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

19MCB302– INDUSTRIAL ELECTRONCIS & APPLICATION

III YEAR V SEM

UNIT 1 – INTRODUCTION TO POWER ELECTRONICS

TOPIC –BJT

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BJT-History

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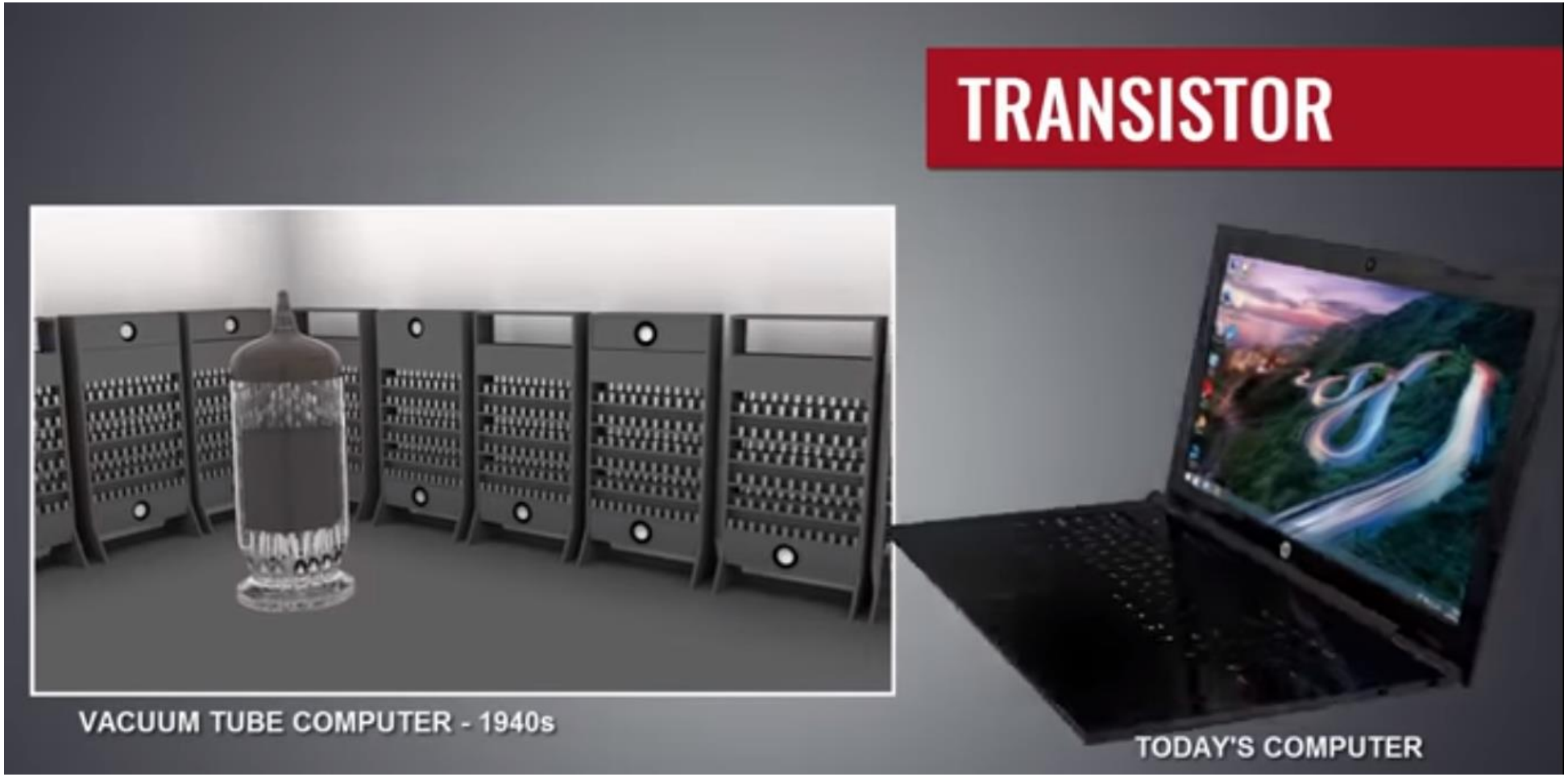
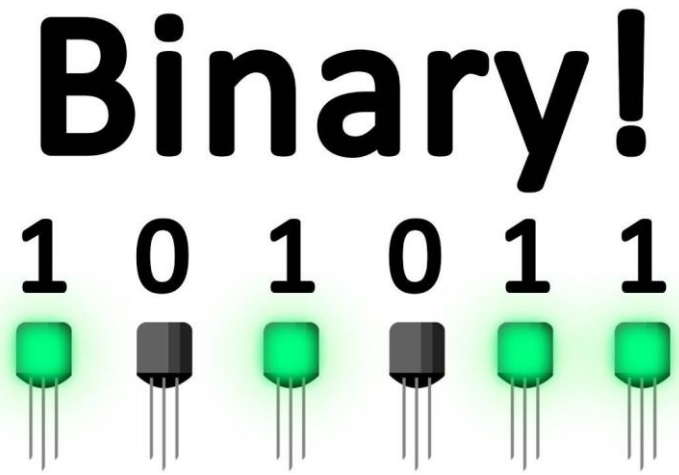
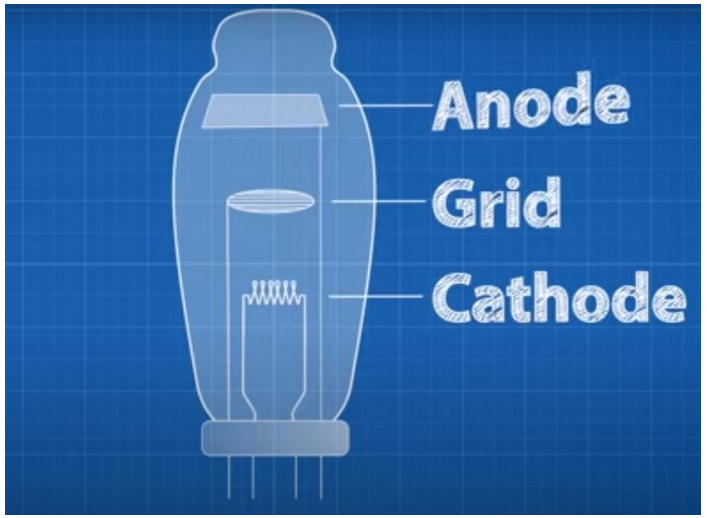
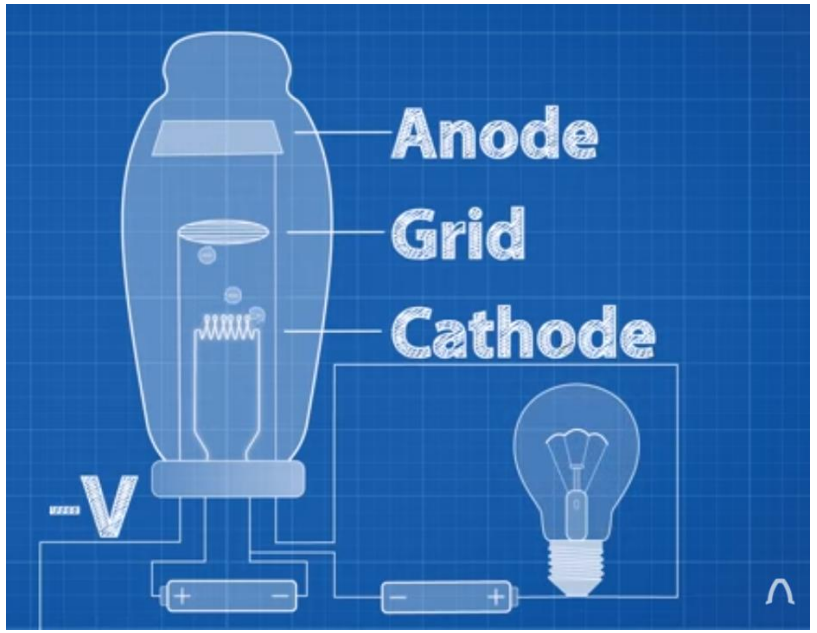


