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EVERETT GIANCARLO

Report on the Activities of the International Telecommunication Union in ... John Wiley & Sons
One of the leading causes of automobile accidents is the slow reaction of the driver while responding to a hazardous situation. State-of-the-art wireless electronics can automate several driving functions, leading to significant reduction in human error and improvement in vehicle safety. With continuous transistor scaling, silicon fabrication technology now has the potential to substantially reduce the cost of automotive radar sensors. This book bridges an existing gap between information available on dependable system/architecture design and circuit design. It provides the background of the field and detailed description of recent research and development of silicon-based radar sensors. System-level requirements and circuit topologies for radar transceivers are described in detail. Holistic approaches towards designing radar sensors are validated with several examples of highly-integrated radar ICs in silicon technologies. Circuit techniques to design millimeter-wave circuits in silicon technologies are discussed in depth. Handbook on Satellite Communications John Wiley & Sons

This book explains one of the hottest topics in wireless and electronic devices community, namely the wireless communication at mmWave frequencies, especially at the 60 GHz ISM band. It provides the reader with knowledge and techniques for mmWave antenna design, evaluation, antenna and chip packaging. Addresses practical engineering issues such as RF material evaluation and selection, antenna and packaging requirements, manufacturing tolerances, antenna and system interconnections, and antenna One of the first books to discuss the emerging research and application areas, particularly chip packages with integrated antennas, wafer scale mmWave phased arrays and imaging Contains a good number of case studies to aid understanding Provides the antenna and packaging technologies for the latest and emerging applications with the emphases on antenna integrations for practical applications such as wireless USB, wireless video, phase array, automobile collision avoidance radar, and imaging

Fusion Energy Update CRC Press

This book focuses on the principles and technology of environmental perception in unmanned systems. With the rapid development of a new generation of information technologies such as automatic control and information perception, a new generation of robots and unmanned systems will also take on new importance. This book first reviews the development of autonomous systems and subsequently introduces readers to the technical characteristics and main technologies of the sensor. Lastly, it addresses aspects including autonomous path planning, intelligent perception and autonomous control technology under uncertain conditions. For the first time, the book systematically introduces the core technology of autonomous system information perception.

Code of Federal Regulations Springer Nature

A geometric figure has chirality, or handedness, if its mirror image cannot be brought to coincide with itself. The concept of chirality was instrumental in establishing the tetrahedral valences of the carbon atom, and has continued to play a key role in chemistry and molecular biology ever since. The fact that living organisms use only one of two mirror isomers of such molecules as amino acids and sugars, that is, the question of the origin of homochirality of the molecular basis of life, remains an unsolved problem of the same dignity as the origin of dark matter and dark energy. The increasing importance of chirality and topology in condensed matter physics and chemistry, and the production of new states of matter in heavy-ion collisions, have brought the concept of chirality into physics and cosmology in a tangible way while at the same time expanded the physics/chemistry interface. The book is the first to address all aspects of chirality in a single volume.

FCC Record Elsevier

This book provides a practical guide to terahertz electronics, especially for readers with an electronics background. The author guides readers through all the key concepts of terahertz electronics, including terahertz sources, detectors, and waveguides, together with reviews on key terahertz applications on spectroscopy, imaging, communication, and radar. This book will serve as a handy reference for graduate students and engineers in the field of terahertz with a viewpoint from electronics. Presents the topic of terahertz from electronics viewpoint; Designed to be particularly helpful for the readers familiar with semiconductor devices and circuits; Enables optics-based terahertz researchers to understand terahertz electronics; Based on the author's extensive experience from both industry and academia.

5G Spectrum and Standards IGI Global

The subject of this book is artificial intelligence (AI), introducing the fast road sensing algorithm and system based on image pattern recognition for unmanned vehicle, especially for traffic sign recognition and complex road recognition. With rich figures and credible data, this book systematically and comprehensively describes the core technology and industrialization focus of today's unmanned vehicle system, which can be used as a reference for R & D Engineers and industrialization practitioners of unmanned vehicle, and it can also be used as a teaching material for higher grades and postgraduates in colleges and universities.

