

SS0920 *World Time, Calendar, Currency Exchange & 8D Calculator*

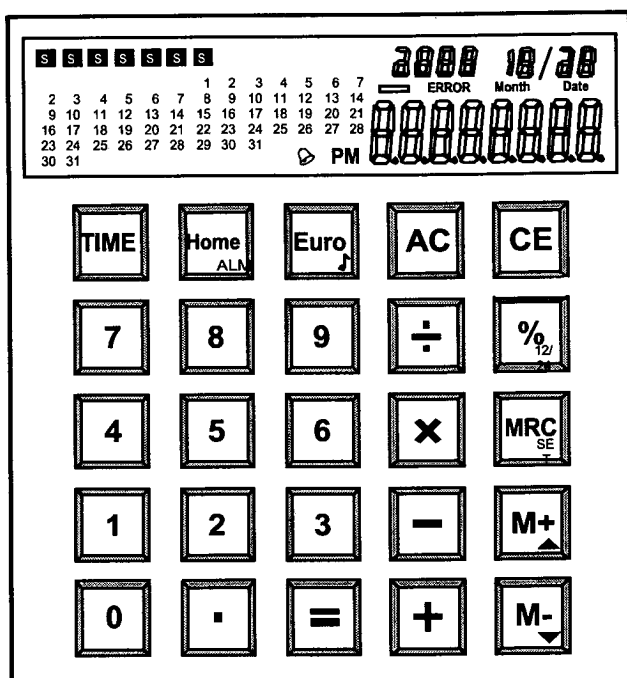
I. Features

- 2 LCD selection, suitable for MC738 & MC739
- 12/24 hours mode clock
- A Perpetual Calendar (year range from 1900 to 2099)
- Month search function
- World time for 16 cities
- An alarm timer (selectable alarm sound can be choice from 3 Bi Bi tones or 4 melodies)
- A Count Down Timer (max. 99hr 59m 59s)
- Smart UP and DOWN keys
- Keytone function
- 8 digits calculator with "+", "-", "×", "÷" and "%" functions
- Memory operation "M+", "M-" and "MRC"
- Two Currencies Exchange
- Two decimal points round up in currencies conversion
- Operating Voltage 3V

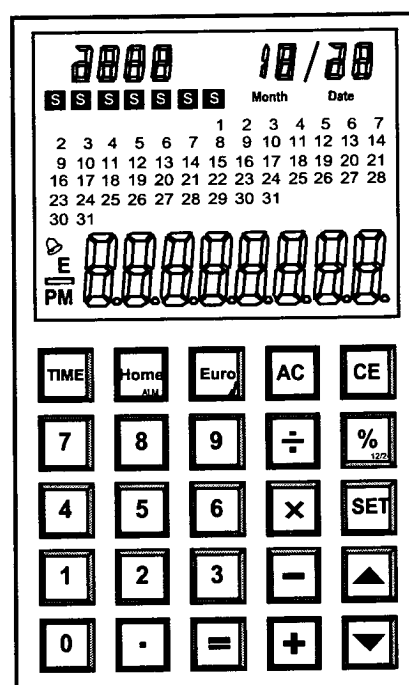
Bonding option for LCD selection and 12/24 hrs mode selection

