8-Channel Multicell Battery Monitor

Data Sheet

ADBMS6817

FEATURES

Measures up to 8 battery cells in series
Maximum lifetime total measurement error: 1.5 mV
Stackable architecture for high voltage battery packs
Built-in isoSPI interface
    2 Mb isolated serial communications
    Uses a single twisted pair, up to 20 meters
    Low EMI susceptibility and emissions
    Bidirectional for broken wire protection
    Capacitor or transformer coupled
Hot plug tolerant without external protection
ADBMS6817WFS models are developed for use in ISO 26262
    applications for Automotive Safety Integrity Level
    Capability D (ASIL D)
Diagnostics for IC and application circuit failure modes
304 µs to measure all cells in a system
16-bit ADC with programmable noise filter
Passive cell balancing up to 300 mA per channel with
    programmable PWM
7 GPIO or analog inputs
    Temperature or other sensor inputs
    Configurable as an I²C or SPI master
Sleep state supply current: 5.5 µA
48-lead LQFP package with exposed pad
AEC-Q100 qualified for automotive applications

APPLICATIONS

Electric and hybrid electric vehicles
Backup battery systems
Grid energy storage
Large portable power banks

TYPICAL APPLICATION CIRCUIT

Figure 1.

GENERAL DESCRIPTION

The ADBMS6817 is a multicell battery stack monitor that measures up to 8 series connected battery cells with a lifetime total measurement error (TME) of less than 1.5 mV. The cell measurement range of 0 V to 5 V makes the ADBMS6817 suitable for most battery chemistries. All 8 cells can be measured in 304 µs, and lower data acquisition rates can be selected for high noise reduction.

Multiple ADBMS6817 devices can be connected in series, permitting simultaneous cell monitoring of long, high voltage battery strings. Each ADBMS6817 has an isoSPI™ interface for high speed, RF immune, long distance communications. Multiple devices are connected in a daisy chain with one host
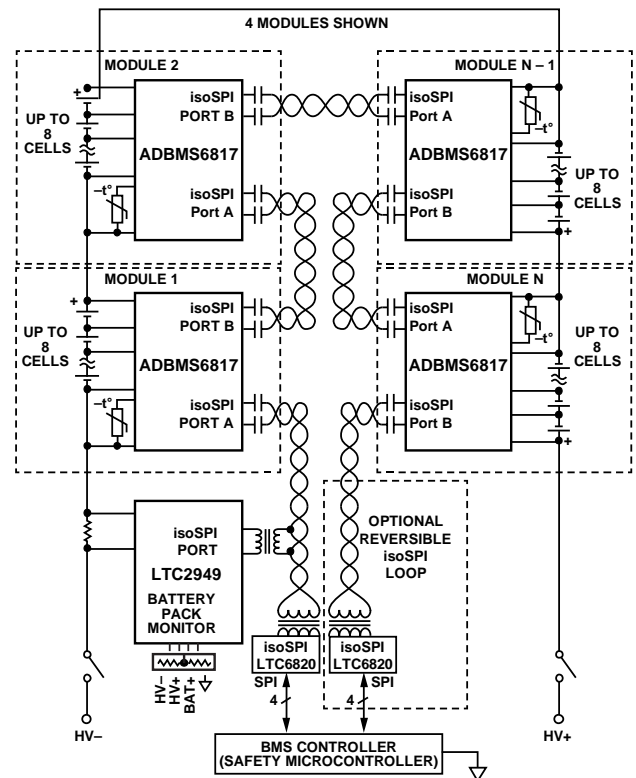
processor connection for all devices. This daisy chain can be operated bidirectionally, ensuring communication integrity even in the event of a fault along the communication path.

The ADBMS6817 can be powered directly from the battery stack or from an isolated supply. The ADBMS6817 includes passive balancing for each cell, with individual pulse-width modulation (PWM) duty cycle control for each cell. Other features include an on-board 5 V regulator, seven general-purpose input/output (GPIO) lines, and a sleep state, where current consumption is reduced to 5.5 µA.

The ADBMS6817WFS models are developed for use in ISO 26262 applications for Automotive Safety Integrity Level Capability D (ASIL D).

For more information on the ADBMS6817, visit the ADBMS6817 product page

NOTES

I²C refers to a communications protocol originally developed by Philips Semiconductors (now NXP Semiconductors).

ANALOG DEVICES

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