**B.j.t – bipolar junction transistor**

- By epic study era

Today we are here with a fresh new topic that is B.J.T – Bipolar Junction Transistor.

So in this blog we shall study about the following points:

Table of contents

B.J.T and

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| --- | --- |
| 1. a. Symbol. 2. b. Types. 3. c. It’s working. 4. d. Applications. |  |
|  |  |

B.j.t: Full for of B.J.T is bipolar junction transistor, which means a transistor device with two junctions. Therefore B.J.T is a three terminal device that consists of two p-n junctions, that are the two regions in a single crystal of a material. It is a current control device.

The three terminals of B.J.T are:

1. Emitter.
2. Base.
3. Collector.

**Symbol of b.j.t**

**c**

b

e

TYPES OF B.J.T

There are two types of B.J.T, which are as follows:

1. **NPN:** It is composed of two n-type semiconductor materials (emitter and collector), separated by a thin p-type semiconductor (base). In an NPN transistor, the e**-** current flows out of the emitter as shown by the arrow in the given figure.

**c**

b

e

**NPN TRANSISTOR**

1. **PNP:** It is composed of two p-type semi-conductor (emitter and collector), separated by a thin layer of semiconductor material. In this transistor, a current flow into the emitter.

**E**

b

C

**PNP TRANSISTOR**

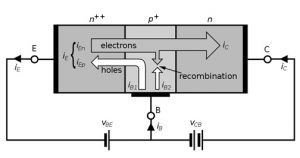
**Configuration of b.j.t**

It can be of three types, which are as follows:

1. **Common collector configuration:** Input is applied between base and collector and the output is taken between emitter and collector.
2. **Common base configuration:** Input is applied between the emitter and base and the output is taken between the collector and emitter.
3. **Common emitter configuration:** Input is applied between the base and emitter and output is taken between the collector and emitter.

Working of b.j.t

To explain the working of a B.J.T, we consider an NPN transistor which is biased for active operation. That means, the emitter-base junction is forward biased by battery VEA and the collector base is reversed biased by battery VCB.



The forward bias voltage is small and the reverses biased voltage VCB is quite large. The forward bias on the emitter-base junction bushes a large number of free electrons in the end-type emitter towards the base. This makes the emitter current. A very few holes also pass from the base region to the emitter region. This flow of electrons and holes constitutes the action of the transistor, it is made larger and larger than the hole current by doping the base region more lightly than the emitter region. , Only a very small portion nearly 0.5% of the emitter current is due to the holes passing from the base to the emitter. The direction of conventional current is always taken opposite to the flow of electrons.

After reaching the base region, the electron 10 to combined with holes. But since the base is very thin and lightly dubbed, only a few electrons combine with holes to constitute the base current. The remaining electron pass on the collector which is positively biased N-reason. These electrons are collected by the collector to constitute the collector current.

There is one another component of collector current due to the thermally generated minority careers which pass towards the base the small current component is called reverse saturation current

**Applications of b.j.t**

**­­­­­**Applications of b.j.t can be can in the following ways, which are as follows:

* It is used as a detector or a demodulator.
* It mainly acts as an amplifier.
* It can be used as a solid-state switch in an electronic circuit.
* It is used in logic gates.

So, in this way, we told you about the B.J.T and about its basic knowledge. Hope you found this blog helpful.

**THANK YOU**