

# Pyroelectric Infrared Radial Sensor



<http://en.nyenba.com>

**TYPE: AS412**  
**NANYANG SENBA OPTICAL AND ELECTRONIC CO., LTD.**

## Digital Smart Pyroelectric Detector AS412

AS412 is a newest smart digital motion detector with a small window size. It 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.

AS412 includes the time setting only.

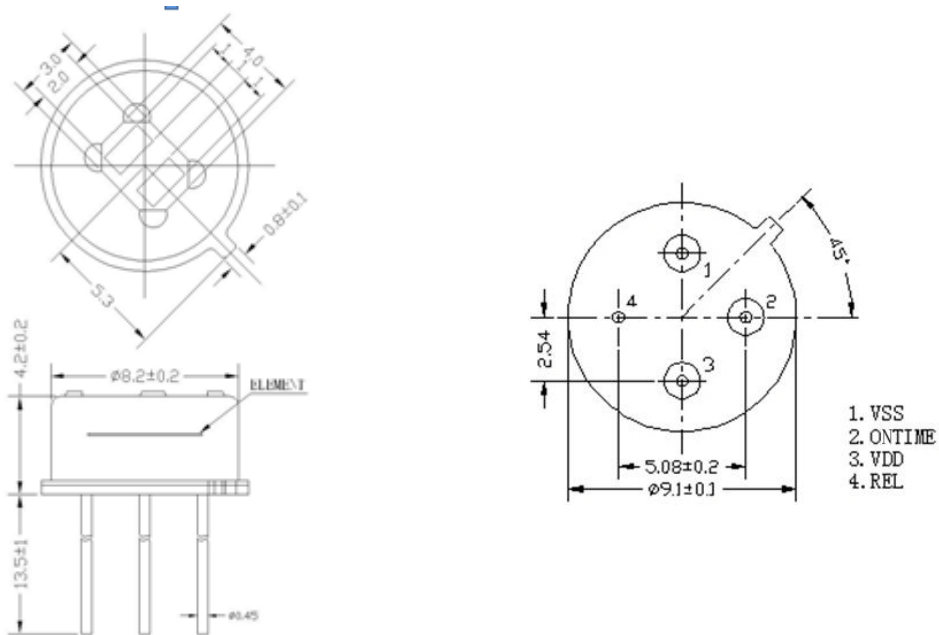
### ■ Features and Benefits

- Digital signal processing (DSP)
- Power adjustable, save more energy
- Two-way differential high impedance sensor input and temperature compensation
- Built-in filter, screen the interference by other frequency
- Excellent power supply rejection, Insensitive to RF conduction interference
- Schmidt REL output

### ■ Application

- Intelligent appliance
- Alarms
- Motion detector
- Sensor lamp, Sensor switch
- Security system
- Automatic control etc.

## ■ Dimension



## ■ Technical Data

### 1. Maximum Ratings

Characteristics	Symbol	Min. Value	Max. Value	Unit	Remarks
Supply Voltage	V <sub>DD</sub>	-0.3	3.6	V	
Working Temperature	T <sub>ST</sub>	-20	85	°C	
Max.current for pin	Into	-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>	2.7	3	3.3	V	IR=0.5mA
Working Current	I <sub>DD</sub>	12	15	20	μA	
Sensitivity	V <sub>SENS</sub>		100		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)
Lock time	T <sub>OL</sub>		2.3		s	
On-time	T <sub>OH</sub>	2.3		4793	s	
<b>ONTIME</b>						
Input voltage		0		V <sub>DD</sub>	V	0V to ¼ V <sub>DD</sub>
Input Bias Current		-1		1	μA	
<b>Oscillator &amp; Band Pass Filter(BPF)</b>						
Band Pass Filter(BPF) Low cut-off frequency				7	Hz	
Band Pass Filter(BPF) high cut-off frequency				0.44	Hz	
Oscillator frequency on Chip	F <sub>CLK</sub>			64	kHz	
Interior Block Diagram						

