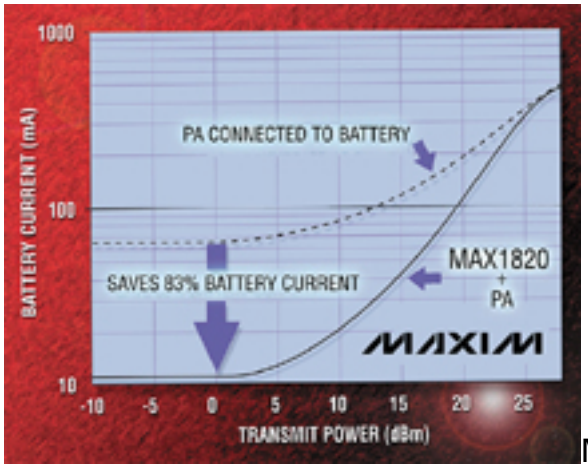
WCDMA Power Amp Supply



Maxim Integrated Products introduces the MAX1820, which is the first step-down DC-DC converter designed specifically for the fixed-gain linear power amplifiers (PAs) used in 2.5G and 3G WCDMA cellular phones. The high-speed MAX1820 can vary its output voltage from 0.4 V to 3.4 V in less than 30 &#956s, adjusting the power applied to the PA so that it tracks the power being transmitted by the PA. This tracking of the transmit power envelope cuts battery current draw by up to 83% and is dynamically controlled from the phone's baseband processor. The MAX1820 is the only supply with a DAC input for direct communication from the baseband processor.

At light loads (0 dBm), the MAX1820 draws only 11mA from the battery versus 62 mA for a PA connected directly to the battery. The MAX1820 can deliver up to 600 mA and has an input range of 2.6 V to 5.5 V for use with a single lithium-ion battery. It is a pulse-width modulated (PWM) converter with a high 1MHz switching frequency and is equipped with a divide-by-13 or 18 phase-lock-loop (PLL) to synchronize to a 2.5G or 3G system clock. It does not add spurious noise into the RF band during actual tests with a WCDMA PA.

The MAX1820 is capable of 100% duty cycle, and dropout is only 150 mV at 600 mA load to give longer useful operating life to the battery. Quiescent supply current is only 200 &#956A and drops to 0.1 &#956A in logic-controlled shutdown.

The MAX1820XEUB (with divide-by-13 PLL), MAX1820YEUB (with divide-by-18 PLL), and MAX1820ZEUB (no sync) come in a 1.11 mm-high 10-pin &#956MAX package and are screened for the extended-industrial temperature range (-40 degrees Celsius to +85 degrees Celsius).

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