



14-Bit 125Msps ADC Dissipates One-Third the Power of Existing Solutions without Sacrificing AC Performance

MILPITAS, CA – October 29, 2008 – Linear Technology introduces a low-power 14-bit, 125Msps ADC that dissipates only 127mW, less than one-third the power of prior solutions. High-speed ADCs are traditionally power-hungry devices: the higher the sample rate, the more power the ADC dissipates. Heat dissipation becomes even more of a concern with systems using multiple ADCs to measure many input channels, or when packaged in small, portable enclosures where higher temperatures can degrade the ADC's performance. Whether operating at full speed or in sleep mode for reduced power dissipation down to 0.5mW, the LTC2261 significantly lowers the power budget for high-speed data acquisition, making it possible to “cut the cord” and migrate products into the portable world.

Operating from a low 1.8V analog supply, the LTC2261 achieves significant power savings without sacrificing AC performance. This ADC offers signal to noise ratio (SNR) performance of 73.4dB and spurious free dynamic range (SFDR) of 85dB at baseband. Ultralow jitter of 0.17p_{S_{RMS}} allows undersampling of IF frequencies with excellent noise performance. The combination of low power and good AC performance provide a much needed power savings to battery powered portable instrumentation and multichannel systems such as medical ultrasound and non-destructive test equipment. JTRS software defined radios and other portable communication equipment will also benefit from the low power portability of this breakthrough ADC family.

The LTC2261 eases the task of designing with high speed ADCs. In such designs care is needed when routing digital outputs to avoid digital noise coupling back and distorting the analog reading. Interference from digital feedback is visible as unwanted tones in the ADC output spectrum. To help negate this effect, the LTC2261 offers a data randomizer to randomize the digital output before it is transmitted to achieve a significant reduction in unwanted tone amplitude by spreading this energy into the noise floor. Using this data encoding scheme can reduce the residual tones caused by digital feedback by 10-15dB.

The LTC2261's innovative digital outputs can be set to full rate CMOS, double data rate CMOS, or double data rate LVDS. Double data rate digital outputs allow data to be transmitted on both the rising edge and the falling edge of the clock, reducing the number of data lines needed by half. A separate output power supply allows the CMOS output swing to range from 1.2V to 1.8V.

Offered in a 6mm x 6mm QFN package, the LTC2261 includes a clock duty cycle stabilizer circuit to facilitate non-50% clock duty cycles, programmable digital output timing, programmable LVDS output current and optional LVDS output termination. These features combine to make the data transmission between the ADC and the microcontroller more flexible.

The LTC2261 family comprises six pin-compatible members, offering 14-bit resolution at 125Msps, 105Msps and 80Msps and 12-bit resolution at 125Msps, 105Msps and 80Msps, with full production planned for December 2008. Demonstration boards and samples are available online at www.linear.com/2261. A lower-speed pin-compatible family with 14-bit and 12-bit versions at 65Msps/40Msps/25Msps will be available in 2009. Each device is offered in commercial and industrial temperature grades, and is competitively priced beginning at \$9.50 each in 1,000-piece quantities.

All parts can be ordered in optional lead-free packages for RoHS compliance. More details can be found at <http://www.linear.com/ad/highspeedADC.jsp>


Photo Caption: 125Msps ADC at 127mW

Summary of Features: LTC2261 Family

- 73.4dB SNR
- 85dB SFDR
- Low Power: 127mW/106mW/89mW
- Single 1.8V Supply
- CMOS, DDR CMOS or DDR LVDS Outputs
- Selectable Input Ranges: 1V_{P-P} to 2V_{P-P}
- 800MHz Full-Power Bandwidth S/H
- Optional Data Output Randomizer
- Optional Clock Duty Cycle Stabilizer
- Shutdown & Nap Modes
- Serial SPI Port for Configuration
- Pin Compatible 14-Bit & 12-Bit Versions
- 40-Pin (6mm x 6mm) QFN Package

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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