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Titolo	Dielectric Breakdown in Gigascale Electronics : Time Dependent Failure Mechanisms // by Juan Pablo Borja, Toh-Ming Lu, Joel Plawsky
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Disciplina	621.3817
Soggetti	Optical materials Electronics - Materials Nanotechnology Electronic circuits Optical and Electronic Materials Nanotechnology and Microengineering Electronic Circuits and Devices
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction -- General Theories -- Measurement Tools and Test Structures -- Experimental Techniques -- Breakdown Experiments -- Kinetics of Charge Carrier Confinement in Thin Dielectrics -- Theory of Dielectric Breakdown in Nanoporous Thin Films -- Dielectric Breakdown in Copper Interconnects -- Reconsidering Conventional Models.
Sommario/riassunto	This book focuses on the experimental and theoretical aspects of the time-dependent breakdown of advanced dielectric films used in gigascale electronics. Coverage includes the most important failure mechanisms for thin low-k films, new and established experimental techniques, recent advances in the area of dielectric failure, and advanced simulations/models to resolve and predict dielectric breakdown, all of which are of considerable importance for engineers and scientists working on developing and integrating present and future chip architectures. The book is specifically designed to aid scientists in assessing the reliability and robustness of electronic systems employing low-k dielectric materials such as nano-porous

films. Similarly, the models presented here will help to improve current methodologies for estimating the failure of gigascale electronics at device operating conditions from accelerated lab test conditions. Numerous graphs, tables, and illustrations are included to facilitate understanding of the topics. Readers will be able to understand dielectric breakdown in thin films along with the main failure modes and characterization techniques. In addition, they will gain expertise on conventional as well as new field acceleration test models for predicting long term dielectric degradation.

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