

14.1: Introduction

Semiconductors play a critical role in modern electronics. The electrical properties of these materials can be used to form the solid-state electronic components which are used in nearly every electronic device including computers, cellular phones, radios, and televisions. In this chapter, we will provide an introduction to the modern theory of band theory of solids which has proven essentially for understanding the behavior of these systems. We will then describe how semiconductor materials can be used to construct diodes, light-emitting diodes, transistors, bipolar junction transistors, and junction field-effect transistors.

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