



A MINI PROJECT REPORT(KEC-554)
ON
INFRARED PROXIMITY SENSOR CIRCUIT

BACHELOR OF TECHNOLOGY
IN
ELECTRONICS AND COMMUNICATION ENGINEERING

SUBMITTED BY

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ABSTRACT

This project is based on Photodiode Object detection within a finite proximity. This device can help in achieving counter for assembly lines and conveyor belts. Other than expensive lasers, it can work with infrared emitting elements which is cost effective. It works only for Opaque substances, if the IR Radiation passes through the object, it cannot work.

INTRODUCTION

Photodiodes can be used in many ways, one application of it can be an Infrared Radiation Proximity Sensor. It is a sensor circuit consisting of IR source, IR Photodiode, Potentiometer, LED, 9v dc Battery, MOSFET, 3 resistances.

IR sensor is a basic electronic gadget which transmits and distinguishes IR radiation to discover certain items/impediments in its reach. A portion of its highlights are warmth and movement detecting.

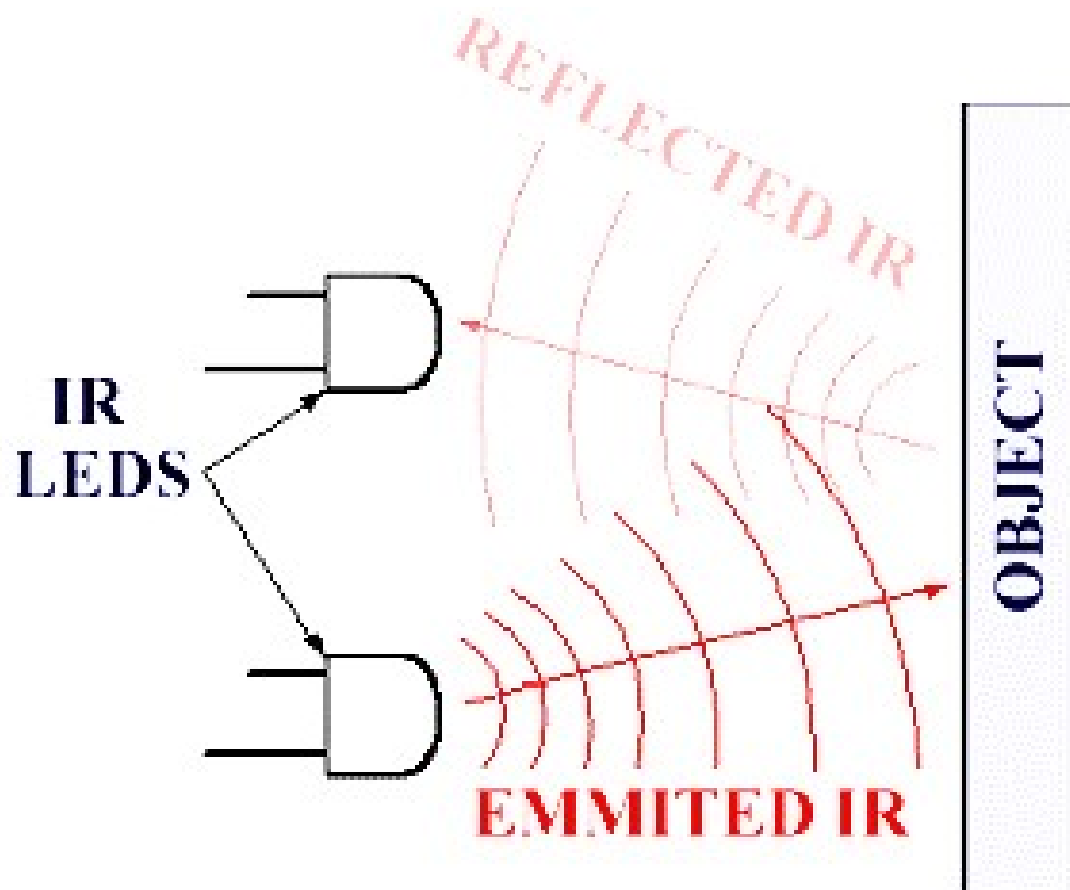
PRINCIPLE

An IR proximity sensor works by applying a voltage to a pair of IR light-emitting diodes (LEDs) which in turn, emit infrared light. This light propagates through the air and once it hits an object it is reflected towards the sensor