II. Product Outlook

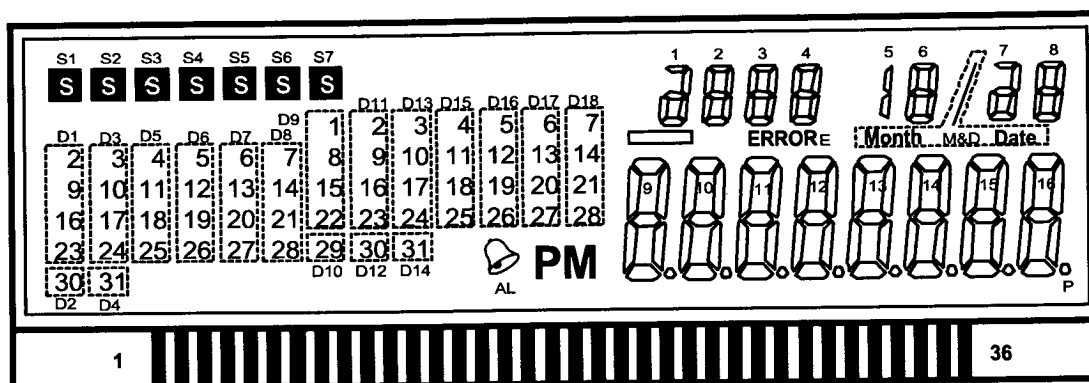
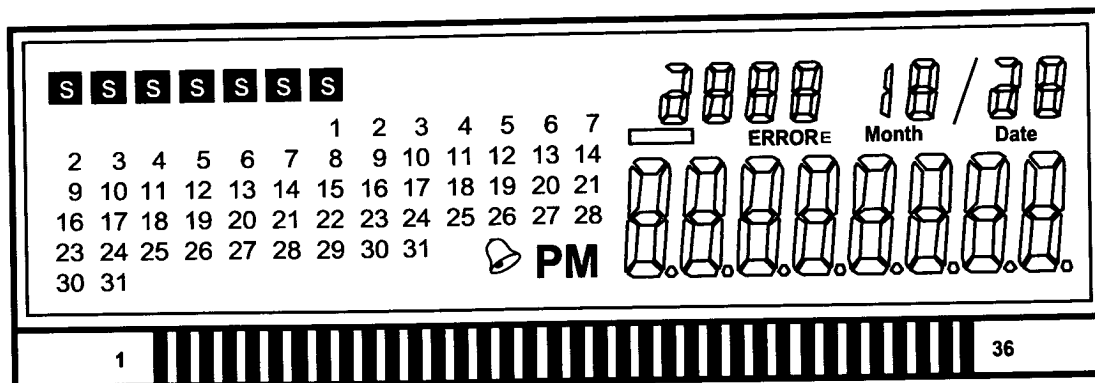
LCD MC739 Model



LCD MC738 Model



III. LCD MC739 Layout Diagram 1



IC Pin	LCD Pin	COM0	COM1	COM2	COM3	IC Pin	LCD Pin	COM0	COM1	COM2	COM3
SEG34	1	8C	8G	8E	1B, M&D, 2ABCD	SEG15	20	10P	10C	10B	10A
SEG33	2	8B	8F	7C	8D	SEG14	21	11D	11E	11G	11F
SEG32	3	8A	7B	7AGD	7E	SEG13	22	11P	11C	11B	11A
SEG31	4	6A	6B	6C	6D	SEG12	23	12D	12E	12G	12F
SEG30	5	5BC	6F	6G	6E	SEG11	24	12P	12C	12B	12A
SEG29	6	4B	4C	4D	E	SEG10	25	13D	13E	13G	13F
SEG28	7	4A	4G	4E	-	SEG9	26	13P	13C	13B	13A
SEG27	8	4F	3B	3C	3D	SEG8	27	14D	14E	14G	14F
SEG26	9	3A	3F	3G	3E	SEG7	28	14P	14C	14B	14A
SEG25	10	D1, S1	S2	S3	S4	SEG6	29	15D	15E	15G	15F
SEG24	11	D2	D4	D3	D5	SEG5	30	15P	15C	15B	15A
SEG23	12	D8	D7	D6	S5	SEG4	31	16D	16E	16G	16F
SEG22	13	D14	D10	D9	S6	SEG3	32	16P	16C	16B	16A
SEG21	14	D13	D12	D11	S7, D18	SEG2	*	*CAL	*TIMER		
SEG20	15	AL	D15	D16	D17	COM1	33	COM0			
SEG19	16	P	M	1C, 2G	1ADEC, 2E	COM2	34		COM1		
SEG18	17	9D	9E	9G	9F	COM3	35			COM2	
SEG17	18	9P	9C	9B	9A	COM4	36				COM3
SEG16	19	10D	10E	10G	10F						

