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Descrizione fisica	1 online resource (XXIII, 798 p. 927 illus., 4 illus. in color.)
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Soggetti	Electronic circuits Signal processing Image processing Speech processing systems Electronics Microelectronics Circuits and Systems Signal, Image and Speech Processing Electronics and Microelectronics, Instrumentation
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Nota di contenuto	Introduction -- Signals and Transforms -- Discrete-Time and Digital Filters -- Filter Algorithms -- Finite Wordlength Effects -- Synthesis of Fir Filters -- Realization of Fir Filters -- Synthesis of Analog Filters -- Analog Filters with Lumped and Distributed Elements -- Synthesis of IIR Filters -- Wave Digital Filters -- Ladder Wave Digital Filters -- Symmetric Wave Digital Filters -- Frequency-Response Masking Filters -- Sampling Rate Converters -- Multirate Filters -- Implementation of Digital Filters -- References -- Index.
Sommario/riassunto	This textbook provides comprehensive coverage for courses in the basics of design and implementation of digital filters. The book assumes only basic knowledge in digital signal processing and covers state-of-the-art methods for digital filter design and provides a simple route for the readers to design their own filters. The advanced mathematics that is required for the filter design is minimized by

providing an extensive MATLAB toolbox with over 300 files. The book presents over 200 design examples with MATLAB code and over 300 problems to be solved by the reader. The students can design and modify the code for their use. The book and the design examples cover almost all known design methods of frequency-selective digital filters as well as some of the authors' own, unique techniques. Discusses in detail state-of-the-art methods for advanced digital filter design; Provides an extensive MATLAB for digital filter design which provides a simple route for the readers to design their own filters; Covers design of FIR filters, wave digital filters, frequency-response masking filters, sample rate converters, multirate filters, and hardware implementation techniques.