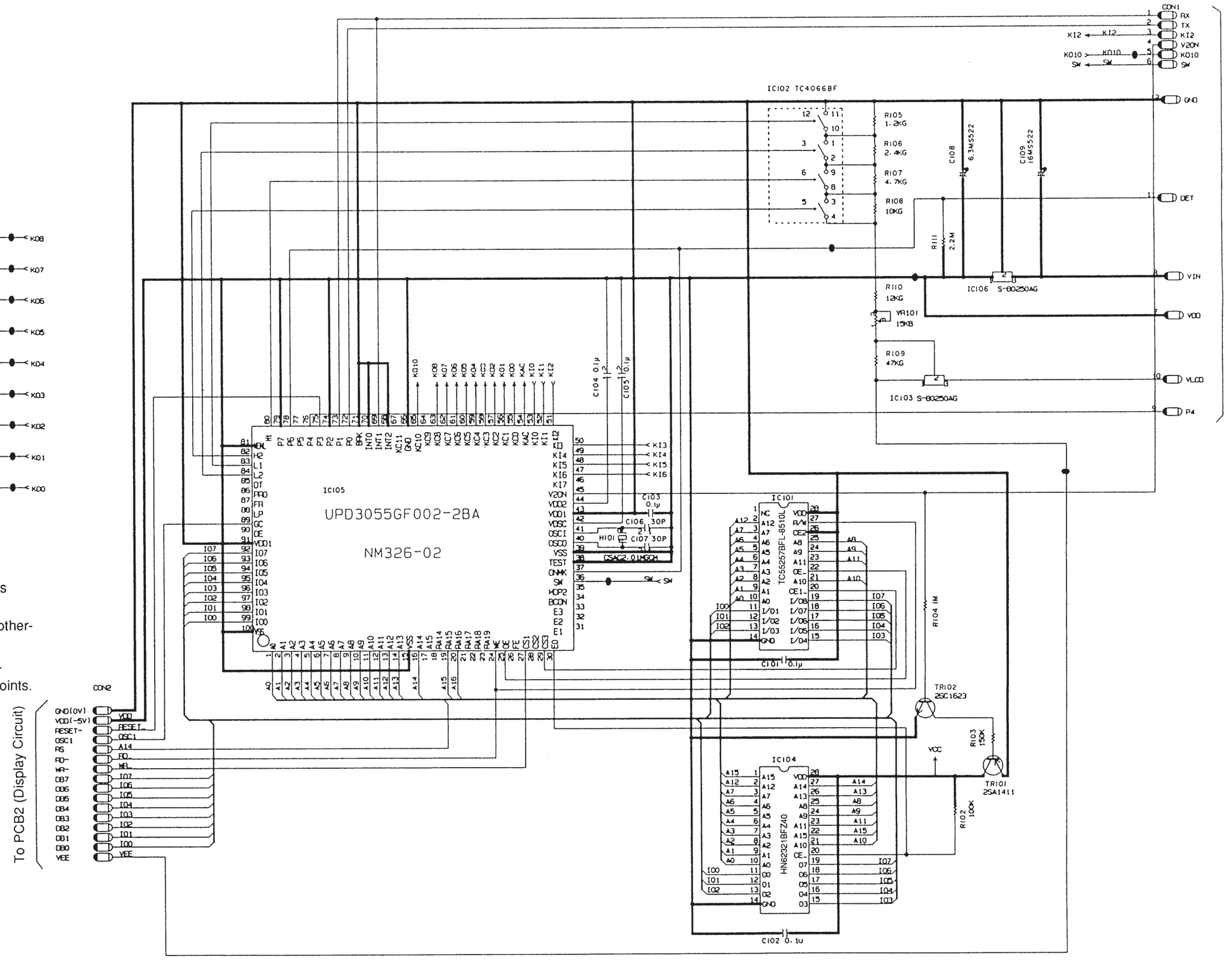
1-1. Main Block



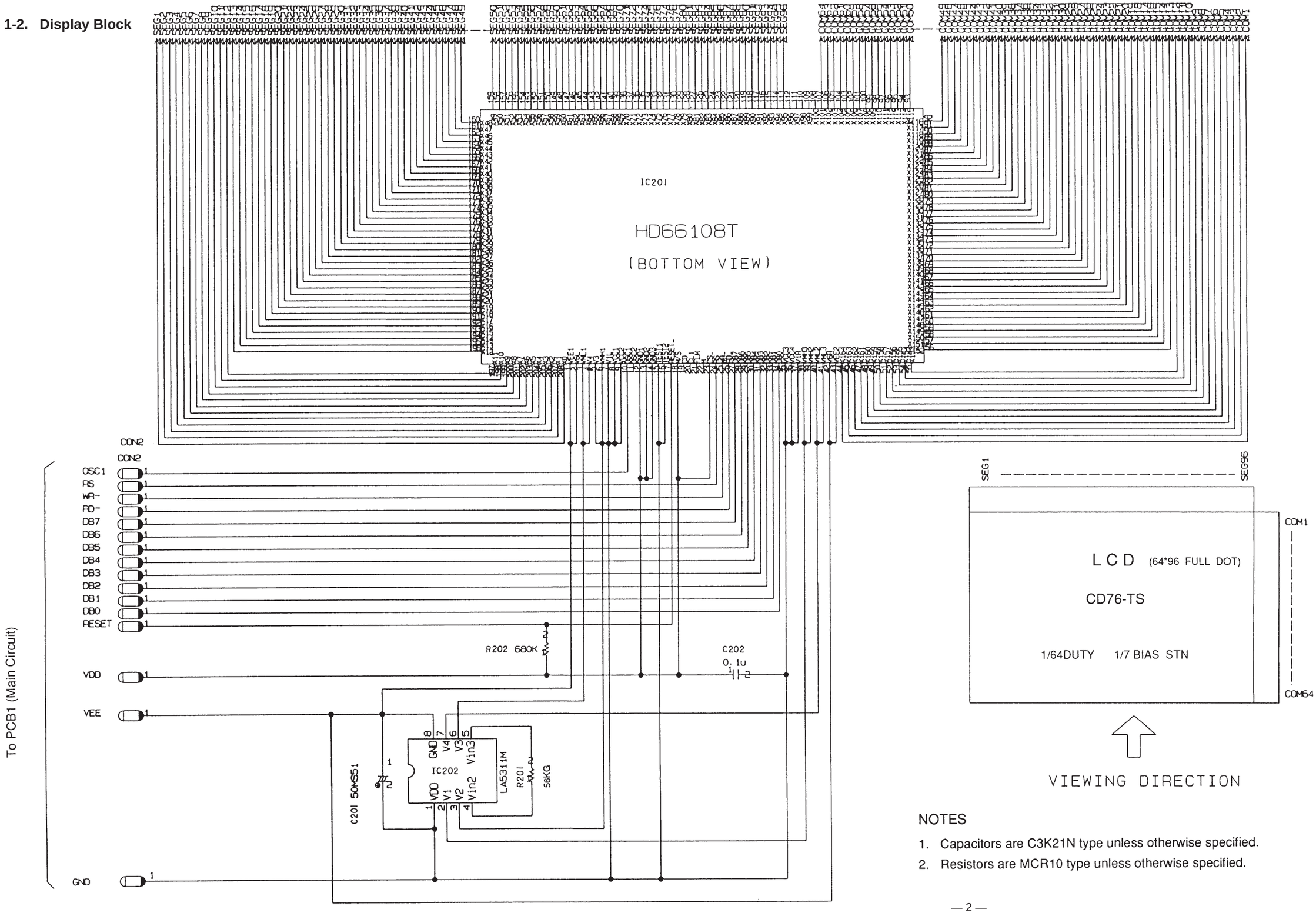
NOTES

1. Capacitors are C3K21N type unless otherwise specified.
2. Resistors are MCR10 type unless otherwise specified.
3. —●— : Function checking points.
   —◆— : Power supply checking points.





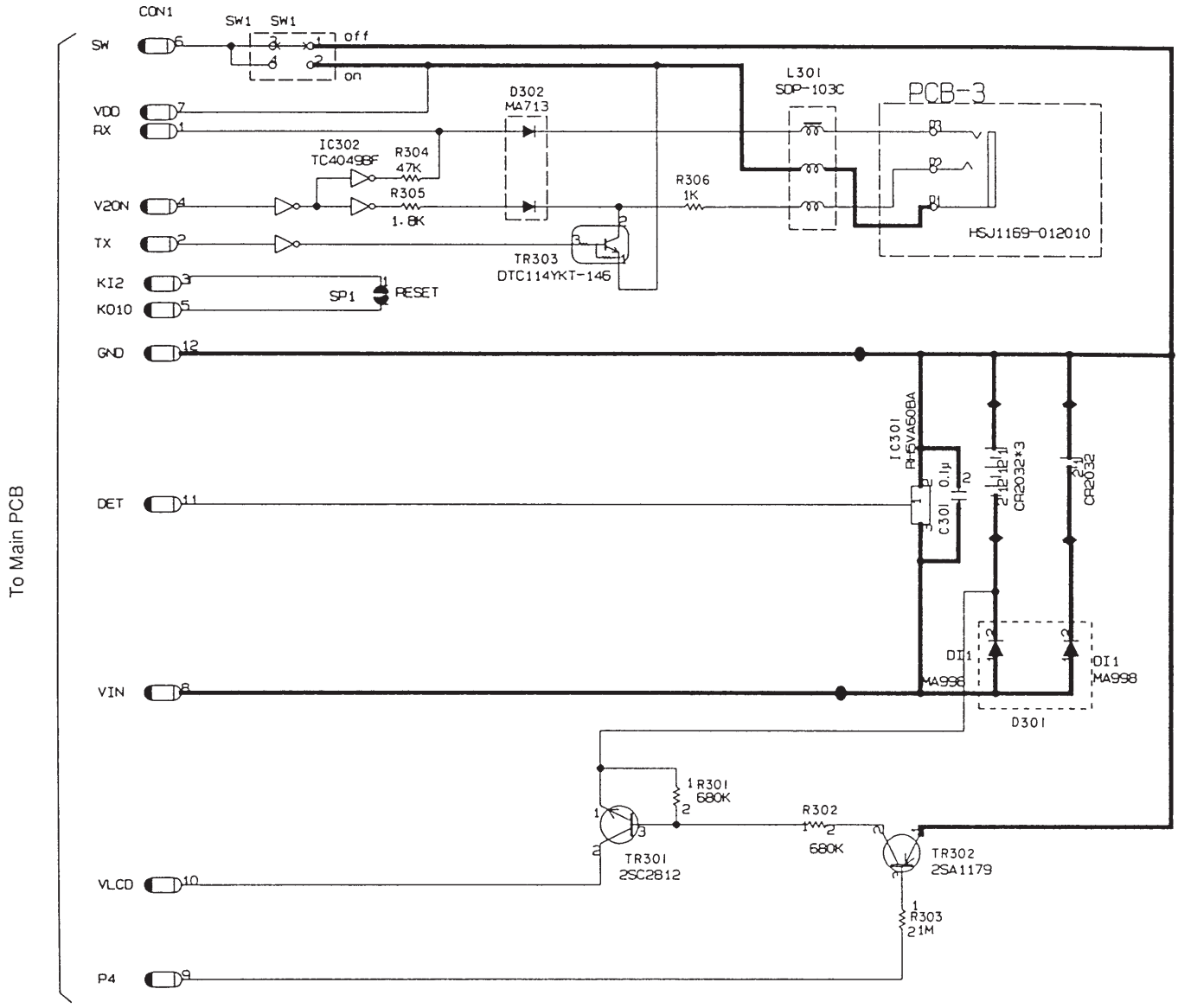
1-2. Display Block



NOTES

1. Capacitors are C3K21N type unless otherwise specified.
2. Resistors are MCR10 type unless otherwise specified.

1-3. Power Block



NOTES

1. Capacitors are C3K21N type unless otherwise specified.
2. Resistors are MCR10 type unless otherwise specified.
3. —●— : Function checking points.
   —◆— : Power supply checking points.

2. SPECIFICATIONS

Program communication functions

RS-232C INTERFACE;

Communication method: Start-stop (Asynchronous)

Transmission speed (baud): 1200 2400 4800 9600BPS

Parity bit: EVEN ODD NONE

Bit length: 8 bit

Stop bit

Transmit: 1 bit

Receive: 2 bit

General

Display system: Liquid crystal display, 10-digit mantissa plus 2-digit exponent.
16 characters by 8 lines (96 by 64 dots).

Power supply: Main — 3 lithium batteries (CR2032)
Memory protection — 1 lithium battery (CR2032)

Power consumption: 0.22W

Battery life: Main — Approximately 100 hours on CR2032
*The battery will also discharge in approximately one year if the unit is left with the power switched off.
Memory protection — Approximately 1 year
*Note that the life of the battery that comes with the unit starts when the battery is loaded in the unit at the factory. The life you get from a battery may be shorter than normal because of the time the unit spends in transport, on the shelf, etc.
*Leaving dead batteries in the unit for a long time can result in demage to the unit. Replace batteries as soon as possible after they get weak or go dead.

