

SHARP SERVICE MANUAL

CODE: 00ZMZ1R12// -E

S-RAM Board

MODEL MZ-1R12
(For MZ-700)

CONTENTS

1. OUTLINE	1
2. FUNCTIONS	1
3. CONNECTION METHOD	1
4. SPECIFICATIONS	1
5. BLOCK DIAGRAM	1
6. DIP SWITCH SETTING	1
7. TROUBLESHOOTING	2
8. CONNECTOR SIGNAL TABLE	2
9. PART LOCATIONS DIAGRAM	3
10. CIRCUIT DIAGRAM	4
11. PARTS LIST AND GUIDE	7

1. OUTLINE

The MZ-1R12 (S-RAM board) can be used with the MZ-700 either for a boot loader function or as an external memory. The MZ-1U03 is needed to connect this card to the MZ-700.

2. FUNCTIONS

- (1) With the MZ-700, capability for booting simultaneous with the supply of power.
- (2) Composed of CMOS-RAMs with backup battery function for capability for use as a static memory.
- (3) Built-in address counter provides automatic address incrementation for each reading or writing operation, thus simplifying reading and writing of continuous data.

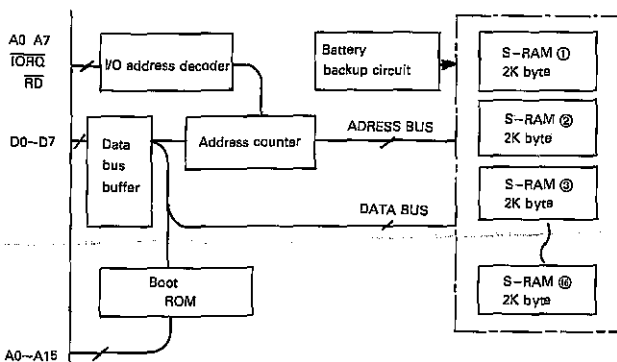
3. CONNECTION METHOD

After confirming that the power supplies of the main unit and the extension unit (MZ-1U03) are OFF, insert this card into the slot of the extension unit. To turn on the power, first turn on the power of the extension unit and then turn on the power supply the MZ-700.

4. SPECIFICATIONS

- | | |
|---------------------|--|
| (1) Memory capacity | 32K bytes |
| (2) Data hold time | approx. 44 days
(approx. 1.5 months) |
| (3) Charging time | 100% charge in 29 hours |
| (4) Power supply | 5 VDC \pm 10% |
| (5) Elements used | CMOS static RAMs
(2K bytes \times 16) |

5. BLOCK DIAGRAM



Note The address counter is incremented automatically with the input/output of data.

6. DIP SWITCH SETTING

Eight-bit port addresses are output from the Z80-CPU. Because three consecutive port addresses are used with this card, the six high-order bits of the eight-bit address signal are selected by the switch in order to set the port address.

Segment	Meaning	Factory setting	Remarks
1	A2	OFF	Used for setting the port address.
2	A3	ON	Used for setting the port address.
3	A4	ON	Used for setting the port address.
4	A5	ON	Used for setting the port address.
5	A6	ON	Used for setting the port address.
6	A7	ON	Used for setting the port address.
7	MSEL	ON	Selection of the P-ROM.
8	A11	ON	P-ROM internal address setting.

The relationship between the switch position and the logic level is shown below. The port addresses of this card are where the logic levels of the address and of the switch are the same.

Switch position	Logic level
ON	1
OFF	0

Note that the port addresses set at the factory are F8, F9, and FAH.

The following is the meaning of the addresses selected by address bits A0 and A1.

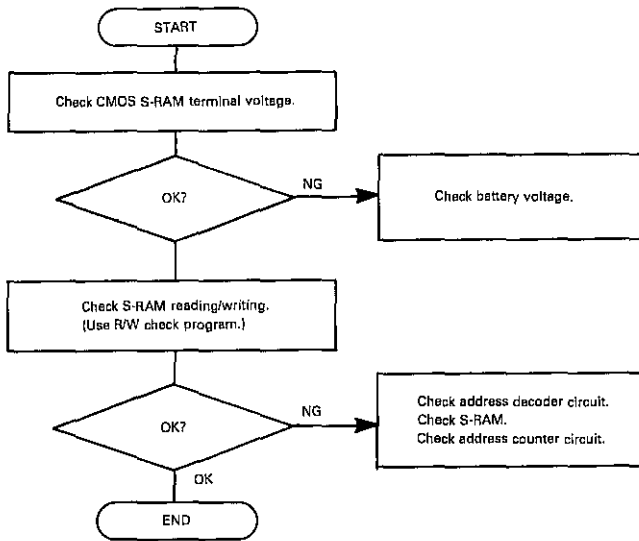
A1	A0	OUT command	IN command
0	0	Address high-order setting	Address counter reset
0	1	Address low-order setting	Data reading
1	0	Data writing	Not in use
1	1	Not in use	Not in use

