Pyroelectric Infrared Radial Sensor

http://en.nyenba.com

TYPE: AS612

NANYANG SENBA OPTICAL AND ELECTRONIC CO.，LTD.

Digital Smart Pyroelectric Detector AS612

AS612 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.

AS612 includes the setting for time, sensitivity and ambient light level.

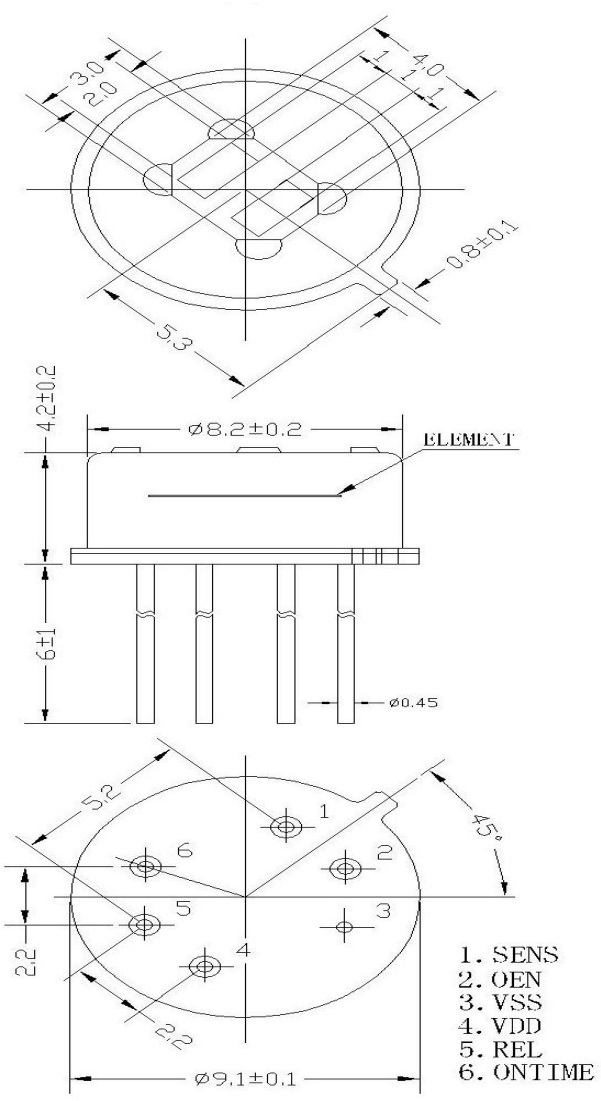
■ Features and Benefits

- 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 conduction 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



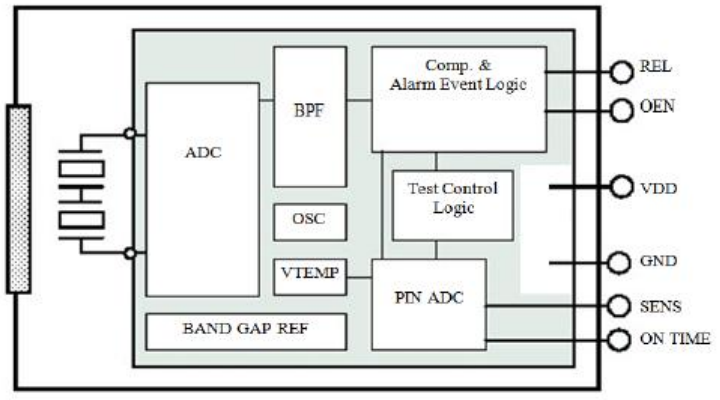
AS612 Dimension (Unite: mm)

■ Technical Data

1. Maximum Ratings

Characteristics	Symbol	Min. Value	Max. Value	Unit	Remarks
Supply Voltage	V_{DD}	-0.3	3.6	V	
Working Temperature	T_{ST}	-20	85	˚C	
Max.current for pin	Into	-100	100	mA	
Storage Temperature	T_{ST}	-40	125	˚C	

2.Working Conditions (T=25°C, Vdd=3V, Except other requirements)

Characteristics	Symbol	Min.	Type	Max.	Unit	Remarks
Supply Voltage	V_{DD}	2.7	3	3.3	V	IR=0.5mA
Working Current	I_{DD}	12	15	20	μA	
Sensitivity	V_{SENS}	100		1900	μV	
Output REL						
Output Low Current	I_{OL}	10			mA	V_{OL}<1V
Output High Current	I_{OH}			-10	mA	V_{OL}>(V_{DD}-1V)
Lock time	T_{OL}		2.3		s	
On-time	T_{OH}	2.3		4793	s	
SENS/ONTIME						
Input voltage		0		V_{DD}	V	0V to ¼ V_{DD}
Input Bias Current		-1		1	μA	
OEN						
Input Low Voltage	V_{IL}			0.2	Vdd	
Input High Voltage	V_{IH}	0.4			Vdd	
Input Current	I_I	-1		1	μA	V_{SS}<V_{IN}<V_{DD}
Oscillator & Band Pass Filter(BPF)						
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_{CLK}			64	kHz	
Interior Block Diagram						

