

FEATURES

- SUNSTAR单片机专用电路 <http://www.icasic.com/> TEL: 0755-83387030 FAX:0755-83376182 E-MAIL:szss20@163.com
- One-chip CMOS constructions
 - Single 1.5V battery operation
 - Voltage doubler, voltage tripler
 - Lower power consumption
 - 32,768Hz crystal frequency
 - Built-in voltage doubler, voltage tripler circuit
 - Trimmer capacitor included
 - Long or short second hand selectable (bonding option)
 - Alarm sound crescendo (mask option)
 - Main alarm frequency 4096Hz (2048Hz mask option)

FUNCTIONS

- 3 functions: hour, minute, second
- Time setting: minute up setting
- PM display
- Alarm function
- Snooze function (5 min interval)
- Alarm output

DESCRIPTION

The DL9116 is a silicon -gate CMOS LSIS for a 3-HAND analog display watch. It provides three functions (hour, minute, second). It connects the analog LCD panel with 120 segments.

The DL9116 has 24 segment outputs and 8 common outputs for direct drive of a 1/6-duty multiplexing LCD. It operates on a single 1.5V battery and the circuit time base is a 32,768Hz crystal oscillator. Optionally, the seconds hand may be displayed as a short segment at the edge of the display, or a long segment with the same length as the minute hand. The DL9116 has alarm function with snooze.

ABSOLUTE MAXIMUM RATINGS_(Ta=25°C)

Characteristics	Symbol	Value	Unit
Supply voltage	VCC	-0.3 ~ +2.0	V
Operating temperature	Tpor	-20 ~ +75	°C
Storage temperature	Tstg	-55 ~ +125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C, Vcc=1.5V, Vss=0V; unless otherwise specified)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Supply voltage	V _{CC}		1.2	1.5	1.8	V
LCD voltage	GND		-1.2	-1.5	-1.8	V
	GND2		-2.4	-3	-3.6	V
Supply current	I _{CC}	Without load		2.0	2.5	uA
Input high voltage	V _{IH}		V _{CC} -0.3		V _{CC}	V
Input low voltage	V _{IL}		V _{SS}		V _{SS} +0.3	V
Switch activation current	I _{SW}	V _{IH} = V _{CC}	0.1	0.5	3	uA
Oscillator start voltage	V _{OSC}	Within 5 Sec			1.45	V
Oscillator stop voltage	V _{OSP}				1.20	V
Oscillator frequency	F _{OSC}			32,768		Hz
LCD frequency	F _d			43		Hz
Oscillator capacitor	C _{in}			20		Hz
	C _{out}			20		Hz
Switch debouncing time	T _{deb}				31.25	mS
Output current (BD, BDN)	I _{OH}	V _{OH} = 1.0V	-500			uA
	I _{OL}	V _{OL} = 0.5V	500			Ua
Alarm output frequency	F _{OUT}			4096		Hz

APPLICATION CIRCUIT

特别注意:

