



Dual Step-Down DC/DC Controller with Digital Power System Management Drives DrMOS & Power Blocks with Fast 70ms Start-Up

MILPITAS, CA – August 17, 2015 – Linear Technology Corporation announces the [LTC3887-1](#), a dual output synchronous step-down DC/DC controller with I²C-based PMBus interface for digital power system management. The LTC3887-1 differs from the previously released LTC3887 by providing a three-state PWM signal, enabling the use of DrMOS, power blocks or similar power stages. The LTC3887-1's enhanced feature set includes a 70ms power-up time and a fast ADC mode that provides an 8ms update rate for one parameter.

The LTC3887-1 regulates two independent outputs or can be configured for a 2-phase single output from 0.5V to 5.5V. Up to 6 phases can be interleaved and paralleled for accurate sharing among multiple ICs, minimizing input and output filtering requirements for high current or multiple output applications. An integrated amplifier provides true differential remote output voltage sensing, enabling high accuracy regulation, independent of board IR voltage drops. Applications include high current ASIC, FPGA and processor supplies in telecom, datacom, computing and storage markets.

The LTC3887-1 operates over an input voltage ranging from 4.5V to 24V, and it produces $\pm 0.50\%$ accurate output voltages from 0.5V to 5.5V with output currents up to 40A per phase over the full operating temperature range. Highest efficiency is achieved by sensing the voltage drop across the output inductor (DCR) to sense current, or an external sense resistor can be optionally used. Programmable DCR temperature compensation cancels the temperature coefficient of the copper inductor to maintain an accurate and constant-current limit over a broad temperature range.

Accurate timing across multiple chips and event-based sequencing enable the optimization of power-up and power-down of complex, multiple rail systems. Additional features include constant-frequency current-mode control with cycle-by-cycle current limit, adjustable

soft-start, a synchronizable switching frequency, and programmable GPIO pins to indicate part status and to provide autonomous recovery from faults.

The LTC3887-1 combines best-in-class analog switching regulator performance with precision mixed signal data conversion for unsurpassed ease of power system design and management, supported by the LTpowerPlay™ power development system with easy to use graphical user interface (GUI). The LTC3887-1 enables digital programming and read back for real-time control and monitoring of critical point-of-load converter functions. Programmable control parameters include output voltage, margining and current limits, input and output supervisory limits, power-up sequencing and tracking, switching frequency, and identification and traceability data. On-chip precision data converters and EEPROM allow for the capture and nonvolatile storage of regulator configuration settings and telemetry variables, including input and output voltages and currents, duty cycle, temperature and fault logging.

Configurations for the LTC3887-1 are easily saved to internal EEPROM over the device's I²C serial interface, using Linear Technology's LTpowerPlay GUI-based development software. With configurations stored on-chip, the controller can power-up autonomously without burdening the host processor. Default settings can be optionally configured by external resistor dividers for output voltage, switching frequency, phase and device address. Multiple designs can be easily calibrated and configured in firmware to optimize a single hardware design for a range of applications. The converter loop gain does not change as the power supply parameters are modified, so compensation remains optimized for multiple configurations.

The LTC3887-1 is available in a 40-pin 6mm x 6mm QFN package with an operating junction temperature range from -40°C to 125°C. Custom device configuration programming service is available at www.linear.com/program. The 1,000-piece price starts at \$5.47 each. For more information, visit www.linear.com/product/LTC3887-1.

Photo Caption: I²C/PMBus Dual Synchronous Step-Down DC/DC Controller

Summary of Features: LTC3887-1

- Dual Output Synchronous Step-Down DC/DC Controller
- Compatible with DrMOS, Power Blocks & External MOSFET Gate Drivers
- I²C/PMBus Compliant Serial Interface
- Internal Nonvolatile EEPROM Memory

- Programmable Parameters Include V_{OUT} , I_{LIM} , Sequencing, Margining, OV/UV Levels & Switching Frequency
- Telemetry includes V_{IN} , I_{IN} , V_{OUT} , I_{OUT} , Duty Cycle, Temperature, Fault Status & Logging
- V_{IN} Range: 4.5V to 24V
- V_{OUT} Range: 0.5V to 5.5V
- Up to 40A per Channel
- $\pm 0.5\%$ Maximum DC Output Voltage Error over the Full Operating Junction Temperature Range
- 70ms Power-Up Time
- Fast ADC Mode Updates One Selectable Parameter Every 8ms
- Temperature Compensated DCR or R_{SENSE} Current Sensing
- PolyPhase® for up to 6-Phase Operation
- Phase-Lockable Fixed Frequency from 250kHz to 1MHz
- 6mm x 6mm QFN-40 Package

The USA list pricing shown is for budgetary use only. International prices may differ due to local duties, taxes, fees and exchange rates.

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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