



The OS-PIR203Z-S0 digital pyroelectric infrared sensor uses the characteristic of temperature change to detect the infrared radiation; it uses the binary compensation method to suppress the interference caused by the temperature change, thereby improving the working stability of the sensor. The resistance-capacitance filtering circuit and the resistance-capacitance frequency selective circuit are used to enhance the electromagnetic compatibility of the sensor, so that the sensor has higher immunity to radio frequency interference (RFI). The product can be used in burglar alarms, induction doors, automatic lamps, intelligent toys and security surveillance cameras, etc.

Feature

- High sensitivity and superior signal to noise ratio
- Adopting binary compensation structure to resist external environmental interference effectively
- Interference filter has high cut-off depth and strong white light resistance
- Using resistance-capacitance filtering circuit, increase anti RFI abilities

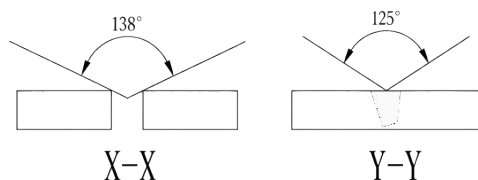
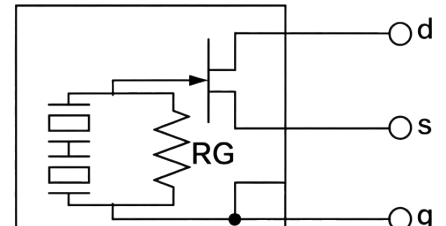
Application

- Applicable to all types of automatic lighting switches
- Applicable to all kinds of intrusion detectors for burglar alarms
- Applicable to all kinds of smart toys
- Applicable to all kinds of smart household appliances

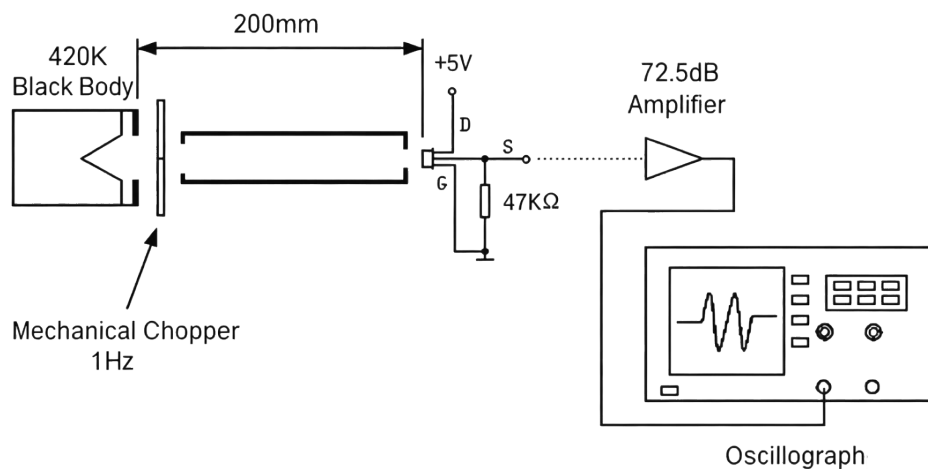
Advantages

- Strict quality assurance system
- Provide a full range of technical support

Specification

Package	TO-5
Window Size	4*3mm
IR Receiving Electrode	2*1mm
Spectral Response	5.5-14μm
Transmittance	≥ 75%
[Vp-p]Peak Output Signal(Vp-p)	≥ 3500mV
Sensitivity	≥ 3000V/W
[Vp-p]Noise(Vp-p)	<120mV
Output Balance	<10%
Offset Voltage	0.4~1.0V
Supply Voltage	2~15V
Working current	2μA
Operating Temp.	-30~70°C
Storage Temp.	-40~80°C
Field of View	
Equivalent Circuit Diagram	

