



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF MECHATRONICS

19EET101/Basic Electrical and Electronics Engineering
I YEAR I SEM

UNIT 4 – ANALOG ELECTRONICS

TOPIC – INTRODUCTION TO DIODE

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Analog vs Digital Electronics

- ❑ Analog circuits are the **electronic circuits** that deal with the currents and voltages that can have any possible value.
- ❑ Digital circuits are the electronic circuits that deal with the currents and voltages that can have only a few discrete values. Digital circuits deal with digital data or signals.



BJT-History

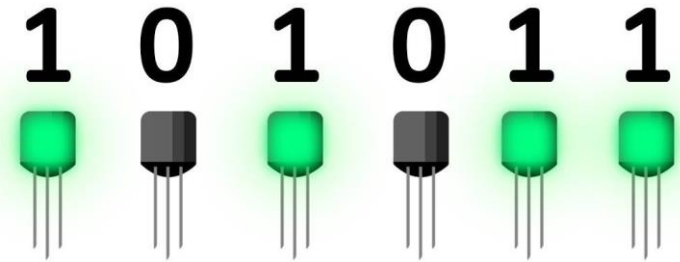




BJT-History

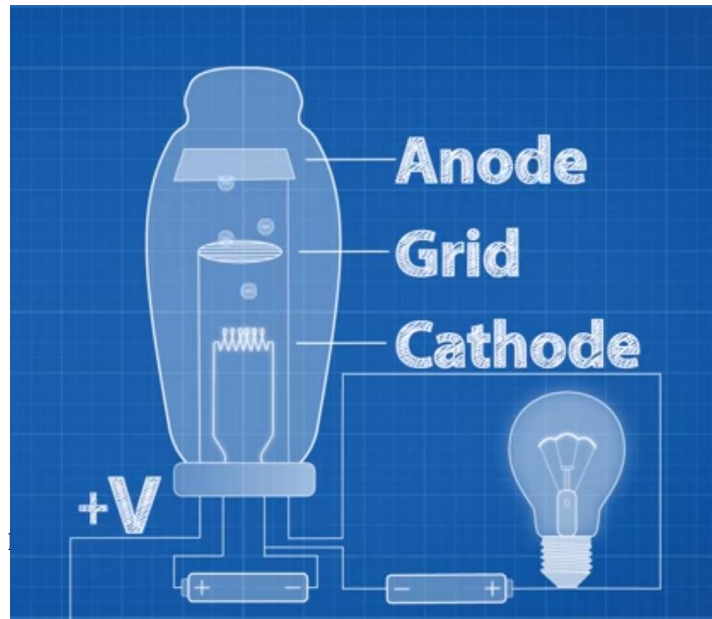
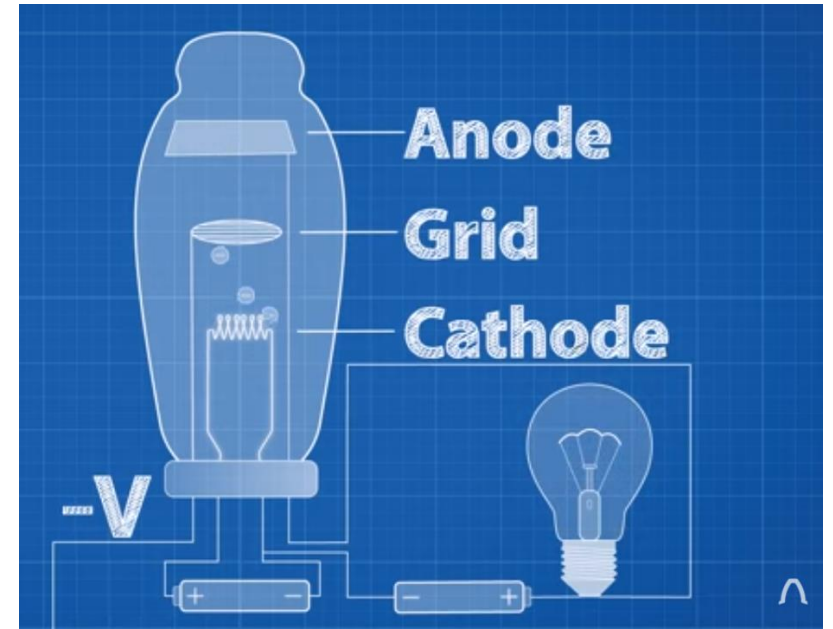
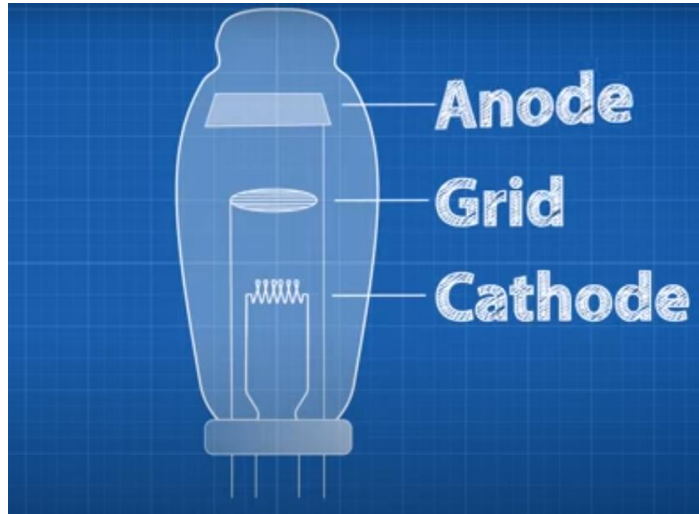


