



Synchronous Step-Down Controller Provides True Current Mode Control with Sub Milliohm DCR Sensing

MILPITAS, CA – February 8, 2012 – Linear Technology Corporation introduces the [LTC3866](#), a current mode synchronous step-down DC/DC controller that allows the use of very low DC resistance power inductor using a novel DCR sensing architecture that enhances the signal-to-noise ratio of the current sense signal. A power inductor DC resistance of as low as 0.17 milliohms can be used to maximize converter efficiency and increase power density. This new DCR sensing technique dramatically reduces the switching jitter normally associated with low DCR resistance applications. DCR temperature compensation maintains a constant and accurate current limit threshold over a broad temperature range.

The LTC3866 operates from a 4.5V to 38V input voltage range that encompasses a wide range of applications including most intermediate bus voltages & battery voltages. Strong onboard N-channel MOSFET gate drivers allow the use of high power external MOSFETs, DrMOS devices or power blocks for an output current of up to 40A, with output voltages ranging from 0.6V to 5V. The LTC3866 can be paralleled for even higher power multiphase applications. An onboard differential amplifier provides remote output voltage sensing of both the positive and negative terminals, enabling high accuracy regulation independent of IR losses (up to $\pm 500\text{mV}$) in trace runs. A low current sense threshold from 10mV to 30mV can be selected. The fixed operating frequency is adjustable from 250kHz to 770kHz or can be synchronized to an external clock. Additional features include an internal bias voltage regulator, soft start or tracking, overvoltage protection, soft short-circuit recovery, current limit foldback, thermal shutdown and external V_{CC} control.

The LTC3866 operates over a -40°C to 125°C junction temperature range, and is available in thermally enhanced 4mm x 4mm QFN-24 and TSSOP-24E packages. The 1,000-piece price starts at \$2.71 each. For more information, visit www.linear.com.


Photo Caption: Sub Milliohm DCR Sensing Step-Down DC/DC Controller

Summary of Features: LTC3866

- Sub Milliohm Resistance DCR Current Sensing – As low as 0.17 Milliohms Provides Very low Jitter
- Novel DCR Sensing Current Mode Control
- DCR Temperature Compensation
- Supports Discrete, DrMOS & Power-Block Power Stages
- High Speed Differential Remote V_{OUT} Sense Amplifier
- Wide V_{IN} Range: 4.5V to 38V
- V_{OUT} Range: 0.6V to 5V
- Adjustable Current Sense Threshold from 10mV to 30mV
- Selectable Fixed Operating Frequency from 250kHz to 770kHz
- 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 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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