

PN JUNCTION DIODE AND ITS BIASING

PRESENTED BY

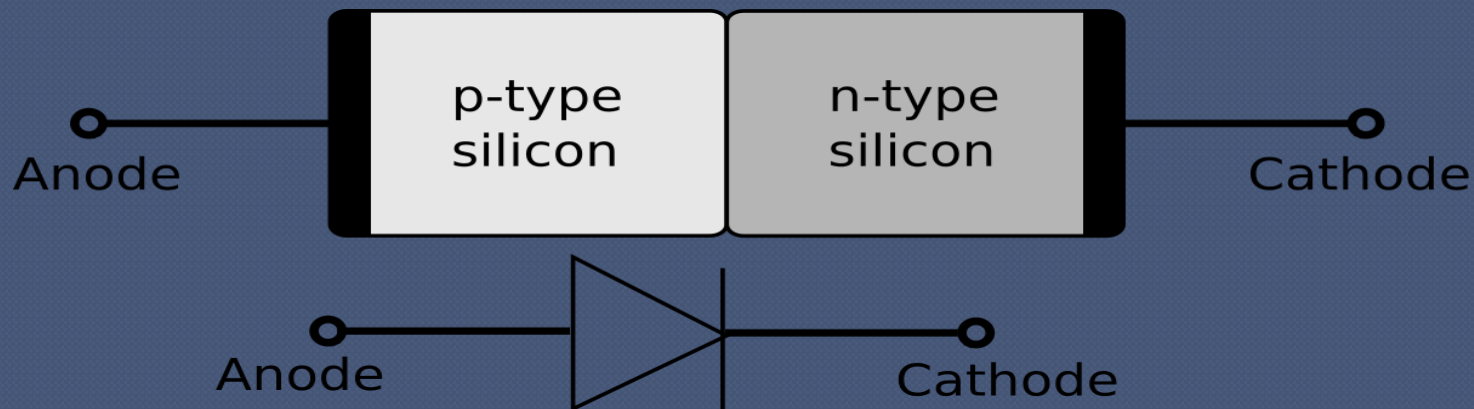
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PN JUNCTION DIODE

