1. Record Nr. UNINA9910465404303321

Autore	Iu Herbert Ho-Ching
Titolo	Development of memristor based circuits [[electronic resource] /] / Herbert Ho-Ching Iu, Andrew L. Fitch
Pubbl/distr/stampa	New Jersey ; ; London, : World Scientific, c2013
ISBN	1-299-28119-2 981-4383-39-2
Descrizione fisica	1 online resource (133 p.)
Collana	World Scientific series on nonlinear science, Series A, , 1793-1010 ; ; v. 82
Altri autori (Persone)	FitchAndrew L
Disciplina	621.3815
Soggetti	Memristors Electronic circuits 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	Contents; Preface; 1 Introduction; 1.1 Introduction; 1.2 HP Memristor; 1.3 Memristor Emulator; 1.3.1 Valsa's memristor emulator; 1.3.2 Pershin and Di Ventra's memristor emulator; 1.3.3 Muthuswamy's memristor modeling circuit; 1.3.4 Kim's memristor emulating circuit; 1.4 Structure of the Book; References; 2 Controlling Chaos in a Memristor Based Circuit; 2.1 Introduction; 2.2 Memristor Based Chaotic Circuit; 2.3 Notch Filter Feedback Controller; 2.3.1 Twin-T notch filter; 2.3.2 Interface circuit; 2.4 Simulation Results; 2.5 Experimental Setup; 2.6 Conclusion; References 3 Hyperchaos in a Memristor Based Modified Canonical Chua's Circuit3. 1 Introduction; 3.2 Dynamical Equations of MHC; 3.3 Simulation Results; 3.4 Experimental Setup; 3.5 Conclusion; References; 4 Realization of an Analog Model of a Memristor Based on a Light Dependent Resistor; 4.1 Introduction; 4.2 Circuit Objectives; 4.3 Simulation Setup; 4.4 Experimental Setup; 4.5 Conclusion; References; 5 Design of a Memcapacitor Emulator Based on a Memristor; 5.1 Introduction; 5.2 The Memcapacitor and Its Relation to the Memristor; 5.3 Simulation Setup; 5.4 Experimental Setup; 5.5 Conclusion; References 6 Practical Realization of an Analog Model of a Memcapacitor6.1

Introduction; 6.2 Circuit Description; 6.2.1 Memristor mimicking circuit; 6.2.2 Capacitor multiplier; 6.2.3 Memcapacitor emulator; 6.3 Experimental Setup; 6.4 Conclusion; References; 7 Chaos in Memristively Coupled Harmonic Oscillators; 7.1 Introduction; 7.2 Coupled Oscillator Circuits; 7.3 Memristor Mimicking Circuit; 7.4 Memristively Coupled Harmonic Oscillator Circuit; 7.5 Experimental Setup; 7.6 Conclusion; References; 8 Conclusion and Future Work; 8.1 Summary; 8.2 Memory Applications; 8.3 Low Power Devices and Sensing
8.4 Neuromorphic Applications8.5 Flexible Circuits; 8.6 Analog Applications; References; Index

Sommario/riassunto

In 1971, Leon O. Chua presented the formulation of a memristor, which was postulated as the fourth circuit element in electrical circuit theory - one that could join the existing core group of elements: capacitor, resistor and inductor. For over thirty years, the memristor had held no significance in circuit theory. Then in 2008, a group of scientists from Hewlett-Packard Labs (HP) developed a working memristor. Although the solid state implementation of the memristor inspired appreciable interest in developing applications, memristors are not yet available on the market to date. HP labs do no