

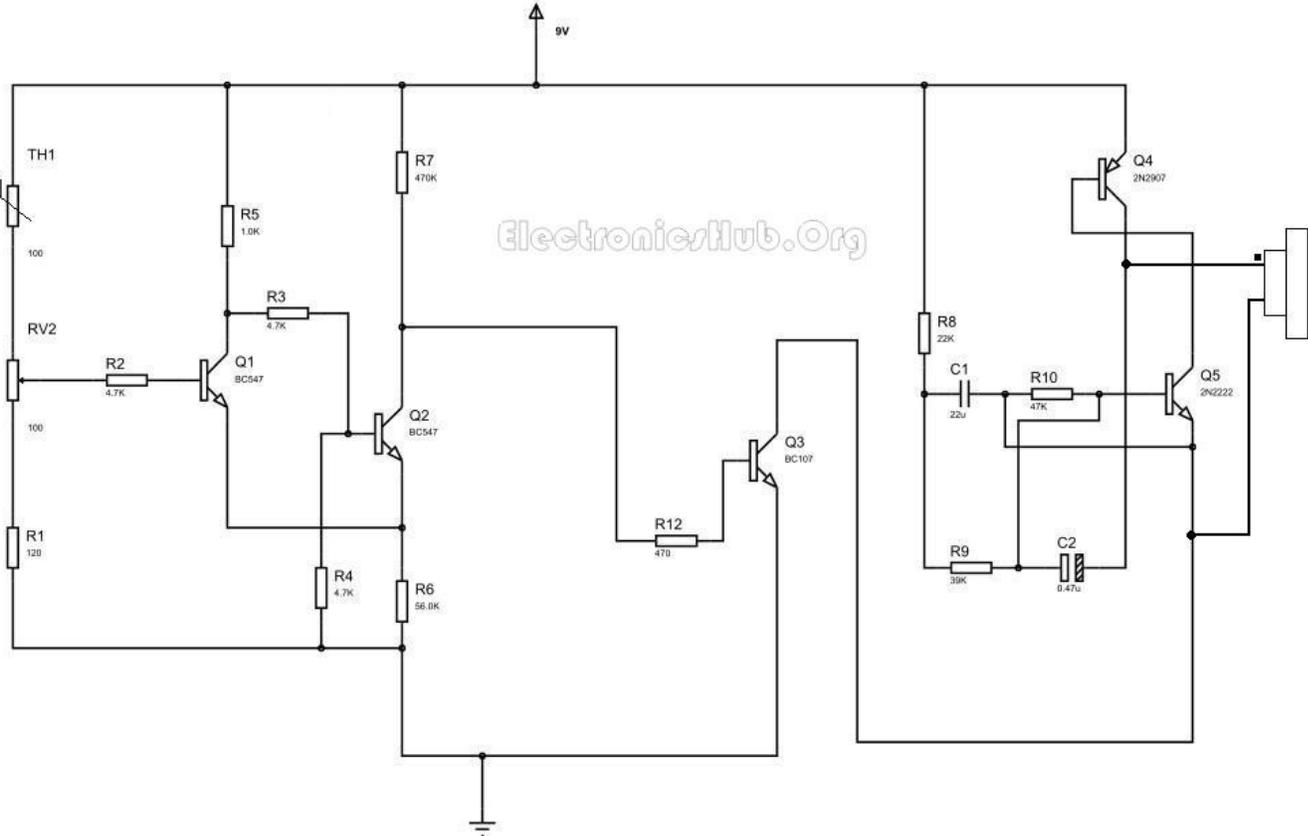
Fire Alarm with Siren Sound

Fire Alarm Circuit:

This circuit alerts us when there is a fire accident at home by ringing a siren sound. You might have seen fire alarms earlier but this is quite different as it generates a siren sound instead of a buzzer and also it uses basic components to generate that siren sound.

We are aware that there are many integrated circuits which can be used to generate the siren effect but we preferred to use basic electronics components like resistors, capacitors and transistors to generate it so that you will clearly understand the internal working of it and it will be much useful for you as you will gain more knowledge by analyzing it instead of simply going for pre designed integrated circuits.

Circuit Diagram of Fire Alarm:



Description:

This circuit uses a thermistor to sense the temperature. When it senses that the temperature of the environment is increasing above a given threshold, then it gives a signal. The temperature at which the circuit detects fire can be adjusted by using the potentiometer arrangement at RV2.

When the temperature increases above the set value, the potentiometer arrangement produces a high voltage. This voltage is then given to BC547 transistor in common emitter mode. It is an NPN general purpose transistor. When the base is given a high input, it gets turned on. When the transistor is turned on, its collector voltage is reduced to low as the collector to emitter voltage decreases. The collector output voltage of the first transistor is given to the base as an input to the second BC 547 NPN transistor. This transistor too is in common emitter mode and as the input is low when the temperature threshold is reached, the output at the collector will rise high. In this state, it will turn on the next transistor, i.e BC107. This transistor will now act as a switch for the siren circuit. This transistor can bear power quite larger than the BC547 and it is also equipped with a heat sink for that purpose.

When the BC107 transistor turns on, it allows current to pass from power supply to ground through collector thereby acting as an electronically controlled switch. When the current is passing, the siren circuit which is assembled as the load to the circuit is turned ON. Then you can hear the siren sound through the buzzer. The capacitors used in the circuit are the main components in producing the siren effect. The principle involved in generating the siren effect is to make an oscillator with an envelope which periodically increases and decreases so as to generate that effect.

Source: <http://www.electronicshub.org/fire-alarm-with-siren-sound/>