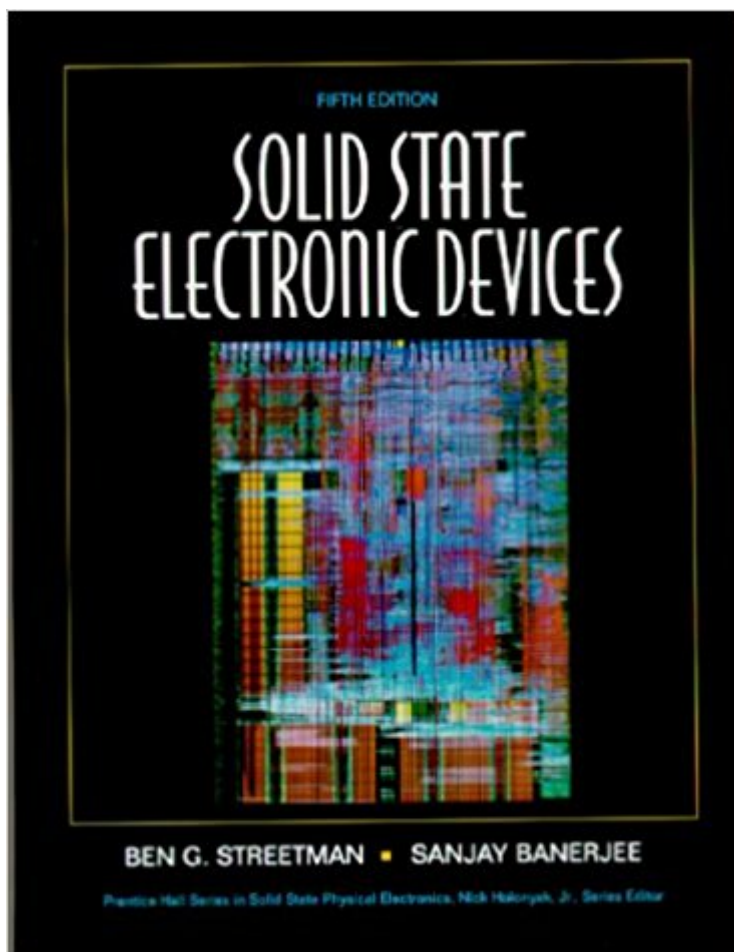


The book was found

Solid State Electronic Devices (5th Edition)



Synopsis

For undergraduate-level courses in Electronic Devices. THE most widely used introduction to solid state electronic devices text, this book is designed to help students gain a basic understanding of semiconductor devices and the physical operating principles behind them. This two-fold approach 1) provides students with a sound understanding of existing devices, so that their studies of electronic circuits and systems will be meaningful, and 2) helps them develop the basic tools with which they can later learn about applications and the latest devices. The text provides one of the most comprehensive treatments of all the important semiconductor devices, and reflects the most current trends in the technology and theoretical understanding of the devices.

Book Information

Series: Solid State Physical Electronics Series

Hardcover: 558 pages

Publisher: Prentice Hall; 5th edition (November 8, 1999)

Language: English

ISBN-10: 0130255386

ISBN-13: 978-0130255389

Product Dimensions: 7.2 x 1.1 x 9.4 inches

Shipping Weight: 1.6 pounds (View shipping rates and policies)

Average Customer Review: 3.7 out of 5 stars 61 customer reviews

Best Sellers Rank: #2,201,249 in Books (See Top 100 in Books) #58 in [Books > Engineering & Transportation > Engineering > Electrical & Electronics > Electronics > Solid State](#) #362 in [Books > Engineering & Transportation > Engineering > Electrical & Electronics > Electronics > Semiconductors](#) #496 in [Books > Textbooks > Engineering > Electrical & Electronic Engineering](#)

Customer Reviews

This revision of the most widely used introduction to solid state electronic devices was developed with two basic purposes: 1) to provide students with a sound understanding of existing devices so their studies of electronic circuits and systems will be meaningful, and 2) to develop the basic tools with which they can later learn about applications and the latest devices. --This text refers to an alternate Hardcover edition.

