

1. Record Nr.	UNINA9910139979603321
Autore	Bahl I. J
Titolo	Fundamentals of RF and microwave transistor amplifiers [[electronic resource] /] / Inder Bahl
Pubbl/distr/stampa	Oxford, : Wiley, 2009
ISBN	1-282-36840-0 9786612368400 0-470-46234-5 0-470-46231-0
Descrizione fisica	1 online resource (697 p.)
Disciplina	621.3815/35 621.381535
Soggetti	Amplifiers, Radio frequency Microwave amplifiers Transistor amplifiers Electronic books.
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 and index.
Nota di contenuto	Fundamentals of RF and Microwave Transistor Amplifiers; Contents in Brief; Contents; Foreword; Preface; 1. Introduction; 1.1. Transistor Amplifier; 1.2. Early History of Transistor Amplifiers; 1.3. Benefits of Transistor Amplifiers; 1.4. Transistors; 1.5. Design of Amplifiers; 1.6. Amplifier Manufacturing Technologies; 1.7. Applications of Amplifiers; 1.8. Amplifier Cost; 1.9. Current Trends; 1.10. Book Organization; References; 2. Linear Network Analysis; 2.1. Impedance Matrix; 2.2. Admittance Matrix; 2.3. ABCD Parameters; 2.4. S-Parameters; 2.4.1. S-Parameters for a One-Port Network 2.5. Relationships Between Various Two-Port ParametersReferences; Problems; 3. Amplifier Characteristics and Definitions; 3.1. Bandwidth; 3.2. Power Gain; 3.3. Input and Output VSWR; 3.4. Output Power; 3.5. Power Added Efficiency; 3.6. Intermodulation Distortion; 3.6.1. IP3; 3.6.2. ACPR; 3.6.3. EVM; 3.7. Harmonic Power; 3.8. Peak-to-Average Ratio; 3.9. Combiner Efficiency; 3.10. Noise Characterization; 3.10.1. Noise Figure; 3.10.2. Noise Temperature; 3.10.3. Noise Bandwidth;

3.10.4. Optimum Noise Match; 3.10.5. Constant Noise Figure and Gain Circles; 3.10.6. Simultaneous Input and Noise Match
 3.11. Dynamic Range 3.12. Multistage Amplifier Characteristics; 3.12.1. Multistage IP₃; 3.12.2. Multistage PAE; 3.12.3. Multistage NF; 3.13. Gate and Drain Pushing Factors; 3.14. Amplifier Temperature Coefficient; 3.15. Mean Time to Failure; References; Problems; 4. Transistors; 4.1. Transistor Types; 4.2. Silicon Bipolar Transistor; 4.2.1. Figure of Merit; 4.2.2. High-Frequency Noise Performance of Silicon BJT; 4.2.3. Power Performance; 4.3. GaAs MESFET; 4.3.1. Small-Signal Equivalent Circuit; 4.3.2. Figure of Merit; 4.3.3. High-Frequency Noise Properties of MESFETs
 4.4. Heterojunction Field Effect Transistor 4.4.1. High-Frequency Noise Properties of HEMTs; 4.4.2. Indium Phosphide pHEMTs; 4.5. Heterojunction Bipolar Transistors; 4.5.1. High-Frequency Noise Properties of HBTs; 4.5.2. SiGe Heterojunction Bipolar Transistors; 4.6. MOSFET; References; Problems; 5. Transistor Models; 5.1. Transistor Model Types; 5.1.1. Physics/Electromagnetic Theory Based Models; 5.1.2. Analytical or Hybrid Models; 5.1.3. Measurement Based Models; 5.2. MESFET Models; 5.2.1. Linear Models; 5.2.2. Nonlinear Models; 5.3. pHEMT Models; 5.3.1. Linear Models; 5.3.2. Nonlinear Models
 5.4. HBT Model 5.5. MOSFET Models; 5.6. BJT Models; 5.7. Transistor Model Scaling; 5.8. Source-Pull and Load-Pull Data; 5.8.1. Theoretical Load-Pull Data; 5.8.2. Measured Power and PAE Source Pull and Load Pull; 5.8.3. Measured IP₃ Source and Load Impedance; 5.8.4. Source and Load Impedance Scaling; 5.9. Temperature-Dependent Models; References; Problems; 6. Matching Network Components; 6.1. Impedance Matching Elements; 6.2. Transmission Line Matching Elements; 6.2.1. Microstrip; 6.2.2. Coplanar Lines; 6.3. Lumped Elements; 6.3.1. Capacitors; 6.3.2. Inductors; 6.3.3. Resistors
 6.4. Bond Wire Inductors

Sommario/riassunto

A Comprehensive and Up-to-Date Treatment of RF and Microwave Transistor Amplifiers This book provides state-of-the-art coverage of RF and microwave transistor amplifiers, including low-noise, narrowband, broadband, linear, high-power, high-efficiency, and high-voltage. Topics covered include modeling, analysis, design, packaging, and thermal and fabrication considerations. Through a unique integration of theory and practice, readers will learn to solve amplifier-related design problems ranging from matching networks to biasing and stability. More than 240 problems are included to help read