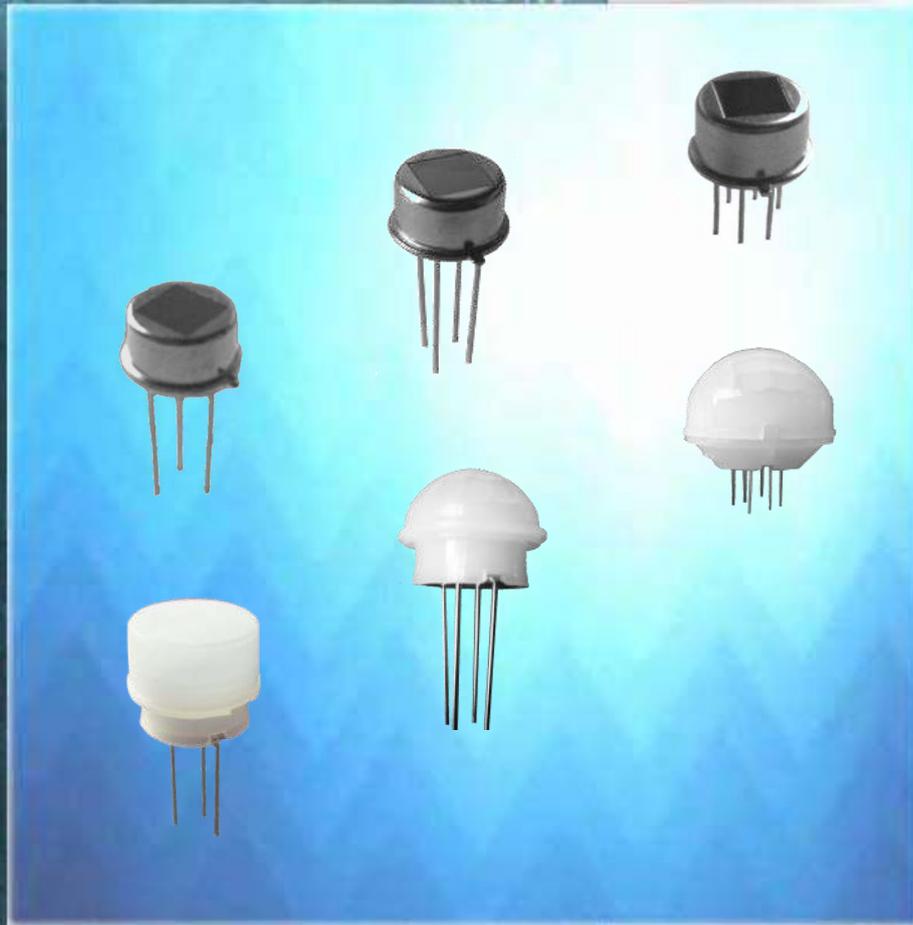


Note: This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

Digital Four Elements Pyroelectric Infrared Sensors



1. MODELNO.

P923B

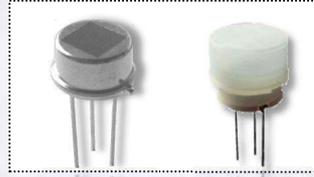


Table.1

2. GENERAL CHARACTERISTICS

PARAMETER		SPECIFICATION
4.1	Pyroelectric Passive Infrared Sensor	Balanced differential type (Series opposed type)
4.2	Circuit Configuration	See Fig.3

3. ELECTRICAL CHARACTERISTICS

Vdd=3.3V, unless specified.

Table.2

PARAMETER	CONDITION	SPECIFICATION
5.1	Maximum range(V)	-0.3 to 3.6V
5.2	Supply Voltage (V) Single Power Supply	2.7 to 3.3V (maximum rating :3.6V)
5.3	Fluctuation in Supply Voltage Single Power Supply	Supply voltage (+/-) 3%
5.4	Current Consumption Vdd=3.3V supply Circuit after Vout is not considered	Non-Detection:20uAmax. Detection :20uAmax.
5.5	Vout Output Voltage Single Power Supply *)Timing Chart : See Fig.2	Non-Detection: Max. 1.0 V Detection: Min. Vdd-1.0V
5.6	Warm-up Time *)Timing Chart : See Fig.2	Max. 30 sec.
5.7	On Time	2.3 sec.
5.8	Trigger Threshold	120 μ V

4. OPTICAL CHARACTERISTICS

Table.3

PARAMETER	SPECIFICATION
6.1	Field of view X-axis : 138 deg. y-axis : 125 deg.
6.2	Filter substrate Sillcon
6.3	Cut on (5%T ABS) 5 (+/-) 1 micron
6.4	Transmission \geq 70% average 8 to 13 micron

5. ENVIROMENTAL REQUIREMENTS

Table.4

PARAMETER	SPECIFICATION
7.1	Operating Temperature -20 to +70 deg. C
7.2	Storage Temperature -30 to +80 deg. C
7.3	Relative Humidity The Sensor shall operate without increase in Noise Output when exposed to 90 to 95% RH at 30 deg.C Continuously
7.4	Hermeticity The Sensor shall be sealed to withsand a vacuum level of 21. 28kPa.

