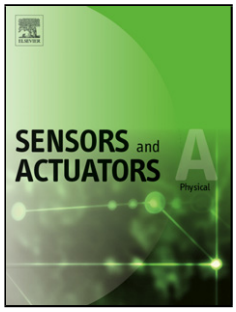

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Design of Resonance Based DC Current Sensor Using BAW Quartz Resonators

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Highlight

- A novel DC-current sensor using quartz crystal is proposed in this paper.
- The working principle of sensor (i.e Stiffening a BAW quartz crystal utilizing SMA Wire) is unique and first of its kind.
- The current flow in the SMA wire is tuning the resonance frequency of BAW quartz cryst al
- The proposed principle is very much useful for low electric current measurement applicat ion.

Abstract

A novel approach is attempted to measure DC current in the range of 0 – 0.7A in this paper. The proposed current sensing system is designed using an AT-cut BAW quartz resonator sandwiched at the center of the rectangular beam. The SMA wire bonded over the rectangular beam changes its shape with the change in input current. The quartz crystal resonator is maintained at first mode resonance frequency using a closed loop resonator electronics. The electric current change in the