Testing Method



Test diagram

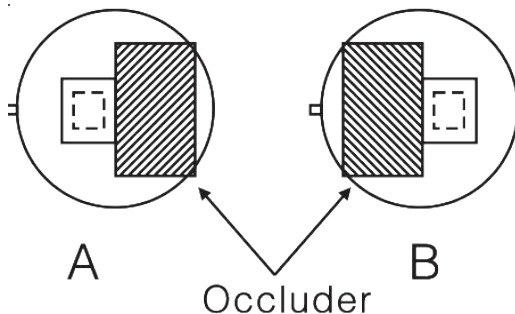
Testing Condition

Ambient temperature 25 °C

Black body temperature 420k

Modulation frequency 1 Hz, 0.3~3.5Hz Δ f

Amplification gain 72.5dB



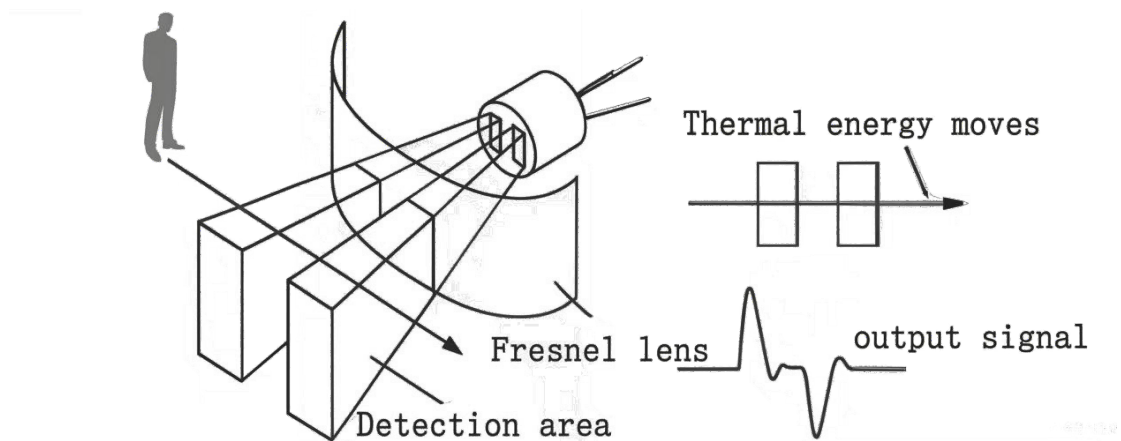
The sensitive balance of the binary sensor is measured by measuring the sensitivity of each unit (ie, the individual output peak voltage) and using the following formula

$$\text{Balance} = |V_A - V_B| / (V_A + V_B) \times 100\%$$

V_A = sensitivity of side A (mVp-p)

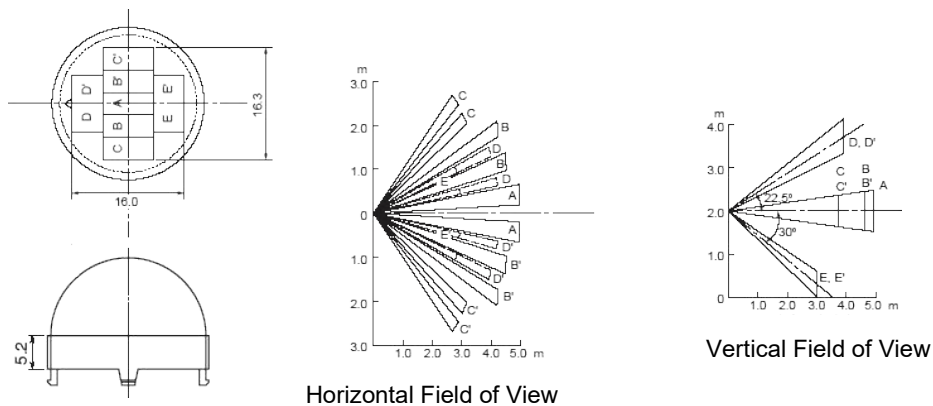
V_B = sensitivity of the B plane (mVp-p)