Binary!





BJT-History

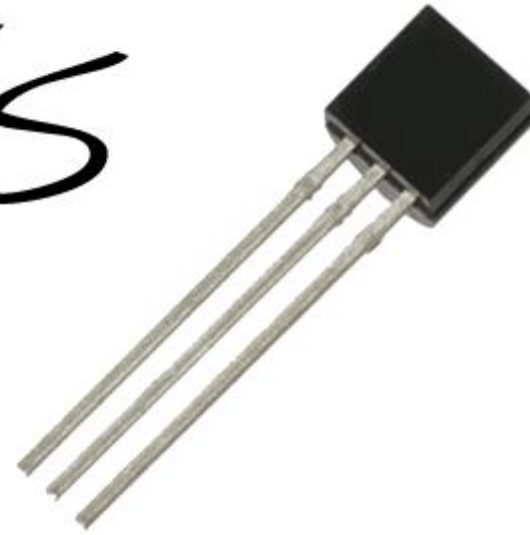




Vaccum tube to BJT

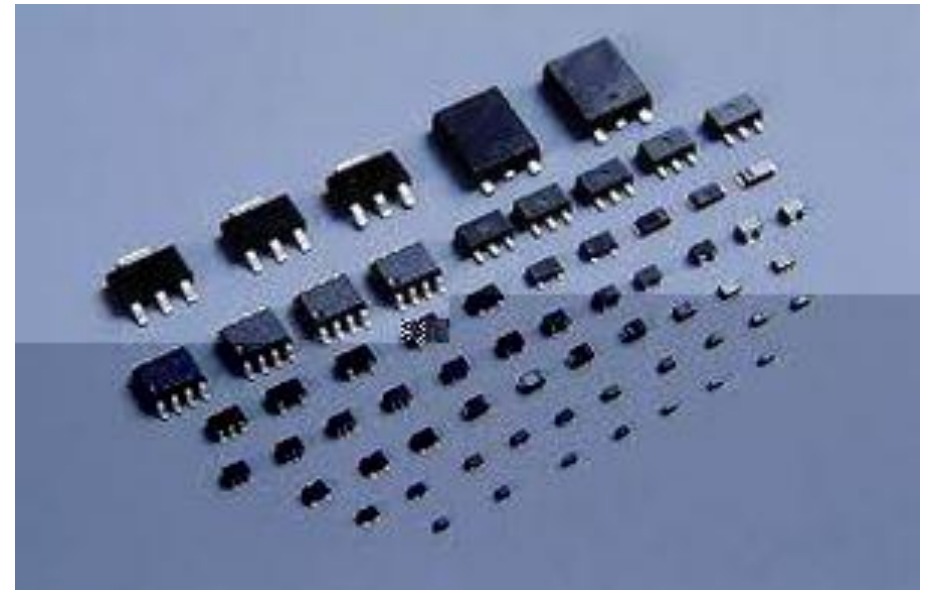
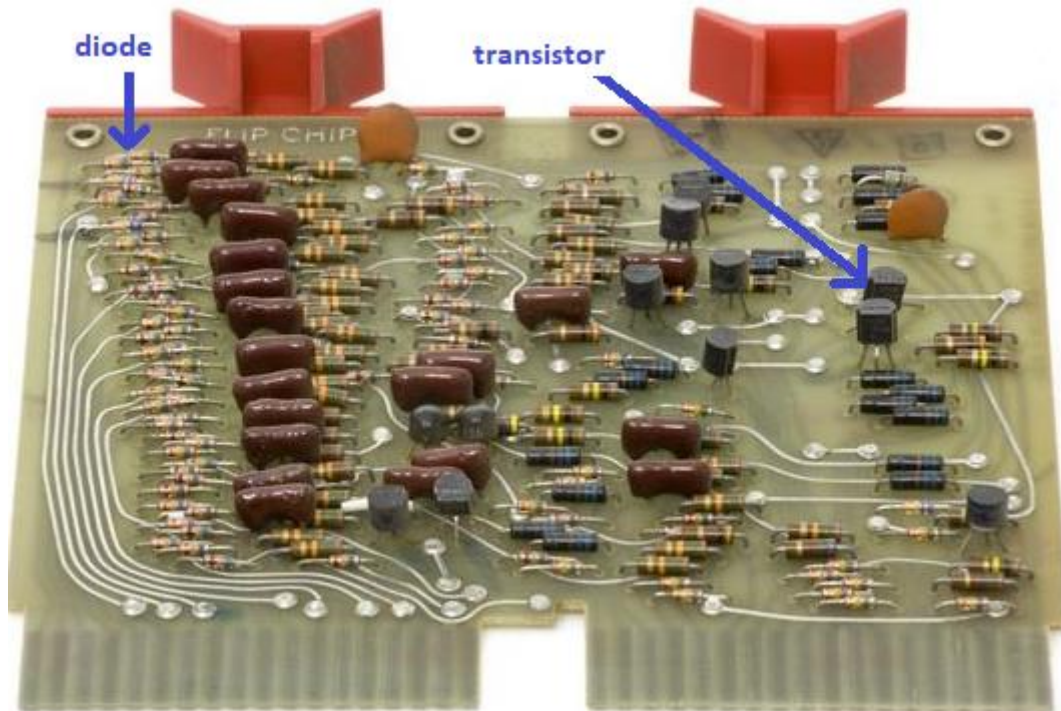


