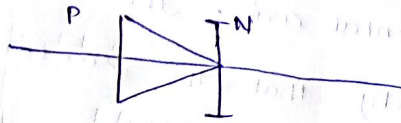


BACKWARD DIODE



Current flows most easily from N to P,

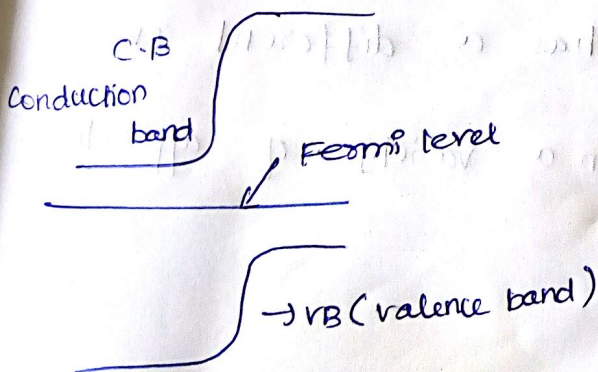
BACKWARD DIODE :

It is a variation on a Zener diode (or) tunnel diode having a better conduction for small reverse biases (for Eg -0.1 to -0.6V) than for Forward Bias voltage.

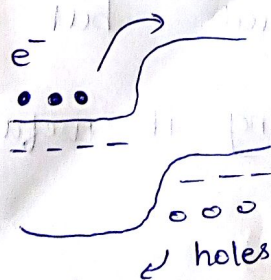
The reverse current in such a diode is by tunneling which is also known as the tunnel effect. (A particle can pass thro' the potential energy barrier that is higher than the energy of the particle.)

CONSTRUCTION

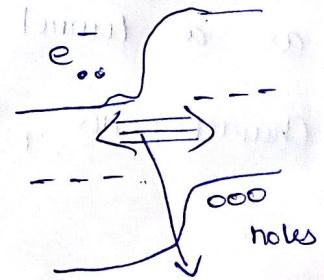
Unbiased



Forward Bias



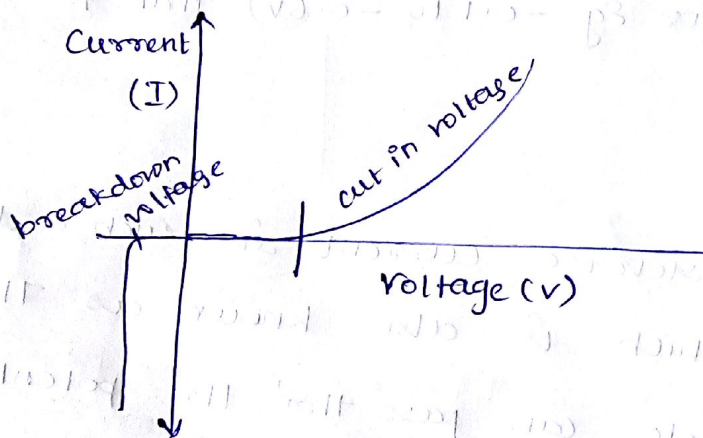
Reverse Bias



Quantum tunneling

Band diagram of a Backward diode, Electron energy is on the vertical axis, position within the device is on the horizontal axis. The Backward diode has the unusual property that the so-called reverse bias direction actually has more current flow than the so-called Forward Bias.

IV characteristic of Backward Diode.



The Backward diode is a form of tunnel diode where 1 side of the Junction is less heavily doped than the other.

The Backward diode uses much the same structure as a tunnel diode but it has a different IV characteristics making it useful in a variety of applications.

when it reaches the cut in voltage. For eg in silicon it is 0.7 V the current increases gradually. Whatever may be the change in voltage, the current remains the same, on further increase of the voltage, the avalanche effect takes place and diode gets damaged, As similar to the Zener diode.

Applications ...

* Detector: Since, it has low capacitance and no charge storage effect, the backward diode can be used as a detector up to 40 GHz .

* Rectifier: The Backward diode can be used for rectifying weak signals with peak amplitudes of 0.1 to 0.7 V .

* Switch: The backward diode can be used in high, speed switching applications.