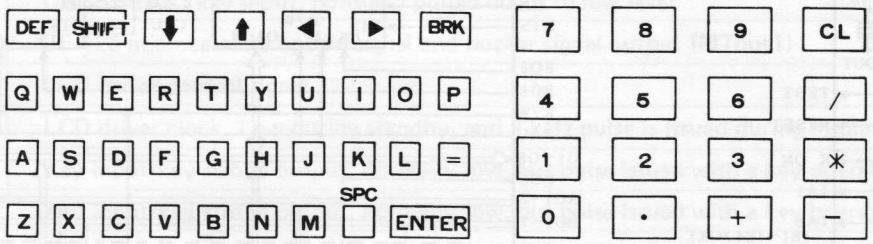
SHARP SERVICE MANUAL

CODE : 00ZPC1262SM/E

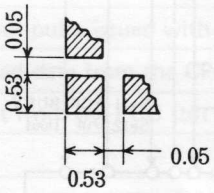
MODEL PC-1262

1. SPECIFICATION

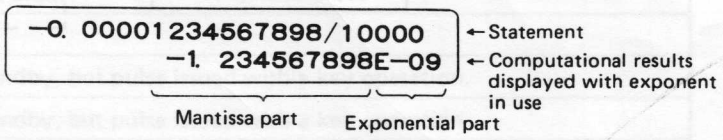
- Keyboard layout:



- Operational capacity: 10 digits of mantissa with two digits of exponentation
- Computation method: Exactly as the programmed statement (with the priority determination feature)
- Programming language: BASIC
- CPU: CMOS, 8-bit CPU
- System ROM: 40 KB
- Memory capacity: System area: About 0.6 KB
  Data dedicated area: 208 bytes
  Program/data area: 9342 bytes
  Reserve area: 48 bytes
  Statement program area (basic capacity): 128 bytes
- Stack: For subroutine use: 10 stacks
  For FOR-NEXT statement: 5 stacks
  For function: 16 stacks
  For data: 8 stacks
- Basic computing functions: Basic computation: Four math rules
  Function: Trigonometric function, inverse trigonometric function, logarithm, exponential, angle conversion, power raising, square root extract, integer conversion, absolute value, signum function, circle ratio, etc.
- Editing function: Horizontal cursor shift (▶,◀)
  Insertion (INS)
  Deletion (DEL)
  Line up and down (↓, ↑)
- Memory protection: Battery backup to retain program, data, and reserve contents during power off
- Display: 5 x 7 dot matrix LCD (24 digits x 2 lines) (LF8223E)



Display character size: 4.01(H) x 2.85(W) mm
Pitch: 3.7mm

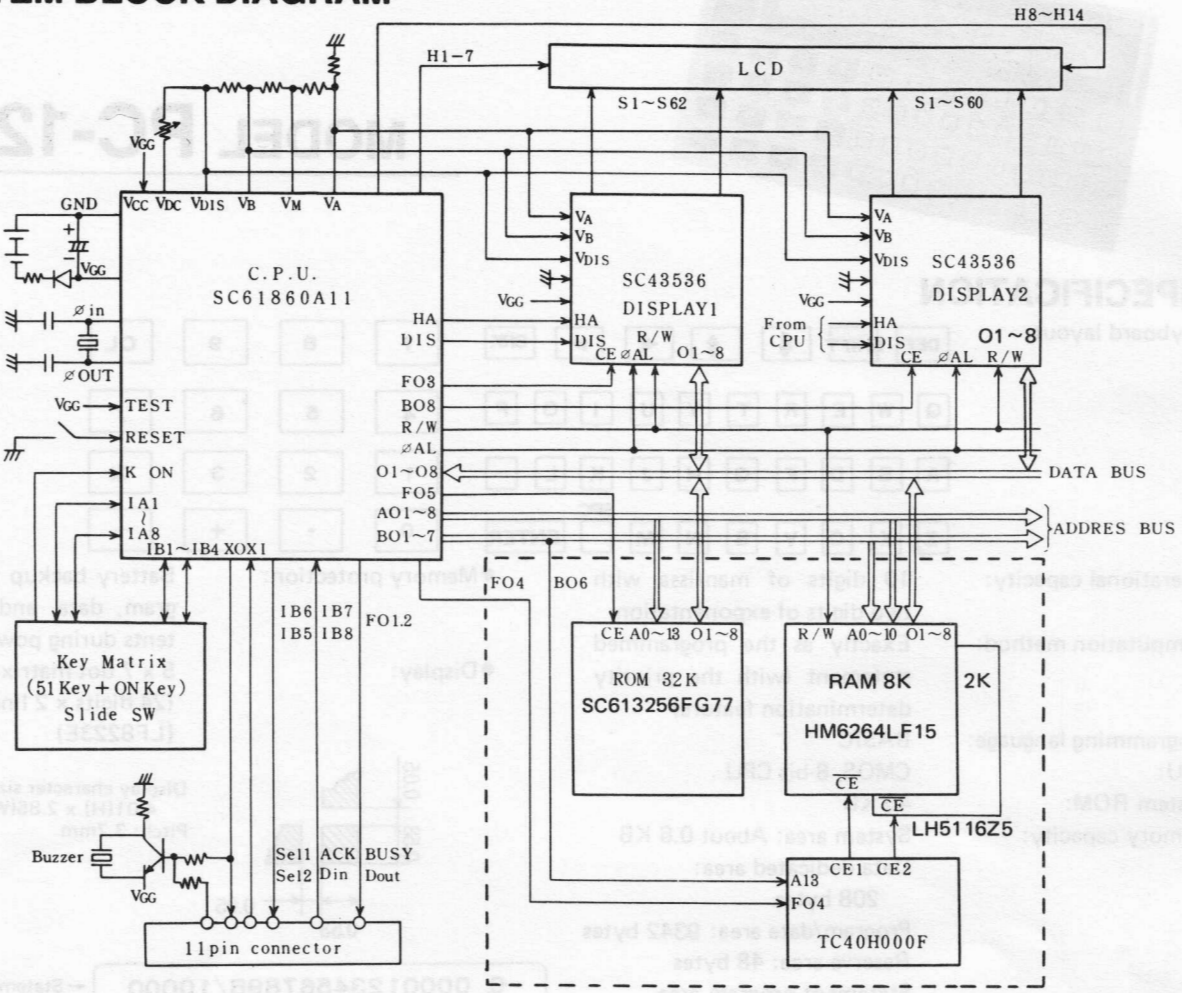


- Auto power off: About 11 minutes
- Operating temperature: 0 to 40°C
- Power supply: 6 V ⎓ (DC) lithium battery (CR2032) x 2
- Battery life: Approximately 300 hours when all 24 display digits are indicated with "5" continuously under the operating temperature of 20°C.
  Subject to fluctuation depending on the type of battery and usage.
  - It will last about four months when used one hour per day, provided that 10 minutes are dedicated for operation or program execution and 50 minutes for displaying.

