



WTD0007
Heart Rate Signal Detector

Preliminary

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Ver 1.5



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General Description

WTD0007 is a chip dedicated to detect the heart-rate signal from human body. Only a few external components need, WTD0007 can implement functions via connecting to three kinds of heart rate detecting sensor.

Support IR photo-interrupt, photo-transmit and electrode metal sensors (Hand pulse sensors), WTD0007 is adapted to various products such as exciting instruments, bicycle and heart rate watch.

Features

- Micro processor base
- Standby current less than 1 μ A
- Heart-rate signal detect circuit built in
- 16 Bit sampling heart rate signal to digital counter
- Auto wake up via simple trigger
- Support three kinds of sensor.
- Supply voltage 2.4V ~ 3.6V for IR photo sensor
- Supply voltage 2.5V ~ 4.5 for Hand pulse sensor
- Hand-holding detect function
- 20 Pin SSOP package or Die



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Function

WTD0007 has two kinds of operation mode; they are “Key Trigger” mode and “Level Control” mode.

While after the power on initial status, WTD0007 will check the “HrOsc” pin input level; when “HrOsc” pin detect logic low, The WTD0007 will set to “Key Trigger” mode. After power on reset, WTD0007 will enter to standby mode, at this time heart-rate detecting circuit will be turn off, waiting for next falling edge on the “Trigger” pin. When “Trigger” pin detect a falling edge WTD0007 will toggle switching between standby and normal mode; for example while the operation mode is at standby mode, next falling edge will change to normal mode.

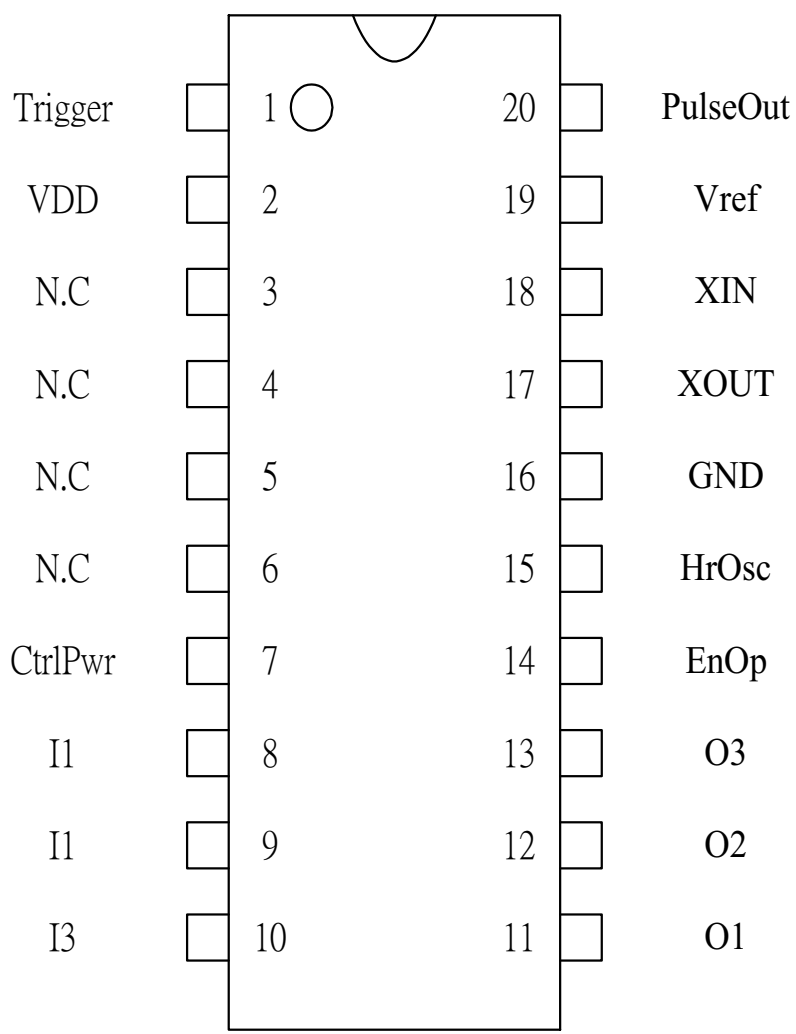
When “HrOsc” pin connected to external pull-high resistor, WTD0007 will set to “Level Control” mode, During this operation mode WTD0007 control by “EnOp” pin input level. When “EnOp” pins input logic high, WTD0007 stays in standby mode. While a falling edge detect on “EnOp” pin and keep it in low level, WTD0007 wake up and entry normal mode until “EnOp” pin status change to logic high.

Pin “EnOp” normally for detecting the handholding status. It cost extra components-MOSFET while user need to detect this handholding status. If user doesn’t need this handholding function keep “EnOp” pin in logic low-level state.

WTD0007 could generation regular duration pulse from HrOsc; you can get a very smooth heart rate signal via this pin.



Pin Assignment 20pin SSOP





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Pin Descriptions

PIN#	NAME	ATTRICUTE	DESCRIPTION
1	Trigger	Input	In Key Trigger Mode, used to switch operation state.it also system reset input.
2	VDD	Power	Connect to power source.2.5V to 5V
3	N.C		No connect
4	N.C		No connect
5	N.C		No connect
6	N.C		No connect
7	CtrlPwr	Output	Use to enable external sensor power
8	I1	Analog	Analog input pin1
9	I2	Analog	Analog input pin2
10	I3	Analog	Analog input pin3
11	O1	Analog	Analog output pin1
12	O2	Analog	Analog output pin2
13	O3	Analog	Analog output pin3
14	EnOp	Input	Active low to enable analog circuit
15	HrOsc	Input/Output	Mode option and Heart rate oscillation output
16	GND	Power	Connect to power ground
17	XOUT	OSC	Connect to crystal input
18	XIN	OSC	Connect to crystal output
19	Vref	Analog	Analog voltage reference when analog circuits launch Vr will set to 1/2 VDD.
20	PulseOut	Output	Pulse output