



News Release | [www.linear.com](http://www.linear.com)

## **12-Bit/10-Bit/8-Bit I<sup>2</sup>C and SPI DAC Families with Integrated Reference in Tiny TSOT-23 Packages**

MILPITAS, CA – July 17, 2008 – Linear Technology Corporation introduces the LTC2631, a family of pin- and software-compatible 12-bit, 10-bit and 8-bit DACs in a tiny TSOT-23 package, making it the smallest I<sup>2</sup>C DAC family with an internal reference on the market today. DACs in such small packages are ideal for fine tuning bias voltages in applications such as optical networking and RFID systems. The LTC2631 makes the integrated 10ppm/°C reference output available to drive the reference inputs for all other data converters on the board, while maintaining good stability over temperature.

The LTC2631 releases alongside an SPI-equivalent LTC2640 12-/10-/8-bit family, each offering the choice of a 2.5V or 4.096V full-scale output range. Alternatively, an external reference can be applied if more accuracy or a non-standard voltage range is required. The LTC2631/LTC2640 DAC outputs can power up to zero-scale or mid-scale with the internal or external reference, allowing more flexibility for designs that cannot be forced to ground when power is first applied.

The LTC2631 and LTC2640 DACs both offer excellent 12-bit DC performance of  $\pm 1\text{LSB}(\text{max})$  integral nonlinearity error, enabling operation in open-loop as well as closed-loop systems. The LTC2631 and LTC2640 complement a family of ultra-tiny DACs that includes the previously released LTC2630 (SPI-compatible, SC70 6-pin package, internal reference not bonded out). These low-power DACs draw only 180uA of supply current at 3V, making them ideal for portable equipment.

The LTC2631/LTC2640 are ideal for automotive voltage adjustment, as they have guaranteed specifications for the H-grade 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 LTC2631 and LTC2640 12-bit, 10-bit, and 8-bit options are now available in 8-pin TSOT23 packages. Pricing begins at \$1.03 each, in 1,000-piece quantities.

Part Number	Resolution	I/O	Reference	Package
LTC2631	12-Bit, 10-Bit, 8-Bit	I <sup>2</sup> C	Bidirectional: Input or 10ppm/°C Output	8-Pin TSOT-23
LTC2630	12-Bit, 10-Bit, 8-Bit	SPI	Internal 10ppm/°C or Supply Voltage	6-Pin SC70
LTC2640	12-Bit, 10-Bit, 8-Bit	SPI	Bidirectional: Input or 10ppm/°C Output	8-Pin TSOT-23

**Photo Caption:** 12-/10-/8-Bit DACs Include Internal Reference in Thin SOT-23 Packages

### Summary of Features: LTC2631/LTC2640

- Integrated Precision Reference:
  - 2.5V Full-Scale 10ppm/°C (LTC2631-L/LTC2640-L)
  - 4.096V Full-Scale 10ppm/°C (LTC2631-H/LTC2640-H)
- Maximum A-Grade 12-Bit INL Error: 1LSB
- Pin- and Software-Compatible I<sup>2</sup>C DACs (LTC2631)
- Pin- and Software-Compatible SPI DACs (LTC2640)
- Low Noise (0.7mVp-p, 0.1Hz to 200kHz)
- Guaranteed Monotonic over Temperature
- Bidirectional Reference
- 2.7V to 5.5V Supply Range (LTC2630-L)
- Low Power Operation: 180uA at 3V
- Nine Selectable I<sup>2</sup>C Addresses (LTC2631-Z)
- Power-on Reset to Zero or Midscale Options
- Tiny 8-Lead Thin SOT-23 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<sup>™</sup> 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).

LT, LTC, LTM and  are registered trademarks and uModule is a trademark of Linear Technology Corp.

### Press Contacts:

John Hamburger, Director Marketing Communications  
[jhamburger@linear.com](mailto:jhamburger@linear.com)  
Tel: 408-432-1900 ext 2419

Doug Dickinson, Media Relations Manager  
[ddickinson@linear.com](mailto:ddickinson@linear.com)  
Tel: 408-432-1900 ext 2233