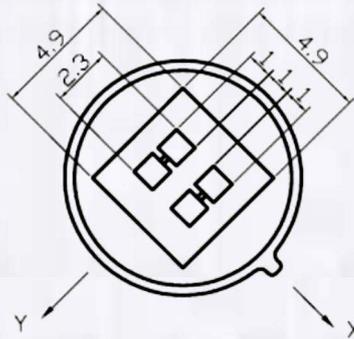
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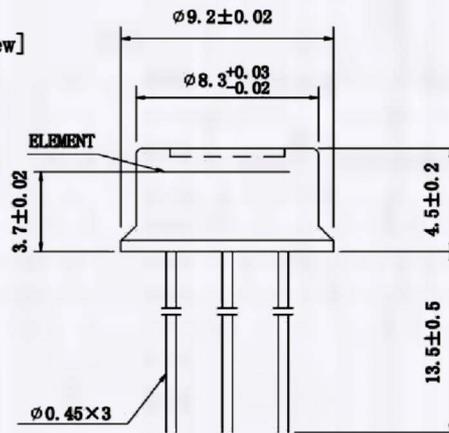
【F.O.V.】



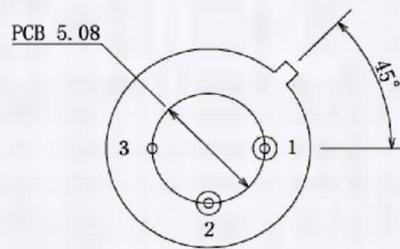
[Top View]



[Side View]



【Bottom View】



- 1 : Vdd
- 2 : Vout
- 3 : Ground

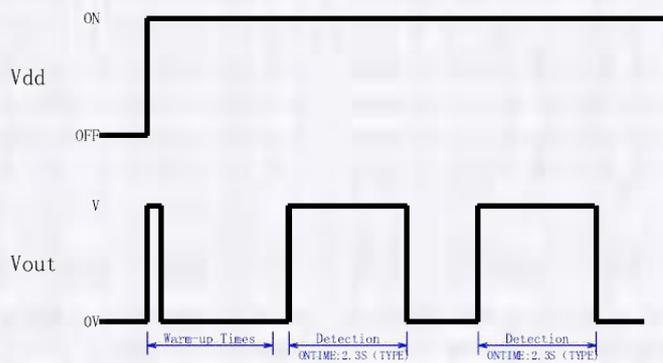
Tolerance without instruction: (+ / -) 0.2
Unit : [mm]

(*)The sensor conforms to the standard for RoHS.

Fig.1 : Dimensions

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Cautions) Warm-up Time: Max. 30 sec.
 Regarding of detection or non-detection during the waiting time, ON signal may be made due to Instability of circuit

Fig.2: Timing Chart

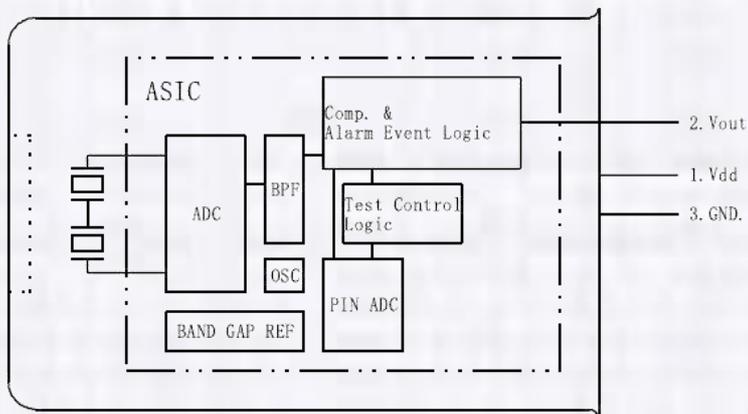


Fig.3:Circuit Configuration

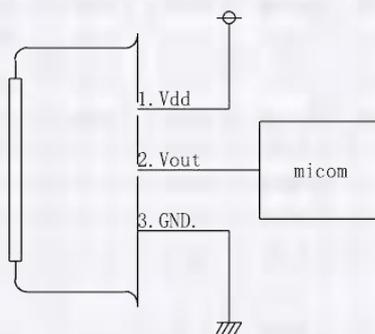


Fig.4:Basic Application Circuit Examples

1. MODEL NO.

P924B

2. Electrical Characteristics

1). Absolute Maximum Ratings

Stresses beyond those listed below may cause permanent damage to the device. Exposure to absolute maximum ratings may affect the device reliability.



