



深圳市晶峰达电子科技有限公司

东莞市琪芯电子有限公司

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DL6167

MULTIFUNCTION 12 DIGITS WATCH CMOS

FEATURE

- Single-chip CMOS construction
- Driver 12-digit triplexed LCD
- Colon display
- 32768Hz crystal frequency
- Debounce circuitry on switch input
- Touch tone signal
- On chip oscillator
- Single 3.0V battery operation
- Low power dissipation

FUNCTION

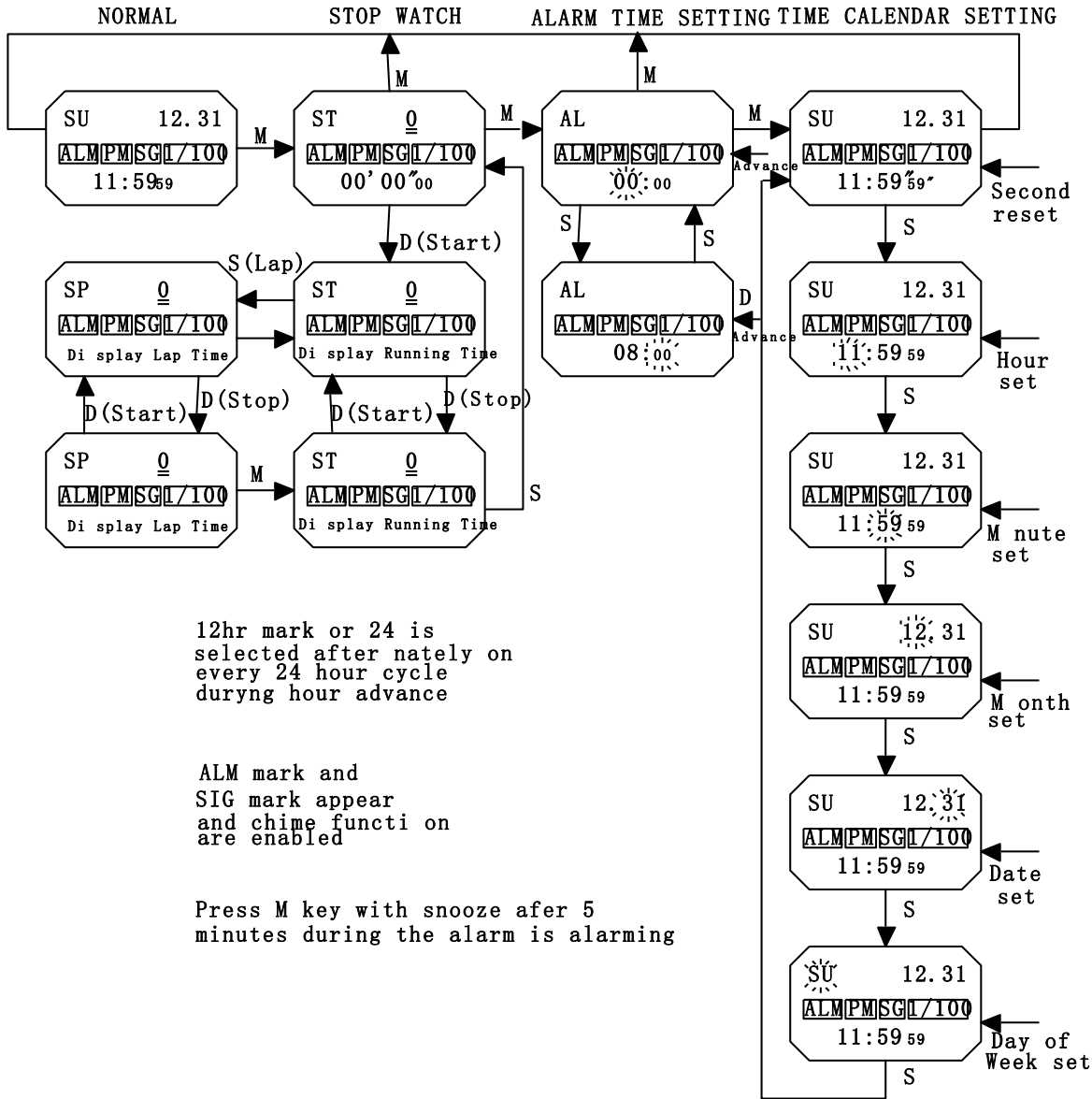
- 6 Functions: Mothe, Date, Day-of-week, Hour, Minute and second.
- 8-digit chronograph.
- Split function of chronograph.
- Use selectable 12-nour/24 hour format.
- 4-year calendar.
- One-touch correction of time error within ± 30 seconds.
- Fast advance for time and alarm time set.
- Chime on every hour, alarm, snooze.
- 4-switch sequential operation.

