



Ultra-Tiny 16-Bit ADC Family's 0.5uA Shutdown Current Ideal for Portable Sensor Applications

MILPITAS, CA – April 23, 2008 – Linear Technology Corporation introduces the LTC2451 and LTC2452, a pair of 16-bit delta sigma ADCs with 0.5uA (max) shutdown current in ultra-tiny 3mm x 2mm DFN packages. Their low power, tiny size, and guaranteed 16-bit no missing code resolution makes these ADCs ideal for battery-powered applications such as remote sensors. Operating from a single 2.7V to 5.5V supply, these ADCs are designed to measure single-ended or differential sensors via either I²C or SPI serial interfaces. The LTC2451 communicates via I²C and can measure a single-ended input between 0V to V_{CC}, whereas LTC2452 communicates via SPI and is capable of measuring a differential input up to $\pm V_{CC}$.

The LTC2451 and LTC2452 join the previously released LTC2450 (SPI, single-ended input) and LTC2453 (I²C, differential input), thereby offering a complete ultra-tiny 16-bit ADC family.

The versatile LTC2451/LTC2452 achieve excellent 16-bit DC performance of 2LSB integral nonlinearity error, 1.4uV_{RMS} transition noise and 0.01% gain error. These ADCs have an internal oscillator and allow up to 60 conversions per second, making it easy to measure temperature, pressure, voltage, or other low-frequency sensor outputs. The LTC2451 draws 0.7mA (max) supply current and the LTC2452 1.2mA (max) at the 60Hz maximum sample rate. After each conversion, the ADC enters a shutdown mode, reducing supply current to less than 0.5uA (max). By sampling only occasionally, as many portable sensors do, the supply current is dramatically reduced. For example, the LTC2451/LTC2452 dissipate just 40uW from a 3V

supply when sampling the ADC only once per second. The LTC2451/LTC2452 also incorporate a proprietary input sampling network that reduces the dynamic input current to less than 50nA, making a wide range of external input protection and filter circuits possible.

The LTC2451 and LTC2452 are each offered in 8-pin ultra-tiny 3mm x 2mm DFN packages. They are available today in both commercial and industrial temperature grade versions today. Pricing for the LTC2451 begins at \$1.15 and the LTC2452 at \$1.25, each in 1,000-piece quantities.

LTC245x Ultra-Tiny ADC Family

I/O	Single-Ended	Differential
SPI	LTC2450 (30Hz), LTC2450-1 (60Hz)	LTC2452
I ² C	LTC2451	LTC2453


Photo Caption: Complete SPI/I²C Single-Ended/Differential Ultra-Tiny 16-Bit ADC Family

Summary of Features: LTC2451/LTC2452

- $\pm V_{CC}$ Differential Input Range (LTC2452/LTC2453)
- 0V to V_{CC} Single-Ended Input Range (LTC2450/LTC2451)
- I²C-Compatible 2-Wire Interface (LTC2451/LTC2453)
- SPI-Compatible 3-Wire Interface (LTC2450/LTC2452)
- Extremely Low 50nA Dynamic Input Current
- Ultra-Tiny 3mm x 2mm DFN Package
- 2LSB INL, No Missing Codes
- 4LSB Full-Scale Error
- Single Supply 2.7 to 5.5V Operation
- 1.4uV_{RMS} Noise
- Low Power:
 - 700uA at 60Hz Output Rate (LTC2451)
 - 10uA 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
- 60Hz 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, uModule™ products, 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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