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| Nota di contenuto | Preface xiii -- Acknowledgements xv -- Introduction to an Exotic Device World xvii -- Part One BRIEF REVIEW AND MODERN APPLICATIONS OF PN-JUNCTION DEVICES -- 1 Concept of an Ideal pn Junction 3 -- References 4 -- 2 Understanding the Non-ideal pn Junction - Theoretical Reconsideration 7 -- 2.1 Introduction 7 -- 2.2 Bulk pn-Junction Diode 8 -- 2.2.1 Assumptions 8 -- 2.2.2 Model A - Low Doping Case 9 -- 2.2.3 Model B - High Doping Case 18 -- 2.3 Bulk pn-Junction Diode - Reverse Bias 24 -- 2.3.1 Model A - Low Doping Case 24 -- 2.3.2 Model B - High Doping Case 25 -- 2.4 The Insulated-Gate pn Junction of the SOI Lubistor - Forward Bias 32 -- 2.4.1 The Positive Gate Voltage Condition 32 -- 2.4.2 The Negative Gate Voltage Condition 35 -- 2.5 The Insulated-Gate pn Junction of the -- SOI Lubistor - Reverse Bias 35 -- References 37 -- 3 Modern Applications of the pn Junction 39 -- References 40 -- Part Two PHYSICS AND MODELING OF SOI LUBISTORS - THICK-FILM DEVICES -- 4 Proposal of the Lateral, Unidirectional, Bipolar-Type Insulated-Gate Transistor (Lubistor) 43 -- 4.1 Introduction 43 -- 4.2 Device Structure and Parameters 43 -- 4.3 Discussion of Current-Voltage Characteristics 45 -- 4.4 Summary 47 -- References 47 -- 5 |

Experimental Consideration for Modeling of Lubistor Operation 49 -- 5.1 Introduction 49 -- 5.2 Experimental Apparatus 49 -- 5.3 Current-Voltage Characteristics of Lubistors 52 -- 5.4 Lubistor Potential Profiles and Features 56 -- 5.5 Discussion 57 -- 5.5.1 Simplified Analysis of Lubistor Operation 57 -- 5.5.2 On the Design of Lubistors 60 -- 5.6 Summary 61 -- References 61 -- 6 Modeling of Lubistor Operation Without an EFS Layer for Circuit Simulations 63 -- 6.1 Introduction 63 -- 6.2 Device Structure and Measurement System 63 -- 6.3 Equivalent Circuit Models of an SOI Lubistor 65 -- 6.3.1 Device Simulation 65 -- 6.3.2 Equivalent Circuit Models 68 -- 6.4 Summary 72 -- References 73 -- 7 Noise Characteristics and Modeling of Lubistor 75 -- 7.1 Introduction 75 -- 7.2 Experiments 75. 7.2.1 Device Structure 75 -- 7.2.2 Measurement System 77 -- 7.3 Results and Discussion 77 -- 7.3.1 I-V Characteristics of an SOI Lubistor and a Simple Analytical Model 77 -- 7.3.2 Noise Spectral Density of SOI Lubistors and Their Feature 81 -- 7.3.3 Advanced Analysis of Anode Noise Spectral Density 83 -- 7.4 Summary 86 -- References 86 -- 8 Supplementary Study on Buried Oxide Characterization 89 -- 8.1 Introduction 89 -- 8.2 Physical Model for the Transition Layer 90 -- 8.3 Capacitance Simulation 93 -- 8.3.1 A Structure to Evaluate Capacitance 93 -- 8.3.2 Numerical Simulation Technique 94 -- 8.4 Device Fabrication 95 -- 8.5 Results and Discussion 96 -- 8.5.1 Electrode-to-Electrode Capacitance Dependence on Frequency 96 -- 8.5.2 Drain-to-Substrate Capacitance Dependence on Bias 98 -- 8.5.3 Electrode-to-Electrode Capacitance Dependence on Transition Layer Thickness 101 -- 8.6 Summary 101 -- References 102 -- Part Three PHYSICS AND MODELING OF SOI LUBISTORS - THIN-FILM DEVICES -- 9 Negative Conductance Properties in Extremely Thin SOI Lubistors 105 -- 9.1 Introduction 105 -- 9.2 Device Fabrication and Measurements 105 -- 9.3 Results and Discussion 106 -- 9.4 Summary 109 -- References 109 -- 10 Two-Dimensionally Confined Injection Phenomena at Low Temperatures in Sub-10-nm-Thick SOI Lubistors 111 -- 10.1 Introduction 111 -- 10.2 Experiments 111 -- 10.2.1 Anode Common Configuration 113 -- 10.2.2 Cathode Common Configuration 113 -- 10.3 Physical Models and Simulations 114 -- 10.3.1 Fundamental Models 114 -- 10.3.2 Theoretical Simulations 118 -- 10.3.3 Influences on Characteristics of Extremely Ultra-Thin SOI MOSFET Devices 122 -- 10.4 Summary 122 -- Appendix 10A: Intrinsic Carrier Concentration (n_i) and the Fermi Level in 2DSS 122 -- Appendix 10B: Calculation of Electron and Hole Densities in 2DSS 125 -- References 125 -- 11 Two-Dimensional Quantization Effect on Indirect Tunneling in SOI Lubistors with a Thin Silicon Layer 127 -- 11.1 Introduction 127 -- 11.2 Experimental Results 128. 11.2.1 Junction Current Dependence on Anode Voltage 128 -- 11.2.2 Junction Current Dependence on Gate Voltage 132 -- 11.3 Theoretical Discussion 134 -- 11.3.1 Qualitative Consideration of the Low-Dimensional Indirect Tunneling Process 134 -- 11.3.2 Theoretical Formulations of Tunneling Current and Discussion 134 -- 11.4 Summary 140 -- Appendix 11A: Wave Function Coupling Effect in the Lateral Two-Dimensional-System-to-Three-Dimensional-System (2D-to-3D) Tunneling Process 141 -- References 141 -- 12 Experimental Study of Two-Dimensional Confinement Effects on Reverse-Biased Current Characteristics of Ultra-Thin SOI Lubistors 143 -- 12.1 Introduction 143 -- 12.2 Device Structures and Experimental Apparatus 144 -- 12.3 Results and Discussion 145 -- 12.3.1 I-V Characteristics under the Reverse-Biased Condition 145 -- 12.4 Summary 151 -- Appendix 12A: Derivation of Equations (12.6) and