MSEL and A11 setting

This S-RAM board has a PROM (for booting the MZ-700) allocated to addresses \$E800H ~ EFFFH. Although this PROM has a memory capacity of 4K bytes, there is only 2K bytes of allocated memory space. For this reason, the A11 bit of the PROM address line is switched ON-OFF to switch the address and make effective use of the PROM.

Signal	Segment	Meaning when ON	Meaning when OFF
MSEL	7	ROM allocated.	ROM cut off.
All	8	PROM \$0000 ~ \$07FF ROM is selected.	\$0800 ~ \$0FFF ROM is selected.

7. TROUBLESHOOTING



R/W check program for the MZ-700

```

10 INP##F8,A:A=85
20 FOR I=0 TO 32767
30 OUT##FA,A:NEXT I
40 PRINT"READ":INP##F8,A
50 FOR I=0 TO 32767
60 INP##F9,A:IF A=65 THEN 80
70 GOTO 90
80 NEXT I:PRINT"CHECK...OK":END
90 PRINT"ERROR...ADDRESS=";HEX$(I);"H"
  
```

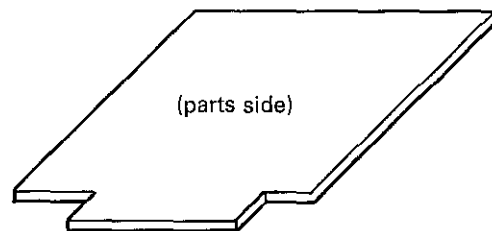
8. CONNECTOR SIGNAL TABLE

Interface signals

Signal name	Number of signals	Polarity	Input or output	Function
*MREQB	1	N	I	Memory request signal
*IORQB	1	N	I	I/O request signal
*RDB	1	N	I	Read command
*WRB	1	N	I	Write command
A0B ~ A15B	8	P	I	Memory or I/O address select signal
D0B ~ D7B	16	P	I/O	Data I/O address select signal

