



18-Bit, 1.6Msps, Pseudo-Differential Serial SAR ADC Achieves 96.5dB SNR Performance & Low 18mW Power

MILPITAS, CA – November 7, 2011 – Linear Technology Corporation introduces the [LTC2369-18](#), a serial 18-bit, 1.6Msps pseudo-differential SAR analog-to-digital converter (ADC), which achieves impressive 96.5dB SNR and -120dB THD while supporting a 0V to 5V unipolar input range. The pseudo-differential input simplifies the ADC driver requirement, enabling single-ended drive while benefiting from the reduction of unwanted signals common to both inputs. This reduces complexity and lowers the power requirements in the signal chain. Operating from a 2.5V supply, the LTC2369-18 consumes only 18mW, with a low power shutdown mode that consumes just 2.25 μ W. When used in combination with the recommended single-ended ADC driver LT6202, the combined power dissipation is a mere 53mW, a 40% reduction from a fully differential drive circuit. The LTC2369-18 is the industry's highest performing 18-bit pseudo-differential SAR ADC, featuring a maximum INL of ± 2.5 LSB with no missing codes and guaranteed specifications over the -40°C to 125°C temperature range.

Complementing the LTC2369-18 is the pin- and software-compatible 16-bit, 2Msps LTC2370-16. The LTC2370-16 achieves outstanding 94dB SNR and ± 0.85 LSB maximum INL. The LTC2369-18 and LTC2370-16 are the first in a family of 18-/16-bit high performance pseudo-differential SAR ADCs with speeds ranging from 250ksps to 2Msps. They offer a user-friendly SPI interface, explicit Busy and Chain pins, I/O voltages from 1.8V to 5V and an internal oscillator that simplifies digital timing and minimizes external component count. Their true no-latency operation enables accurate one-shot measurements even after lengthy idle periods with no minimum sample rate required.

The LTC2369-18 family of 18-/16-bit pseudo-differential SAR ADCs broadens the LTC2379-18 family of up to 102dB SNR, fully differential SAR ADCs introduced earlier this year. Linear's complete portfolio of high performance pseudo and fully differential 18-/16-bit SAR ADCs with high SNR, fast throughput and low power dissipation is ideal for high

performance medical, industrial and automotive applications. The LTC2369-18 and LTC2370-16 are available in small 16-lead MSOP and 4mm x 3mm DFN packages, and are priced at \$29.95 each and \$24.50 each, respectively in 1,000 piece quantities. To achieve uncompromised AC performance, we recommend the low noise, low power LT6202 ADC driver. We also recommend the LTC6655, a precision external reference with high accuracy of $\pm 0.025\%$ max, 2ppm/ $^{\circ}\text{C}$ drift and low 0.25ppm_{P-P} noise ideal for high precision applications. The DC1813A, an integrated demo board featuring the LT6202 ADC driver and LTC6655 reference, is available at www.linear.com or via a local Linear Technology sales office. For more information, visit www.linear.com/product/LTC2369


Photo Caption: 18-Bit No-Latency Pseudo-Differential SAR ADC with 1.6Msps Throughput & 96.5dB SNR

Summary of Features: LTC2369-18

- 1.6Msps Throughput Rate
- $\pm 2.5\text{LSB}$ INL (Max)
- Guaranteed 18-Bit No Missing Codes
- Low Power: 18mW at 1.6Msps, 18 μW at 1.6ksps
- 96.5dB SNR (Typ) at $f_{\text{IN}} = 2\text{kHz}$
- -120dB THD (Typ) at $f_{\text{IN}} = 2\text{kHz}$
- Guaranteed Operation to 125°C
- 2.5V Supply
- Pseudo-Differential Unipolar Input Range: 0V to V_{REF}
- V_{REF} Input Range from 2.5V to 5.1V
- No Pipeline Delay, No Cycle Latency
- 1.8V to 5V I/O Voltages
- SPI-Compatible Serial I/O with Daisy-Chain Mode
- Internal Conversion Clock
- 16-Lead MSOP & 4mm X 3mm DFN 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, and μ Module[®] subsystems.

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Press Contacts:

North America / Worldwide

John Hamburger, Director Marketing
Communications
jhamburger@linear.com
Tel: 408-432-1900 ext 2419

Doug Dickinson, Media Relations Manager
ddickinson@linear.com
Tel: 408-432-1900 ext 2233

UK & Nordic

Alan Timmins
alan@ezwire.com
Tel: +44-1-252-629937