Parameter	Symbol	Min	Max	Unit	
Supply Voltage	VDD	-0.3	3.6	V	
Operating temperature		-20	70	°C	
Current into any pin		-100	100	mA	
Storage Temperature	TST	-30	60	°C	

2). Operating Conditions (T=25°C, The parameters listed below for normal operation and are specified for an ambient temperature of 25 degree Celsius)

Parameter	Symbol	Min	Typ	Max		Unit	
Supply Voltage	VDD	2.7		3.3	V		
Supply current	IDD			15	µA		
Output REL							
Output current low	IOL	10			mA	VOL<1V	
Output current high	IOH	-10			mA	VOH>(VDD-1V)	
Output active (On) time	TOH	2.3		4793	s	16 steps	
Inputs SENS							
Input voltage range		0		VDD	V	Adjustment between 0V And 1/4 VDD	
Input leakage current		-1		1	µA		
Threshold for pulse count	VTH	49		462	µV	128 分档	
Band pass filter							
LPF cutoff frequency				7	Hz		
HPF cutoff frequency				0.4	Hz		

3.Features:

Using digital signal processing technology to process the pyroelectric signal.

A high impedance differential input as the sensing element input.

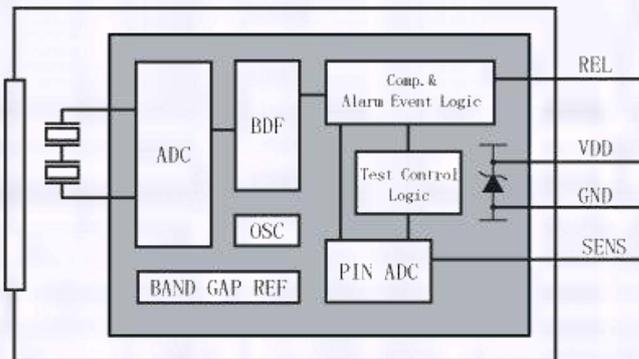
Uses a 16 bit precision AD converter to convert the voltage signal generated by the sensitive element into digital signal

Uses a two order Butterworth filter, to filter the digital signal, effectively filter various sources low frequency and high frequency noise.

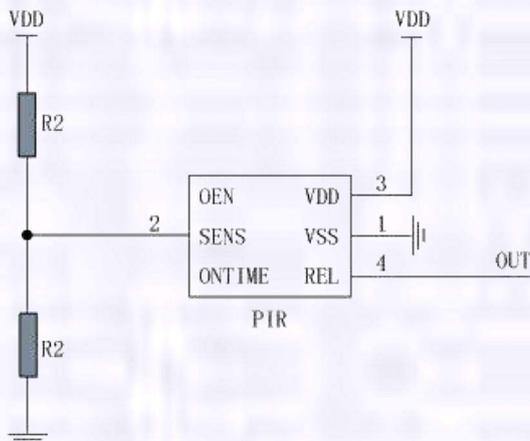
Due to signal processing is completed in the shell shield,has the stronger ability of anti RF interference.

Low power consumption

4.Detailed Description:



5.Schematic Circuit:



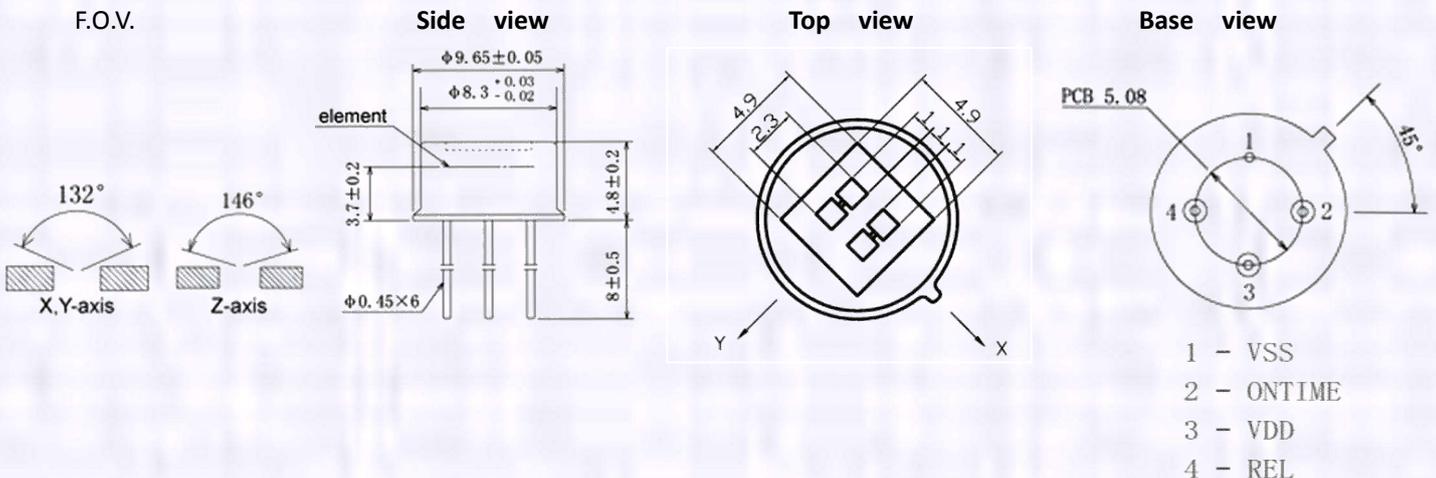
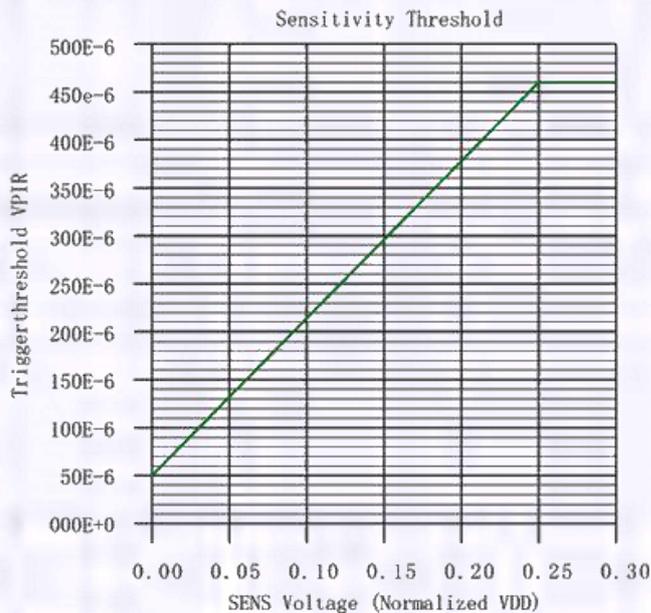
6. Alarm Event Processor

