

Features

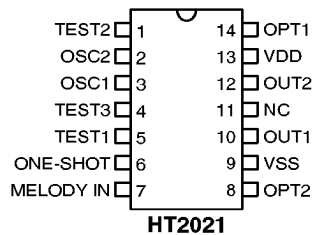
- CMOS Metal-Gate Process
- Operating voltage: 1.2V~4.5V
- Low stand-by current: 1 μ A at 3V
- Two lamp flash driver with a 10mA driving capability
- In-Phase or Out-of-Phase selection
- Synchronous flash with a melody interface
- 1/8 duty cycle output
- A built-in oscillator
- Minimum external components

General Description

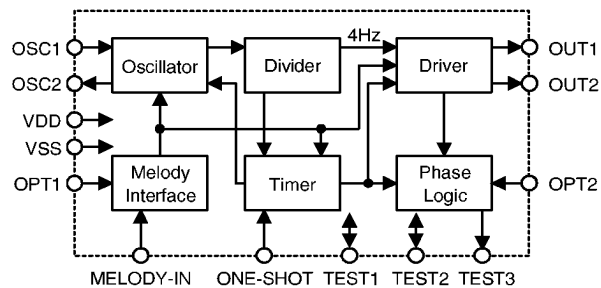
The HT2021 is a low cost, low-power CMOS LSI chip designed for lamp and LED flash drivers. It contains two 10mA flash drivers that can be driven in-phase or out-of-phase. The chip re-

quires only one external resistor for normal applications. It is suitable for use in products that require flashing lights, such as Christmas decoration, gift cards, and so on.

Pin Assignment

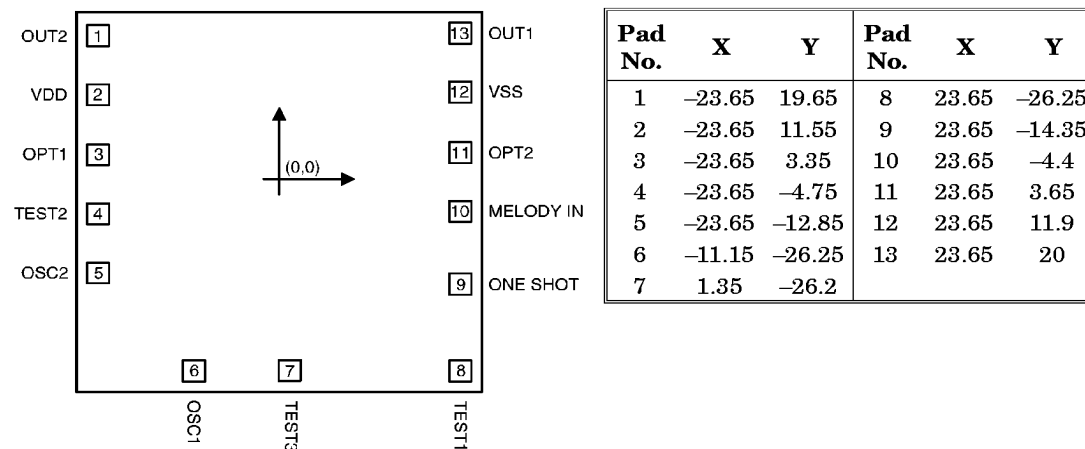


Block Diagram



Pad Coordinates

Unit: mil



Chip size: 60 × 65 (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	OUT2	O	Lamp/LED flash drive output
2	VDD	I	Positive power supply
3	OPT1	I	Melody Interface selection
4	TEST2	I/O	For IC test only
5	OSC2	O	Oscillator output
6	OSC1	I	Oscillator input
7	TEST3	O	For IC test only
8	TEST1	I/O	For IC test only
9	ONE-SHOT	I	One shot control input
10	MELODY IN	I	Melody input from the melody IC
11	OPT2	I	In-Phase or Out-of-Phase selection
12	VSS	I	Negative power supply, GND
13	OUT1	O	Lamp/LED drive output

