

B. L. D. E. A's
S. B. Arts and K. C. P. Science College, Vijayapur
(Affiliated to Rani Channamma University, Belagavi)



Department of PG Studies in PHYSICS

2023-2024

Seminar Report

M. Sc^{II}.....Semester

Name of the Student: Pneeksha R. Bendawade

UUCMSNo. : P15KM23S103001

Subject: Electronics

Topic of Seminar: Basic principle of Transistor operation

Date of Presentation: 09-09-2024

Semiconductor Devices

* Basic Principles of Transistor operation:-

Transistor:-

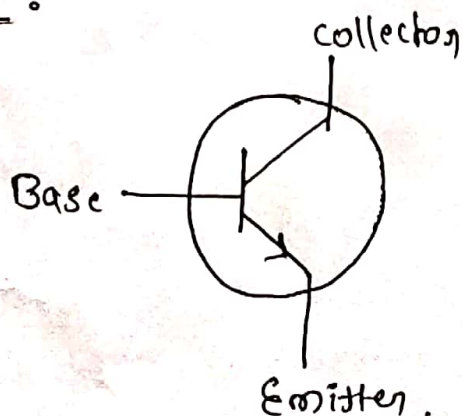
A transistor is a type of Semiconductor device that can be used to conduct and insulate electric current on voltage.

⇒ A transistor basically acts as a switch & an amplifier.

⇒ In simple words, we can say a transistor is a miniature device that is used to control or regulate the flow of electronic signals.

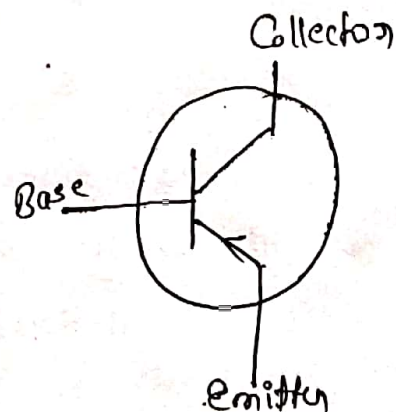
⇒ Transistor is developed in the year 1947 by three Scientists (physicists), John Bardeen, Walter Brattain & William Shockley.

Symbol :-



NPN

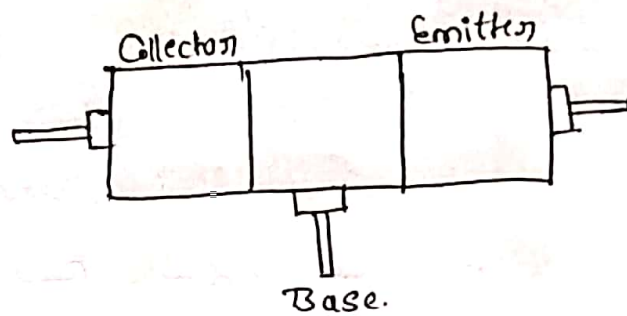
E - Majority
H -



PNP

H - Majority
E -

⇒ Parts of Transistor :-



⇒ A transistor consists of two PN-diodes connected back to back.

* It has three terminals.

- 1) Emitter
- 2) Base
- 3) Collector

* Base :-

The base is the middle layer between the collector and emitter. The base controls the flow of electrons from the collector to the emitter. It is made of a material that is easily electrically conductive, such as silicon.

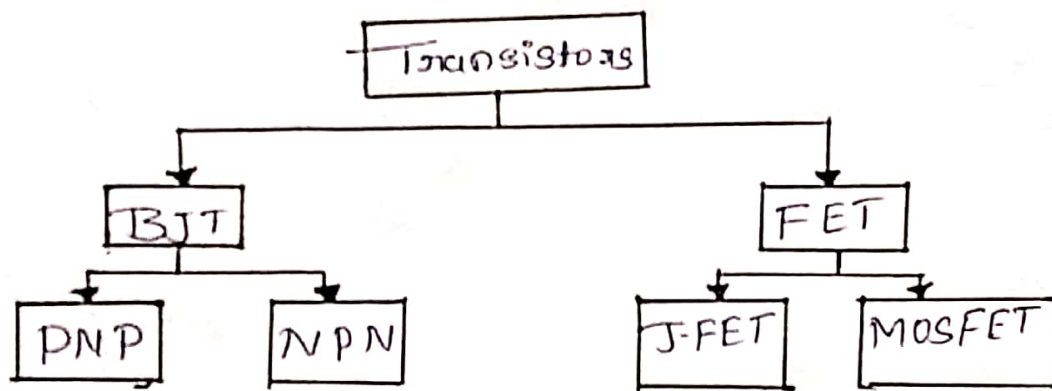
* Collector :-

The collector is the bottom layer of the transistor. It is made of a material that is not easily electrically conductive, such as aluminium. The collector collects electrons from the base and brings them to the emitter.

* Emitter:

The Emitter is the top layer of the transistor. It is made of a material that is not easily electrically conductive, such as aluminium. The emitter emits electrons from the collector to create an electric current.

Types of Transistor :-



Uses of Transistors :-

* Transistors are used in many electronic devices, such as radios, TVs, and computers. They are also used in amplifiers.

* A Transistor amplifies a signal by increasing the current through the semiconductors.

Observed
Depends