Course Name:*Inductrial Electronics Laboratory*

Course Number*:ECE 3102*

Project Name: *Build a Heat Alarm Circuit using SCR*

Submitted By:

Lab Group: B-3

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Objectives:

In this project,our objectives are:

- To bulid a Heat Alarm Circuit using SCR
- To verify the circuit
- To analyse the application of this circuit
- To verify the circuit in practical situations

Description:

We built a heat alarm circuit. The main component of our circuit was a thermistor and an SCR. The SCR worked basically as a switch. The thermistor was our heat sensing element. We used a NTC thermistor, i.e. it had a negative temperature coefficient. It's resistance decreases when the temperature increases. We connected this thermistor to a battery. The other terminal of the thermistor is connected to the gate terminal of the SCR. We also used the battery to supply forward voltage to the SCR to maintain it on ON state. The gate trigger is provided through the thermistor. Initially, the resistance of thermistor is very high (approximately 10k). So the voltage that reaches the gate terminal is not enough to trigger the SCR. When the environment temperature increases, the internal resistance of the thermistor drops. When it becomes sufficiently low, the trigger voltage is enough to trigger the SCR. Once it is triggered, the SCR acts as a short circuit and the LED is lit. Instead of the LED, a buzzer can be used to alert the user of the high temperature of the environment.

We used a temperature sensor to measure the temperature at which the alarm goes off. We found it to be around 41.5^{o} Celcius. So this alarm will work when the user wants to be alerted if the environment temperature ever rises above the mentioned temperature.

Circuit Diagram:

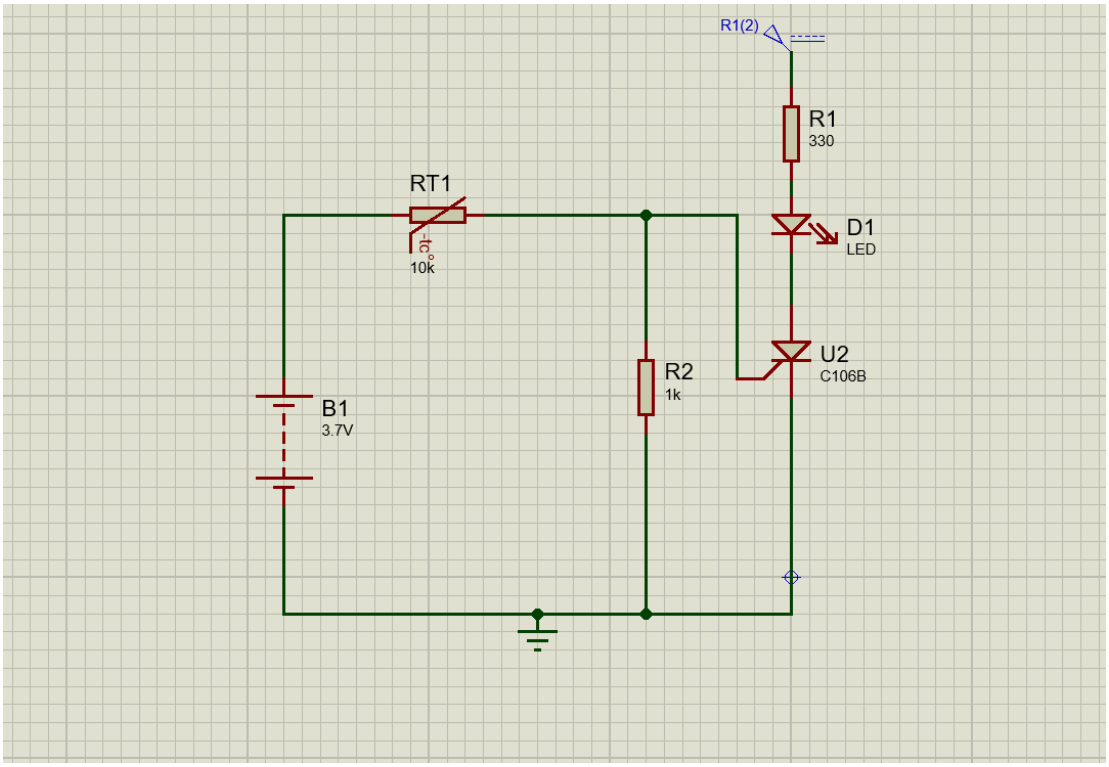

Figure: Heat Alarm Circuit using SCR

Application:

- It can be used in motors for temperature monitoring to avoid overheating.
- It can be used in industries to maintain the temperature of the environment or the system.
- Heat sensors are also utilized in computer systems to avoid overheating.
- It is used in different home appliances like washing machines, toasters, dishwashers etc.
- Heating/cooling systems, heat exchangers also use heat sensor circuits.

Conclusion:

When we started working on this project, we wanted to build an effective heat alarm circuit. We were able to do that using simple components andworking procedure. This alarm circuit is a cost-effective and lightweight circuit. It gives us the required output. So we can say that our project was successfully completed.