1. Record Nr. UNINA9910841357403321 Autore Kursun Volkan Titolo Multi-voltage CMOS circuit design [[electronic resource] /] / Volkan Kursun, Eby G. Friedman Chichester, England; ; Hoboken, NJ, : John Wiley, 2006 Pubbl/distr/stampa **ISBN** 1-280-64869-4 9786610648696 0-470-03337-1 0-470-01024-X Descrizione fisica 1 online resource (243 p.) Altri autori (Persone) FriedmanEby G 621.39732 Disciplina Soggetti Metal oxide semiconductors, Complementary Low voltage integrated circuits - Design and construction 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 Multi-voltage CMOS Circuit Design; Contents; About the Authors; Preface; Acknowledgments; Chapter 1 Introduction; 1.1 Evolution of Integrated Circuits; 1.2 Outline of the Book; Chapter 2 Sources of Power Consumption in CMOS ICs; 2.1 Dynamic Switching Power; 2.2 Leakage Power; 2.2.1 Subthreshold Leakage Current; 2.2.1.1 Short-Channel Effects; 2.2.1.2 Drain-Induced Barrier-Lowering; 2.2.1.3 Characterization of Subthreshold Leakage Current; 2.2.2 Gate Oxide Leakage Current; 2.2.2.1 Effect of Technology Scaling on Gate Oxide Leakage; 2.2.2.2 Characterization of Gate Oxide Leakage Current 2.2.2.3 Alternative Gate Dielectric Materials 2.3 Short-Circuit Power: 2.4 Static DC Power; Chapter 3 Supply and Threshold Voltage Scaling Techniques; 3.1 Dynamic Supply Voltage Scaling; 3.2 Multiple Supply Voltage CMOS; 3.3 Threshold Voltage Scaling; 3.3.1 Body Bias Techniques; 3.3.1.1 Reverse Body Bias; 3.3.1.2 Forward Body Bias; 3.3.1.3 Bidirectional Body Bias; 3.3.2 Multiple Threshold Voltage CMOS; 3.4 Multiple Supply and Threshold Voltage CMOS: 3.5 Dynamic Supply and Threshold Voltage Scaling; 3.6 Circuits with Multiple Voltage and

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Sommario/riassunto

This book presents an in-depth treatment of various power reduction and speed enhancement techniques based on multiple supply and threshold voltages. A detailed discussion of the sources of power consumption in CMOS circuits will be provided whilst focusing primarily on identifying the mechanisms by which sub-threshold and gate oxide leakage currents are generated. The authors present a comprehensive review of state-of-the-art dynamic, static supply and threshold voltage scaling techniques and discuss the pros and cons of supply and threshold voltage scaling techniques.