

LTC News for Immediate Release

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PolyPhase DC/DC Controller Operates up to 140°C

MILPITAS, CA – June 14, 2005 – Linear Technology Corporation introduces the LTC3731H, a PolyPhase[®] step-down synchronous controller with guaranteed operation and precision for junction temperatures as high as 140°C. This rugged DC/DC controller has integrated MOSFET drivers and is expandable from 3- to 12-phase operation for 60A to 240A power supply designs. The accuracy of the reference voltage is high, with guaranteed $\pm 2\%$ accuracy over the entire operating temperature range. The precise $\pm 5\%$ output current matching simplifies thermal management by evenly spreading the heat among the output stages. Applications include automotive, heavy equipment and high power industrial systems.

Housed in a narrow 36-lead SSOP (5.3mm wide), the LTC3731H is a single-IC solution for high output distributed power in systems requiring DC/DC conversion from 4.5V to 32V input source to 0.6V to 6V output in buck mode. The LTC3731H configured as 3-phase boost converter delivers high output currents with low output ripple. Competing solutions incorporating MOSFET or inductor sensing introduce as much as $\pm 35\%$ error in power dissipation between the output stages, resulting in unbalanced power handling and overheating of one or two stages. To cope with this excess heat and to prevent thermal stress, designers using competing solutions are forced to over-size the MOSFETs and inductors, further adding to the cost and size of the solution. LTC3731H applications range from high-end notebook PCs to embedded systems and single-board computers for industrial, instrumentation, telecom and medical systems.

The LTC3731H incorporates a patented power saving Stage Shedding[™] technique to optimize efficiency and improve battery life at light loads by eliminating the gate charging losses and switching losses of two of its output stages. The PolyPhase operation reduces input ripple current and improves transient response as well as minimizing the requirement for input and output capacitors. The IC operates from 250kHz to 600kHz per phase to achieve an

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optimal frequency for efficiency, ease of thermal design and use of small inductors and capacitors. To protect the load and MOSFETs, the LTC3731H is equipped with short-circuit and overload protection as well as soft-start to protect the system from high inrush current.

The LTC3731H is offered in a 36-lead SSOP. 1,000-piece pricing starts at \$5.00 each.

Summary of Features: LTC3731H

- -40°C to 140°C guaranteed operation
- $\pm 2\%$ V_{REF} accuracy over temperature
- $\pm 5\%$ output current match optimizes thermal performance and size of inductors and MOSFETs
- 3-phase current mode controller with onboard MOSFET drivers
- Reduced input and output capacitance
- 250kHz to 600kHz per phase, PLL, fixed frequency
- 4.5V to 32V input voltage range

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.

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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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