Auto power off: Power is automatically switched off approximately 6 minutes after last operation.

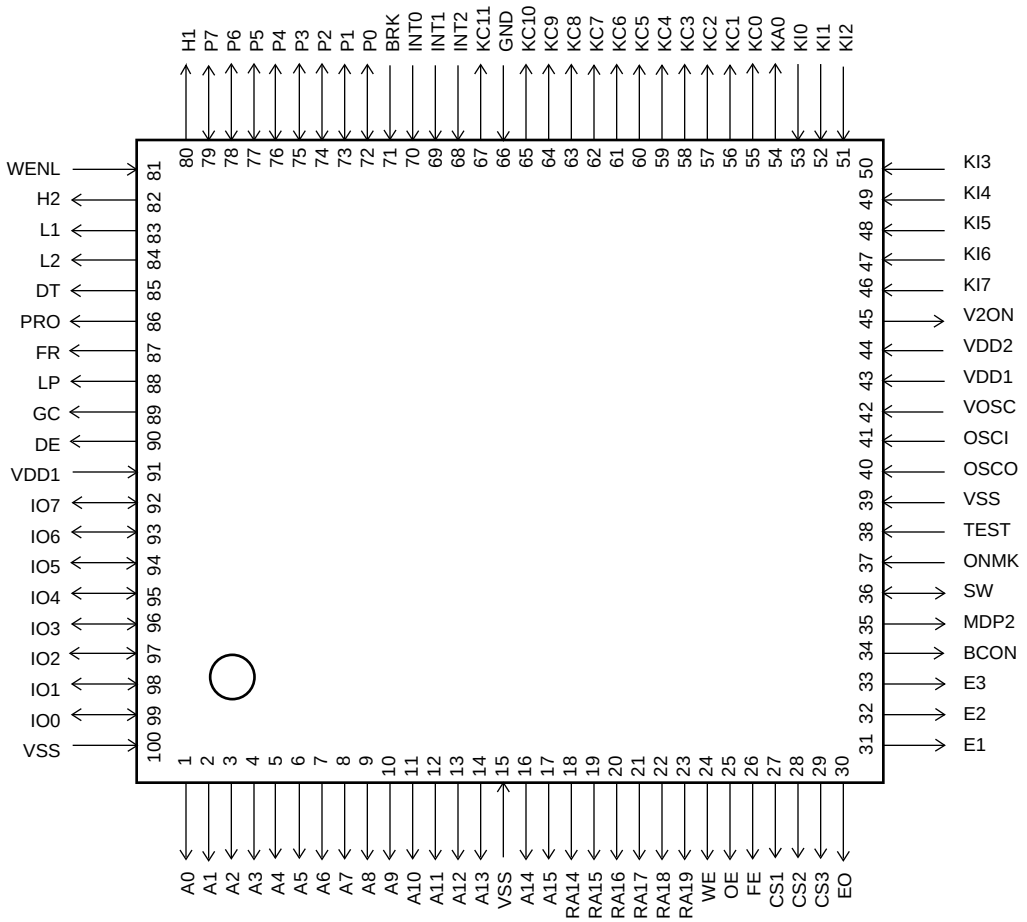
Ambient temperature range: 0°C ~ 40°C (32°F ~ 104°F)

Dimensions: 15.6mmH × 81mmW × 172.5mmD ($^5/_8$"H × $3^3/_4$"W × $6^3/_4$"D)

Weight: 179g (6.3oz) including batteries

3. PIN FUNCTION

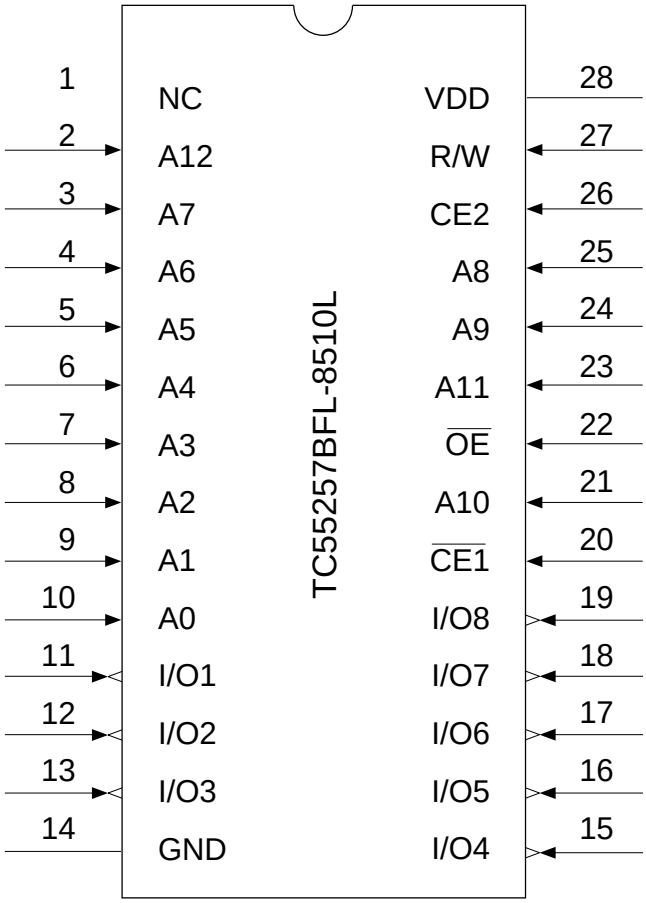
1. CPU (μPD3055GF002-2BA) (IC105)



Pin No.	Signal	IN/OUT	Function
1~14, 16, 19, 20	A0~A16	OUT	Address bus
15, 39, 100	VSS	IN	GND (-5V)
24	WE	OUT	Write enable signal
25	OE	OUT	Output enable signal
27, 29	CS1, CS3	OUT	Chip select signal
30	E0	OUT	Chip enable signal

