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153 -- 4.9 JLFET with a Dual Material Gate 157 -- 4.10 Conclusion 162 -- References 162 -- 5 Gate-Induced Drain Leakage in Junctionless Field-Effect Transistors 173 -- 5.1 Hole Accumulation 174 -- 5.2 Parasitic BJT Action 176 -- 5.3 Impact of BTBT-Induced Parasitic BJT Action on Scaling 177 -- 5.4 Impact of Silicon Film Thickness on GIDL 179 -- 5.5 Impact of Doping on GIDL 187 -- 5.6 Impact of Spacer Design on GIDL 189 -- 5.7 Nature of GIDL in Different NWFET Configurations 190 -- 5.8 Device Architectures to Mitigate GIDL 199 -- 5.9 Conclusion 248 -- References 249 -- 6 Impact Ionization in Junctionless Field-Effect Transistors 255.
6.1 Impact Ionization 256 -- 6.2 Floating Body Effects in Silicon-on-Insulator MOSFETs 256 -- 6.3 Nature of Impact Ionization in JLFETs 260 -- 6.4 Zero Gate Oxide Thickness Coefficient 263 -- 6.5 Single Transistor Latch-Up in JLFETs 266 -- 6.6 Impact of Body Bias on Impact Ionization in JLFETs 267 -- 6.7 Subband Gap Impact Ionization in DGJLFETS with Asymmetric Operation 268 -- 6.8 Impact of Gate Misalignment on Impact Ionization in DGJLFETs 270 -- 6.9 Spacer Design Guideline from Impact Ionization Perspective 272 -- 6.10 Hysteresis and Snapback in JLFETs 273 -- 6.11 Impact of Heavy-Ion Irradiation on JLFETs 275 -- 6.12 Conclusions 276 -- References 276 -- 7 Junctionless Devices Without Any Chemical Doping 281 -- 7.1 Charge Plasma Doping 282 -- 7.2 Charge Plasma Based p-n Diode 283 -- 7.3 Junctionless I-MOS FET 288 -- 7.4 Junctionless Tunnel FETs 290 -- 7.5 JLTFET on a Highly Doped Silicon Film 294 -- 7.6 Bipolar Enhanced JLTFET 294 -- 7.7 Junctionless FETS Without Any Chemical Doping 297 -- 7.8 Challenges for CPJLFETs 302 -- 7.9 Electrostatic Doping Based FETs 312 -- 7.10 Conclusions 319 -- References 319 -- 8 Modeling Junctionless Field-Effect Transistors 327 -- 8.1 Introduction to FET Modeling 328 -- 8.2 Surface Potential Modeling of JLFETs 330 -- 8.3 Charge-Based Modeling Approach 351 -- 8.4 Drain Current Modeling Approach 355 -- 8.5 Modeling Short-Channel JLFETs 365 -- 8.6 Modeling Quantum Confinement 372 -- 8.7 Conclusion 379 -- References 379 -- 9 Simulation of JLFETS Using Sentaurus TCAD 385 -- 9.1 Introduction to TCAD 386 -- 9.2 Tool Flow 387 -- 9.3 Sample Input Deck for Long-Channel JLFETS 391 -- 9.4 Model Calibration 407 -- 9.5 Model Calibration for Short-Channel JLFETs 409 -- 9.6 Model Calibration for NWFETS 422 -- References 436 -- 10 Conclusion and Perspectives 439 -- 10.1 JLFETS As a Label-Free Biosensor 441 -- 10.2 JLFETS As Capacitorless DRAM 443 -- 10.3 Nanowire Junctionless NAND Flash Memory 444 -- 10.4 Junctionless Polysilicon TFTS with a Hybrid Channel 447.
10.5 JLFETS for 3D Integrated Circuits 449 -- 10.6 Summary 450 -- References 451 -- Index 457.

