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Nota di contenuto	PREFACE -- PART I PHYSICS REQUIRED TO DESIGN LASER DIODES -- 1 Energy Bands in Bulk and Quantum Structures -- 1.1 Introduction -- 1.2 Bulk Structure -- 1.3 Quantum Structures -- 1.4 Superlattices -- References -- 2 Optical Transitions -- 2.1 Introduction -- 2.2 Direct and Indirect Transitions -- 2.3 Light-Emitting Processes -- 2.4 Spontaneous Emission, Stimulated Emission, and Absorption -- 2.5 Optical Gains -- References -- 3 Optical Waveguides -- 3.1 Introduction -- 3.2 Two-Dimensional Optical Waveguides -- 3.3 Three-Dimensional Optical Waveguides -- References -- 4 Optical Resonators -- 4.1 Introduction -- 4.2 Fabry-Perot Cavity -- 4.3 Waveguide Grating -- 4.4 Vertical Cavity -- References -- 5 pn- and pnpn-Junctions -- 5.1 Intrinsic Semiconductor -- 5.2 Extrinsic Semiconductor -- 5.3 pn-Junction -- 5.4 pnpn-Junction -- References

-- PART II CONVENTIONAL LASER DIODES -- 6 Fabry-Perot Laser Diodes -- 6.1 Introduction -- 6.2 Rate Equations -- 6.3 Current versus Voltage Characteristics -- 6.4 Current versus Light Output Characteristics -- 6.5 Polarization of Light -- 6.6 Transverse Modes -- 6.7 Longitudinal Modes -- 6.8 Modulation Characteristics -- 6.9 Noises -- References -- 7 Quantum Well Laser Diodes -- 7.1 Introduction -- 7.2 Features of Quantum Well LDs -- 7.3 Strained Quantum Well LDs -- References -- 8 Single-Mode Laser Diodes -- 8.1 Introduction -- 8.2 DFB LDs -- 8.3 DBR LDs -- 8.4 Vertical Cavity Surface-Emitting LDs -- References -- 9 Semiconductor Optical Amplifiers -- 9.1 Introduction -- 9.2 Signal Gain -- 9.3 Polarization -- 9.4 Noises -- References -- PART III ADVANCED LASER DIODES AND RELATED DEVICES -- 10 Phase-Controlled DFB Laser Diodes -- 10.1 Introduction -- 10.2 Theoretical Analysis -- 10.3 Device Structure -- 10.4 Device Characteristics and Discussion -- 10.5 Summary -- References -- 11 Phase-Shift-Controlled DFB Laser Diodes -- 11.1 Introduction -- 11.2 Theoretical Analysis -- 11.3 Device Structure -- 11.4 Device Characteristics and Discussion. -- 11.5 Summary -- References -- 12 Phase-Controlled DFB Laser Filter -- 12.1 Introduction -- 12.2 Device Structure -- 12.3 Device Characteristics and Discussion -- 12.4 Summary -- References -- 13 Phase-Shift-Controlled DFB Filter -- 13.1 Introduction -- 13.2 Theoretical Analysis -- 13.3 Device Structure -- 13.4 Device Characteristics and Discussion -- 13.5 Summary -- References -- 14 Passive Phase-Shifted DFB Filter -- 14.1 Introduction -- 14.2 Theoretical Analysis -- 14.3 Device Structure -- 14.4 Device Characteristics and Discussion -- 14.5 Summary -- References -- 15 Two-Section Fabry-Perot Filter -- 15.1 Introduction -- 15.2 Theoretical Analysis -- 15.3 Device Structure -- 15.4 Device Characteristics and Discussion -- 15.5 Summary -- References -- 16 Optical Functional Devices with pn-pn-Junctions -- 16.1 Introduction -- 16.2 Edge-Emitting Optical Functional Device -- 16.3 Surface-Emitting Optical Functional Device -- References -- PART IV SYSTEM DEMONSTRATIONS USING ADVANCED LASER DIODES AND RELATED DEVICES -- 17 Photonic Switching System -- 17.1 Introduction -- 17.2 Wavelength Division Switching -- 17.3 Wavelength- and Time-Division Hybrid Switching -- 17.4 Summary -- References -- 18 Optical Information Processing -- 18.1 Introduction -- 18.2 Serial-to-Parallel Data Conversion -- 18.3 Optical Self-Routing Switch -- 18.4 Optical ATM Switch -- 18.5 Optical Interconnection -- 18.6 Optical Memory -- 18.7 Optical Bus -- References -- Appendix A: Density of States -- Appendix B: Density of States Effective Mass -- Appendix C: Conductivity Effective Mass -- INDEX.

Sommario/riassunto

An authoritative guide to developing high-level photonic devices and systems via laser diodes. As the number of Internet users continues to skyrocket, so does the importance of photonics, which contributes to building an infrastructure for the Internet. Laser diodes have the tremendous potential to expand photonics technology if their operating principles are applied to photonic devices such as optical filters and optical functional devices. This volume provides a thorough explanation of laser diode physics to enable the reader to develop superior photonic devices. It teaches the fundamentals behind the creation of such devices as energy bands of semiconductors, optical transitions, optical waveguides, and semiconductor junctions. Also reviewed are the characteristics of laser diodes, optical filters, and optical functional devices, which have been developed based on the above physics. These photonic devices are demonstrated in successful system applications, and several experimental results are clearly described. Further, this

important work:.. Bridges the large gap between journal papers and textbooks, giving readers a working understanding so they can comprehend the latest, most intricate journal papers and research in the field. Provides analytical tools for Fabry-Perot LDs, DFB-LDs, and VCSELs, including equations to follow. Delineates differences in specifications required for light sources and for optical filters and optical functional devices. Outlines actual experimental results for system applications of laser diodes, optical filters, and optical functional devices. Discusses challenges in the field to be overcome in the future. By opening readers' eyes to the incredible potential of laser diodes, this book inspires future development in photonics technology. Laser Diodes and Their Applications to Communications and Information Processing can be utilized as an advanced undergraduate text or a graduate text. It is also extremely useful to researchers in the fields of physics and electronics, from those at the beginning of their careers to senior scientists.