The signal from the band pass filter is rectified. When the signal level exceeds the set sensitivity threshold, an internal pulse is generated. A second pulse is counted, when the signals changes sign and exceeds the threshold again.

Whenever 2 pulses appear within 4s, an alarm condition is detected and the REL output is activated. If the signal level is in excess of 5 times the selected threshold, 1 pulse will cause activation of the REL output.

7. Sensitivity / Threshold

The voltage applied to the SENS input defines the threshold for the PIR signal which generates a pulse for the pulse counter, to determine an alarm condition. Connecting this input to VSS will result in the minimum possible threshold level, which is hardwired internally (offset) to avoid false detection due to zero threshold and detector noise. Any voltage above VDD/4 will select the maximum threshold, which is the least sensitive setting for PIR signal detection.



1. MODEL NO.

P906B

2. Electrical Characteristics

2.1 Absolute Maximum Ratings

Stresses beyond those listed below may cause permanent damage to the device.

Exposure to absolute maximum ratings may affect the device reliability.



Parameter	Symbol	Min	Max	Unit
Supply Voltage	VDD	-0.3	3.6	V
Operating temperature		-20	50	°C
Current into any pin		-100	100	mA
Storage Temperature	TST	-30	60	°C

2.2. Operating Conditions (T=25°C, The parameters listed below for normal operation and are specified for an ambient temperature of 25 degree Celsius)

Parameter	Symbol	Min	Typ	Max		Unit
Supply Voltage	VDD	2.7		3.3	V	
Supply current	IDD			15	µA	
Output REL						
Output currentlow	IOL	10			mA	VOL<1V
Output currenthigh	IOH	-10			mA	VOH>(VDD-1V)
Output active(On) time	TOH	2.3		4793	s	16 steps
Inputs SENS						
Input voltage range		0		VDD	V	Adjustment between 0V And 1/4 VDD
Input leakage current		-1		1	µA	
Threshold for pulse count	VTH	49		462	µV	128 分档
Inputs ONTIME						
Input voltage range		0		VDD	V	Adjustment between 0V And 1/4 VDD
Input leakage current		-1		1	µA	
(On) time		2.3		4793	S	
Input OEN						
Input low voltage	VIL		0.6		V	

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Input high voltage	VIH		1.0	V	
Input Current	II	-1	1	μA	VIN = VSS .. VDD
Band pass filter					
LPF cutoff frequency			7	Hz	
HPF cutoff frequency			0.4	Hz	

3.Features:

Using digital signal processing technology to process the pyroelectric signal.

A high impedance differential input as the sensing element input.

Uses a 16 bit precision AD converter to convert the voltage signal generated by the sensitive element into digital signal

Uses a two order Butterworth filter, to filter the digital signal, effectively filter various sources low frequency and high frequency noise.

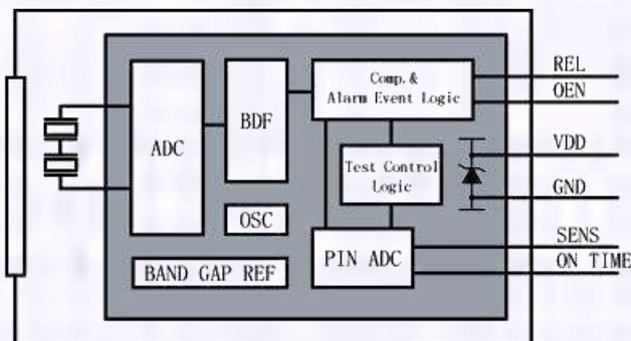
Due to signal processing is completed in the shell shield,has the stronger ability of anti RF interference.

