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Advanced Interconnects For ULSI Technology



Synopsis

Finding new materials for copper/low-k interconnects is critical to the continuing development of computer chips. While copper/low-k interconnects have served well, allowing for the creation of Ultra Large Scale Integration (ULSI) devices which combine over a billion transistors onto a single chip, the increased resistance and RC-delay at the smaller scale has become a significant factor affecting chip performance. Advanced Interconnects for ULSI Technology is dedicated to the materials and methods which might be suitable replacements. It covers a broad range of topics, from physical principles to design, fabrication, characterization, and application of new materials for nano-interconnects, and discusses: Interconnect functions, characterisations, electrical properties and wiring requirements Low-k materials: fundamentals, advances and mechanical properties Conductive layers and barriers Integration and reliability including mechanical reliability, electromigration and electrical breakdown New approaches including 3D, optical, wireless interchip, and carbon-based interconnects Intended for postgraduate students and researchers, in academia and industry, this book provides a critical overview of the enabling technology at the heart of the future development of computer chips.

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