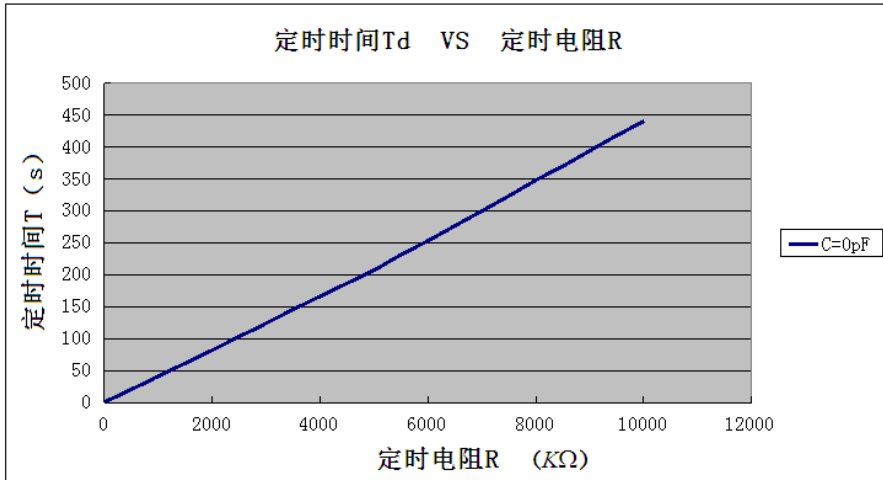
## ■ On-time Setting

### 1. Analog setting style for on-time

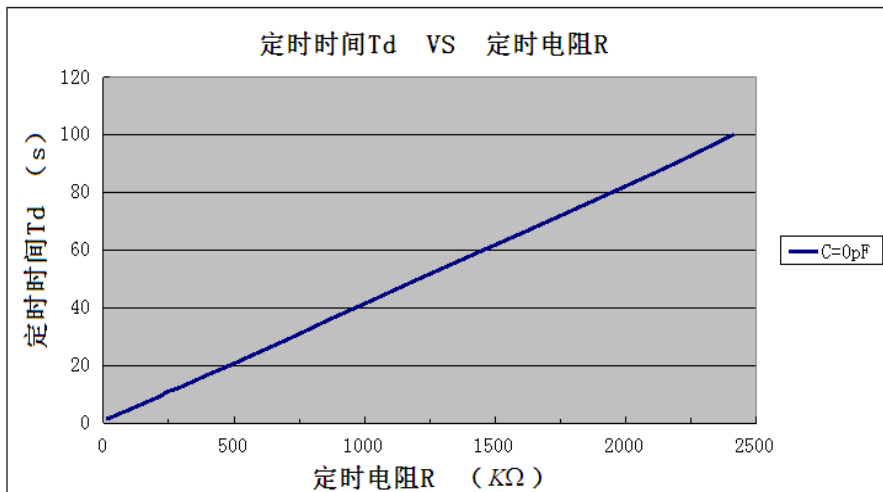
Td: On-time time

R: On-time Resistor

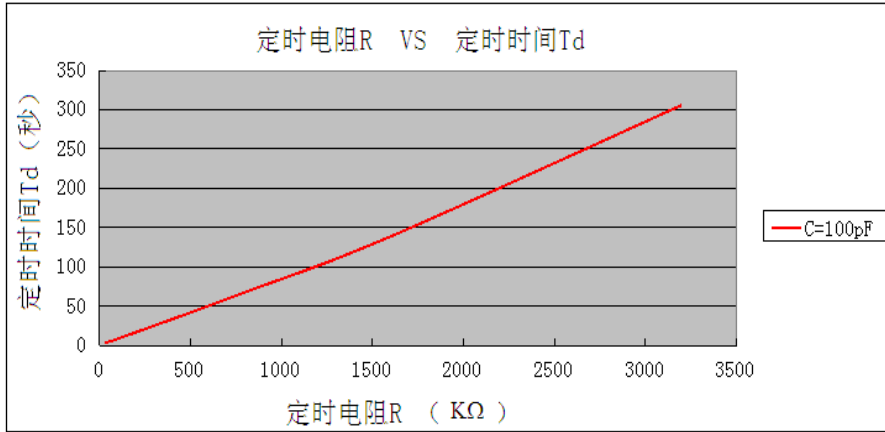
C: On-time Capacitor



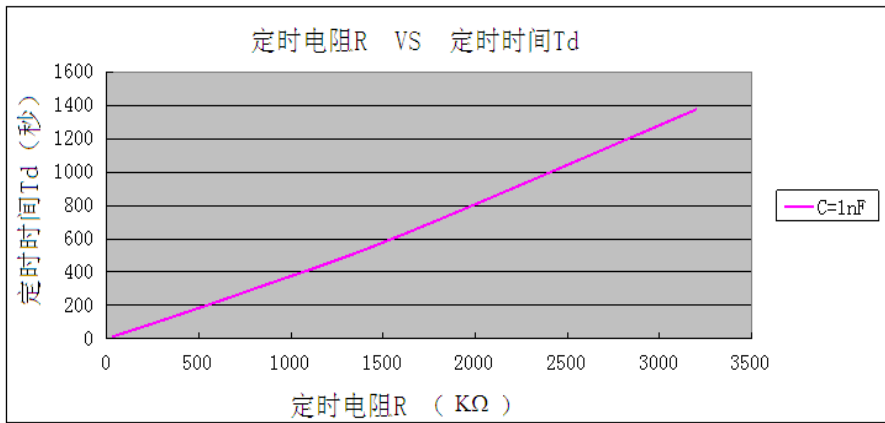
\* C=0pF



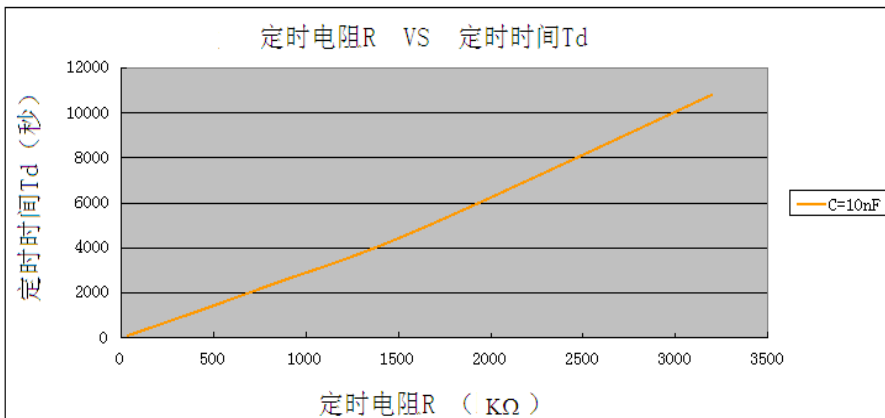
\* C=0pF



\* **C=100pF**



\* **C=1nF**

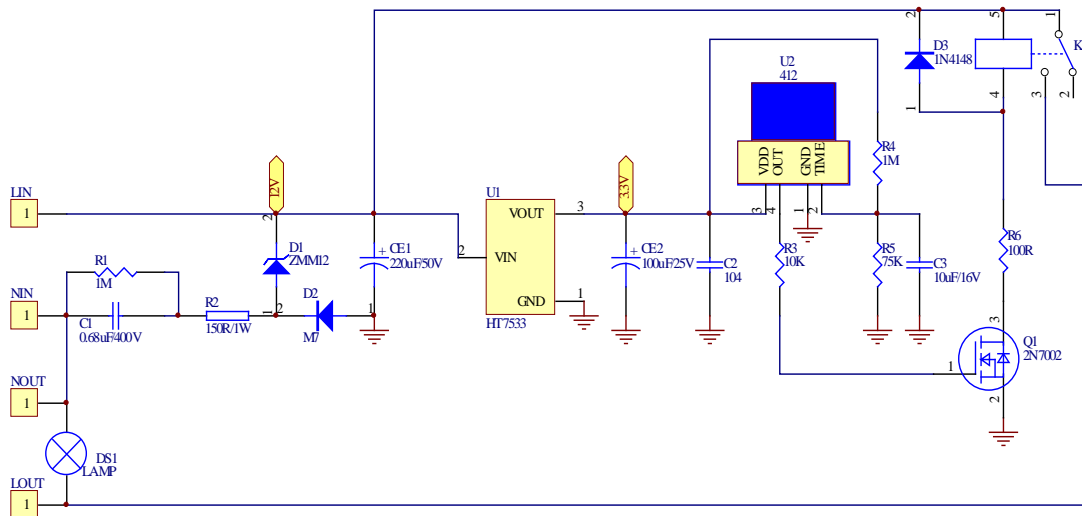


\* **C=10nF**

## 2. Digital setting style for on-time

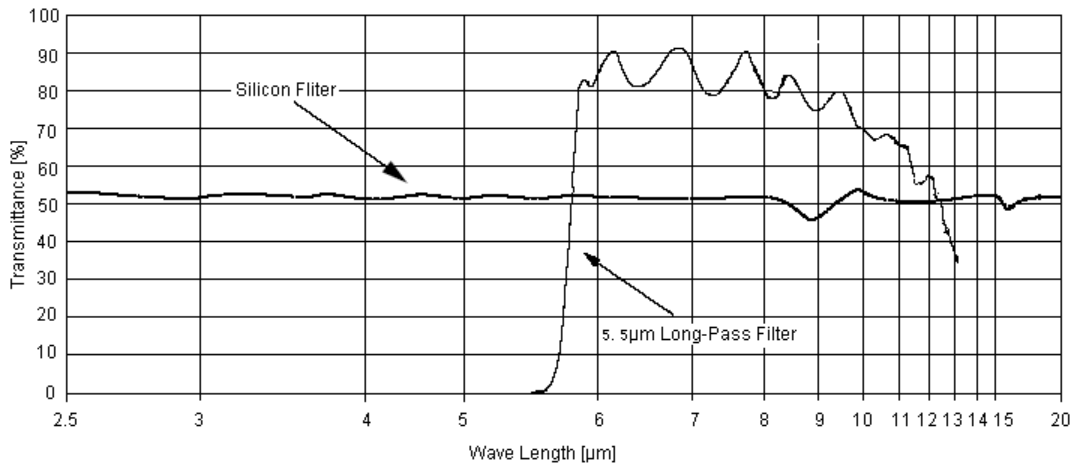