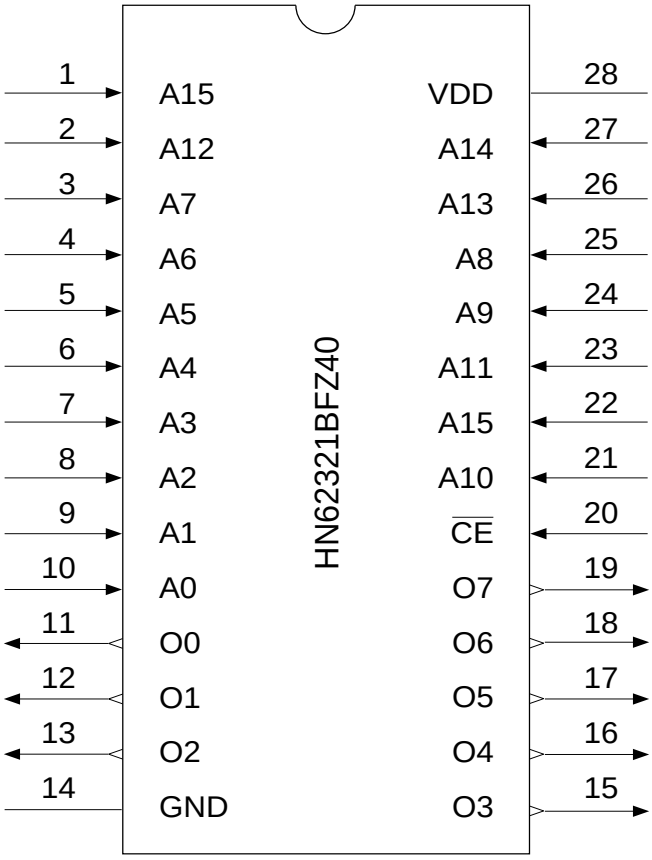
Pin No.	Signal	IN/OUT	Function
36	SW	IN/OUT	Switch signal
37	ONMK	IN	Voltage detect signal terminal
38	TEST	IN	Test terminal
40, 41	OSCO/I	IN	Clock terminal
42	VOSC	IN	Power supply for clock
43, 91	VDD1	IN	Power supply (0V)
44	VDD2	IN	Power supply
45	V2ON	OUT	Power on signal
46~53	KI0~KI7	IN	Key input signal
54	KAC	OUT	On key scan signal
55~63, 65	KC0~KC8, KC10	OUT	Key scan signal
66	GND	IN	GND (-5V)
68, 70	INT0, INT2	IN	(0V)
69	INT1	IN	Interrupt terminal
71	BRK	IN	(0V)
72~79	P0~P7	IN/OUT	IO port terminal P0 : Data transfer terminal (Output) P1 : Data transfer terminal (Input) P6 : Voltage detect signal terminal (Input)
80, 82	H1, H2	OUT	Output port (Low active)
81	WENL	IN	GND (-5V)
83, 84	L1, L2	OUT	Output port (High active)
89	GC	OUT	Not used
92~99	IO0~IO7	IN/OUT	Data bus

2. RAM (TC55257BFL-8510L) (IC101)



Pin No.	Signal	IN/OUT	Function
1			Not used
2~10, 21, 23~25	A0~A12	IN	Address bus
11~13, 15~19	IO1~IO8	IN/OUT	Data bus
14	GND	IN	GND (-5V)
20	$\overline{CE1}$	IN	Chip enable
22	$\overline{OE}$	IN	Output enable
26	CE2	IN	Chip enable
27	R/W	IN	Read/Write terminal Low : Data input High: Data output
28	VDD	IN	Power supply (0V)

3. ROM (HN62321 BFZ40) (IC104)



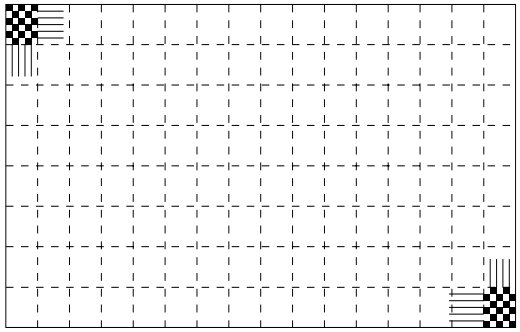
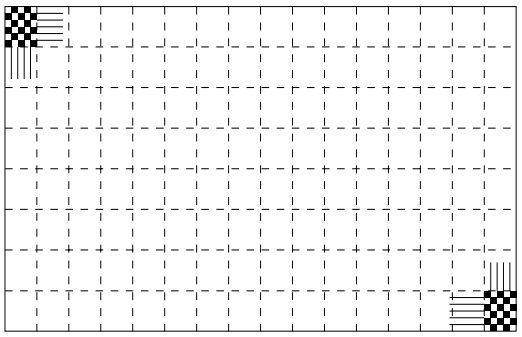
Pin No.	Signal	IN/OUT	Function
1~10, 21, 23~27	A0~A15	IN	Address bus
11~13, 15~19	O0~O7	OUT	Data bus
14	GND	IN	GND (-5V)
20	$\overline{CE}$	IN	Chip enable
28	VDD	IN	Power supply (0V)

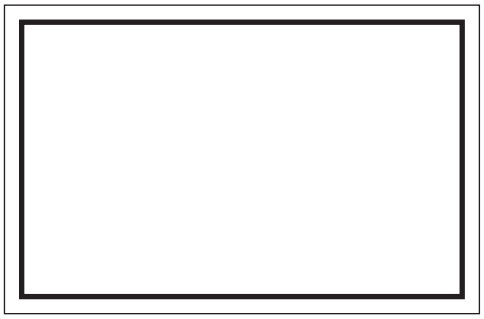
4. TROUBLESHOOTING

SYMPTOM	CAUSE	SOLUTION
Intermittent display	Dirt or poor contact on battery	Clean or adjust pressure of contact
	Poor contact on power switch	Clean or replace power switch
	Poor connection on PC joiner	Resolder or replace
	Poor soldering on LSI, capacitor, or resistor	Resolder
No display at all	Weak battery	Replace battery
	Dirt or poor contact on battery	Clean or adjust pressure of contact
	Poor contact on power switch	Clean or replace power switch
	Poor connection on PC joiner	Resolder or replace
	Defective LSI, capacitor, or resistor	Replace
Erratic display	Poor contact between LCD and PCB	Replace the heat seal
	Poor soldering on LSI	Resolder or replace display PCB ass'y
Certain key does not function	Dirt on key contact	Clean or replace contact
	Heavy key motion	Clean or replace the key
	Poor soldering on LSI	Resolder
	Defective LSI, capacitor, or resistor	Replace
All keys do not function	Constant contact is made on a certain key	Separate the contact
	Defective LSI, capacitor, or resistor	Replace
Heavy key motion	Dirt or scratch on the key	Clean or replace the key