CURRENT DRAIN
ON . 3M
OFF . 6μ

- Power consumption: 0.03 W
- Physical dimensions: 135(W) x 70(D) x 9.5(H) mm
- Weight: 115 grams including batteries
- Accessories: Hard cover, template, two lithium batteries inside the unit, instruction manual, name label

2. SYSTEM BLOCK DIAGRAM



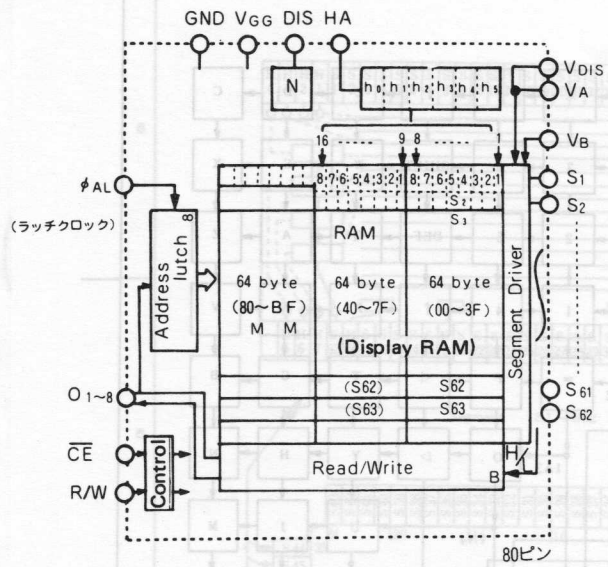
3. CPU SIGNAL DESCRIPTION

Pin No.	Signal Name	In/Out	Function (standby = power off)
1	AO1	Out	Address bus line, high during standby
2	R/W	Out	Write clock signal, normally high
3	ϕAL	Out	Low order bit address latch, normally high. The clock used to latch the low order 8 bits of the 16-bit address signal for the data bus line, when a large capacity ROM is used.
4	TES	In	Test input, normally low
5	ϕi	In	Oscillator input
6	ϕo	Out	Oscillator output
7	RES	In	Reset input, normally pulled down to low level. Reset when high.
8	Xin	In	CE-125 microcassette option signal input (MTin)
9	ON	In	ON (BREAK) key input, normally pulled down to low level
10	Xout	Out	CE-125 microcassette option signal and buzzer signal output (MTout1)
11	Dis	Out	LCD driver control signal
12	HA	Out	LCD driver clock. Low during standby, and 2 kHz pulse is issued during displaying.
13	iA8	In/Out	Key input/key strobe output, normally low, but pulse issued with a key operation.
14	iA7	In/Out	Key input/key strobe output, normally low, but pulse issued with a key operation.
15	iA6	In/Out	Key input/key strobe output, normally low, but pulse issued with a key operation.
16	iA5	In/Out	Key input/key strobe output, normally low, but pulse issued with a key operation.
17	iA4	In/Out	Key input/key strobe output, normally low, but pulse issued with a key operation.
18	iA3	In/Out	Key input/key strobe output, normally low, but pulse issued with a key operation.
19	iA2	In/Out	Key input/key strobe output, normally low, but pulse issued with a key operation.
20	iA1	In/Out	Key input/key strobe output, normally low, but pulse issued with a key operation.
21	iB8	In	ACK signal which enables the I/O (PCU) to read data from the CPU.
22	iB7	In	Data in signal (Din) which is a serial data input from the PCU (bit unit, serial handshake).
23	iB6	Out	(SEL2) select output, P-type open drain
24	iB5	Out	(SEL1) select output, P-type open drain
25	iB4	In	Slide switch input
26	iB3	Out	Key strobe output, low during standby, but pulse issued with a key operation.
27	iB2	Out	Key strobe output, low during standby, but pulse issued with a key operation.
28	iB1	Out	Key strobe output, low during standby, but pulse issued with a key operation.
29	VM	In	LCD power supply
30	VA	In	LCD power supply
31	GND	In	Power supply
32	H1	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
33	H2	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
34	H3	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
35	H4	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
36	H5	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
37	H6	Out	LCD Backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
38	H7	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
39	H8	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
40	H9	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.

Pin No.	Signal Name	In/Out	Function (standby – power off)
41	H10	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
42	H11	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
43	H12	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
44	H13	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
45	H14	Out	LCD backplate signal, high impedance during standby, but 4 level pulse issued during displaying.
46	H15	–	Not used because the display unit of this model is operates under 1/14 duty.
47	H16	–	Not used because the display unit of this model is operates under 1/14 duty.
48	VB	In	LCD power supply, high during standby and VB when clock is at stop.
49	VDiS	In	LCD power supply, high during standby and low when clock is at stop.
50	VCC	In	LCD power supply, normally low.
51	VDC	Out	LCD power supply, high during standby and low when clock is at stop.
52	VGG	In	Power supply, normally low
53	o8	In/Out	Data bus line, normally high impedance
54	o7	In/Out	Data bus line, normally high impedance
55	o6	In/Out	Data bus line, normally high impedance
56	o5	In/Out	Data bus line, normally high impedance
57	o4	In/Out	Data bus line, normally high impedance
58	o3	In/Out	Data bus line, normally high impedance
59	o2	In/Out	Data bus line, normally high impedance
60	o1	In/Out	Data bus line, normally high impedance
61	Fo5	Out	32K ROM chip enable
62	Fo4	Out	Option RAM chip enable
63	Fo3	Out	LCD driver LSI (DISPLAY 1) chip enable
64	Fo2	Out	Data out (Dout) peripheral data out port output
65	Fo1	Out	BUSY (I/F) out port output
66	Bo8	Out	LCD driver LSI (DISPLAY 2) chip enable
67	Bo7	Out	(A14) address bus line, high during standby
68	Bo6	Out	(A13) address bus line, high during standby
69	Bo5	Out	(A12) address bus line, high during standby
70	Bo4	Out	(A11) address bus line, high during standby
71	Bo3	Out	(A10) address bus line, high during standby
72	Bo2	Out	(A9) address bus line, high during standby
73	Bo1	Out	(A8) address bus line, high during standby
74	Ao8	Out	(A7) address bus line, high during standby
75	Ao7	Out	(A6) address bus line, high during standby
76	Ao6	Out	(A5) address bus line, high during standby
77	Ao5	Out	(A4) address bus line, high during standby
78	Ao4	Out	(A3) address bus line, high during standby
79	Ao3	Out	(A2) address bus line, high during standby
80	Ao2	Out	(A1) address bus line, high during standby