VCC 与 VSS 两端

需加电容 0.1uF

Quartz Crystal Parameter

F_p = 32,678

CL = 10pF

C1 = 4pF

C0 = 2.0pF

Rs = 35KΩ

Q = 35,000

C1, C2, C3 = 0.1uF

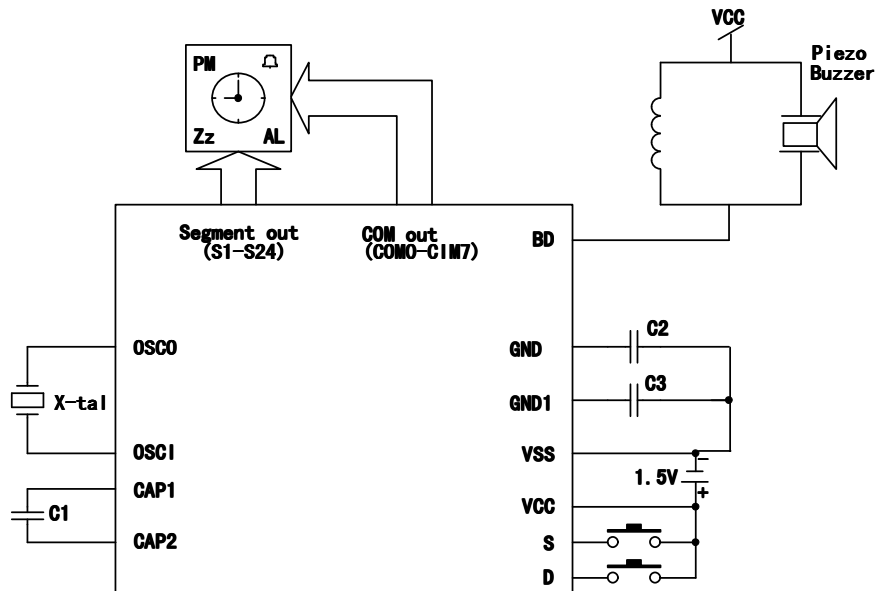
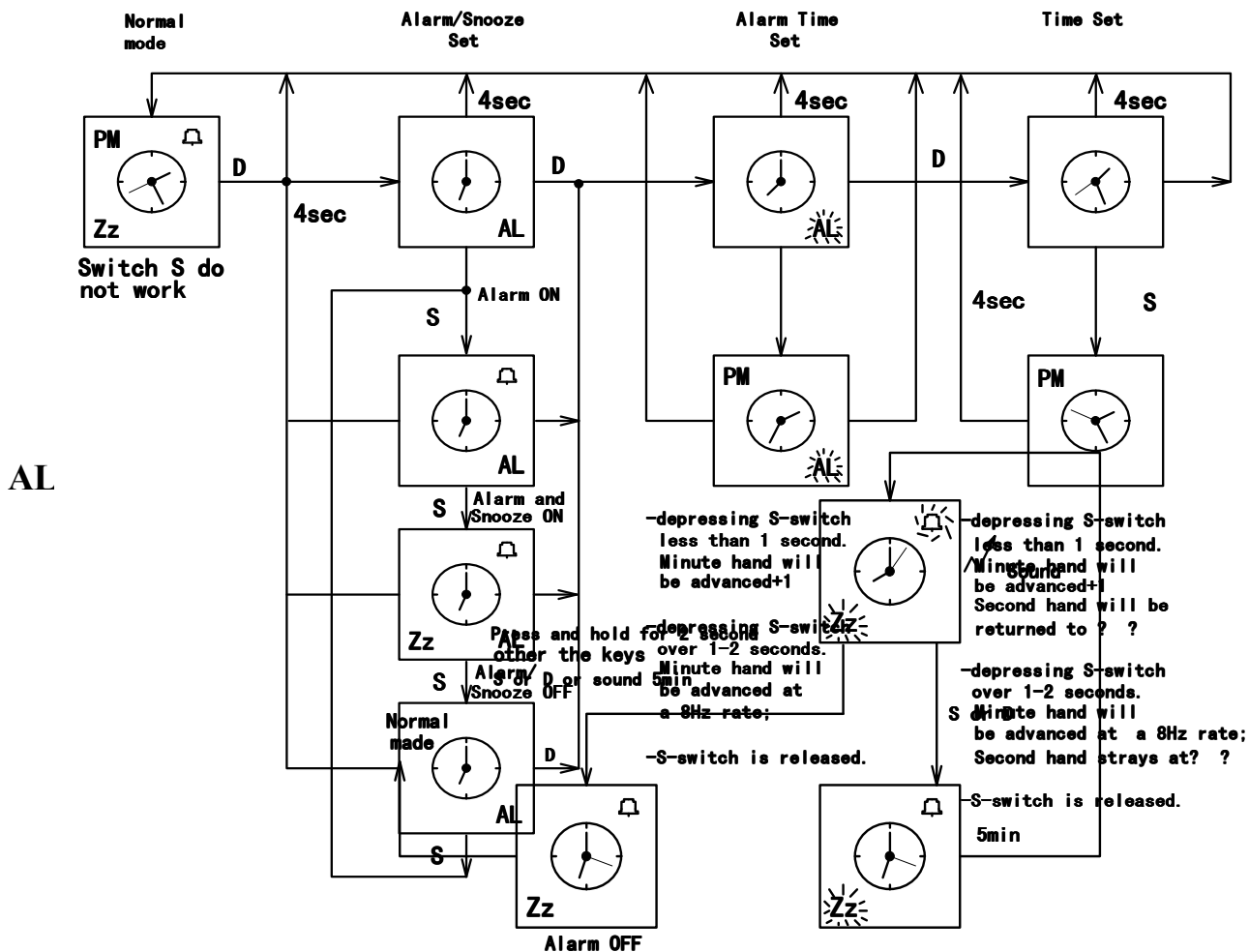