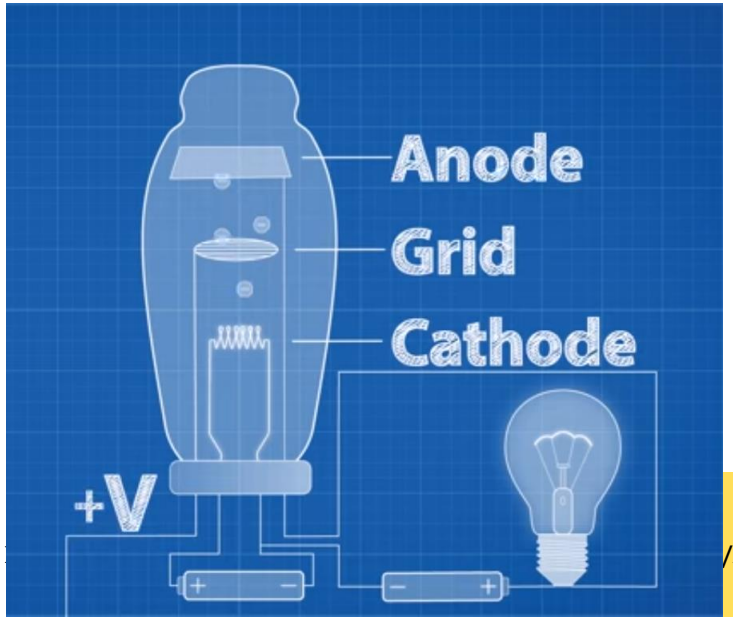
BJT-History



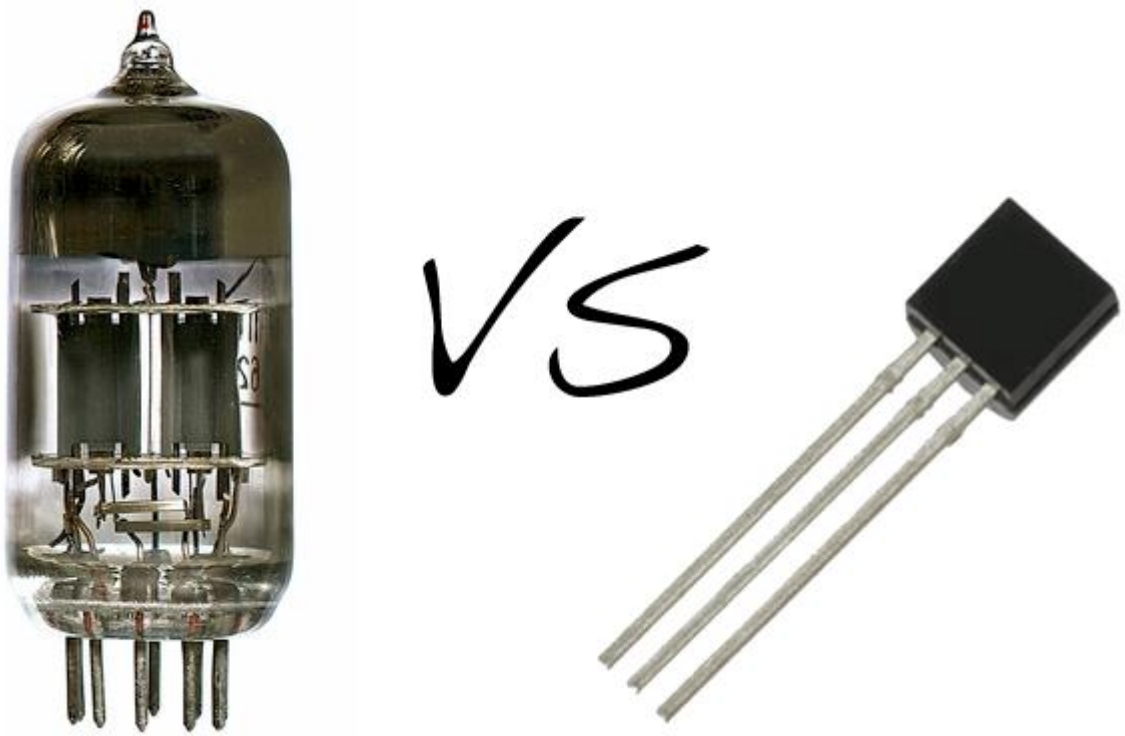
BJT-History


Anode
Grid
Cathode

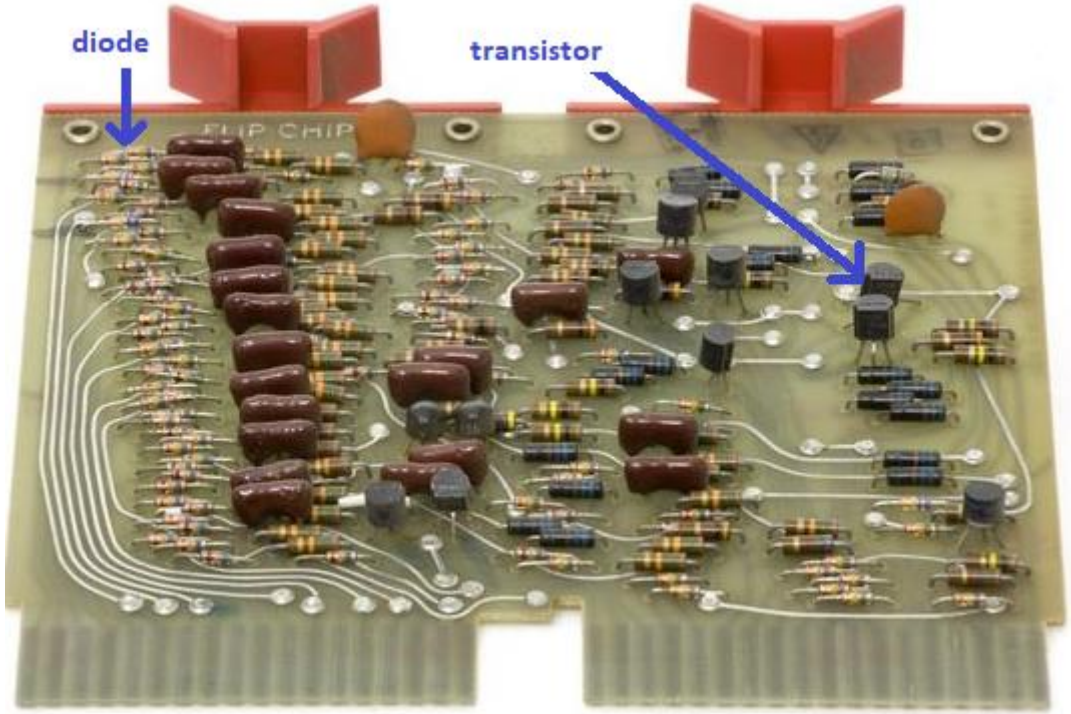

Anode
Grid
Cathode
-V

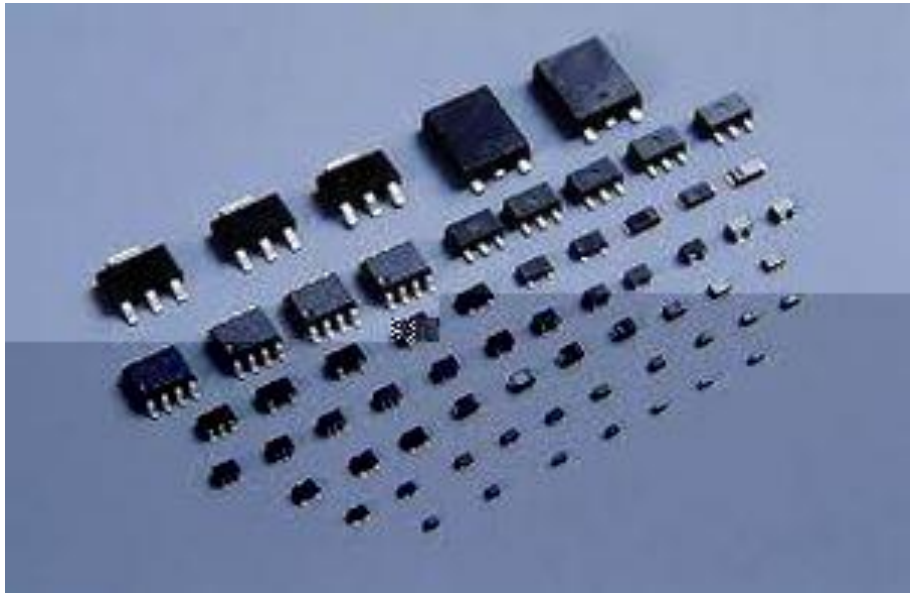

Anode
Grid
Cathode
