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Differential ADC Buffer Drives 300MHz Signals with Only 1.8nV/ $\sqrt{\text{Hz}}$ Noise

MILPITAS, CA – March 5, 2009 – Linear Technology introduces the LTC6416, a wideband unity gain 2GHz differential buffer aimed at addressing the challenge of driving high resolution ADCs. The LTC6416 provides excellent noise figure and distortion performance at high frequencies. With its programmable output voltage clamps, the LTC6416 limits the maximum voltage levels applied to the ADC inputs, ensuring that there is no concern with ADC overdrive recovery.

At a low 1.8nV/ $\sqrt{\text{Hz}}$ output referred noise at high frequencies, the LTC6416 does not degrade the incoming signal for higher resolution ADCs. This buffer can be used with a transformer at its input to achieve additional low noise system gain in high bandwidth applications. The buffer's inputs and outputs can be AC- or DC-coupled. The LTC6416 output common mode voltage is set by the V_{CM} pin to match the ADC's input range. The LTC6416 is capable of maintaining exceptional performance when driving high-speed ADCs past 300 MHz, where it maintains -72.5dBc of third-order intermodulation distortion and -74dBc/-67.5dBc second- and third-harmonic distortion, respectively.


The LTC6416 is available in a tiny 2mm x 3mm 10-lead DFN package and is fully specified over the commercial (0°C to 70°C) and industrial (-40°C to +85°C) temperature ranges. Pricing starts at \$3.50 each for 1,000 piece quantities. For more information, visit www.linear.com.

Photo Caption: High Speed Low Noise, 16-Bit ADC Buffer**Summary of Features: LTC6416**

- 2GHz -3dB Small Signal Bandwidth
- 300MHz ± 0.1 dB Bandwidth
- 1.8nV/ $\sqrt{\text{Hz}}$ Output Noise
- 46.25dBm Equivalent OIP3 at 140MHz
- 40.25dBm Equivalent OIP3 up to 300MHz
- -81dBc/-72dBc HD2/HD3 at 140MHz, 2V_{P-P}
- -84.5dBc IM3 at 140MHz, 2V_{P-P} Output Composite
- -74dBc/-67.5dBc HD2/H3 at 300MHz, 2V_{P-P} Output
- -72.5dBc IM3 at 300MHz, 2V_{P-P} Output Composite
- Programmable High Speed, Fast Recovery Output Clamping
- DC-Coupled Signal Path
- Operates on single 2.7V to 3.9V supply
- Low Power: 150mW on 3.6V
- 2mm X 3mm 10-lead DFN 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.

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Press Contacts:

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