Fig.2.Application circuit with additional transistor's amplifier



LCD FORMAT

SUNSTAR单片机专用电路 <http://www.icasic.com/> TEL: 0755-83387030 FAX:0755-83376182 E-MAIL:szss20@163.com

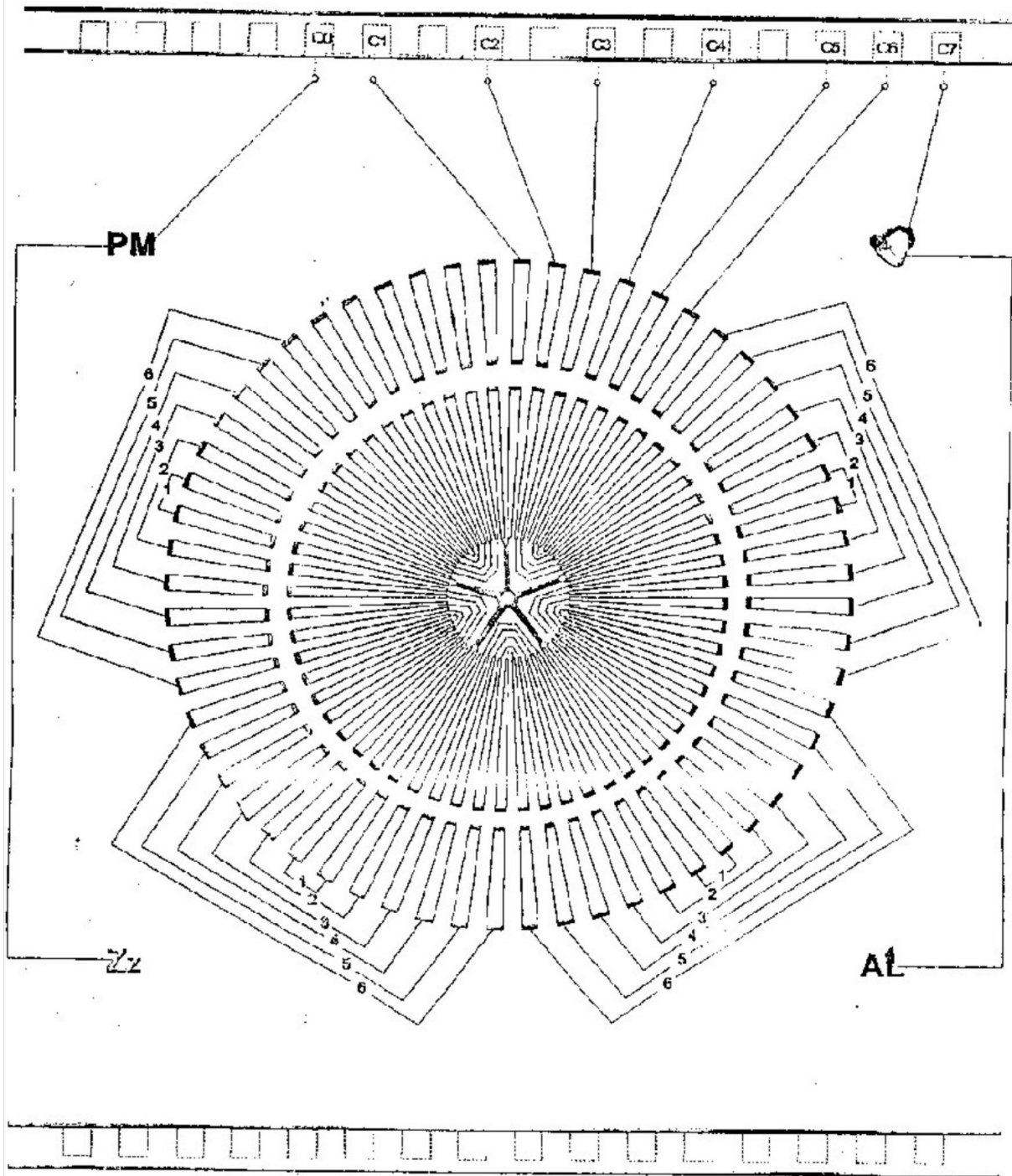


Fig.2.COMMON SIDE

LCD FORMAT (Continued)

