



PIR CONTROLLER
FOR DC/AC APPLICATIONS

DESCRIPTION

The M7623 integrated circuit combines all required functions for a single chip Passive Infra-Red (PIR) motion detector. Suitable for AC and DC systems. The M7623 integrates the internal pull-down resistor and the DC decoupling circuit PIR signal.

The external potentiometer or resistor sets the sensitivity, lamp on-time, CDS (photoresist) parameters, The corresponding potential is converted to a 15-bit resolution digital value, all processed by digital signals. The application circuit is simple, and the consistency of mass production products is good.

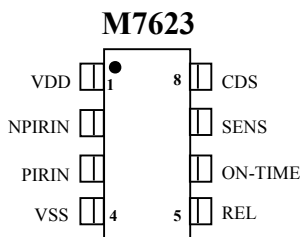
FEATURES

- Digital signal processing
- Adjustable PIR sensitivity
- Adjustable output turn-on time
- Built-in regulator
- RELAY output
- SOP-8 package

APPLICATIONS

- PIR light controller, Motion Detector, Alarm system, Auto-door bell

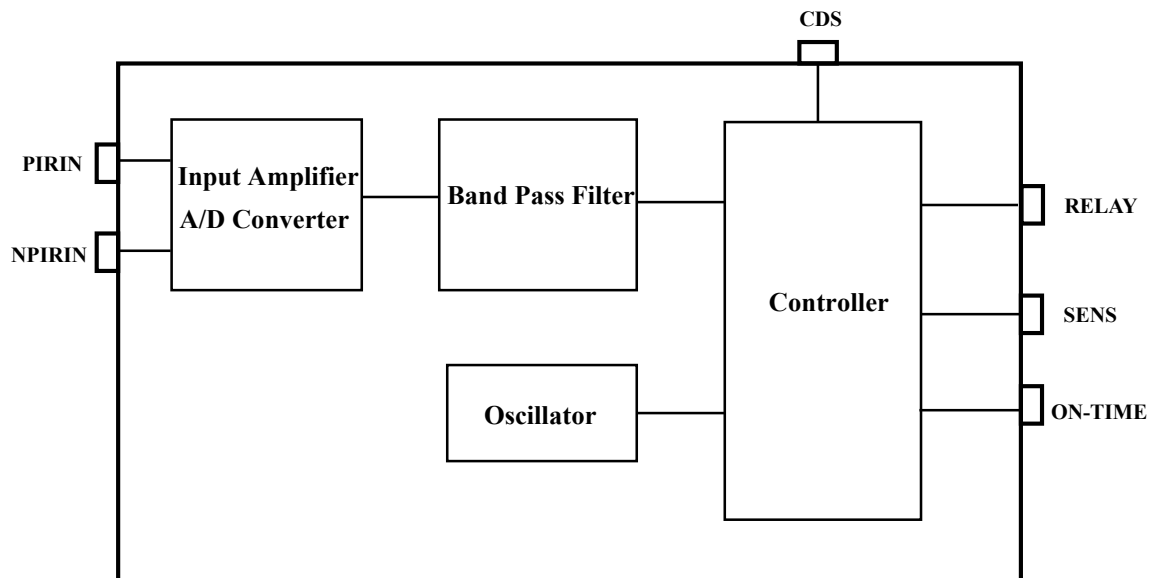
PIN ASSIGNMENT





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BLOCK DIAGRAM



PIN DESCRIPTION

Pin No.	Name	I/O	Description
1	VDD	—	Positive power supply
2	NPIRIN	I	PIR sensor negative input, normally connect ground.
3	PIRIN	I	PIR sensor input
4	VSS		Ground
5	RELAY	O	Relay output pin
6	ON-TIME	I	Light on-time adjustment. Refer to Table1 (internal pull-low resistance)
7	SENS	I	Sensitivity threshold adjustment Sets the sensitivity threshold required to generate a trigger condition. Refer to Table2
8	CDS	I	Connect to the CDS voltage divider for daytime/night auto detecting (internal pull-low resistance) VDD : Enable switching of the light VSS : Disable switching of the light



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FUNCTION DESCRIPTION

Power-up Mode

After the device powers on it first enters a warm-up period. The light is switched on for the selected on-time duration.

Conditions for Switching the Light ON

The lights and relays will remain on for the duration set by the ON-TIME input.