+V

Vaccum tube to BJT



BJT-History





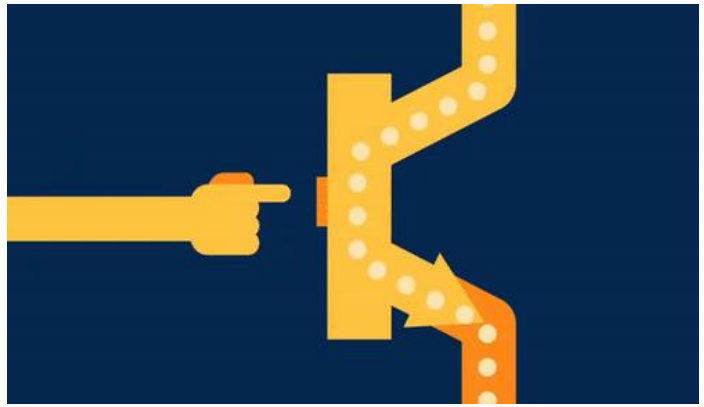
BJT

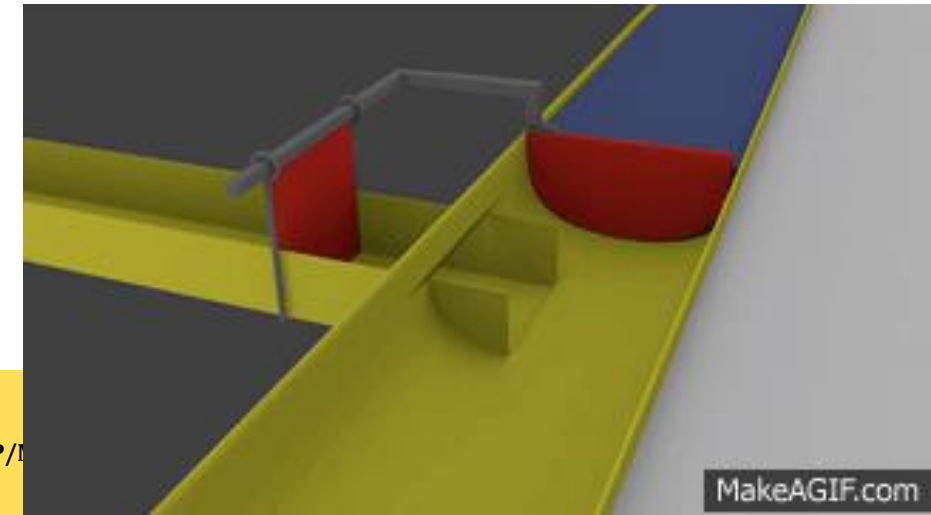
A **transistor** is a semiconductor device used to amplify or switch ***electronic signals*** and ***electrical power***.