Advanced Millimeter-wave Technologies John Wiley & Sons

Nanostructured silicon-germanium (SiGe) opens up the prospects of novel and enhanced electronic device performance, especially for semiconductor devices. Silicon-germanium (SiGe) nanostructures reviews the materials science of nanostructures and their properties and applications in different electronic devices. The introductory part one covers the structural properties of SiGe nanostructures, with a further chapter discussing electronic band structures of SiGe alloys. Part two concentrates on the formation of SiGe nanostructures, with chapters on different methods of crystal growth such as molecular beam epitaxy and chemical vapour deposition. This part also includes chapters covering strain engineering and modelling. Part three covers the material properties of SiGe nanostructures, including chapters on such topics as strain-induced defects, transport properties and microcavities and quantum cascade laser structures. In Part four, devices utilising SiGe alloys are discussed. Chapters cover ultra large scale integrated applications, MOSFETs and the use of SiGe in different types of transistors and optical devices. With its distinguished editors and team of international contributors, Silicon-germanium (SiGe) nanostructures is a standard reference for researchers focusing on semiconductor devices and materials in industry and academia, particularly those interested in nanostructures. Reviews the materials science of nanostructures and their properties and applications in different electronic devices Assesses the structural properties of SiGe nanostructures, discussing electronic band structures of SiGe alloys Explores the formation of SiGe nanostructures featuring different methods of crystal growth such as molecular beam epitaxy and chemical vapour deposition Reference Data for Engineers U.S. Government Printing Office

An essential overview of satellite communications from the organization that sets the international standards Since their introduction in the mid-1960s, satellite communications have grown from a futuristic experiment into an integral part of today's "wired world." Satellite communications are at the core of a global, automatically switched telephony network. Assembled by the International Telecommunication Union--the international organization that sets the standards for this rapidly growing industry--the Handbook on Satellite Communications, Third Edition brings together basic facts about satellite communications as related to the fixed-satellite service (FSS). It covers the main principles, technologies, and operation of equipment in a tutorial form. Updated to include the latest technologies and information, the Third Edition provides both the standards and technical information needed to implement and interact with satellite communication systems, including: * The components and basic characteristics of a satellite communication system *

Regulatory considerations and system planning * SDH and ATM satellite transmissions * Analog and digital baseband signal processing and multiplexing * Carrier modulation techniques * Geostationary and non-geostationary systems * Interconnection of satellite and terrestrial networks * LEOS satellite networks and other recent developments As digital modulation and transmission replace analog techniques, and as satellites in non-geostationary and lower-altitude orbits open the way to new applications, satellite communications will continue to grow in use and importance. Everyone involved in the administration and operation of satellite communications will find this a crucial resource.

Silicon-Germanium (SiGe) Nanostructures John Wiley & Sons

MEMS for automotive and aerospace applications reviews the use of Micro-Electro-Mechanical-Systems (MEMS) in developing solutions to the unique challenges presented by the automotive and aerospace industries. Part one explores MEMS for a variety of automotive applications. The role of MEMS in passenger safety and comfort, sensors for automotive vehicle stability control applications and automotive tire pressure monitoring systems are considered, along with pressure and flow sensors for engine management, and RF MEMS for automotive radar sensors. Part two then goes on to explore MEMS for aerospace applications, including devices for active drag reduction in aerospace applications, inertial navigation and structural health monitoring systems, and thrusters for nano- and pico-satellites. A selection of case studies are used to explore MEMS for harsh environment sensors in aerospace applications, before the book concludes by considering the use of MEMS in space exploration and exploitation. With its distinguished editors and international team of expert contributors, MEMS for automotive and aerospace applications is a key tool for MEMS manufacturers and all scientists, engineers and academics working on MEMS and intelligent systems for transportation. Chapters consider the role of MEMS in a number of automotive applications, including passenger safety and comfort, vehicle stability and control MEMS for aerospace applications are also discussed, including active drag reduction, inertial navigation and structural health monitoring systems Presents a number of case studies exploring MEMS for harsh environment sensors in aerospace

Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar Systems Springer Science & Business Media