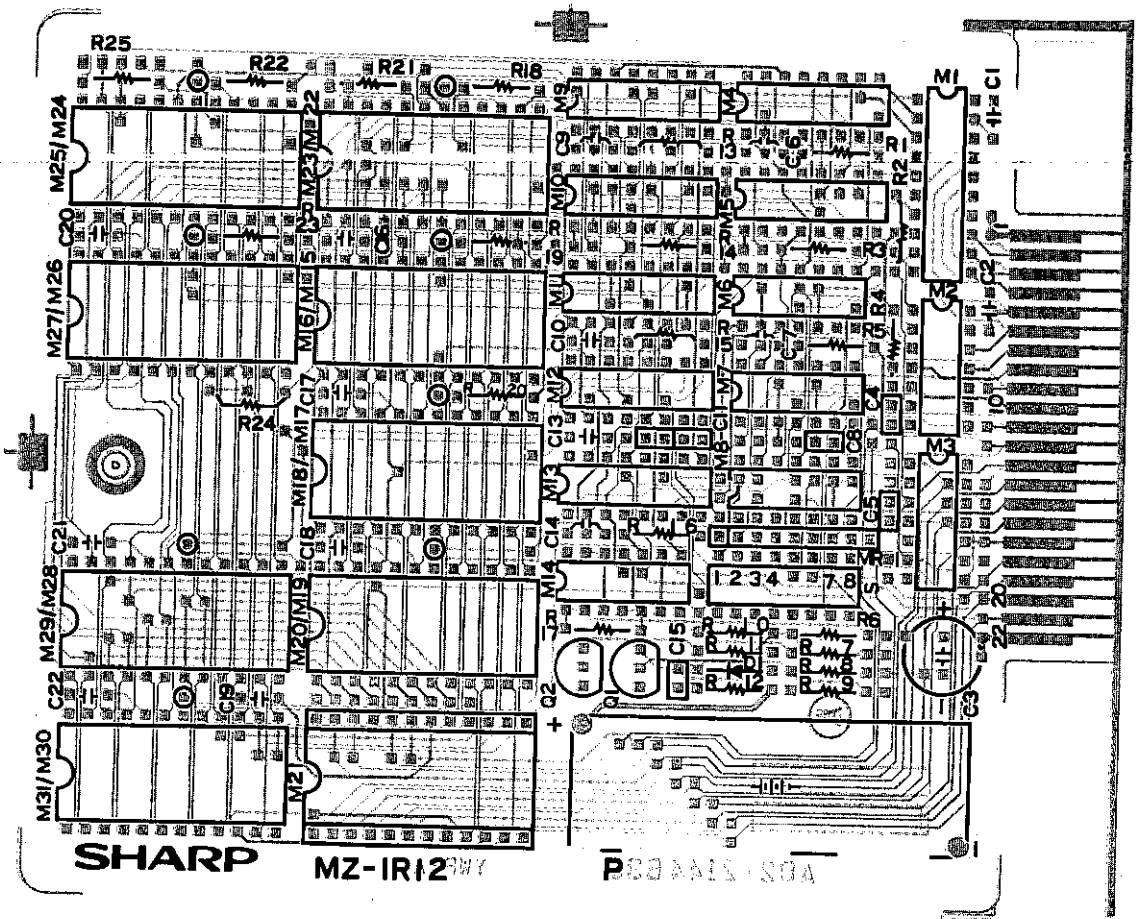
Interface pin locations

No.	A (parts side)	B (solder side)
1	+5 V	+5 V
2	D2B	D3B
3	D1B	D4B
4	D0B	D5B
5	GND	D6B
6	A15B	D7B
7	A14B	
8	A13B	
9	A12B	*WRB
10	A11B	*RDB
11	A10B	*IORQB
12	A9B	*MREQB
13	A8B	GND
14	A7B	
15	A6B	
16	A5B	
17	A4B	
18	A3B	
19	A2B	
20	A1B	
21	A0B	
22	GND	GND

