

FINFETLOW POWER CAPACITIVE PRESSURE SENSOR READOUT CIRCUIT

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ABSTRACT

This paper introduces a low power readout circuit for MEMS capacitive pressure sensor in industrial wireless sensing applications. The proposed design relies on using FinFET technology in implementing a capacitance to frequency converter. The transmission frequency is chosen in the 2.4 GHz ISM band to allow for wireless transmission of measured pressure data in a near-field communication or a short range wireless sensor network. The results showed a pressure range of 10 to 20 MPa (100 to 200 atm) under power consumption around $214 \mu\text{W}$.

KEYWORDS: FinFET, Low Power, Ring Oscillator, SiC Pressure Sensor