3 Terminal Device

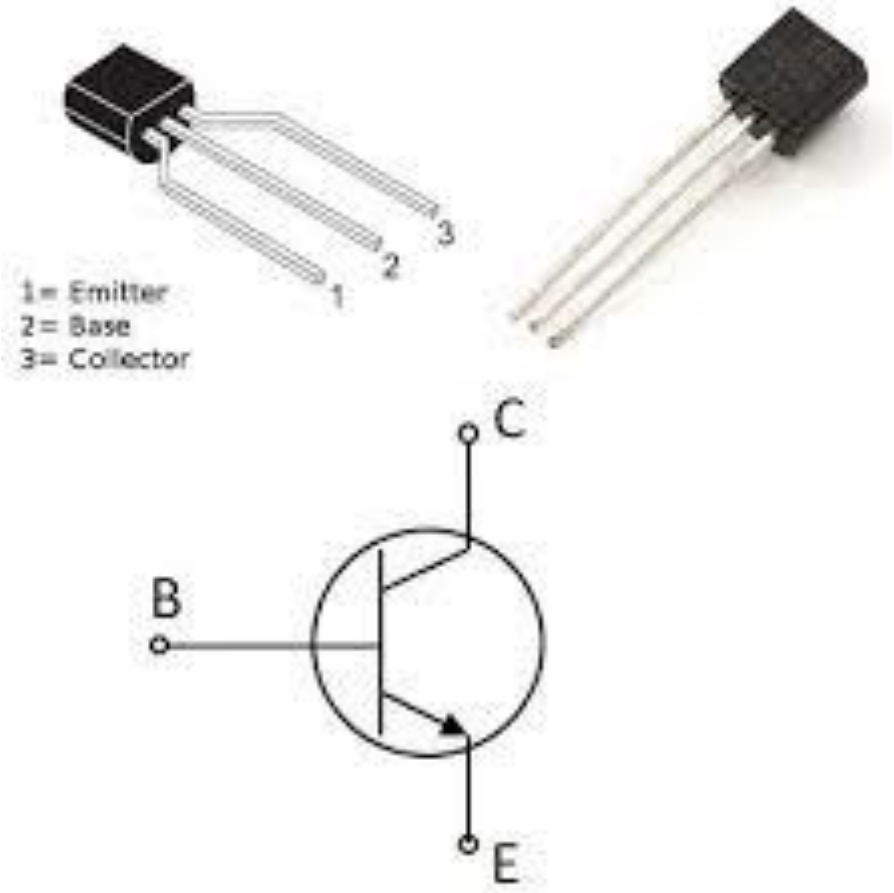
3 layer Device

2 Junction Device

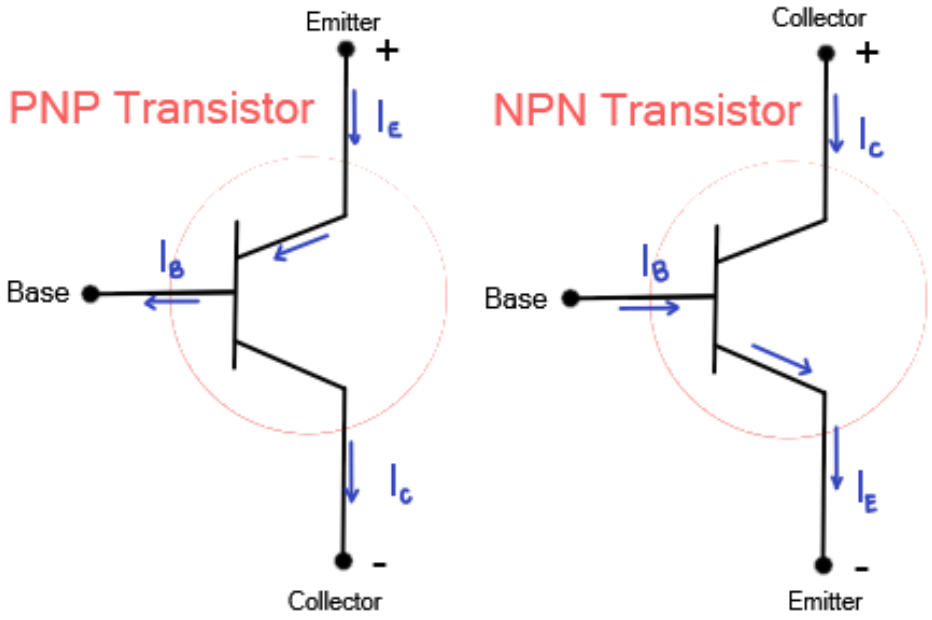




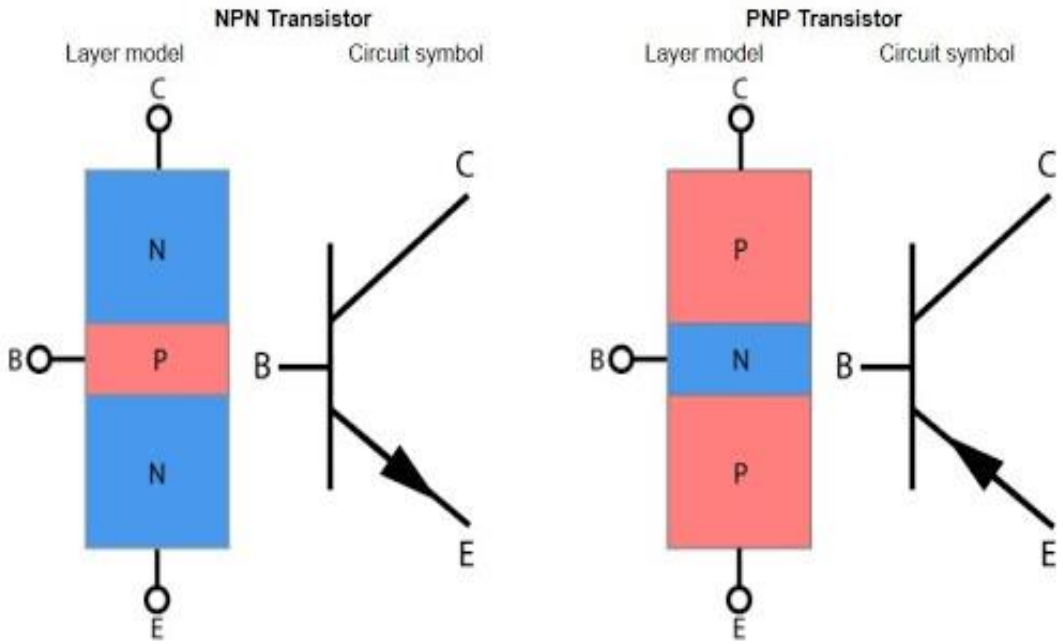
BJT- Basics



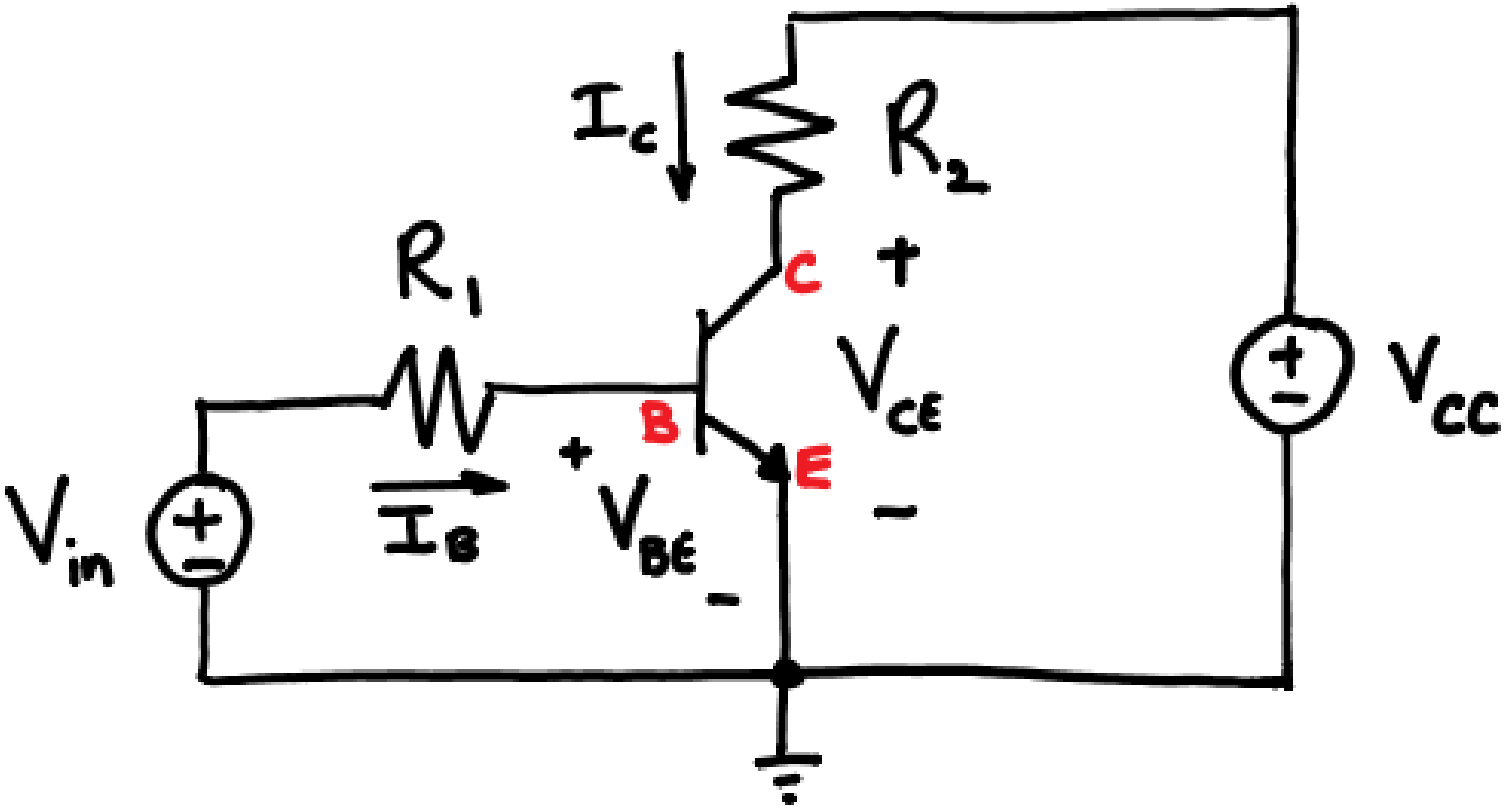