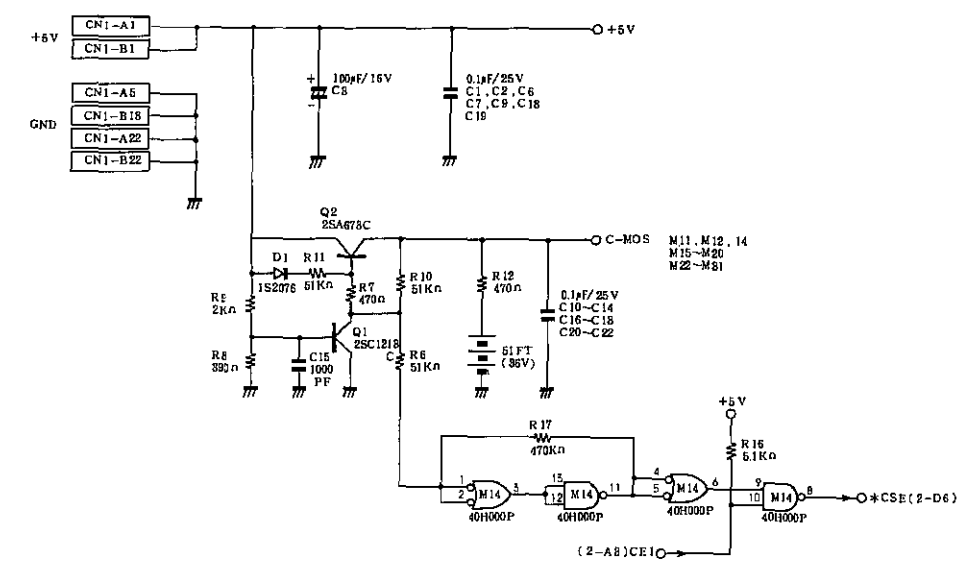
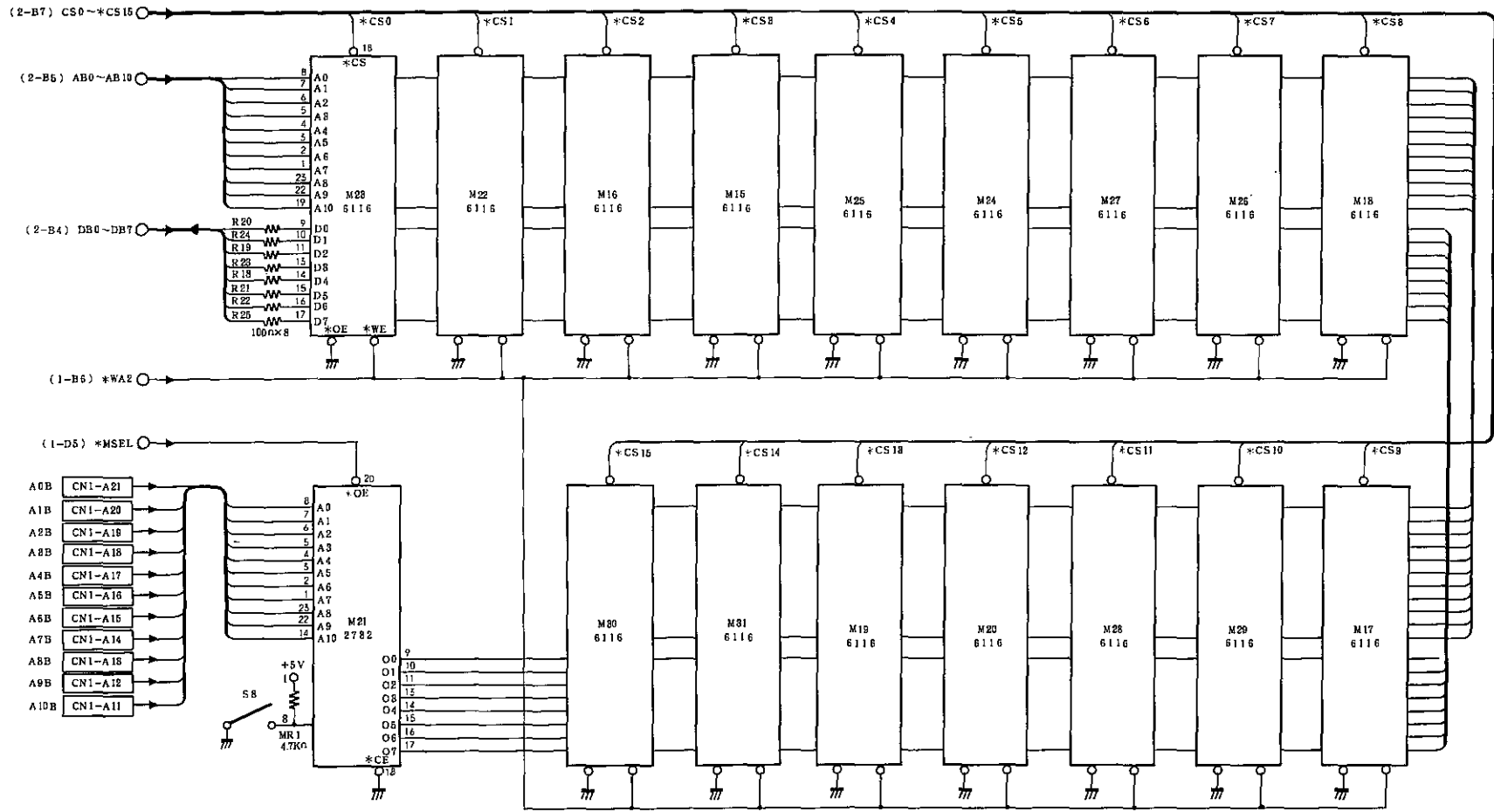