This book is an outcome of the second national conference on Communication, Cloud and Big Data (CCB) held during November 10-11, 2016 at Sikkim Manipal Institute of Technology. The nineteen chapters of the book are some of the accepted papers of CCB 2016. These chapters have undergone review process and then subsequent series of improvements. The book contains chapters on various aspects of communication, computation, cloud and big data. Routing in wireless sensor networks, modulation techniques, spectrum hole sensing in cognitive radio networks, antenna design, network security, Quality of Service issues in routing, medium access control protocol for Internet of Things, and TCP performance over different routing protocols used in mobile ad-hoc networks are some of the topics discussed in different chapters of this book which fall under the domain of communication. Moreover, there are chapters in this book discussing topics like applications of geographic information systems, use of radar for road safety, image segmentation and digital media processing, web content management system, human computer interaction, and natural language processing in the context of Bodo language. These chapters may fall under broader domain of computation. Issues like robot navigation exploring cloud technology, and application of big data analytics in higher education are also discussed in two different chapters. These chapters fall under the domains of cloud and big data, respectively.

White Paper on Science and Technology CRC Press

The recent rapid progress in wireless telecommunication, including the Internet of Things, 5th generation wireless systems, satellite broadcasting, and intelligent transport systems has increased the need for low-loss dielectric materials and modern fabrication techniques. These

materials have excellent electrical, dielectric, and thermal properties and have enormous potential, especially in wireless communication, flexible electronics, and printed electronics. Microwave Materials and Applications discusses the methods commonly employed for measuring microwave dielectric properties, the various attempts reported to solve problems of materials chemistry and crystal structure, doping, substitution, and composite formation, highlighting the processing techniques, morphology influences, and applications of microwave materials whilst summarizing many of the recent technical research accomplishments in the area of microwave dielectrics and applications Chapters examine: Oxide ceramics for dielectric resonators and substrates HTCC, LTCC and ULTCC tapes for substrates Polymer ceramic composites for printed circuit boards Elastomer-ceramic composites for flexible electronics Dielectric inks EMI shielding materials Microwave ferrites A comprehensive Appendix presents the fundamental properties for more than 4000 low-loss dielectric ceramics, their composition, crystal structure, and their microwave dielectric properties. Microwave Materials and Applications presents a comprehensive view of all aspects of microwave materials and applications, making it useful for scientists, industrialists, engineers, and students working on current and emerging applications of wireless communications and consumer electronics.

[Connected and Autonomous Vehicles in Smart Cities](#) Elsevier

Lists citations with abstracts for aerospace related reports obtained from world wide sources and announces documents that have recently been entered into the NASA Scientific and Technical Information Database.

Mems for Automotive and Aerospace Applications Springer Science & Business Media

A comprehensive guide to antenna design, manufacturing processes, antenna integration, and packaging Antenna-in-Package Technology and Applications contains an introduction to the history of AiP technology. It explores antennas and packages, thermal analysis and design, as well as measurement setups and methods for AiP technology. The authors—well-known experts on the topic—explain why microstrip patch antennas are the most popular and describe the myriad constraints of packaging, such as electrical performance, thermo-mechanical reliability, compactness, manufacturability, and cost. The book includes information on how the choice of interconnects is governed by JEDEC for automatic assembly and describes low-temperature co-fired ceramic, high-density interconnects, fan-out wafer level packaging-based AiP, and 3D-printing-based AiP. The book includes a detailed discussion of the surface laminar circuit-based AiP designs for large-scale mm-wave phased arrays for 94-GHz imagers and 28-GHz 5G New Radios. Additionally, the book includes information on 3D AiP for sensor nodes, near-field wireless power transfer, and IoT applications. This important book: • Includes a brief history of antenna-in-package technology • Describes package structures widely used in AiP, such as ball grid array (BGA) and quad flat no-leads (QFN) • Explores the concepts, materials and processes, designs, and verifications with special consideration for excellent electrical, mechanical, and thermal performance Written for students in electrical engineering, professors, researchers, and RF engineers, Antenna-in-Package Technology and Applications offers a guide to material selection for antennas and packages, antenna design with manufacturing processes and packaging constraints, antenna integration, and packaging.

