



Characterization Methods for Submicron MOSFETs /

Haddara, Hisham

Springer US,
1996

Monografía

The Metal-Oxide Semiconductor Field-Effect Transistor (MOSFET) is a key component in modern microelectronics. During the last decade, device physicists, researchers and engineers have been continuously faced with new elements making the task of MOSFET characterization increasingly crucial, as well as more difficult. The progressive miniaturization of devices has caused several phenomena to emerge and modify the performance of scaled-down MOSFETs. Localized degradation induced by hot carrier injection and Random Telegraph Signal (RTS) noise generated by individual traps are examples. It was thus unavoidable to develop new models and new characterization methods, or at least adapt the existing ones to cope with the special nature of these new phenomena. Characterization Methods for Submicron MOSFETs deals with techniques which show high potential for characterization of submicron devices. Throughout the book the focus is on the adaptation of such methods to resolve measurement problems relevant to VLSI devices and new materials, especially Silicon-on-Insulator (SOI). Characterization Methods for Submicron MOSFETs was written to provide help to device engineers and researchers to enable them to cope with the challenges they face. Without adequate device characterization, new physical phenomena and new types of defects or damage may not be well identified or dealt with, leading to an undoubted obstruction of the device development cycle. Audience: Researchers and graduate students familiar with MOS device physics, working in the field of device characterization and modeling. Also intended for industrial engineers working in device development, seeking to enlarge their understanding of measurement methods. The book additionally addresses device-based characterization for material and process engineers and for circuit designers. A valuable reference that may be used as a text for advanced courses on the subject

<https://rebiunoda.pro.baratznet.cloud:28443/OpacDiscovery/public/catalog/detail/b2FpOmNlbGVicmF0aW9uOmVzLmJhcmF0ei5yZW4vMzgyNzY0ODg>

Título: Characterization Methods for Submicron MOSFETs edited by Hisham Haddara

Editorial: Boston, MA Springer US 1996

Descripción física: 1 online resource (248 pages)

Mención de serie: The Kluwer International Series in Engineering and Computer Science, Analog Circuits and Signal Processing 0893-3405 352

Contenido: 1 Static Measurements and Parameter Extraction -- 1.1 Introduction -- 1.2 Modeling of MOSFET DC Characteristics -- 1.3 MOSFET Parameter Extraction Methods -- 1.4 Measuring Techniques -- 1.5 Summary and Conclusion -- 2 Small Signal Characterization of VLSI MOSFETs -- 2.1 Introduction -- 2.2 Small Signal AC

Model -- 2.3 Channel Frequency Response of MOSFETs -- 2.4 The Split Admittance Technique -- 2.5 Dynamic Transconductance -- 3 Charge Pumping -- 3.1 Introduction -- 3.2 Early Experiments and Basic Principle of CP Measurement -- 3.3 Interface State Generation-Recombination Kinetics -- 3.4 Experimental Techniques -- 3.5 Applications of Charge Pumping -- 3.6 Conclusion -- 4 Deep Level Transient Spectroscopy -- 4.1 Introduction -- 4.2 Generation, Recombination and Trapping Statistics -- 4.3 MOSFET Current Transient Spectroscopy -- 4.4 Signal Analysis -- 4.5 Depletion MOSFET Current Transient Spectroscopy -- 4.6 MOSFET Current DLTS Measurement System -- 5 Individual Interface Traps and Telegraph Noise -- 5.1 Introduction -- 5.2 Observation of Single Carrier Trapping -- 5.3 Experimental Properties of Individual Interface Traps -- 5.4 Interpretation and Modeling -- 5.5 Conclusion -- 6 Characterization of SOI MOSFETs -- 6.1 Introduction -- 6.2 Interest of MOS-SOI Technology -- 6.3 Synthesis of SOI Structures -- 6.4 Wafer Screening by?-MOSFET Technique -- 6.5 Capacitance and Conductance Techniques -- 6.6 SOI-MOSFETs: Basic Operation and Typical Characteristics -- 6.7 Profiling the Vertical Inhomogeneities -- 6.8 Charge Pumping Technique -- 6.9 Low Frequency Noise -- 6.10 Drain Current Transient Technique -- 6.11 Concluding Remarks -- 7 Modern Analog IC Characterization Techniques -- 7.1 Introduction -- 7.2 Random Mismatch in MOS Transistors -- 7.3 The Extraction of BJT Base Spreading Resistance -- 7.4 Mismatch Characterization of BJT for Statistical CAD -- 7.5 Test Structure for Resistance Matching Properties -- 7.6 MOS Capacitance Technique

Copyright/Depósito Legal: 1243533981 1244623183

ISBN: 9781461313557 electronic bk.) 1461313554 electronic bk.) 9781461285847 1461285844

Materia: Engineering Computer engineering Systems engineering Engineering Ingénierie Ordinateurs- Conception et construction Ingénierie des systèmes engineering. systems engineering. Computer engineering. Engineering. Systems engineering.

Enlace a formato físico adicional: Print version 9781461285847

Punto acceso adicional serie-Título: Kluwer international series in engineering and computer science. Analog circuits and signal processing 352

Baratz Innovación Documental

- Gran Vía, 59 28013 Madrid
- (+34) 91 456 03 60
- informa@baratz.es