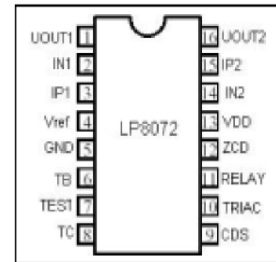


# CS9803 PIR CONTROLLER

## CS9803 GENERAL DESCRIPTION

CS9803 is a PIR (passive infra-red) controller, using analog mixing digital design technique and manufactures by CMOS process which can either drive TRIAC or RELAY depending on users' choice. With special noise immunity technique, CS9803 is the most stable PIR controller you can find on the market. More than this, there are few components needed in its application circuit which can reduce material cost and increase competitive.



## CS9803 PIN DESCRIPTION

Pin No.	Pin Name	I/O	Description
1	UOU1		First stage OP amp output
2	NI1		First stage OP amp positive input
3	II1		First stage OP amp negative input
4	VREF		Stable reference voltage
5	GND		System ground
6	TB		Time base for 1. The delay time of receiving PIR signal to sent a puls to trigger TRIAC or a high signal to trigger relay. The delay time = $R \times C \times 32$ . The PIR signal patented and accepted only if the signal cycle greater than $R \times C \times 768$ . When state of relay or TRIAC is changing form active into inactive mode. It takes more than $R \times C \times 4069$ , then system is able to receive PIR signal again. 2.The flash cycle show the beginning of auto mode. Note: Width of TRIAC pulse = $R \times C \times 2$ . Flash cycle: $R \times C \times 32768$ $10\text{ K} < R < 1\text{M Ohm}$ $100\text{pF} < C < 0.1\text{ uF}$ (Reference Diagram 1)
7	QTEST		For testing only
8	TCI		To set up the timing of how long Triac or relay is active. During the period, if the system receives the PIR signal, then it restarts counting the timing again. The range for R: $10\text{K} < R < 1\text{M Ohm}$ C: $100\text{uF} < C < 0.1\text{ uF}$ (Reference Diagram 2)
9	CDS		Connected to a CDS for inhibiting relay or TRIAC being triggered. If TRIAC or relay has already being triggered by PIR signal and turned into active mode, then CDS can not inhibit PIR again.
10	TRIAC		To trigger TRIAC, active low Sink current: 15 mA max.
11	RELAY		To drive relay, active high Sink current: 10 mA max. Source current: 10 mA max.
12	ZCD		Detect zero cross of AC line under remote mode function.
13	VDD		Operation voltage: 5V, stand by current: 1mA
14	II2		2nd stage OP amp negative input

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15	NII2	2 <sup>nd</sup> stage OP amp positive input
16	UOU2	2 <sup>nd</sup> stage OP amp output

## CS9803 Absolute Maximum Ratings

Parameter	SYMBOL	VALUE	Units
POWER SUPPLY V <sub>dd</sub> WITH REPECT TO V <sub>ss</sub>	V <sub>dd</sub> -V <sub>ss</sub>	5.6	V
VOLTAGE ON ANY PIN		-0.3-5.6	V
OPERATING TEMPERATURE	T <sub>op</sub>	0-70	C
STORAGE TEMPERATURE		-65-150	C

## CS9803 ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
V <sub>dd</sub>	SUPPLY VOLTAGE		4.2	5	5.5	V
I <sub>st</sub>	STANDY CURRENT		0.9	1.0	1.2	mA
I <sub>dd</sub>	OPERATING CURRENT	1.8mA, TRIAC 2.5mA, RELAY	1.8		2.5	mA
V <sub>ref</sub>	STABLE VOLTAGE	V <sub>dd</sub> >4.2V	3.0	3.2	3.4	V
I <sub>ref</sub>	SOURCE CURRENT OF V <sub>ref</sub>		200			uA
	RIPPLE OF V <sub>ref</sub>				0.5	mV
	INPUT AND OUTPUT REGULATION OF V <sub>ref</sub>				0.3%	
F <sub>tb</sub>	TIME BASE OPERATING FREQUENCY		15	16	17	KHZ
V <sub>t+</sub>	CDS OPERATING TRIGGER		1.3	1.7	2.1	V
V <sub>t-</sub>	CDS OPREATING TRIGGER		0.6	0.9	1.1	V
I <sub>cds</sub>	CDS SOURCE CURRENT		2.6	3.5	4.4	uA
I <sub>source</sub>	CDS OUTPUT SOURCE CURRENT		9	10.4	17.4	mA
I <sub>sink</sub>	CDS OUTPUT SINK CURRENT		11.6	13	21	mA
I <sub>rs</sub>	RELAY SOURCE CURRENT				5	mA
I <sub>rsink</sub>	RELAY SINK CURRENT				5	mA

