1. Record Nr. UNINA9910437911603321 Analog/RF and mixed-signal circuit systematic design / / Mourad **Titolo** Fakhfakh, Esteban Tlelo-Cuautle, and Rafael Castro-Lopez (eds.) Pubbl/distr/stampa Berlin; ; New York, : Springer, c2013 **ISBN** 3-642-36329-6 Edizione [1st ed. 2013.] 1 online resource (xii, 379 pages): illustrations (some color) Descrizione fisica Lecture notes in electrical engineering, , 1876-1100 ; ; 233 Collana Altri autori (Persone) FakhfakhMourad Tlelo-CuautleEsteban Castro-LopezR Disciplina 621.3815 Soggetti Linear integrated circuits - Design and construction Radio frequency integrated circuits - Design and construction Systems on a chip - Design and construction Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Includes author index. Nota di bibliografia Includes bibliographical references and index. Nota di contenuto ""Title ""; ""Foreword""; ""Preface""; ""Contents""; ""Part I Methodologies""; ""Towards Automatic Structural Analysis of Mixed-Signal Circuits"": ""Introduction"": ""Preprocessing"": ""Building Block Recognition""; ""Analog, Mixed-Signal and Digital Building Block Library""; ""Recognition Conflicts and Their Resolution""; ""Recognition Algorithm""; ""Structural Signal Flow Analysis""; ""Generation""; ""Assignment of Passa€?Gate Directions""; ""Analog / Digital Partitioning""; ""Transformation to Temporal ESFG""; ""Logic Function Extraction"" ""Computation of Logic Function for Building Blocks""""Computation of Overall Logic Function""; ""Application Examples""; ""Description Generation for Digital Standard Cell Libraries""; ""Structural Analysis of Mixed-Signal Circuits""; ""Conclusion""; ""References""; ""Efficient Synthesis Methods for High-Frequency Integrated Passive Components and Amplifiers"; ""Introduction""; ""Review of Related Works and Challenges""; ""RF Integrated Circuit Synthesis ""; ""Basic Computational Intelligence Techniques""; ""Differential Evolution""; ""Gaussian Process Machine Learning""

""Naive Bayes Classifier""""MMLDE: Efficient Synthesis of Integrated

Passive Components at High Frequencies"; ""Key Ideas of MMLDE""; ""Expected Improvement Prescreening"": ""The General Framework of MMLDE""; ""Experimental Results of MMLDE""; ""EMLDE: Efficient Synthesis of mm-Wave Linear Amplifiers"; ""Overview of EMLDE""; ""Key Algorithms in the EMLDE Method""; ""The Embedded SBDE Algorithm""; ""The EMLDE Method""; ""Experimental Verification of the EMLDE Method""; ""Example and Settings""; ""Example: Three-Stage Linear Amplifier Synthesis""; ""Conclusion""; ""References"" ""Self-Healing Circuits Using Statistical Element Selection""" Introduction""; ""Process Variations""; ""Systematic Variations""; ""Random Variations""; ""Mismatch Correction Methods""; ""Statistical Element Selection""; ""Basis""; ""Methodology ""; ""Comparator Array in 65nm Bulk CMOS Technology""; ""Design Architecture""; ""Testing Setup""; ""Measurement Results ""; ""An 8-bit 1.5-GHz Flash ADC in 65nm CMOS Process""; ""Flash ADC Architecture""; ""Comparator Design""; ""Measurement Results ""; ""Conclusion""; ""References"" ""Improving Design Feature Reuse in Analog Circuit Design through Topological-Symbolic Comparison and Design Concept Combination""" Introduction""; ""Related Work""; ""Circuit Synthesis Based on Concept Comparison and Combination""; ""Systematic Comparison of Analog Circuits""; ""Topological Matching""; ""Symbolic Matching""; ""Constraint Generation""; ""Performance Characterization ""; ""Experiments""; ""Conclusion""; ""References ""; ""Graph-Based Symbolic and Symbolic Sensitivity Analysis of Analog Integrated Circuits"; ""Introduction""; ""Nullor Circuit Equivalents"" ""Graph-Based Determinant Representation""

Sommario/riassunto

Despite the fact that in the digital domain, designers can take full benefits of IPs and design automation tools to synthesize and design very complex systems, the analog designers' task is still considered as a 'handcraft', cumbersome and very time consuming process. Thus, tremendous efforts are being deployed to develop new design methodologies in the analog/RF and mixed-signal domains. This book collects 16 state-of-the-art contributions devoted to the topic of systematic design of analog, RF and mixed signal circuits. Divided in the two parts Methodologies and Techniques recent theories, synthesis techniques and design methodologies, as well as new sizing approaches in the field of robust analog and mixed signal design automation are presented for researchers and R/D engineers.