



**GANDHI SCHOOL OF
ENGINEERING, BHABANDHA, BERHAMPUR**

TEACHING AND LEARNING MATERIAL

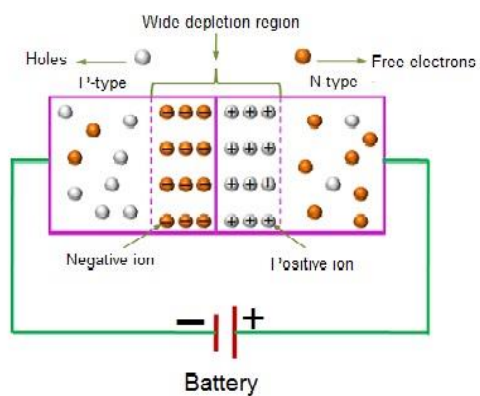
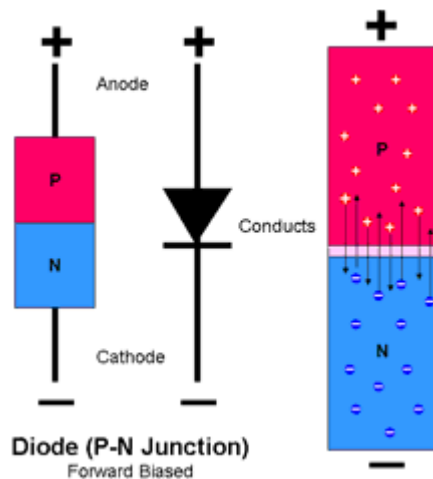
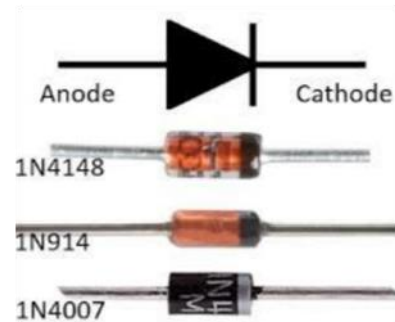
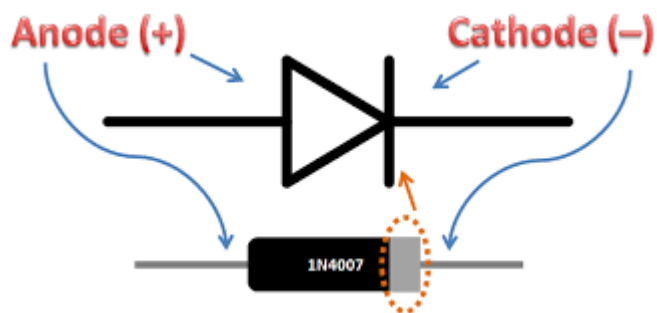
**SUBJECT: ANALOG ELECTRONICS &
OP-AMP
SEMESTER: 4TH**

SUBMITTED BY:-

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Unit-1: DIODE, TRANSISTORS AND CIRCUITS

DIODE



ZENER DIODE

What is a ZENER DIODE?

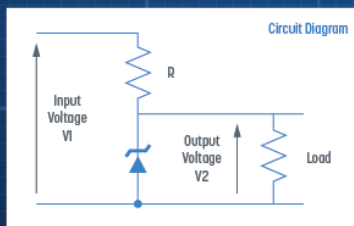
A **Zener diode** is designed to have a specific breakdown voltage, so that it will conduct current in reverse when the cathode reaches its threshold voltage. The breakdown voltage can be as low as 2.4V to as high as 1kV.

Applications

Some common uses for Zener diodes in circuits:

- Voltage regulation
- As a voltage reference
- Surge suppressors
- Switching signals
- Clipping waveforms

