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High Power Multiphase Step-Down DC/DC Controller Features Differential Remote Sensing, Active Voltage Positioning & Stage Shedding Technology

MILPITAS, CA – May 24, 2010 – Linear Technology Corporation introduces the [LTC3856](#), a two-phase single output high efficiency (up to 95%) synchronous step-down DC/DC controller with PolyPhase[®] operation, differential output voltage sensing and integrated phased-lock loop (PLL) synchronization. Up to 12 phases can be paralleled and clocked out of phase to minimize input and output filtering requirements for high current applications (up to 300A). The differential amplifier provides remote output voltage sensing of both the positive and negative terminals, enabling high accuracy regulation independent of IR losses in trace runs, vias and interconnects. Applications include high current ASIC and FPGA supplies, power distribution buses, high power audio amplifiers and network servers.

The LTC3856 operates with all N-channel MOSFETs from input voltages ranging from 4.5V to 38V and it can produce $\pm 0.75\%$ accurate output voltages from 0.6V to 5V. The output current is sensed by monitoring the voltage drop across the output inductor (DCR) or by using a sense resistor. Programmable DCR temperature compensation maintains an accurate and constant current limit set point over a broad temperature range. The powerful onboard gate drivers minimize MOSFET switching losses and enable the use of multiple MOSFETs connected in parallel. A fixed operating frequency can be programmed from 250kHz to 770kHz or can be synchronized to an external clock with its internal PLL. The device's minimum on-time of just 90ns makes the LTC3856 ideal for high step-down ratio applications.

The LTC3856 incorporates an adjustable Stage Shedding[™] technique to increase efficiency at light loads by eliminating gate charge and switching losses of one of its output stages. In addition, the LTC3856 can be configured for adjustable Burst Mode[®]

operation to produce even higher efficiency at light loads. Its adaptive voltage positioning (AVP) minimizes the maximum transient voltage deviation during a load current step.

Tracking and sequencing functions allow the optimization of power-up and power-down of multiple power supplies. Additional features include current mode control, an onboard LDO for IC power, programmable soft start, a power good output and external V_{CC} control.

The LTC3856 is available in thermally enhanced 38-lead SSOP or 32-lead 5mm x 5mm QFN packages and operates over a -40°C to 125°C operating junction temperature range. 1000-piece price starts at \$3.12 each. Both versions are available from stock. For more information, visit <http://www.linear.com/pr/3856>


Photo Caption: High Power Single Output Multiphase DC/DC Controller

Summary of Features: LTC3856

- Multiphase Operation – Up to 12 Phases
- High Efficiency – Up to 95%
- Adjustable Stage Shedding™ Technique
- Programmable Burst Mode® Operation
- Wide V_{IN} Range from 4.5V to 38V
- V_{OUT} Ranging from 0.6V to 5V, $\pm 0.75\%$ Accuracy
- True Differential Amplifier for Remote Output Voltage Sensing
- R_{SENSE} or DCR Current Sensing
- Programmable DCR Temperature Compensation
- Powerful Onboard N-Channel MOSFET Gate Drivers
- Adaptive Voltage Positioning
- Output Voltage Tracking or Programmable Soft Start
- Phase-Lockable Fixed Frequency from 250kHz to 770kHz
- Current Mode Control for Accurate & Easy Current Sharing

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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