I-V CHARACTEISTICS CURVE

PRESENTED BY
DR. VIVEK AMBALKAR
HEAD OF DEPARTMENT, PHYSICS
D. P. VIPRA COLLEGE, BILASPUR (C.G.)

OPERATING REGION & BIASING

There are two operating regions and three possible "biasing" conditions for the standard **Junction Diode** and these are:

- 1. Zero Bias – No external voltage potential is applied to the PN junction diode.

- 2. Reverse Bias – The voltage potential is connected negative, (-ve) to the P-type material and positive, (+ve) to the N-type material across the diode which has the effect of **Increasing** the PN junction diode's width.

- 3. Forward Bias – The voltage potential is connected positive, (+ve) to the P-type material and negative, (-ve) to the N-type material across the diode which has the effect of **Decreasing** the PN junction diodes width.

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- When a diode is **Zero Biased** no external energy source is applied and a natural **Potential Barrier** is developed across a depletion layer which is approximately 0.5 to 0.7v for silicon diodes and approximately 0.3 of a volt for germanium diodes.

- When a junction diode is **Forward Biased** the thickness of the depletion region reduces and the diode acts like a short circuit allowing full circuit current to flow.

- When a junction diode is **Reverse Biased** the thickness of the depletion region increases and the diode acts like an open circuit blocking any current flow, (only a very small leakage current will flow).
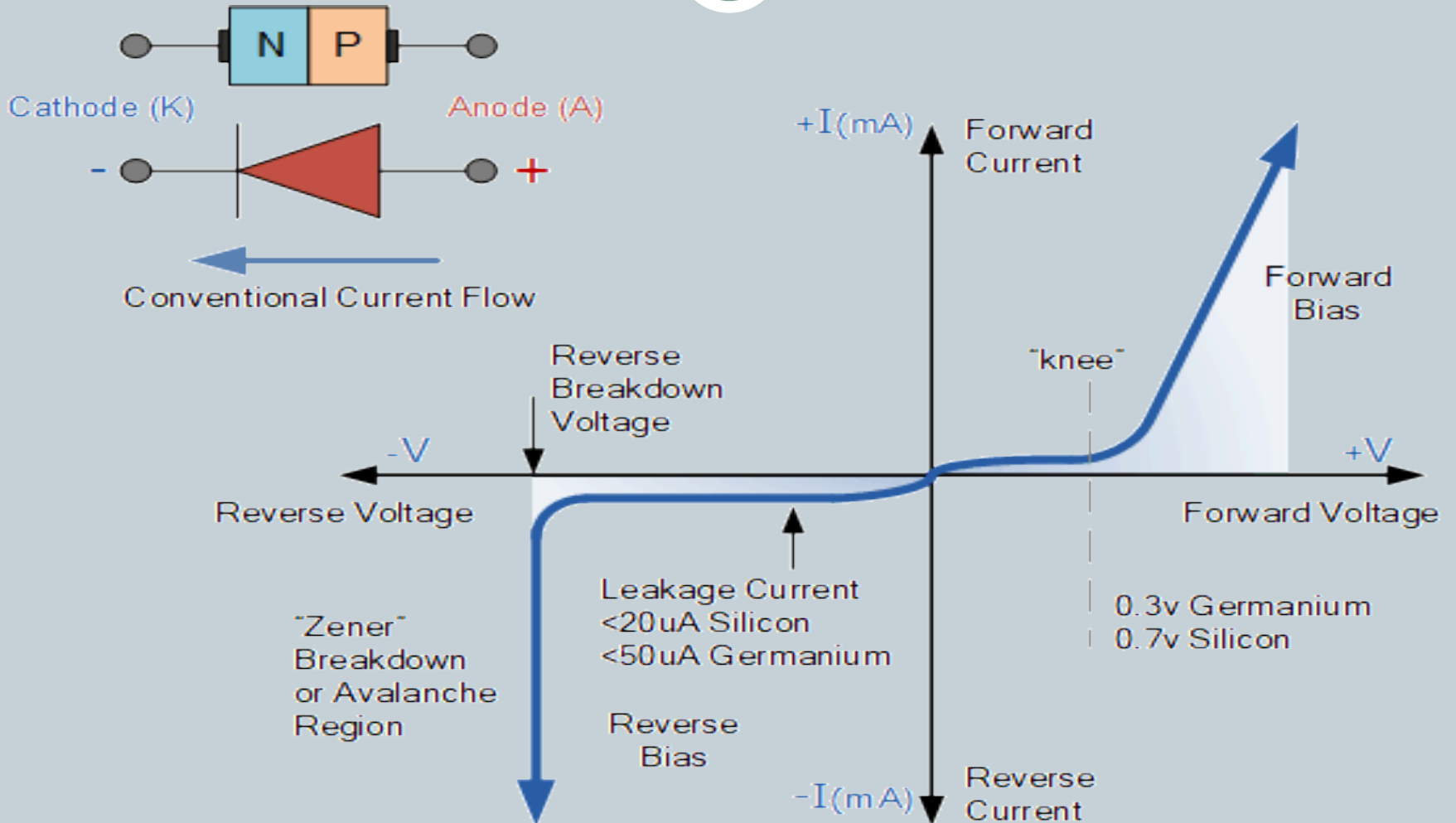
FORWARD BIASING
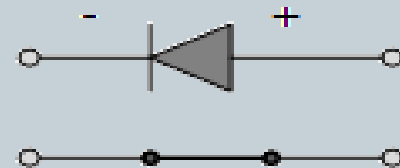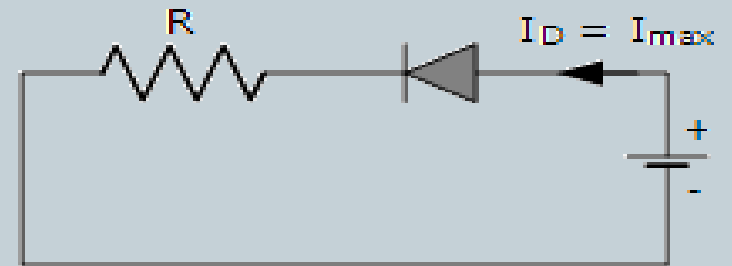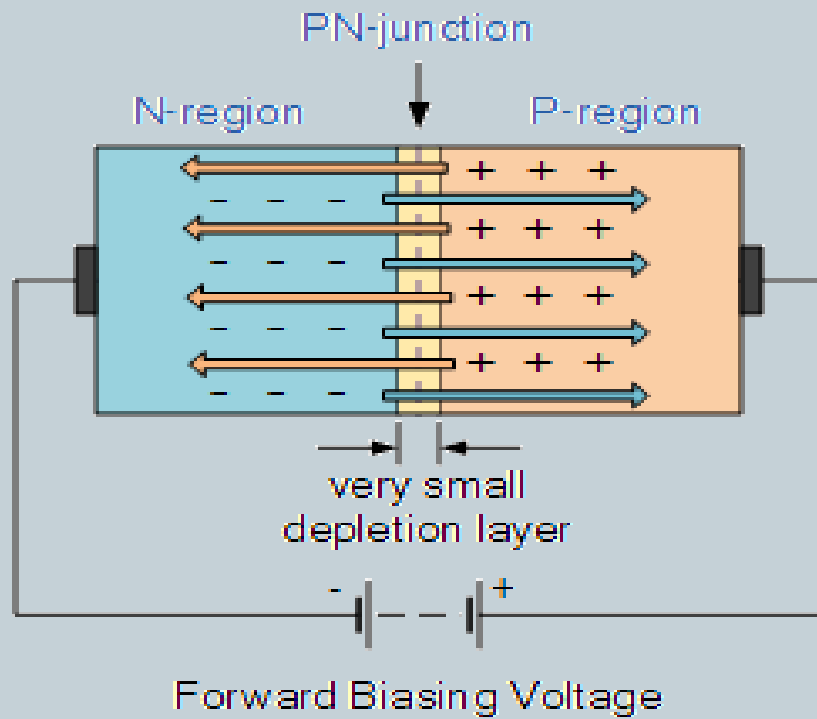
REVERSE BIASING
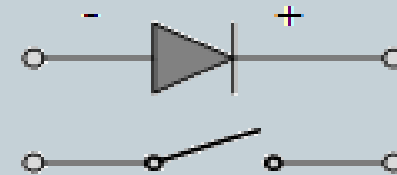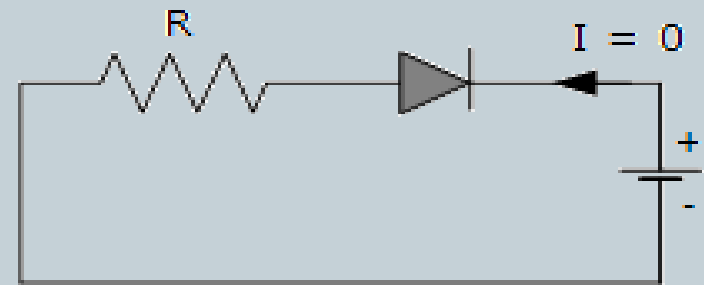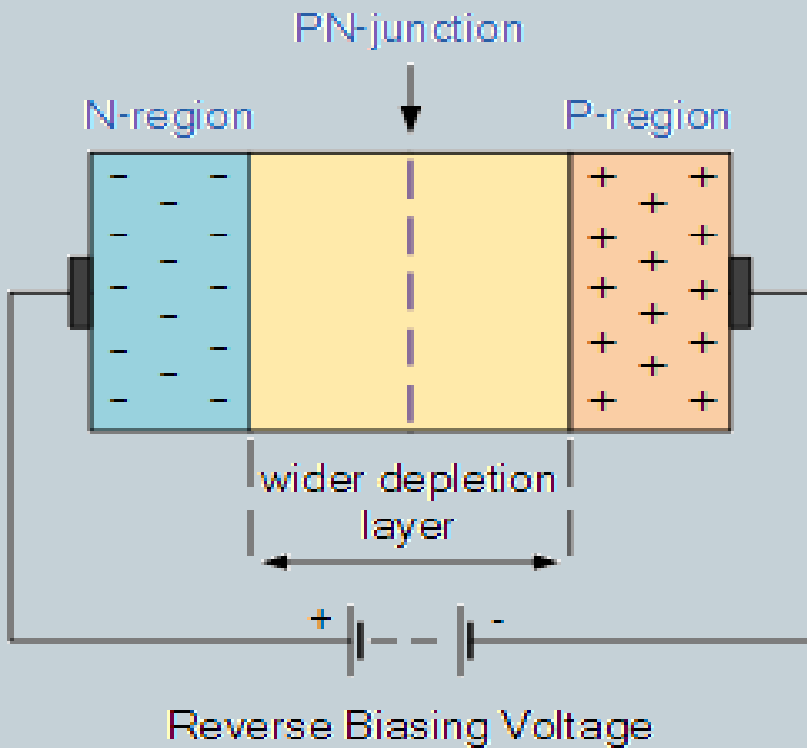
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In the next class….

➢ Advantages and disadvantages of pn junction diode
➢ Applications

THANK YOU