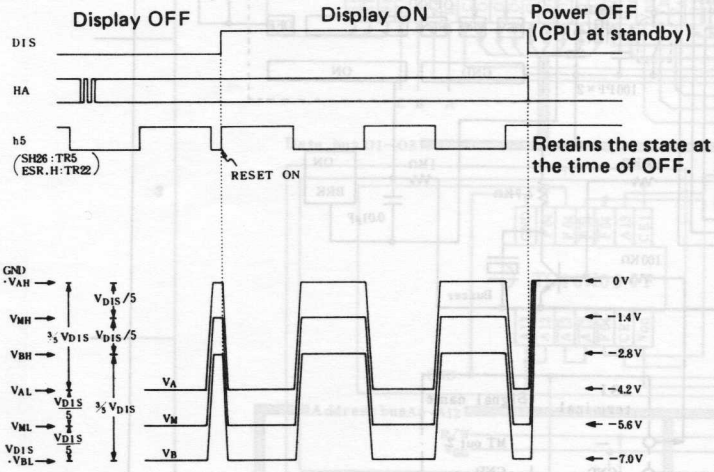
4. LCD DRIVE AND TIMINGS

4-1. LCD drive LSI (SC43536)



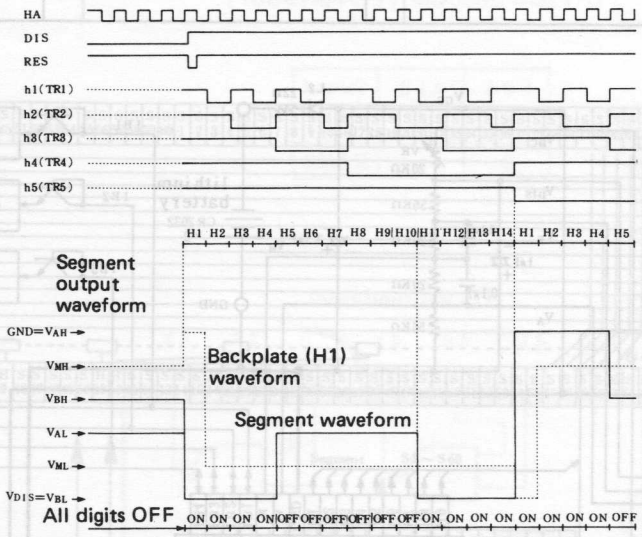
The 24-digit liquid crystal display is divided into half. H1 through H7 are used for backplate signal from the first digit to the twelfth digit, and H8 through H14 are used for backplate signal from the thirteenth digit to the twenty fourth digit. Therefore, the LCD operates under the 1/14 duty.

4-2. LCD timings



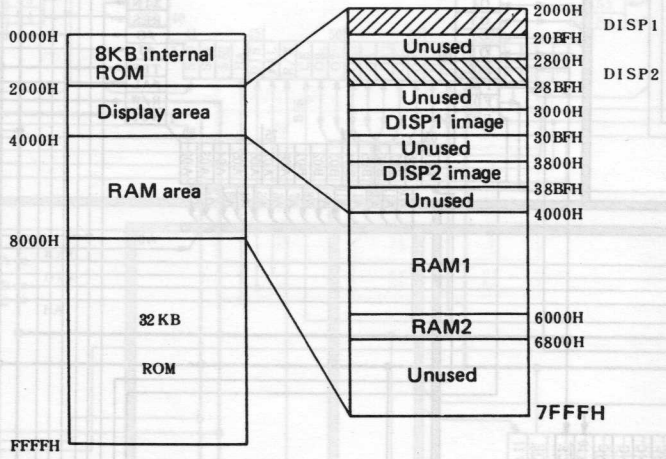
NOTE: Voltage when VDIS is 7.0V.

4-3. Counter section and segment output waveforms



	h5 = 0	h5 = 1
All digits OFF (Dis = L)	VAL	VBH
ON	VBL	VAH
OFF	VAH	VBH

5. MEMORY MAP

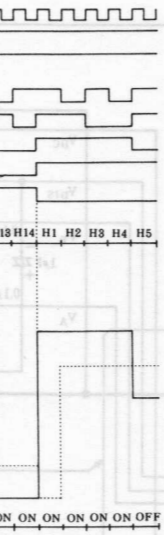


6. CHIP ENABLE PROGRAM LOGIC ARRAY (CE-PLA)

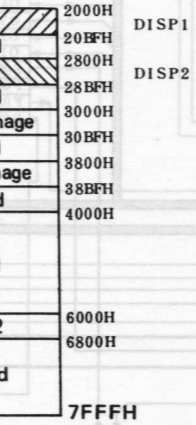
Address / Pin No.	A15	A14	A13	A12	A11
F05 (ROM)	1	×	×	×	×
F04 (RAM)	0	1	×	×	×
F03 (Disp1)	0	0	1	×	0
B08 (Disp2)	0	0	1	×	1

× : Don't Care

output wave-



h5 = 1
VBH
VAH
VBH

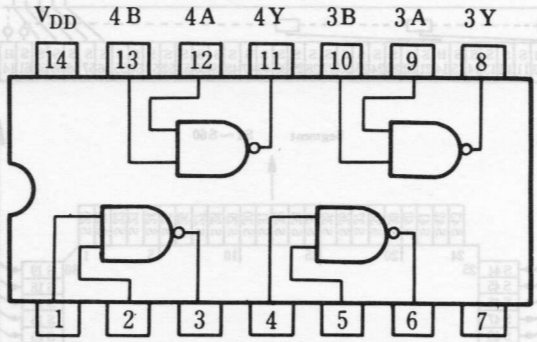


7. RAM SELECT CE-PLA

7-1. PC-1262 decoder (TC40H000F)

