ARTECH HOUSE
BOSTON I LONDON

MICROWAVE & RF DESIGN GUIDANCE FOR TOP PERFORMANCE

FIND EXCLUSIVE SAVINGS ON 17 NEW AND BESTSELLING MICROWAVE & RF ENGINEEIRNG BOOKS

ORDER AT ARTECHHOUSE.COM

A leading technical book publisher, Artech House provides today's professionals and students with cutting-edge books and software from the world's top authorities. From RF/microwave design, wireless communications, radar engineering, and electronic defense, to GPS/GNSS, power engineering, computer security, and building technology, Artech House publishes the forward-looking titles that engineers and managers need to excel.

Artech House is a subsidiary of Horizon House Publications, Inc., publisher of the internationally acclaimed magazine Microwave Journal®.

Artech House operates two full service offices: the main headquarters in suburban Boston, and a European division located in Central London. Both offices offer full publishing capabilities, from sales and distribution, to acquisitions and editorial, to promotion and marketing functions.

Shop and **Save** at **www.ArtechHouse.com**

For customers in the US, Canada, South America, Australia, New Zealand:

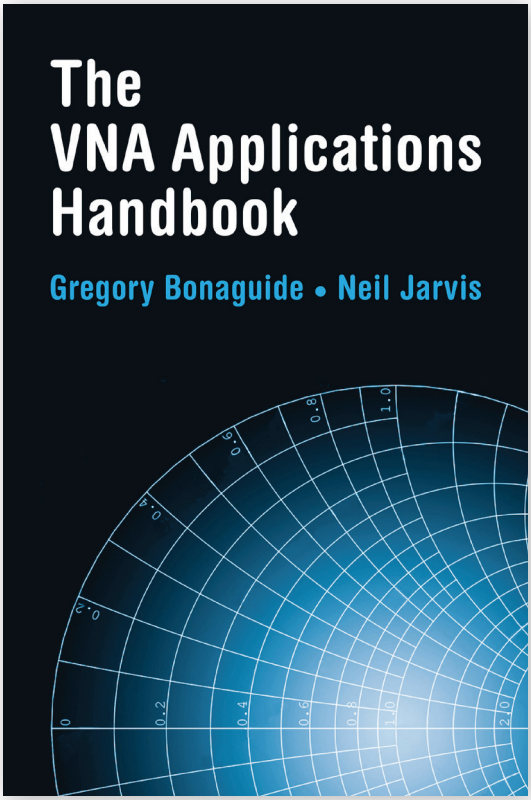
Call 1-800-225-9977 (in the U.S or Canada), or 1-781-769-9750, ext. 4030

email artech@ArtechHouse.com

For customers in the UK, EMEA, Asia, or international orders:

Call +44 (0)20 7596-8750

email artech-uk@ArtechHouse.com



"This is an excellent book that explains the fundamentals of the Vector Network Analyzer and detailed information on each measurement types. The book explains each measurement method in great detail including the system calibration techniques which aid you to understand the benefits and limitations of the measurement types. This is a highly recommended book for engineers who use Vector Network Analyzers for their work."

– Chris Lee, Principal RF Engineer,
Apptronics LLC

RECENT RELEASE!

The VNA Applications Handbook

Gregory Bonaguide and Neil Jarvis

Written by prominent experts in the field, this authoritative new resource provides guidelines for performing a wide variety of Vector Network Analyzers (VNA) measurements. The capabilities and limitations of modern VNA in the context of challenging real-world applications are explained, as well as insights for optimizing test setups and instrument settings, making accurate measurements and, equally important, avoiding costly mistakes.

Organized by topic, the readers can focus on chapters covering particular measurement challenges. Application topics include linear and non-linear measurements of passive and active devices, frequency converting devices, and special considerations for high-power, high-gain, and pulsed devices. Signal Integrity and time-domain reflectometry are covered, as well as emerging applications at millimeter-wave frequencies driven by 5G and automotive radar. Waveguide is presented, with emphasis on understanding guided-wave propagation and the associated calculations required for creating calibration standards. Each application is supported by illustrations that help explain key concepts and VNA screenshots are used to show both expected and, in some cases, unexpected results. This book equips engineers and lab technicians to better understand these important instruments, and effectively use them to develop the technologies that drive our world.

400 pp. • 2019 • eBook ISBN: 978-1-63081-602-5 • $84.50 / £52
Print ISBN: 978-1-63081-600-1• $169 / £139

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers

"I truly believe that this book will soon become a must and an essential consulting material in the engineering school libraries as well as part of the stuff of engineers and technologists devoted to testing and measurements in anechoic sites of equipment, components or systems."

– Dr. Israel Garcia-Ruiz, Director for the Metrology in Radiofrequencies Area, *National Center for Metrology, CENAM*

RECENT RELEASE!

Anechoic Range Design for Electromagnetic Measurements

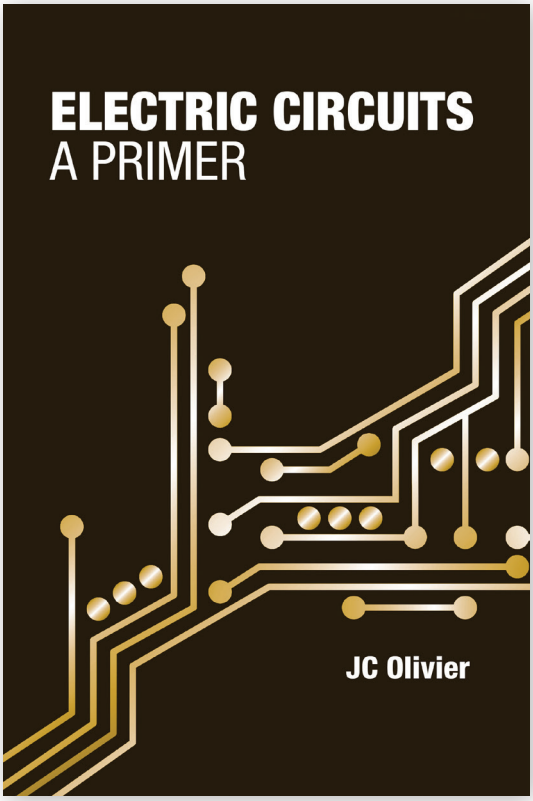
Vince Rodriguez

As technologies for wireless communications, including 5G and Internet of Things (IoT), require more complex antennas, practitioners need more information on the best methods to perform measurements on these different types of antennas. This exciting resource provides guidance on the proper design of indoor ranges for RF antenna measurements. The important aspects of specifying the range or resources needed in a development program are explored. Analysis of existing ranges to determine their suitability for performing specific test that a user of the range may require is also introduced. Readers find in-depth coverage of the design of ranges and how to evaluate the error contributions of the range and the best approach to measure a system, antenna, or other radiating hardware.