Threshold of sensitivity, ONtime can be adjusted by an external voltage.

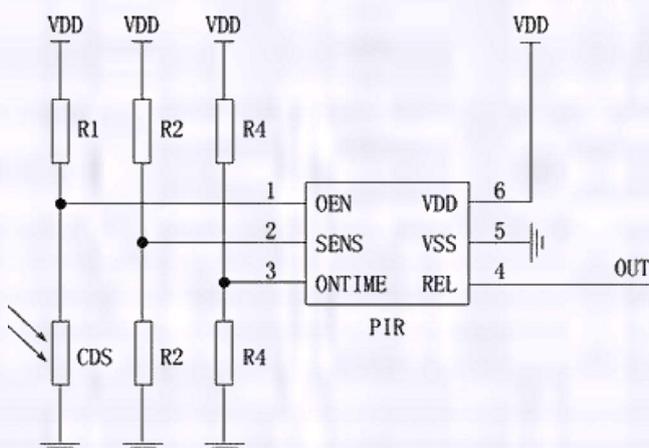
With light sensor application input,sensors can be controlled to function below the set illuminance

Low power consumption

4. Detailed Description:



5.Schematic Circuit:



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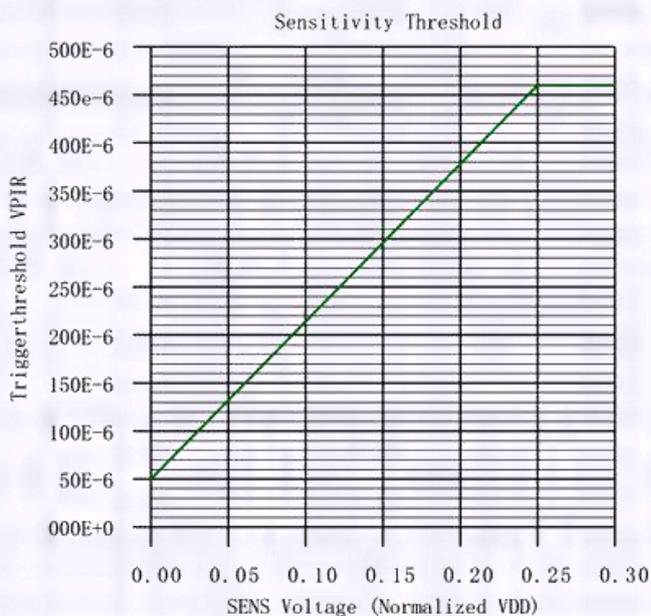
6. Alarm Event Processor

The signal from the band pass filter is rectified. When the signal level exceeds the set sensitivity threshold, an internal pulse is generated. A second pulse is counted, when the signals changes sign and exceeds the threshold again.

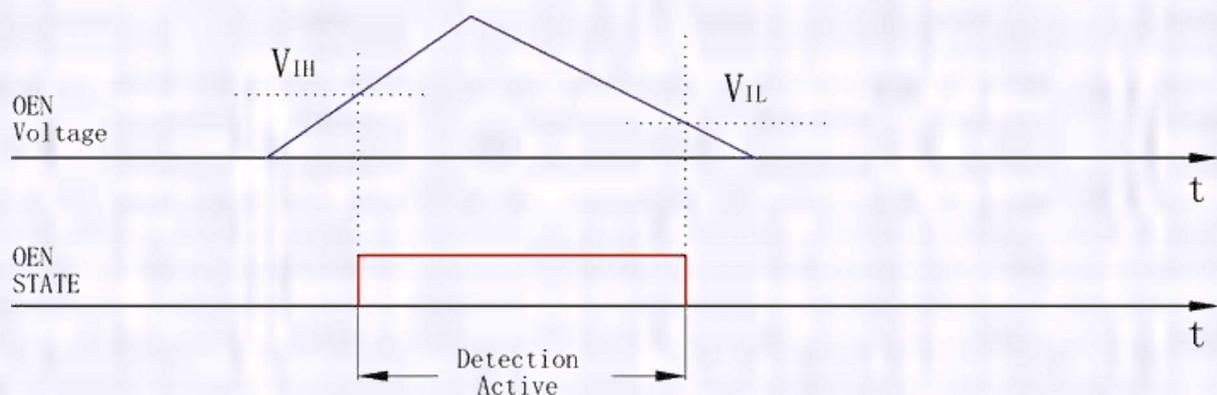
Whenever 2 pulses appear within 4s, an alarm condition is detected and the REL output is activated. If the signal level is in excess of 5 times the selected threshold, 1 pulse will cause activation of the REL output.

7. Sensitivity / Threshold

The voltage applied to the SENS input defines the threshold for the PIR signal which generates a pulse for the pulse counter, to determine an alarm condition. Connecting this input to VSS will result in the minimum possible threshold level, which is hardwired internally (offset) to avoid false detection due to zero threshold and detector noise. Any voltage above $V_{DD}/4$ will select the maximum threshold, which is the least sensitive setting for PIR signal detection.



