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Microwave Devices and Circuits - Samuel Y. Liao 1980

Microwave Devices and Circuits - Samuel Y. Liao 1990-09


Microwave Engineering - David M. Pozar 2021-02-18

Microwave Devices, Circuits and Subsystems for Communications Engineering - Ian A. Glover 2006-05-01 Microwave Devices, Circuits and Subsystems for Communications Engineering provides a detailed treatment of the common microwave elements found in modern microwave communications systems. The treatment is thorough without being unnecessarily mathematical. The emphasis is on acquiring a conceptual understanding of the techniques and technologies discussed and the practical design criteria required to apply these in real engineering situations. Key topics addressed include: Microwave diode and transistor equivalent circuits Microwave transmission line technologies and microstrip design Network methods and s-parameter measurements Smith chart and related design techniques Broadband and low-noise amplifier design Mixer theory and design Microwave filter design Oscillators, synthesizers and phase locked loops Each chapter is written by specialists in their field and the whole is edited by experience authors whose expertise spans the fields of communications systems engineering and microwave circuit design. Microwave Devices, Circuits and Subsystems for Communications Engineering is suitable for senior electrical, electronic or telecommunication engineering undergraduate students, first year postgraduate students and experienced engineers seeking a conversion or refresher text. Includes a companion website featuring: Solutions to selected problems Electronic versions of the figures Sample chapter

Ferroelectrics in Microwave Devices, Circuits and Systems - Spartak Gevorgian 2009-05-30 Today's wireless communications and information systems are heavily based on microwave technology. Current trends indicate that in the future along with - crowaves, the millimeter wave and Terahertz technologies will be used to meet the growing bandwidth and overall performance requirements. Moreover, motivated by the needs of the society, new industry sectors are gaining ground; such as wireless sensor networks, safety and security systems, automotive, medical, environmental/food monitoring, radio tags etc. Furthermore, the progress and the proliferation in the modern society indicate that in the future these systems have to be more user/consumer friendly, i. e. adaptable, reconfigurable and cost effective. The mobile phone is a typical example which today is much more than just a phone; it includes a range of new functionalities such as Internet, GPS, TV, etc. To handle, in a cost effective way, all available and new future standards, the growing n- ber of the channels and bandwidth both the mobile handsets and the associated systems have to be agile (adaptable/reconfigurable). The complex societal needs have initiated considerable activities in the field of cognitive and software defined radios and triggered extensive research in adequate components and technology platforms. To meet the stringent requirements of these systems, especially in ag- ity and cost, new components with enhanced performances and new functionalities are needed. In this sense the components based on ferroelectrics have greater - testial and already are gaining ground.

Solutions Manual for RF and Microwave Wireless Systems Refer to G. Telecki X6317-Kai Chang 2000-06-05 A comprehensive introduction to the hardware, parameters, and architectures of RF/microwave wireless systems As the basis for some of the hottest technologies of the new millennium, radio frequency (RF) and microwave wireless systems rapidly propel us toward a future in which the transmission of voice, video, and data communications will be possible anywhere in the world through the use of simple, handheld devices. This book provides scientists and engineers with clear, thorough, up-to-date explanations of all aspects of RF and microwave wireless systems, including general hardware components, system parameters, and architectures. Renowned authority Kai Chang covers both communication and radar/sensor systems and extends the discussion to other intriguing topics, from global positioning systems (GPS) to smart highways and smart automobiles. With an emphasis on basic operating principles, Dr. Chang reviews waves and transmission lines, examines modulation and demodulation and multiple-access techniques, and helps bridge the gap between RF/microwave engineering and communication system design. Ampie practical examples of components and system configurations and nearly 300 illustrations and photographs complete this timely and indispensable resource. An Instructor’s Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department

