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phenomena modeling -- 4. Capacitances. 4.1. Intrinsic capacitances. 4.2. Overlap capacitances. 4.3. Longitudinal (lateral) -field-induced capacitance. 4.4. Fringing capacitance. 4.5. Summary of equations and model parameters appearing in chapter 4 for capacitances -- 5. Leakage currents and junction diode. 5.1. Leakage currents. 5.2. Bulk/source and bulk/drain junction models. 5.3. Summary of equations and model parameters appeared in chapter 5 for leakage currents and junction diode -- 6. Modeling of phenomena important for RF applications. 6.1. Noise models. 6.2. Non-Quasi-Static (NQS) model. 6.3. External MOS transistor resistances. 6.4. Summary of equations and model parameters appeared in chapter 6 for modeling of phenomena important for RF applications -- 7. Summary of HiSIM's model equations, parameters, and parameter-extraction method. 7.1. Model equations of HiSIM. 7.2. Model flags and exclusion of modeled effects. 7.3. Model parameters and their meaning. 7.4. Default values of the model parameter. 7.5. Parameter extraction method.

Sommario/riassunto

This volume provides a timely description of the latest compact MOS transistor models for circuit simulation. The first generation BSIM3 and BSIM4 models that have dominated circuit simulation in the last decade are no longer capable of characterizing all the important features of modern sub-100nm MOS transistors. This book discusses the second generation MOS transistor models that are now in urgent demand and being brought into the initial phase of manufacturing applications. It considers how the models are to include the complete drift-diffusion theory using the surface potential variable in the MOS transistor channel in order to give one characterization equation.