8. Hysteresis on the OEN input

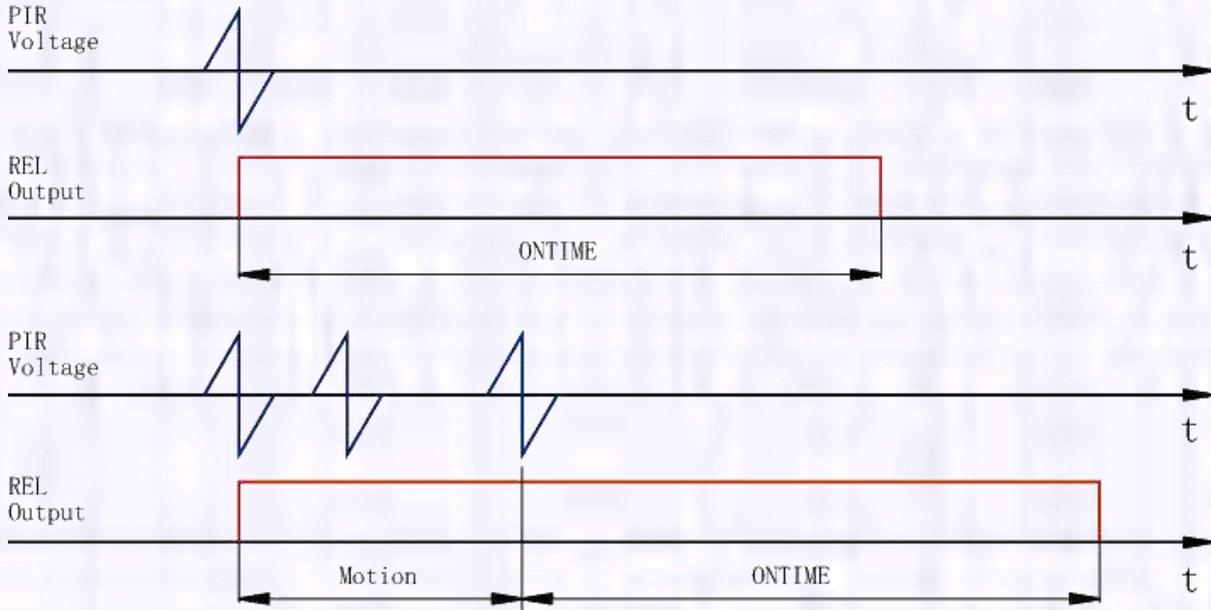


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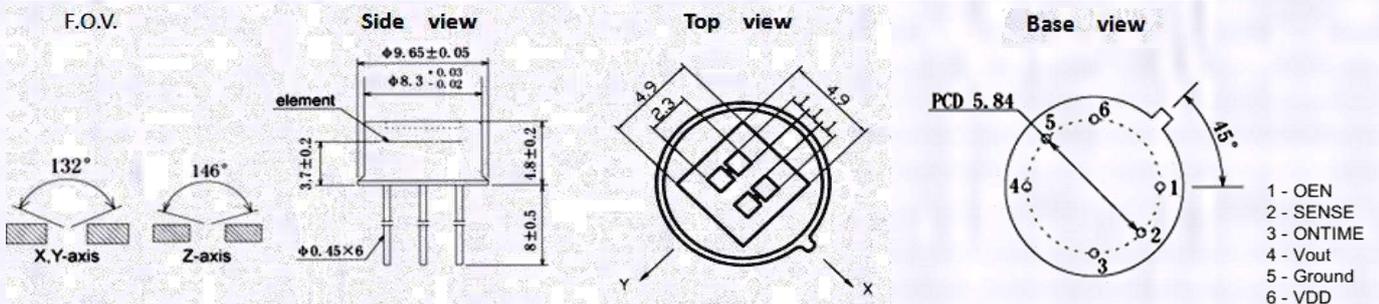
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9.ON TIME

The voltage applied to the ONTIME input determines how long the REL output stays active after the last alarm condition has been detected. If multiple alarm conditions are detected during the on time period, the on time is re-started whenever an alarm condition is detected. The on time period is derived from the oscillator frequency and will have a spread accordingly.



Step	Pin voltage	ONTIME(s)	Step	Pin voltage	ONTIME(s)
	Center of step voltage value			Center of step voltage value	
	$(VDD*(Step*2)+3)/128$	(typ)		$(VDD*(Step*2)+3)/128$	(typ)
0	3/128 or less	2.3	8	$(VDD*16+3)/128$	150
1	$(VDD*2+3)/128$	4.7	9	$(VDD*18+3)/128$	300
2	$(VDD*4+3)/128$	7	10	$(VDD*20+3)/128$	449
3	$(VDD*6+3)/128$	9.4	11	$(VDD*22+3)/128$	599
4	$(VDD*8+3)/128$	18.7	12	$(VDD*24+3)/128$	1198
5	$(VDD*10+3)/128$	37	13	$(VDD*26+3)/128$	2397
6	$(VDD*12+3)/128$	56	14	$(VDD*28+3)/128$	3595
7	$(VDD*14+3)/128$	75	15	$(VDD*30+3)/128$ or above	4793



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NOTES

10.1. Design restrictions/precautions

If used for outdoor applications, be sure to apply suitable supplementary optical filter, drip-proof and anti-dew construction. This sensor is designed for indoor use.