FOUNDATIONS FOR MICROWAVE ENGINEERING, 2ND ED - Robert E. Collin 2007 About The Book: The book covers the major topics of microwave engineering. Its presentation defines the accepted standard for both advanced undergraduate and graduate level courses on microwave engineering. It is an essential reference book for the practicing microwave engineer

Microwave Engineering 2E - Das 2009

Analysis Methods for RF, Microwave, and Millimeter-Wave Planar Transmission Line Structures - Cam Nguyen 2003-06-11 A one-stop reference to the major techniques for analyzing microwave planar transmission line structures The last two decades have seen important progress in the development of methods for the analysis of microwave and millimeter-wave passive structures, which contributed greatly to modern integrated circuit design while also stimulating the development of new planar transmission lines. This timely and authoritative work introduces microwave engineers to the most commonly used techniques for analyzing microwave planar transmission line structures. Designed to be easily accessible to readers with only a fundamental background in electromagnetic theory, the book provides clear explanations of the theory and applications of Green’s function, the conformal-mapping method, spectral domain methods, variational methods, and the mode-matching methods. Coverage for each method is self-contained and supported with problems and solutions as well as useful figures. In addition to providing detailed formulations of the methods under discussion, this highly practical book also demonstrates how to apply the principles of electromagnetic theory to the analysis of microwave boundary value problems, customize methods for specific needs, and develop new techniques. Analysis Methods for RF, Microwave, and Millimeter-Wave Planar Transmission Line Structures is an excellent working resource for anyone involved in the design and engineering of RF, microwave, and millimeter-wave integrated circuits.

Radio-Frequency and Microwave Communication Circuits - Devendra K. Misra 2004-07-30 The products that drive the wireless communication industry, such as cell phones and pagers, employ circuits that operate at radio and microwave frequencies. Following on from a highly successful first edition, the second edition provides readers with a detailed introduction to RF and microwave circuits. Throughout, examples from real-world devices and engineering problems are used to great effect to illustrate circuit concepts. * Takes a top-down approach, describing circuits...
in the overall context of communication systems. * Presents expanded coverage of waveguides and FT mixers. * Discusses new areas such as oscillators designs and digital communication. * An Instructor’s Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Microwave Circuit Design Using Linear and Nonlinear Techniques-George D. Vendelin 2005-10-03 The ultimate handbook on microwave circuit design with CAD. Full of tips and insights from seasoned industry veterans, Microwave Circuit Design offers practical, proven advice on improving the design quality of microwave passive and active circuits-while cutting costs and time. Covering all levels of microwave circuit design from the elementary to the very advanced, the book systematizes and presents computer-aided methods for linear and nonlinear designs used in the design and manufacture of microwave amplifiers, oscillators, and mixers. Using the newest CAD tools, the book shows how to design transistor and diode circuits, and also details CAD’s usefulness in microwave integrated circuit (MIC) and monolithic microwave integrated circuit (MMIC) technology. Applications of nonlinear SPICE programs, now available for microwave CAD, are described. State-of-the-art coverage includes microwave transistors (HEMTs, MODFETs, MESFETs, HBTs, and more), high-power amplifier design, oscillator design including feedback topologies, phase noise and examples, and more. The techniques presented are illustrated with several MMIC designs, including a wideband amplifier, a low-noise amplifier, and an MMIC mixer. This unique, one-stop handbook offers features a major case study of an actual antenna-coupled transistor transceiver, which is compared in detail against CAD predictions; examples of actual circuit designs with photographs of completed circuits; and tables of design formulae.