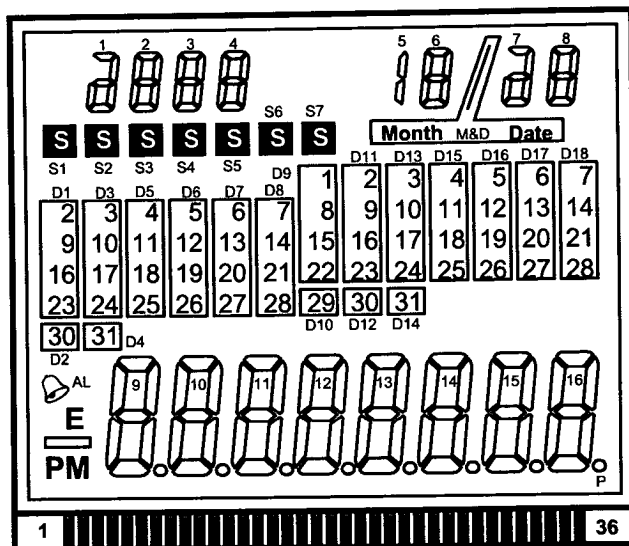
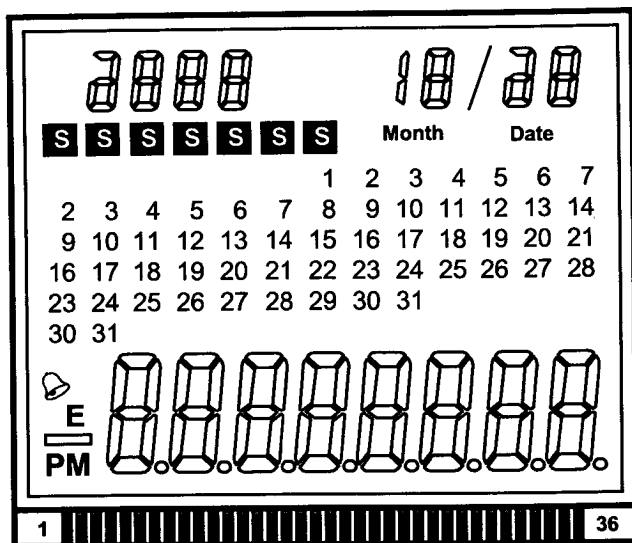
* Additional dots for touch panel LCD, "CAL" for calculator mode and "Timer" for Timer mode.

LCD Voltage = 3 Volt

LCD Duty = 1/4

LCD Bias = 1/3

IV. LCD MC739 Layout Diagram 2



IC Pin	LCD Pin	COM0	COM1	COM2	COM3	IC Pin	LCD Pin	COM0	COM1	COM2	COM3
SEG34	1	8C	8G	8E	1B, M&D, 2ABCD	SEG15	20	10P	10C	10B	10A
SEG33	2	8B	8F	7C	8D	SEG14	21	11D	11E	11G	11F
SEG32	3	8A	7B	7AGD	7E	SEG13	22	11P	11C	11B	11A
SEG31	4	6A	6B	6C	6D	SEG12	23	12D	12E	12G	12F
SEG30	5	5BC	6F	6G	6E	SEG11	24	12P	12C	12B	12A
SEG29	6	4B	4C	4D	E	SEG10	25	13D	13E	13G	13F
SEG28	7	4A	4G	4E	-	SEG9	26	13P	13C	13B	13A
SEG27	8	4F	3B	3C	3D	SEG8	27	14D	14E	14G	14F
SEG26	9	3A	3F	3G	3E	SEG7	28	14P	14C	14B	14A
SEG25	10	D1, S1	S2	S3	S4	SEG6	29	15D	15E	15G	15F
SEG24	11	D2	D4	D3	D5	SEG5	30	15P	15C	15B	15A
SEG23	12	D8	D7	D6	S5	SEG4	31	16D	16E	16G	16F
SEG22	13	D14	D10	D9	S6	SEG3	32	16P	16C	16B	16A
SEG21	14	D13	D12	D11	S7, D18	SEG2	*	*CAL	*TIMER		
SEG20	15	AL	D15	D16	D17	COM1	33	COM0			
SEG19	16	P	M	1C, 2G	1A DEG, 2E	COM2	34		COM1		
SEG18	17	9D	9E	9G	9F	COM3	35			COM2	
SEG17	18	9P	9C	9B	9A	COM4	36				COM3
SEG16	19	10D	10E	10G	10F						

