Silan
Semiconductors

SC6802

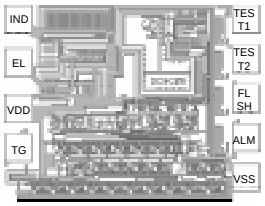
EL LAMP DRIVER IC

DESCRIPTION

The SC6802 is a poly gate CMOS integrated circuit which is designed to drive an Electoluminescence Lamp (EL) to light. It supplies three pins for trigger input: one is active at low (ALM) and other two are active at high (TG & FLSH). 3 seconds display delay function is implemented by internal divider. Only ALM and TG will 3 seconds delay but FLSH not. The switching and EL driving frequency is decided by an internal RC oscillator.

The driving capability for IND output and frequency for EL output are different options, the detail information shown in the OPTION LIST.

The SC6802 can be widely used in the back light of digital watch, analogy watch, calculator etc.



Chip Topography

FEATURES

* Single 3V or 1.5V battery operation
* DC to AC conversion
* Built-in RC oscillator
* Built-in delay function
* Three independent trigger inputs:
  -- ALM (active Low) makes EL display for 3 seconds delay;
  -- TG (active High) makes EL display for 3 seconds delay;
  -- FLSH (active high) makes EL flash companied with the pulse from FLSH without any delay (See Timing Diagram)
* Economical solution for EL display
* CMOS process and low power consumption
* No external component needed for delay function
* Minimum external components application

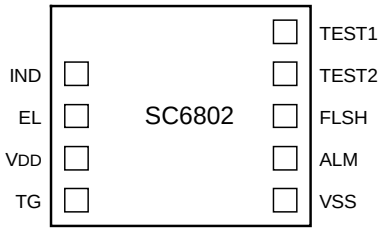
OPTION LIST

OPTION	IND Output Current I_{OH1}(mA)			Oscillator Frequency F_{OSC}(kHz)		
	Min.	Typ.	Max.	Min.	Typ.	Max.
SC6802-1	0.25	0.5	1.0	170	240	310
SC6802-2	1.0	1.5	2.5	400	500	670
SC6802-3	0.2	0.4	0.8	400	500	670

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Characteristic	Symbol	Test Conditions	Value	Unit
Supply Voltage	V_{DD} - V_{SS}	--	-0.3 ~ 5.0	V
Input Voltage	V_{IN}	--	V_{SS} -0.3V ~ V_{DD}+0.3V	V
Operating Temperature	Topr	--	-10 ~ +70	°C
Storage Temperature	Tstg	--	-55 ~ +125	°C

PAD ASSIGNMENT



Chip size: 1.11x0.85(mm)^2

Note: The IC substrate should be connected to V_{DD} in the PCB layout artwork.

ELECTRICAL CHARACTERISTICS (Ta=25°C, V_{SS}=0V, V_{DD}=3.0V; Unless otherwise specified)

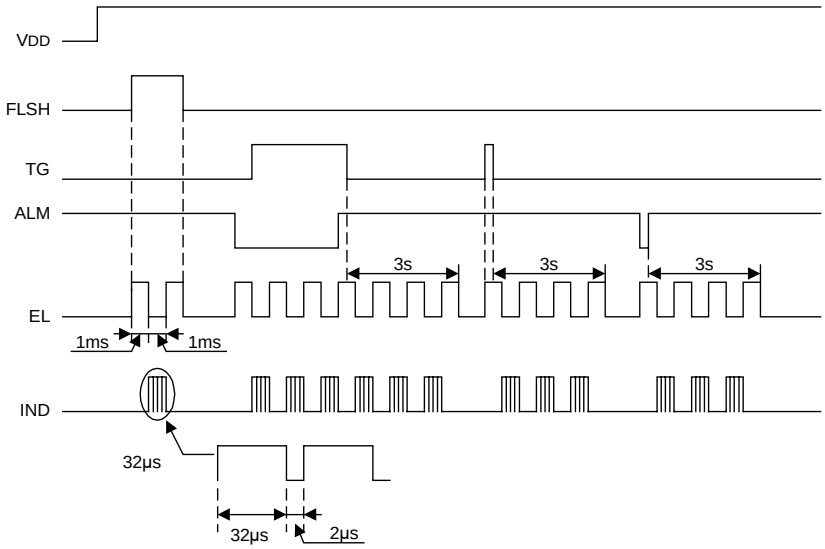
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Operating Voltage	V_{DD}	--	1.3	3.0	4.5	V
Stand-by Current	I_{DD}	All input and output are opened.	--	0.1	1	μA
IND Output Source Current *	I_{OH1}	V_{OH} = 0.8V	1.0	1.5	2.5	mA
EL Output Source Current	I_{OH2}	V_{OH} = 0.8V	0.2	0.6	--	mA
IND Output Sink Current	I_{OL1}	V_{OL} = 0.8V	10	20	--	mA
EL Output Sink Current	I_{OL2}	V_{OL} = 0.8V	0.5	2	--	mA
Oscillator Start Voltage	V_{OSC}	Within 2 sec	1.3	--	--	V
Oscillator Frequency *	F_{OSC}	V_{DD} = 3.0V	400	500	670	KHz

* The parameters I_{OH} and F_{OSC} in the above table refer to option SC6802-2; Others can be found in the OPTION LIST.

