



# **Pyroelectric Infrared Radial Sensor**

**TYPE: BM612  
SENBA SENSING TECHNOLOGY CO., LTD.**

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## Digital Smart Pyroelectric Detector BM612

BM612 is a newest smart digital motion detector. This Smart digital detector offers a complete motion detector solution, with all electronic circuitry built into the detector housing. Only a power supply and power-switching components need to be added to make the entire motion switch, a timer is included. The series has versions which can include ambient light level and sensitivity adjustments.

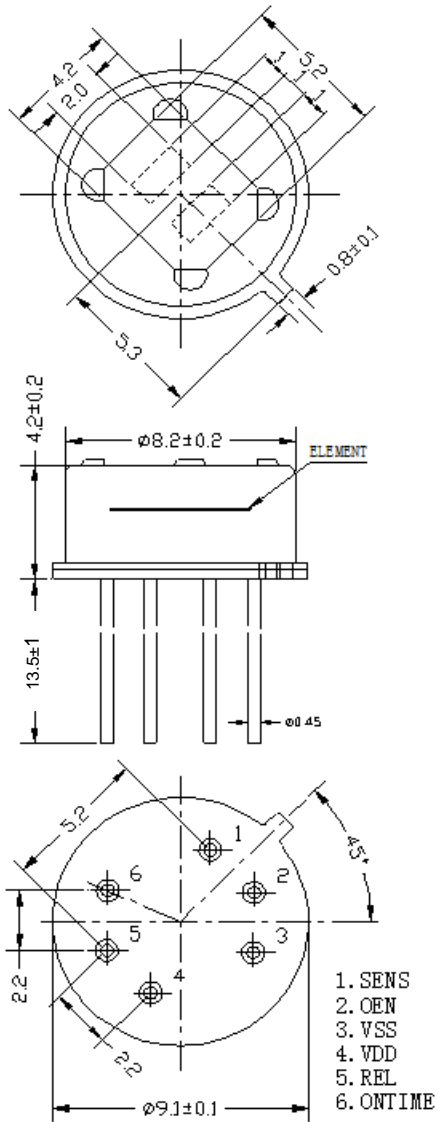
### ■ Features and Benefits

- Digital signal processing (DSP)
- Power adjustable, save more energy
- Two-way differential high impedance sensor input
- Built-in filter, screen the interference by other frequency
- Excellent power supply rejection, Insensitive to RF interference
- Schmidt REL output
- Low voltage, low power consumption, instantaneous settling after power up

### ■ Applications

- Toys
- Digital photo frame
- TV, Refrigerator, Air-conditioner
- USB Alarms
- PIR motion detection
- Intruder detection
- Occupancy detection
- Motion sensor lights
- Computer monitor
- Security system
- Automatic control
- Corridor
- Stairs Lights etc.

## ■ Dimension



PIR Dimension (A)

