

FEATURES

- Drives mixed analog / 6-digit triplexed LCD
- 32,768Hz crystal frequency
- Single 1.5V battery operation
- User selectable 12-hour/24-hour format
- EL - block light driver

FUNCTIONS

- Analog: Hours, Minutes, Seconds
- Digital: Hours, Minutes, Seconds, PM
- Data Mode: Month, Date, Day of Week
- Alarm Mode: Daily Alarm, Hourly Time signal
- Stopwatch Mode: Measuring Unit 1/100 of a second
- 6-digit Chronograph: Autoranging after 30 minutes to hour, minute; second
- One-touch correction of time error withing + 30 seconds -3-switch sequential operation
- 4-year calendar

DESCRIPTION

The DL6116 is a CMOS Analog/Digital multifunction watch 1C. It can directly drive analog and 6 digits 1/3 bias 1/3 duty cycle LCD.

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	-0.3- + 2.0	V
Display Voltage	V_{DD1}	-0.3- + 4.0	V
Display Voltage	V_{DD2}	-0.3- + 6.0	V
Operating Temperature	T_{opr}	-20- + 75	°C
Storage Temperature	T_{stg}	-55-+ 125	°C

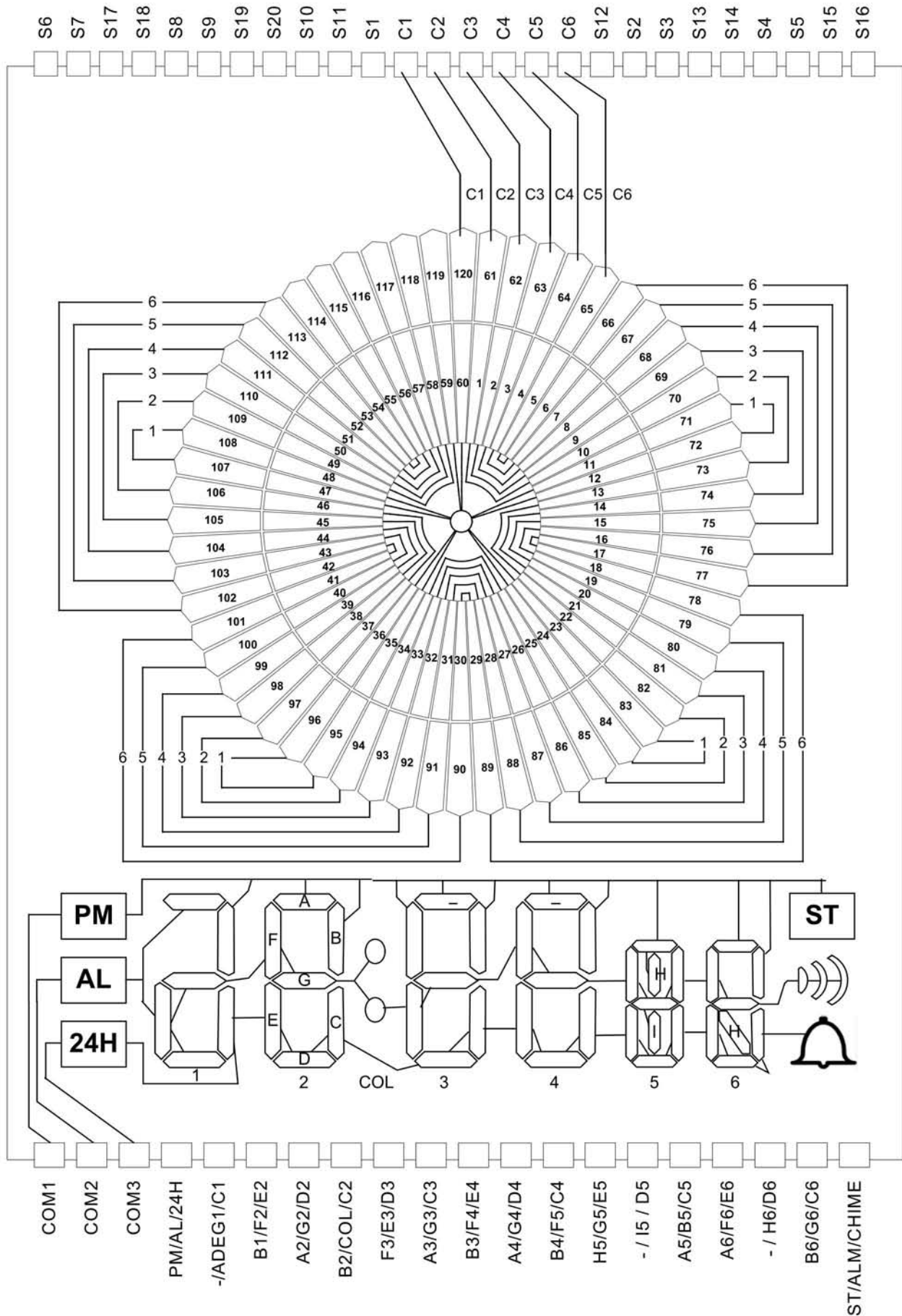
ELECTRICAL CHARACTERISTICS

($V_{CC} = 1.5V$, $V_{SS} = 0V$, $T_a = 25^{\circ}C$ unless otherwise specified)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Operating Voltage	V_{CC}		1.2	1.5	1.8	V
Display Voltage	V_{DD1}		2.4	3.0	3.6	V
Display Voltage	V_{DD2}		3.6	4.5	5.4	V
Supply Current	I_{CC}	Without load		1.5	2.0	μA
Oscillator Start Voltage	V_{OSC}	Within 5 sec			1.40	V
Alarm Drive Current	I_{BZ}	$V_{sar} = 0.5V$	1	2		mA
Oscillator Input and Output Capacitor	C_{IN}, C_{OUT}			20		pF

