Preface

Solid State Devices and Technology deals with semiconductor materials, fabrication technology of semiconductor devices, their principle of operation, characteristics and applications. This book is the fruit of author's 24 years of research and teaching experience in the field. This book is suitable for a course on Solid State Devices and Technology at undergraduate level of Electronics, Electrical and Computer Engineering.

The contents of the book are organized into three parts as a step by step evolution of the subject. Part-I covers Semiconductor materials, properties and physics required for the study of semiconductor devices. Part-II presents a brief introduction to the fabrication technology of semiconductor devices. Part-III discusses various semiconductor devices in detail including the principle of operation, current voltage relationships and the performance parameters. The detailed analysis of all devices are done for idealized models. Various non-idealities of devices are discussed thereafter.

The book has consistent notations that enables the students to have a pleasant sojourn through-out the text. Numerous figures and illustrative examples are used as an aid to illustrate concepts. Link between analytical results and physical phenomena are provided wherever possible. Understanding of physical concepts is best honed by doing analytical problems. Therefore numerous illustrative examples, solved problems and exercise problems are included to reinforce the concepts and enhance the problem solving skills.

Epitome of important definitions and equations are given at the end of each chapter for quick reference. Review questions and exercise problems are included for self evaluation of the knowledge of concepts and analytical relations developed in the text. I welcome any suggestions or comments from the readers, which may be mailed to vsbsreeragam@gmail.com.

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V.Suresh Babu

Solid State Devices and Technology

FOURTH EDITION

Solid State Devices and Technology deals with semiconductor materials, the fabrication process of semiconductor devices,-and their principle of operation, characteristics and applications, This book is a treasure trove of information that prepares the students for a further study of VLSI Fabrication. VLSI Design. Microwave Devices, etc.

KEY FEATURES

- Figures and examples are used as an aid to illustrate concepts.
- Links between analytical results and physical phenomena are provided wherever possible.
- A large number of illustrative examples, solved problems and exercise problems are included to re-inforce the concepts and enhance problem solving skills.
- A list of important points and inferences are given at the end of each chapter for a quick glance.
- Analytical relations for carrier concentrations is MOS capacitor, energy band diagram of Schottky barrier diode, and band bending in MOS devices are covered extensively.
- Derivation of analytical relations are provided completely, wherever necessary.