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Introduction to Diode

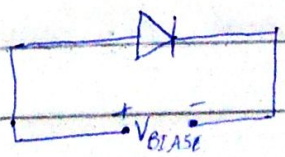
Diode is an electronic device which allows current to flow in one direction (during forward bias) and block in other direction (during reverse bias).

A diode is made from a small piece of semiconductor materials, usually silicon in which half is doped as a p region and half is doped as n- region with a pn junction and depletion region in between. The p region is called anode and n region is called cathode. The symbol of diode is:

Forward Bias:

Forward bias is the condition that allows current through pn junction. A dc valtage is connected by conductive material across a diode in the direction to produce forward bias. The external valtage is designated as V_{BIAS}.

In forward bias the negative side of V_{BIAS} is connected to the n region of the diode and positive side is connected to the p region. This is one requirement for forward bias. A second requirement is that the bias voltage V_{BIAS} must be greater than barrier potential.



In forward bias, depletion region decrease.

Reverse Bias:

Reverse bias is the condition that essentially prevents current through the diode. A dc voltage source connected across a diode in the direction to produce reverse bias.

The positive side of V_{BIAS} is connected to n region of the diode and the negative side is connected to the p region. The depletion region is much wider than in forward bias.