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2- & 4-Channel Hot Swap[™] I²C Multiplexers Provide Capacitive Buffering

MILPITAS, CA – December 15, 2010 – Linear Technology Corporation introduces the [LTC4312](#) and [LTC4314](#) 2-wire bus multiplexers, which provide individual enable pins to connect an upstream I²C bus to any combination of downstream busses or cards. The LTC4312 and LTC4314 are pin-selectable multiplexers with bus buffers that reduce component count while promoting ideal I²C signal integrity. The LTC4312 multiplexes two channels, while the LTC4314 multiplexes four channels. These devices allow easy I²C address expansion, providing the ability to address one of multiple identical devices, thus resolving address conflict issues. Bidirectional capacitive buffering allows extension of the I²C bus size well beyond the 400pF I²C bus specification and prevents I²C signal corruption during live board insertion or removal.

The LTC4312 and LTC4314 are suitable for a wide range of applications, including radial architectures in telecommunications systems such as ATCA, address expansion and level translators. Many I²C and SMBus devices operate at different supply voltage levels, yet must communicate in the same application. The LTC4312 and LTC4314 support level translation for bus voltages ranging from 1.5V to 5.5V, providing the ability to power devices from different supply voltages while maintaining fully bidirectional communications between all devices in the system. Bidirectional buffering keeps backplane and card capacitances isolated, while maintaining low offsets and high noise margins up to 0.3V_{CC}. In addition, 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; the strength of these accelerators can be selected or

disabled completely. Safety measures include a stuck bus disconnect and recovery feature to disengage the input from all enabled output channels and issue clocks to the stuck device, a fault output to signal when the host a bus is stuck low, and $\pm 4\text{kV}$ HBM ESD protection for increased ruggedness.

The LTC4312 is available in 14-lead 4mm x 3mm DFN and 16-lead SSOP packages, and the LTC4314 is available in 20-lead 3mm x 4mm QFN and 20-lead SSOP packages. Offered over the commercial and industrial temperature ranges, pricing for the LTC4312 and LTC4314 starts at \$1.95 and \$2.65 each, respectively for 1000-piece quantities. For more information, visit www.linear.com/4312 and www.linear.com/4314.


Photo Caption: 1:4 I²C Multiplexer with Capacitive Buffering, Rise Time Acceleration & Stuck Bus Disconnect

Summary of Features: LTC4312-14

- 1:4 Multiplexer/Switch for 2-Wire Bus (LTC4314)
- 1:2 Multiplexer/Switch for 2-Wire Bus (LTC4312)
- Bidirectional Buffer for SDA & SCL Lines
- High Noise Margin with $V_{IL} = 0.3 \cdot V_{CC}$
- ENABLE Pins Connect SDA & SCL Lines
- Selectable Rise Time Accelerator Current & Activation Voltage
- Level Shift 1.5V, 1.8V, 2.5V, 3.3V & 5V Busses
- Prevents SDA and SCL Corruption During Live Board
- Stuck Bus Disconnect & Recovery
- Compatible with I²C, I²C Fast Mode & SMBus
- $\pm 4\text{kV}$ Human Body Model ESD Ruggedness
- 14-Lead DFN & 16-Lead MSOP Packages (LTC4312)
- 20-Lead SSOP & 3mm x 4mm QFN Packages (LTC4314)

About Linear Technology

Linear Technology Corporation, a member of the S&P 500, has been designing, manufacturing and marketing a broad line of high performance analog integrated circuits for major companies worldwide for three decades. The Company's products provide an essential bridge between our analog world and the digital electronics in communications, networking, industrial, automotive, computer, medical, instrumentation, consumer, and military and aerospace systems. Linear Technology produces power management, data conversion, signal conditioning, RF and interface ICs, and μ Module[®] subsystems.

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