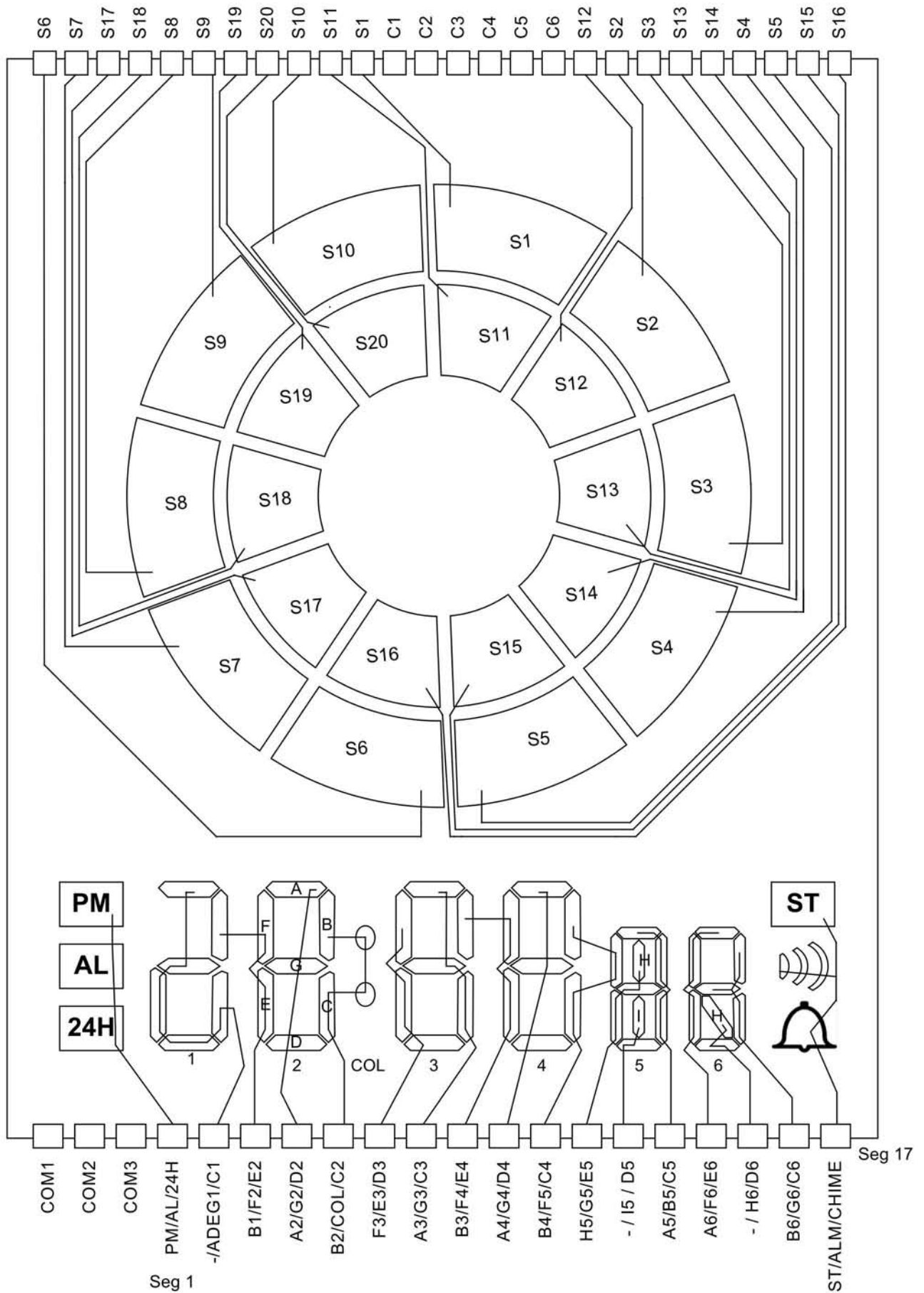
LCD FORMAT

COMMON SIDE

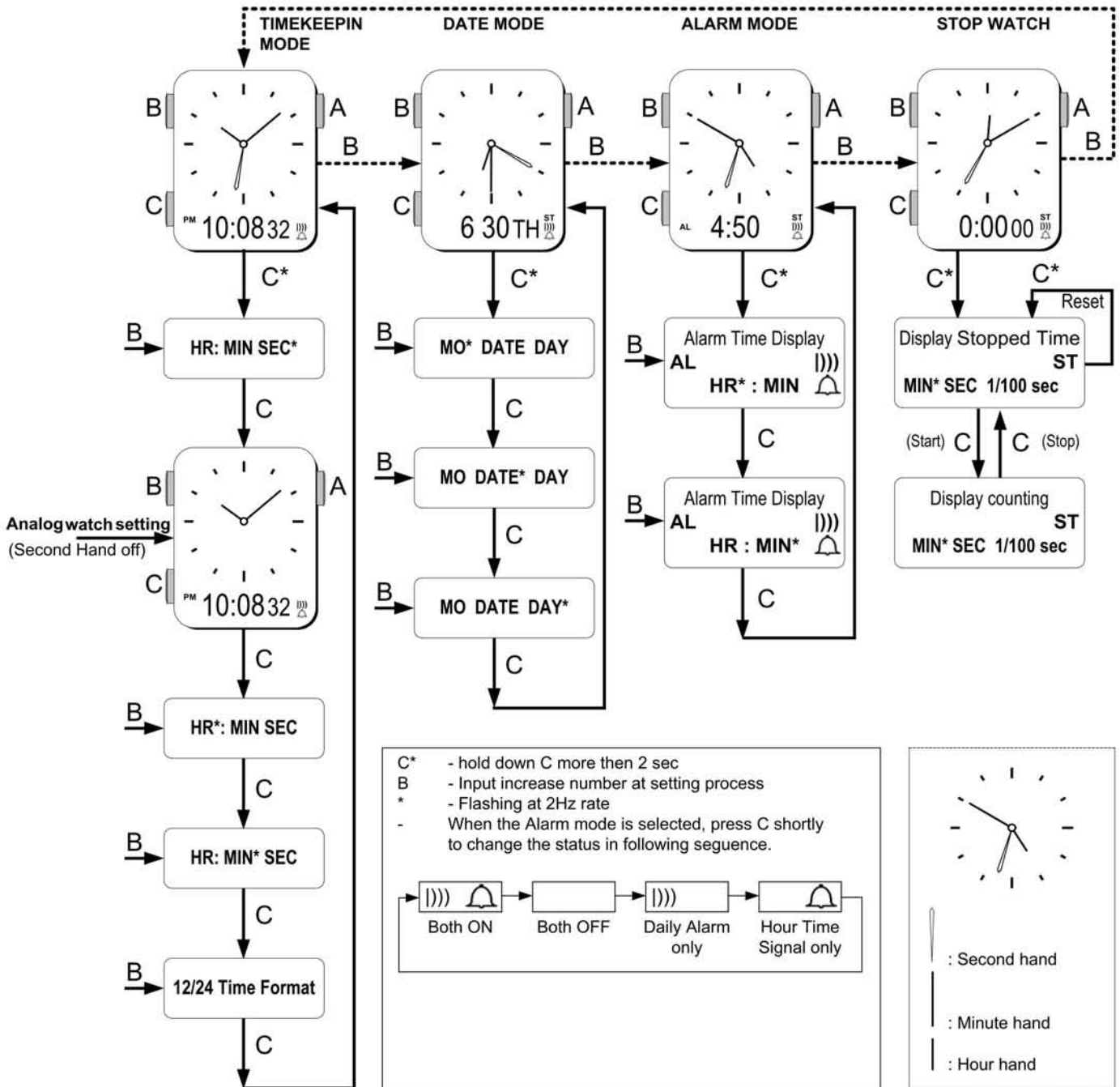