Preface This book is an introduction to semiconductor devices for undergraduate electrical

engineers, other interested students, and practicing engineers and scientists whose understanding of modern electronics needs updating. The book is organized to bring students with a background in sophomore physics to a level of understanding which will allow them to read much of the current literature on new devices and applications.

Goals An undergraduate course in electronic devices has two basic purposes: (1) to provide students with a sound understanding of existing devices, so that their studies of electronic circuits and systems will be meaningful; and (2) to develop the basic tools with which they can later learn about newly developed devices and applications. Perhaps the second of these objectives is the more important in the long run; it is clear that engineers and scientists who deal with electronics will continually be called upon to learn about new devices and processes in the future. For this reason, we have tried to incorporate the basics of semiconductor materials and conduction processes in solids, which arise repeatedly in the literature when new devices are explained. Some of these concepts are often omitted in introductory courses, with the view that they are unnecessary for understanding the fundamentals of junctions and transistors. We believe this view neglects the important goal of equipping students for the task of understanding a new device by reading the current literature. Therefore, in this text most of the commonly used semiconductor terms and concepts are introduced and related to a broad range of devices.

Reading Lists As a further aid in developing techniques for independent study, the reading list at the end of each chapter includes a few articles which students can read comfortably as they study this book. Some of these articles have been selected from periodicals such as *Scientific American* and *Physics Today*, which specialize in introductory presentations. Other articles chosen from books and the professional literature provide a more quantitative treatment of the material. We do not expect that students will read all articles recommended in the reading lists; nevertheless, some exposure to periodicals is useful in laying the foundation for a career of constant updating and self-education.

Problems One of the keys to success in understanding this material is to work problems that exercise the concepts. The problems at the end of each chapter are designed to facilitate learning the material. Very few are simple "plug-in" problems. Instead, they are chosen to reinforce or extend the material presented in the chapter.

Units In keeping with the goals described above, examples and problems are stated in terms of units commonly used in the semiconductor literature. The basic system of units is rationalized MKS, although cm is often used as a convenient unit of length. Similarly, electron volts (eV) are often used rather than joules (J) to measure the energy of electrons. Units for various quantities are given in Appendices I and II.

Presentation In presenting this material at the undergraduate level, one must anticipate a few instances which call for a phrase such as "It can be shown. . ." This is always disappointing; on the other hand, the

alternative is to delay study of solid state devices until the graduate level, where statistical mechanics, quantum theory, and other advanced background can be freely invoked. Such a delay would result in a more elegant treatment of certain subjects, but it would prevent undergraduate students from enjoying the study of some very exciting devices. The discussion includes both silicon and compound semiconductors, to reflect the continuing growth in importance for compounds in optoelectronic and high-speed device applications. Topics such as heterojunctions, lattice matching using ternary and quaternary alloys, variation of band gap with alloy composition, and properties of quantum wells add up to the breadth of the discussion. Not to be outdone by the compounds, silicon-based devices have continued their dramatic record of advancement. The discussion of FET structures and Si integrated circuits reflects these advancements. Our objective is not to cover all the latest devices, which can only be done in the journal and conference literature. Instead, we have chosen devices to discuss which are broadly illustrative of important principles. The first four chapters of the book provide background on the nature of semiconductors and conduction processes in solids. Included is a brief introduction to quantum concepts (Chapter 2) for those students who do not already have this background from other courses. Chapter 5 describes the p-n junction and some of its applications. Chapters 6 and 7 deal with the principles of transistor operation. Chapter 8 covers optoelectronics and Chapter 9 discusses integrated circuits. Chapters 10 and 11 apply the theory of junctions and conduction processes to microwave and power devices. All of the devices covered are important in today's electronics; furthermore, learning about these devices should be an enjoyable and rewarding experience. We hope this book provides that kind of experience for its readers.

