

PIR Motion Detector Module

Item No.: SB00622A-2



General

SB00622A-2 is a pyroelectric sensor module which developed for human body detection. An integrated PIR sensor combined with a fresnel lens which is mounted on a compact PCB, and limited components to form the module. Delay time, lux is adjustable. Customization is accepted.

Features and Electrical Specification

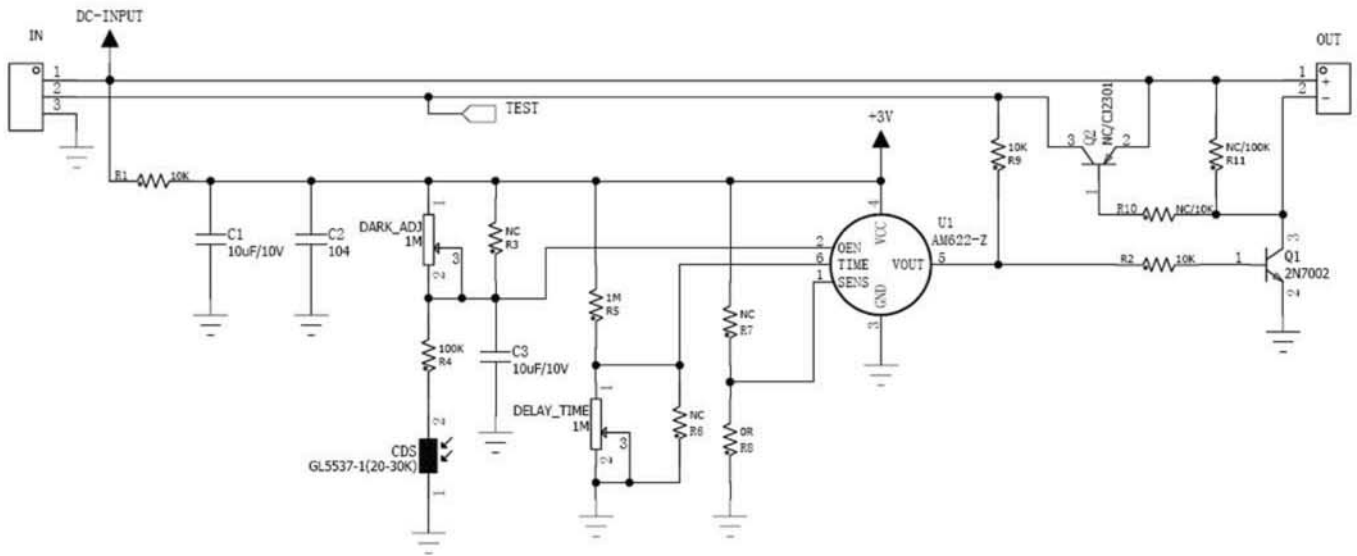
Compact size: 24*32 mm
Supply current: DC3.3-15V
Current drain :< 1mA
Voltage Output: DC3.3-15V

Sensitivity: adjustable for choice
Delay time: adjustable
Lux: adjustable

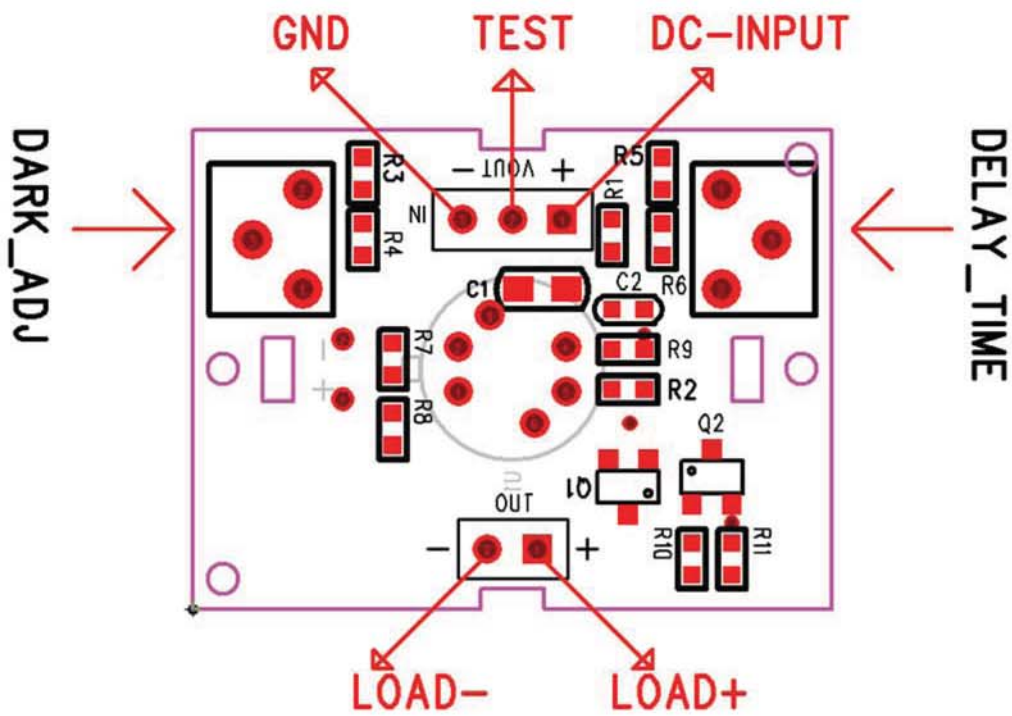
Detecting distance: 5-6m
Detecting angle: $\leq 120^\circ$