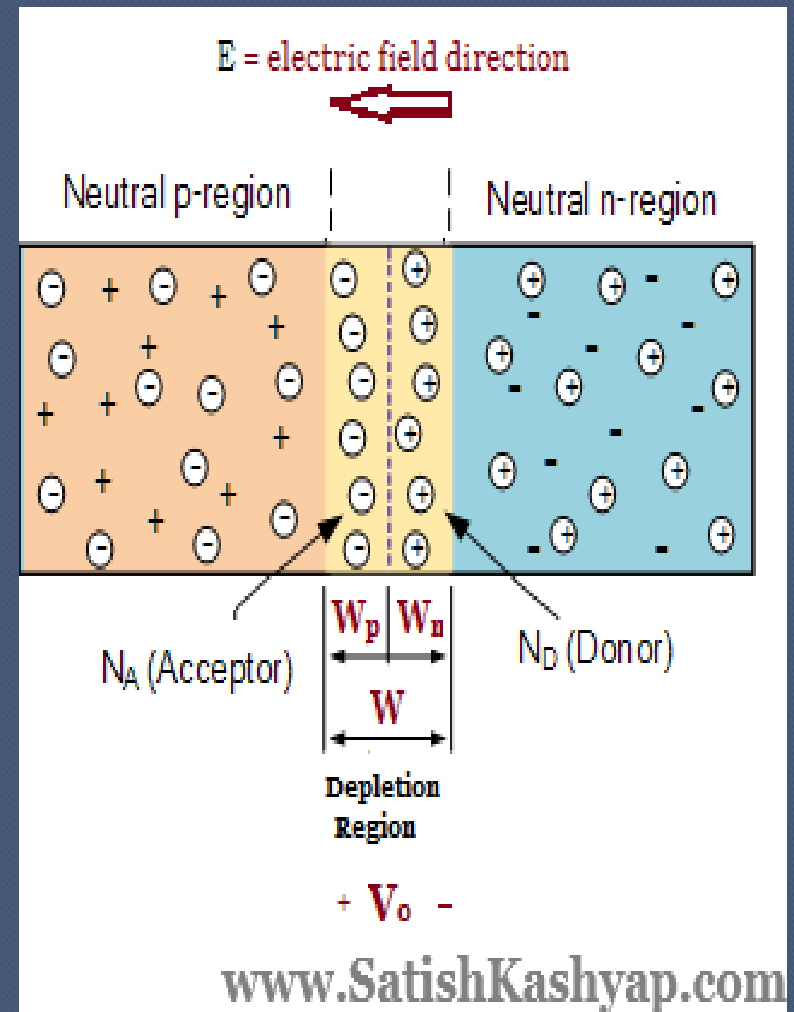
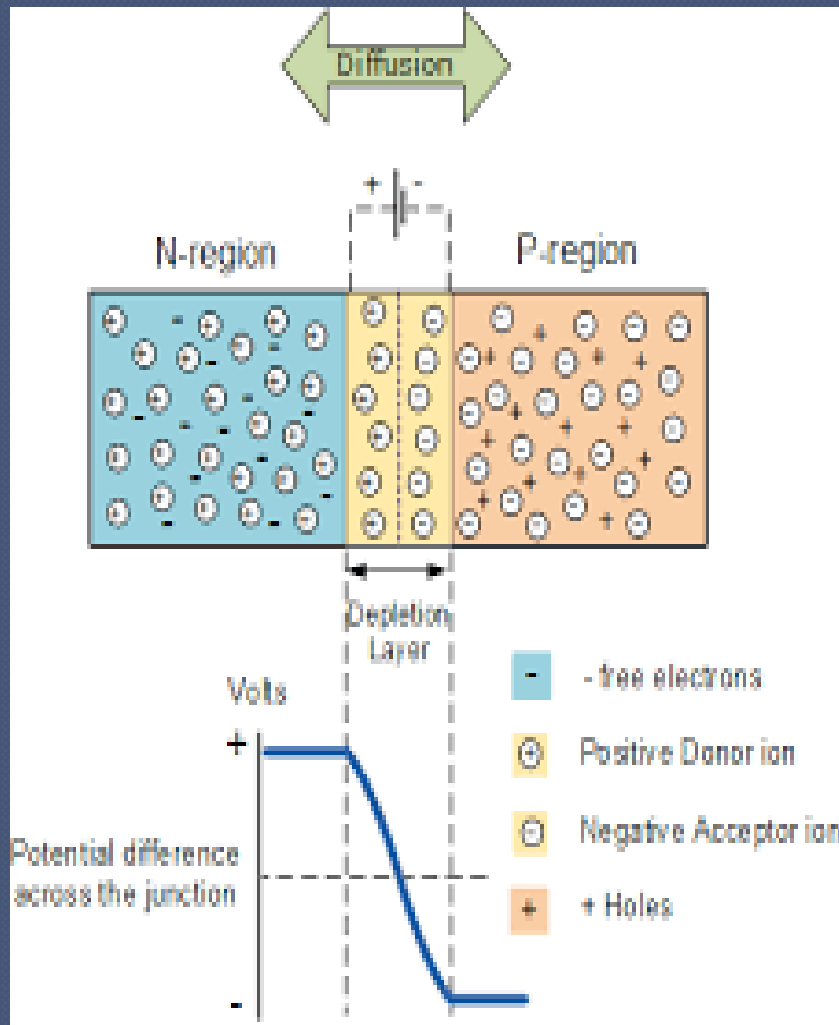
- A p-n junction diode is two-terminal or two-electrode semiconductor device, which allows the electric current in only one direction while blocks the electric current in opposite or reverse direction.



FORMATION

- ◉ When a p -type semiconductor is suitably joined to n -type semiconductor the contact surface is called pn junction.
- ◉ Since the n -type region has a high electron concentration and the p -type a high hole concentration, electrons diffuse from the n -type side to the p -type side.
- ◉ Similarly, holes flow by diffusion from the p -type side to the n -type side.
- ◉ If the electrons and holes were not charged, this diffusion process would continue until the concentration of electrons and holes on the two sides were the same.
- ◉ As the process goes on there is formation of depletion layer as given in the figure.

