HOLTEK

HT2051
Five LAMP/LED Flash Driver

Features

- CMOS Metal-Gate process technology
- Operating voltage: 1.2V~4.5V
- Low stand-by current: 1μA 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.
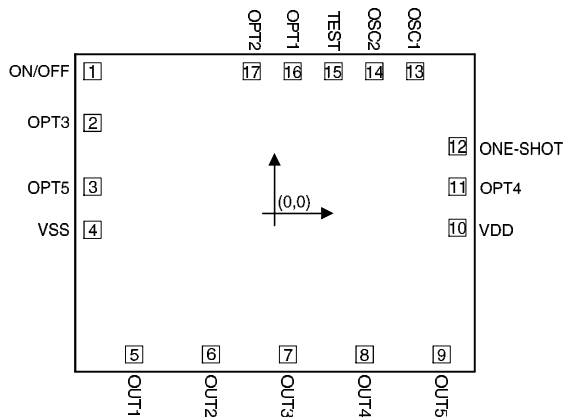
Pin Assignment

HT2051
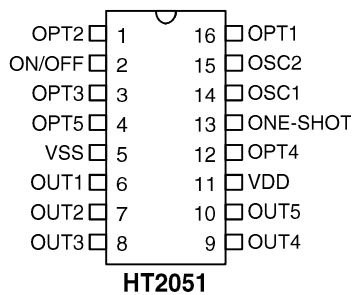
Block Diagram
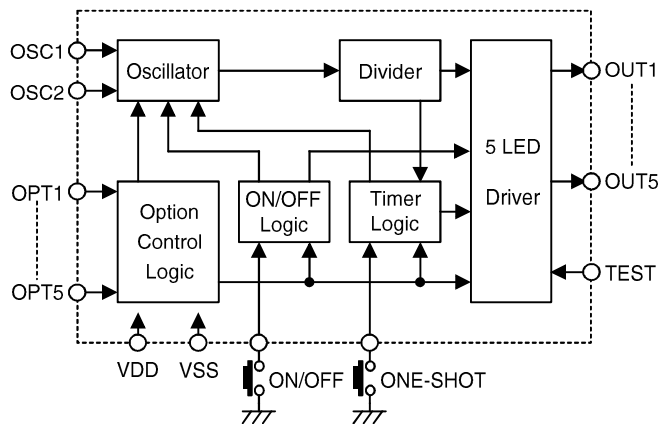
Pad Coordinates

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: 71×58 (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

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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

Input/Output Voltage ... V_{SS}−0.3V to V_{DD}+0.3V

Storage Temperature .... −50°C to 125°C

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

Application Circuit
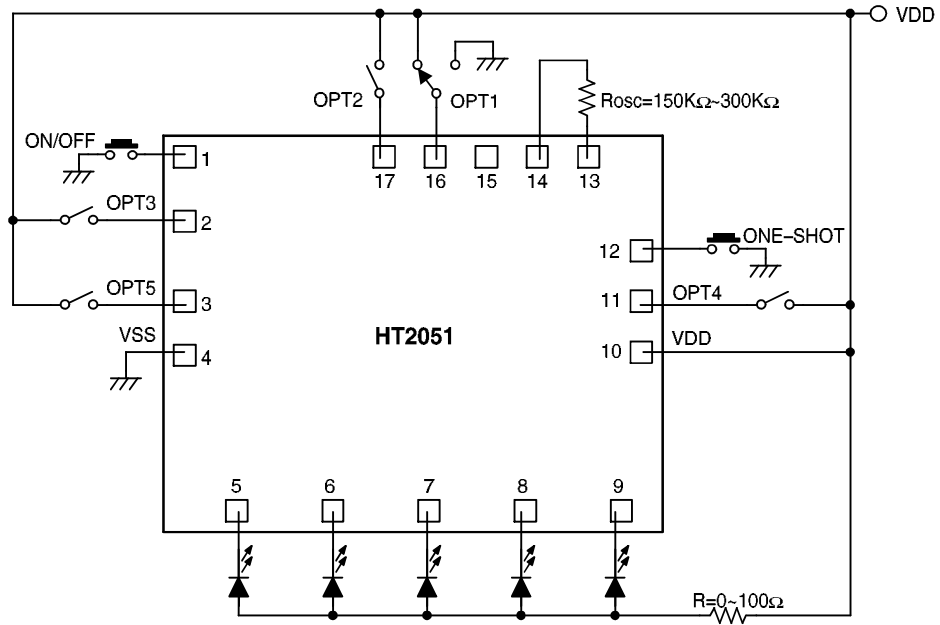
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