



TRINITY COLLEGE FOR WOMEN NAMAKKAL

Department of Physics

SEMICONDUCTOR DEVICES

23PPHPE01-ODD Semester

Presented by

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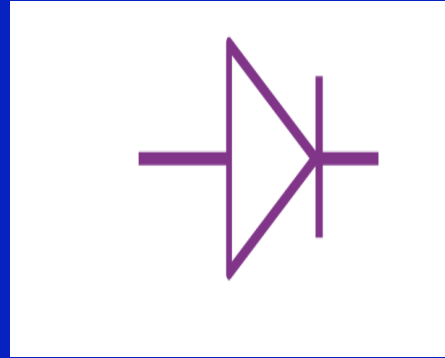
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Semiconductor Diode

A semiconductor diode is a p-n junction diode. It is a two-terminal device that conducts current only in one direction.

The figure below represents the symbol for the p-n junction diode, which symbolises the direction of the current. By applying an external voltage V we can vary the potential barrier

Semiconductor Diode Symbol



A p-n junction is denoted by the symbol shown in the figure above. Here, the direction of the arrow indicates the permissible direction of the current

Semiconductor Diode Characteristics

The V-I characteristics curve of a semiconductor diode is given below. This characteristic curve is a typical explanation for the V-I characteristic of a semiconductor diode. Current in the semiconductor diode starts to conduct when the current exceeds the threshold of the forward voltage, which is mentioned by the manufacturer.

Types of Semiconductor Diode

Following are the types of semiconductor diodes:

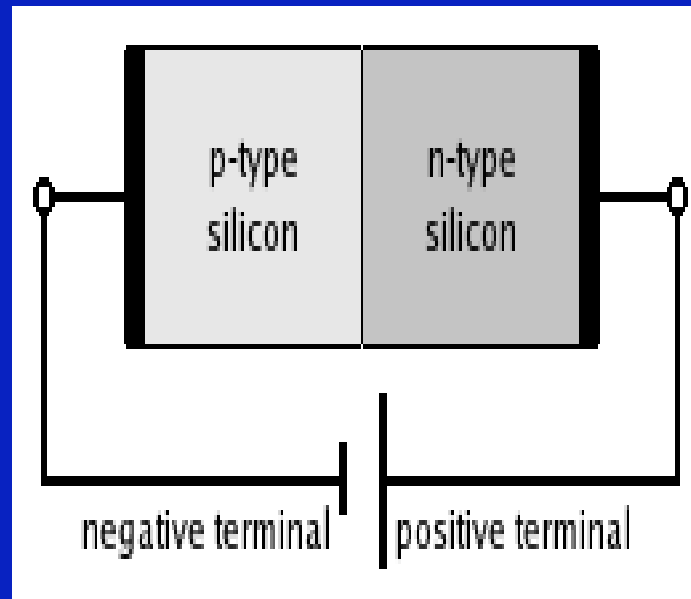
- LED
- Zener diode
- Rectifier diode
- Tunnel diode
- Variable capacitance diode
- Photodiode
- Switching diode
- Gunn diode

Applications of Semiconductor Diode

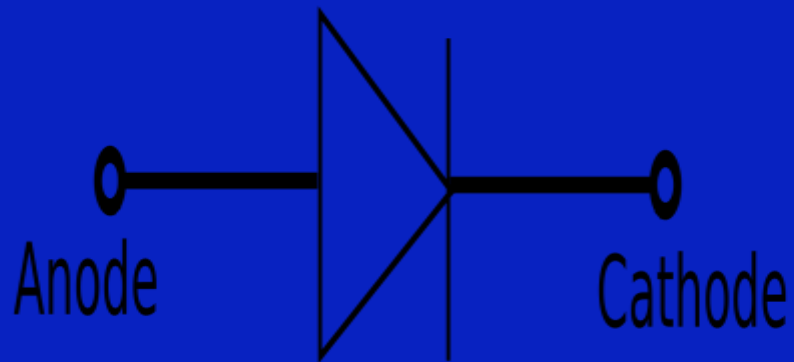
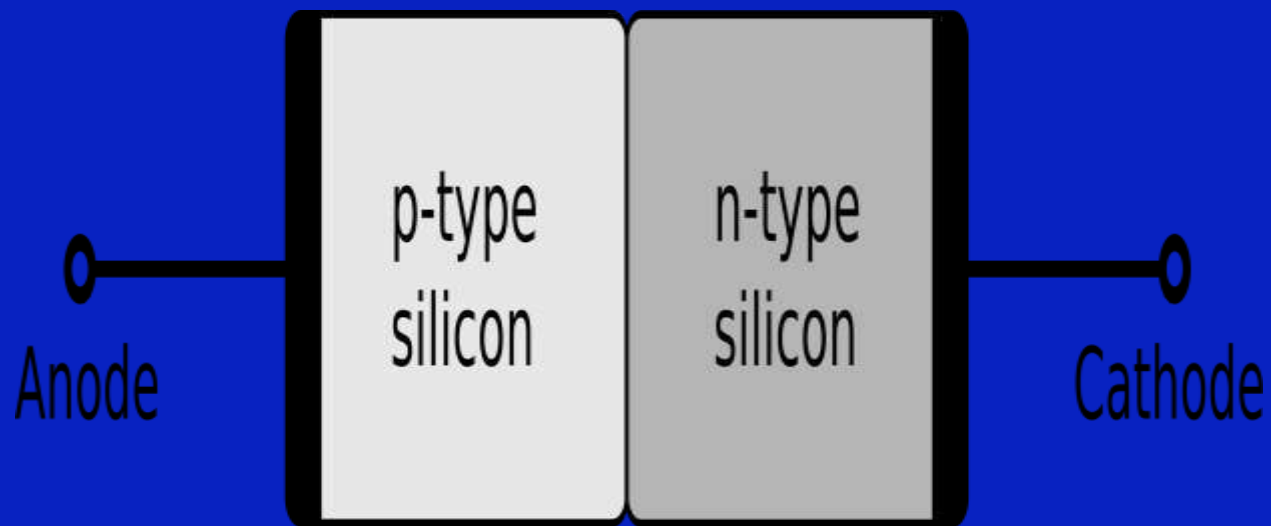
Following are the applications of semiconductor diodes:

- Rectifier diode which is used for the rectification of alternating current.
- Gunn diode which is one of the components of high-frequency electronics.
- Zener diodes are used for the stabilisation of current and voltage in electronic systems.
- Photodiode works as a photo-detector.
- Switching diode which is used for fast switching requirements.

p-n junction



p-n junctions are elementary "building blocks" of semiconductor electronic devices such as diodes, transistors, light emitting diodes (LEDs), and integrated circuits; they are the active sites where the electronic action of the device takes place. For example, a common type of transistor, the bipolar junction transistor (BJT), consists of two p-n junctions in series, in the form n-p-n or p-n-p; while a diode can be made from a single p-n junction. A Schottky junction is a special case of a p-n junction, where metal serves the role of the n-type semiconductor.



THANK YOU

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