Table 1 : Output turn-on time

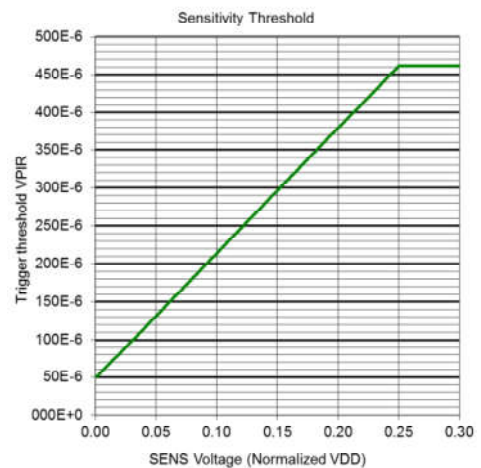
Pin Voltage	On time (second)	Pull-up resistor (Ω)	Pull-down resistor (Ω)
(0~2/128) *VDD	2	1M	Ground
(2/128~4/128) *VDD	4	1M	24k
(4/128~6/128) *VDD	6	1M	43k
(6/128~8/128) *VDD	8	1M	56k
(8/128~10/128) *VDD	16	1M	75k
(10/128~12/128) *VDD	33	1M	94k
(12/128~14/128) *VDD	49	1M	110k
(14/128~16/128) *VDD	66	1M	130k
(16/128~18/128) *VDD	131	1M	150k
(18/128~20/128) *VDD	262	1M	174k
(20/128~22/128) *VDD	393	1M	196k
(22/128~24/128) *VDD	524	1M	220k
(24/128~26/128) *VDD	1049	1M	240k
(26/128~28/128) *VDD	2097	1M	270k
(28/128~30/128) *VDD	3146	1M	300k
(30/128~32/128) *VDD	4194	1M	330k

Threshold resistance setting

Sensitivity setting input. Input voltage range from 0 to VDD/4, internally converted to 7-bit digital code, 0 to 127, corresponding to a threshold range of 50 μ V to 460 μ V

Table 2 : Sensitivity threshold adjustment

Sensitivity	Pull-up resistor (Ω)	Pull-down resistor (Ω)	Distance
80 μ v	1M	20K	<div style="text-align: center;"> long distance short distance </div>
90 μ v	1M	26.1K	
100 μ v	1M	33K	
120 μ v	1M	47K	
200 μ v	1M	100K	





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ABSOLUTE MAXIMUM RATING

(TA=25°C)

Parameter	Sym.	Min.	Max.	Unit	Remarks
Operating Voltage	VDD	-0.3	5	V	
Voltage on Any Pin		-100	100	mA	
Operating Temperature		-25	70	°C	
Storage temperature	Tst	-45	125	°C	

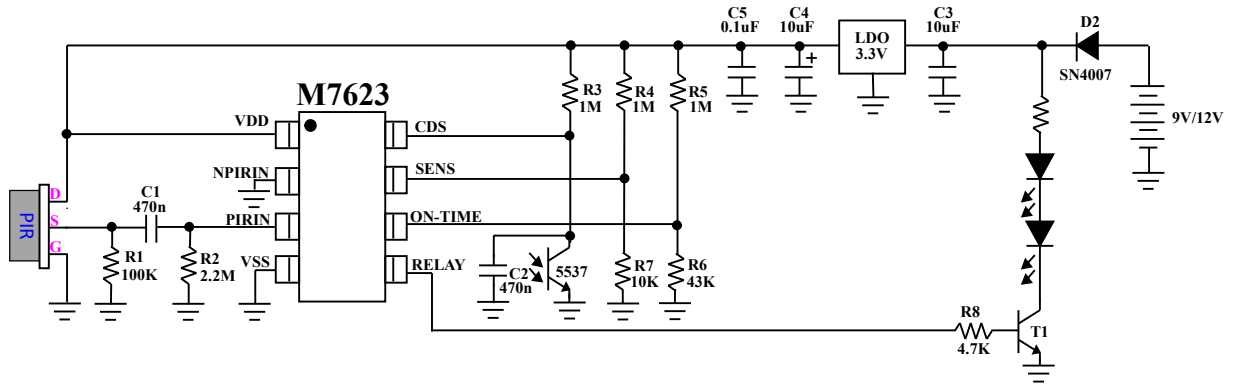
ELECTRICAL CHARACTERISTICS

(TA=25°C , VDD=3.0V)

Characteristics	Sym.	Min.	Typ.	Max.	Unit	Conditions
Operating Voltage						
Supply voltage	VDD	3.3	4.4	5.0	V	
Supply current	IDD	—	—	200	μA	VDD=3.0V@25°C
Oscillator and Filter						
LPF cutoff frequency		—	5	—	Hz	
HPF cutoff frequency		—	0.3	—	Hz	
Clock frequency	F _{CLK}	—	64	—	KHz	
Analog Inputs						
Input leakage current (ON-TIME 、 SENS)		-1	—	1	μA	
PIRIN resistance to VSS		30	—	60	KΩ	
PIRIN input AC voltage		—	—	50	mV	Peak-to-Peak
PIRIN input DC voltage	V _n	0.2	—	1.5	V	
Digital Inputs, Schmitt Triggers (CDS)						
Input low voltage	V _{IL}	—	—	0.6	V	
Input high voltage	V _{IH}	1.2	—	—	V	
Leakage current on CDS		—	—	±1	μA	input to VSS or VDD
Digital Outputs						
Relay Source Current	I _{RS}	-10	—	10	mA	



APPLICATION CIRCUIT



* All specs and applications shown above subject to change without prior notice.



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PACKAGE OUTLINE

SYMBOLS	MIN	MAX
A	0.053	0.069
A1	0.004	0.010
A2		0.059
D	0.189	0.196
E	0.150	0.157
H	0.228	0.244
L	0.016	0.050
θ	0	8

Unit : INCH

SOP-8