



26.8dBm IIP3 Dual Broadband RF Mixer Draws 300mW/Channel for 4G MIMO Multi-Mode Receivers

MILPITAS, CA – June 8, 2011 – Linear Technology announces the [LTC5569](#), a dual high performance RF mixer that packs a combination of 26.8dBm IIP3 (Input Third Order Intercept), 300mW per mixer and wide operating frequency coverage to address high density footprints of multimode 4G RRH (Remote Radio Head) MIMO (Multiple-Input, Multiple-Output) receivers. This mixer operates over a wide 300MHz to 4GHz frequency range, so a single part can be configured to operate on any of the cellular bands from 700MHz to 2.7GHz. The LTC5569 dual mixer provides best-in-class power consumption while delivering outstanding IIP3 with a conversion gain of 2dB and a noise figure of 11.7dB. This enables excellent dynamic range performance for both MIMO and diversity broadband receiver applications. Moreover, the LTC5569 has robust inputs that can withstand strong in-band blocking interference signals without significantly degrading its noise figure, thus enhancing receiver sensitivity.

Each channel of the LTC5569 dual mixer contains an integrated balun transformer at the RF and LO inputs. These ports are single-ended 50Ohm matched, requiring minimal external components to save costs and reduce the solution footprint. Each channel's LO has separate buffers driven from a common input, providing excellent channel-to-channel isolation while preserving phase coherency between the two channels. The LO input port is also single-ended, always 50Ohm matched regardless of whether the mixer is turned on or powered down. So turning on and off the channels will not induce load disturbance, avoiding unlocking of a PLL (phase-locked loop) and VCO circuit. The LO input requires only 0dBm drive level and has excellent reverse RF isolation, so it can be driven directly from an external VCO circuit requiring no external buffer. All of these features ensure a compact solution with minimal external components and enhanced ease of use.

The LTC5569 dual mixer's low power and compact solution are optimized for the new generation of multiple receivers in 4G base stations. The device's 300mW per channel power

consumption eases the thermal design challenge in MIMO RRH (Remote Radio Head) designs, packing as many as 8 or 16 channels of receivers in small, weather-sealed housings. The dual mixer requires minimum external components, providing a highly compact solution footprint with its 4mm x 4mm QFN package. Furthermore, the LTC5569 is specified for case operating temperature from -40°C to 105°C to ensure reliability in harsh environments. To further enhance performance under these conditions, the dual mixer offers excellent conversion gain variation to ensure consistent receiver performance over temperature.

The LTC5569 operates from a single 3.3V supply, drawing a total supply current of 180mA when both channels are on. Each mixer can be independently shut down with a separate enable control. When disabled, the IC has a maximum of 200µA leakage current. The LTC5569 is priced starting at \$8.50 each in 1,000-pieces quantities. Samples and production quantities are available immediately. For more information, visit www.linear.com/product/LTC5569


Photo Caption: High Performance, Low Power Broadband Dual RF Mixer

Summary of Features: LTC5569

Operating Frequency	300MHz – 4GHz
Input IP3	26.8dBm
Output IP3	28.8dBm
Conversion Gain	2dB
Noise Figure (NF)	11.7dB
NF with 5dBm Blocking	17dB
Power Consumption	600mW

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 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, and μ Module[®] subsystems.

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