(12.9) 151 -- References 153 -- 13 Supplementary Consideration of I-V Characteristics of Forward-Biased Ultra-Thin Lubistors 155 -- 13.1 Introduction 155 -- 13.2 Device Structures and Bias Configuration 155 -- 13.3 Results and Discussion 156 -- 13.4 Summary 157 -- References 158 -- 14 Gate-Controlled Bipolar Action in the Ultra-Thin Dynamic Threshold SOI MOSFET 159 -- 14.1 Introduction 159 -- 14.2 Device and Experiments 159 -- 14.3 Results and Discussion 159 -- 14.3.1 ID-VG and IG-VG Characteristics of the Ultra-Thin-Body DT-MOSFET 159 -- 14.3.2 Control of Bipolar Action by the MOS Gate 162 -- 14.4 Channel Polarity Dependence of Bipolar Action 162 -- 14.4.1 ID-VG and gm-VG Characteristics of the Ultra-Thin-Body DT-MOSFET 162 -- 14.4.2 Difference of Bipolar Operation between the n-Channel DT-MOS and the p-Channel DT-MOS 163 -- 14.4.3 Impact of Body Thickness on Bipolar Operation 164 -- 14.5 Summary 166 -- References 166 -- 15 Supplementary Study on Gate-Controlled Bipolar Action in the Ultra-Thin Dynamic Threshold SOI MOSFET 167 -- 15.1 Introduction 167 -- 15.2 Device Structures and Parameters 167. 15.3 Results and Discussion 169 -- 15.3.1 SOI MOSFET Mode and DT-MOSFET Mode 169 -- 15.3.2 Temperature Evolution of Transconductance (gm) Characteristics and Impact of Channel Length on gm Characteristics 170 -- 15.3.3 Impact of SOI Layer Thickness on gm Characteristics 173 -- 15.4 Summary 173 -- References 174 -- Part Four CIRCUIT APPLICATIONS -- 16 Subcircuit Models of SOI Lubistors for Electrostatic Discharge Protection Circuit Design and Their Applications 179 -- 16.1 Introduction 179 -- 16.2 Equivalent Circuit Models of SOI Lubistors and their Applications 180 -- 16.2.1 Device Structure and Device Simulation 180 -- 16.2.2 Equivalent Circuit Models 183 -- 16.3 ESD Protection Circuit 183 -- 16.4 Direct Current Characteristics of the ESD Protection Devices and Their SPICE Models 186 -- 16.5 ESD Event and Performance Evaluation of an ESD Protection Circuit 189 -- 16.6 Summary 196 -- References 196 -- 17 A New Basic Element for Neural Logic Functions and Capability in Circuit Applications 199 -- 17.1 Introduction 199 -- 17.2 Device Structure, Model, and Proposal of a New Logic Element 199 -- 17.2.1 Device Structure and Fundamental Characteristics 199 -- 17.2.2 Device Model for the Lubistor 201 -- 17.2.3 Proposal of a New Logic Element 203 -- 17.3 Circuit Applications and Discussion 206 -- 17.3.1 Examples of Fundamental Elements for Circuit Applications 206 -- 17.3.2 On the Further Improvement of Functions of the Basic Logic Element 211 -- 17.4 Summary 211 -- References 211 -- 18 Sub-1-V Voltage Reference Circuit Technology as an Analog Circuit Application 213 -- 18.1 Review of Bandgap Reference 213 -- 18.2 Challenging Study of Sub-1-V Voltage Reference 214 -- References 215 -- 19 Possible Implementation of SOI Lubistors into Conventional Logic Circuits 217 -- References 218 -- Part Five OPTICAL DEVICE APPLICATIONS OF SOI LUBISTORS -- 20 Potentiality of Electro-Optic Modulator Based on the SOI Waveguide 223 -- 20.1 Introduction 223 -- 20.2 Characterization of the Quasi-One-Dimensional Photonic Crystal Waveguide 224. 20.3 Electro-Optic Modulator Based on the SOI Waveguide 230 -- 20.4 Summary 233 -- References 234 -- Part Six SOI LUBISTOR AS A TESTING TOOL -- 21 Principles of Parameter Extraction 237 -- References 239 -- 22 Charge Pumping Technique 241 -- 22.1 Introduction 241 -- 22.2 Experimental and Simulation Details 241 -- 22.3 Results and Discussion 243 -- 22.4 Summary 246 -- References 246 -- Part Seven FUTURE PROSPECTS -- 23 Overview 249 -- 23.1 Introduction 249 -- 23.2 i-MOS Transistor 249 -- 23.3 Tunnel FET 251 -- 23.4 Feedback FET 254 -- 23.5 Potential of Offset-Gate Lubistor 256 -- 23.6 Si Fin LED with a Multi-quantum Well 258 -- 23.7 Future

