

# Silicon Diode Characteristics

Spoken Tutorial Project

<https://spoken-tutorial.org>

National Mission on Education through ICT

Spoken Tutorial & FOSSEE Team

IIT Bombay

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# Learning Objectives



# Learning Objectives

**We will learn about**



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**We will learn about**

- **Voltage-Current (V-I ) characteristics of Silicon diode in forward and reverse bias**



# System Requirement



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- **Ubuntu Linux 20.04 OS**



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- **CircuitJS Application**



# Pre-requisites



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To follow this tutorial, you should have basic knowledge of

- **Electrical Circuits**



# What is a Diode?



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- **These terminals control the flow of electrons in a circuit**



# What is a Diode?

- **Diode is a semiconductor device with two terminals**
- **These terminals control the flow of electrons in a circuit**
- **Diodes can be used as rectifiers, switches, voltage regulators etc.**





# Diode Biasing



# Diode Biasing

- **The process of applying an external voltage to a p-n junction of a diode is called biasing**



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# Diode Biasing

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- There are two ways of Biasing:
  - Forward Bias

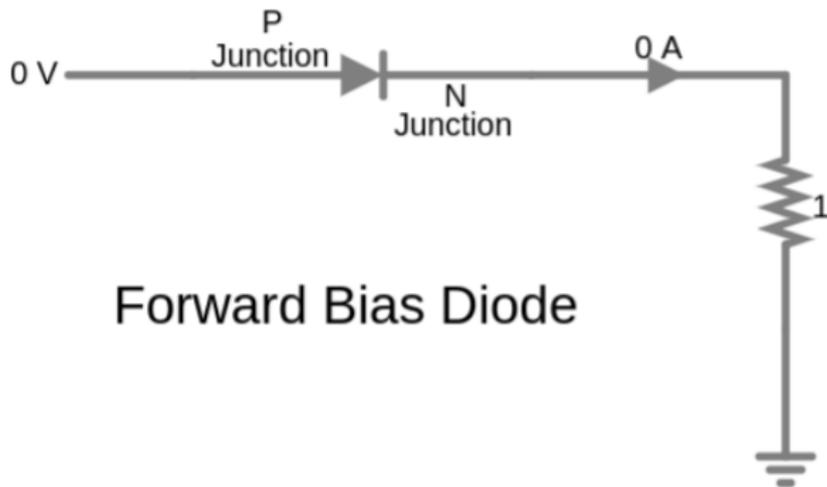


# Diode Biasing

- The process of applying an external voltage to a p-n junction of a diode is called biasing
- There are two ways of Biasing:
  - Forward Bias
  - Reverse Bias

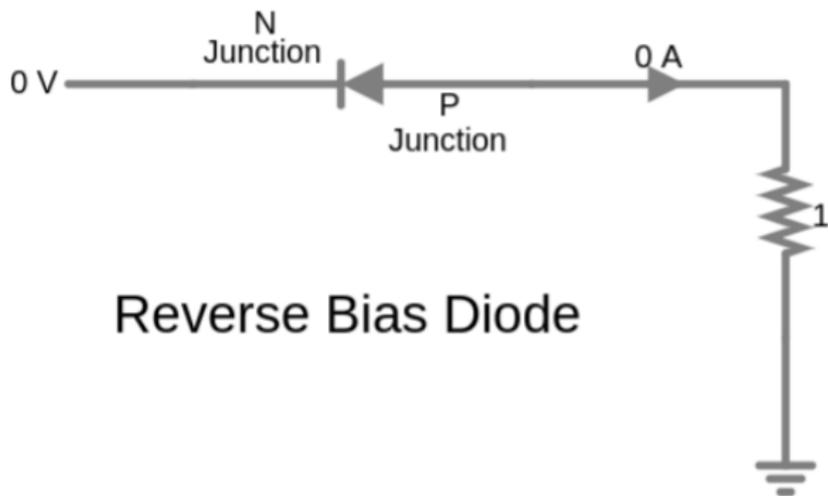


# Forward Bias Diode



Forward Bias Diode

# Reverse Bias Diode



# Diode Characteristics



# Diode Characteristics

- **Forward bias in a diode allows current flow, enabling conduction**



# Diode Characteristics

- **Forward bias in a diode allows current flow, enabling conduction**
- **Reverse bias creates a barrier, limiting a negligible current passing through the diode**



# Summary

In this tutorial, we learnt about

- **Voltage-Current (V-I ) characteristics of Silicon diode in forward and reverse bias**



# Assignment

- 1 Find the knee voltage of the Germanium diode

**Hint: Double click on the diode and select 1N34 (Germanium diode)**



# About the Spoken Tutorial Project

- Watch the video available at [https://spoken-tutorial.org/What\\_is\\_a\\_Spoken\\_Tutorial](https://spoken-tutorial.org/What_is_a_Spoken_Tutorial)
- It summarises the Spoken Tutorial project
- If you do not have good bandwidth, you can download and watch it



# Spoken Tutorial Workshops

## The Spoken Tutorial Project Team

- Conducts workshops using spoken tutorials
- Gives certificates to those who pass an online test
- For more details, please write to [contact@spoken-tutorial.org](mailto:contact@spoken-tutorial.org)



# Answers for THIS Spoken Tutorial

- Questions in THIS Spoken Tutorial?
- Visit <https://forums.spoken-tutorial.org>
- Choose the minute and second where you have the question
- Explain your question briefly
- The Spoken Tutorial project will ensure an answer



# Acknowledgements

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# Thank You

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IIT Bombay.**