[Manual of Regulations and Procedures for Federal Radio Frequency Management](#) Cambridge University Press

Cognitive Hyperconnected Digital Transformation provides an overview of the current Internet of Things (IoT) landscape, ranging from research, innovation and development priorities to enabling technologies in a global context. It is intended as a standalone book in a series that covers the Internet of Things activities of the IERC-Internet of Things European Research Cluster, including both research and technological innovation, validation and deployment. The book builds on the ideas put forward by the European Research Cluster, the IoT European Platform Initiative (IoT-EPI) and the IoT European Large-Scale Pilots Programme, presenting global views and state-of-the-art results regarding the challenges facing IoT research, innovation, development and deployment in the next years. Hyperconnected environments integrating industrial/business/consumer IoT technologies and applications require new IoT open systems architectures integrated with network architecture (a knowledge-centric network for IoT), IoT system design and open, horizontal and interoperable platforms managing things that are digital, automated and connected and that function in real-time with remote access and control based on Internet-enabled tools. The IoT is bridging the physical world with the virtual world by combining augmented reality (AR), virtual reality (VR), machine learning and artificial intelligence (AI) to support the physical-digital

integrations in the Internet of mobile things based on sensors/actuators, communication, analytics technologies, cyber-physical systems, software, cognitive systems and IoT platforms with multiple functionalities. These IoT systems have the potential to understand, learn, predict, adapt and operate autonomously. They can change future behaviour, while the combination of extensive parallel processing power, advanced algorithms and data sets feed the cognitive algorithms that allow the IoT systems to develop new services and propose new solutions. IoT technologies are moving into the industrial space and enhancing traditional industrial platforms with solutions that break free of device-, operating system- and protocol-dependency. Secure edge computing solutions replace local networks, web services replace software, and devices with networked programmable logic controllers (NPLCs) based on Internet protocols replace devices that use proprietary protocols. Information captured by edge devices on the factory floor is secure and accessible from any location in real time, opening the communication gateway both vertically (connecting machines across the factory and enabling the instant availability of data to stakeholders within operational silos) and horizontally (with one framework for the entire supply chain, across departments, business units, global factory locations and other markets). End-to-end security and privacy solutions in IoT space require agile, context-aware and scalable components with mechanisms that are both fluid and adaptive. The convergence of IT (information technology) and OT (operational technology) makes security and privacy by default a new important element where security is addressed at the architecture level, across applications and domains, using multi-layered distributed security measures. Blockchain is transforming industry operating models by adding trust to untrusted environments, providing distributed security mechanisms and transparent access to the information in the chain. Digital technology platforms are evolving, with IoT platforms integrating complex information systems, customer experience, analytics and intelligence to enable new capabilities and business models for digital business.

Chiral Matter - Proceedings Of The Nobel Symposium 167 World Scientific

Driven by the demand for high-data-rate, millimeter wave technologies with broad bandwidth are being explored in high-speed wireless communications. These technologies include gigabit wireless personal area networks (WPAN), high-speed wireless local area networks (WLAN), and high-speed wireless metropolitan area networks (WMAN). As a result of this

[Introduction to Terahertz Electronics](#) Elsevier

Reference Data for Engineers is the most respected, reliable, and indispensable reference tool for technical professionals around the globe. Written by professionals for professionals, this book is a complete reference for engineers, covering a broad range of topics. It is the combined effort of 96 engineers, scientists, educators, and other recognized specialists in the fields of electronics, radio, computer, and communications technology. By providing an abundance of information on essential, need-to-know topics without heavy emphasis on complicated mathematics, Reference Data for Engineers is an absolute "must-have" for every engineer who requires comprehensive electrical, electronics, and communications data at his or her fingertips. Featured in the Ninth Edition is updated coverage on intellectual property and patents, probability and design, antennas, power electronics, rectifiers, power supplies, and properties of materials. Useful information on units, constants and conversion factors, active filter design, antennas, integrated circuits, surface acoustic wave design, and digital signal processing is also included. The Ninth Edition also offers new knowledge in the fields of satellite technology, space communication, microwave science, telecommunication, global positioning systems, frequency data, and radar. * Widely acclaimed as the most practical reference ever published for a wide range of electronics and computer professionals, from technicians through post-graduate engineers. * Provides a great way to learn or review the basics of various technologies, with a minimum of tables, equations, and other heavy math.

[NASA Technical Memorandum](#) Springer Nature

With the rise of mobile and wireless technologies, more sustainable networks are necessary to support such communications. These next generation networks can now be utilized to strengthen the growing era of the Internet of Things. Powering the Internet of Things With 5G Networks is a comprehensive reference source for the latest scholarly research on the progression and design of fifth generation networks and their role in supporting the Internet of Things. Including a range of perspectives on topics such as privacy and security, large scale monitoring, and scalable architectures, this book is ideally designed for technology developers, academics, researchers, and practitioners interested in the convergence of the Internet of Things and 5G networks.