Notes: unit= MM

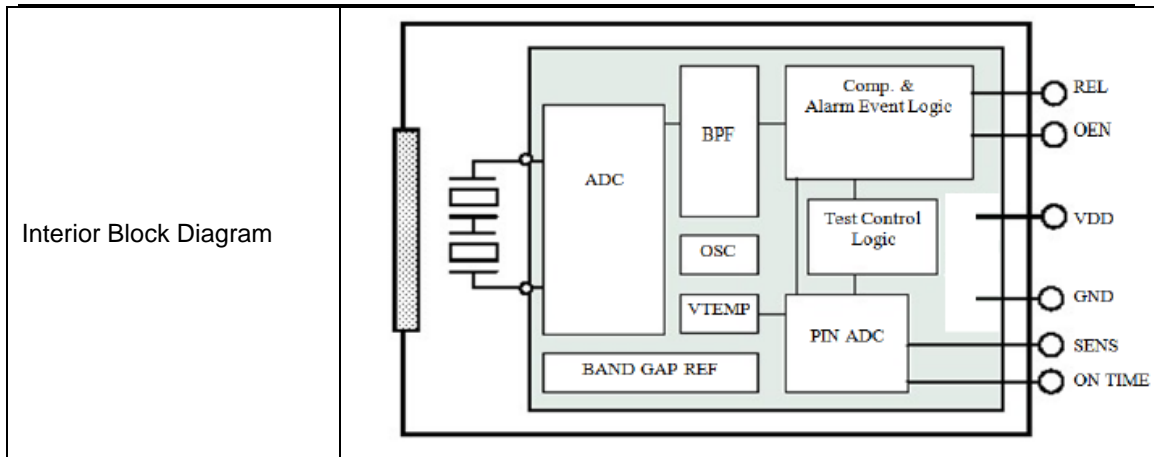
## ■ Technical Data

### 1. Maximum Ratings

Characteristics	Symbol	Min. Value	Max. Value	Unit	Remarks
Working Temperature	T <sub>ST</sub>	-20	85	°C	
Max.current	I <sub>nto</sub>	-100	100	mA	
Storage Temperature	T <sub>ST</sub>	-40	125	°C	

### 2. Working Conditions (T=25°C, V<sub>DD</sub>=3V, Except other requirements)

Characteristics	Symbol	Min.	Type	Max.	Unit	Remarks
Supply Voltage	V <sub>DD</sub>	2.2	3	3.7	V	I <sub>R</sub> =0.5mA
Working Current	I <sub>DD</sub>	9	9.5	11	μA	
Sensitivity threshold value	V <sub>SENS</sub>	90		2000	μV	
<b>Output REL</b>						
Output Low Current	I <sub>OL</sub>	10			mA	V <sub>OL</sub> <1V
Output High Current	I <sub>OH</sub>			-10	mA	V <sub>OL</sub> >(V <sub>DD</sub> -1V)
Output Low current Lock time	T <sub>OL</sub>		2		s	Non-adjustable
Output High current Lock time	T <sub>OH</sub>	2		3600	s	
<b>Input SENS/ONTIME</b>						
Voltage Input Range		0		V <sub>DD</sub>	V	0V to ¼ V <sub>DD</sub>
Input Bias Current		-1		1	μA	
<b>OEN</b>						
Input Low Voltage	V <sub>IL</sub>			0.8	V	OEN Threshold Value From High Voltage to Low Voltage
Input High Voltage	V <sub>IH</sub>	1.52			V	OEN Threshold Value From High Voltage to Low Voltage
Input Current	I <sub>I</sub>	-1		1	μA	V <sub>SS</sub> <V <sub>IN</sub> <V <sub>DD</sub>
<b>Oscillator &amp; Filter</b>						
Low pass filter cut-off frequency				7	Hz	
High pass filter cut-off frequency				0.44	Hz	
Oscillator frequency on Chip	F <sub>CLK</sub>			64	kHz	