Depletion layer & electric potential



Biasing a pn junction

FORWARD BIASING

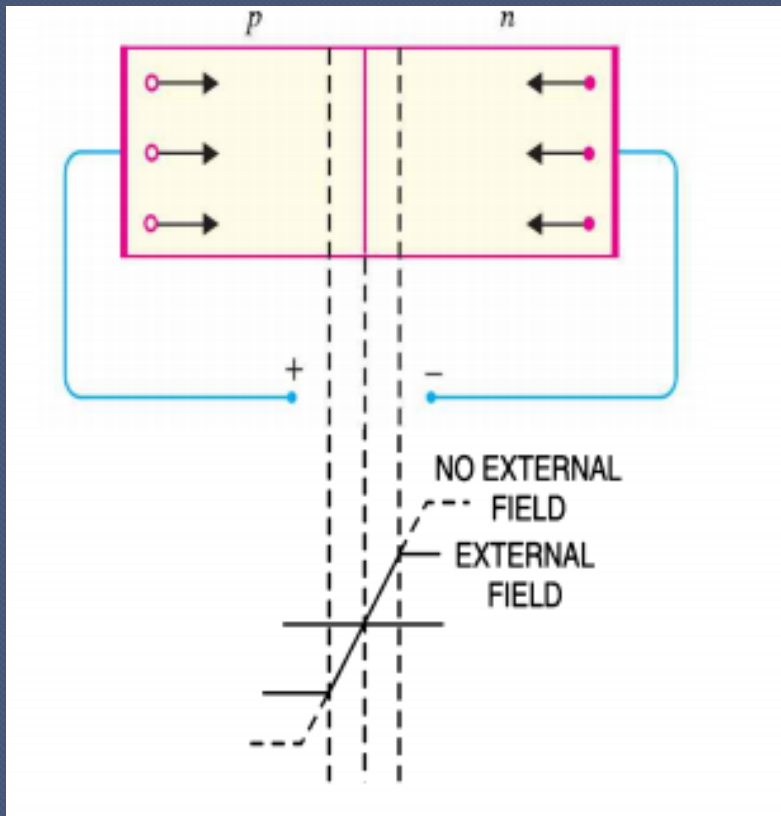
- When external dc voltage applied to the junction is in such a direction that it cancels the potential barrier, thus permitting the current flow, it is called forward biasing.
- The magnitude of current depends upon the applied forward voltage.

REVERSE BIASING

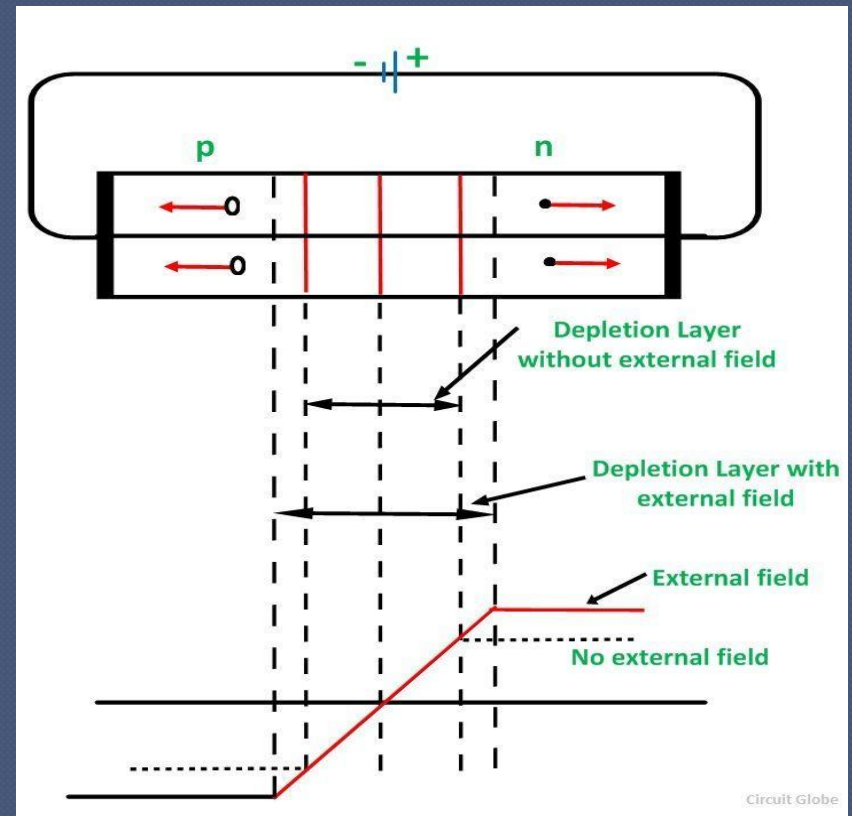
- When external dc voltage applied to the junction is in such a direction that potential barrier is increased, it is called reverse biasing.
- No current flows in the circuit due to the establishment of high resistance path.

Resultant barrier height

FORWARD BIASING



REVERSE BIASING



IN NEXT CLASSES

- ◉ STUDY OF CHARACTERISTICS OF PN JUNCTION DIODE
- ◉ ADVANTAGES & DISADVANTAGES
- ◉ APPLICATIONS OF PN JUNCTION DIODE

THANK YOU