The book provides information on selecting the right range to make a specific type of measurement and understanding for an RF absorber. Matlab scripts are also included to help readers estimate the performance of an RF absorber. Readers will be able to estimate the required space for a given type of measurement, as well as identify what type of range is the better choice, based on physical limitations and economics. Simple rules for the design of an anechoic chamber, based on the required accuracy and parameters to be measured are described. Packed with examples and references, this book is a prime reference for any practitioner that uses or designs facilities for the measurement of electromagnetic energy.

416 pp. • 2019 • eBook ISBN: 978-1-63081-539-4 • $84.50 / £69.50
Print ISBN: 978-1-63081-537-0 • $169 / £139

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers



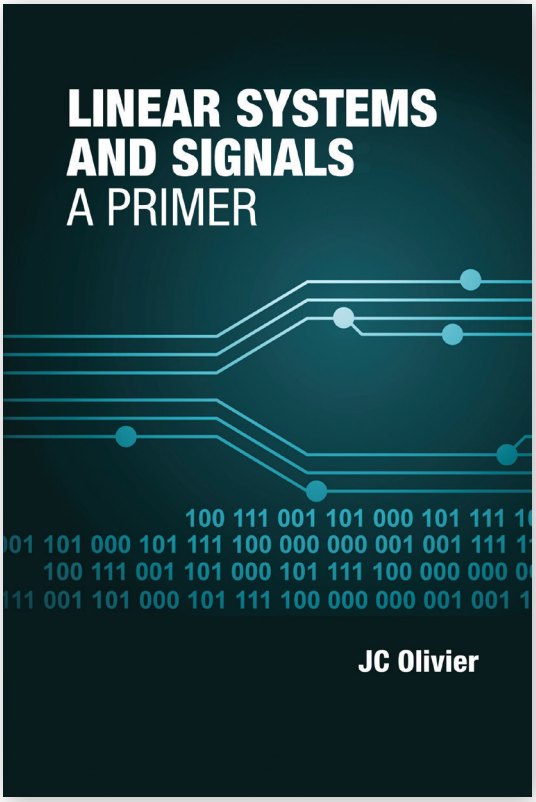
Electric Circuits: A Primer

Jan Cornelius Olivier

This new resource provides you with a comprehensive and concise introduction of the underpinnings and fundamentals of electrical circuits. Models, the limitations of models, and examples are clearly explained.

The book examines circuits with static sources and explains how to reduce any circuit to a system of linear equations. Moreover, the book presents you with dynamic sources that exhibit transient phenomena that require the solution of linear differential equations. MATLAB® code is used throughout the book to help solve key problems and assist engineers in the field. Additionally, this hands-on volume explores circuits with sinusoidal sources also known as the AC paradigm.

262 pp. • 2018 • eBook ISBN: 978-1-63081-551-6 • $64.50 / £51.50
Print ISBN: 978-1-63081-549-3 • $129 / £103



Linear Systems and Signals: A Primer

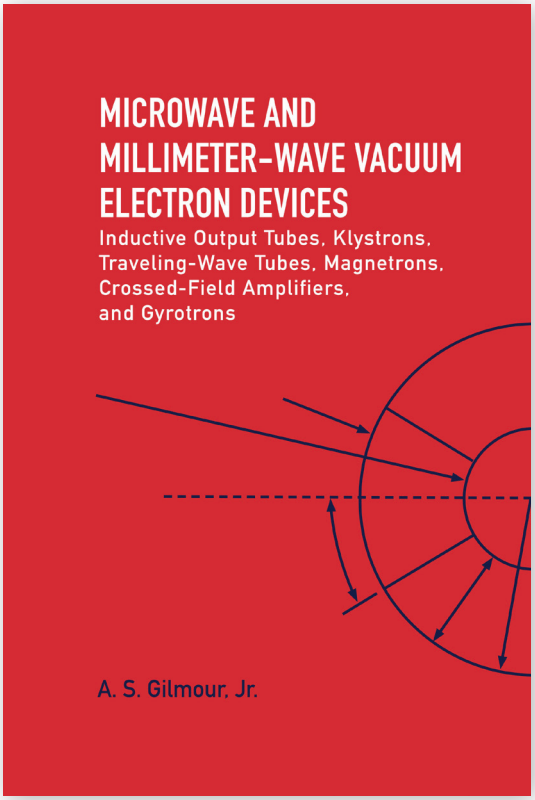
Jan Cornelius Olivier

This new resource covers a wide range of content by focusing on theorems and examples to explain key concepts of signals and linear systems theory in fewer than 300 pages. Readers will learn how to compute the impulse response of an electronic circuit, design a filter in the presence of colored noise, and use the Z transform to design a digital filter.

The book covers transform theory and statespace analysis and design. Stochastic systems and signals, a topic that has become important recently with the advent of renewable energy, is also presented.

304 pp. • 2018 • eBook ISBN: 978-1-63081-615-5 • $59.50 / £51.50
Print ISBN: 978-1-63081-613-1• $119 / £103

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers



COMING SOON!

Microwave and Millimeter-Wave Vacuum Electron Devices: Inductive Output Tubes, Klystrons, Traveling-Wave Tubes, Magnetrons, Crossed-Field Amplifiers, and Gyrotrons

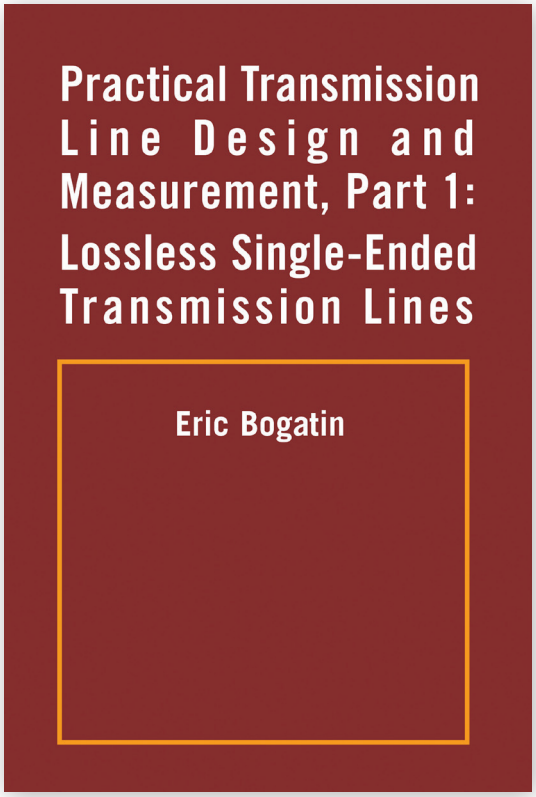
A.S. Gilmour, Jr.