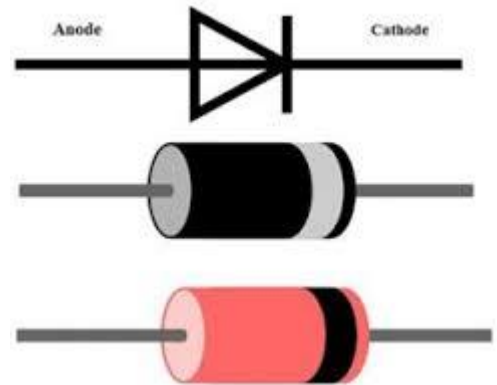
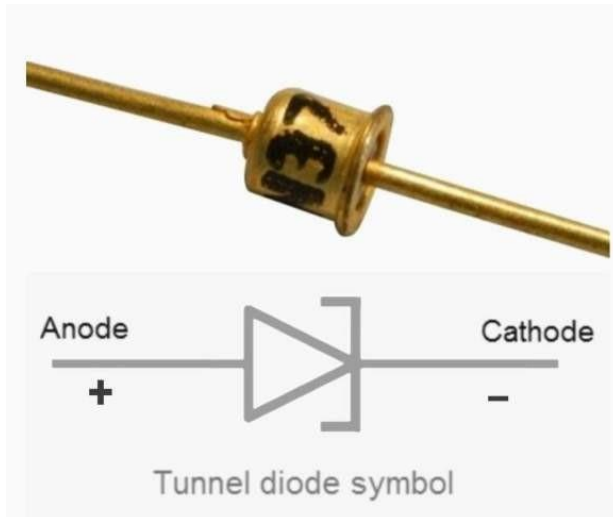
Cathode: The cathode is typically connected to a positive voltage. The zener diode will not conduct electricity from cathode to anode until the breakdown voltage is reached.



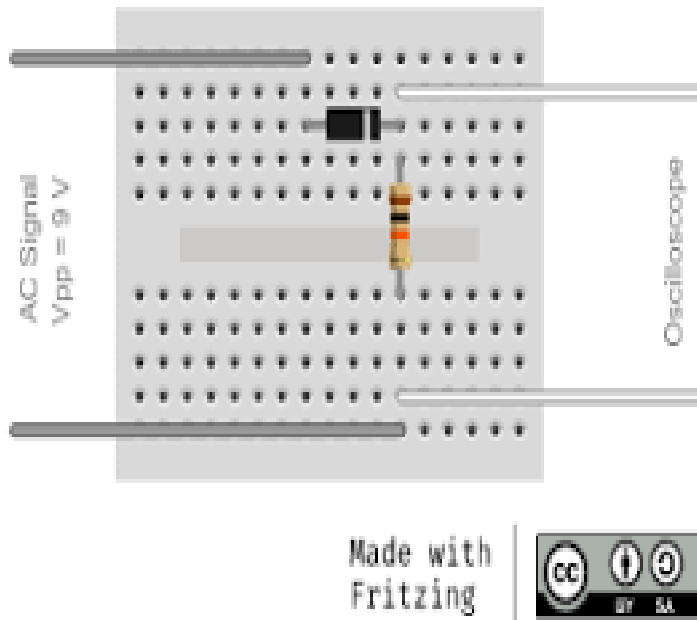
Anode: The anode is typically connected to ground. If a positive voltage is applied to the anode, it will conduct like a regular diode.

