DEV BHOOMI UTTARAKHAND UNIVERSITY

ASSIGNMENT ON BJT(BIPOLAR JUNCTION TRANSISTOR)

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TRANSISTOR:-A semiconductor device consisting of two PN junction formed by sandwiching either P type or N type between pair of opposite type of is known as a transistor.

- Transistor is called bipolar device because its two charge carriers electrons or holes.
- The name of transistor is derived from the combination of two words (transfer+resistance)
- A transistor transfer the resistance from one end to other end.
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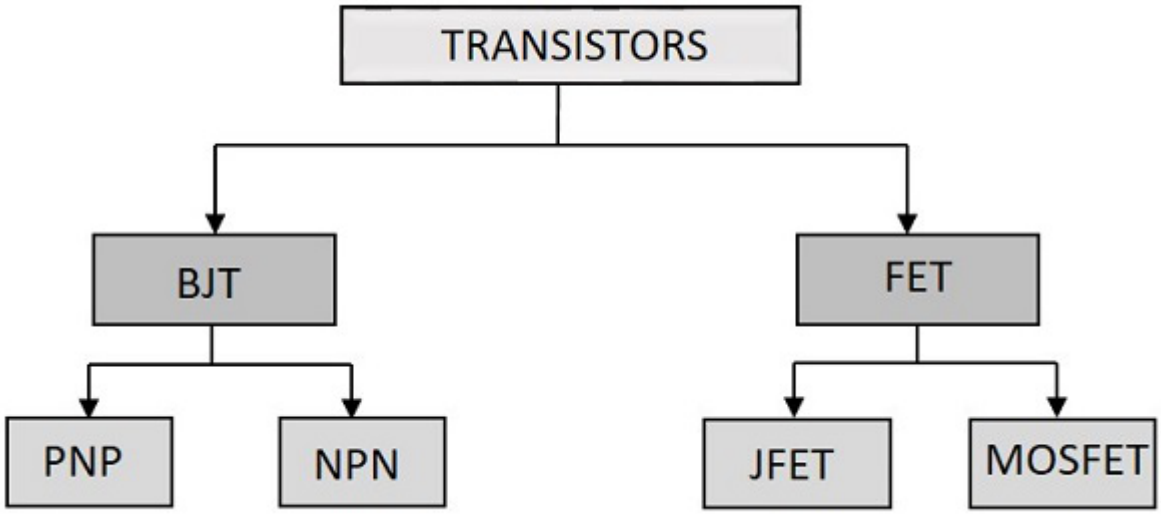


- FET-Field Effect Transistor.
- JFET-Junction Field Effect Transistor.
- MOSFET-Metal Oxide Semiconductor Field Effect Transistor.

BIPOLAR JUNCTION TRANSISTOR

INTRODUCTION

It was invented by Dr. William Shockly and Dr.John Bardeen at bell laboratory in America in 1951.

The invention of transistor changed the concept of electrical circuit to integrated circuit.

Nowadays,the use of bjt is decrasing because CMOS technology took place in the design of digital circuit.

WHAT IS BIPOLAR JUNCTION TRANSISTOR?

It is a three terminal device base,collector and emitter.

It is also called current control device.

The output voltage current or power are controlled by the input current in a transistor.

Bipolar junction transistor because the two types of charge carriers:- majority carriers and minority carriers.

APPLICATIONS OF TRANSISTOR

It is used in control system.

It is used in satellite and mobile phone.

In digital computer electronic,the transistor is used as a high speed electronic switch.

In communication system,it is widely used primary component in the amplifier

TYPES OF BJT

There are two types:

(i)npn transistor

(ii)pnp transistor

NPN TRANSISTOR

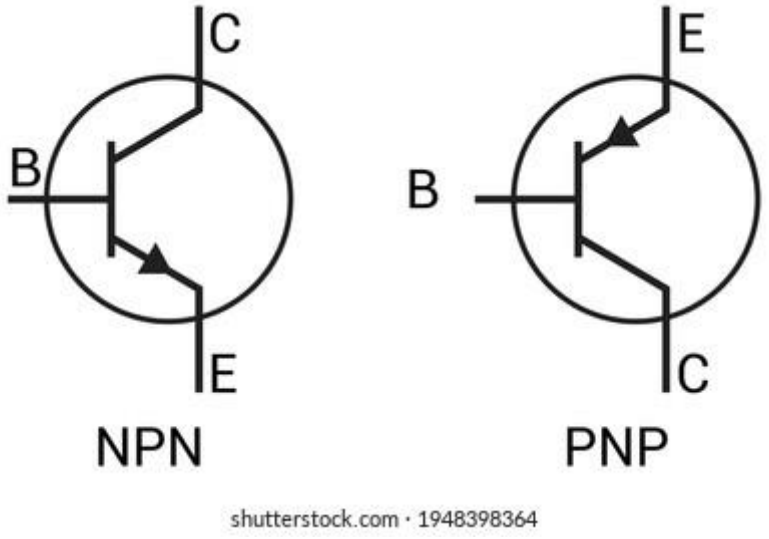
The arrow indicate current is flowing from the base to emitter

NOTE:-npn transistor the current conduction is due to majority electrons.

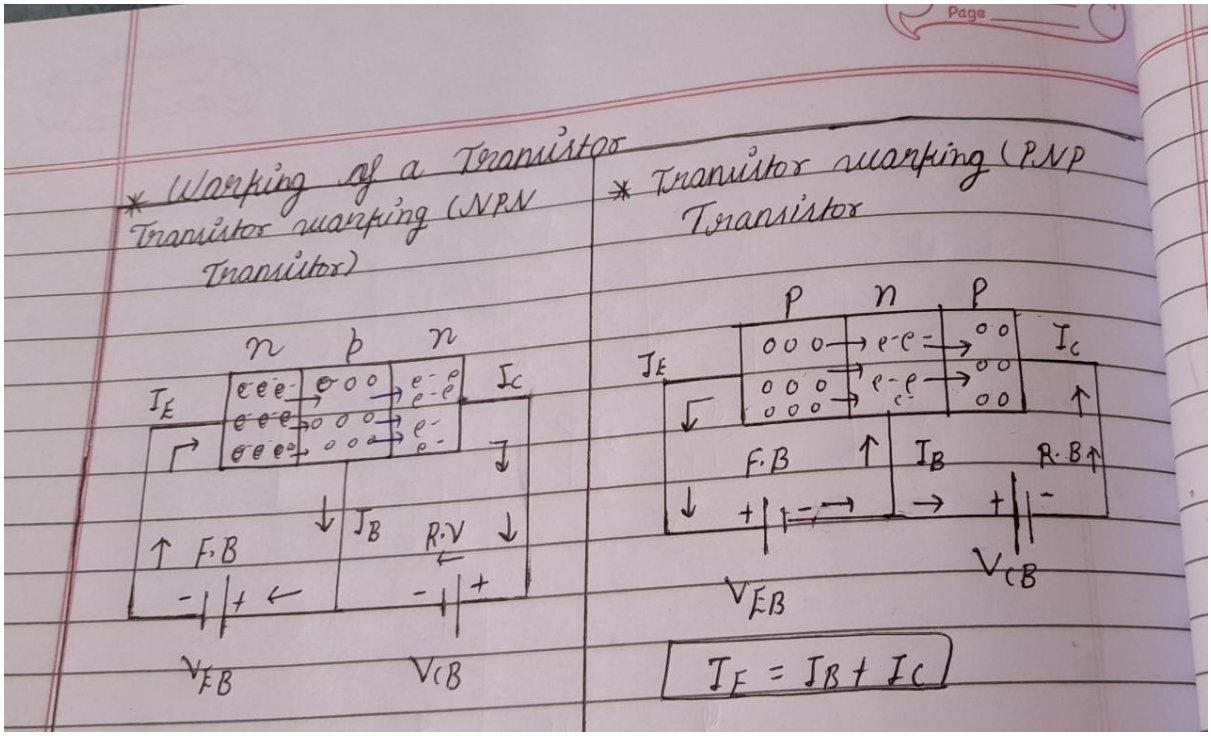
PNP TRANSISTOR

The arrow indicate current flowing from the emitter to the base.

NOTE:-pnp transistor the conduction is due to majority holes.