DESCRIPTION

The DL6167 is a CMOS digital 6-function watch integrated circuit with alarm, Snooze and chronograph function; designed for a 12-digit triplexed liquid crystal display.



SETTING SEQUENCE AND OPERATION



NOTE:

When switches S, M, D are pressed together all segment of LCD will be displayed and after released all digits of LCD will be released.



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PIN ASSIGNMENT

DESIGNATION	TYPE	DESCRIPTION
B[0:1]	OUTPUT	Buzzer output
VC1, VC2	OUTPUT	Halfer output
VEE	OUTPUT	Halfer voltage
T2, T1	INPUT(PL)	TEST pin
OO	OUTPUT	Oscillator output
OI	INPUT	Oscillator input
VDD	POWER	+3.0V power supply
GND	POWER	Ground
D, S, M, EL	INPUT{PL}	Input key
R[0:1]	OUTPUT	Output/EL output
C[1:3]	OUTPUT	LCD common output
S[1:28]	OUTPUT	LCD segment output

Note: (PL)-pull low; (PH)-pull high

ABSOLUTE MAXIMUM RATINGS

Supply voltage $V_{DD}-V_{SS}$0 to 5V

Input voltage V_{in} V_{SS} to V_{DD}

Operating temperature T_{op}-10°C to 60°C

Storing temperature T_{st}-40°C to 70°C

COMMENTS

Stress above those listed under “Absolute maximum ratings” may cause permanent damage to the device. These are stress rating only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied and exposure to absolute maximum rating conditions for extended periods may affect device reliability.

D.C. ELECTRICAL CHARACTERISTICS (GND=0V, VDD=3.0V, Ta=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	max	Unit	Conditions
Supply voltage	Vdd	2.5	3.0	3.6	V	
Operating current	Idd	-	1	3	uA	No load
OSC. Built-in cap	Cd	-	15	-	pF	Bonding option
Buzzer output current	Ib	500	-	-	uA	
LCD frequency	Flcd	-	64	-	Hz	
Segment current	Is	0.15	-	-	uA	Vseg=0.2V
Common current	Ic	3.0	-	-	uA	Vcom=0.2V
R[0:1] output current	Ir	0.8	-	-	mA	Vr-Vss=0.7



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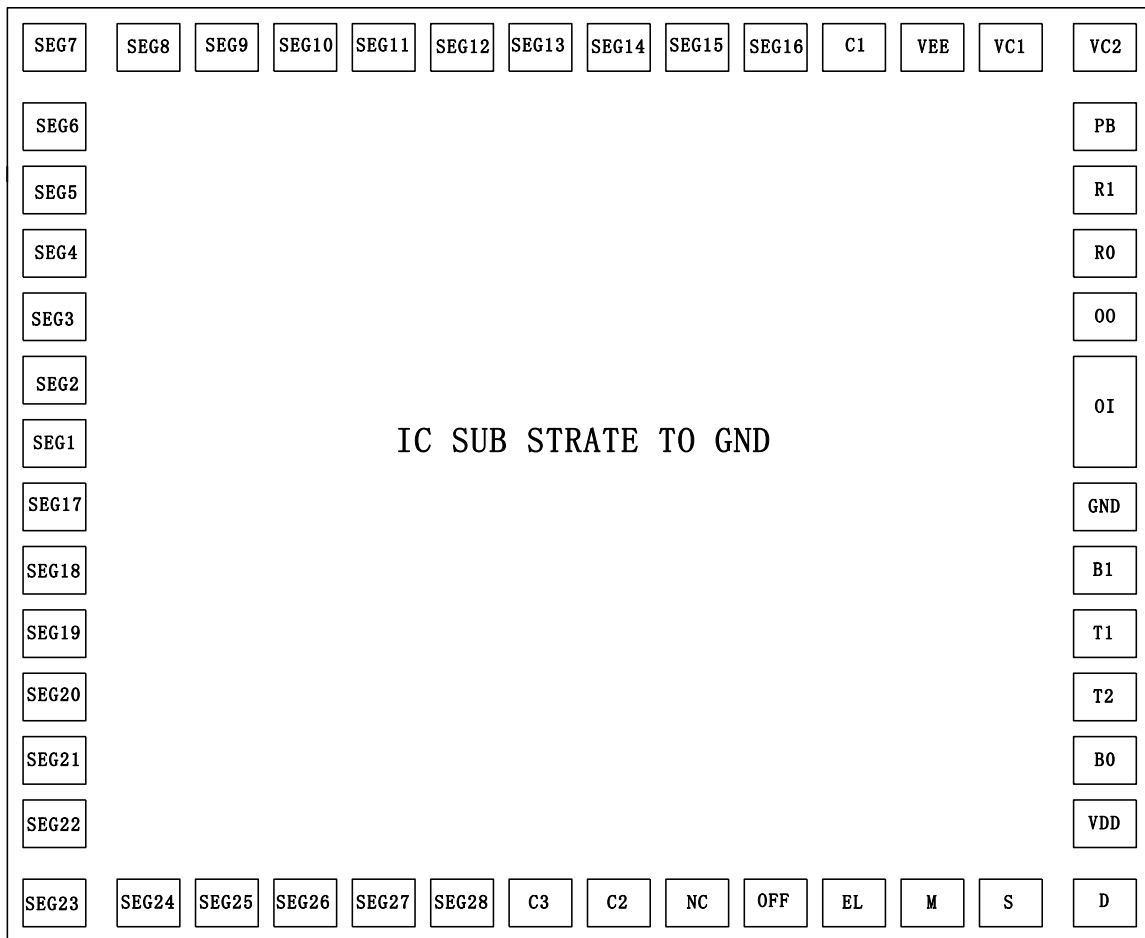
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APPLICATION INFORMATION

