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Descrizione fisica	1 online resource (xx, 559 pages) : digital, PDF file(s)
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Nota di contenuto	Machine generated contents note: 1. Introduction; 2. Circuit-based modeling; 3. Capacitive lumped parameter electromechanics; 4. Small-signal capacitive electromechanical systems; 5. Electromechanics of piezoelectric elements; 6. Capacitive sensing and resonant drive circuits; 7. Distributed 1D and 2D electromechanical structures; 8. Practical MEMS: pressure transducers, accelerometers and gyroscopes; 9. Electromechanics of magnetic MEMS devices; A. Review of quasistatic electromagnetics; B. Review of mechanical resonators; C. Brief survey of MEMS fabrication; D. A brief review of solid mechanics; E. Tables of M- and N-form transducer matrices; F. Finite element analysis as applied to MEMS.
Sommario/riassunto	Offering a consistent, systematic approach to capacitive, piezoelectric and magnetic MEMS, from basic electromechanical transducers to high-level models for sensors and actuators, this comprehensive textbook equips graduate and senior-level undergraduate students with all the resources necessary to design and develop practical, system-level

MEMS models. The concise yet thorough treatment of the underlying principles of electromechanical transduction provides a solid theoretical framework for this development, with each new topic related back to the core concepts. Repeated references to the shared commonalities of all MEMS encourage students to develop a systems-based design perspective. Extensive use is made of easy-to-interpret electrical and mechanical analogs, such as electrical circuits, electromechanical two-port models and the cascade paradigm. Each chapter features worked examples and numerous problems, all designed to test and extend students' understanding of the key principles.
