

LTC News for Immediate Release

For more information, tel. 408-432-1900
John Hamburger, Dir., Mktg Communications, ext. 2419
Doug Dickinson, Media Relations Mgr., ext. 2233
www.linear.com

I²C/SMBus Buffers Recover Stuck Bus

MIPITAS, CA – July 13, 2005 – Linear Technology Corporation introduces the LTC4303 and LTC4304 2-wire bus buffers with stuck bus recovery. These new ICs solve the common problem of a stuck bus by isolating all of the bus connections on the upstream side, while restoring the downstream bus. If the serial data output SDAOUT or serial clock output SCLOUT are low for more than 30ms, the LTC4304 will automatically break the data and clock connections, issuing a Fault signal. Sequentially, the LTC4304 will automatically generate up to 16 clock pulses on the SCLOUT in an attempt to free the bus. When the bus becomes free, a connection is immediately enabled and proper operation resumes. With stuck bus recovery, the LTC4303 and LTC4304 eliminate the need for a general system reset and unburden the microcontroller, providing the appropriate signals to free the bus.

The LTC4303 and LTC4304 also provide capacitive isolation between the backplane and the card's I²C busses, even if their respective supplies are at different levels. The ICs perform this level translation without the need of a second supply pin or a second pair of input pull-up resistors, eliminating the requirement to dedicate a connector pin for the backplane supply voltage. Due to the capacitive buffering, the backplane bus sees only the capacitance of the buffer ICs, about 10pF each, instead of seeing the entire cards' bus capacitance. This dramatically increases the number of nodes that can be supported in a given system and eliminates most signal integrity problems.

In addition to facilitating live card insertion or removal, the LTC4303 and LTC4304's SDA and SCL pins withstand ±15kV ESD, thus protecting the card from damage due to handling. The part greatly simplifies the utilization of an I²C bus to manage a large number of cards with different supply and bus voltage levels in network server, desktop PC or telecom environments.

The LTC4303 is offered in MSOP-8 and 3mm x 3mm DFN packages and is

pin-compatible with the LTC4300A-1. The LTC4304 is available in MSOP-10 and 3mm x 3mm DFN packages. Both ICs are specified over the commercial and industrial temperature ranges and pricing starts at \$2.10 each for 1,000 piece quantities.

Summary of Features: LTC4303 & LTC4304

- Automatic Disconnect of SDA/SCL Lines when Bus is Stuck Low for $\geq 30\text{ms}$
- Recover Stuck Bus with Automatic Clocking
- Fault Flag for Stuck Bus (LTC4304)
- Bi-directional Buffer for SDA & SCL Lines Increases Fanout
- Prevents SDA & SCL Corruption During Live Board Insertion & Removal from Backplane
- $\pm 15\text{kV}$ Human Body Model ESD Protection
- 8-pin MSOP & DFN (3mm x 3mm) Packages (LTC4303)
- 10-pin MSOP & DFN (3mm x 3mm) Packages (LTC4304)

COMPANY BACKGROUND: Linear Technology Corporation was founded in 1981 as a manufacturer of high performance linear integrated circuits. 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, contact:

Doug Dickinson, Media Relations Manager

Linear Technology Corporation


1630 McCarthy Boulevard

Milpitas, CA 95035-7417

ddickinson@linear.com

408-432-1900

READER SERVICE: Call toll-free 1-800-4-LINEAR (for literature only), or go to the company's web site: **<http://www.linear.com>**

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