Microwave Engineering-Ahmad Shahid Khan 2014-03-24 Detailing the active and passive aspects of microwaves, Microwave Engineering: Concepts and Fundamentals covers everything from wave propagation to reflection and refraction, guided waves, and transmission lines, providing a comprehensive understanding of the underlying principles at the core of microwave engineering. This encyclopedic text not only encompasses nearly all facets of microwave engineering, but also gives all topics— including microwave generation, measurement, and processing—equal emphasis. Packed with illustrations to aid in comprehension, the book: Describes the mathematical theory of waveguides and ferrite devices, devoting an entire chapter to the Smith chart and its applications; Discusses different types of microwave components, antennas, tubes, transistors, diodes, and parametric devices; Examines various attributes of cavity resonators, semiconductor and RF/microwave devices, and microwave integrated circuits; Addresses scattering parameters and their properties, as well as planar structures including striplines and microstrips; Considers the limitations of commercial software, illustrating the principles used in each example; and, The underlying concepts in this book cover the, 1) understanding of the physical mechanisms of the thermal devices with the essential formulas and detailed derivations, and 2) designing the thermal devices in conjunction with mathematical modeling, graphical optimization, and occasionally computational fluid-dynamic (CFD) simulation. Important design examples are developed using the commercial software, MathCAD, which allows the students to easily reach the graphical solutions even with highly detailed processes. In other words, the design concept is embodied through the example problems. The graphical presentation generally provides designers or students with the rich and flexible solutions toward achieving the optimal design. A solutions manual will be provided.

Radio-Frequency and Microwave Communication Circuits-Devendra K. Misra 2012-04-12 The products that drive the wireless communication industry, such as cell phones and pagers, employ circuits that operate at radio and microwave frequencies. Following on from a highly successful first edition, the second edition provides readers with a detailed introduction to RF and microwave circuits. Throughout, examples from real-world devices and engineering problems are used to great effect to illustrate circuit concepts. * Takes a top-down approach, describing circuits in the overall context of communication systems. * Presents expanded coverage of waveguides and FT mixers. * Discusses new areas such as oscillators design and digital communication. * An Instructor’s Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Radiation Protection in the Health Sciences-Marilyn E Noz 2007-04-12 This book takes a very practical approach to radiation protection and presents very readable information for anyone working in the radiation field or with radioactive material. Offering information rarely found elsewhere, the authors describe in detail both the basic principles and practical implementation recommendations of radiation protection. Each chapter includes self-assessment review questions and problems, with answers provided, to help readers master important information. Coupled with a teacher’s manual, this book is highly suitable as an undergraduate text for students preparing for careers as X-ray, radiation oncology, or nuclear medicine technologists. It can also be used as a reference for residents in radiology and radiation oncology, medical personnel, or anyone working with radioactive materials such as those involved in homeland security/emergency services, or employed at a nuclear power plant.

Solutions Manual to Accompany Elements of Physical Chemistry-David Smith 2013-05-30 The Solutions Manual to accompany Elements of Physical Chemistry 6th edition contains full worked solutions to all end-of-chapter discussion questions in the book. The manual provides helpful comments and friendly advice to aid understanding. It is also a valuable resource for any lecturer who wishes to use the extensive selection of exercises featured in the text to support either formative or summative assessment, and wants labour-saving, ready access to the full solutions to these questions.


Thermal Design-H. S. Lee 2010-11-17 The proposed is written as a senior undergraduate or the first-year graduate textbook, covering modern thermal devices such as heat sinks, thermoelectric generators and coolers, heat pipes, and heat exchangers as design components in larger systems. These devices are becoming increasingly important and fundamental in thermal design across such diverse areas as microelectronic cooling, green or thermal energy conversion, and thermal control and management in space, etc. However, there is no textbook available covering this range of topics. The proposed book may be used as a capstone design course after the fundamental courses such as thermodynamics, fluid mechanics, and heat transfer. The underlying concepts in this book cover the, 1) understanding of the physical mechanisms of the thermal devices with the essential formulas and detailed derivations, and 2) designing the thermal devices in conjunction with mathematical modeling, graphical optimization, and occasionally computational fluid-dynamic (CFD) simulation. Important design examples are developed using the commercial software, MathCAD, which allows the students to easily reach the graphical solutions even with highly detailed processes. In other words, the design concept is embodied through the example problems. The graphical presentation generally provides designers or students with the rich and flexible solutions toward achieving the optimal design. A solutions manual will be provided.