Written by an internationally recognized as an expert on the subject of microwave (MW) tubes, this book presents and describes the many types of microwave tubes, and despite competition from solid-state devices (those using GaN, SiC, et cetera), which continue to be used widely and find new applications in defense, communications, medical, and industrial drying. Helix traveling wave tubes (TWTs), as well as coupled cavity TWTs are covered. Klystrons, and how they work, are described, along with the physics behind it and examples of devices and their uses. Vacuum electron devices are explained in detail and examines the harsh environment that must exist in tubes if they are to operate properly. The secondary emission process and its role in the operation of crossed-field devices is also discussed.

The design of collectors for linear-beam tubes, including power dissipation and power recovery, are explored. Discussions of important noise sources and techniques that can be used to minimize their effects are also included. Presented in full color, this book contains a balance of practical and theoretical material so that those new to microwave tubes as well as experienced microwave tube technicians, engineers, and managers can benefit from its use.

950 pp. • 2020 • eBook ISBN: 978-1-63081-729-9 • $89.50 / £77.50
Print ISBN: 978-1-63081-728-2 • $179 / £155

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers



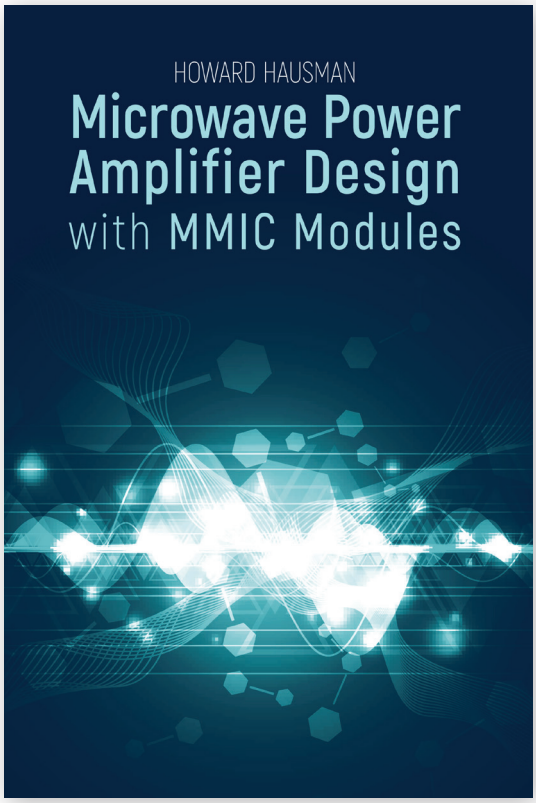
COMING SOON!

Practical Transmission Line Design and Measurement, Part 1: Lossless Single-Ended Transmission Lines

Eric Bogatin

This book establishes a solid foundation in the essential principles of how systems interact with transmission lines, how the physical design of interconnects affects transmission line properties, and how to interpret transmission line design (TDR) measurements to extract important figures of merits and avoid common misinterpretations. This book presents an intuitive understanding of transmission lines.

420 pp. • 2020 • eBook ISBN: 978-1-63081-692-6 • $79 / £73



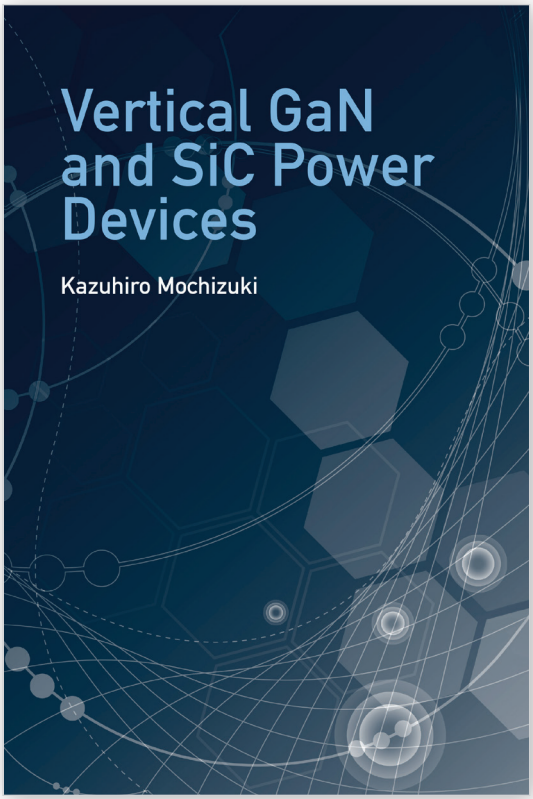
Microwave Power Amplifier Design with MMIC Modules

Howard Hausman

Solid state power amplifiers (SSPA) are a critical part of many microwave systems. Designing SSPAs with monolithic microwave integrated circuits (MMIC) has boosted device performance to much higher levels focused on PA modules. This cutting-edge book offers engineers practical guidance in selecting the best power amplifier module for a particular application and interfacing the selected module with other power amplifier modules in the system. It also explains how to identify and mitigate peripheral issues concerning the PA modules, SSPAs, and microwave systems.

384 pp. • 2018 • eBook ISBN: 978-1-63081-473-1 • $84.50 / £73
Print ISBN: 978-1-63081-346-8 • $169 / 146

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers



Vertical Gan and Sic Power Devices

Kazuhiro Mochizuki

This unique new resource provides a comparative introduction to vertical Gallium Nitride (GaN) and Silicon Carbide (SiC) power devices using real commercial device data, computer, and physical models. This book uses commercial examples from recent years and presents the design features of various GaN and SiC power components and devices. Vertical verses lateral power semiconductor devices are explored, including those based on wide bandgap materials. The abstract concepts of solid state physics as they relate to solid state devices are explained with particularemphasis on power solid state devices.

308 pp. • 2018 • eBook ISBN: 978-1-63081-429-8 • $84.50 / £73
Print ISBN: 978-1-63081-427-4 • $169 / £146

High-Efficiency Load Modulation Power Amplifiers for Wireless Communications

Zhancang Wang

This cutting-edge resource presents you with a complete and systematic overview of the practical design considerations of radio frequency (RF) high efficiency load modulation power amplifiers (PA) for modern wireless communications for 4G and beyond. It provides you with comprehensive insight into all aspects of load modulation PA design and optimization not only covering design approaches specifically for passive and active load modulation operation but also hybrid with dynamic supply modulation and digital signal processing algorithms required for performance enhancement.

414 pp. • 2017 • eBook ISBN: 978-1-63081-467-0 • $89.50 / £54
Print ISBN: 978-1-60807-987-2 • $125 / £108

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers

COMING SOON!

Creating FPGA & Programmable SoC Based Embedded Systems – Architecture and Design

Adam Taylor, Eugen Krassin, Olaf Deppe-Reibold, and Steffen Zimmerman

This practical resource introduces power amplifier (PA) design and a valuable reference and guide for practicing PA designers.