In cases where secondary accidents due to operation failure or malfunctions can be anticipated, add a fail safe function to the design.

10.2. Usage restrictions/precautions

To prevent sensor malfunctions, operational failure or any deterioration of its characteristics, do not use this sensor in the following, or similar, conditions.

- A. In rapid environmental temperature changes
- B. In strong shock or vibration.
- C. In a place where there are obstructing materials(Glass, Fog, etc) through which infrared rays cannot pass within detection area.
- D. In fluid, corrosive gases and sea breeze.
- E. Continual use in high humidity atmosphere.
- F. Exposed to direct sun light or headlights of automobiles.
- G. Exposed to direct wind from a heater or air conditioner.

10.3. Assembly restrictions/precautions

Soldering

- A. Use soldering irons when soldering .
- B. Avoid keeping pins of this sensor hot for a long time as excessive heat may cause deterioration of its quality.(Ex. Within 5 sec. at 350 deg.C)

Washing

- A. Be sure to wash out all flux after soldering as remainder may cause malfunctions.
- B. Use a brush when washing . Washing with an ultrasonic cleaner may cause operational failure.

10.4. Handling and storage restrictions/precautions

To prevent sensor malfunctions, operational failure, appearance damage or any deterioration of its characteristics, do not expose this sensor to the following or similar handling and storage conditions.

- A. Vibration for a long time.
- B. Strong shock
- C. Static electricity or strong electromagnetic waves.
- D. High or Low temperature and humidity for a long time.
- E. Corrosive gases or sea breeze.
- F. Dirty and dusty environments that may contaminate the optical lens.

10.5. Restrictions on product use

The product described in this document shall not be used or embedded to any downstream products of which manufacture, use and/ or sales are prohibited under any applicable laws and regulations.

Sensor troubles resulting from misuse, inappropriate handling or storage are not the manufacturer's responsibility.

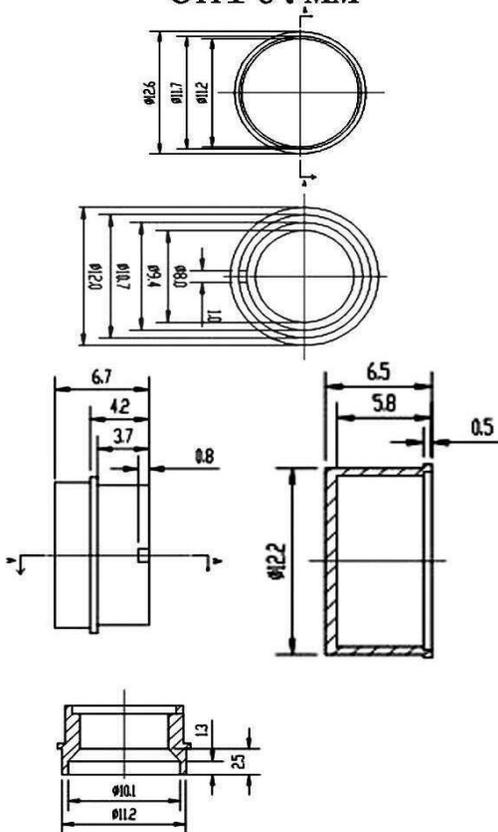
FRESNEL LENS-8120-11



Model No.	Focus	Angle	Distance	Dimension	Thickness
8120-11	6.6	120°	9m	Ø12.2	0.6mm

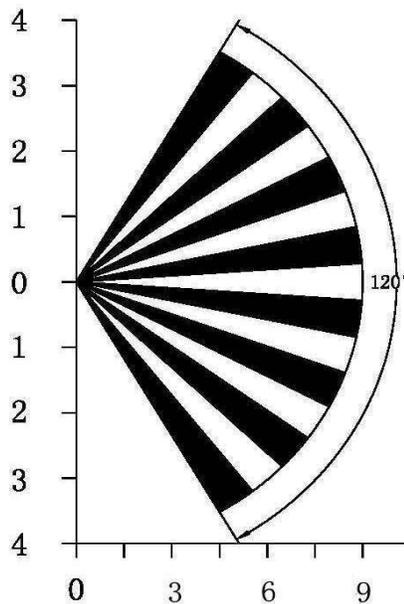
DIMENSION:

Unit:MM



DETECTING AREA:

Unit:Meter



Material :HDPE General Tolerance: $\pm 0.2\text{mm}$

SALENS

RM507,Block D,Phase 2,1980 Culture Industry Park,Minxing Road, Minzhi Street,Longhua District,Shenzhen,Guangdong Province,China.

