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IJCA Proceedings on International Conference
on Innovations In Intelligent Instrumentation, Optimization and Electrical Sciences

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ICIIOES - Number 7

Year of Publication: 2013

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{bibtex}iciioes1606.bib{/bibtex}

Abstract

Due to the anisotropic characteristics of the energy resolution in crystal space, piezoresistive effect of doped silicon piezoresistors are used for sensing stress on accelerometer structures. Piezoresistive accelerometers are the most popular and widely used method of acceleration sensing due to their simplicity in fabrication, packaging and inherent ruggedness. Moreover, piezoresistive sensors show excellent DC response and hybrid packaging of the sensor chip

with signal processing chip in the same package can be used without any signal loss. The performance of the accelerometer which is characterized by the sensitivity and resolution of the accelerometer has a direct impact on the parameters like the size, doping concentration and temperature coefficient of sensitivity of the piezoresistor, noises, power consumption and temperature sensitivity of the accelerometer. It is quite difficult to determine the accelerometer performance only based on some of those parameters. Among these parameters, doping concentration, stress on the piezoresistor and temperature sensitivity is the major factors that affect the performance of the accelerometer. Hence in this paper we investigate on various methods adopted for enhancement of these performance dependent parameters of the accelerometer.

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Index Terms

Computer Science

Electronics

Keywords

Mems Accelerometer Sensitivity Doping Concentration Temperature Effects Stress

Design Optimization