of the pn Junction 258 -- References 259 -- 24 Feasibility of the Lubistor-Based Avalanche Phototransistor 261 -- 24.1 Introduction 261 -- 24.2 Theoretical Formulation of the Avalanche Phenomenon in Direct-Bandgap Semiconductors 261 -- 24.3 Theoretical Formulation of the Avalanche Phenomenon in Indirect-Bandgap Semiconductors 264 -- 24.4 Theoretical Consideration of the Avalanche Phenomenon in a One-Dimensional Wire pn Junction 265 -- 24.5 Summary 269 -- References 269 -- Part Eight SUMMARY OF PHYSICS FOR SEMICONDUCTOR DEVICES AND MATHEMATICS FOR DEVICE ANALYSES -- 25 Physics of Semiconductor Devices for Analysis 273 -- 25.1 Free Carrier Concentration and the Fermi Level in Semiconductors 273 -- 25.2 Impurity Doping in Semiconductors 275 -- 25.3 Drift and Diffusion of Carriers and Current Continuity in Semiconductors 275 -- 25.4 Stationary-State Schrödinger Equation to Analyze Quantum-Mechanical Effects in Semiconductors 276 -- 25.5 Time-dependent Schrödinger Equation to Analyze Dynamics in Semiconductors 277 -- 25.6 Quantum Size Effects in Nano-Scale Semiconductors 278 -- 25.7 Tunneling through Energy Barriers in Semiconductors 281 -- 25.8 Low-Dimensional Tunneling in Nano-Scale Semiconductors 282 -- 25.9 Photon Absorption and Electronic Transitions 284 -- 25.9.1 Fundamental Formulations 284 -- 25.9.2 Interband Transition - Direct Bandgap 285. 25.9.3 Interband Transition - Indirect Bandgap 286 -- References 287 -- 26 Mathematics Applicable to the Analysis of Device Physics 289 -- 26.1 Linear Differential Equation 289 -- 26.2 Operator Method 290 -- 26.3 Klein-Gordon-Type Differential Equation 291 -- References 292 -- Bibliography 293 -- Index 295.

Sommario/riassunto

The Lubistor (lateral, unidirectional, bipolar-type insulated-gate transistor) is a transistor-like device invented by the author in 1982. The main application of the device is as an electrostatic discharge protection device in SOI (silicon-on-insulator) circuits used in IBM and AMD microprocessors. SOI structures are believed to have excellent potential in high-temperature electronics. No comprehensive description of the physics and possible applications of the Lubistor can be found in a single source even though the Lubistor is already being used in SOI LSI. The book provides, for the first time, a comprehensive understanding of the physics of the Lubistor. . Advanced level consolidation of the technology, physics and design aspects of silicon-on-insulator (SOI) Lubistors. Written by the inventor of the Lubistor, this volume describes the technology and the background physics comprehensively to enable readers to understand the physics and applications of the device. The first book devoted to the Lubistor transistor, presently being utilized in electrostatic discharge (ESD) applications in SOI technology, a growing market for semiconductor devices and advanced technologies. Approaches the topic in a systematic manner, from physics-based physical theory, through to modeling, and finally to circuit applications. Recent progress on device applications using Lubistors is addressed and future prospects are also discussed in-depth. Reviews and summaries of semiconductor physics and related mathematics are described for the convenience of readers. The book is designed for device and circuit engineers, researchers, as well as postgraduate and graduate students in electrical engineering courses.