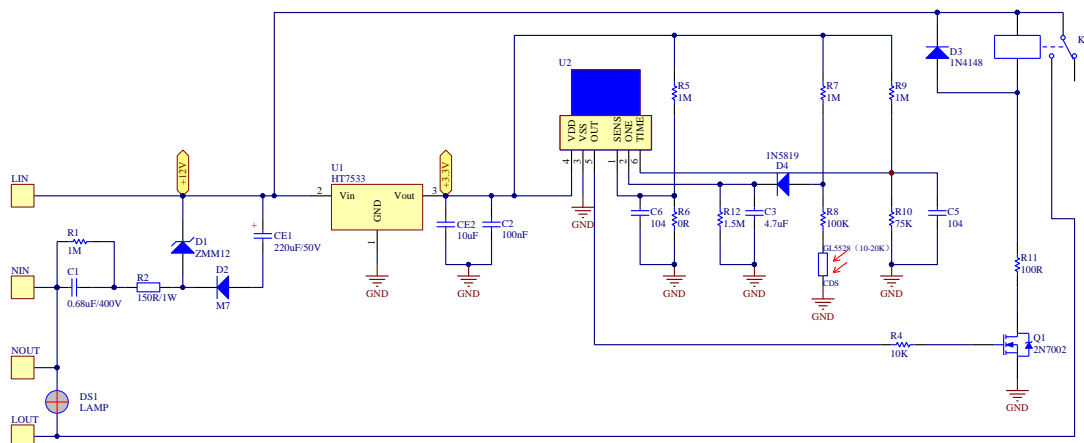
### ■ Adjustable Relay Time

NO	TIME (s) (typical value)	On-time Voltage (VDD)	On-time center Voltage (VDD)	Resistor value ( $\pm 1\%$ )	
				Pull-up- Resistor ( $\Omega$ )	Pull-down- Resistor ( $\Omega$ )
1	2	0~1/32VDD	1/64VDD	不貼/1M	0R
2	5	1/32VDD~2/32VDD	3/64VDD	1M	51K
3	10	2/32VDD~3/32VDD	5/64VDD	1M	82K
4	15	3/32VDD~4/32VDD	7/64VDD	1M	124K
5	20	4/32VDD~5/32VDD	9/64VDD	1M	165K
6	30	5/32VDD~6/32VDD	11/64VDD	1M	210K
7	45	6/32VDD~7/32VDD	13/64VDD	1M	255K
8	60	7/32VDD~8/32VDD	15/64VDD	1M	309K
9	90	8/32VDD~9/32VDD	17/64VDD	1M	360K
10	120	9/32VDD~10/32VDD	19/64VDD	1M	422K
11	180	10/32VDD~11/32VDD	21/64VDD	1M	487K
12	300	11/32VDD~12/32VDD	23/64VDD	1M	560K
13	600	12/32VDD~13/32VDD	25/64VDD	1M	634K
14	900	13/32VDD~14/32VDD	27/64VDD	1M	732K
15	1800	14/32VDD~16/32VDD	29/64VDD	1M	825K
16	3600	15/32VDD~16/32VDD	31/64VDD	1M	953K

## Adjustable Sensitivity

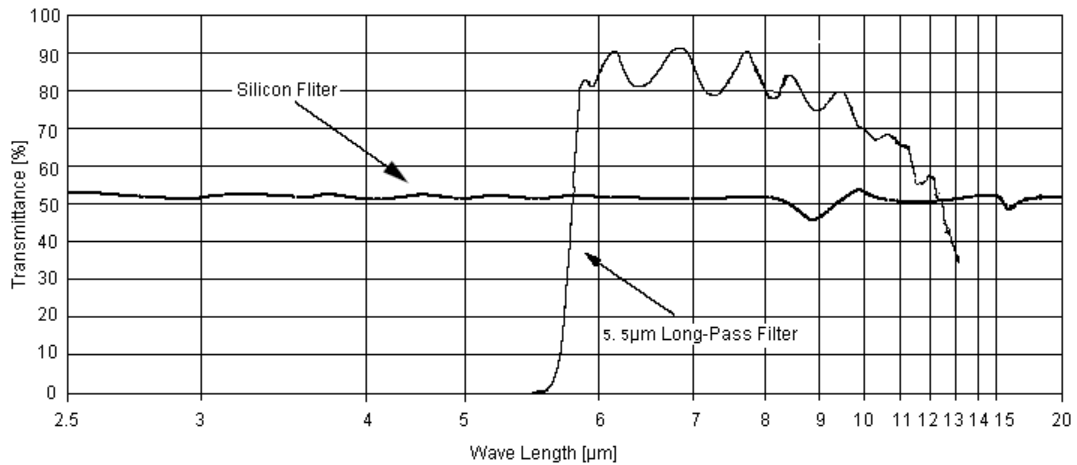
序号	SENS 脚电压		序号	SENS 脚电压	
	电压范围 (VDD)	中心电压 (VDD)		电压范围 (VDD)	中心电压 (VDD)
0	0~1/64	1/128	16	16/64~17/64	33/128
1	1/64~2/64	3/128	17	17/64~18/64	35/128
2	2/64~3/64	5/128	18	18/64~19/64	37/128
3	3/64~4/64	7/128	19	19/64~20/64	39/128
4	4/64~5/64	9/128	20	20/64~21/64	41/128
5	5/64~6/64	11/128	21	21/64~22/64	43/128
6	6/64~7/64	13/128	22	22/64~23/64	45/128
7	7/64~8/64	15/128	23	23/64~24/64	47/128
8	8/64~9/64	17/128	24	24/64~25/64	49/128
9	9/64~10/64	19/128	25	25/64~26/64	51/128
10	10/64~11/64	21/128	26	26/64~27/64	53/128
11	11/64~12/64	23/128	27	27/64~28/64	55/128
12	12/64~13/64	25/128	28	28/64~29/64	57/128
13	13/64~14/64	27/128	29	29/64~30/64	59/128
14	14/64~15/64	29/128	30	30/64~31/64	61/128
15	15/64~16/64	31/128	31	31/64~32/64	63/128

