



Low Offset Bus Buffer Enables Cascading and Improves I²C Reliability

MILPITAS, CA – December 18, 2006 – Linear Technology introduces the LTC4307, an I²C bus buffer with low offset and stuck bus recovery that significantly increases the reliability of systems utilizing the I²C bus. With the growth in the number and complexity of plug-in boards, the addition of each new device adds to already accumulated offset voltages and can result in exceeded valid logic low specification. The LTC4307 adds only 50mV of logic low offset voltage between input and output, instead of the typical 100mV or more, allowing users to cascade several LTC4307's in series, while meeting V_{OL} levels and maintaining large noise margins. As a result, larger systems can be divided into many smaller, less capacitive, and therefore faster bus segments. The low offset feature of the LTC4307 makes it ideal for high availability systems, such as AdvancedTCA and μ TCA based servers and networking equipment, which require large I²C busses for critical system management functions.

The LTC4307 also features stuck bus recovery circuitry that helps maintain system integrity by detecting and clearing stuck busses. If the serial data output SDAOUT or serial clock output SCLOUT are low for more than 30ms, the LTC4307 will automatically break the data and clock bus connections and will generate up to sixteen clock pulses on the SCLOUT in an attempt to free the bus. When the bus becomes free, a connection will be immediately enabled for a proper operation to resume, and in essence the LTC4307 will effectively eliminate the need for a general system reset. Furthermore, the LTC4307 provides capacitive isolation between the backplane and the card's I²C busses, even if their respective supplies are at different levels. Since

the level translation is performed without a second supply pin or a second pair of input pull-up resistors, a dedicated connector pin for the backplane supply voltage is not required. In addition to facilitating live card insertion or removal, the SDA and SCL pins withstand $\pm 8\text{kV}$ ESD, providing extra ruggedness and protecting the cards from damage due to handling.

The rich feature set of the LTC4307 makes it well suited for advanced computing, networking and data storage systems that utilize a large number of I/O cards with different supply and bus voltage levels. The LTC4307 is available in 8-lead MSOP and 3mm x 3mm DFN packages. Specified over the commercial and industrial temperature ranges, pricing begins at \$2.15 each for 1,000-piece quantities.


Photo Caption: Low Offset Bus Buffer

Summary of Features: LTC4307

- 50mV Input to Output Offset Enables Multiple Buffer Cascading for Bus Expansion
- Automatic Disconnect of SDA/SCL Lines When Bus is Stuck Low for $\geq 30\text{ms}$
- Prevents SDA and SCL Corruption During Live Board Insertion and Removal from Backplane
- Pin Compatible with LTC4300A-1
- 8-lead (3mm x 3mm) DFN and MSOP 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, 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

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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

408-432-1900 ext 2233