The book considers the device technology and the interaction of the transistor with the circuit, providing a frequency-based approach to enable narrow-band and wide-band PA designs, accommodating the practical trade-offs between performance and costs, and including system-level considerations such as linearization and efficiency enhancement techniques.

310 pp. • 2020 • eBook ISBN: 978-1-63081-684-1 • $84 / £72
Print ISBN: 978-1-63081-683-4 • $168 / £146

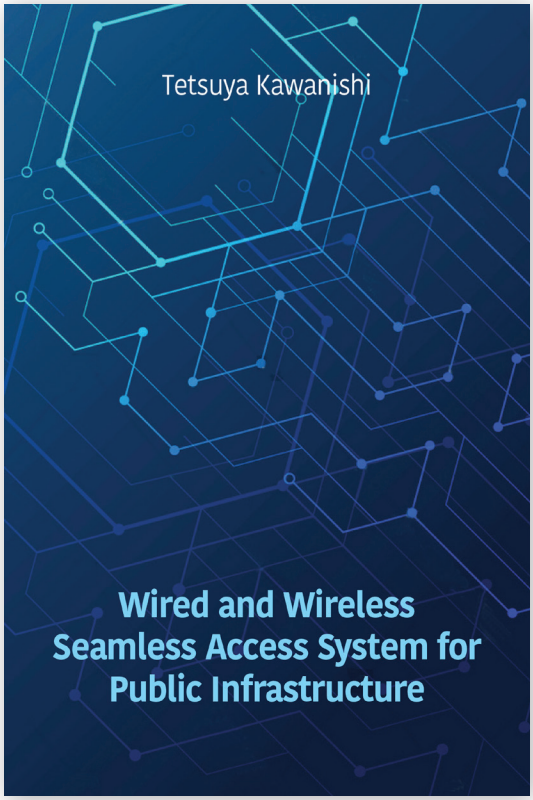
Technologies for RF Systems

Terry Edwards

This comprehensive resource provides an introduction to the main concepts, technologies, and components in microwave and RF engineering. It presents details about how to design various amplifiers, circuits, and chips for communication systems. It offers insight into selecting appropriate ADC and DAC technology. Several worked examples are found throughout the book.

330 pp • 2018 • eBook ISBN: 978-1-63081-452-6 • $79.50 / £69
Print ISBN: 978-1-63081-450-2 • $138 / £138

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers



COMING SOON!

Wired and Wireless Seamless Access System for Public Infrastructure

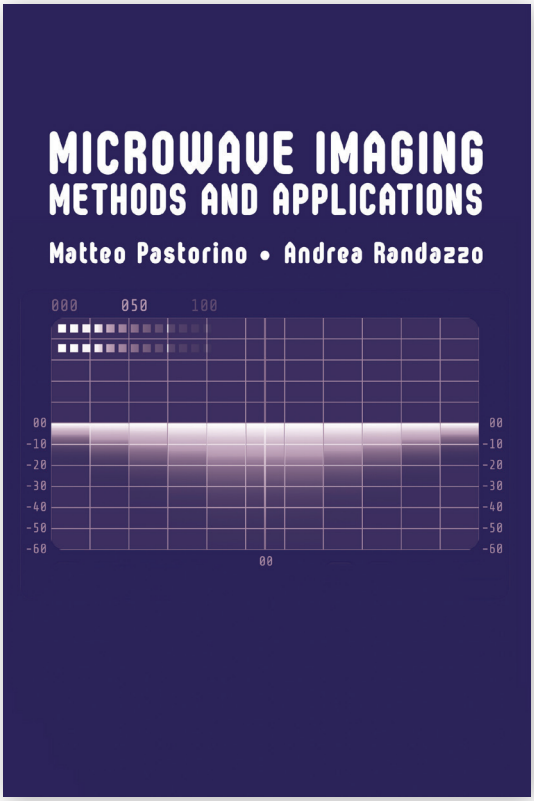
Tetsuya Kawanishi

This innovative resource presents comprehensive and detailed information on wired and wireless seamless access systems consisting of various types of transmission media including microwave, millimeter-wave, THz wave, and lightwave in fibers. This book explains heterogenous networks consisting of various transmission media with many media converters. Applications of seamless access networks for public infrastructure such as airports, railways and information and communications systems are described. The book focuses on two important features of seamless access systems, including high-capacity transmission capacity limitation due to economics as well as physics, and low-latency transmission. Latency has significant impact on applications including financial transactions and online gaming. Low-latency data is very important or self-driving cars as well. This book presents the concept of sensor-over-fiber, where many antenna units are connected through optical fibers to gather sensor responses coherently.

This book provides possible scenarios of future mobile networks which have many antenna units and opto-electric device technologies. Readers will learn about basic and state-of-the-art signal estimation techniques and concludes with exploration of social issues on future information and communication (ICT) infrastructure.

330 pp. • 2020 • eBook ISBN: 978-1-63081-741-1 • $79.50 / £64
Print ISBN: 978-1-63081-740-4 • $159 / £138

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers

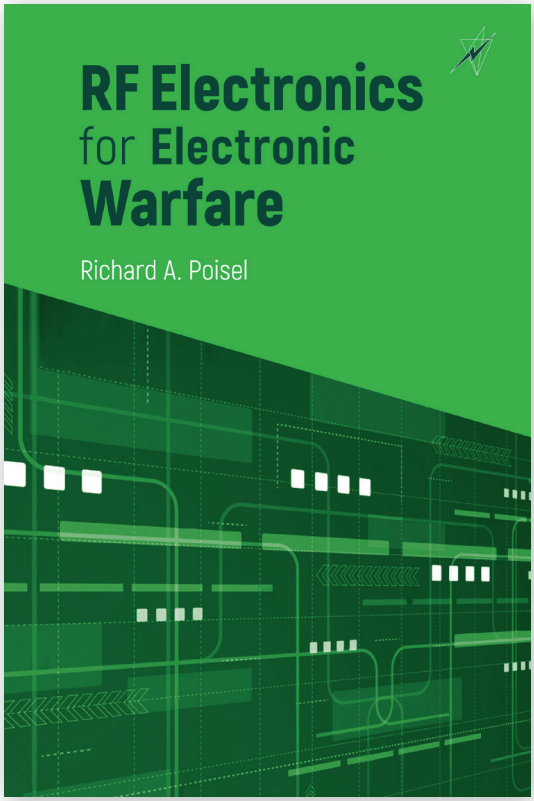


Microwave Imaging Methods and Applications

Matteo Pastorino and Andrea Randazzo

Microwave Imaging Methods and Applications provides practitioners and researchers with a complete overview of the latest and most important noninvasive and nondestructive techniques for inspecting structures and bodies by using microwaves. Placing emphasis on applications, the book considers many areas, from medical imaging and security... to industrial engineering and subsurface prospection. For each application, readers are presented with the objectives of the inspection and related challenges. Moreover, this groundbreaking resource details computational methods that can be used to solve inverse problems related to specific applications.