Modern Semiconductor Devices for Integrated Circuits-Chenning Hu 2010 Modern Semiconductor Devices for Integrated Circuits, First Edition introduces readers to the world of modern semiconductor devices with an emphasis on integrated circuit applications. KEY TOPICS: Electrons and Holes in Semiconductors; Motion and Recombination of Electrons and Holes; Device Fabrication Technology; PN and Metal–Semiconductor Junctions; MOS Capacitor; MOS Transistor; MOSFETs in ICs—Scaling, Leakage, and Other Topics; Bipolar Transistor. MARKET: Written by an experienced teacher, researcher, and expert in industry practices, this succinct and forward-looking text is appropriate for anyone interested in semiconductor devices for integrated circuits, and serves as a suitable reference text for practicing engineers.

Automation Solutions for Analytical Measurements-Heidi Fleischer 2017-08-30 The first book dedicated specifically to automated sample preparation and analytical measurements, this timely and systematic overview not only covers biological applications, but also environmental measuring technology, drug discovery, and quality assurance. Following a critical review of realized automation solutions in biological sciences, the book goes on to discuss special requirements of comparable systems for analytical applications, taking different concepts into consideration and with examples chosen to illustrate the scope and limitations of each technique.

Microwave and Wireless Measurement Techniques-Nuno Borges Carvalho 2013-10-03 From typical metrology parameters for common wireless and microwave components to the implementation of measurement benches, this introduction to metrology contains all the key information on the subject. Using it, readers will be able to: • Interpret and measure most radio and microwave quantities. Several practical examples are included, demonstrating how to measure intermodulation distortion, error vector magnitude, S-parameters and large signal waveforms. Each chapter then ends with a set of exercises, allowing readers to test their
understanding of the material covered and making the book equally suited for course use and for self-study.


Student Solutions Manual for Essential University Physics - Richard Wolfson 2011-01 This solutions manual contains detailed solutions to all of the odd-numbered end-of-chapter problems from the textbook, all written in the IDEA problem-solving framework.

Simulation Method of Multipactor and Its Application in Satellite Microwave Components - Wanzhao Cui 2021-09-16 This book combines the experience and achievements in engineering practice of the China Academy of Space Technology, Xi'an, with a focus on the field of high-power multipactor over recent decades. It introduces the main concepts, theories, methods and latest technologies of multipactor simulation, at both the theoretical level and as a process of engineering, while providing a comprehensive introduction to the outstanding progress made in the research technology of multipactor numerical simulation in China. At the same time, a three-dimensional numerical simulation method of multipactor for typical high-power microwave components of spacecraft is introduced. This book is an essential volume for engineers in the field of high-power microwave technology. It can also be used as a reference for researchers in related fields, or as a teaching reference book for graduate students majoring in Astronautics at colleges and universities.

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Soft Computing Methods for Microwave and Millimeter-Wave Design Problems - Narendra Chauhan 2012-02-06 The growing commercial market of Microwave/Millimeter wave industry over the past decade has led to the experience of interests and opportunities for the design and development of microwave components. The design of most microwave components requires the use of commercially available electromagnetic (EM) simulation tools for their analysis. In the design process, the simulations are carried out by varying the design parameters until the desired response is obtained. The optimization of design parameters by manual searching is a cumbersome and time consuming process. Soft computing methods such as Genetic Algorithm (GA), Artificial Neural Network (ANN) and Fuzzy Logic (FL) have been widely used by EM researchers for microwave design since last decade. The aim of these methods is to tolerate imprecision, uncertainty, and approximation to achieve robust and low cost solution in a small time frame. Modeling and optimization are essential parts and powerful tools for the microwave/millimeter wave design. This book deals with the development and use of soft computing methods for tackling challenging design problems in the microwave/millimeter wave domain. The aim in the development of these methods is to obtain the design in small time frame while improving the accuracy of the design for a wide range of applications. To achieve this goal, a few diverse design problems of microwave field, representing varied challenges in the design, such as different microstrip antennas, microwave filters, a microstrip-via and also some critical high power components such as nonlinear tapers and RF-windows are considered as case-study design problems. Different design methodologies are developed for these applications. The presents soft computing methods, their review for microwave/millimeter wave design problems and specific case-study problems to infuse better insight and understanding of the subject.