Zener Diode

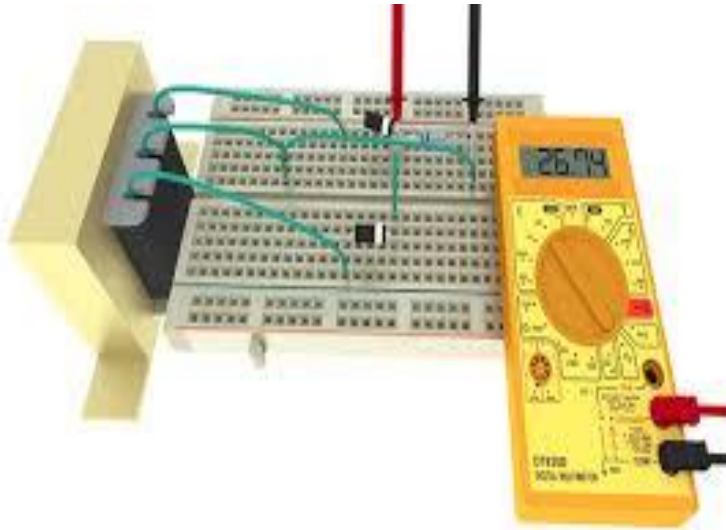




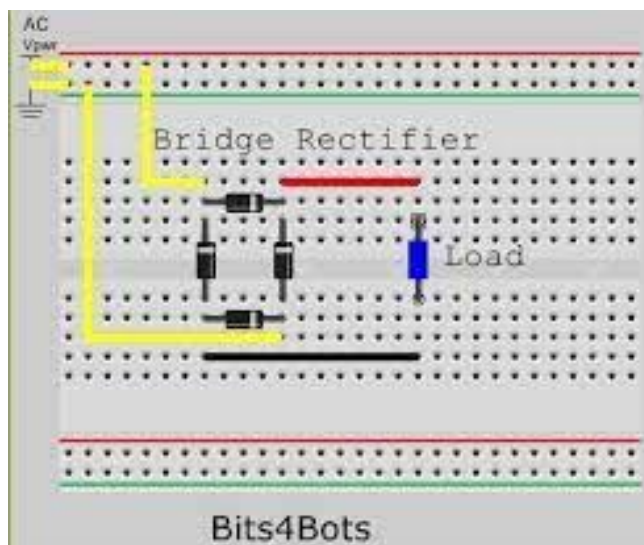
HALF WAVE RECTIFIER



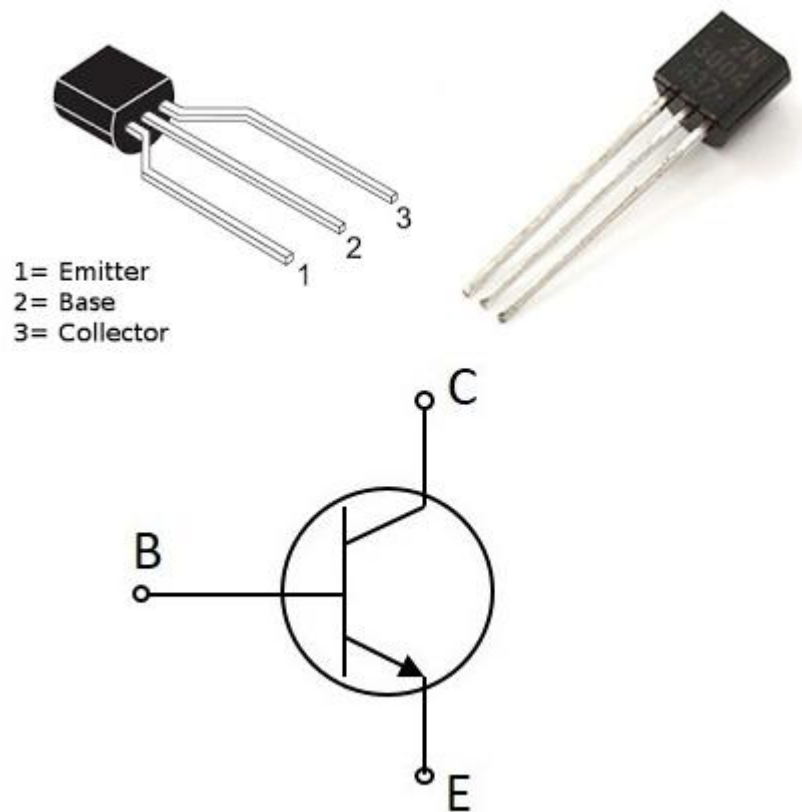
CENTRE TAP FULL WAVE RECTIFIER



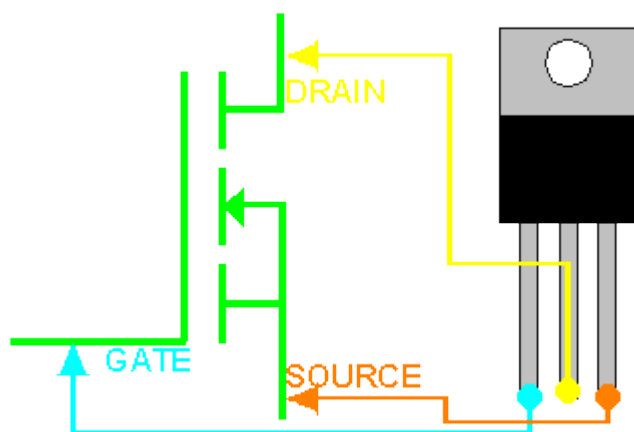