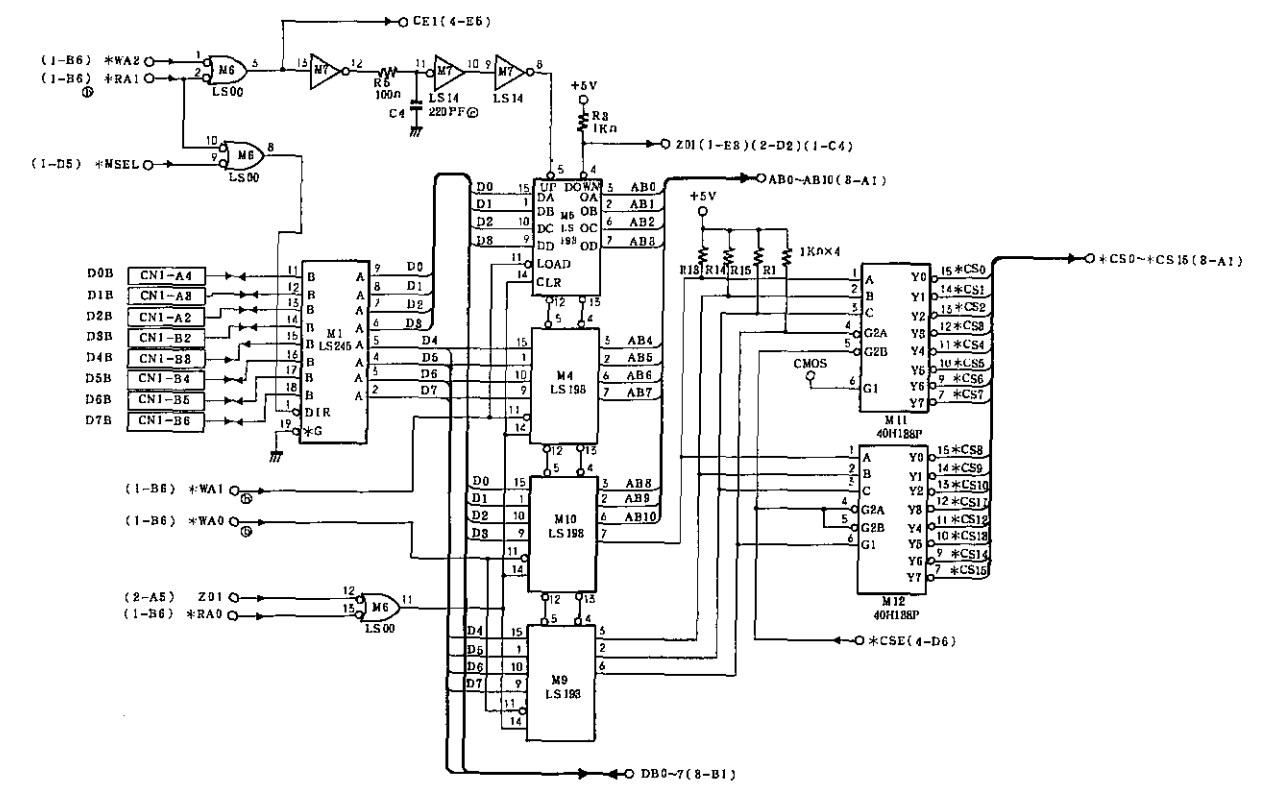
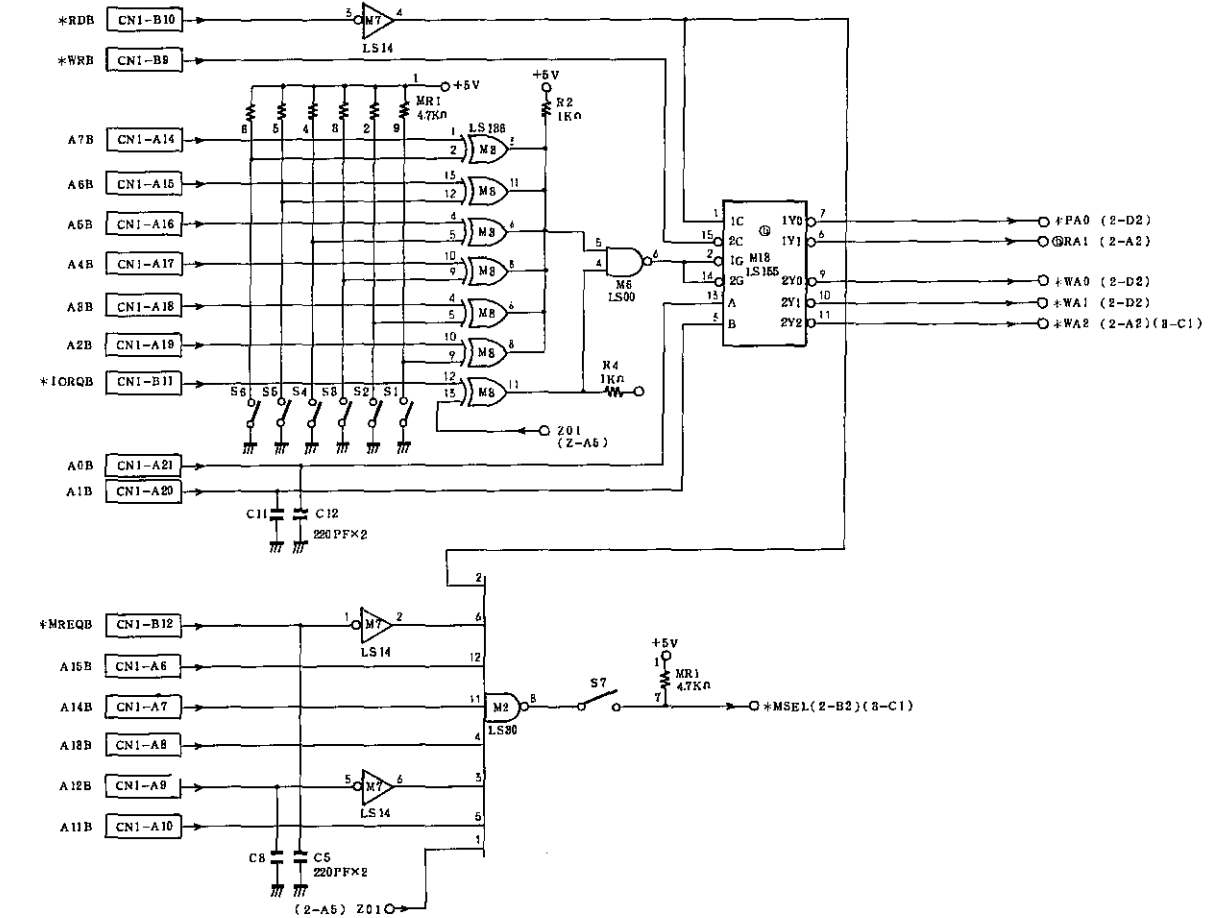


