传感技术学报
中国微米纳米技术学会
全国高校传感技术研究会 主办

基于LC谐振的无线无源应变传感器研究

作　者：豆刚, 蒋洪川, 张万里, 彭斌

单　位：电子科技大学微电子与固体电子学院

基金项目：中央高校基本科研业务费

摘　要：

摘要：　本文研究一种平面螺旋电感和叉指电容并联结构的LC谐振无线无源应变传感器，利用LC谐振回路的谐振频率对不同应变的响应来表征传感器的应变特性，采用电感耦合的方式来实现无线检测。结果显示LC应变传感器的谐振频率随外加张应变增加而降低，沿电容电极长度方向谐振频率变化对应变的响应灵敏度约为0.3kHz/με，垂直于电容电极长度方向约为0.2kHz/με。

关键词：关键词：无源无线传感器；应变；无线检测；平面螺旋电感；叉指电容；灵敏度

Research on wireless passive strain sensor of LC resonant circuit

Author's Name:

Institution:

Abstract:

Abstract: A LC resonant circuit wireless passive strain sensor consisted of a plane spiral inductor and an interdigital capacitor was investigated. The principle of the sensor was based on the change of resonance frequency of the LC circuit with the external strain. Wireless detection was realized by electromagnetic coupling with two inductances. The results show that the resonance frequency of the LC strain sensor decreases with the increase of tension strains. The response sensitivity of the resonance frequency to strain is about 0.3 kHz/με and 0.2 kHz/με along and perpendicular to the direction of the capacitor electrode, respectively.

Keywords: Key words: wireless passive sensor; strain; wireless detection; plane spiral inductor; interdigital capacitor; sensitivity

投稿时间：**2011-06-24**

查看pdf文件