Note: (a) OPTION 1 = 0 → No melody interface

OPTION 1 = 1 → Melody interface

(b) OPTION 2 = 0 → Out-of-phase

OPTION 2 = Open → In-phase

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

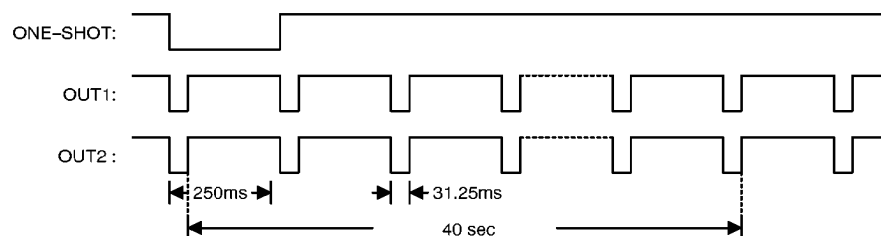
Electrical Characteristics

($T_a=25^{\circ}C$)

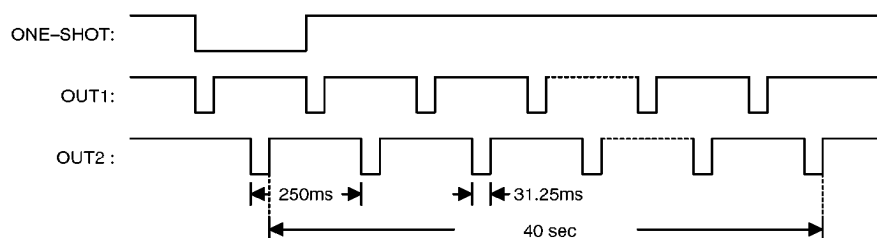
Symbol	Parameter	Test Condition		Min.	Typ.	Max.	Unit
		V_{DD}	Condition				
V_{DD}	Operating Voltage	—	—	1.2	3	4.5	V
I_{STB}	Stand-by Current	3V	No load	—	1	2	μA
I_{DD}	Operating Current	3V	—	—	200	500	μA
I_{OL}	Output Sink Current	1.5V	$V_{OL}=0.5V$	5	8	—	mA
		3V	$V_{OL}=0.5V$	10	15	—	mA
F_{OSC}	Oscillator Frequency	3V	—	—	128k	—	Hz

Timing Diagram

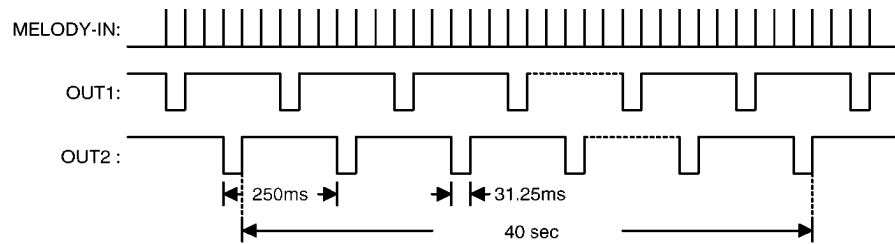
In-phase output: (when $f_{osc}=128kHz$)



Out-of-phase output: (when $f_{osc}=28kHz$)

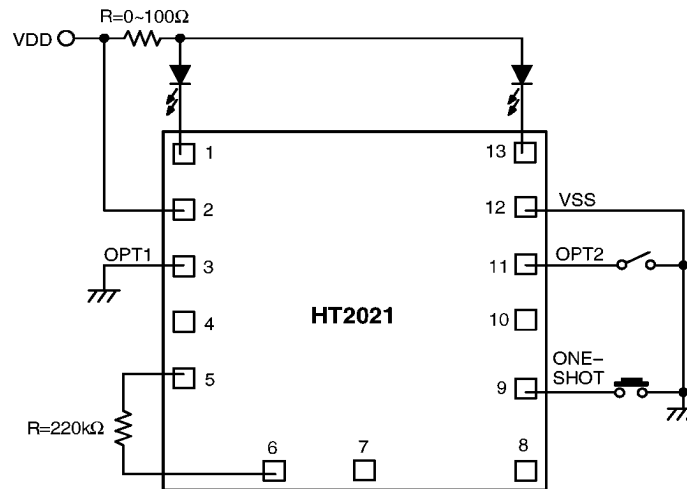


Melody interface timing: (out-of-phase)

