

## ***Regulator's Low Quiescent Current Extends Battery Life For IoT Devices***

[Texas Instruments'](#) TPS62840 synchronous stepdown converter is an ultra-low-power switching regulator. According to the company, it has the industry's lowest operating quiescent current ( $I_Q$ ) at 60 nA, which is said to be one-third that of the nearest competitive device. It delivers a high light-load efficiency of 80% at 1- $\mu$ A load, which can enable designers to extend the battery life of their systems, or use fewer or smaller batteries to shrink their overall power supply solution size and reduce cost. Additionally, the new buck converter's wide input voltage range of 1.8 V to 6.5 V supports a variety of battery chemistries and configurations.

These features plus its selectable functions enable the TPS62840 to help engineers solve critical design challenges in many battery-powered, always-on industrial and personal electronics applications—including narrow-band Internet of Things (IoT), grid infrastructure equipment and wearables—that require more flexibility, an extended wireless range, improved accuracy and reduced electromagnetic interference (EMI).

The TPS62840's selectable mode and stop functions improve noise performance and reduce signal distortion. These benefits can help lower the solution cost because designers can achieve system requirements without using more expensive precision signal-chain components, sensors or radio solutions to perform the same functions.

The mode pin allows for continuous-conduction mode, also called forced pulse-width modulation mode, to improve ripple or noise performance and lessen the impact on transmissions in sensitive radio-frequency applications. The stop pin turns off all switching to reduce EMI or ripple, and minimizes distortions passed to precision signal-chain, measurement, sensors or wireless connectivity components.

Engineers can use the new switching regulator to cut their battery count in half or use smaller batteries in their design. For example, designers can save up to 16,980 mm<sup>3</sup> using four AAAs instead of four AAs. The TPS62840's wide input range accommodates multiple battery chemistries and configurations, such as two lithium manganese dioxide (2s-LiMnO<sub>2</sub>) cells in series, single-cell lithium thionyl chloride (1xLiSOCL<sub>2</sub>), four-cell and two-cell alkaline, and lithium polymer (Li-Po).

Pre-production samples of the TPS62840 are now available through the TI store in the following packages: 8-pin small outline no-lead (SON), measuring 1.5 mm by 2.0 mm; and 6-pin wafer chip scale package (WCSP), measuring 0.97 mm by 1.47 mm. An 8-pin thermally enhanced package (HVSSOP), measuring 3 mm by 5 mm, will become available later this year.

Pricing starts at \$0.85 each in 1,000-unit quantities. The TPS62840-1DLCEVM55 and TPS62840-1YBGEVM56 evaluation modules are available for \$49 each. For more information, see [www.ti.com/TPS62840-pr](http://www.ti.com/TPS62840-pr).