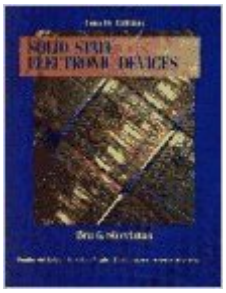
Solid State Electronic Devices



Synopsis

Aiming to provide students with a sound understanding of existing devices in order to develop the basic tools with which they can later learn about applications and the latest devices, this study incorporates the basics of semiconductor materials and conduction processes in solids. It also introduces and relates the most commonly used semiconductor terms and concepts to a broad range of devices. In addition, the work presents the study of solid state devices including both silicon and compound semiconductors so that undergraduate students may appreciate the continuing growth in importance of exciting optoelectronic and high-speed device applications.

Book Information

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Average Customer Review: 3.7 out of 5 starsÂ Â See all reviewsÂ (49 customer reviews)

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Customer Reviews

If you are an EE sophomore/junior or senior and want to buy a book on semiconductor physics or devices that is both comprehensive in its depth and coverage of topics, I'd highly recommend this book. Its explanation of the working of FETs is very lucid and takes you all the way up to III-V HEMTs; similarly derivation of drift-diffusion/continuity equations for BJTs are explained in great detail and advanced devices like HBTs are also covered. Furthermore, if you are confused about energy band diagrams, this book is for you.Let me briefly compare it with other similar books:1- Semiconductor devices --Physics and Technology, 2nd edition by S. M. Sze--Standard, very good, but a little advanced textbook on semiconductors. Its explanation of FETs working and its assoicated band diagrams is not very comprehensive. Semiconductor Devices: Physics and

Technology, 2nd Edition2- Semiconductor Device fundamentals by R. F. Peirret-- An excellent book on the fundamentals, especially concepts of band diagrams, but again I found its coverage of FET devices not as good as that of Streetman. Semiconductor Device Fundamentals3- Physics of semiconductor devices by M. Shur-- Shur is an expert on III-V devices modelling and simulations, but for fundamentals of semiconductor devices I won't recommend this to a sophomore!

Streetman wrote this book as an assistant professor almost 40 years ago at the rise of the industry. He and his former student (a professor at UT Austin) have continually updated this book into its sixth edition. With so many revisions and accolades, you can be quite confident that this book will serve as a solid text for learning about the operation and fabrication of traditional and modern semiconductor devices.I've read this book twice through in detail along with Pierret's Semiconductor Device Fundamentals, parts of S. Sze's book, and many other books that cover semiconductor physics. For an undergraduate learning the material for the first time, I HIGHLY recommend reading Pierret's book instead, with this book for more detail on modern devices and additional information on basic topics. Pierret holds your hand as he walks you through the material, explaining many details and limiting cases for basic material...Streetman doesn't quite do that. Pierret also puts some emphasis on computational solutions and graphing via MATLAB, which I think is very useful for learning and necessary in more advanced works.Streetman excels in mentioning and explaining many unconventional effects and advanced devices, as well as talking about integrated circuits. In addition, Streeman spends many sections on fabrication techniques and device processing. He also includes some nice curves, material properties, and useful equations placed in known areas of the book (front/back cover, appendix, etc...), which are very useful for quick reference. Clearly, this book is better for an advanced reader, but I did appreciate some of Streetman's explanations (especially for the operation of a BJT) and the overall progression of the sections, which are very useful for a first-time reader.

devices) Solid-State Electronic Circuits - Volume 1 Solid-State Electronic Circuits - Volume 3 Optical Interconnects (Synthesis Lectures on Solid-State Materials and Devices) US Army Technical Manual, ARMY DATA SHEETS FOR CARTRIDGES, CARTRIDGE ACTUATED DEVICES AND PROPELLANT ACTUATED DEVICES, FSC 1377, TM 43-0001-39, 1991 Electronic Circuit Devices: An Aviation Maintenance Publishers, Inc. Training Manual JS312663 Lab Manual to Accompany Introductory Electronic Devices and Circuits Introductory Electronic Devices and Circuits: Conventional Flow Version, Sixth Edition Introductory Electronic Devices and Circuits Waste Electrical and Electronic Equipment (WEEE) Handbook (Woodhead Publishing Series in Electronic and Optical Materials) How to Build and Use Electronic Devices Without Frustration Panic Mountains of Money or an Engineer Degree ISO 14971:2007, Medical devices - Application of risk management to medical devices Towards Solid-State Quantum Repeaters: Ultrafast, Coherent Optical Control and Spin-Photon Entanglement in Charged InAs Quantum Dots (Springer Theses) Magnetic Bubble Technology (Springer Series in Solid-State Sciences)