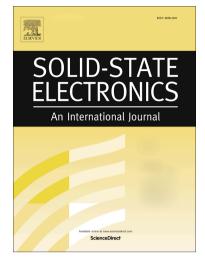
#### Accepted Manuscript

MEMS Fabrication and Frequency Sweep for Suspending Beam and Plate Electrode in Electrostatic Capacitor

Jianxiong Zhu, Weixing Song

PII:	S0038-1101(17)30222-8
DOI:	https://doi.org/10.1016/j.sse.2017.10.039
Reference:	SSE 7352
To appear in:	Solid-State Electronics
Received Date:	21 March 2017
Revised Date:	22 September 2017
Accepted Date:	25 October 2017



Please cite this article as: Zhu, J., Song, W., MEMS Fabrication and Frequency Sweep for Suspending Beam and Plate Electrode in Electrostatic Capacitor, *Solid-State Electronics* (2017), doi: https://doi.org/10.1016/j.sse. 2017.10.039

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

### **ACCEPTED MANUSCRIPT**

# MEMS Fabrication and Frequency Sweep for Suspending Beam and Plate Electrode in Electrostatic Capacitor

Jianxiong Zhu, Weixing Song

Beijing Institute of Nanoenergy&Nanosystems, Chinese Academy of Sciences, National Center for Nanoscience and Technology (NCNST), Beijing 100083, China, Corresponding Author: danverzhu@gmail.com

**Abstract:** We report a MEMS fabrication and frequency sweep for a high-order mode suspending beam and plate layer in electrostatic micro-gap semiconductor capacitor. This suspended beam and plate was designed with silicon oxide  $(SiO_2)$  film which was fabricated using bulk silicon micromachining technology on both side of a silicon substrate. The designed semiconductor capacitors were driven by a bias direct current (DC) and a sweep frequency alternative current (AC) in a room temperature for an electrical response test. Finite element calculating software was used to evaluate the deformation mode around its high-order response frequency. Compared a single capacitor with a high-order response frequency (0.42 MHz) and a 1×2 array parallel capacitor, we found that the 1×2 array parallel capacitor had a broader high-order response range. And it concluded that a DC bias voltage can be used to modulate a high-order response frequency for both a single and 1×2 array parallel capacitors.

KEYWORDS: Electrical response, Voltage modulation, Electrostatic force, Bulk silicon fabrication

#### **1. Introduction**

Download English Version:

## https://daneshyari.com/en/article/7150647

Download Persian Version:

https://daneshyari.com/article/7150647

Daneshyari.com