

## Improving Bias Stability of Micromachined Accelerometer by Increasing Mechanical Stability

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In this paper, the bias stability of a micromachined accelerometer is improved by increasing the mechanical stability. The mechanical stability is increased by increasing the stiffness of the parallel plate electrodes of the accelerometer structure. Through this work, we experimentally show that there is a relationship between the bias stability and the mechanical stability of the accelerometer structure. We designed and fabricated two models with different mechanical stabilities. The two models of the accelerometer were designed by ANSYS modal analysis and MATLAB analysis. Silicon on glass (SiOG) substrate is used in the proposed accelerometers. Therefore, the single-crystalline silicon was used as a device layer and the glass wafer was used as a handling layer. The measured bias stability of the fabricated accelerometers was improved from 500 mg to 4.4 mg with the same sensing circuit.

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