



News Release | www.linear.com

40MHz to 10GHz RMS Detector with 57dB Dynamic Range Provides Accurate RF Power Measurement

MILPITAS, CA – June 16, 2010 – Linear Technology introduces the [LTC5582](#), a high dynamic range 10GHz RMS detector that sets a new standard in measurement accuracy of RF signals. It offers outstanding $\pm 0.2\text{dB}$ linearity over a 43dB dynamic range at 2.14GHz, regardless of the high crest-factor modulations used in 3G and 4G broadband wireless networks, including LTE, WiMAX, TD-SCDMA, W-CDMA and CDMA2000. In addition, the LTC5582 can accurately measure signal levels as low as -56dBm to 1dBm to $\pm 1\text{dB}$ error, providing 57dB dynamic range from 450MHz to 2.7GHz. The device is capable of operating at higher frequencies, providing 46dB of useful dynamic range at 6GHz, and 38dB at 10GHz. Moreover, the device operates efficiently on a single 3.3V supply. Its RF input is designed to operate single-ended, requiring no external balun transformer, thus reducing the solution size and cost.

The LTC5582 has outstanding temperature performance. From -40°C to 85°C , the device can deliver 48dB of dynamic range with a linearity accuracy of $\pm 1\text{dB}$. This enables use of the LTC5582 in rugged environments such as RRUs (Remote Radio Units) or ODU (Outdoor Units) deployed on cellular towers with minimal calibration adjustments. Moreover, the device has on-chip provisions for first- and second-order temperature compensation which can be easily calibrated for improved temperature performance.

The LTC5582 has a log-linear response which precisely converts the RF signal levels in dB scale into a linearly proportional DC voltage. Operating in the wireless network frequency range from 450MHz to 2.7GHz, the detector response maintains the industry's most constant

slope as the signal frequency changes. This allows a single detector to operate in multiband environments with minimal calibration adjustments. Moreover, the LTC5582 has fast settling characteristics, acquiring a rising signal accurately in 500ns and a falling signal in 4.5us. Its fast response supports a wide range of signal envelope tracking applications.

The LTC5582's specifications apply to single-ended RF input, supporting single-ended applications without a need of an external balun transformer. So the RF input provides easy interface, and is cost-effective to implement in a high performance RF measurement circuit.

The LTC5582 is powered from a single 3.3V supply with an operating current of 42mA, minimizing power consumption. The device has an Enable pin, allowing the chip to power down. When in shutdown mode, the device draws trickle current of less than 10uA. The LTC5582 comes in a small 3mm x 3mm 10-pin DFN package. Typical application circuits using the device require fewer external components, providing a compact solution footprint. The LTC5582 is available from stock. Pricing starts at \$6.25 in 1,000 piece quantities. For more information, visit www.linear.com/pr/5582.


Photo Caption: 40MHz to 10GHz High Dynamic Range RMS Detector

Summary of Features: LTC5582

- | | |
|--|-------------------------|
| • Operating Frequency Range | 40MHz to 10GHz |
| • Log-Linear Dynamic Range (Modulated Signals) | |
| ○ at 880MHz | 59dB |
| ○ at 2.14GHz | 57dB |
| ○ at 5.8GHz | 49dB |
| • Accurate RF Measurement Range | -56dBm to 1dBm |
| • Accuracy Over Temperature (-40°C to +85°C) | ± 1dB |
| • Accurate Response Over Frequency | 700MHz to 2.7GHz |
| • Single-Ended RF Input | No External Transformer |
| • Fast Settling Time | |
| ○ Rise | 500ns |
| ○ Fall | 4.5us |
| • Small Package | 3mm x 3mm DFN |

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.

LT, LTC, LTM, uModule and  are registered trademarks of Linear Technology Corp. All other trademarks are the property of their respective owners.

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
408-432-1900 ext 2233

UK & Nordic

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