Sommario/riassunto

A comprehensive one-volume reference on current JLFET methods, techniques, and research Advancements in transistor technology have driven the modern smart-device revolution-many cell phones, watches, home appliances, and numerous other devices of everyday usage now surpass the performance of the room-filling supercomputers of the past. Electronic devices are continuing to become more mobile, powerful, and versatile in this era of internet-of-things (IoT) due in large part to the scaling of metal-oxide semiconductor field-effect transistors (MOSFETs). Incessant scaling of the conventional MOSFETs to cater to consumer needs without incurring performance degradation requires costly and complex fabrication process owing to the presence of metallurgical junctions. Unlike conventional MOSFETs, junctionless field-effect transistors (JLFETs) contain no metallurgical junctions, so they are simpler to process and less costly to manufacture.JLFETs utilize a gated semiconductor film to control its resistance and the

current flowing through it. Junctionless Field-Effect Transistors: Design, Modeling, and Simulation is an inclusive, one-stop reference on the study and research on JLFETs This timely book covers the fundamental physics underlying JLFET operation, emerging architectures, modeling and simulation methods, comparative analyses of JLFET performance metrics, and several other interesting facts related to JLFETs. A calibrated simulation framework, including guidance on SentaurusTCAD software, enables researchers to investigate JLFETs, develop new architectures, and improve performance. This valuable resource: -Addresses the design and architecture challenges faced by JLFET as a replacement for MOSFET -Examines various approaches for analytical and compact modeling of JLFETs in circuit design and simulation -Explains how to use Technology Computer-Aided Design software (TCAD) to produce numerical simulations of JLFETs -Suggests research directions and potential applications of JLFETs Junctionless Field-Effect Transistors: Design, Modeling, and Simulation is an essential resource for CMOS device design researchers and advanced students in the field of physics and semiconductor devices.

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Anatomy of the Airway/Airway Management -- Section 2: Pharmacology -- Pharmacology – General Concepts -- Pharmacology of Non-Opioid Intravenous Anesthetics -- Pharmacology of Opioids -- Clinical Pharmacology of Drugs Acting at the Neuromuscular Junction -- Pharmacology of Local and Neuraxial Anesthetics -- Pharmacology of Inhaled Anesthetics -- Cardiovascular Anatomy and Pharmacology -- Respiratory Pharmacology -- Renal Pharmacology -- Pharmacology of Anticoagulants, Antithrombotics, and Antiplatelet Drugs -- Perioperative Intravenous Fluid Therapy -- Section 3: Physiology -- Central and Peripheral Nervous Systems -- Cardiovascular Physiology -- Respiratory System Physiology -- Physiology of the Autonomic Nervous System -- Physiology of Temperature Control -- Gastrointestinal/Hepatic Physiology -- Renal Physiology -- Physiology of the Endocrine System and Metabolic Complications in Anesthesia -- Section 4: Anesthetic Management Topics -- Preoperative Evaluation of Patients Undergoing Non-Cardiac Surgery -- Premedication -- Monitored Anesthesia Care -- Blood Products Transfusion -- Complications in Anesthesia -- The Postoperative Period -- Perioperative Pain Management -- Special Problems in Anesthesiology -- Section 5: Physics in Anesthesia -- The Anesthesia Machine -- Physical Measurements in Anesthesia -- Breathing Systems -- Physics of Instrumentation -- Electrical Safety in the Operating Room -- Mechanical Ventilation -- Statistics Made Simple: Introduction to Biostatistics and Research Design for the Anesthesiologist.

Sommario/riassunto

This textbook presents the most recent evidenced-based knowledge in basic sciences in anesthesia. It covers topics from the syllabus of the American Board of Anesthesiology (ABA) basic science exam, including anatomy, pharmacology, physiology, physics in anesthesia, and more. In each chapter, key points summarize the content, followed by a pertinent and concise discussion of the topic, ending with multiple choice questions with answers and suggested further reading. Basic Sciences in Anesthesia is aimed at residents taking the ABA basic science of anesthesia examination, and any other anesthesiologist or trainee with an interest in the topic.