310 pp. • 2018 • eBook ISBN: 978-1-63081-526-4 • $79.50 / £69
Print ISBN: 978-1-63081-348-2 • $159 / £138



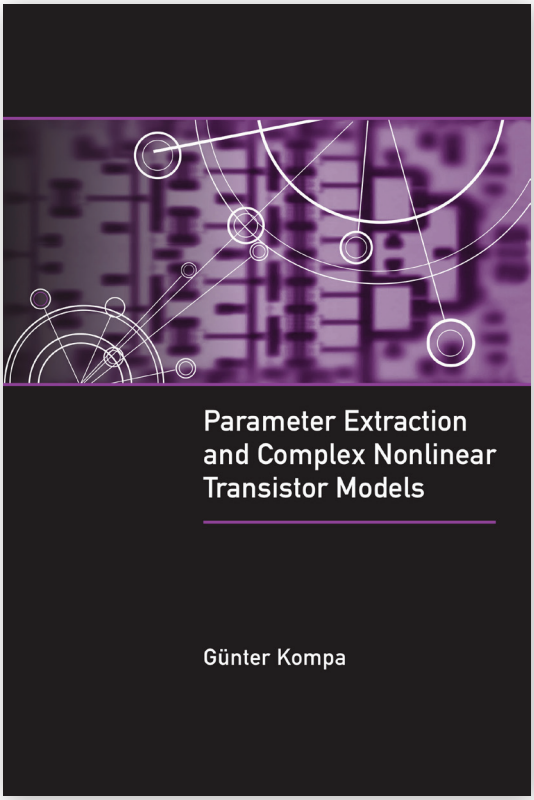
RF Electronics for Electronic Warfare

Richard A. Poisel

This exciting new resource investigates the function of RF communication in electronic warfare systems. The book provides in-depth coverage of how RF signals must be constructed to perform jamming missions, which prevent a receiver from properly extracting a target signal. Technical descriptions of oscillators and modulators, which generate the RF signals, are presented and explored. Power supplies that generate adequate power for fueling high power amplifiers are also described and their operations investigated.

600 pp. • 2019 • eBook ISBN: 978-1-63081-706-0 • $89.50 / £74.50
Print ISBN: 978-1-63081-705-3 • $179 / £149

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers



RECENT RELEASE!

Parameter Extraction and Complex Nonlinear Transistor Models

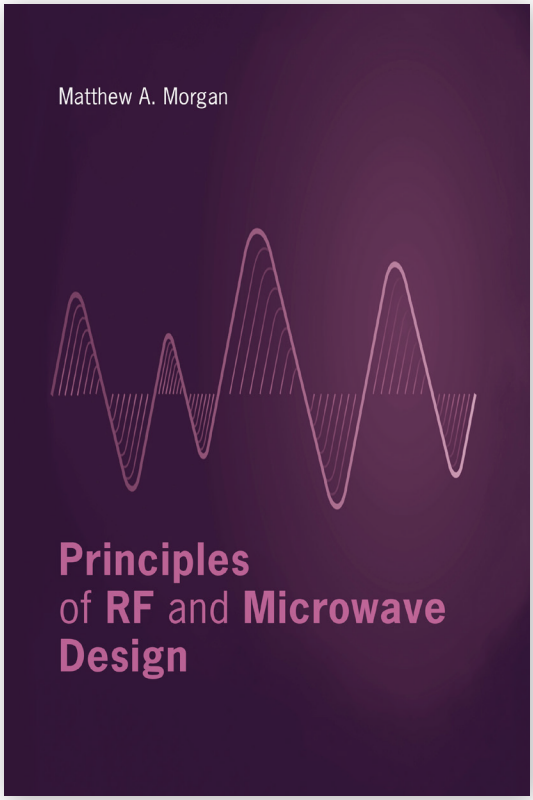
Gunter Kompa

All model parameters are fundamentally coupled together, so that directly measured individual parameters, although widely used and accepted, may initially only serve as good estimates.
This comprehensive resource presents all aspects concerning the modeling of semiconductor field-effect device parameters based on gallium-arsenide (GaAs) and gallium nitride (GaN) technology. Metal-semiconductor field-effect transistors (MESFETs), high electron mobility transistors (HEMTs) and heterojunction bipolar transistors (HBTs), their structures and functions, and existing transistor models are also classified. The Shockley model is presented in order to give insight into semiconductor field-effect transistor (FET) device physics and explain the relationship between geometric and material parameters and device performance.

Extraction of trapping and thermal time constants is discussed. A special section is devoted to standard nonlinear FET models applied to large-signal measurements, including static-/pulsed-DC and single-/two-tone stimulation. High power measurement setups for signal waveform measurement, wideband source-/load-pull measurement (including envelope source-/load pull) are also included, along with high-power intermodulation distortion (IMD) measurement setup (including envelope load-pull).

610 pp. • 2019 • eBook ISBN: 978-1-63081-745-9 • $84.50 / £74.50
ISBN: 978-1-63081-744-2 • $169 / £149

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers



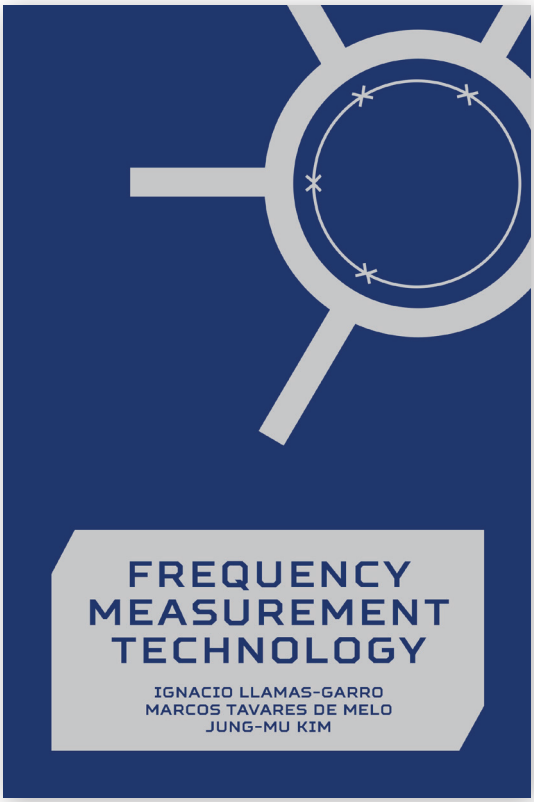
RECENT RELEASE!

