

基片表面力负载对SAW谐振器的特性影响研究

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摘要:

分析了SAW谐振器表面力负载对谐振器谐振频率和机械损耗产生的影响。进行了两种表面力加载方式的实验研究, 对比实验结果表明: 基片底面固定时, 表面力负载对SAW谐振器谐振频率的影响主要与负载在基片表面产生的应力大小有关, 而谐振器的机械损耗主要与力在基片表面的分布有关。实验结果为SAW力传感器的结构设计提供了参考。

关键词: SAW谐振器; 表面力负载; 谐振频率; 机械损耗

Characterization of SAW resonator under force loaded on the substrate surface

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Abstract:

The variation of the resonant frequency and the mechanical loss of SAW resonators are analyzed while there is force directly applied on the surface of an SAW resonator substrate. Experiments with distinct force distributions on the surface have been conducted and the experimental results show that the variation of SAW resonant frequency is related with the surface stress produced by surface force loading and the mechanical loss of a resonator is related with the force distribution when the back surface of the substrate is fixed. The analysis provides a reference for structure design of SAW force sensors.

Keywords: SAW resonator; surface force loading; resonant frequency; mechanical loss

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