



SYNACORP TRADING & SERVICES

No.9, 1st Floor, Lorong 1/SS2, Bandar Tasek Mutiara, 14120 Simpang Ampat, S.Prai (S), Penang
Tel : +604.502.1726 Hunting Line : 012.403.3474 Fax : +604.502.1726
(Website) <http://www.synacorp.my> (Email) sales@synacorp.com.my

SN-RE200B: Double Elements Pyroelectric Infrared Sensor

Application Example

The pyroelectric sensor is made of a crystalline material that generates a surface electric charge when exposed to heat in the form of infrared radiation. When the amount of radiation striking the crystal changes, the amount of charge also changes and can then be measured with a sensitive FET device built into the sensor. The sensor elements are sensitive to radiation over a wide range so a filter window is added to the TO5 package to limit incoming radiation to the 8 to 14 μ m range which is most sensitive to human body radiation.

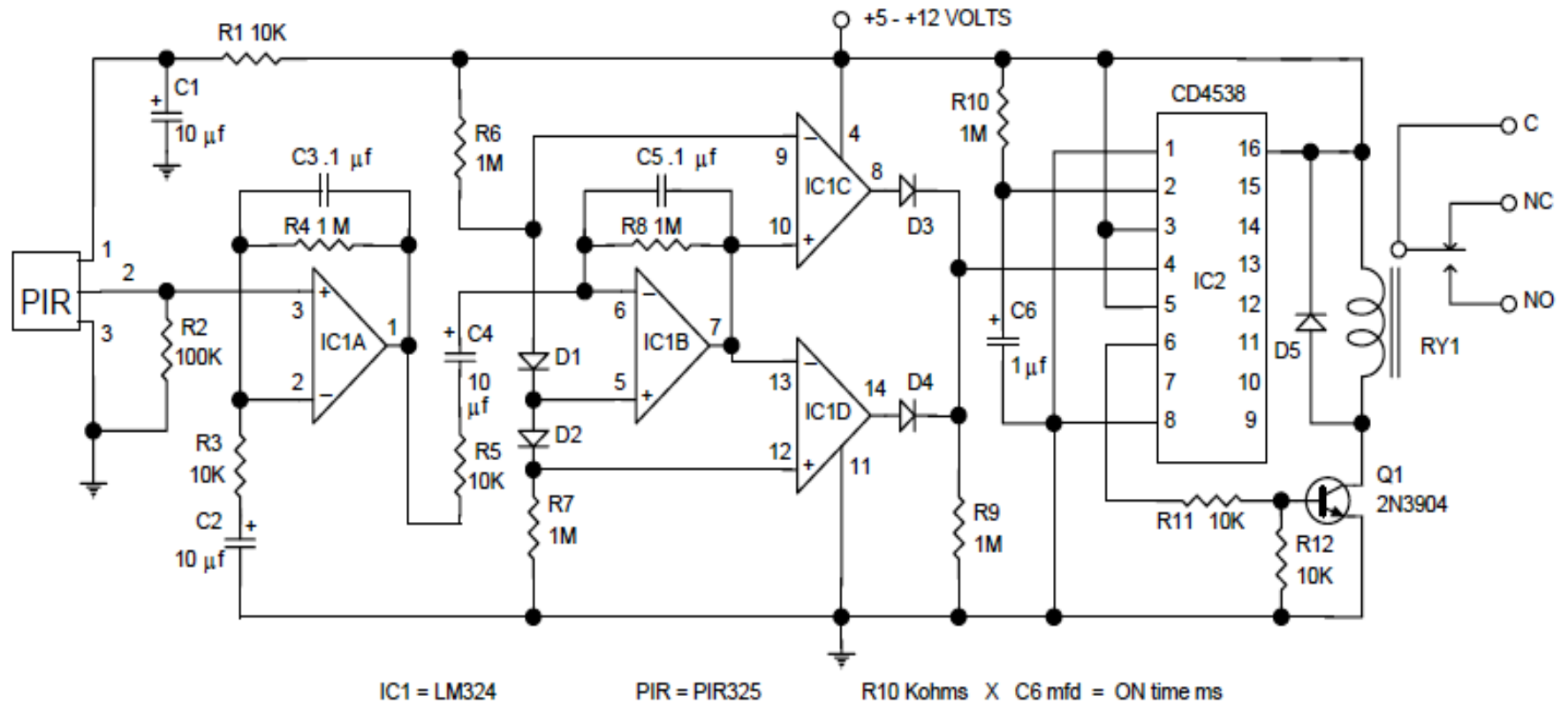
GENERAL MOTION DETECTOR

This motion detector circuit uses a low cost LM324 quad operational amplifier as both a two stage amplifier and a window comparator. Amplifiers IC1A and IC1B have a gain of 100 each for a total of about 10,000.

IC1C and IC1D form a window comparator that responds to signals about 200 mV above and 200 mV below $V_{cc}/2$. This window is set by the low current voltage drops across D1 and D2. Comparator outputs feed through D3 and D4 that pass only the positive transitions into CD4538 CMOS single shot IC2 which feeds into Q1 that drives relay RY1.