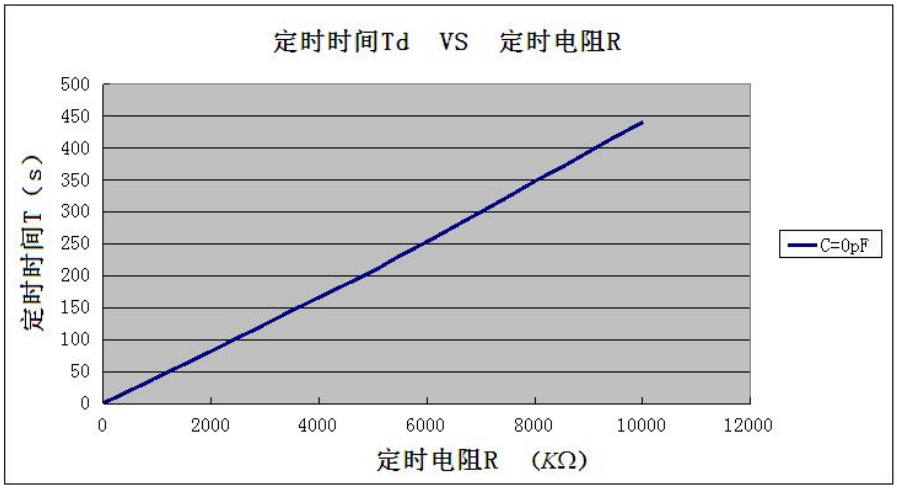
■ Ontime Setting

1. Analog setting style for on-time

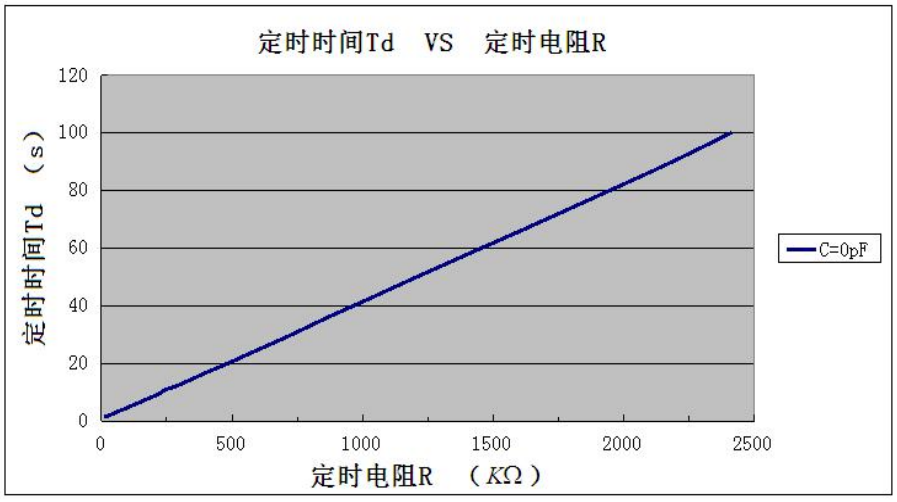
Td: On-time time

R: On-time Resistor

C: On-time Capacitor