Principles of RF and Microwave Design

Matthew A. Morgan

This comprehensive resource provides a thorough introduction to the principles of electronic circuits operating in the radio, microwave, and millimeter-wave frequency ranges. The book highlights the fundamental physical laws of classical electromagnetics using a foundation of Maxwell's equations to give insight into the operating principles of circuit elements of all kinds, from lumped elements to transmission lines, waveguides, optical fibers, and quasi-optical structures.

330 pp. • 2020 • eBook ISBN: 978-1-63081-741-1 • $79.50 / £77.50
Print ISBN: 978-1-63081-740-4 • $169 / £155



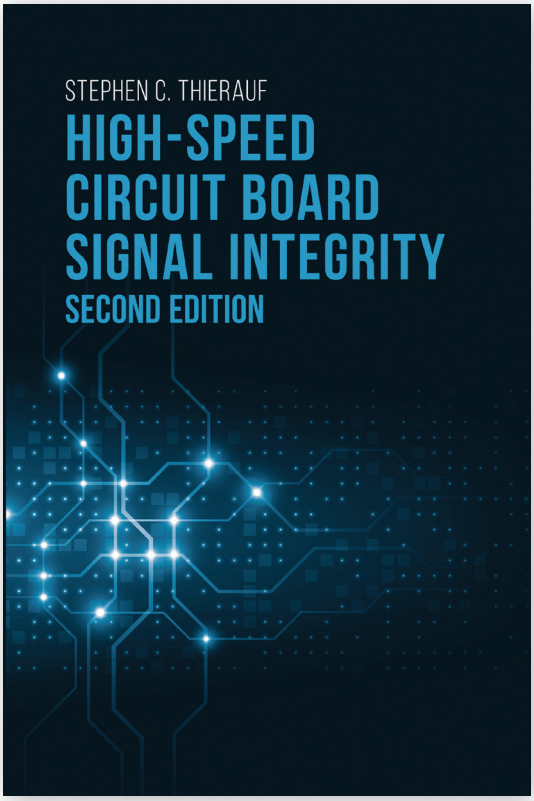
Frequency Measurement Technology

Ignacio Llamas-Garro, Marcos Tavares de Melo, and Jung-Mu Kim

This unique first-of-its-kind resource provides practical coverage of the design and implementation of frequency measurement receivers, which aid in identifying unknown signals. The technologies used in frequency measurement interferometry-based on-delay lines and filters are explored in this book. Practitioners also find concrete examples of microwave photonics implementations. The designs and concepts that cover conventional photonic instantaneous frequency measurement (IFM) circuits are explained.

222 pp. • 2018 • eBook ISBN: 978-1-63081-516-5 • $64.50 / £56
Print ISBN: 978-1-63081-171-6 • $129 / £112

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers

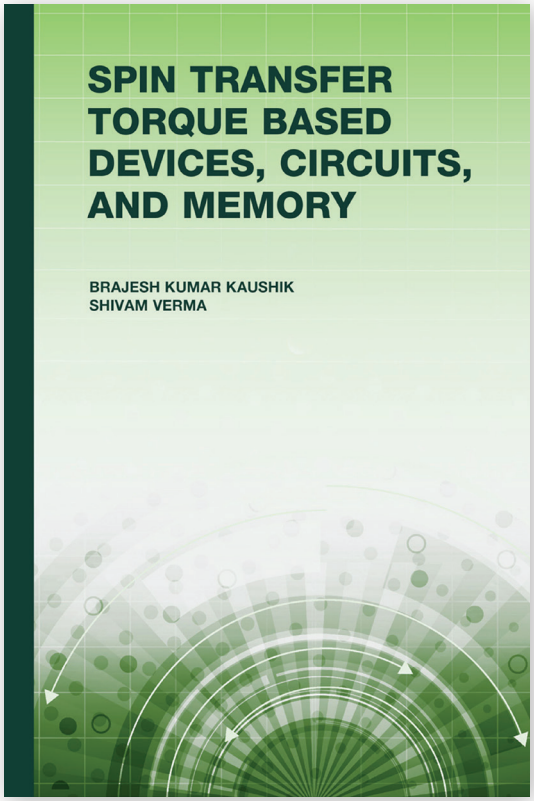


High-Speed Circuit Board Signal Integrity, Second Edition

Stephen C. Thierauf

This thoroughly updated leading-edge circuit design resource offers you the knowledge needed to quickly pinpoint transmission problems that can compromise the entire circuit design. This new edition demonstrates how to apply EM theory to solve signal integrity problems with a practical application-oriented approach. Discussing both design and debug issues at gigabit per second data rates, the book serves as a practical reference for projects involving high-speed serial signaling on printed wiring boards. Step-by-step, this book goes from reviewing the essentials of linear circuit theory, to examining practical issues of pulse propagation lossless and lossy transmission lines.

320 pp. • 2017 • eBook ISBN: 978-1-63081-444-1 • $84.50 / £73
Print ISBN: 978-1-60807-977-3 • $169 / £146



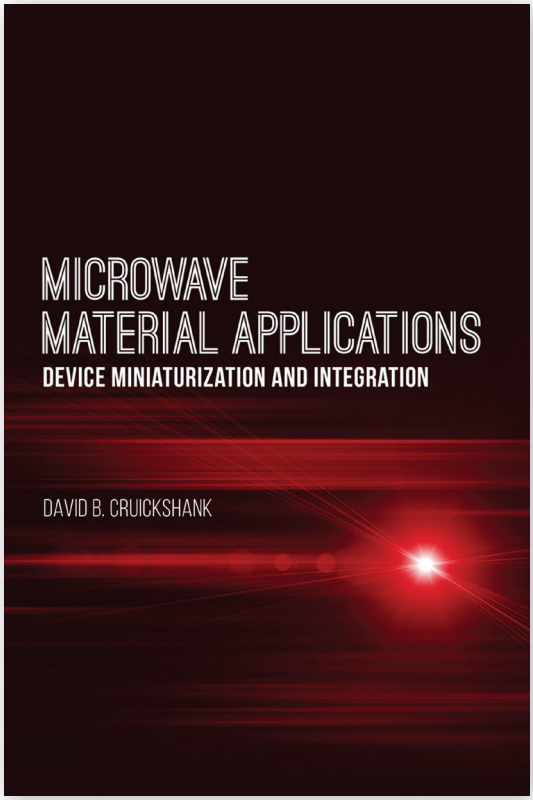
Spin Transfer Torque Based Devices, Circuits, and Memory

Brajesh Kumar Kaushik and Shivam Verma

This first-of-its-kind resource is completely dedicated to spin transfer torque (STT) based devices, circuits, and memory. A wide range of topics including, STT MRAMs, MTJ based logic circuits, simulation and modeling strategies, fabrication of MTJ CMOS circuits, non-volatile computing with STT MRAMs, all spin logic, and spin information processing are explored. State-of-the-art modeling and simulation strategies of spin transfer torque based devices and circuits in a lucid manner are covered.

