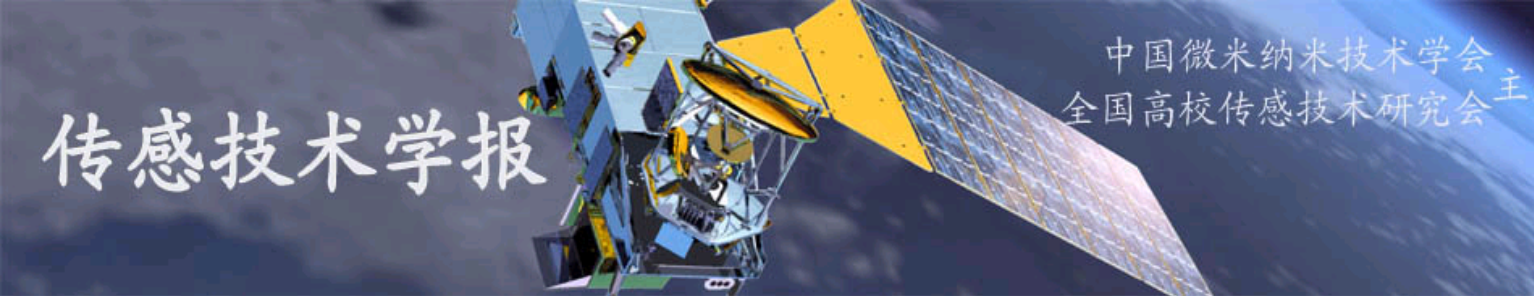

一种单片集成电容式压力传感器的设计、制造和测试

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摘　要：

提出了一种新型电容式压力传感器。在外加压力下，该传感器的极板面积、间距以及介质层介电常数均发生改变，并导致电容发生变化。同时介绍了接口电路计，该电路基于电容－频率转换原理。该传感器结构简单，实现了与CMOS接口电路集成。传感器采用标准CMOS工艺与后处理工艺相结合的方式制造。结果表明，在800hPa到1100hPa的压力范围，传感器灵敏度约为44fF/hPa，接口电路的分辨率为3.77Hz/hPa。

关键词：单片集成；电容式压力传感器；接口电路

The Design, Fabrication and Test of a Monolithic Capacitive Pressure Sensor

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Abstract:

a novel capacitive pressure sensor is presented. Under pressure applied, the capacitance changes due to the variation of the permittivity as well as the variation of the ar displacement between the electrodes. The interface circuits based on the principle of the conversion from capacitance to frequency are also introduced. The fabrication c sensor is simple, and integrated with CMOS interface circuits. The sensor was fabricated by standard CMOS process plus some post-processing. The results show that t sensitivity is about 44fF/hPa from the range of 800hPa to 1100hPa, and the resolution of the circuit is 3.77Hz/hPa.

Keywords: monolithic; capacitive pressure sensor; interface circuit

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