

## 集成于无源UHF RFID标签的新结构CMOS温度传感器

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摘要：

设计了一种集成于无源UHF RFID标签芯片的新结构温度传感器。利用高PSRR共源共栅结构的电流镜偏置电路产生两路温度源电压和温度补偿。与温度相关的脉冲信号由类似差分结构产生，有效的克服了工艺偏差导致的误差。计数时钟信号由标电流控制近似与电源电压和温度无关。采用SMIC 0.18 $\mu$ m 2P4M CMOS工艺，仿真结果表明：电源电压为1.8V，温度在-10~100 $^{\circ}$ C的时钟信号频率为2MHz，温度传感器有效分辨率为0.5 $^{\circ}$ C/LSB，工作电流为774nA。

关键词：无源 RFID；温度传感器；CMOS；有效分辨率

## A new CMOS temperature sensor integrated in the passive UHF RFID tag

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**Abstract:**

A new temperature sensor integrated in the passive UHF RFID tag is designed. Two currents with the opposite temperature coefficient cascode current mirror with high PSRR, to realize the supply voltage and temperature compensation. The pulse signal related to the temperature differential architecture, it effectively overcomes the errors caused by process variation. The counting clock signal is provided by the oscillator frequency controlled by the bias current is approximately independent of the supply voltage and temperature. It is implemented process, as shown in the simulation results, when the supply voltage is 1.8V and temperature ranges from -10 $^{\circ}$ C to 100 $^{\circ}$ C, the bias current of the tag is 2MHz, and the temperature sensor achieves an effective resolution of 0.5 $^{\circ}$ C/LSB, the working currents are 774nA.

**Keywords:** passive RFID; temperature sensor; CMOS; effective resolution

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