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3.3 BJT Physical Operation; 3.3.1 Device Structure; 3.3.2 The Modes of Operation; 3.3.3 Base-Width Modulation; 3.3.4 High Injection and Current Crowding; 3.4 Equivalent Circuit Model; 3.4.1 E-M Model; 3.4.2 G-P Model; 3.4.3 Noise Model; 3.5 Microwave Performance; 3.5.1 Transition Frequency; 3.5.2 Common-Emitter Configuration; 3.5.3 Common-Base Configuration; 3.5.4 Common-Collector Configuration; 3.5.5 Summary and Comparisons; 3.6 Summary; References; Chapter 4 Basic Principle of HBT; 4.1 Semiconductor Heterojunction 4.2 HBT Device 4.2.1 GaAs HBT; 4.2.2 InP HBT; 4.3 Summary; References; Chapter 5 Small-Signal Modeling and Parameter Extraction of HBT; 5.1 Small-Signal Circuit Model; 5.1.1 Pad Structure; 5.1.2 T-Type Circuit Model; 5.1.3 -Type Circuit Model; 5.1.4 Unilateral Power Gain; 5.1.5 f_T and f_{max} ; 5.2 HBT Device Structure; 5.3 Extraction Method of PAD Capacitances; 5.3.1 Open Test Structure Method; 5.3.2 Pinch-Off Method; 5.4 Extraction Method of Extrinsic Inductances; 5.4.1 Short Test Structure Method; 5.4.2 Open-Collector Method; 5.5 Extraction Method of Extrinsic Resistance 5.5.1 Z Parameter Method 5.5.2 Cold-HBT Method; 5.5.3 Open-Collector Method; 5.6 Extraction Method of Intrinsic Resistance; 5.6.1 Direct Extraction Method; 5.6.2 Hybrid Method; 5.7 Semianalysis Method; 5.8 Summary; References; Chapter 6 Large-Signal Equivalent Circuit Modeling of HBT; 6.1 Linear and Nonlinear; 6.1.1 Definition; 6.1.2 Nonlinear Lumped Elements; 6.2 Large Signal and Small Signal; 6.3 Thermal Resistance; 6.3.1 Definition; 6.3.2 Equivalent Circuit Model; 6.3.3 Determination of Thermal Resistance; 6.4 Nonlinear HBT Modeling; 6.4.1 VBIC Model; 6.4.2 Agilent Model 6.4.3 Macromodeling Method
