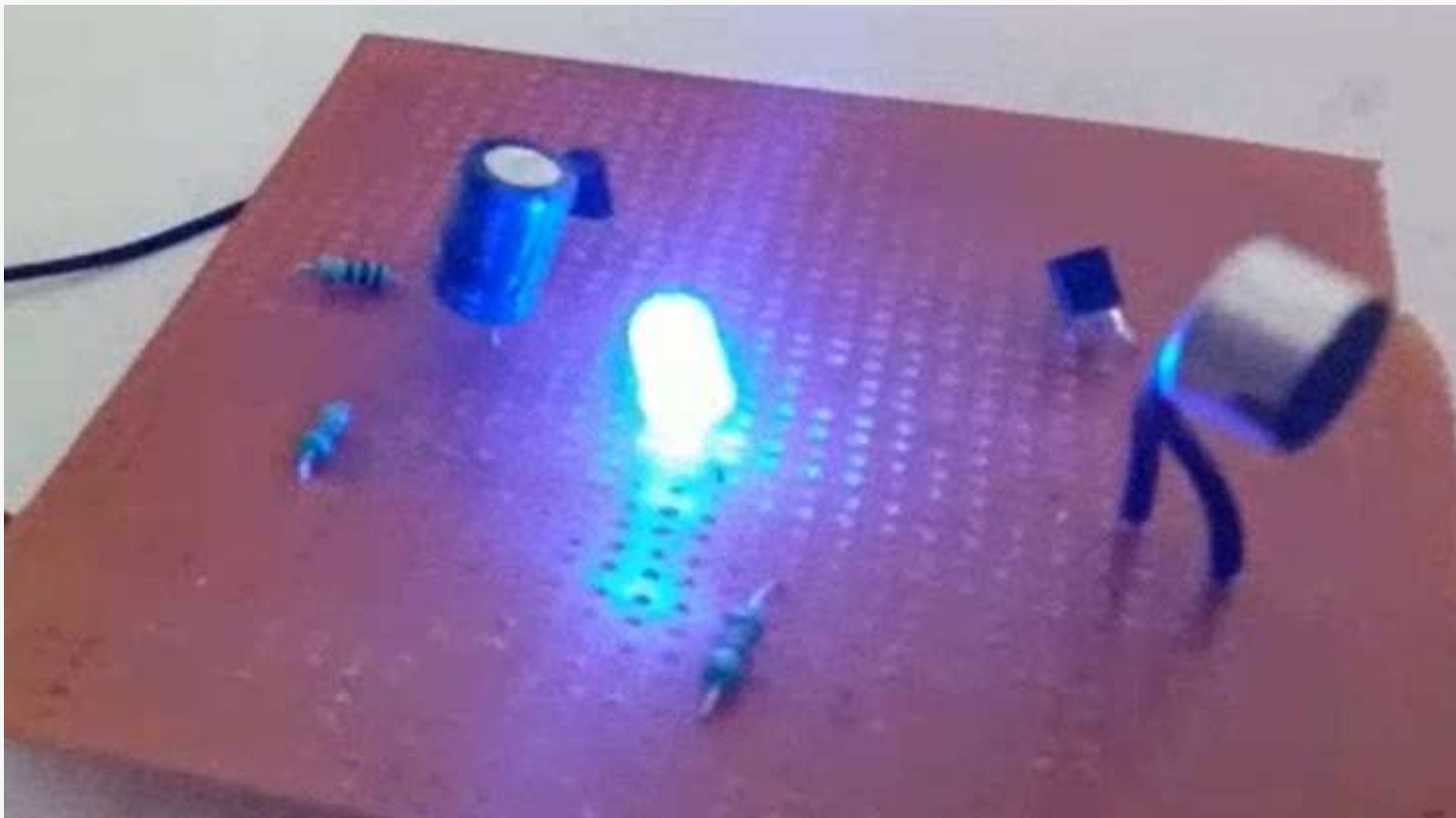


# Clap Circuit Project



# About Project

**Clap circuit** is a basic electronics mini-project, made with the help of the basic components. Clap switch has the ability to turn ON/OFF any electrical component or circuit by the clap sound. The main component of this clap switch circuit is the electric condenser mic, which has been used as a sound sensor.

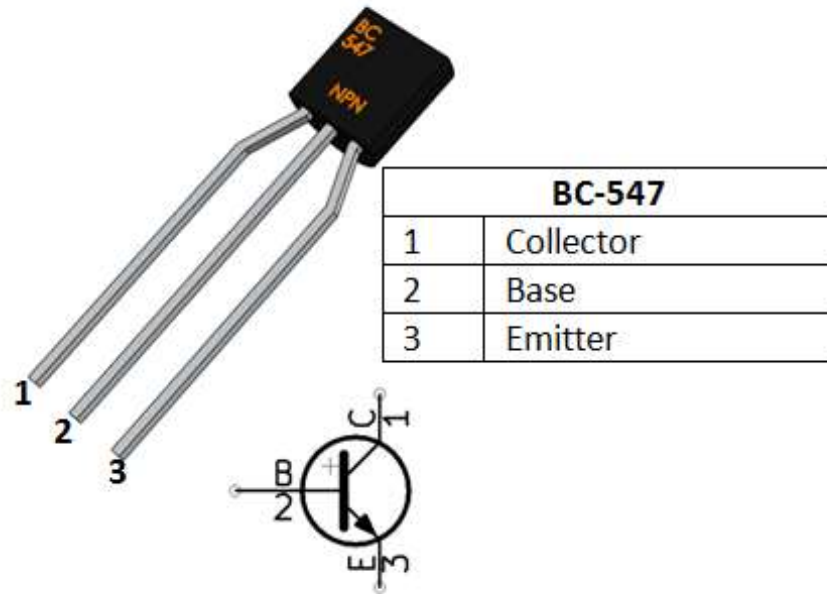
# Microphone

- A **microphone** is a device that captures audio by converting sound waves into an electrical signal. This signal can be amplified as an analog signal or may be converted to a digital signal, which can be processed by a computer or other digital audio device.
- Vibration of the diaphragm causes surrounding components of the **microphone** to vibrate. Conversion of these vibrations is delivered as an audible signal.