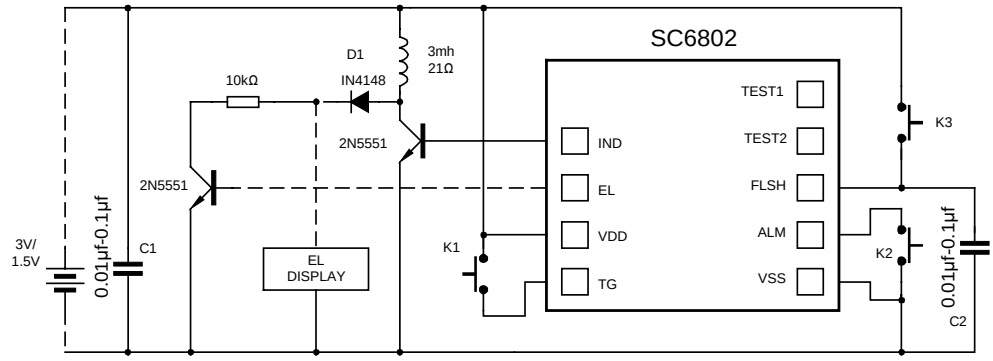
PAD DESCRIPTION

Pad No.	Symbol	I/O	Description
1	Vss	--	Negative power supply
2	ALM	I	Trigger input pin (active low)
3	FLSH	I	Trigger input pin (active high)
4	TEST2	--	Test pin
5	TEST1	--	Test pin
6	IND	O	DC to AC converter output
7	EL	O	
8	V_{DD}	--	Positive power supply
9	TG	I	Trigger input pin (active high)

TIMING DIAGRAM



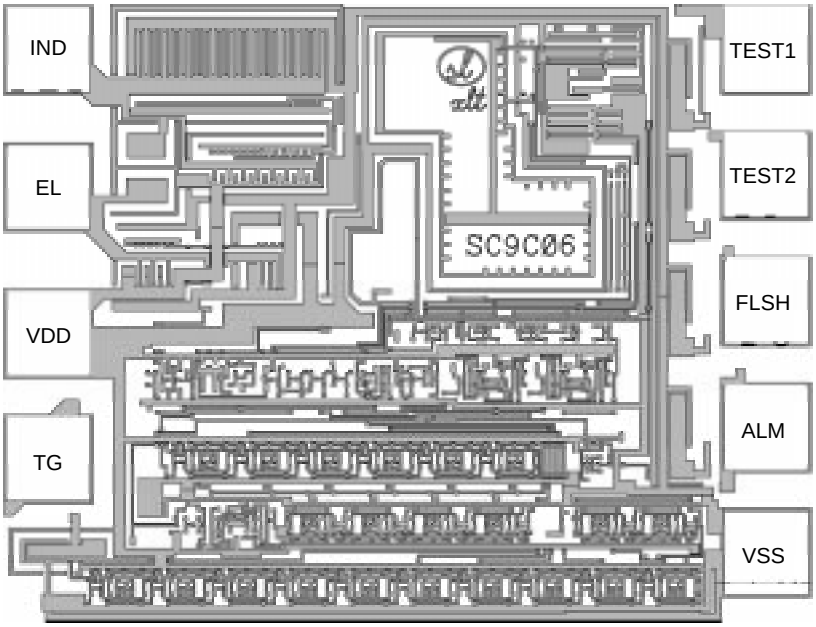
APPLICATION CIRCUIT



Note: 1. Substrate is connected to VDD.

2. The wires connected to TG and ALM cannot across the line inside the black dote line box. Furthermore, these wires should be separated from the lines inside the black dote line box by Vss or VDD.
3. The capacitor C2 can be connected to Vss or VDD.
4. During the watch application, the two wires connected to crystal are better to be surrounded by Vss or VDD, and they are the farer the better away from the wire connected to EL.
5. The items 2,3,4 are very important for PCB layout.

CHIP TOPOGRAPHY



Chip Size: 1.11mm x 0.85mm

PAD COORDINATES (Unit: μm)

PAD Name	X	Y	PAD Name	X	Y
V_{DD}	-470	-35	TEST2	460	170
TG	-470	300	TEST1	460	340
V_{SS}	460	-325	IND	-470	340
ALM	460	160	EL	-470	160
FLSH	460	5			

Note: The original point of the coordinate is the die center.