

# 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 (Fosc: 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:
  - $HT2013H \rightarrow about 4Hz$
  - HT2012H → about 4Hz (No ON/OFF control function)
  - $HT2013M \rightarrow about 2Hz$
  - HT2014M → about 2Hz
  - (No ON/OFF control function)
  - HT2013L  $\rightarrow$  about 1Hz HT2014L  $\rightarrow$  about 1Hz
  - H12014L → 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 applica-

tions on flashing badges, gift cards, flashing earrings, and other products that require flashing lights.

#### **Selection Table**

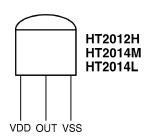
Part No.	Flash Rate	ON/OFF Control		Package		
		Yes	No	TO-92	Dice	
HT2013H	4Hz	√			√	
HT2012H	4Hz		√	√	√	
HT2013M	2Hz	V			√	
HT2014M	2Hz		√	√	√	
HT2013L	1Hz	V			√	
HT2014L	1Hz		V	√	√	

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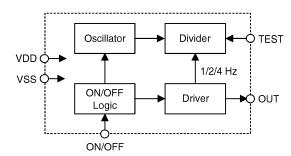
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# **Pin Assignment**

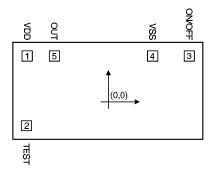


# **Block Diagram**



#### **Pad Coordinates**

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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:  $60 \times 38 \text{ (mil)}^2$ 

# **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	0	NMOS Open Drain	Lamp/LED flash output

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<sup>\*</sup>The IC substrate should be connected to VDD in PCB layout artwork.



# **Absolute Maximum Ratings**

Supply Voltage0.3V to 5.5V	Storage Temperature50°C to 125°C
Input VoltageVss-0.3V to Vpp+0.3V	Operating Temperature20°C to 75°C

## **Electrical Characteristics**

(Ta=25°C)

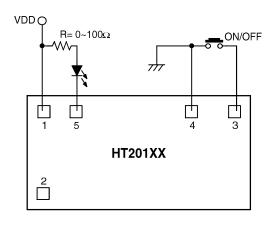
Symbol	Domonoston	Test Condition		M:	T	Mari	T I *4
	Parameter	V <sub>DD</sub>	Condition	Min.	Тур.	Max.	Units
$V_{\mathrm{DD}}$	Operating Voltage	_	_	1.2	3	4.5	V
I <sub>STB</sub>	Standby Current	3V	_	_	1	2	μΑ
I <sub>DD</sub>	Operating Current	3V	No load	_	200	500	μΑ
IoL	OLUT De d'Chale Comment	1.5V	V <sub>OL</sub> =0.15V	5	12	_	mA
	OUT Pad Sink Current	3V	V <sub>OL</sub> =0.3V	10	30	_	mA
Fosc	System Frequency	3V	_	_	32K	_	Hz

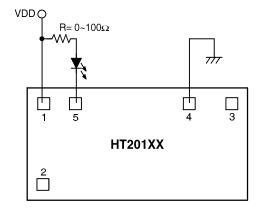
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# **Application Circuit**

## Chip form with ON/OFF control

# Chip form without ON/OFF control



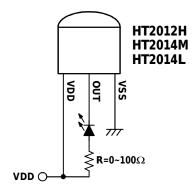


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# Package form application



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