Name	Function	Name	Function
VEE	Negative voltage	KEL(EL)	Light key
VDD	Positive voltage	KMODE(M)	Mode key
C[1:3]	LCD common out	KADJ(D)	ADJ key
S[1:28]	LCD segment out	KSET(S)	Set key
PB	Reset	OFF	Test
B0, B1	Buzzer output	OI	Oscillator input
T1, T2	TEST pin	OI15PF	Oscillator input
RO, RI	EL output	OO	Oscillator output
GND	Ground	VC1, VC2	LCD volatge

PAD LOCATION ANDCOORDINATE





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Coordinate

Pad No	Pad Name	X	Y	Pad No	Pad Name	X	Y	Pad No	Pad Name	X	Y
1	D	1505.00	5.00	18	SEG19	5.00	487.50	35	SEG15	927.50	1545.00
2	S	1387.50	5.00	19	SEG18	5.00	602.50	36	SEG16	1042.50	1545.00
3	M	1272.50	5.00	20	SEG17	5.00	717.50	37	C1	1157.50	1545.00
4	EL	1157.50	5.00	21	SEG1	5.00	832.50	38	VEE	1272.50	1545.00
5	OFF	1042.50	5.00	22	SEG2	5.00	947.50	39	VC1	1387.50	1545.00
6	NC	927.50	5.00	23	SEG3	5.00	1062.50	40	VD2	1505.00	1545.00
7	C2	812.50	5.00	24	SEG4	5.00	1177.50	41	PB	1505.00	1407.50
8	C3	697.50	5.00	25	SEG5	5.00	1292.50	42	P1	1505.00	1292.50
9	SEG28	582.50	5.00	26	SEG6	5.00	1407.50	43	P0	1505.00	1177.50
10	SEG27	467.50	5.00	27	SEG7	5.00	1545.00	44	OO	1505.00	1062.50
11	SEG26	352.50	5.00	28	SEG8	122.50	1545.00	45	OI	1505.00	880.30
12	SEG25	237.50	5.00	29	SEG9	237.50	1545.00	46	GND	1505.00	765.30
13	SEG24	122.50	5.00	30	SEG10	352.50	1545.00	47	B1	1505.00	650.30
14	SEG23	5.00	5.00	31	SEG11	467.50	1545.00	48	T1	1505.00	535.30
15	SEG22	5.00	142.50	32	SEG12	582.50	1545.00	49	T2	1505.00	420.30
16	SEG21	5.00	257.50	33	SEG13	697.50	1545.00	50	B0	1505.00	305.30
17	SEG20	5.00	372.50	34	SEG14	812.50	1545.00	51	VDD	1505.00	190.30



