100MHz to 40GHz RMS Power Detector Offers 1dB Accuracy & 35dB Dynamic Range

MILPITAS, CA – September 28, 2016 – Linear Technology introduces the LTC5596, a high frequency, wideband and high dynamic range RMS power detector that provides accurate, true power measurement of RF and microwave signals independent of modulation and waveforms. The LTC5596 responds in an easy to use log-linear 29mV/dB scale to signal levels from –37dBm to –2dBm, at accuracy better than ±1dB error over the full operating temperature range and RF frequency range, from 200MHz to an unprecedented 30GHz. In addition, the device's response has ±1dB flatness within this frequency range. A wider frequency range can be used, from 100MHz to 40GHz, however with slightly reduced accuracy at the frequency extremes. Its RF input is internally 50Ω matched from 100MHz to 40GHz, making the device very easy to use at any band within its useful frequency range.

Modern 4G and 5G broadband communications systems employ high order, multi-tone OFDM modulation to attain higher desired data rates. Traditionally, microwave Schottky diodes are used as the detector element. They face serious shortcomings when rectifying the RF or microwave signals while measuring only the peak of the waveform, which grossly misrepresents the real power of the signal. In contrast, RMS detectors perform an analog root-mean-square computation of the waveform, then average the result to derive a true power representation of the input signal, regardless of its modulation, number of carriers and varying amplitudes. This capability to measure the true power is critical for equipment manufacturers to set the proper transmit power, ensuring the maximum transmission distance and thus improves TX range while remaining compliant with regulatory power limits.

The LTC5596's extraordinarily wide bandwidth allows the detector to work seamlessly across multiple frequency bands using a common design with minimum calibration. For example, the LTC5596 works equally well in a sub-10GHz backhaul microwave link as with a 28GHz version. A single design with no recalibration has the potential to provide significant cost savings to equipment manufacturers. Moreover, the LTC5596's wide frequency range and

improved sensitivity enables use in a wide variety of applications such as radar systems, avionics, wireless infrastructure base stations, satellite communications and test instrumentation.

The LTC5596 operates from a single 3.3V supply, drawing a nominal supply current of 30mA. The detector has built-in improved ESD protection. All pins are capable of withstanding up to 3,500V discharge, human body model. Two temperature grades are available. An I-grade is designed for operation from –40°C to 105°C case. For applications subject to extraordinarily high temperature operating environments such as in high power RF power amplifiers, a high temperature H-grade is offered with rated temperature from –40°C to 125°C case. The H-grade is 100% tested over temperature, and is guaranteed to have tight tolerance on its slope and intercept point, reducing part-to-part variations. Both temperature versions are available in a 2mm x 2mm plastic 8-lead DFN package.

The LTC5596 I-grade is priced starting at $12.50 each in 1,000-piece quantities, while the H-grade starts at $16.95 each. Both versions are now available in production quantities. For more information, visit www.linear.com/product/LTC5596.

Photo Caption: 100MHz to 40GHz Linear-in-dB RMS Power Detector with 35dB Dynamic Range

Summary of Features: LTC5596

- 50Ω Matched Operating Frequency Range — 100MHz to 40GHz
- Wide Detection Range (200MHz to 30GHz) — –37dBm to –2dBm
- Linear Dynamic Range (< +/-1dB Error) — 35dB
- ±1dB Flat Frequency Response — 200MHz to 30GHz
- Operating Temperature (Case)
  - I-Grade — –40°C to 105°C
  - H-Grade — –40°C to 125°C

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, μModule® subsystems, and wireless sensor network products. For more information, visit www.linear.com

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
a.timmins@ntlworld.com
Tel: +44-1-252-629937