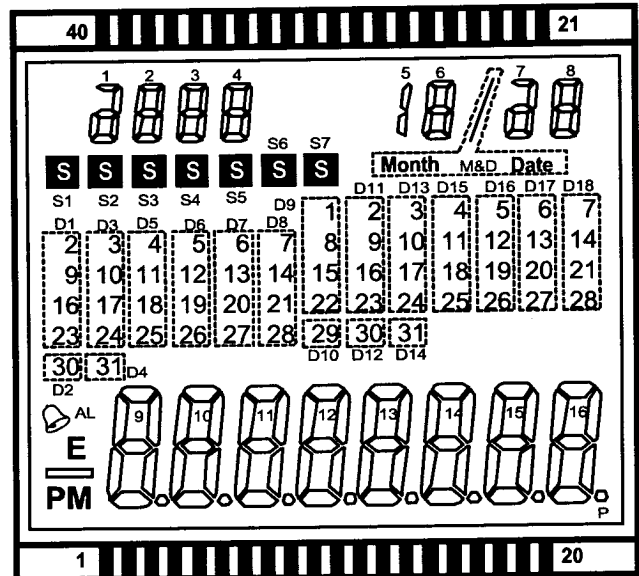
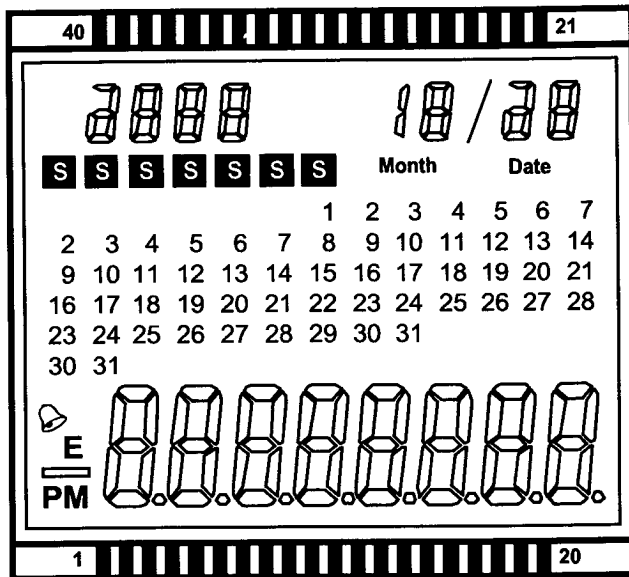
* Additional dots for touch panel LCD, "CAL" for calculator mode and "Timer" for Timer mode.

LCD Voltage = 3 Volt

LCD Duty = 1/4

LCD Bias = 1/3

V. LCD MC738 Layout Diagram



IC Pin	LCD Pin	COM3	COM2	COM1	COM0	IC Pin	LCD Pin	COM3	COM2	COM1	COM0
COM2	1			COM1		SEG34	21	D18	8C	8B	8A
COM1	2				COM0	SEG33	22	8D	8E	8G	8F
SEG20	3	D1	D2	E	AL	SEG32	23	D12	D17	7C	7B
SEG19	4	D3	D4	-	PM	SEG31	24	D16	M&D	7E	7ADG
SEG18	5	9F	9G	9E	9D	SEG30	25	D14	D15	6C	6B
SEG17	6	9A	9B	9C	9P	SEG29	26	D13	6D	6G	6A
SEG16	7	10F	10G	10E	10D	SEG28	27	D11	5BC	6E	6F
SEG15	8	10A	10B	10C	10P	SEG31	28		D9		
SEG14	9	11F	11G	11E	11D	SEG27	29	D8	S7	4C	4B
SEG13	10	11A	11B	11C	11P	SEG26	30	S6	4D	4G	4A
SEG12	11	12F	12G	12E	12D	SEG25	31	D7	S5	4E	4F
SEG11	12	12A	12B	12C	12P	SEG24	32	D10	D6	3C	3B
SEG10	13	13F	13G	13E	13D	SEG23	33	S4	3D	3G	3A
SEG9	14	13A	13B	13C	13P	SEG22	34	D5	S3	3E	3F
SEG8	15	14F	14G	14E	14D	SEG31	35		1B, 2ABCD		
SEG7	16	14A	14B	14C	14P	SEG21	36	S1	S2	1C, 2G	1ADEG, 2E
SEG6	17	15F	15G	15E	15D	COM2	37			COM1	
SEG5	18	15A	15B	15C	15P	COM1	38				COM0
SEG4	19	16F	16G	16E	16D	COM4	39	COM3			
SEG3	20	16A	16B	16C	16P	COM3	40		COM2		
SEG2	*			*TIMER	*CAL						

* Additional dots for touch panel LCD, "CAL" for calculator mode and "Timer" for Timer mode.