Solution Manual for 100 Genesys Designed Examples - Second Edition - Ali Behagi 2019-01-20 The Second Edition of the 100 Genesys Design Examples book consolidates relevant knowledge and practical skills that are highly sought-after in the RF and microwave industry. This book provides practical hands-on experience for the practicing engineer or university student to quickly acquire the practical understanding of RF and microwave circuit design. This is made possible by the well-chosen design examples and using the Keysight Genesys software for their solution. The powerful synthesis and simulation tools in Genesys software are used by more than 5,000 RF and microwave engineers worldwide.

Student Solution Manual for Foundation Mathematics for the Physical Sciences - F. Riley 2011-03-28 This Student Solution Manual provides complete solutions to all the odd-numbered problems in Foundation Mathematics for the Physical Sciences. It takes students through each problem step-by-step, so they can clearly see how the solution is reached, and understand any mistakes in their own working. Students will learn by example how to arrive at the correct answer and improve their problem-solving skills.

Radio-Frequency Electronics - Jon B. Hagen 2009-06-11 Covering the fundamentals applying to all radio devices, this is a perfect introduction to the subject for students and professionals.

Microwave Processing of Materials - National Research Council 1994-02-01 Microwaves can be effectively used in the processing of industrial materials under a wide range of conditions. However, microwave processing is complex and multidisciplinary in nature, and a high degree of technical knowledge is needed to determine how, when, and where the technology can be most profitably utilized. This book assesses the potential of microwave technology for industrial applications, reviews the latest equipment and processing methods, and identifies both the gaps in understanding of microwave processing technology and the promising development opportunities that take advantage of this new technology's unique performance characteristics.

Microwave Engineering - S Vasuki 2007-02-05 This book on Microwave Engineering presents the subject in simplified manner with equal weightage to both introductory and advance level topics. The book encompasses the entire undergraduate requirements of the microwave engineering course with plentiful pedagogical aids. The students will find this book extremely handy during the course. Salient Features: ? Demonstration of Monolithic Microwave Integrated Circuits with emphasis on device structure, wafer processing technology, circuit Design and RF performances ? Dedicated Chapter on Solid State Semiconductor Devices and Microwave Amplifier Design and Matching ? In depth concept analysis supported by stepwise solution of derivations

High Power Microwaves - John E. Barlow 2006-07-05 The first edition of High Power Microwaves was considered to be the defining book for this field. Not merely updated but completely revised and rewritten, the second edition continues this tradition. Written from a systems perspective, the book provides a unified, coherent presentation of the fundamentals in this rapidly changing field. The p

College of Engineering - University of Michigan. College of Engineering 1987

MICROWAVE DEVICES AND CIRCUIT DESIGN - GANESH PRASAD SRIVASTAVA 2006-01-01 This textbook presents a unified treatment of theory, analysis and design of microwave devices and circuits. It is designed to address the needs of undergraduate students of electronics and communication engineering for a course in microwave engineering as well as those of the students pursuing M.Sc. courses in electronics science. The main objective is to provide students with a thorough understanding of microwave devices and circuits, and to acquaint them with some of the methods used in circuit analysis and design. Several types of planar transmission lines such as stripline, microstrip, slot line and a few other structures have been explained in detail. The performance and geometry of microwave transistors both bipolar and field-effect have been analysed. Microwave passive components such as couplers, power dividers, attenuators, phase shifters and circulators have been comprehensively dealt with. Finally, the analysis and design aspects of microwave transistor amplifiers and oscillators are presented using the scattering parameters technique. Numerous solved problems and chapter-end questions are included for practice and reinforcement of the concepts.

