

Sandglass Timer

Feature:

- Display: month, day, hour, minute.
- 12/24 hour format.
- Alarm function.
- Timer and Count-down Timer. (range: 1-99min)
- Bonding option: select LCD A or LCD B.
- With 7 colors LED background illumination.
- Voltage: 1.5V.
- Low power.

Operation:

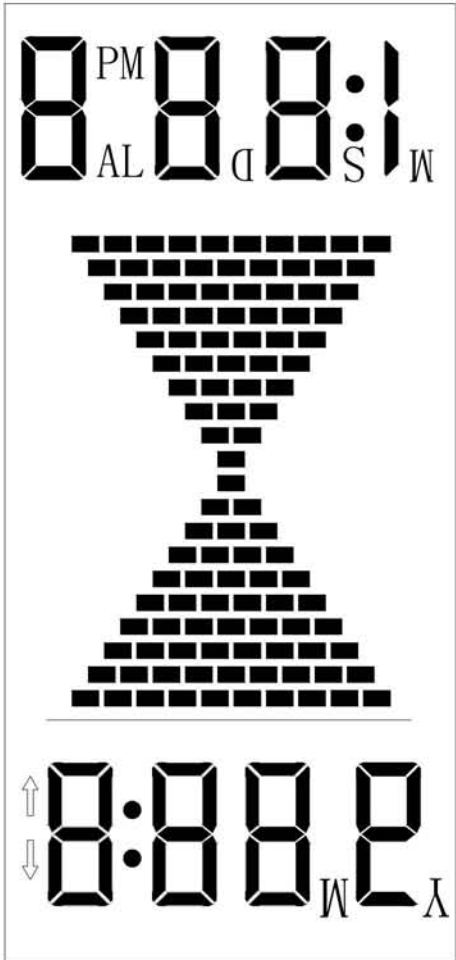
1. 7 Keys for operation:
+(UP)、-(DOWN)、12/24、CLOCK SET、TIMER (START/STOP)、CLEAR、LIGHT.
2. Setting Clock: Press CLOCK SET key, the minute is flash, press +/- to adjust the value. Then press 12/24 key return to setting hour. And press CLOCK SET key to save.
3. Setting Count-down Timer: Place the Sandglass Timer to Count-down Timer mode, press +/- key to adjust time that you want. Press START/SOTP key to start. Press the key to pause and press the key again to continue. A tone will playing for one minute and the color LED turn on same time when count-down time is out (0:00). And then, it began to count time from 0:00, the LCD is flashing. Press CLEAR key return to stop and display 0:00. (Range: max 99:59)
4. When the tone is playing, press START/STOP key to stop playing and display the set count-down time.
5. Count Timer: Place the Sandglass Timer to Count-down Timer mode. Press START/SOTP key to start. Press the key to pause and press the key again to continue. (Range: max 99:59)
6. 12/24 hour format: Press 12/24 key to select want format. 'PM' will be appeared that for afternoon when the format is 12 hour.
7. 2 style LCD.
LCD A: year, month, date + clock. **LCD B:** count-down timer + clock. (Bonding option)
8. Setting Alarm: In clock mode, press and hold CLOCK SET key for 2 second into Alarm Setting mode. Press Clear key to turn ON/OFF alarm function. Press 12/24 key to adjust alarm time.
9. Alarm tone will be playing for one minute and the color LED turn on same time.
10. When the alarm tone is playing, press Stop key to stop play and turn off color LED.
11. Color LED: a) Turn on one minute in count-down mode. b) Turn on one minute in alarm mode.
c) Turn on 7 sec when switch to clock or timer mode. d) Press LIGHT key to turn on 7 sec.
12. Sandglass cycle: 1 minute.

