

1. Record Nr.	UNINA9910141509103321
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Titolo	Semiconductor laser engineering, reliability and diagnostics [[electronic resource] ] : a practical approach to high power and single mode devices // Peter W. Epperlein
Pubbl/distr/stampa	Chichester, West Sussex, U.K., : John Wiley & Sons Inc., 2013
ISBN	1-118-48188-7 1-118-48187-9 1-118-48186-0
Edizione	[1st edition]
Descrizione fisica	1 online resource (522 p.)
Disciplina	621.36/61
Soggetti	Semiconductor lasers
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Machine generated contents note: Dedication Preface About the Author PART I: DIODE LASER ENGINEERING Overview 1. Basic Diode Laser Engineering Principles Introduction 1.1. Brief Recapitulation 1.1.1. Key Features of a Diode Laser 1.1.2. Homo-Junction Diode Laser 1.1.3. Double-Heterostructure Diode Laser 1.1.4. Quantum Well Diode Laser 1.1.5. Common Compounds for Semiconductor Lasers 1.2. Optical Output Power - Diverse Aspects 1.2.1. Approaches to High Power Diode Lasers 1.2.2. High Optical Power Considerations 1.2.3. Power Limitations 1.2.4. High Power versus Reliability Trade-Offs 1.2.5. Typical and Record-High CW Optical Output Powers 1.3. Selected Relevant Basic Diode Laser Characteristics 1.3.1. Threshold Gain 1.3.2. Material Gain Spectra 1.3.3. Optical Confinement 1.3.4. Threshold Current 1.3.5. Transverse Vertical and Transverse Lateral Modes 1.3.6. Fabry-Perot Longitudinal Modes 1.3.7. Operating Characteristics 1.3.8. Mirror Reflectivity Modifications 1.4. Laser Fabrication Technology 1.4.1. Laser Wafer Growth 1.4.2. Laser Wafer Processing 1.4.3. Laser Packaging References 2. Design Considerations for High Power Single Spatial Mode Operation Introduction 2.1. Basic High Power Design Approaches 2.1.1. Key Aspects 2.1.2. Output Power Scaling 2.1.3. Transverse Vertical Waveguides 2.1.4. Narrow Stripe Weakly Index Guided Transverse Lateral Waveguides 2.1.5. Thermal Management

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## Sommario/riassunto

"This reference book provides a fully integrated novel approach to the development of high power, single transverse mode, edge-emitting diode lasers by addressing the complementary topics of device engineering (Part 1), reliability engineering (Part 2) and device diagnostics (Part 3) in the same book in altogether nine comprehensive chapters, and thus closes the gap in the current book literature. Diode laser fundamentals are discussed, followed by an elaborate discussion of problem-oriented design guidelines and techniques, and by a systematic treatment of the origins of laser degradation and a thorough exploration of the engineering means to address for effective remedies and enhanced optical strength. The discussion covers also stability criteria of critical laser characteristics and key laser robustness factors. Clear design considerations are discussed in the context of reliability engineering concepts and models, along with typical programs for reliability tests and laser product qualifications. A final extended part of novel, advanced diagnostic methods covers in detail, for the first time in book literature, performance- and reliability-impacting factors such as temperature, stress and material instabilities. Further key features include: Furnishes comprehensive practical design guidelines by considering also reliability related effects and key laser robustness factors, and discusses basic laser fabrication and packaging issues. Discusses in detail diagnostic investigations of diode lasers, the

fundamentals of the applied approaches and techniques, many of them pioneered by the author to be fit-for-purpose and novel in the application. Provides a systematic insight into laser degradation modes such as catastrophic optical damage, and covers a wide range of technologies to increase the optical strength of diode lasers. Discusses basic concepts and techniques of laser reliability engineering, and provides for the first time in a book details on a standard commercial program for testing the reliability of high power diode laser.

Semiconductor Laser Engineering, Reliability and Diagnostics reflects the extensive expertise of the author in the diode laser field both as a top scientific researcher as well as a key developer of highly reliable devices. It features two hundred figures and tables illustrating numerous aspects of diode laser engineering, fabrication, packaging, reliability, performance, diagnostics and applications, and an extensive list of references to all addressed technical topics at the end of each chapter. With invaluable practical advice, this novel reference book is suited to practising researchers in diode laser technologies, and to postgraduate engineering students. "--

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