Microelectronic Circuit Design - Richard Jaeger 2015-02-27 Richard Jaeger and Travis Blalock present a balanced coverage of analog and digital circuits, students will develop a comprehensive understanding of the basic techniques of modern electronic circuit design, analog and digital, discrete and integrated. A broad spectrum of topics are included in Microelectronic Circuit Design which gives the professor the option to easily select and customize the material to satisfy a two-semester or three-quarter sequence in electronics. Jaeger/Blalock emphasizes design through the use of design
examples and design notes. Excellent pedagogical elements include chapter opening vignettes, chapter objectives, "Electronics in Action" boxes, a problem-solving methodology, and "Design Note" boxes. The use of the well-defined problem-solving methodology presented in this text can significantly enhance an engineer's ability to understand the issues related to design. The design examples assist in building and understanding the design process.

High-Frequency Magnetic Components-Marian K. Kazimierczuk
2011-08-24

Semiconductor Devices: Physics and Technology, 3rd Edition-Simon M. Sze 2012-04-23 The awaited revision of Semiconductor Devices: Physics and Technology offers more than 50% new or revised material that reflects a multitude of important discoveries and advances in device physics and integrated circuit processing. Offering a basic introduction to physical principles of modern semiconductor devices and their advanced fabrication technology, the third edition presents students with theoretical and practical aspects of every step in device characterizations and fabrication, with an emphasis on integrated circuits. Divided into three parts, this text covers the basic properties of semiconductor materials, emphasizing silicon and gallium arsenide; the physics and characteristics of semiconductor devices bipolar, unipolar special microwave and photonic devices; and the latest processing technologies, from crystal growth to lithographic pattern transfer.

Microwave Engineering and Systems Applications-Edward A. Wolff

RF and Microwave Wireless Systems-Kai Chang 2004-04-05 A comprehensive introduction to the hardware, parameters, and architectures of RF/microwave wireless systems. As the basis for some of the hottest technologies of the new millennium, radio frequency (RF) and microwave wireless systems rapidly propel us toward a future in which the transmission of voice, video, and data communications will be possible anywhere in the world through the use of simple, handheld devices. This book provides scientists and engineers with clear, thorough, up-to-date explanations of all aspects of RF and microwave wireless systems, including general hardware components, system parameters, and architectures. Renowned authority Kai Chang covers both communication and radar/sensor systems and extends the discussion to other intriguing topics, from global positioning systems (GPS) to smart highways and smart automobiles. With an emphasis on basic operating principles, Dr. Chang reviews waves and transmission lines, examines modulation and demodulation and multiple-access techniques, and helps bridge the gap between RF/microwave engineering and communication system design. Ample practical examples of components and system configurations and nearly 300 illustrations and photographs complete this timely and indispensable resource. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Handbook of Microwave and Radar Engineering-Anatoly Belous
2021-01-04 This comprehensive handbook provides readers with a single-source reference to the theoretical fundamentals, physical mechanisms and principles of operation of all known microwave devices and various radars. The author discusses proven methods of computation and design development, process, schematic, schematic-technical and construction peculiarities of each breed of the microwave devices, as well as the most popular and original technical solutions for radars. Coverage also includes the history of creation of the most widely used radars, as well as guidelines for their potential upgrading. Offers readers a comprehensive, systematized view of all contemporary knowledge, acquired during the last 20 years, on radars and related disciplines; Provides a single-source reference on the physical mechanisms and principles of operation of the basic components of radio location devices, including theoretical aspects of designing the necessary, high-efficiency electronic devices and systems, as well as key, practical methods of computation and design; Presents complex topics using simple language, minimizing mathematics.