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Nota di contenuto	1. Introductory Chapter: Integrated Circuit Chip -- 2. Ultra-Low-Voltage IC Design Methods -- 3. Tunnel Field Effect Transistors Based on Two-Dimensional Material Van-der-Waals Heterostructures -- 4. Crystal Polymorph Control for High-Performance Organic Field-Effect Transistors -- 5. High Capacitance Dielectrics for Low Voltage Operated OFETs -- 6. Tackling the Problem of Dangerous Radiation Levels with Organic Field-Effect Transistors -- 7. CMOS Integrated Circuits for Various Optical Applications -- 8. Area-Efficient Spin-Orbit Torque Magnetic Random-Access Memory -- 9. Computationally Efficient Hybrid Interpolation and Baseline Restoration of the Brain-PET Pulses.
Sommario/riassunto	With the world marching inexorably towards the fourth industrial revolution (IR 4.0), one is now embracing lives with artificial intelligence (AI), the Internet of Things (IoT), virtual reality (VR) and 5G technology. Wherever we are, whatever we are doing, there are electronic devices that we rely indispensably on. While some of these technologies, such as those fueled with smart, autonomous systems, are seemingly precocious; others have existed for quite a while. These devices range from simple home appliances, entertainment media to complex aeronautical instruments. Clearly, the daily lives of mankind today are interwoven seamlessly with electronics. Surprising as it may seem, the cornerstone that empowers these electronic devices is nothing more than a mere diminutive semiconductor cube block. More colloquially referred to as the Very-Large-Scale-Integration (VLSI) chip or an

integrated circuit (IC) chip or simply a microchip, this semiconductor cube block, approximately the size of a grain of rice, is composed of millions to billions of transistors. The transistors are interconnected in such a way that allows electrical circuitries for certain applications to be realized. Some of these chips serve specific permanent applications and are known as Application Specific Integrated Circuits (ASICs); while, others are computing processors which could be programmed for diverse applications. The computer processor, together with its supporting hardware and user interfaces, is known as an embedded system. In this book, a variety of topics related to microchips are extensively illustrated. The topics encompass the physics of the microchip device, as well as its design methods and applications.