SYMBOL



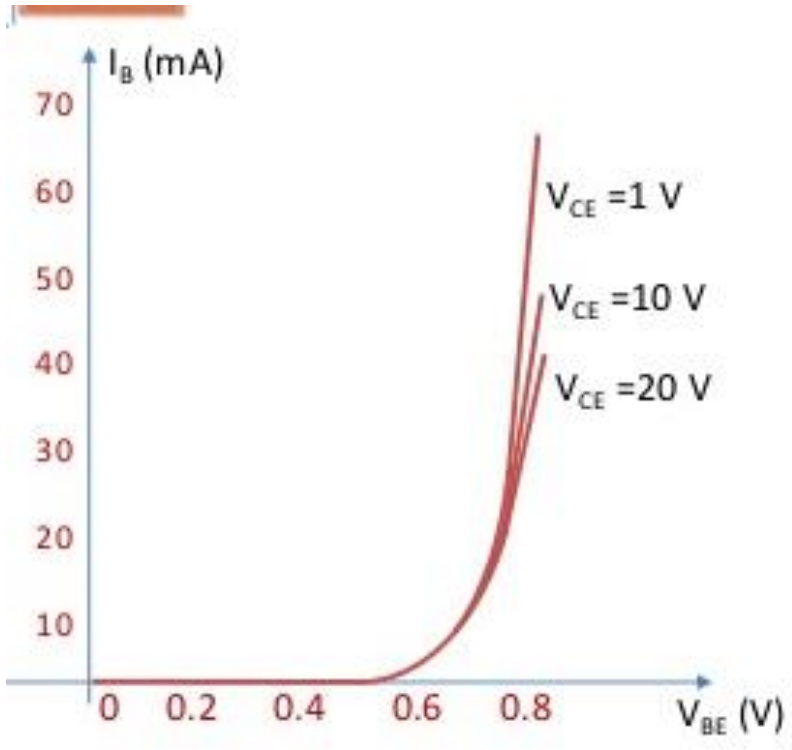
Layer



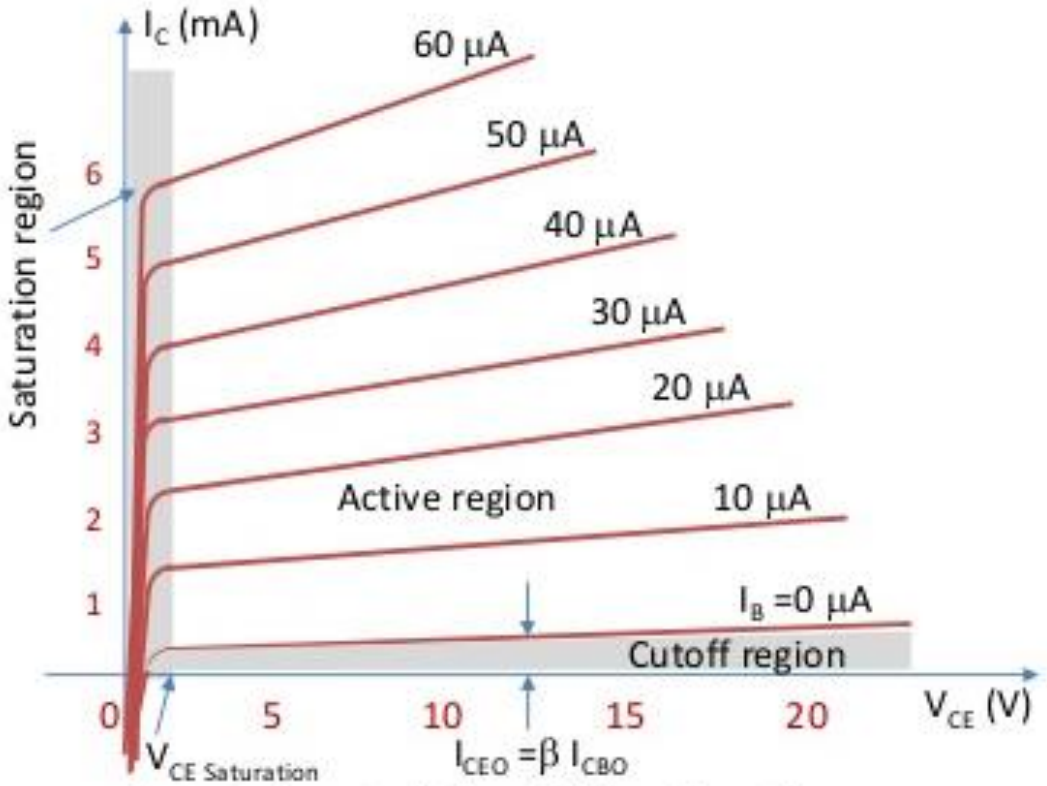
CIRCUIT DIAGRAM



CHARACTERISTIC DIAGRAM



Input characteristics of CE configuration



Output characteristics of CE configuration

