1. Record Nr. UNINA9910145953303321

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Titolo	Analysis and design of autonomous microwave circuits / / Almudena Suarez
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley, , c2009 [Piscataqay, New Jersey] : , : IEEE Xplore, , 2008
ISBN	1-282-68268-7 9786612682681 0-470-38590-1 0-470-38589-8
Descrizione fisica	1 online resource (729 p.)
Collana	Wiley series in microwave and optical engineering ; ; 19
Disciplina	621.381/32 621.38132
Soggetti	Microwave circuits - Mathematical models Oscillators, Microwave - Automatic control Oscillators, Microwave - Design and construction System analysis
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.
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Sommario/riassunto

Presents simulation techniques that substantially increase designers' control over the oscillationin autonomous circuits This book facilitates a sound understanding of the free-running oscillation mechanism, the start-up from the noise level, and the establishment of the steady-state oscillation. It deals with the operation principles and main characteristics of free-running and injection-locked oscillators, coupled oscillators, and parametric frequency dividers. Analysis and Design of Autonomous Microwave Circuits provides: . An exploration of the main nonlinear-analysis methods, with emphasis on harmonic balance and envelope transient methods. Techniques for the efficient simulation of the most common autonomous regimes. A presentation and comparison of the main stability-analysis methods in the frequency domain. A detailed examination of the instabilization mechanisms that delimit the operation bands of autonomous circuits. Coverage of techniques used to eliminate common types of undesired behavior, such as spurious oscillations, hysteresis, and chaos. A thorough presentation of the oscillator phase noise. A comparison of the main methodologies of phase-noise analysis. Techniques for autonomous circuit optimization, based on harmonic balance. A consideration of different design objectives: presetting the oscillation frequency and output power, increasing efficiency, modifying the transient duration, and imposing operation bands Analysis and Design of Autonomous Microwave Circuits is a valuable resource for microwave designers, oscillator designers, and graduate students in RF microwave design