# HT2050
# Five LAMP/LED Flash Driver



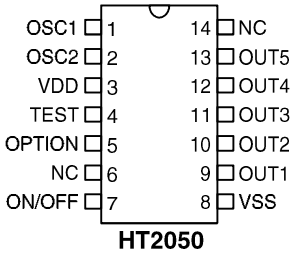
## Features

- C-MOS Metal-Gate Process
- Operating voltage: 1.2V~4.5V
- Low stand-by current: 1μA at 3V
- A five lamp flash driver
- Random or sequence flash
- On/Off toggle control
- 1/10 duty cycle output
- A built-in oscillator
- Minimum external components

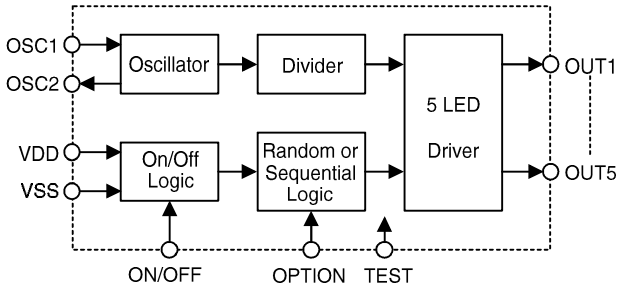
## General Description

The HT2050 is a low cost, low-power CMOS fabricated LSI chip designed for lamp and LED flash drivers. It contains five flash outputs. Each flash output is with a 10mA capability that can implement random or sequential flashing controlled by a single option pin. The chip requires only one external resistor for normal applications. It is very suitable for use in products that require flashing lights, such as gift cards, Christmas decoration, etc.

## Pin Assignment

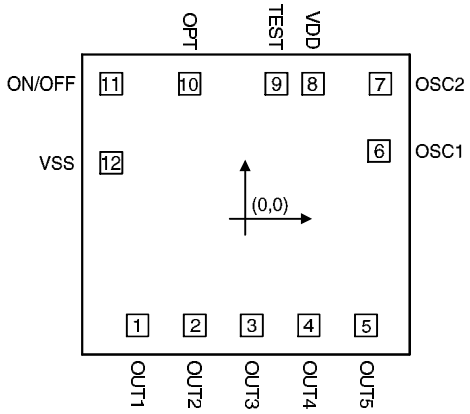



## Block Diagram




## Pad Coordinates

Unit: mil




| Pad No. | X | Y | Pad No. | X | Y |
|---|---|---|---|---|---|
| 1 | –21.09 | –20.9 | 7 | 26.55 | 26.5 |
| 2 | –9.89 | –20.9 | 8 | 13.35 | 26.5 |
| 3 | 1.31 | –20.9 | 9 | 6.15 | 26.5 |
| 4 | 12.51 | –20.9 | 10 | –10.89 | 26.5 |
| 5 | 23.71 | –20.9 | 11 | –26.25 | 26.5 |
| 6 | 26.23 | 13.3 | 12 | –26.25 | 10.98 |

Chip size: $64 \times 59$ (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 | OUT1 | O | Lamp/LED flash drive output |
| 2 | OUT2 | O | Lamp/LED flash drive output |
| 3 | OUT3 | O | Lamp/LED flash drive output |
| 4 | OUT4 | O | Lamp/LED flash drive output |
| 5 | OUT5 | O | Lamp/LED flash drive output |
| 6 | OSC1 | I | Oscillator input |
| 7 | OSC2 | O | Oscillator output |
| 8 | VDD | I | Positive power supply |
| 9 | TEST | I/O | For IC test only |
| 10 | OPTION | I | Random or sequence function selection |
| 11 | ON/OFF | I | Toggle ON/OFF control |
| 12 | VSS | I | Negative power supply, GND |

Note: OPTION=VDD → Sequential Mode
OPTION=Open → Random Mode

## Absolute Maximum Ratings

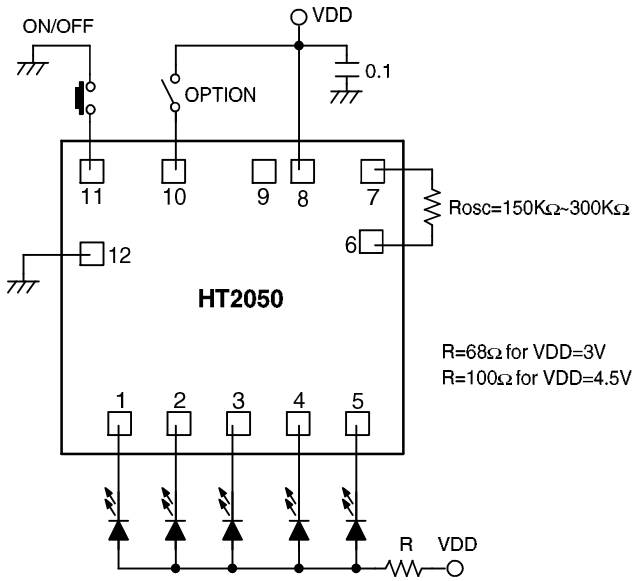
Supply Voltage ..... –0.3V to 5V
Input/Output Voltage ... $V_{SS}$–0.3V to $V_{DD}$+0.3V
Storage Temperature..... –50°C to 125°C
Operating Temperature..... 0°C to 70°C

## Electrical Characteristics

| 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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