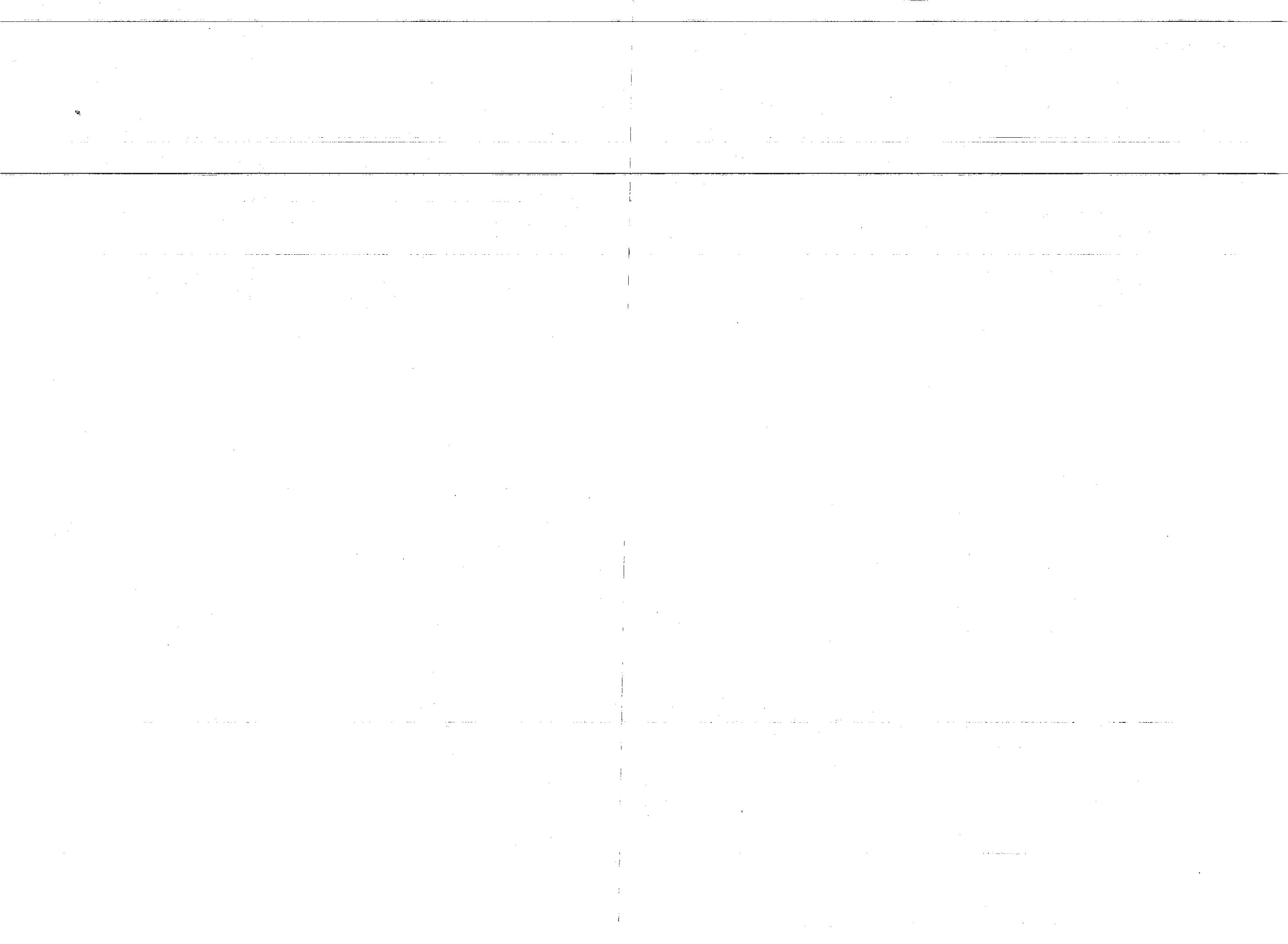
22 3, 2, 1 parts side (A)
 22 3, 2, 1 parts side (B)

