





Library Indian Institute of Science Education and Research Mohali



DSpace@IISERMohali / Thesis & Dissertation / Master of Science / MS-15

Please use this identifier to cite or link to this item: http://hdl.handle.net/123456789/1478

Title: Investigations on Film Bulk Acoustic Wave Resonator based on Aluminum Nitride

Authors: Jindal, Anubhav

Keywords: Acoustic Wave Resonator

Aluminum Nitride

Butterworth Van-Dyke Model

Film Bulk

Issue Apr-2020

Date:

Publisher: IISER Mohali

Abstract:

Thin-film bulk acoustic wave resonators serve as an alternative to current dilelectric acoustic wave resonators for use in telecommunications [LAGG + 11]. Because it has high resonance frequency, the current research focuses on using FBAR for sensing purposes[ZC12]. It has many advantages such as small size, IC compatibility, which makes it possible to integrate on a chip. The FBAR has two modes for resonating: thickness extensional(TE) and thickness shear(TS). Studying these two modes is the main theme of this thesis. This thesis at first introduces the basic theory of the piezoelectric resonators and then discusses a handy equivalent circuit of the resonator called Butterworth van dyke Model. It then dives into Finite Element Analysis of a simple geometry of both Thickness Exten- sional and Thickness Shear Modes of an FBAR and discusses the results that come out of it. Under the section of experimental results various recipes for depositing Aluminum Nitride are discussed and what results come out from the characterization measurements of the deposited films are discussed.

URI: http://hdl.handle.net/123456789/1478

Appears in Collections:

MS-15

Files in This Item:

File	Description	Size	Format	
MS15200.pdf		11.85 MB	Adobe PDF	View/Open

Show full item record

di

Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.

Theme by CINEC

Customized & Implemented by - Jivesna Tech