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Dual Output, Multiphase Step-Down DC/DC Controller Operates with Power Blocks & DrMOS Devices

MILPITAS, CA – February 17, 2010 – Linear Technology Corporation introduces the LTC3860, a dual output synchronous step-down DC/DC controller with multiphase operation, differential output voltage sensing and high frequency operation. This controller works in conjunction with external power train devices such as Power Blocks and DrMOS, as well as discrete N-channel MOSFETs and associated gate drivers, enabling flexible design configurations. Up to 12 phases can be paralleled and clocked out-of-phase to minimize input and output filtering for very high current requirements (up to 300A). Applications include high current power distribution and industrial systems, DSP and ASIC supplies.

The differential amplifier provides true remote output voltage sensing of both V_{OUT} and ground terminals, enabling high accuracy regulation where IR losses occur through vias, trace runs and interconnects. The LTC3860 operates with a V_{CC} voltage ranging from 3V to 5.5V, a V_{IN} voltage (drain voltage for the high-side MOSFET) from 3V to 24V and produces output voltages from 0.6V to 5V. The device's voltage mode control architecture allows for a selectable fixed operating frequency from 250kHz to 1.25MHz or it can be synchronized over the same range with its phased-lock loop (PLL). The output current is sensed by monitoring the voltage drop across the output inductor (DCR) for maximum efficiency or using a sense resistor. Its adjustable current limit can be configured for very low sense voltages (0mV to 50mV) to minimize power loss. The LTC3860's current sharing loop enables accurate current sharing between phases across multiple IC's both DC and during a load transient.

Additional features include adjustable soft start or tracking, output overvoltage protection and two power good output signals. Furthermore, it maintains $\pm 1\%$ reference voltage accuracy over an operating temperature range of -40°C to 125°C .

The LTC3860 is housed in a 32-lead 5mm x 5mm QFN package and is available from stock. The 1000-piece price starts at \$2.59. For more information, visit www.linear.com.


Photo Caption: Dual Synchronous Step-Down DC/DC Controller

Summary of Features: LTC3860

- Can be used with Power Blocks & DrMOS Devices
- Multiphase Operation (Up to 12-Phases) with Accurate Current Sharing
- Differential Amplifier for Remote Voltage Sensing
- V_{CC} Ranging from 3V to 5.5V
- V_{IN} Ranging from 3V to 24V
- Very Fast Transient Response
- Phase Lockable Fixed Operating Frequency from 250kHz to 1.25MHz
- DCR or R_{SENSE} Output Current Sense
- Adjustable Current Limit
- Voltage Mode Control
- Dynamic Current Sharing Between Phases
- Adjustable Soft Start or Tracking
- $\pm 1\%$ Reference Voltage Accuracy over -40°C to $+125^{\circ}\text{C}$
- Power Good Outputs

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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