*** C=0pF**



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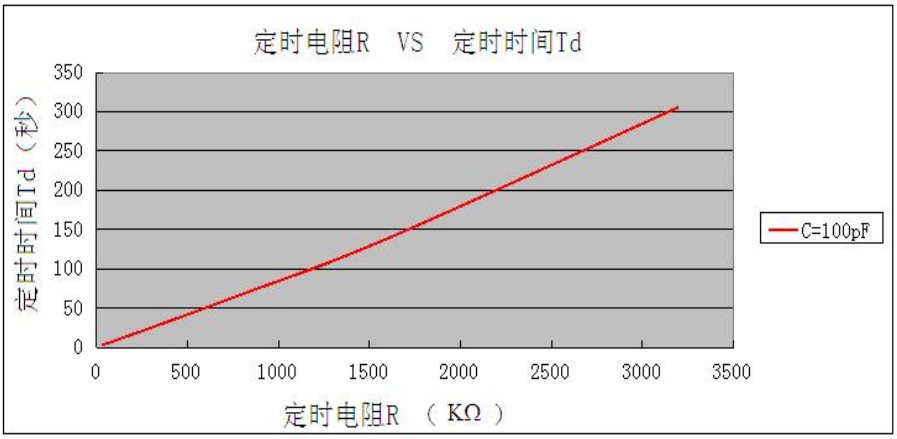
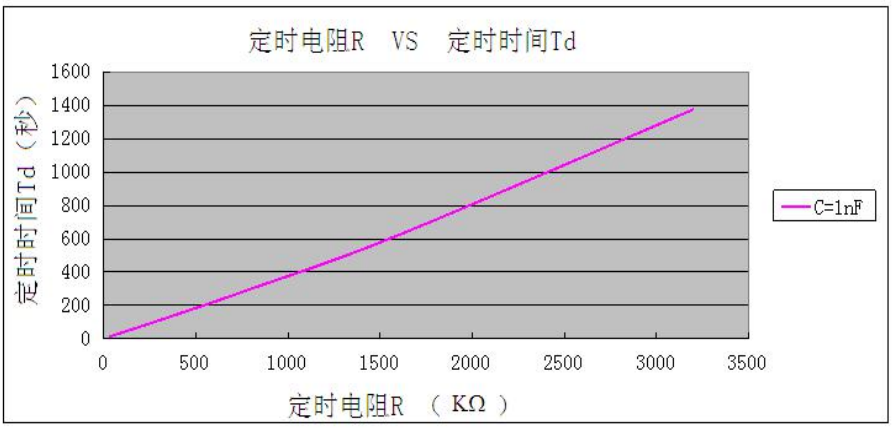
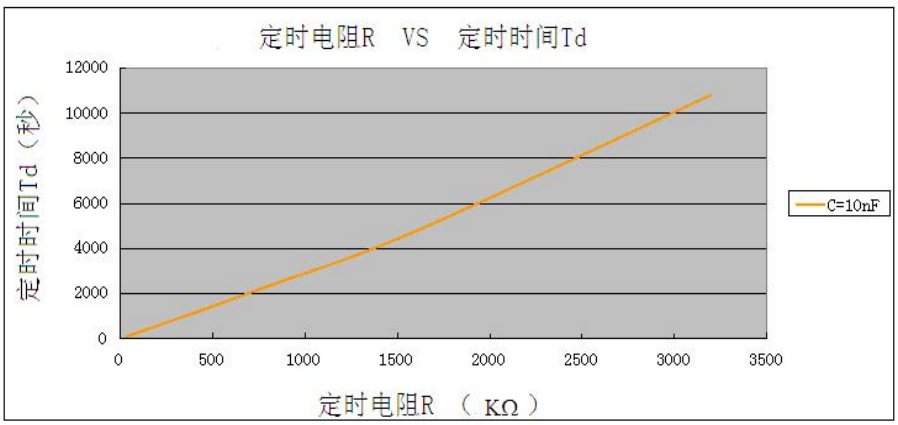


