



20V, 500mA LDO with Ultralow ($0.8\mu\text{V}_{\text{RMS}}$) Noise & 76dB PSRR at 1MHz Powers Noise-Sensitive Applications

MILPITAS, CA – October 11, 2016 – Linear Technology Corporation announces the [LT3045](#), an ultralow noise, ultrahigh power supply ripple rejection (PSRR) low dropout voltage linear regulator, a higher output current version of the widely accepted 200mA LT3042 ultralow noise LDO. The LT3045's unique design features ultralow spot noise of only $2\text{nV}/\sqrt{\text{Hz}}$ at 10kHz and $0.8\mu\text{V}_{\text{RMS}}$ integrated output noise across a wide 10Hz to 100kHz bandwidth. Low and high frequency PSRR performance are exceptional. Low frequency PSRR exceeds 90dB out to 10kHz and high frequency PSRR exceeds 70dB out to 2.5MHz, thereby quieting noisy or high ripple input supplies. The LT3045 utilizes Linear's proprietary LDO architecture – a precision current source reference followed by a high performance unity-gain buffer, resulting in virtually constant bandwidth, noise, PSRR and load regulation performance, independent of output voltage. In addition, this architecture permits paralleling of multiple LT3045s to further decrease noise, increase output current and spread heat on a printed circuit board.

The LT3045 delivers up to 500mA output current with a 260mV dropout voltage at full load, across a wide 1.8V to 20V input voltage range. Output voltage range is 0V to 15V and output voltage tolerance is highly accurate at $\pm 2\%$ over line, load and temperature. The device's wide input and output voltage ranges, high bandwidth, high PSRR and ultralow noise performance are ideal for powering noise-sensitive applications such as PLLs, VCOs, mixers, LNAs, very low noise instrumentation, high speed/high precision data converters, medical applications such as imaging and diagnostics, precision power supplies and as a post-regulator for switching supplies.

The LT3045 operates with a small, low cost, $10\mu\text{F}$ ceramic output capacitor, optimizing stability and transient response. A single resistor programs the external precision current limit ($\pm 10\%$ over temperature). A single SET pin capacitor lowers output noise and provides reference soft-start functionality, preventing output voltage overshoot at turn-on. Moreover, the device's internal protection circuitry includes reverse-battery protection, reverse-current protection,

internal current limit with foldback and thermal limit with hysteresis. Other features include fast start-up capability (useful if a large value SET pin capacitor is used) and a power good flag with programmable threshold to indicate output voltage regulation.

The LT3045 is available in thermally enhanced 10-lead 3mm x 3mm DFN (pin-compatible with the LT3042) and 12-lead MSOP packages, both with a compact footprint. The E- and I-grade versions are available from stock with an operating junction temperature of -40°C to 125°C . A future high temperature H-grade version will be rated from -40°C to 150°C . Devices are in stock, priced starting at \$2.80 each for the E-grade in 1,000-piece quantities. For more information, visit www.linear.com/product/LT3045.

Photo Caption: 20V_{IN} , 500mA $0.8\mu\text{V}_{\text{RMS}}$ Ultralow Noise, Ultrahigh PSRR LDO

Summary of Features: LT3045

- Ultralow RMS Noise: $0.8\mu\text{V}_{\text{RMS}}$ (10Hz to 100kHz)
- Ultralow Spot Noise: $2\text{nV}/\sqrt{\text{Hz}}$ at 10kHz
- Ultrahigh PSRR: $>90\text{dB}$ to 10kHz & $>70\text{dB}$ to 2.5MHz
- Output Current: 500mA
- Wide Input Voltage Range: 1.8V to 20V
- Single Capacitor Improves Noise & PSRR
- $100\mu\text{A}$ SET Pin Current: $\pm 1\%$ Initial Accuracy
- Single Resistor Programs Output Voltage
- High Bandwidth: 1MHz
- Programmable Current Limit
- Low Dropout Voltage: 260mV
- Output Voltage Range: 0V to 15V
- Power Good Flag with Programmable Threshold
- Fast Start-Up Capability
- Precision Enable/UVLO
- Can Be Paralleled for Lower Noise & Higher Current
- Internal Current Limit with Foldback
- Minimum Output Capacitor: $10\mu\text{F}$ Ceramic
- Reverse-Battery & Reverse-Current Protection
- 12-Lead MSOP & 10-Lead 3mm x 3mm DFN Packages

Pricing shown is for budgetary use only and 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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