Buffered 18-Bit Octal ADC with Picoamp Inputs Shrinks Solution Size

MILPITAS, CA & NORWOOD, MA – April 17, 2017 – Analog Devices, Inc., which recently acquired Linear Technology Corporation, announces the LTC2358-18, an 18-bit, 8-channel simultaneous sampling successive approximation register (SAR) ADC featuring integrated picoamp input buffers. With board real estate at a premium, the LTC2358-18 brings substantial space and cost savings by eliminating front end signal conditioning circuitry normally required to drive unbuffered switched-capacitor ADC inputs. The combined component savings of three amplifiers, six resistors and two capacitors for each channel, a total of 88 components over 8 channels, saves BOM cost and significant board space and provides over 40% savings in power consumption. Picoamp inputs and 128dB CMRR over a $30V_{P-P}$ common mode range enable the LTC2358-18 to directly connect to a wide range of sensors without compromising measurement accuracy.

While converting eight channels at 200ksps per channel throughput, the LTC2358-18 provides added flexibility via independently configurable SoftSpan™ input ranges. Each channel can be programmed on a conversion-by-conversion basis to accept ±10.24V, 0V to 10.24V, ±5.12V, or 0V to 5.12V unipolar, true bipolar, fully differential or arbitrary input signals. The differential analog inputs operate over a wide 30V input common mode range, allowing the ADC to directly digitize a variety of signals while simplifying the signal chain design. The input signal flexibility, combined with unrivaled ±3.5LSB maximum INL, no missing codes at 18 bits, and 96.4dB SNR, makes the LTC2358-18 ideal for high performance industrial process control, test and measurement, power line monitoring and motor control applications.

The LTC2358-18 features a precision internal reference with 20ppm/^{o}C maximum temperature coefficient and an integrated reference buffer capable of accurate one-shot measurements, providing space savings in densely packed circuit boards. Optionally, an external 5V reference can be used to expand the analog input range to ±12.5V. The device dissipates 219mW when converting eight channels simultaneously at 200ksps per channel, and features nap and power-down modes to reduce power dissipation at slower throughputs.

In addition to its unique analog characteristics, the LTC2358-18 offers unmatched digital flexibility, featuring pin-selectable SPI CMOS and LVDS serial interfaces. The wide digital output supply range allows the device to communicate with any CMOS logic between 1.8V and 5V. In CMOS mode, applications can employ between one and eight lanes of serial output data, enabling the user to optimize bus width and data throughput. LVDS mode offers low noise, high speed communications over greater distances using differential signaling. Together, these I/O interface options enable the LTC2358-18 to communicate equally well with legacy microcontrollers and modern FPGAs.

The LTC2358-18 follows the LTC2358-16, leading a family of multichannel 18-/16-bit simultaneous sampling buffered SAR ADCs. Specified over the −40°C to 125°C temperature range, the LTC2358-18 is offered in a 48-lead 7mm x 7mm LQFP package that is pin-compatible with the unbuffered LTC2348-18. 1,000-piece pricing starts at $25.95 each. Device samples and evaluation circuit boards are available online or from your local Linear Technology sales office. For more information, visit www.linear.com/product/LTC2358-18.

Photo Caption: 18-Bit 8-Channel Picoamp Buffered Simultaneous Sampling SAR ADC

Summary of Features: LTC2358-18

- Eight Picoamp Buffered Simultaneous Sampling Channels
- Guaranteed 18-Bit, No Missing Codes, ±3.5LSB INL (Max)
- 200ksps per Channel Throughput
- Differential, 30V Common Mode Range Inputs
- Per-Channel SoftSpan Input Ranges with:
  - Internal Reference: ±10.24V, 0V to 10.24V, ±5.12V, 0V to 5.12V
  - External 5V Reference: ±12.5V, 0V to 12.5V, ±6.25V, 0V to 6.25V
- 96.4dB Single-Conversion SNR
- Integrated Reference & Reference Buffer
- SPI CMOS (1.8V to 5V) & LVDS Serial I/O
- 219mW Power Dissipation
- 48-Lead 7mm x 7mm LQFP Package

Pricing shown is for budgetary use only and may differ due to local duties, taxes, fees and exchange rates.

Analog Devices just got more Powerful. On March 10, Analog Devices acquired Linear Technology, creating the premier high-performance analog company. More info at http://lt.linear.com/07c

About Analog Devices

Analog Devices (NASDAQ: ADI) is the leading global high-performance analog technology company dedicated to solving the toughest engineering challenges. We enable our customers to interpret the world around us by intelligently bridging the physical and digital with unmatched technologies that sense, measure, power, connect and interpret. Visit http://www.analog.com

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