Acknowledgements The fifth edition benefits greatly from comments and suggestions provided by students and teachers of the first four editions. The book's readers have generously provided comments which have been invaluable in developing the present version. We remain indebted to those persons mentioned in the Preface of the first four editions, who contributed so much to the development of the book. In particular, Nick Holonyak has been a source of continuing information and inspiration for all five editions. Additional thanks go to our colleagues at UT-Austin who have provided special assistance, particularly Joe Campbell, Ray Chen, Dennis Deppe, Russ Dupuis, Archie Holmes, Dim-Lee Kwong, Jack Lee, Christine Maziar, Dean Neikirk, and Al Tasch. Kay Shores and Qingyou Lu provided useful assistance with the typing. We thank the many companies and organizations cited in the figure captions for generously providing photographs and illustrations of devices and fabrication processes. Kobi Benzvi and Pradipto Mukherjee at Motorola, Shubneesh Batra and Mary Miller at Micron, and Tom Way at IBM deserve special mention. Finally, we recall with gratitude many years of association with the late Greg

Stillman, a valued colleague and friend. Ben G. Streetman Sanjay Banerjee

This book may actually be very informative, but all I really did was homework out of it. I tried following along in the book itself, but it is utterly dense and does absolutely NO hand-holding whatsoever. If you aren't in a very, very introductory course to this information, this will go way over your head, with ease. Also, the book just looks and feels old and outdated and made me wish for something more modern and interactive and easy to understand the whole time.

Delivered exactly as described. Definitely helped me with my coursework and would buy again if I needed to.

The book was excellent and as expected

CHEAP :)

good book

ExcellentExcellentExcellentExcellentExcellent

The binding was already falling off when I got it. I returned it and the replacement binding broke in the middle of the book, making it always flop open to the same page when set down, making studying difficult. If there's a digital copy available, go for that. Worst binding I've ever seen. Oh, yeah, the content is presented in the most incoherent way possible. Difficult to read. But hey, maybe I could have focused better if it would STAY OPEN TO THE PAGE I WAS READING!!! So glad I'm graduating so I don't get abused by these slime-ball textbook companies anymore. We should be having hearings on Capitol Hill on these shysters.

This was a purchase for a class, less expensive than the bookstore price and arrived very quickly. was a great solution for what could have been a more expensive book.

[Download to continue reading...](#)

Solid State Electronic Devices (5th Edition) The Floridas: The Sunshine State * The Alligator State * The Everglade State * The Orange State * The Flower State * The Peninsula State * The Gulf State
Solid State Electronic Devices (7th Edition) Solid State Electronic Devices (6th Edition) Solid State

Electronic Devices Solid State Electrochemistry and Its Applications to Sensors and Electronic Devices (Materials Science Monographs) Handbook of Organic Materials for Optical and (Opto)Electronic Devices: Properties and Applications (Woodhead Publishing Series in Electronic and Optical Materials) Introduction to Microelectronic Fabrication: Volume 5 of Modular Series on Solid State Devices (2nd Edition) Principles and Analysis of Aigaas/GAAS Heterojunction Bipolar Transistors (Solid State Technology & Devices Library) Solid State Devices Introductory Electronic Devices and Circuits: Electron Flow Version (5th Edition) Introductory Electronic Devices and Circuits: Conventional Flow Version (5th Edition) Electronic Devices (Electron Flow Version) (5th Edition) Electronic Devices and Circuit Theory (11th Edition) Electronic Devices (Conventional Current Version) (9th Edition) Electronic Devices (Conventional Current Version) (10th Edition) (What's New in Trades & Technology) Introductory Electronic Devices and Circuits: Conventional Flow Version, Sixth Edition US Army Technical Manual, ARMY DATA SHEETS FOR CARTRIDGES, CARTRIDGE ACTUATED DEVICES AND PROPELLANT ACTUATED DEVICES, FSC 1377, TM 43-0001-39, 1991 Integrated circuit devices and components (Integrated-circuit technology, analog and logic circuit design, memory and display devices) ISO 14971:2007, Medical devices - Application of risk management to medical devices

[Contact Us](#)

[DMCA](#)

[Privacy](#)

[FAQ & Help](#)