TEL: 0755-85286856 85263186 [Http://www.salens.cn](http://www.salens.cn)

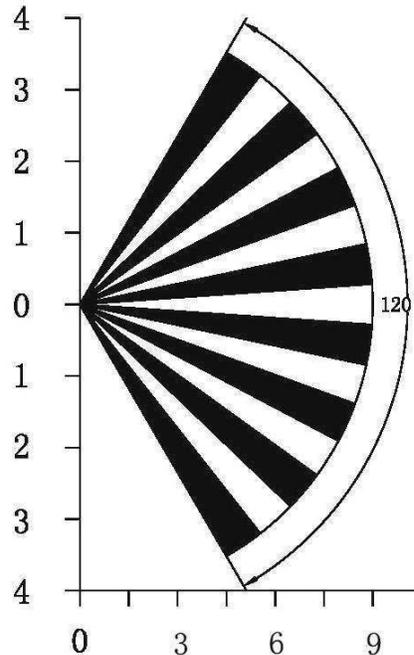
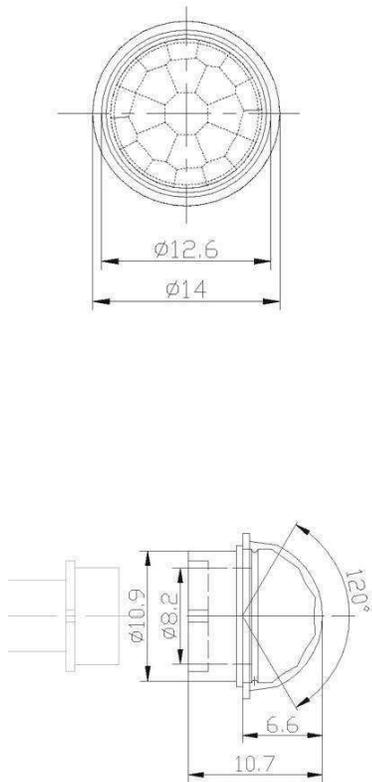
FRESNEL LENS-8120-4



Model No.	Focus	Angle	Distance	Dimension	Thickness
8120-4	6.6	120°	9m	Ø12	0.6mm

DIMENSION:
Unit:MM

DETECTING AREA:
Unit:Meter



Material :HDPE General Tolerance: ±0.2mm

RM507,Block D,Phase 2,1980 Culture Industry Park,Minxing Road, Minzhi Street,Longhua District,Shenzhen,Guangdong Province,China.

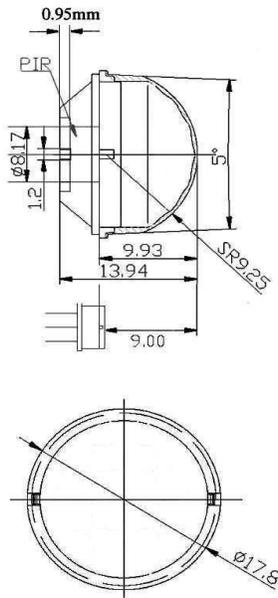
TEL: 0755-85286856 85263186 [Http://www.salens.cn](http://www.salens.cn)

FRESNEL LENS-7709-7

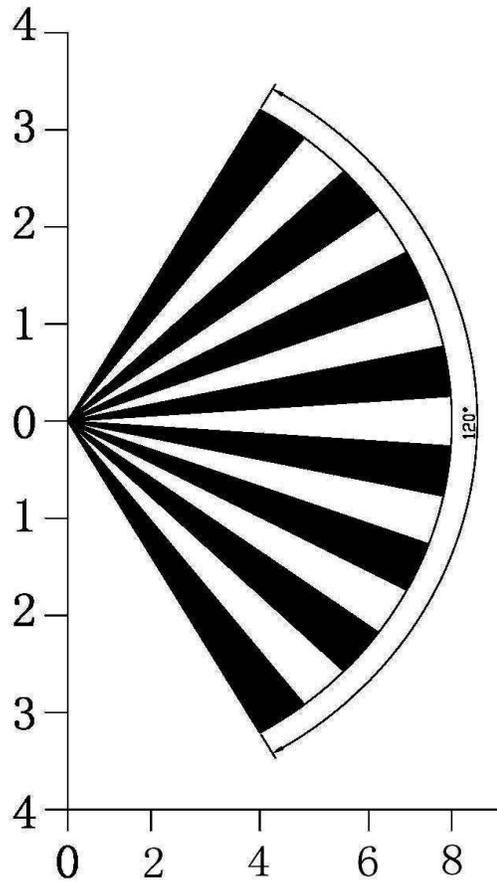


Model No.	Focus	Angle	Distance	Dimension	Thickness
7709-7	9	120°	9m	Ø17.8	0.6mm

DIMENSION:
(Unit=m/m)



DETECTING AREA:
(Unit = meter)



SALENS

Material :HDPE General Tolerance: ±0.2mm

RM507,Block D,Phase 2,1980 Culture Industry Park,Minxing Road, Minzhi Street,Longhua District,Shenzhen,Guangdong Province,China.

TEL: 0755-85286856 85263186 [Http://www.salens.cn](http://www.salens.cn)