WORKING OF TRANSISTOR



NPN

Forward biased causes the electron in n type emitter to flow towards base this constitutes emitter current I(E)

Electrons passing through p type base tends to combine with holes (less than 5 percent thin and lightly doped base)

PNP

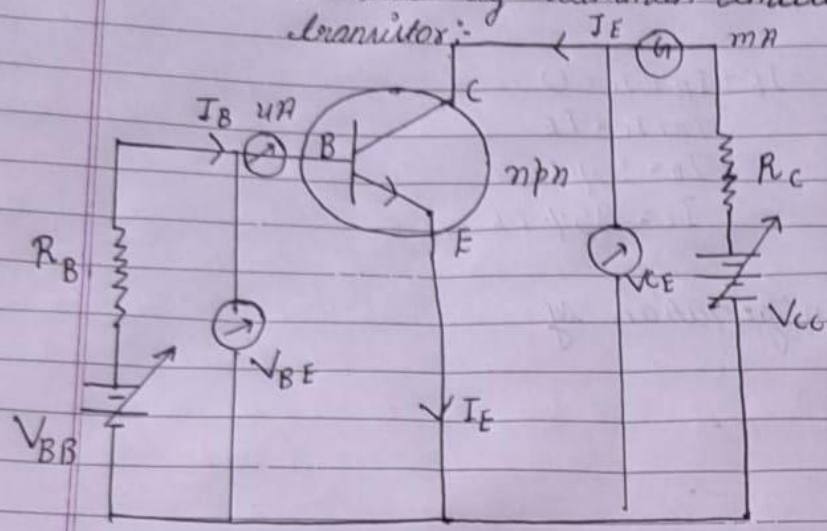
Forward bias causes the holes in p type emitter to flow towards base ->emitter current

Holes>5% passing n type base tends to combine with electrons base current remaining holes more than 95% moves toward collector current

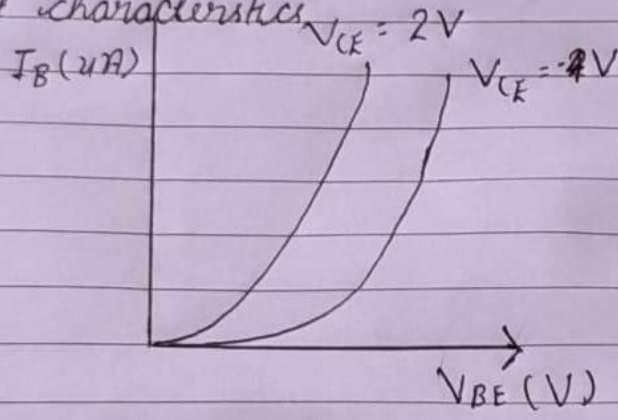
Current conduction in pnp transistor is by holes

However in external conducting wires current is still by electrons.

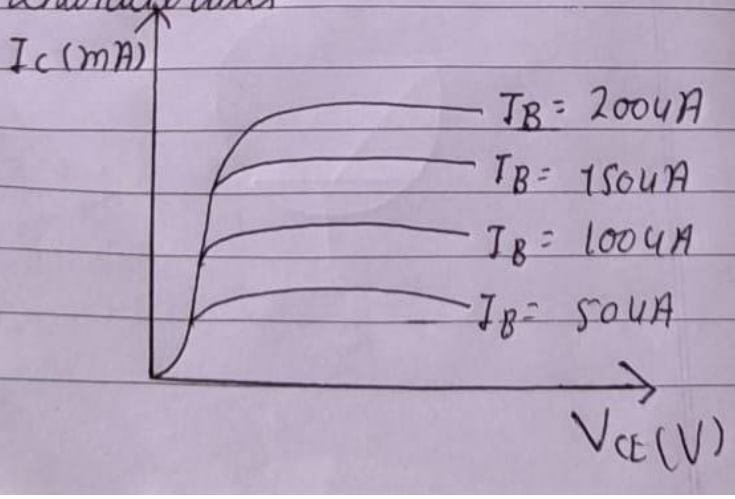
* characteristics of camman emitter transistor:-



* Input characteristics



* 2) Output characteristics.



THANKYOU