	LED-R	LED-B	LED-G
1 st second	*		
2 nd second		*	
3 rd second			*
4 th second	*	*	
5 th second	*		*
6 th second		*	*
7 th second	*	*	*

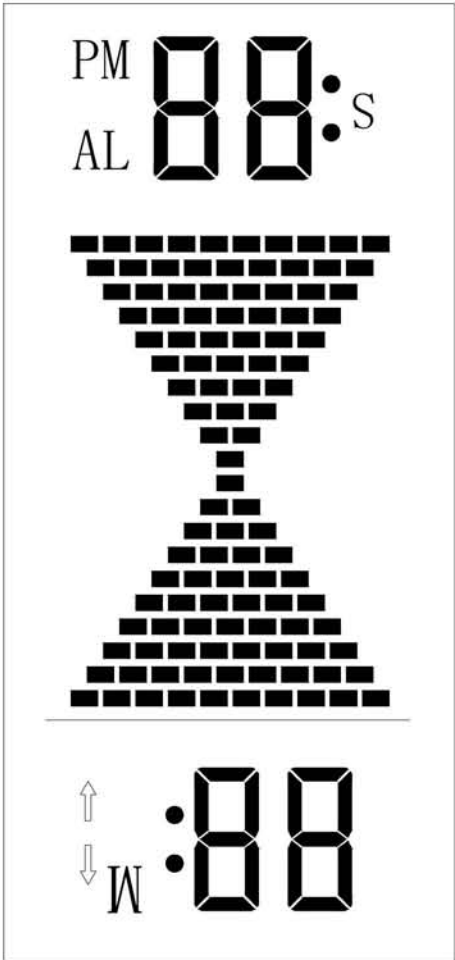
Note: * = The LED is turn on.

LCD Drawing:

LCD A

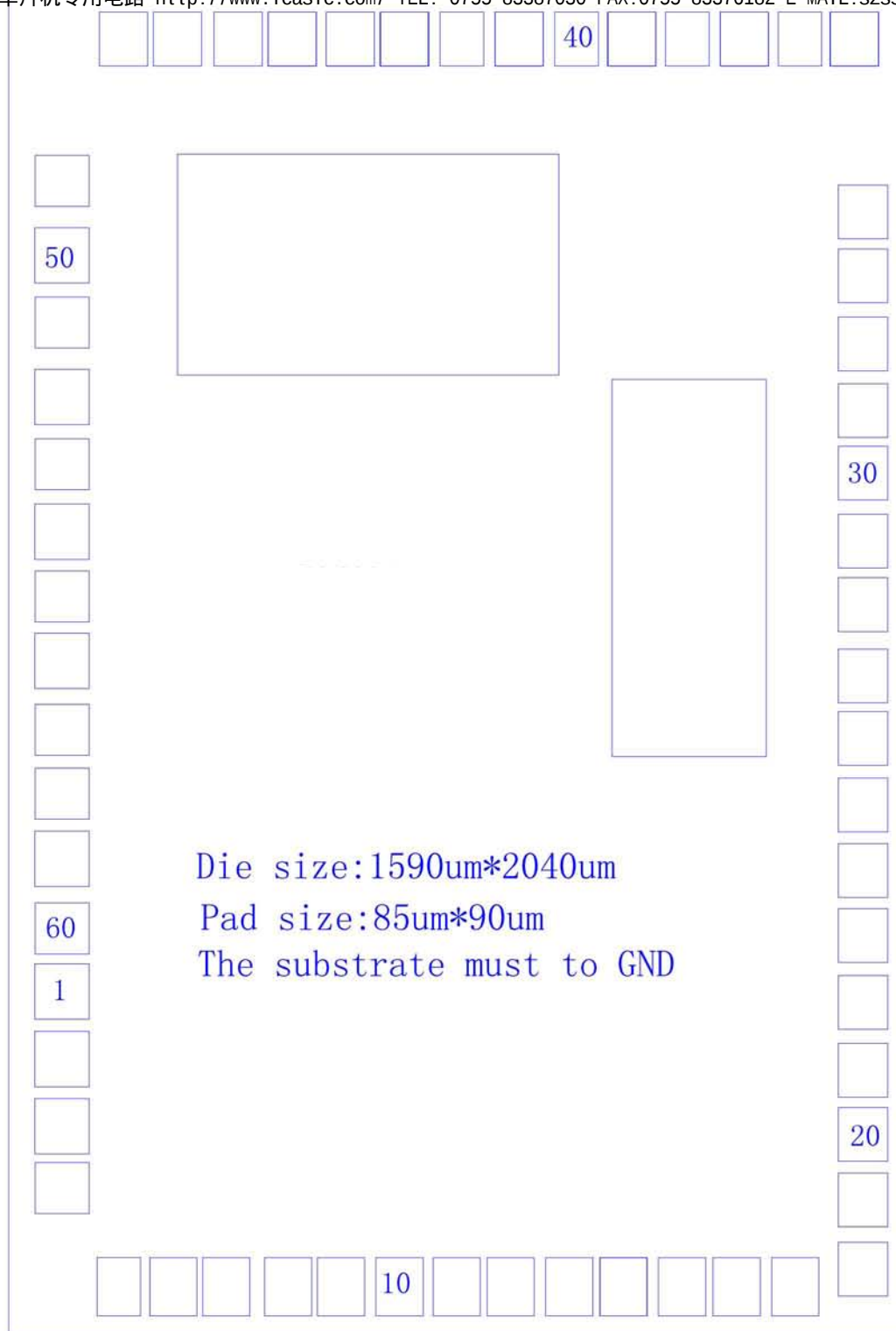


LCD B



PAD Location:

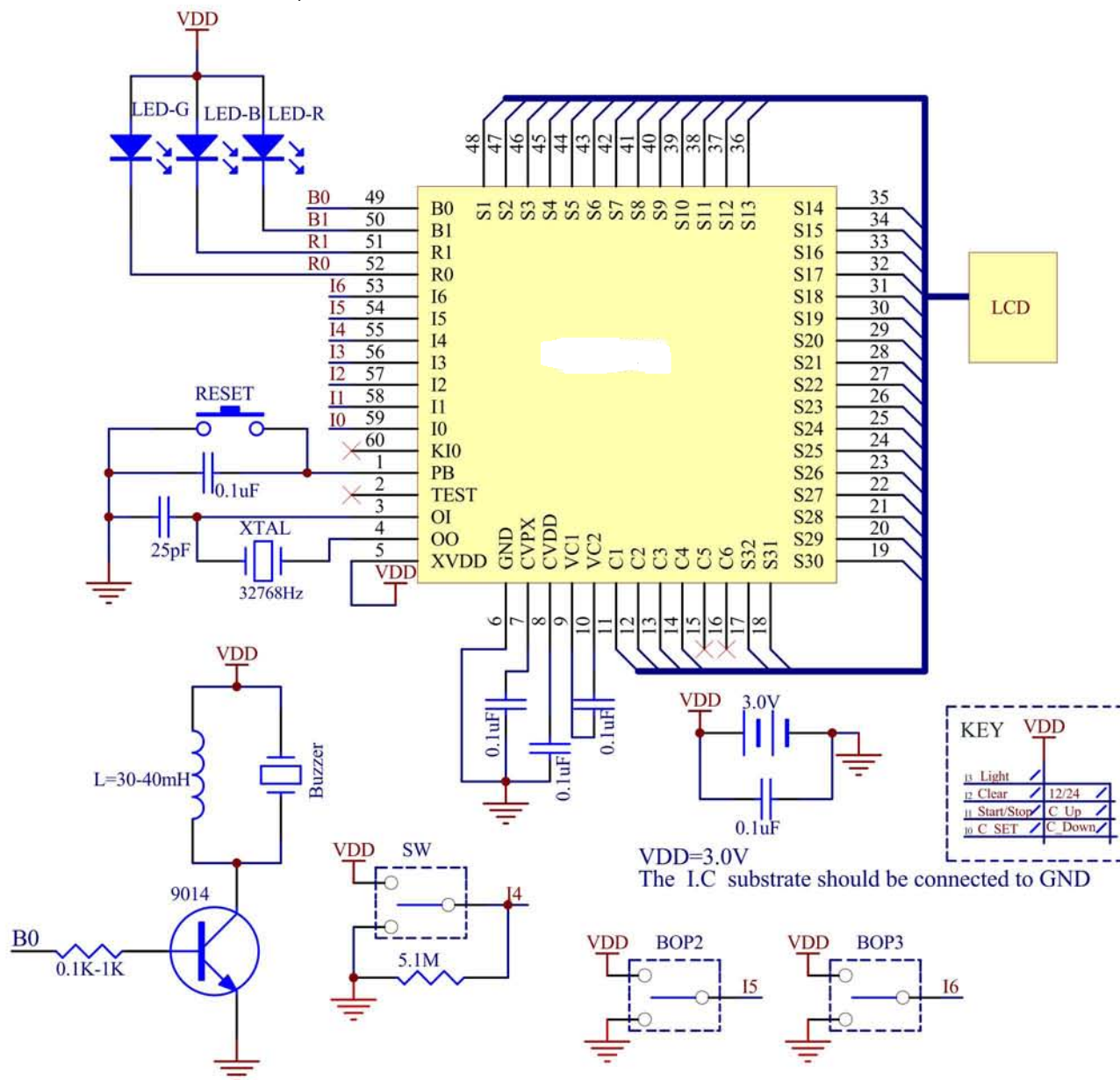
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NO	Name	X(μm)	Y(μm)	NO	Name	X(μm)	Y(μm)
1	PB	89.95	515.15	31	S18	1444.65	1407.00
2	TEST	89.95	415.15	32	S17	1444.65	1507.00
3	OI	89.95	315.15	33	S16	1444.65	1600.00
4	OO	85.70	214.50	34	S15	1444.65	1700.00
5	XVDD	89.10	67.10	35	S14	1433.85	1960.05
6	GND	221.75	67.10	36	S13	1333.85	1960.05
7	CVPX	321.75	67.10	37	S12	1233.85	1960.05
8	CVDD	421.75	67.10	38	S11	1133.85	1960.05
9	VC1	521.75	67.10	39	S10	1033.85	1960.05
10	VC2	621.75	67.10	40	S9	933.85	1960.05
11	C1	721.75	67.10	41	S8	833.85	1960.05
12	C2	821.75	67.10	42	S7	733.85	1960.05
13	C3	921.75	67.10	43	S6	633.85	1960.05
14	C4	1021.75	67.10	44	S5	533.85	1960.05
15	C5	1121.75	67.10	45	S4	433.85	1960.05
16	C6	1221.75	67.10	46	S3	333.85	1960.05
17	S32	1321.75	74.10	47	S2	233.85	1960.05
18	S31	1445.90	107.00	48	S1	133.85	1960.05
19	S30	1446.05	206.35	49	B0	89.95	1740.45
20	S29	1444.65	307.00	50	B1	89.95	1629.90
21	S28	1444.65	407.00	51	R1	89.95	1529.90
22	S27	1444.65	507.00	52	R0	89.95	1415.15
23	S26	1444.65	607.00	53	I6	89.95	1315.15
24	S25	1444.65	707.00	54	I5	89.95	1215.15
25	S24	1444.65	807.00	55	I4	89.95	1115.15
26	S23	1444.65	907.00	56	I3	89.95	1015.15
27	S22	1444.65	1007.00	57	I2	89.95	915.15
28	S21	1444.65	1107.00	58	I1	89.95	815.15
29	S20	1444.65	1207.00	59	I0	89.95	715.15
30	S19	1444.65	1307.00	60	KI0	89.95	615.15

Application Circuit (3 Color LED):

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Note:

1. VDD=3.0V
2. Crystal should be as close to the IC as possible, and keep away from LCD/alarm circuit as possible.
3. Bonding option:

SW:

I4 = VDD, Timer Mode. I4 = GND, Clock Mode.