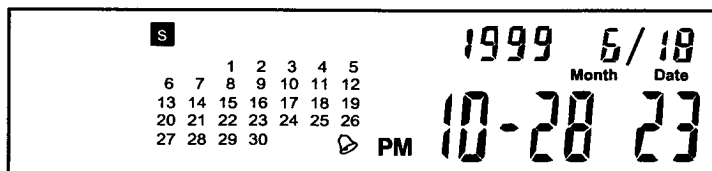
LCD Voltage = 3 Volt

LCD Duty = 1/4

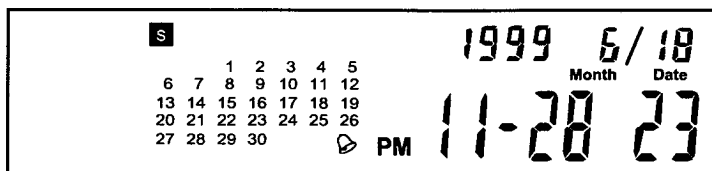
LCD Bias = 1/3

VI. Display Mode (Use MC739 as example)

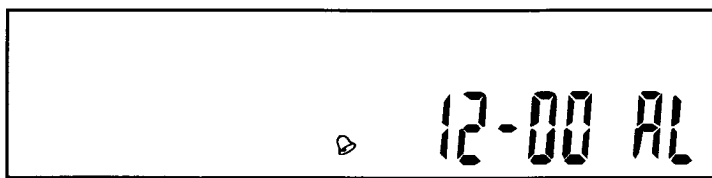
Time / Normal Mode



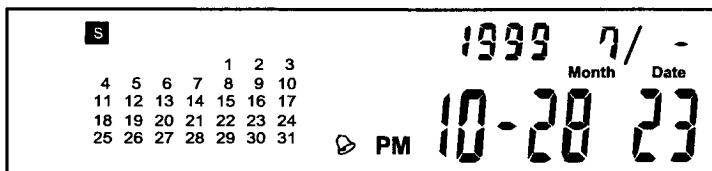
World Time Mode



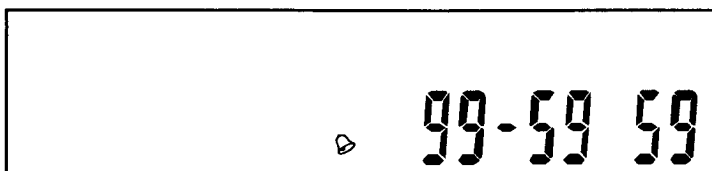
Alarm Mode



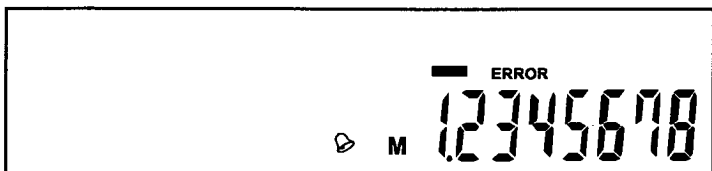
Month Search Mode



Count Down Timer



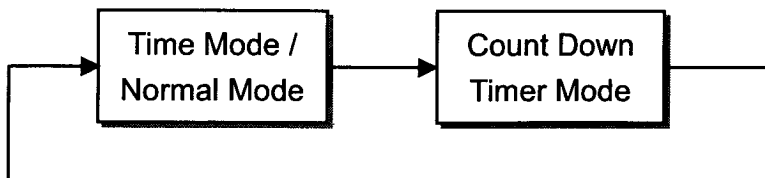
Calculator Mode



VII. Operation Description

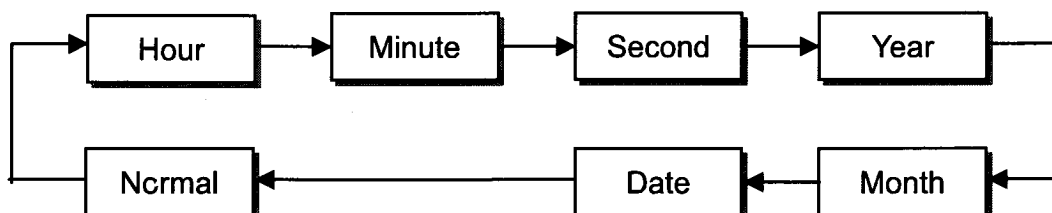
● Time Mode / Count Down Timer Mode

- Press **MODE** key to toggle time mode or count down timer mode.



● Setting of Real Time Clock

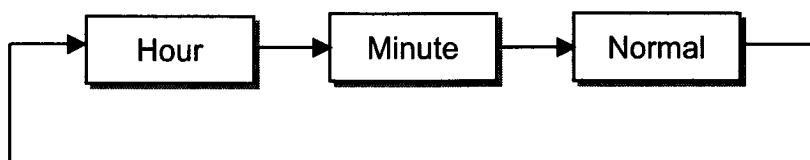
- At normal mode press **SET** key to set the real time clock and date, month, year.
- The setting sequence as follows:



- The setting object will be flash, then press **UP** or **DOWN** key to adjust. Adjust of second will to zero.

● Setting of alarm

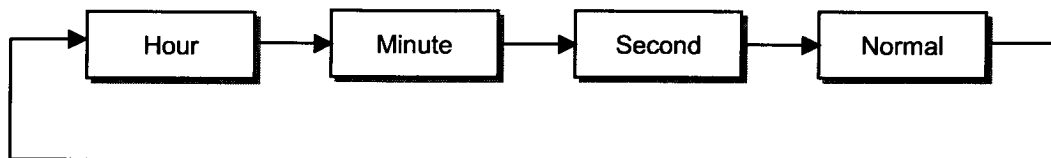
- Press **ALM** key go to alarm mode.
- Press **ALM** key again to toggle alarm ON/OFF, indicate by the  icon.
- Press **SET** key to set alarm time.
- The setting sequence as follows:



- That setting similar to real time clock setting.
- Press number keys **1** , **2** or **3** choose any one Bi Bi tone to be alarm sound.
- Or press number keys **4** , **5** , **6** or **7** choose any one melody to be alarm sound.

● Setting of Count Down Timer

- Press **MODE** key go to Count Down Timer mode.