TTL output
Delay time: 2s-70 minute(as customer requirement)
Operation Temperature: -20°C - $+85^\circ\text{C}$
Infrared sensor: dual element, low noise, high sensitivity

Application circuit



Module information:



Note:

1. DC-INPUT: supply voltage (DC 3.3V-15V)
2. TEST: test pin for output. With output, high level signal (3V); no output, low level signal (0V)
3. LOAD+: anode of the load 、LOAD-: cathode of the load. Voltage of the load and .DC-INPUT are the same. Max current with load is 100mA.
4. DARK_ADJ: to adjust the lux. Turn it to the end by clock-wise, sensor detects human both day and night. Turn it to the end by counter-clock-wise, sensor only detect at 0lux (night).
- 5.DELAY_TIME: to adjust the delay time. Turn it to the end by clock-wise, delay is 2S (Minimum); Turn it to the end by counter-clock-wise, delay is 70min (Max).

Parameters setting

Supply voltage and static current

If smaller current is needed, change the load driver Q1 to MOS transistor, no triode. Also need to adjust the R1 according to the supply voltage, to make the current of R1 less than 100uA. See the table below:

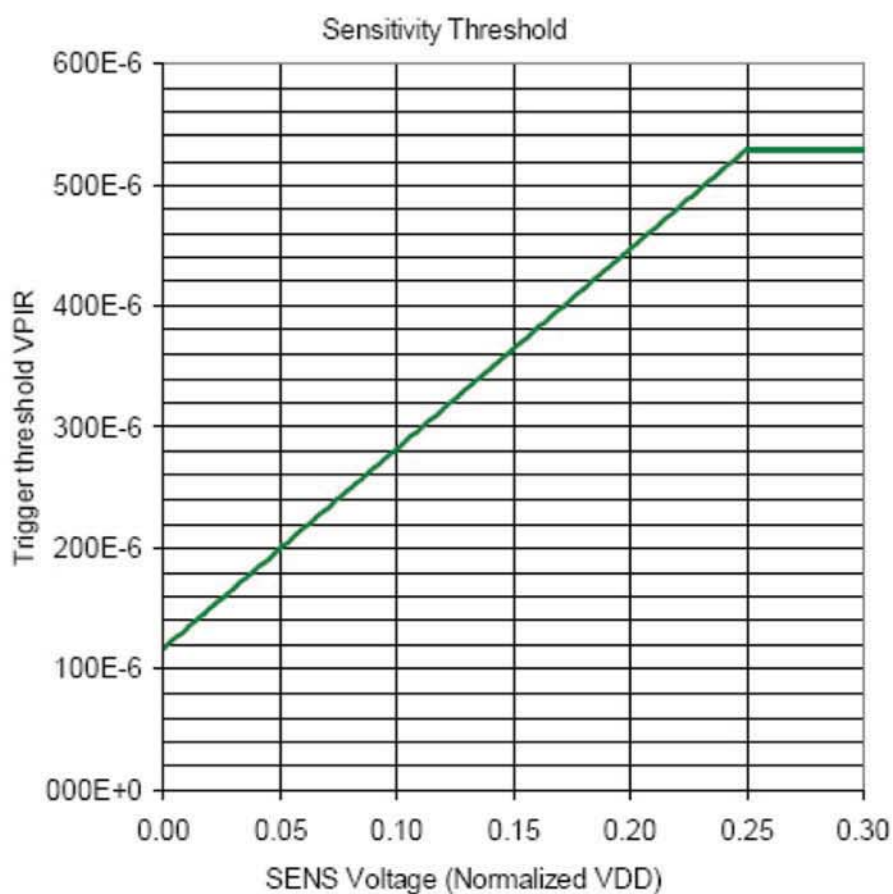
Supply voltage	Current limit resistor
3.3V	3K
4V	10K
5V	20K
6V	30K
9V	68K
12V	100K
15V	120K

If use triode as Q1, there must be a current limit resistor as R2.

Sensitivity

Sensitivity

A voltage applied to the SENS input sets the threshold used to detect a PIR signal between the PIRIN and NPIRIN inputs. VSS selects the minimum threshold voltage. Any voltage above $VDD/4$ will select the maximum threshold, which is the least sensitive setting for PIR signal detection.