302 pp. • 2016 • eBook ISBN: 978-1-63081-436-6 • $89.50 / £54
Print ISBN: 978-1-63081-091-7 • $179 / £125

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers



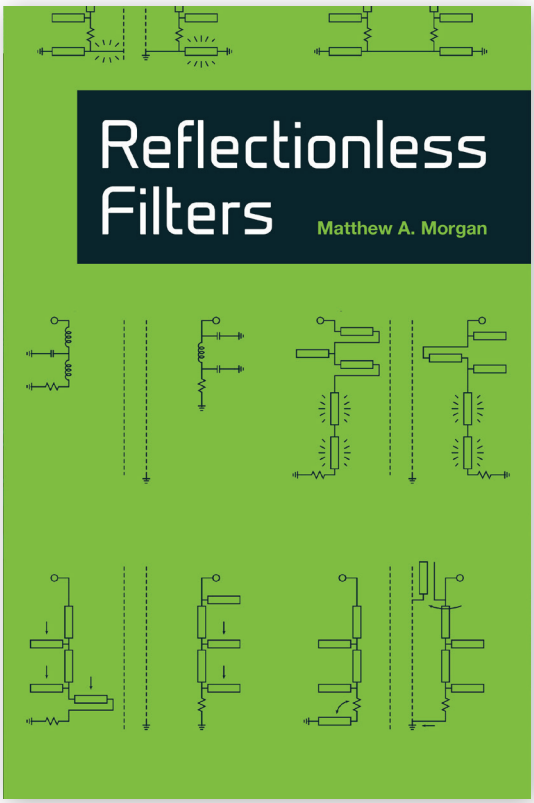
Microwave Material Applications: Device Miniaturization and Integration

David B. Cruickshank

This comprehensive new resource based on the classic Artech House title, *Microwave Materials for Wireless Applications*, introduces you to the use of new microwave materials for passive devices including ferrites, magnetization garnets, dielectric materials, and absorbers for wireless and antenna applications.

This book explores a new set of magnetic and dielectric materials that assist with size reduction of passive devices such as ferrite isolators and circulators. Revised data on the applications of new materials, including examples of different combinations of magnetic, dielectric, and absorber materials into integrated devices is presented.

246 pp. • 2016 • eBook ISBN: 978-1-63081-435-9 • $84.50 / £38.50
Print ISBN: 978-1-63081-101-3 • $77 / £77



Reflectionless Filters

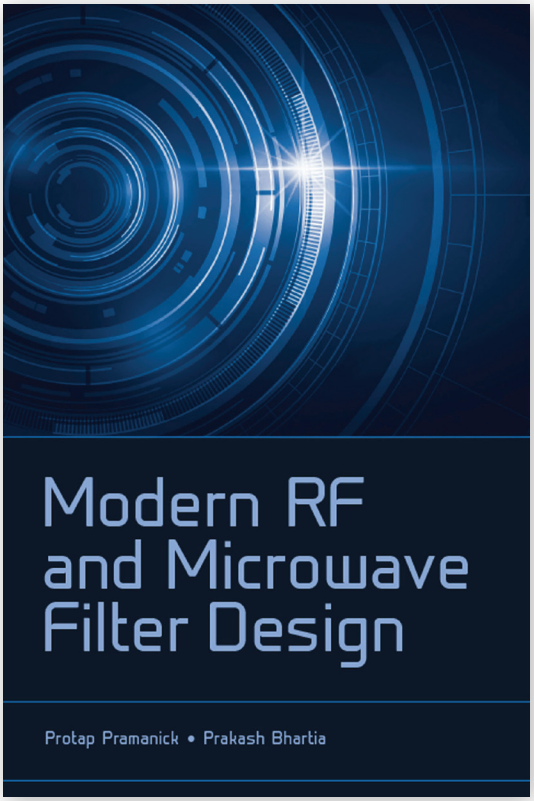
Matthew A. Morgan

This invaluable resource introduces you to progressive techniques for the creation of sophisticated reflectionless filter topologies that have identically zero reflection coefficient at all frequencies. Practical implementations are discussed along with their advantages when compared to classical absorptive filters and their benefits in real-world systems such as up/down converters, multiplier chains, broadband amplifiers, analog-to-digital converters, and time-domain applications.

This book offers insight into the innovative process of developing reflectionless filters from first principles using both lumped elements and transmission lines.

280 pp. • 2017 • eBook ISBN: 978-1-63081-405-2 • $69.50 / £60
Print ISBN: 978-1-63081-327-7 • $139 / £120

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers



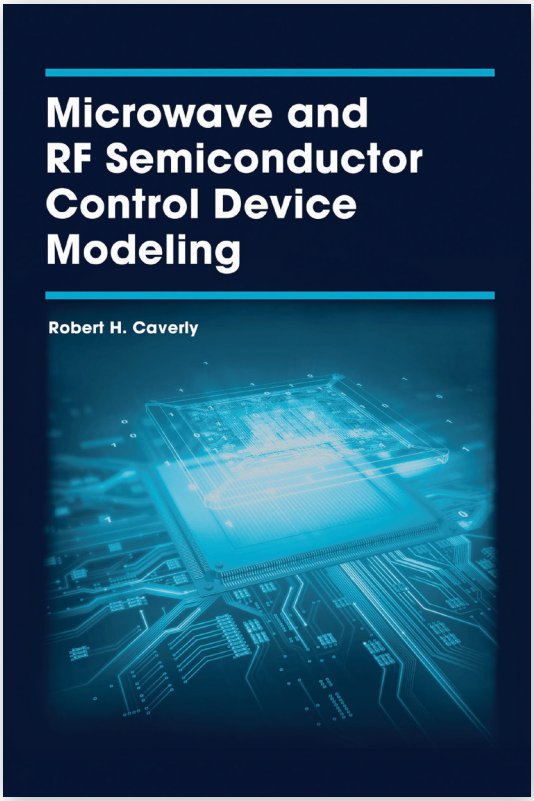
Modern RF and Microwave Filter Design

Protap Pramanick and Prakash Bhartia

This authoritative resource presents you with current practices for the design of RF and microwave filters. This one-stop reference offers you essential and practical information in order to design your own filter design software package, ultimately saving you time and money. Essential building blocks for each type of filter are presented including network theory, transmission lines, and coupling mechanisms.

This book provides you with a detailed discussion of the Low Pass Filter prototype, which is then extended to other configurations such as high pass, band pass, band stop, diplexers, and multiplexers.