F04	A13	Output
0	0	RAM1
0	1	RAM2

Pin configuration



$Y = \overline{A \cdot B}$

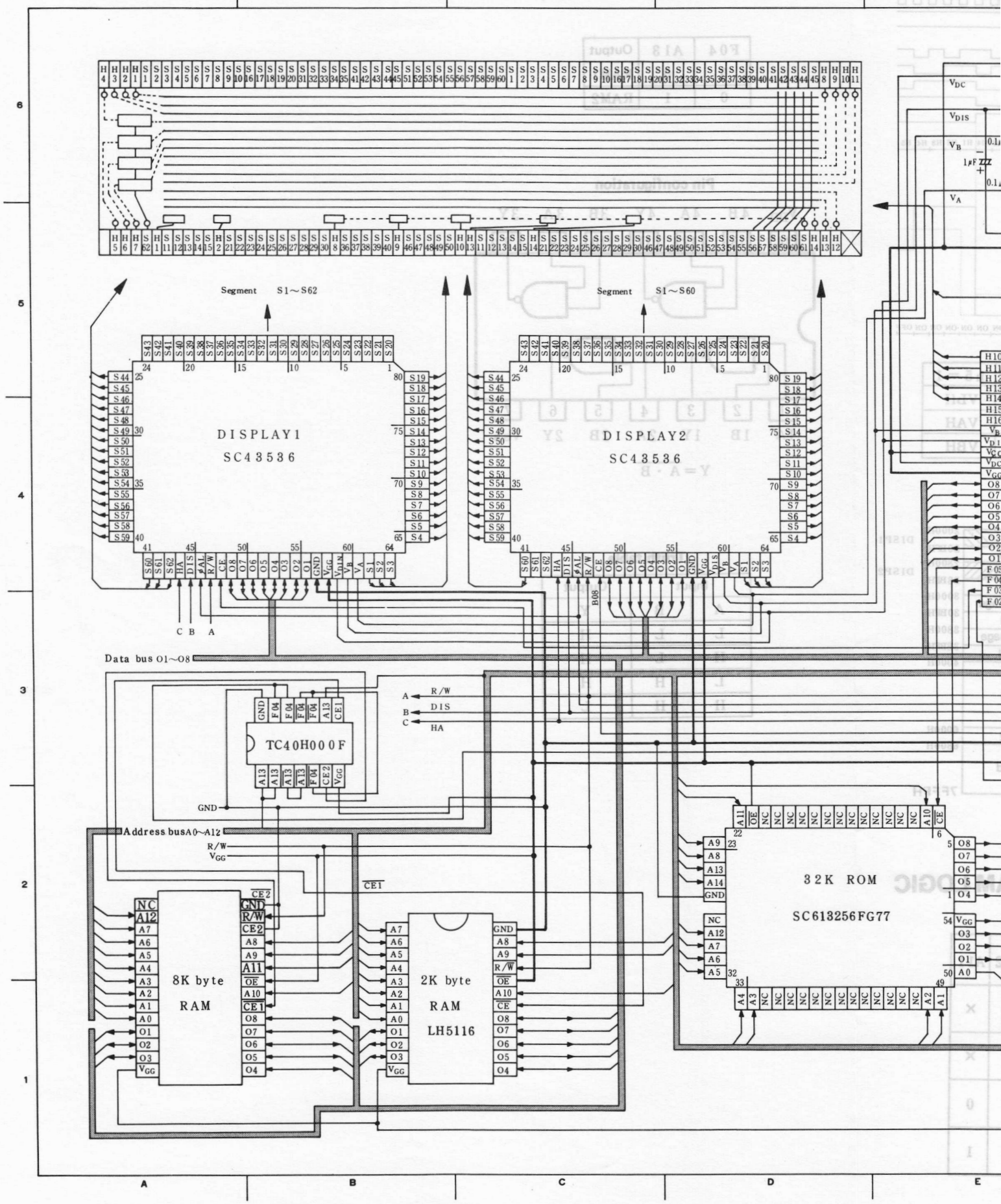
Truth table

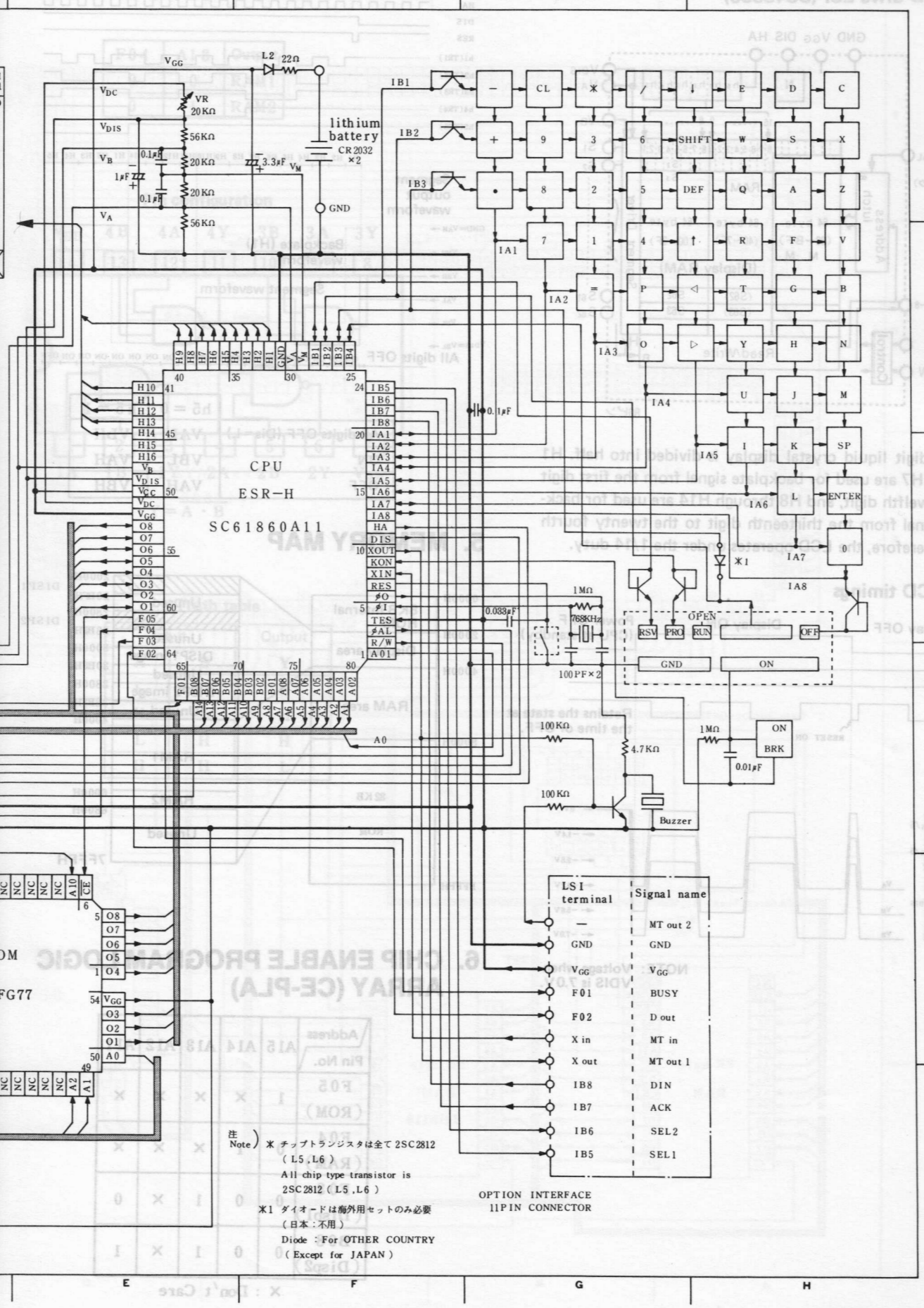
Input		Output
A	B	Y
L	L	H
H	L	H
L	H	H
H	H	L

