



18-Bit, 2.5Msps No Latency SAR ADC Achieves 99.8dB SNR with Flexible Analog Input Ranges

MILPITAS, CA – April 12, 2012 – Linear Technology Corporation introduces the [LTC2389-18](#), the industry's fastest 18-bit no cycle latency SAR ADC (analog-to-digital converter). The LTC2389-18 achieves unrivaled 99.8dB SNR and -116dB THD at sample rates up to 2.5Msps. Operating from a single 5V supply, the LTC2389-18 supports three pin-configurable analog input ranges, easily interfacing to multiple signal chains with a single device. For the highest SNR performance, the LTC2389-18 can be configured for fully differential ($\pm 4.096\text{V}$) inputs. The pseudo-differential unipolar (0V to 4.096V) and bipolar ($\pm 2.048\text{V}$) analog input ranges enable lower power single-ended drive and benefit from the reduction of unwanted signals common to both inputs. The LTC2389-18 is well suited for demanding designs that require maximum signal swings at low power levels in noisy industrial environments.

The LTC2389-18 features equally impressive DC performance, featuring $\pm 3\text{LSB}$ INL (max), $\pm 10\text{LSB}$ offset error and 18 bits no missing codes resolution. The LTC2389-18 also features a 4.096V precision internal reference with a 20ppm/ $^{\circ}\text{C}$ (max) temperature coefficient, providing space savings for high density designs. The LTC2389-18 dissipates 162.5mW at 2.5Msps and features a shutdown mode that reduces power dissipation to 75 μW when not converting. The true no latency operation enables accurate one shot measurements even after lengthy idle periods with no minimum sample rate requirement. The LTC2389-18 provides a flexible digital interface supporting 2.5Msps throughput with parallel interface and 1.9Msps throughput with serial SPI interface at I/O voltages from 1.8V to 5V.

A 16-bit 2.5Msps pin- and software compatible version LTC2389-16 with exceptional 96dB SNR and $\pm 0.75\text{LSB}$ INL performance is also planned to be released following the LTC2389-18. Specifications are guaranteed over the -40°C to 125°C temperature range and the devices are available in 48-pin 7mm \times 7mm LQFP and QFN packages. The LTC2389-16 and

LTC2389-18 are priced respectively at \$30.31 and \$33.90 each in 1,000 piece quantities. The DC1826A, the associated demonstration board to evaluate the LTC2389-18 and LTC2389-16, is available at www.linear.com or via a local Linear Technology sales office. For more information, visit www.linear.com/product/LTC2389-18


Photo Caption: 2.5Msps 18-bit, No Latency SAR ADC with Flexible Analog Inputs

Summary of Features: LTC2389-18

- 2.5Msps Throughput Rate
- $\pm 3\text{LSB}$ INL (Max)
- Guaranteed 18-Bit, No Missing Codes
- Pin-Configurable Analog Input Range:
 - $\pm V_{\text{REF}}$ Fully Differential
 - 0V to V_{REF} Pseudo-Differential Unipolar
 - $\pm V_{\text{REF}}/2$ Pseudo-Differential Bipolar
- 99.8dB (Fully Differential)/95.2dB (Pseudo-Differential) SNR (Typ) at $f_{\text{IN}} = 2\text{kHz}$
- -116dB (Fully Differential) /-112 dB (Pseudo-Differential) THD (Typ) $f_{\text{IN}}=2\text{kHz}$
- Guaranteed Operation to 125°C
- Single 5V Supply
- Internal 20ppm/ $^{\circ}\text{C}$ (Max) Reference
- Internal Reference Buffer
- 162.5mW Power Dissipation at 2.5Msps
- No Pipeline Delay, No Cycle Latency
- 1.8V to 5V I/O Voltages
- Parallel and Serial I/O Interface
- 48-Pin 7mm \times 7mm LQFP & QFN Packages

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 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, μ Module[®] subsystems, and wireless sensor network products. For more information, visit www.linear.com

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