- Press **SET** key to adjust the Count Down Timer.
- The setting sequence as follows:



- That setting also similar to real time clock setting.
- When counter is non zero press **⏻** to start count down, press again to pause the counter. At this time press **UP** or **DOWN** reset counter to [00-00 00].
- When counter is start, display keep on the Count Down Timer Mode, except key is press. Display will back to normal mode on count down finish and count down alarm tone end.

● Calendar Month Search

- At normal mode press **UP** or **DOWN** key to search the month.

● Smart **UP** and **DOWN** keys

- The **UP** and **DOWN** keys are smart keys, it is useful on the setting and month search. Hold that key on one second will automatically roll up/down, then hold with more than 5 second roll up/down will go faster.

● World Time Search

- At normal mode press number keys or **+**, **-**, **×**, **÷**, **=** to search other city time.
- Press **SET** key to set the current city time to be local time.
- Press **MODE** key back to local time.

Table of time different for the cities

Time Zone	Time different	Key	City Code	Name of City
10	0	7	LON	LONDON
15.5	+5.5	4	IND	INDIA
20	+10	1	SYD	SYDNEY
3	-7	0	DEV	DENVER
11	+1	8	PAR	PARIS
17	+7	5	BKK	BANGKOK
22	+12	2	WLG	WELLINGTON
4	-6	.	CHI	CHICAGO
12	+2	9	CAI	CAIRO
18	+8	6	HKG	HONG KONG
0	-10	3	HNL	HONOLULU
5	-5	=	NYC	NEW YORK
13	+3	÷	MCW	MOSCOW
19	+9	×	TYO	TOKYO
2	-8	-	LAX	LOS ANGELES
7	-3	+	RIO	RIO DE JANEIRO

- **12/24 Hours Mode Setting**

- At normal mode press  key to toggle 12/24 hours mode.

