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Sub-Milliohm DCR Sensing Multiphase Current-Mode Synchronous Step-Down DC/DC Controller

MILPITAS, CA – January 21, 2014 – Linear Technology Corporation introduces the [LTC3875](#), a dual output current-mode synchronous step-down DC/DC controller that enables the use of very low DC resistance (DCR) power inductors by using a novel DCR sensing architecture that enhances the signal-to-noise ratio of the current sense signal. Power inductor DCR, as low as 0.2 milliohms can be used without a sense resistor to maximize converter efficiency and increase power density. This new DCR sensing technique dramatically reduces the switching jitter normally associated with low DCR sensing applications.

The LTC3875 operates over an input voltage range of 4.5V to 38V and produces a fixed output voltage from 0.6V to 3.5V with +/-0.5% accuracy from -40°C to 125°C. Dual onboard differential amplifiers provide true remote output voltage sensing of both output voltages. Up to 12 phases can be paralleled and clocked out-of-phase to minimize input and output filtering. When both outputs are paralleled, the LTC3875 maintains less than +/-5% current mismatch between phases, making it ideal for very high current requirements up to 360A. Precise programmable current sense limits and DCR temperature compensation limit the maximum output current precisely over temperature. Applications include high current power distribution, redundant (n+1) supplies, industrial systems, processor and ASIC power.

The LTC3875 has a selectable fixed operating frequency from 250kHz to 720kHz or it can be synchronized to an external clock. Powerful 1.1 Ohm onboard all N-channel gate drivers

minimize MOSFET switching losses. Its adjustable current limit can be configured for very low sense voltages from 10mV to 30mV to minimize power loss. The second channel features a fast transient circuit that improves the load-step-up transient by up to 30% . Additional features include adjustable soft-start or tracking, foldback current limit, short-circuit soft recovery, output overvoltage protection and a power good output voltage monitor.

The LTC3875 is available in a 40-lead 6mm x 6mm QFN package. The 1,000-piece price starts at \$3.47 each. For more information, visit www.linear.com/product/LTC3875


Photo Caption: Sub-Milliohm Current-Mode Dual Step-Down DC/DC Controller

Summary of Features: LTC3875

- Sub-Milliohm DCR Current Sensing – As Low as 0.2 Milliohms
- Novel DCR Sensing Current-Mode Control Provides Very Low Jitter
- DCR Temperature Compensation
- High Speed Differential Remote V_{OUT} Sense Amplifiers
- Wide V_{IN} Range: 4.5V to 38V
- V_{OUT} Range: 0.6V to 3.5V, +/-0.5% Accuracy over Temperature.
- Up to 12 Phase Operation
- Less than +/-5% Current Mismatch when Both Outputs Are Paralleled
- Optional Fast Transient Function on Channel 2
- Adjustable Current Sense Threshold from 10mV to 30mV
- Selectable Fixed Operating Frequency from 250kHz to 720kHz
- Output Voltage Tracking or Programmable Soft-Start
- Overvoltage Protection, Thermal Shutdown & Short-Circuit Soft Recovery

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 over 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, μ Module[®] subsystems, and wireless sensor network products. For more information, visit www.linear.com

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