5. OPERATION CHECK

NO.	OPERATION	DISPLAY	NOTE
1	Turn the slide switch (LOCK) on and push the "RESET" button	RUN / COMP G-type : REC/CON angle : Deg display : Nrm1 YES RESET ALL NO	
2	[F1]	RUN / COMP G-type : REC/CON angle : Deg display : Nrm1 * * RESET ALL * *	
3	[SHIFT] [AC]	No display	
4	While pushing [F6] and [$a^b/_c$], push [AC]	= = Lx 388 TEST = = 1. LCD 4. ROM 2. KEY 5. TRS 3. RAM 0. rst	

NO.	OPERATION	DISPLAY	NOTE
5	1	No display	
6	EXE		Checker display
7	EXE		Reverse checker display
8	EXE	All dots display	

NO.	OPERATION	DISPLAY	NOTE
9	EXE		Frame
10	EXE	= = Lx 388 TEST = = 1. LCD 4. ROM 2. KEY 5. TRS 3. RAM 0. rst	
11	2	Trace	
12	Trace F1	Zoom	

NO.	OPERATION	DISPLAY	NOTE
13	Zoom [F2]	Plot	
14	Push each key sequentially as it appears on the display (Plot, Line, Cls, Coord, SHIFT, and so on)		
15	[Ans]	EXE	
16	[EXE]	= = Lx 388 TEST = = 1. LCD 4. ROM 2. KEY 5. TRS 3. RAM 0. rst	

NO.	OPERATION	DISPLAY	NOTE
17	3	. . .	
18	(After a few seconds)	< < RAM OK > >	OK
		< < RAM NG > >	NG
19	EXE	= = Lx 388 TEST = = 1. LCD 4. ROM 2. KEY 5. TRS 3. RAM 0. rst	
20	4	. . .	

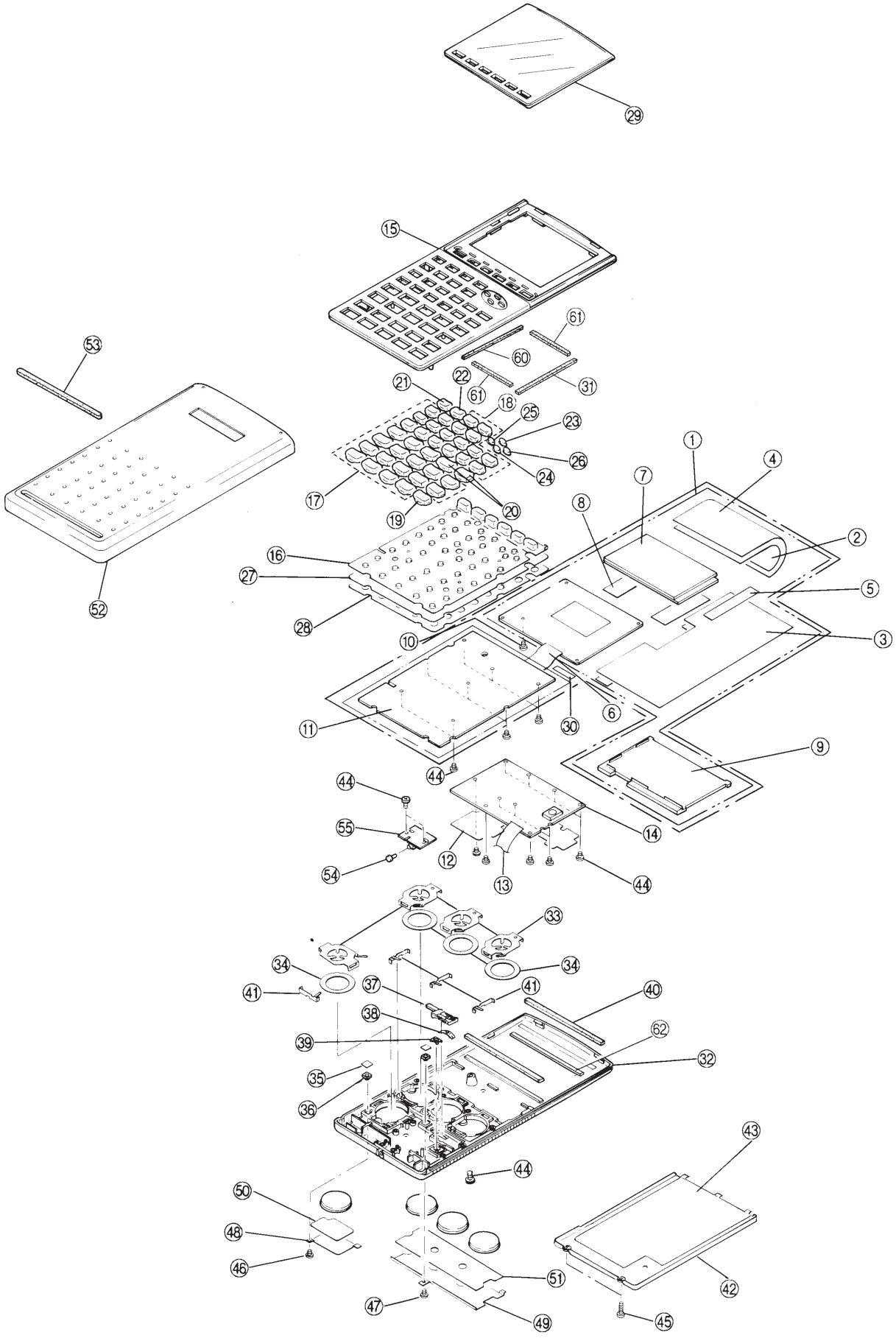
NO.	OPERATION	DISPLAY	NOTE
21	(After a few seconds)	0 1 1 2 D 1 2 E	Check the number. If the number is different, there is something wrong in ROM or the circuit.
22	EXE	= = Lx 388 TEST = = 1. LCD 4. ROM 2. KEY 5. TRS 3. RAM 0. rst	
23	0	RUN / COMP G-type : REC/CON angle : Deg display : Nrm1 * * RESET ALL * *	
24	SHIFT AC	No display	END

6. DATA TRANSFER CHECK

* Turn off both units and connect them using the appropriate cable.

