

# **Semiconductor Devices & Circuits**

*BIT1013*

*Prof. SASIKUMAR K*

## **ELECTRONIC EYE CONTROLLED SECURITY SYSTEM**

### **A PROJECT REPORT**

#### **SUBMITTED BY:**

DAFFINY SARA JOSHUA 17BMD0040

ISHWARYA CHRISTINA 17BMD0069

HEMAVATHY.K 17BMD0096

JEVETHA VIJAYADASAN 17BMD0073

## **CERTIFICATE OF APPRECIATION**

Certified this project report “**ELECTRONIC EYE CONTROLLED SECURITY SYSTEM**” is the bonafide work of “ Daffiny, Ishwarya, Hemavathy, Jevetha” who carried out the project under my supervision

## **ABSTRACT**

As the automation is emerging technology these days, just imagine a door bell that automatically rings when a person visits the place of concern. This provides security when any person is trying to enter into restricted or any other place of concern without permission. Electronic eye is the electronic device that continuously observes if anyone invades and gives a notification via the buzzing sound.

## **PRINCIPLE : DEVICE WORKING AND CHARACTERISTICS**

The main principle of the circuit is to ring the doorbell when there is any person at the entrance. Light on the LDR determines whether a person is present or not. When there is any object at the entrance, LDR is in dark and buzzer starts ringing and the LED starts glowing.

## **THE LIGHT DEPENDENT RESISTOR: CONFIGURATION BEHIND WORKING OF ELECTRONIC EYE**

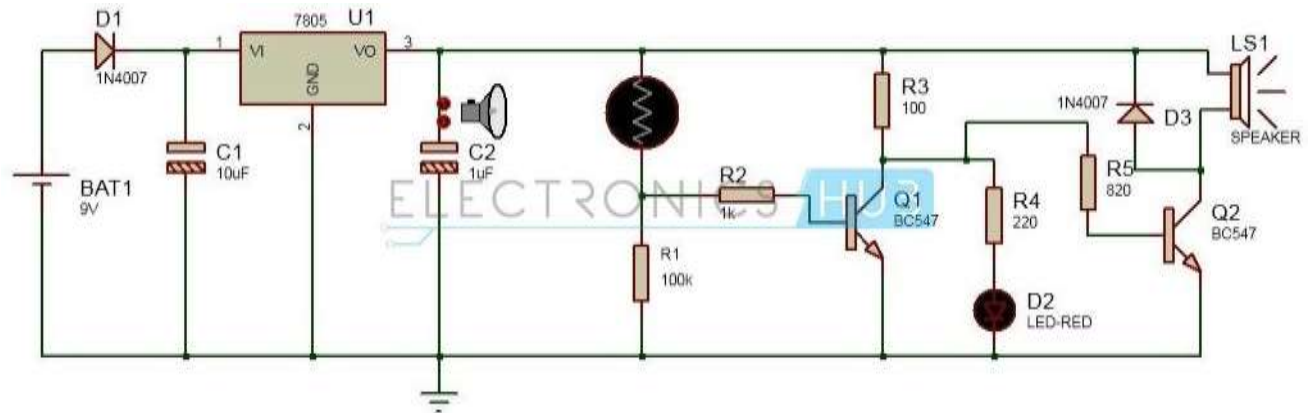
The circuit of the electronic eye security control system is separated into two parts such as logic circuit and power supply. The power supply circuit is designed with a battery, capacitors, P-N junction diode and regulators. Here diode is connected in forward bias mode and it protects the circuit from negative voltages. When the battery is connected in reverse polarity, there is a chance of circuit damage. So the diode is connected in the forward bias, that allows the flow of current in only one direction. The voltage across the diode is 0.7V.

