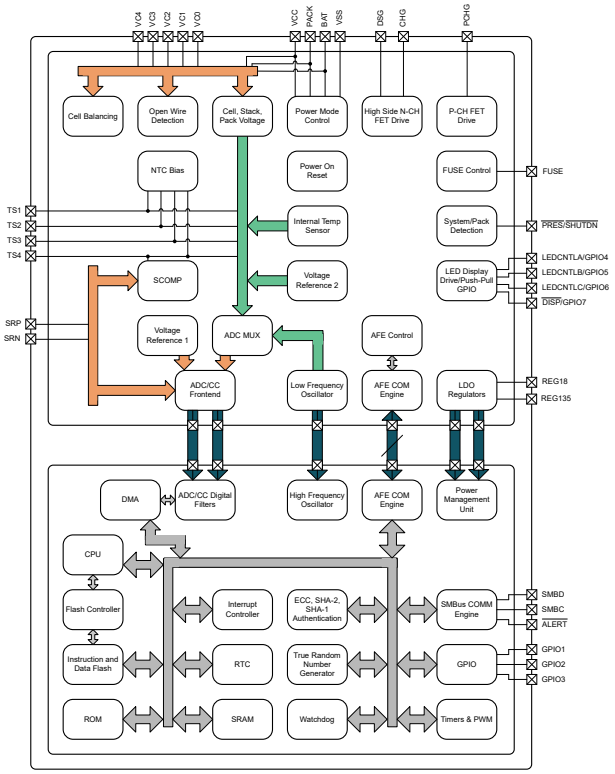
Product Overview

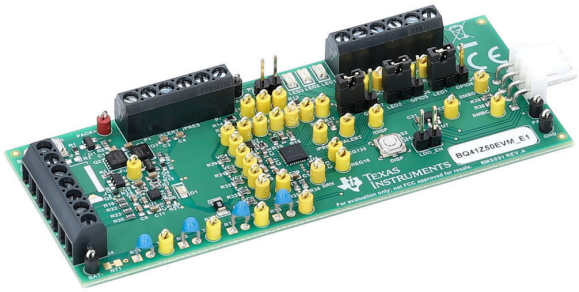
How to Gauge Batteries with Dynamic Loads with BQ41Z50 Battery Gauge

Description

In our modern world, many of the products we use every day are battery powered. The end user must know how much capacity is remaining to complete their task without being interrupted by a dead battery. Texas Instruments battery gauges provide the most accurate remaining capacity, state of charge and state of health indicators for all of your battery powered applications. Our newest battery gauge, BQ41Z50 with Dynamic Z-Track™ technology is designed specifically for applications with dynamic or unpredictable loads such as a laptop or smartphone running facial recognition to unlock, a drone accelerating, or medical patient monitor taking a blood pressure measurement. BQ41Z50 supports battery packs with 2 to 4 cells in series and provides monitoring, protection and authentication for a full battery pack management design.



BQ41Z50 Block Diagram



BQ41Z50 Evaluation Module

Features

- Fully integrated 2-series, 3-series, and 4-series cell Li-ion, LiPO, or LiFePO4 battery pack manager and protection
- Ultra-low power 32-bit RISC processor
- Texas Instruments Dynamic Z-Track algorithm
- Up to 40V tolerant power supply pins
- High side N-CH protection FET drive
- Precision analog front-end with two independent 16-bit ADCs:
  - Support for simultaneous current and voltage sampling
  - Support for up to four external thermistor measurements and an internal temperature sensor
- Primary and secondary levels of protection
  - Overvoltage and undervoltage
  - Overcurrent in charge and discharge
  - Short circuit in discharge
  - Overtemperature
  - Charge timeout
  - CHG and DSG FET drivers
- Sophisticated charge algorithms
  - JEITA
  - Adaptive charging based on cycle time, run time, and SOH
  - Cell balancing
- Integrated cell balancing while charging or at rest
- Supports TURBO mode
- Diagnostic lifetime data monitor and black box recorder
- Optional up to three LED displays support
- Supports SHA-1, SHA-2, and Elliptic Curve Cryptography (ECC) authentication
- Up to 1MHz SMBus v3.2 host communication support
- Compact package: 32-lead WQFN (RSN)

Applications

- Notebooks/netbook PCs
- Tablets
- Drones
- Handheld vacuum cleaners and vacuum robots
- Medical and test equipment
- Portable Electronics

Learn More

- BQ41Z50 Data sheet
- BQ41Z50 Technical Reference Manual
- Production Calibration Guide

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265