VS





BJT-History

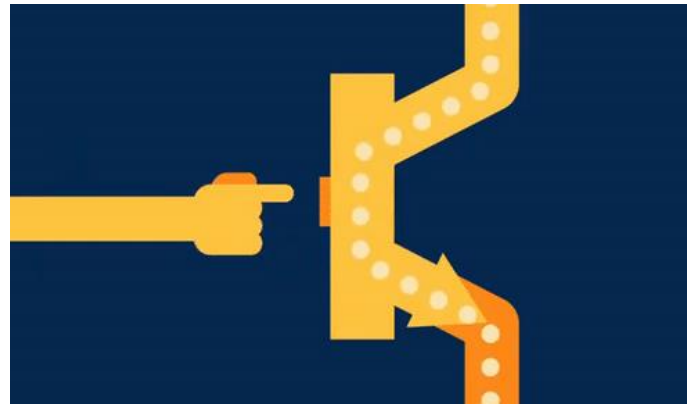




BJT

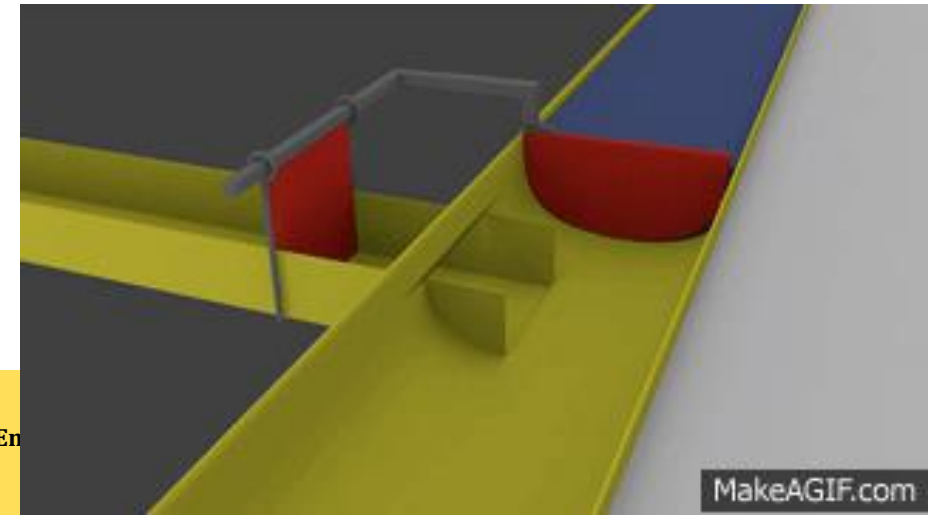
A **transistor** is a semiconductor device used to amplify or switch **electronic signals** and **electrical power**.