A voltage regulator (IC 7805) is used to regulate the o/p voltage of the circuit. Here 05 denotes the o/p voltage and 78 denotes the series. Thus 5 volts is generated at the o/p of the voltage regulator. To eliminate the ripples two capacitors are connected before and after of the voltage regulator. Thus the voltage which is generated from the voltage regulator is applied to the logic circuit. The logic circuit is built with LDR, operational amplifier, transistors and a buzzer. A 220 kilo ohm resistor and a LDR are connected in series. When the LDR is placed in a dark place, the resistance of the LDR will increase. In the same way, when it is placed in the light, then the resistance will decrease. Thus, there is a change in the series resistances. When the LDR is in the dark, then it has high resistance value and generates the logic high value at the o/p. When the LDR is in light, then it has low resistance value and generates the low logic value.

The IC LM358 consists of two inputs and one output which is applied to the transistor. Two transistors are connected to the buzzer. The first transistor reverses the input from the IC. The second transistor runs the buzzer and the diode is used for the protection.

The buzzer used in this circuit has two pins, where one pin is connected to the NOT gate and the remaining pin is connected to the LED. When the o/p of the gate is high, then the buzzer starts ringing and LED also blinks.

## CIRCUIT DIAGRAM:



## Working of a 'Light dependent resistor':

A **light dependent resistor** works on the principle of photo conductivity. Photo conductivity is an optical phenomenon in which the materials conductivity is increased when light is absorbed by the material. When light falls i.e. when the photons fall on the device, the electrons in the valence band of the semiconductor material are excited to the conduction band. These photons in the incident light should have energy greater than the band gap of the semiconductor material to make the electrons jump from the valence band to the conduction band. Hence

when light having enough energy strikes on the device, more and more electrons are excited to the conduction band which results in large number of charge carriers. The result of this process is more and more current starts flowing through the device when the circuit is closed and hence it is said that the resistance of the device has been decreased. This is the most common **working principle of LDR**

## **WORKING: COMPONENTS USED IN THE CIRCUIT**

- ❖ 7805 regulator U1
- ❖ Resistors R1,R2,R3,R4,R5-100k,1k,100,220,820
- ❖ 1N4007 diode D1
- ❖ Capacitors C1,C2
- ❖ BC 547 transistors Q1,Q2
- ❖ Light Dependent Resistor
- ❖ Buzzer BUZ1
- ❖ Light Emitting Diode D2.
- ❖ Bread board
- ❖ Connecting wires
- ❖ DC 9V battery.

## **SIGNIFICANT ADVANTAGES :**

- ❖ **Convenience:** With automated home security, you receive notifications to your smartphone or iPad instantly when anything goes wrong. It's comparable to having your own personal assistant updating you with what's going on at home. Monitoring your home on-the-go will give you peace of mind that you locked the doors, turned off the lights, and that your home is safe and secure.
- ❖ **Security:** Video surveillance installs a ring of security around your home, providing an impressive display of protection that you are able to monitor at all times. You'll receive an instant notification if someone breaches this ring, enabling you to gain the upper hand over a potentially dangerous, aggressive, or generally trespassing criminal.
- ❖ **Energy management:** In the morning, while everyone is getting ready for school and work, it's easy to forget to turn the lights off or to properly lock all the doors. With smart locks from Electronic Eye Security, you have total mobile command of your home's locks, allowing you to control, monitor, and protect your home. This saves clients stress and

money, which minimizes your energy consumption and improves efficiency overall.

### **DISADVANTAGES:**

- ✓ The led starts blinking for any sort of movements. Even if people who are meant to cross its path move , the buzzer and the led goes off.
- ✓ Heating of the circuit if of major concern so constant check on the device on a regular basis is advisable
- ✓ Due to such issues maintenance is tiring.

## **FINAL SUMMARY :**

The model submitted as on 29/03/18 has exhibited that any sort of movement across the sensor shall be detected and the buzzer and the led does go off as well.

The Electronic Eye security system has found its application in several institution where adequate security is of immense need, also in the case of examples like garage door circuits , it has prominent use. Although the latter mentioned use is secondary, the primary use for security has been so effective that commercially this will be of very high demand.

The less complexity of the circuit makes it even more portable. The circuit can be efficiently placed in most locations. In short, the “ELECTRONIC EYE” can revolutionise the field of security solutions.