LCD FORMAT

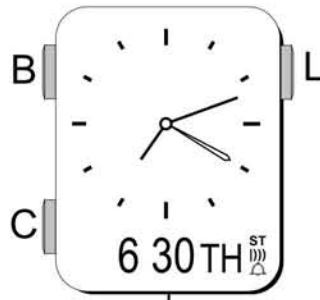
SEGMENT SIDE



SETTING SEQUENCE AND SWITCH OPERATION

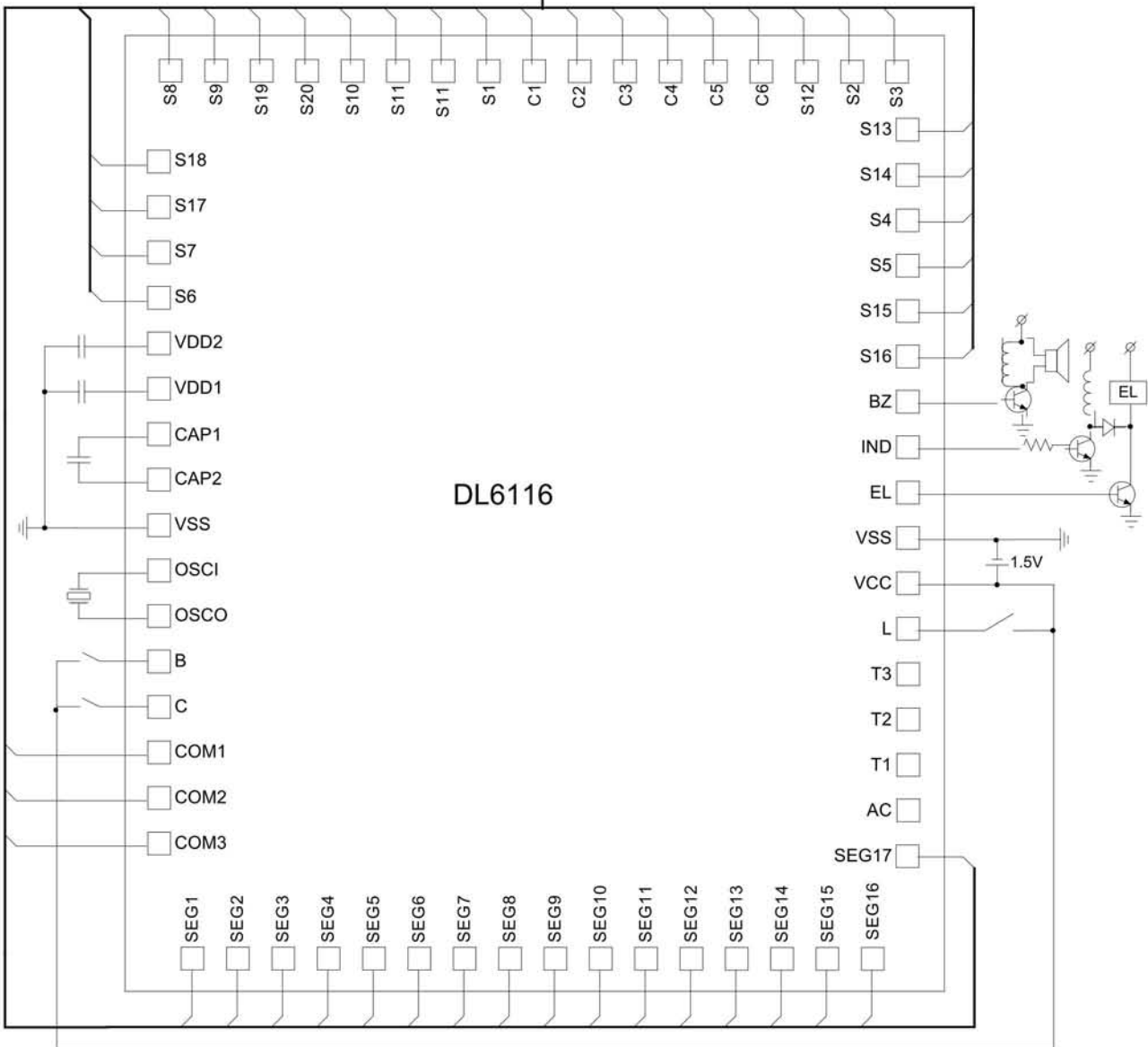


APPLICATION CIRCUIT