3 Terminal Device



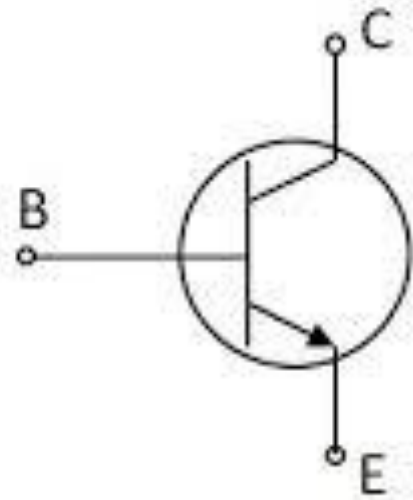
3 layer Device

2 Junction Device





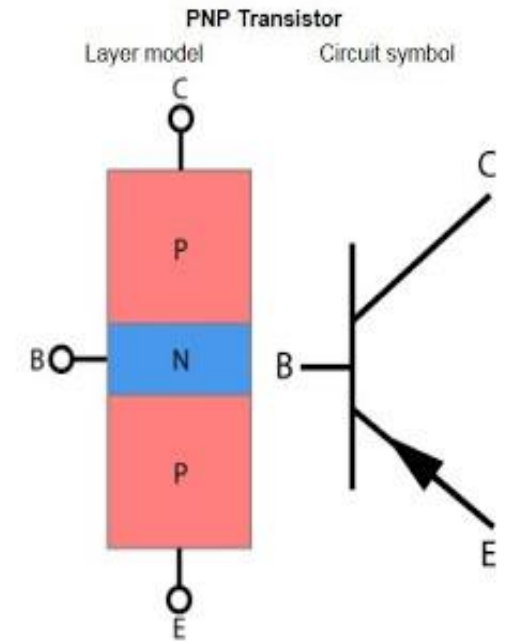
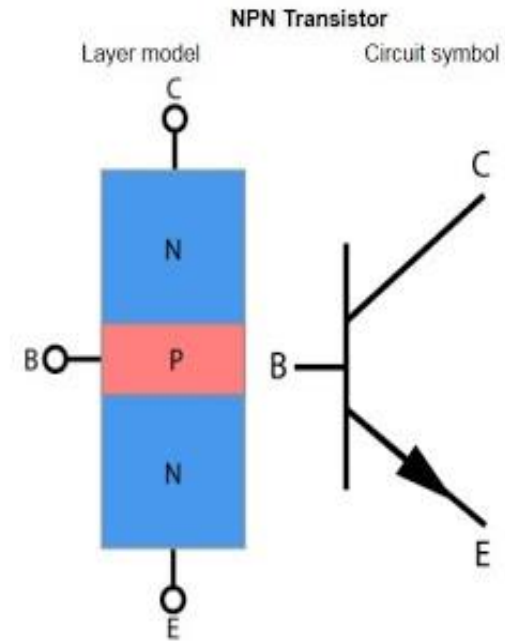
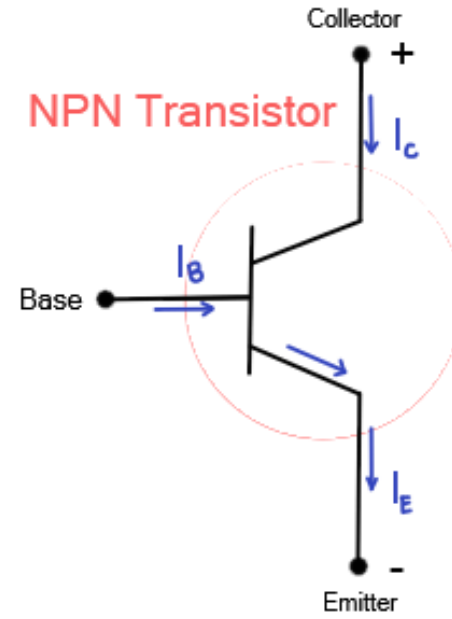
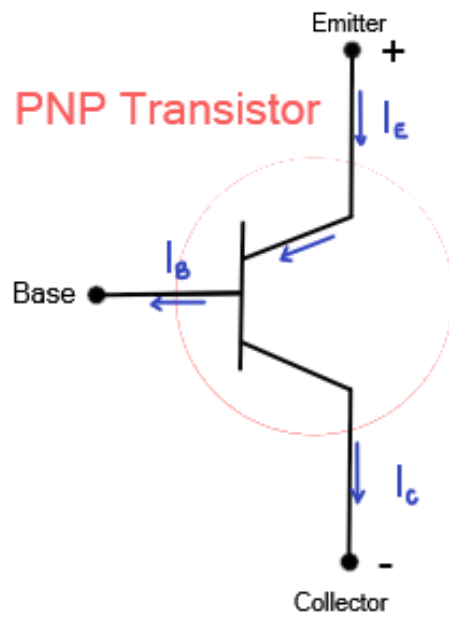
BJT- Basics