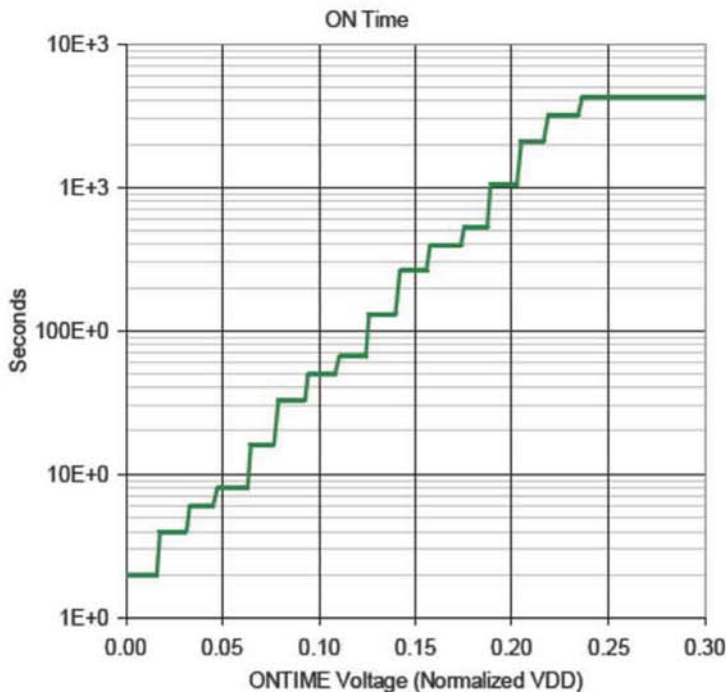
Graph 1: PIR voltage trigger threshold vs. SENS pin voltages normalized to VDD.

Delay time

On Time

A voltage applied to the ONTIME input set the time the REL output is active with a single trigger event. Any voltage above $V_{DD}/4$ will select the maximum on time.

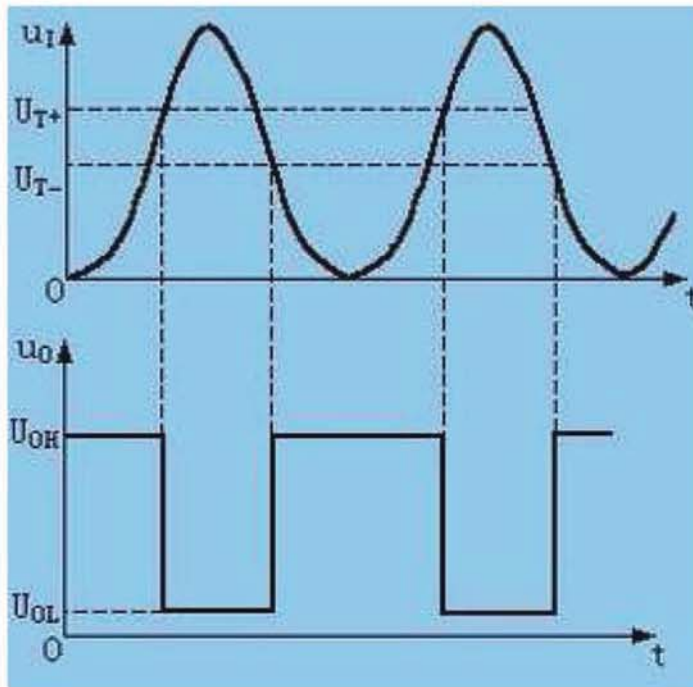
Pin voltage	PIN ADC count	ON Time in seconds	ON Time
$V_{DD} * 1/128$ or less	0	2	2 sec
$V_{DD} * 3/128$	1	4	4 sec
$V_{DD} * 5/128$	2	6	6 sec
$V_{DD} * 7/128$	3	8	8 sec
$V_{DD} * 9/128$	4	16	16 sec
$V_{DD} * 11/128$	5	33	32 sec
$V_{DD} * 13/128$	6	49	49 sec
$V_{DD} * 15/128$	7	66	1 min 5 sec
$V_{DD} * 17/128$	8	131	2 min 11 sec
$V_{DD} * 19/128$	9	262	4 min 22 sec
$V_{DD} * 21/128$	10	393	6 min 33 sec
$V_{DD} * 23/128$	11	524	8 min 44 sec
$V_{DD} * 25/128$	12	1049	17 min 28 sec
$V_{DD} * 27/128$	13	2097	34 min 57 sec
$V_{DD} * 29/128$	14	3146	52 min 25 sec
$V_{DD} * 31/128$ or above	15	4194	1 hour 10 min



Graph 2: REL Output On Time in seconds vs. ONTIME pin voltages normalized to VDD.

Lux

If VDD is 3V, it's a typical OEN voltage, when voltage rises, Vout enable if higher than 0.4VDD (1.2V). When voltage decrease, Vout disable if lower than 0.2VDD (0.6V). See the diagram below:



Note

Due to the high sensitivity of PIR sensor device, it is not recommended to use the module in the following or similar condition.

- A) in rapid environmental changes
- B) in strong shock or vibration
- C) in a place where there are obstructing material (eg. glass) through which IR cannot pass within detection area.
- D) exposed to direct sun light
- E) exposed to direct wind from a heater or air condition