

18-Channel or 16-Channel Multicell Battery Monitors
FEATURES

- ▶ Measures up to 18 (ADBMS6832) or 16 (ADBMS6833) battery cells in series
- ▶ Maximum lifetime TME: ± 1.8 mV at 3.3 V per cell (-40°C to $+125^{\circ}\text{C}$)
- ▶ Simultaneous and continuous measurement of cell voltages
- ▶ Configurable integrated low-pass filtering
- ▶ Stackable architecture for high-voltage battery packs
- ▶ Built-in isoSPI
 - ▶ 2 Mbps isolated serial communications
 - ▶ Uses a single twisted pair, up to 20 meters per segment
 - ▶ Low EMI susceptibility and emissions
 - ▶ Bidirectional for broken wire protection
 - ▶ Capacitor or transformer coupled
- ▶ Hot-plug tolerant without external protection
- ▶ Passive cell balancing up to 300 mA per channel with programmable PWM
- ▶ 12 general-purpose analog inputs or 10 digital I/O
 - ▶ Temperature or other sensor inputs
 - ▶ Configurable as an $i^2\text{C}$ or SPI controller
- ▶ Cell and temperature monitoring in key-off state
- ▶ 4 μA sleep mode supply current
- ▶ Provisions for bus bars
- ▶ AEC-Q100 qualified for automotive applications

APPLICATIONS

- ▶ Electric and hybrid electric vehicles
- ▶ Backup battery systems
- ▶ Grid energy storage

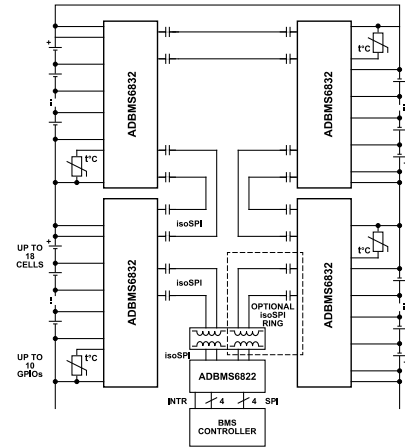
TYPICAL APPLICATION CIRCUIT


Figure 1. Typical Application Circuit

GENERAL DESCRIPTION

The ADBMS6832/ADBMS6833 are multicell battery stack monitors that measure series-connected battery cells with a lifetime total measurement error (TME) of less than 2 mV over the full temperature range. ADBMS6832 can measure up to 18 and ADBMS6833 up to 16 series connected cells. The measurement input range of -2 V to $+5.5$ V makes the ADBMS6832/ADBMS6833 suitable for most battery chemistries and allows the measurement of voltages across bus bars. Provisions are made for bypassing bus bars without dedicating any measurement channels.

All cells can be measured simultaneously and redundantly with two individual analog-to-digital converters (ADCs), which operate with a high sampling rate of 4.096 MHz, allowing reduced external analog filtering and aliasing-free measurement results. Higher noise reduction can be achieved by subsequent programmable infinite impulse response (IIR) filters. Multiple ADBMS6832/ADBMS6833s can be connected in series, permitting simultaneous cell monitoring of long, high-voltage battery strings. Each ADBMS6832/ADBMS6833 has an isolated serial port interface (isoSPI™) for high-speed, RF-immune, long-distance communication. Multiple devices are connected in a daisy chain with one host processor connection, which can be operated bidirectionally, ensuring communication integrity even in the event of a fault along the communication path.

The ADBMS6832/ADBMS6833 can be powered from the battery stack or an isolated supply. They include passive balancing with individual pulse-width modulation (PWM) duty cycle control and up to 300 mA discharge current for each cell. Other features include an on-board 5 V regulator, up to 10 GPIOs, and a sleep mode, where current consumption is reduced to 4 μA .

For more information on the ADBMS6832/ADBMS6833, contact BMS_Doc_Request@analog.com.

Rev. SpB

DOCUMENT FEEDBACK
TECHNICAL SUPPORT

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