BOP2:

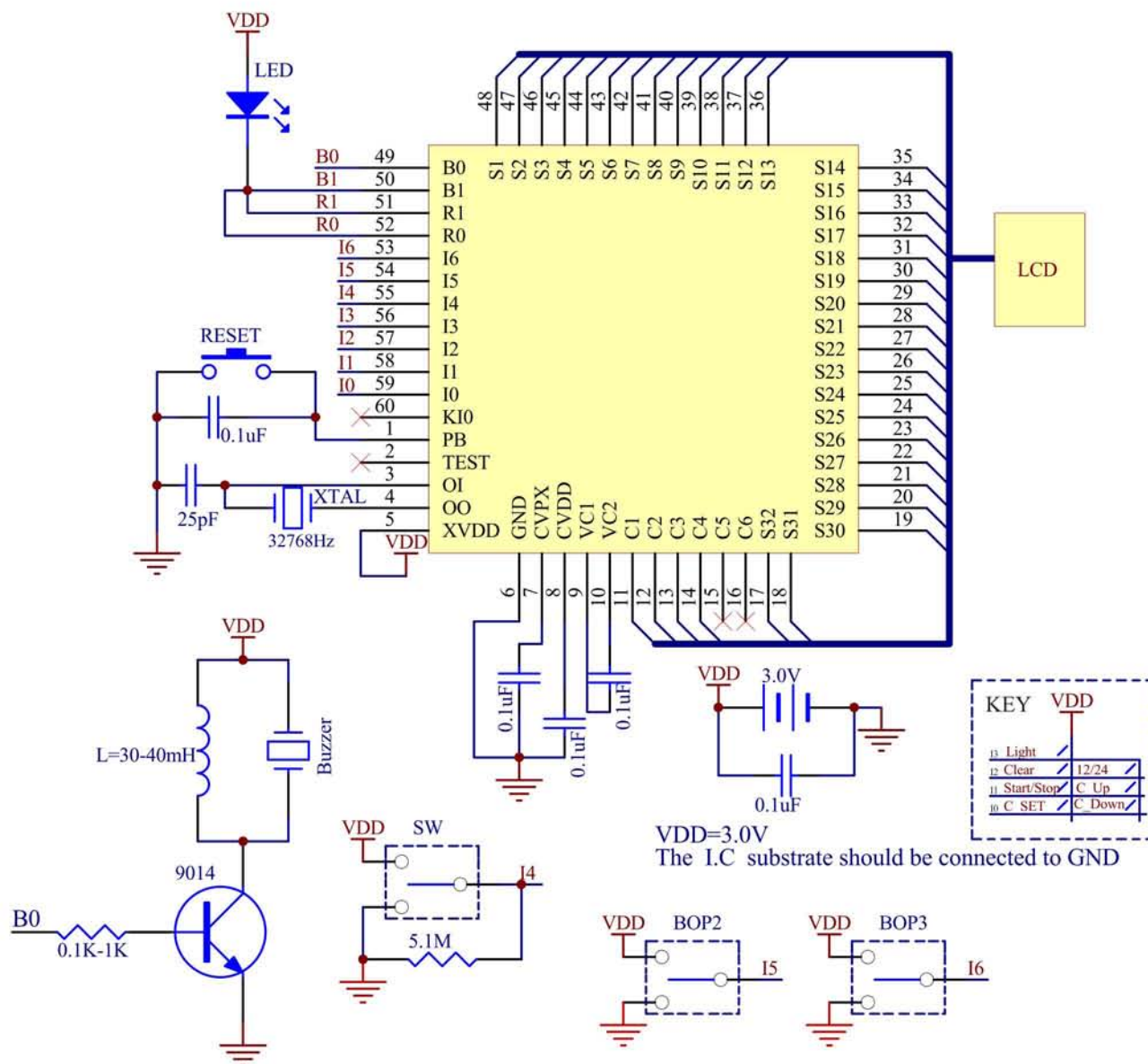
I5 = VDD, Clock Mode when power on. I5 = GND, Clock Setting Mode when power on.

BOP3:

I6 = VDD, LCD A. I6 = GND, LCD B.

Application Circuit (One LED):

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Note:

1. VDD=3.0V
2. Crystal should be as close to the IC as possible, and keep away from LCD/alarm circuit as possible.
3. Bonding option:

SW:

I4 = VDD, Timer Mode. I4 = GND, Clock Mode.