- **The function of key**

- Press that key at time mode to toggle keytone ON/OFF.

Note: At above modes if no key press after 8 sec will back to normal mode.

- **Calculator Mode**

- Press  key change to calculator mode.
- Press number keys with  ,  ,  ,  ,  ,  keys to calculation.
- Press  ,  ,  keys for memory operation.
- Press  key back to time mode.

- **Exchange Rate Setting**

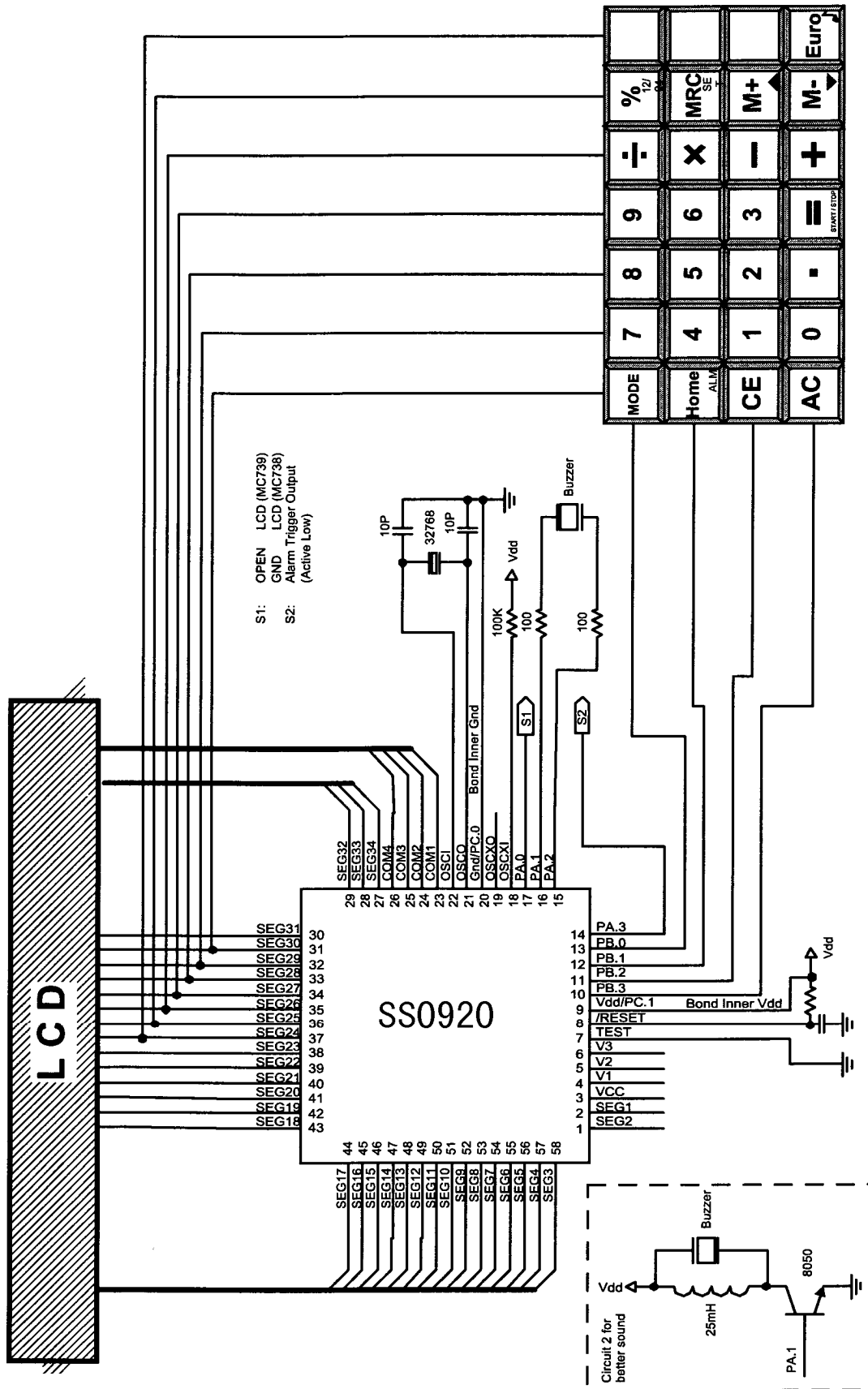
- Press  key then press  key twice to set exchange rate.
- Display will flash the numbers.
- Key in six decimal places number of exchange rate.
- Press  key again to end of setting.