AM LOGIC

2	A11
	×
	×
	0
	1

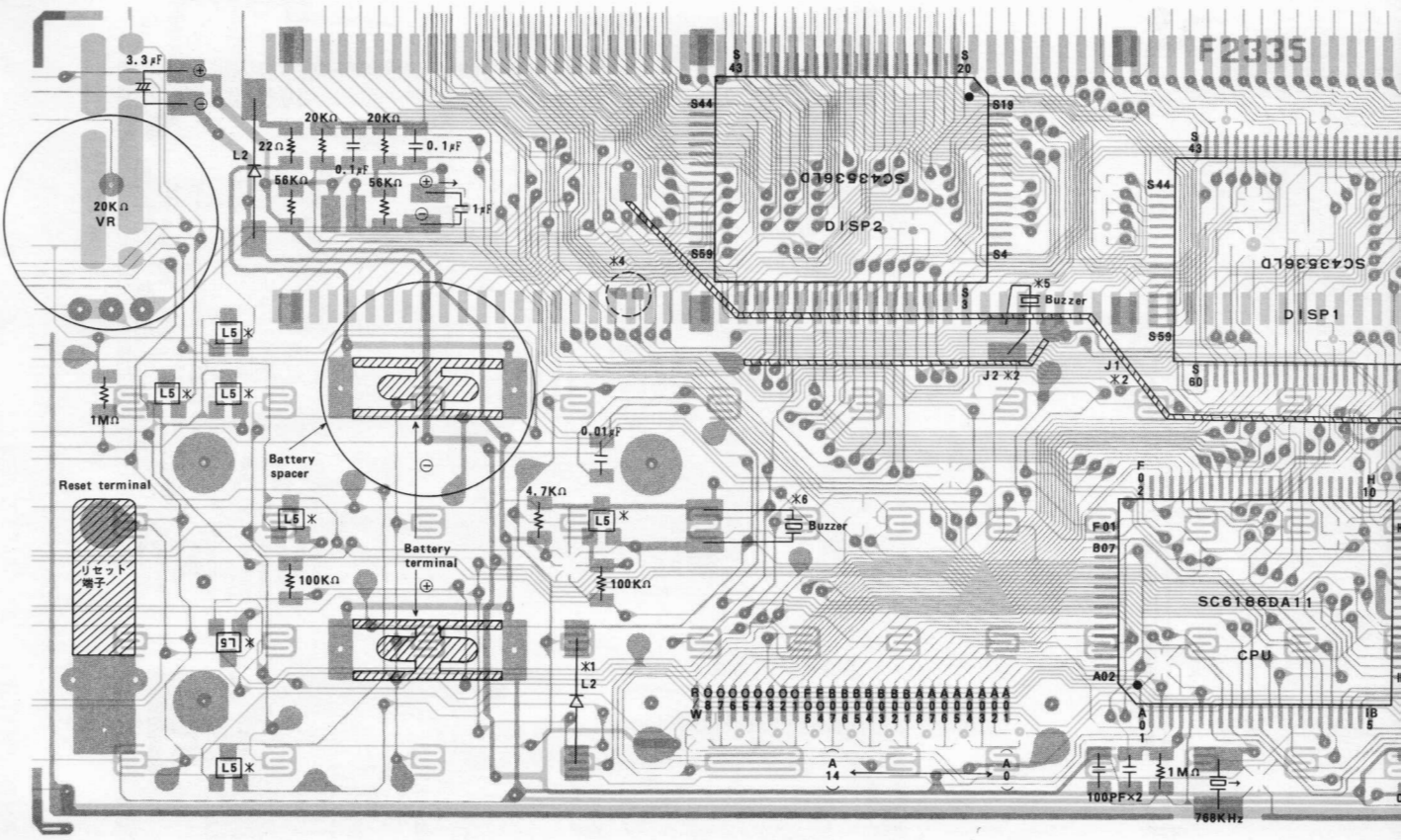
8. CIRCUIT DIAGRAM

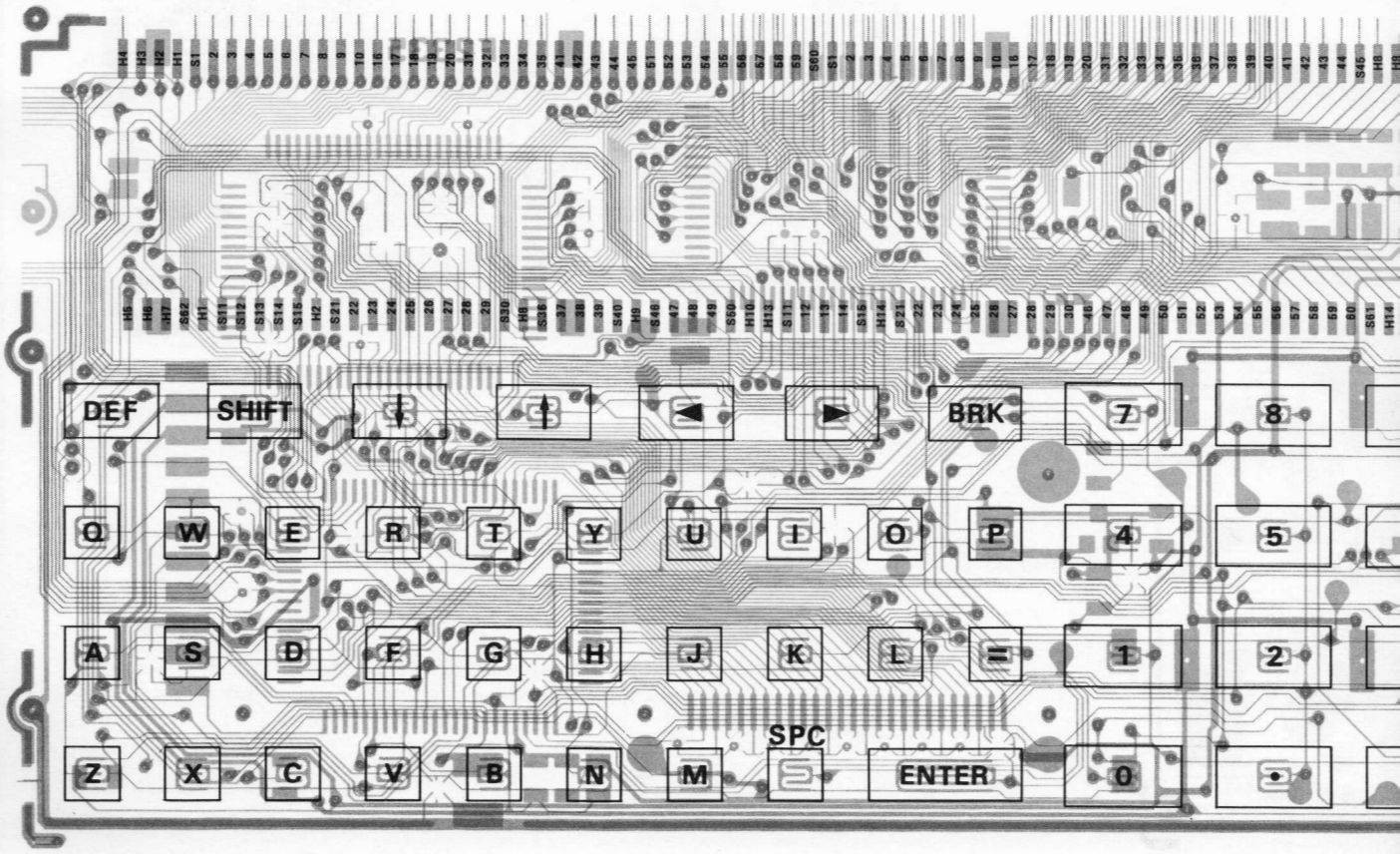



CPU
ESR-H
SC61860A11
lithium battery
CR2032 ×2
VR 20KΩ
56KΩ
20KΩ
20KΩ
56KΩ
0.1μF
1μF
3.3μF
L2 22Ω
GND
IB1
IB2
IB3
IA1
IA2
IA3
IA4
IA5
IA6
IA7
IA8
CL
SHIFT
DEF
ENTER
ON
OFF
RSV
PRO
RUN
OPEN
1MΩ
768KHz
0.033μF
100PF×2
100KΩ
4.7KΩ
0.01μF
Buzzer
BRK
※1
LSI terminal