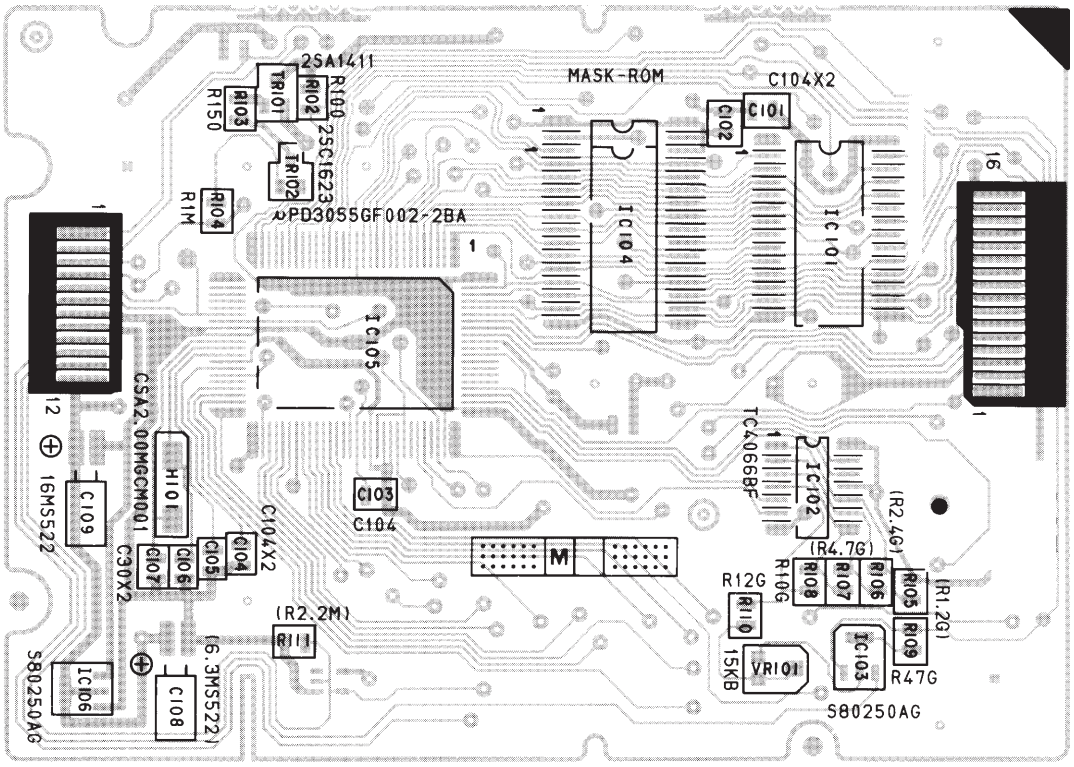
NO.	Master		Slave	
	Function	**Display**	**Function**	**Display**
1	While pushing [F6] and [$a^b/_c$], push [AC]	= = Lx 388 TEST = = 1. LCD 4. ROM 2. KEY 5. TRS 3. RAM 0. rst	While pushing [F6] and [$a^b/_c$], push [AC]	= = Lx 388 TEST = = 1. LCD 4. ROM 2. KEY 5. TRS 3. RAM 0. rst
2	[5]	TRANSMIT CHECK 1. COM CHECK 2. RANDOM DATA OUT	[5]	TRANSMIT CHECK 1. COM CHECK 2. RANDOM DATA OUT
3	[1]	1. TRANS 2. RECEIVE	[1]	1. TRANS 2. RECEIVE
4		1. TRANS 2. RECEIVE	[2]	DATA RECEIVE TO STOP PRESS AC KEY
5	[1]	1. TRANS 2. RECEIVE		DATA RECEIVE TO STOP PRESS AC KEY
6	(OK)	TRANSMITTED	(OK)	RECEIVE OK
	(NG)	TRANSMIT ERROR (or) 1. TRANS 2. RECEIVE	(NG)	RECEIVE NG
	[EXE] or ([AC] : NG)	= = Lx 388 TEST = = 1. LCD 4. ROM 2. KEY 5. TRS 3. RAM 0. rst	[EXE] or ([AC] : NG)	= = Lx 388 TEST = = 1. LCD 4. ROM 2. KEY 5. TRS 3. RAM 0. rst
	[0]	RUN / COMP G-type : REC/CON angle : Deg display : Nrm1 * * RESET ALL * *	[0]	RUN / COMP G-type : REC/CON angle : Deg display : Nrm1 * * RESET ALL * *

