

# Zener Diode Characteristics

Spoken Tutorial Project

<https://spoken-tutorial.org>

National Mission on Education through ICT

Spoken Tutorial & FOSSEE Team

IIT Bombay

6 March 2024



# Learning Objectives



# Learning Objectives

**We will learn about**



# Learning Objectives

**We will learn about**

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



# System Requirement



# System Requirement

- **Ubuntu Linux 20.04 OS**



# System Requirement

- **Ubuntu Linux 20.04 OS**
- **CircuitJS Application**





# Pre-requisites

To follow this tutorial, you should have basic knowledge of

- **Electrical Circuits**



# Zener Diode



# Zener Diode

- **Zener diode is a specialized semiconductor device**



# Zener Diode

- Zener diode is a specialized semiconductor device
- It is designed to operate in the reverse breakdown region



# Zener Diode



# Zener Diode

- It maintains a constant voltage in reverse bias, also called as zener voltage



# Zener Diode

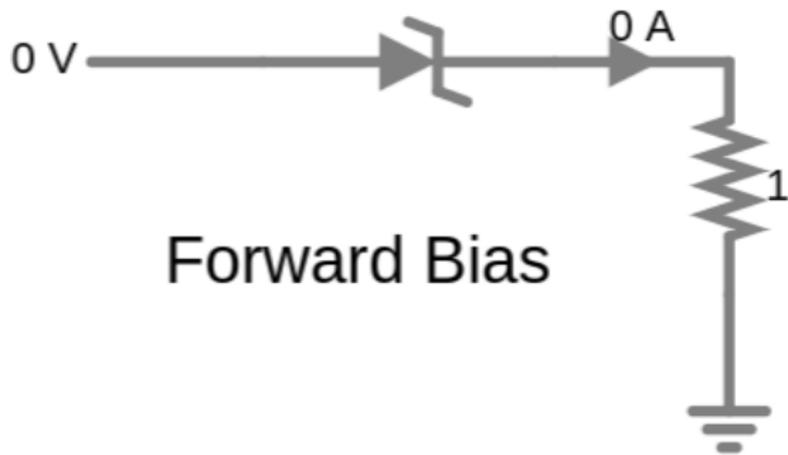
- It maintains a constant voltage in reverse bias, also called as zener voltage
- It is used as a voltage regulator and to protect electronic circuits



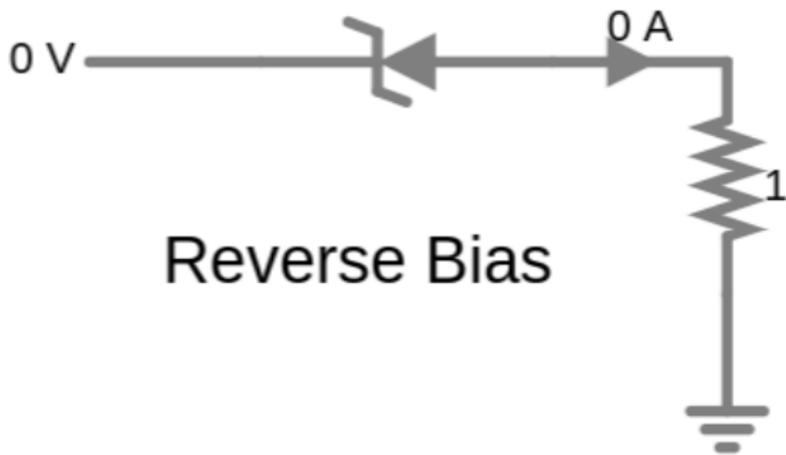
# Zener Diode



# Zener Diode Forward Bias



# Zener Diode Reverse Bias



# Silicon - Zener Diode comparison



# Silicon - Zener Diode comparison

- **Silicon diodes allow the current flow in one direction**  
**zener diodes allow the current to flow in both directions**



# Silicon - Zener Diode comparison



# Silicon - Zener Diode comparison

- **Silicon diodes are designed to work in forward bias**  
**zener diodes are intended to work in reverse bias**



# Silicon - Zener Diode comparison



# Silicon - Zener Diode comparison

- **Silicon diodes are used as rectifiers in electronic circuits**  
**Zener diodes are used in voltage regulator circuits**



# Summary

**In this tutorial, we learnt about**

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



# 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

**Spoken Tutorial project was established by the Ministry of Education(MoE), Govt of India**



# Thank You

**This tutorial has been contributed by  
FOSSEE and Spoken Tutorial Project,  
IIT Bombay.**