Signal name
MT out 2
GND
BUSY
D out
MT in
MT out 1
DIN
ACK
SEL2
SEL1
OPTION INTERFACE
11PIN CONNECTOR
注 Note) ※ チップトランジスタは全て 2SC2812 (L5, L6)
All chip type transistor is 2SC2812 (L5, L6)
※1 ダイオードは海外用セットのみ必要 (日本：不用)
Diode : For OTHER COUNTRY (Except for JAPAN)

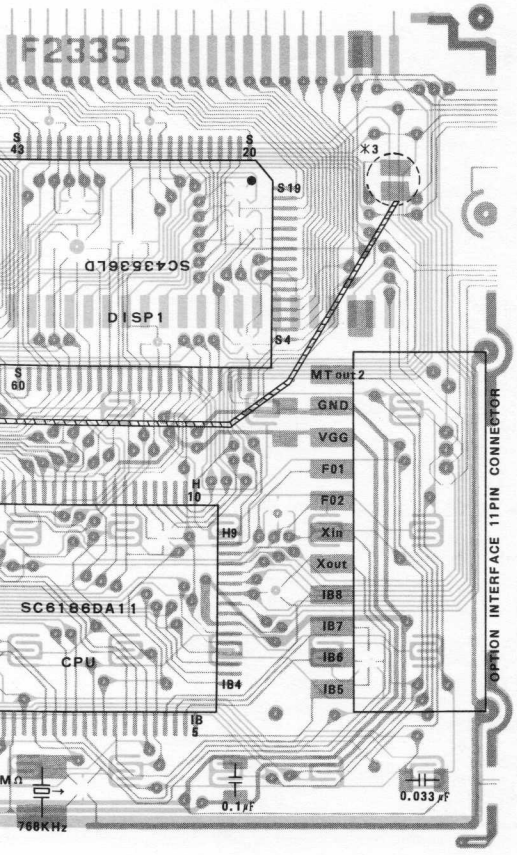
9. PARTS & SIGNALS POSITION

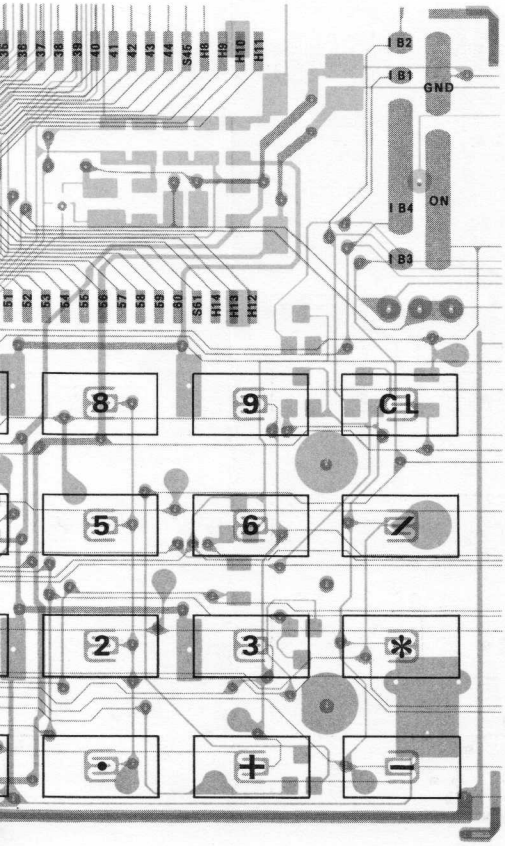
9–1 Main P.W.B.

