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## **12-/10-/8-Bit Octal DACs Integrate 10ppm/°C Reference in Tiny Packages**

MILPITAS, CA – December 9, 2008 – Linear Technology Corporation introduces the LTC<sup>®</sup>2636, a family of 12-bit, 10-bit, and 8-bit digital-to-analog converters (DACs) that integrate a precision reference in tiny 4mm x 3mm DFN and MSOP packages, making them the smallest octal DACs available on the market today. The LTC2636's small size and internal reference is vital for a variety of industrial and communications applications. Optical networking is one such application that requires multiple DACs in a single compact package. These DACs are ideally suited for driving optical attenuators or setting the current levels for laser diodes. By integrating a 10ppm/°C reference, the LTC2636 offers further space reduction for constrained optical networking circuit boards.

The LTC2636 DACs are available in a number of ordering options to meet a wide range of applications. In addition to selecting one of three resolution options, designers can also choose between a 2.5V or 4.096V full-scale range, making the LTC2636 a good fit for 3V or 5V systems. The internal reference is bonded out, providing a convenient way to drive the reference inputs for other data converters in the system. Alternatively, an external reference can be used if greater accuracy or a nonstandard voltage range is required. Ordering option provides the choice between powering up the DACs at zero-scale or mid-scale, offering flexibility for designs that cannot be forced to ground when power is first applied.

Designers can choose between a 14-pin 4mm x 3mm DFN package and an MSOP-16 package that includes a hardware load-DAC (LDAC) pin and a clear pin that asynchronously forces the DAC outputs to their respective reset state. These DACs are ideal for automotive applications such as millimeter wave radar both the DACs' specifications being guaranteed over the automotive temperature range (-40°C to +125°C), in addition to the industrial (-40°C to +85°C) and commercial (0°C to +70°C) temperature ranges.

The LTC2636 offers excellent 12-bit DC performance of  $\pm 2.5\text{LSB}(\text{max})$  integral nonlinearity error and only  $\pm 5\text{mV}$  offset error, making it a good fit for open-loop as well as

closed-loop systems. The device's AC performance also stands out, as the LTC2636 offers <2.4nV•s crosstalk, ensuring that a voltage change on one DAC has minimal effect on the other DACs. Operating from a single 2.7V to 5.5V supply, supply current is a low 100uA per DAC.

The LTC2636 octal DACs join the previously released LTC2630 and LTC2640 single DACs. These are part of a complete family of octal, quad, dual and single 12-/10-/8-bit DACs with internal references in tiny packages. Pricing begins at \$2.85 each, in 1,000-piece quantities.

Part Number	Bits	DACs	I/O	Packages
LTC2636	12, 10, 8	8	SPI	4mm x 3mm DFN-14, MSOP-16
LTC2634*	12, 10, 8	4	SPI	3mm x 3mm QFN-16, MSOP-10
LTC2632*	12, 10, 8	2	SPI	3mm x 2mm DFN-10, TSOT23-8
LTC2630/ LTC2640	12, 10, 8	1	SPI	SC70-6/TSOT23-8
LTC2631	12, 10, 8	1	I <sup>2</sup> C	TSOT23-8

\* Future Product. Contact Linear Technology for Availability.


**Photo Caption:** 12-/10-/8-Bit Octal DACs Include Internal Reference

### Summary of Features: LTC2636

- Integrated Precision Reference  
2.5V 10ppm/°C (LTC2636-L)  
4.096V 10ppm/°C (LTC2636-H)
- Maximum 12-Bit INL Error:  $\pm 2.5$ LSB
- Pin- & Software-Compatible SPI DACs
- Guaranteed Monotonic Over -40°C to +125°C Temperature Range
- Ultralow Crosstalk Between DACs (<2.4nV•s)
- Low Noise (0.75mV<sub>P-P</sub>, 0.1Hz to 200kHz)
- Selectable Internal or External Reference
- 2.7V to 5.5V Supply Range (LTC2630-L)
- Low Power Operation: 100uA per DAC
- Power-on Reset to Zero or Mid-scale Options
- Tiny 4mm x 3mm DFN-14 and MSOP-16 Packages

## 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](http://www.linear.com).

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