



## **Universal Temperature Sensor IC Linearizes Temperature Sensors with 0.1°C Accuracy**

MILPITAS, CA – November 24, 2014 – Linear Technology Corporation introduces the [LTC2983](#) high performance digital temperature measurement IC which directly digitizes RTDs, thermocouples, thermistors and external diodes with 0.1°C accuracy and 0.001°C resolution. A high performance analog front end combines low noise and low offset buffered ADCs with all the necessary excitation and control circuits for each sensor. Measurements are performed under the control of a digital engine combining all the algorithms and linearization required for each. The LTC2983 provides a multiplexed high precision interface to virtually any sensor. It precisely measures absolute microvolt level signals from thermocouples and ratiometric resistance measurements from RTDs and thermistors, linearizes the results and outputs the results in °C or °F. Up to twenty analog inputs are available and digitized measurements can be output in Centigrade or Fahrenheit. The SPI interface works with virtually any digital system and a comprehensive software support system with drop-down menus allows easy customizing of the LTC2983.

The simple, yet feature-rich, LTC2983 interfaces with a wide variety of temperature sensors, including type B, E, J, K, N, S, R, T thermocouples, 2,3, or 4-wire RTDs, 2.25kΩ to 30kΩ thermistors and temperature sensing diodes. The LTC2983 works with ground referenced sensors without the need for amplifiers, negative supplies, or level shift circuitry. Signals are simultaneously digitized with three, high accuracy, 24-bit  $\Delta\Sigma$  ADCs using an internal 10ppm/°C reference. Automatic thermocouple cold junction compensation can be done using

any type of external sensor. Included on the chip are linearization algorithms for all common sensor types. Custom sensors can be linearized with custom coefficients programmed into the chip. Dual programmable excitation current sources feature current reversal and current ranging to improve accuracy and reduce noise. To ensure resistive measurements are accurate, current reversal eliminates thermocouple effects in the resistive sensor. Sensor specific fault detection alerts the user of short circuits, open circuits, over temperature, under temperature, and ADC overranging.

The LTC2983 is offered in commercial and industrial versions, supporting operating temperature ranges from 0°C to 70°C and –40°C to 85°C respectively. The LTC2983 is available today in a RoHS compliant, 7mm x 7mm LQFP-48 package. Pricing starts at 19.49 each in 1,000 piece quantities. For more information, visit [www.linear.com/product/LTC2983](http://www.linear.com/product/LTC2983).

**Photo Caption:** Complete 20-Channel Digital Temperature Measurement SoC


### **Summary of Features: LTC2983**

- Directly Digitize RTDs, Thermocouples, Thermistors & Diodes
- Single 2.85V to 5.25V Supply
- 20 Flexible Inputs Allow Multiple Sensor Types
- Automatic Thermocouple Cold Junction Compensation
- Standard & User-Programmable Coefficients for Linearizing Thermocouples, RTDs & Thermistors
- Configurable 2-, 3-, 4-Wire RTD Configurations
- Measures Negative Thermocouple Voltages Without a Negative Supply
- Automatic Burn Out, Short-Circuit & Fault Detection
- Buffered Inputs Allow External Protection & Direct Interface to Resistive Sensors
- Simultaneous 50Hz/60Hz Rejection
- Includes 10ppm/°C (Max) Reference
- 48-Lead 7mm x 7mm LQFP Package

The USA list pricing shown is for budgetary use only. International prices may differ due to local duties, taxes, fees and exchange rates.

## About Linear Technology

Linear Technology Corporation, a member of the S&P 500, has been designing, manufacturing and marketing a broad line of high performance analog integrated circuits for major companies worldwide for over three decades. The Company's products provide an essential bridge between our analog world and the digital electronics in communications, networking, industrial, automotive, computer, medical, instrumentation, consumer, and military and aerospace systems. Linear Technology produces power management, data conversion, signal conditioning, RF and interface ICs,  $\mu$ Module<sup>®</sup> subsystems, and wireless sensor network products. For more information, visit [www.linear.com](http://www.linear.com)

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