

Buck-Boost Converter Extends Battery Life For IoT, Wearable, And Portable Devices

[ROHM's](#) BD83070GWL, a synchronous buck-boost converter with integrated MOSFET, combines unmatched efficiency with best-in-class current consumption, according to the vendor. These characteristics make the converter well suited for IoT, wearables, and portable devices. The converter is offered in a 1.2-mm x 1.6-mm WLCSP package (Fig. 1).

The built-in low- $R_{DS(ON)}$ MOSFET and low control current circuitry achieve a power conversion efficiency of 97% during operation (at 200-mA load current) along with a 2.8- μ A quiescent current consumption. This low I_Q contributes to longer operating time in compact battery-driven devices and according to Rohm, prolongs battery life by as much as 1.53 times when compared to other conventional products during standby (100- μ A load current) (Fig. 2).

The BD83070GWL generates 3.3-V or 2.5-V output while operating from a single-cell Li-ion battery or other input between 2.0 V and 5.5 V. It has the capability to support up to 1 A of output over an input voltage range of 2.7 V to 5.5 V. In addition, it seamlessly changes between buck and boost operations depending on the input voltage.

The buck-boost converter is based on pulse width modulation (PWM) and provides high efficiency for heavy load. While in PWM operation, internal FETs typically switch at a fixed frequency of 1.5 MHz. It automatically changes to hysteresis pulse frequency modulation (PFM) to suppress switching loss and current consumption during light loads. Battery drain falls to just 2.8 μ A typical at no load current.

For noise-sensitive applications, it is possible to disable the auto-PFM/PWM mode using the MODE pin. This step suppresses output ripple and maintains fixed-frequency switching.

Samples of the BD83070GWL are available now with OEM quantities expected in October. An evaluation board integrating this converter is also available. For more information, see the BD83070GWL product [page](#).

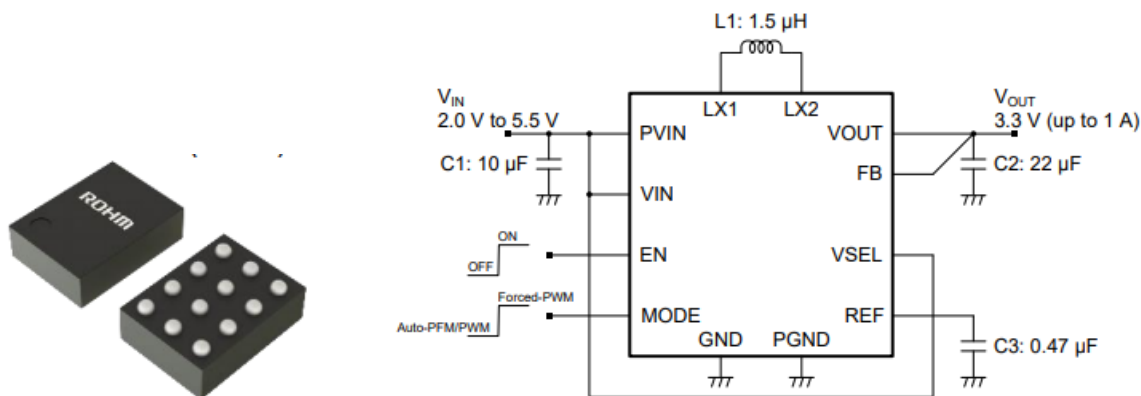


Fig. 1. A synchronous buck-boost converter with integrated MOSFET, the BD83070GWL comes in a 1.2-mm x 1.6-mm WLCSP package suited for use in the targeted space-constrained applications.

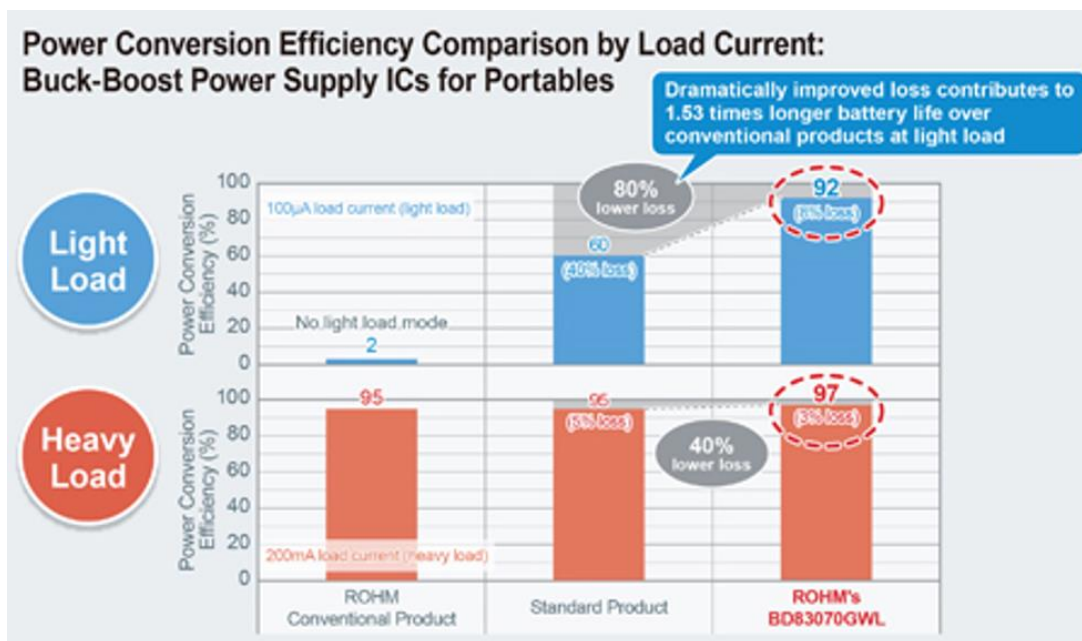


Fig. 2. The BD83070GWL is said to offer lower current consumption at light loads (100 µA) versus competing devices, while also achieving higher efficiency at heavy loads (200 mA).