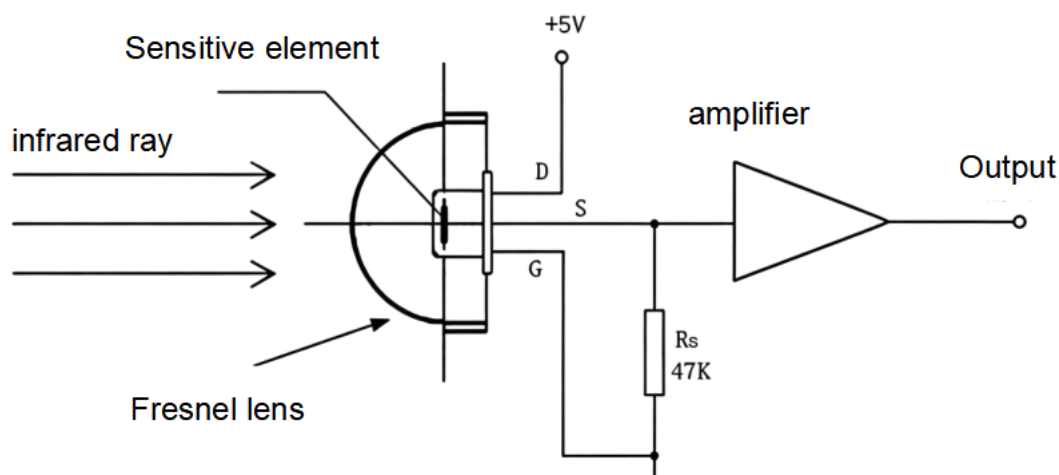
Typical Signal Characteristic



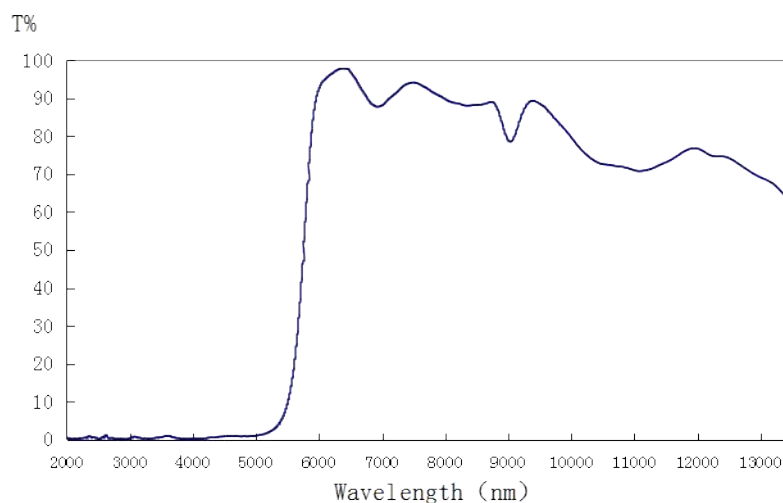
Fresnel Lens

The Fresnel lens determines the detection range and distance of the sensor. According to customer requirements, it can correspond to various detection range and detection distance