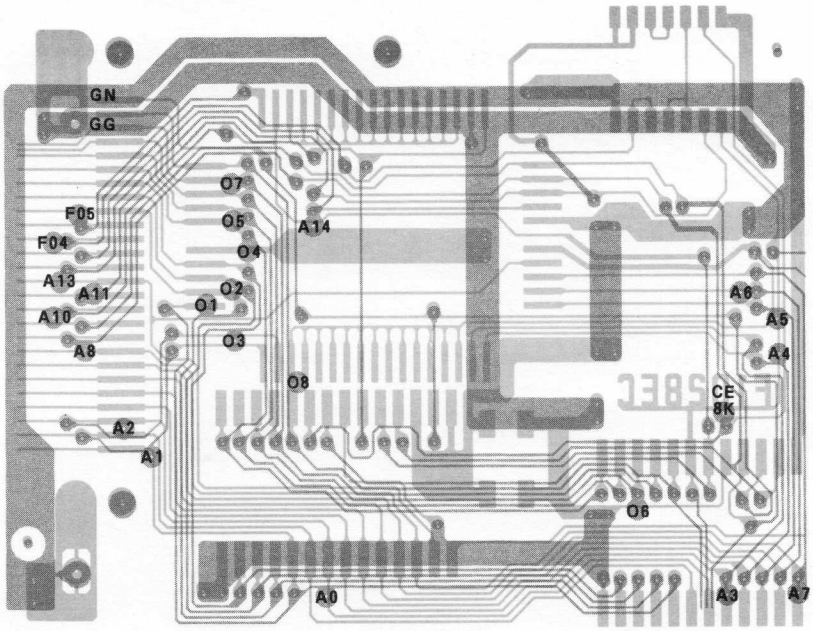


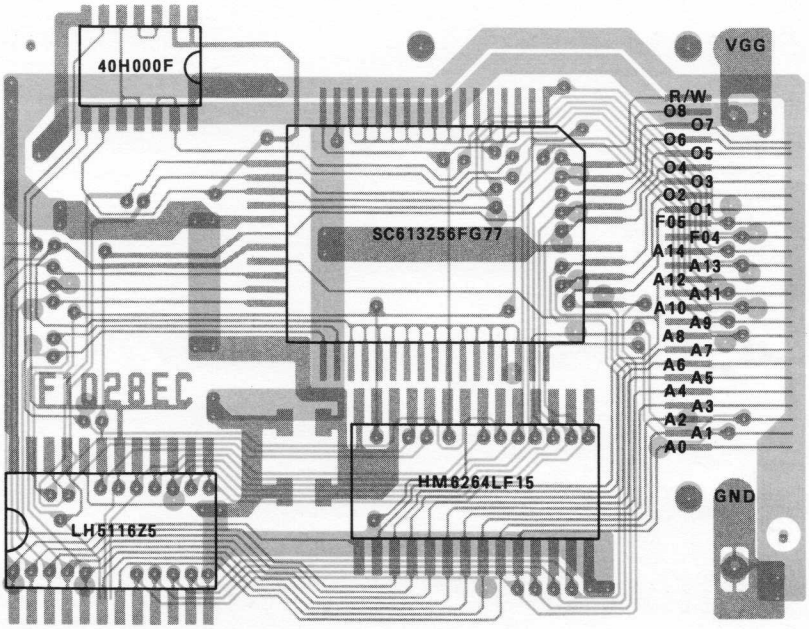


9−2 Memory P.W.B.









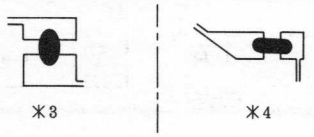
注 Note)

＊ チップトランジスタは全て2SC2812(L5,L6)
All chip type transistor is 2SC2812(L5,L6)

＊1 ダイオードL2は海外用セットのみ必要(日本:不用)
Diode L2:For OTHER COUNTRY (Except for JAPAN)

＊2 ジャンパー線(J1及びJ2)は日本のみ必要
Jumper wire J1 and J2 : For JAPAN only

＊3,＊4 ハンダブリッジは海外用セットのみ必要(日本:不用)
Solder bridge : For OTHER COUNTRY (Except for JAPAN)



10. PARTS LIST & GUIDE

1 Exteriors

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	XBSSC20P08000	AA		C	Screw (2×8)
2	HDECA2082CCSA	AF	N	D	Bottom panel
3	PZETL1491CCZZ	AC		C	Insulator sheet
4	CPWBF1028EC01	BK	N	E	Memory PWB unit
5	QTANZ1406CCZZ	AB		C	Battery terminal (⊕⊖)
6	LCHSS1161CCSA	AE	N	C	Chassis
7	PGUMS1540CCZZ	AC		C	Rubber connector B
8	RALMB1030CC01	AD		B	Buzzer
9	DUNTK7941CCZZ	BR	N	E	Main PWB unit
10	PSLDP1463CC01	AC		C	Display mask
12	PTPEH1090CCZZ	AA		C	Tape for polarized filter
13	PFiLW1513CCZZ	AC		C	Acryl filter
14	PTPEH1039CCZZ	AA		C	Tape for Acryl filter
15	PFiLV1001ECZZ	AC		C	Polarized filter
16	JKNBZ1908CC03	AF	N	C	Key top (DEF.BRK Key each of 24pcs/1set)
17	JKNBZ1909CC01	AF		C	Key top (SHIFT key,48pcs/1set)
18	JKNBZ1908CC02	AF	N	C	Key top (↑ • ↓ Key 24pcs/1set)
19	JKNBZ1908CC01	AF	N	C	Key top (▶•◀ Key 24pcs/1set)
20	JKNBZ1906CCSA	AF	N	C	Key top (15Keys each of 1pc)
21	JKNBZ1907CC01	AE		C	Key top (CL key 20pcs/1set)
22	JKNBZ1910CC01	AF	N	C	Key top (Typewriter key each of 1pc)
23	QCNTM1042CCZZ	AA		C	Slide switch terminal
24	MSLiP1020CCSA	AB	N	C	Slide switch A
25	PSLDP1318CCZZ	AA		C	Shield plate
26	PGUMM1426CCZZ	AH		B	Key rubber
27	DUNTG1103ECZZ	AM	N	D	Top cabinet unit

2 Main PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	DUNT-7944CCZZ	AT		E	LCD unit
2	PGUMS1546CCZZ	AD		C	Rubber connector
3	PZETL1313CCZZ	AA		C	Spacer for battery terminal (Round)
4	PZETL1353CCZZ	AA		C	Spacer for battery terminal (Square)
5	QCNCW1306CC1B	AK		C	Connector (12pin)
6	QCNTM1051CCZZ	AB		C	Reset terminal
7	QTANZ1289CCZZ	AB		C	Battery terminal
8	RALMB1030CC01	AD		B	Buzzer
9	RC-CZ1021CCZZ	AB		C	Capacitor (0.1μF)
10	RC-CZ1035CCZZ	AC		C	Capacitor (100pF)
11	RC-CZ1037CCZZ	AB		C	Capacitor (0.01μF)
12	RC-CZ1047CCZZ	AB		C	Capacitor (0.033μF)
13	RC-SZ1007CCZZ	AF		C	Capacitor (1μF)
14	RC-SZ1021CCZZ	AC		C	Capacitor (10WV 3.3μF)
15	RCRSZ1063CCZZ	AF		B	Crystal (768KHz)
16	RH-iX1012CCZZ	AB		B	Chip transistor (2SC2812)
17	RVR-Z2400QCZZ	AF		B	Variable resistor (20KΩ)
18	VHDDS1588L2-1	AB		B	Diode (DS1588L2)
19	VHiSC43536/-1	AX	N	B	IC (SC43536)
20	VHiSC61860A11	BB		B	IC (SC61860A11)
21	VRS-TP2BD104J	AA		C	Resistor (1/8W 100KΩ ±5%)
22	VRS-TP2BD105J	AA		C	Resistor (1/8W 1.0MΩ ±5%)
23	VRS-TP2BD203J	AA		C	Resistor (1/8W 20KΩ ±5%)
24	VRS-TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%)
25	VRS-TP2BD472J	AA		C	Resistor (1/8W 4.7KΩ ±5%)
26	VRS-TP2BD563J	AA		C	Resistor (1/8W 56KΩ ±5%)
	(Unit)				
901	DUNTK7941CCZZ	BR	N	E	Main PWB unit

