

28 Lecture - PHY301

Important Subjective

What is a PN junction diode?

Answer: A PN junction diode is a semiconductor device that consists of a junction between a p-type semiconductor material and an n-type semiconductor material.

How is a PN junction diode created?

Answer: A PN junction diode is created by doping the semiconductor materials with impurities, such as boron for p-type material and phosphorus for n-type material.

What is forward biasing in a PN junction diode?

Answer: Forward biasing is the application of a positive voltage to the p-type side and a negative voltage to the n-type side of the diode, allowing current to flow through the diode.

What is reverse biasing in a PN junction diode?

Answer: Reverse biasing is the application of a negative voltage to the p-type side and a positive voltage to the n-type side of the diode, blocking the flow of current through the diode.

What is the forward voltage drop of a PN junction diode?

Answer: The forward voltage drop is typically around 0.7 volts for silicon diodes and 0.3 volts for germanium diodes.

What is the reverse breakdown voltage of a PN junction diode?

Answer: The reverse breakdown voltage is the maximum reverse voltage that can be applied before the diode breaks down and allows current to flow in the reverse direction.

What are the applications of PN junction diodes?

Answer: PN junction diodes have applications in rectifiers, voltage regulators, signal detection and modulation circuits, and optical devices such as photodiodes and LEDs.

What happens to the depletion region in a PN junction diode during forward biasing?

Answer: The depletion region narrows during forward biasing due to the attraction between the majority carriers.

What happens to the depletion region in a PN junction diode during reverse biasing?

Answer: The depletion region widens during reverse biasing due to the repulsion between the majority carriers and the reverse bias voltage.

What is the significance of the PN junction diode in electronics?

Answer: The PN junction diode is a fundamental semiconductor device with many important applications in electronic circuits, making it an essential component in many electronic devices.