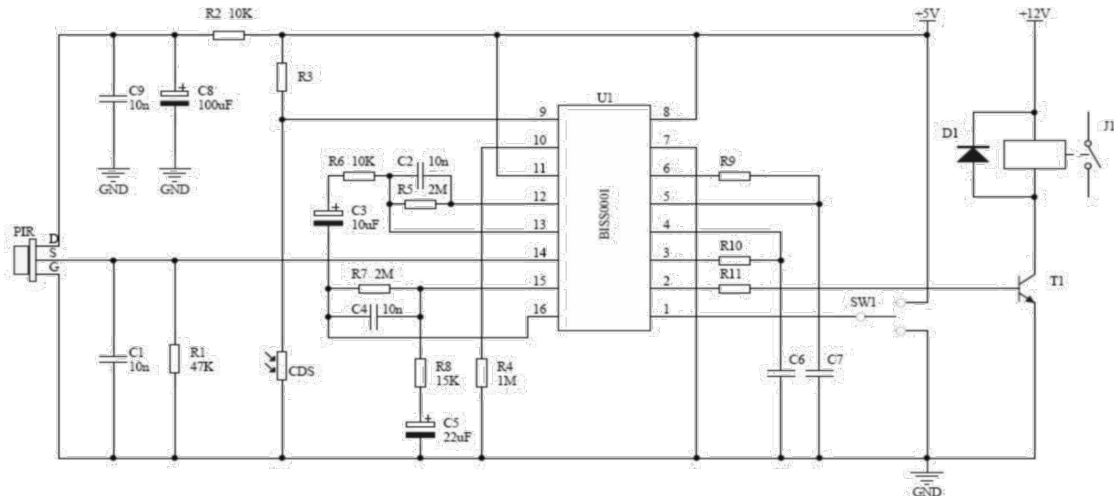


Window Material Receiving Wavelength

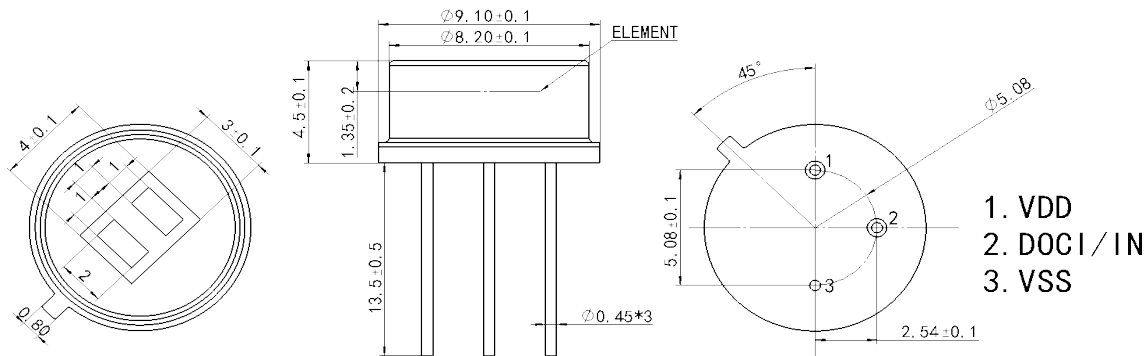


Note: the chart shows the typical 5.5um infrared filter reference graph. The curve is the average of the infrared pass rate. The window material is a semiconductor silicon wafer with special vacuum coating.

Typical Application Circuit



Product Dimension (mm)



TOP VIEW

FIGURE A

SIDE VIEW

FIGURE B

BOTTOM VIEW

FIGURE C

Pin Description:

1	VDD	VDD Power supply pin
2	DOCI	DOCI Sensor data output pin

3	VSS	VSS Power ground GND
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Soldering

Careless operation during soldering will cause damage to the product, please be careful. Please avoid put pressure on the product bracket or package part during soldering. When soldering, please ensure that the soldering position has a certain distance from the bottom of the sensor. This distance varies with different welding methods. Please refer to the recommended welding conditions below.

Recommended Soldering Conditions

Soldering Mode		Fixed Form
Manual soldering	Soldering iron temperature	< 350℃
	Soldering time	< 5 seconds
	Soldering position	More than 1.5mm (from PCB to base)
Tin stove welding	Preheat	Max 100℃, no more than 60 seconds
	Dip soldering temperature	Max 280℃
	Dip soldering time	< 5 seconds
	Soldering position	More than 1.5mm (from PCB to base)

Caution

Thanks for using our company's PIR series products. In order to enhance your understanding of our products characteristics and avoid unnecessary damage due to manmade factors, we provide corresponding operation standard instruction. At the same time, even if you are using the same specification PIR, its reliability is related to overall system design level, operation mode and use condition. This instruction couldn't cover all questions customers may meet during using. We apologize for any inconvenience caused sincerely.

■ Product Declaration

- The factory parameters of the sensor are tested after one minute stabilization time under standard blackbody and related parameter test conditions.
- In order to confirm the product is right for using purpose, pretest is necessary before use. We don't guarantee the product application introduction don't contravene any patent. The corresponding import and export legal responsibility should be taken by customers. Please verify relevant provision in each country and district beforehand. We may change specifications from time to time in the interest of product development, without prior notification or public announcement. We require formal product specifications to be signed before mass production.

■ Storage

- Under the storage conditions of 30℃ or less and humidity less than 60%RH, the storage period is 6months. Store the products in sealed container with moisture absorbent could prolong the storage time to a certain extent. Bad storage conditions may cause the product pin corrode or characteristics change.

■ Static

- Static and electric surge would change the product features, such as decreasing forward voltage or damage the products. Please make sure adopt effective anti-static measures. All the relative devices and machinery must be properly grounded. And please use anti-static wristbands, anti-electrostatic gloves, anti-electrostatic containers at the same time to prevent static and electric surge.

■ **Design Suggestion**

- Please pay attention to the window direction of the sensor when designing the product, and combine the Fresnel lens to achieve a better detection angle.
- The sensor detection distance is related to the background temperature, the moving target temperature, the Fresnel lens, the ambient temperature, and the amplifier magnification setting. It is necessary to consider all parameters when using.

■ **Others**

- The sensor is sealed by a metal casing. In order to ensure the airtightness of the device, it is not recommended to bend the lead during use. Bending the lead may damage the airtightness of the glass and metal sealing parts, cause air leakage. If you need to bend, please use tool assist and ensure that the root of the lead is not stressed during the bending process. Please ensure the distance between the bending point and sensor base is more than 3mm. Do not twist the leads axially during use.
- The sensor window lens is a semiconductor wafers filter vacuum coated by special materials. Please don't touch the window with your hands or hard objects when using. If the filter is dirty, please wipe it with absolute ethanol by lint-free cloth.
- Please avoid mechanical shock for the sensor. Frequent or excessive vibration will cause the sensitive element break.