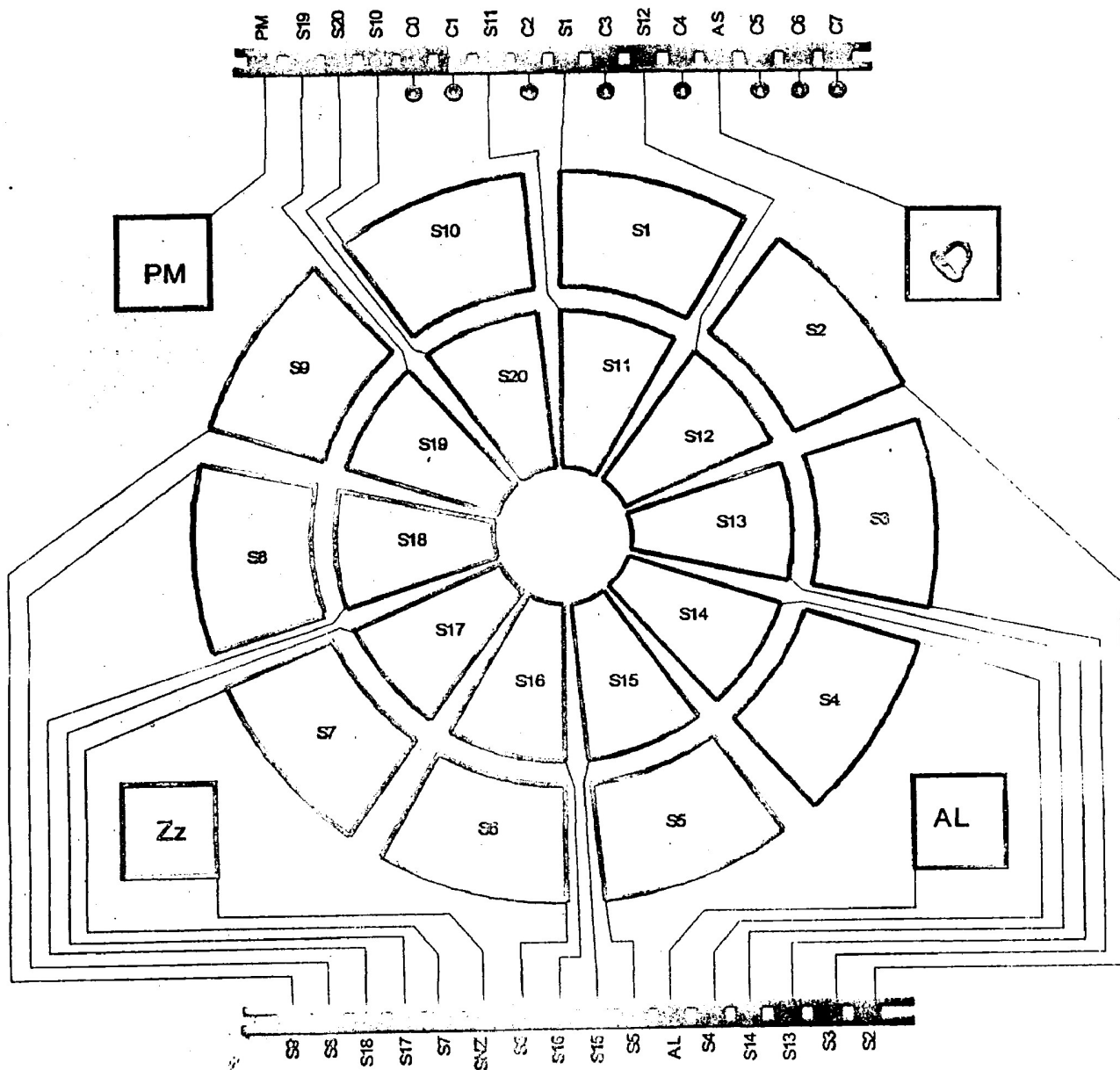
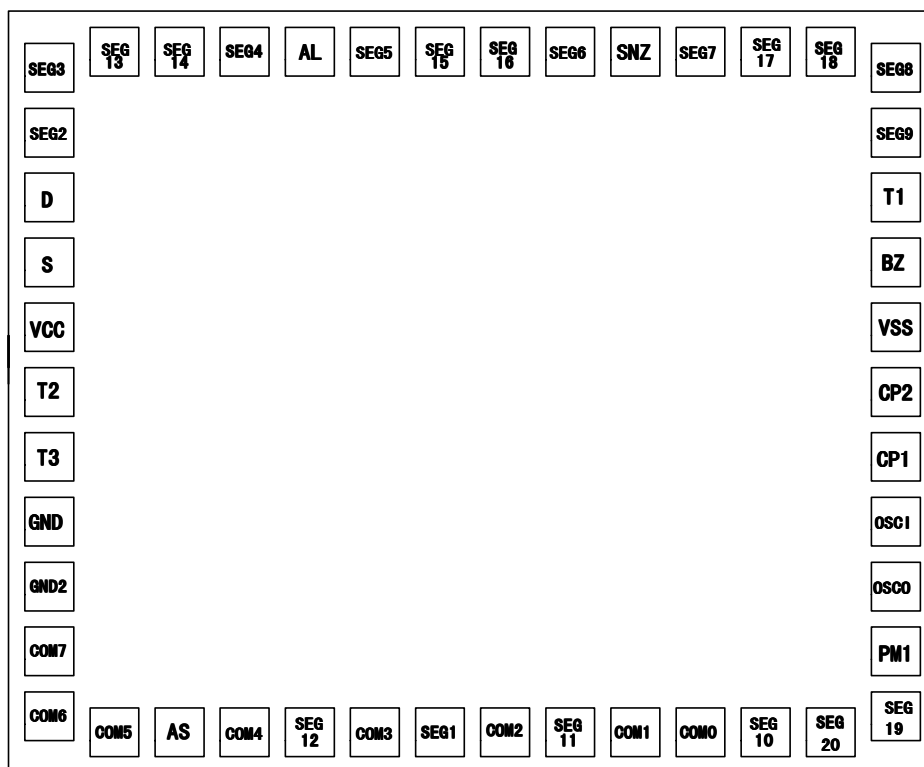