- **Currency Exchange**

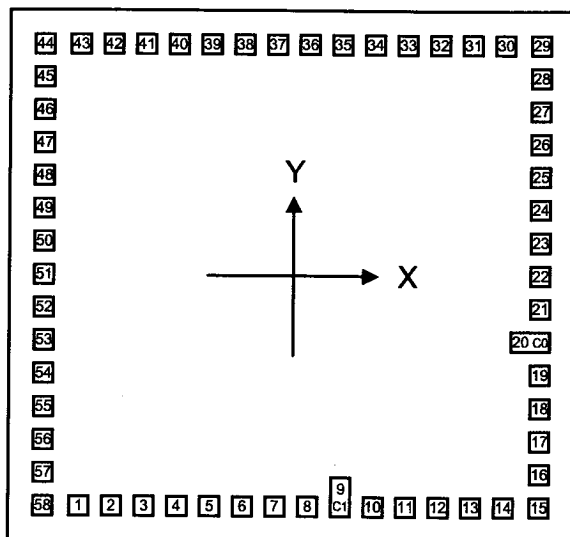
- Press  key and enter the numbers.
- Press either  or  key for currency exchange, indicate by Eu or Hc.
- The rounded up result will be show on the display.

Note: At calculator mode if no key press after 5 minute will back to Time mode.

VIII. SS0920 Circuit Diagram



IX. SS0920 Bonding Pad Diagram



Chip size : 2050 x 1930 mm²

Substrate connect to GND

Pad 20  Bond outer portion to select C0+GND

Pad 20  Bond inner portion to select GND only

Pad 9  Bond outer portion to select C1+Vdd

Pad 9  Bond inner portion to select Vdd only

Pad	Name	X (μm)	Y (μm)	Pad	Name	X (μm)	Y (μm)
1	SEG2	-770	-840	29	COM7/SEG32	900	840
2	SEG1	-640	-840	30	COM8/SEG31	770	840
3	VCC	-520	-840	31	SEG30	640	840
4	V1	-405	-840	32	SEG29	520	840
5	V2	-290	-840	33	SEG28	405	840
6	V3	-175	-840	34	SEG27	290	840
7	TEST	-60	-840	35	SEG26	175	840
8	/RESET	55	-840	36	SEG25	60	840
9	Vdd	180	-746	37	SEG24	-60	840
	PC.1	176	-849	38	SEG23	-175	840
10	PB.3	295	-840	39	SEG22	-290	840
11	PB.2	410	-840	40	SEG21	-405	840
12	PB.1	525	-840	41	SEG20	-520	840
13	PB.0	640	-840	42	SEG19	-640	840
14	PA.3	770	-840	43	SEG18	-770	840
15	PA.2	900	-840	44	SEG17	-900	840
16	PA.1	900	-710	45	SEG16	-900	710
17	PA.0	900	-590	46	SEG15	-900	590
18	OSCXI	900	-470	47	SEG14	-900	470
19	OSCXO	900	-355	48	SEG13	-900	355
20	Gnd	806	-240	49	SEG12	-900	240
	PC.0	908	-248	50	SEG11	-900	120
21	OSCO	900	-120	51	SEG10	-900	0
22	OSCI	900	0	52	SEG9	-900	-120
23	COM1	900	120	53	SEG8	-900	-240
24	COM2	900	240	54	SEG7	-900	-355
25	COM3	900	355	55	SEG6	-900	-470
26	COM4	900	470	56	SEG5	-900	-590
27	COM5/SEG34	900	590	57	SEG4	-900	-710
28	COM6/SEG33	900	710	58	SEG3	-900	-840

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