R10 and C6 adjust the amount of time that RY1 remains closed after motion is detected. When used with a PIR325 sensor and FL65 Fresnel lens, this circuit can detect motion at a significance distance.

The R10 and C6 time constant determine how long the relay remains energized after motion is detected. All components can operate on 5 to 12 volts. This type of circuit is often used to turn a light on outside of a house when motion is detected.





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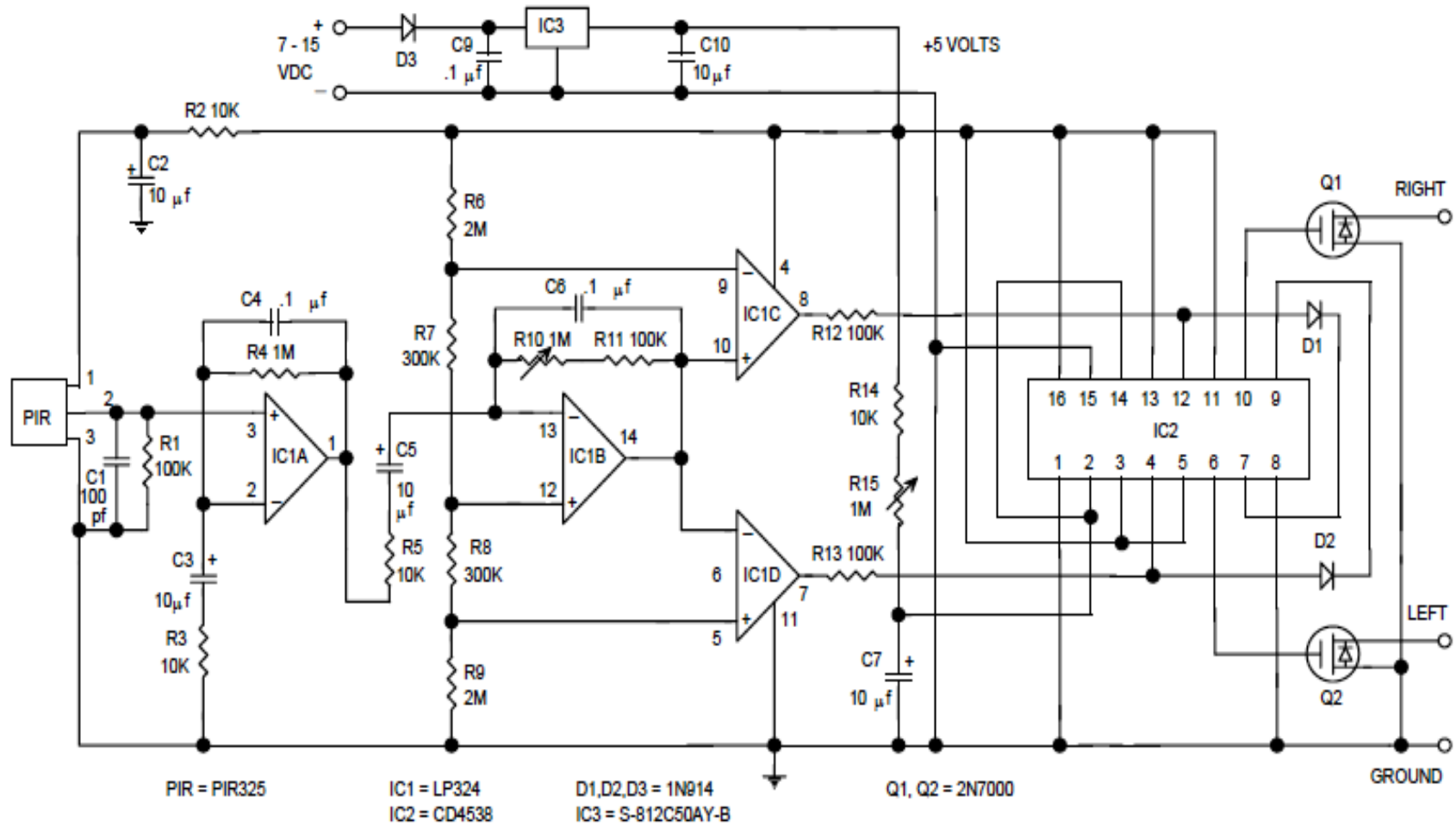
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DIRECTION SENSING MOTION DETECTOR

This motion detector circuit will both detect motion and indicate the direction that an infrared emitting body is moving. The amplifier and comparator circuits are similar to those in figure 6. Potentiometer R10 is a sensitivity adjustment to vary the detection range.

IC2 is a CD4538 dual single shot. The first single shot to receive a trigger input from IC1C or IC1D will turn its output on to indicate the direction of detection and will also inhibit the other single shot so that it cannot be triggered while the first single shot is on. Potentiometer R15 adjusts the amount of time that an output remains on after motion is detected.

This type of motion detector can be used to indicate people entering or leaving a building or in some robotic applications.





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