9. PART LOCATIONS DIAGRAM



10. CIRCUIT DIAGRAM





PARTS LIST

No.	PART CODE	PRICE RANK	NEW PART MARK	PART RANK	PART NAME
1	VHiHM6116LP3N	AZ		B	STATIC RAM [M22-M31,M15-M20]
2	VHiSN74LS00-1	AE		B	IC [M6]
3	VHiSN74LS14-1	AM		B	IC [M7]
4	VHiSN74LS30-1	AE		B	IC [M2]
5	VHiSN74LS155N	AP		B	IC [M13]
6	VHiSN74LS193N	AR		B	IC [M4,5,9,10]
7	VHiSN74LS245N	AR		B	IC [M1]
8	VHiSN74LS136N	AE		B	IC [M3,M8]
9	VHiTC40H000P1	AF		B	IC [M14]
10	VHiTC40H138P1	AN		B	IC [M11,M12]
11	VS2SA673-C/1A	AC		B	Transistor [Q2]
12	VS2SC1213-C-1	AD		B	Transistor [Q1]
13	VHD1S2076A/-1	AB		B	Diode [D1]
14	VRD-ST2EY101J	AA		C	Resistor (1/4W 100) [R10,18-25]
15	VRD-ST2EY391J	AA		C	Resistor (1/4W 390) [R8]
16	VRD-ST2EY471J	AA		B	Resistor (1/4W 470) [R7,R12]
17	VRD-ST2EY202J	AA		C	Resistor (1/4W 2K) [R9]
18	VRD-ST2EY102J	AA		C	Resistor (1/4W 1K) [R1,3,14,15,4,2]
19	VRD-ST2EY512J	AA		C	Resistor (1/4W 5.1K) [R16,R11]
20	VRD-ST2EY513J	AA		C	Resistor (1/4W 51K) [R5,6]
21	VRD-ST2EY474J	AA		C	Resistor (1/4W 470K) [R17]
22	RMPTC8472QCKB	AD		C	Block resistor (4.7 k Ω \times 8) [NR1]
23	VCKYPU1HB221K	AB		C	Capacitor (50V, 200p) [C4,11,12,8,5]
24	VCKYPU1HB102K	AA		C	Capacitor (50V, 1000p) [C15]
25	VCKYPU1HF104Z	AB		C	Capacitor (25V, 0.1 μ) [C10,14,16-18,20-22]
	VCKYPU1HF104Z	AB		C	Capacitor (25V, 0.1 μ) [C1,2,6,7,9,13,19]
26	VCEAAU1CW227Q	AC		C	Capacitor (16V, 220 μ) [C3]
27	0AE322649////	BC	N	B	Dip switch
28	0AE328384////	BC	N	B	Battery (NI-CD)
29	0AE1R12CTN///	AZ	N	D	Carton
30	0AE1R12O/M///	BF	N	D	Instruction Manual

SHARP