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Hot Swappable I²C Isolator Enables Simple Interfacing Between Busses with Isolated Grounds

MILPITAS, CA – April 22, 2010 – Linear Technology introduces the LTC4310, a hot swappable I²C isolator that provides bidirectional communication between two I²C busses whose grounds are isolated from one another. I²C isolation has traditionally been achieved using up to four optocouplers and special buffers, a costly, large and relatively complicated technique. The LTC4310 simplifies I²C isolation by encoding and expanding the SDA and SCL signals into four unidirectional channels, ready to be transmitted over the isolation barrier, and then decodes and recombines them using a second LTC4310, all while maintaining I²C signal integrity. The LTC4310 allows the four digital transmit and receive signals to be bridged by an Ethernet transformer to achieve communications across voltage differences of more than 1500V_{RMS} or capacitors for lower voltage differentials.

The LTC4310 is suitable for many isolated applications including isolated I²C, SMBus and PMBus interfaces, isolated power supplies, positive-to-negative rail communications and Power over Ethernet. Aside from providing I²C isolation, the LTC4310's built-in rise time accelerators provide strong pull-up currents on SCL and SDA rising edges to meet I²C rise time specifications for heavily loaded busses. Hot Swap™ control circuitry prevents data corruption when a card is inserted or removed from a live bus. A stuck bus disconnect and recovery feature attempts to free the card if the bus is stuck low for more than 30ms. In addition, the LTC4310 is equipped with thermal shutdown protection, a READY digital output pin to indicate device operation and an enable pin for enabling the device or setting the device in a very low shutdown current mode.

The LTC4310-1 is intended for use in 100kHz systems and the LTC4310-2 is designed for 400kHz systems. Both versions are specified over the commercial and industrial temperature ranges, and offered in 10-lead MSOP and 3mm x 3mm DFN packages. Available today, pricing begins at \$1.48 each in 1,000 piece quantities. The LTC4310 is a welcome addition to Linear's growing family of I²C bus buffers, accelerators and multiplexers.

For more information, visit www.linear.com/busbuffers.


Photo Caption: Hot Swappable I²C Isolators Achieve 1500V_{RMS} Bus Isolation Using Ethernet Transformer

Summary of Features: LTC4310

- Bidirectional I²C Communication Between Two Isolated Busses
- Full Isolation with Inexpensive Ethernet Transformer
- Low Voltage Level Shifting with Capacitors
- I²C Maximum Operating Frequency:
 - 100kHz for LTC4310-1
 - 400kHz for LTC4310-2
- I²C Specification Compliant V_{OL}, V_{IL}
- Rise Time Accelerators
- SDA, SCL Hot Swap Capable
- Very Low Current Shutdown
- Stuck Bus Disconnect and Recovery
- Thermal Shutdown
- 10-Lead MSOP and DFN (3mm x 3mm) 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.

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Press Contacts:

North America / Worldwide

John Hamburger, Director Marketing
Communications
jhamburger@linear.com
Tel 408-432-1900 ext 2419

Doug Dickinson, Media Relations Manager
ddickinson@linear.com
408-432-1900 ext 2233

UK & Nordic

Alan Timmins
alan@ezwire.com
Tel: +44-1-252-629937