



600mA Negative LDO+ Offers Rail-to-Rail Operation, Programmable Current Limit & Output Current Monitor

MILPITAS, CA – September 26, 2013 – Linear Technology Corporation announces the [LT3090](#), the newest member of our LDO+™ family, a 600mA low dropout negative linear regulator featuring low noise, rail-to-rail operation, precision programmable current limit and a bidirectional output current monitor. The device is cable-drop compensation capable, easily parallelable for higher current or PCB heat spreading and configurable as a floating 3-terminal regulator. The LT3090's input voltage range is -1.5V to -36V. A single resistor programs the adjustable rail-to-rail output voltage from 0V to -32V and dropout voltage is only 300mV (typical at full load). The device features a trimmed, $\pm 1\%$ accurate 50 μ A current source reference and provides $\pm 2\%$ output voltage tolerance over line, load and temperature. Output voltage regulation, bandwidth, transient response and output noise (18 μ V_{rms} over a 10Hz to 100kHz bandwidth) remain independent of output voltage due to the device's unity-gain voltage follower architecture. The LT3090 is ideal for negative logic supplies, low noise instrumentation and RF supplies, rugged industrial supplies and for post-regulating switching supplies.

The LT3090 exhibits excellent stability with a wide range of output capacitors including small, low cost ceramic capacitors. It is stable with a minimum 4.7 μ F output capacitor. A single resistor adjusts the precision programmable current limit. The device's bipolar current monitor either sources or sinks a current proportional to output current, useful for system monitoring. The LT3090's bidirectional shutdown capability allows the device to operate with either positive or

negative logic levels. In addition, the LT3090's accurate shutdown thresholds enable a programmable UVLO threshold for either the regulator's input supply or a positive system supply voltage. Internal protection circuitry for the IC includes a precision current limit with foldback and thermal shutdown with hysteresis. In bipolar supply applications where the regulator's load returns to a positive supply, the OUT pin can be pulled above GND up to 40V and will still allow the LT3090 to safely start up.

The LT3090 is available in a low profile (0.75mm) 3mm x 3mm 10-lead DFN and a 12-lead MSOP package, both with backside thermal pads. E- and I-grade operating junction temperature is -40°C to +125°C, H-grade is -40°C to +150°C, and the MP-grade is specified over the widest operating range from -55°C to +150°C. 1000-piece pricing for the E-grade version starts at \$2.15 each, and devices are available from stock. For more information, visit www.linear.com/product/LT3090

Photo Caption: 600mA Negative LDO


Summary of Features: LT3090

- Output Current: 600mA
- Single Resistor Sets Output Voltage
- 50µA SET Pin Current: ±1% Initial Accuracy
- Programmable "Brick-Wall" Current Limit
- Dual Polarity Output Current Monitor
- Parallelable for Higher Current and Heat Spreading
- Low Dropout Voltage: 300mV
- Low Output Noise: 18µV_{RMS} (10Hz to 100kHz)
- Configurable as a 3-Terminal Floating Regulator
- Wide Input Voltage Range: -1.5V to -36V
- Rail-to-Rail Output Voltage Range: 0V to -32V
- Positive/Negative Shutdown Logic or UVLO
- Internal Back-Up Current Limit with Foldback
- Stable with 4.7µF Minimum Output Capacitor
- Stable with Ceramic or Tantalum Capacitors
- Reverse Output Protection
- Thermally Enhanced 12-Lead MSOP and 10-Lead

3mm × 3mm x 0.75mm DFN Packages

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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Press Contacts:

North America / Worldwide

John Hamburger, Director Marketing
Communications
jhamburger@linear.com
Tel: 408-432-1900 ext 2419

Doug Dickinson, Media Relations Manager
ddickinson@linear.com
Tel: 408-432-1900 ext 2233

UK & Nordic

Alan Timmins
alan@ezwire.com
Tel: +44-1-252-629937