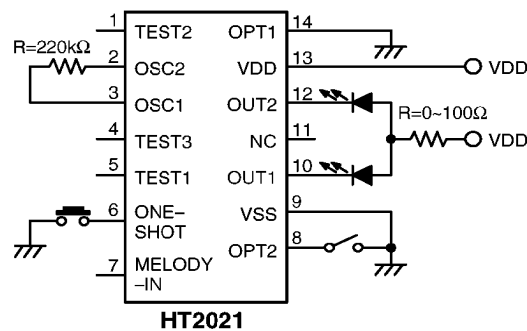


Application Circuit

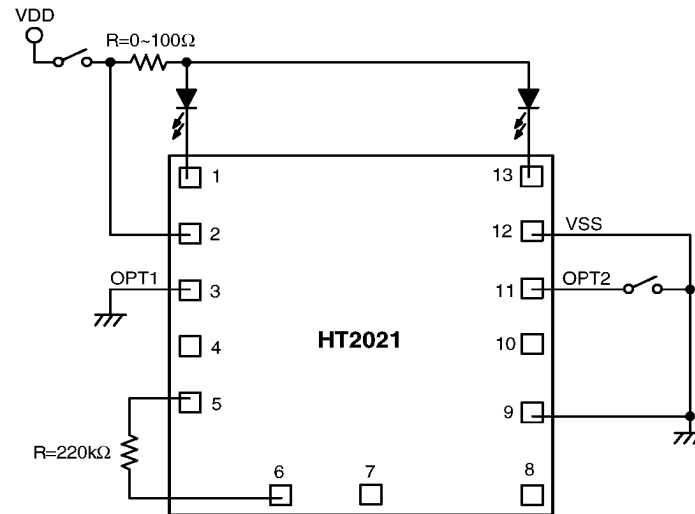
One-shot mode



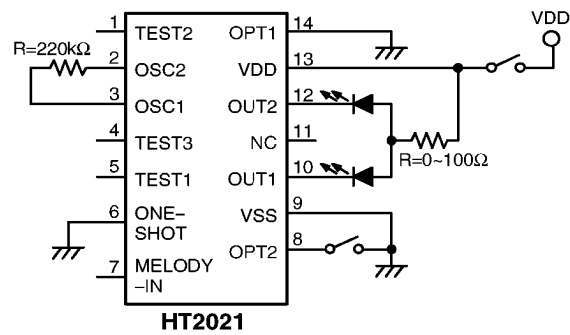
* The IC substrate should be connected to VDD in the PCB layout artwork.



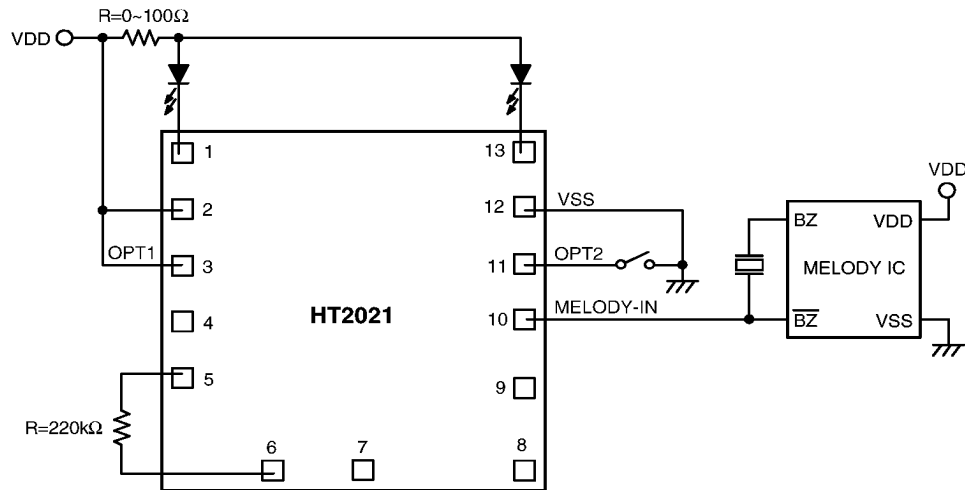
Power-on mode



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



Interface with a melody chip



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