

Digital Intelligent
Pyroelectric Infrared
Sensor
P916H



1. Overview

The P916H is a pyroelectric infrared sensor that integrates a digital intelligent control circuit and a human body detection sensitive element in an electromagnetic shielding cover. The human body sensing sensor couples the sensed body motion signal to the digital smart integrated circuit chip through a very high impedance differential input circuit. The digital smart integrated circuit converts the signal into a 15-bit ADC digital signal when the PIR signal exceeds the selected digital valve. The value will have a timed REL level output.

2.the characteristics

- Digital signal processing, low voltage, low power consumption, and work instantly after startup.
- Two-way differential very high impedance sensor input
- Second-order Butterworth bandpass filter with built-in infrared sensor to shield input interference at other frequencies
- Sensitivity, timing time, illumination sensor Schmitt REL output.

3. Performance parameter

1. Maximum Ratings (Any electrical stress that exceeds the parameters in the table below may cause permanent damage to the device.)

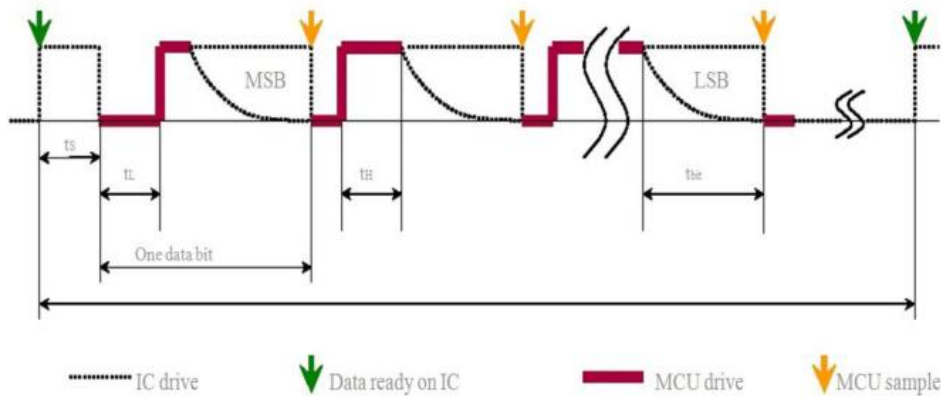
Parameter	symbol	Minimum	Maximum	unit	Note
Voltage	V _{oo}	-0.3	3.6	V	
Operating temperature	T _{st}	-20	85	°C	
pin limit	Into	-100	100	mA	
storage temperature	T _{st}	-40	125	°C	

2. Working conditions (T=25 °C, V_{DD} = 3V, unless otherwise specified)

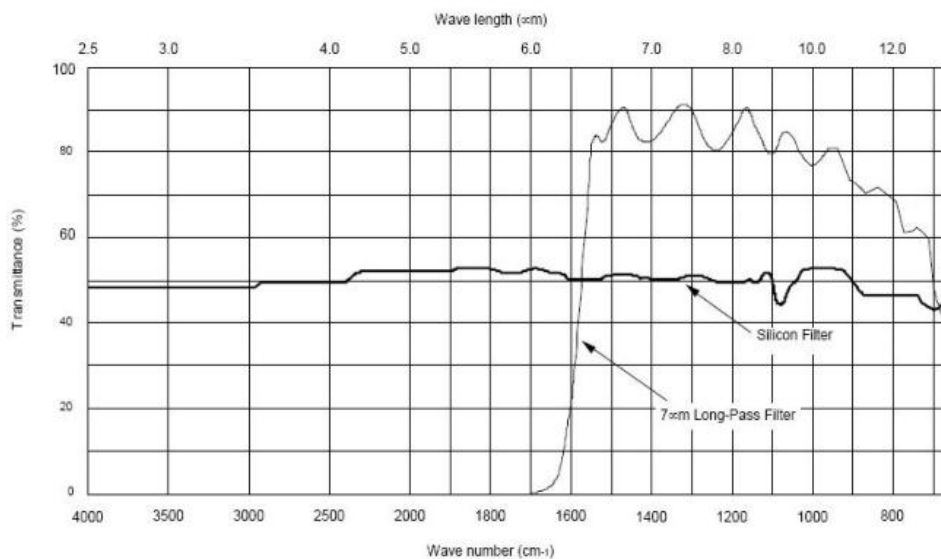
Parameter	symbol	Minimum	Typical	Maximum	unit	Note
Voltage	V _{DD}	2.7	3	3.3	V	
Operating temperature	I _{DD}	12	15	20	μA	
Sensitivity threshold	V _{SENS}	120		530	μV	
Output REL						
Output low frequency	L _{OL}	10			mA	V _{OL} < 1V
Output high frequency	L _{OH}			-10	mA	V _{OH} > (V _{DD} -1V)
REL low level output lock time	T _{OL}		2.3		S	Not adjustable

