



Low Noise, Tiny, 16-Bit Delta Sigma ADC Upgrades System Accuracy

MILPITAS, CA – June 25, 2007 – Linear Technology Corporation introduces the LTC2450, a 16-bit delta sigma analog-to-digital converter (ADC) in an ultra-tiny 2mm x 2mm DFN package that enables performance upgrades to lower resolution systems. Designers of portable and space-constrained applications typically trade off space with performance, leading to use of microcontrollers with internal ADCs or lower resolution ADCs with preamplifier circuitry. These designs are typically complex and lag in performance due to larger linearity errors, greater noise, or other unguaranteed specifications.

In only 4mm² area, the versatile LTC2450 achieves excellent 16-bit DC performance of 2LSB integral nonlinearity error, 1.4uV_{RMS} noise and 0.01% gain error. The tiny size and guaranteed 16-bit resolution allows designers to easily replace an embedded system's integrated ADC or a lower performance ADC and its preamplifier circuitry. Using the 2.7V to 5.5V supply voltage as the reference, the LTC2450 draws just 500uA of supply current, minimizing power loss. After automatically entering a shutdown mode, supply current is reduced to less than 1uA, further preserving battery power. By controlling the duration between conversions, the LTC2450's power dissipation can be reduced to 50uW at a 1Hz output rate. An internal oscillator allows conversion rates up to 30 per second, making it easy to measure temperature, pressure, voltage, or other low-frequency sensor outputs.

The LTC2450 communicates via a simple 3-wire SPI-compatible interface while measuring a single-ended analog input that may extend from ground to V_{CC}. The LTC2450 includes continuous internal offset and full-scale calibration of the input signal, ensuring accuracy over time and over the full operating temperature range. Linear Technology's No Latency Delta Sigma™ design allows the ADC to multiplex several inputs with no delay in reading the output data. The LTC2450 incorporates a proprietary sampling network that reduces the input sampling current to less than 50nA, making possible a wide range of input protection and filter circuits.

The LTC2450 is available in both commercial and industrial temperature grade versions today, with pricing beginning at \$1.15 each in 1,000-piece quantities.


Photo Caption: 16-Bit Delta Sigma ADC in 2mm x 2mm DFN Package

Summary of Features: LTC2450

- GND to V_{CC} Single Ended Input Range
- Extremely Low 50nA Dynamic Input Current
- Ultra-Tiny 2mm x 2mm DFN Package
- 2LSB INL, No Missing Codes
- 7LSB Total Unadjusted Error
- Single Supply 2.7 to 5.5V Operation
- $1.4\mu V_{RMS}$ Noise
- Low Power:
 - 500uA at 30Hz Output Rate
 - 50uW Power Dissipation at 1Hz Output Rate
 - <1uA Sleep Current
- Internal Oscillator – No External Components Required
- Single Conversion Settling Time for Multiplexed Applications
- Single Cycle Operation with Auto Shutdown
- 30Hz Conversion Rate

About Linear Technology

Linear Technology Corporation, a manufacturer of high performance linear integrated circuits, was founded in 1981, became a public company in 1986 and joined the S&P 500 index of major public companies in 2000. Linear Technology products include high performance amplifiers, comparators, voltage references, monolithic filters, linear regulators, DC-DC converters, battery chargers, data converters, communications interface circuits, RF signal conditioning circuits, and many other analog functions. Applications for Linear Technology's high performance circuits include telecommunications, cellular telephones, networking products such as optical switches, notebook and desktop computers, computer peripherals, video/multimedia, industrial instrumentation, security monitoring devices, high-end consumer products such as digital cameras and MP3 players, complex medical devices, automotive electronics, factory automation, process control, and military and space systems. For more information, visit www.linear.com

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