THE BUSINESS PARTNER FOR YOUR IDEAS

ULTRA-LOW POWER VOLTAGE REFERENCE & TEMPERATURE SENSOR

HARDWARE, CIRCUITS, & SENSORS

Voltage reference and temperature sensor with low power usage, well-suited to internet-of-things applications.

TECHNOLOGY TYPE

Semiconductors

STAGE OF DEVELOPMENT

Validated prototype.

LEARN MORE

Reference Numbers: U-6582, U-6583

Dean Gallagher Technology Manager
dean.gallagher@tvc.utah.edu
801-585-0396

TECHNOLOGY SUMMARY

The emergence of internet-of-things technology has led to an increasing demand for efficient stable power supplies, with low sensitivity to temperature and supply quality.

University of Utah researchers have created an ultra-low power, highly stable voltage reference for 65nm CMOS circuits with lower PVT sensitivity. The temperature sensor is built on the low-power voltage reference design and provides a digital friendly and accurate output from -20 to +80°C with a max error of +/-.23°C while consuming only 11nW.

FEATURES AND BENEFITS

The voltage reference:

- Operates with voltage as low as 350 mV.
- Offers high output voltage of 293 mV.
- Less sensitive to process, voltage, temperature (PVT).

The temperature sensor:

- Operates with voltage as low as 450 mV.
- Expresses temperature as a ratio, and is digital friendly.

RECENT PUBLICATIONS

Azam, A., Bai, Z., & Walling, J. S. (2018). An 11.2nW, 0.45V PVT-tolerant Pulse-width Modulated Temperature Sensor in 65 nm CMOS. *2018 16th IEEE International New Circuits and Systems Conference (NEWCAS).* doi: 10.1109/newcas.2018.8585691

INVENTOR PROFILE

Jeffrey Walling, Ph.D., Adjunct Associate Professor – Electrical & Computer Engineering
Ali Azam, Ph.D.

DATE UPDATED: 4/10/2019