



## METADATA

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### Abstract

The operation of every electrical and electronic circuit refers to the phenomena of transfer and distribution of electrical energy in terms of voltage (potential difference) or current intensity in its elements. This book presents basic semiconductor elements and devices and emphasizes the physics of their operation as elements used to control the flow and current intensity in them as well as their main applications. Thus, after an introductory reference to semiconductor physics, the main characteristics and conductivity properties of material contacts with different conductivity characteristics are described, and

an analytical presentation of the electrical behavior of contact diodes of different types of semiconductors (pn junction) as simple control elements of current flow in electrical circuits is made, together with their basic applications. Then, the physics of the bipolar junction transistor (BJT) operation and its basic connections are presented, and the operation of corresponding simple linear and non-linear circuits is analyzed. Finally, the physics of the operation of the various types of field effect transistors (JFETs and MOSFETs) are presented with their respective applications in simple electronic circuits.

