



News Release | www.linear.com

6GHz Matched Dual RMS Detectors Enable Accurate VSWR Measurements

MILPITAS, CA – September 9, 2010 – Linear Technology introduces the [LTC5583](#), a 40MHz to 6GHz dual channel, matched RMS power detector, offering over 55dB isolation at 2.14GHz. In RF power amplifier (PA) applications, the LTC5583 provides a simple solution for accurately measuring forward power, reverse power, and voltage standing wave ratio (VSWR). The device comprises a pair of 60dB dynamic range RMS detectors that are matched to 1.25dB. This provides accurate RF power measurement of high crest-factor signals such as those used in LTE, WiMAX, W-CDMA, TD-SCDMA and CDMA2000 3G or 4G basestations and other high-performance radios employing complex modulation waveforms. Each channel can detect signals accurately from as small as -58dBm to 2dBm, in a log-linear response with a typical linearity of better than +/-0.5dB covering all cellular frequency bands. At higher frequencies, the device is capable of providing 47dB of useful dynamic range up to 6GHz. Unique to the LTC5583, each detector simultaneously tracks the envelope of the modulated input waveform, providing on-chip capability to measure both peak and average signal power.

The LTC5583 has best-in-class channel-to-channel isolation of over 55dB at 2.14GHz, when driven differentially. Unlike other detectors, the LTC5583 can operate single-ended for RF input frequencies up to 2.14GHz, requiring no external balun transformers. This configuration greatly reduces costs without trading off dynamic range and provides isolation better than 40dB. An integrated amplifier measures the difference between the two detector outputs. For applications where one RF input is measuring the forward power and the other the reflected power, the difference output provides real time VSWR results. The two matched detectors are also useful in applications such as monitoring and controlling RF amplifier stage gain. The LTC5583's matching and isolation performance minimize calibration requirements, thus simplifying designs and reducing costs.

The detectors exhibit outstanding temperature performance. Each detector maintains accuracy of +/-1dB error over a 53dB dynamic range over its specified operating temperature range of -40°C to 85°C. This enables the LTC5583 to be used in rugged environments such as Remote Radio Units (RRUs) or Outdoor Units (ODUs) deployed on cellular towers. Moreover, the device has on-chip provisions for first- and second-order temperature compensation which enable easy calibration for improved temperature performance.

The LTC5583 operates on a single 3.3V supply with total current consumption of 80.5mA. This 266mW is 25% lower power than other available solutions. The device has an enable pin, allowing the chip to power down. In shutdown mode, the device draws a maximum current of 10uA. The LTC5583 is available in a 4mm x 4mm 24-pin QFN package. The LTC5583 is available from stock, priced starting at \$9.50 each in quantities of 1,000 pieces. For more information, visit www.linear.com/5583.


Photo Caption: 40MHz to 6GHz Dual RMS Detector Measures VSWR

Summary of Features: LTC5583

- | | |
|---|-------------------------|
| • Operating Frequency Range | 40MHz to 6GHz |
| • Difference Output for VSWR or Power-Gain Measurements | |
| • Channel-to-Channel Matching | <1.25dB |
| • Channel-to-Channel Isolation | >55dB |
| • Log-Linear Dynamic Range (Modulated Signals) | |
| ○ at 880MHz | 61dB |
| ○ at 2.14GHz | 60dB |
| ○ at 5.8GHz | 49dB |
| • Accurate RF Measurement Range | -58dBm to 2dBm |
| • Accuracy Over Temperature (-40°C to +85°C) | ± 1dB |
| • Flat Detector Response from 700MHz to 2.7GHz | |
| • Single-Ended RF Input (40MHz to 2.2GHz) | No External Transformer |

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