## Typical Application



Notes: This is only for reference circuit of BM612 PIR Sensor for simple intrusion detector for wired alarm systems.

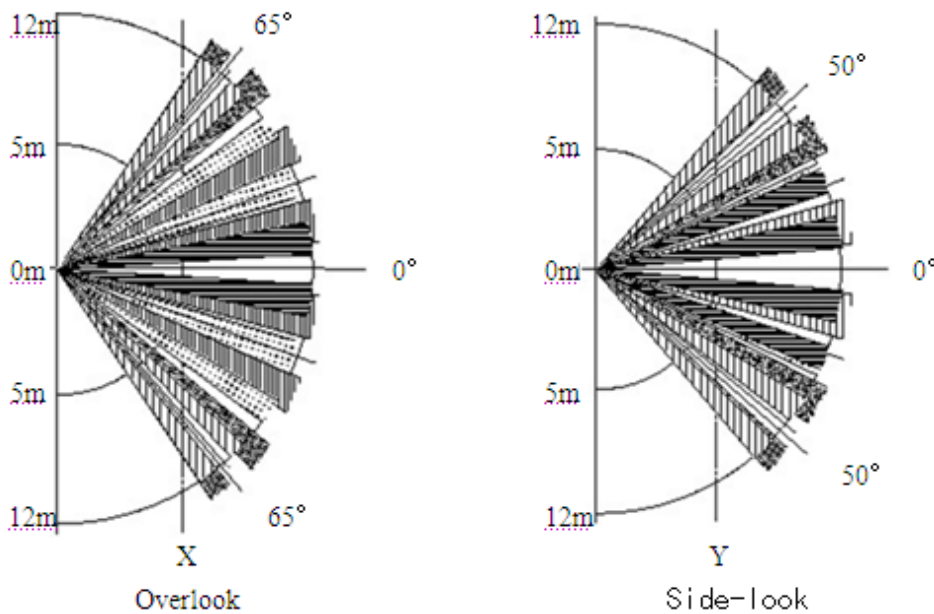
## ■ Spectral Response of Window Materials



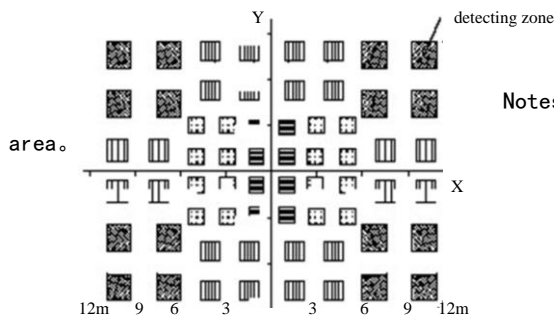
Notice:

The typical average transmissivity curve of 5.5μm pass IR filter is figured, which is vacuumed on silicon filter.

## ■ View of Field



### X-Y sectional view



Notes: 1. X-Y sectional view represent the detecting

2. Objects with temperature difference can be Detected in the vertical level.



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