REL high output lock time	T_{OH}	2.3		4793	S	
Input SENS/ONTIME						
Voltage input range		0		V_{DD}	V	Adjustment range between 0V and 1/4VDD
Input bias current		-1		1	μA	
Enable OEN						
Input low voltage	V_{IL}			$0.2 V_{DD}$	V	OEN voltage high to low threshold level
Input high voltage	V_{IH}	$0.4V_{DD}$			V	OEN voltage low to high threshold level
Input Current	I_I	-1		1	μA	$V_{SS} < V_{IN} < V_{DD}$
Oscillator and filter						
Low pass filter cutoff frequency				7	Hz	
High pass filter cutoff frequency				0.44	Hz	
Oscillator frequency on the chip	F_{CLK}			64	KHz	

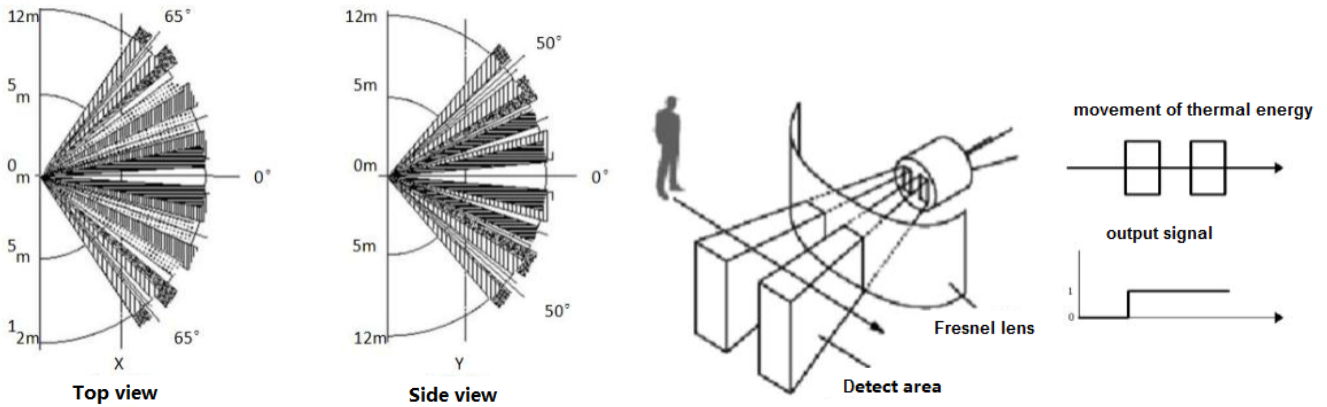
3. Output voltage waveform



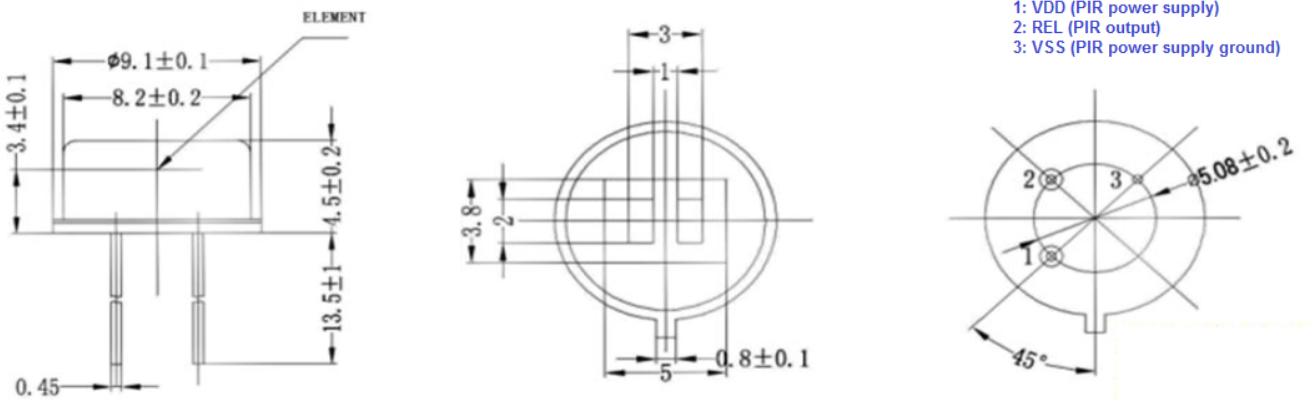
4. Transmission spectrum of window material



5. Detection angle

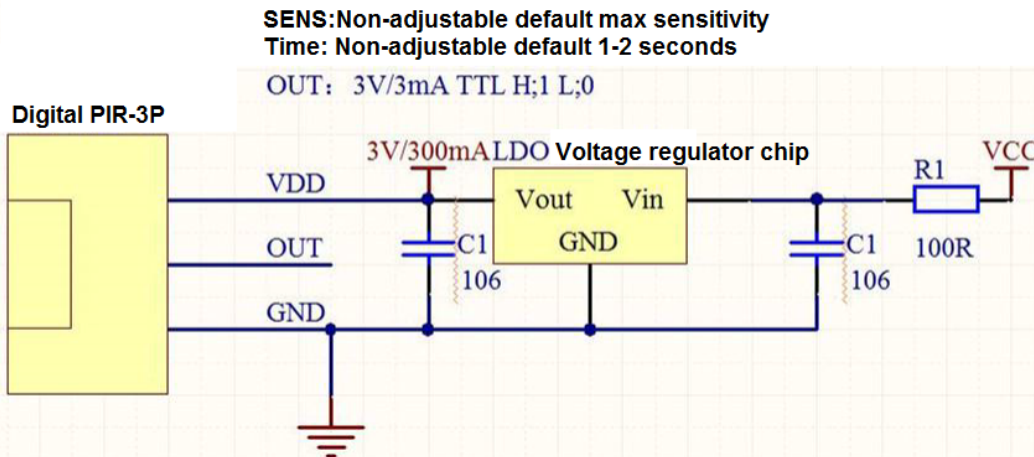


6. Size angle bitmap (mm)



- 1: VDD (PIR power supply)
- 2: REL (PIR output)
- 3: VSS (PIR power supply ground)

7. Application circuit



8. Precautions

- When there are stains on the window, it will affect the detection performance, so please pay attention.
- The lens is made of a weak material (polyethylene). When a load or impact is applied to the lens, malfunction and performance deterioration may occur due to deformation and damage, so avoid the above.
- Failure to apply static electricity of $\pm 200\text{V}$ or more may cause damage. Therefore, please pay attention to the operation, avoid touching the terminal directly by hand.
- When soldering a wire, solder the soldering iron at a temperature of $350\text{ }^{\circ}\text{C}$ or less and soldering within 3 seconds. When soldering through a solder bath, performance may deteriorate, so avoid it.
- Please avoid cleaning the sensor. Otherwise, the cleaning liquid may intrude into the inside of the lens, which may cause deterioration in performance.
- When using the cable wiring, it is recommended to use shielded wires to minimize the influence of interference.