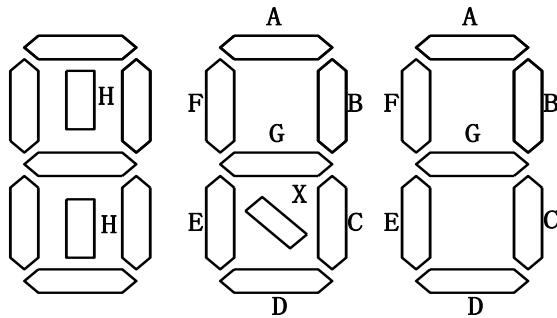
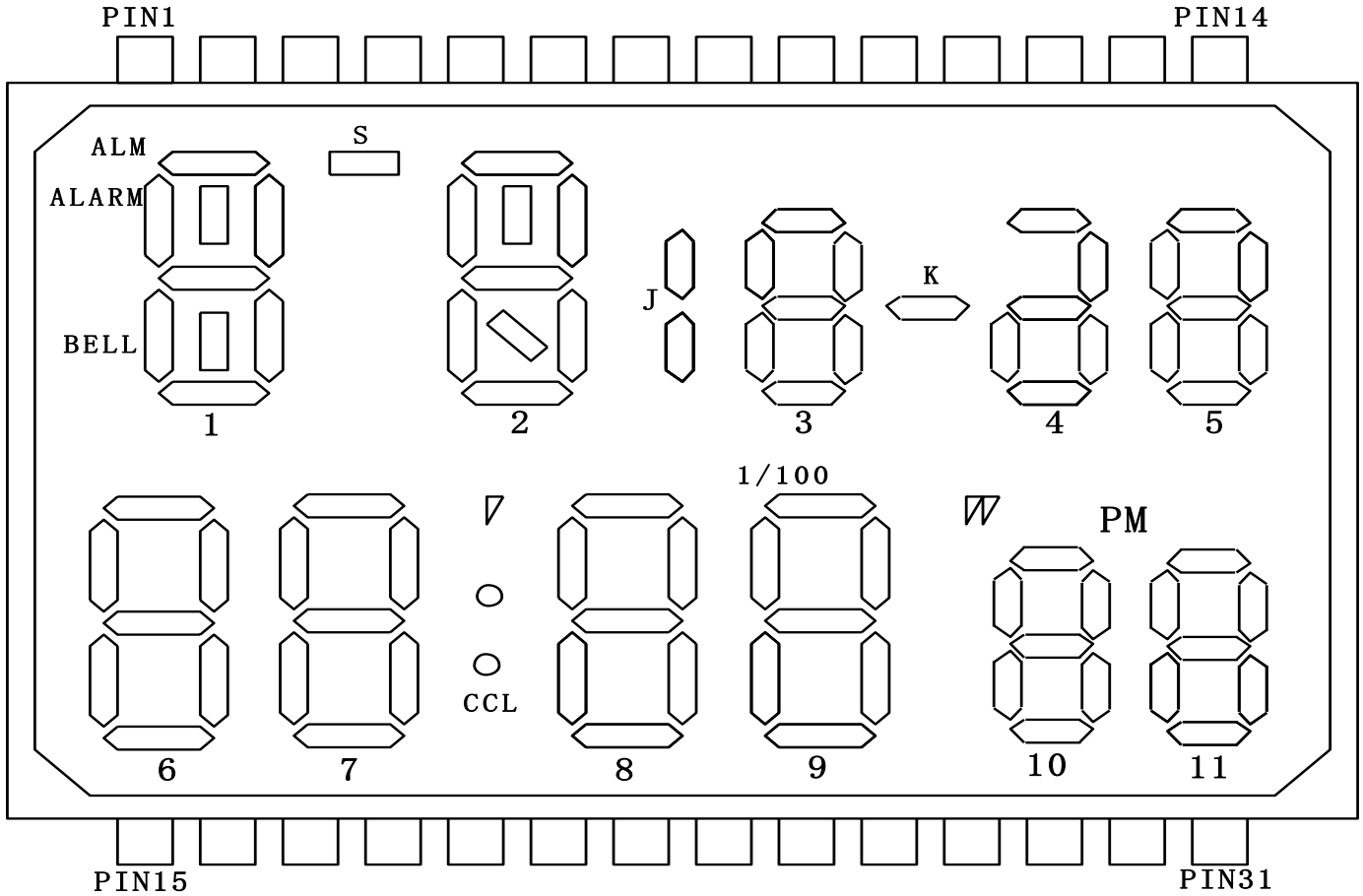
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LCD DISPLAY





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LCD TABLE

PIN	I.C PAD	COM2	COM1	COM3
1	SEG28		SG	ALM
2	SEG27	1H	1E	1F
3	SEG26	1B	1G	1A
4	SEG25	1C	1D	S
5	SEG23	2EF	1/100	2A
6	SEG22	2G	2X	2B
7	SEG21	2C	2D	J
8	SEG20	3G	3E	3F
9	SEG19	3B	K	3A
10	SEG18	4E	3C	4AGD
11	SEG17	4C	3D	4B
12	SEG28	PM		
13	SEG1	5F	5E	5A
14	SEG2	5G	5C	5B
15	COM1		COM1	
16	COM2	COM2		
17	COM3			COM3
18	SEG16	6E	6F	6AD
19	SEG15	6G	6B	6C
20	SEG14	7E	7F	7D
21	SEG13	7G	7A	7C
22	SEG12	COL	7B	8E
23	SEG11	8G	8F	8AD
24	SEG10	8C	8B	9E
25	SEG9	9G	9F	9D
26	SEG8	9B	9A	9C
27	SEG7	10E	10F	10D
28	SEG6	10G	10A	10C
29	SEG5	11F	10B	11E
30	SEG4	11G	11A	11D
31	SEG3	11B	5D	11C

LCD Voltage=3.0V

LCD Duty=1/3

LCD Bias=1/2