*** C=100pF**



*** C=1npF**



*** C=10npF**

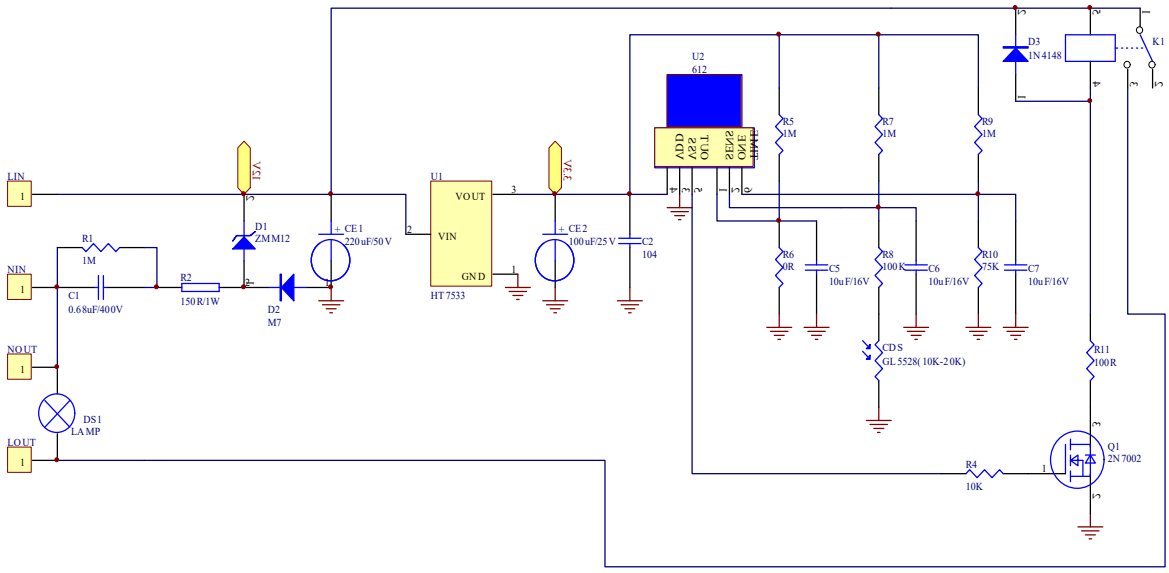
2. Digital setting style for on-time

No	On-time Voltage （VDD）	On-time center Voltage （VDD）	Pull-down- Resistor (Ω) (Pull-up=1M)	Time (Td) （sec）
0	0~1/32	1/64	0K	1.8
1	1/32~2/32	3/64	51k	3.6
2	2/32~3/32	5/64	91k	5.4
3	3/32~4/32	7/64	120k	7.2
4	4/32~5/32	9/64	180k	14.4
5	5/32~6/32	11/64	220k	29
6	6/32~7/32	13/64	270k	43
7	7/32~8/32	15/64	330k	58
8	8/32~9/32	17/64	360k	115
9	9/32~10/32	19/64	430k	230
10	10/32~11/32	21/64	510k	346
11	11/32~12/32	23/64	560k	461
12	12/32~13/32	25/64	680k	922
13	13/32~14/32	27/64	750k	1843
14	14/32~15/32	29/64	910k	2765
15	15/32~16/32	31/64	1M	3686

■ Sensitivity Setting

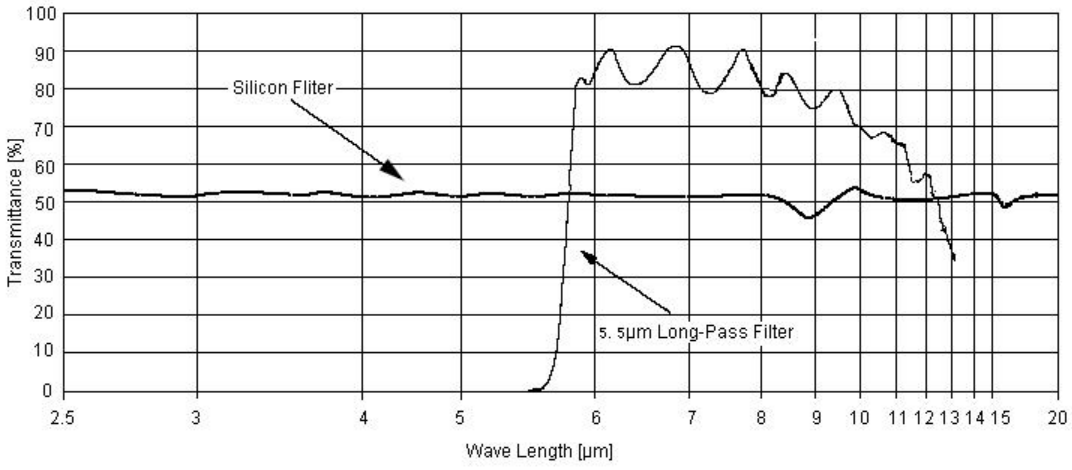
	V_{SENS}			V_{SENS}	
	Voltage Range （V_{DD}）	Center Voltage （V_{DD}）		Voltage Range （V_{DD}）	Center Voltage （V_{DD}）
0	0~1/64	1/128	16	16/64~17/64	33/128
1	1/64~2/64	3/128	17	17/64~18/64	35/128
2	2/64~3/64	5/128	18	18/64~19/64	37/128
3	3/64~4/64	7/128	19	19/64~20/64	39/128
4	4/64~5/64	9/128	20	20/64~21/64	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: The circuit design for PIR Sensor AS612 .

■ Spectral Response of Window Materials



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

■ Directions for Use

●The detection range is influenced by ambient temperature, detection target details, Fresnel lens size, etc.

●There are some sources may make a failure triggering, include small pets, car light, air-condition, etc.

●The welding temperature is 300℃ 2-3 seconds.

●Do not touch the window by hand and the hard things directly.
Wash by 100% absolute ethanol if need.

●Strong shake and static should be avoided.

●100pcs in one box; 3000pcs in one carton.

SENBA OPTOELECTRONIC **NANYANG SENBA OPTICAL AND ELECTRONIC CO. LTD.**

Add : 2nd Floor, No.4 Building,Huawan Industry Zone, Gushu,
Bao'an Dist., Shenzhen City, China

Tel: +86-755-82591635

Fax:+86-755-82594762

Mobile: +86-13713635820

Skype: lemengzhi

Email:mon@nysenba.com

Website: http://en.nysenba.com