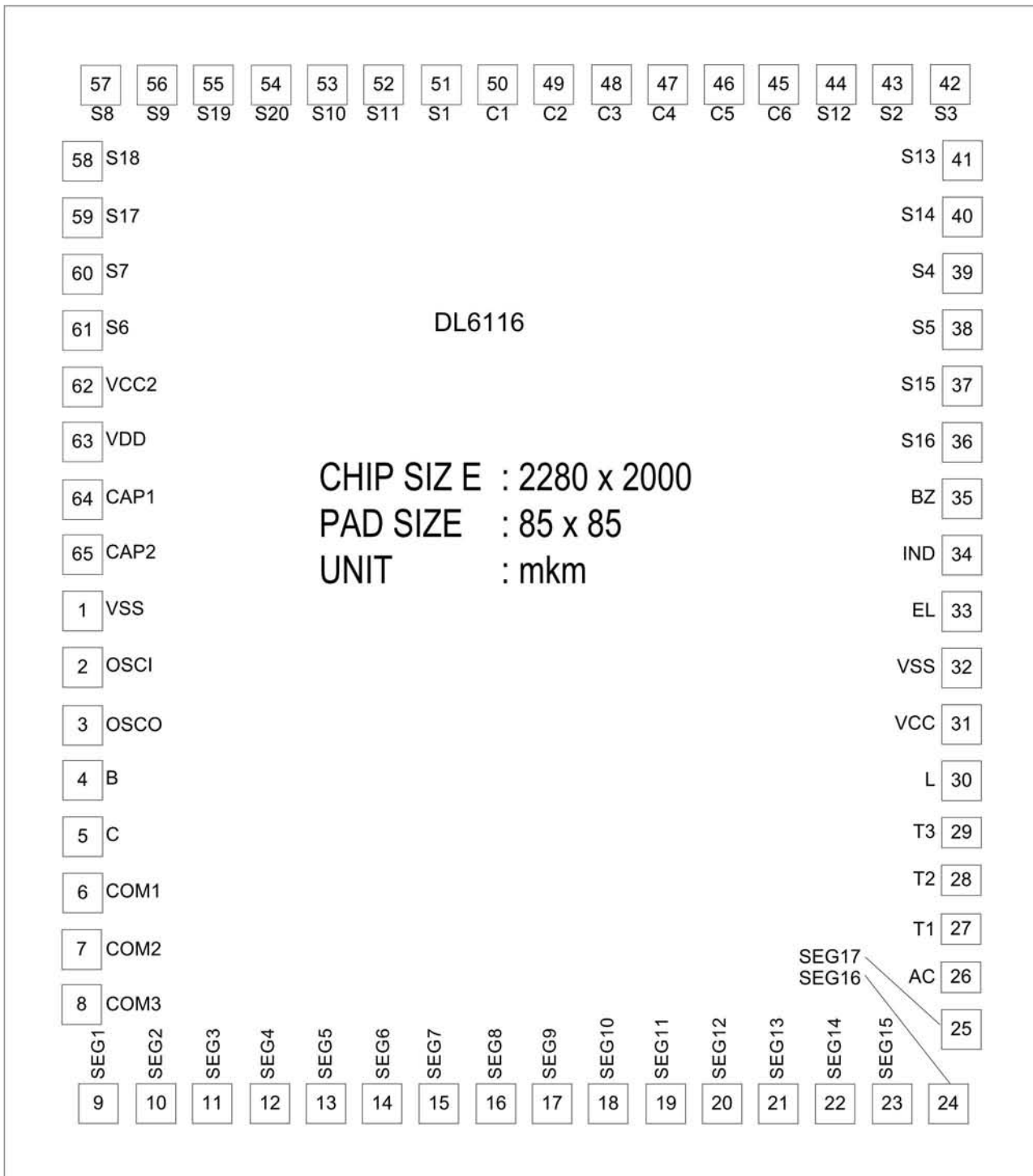
*Direct drive 1/4 bias 1/6 duty LCD.
LCA Portion*

