

1. Record Nr.	UNINA9910830417503321
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Titolo	Asymmetric passive components in microwave integrated circuits [[electronic resource] /] / by Hee-Ran Ahn
Pubbl/distr/stampa	Hoboken, NJ, : J. Wiley & Sons, c2006
ISBN	1-280-51726-3 9786610517268 0-470-03696-6 0-470-03695-8
Descrizione fisica	1 online resource (308 p.)
Collana	Wiley series in microwave and optical engineering
Disciplina	621.38132 621.3815
Soggetti	Microwave integrated circuits Passive components
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"Wiley-Interscience."
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Asymmetric Passive Components in Microwave Integrated Circuits; Contents; Preface; 1 Introduction; 1.1 Asymmetric Passive Components; 1.2 Circuit Parameters; 1.3 Asymmetric Four-Port Hybrids; 1.3.1 Asymmetric Ring Hybrids; 1.3.2 Asymmetric Branch-Line Hybrids; 1.4 Asymmetric Three-Port Power Dividers; 1.5 Asymmetric Two-Port Components; References; 2 Circuit Parameters; 2.1 Scattering Matrix; 2.1.1 Transmission-Line Theory; 2.1.2 Basis-Dependent Scattering Parameters of a One-Port Network; 2.1.3 Voltage- and Current-Basis Scattering Matrices of n-Port Networks 2.1.4 Complex Normalized Scattering Matrix 2.2 Scattering Parameters of Reduced Multiports; 2.2.1 Examples of Reduced Multiports; 2.3 Two- Port Network Analysis Using Scattering Parameters; 2.4 Other Circuit Parameters; 2.4.1 ABCD Parameters; 2.4.2 Open-Circuit Impedance and Short-Circuit Admittance Parameters; 2.4.3 Conversion Matrices of Two-Port Networks Terminated in Arbitrary Impedances; 2.5 Analyses of Symmetric Networks; 2.5.1 Analyses with Even- and Odd-Mode Excitations; 2.5.2 Useful Symmetric Two-Port Networks; 2.5.3 Properties of Symmetric Two-Port Networks

2.6 Analyses with Image Parameters 2.6.1 Image Impedances; 2.6.2 Image Propagation Constants; 2.6.3 Symmetrical and Common Structures; Exercises; References; 3 Conventional Ring Hybrids; 3.1 Introduction; 3.2 Original Concept of the 3-dB Ring Hybrid; 3.3 Conventional Ring Hybrids; 3.3.1 Coupled Transmission Lines; 3.3.2 Ring Hybrids with Coupled Transmission Lines; 3.3.3 Wideband Ring Hybrids; 3.3.4 Symmetric Ring Hybrids with Arbitrary Power Divisions; 3.3.5 Conventional Lumped-Element Ring Hybrids; 3.3.6 Mixed Small Ring Hybrids; 3.4 Conventional 3-dB Uniplanar Ring Hybrids 3.4.1 Uniplanar T-Junctions 3.4.2 Transitions; 3.4.3 Wideband Uniplanar Baluns; 3.4.4 Uniplanar Ring Hybrids; Exercises; References; 4 Asymmetric Ring Hybrids; 4.1 Introduction; 4.2 Derivation of Design Equations of Asymmetric Ring Hybrids; 4.3 Small Asymmetric Ring Hybrids; 4.4 Wideband or Small Asymmetric Ring Hybrids; 4.4.1 Microstrip Asymmetric Ring Hybrids; 4.4.2 Uniplanar Asymmetric Ring Hybrids; 4.5 Miniaturized Ring Hybrids Terminated in Arbitrary Impedances; 4.5.1 Asymmetric Lumped-Element Ring Hybrids; Exercises; References; 5 Asymmetric Branch-Line Hybrids; 5.1 Introduction 5.2 Origin of Branch-Line Hybrids 5.3 Multisection Branch-Line Couplers; 5.4 Branch-Line Hybrids for Impedance Transforming; 5.5 Asymmetric Four-Port Hybrids; 5.5.1 Analyses of Asymmetric Four-Port Hybrids; 5.5.2 Conventional-Direction Asymmetric Branch-Line Hybrids; 5.5.3 Anti-Conventional-Direction Asymmetric Branch-Line Hybrids; Exercises; References; 6 Conventional Three-Port Power Dividers; 6.1 Introduction; 6.2 Three-Port 3-dB Power Dividers; 6.3 Three-Port Power Dividers with Arbitrary Power Divisions; 6.4 Symmetric Analyses of Asymmetric Three-Port Power Dividers 6.5 Three-Port 3-dB Power Dividers Terminated in Complex Frequency-Dependent Impedances

Sommario/riassunto

This book examines the new and important technology of asymmetric passive components for miniaturized microwave passive circuits. The asymmetric design methods and ideas set forth by the author are groundbreaking and have not been treated in previous works. Readers discover how these design methods reduce the circuit size of microwave integrated circuits and are also critical to reducing the cost of equipment such as cellular phones, radars, antennas, automobiles, and robots. An introductory chapter on the history of asymmetric passive components, which began with asymmetric ring hybrid
