



20V, 200mA RF LDO with Ultralow ($0.8\mu\text{V}_{\text{RMS}}$) Noise & 79dB PSRR at 1MHz Powers Noise-Sensitive Applications

MILPITAS, CA – February 23, 2015 – Linear Technology Corporation announces the [LT3042](#), a leading-edge, ultralow noise, ultrahigh power supply ripple rejection (PSRR) low dropout voltage linear regulator. Its 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 75dB out to 3MHz, quieting noisy or high ripple input supplies. The LT3042 utilizes LTC'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 LT3042s to further decrease noise, increase output current and spread heat on a printed circuit board (PCB).

The LT3042 delivers up to 200mA output current with a 350mV 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 make it 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 LT3042 operates with a small, low cost, $4.7\mu\text{F}$ 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 large value SET pin capacitors are used) and a power good flag with programmable threshold to indicate output voltage regulation.

The LT3042 is available in thermally enhanced 10-lead 3mm x 3mm DFN and 10-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 . The high temperature H grade is rated from -40°C to 150°C , and the high reliability MP-grade version is specified from -55°C to 150°C . Devices are in stock, and pricing starts at \$2.25 each for the E grade in 1,000-piece quantities. For more information, visit www.linear.com/product/LT3042

Photo Caption: 20V_{IN} , 200mA $0.8\mu\text{V}_{\text{RMS}}$ Ultralow Noise Ultrahigh PSRR LDO

Summary of Features: LT3042

- 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 and $>75\text{dB}$ to 3MHz
- Output Current: 200mA
- 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: 350mV
- 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: $4.7\mu\text{F}$ Ceramic
- Reverse Battery & Reverse Current Protection
- 10-Lead MSOP & 3mm x 3mm DFN Packages

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, $\mu\text{Module}^{\text{®}}$ 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