

Features

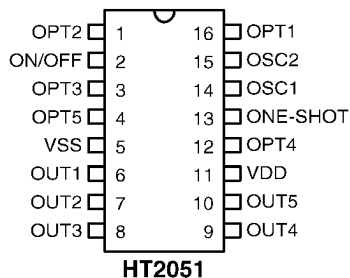
- CMOS Metal-Gate process technology
- Operating voltage: 1.2V~4.5V
- Low stand-by current: 1 μ A at 3V (Typ.)
- A five lamp flash driver with a 10mA driving capability
- Random or sequential flash selection
- Up or Down sequential flash selection
- One-shot mode or on/off mode selection
- Two flash timer selection in one-shot mode
- Output all-On or all-Off selection in stand-by mode
- 1/10 duty cycle output
- A built-in oscillator
- Minimum external components

General Description

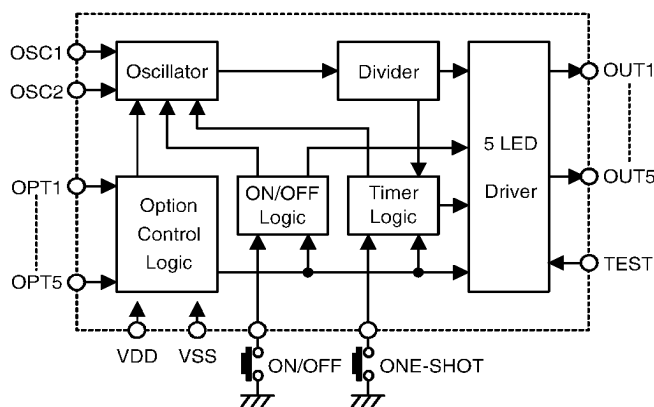
The HT2051 is a low cost, low-power CMOS LSI chip designed for lamps and LED flash drivers. It contains five flash outputs with a 10mA driving capability that can be implemented in many different ways such as random flashers, sequential Up/Down flashers, One-Shot mode and

On/Off mode — all of which are controlled by the options selected on pads. The chip requires only one external resistor for normal applications. It is very suitable for use in flash products such as disco lights, fancy hats, gift cards, X'mas decoration, etc.

Pin Assignment

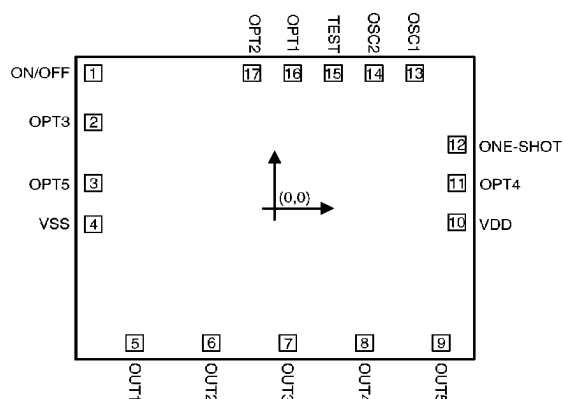


Block Diagram



Pad Coordinates

Unit: mil



Pad No.	X	Y	Pad No.	X	Y
1	-30.4	23.7	10	30.3	-2.35
2	-30.4	15.15	11	30.3	4.5
3	-30.4	4.5	12	30.35	11.25
4	-30.4	-2.7	13	23.3	23.7
5	-23.5	-23.45	14	16.5	23.7
6	-10.7	-23.45	15	9.7	23.7
7	2.1	-23.45	16	2.9	23.7
8	14.9	-23.45	17	-3.9	23.7
9	27.7	-23.45			

Chip size: $71 \times 58 \text{ (mil)}^2$

* The IC substrate should be connected to VDD in the PCB layout artwork.

Pad Description

Pad No.	Pad Name	I/O	Description
1	ON/OFF	I	Toggle on/off control
2	OPT3	I	Sequential flash up/down selection
3	OPT5	I	Output all-on or all-off selection in stand-by mode
4	VSS	I	Negative power supply, GND
5	OUT1	O	Lamp/LED flash drive output
6	OUT2	O	Lamp/LED flash drive output
7	OUT3	O	Lamp/LED flash drive output
8	OUT4	O	Lamp/LED flash drive output
9	OUT5	O	Lamp/LED flash drive output
10	VDD	I	Positive power supply
11	OPT4	I	Two flash time selections in one-shot mode
12	ONE-SHOT	I	One-shot input
13	OSC1	I	Oscillator input
14	OSC2	O	Oscillator output
15	TEST1	I/O	For IC test only
16	OPT1	I	One-shot or on/off type selection
17	OPT2	I	Random or sequential flash selection

- Note: (a) OPT1 = VSS → On/Off type
 OPT1 = VDD → One-shot type
 (b) OPT2 = Open → Random flash
 OPT2 = VDD → Sequential flash
 (c) OPT3 = Open → Down sequence flash
 OPT3 = VDD → Up/Down sequence flash
 (d) OPT4 = Open → Short flash time
 OPT4 = VDD → Long flash time in the one-shot mode
 (e) OPT5 = Open → Stand-by output all-off
 OPT5 = VDD → Stand-by output all-on

Absolute Maximum Ratings

Supply Voltage -0.3V to 5V Storage Temperature -50°C to 125°C
 Input/Output Voltage ... $V_{SS}-0.3V$ to $V_{DD}+0.3V$ Operating Temperature..... 0°C to 70°C

Electrical Characteristics

(Ta=25°C)

Symbol	Parameter	Test Condition		Min.	Typ.	Max.	Unit
		V _{DD}	Condition				
V _{DD}	Operating Voltage	—	—	1.2	3	4.5	V
I _{STB}	Stand-by Current	3V	—	—	1	2	μA
I _{DD}	Operating Current	3V	No load	—	200	500	μA
I _{OL}	Output Sink Current	1.5V	V _{OL} =0.5V	5	8	—	mA
		3V	V _{OL} =0.5V	10	15	—	mA
F _{OSC}	Oscillator Frequency	—	R=150K~300KΩ	—	64K	—	Hz