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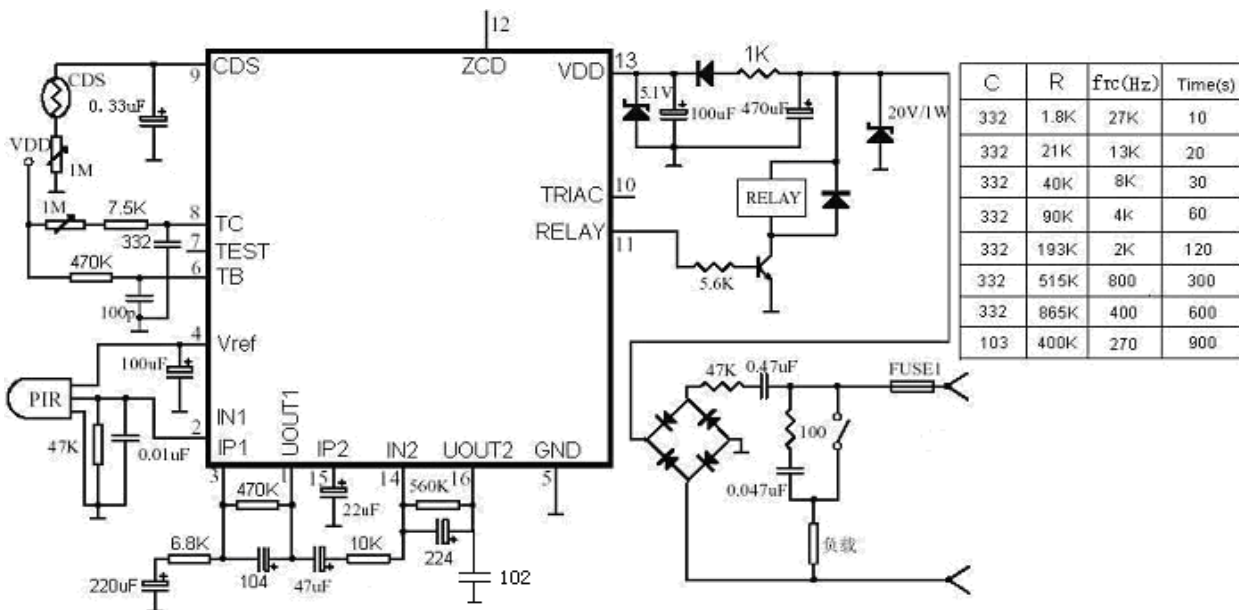
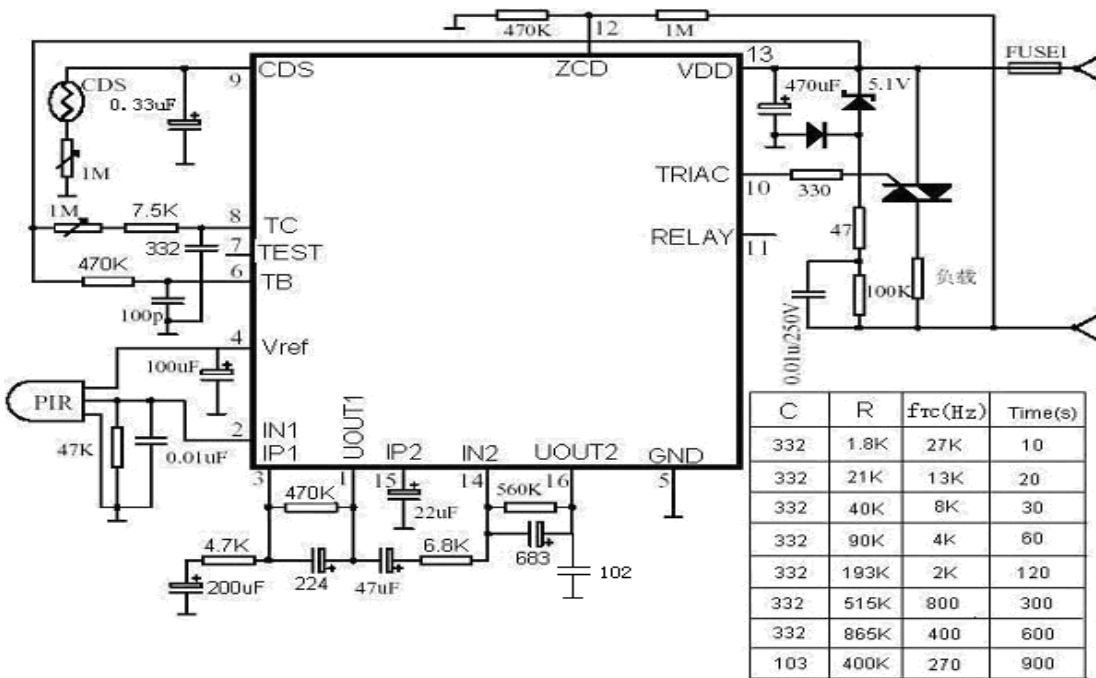
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Vro	RELAY OPERATING VOLTAGE	18.8V: RELAY ON 13.1V: RELAY OFF	13.1		18.8	V
I <sub>tsink</sub>	TRIAC SINK CURRENT				15	mA
I <sub>tsource</sub>	TRIAC SOURCE CURRENT				50	uA

## CS9803 TYPICAL APPLICATION



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