Fig.3.SEGMENT SIDE

PAD ASSIGNMENT



IC 衬底接 VDD

PAD LOCATION

Pad NO.	Pad Name	X	Y	Pad NO.	Pad Name	X	Y
1	SEG3	-780.50	600.00	24	SEG19	779.50	-600.00
2	SEG2	-780.50	480.00	25	PM1	779.50	-480.00
3	D	-780.50	360.00	26	OSCO	779.50	-360.00
4	S	-780.50	240.00	27	OSCI	779.50	-240.00
5	VCC	-780.50	120.00	28	CP1	779.50	-120.00
6	T2	-780.50	0.00	29	CP2	779.50	0.00
7	T3	-780.50	-120.00	30	VSS	779.50	120.00
8	GND	-780.50	-240.00	31	BZ	779.50	240.00
9	GND2	-780.50	-360.00	32	T1	779.50	360.00
10	COM7	-780.50	-480.00	33	SEG9	779.50	480.00
11	COM6	-780.50	-600.00	34	SEG8	779.50	600.00
12	COM5	-660.50	-612.00	35	SEG18	659.50	612.00
13	AS	-540.50	-612.00	36	SEG17	539.50	612.00
14	COM4	-420.50	-612.00	37	SEG7	419.50	612.00
15	SEG12	-300.50	-612.00	38	SNZ	299.50	612.00
16	COM3	-180.50	-612.00	39	SEG6	179.50	612.00
17	SEG1	-60.50	-612.00	40	SEG16	59.50	612.00
18	COM2	59.50	-612.00	41	SEG15	-60.50	612.00
19	SEG11	179.50	-612.00	42	SEG5	-180.50	612.00
20	COM1	299.50	-612.00	43	AL	-300.50	612.00
21	COM0	419.50	-612.00	44	SEG4	-420.50	612.00
22	SEG10	539.50	-612.00	45	SEG14	-540.50	612.00
23	SEG20	659.50	-612.00	46	SEG13	-660.50	612.00