[A Collection of Technical Papers](#) Springer

This book presents a comprehensive coverage of the five fundamental yet intertwined pillars paving the road towards the future of connected autonomous electric vehicles and smart cities. The connectivity pillar covers all the latest advancements and various technologies on vehicle-to-everything (V2X) communications/networking and vehicular cloud computing, with special emphasis on their role towards vehicle autonomy and smart cities applications. On the other hand, the autonomy track focuses on the different efforts to improve vehicle spatiotemporal perception of its surroundings using multiple sensors and different perception technologies. Since most of CAVs are expected to run on electric power, studies on their electrification technologies, satisfaction of their charging demands, interactions with the grid, and the reliance of these components on their connectivity and autonomy, is the third pillar that this book covers. On the smart services side, the book highlights the game-changing roles CAV will play in future mobility services and intelligent transportation systems. The book also details the ground-breaking directions exploiting CAVs in broad spectrum of smart cities applications. Example of such revolutionary applications are autonomous mobility on-demand services with integration to public transit, smart homes, and buildings. The fifth and final pillar involves the illustration of security mechanisms, innovative business models, market opportunities, and societal/economic impacts resulting from the soon-to-be-deployed CAVs. This book contains an archival collection of top quality, cutting-edge and multidisciplinary research on connected autonomous electric vehicles and smart cities. The book is an authoritative reference for smart city decision makers, automotive manufacturers, utility operators, smart-mobility service providers, telecom operators, communications engineers, power engineers, vehicle charging providers, university professors, researchers, and students who would like to learn more about the advances in CAEVs connectivity, autonomy, electrification, security, and integration into smart cities and intelligent transportation systems.

Antenna-in-Package Technology and Applications Springer

Discover the concepts, architectures, components, tools, and techniques needed to design millimeter-wave circuits for current and emerging wireless system applications. Focusing on applications in 5G, connectivity, radar, and more, leading experts in radio frequency integrated circuit (RFIC) design provide a comprehensive treatment of cutting-edge physical-layer technologies for radio frequency (RF) transceivers - specifically RF, analog, mixed-signal, and digital circuits and architectures. The full design chain is covered, from system design requirements through to building blocks, transceivers, and process technology. Gain insight into the key novelties of 5G through authoritative chapters on massive MIMO and phased arrays, and learn about the very latest technology developments, such as FinFET logic process technology for RF and millimeter-wave applications. This is an essential reading and an excellent reference for high-frequency circuit designers in both academia and industry.

Microwave Materials and Applications Artech House

Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar Systems The first and only comprehensive text on substrate-integrated mmW antenna technology, state-of-the-art antenna design, and emerging wireless applications Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar Systems elaborates the most important topics related to revolutionary millimeter-wave (mmW) technology. Following a clear description of fundamental concepts including substrate-integrated waveguides and loss analysis, the text treats key design methods, prototyping techniques, and experimental setup and testing. The authors also highlight applications of mmW antennas in 5G wireless communication and next-generation radar systems. Readers are prepared to put techniques into practice through practical discussions of how to set up testing for impedance matching, radiation patterns, gain from 24GHz up to 325 GHz, and more. This book will bring readers state-of-the-art designs and recent progress in substrate-integrated mmW antennas for emerging wireless applications. Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar Systems is the first comprehensive text on the topic, allowing readers to quickly master mmW technology. This book: Introduces basic concepts such as metamaterials Huygens's surface, zero-index structures, and pattern synthesis Describes prototyping in the form of fabrication based on printed-circuit-board, low-temperature-co-fired-ceramic and micromachining Explores applications for next-generation radar and imaging systems such as 24-GHz and 77-GHz vehicular radar systems Elaborates design methods including waveguide-based feeding network, three-dimensional feeding structure, dielectric loaded aperture antenna element, and low-sidelobe synthesis The mmW is one of today's most important emerging technologies. This book provides

graduate students, researchers, and engineers with the knowledge they need to deploy mmW systems and develop new antenna designs with low cost, low loss, and low complexity.