

1. Record Nr.	UNINA9910454116803321
Titolo	Design and test of digital circuits by quantum-dot cellular automata // Fabrizio Lombardi, Jing Huang, editors
Pubbl/distr/stampa	Boston ; , : Northeastern University, , ©2008 [Piscataqay, New Jersey] : , : IEEE Xplore, , [2007]
ISBN	1-5231-1706-0 1-59693-268-6
Descrizione fisica	1 online resource (380 p.)
Altri autori (Persone)	LombardiFabrizio <1955-> HuangJing <1970->
Disciplina	621.395
Soggetti	Cellular automata Digital electronics - Design and construction Digital electronics - Testing Nanoelectronics Quantum computers Quantum dots 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	Design and Test of Digital Circuits byQuantum-Dot Cellular Automata; Contents; Preface; Chapter 1 Introduction 1; Chapter 2 Nano Devices and Architectures Overview 11; Chapter 3 QCA 37; Chapter 4 QCA Combinational Logic Design 69; Chapter 5 Logic-Level Testing and Defect Characterization 91; Chapter 6 Two-Dimensional Schemes for Clocking/Timing of QCA Circuits 143; Chapter 7 Tile-Based QCA Design 171; Chapter 8 Sequential Circuit Design in QCA 213; Chapter 9 QCA Memory 247; Chapter 10 Implementing Universal Logic in QCA 287; Chapter 11 QCA Model for Computing and Energy Analysis 305 Chapter 12 Fault Tolerance of Reversible QCA Circuits 327Chapter 13 Conclusion and Future Work 349; Appendix A Preliminary for QCA Mechanical Model 353; Appendix B Validation of Mechanical Model 357; Appendix C Energy Dissipation Analysis of Circuit Units 363; About the Authors 367

Sommario/riassunto

Probing both the science and the engineering involved, this one-of-a-kind resource reviews current microchip fabrication methods and architectures and discusses fundamentals of nanoscale design and DNA self-assembly. Moreover, the book surveys current limitations and challenges, and features detailed case studies of lightweight self-organizing computer architectures. This roadmap to DNA microchip synthesis is essential reading for all engineers and researchers involved in developing nanoscale computer structures, devices, and applications.
