



## **45V 100mA LDO Offers 30 $\mu$ V<sub>RMS</sub> Noise, Programmable Current Limit & Diagnostic Information**

MILPITAS, CA – September 14, 2009 – Linear Technology Corporation announces the LT3050, a high voltage, low noise, low dropout voltage linear regulator offering precision, programmable current limit and diagnostic capability. The device delivers up to 100mA output current with a 340mV dropout voltage at full load. The LT3050 features a wide 2V to 45V input voltage range, delivering adjustable output voltages from 0.6V to 44.5V. A single capacitor at the REF/BYP pin provides programmable low noise operation--only 30 $\mu$ V<sub>RMS</sub> across a wide bandwidth of 10Hz to 100kHz--and reference soft start functionality, preventing output voltage overshoot at turn-on. Output voltage tolerance is highly accurate at  $\pm 2\%$  over line, load and temperature.

The LT3050 provides several diagnostic and safety functions. A single resistor at the I<sub>MAX</sub> pin programs current limit, accurate to  $\pm 5\%$  over the full input voltage and temperature range. Also, a single resistor at the I<sub>MIN</sub> pin programs a minimum output current detector, useful for identifying open-circuit conditions. Furthermore, a current monitor function sources current equal to 1/100th of output current, allowing the user to measure output current or calculate the device's power dissipation. A logic Fault pin asserts low if the LT3050 is in current limit, operating below its minimum output current (open-circuit) or is in thermal shutdown. Moreover, the LT3050's internal protection circuitry includes reverse-battery protection, reverse-output protection, reverse-current protection, internal default current limiting and thermal limiting.

The LT3050 operates with a very small, low cost, 2.2 $\mu$ F ceramic output capacitor, optimizing stability and transient response. This tiny external capacitor can be used without the

addition of series resistance (ESR) as is common with many other regulators. The LT3050's wide input and output voltage ranges, fast transient response, low quiescent current of 50 $\mu$ A (operating) and <1 $\mu$ A (in shutdown) make it an excellent choice for active antenna supplies, industrial power supplies, battery-powered systems requiring optimum run time, and high reliability power supplies requiring diagnostic information and protection functions.

The LT3050EDDB & LT3050IDDB are housed in the 12-lead 2mm x 3mm DFN package, while the LT3050EMS8E & LT3050IMS8E are available in the 12-lead thermally enhanced MSOP package, all offering a compact footprint. Both "E" and "I" grade versions are available from stock with an operating junction temperature of -40°C to +125°C, while the "MP" grade operates from -55 to +125°C (MSOP package only, LT3050MPMS8E). 1,000 piece pricing starts at \$1.55 & \$1.75 each for the DFN package E and I grades, respectively, and \$1.55, \$1.75 and \$4.19 each for the MSOP package E, I and MP grades, respectively. For more information, visit [www.linear.com](http://www.linear.com).

**Photo Caption:** 45V<sub>IN</sub>, 0.6V<sub>OUT</sub> 100mA Ultralow Noise LDO with Diagnostics


### Summary of Features: LT3050

- Output Current: 100mA
- Dropout Voltage: 340mV
- Input Voltage Range: 2V to 45V
- Programmable Precision Current Limit:  $\pm$ 5%
- Programmable Minimum I<sub>OUT</sub> Detector
- Output Current Monitor: 1/100th of I<sub>OUT</sub>
- Fault Indicator: Current Limit, Minimum I<sub>OUT</sub> or Thermal Limit
- Low Noise: 30 $\mu$ V<sub>RMS</sub> (10Hz to 100kHz)
- Adjustable Output (V<sub>REF</sub> = V<sub>OUT(MIN)</sub> = 0.6V)
- Reference Soft Start Capability Prevents Output Voltage Turn-on Overshoot
- Output Tolerance:  $\pm$ 2% Over Line, Load and Temperature
- Stable with Low ESR, Ceramic Output Capacitors (2.2 $\mu$ F minimum)
- Shutdown Current: <1 $\mu$ A
- Reverse Battery and Reverse Current Protection
- Thermal Limit Protection

- 12-Lead 2mm x 3mm DFN & MSOP Packages

## 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,  $\mu$ Module<sup>®</sup> 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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