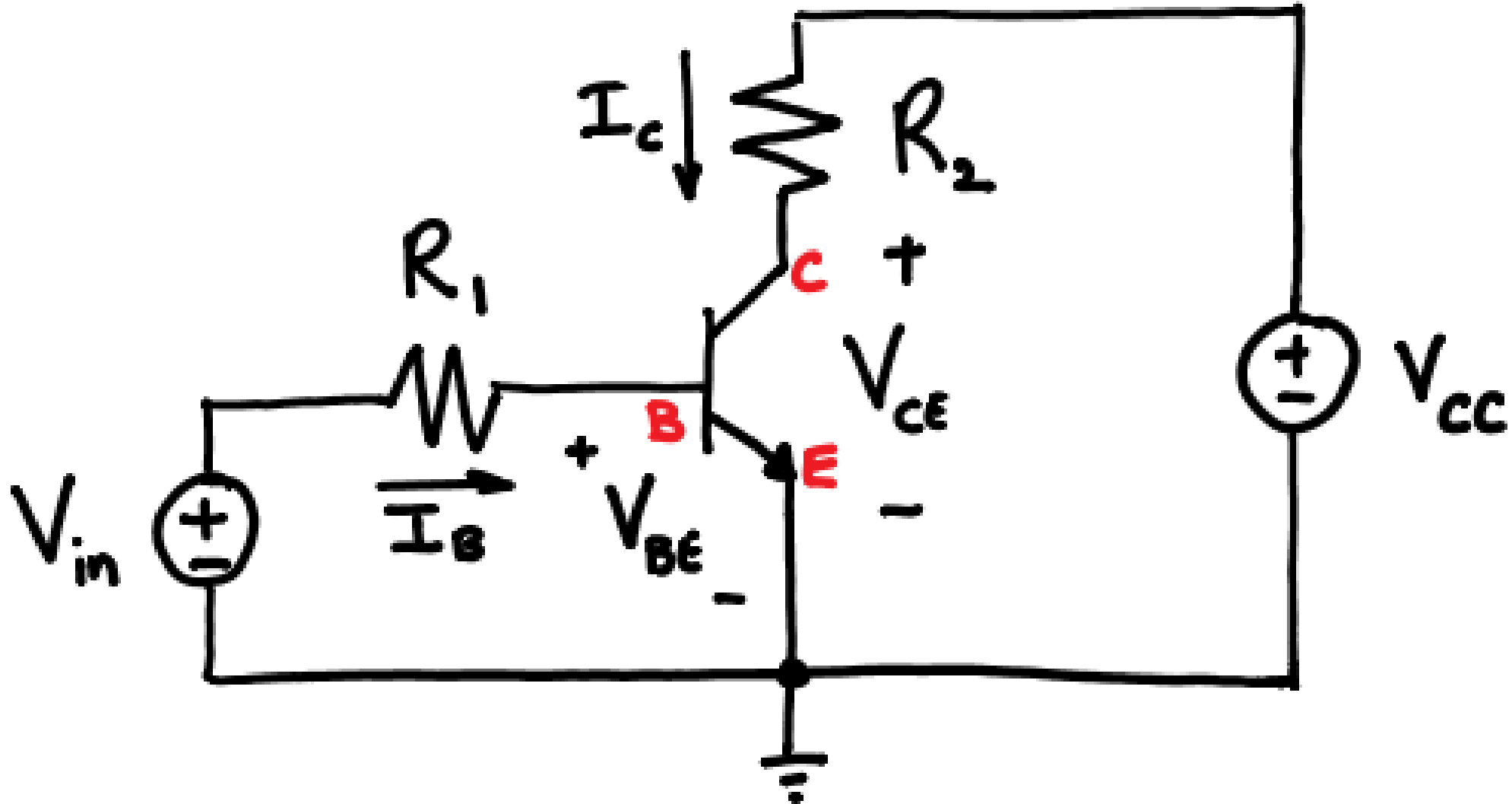
SYMBOL

Layer



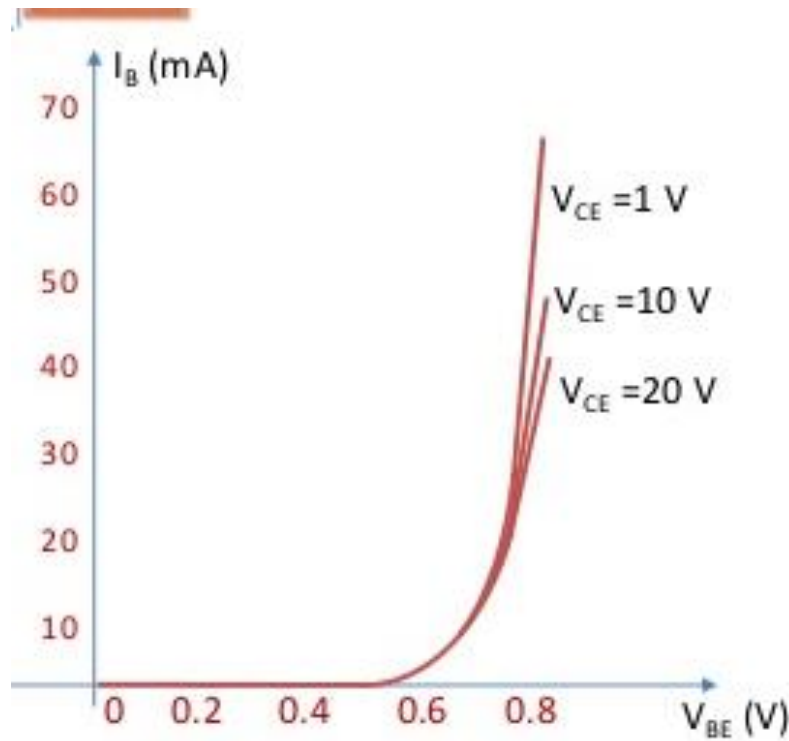


CIRCUIT DIAGRAM

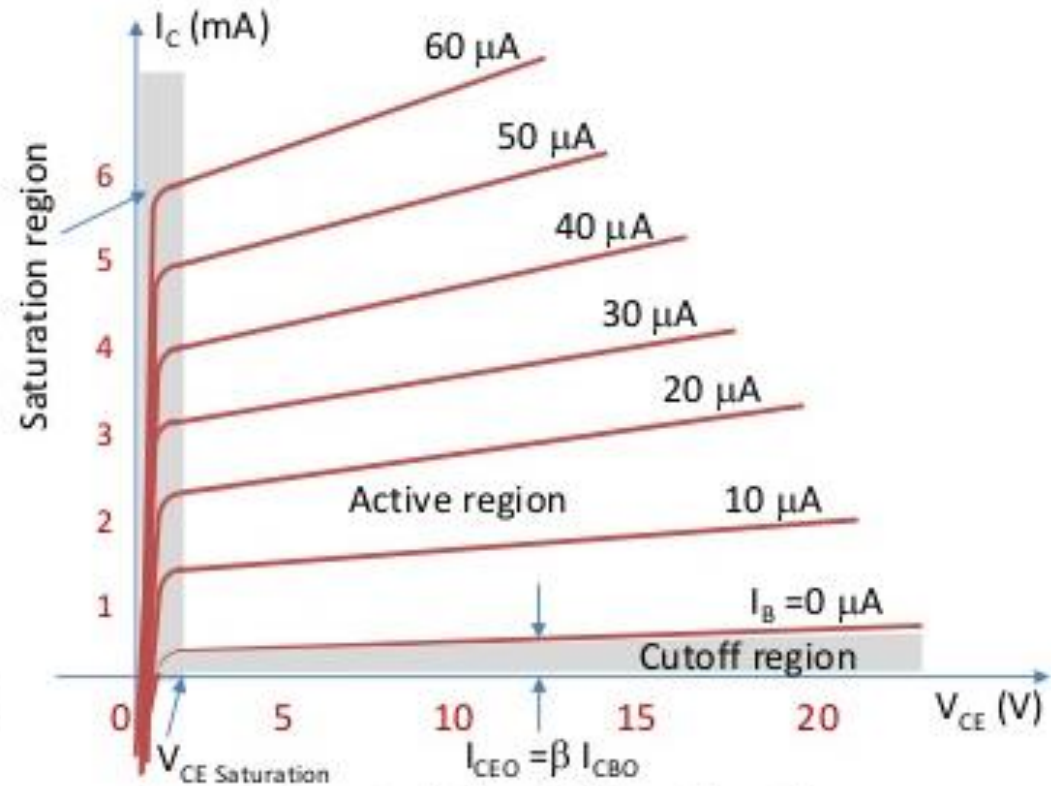




CHARACTERISTIC DIAGRAM



Input characteristics of CE configuration



Output characteristics of CE configuration



Advantages of Transistor:

- Lower cost and smaller in size, especially in small-signal circuits.
- Low operating voltages for greater safety, lower costs.
- Extremely long life.
- No power consumption by a cathode heater.
- Fast switching



Applications

- Daily Life Applications
 - Smart Phones
 - Processors
 - CPU, DSP, Controllers
 - Computers
 - Commercial Electronics
 - Medicine