7. EXPLODED VIEW

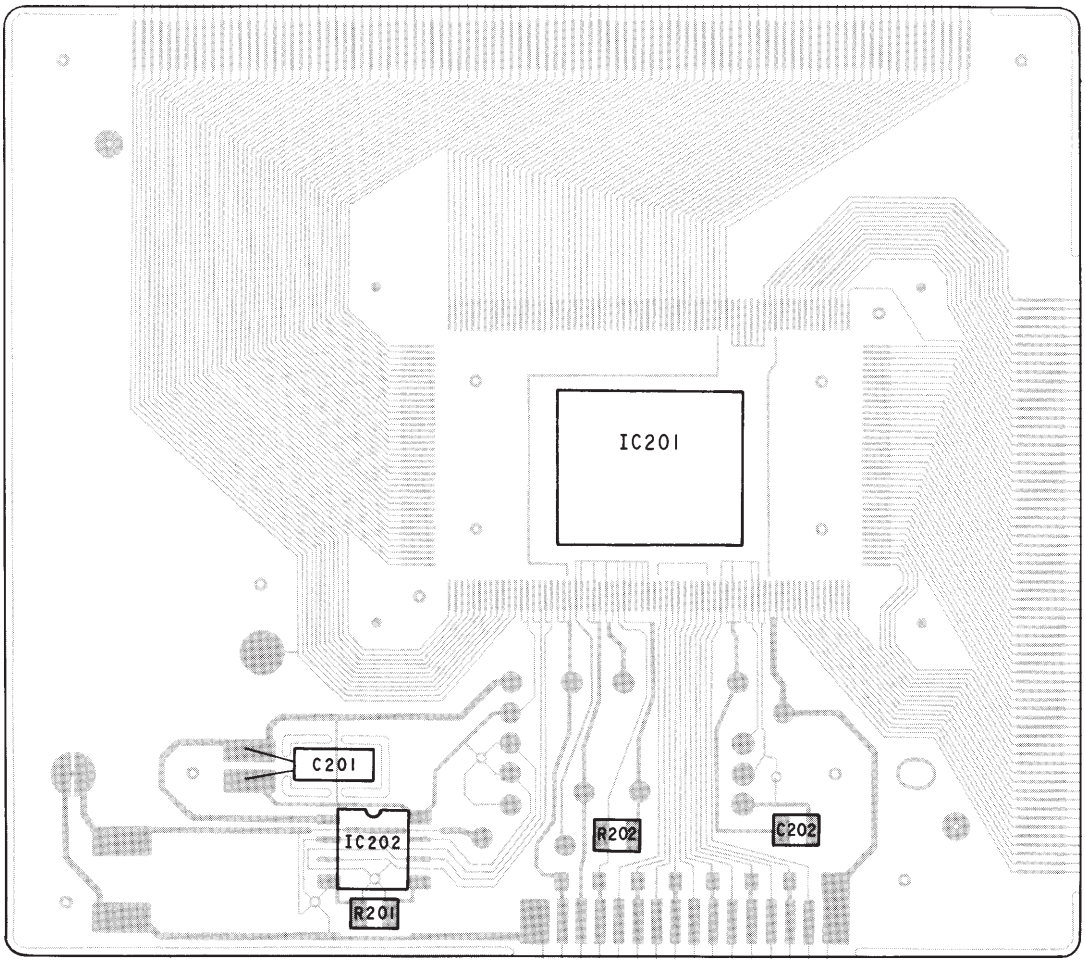


8. PCB VIEW

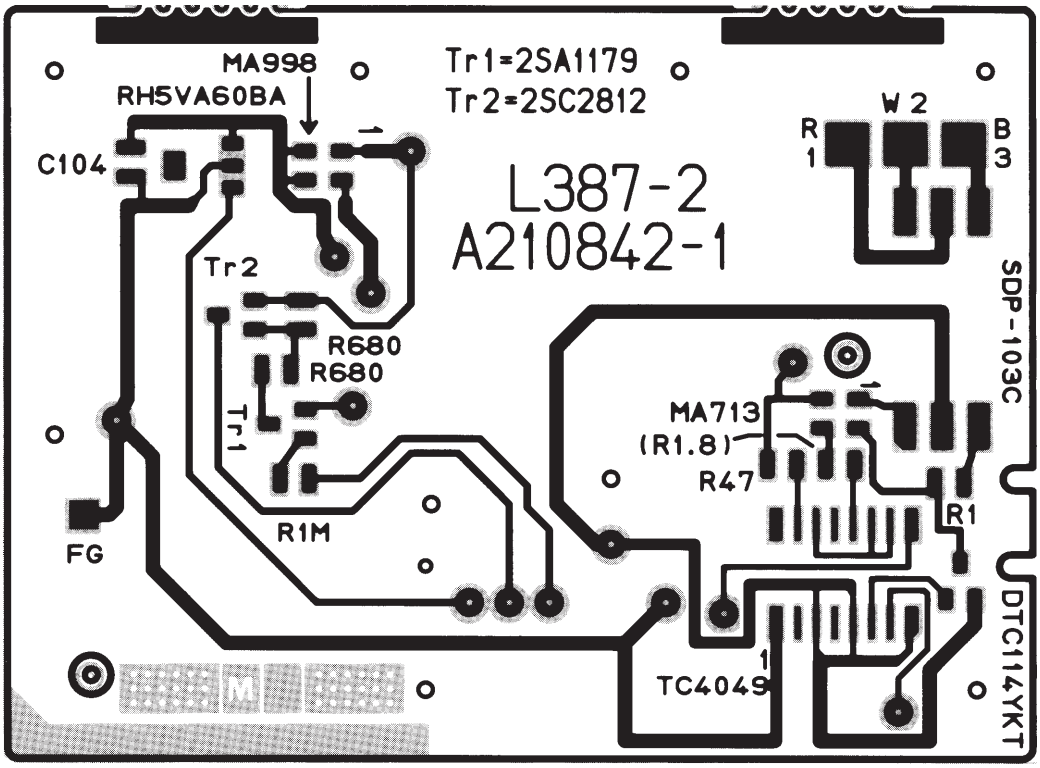
1. Main Block



2. Display Block (PCB L387-4)



3. Power Block (PCB L387-2)



8. PARTS LIST

N	Item	Code No.	Parts Name	Specification	Q	M	FOB Japan N.R.Yen Unit Price	R
		1. L383-1 ASS'Y						
	IC105	2011 0098	LSI	μPD3055GF002-2BA	1	1		B
N	IC104	2011 3773	LSI	HN62321BFZ40	1	1		B
	IC101	2010 9499	LSI	TC55257BFL-8510L	1	1		B
	C109	2803 5343	Electrolytic capacitor	16MS522-T3	1	20		C
	C108	2803 5350	Electrolytic capacitor	6.3MS522-T3	1	20		C
	IC103/106	3122 0476	Regulator	S-80250AG-GB	2	1		C
	H101	2590 0777	Ceramic oscillator	CSAC2.01MGCM001-TC	1	5		C
	TR101	2250 0413	Chip transistor	2SA1411-T1B(M15, M16)	1	20		C
	TR102	2252 0112	Chip transistor	2SC1623-T1B (L6, L7)	1	20		C
	R104	2796 0231	Chip resistor	MCR10EZHJ105	1	20		C
	R111	2796 0217	Chip resistor	MCR10EZHJ225	1	20		C
	R102	2796 0448	Chip resistor	MCR10EZHJ104	1	20		C
	R103	2796 0567	Chip resistor	MCR10EZHJ154	1	20		C
	R105	2796 0952	Chip resistor	MCR10EZHG122	1	20		C
	R106	2796 0959	Chip resistor	MCR10EZHG242	1	20		C
	R109	2796 0581	Chip resistor	MCR10EZHG472	1	20		C
	R108	2796 0588	Chip resistor	MCR10EZHG103	1	20		C
	R110	2796 0301	Chip resistor	MCR10EZHG123	1	20		C
	R107	2796 0553	Chip resistor	MCR10EZHG473	1	20		C
	VR101	3122 1701	Chip volume	MVR32HXBRN153	1	20		C
	C101~105	2845 0581	Chip capacitor	T1-C3K21N1EF104Z	5	20		C
	C106/107	2981 0133	Chip capacitor	T1-C2C21P1HCG300J	2	20		C
	IC102	2105 0952	C-MOS IC	TC4066BF(TP1)	1	10		C
N	1	6402 5210	L383-1 ass'y	A110421F*4	1	1		C
			(This ass'y contains the above parts and L382-2 ASS'Y as its element)					
		2. L383-2 ASS'Y						
	2	5610 6521	Heat seal B-G935	A37112-1	1	1		B
	3	5610 6290	Heat seal A-V485	A311335-1	1	1		B
	4	6394 6020	Insulation seal A-V485	A411577-1	1	20		B
	5	6344 2520	Insulation seal G935B	A45999-4	3	20		B
	6	6394 6040	PC joiner V485	A411578-1	1	20		B
	IC202	2189 2009	Linear IC	LA5311M-TP-T1	1	1		C
	C201	2802 9420	Electrolytic capacitor	50MS51-T3	1	20		C
	R201	2795 3262	Chip resistor	MCR10EZHG563	1	20		C
	R202	2796 0238	Chip resistor	MCR10EZHJ684	1	20		C
	C202	2845 0581	Chip capacitor	T1-C3K21N1FF104Z	1	20		C
	7	3335 3052	LCD	CD76-TS	1	1		B
	8	6398 5060	Adhesive tape C-L383	A412118-1	2	20		C
	9	6398 5070	LCD holder L383	A210703-1	1	20		C
	10	6329 1680	Flat screw A-G320	A44793-11	1	20		B
	11	6401 4750	L383-2 ass'y	A110422D*2	1	1		C
			This ass'y contains the above parts as its element)					
		3. L383B-2 ASS'Y						
	12	6398 5160	Tape A-L383	A412109-1	1	20		X
	13	6402 1920	PC joiner L387	A412110-2	1	20		B
	L301	3841 0742	Coil	SDP-103C	1	1		C
	IC301	2105 2247	CMOS-IC	RH5VA60BA-T1	1	5		C
	D301	2390 1407	Chip diode	MA998-(TX)	1	20		C
	TR301	2221 0378	Chip transistor	2SC2812-L5, L6-TA	1	20		C
	TR302	2200 4417	Transistor	2SA1179M5, M6-TA	1	20		C
	R301/302	2796 0238	Chip resistor	MCR10EZHJ684	2	20		C
	R303	2796 0231	Chip resistor	MCR10EZHJ105	1	20		C
	C301	2845 0581	Chip capacitor	T1-C3K21N1EF104Z	1	20		C

