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40MHz to 3.8GHz Log RF Power Detector Features 75dB Dynamic Range

MILPITAS, CA – May 19, 2008 – A new monolithic broadband, high performance logarithmic RF power detector from Linear Technology provides accurate RF power measurement over a wide frequency range covering the 800-900MHz and the 1.7GHz to 2.2GHz cellular bands, as well as the 2.6GHz and 3.5GHz WiMAX bands. The LT5538 RF power detector provides a DC output voltage that is log-linearly proportional to its input power level. Within its measurement dynamic range, the detector exhibits best-in-class accuracy and linearity of +/- 0.8 dB over its rated operating temperature range of -40°C to +85°C. Moreover, the LT5538 has outstanding sensitivity, capable of detecting signals as small as -75 dBm to as large as +10 dBm at 2.14 GHz. The device operates with a single-ended RF input. It requires no external RF transformer, thus simplifying design while reducing costs.

The LT5538's dynamic range performance is ideal for RF power amplifier power control and monitoring for a wide range of wireless systems, as well as receiver AGC (Automatic Gain Control), and RSSI (Receive Signal Strength Indicator) functions. These are required functions for cellular basestations of all types, including large cells, microcells, picocells, and femtocells, wireless repeaters, WiMAX basestations, broadband wireless access points, broadband cable networks, military and commercial long-range radios, as well as test and measurement instrumentation. The LT5538's accuracy performance helps to minimize equipment calibration requirements, resulting in stable system performance and reduced operating costs.

The LT5538 utilizes Linear Technology's high speed bipolar process, enabling wide bandwidth and dynamic range performance. The fast output response of 100ns rise time and 200ns fall time to rapidly changing RF input signal levels make it suitable for rapid measurement of RF signal power in TDD (Time Division Duplexing) switching wireless operating environments, including WiMAX, TD-SCDMA, and other applications.

The LT5538 operates over a wide supply voltage range of 3V to 5.25V, drawing a low quiescent supply current of 29mA compared to other similar class detectors. A shutdown feature is provided. When the chip is disabled with a logic LOW applied to its ENABLE input pin, the chip draws a typical shutdown current of 1uA, and a maximum of 100uA. The device comes in a tiny 8-lead, 3mm x 3mm DFN surface mount package. Pricing starts at \$4.50 each in 1,000-piece quantities. The LT5538 is available immediately from stock.


Photo Caption: 3.8 GHz High Dynamic Range RF Detector

Summary of Features: LT5538

Operating Frequency Range	40MHz to 3.8GHz
Accurate over Temperature (-40°C to +85°C)	± 0.8dB
Log-Linear Dynamic Range	
○ @ 880MHz	75dB
○ @ 2.14GHz	70dB
Fast Response Time	
○ Rise Time	100ns
○ Fall Time	200ns
Single-Ended Operation:	No External Transformer
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. For more information, visit www.linear.com.

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