

# Semiconductor Diodes and Applications - Important Topics

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## Semiconductor Materials

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Intrinsic semiconductors have no impurities.

Extrinsic semiconductors have added dopants to improve conductivity.

## PN Junction Diode

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A diode formed by p-type and n-type semiconductor materials, allowing current to flow in one direction.

## Rectifiers

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Half-Wave Rectifier: Converts AC to DC using a single diode.

Full-Wave Rectifier: Uses a bridge or center-tapped transformer for better efficiency.

## Zener Diode

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Operates in reverse breakdown region and is used for voltage regulation.

## LED and Solar Cell

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Light Emitting Diode emits light when current flows through it.

Solar Cell converts light energy into electrical energy.