*Direct drive 1/2 bias 1/3 duty LCD.
6-Digit Portion*



NOTE: The chip substrate is electrically connected to Vss

PAD DIAGRAM



PAD LOCATION

Pad No.	Pad Name	X	Y	Pad No.	Pad Name	X	Y
1	VSS	110	1066	34	IND	1813	1176
2	OSCI	110	956	35	BZ	1813	1286
3	OSCO	110	847	36	S16	1813	1396
4	B	110	737	37	S15	1813	1505
5	C	110	628	38	S5	1813	1615
6	COM1	110	518	39	S4	1813	1724
7	COM2	110	408	40	S14	1813	1834
8	COM3	110	300	41	S13	1813	1944
9	SEG1	144	110	42	S3	1788	2088
10	SEG2	253	110	43	S2	1678	2088
11	SEG3	363	110	44	S12	1568	2088
12	SEG4	472	110	45	C6	1459	2088
13	SEG5	582	110	46	C5	1349	2088
14	SEG6	692	110	47	C4	1240	2088
15	SEG7	801	110	48	C3	1130	2088
16	SEG8	911	110	49	C2	1020	2088
17	SEG9	1020	110	50	C1	911	2088
18	SEG10	1130	110	51	S1	801	2088
19	SEG11	1240	110	52	S11	692	2088
20	SEG12	1349	110	53	S10	582	2088
21	SEG13	1459	110	54	S20	472	2088
22	SEG14	1568	110	55	S19	363	2088
23	SEG15	1678	110	56	S9	253	2088
24	SEG16	1788	110	57	S8	144	2088
25	SEG17	1813	254	58	S18	110	1943
26	AC	1813	364	59	S17	110	1833
27	T1	1813	458	60	S7	110	1724
28	T2	1813	551	61	S6	110	1614
29	T3	1813	644	62	VDD1	110	1504
30	L	1813	738	63	VDD2	110	1395
31	VCC	1813	848	64	CAP1	110	1285
32	VSS	1813	957	65	CAP2	110	1176
33	EL	1813	1067				