HT201XX
One Lamp/LED Flash Driver

Features

- CMOS Metal-Gate Process Technology
- Operating voltage: 1.2V~4.5V
- Low standby current: 1μA Typ. at 3V
- Built-in oscillator (F_{OSC}: 32KHz)
- ON/OFF control function for the HT2013H, HT2013M, HT2013L
- 1/8 duty cycle output
- Directly driving an LED
- Minimum external components
- TO-92 package (only for the HT2012H, HT2014M, HT2014L)
- Flash rate options:
  - HT2013H → about 4Hz
  - HT2012H → about 4Hz
    (No ON/OFF control function)
  - HT2013M → about 2Hz
  - HT2014M → about 2Hz
    (No ON/OFF control function)
  - HT2013L → about 1Hz
  - HT2014L → about 1Hz
    (No ON/OFF control function)

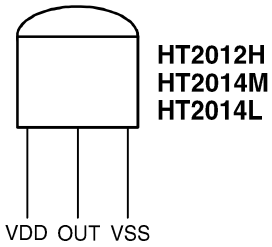
General Description

The HT201XX series is a low cost, low power CMOS LSI chip designed for lamp and LED flash drivers. It can be operated without any external components, thus suitable for applications on flashing badges, gift cards, flashing earrings, and other products that require flashing lights.

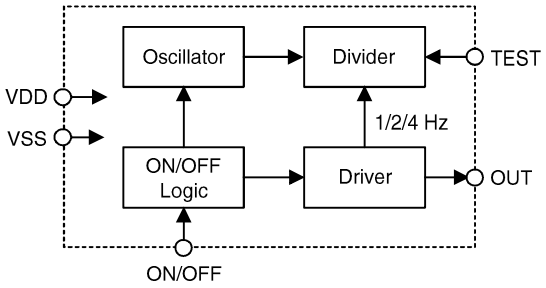
Selection Table

Part No.	Flash Rate	ON/OFF Control		Package	
		Yes	No	TO-92	Dice
HT2013H	4Hz	√			√
HT2012H	4Hz		√	√	√
HT2013M	2Hz	√			√
HT2014M	2Hz		√	√	√
HT2013L	1Hz	√			√
HT2014L	1Hz		√	√	√

Pin Assignment

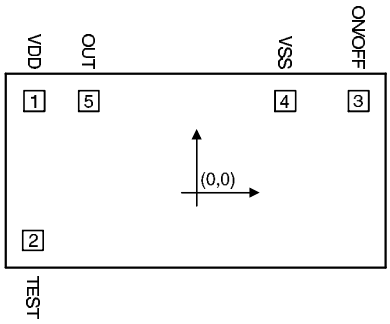


Block Diagram



Pad Coordinates

Unit: mil



Pad No.	X	Y
1	–23.9	13.5
2	–24.13	–7.055
3	23.89	13.5
4	13.09	13.5
5	–15.89	13.5

Chip size: 60×38 (mil)^2

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

Pad Description

Pad No.	Pad Name	I/O	Internal Connection	Description
1	VDD	—	—	Power supply (positive)
2	TEST	—	—	For IC test only
3	ON/OFF	I	CMOS Pull-High	Lamp/LED flash ON/OFF control pad
4	VSS	—	—	Power supply (ground)
5	OUT	O	NMOS Open Drain	Lamp/LED flash output

Absolute Maximum Ratings

Supply Voltage .....–0.3V to 5.5V
Input Voltage..... V_{SS}–0.3V to V_{DD}+0.3V
Storage Temperature.....–50°C to 125°C
Operating Temperature.....–20°C to 75°C

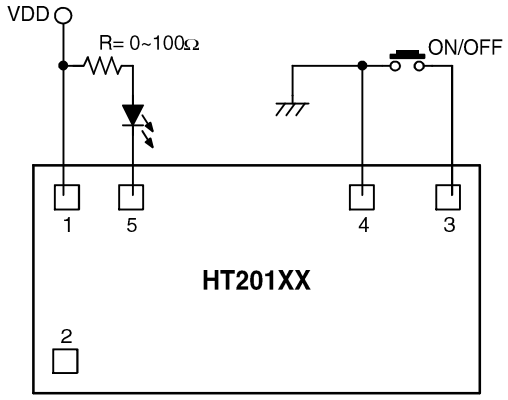
Electrical Characteristics

(Ta=25°C)

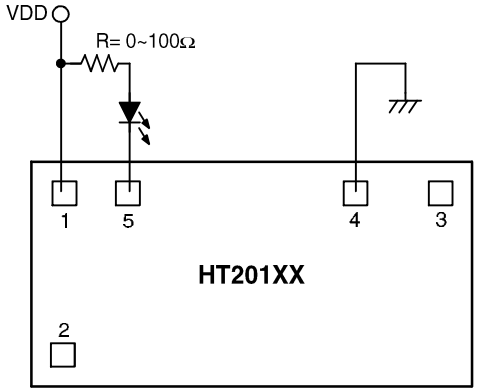
Symbol	Parameter	Test Condition		Min.	Typ.	Max.	Units
		V_{DD}	Condition				
V_{DD}	Operating Voltage	—	—	1.2	3	4.5	V
I_{STB}	Standby Current	3V	—	—	1	2	μA
I_{DD}	Operating Current	3V	No load	—	200	500	μA
I_{OL}	OUT Pad Sink Current	1.5V	V_{OL}=0.15V	5	12	—	mA
		3V	V_{OL}=0.3V	10	30	—	mA
F_{OSC}	System Frequency	3V	—	—	32K	—	Hz

Application Circuit

Chip form with ON/OFF control



Chip form without ON/OFF control



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Package form application