Synchronous Step-Down DC/DC Controller Using Nonlinear Control & Differential Output Sensing for Tight Output Voltage Regulation

MILPITAS, CA – August 10, 2011 – Linear Technology Corporation introduces the LTC3867, a fixed frequency synchronous step-down DC/DC controller with nonlinear control, differential output voltage sensing and clock synchronization. Nonlinear control minimizes the output voltage excursion during load transient events by increasing the operating frequency, allowing the LTC3867 to recover from a large load step in only a few cycles. This feature reduces the maximum deviation from nominal by up to 50% compared to traditional controllers. The LTC3867's 4V to 38V input range encompasses a wide variety of applications including most intermediate bus voltages. Strong onboard N-channel MOSFET gate drivers allow the use of high power external MOSFETs for high load current, up to 25A. The output voltage range is 0.6V to 14V, making the LTC3867 ideal for telecom, datacom, automotive and industrial applications.

The LTC3867's differential amplifier provides true remote output voltage sensing of both the positive and negative terminals, enabling high accuracy regulation independent of IR losses (up to ±300mV) in trace runs, vias and interconnects. A low 65ns minimum on-time allows for a high step-down ratio power supply at high frequency operation. The operating frequency is selectable from 200kHz to 1.2MHz or can be synchronized to an external clock. The output current is monitored by sensing the voltage drop across the output inductor (DCR) for highest efficiency or by using a sense resistor. Additional features include DCR temperature compensation, an onboard bias voltage LDO, soft-start or tracking, adjustable current limit, soft recovery from an output overcurrent condition, overvoltage protection, external V_{CC} control and ±1% reference voltage accuracy over a -40°C to 125°C operating junction temperature range.

The LTC3867 is available in a thermally enhanced 4mm x 4mm QFN-24 package. The 1,000-piece price starts at $2.76 each. For more information, visit www.linear.com/product/LTC3867

Photo Caption: Synchronous Step-Down DC/DC Controller

Summary of Features: LTC3867

- Nonlinear Control for Minimal Output Voltage Excursion During a Transient Event
- Differential Amplifier for Remote Output Voltage Sensing
- Wide V_{IN} Range: 4V to 38V
- V_{OUT} Range: 0.6V to 14V
- Powerful Onboard MOSFET Gate Drivers
- High Step-Down Ratio: 65ns Minimum On-Time
- Selectable Operating Frequency from 200kHz to 1.2MHz
- Synchronizable to an External Clock from 250kHz to 1.1MHz
- ±1% Reference Voltage Accuracy over Temperature
- R_{SENSE} or DCR Current Sensing
- DCR Temperature Compensation
- Output Voltage Tracking or Programmable Soft Start
- Adjustable Current Limit
- Soft Recovery from an Output Over Current
- Overvoltage Protection

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, and µModule® subsystems.

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