1. Record Nr. UNINA9910299747703321

Titolo	Bias temperature instability for devices and circuits / / Tibor Grasser, editor
Pubbl/distr/stampa	New York : , : Springer, , 2014
ISBN	1-4614-7909-6
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (xi, 810 pages) : illustrations (some color)
Collana	Gale eBooks
Disciplina	621.3192
Soggetti	Metal oxide semiconductor field-effect transistors
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Characterization, Experimental Challenges -- Advanced Characterization -- Characterization of Nanoscale Devices -- Statistical Properties/Variability -- Theoretical Understanding -- Possible Defects: Experimental -- Possible Defects: First Principles -- Modeling -- Technological Impact -- Silicon dioxides/SiON -- High-k oxides -- Alternative technologies -- Circuits.
Sommario/riassunto	This book provides a single-source reference to one of the more challenging reliability issues plaguing modern semiconductor technologies, negative bias temperature instability. Readers will benefit from state-of-the art coverage of research in topics such as time dependent defect spectroscopy, anomalous defect behavior, stochastic modeling with additional metastable states, multiphonon theory, compact modeling with RC ladders and implications on device reliability and lifetime. · Enables readers to understand and model negative bias temperature instability, with an emphasis on dynamics; · Includes coverage of DC vs. AC stress, duty factor dependence and bias dependence; · Explains time dependent defect spectroscopy, as a measurement method that operates on nanoscale MOSFETs; · Introduces new defect model for metastable defect states, nonradiative multiphonon theory and stochastic behavior.