

## Design and Characterization of a CMOS Process Sensor Utilizing Vth Extractor Circuit

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**Abstract :** This paper presents the design and characterization of a low power Complementary Metal Oxide Semiconductor (CMOS) process sensor. The design is targeted for implementation using Silterra's 180 nm CMOS process technology. The proposed process sensor employs a voltage threshold ( $V_{th}$ ) extractor architecture for detection of variations in the fabrication process. The process sensor generates output voltages in the range of 401 mV (fast-fast corner) to 443 mV (slow-slow corner) at nominal condition. The power dissipation for this process sensor is 6.3  $\mu$ W with a supply voltage of 1.8V with a silicon area of 190  $\mu$ m X 60  $\mu$ m. The preliminary result of this process sensor that was fabricated indicates a close resemblance between test and simulated results.

**Keywords :** CMOS process sensor, PVT sensor, threshold extractor circuit, Vth extractor circuit

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