FULL WAVE BRIDGE RECTIFIER



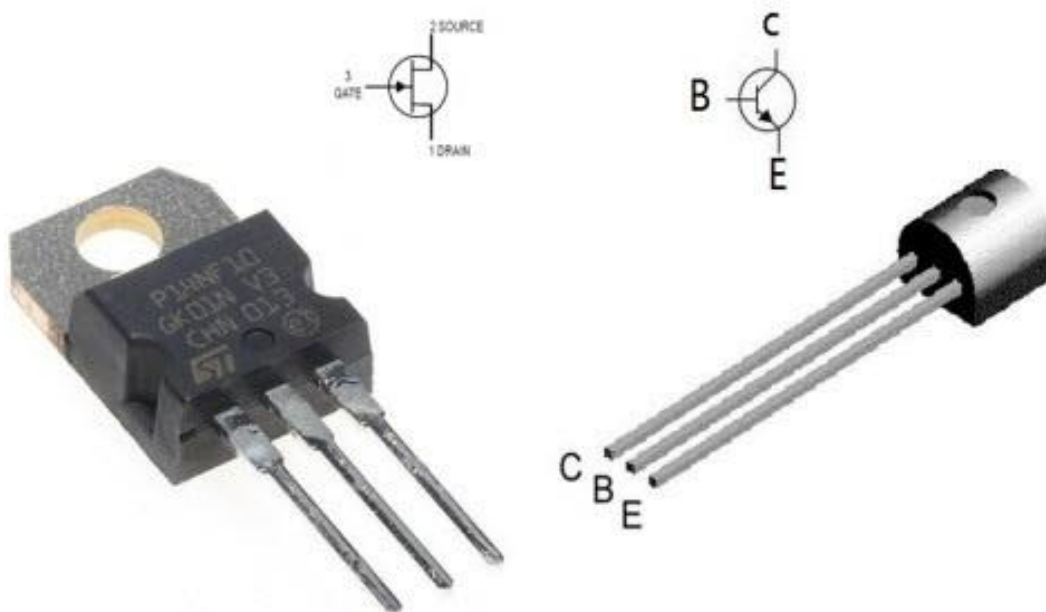
BJT



FET



BJT V/S FET



OPAMP

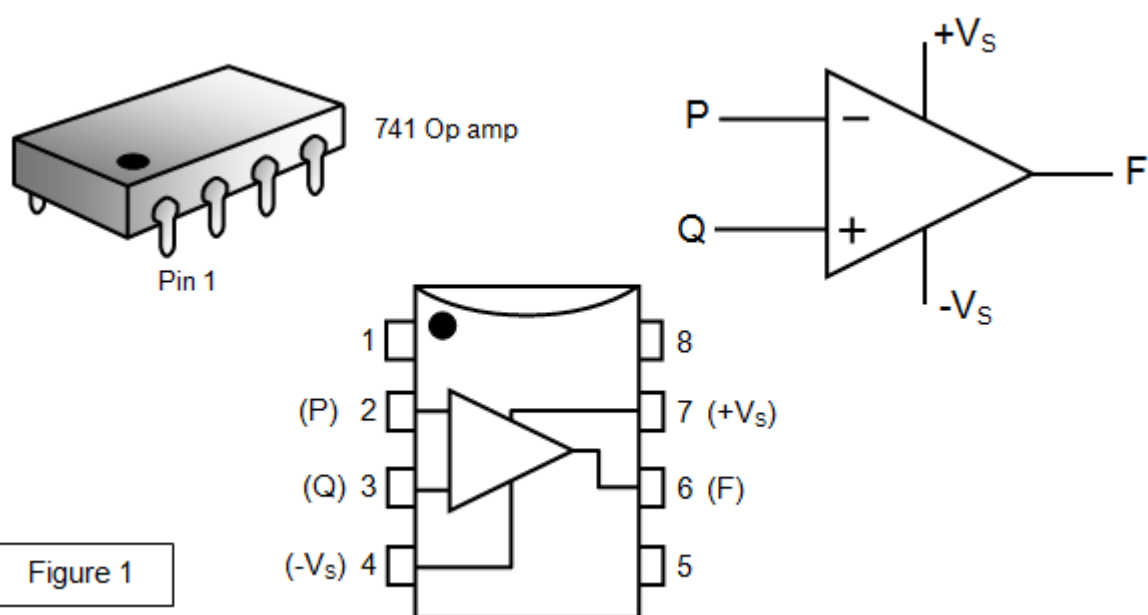


Figure 1



OUT 1

IN 1 (-)

IN 1 (+)

GND

1

2

3

4



8 Vcc

7 OUT 2

6 IN 2 (-)

5 IN 2 (+)