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UltraFast™ Digitally Programmable 5A LDO Features Analog Margining, Output Current Monitor, 85mV Dropout & 25uV$_{RMS}$ Noise

MILPITAS, CA – May 12, 2010 – Linear Technology Corporation announces the LT3071, the second in a family of digitally programmable linear regulators with the lowest dropout voltage, lowest noise and fastest transient response of any monolithic 5A LDO currently available. Dropout voltage at 5A is an ultralow 85mV. Output voltage noise at 5A is only 25uV$_{RMS}$ over a 10Hz to 100kHz bandwidth. The LT3071's 1MHz unity gain bandwidth, coupled with its minimum 15uF ceramic output capacitance, provides a mere 30mV of overshoot/undershoot in response to a fast 4.5A output load step, saving significant bulk capacitance, space and cost. The LT3071 is ideal for efficiently powering low voltage, high current devices such as FPGAs, DSPs, ASICs, microprocessors, sensitive communication supplies, server/storage devices, and post-buck regulation applications.

The LT3071's output voltage is digitally programmable from 0.8V to 1.8V in 50mV increments. Accuracy is tightly specified at ±1% over line, load and temperature. An analog output margining feature can adjust system output voltage over a continuous ±10% range, advantageous during system development debug. A PowerGood flag indicates if output voltage is in regulation or if the device is in UVLO, and the flag also provides an early warning indication of a thermal fault. An output current monitor sources a scaled dynamic representation of output current (I_{OUT}/2500) that can be measured directly or terminated with a resistor and converted to voltage, allowing load conditions or power to be calculated. The LT3071's input

supply voltage range is 0.95V to 3.0V and its bias supply voltage ranges from 2.2V to 3.6V. The bias supply provides gate drive to the internal NMOS pass device.

Multiple LT3071 devices can be easily paralleled for higher output current and to spread heat across a circuit board. A tracking feature can control a buck regulator powering the LT3071's input. This tracking function drives the upstream buck regulator to maintain the LT3071's input voltage at V_{OUT} + 300mV, minimizing power dissipation. If output voltage is dynamically changed, the tracking function automatically adjusts the output voltage of the buck regulator to maintain efficiency. Internal protection circuitry includes UVLO, reverse-current protection, precision current limiting with power foldback and thermal shutdown with hysteresis.

The LT3071 is offered in a thermally enhanced, low profile (0.75mm) 28-lead 4mm x 5mm QFN package, and both E and I grades operate from -40°C to +125°C junction temperature range. 1,000-piece pricing starts at $4.20 and $4.80 each, respectively. For more information, visit www.linear.com.

Photo Caption: UltraFast, Digitally Programmable Ultralow Dropout, Low Noise 5A LDO with Analog Margining

Summary of Features: LT3071

- Output Current: 5A
- Dropout Voltage: 85mV Typical
- Digitally Programmable V_{OUT} : 0.8V to 1.8V in 50mV Increments
- Analog Output Margining: ±10% Range
- Output Current Monitor: Sources I_{OUT}/2500, 2mA at I_{OUT} = 5A
- Low Output Noise: 25uV$_{RMS}$ (10Hz to 100kHz)
- Parallelable: Use Two for a 10A Output
- Precision Current Limit: ±20%
- ±1% Accuracy Over Line, Load and Temperature
- Stable with Low ESR Ceramic Output Capacitors (15uF Minimum)
- High Frequency PSRR: 30dB at 1MHz
- Enable Function Turns Output On/Off
- VIOC Pin Controls Buck Converter to Maintain Low Power Dissipation & Optimize Efficiency
- PWRGD/UVLO/Thermal Shutdown Flag
- Current Limit with Foldback Protection
- Thermal Shutdown
- Low Profile (0.75mm) Thermally Enhanced 28-Lead 4mm x 5mm QFN Package

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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