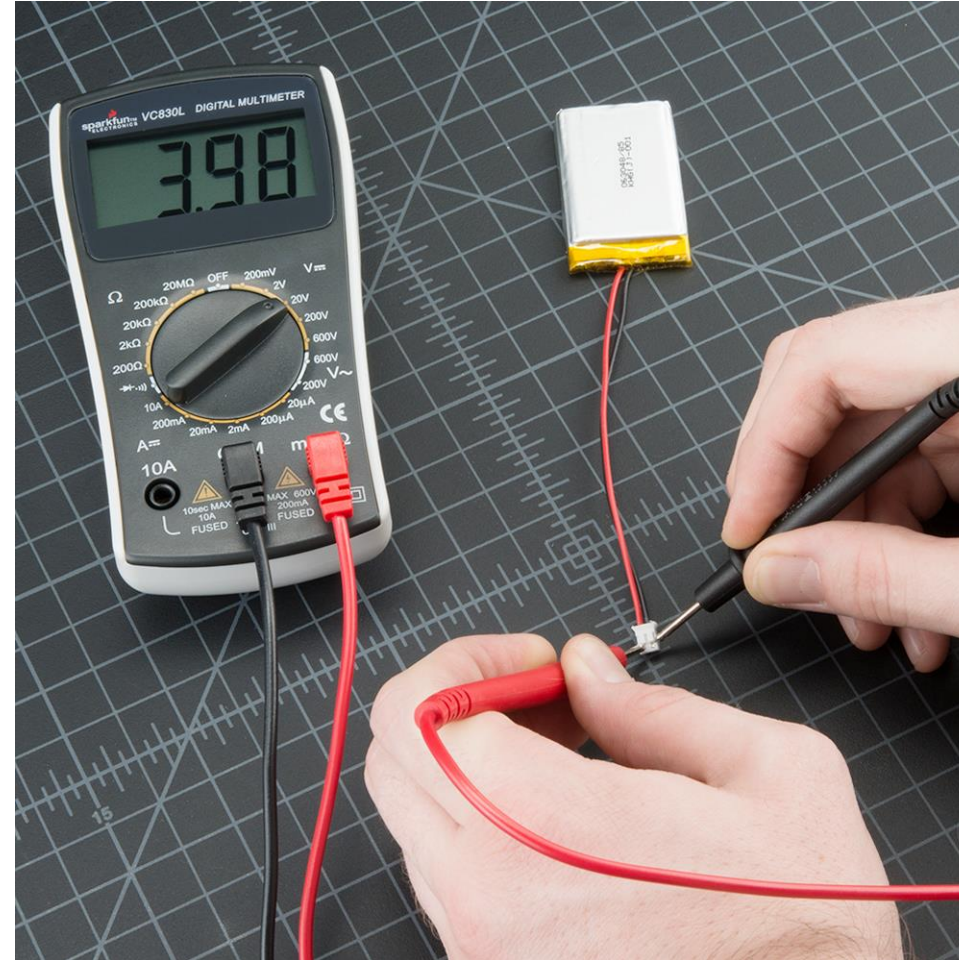
 - Memory chips
 - RAM, ROM, EEPROM
 - Analog
 - Mobile communication, audio/video processing
 - Programmable
 - PLA, FPGA
 - Embedded systems
 - Used in cars, factories
 - Network cards
 - System-on-chip (SoC)





ASSIGNMENT

Test a transistor(Both NPN, PNP) with a multimeter.





References

1. https://www.electronics-tutorials.ws/transistor/tran_1.html
2. <https://components101.com/articles/understanding-bjt-transistor-and-how-to-use-it-in-your-circuit-designs>
3. <https://www.electrical4u.com/bipolar-junction-transistor-or-bjt-n-p-n-or-p-n-p-transistor/>
4. <https://www.youtube.com/watch?v=-VwPSDQmdjM>
5. <https://www.youtube.com/watch?v=7ukDKVHnac4>

