1.

Record Nr.	UNINA9910830401703321
Autore	Varadan V. K. <1943->
Titolo	RF MEMS and their applications [[electronic resource] /] / Vijay K. Varadan, K. J. Vinoy, K.A. Jose
Pubbl/distr/stampa	West Sussex, England ; ; Hoboken, NJ, : J. Wiley, c2003
ISBN	1-280-26970-7 9786610269709 0-470-34173-4 0-470-84619-4 0-470-85660-2
Descrizione fisica	1 online resource (408 p.)
Altri autori (Persone)	VinoyK. J <1969-> (Kalarickaparambil Joseph) JoseK. A
Disciplina	621.3815 621.38413
Soggetti	Radio circuits - Equipment and supplies Microelectromechanical systems Microwave circuits
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	RF MEMS and Their Applications; Contents; Preface; 1 Microelectromechanical systems (MEMS) and radio frequency MEMS; 1.1 Introduction; 1.2 MEMS; 1.3 Microfabrications for MEMS; 1.3.1 Bulk micromachining of silicon; 1.3.2 Surface micromachining of silicon; 1.3.3 Wafer bonding for MEMS; 1.3.4 LIGA process; 1.3.5 Micromachining of polymeric MEMS devices; 1.3.6 Three-dimensional microfabrications; 1.4 Electromechanical transducers; 1.4.1 Piezoelectric transducers; 1.4.2 Electrostrictive transducers; 1.4.3 Magnetostrictive transducers; 1.4.4 Electrostatic actuators 1.4.5 Electromagnetic transducers1.4.6 Electrodynamic transducers; 1.4.7 Electrothermal actuators; 1.4.8 Comparison of electromechanical actuation schemes; 1.5 Microsensing for MEMS; 1.5.1 Piezoresistive sensing; 1.5.2 Capacitive sensing; 1.5.3 Piezoelectric sensing; 1.5.4 Resonant sensing; 1.5.5 Surface acoustic wave sensors; 1.6 Materials for MEMS; 1.6.1 Metal and metal alloys for MEMS; 1.6.2 Polymers for

	MEMS; 1.6.3 Other materials for MEMS; 1.7 Scope of this book; References; 2 MEMS materials and fabrication techniques; 2.1 Metals; 2.1.1 Evaporation; 2.1.2 Sputtering; 2.2 Semiconductors 2.2.1 Electrical and chemical properties2.2.2 Growth and deposition; 2.3 Thin films for MEMS and their deposition techniques; 2.3.1 Oxide film formation by thermal oxidation; 2.3.2 Deposition of silicon dioxide and silicon nitride; 2.3.3 Polysilicon film deposition; 2.3.4 Ferroelectric thin films; 2.4 Materials for polymer MEMS; 2.4.1 Classification of polymers; 2.4.2 UV radiation curing; 2.4.3 SU-8 for polymer MEMS; 2.5 Bulk micromachining for silicon-based MEMS; 2.5.1 Isotropic and orientation-dependent wet etching; 2.5.2 Dry etching; 2.5.3 Buried oxide process; 2.5.4 Silicon fusion bonding 2.5.5 Anodic bonding2.6 Silicon surface micromachining; 2.6.1 Sacrificial layer technology; 2.6.2 Material systems in sacrificial layer technology; 2.6.3 Surface micromachining using plasma etching; 2.6.4 Combined integrated-circuit technology and anisotropic wet etching; 2.7 Microstereolithography for polymer MEMS; 2.7.1 Scanning method; 2.7.2 Two-photon microstereolithography; 2.7.3 Surface micromachining of polymer MEMS; 2.7.4 Projection method; 2.7.5 Polymeric MEMS architecture with silicon, metal and ceramics; 2.7.6 Microstereolithography integrated with thick-film lithography 2.8 ConclusionsReferences; 3 RF MEMS switches and micro relays; 3.1 Introduction; 3.2 Switch parameters; 3.3 Basics of switching; 3.3.1 Mechanical switches; 3.3.2 Electronic switches; 3.4 Switches for RF and microwave applications; 3.4.1 Mechanical RF switches; 3.4.2 PIN diode RF switches; 3.4.3 Metal oxide semiconductor field effect transistors and monolithic microwave integrated circuits; 3.4.4 RF MEMS switches; 3.4.5 Integration and biasing issues for RF switches; 3.5 Actuation mechanisms for MEMS devices; 3.5.1 Electrostatic switching; 3.5.2 Approaches for low-actuation-voltage switches 3.5.3 Mercury contact switches
Sommario/riassunto	Microelectromechanical systems (MEMS) refer to a collection of micro-sensors and actuators, which can react to environmental change under micro- circuit control. The integration of MEMS into traditional Radio Frequency (RF) circuits has resulted in systems with superior performance levels and lower manufacturing costs. The incorporation of MEMS based fabrication technologies into micro and millimeter wave systems offers viable routes to ICs with MEMS actuators, antennas, switches and transmission lines. The resultant systems operate with an increased bandwidth and increased radiation efficienc