3 Memory PWB unit

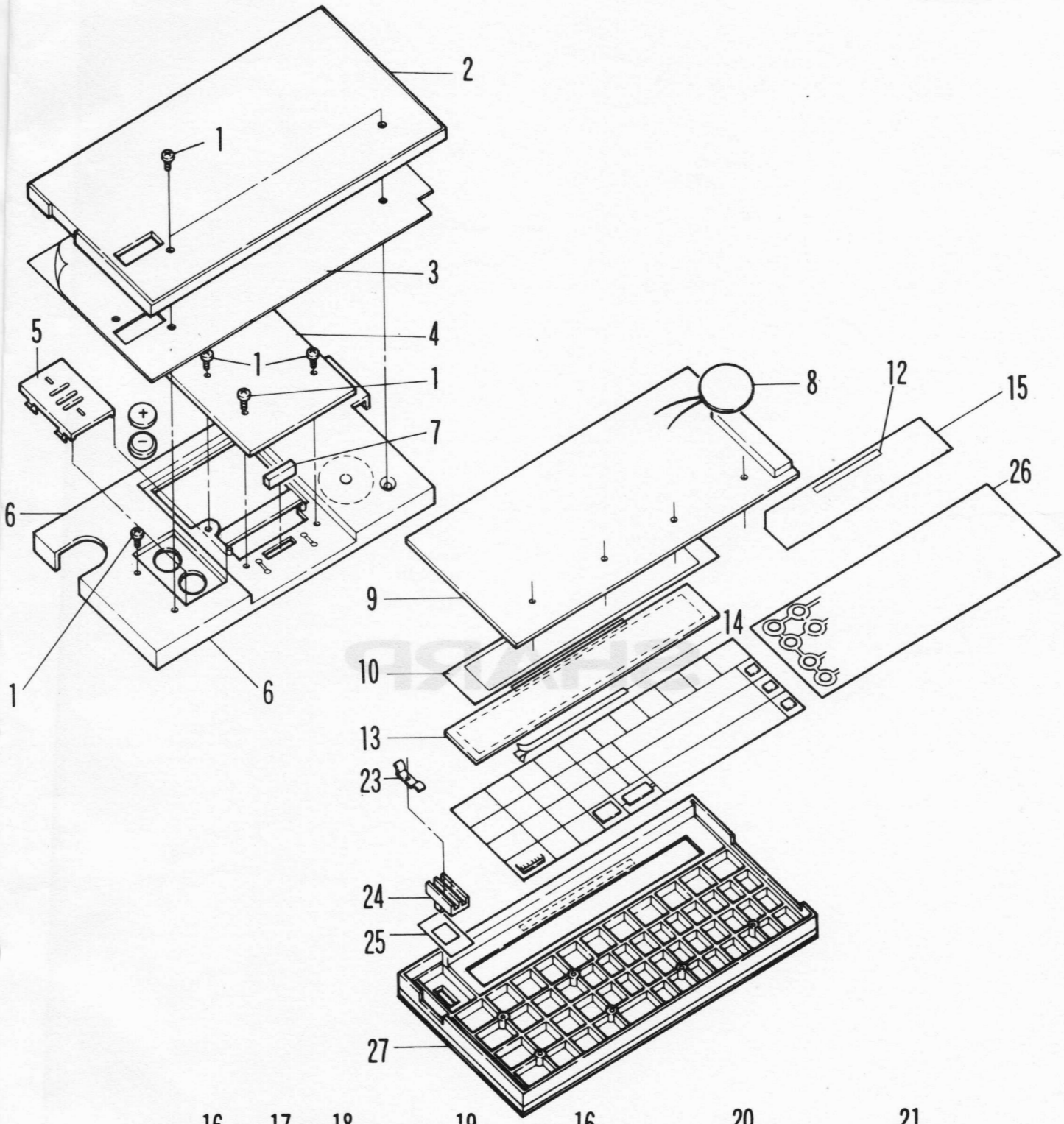
NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	MSPRC1207CCZZ	AB		C	PS spring
2	VHiHM6264LF15	BB		B	IC (HM6264LF15)
3	VHiLH5116Z5-1	AU		B	IC (LH5116Z5)
4	VHiTC40H000FN	AG		B	IC (TC40H000FN)
5	VHi613256FG77	BD		B	IC (613256FG77)
	(Unit)				
901	CPWBF1028EC01	BK	N	E	Memory PWB unit

4

NO.
1
2
3
4
5
6

4 Other parts

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	GCASP1099CCSB	AE	N	D	Hard case
2	LPLTP1099CCZZ	AA		D	Ten plate
3	TiNSG1056ECZZ	AY	N	D	Instruction book (Germany)
	TiNSE1055ECZZ	AZ	N	D	Instruction book (English)
	TiNSE1054ECZZ	AY	N	D	Instruction book(U.S.A.)
4	TLABH1997CCZZ	AC		C	Operation label
5	SPAKA8990CCZZ	AE	N	D	Packing cushion for set
6	SPAKC0109ECZZ	AE	N	D	Packing case


2
1
3
4
5
1
1
7
6
1
6
8
12
15
26
9
14
10
13
23
24
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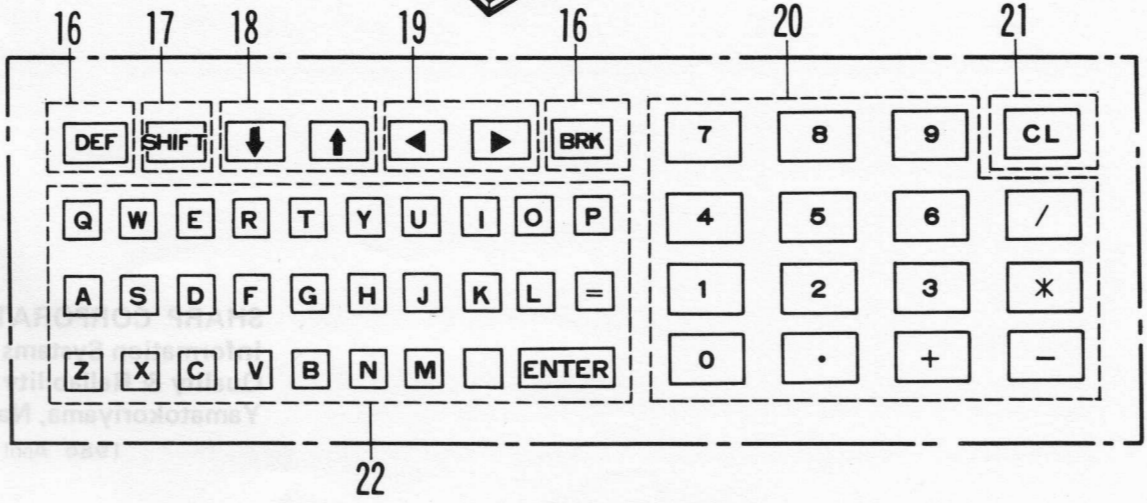
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