Universal Temperature Sensor IC with EEPROM
Targets Modular & Custom Sensor Systems

MILPITAS, CA – June 29, 2015 – Linear Technology Corporation introduces the LTC2984, a high performance digital temperature measurement IC that directly digitizes RTDs, thermocouples, thermistors and external diodes with 0.1°C conformity and 0.001°C resolution. The LTC2984 builds on Linear Technology's LTC2983 by adding EEPROM (electrically erasable programmable read-only memory) that stores user configuration data and custom sensor coefficients. This addition eliminates any IC or sensor programming by a host processor and facilitates the use of self-contained temperature sensing boards or modules. The LTC2984 is pin and software compatible with the LTC2983. The nonvolatile memory in the LTC2984 results in simplified designs and increased reliability for modular and custom sensor systems.

The LTC2984 includes all of the features found on the LTC2983, plus EEPROM. 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 LTC2984 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 them 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 enables easy customization of the LTC2984.

The simple, feature-rich LTC2984 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 LTC2984 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 ΔΣ ADCs, using an internal 15ppm/°C reference. Automatic thermocouple cold junction compensation can be done using any type of

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

The LTC2984 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 LTC2984 is now available in a RoHS-compliant, 7mm x 7mm LQFP 48-lead package. Pricing starts at $21.43 each in 1,000 piece quantities. For more information, visit www.linear.com/product/LTC2984.

Photo Caption: Complete 20-Channel Digital Temperature Measurement SoC

Summary of Features: LTC2984

- Directly Digitize RTDs, Thermocouples, Thermistors & Diodes
- On-Chip EEPROM Stores Channel Configuration Data & Custom Coefficients
- Single 2.85V to 5.25V Supply
- 20 Flexible Inputs Enable 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 15ppm/°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, µModule® subsystems, and wireless sensor network products. For more information, visit www.linear.com

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