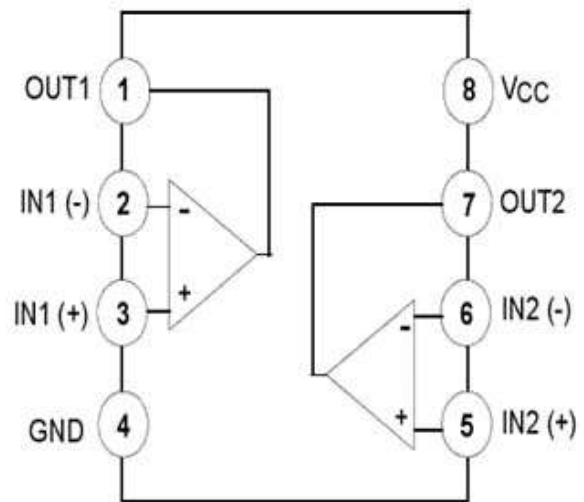
WORKING

This circuit contains a popular IC Lm358 which is a comparator IC. In LM358, Pin 8 is the main power supply input. If we want to use LM358 as a comparator, we can give input voltage from 3V to 32V. If we want to use the LM358 as an operational amplifier then we will give the supply voltage from $\pm 1.5V$ to $\pm 16V$. When any obstruction is in the way of the IR source, it will bounce back to the IR photodiode and act as a counter and signals to light the LED.

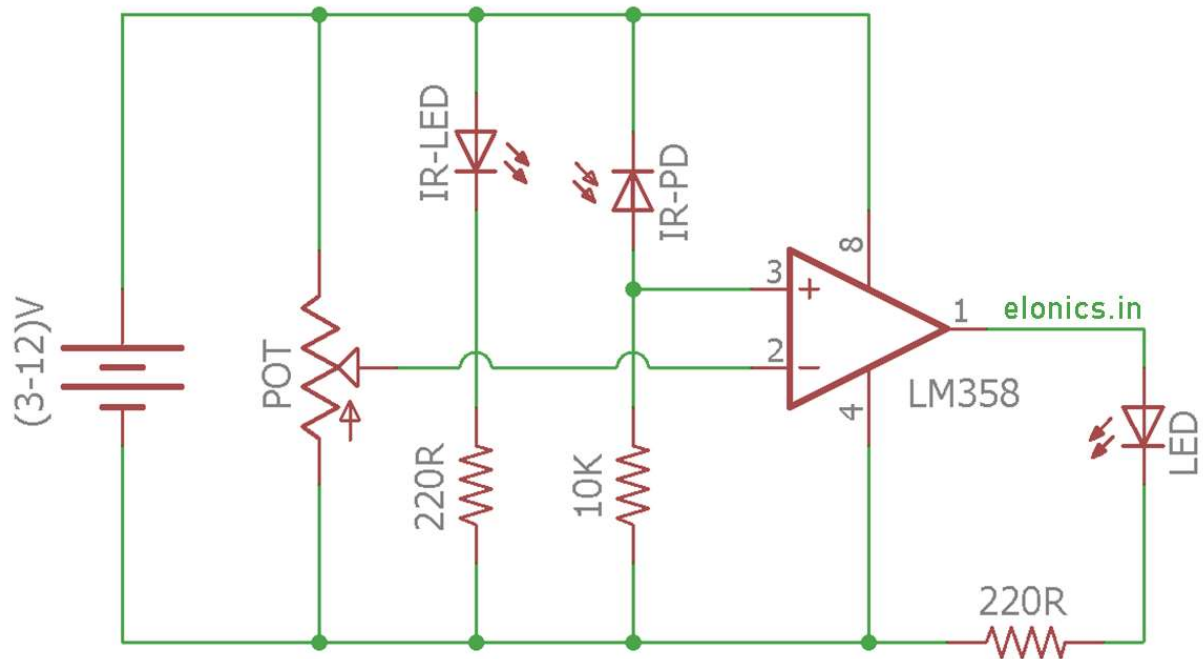
BLOCK DIAGRAM



IC Block Diagram



CIRCUIT DIAGRAM



IR PROXIMITY SENSOR SCHEMATIC

Components Required

- 1) IC Lm358 (Comparator IC)
- 2) Potentiometer
- 3) MOSFET
- 4) Photodiode
- 5) IR Source
- 6) LED
- 7) Resistors
- 8) DC Battery

ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

- They are truly more modest in size and are more moderate.
- It has reaction time quicker than thermocouple.
- It gives great soundness after some time.
- No consumption or oxidation can influence the precision of infrared sensor.
- It conveys high repeatability.

DISADVANTAGES:

- Infrared waves at high force can harm eyes.
- In screen and control application, it can control just a single gadget at one time. Additionally, it is hard to control things which are not in LOS (Line of Sight). It requires view among transmitter and collector to convey.
- It underpins more limited reach and consequently its execution corrupts with longer distances.
- It upholds lower information rate transmission contrast with wired transmission.

CONCLUSION

This project is based on Photodiode Object detection within a finite proximity. This device can help in achieving counter for assembly lines and conveyor belts. Other than expensive lasers, it can work with infrared emitting elements which is cost effective. It works only for Opaque substances, if the IR Radiation passes through the object, it cannot work.

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