Notes: N – New parts
M – Minimum order/supply quantity
R – Rank
Q – Quantity used per unit

R – A : Essential
B : Stock recommended
C : Others
X : No stock recommend

N	Item	Code No.	Parts Name	Specification	Q	M	FOB Japan N.R.Yen Unit Price	R
	IC302	2101 0952	MOS IC	TC4049BF-TP1	1	5		C
	TR303	2259 0959	Chip digital transistor	DTC114YKT-146	1	20		C
	D302	2390 0364	Schottky diode	MA713-TX	1	10		C
	R304	2796 0476	Chip resistor	MCR10EZHJ473	1	20		C
	R305	2796 0987	Chip resistor	MCR10EZHJ182	1	20		C
	R306	2796 0308	Chip resistor	MCR10EZHJ102	1	20		C
	14	6402 1890	L383B-2 ass'y	A311744B*3	1	1		C
			(This ass'y contains the above parts as its element)					
		4. UPPER CASE						
N	15	6402 5160	Upper case ass'y	A210736*3	1	1		X
	16	6398 6550	Key contact rubber L382	A210695-1	1	1		B
	17	6398 6440	Button A-L382	A210704-1	1	5		X
	18	6398 6450	Button B-L382	A210705-1	1	5		X
	19	6398 6460	Button C-L382	A311692-1	1	20		X
	20	6398 6470	Button D-L382	A210706-1	1	10		X
	21	6398 6480	Button E-L382	A311691-1	1	20		X
	22	6398 6490	Button F-L382	A311691-2	1	20		X
	23	6398 6500	Button G-L382	A311693-1	1	20		X
	24	6398 6510	Button H-L382	A311693-2	1	20		X
	25	6398 6520	Button I-L382	A311693-3	1	20		X
	26	6398 6530	Button J-L382	A311693-4	1	20		X
	27	6398 4980	Common film L383	A311663-1	1	20		B
	28	6398 4990	Spacer L383	A412101-1	1	20		C
N	29	6402 5180	Display plate L388	A311679-5	1	1		X
	30	6398 5050	Adhesive tape D-L383	A412119-1	1	20		X
	31	6394 6070	Cushion B-V485	A411650-1	1	20		X
	60	6401 6260	Cushion B-L385	A412539-1	1	20		X
	61	6398 5120	Cushion A-L385	A412120-1	2	20		X
		5. LOWER CASE						
	32	6402 1870	Lower case L387	A110540-1	1	5		X
	33	6329 7621	Battery spring A-G272	A33938A-1	4	20		X
	34	6329 7660	Battery insulation seal G272	A45154-1	4	20		X
	35	6323 1011	Battery spring insulation tape G106	A43065-1	2	20		X
	36	6393 1700	Nut A-V346	A411430-1	2	20		C
	37	6398 5150	Switch knob L383	A311671-1	1	20		C
	38	6274 7023	Switch spring	A4532C-1	1	20		B
	39	3122 0700	Rubber button	AS-G	1	20		C
	40	6398 5120	Cushion A-L383	A412120-1	2	20		C
	41	6398 8940	Battery spring L383	A311808-1	4	20		C
N	42	6402 5200	Lower panel L388	A311680-4	1	1		C
	43	6402 0740	Label L382	A312175-1	1	20		C
	55	6402 1880	L387-3 ass'y	A312118A*1	1	1		X
	62	6401 6250	Cushion C-L385	A411508-3	1	20		X
		6. OTHERS						
	44	6334 7860	Flat screw A-G361	A33953-13	21	20		B
	45	6399 1260	Decorative screw L383	A412299-1	2	20		B
	46	6347 2720	Decorative screw G748	C41077-1	1	20		B
	47	6382 1080	Decorative screw G895	A49055-1	1	20		B
	48	6391 4171	Battery cover V330	A310945-1	1	20		C
	49	6398 5000	Battery cover L383	A311678-1	1	10		C
	50	6391 4340	Tape F-V330	A411085-1	1	20		X
	51	6398 5010	Tape B-L383	A412116-1	1	20		X
	52	6402 1840	Hard case L387	A210852-1	1	1		X
	53	6398 6380	Foot rubber L383 (For hard case)	A412232-1	1	20		B

Notes: N – New parts
M – Minimum order/supply quantity
R – Rank
Q – Quantity used per unit

R – A : Essential
B : Stock recommended
C : Others
X : No stock recommend

N	Item	Code No.	Parts Name	Specification	Q	M	FOB Japan N.R.Yen Unit Price	R
	54	6390 0430	Cap V332	A310765A-1	1	20		B

Notes: N – New parts
M – Minimum order/supply quantity
R – Rank
Q – Quantity used per unit

R – A : Essential
B : Stock recommended
C : Others
X : No stock recommend

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