

# TI Intros Smallest, Single-Chip Battery Charger and DC/DC for Bluetooth Headsets

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Texas Instruments Incorporated (TI) announced today a highly integrated charge and power management device that combines a single-cell Li-Ion USB/AC charger with a high efficiency, synchronous DC/DC power converter. The simple-to-design integrated circuit (IC) supports a wide range of space-limited portable applications, such as Bluetooth™ headsets and accessories.

TI's new bq25010 device gives portable designers the ability to charge a battery either from the AC adapter or USB with autonomous power source selection. The IC integrates a power FET and current sensor to deliver up to 500-mA, while the USB charge control limits the USB current to 100-mA or 500-mA.

The bq25010 also incorporates a 100-mA step-down DC/DC converter for high power efficiency. Under nominal load current, operating at a fixed switching frequency of 1 MHz, the device achieves up to 95 percent conversion efficiency. At lighter load currents, it enters a "power save mode" with reduced switching frequency and a minimum quiescent current to maintain high efficiency. The converter also operates directly from the battery and regulates the output voltage, even when the input supply is removed.

In addition to the integrated battery charger, Bluetooth headset designers can take advantage of longer talk time using TI's 50-mW stereo headphone driver, TPA6100A2. The amplifier supports an input voltage range of 1.6 V to 3.6 V, offering a low supply current of 0.75 mA and

shutdown current of only 50 nA. The TPA6100A2 amplifier also provides excellent audio quality by achieving total harmonic distortion plus noise as low as 0.04 percent at 1 kHz.

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