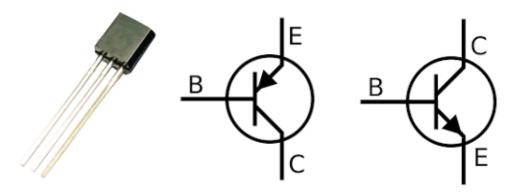
# **Bipolar Junction Transistor:**



A Bipolar Junction Transistor (BJT) has three terminals connected to three doped semiconductor regions. It comes with two types, P-N-P and N-P-N.

P-N-P transistor, consisting of a layer of N-doped semiconductor between two layers of P-doped material. The base current entering in the collector is amplified at its output.

That is when PNP transistor is ON when its base is pulled low relative to the emitter. The arrows of PNP transistor symbol the direction of current flow when the device is in forward active mode.

# **Transistor Not Turned On** Transistor Turned On Emitter (Supply Voltage) Emitter (Supply Voltage) P Base = Emitter Base 0.7V N N < Emitter P P Collector (Other part of the circuit) Collector (Other part of the circuit) PNP Symbol PNP Symbol

Emitter (Supply Voltage)

Collector (Other part of the circuit)

Base = Emitter

Voltage

N-P-N transistor consisting a layer of P-doped semiconductor between two layers of N-doped material. By amplifying current the base we get the high collector and emitter current.

Emitter (Supply Voltage)

Collector (Other part of the circuit)

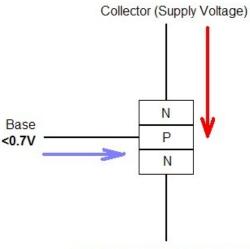
Base Voltage

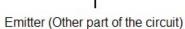
0.7V < Emitter Voltage

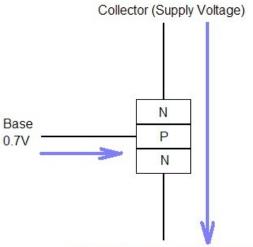
That is when NPN transistor is ON when its base is pulled low relative to the emitter. When the transistor is in ON state, current flow is in between the collector and emitter of the transistor. Based on minority carriers in P-type region the electrons moving from emitter to collector. It allows the greater current and faster operation; because of this reason most bipolar transistors used today are NPN.

#### **Transistor Not Turned On**

#### **Transistor Turned On**



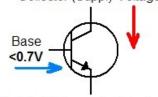




Emitter (Other part of the circuit)

## NPN Symbol

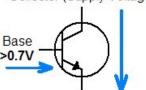
Collector (Supply Voltage)



Emitter (Other part of the circuit)

## NPN Symbol

Collector (Supply Voltage)



Emitter (Other part of the circuit)