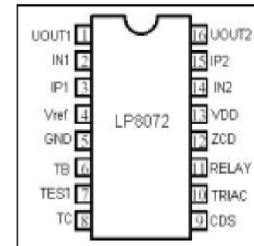


# LP8072C PIR CONTROLLER

## LP8072C GENERAL DESCRIPTION

LP8072C 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, LP8072C 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.



## LP8072C 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   |

Silvan Chip Electronics Tech.Co.,Ltd.

Address: Fl.16 FuChang Building,Binhe Rd,Shenzhen,China

Phone: 86-0755-88291843 88304213 Fax : 86-0755-88290509

Email: jja@sc-tech.cn Http:// www.sc-tech.cn

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|    |      |  |   |
|----|------|--|---|
| 14 | I12  |  | 2 <sup>nd</sup> stage OP amp negative input |
| 15 | NI12 |  | 2 <sup>nd</sup> stage OP amp positive input |
| 16 | UOU2 |  | 2 <sup>nd</sup> stage OP amp output         |

## LP8072C 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     |

## LP8072C 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   |

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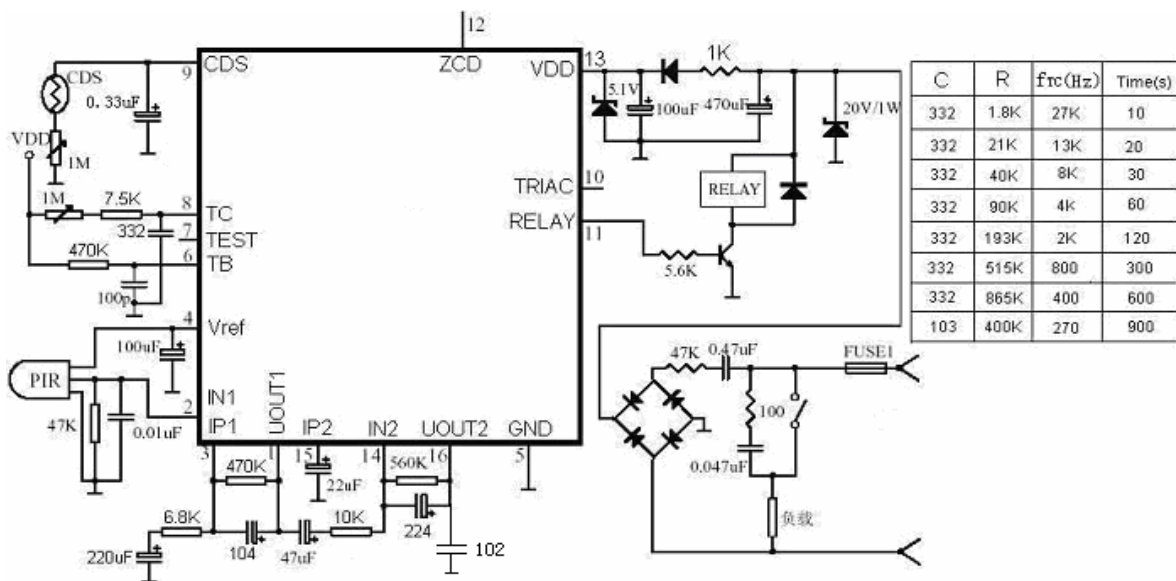
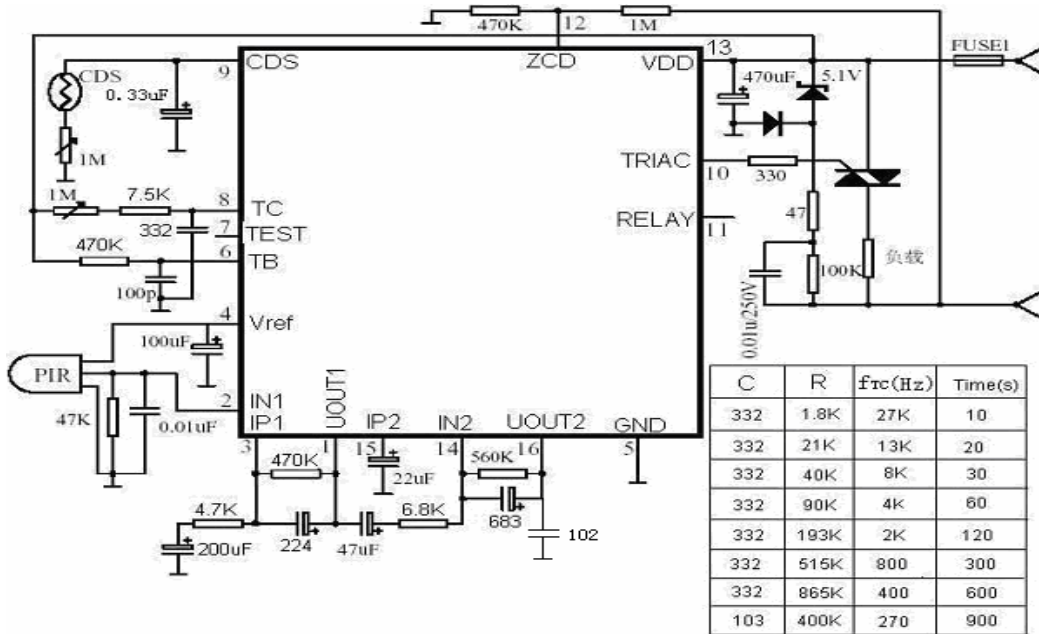
Phone: 86-0755-88291843 88304213 Fax : 86-0755-88290509

Email: [jjja@sc-tech.cn](mailto:jjja@sc-tech.cn) Http:// [www.sc-tech.cn](http://www.sc-tech.cn)

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|           |                         |                                     |      |  |      |    |
|-----------|-------------------------|-------------------------------------|------|--|------|----|
| Irsink    | RELAY SINK CURRENT      |                                     |      |  | 5    | mA |
| Vro       | RELAY OPERATING VOLTAGE | 18.8V: RELAY ON<br>13.1V: RELAY OFF | 13.1 |  | 18.8 | V  |
| Itsink    | TRIAC SINK CURRENT      |                                     |      |  | 15   | mA |
| Itsources | TRIAC SOURCE CURRENT    |                                     |      |  | 50   | uA |

## LP8072C TYPICAL APPLICATION



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