Advantages of Transistor:

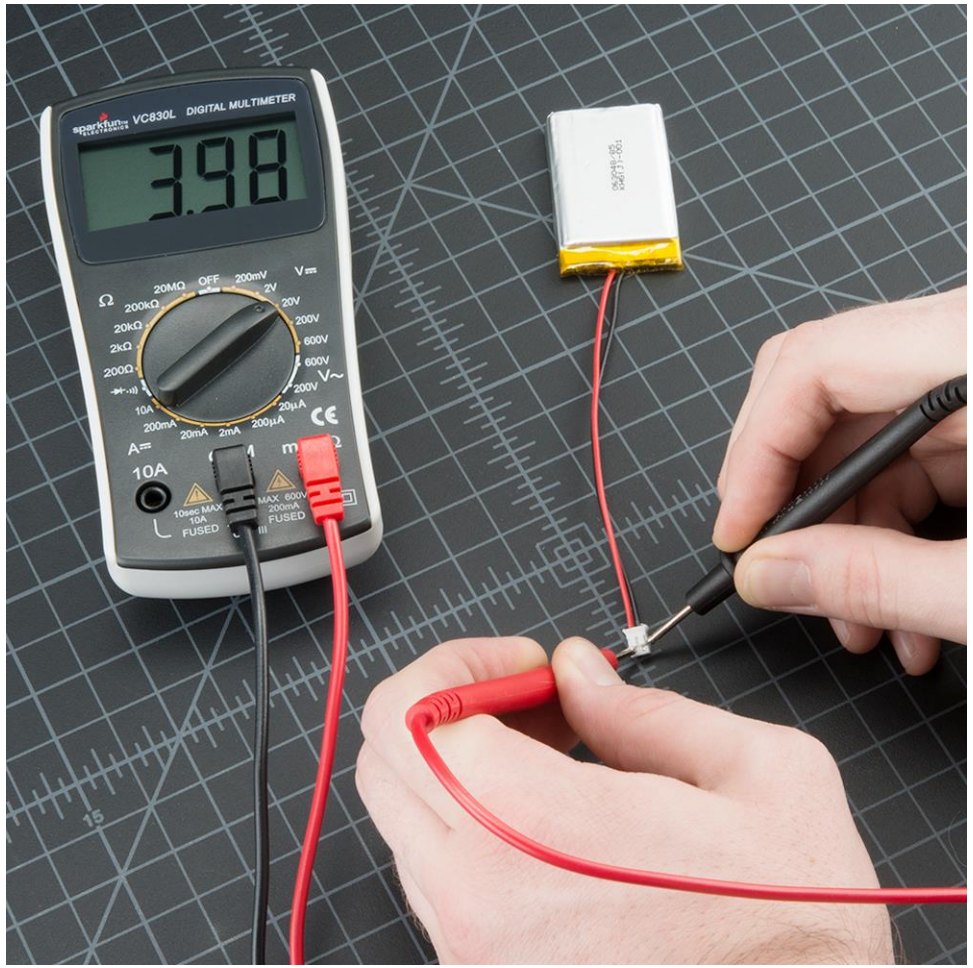
- Lower cost and smaller in size, especially in small-signal circuits.
- Low operating voltages for greater safety, lower costs.
- Extremely long life.
- No power consumption by a cathode heater.
- Fast switching

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

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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