序号	On-time Voltage ( $V_{DD}$ )	On-time center Voltage ( $V_{DD}$ )	Time ( $T_d$ )
0	0~1/32	1/64	1.8sec
1	1/32~2/32	3/64	3.6sec
2	2/32~3/32	5/64	5.4sec
3	3/32~4/32	7/64	7.2sec
4	4/32~5/32	9/64	14.4sec
5	5/32~6/32	11/64	29sec
6	6/32~7/32	13/64	43sec
7	7/32~8/32	15/64	58sec
8	8/32~9/32	17/64	115sec
9	9/32~10/32	19/64	230sec
10	10/32~11/32	21/64	346sec
11	11/32~12/32	23/64	461sec
12	12/32~13/32	25/64	922sec
13	13/32~14/32	27/64	1843sec
14	14/32~15/32	29/64	2765sec
15	15/32~16/32	31/64	3686sec

### ■ Typical Application



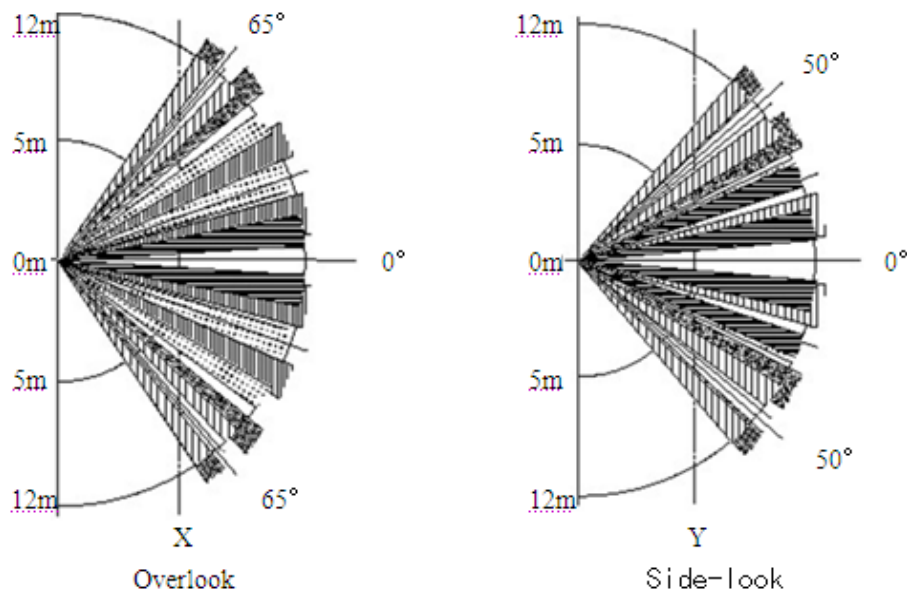
Notes: The circuit design for PIR Sensor AS412 .

## Spectral Response of Window Materials

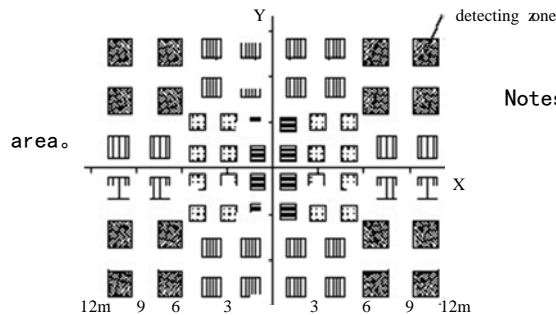


Notes: The average transitivity curve for silicon filter with 5.5μm pass IR filter

## Detection View



### X-Y sectional view



- Notes:
1. X-Y sectional view represent the detecting area.
  2. Objects with temperature difference can be Detected in the vertical level.





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