BOP2:

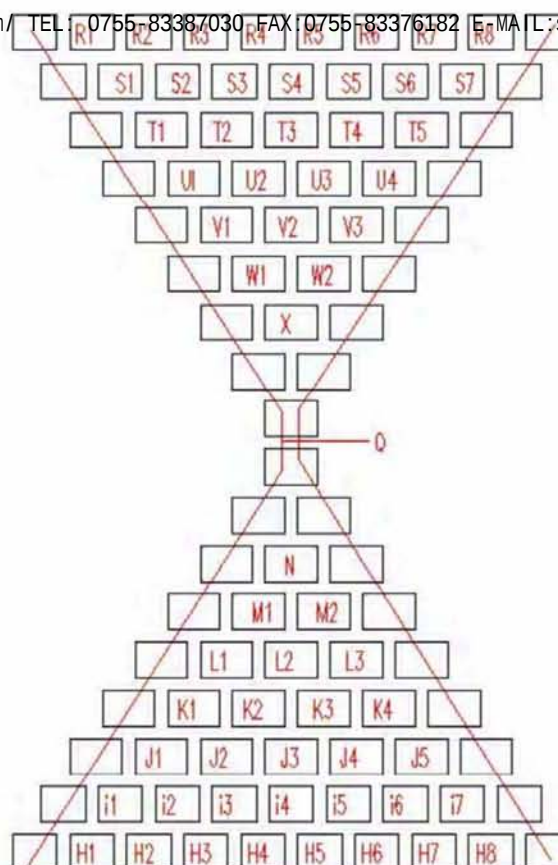
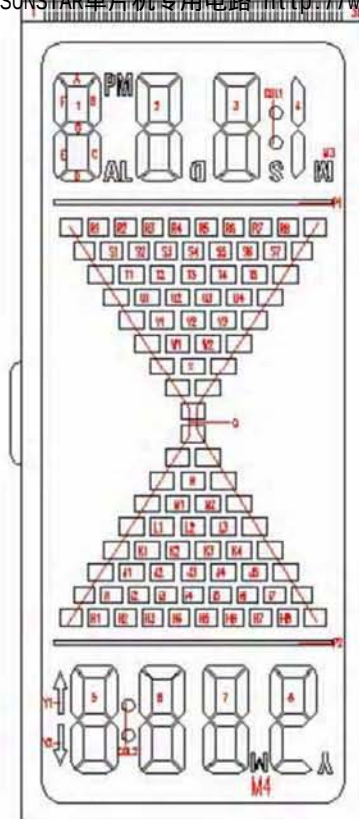
I5 = VDD, Clock Mode when power on. I5 = GND, Clock Setting Mode when power on.

BOP3:

I6 = VDD, LCD A. I6 = GND, LCD B.

LCD Layout Drawing (LED A): (VOLTAGE: 4.5V, DUTY: 1/4, BIAS1/3)

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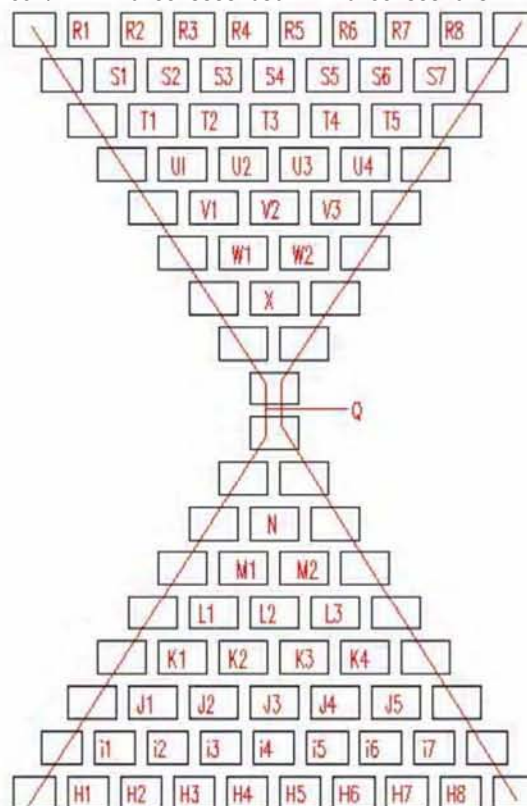
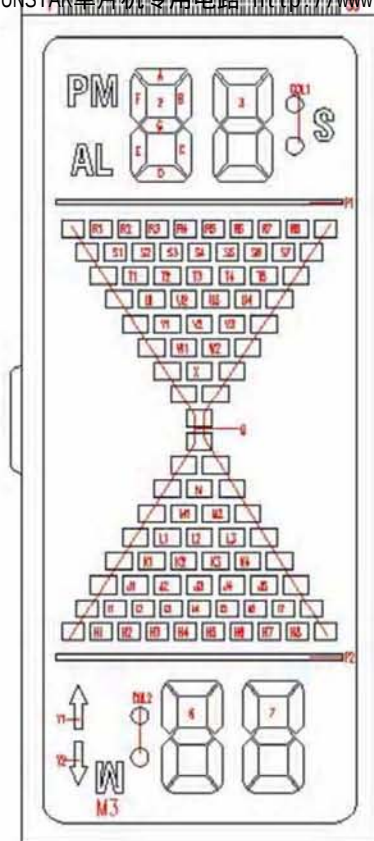
LCD Table:

IC PIN	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	C1	C2
ICD PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
COM1	i7	i6	L1	i5	i4	H3	H1	M1	1A	PM	2A	2B	3A	3B	4BC	COM1	--
COM2	J5	J4	J3	J2	i3	i2	AL	N	1F	1B	2F	2G	3F	3G	COL1	--	COM2
COM3	K4	K3	K2	K1	J1	i1	--	M2	1E	1G	2E	2C	3E	3C	M3	--	--
COM4	H8	H7	L2	H6	H5	H4	H2	L3	1D	1C	2D	2C	3D	S	P1	--	--

C3	C4	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32
18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
--	--	U1	U2	U3	T4	T5	S7	--	V1	--	8G	8F	7G	7F	6G	6F	5G	5F
--	--	T1	T2	T3	U4	S5	S6	--	W1	--	8E	7C	7E	6C	6E	5C	5E	
COM3	--	S1	S2	V2	S3	S4	R6	R7	X	Y2	P2	8D	M4	7D	Y1	6D	COL2	5D
--	COM4	R1	R2	V3	R3	R4	R5	R8	W2	Q	8B	8A	7B	7A	6B	6A	5B	5A

LCD Layout Drawing (LED B):

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LCD Table:

IC PIN	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	C1	C2
ICD PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
COM1	i7	i6	L1	i5	i4	H3	H1	M1	---	PM	2A	2B	3A	3B	---	COM1	---
COM2	J5	J4	J3	J2	i3	i2	AL	N	---	---	2F	2G	3F	3G	COL1	---	COM2
COM3	K4	K3	K2	K1	J1	i1	---	M2	---	---	2E	2C	3E	3C	---	---	---
COM4	H8	H7	L2	H6	H5	H4	H2	L3	---	---	2D	---	3D	S	P1	---	---

C3	C4	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31
18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
---	---	U1	U2	U3	T4	T5	S7	---	V1	---	---	---	7G	7F	6G	6F	---
---	---	T1	T2	T3	U4	S5	S6	---	W1	---	---	---	7C	7E	6C	6E	---
COM3	---	S1	S2	V2	S3	S4	R6	R7	X	Y2	P2	---	M3	7D	Y1	6D	COL2
---	COM4	R1	R2	V3	R3	R4	R5	R8	W2	Q	---	---	7B	7A	6B	6A	---

Update History:

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Date	Version	Note		Manager
		Original	Original	
2009/9/4	V0.1	/	/	PJ
2009/9/7	V0.2	/	应用线路图	PJ
2009/11/24	V0.3	/	应用线路图下的 BOP1 与 BOP2 修改	PJ
2009/12/14	V0.4	/	按键或旋转灯亮的时间/应用线路图	PJ
2010/1/8	V0.5	/	应用线路图 / LCD 表格	PJ
2010/3/9	V0.6	/	脚位图	PJ
2010/4/12	V0.7	V0.6	应用线路图	PJ
2010/4/14	V0.8	V0.7	操作说明	PJ
2010/4/26	V0.9	V0.8	应用线路图	PJ
2010/5/7	V0.9	V0.9	First release (English Version).	XJ