# BC547

**BC547 is a NPN transistor** hence the collector and emitter will be left open (Reverse biased) when the base pin is held at ground and will be closed (Forward biased) when a signal is provided to base pin.



# Working of BC547 Transistor

BC547 has a gain value of 110 to 800, this value determines the amplification capacity of the transistor. The maximum amount of current that could flow through the Collector pin is 100mA, hence we cannot connect loads that consume more than 100mA using this transistor. To bias a transistor we have to supply current to base pin, this current ( $I_B$ ) should be limited to 5mA.

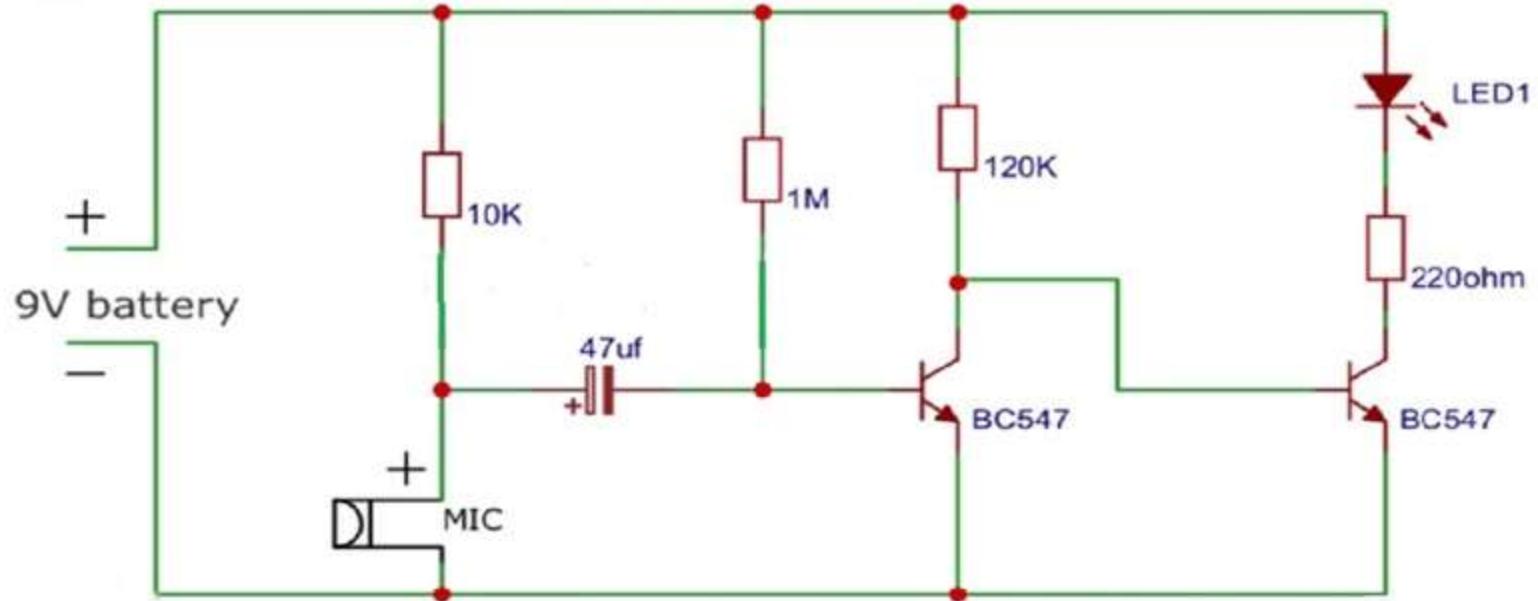
When this transistor is fully biased then it can allow a maximum of 100mA to flow across the collector and emitter. This stage is called **Saturation Region** and the typical voltage allowed across the Collector-Emitter ( $V_{CE}$ ) or Base-Emitter ( $V_{BE}$ ) could be 200 and 900 mV respectively. When base current is removed the transistor becomes fully off, this stage is called as the **Cut-off Region** and the Base Emitter voltage could be around 660 mV.

# Components Required

- Zero PCB
- Soldering iron
- Soldering wire
- BC547 Transistor [2]
- Microphone [1]
- LED [1]
- Resistors(220ohm,120k,10k) [1]
- Capacitor 47uf
- Battery 9V
- Battery connector



# Connection Diagram



# Future Scope

- Clap Switch is not restricted to turn the LEDs ON and OFF, but it can be used in any electric appliances such as Tube Light, Fan, Radio or any other basic circuit which you want to turn ON by a Sound.
- Clap switch is generally used for a light, television, radio or similar electronic device that the person will want to turn on/off from bed.





**Project Link : <https://youtu.be/0Kna4GY5kws>**