

|                         |  |
|-------------------------|--|
| 1. Record Nr.           | UNINA9910458848903321  |
| Autore                  | Morgan David P   |
| Titolo                  | Surface acoustic wave filters [[electronic resource]] : with applications to electronic communications and signal processing / / David Morgan  |
| Pubbl/distr/stampa      | Amsterdam ; ; Boston, : Academic Press, 2007   |
| ISBN                    | 1-281-01884-8<br>9786611018849<br>0-08-055013-4  |
| Edizione                | [2nd ed.]  |
| Descrizione fisica      | 1 online resource (448 p.)   |
| Collana                 | Studies in Electrical and Electronic Engineering   |
| Disciplina              | 621.3828   |
| Soggetti                | Acoustic surface wave filters<br>Signal processing<br>Spread spectrum communications<br>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       | Front cover; Surface Acoustic Wave Filters; Copyright page; Contents; Preface; Foreword to second edition; Foreword to previous edition (1991); Chapter 1 Basic survey; 1.1 Acoustic waves in solids; 1.2 Propagation effects and materials; 1.3 Basic properties of Interdigital Transducers; 1.3.1 Transducer reflectivity and the triple-transit signal; 1.3.2 Non-reflective transducers: delta-function model; 1.4 Apodization and transversal filtering; 1.5 Correlation and signal processing; 1.6 Wireless interrogation: sensors and tags; 1.7 Resonators and low-loss filters; 1.7.1 Gratings and resonators 1.7.2 Low-loss filters for RF1.7.3 Low-loss filters for IF; 1.7.4 Performance of bandpass filters; 1.8 Summary of devices and applications; Chapter 2 Acoustic waves in elastic solids; 2.1 Elasticity in anisotropic materials; 2.1.1 Non-piezoelectric materials; 2.1.2 Piezoelectric materials; 2.2 Waves in isotropic materials; 2.2.1 Plane waves; 2.2.2 Rayleigh waves in a half-space; 2.2.3 Shear-horizontal waves in a half-space; 2.2.4 Waves in a layered half-space; 2.2.5 Waves in a parallel-sided plate; 2.3 Waves in anisotropic materials; 2.3.1 Plane waves in an infinite medium |

2.3.2 Theory for a piezoelectric half-space  
2.3.3 Surface-wave solutions; 2.3.4 Other solutions; 2.3.5 Surface waves in layered substrates: perturbation theory; Chapter 3 Electrical excitation at a plane surface; 3.1 Electrostatic case; 3.2 Piezoelectric half-space; 3.3 Some properties of the effective permittivity; 3.4 Green's function; 3.5 Other applications of the effective permittivity; Chapter 4 Propagation effects and materials; 4.1 Diffraction and beam steering; 4.1.1 Formulation using angular spectrum of plane waves; 4.1.2 Beam steering in the near field  
4.1.3 Minimal-diffraction orientations  
4.1.4 Diffracted field in the parabolic approximation: scaling; 4.1.5 Two-transducer devices; 4.2 Propagation loss and non-linear effects; 4.3 Temperature effects and velocity errors; 4.4 Materials for surface-wave devices; 4.4.1 Orientation: Euler angles; 4.4.2 Single-crystal materials; 4.4.3 Thin films; Chapter 5 Non-reflective transducers; 5.1 Analysis for a general array of electrodes; 5.1.1 The quasi-static approximation; 5.1.2 Electrostatic equations and charge superposition; 5.1.3 Current entering one electrode  
5.1.4 Evaluation of the acoustic potential  
5.2 Quasi-static analysis of transducers; 5.2.1 Launching transducer; 5.2.2 Transducer admittance; 5.2.3 Receiving transducer; 5.3 Summary and P-matrix formulation; 5.4 Transducers with regular electrodes: element factor; 5.5 Admittance of uniform transducers; 5.5.1 Acoustic conductance and susceptance; 5.5.2 Capacitance; 5.5.3 Comparative performance; 5.6 Two-transducer devices; 5.6.1 Device using unapodized transducers; 5.6.2 Device using an apodized transducer; 5.6.3 Admittance of apodized transducers  
5.6.4 Two-transducer device using a multistrip coupler

---

#### Sommario/riassunto

This book gives the fundamental principles and device design techniques for surface acoustic wave filters. It covers the devices in widespread use today: bandpass and pulse compression filters, correlators and non-linear convolvers and resonators. The newest technologies for low bandpass filters are fully covered such as unidirectional transducers, resonators in impedance element filters, resonators in double-mode surface acoustic wave filters and transverse-coupled resonators using waveguides. The book covers the theory of acoustic wave physics, the piezoelectric effect, electrostatic

---