and limitations encountered in RFID systems and convey a good understanding of how the system functions.

The remaining chapters describe medical applications and sociocultural implications including market trends, security and privacy aspects, and ethical and moral dilemmas of RFID technology, all of which make for interesting reading.

RFID Design Principles is a very accessible book for those wanting to learn about the fundamentals of current RFID technology. It provides sufficient technical details to give the reader a good understanding of the technology, limitations, and considerations when designing a system, without delving into intimate design details. There are review questions and problems at the end of each chapter, making this book a good choice for a course in electrical or communications engineering.

Extreme Environment Electronics

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This text is focused on microelectronics primarily for space-based applications or other extreme applications that may use electronics such as oil well drilling. Extreme environments, in which electronic circuits have to function, are considered in order of importance to NASA: high radiation (encountered in Earth orbit), low temperatures (i.e., cryogenic levels 77 K), high temperatures (125 to over 600°C), cyclic temperature extremes, vibration, corrosive atmospheres, intense magnetic fields, and combinations of the above.

This niche in the field of electronics may be small but is very necessary because many essential applications would not be possible without this type of work. Modern satellites use many electronic components that need to be radiation hardened either during the processing of the semiconductors and/or by circuit design. Ionizing radiation in space will quickly burn out a standard CMOS-based semiconductor without these special considerations. This is why commercial-off-the-shelf (COTS) devices cannot be used in these extreme applications and one of the reasons why certain extreme environment circuits are very high in cost but high in value. This book contains the present state-of-the-art knowledge from a wide range of experts in this high-value niche field of electronics.

This book is a very large and comprehensive collection of modern electronic circuits generally used in space applications. It generally covers the behavior of various types of electronic components (CMOS, microprocessors, A/D converters, amplifiers, filters, etc.) under the extreme conditions stated above, with the majority of the data presented for radiation and temperature effects. In addition to device properties, the book details how materials properties such as insulators and discrete components (capacitors, resistors, inductors) are affected by extreme conditions. There is a section explaining how semiconductors are radiation hardened by processing and made for high temperatures. Also described are properties of high-temperature materials such as SiC and various applications. In addition, the layout and processing parameters for many types of semiconductor devices at the wafer level are presented along with various application circuits and packaging examples. The appendix provides a wealth of information. Among other topics, it contains radiation and temperature test data on COTS devices from NASA, properties for silicon and germanium, and background on MOSFETs and bipolar transistors.

This book can be considered the authoritative guide to extreme environment electronics, loaded with a wealth of information. It will provide engineers and scientists working in this field with up-to-date information and provide a comprehensive listing of reference sources for further study. It could also be useful to graduate students studying electrical engineering, physics, or material science.

Electrical Safety Handbook, 4th Edition

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Electrical safety is a critical aspect when installing or performing maintenance on electrical systems. This book covers every major electrical safety standard in North America, including National Electrical Code (NEC), National Electrical Safety Code (NESC), National Fire and Protection Agency (NFPA) 70E, Institute of Electrical and Electronic Engineers (IEEE) 1584 (Arc Flash standard), and Occupational Safety and Health Administration (OSHA). All these agencies address different aspects of electrical safety practices across industrial, commercial, and residential electrical systems. This book presents a clear view of the most up-to-date electrical safety standards from all these agencies plus additional background on electrical arc characteristics to show the amount of energy that can be generated from an arc and the other potentially dangerous properties of the arc such as radiation, blast force, sound pressure, molten metal particle emission, and toxic gases.

The book contains the following topics, beginning with a summary of the hazards and basic physics of the electric arc including arc energy calculations, blast effects, and the differences between bolted faults and arcing faults. The major parts of the book then cover electrical safety equipment and safety procedures and methods. The safety-equipment section reviews various arc flash and thermal protection equipment (rubber gloves, clothing standards, insulated tools, measuring equipment, i.e., personnel protective equipment). Also included are protective devices such as ground fault and arc fault breakers, various safety grounding equipment, and lock out and tag out devices.