412 pp. • 2016 • eBook ISBN: 978-1-63081-382-6 • $89.50 / £54
Print ISBN: 978-1-63081-157-0 • $125 / £108



Microwave and RF Semiconductor Control Device Modeling

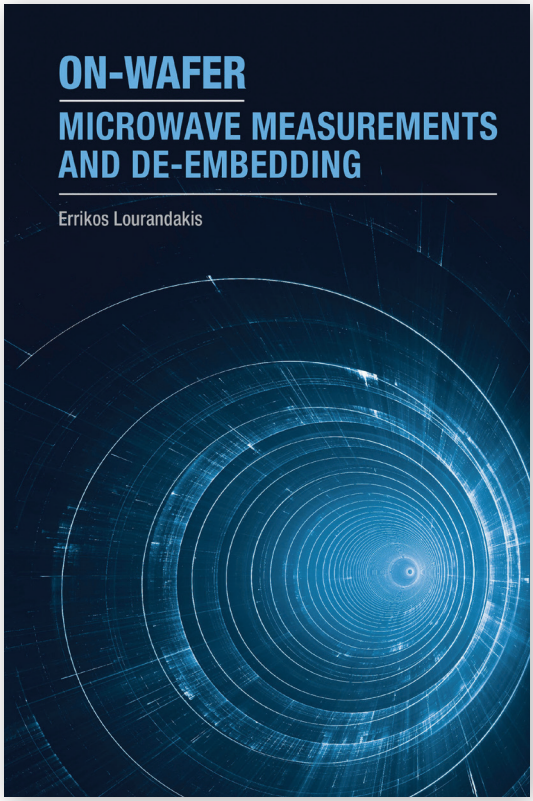
Robert H. Caverly

This comprehensive new resource presents a detailed look at the modeling and simulation of microwave semiconductor control devices and circuits. Fundamental PIN, MOSFET, and MESFET nonlinear device modeling are discussed, including the analysis of transient and harmonic behavior. Considering various control circuit topologies, the book analyzes a wide range of models, from simple approximations, to sophisticated analytical approaches.

Readers find clear examples that provide guidance in how to use specific modeling techniques for their challenging projects in the field.

290 pp. • 2016 • eBook ISBN: 978-1-63081-022-3 • $94.50 / £57
Print ISBN: 978-1-63081-021-4 • $114 / £114

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers

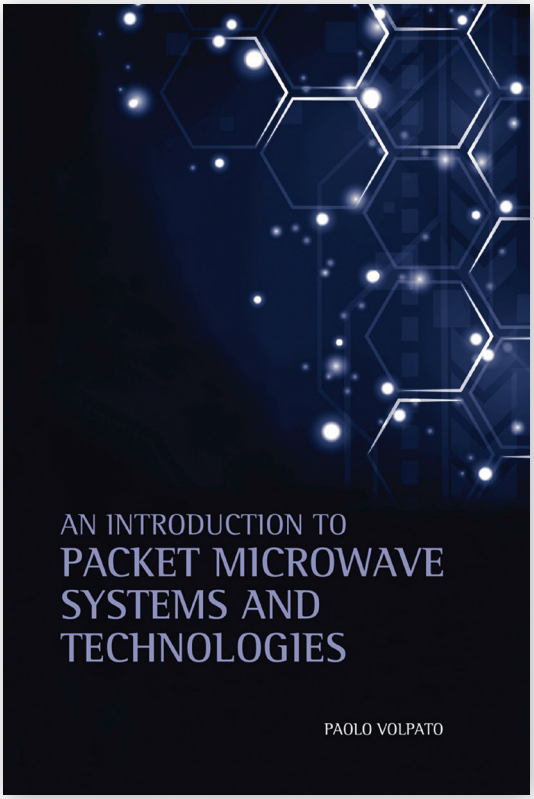


On-Wafer Microwave Measurements and De-embedding

Errikos Lourandakis

This new authoritative resource presents the basics of network analyzer measurement equipment and troubleshooting errors involved in the on-wafer microwave measurement process. This book bridges the gap between theoretical and practical information using real-world practices that address all aspects of on-wafer passive device characterization in the microwave frequency range up to 60GHz. Readers find data and measurements from silicon integrated passive devices fabricated and tested in advance CMOS technologies. Basic circuit equations, terms and fundamentals of time and frequency domain analysis are covered.

256 pp. • 2016 • eBook ISBN: 978-1-63081-371-0 • $84.50 / £73
Print ISBN: 978-1-63081-056-6 • $169 / £169



An Introduction to Packet Microwave Systems and Technologies

Paolo Volpato

Providing a thorough introduction to packet microwave systems and technologies, this unique book focuses on the architecture of microwave networks and the applications of packet microwaves, particularly in mobile backhaul. IP and data technologies which are the key differentiator of packet microwave systems are explored. Microwave applications and packet microwave, including radio equipment chain, full-indoor and outdoor applications, and operational aspects are presented along with packet microwave in hybrid applications and packet technologies for capacity scale.

240 pp. • 2016 • eBook ISBN: 978-1-63081-439-7 • $74.50 / £64.50
Print SBN: 978-1-63081-331-4 • $149 / £129

EXCLUSIVE 25% OFF NEW RELEASES. DISCOUNT SHOWN ON WEBSITE. NO CODE NEEDED.
15% OFF ALL OTHER TITLES. USE PROMO CODE **20D99**. EXPIRES 5/31/20. PLUS **FREE SHIPPING**.
Cannot be combined with any other discount offers

OVER 40 NEW BOOKS COMING THIS YEAR

2020

Check ArtechHouse.com for more information and to order!

Visit our new blog
www.blog.ArtechHouse.com

ARTECH HOUSE
BOSTON I LONDON

Easy Ordering

For customers in the US, Canada, South America, Australia, New Zealand:

Call 1-800-225-9977 or 1-781-769-9750, ext. 4030

e-mail artech@ArtechHouse.com

Mail your order to: Artech House, 685 Canton Street, Norwood, MA 02062 USA

For customers in the UK, EMEA, Asia:

Call +44(0)20 7596-8750

e-mail artech-uk@ArtechHouse.com

Mail your order to: Artech House, 16 Sussex Street, London, SW1V 4RW, UK

Shipping and Handling

Within U.S.: $5 for the first item, $3.50 for each additional item.

Outside U.S.: $5 each item for surface shipment.

Express Shipping is available. Please see website for details.

Tax: MA Customers add 6.25% sales tax.

Canadian customers add 5% GST.

The ARTECH advantage Guarantee

If you're not completely satisfied with your purchase, you may return any book in new condition with the invoice within 30 days for a full refund less shipping and handling. Opened software is not returnable unless defective.
*Titles noted as Printed-On-Demand are not returnable.

Receive special offers by e-mail—sign up at **www.ArtechHouse.com**