

Battery Management Solutions for Wearable and Fitness Devices

Innovative, Space-Saving, Chargers, Gauges and Harvesters



Overview

Multi-function wearable devices help people track and manage fitness, health, and medical functions. As these devices become smaller and more comfortable for the user, the demand for additional features and longer run time presents new challenges for designers. Whether powered from conventional or renewable sources, tiny and efficient low-power chargers from Texas Instruments enable peak performance for a wide range of wearable electronic devices.

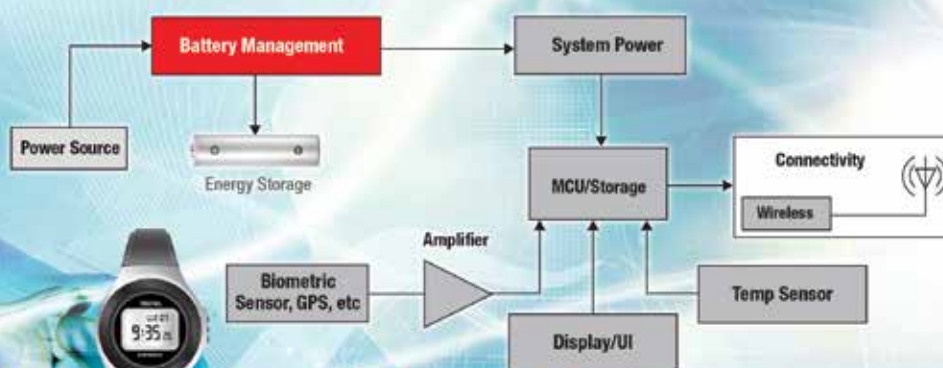
Broadest Portfolio of Wireless Charging ICs, Nano-Power Harvesting ICs, Traditional Chargers, and Gauges

- Smallest footprint, space-saving solutions for tight form factors
- Very high-efficiencies allow lower heat dissipation and longer battery run times
- Most accurate gauging for extended run time
- Reference design and evaluation boards available for rapid prototyping

Application Examples

- Sensor integration
- Smart watches, bio-metric monitors
- ID tags
- Augmented reality, fashion design

Wearable System Diagram



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Featured Chargers, Gauges, and Evaluation Modules

Product	Description	EVM
bq25570	Ultra-low power boost charger with integrated DC/DC conversion	bq25570EVM-206
bq25505/04	Ultra-low power boost converter with battery management and autonomous power path multi-plexing	bq25505EVM-218, bq25504EVM
TPS62736/37	Ultra-low Iq nano-buck regulators with 50/100 mA load capability	TPS62736EVM-205, TPS62737EVM-560
bq25100/A	Smallest 250 mA single-cell Li-Ion charger with 75 nA low IQ, 1 mA termination for ultra-low-power designs	bq25100EVM-654
bq24040/45	1A, 4.2/4.35V single-cell Li-Ion and Li-Pol linear chargers with Auto Start	bq24040EVM, bq24045EVM
bq24090/95	1A, 4.2/4.35V single-cell Li-Ion linear chargers with temperature monitoring	bq24090EVM, bq24095EVM-005
bq24232	USB-friendly 0.5A Li-Ion charger with Power Path management	bq24232EVM
bq27421	System-side Impedance Track™ fuel gauge with integrated sense resistor	bq27421EVM-G1A, bq27421EVM-G1B
bq27621	System-side fuel gauge with Dynamic Voltage Correlation	bq27621EVM-G1
bq51003	WPC 1.1 integrated wireless power supply receiver optimized for 2.5W applications	bq51003EVM-764
bq51013B	WPC 1.1 integrated wireless power receiver with 5V regulated output	bq51013BEVM-764
bq51050B/51B	WPC 1.1 integrated wireless power receiver and 4.2V / 4.35V Li-Ion charger receivers	bq51050BEVM-764
bq500212A	WPC 1.1-compliant 5V wireless power transmitter manager with lowest total device count	bq500212EVM-550

bq24040/45

Single-cell Li-Ion linear battery chargers

Key Features

- 1% charge voltage accuracy, 10% charge current accuracy
- USB port or AC adapter operation
- 30V input rating with 6.6V or 7.1V input overvoltage protection supports low-cost, unregulated adapters
- Automatic Termination and Timer Disable Mode (TTDM) for absent battery pack with thermistor



bq24232

Integrated Li-Ion linear charger and power-path management IC

Key Features

- Fully-compliant USB charger, selectable 100 mA or 500 mA Max V_{IN}
- 28V input rating with over-voltage protection
- Integrated Dynamic Power Path Management (DPPM) powers system and charges battery
- Supports up to 500 mA charge current with current monitoring output (ISET)



bq51003

Advanced, integrated receiver for wireless power transfer

Key Features

- High efficiency DC/DC boost converter/charger with built-in buck regulation
- MPPT with cold start feature
- Flexible energy storage options
- Battery charging and protection



bq25100 series

Single input, single-cell Li-Ion and Li-Pol linear chargers

Key Features

- Ultra-small WCSP package, 0.9 mm x 1.6 mm
- 1 mA minimum programmable termination current
- 75 nA maximum battery leakage current
- 30V input rating with 6.5V over-voltage protection



bq25504/05

Ultra-low power boost converters with battery management for charging and protection

Key Features

- High-efficiency DC/DC boost converters/chargers
- Programmable dynamic Maximum Power Point Tracking (MPPT) with cold start feature
- Flexible energy storage options



bq27421/621

Low-power, high accuracy single-cell Li-Ion fuel gauges

Key Features

- 5% accuracy, longer run-time, less charging needed
- Low power consumption, suitable for small batteries
- Small form factor, no external sense resistor required



For more information, visit ti.com/battery

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