Multicell Battery Monitors

Data Sheet

ADBMS6834/36/37/34A/36A/37A

FEATURES

- **Simultaneous and continuous measurement of cell voltages**
  - **24 channel (ADBMS6834/34A)**
  - **18 channel (ADBMS6836/36A)**
  - **16 channel (ADBMS6837/37A)**
- **Passive cell balancing with programmable pulse-width modulation control per channel**
- **Configurable digital low-pass filters per channel**
- **Bidirectional isoSPI interface**
  - **2 Mbps isolated serial communication**
  - **Uses a single twisted pair cable**
  - **Low EMI susceptibility and emissions**
  - **Capacitive or transformer-coupled**
- **Integrated step-down DC/DC regulator with internal low-resistance power MOSFET**
- **Low-power cell monitoring mode**
- **Bus bar bypass and measurement support**
- **14 pins configurable as analog input or digital I/O**
  - **Configurable as an I²C or SPI port**
- **2 additional pins dedicated as analog inputs**
- **Maximum lifetime TME < 3 mV (over full temperature and voltage range)**
- **Sleep-state supply current of 7 µA**
- **Measure-state power reduction of up to 1W**
- **72/88-lead side-solderable package with exposed pad**
- **AEC-Q100 Qualified**
- **ISO 26262 life cycle, automotive safety integrity level capability (ASIL D)**

APPLICATIONS

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

GENERAL DESCRIPTION

The ADBMS6834/36/37/34A/36A/37A (ADBMS Cell Monitor) is a family of multicell battery monitors that measure 16, 18, or 24 series-connected battery cells (Table 1).

All cell voltages are measured simultaneously using a set of analog-to-digital converters (ADCs), one for each cell. Each channel includes a programmable digital low-pass filter. A second set of similar ADCs provides closely correlated measurements to ensure redundant measurement capability required to meet safety standards. The ADBMS Cell Monitor allows bus bars to be bypassed using dedicated pins. Negative bus bar voltage can be measured using a dedicated channel.

The device has a bidirectional isolated serial-port interface (isoSPI) for high-speed, RF-immune communication over simple twisted pair cables. Using the isoSPI interface, multiple ADBMS Cell Monitors may be connected in a daisy-chain configuration to a BMS Controller enabling simultaneous monitoring of long, high-voltage strings of battery cells. Using the bidirectional feature, the daisy-chain may also be configured to provide communication redundancy to protect against a cable break along the chain.

The device supports internal and external passive cell balancing with individually programmable pulse-width modulation (PWM) control. The ADBMS Cell Monitor is powered directly from the battery to be measured, by either the step-down DC/DC or linear regulator. Using the integrated DC/DC regulator significantly reduces the power consumption by up to 1W while in the MEASURE state. When in SLEEP state, the device draws 7 µA, which minimizes the discharge of the battery stack. The lifetime total measurement error (TME) of the device is less than 3 mV over the full-operating temperature and voltage range.

Table 1. Derivative Overview

Feature	ADBMS6834/34A	ADBMS6836/36A	ADBMS6837/37A
isoSPI Ports	0/1/2 MODE Pin Configurable		
SPI Ports	0/1 MODE Pin Configurable		
Voltage Channels	24	18	16
GPIOs	14		
GPAs	2		
Pins	88 (84 used pins + 1 exposed pad)	72 (70 used pins + 1 exposed pad)	
Pitch	0.4 mm	0.5 mm	
Package	LFCSP-SS 10 mm x 10 mm		

Rev. SpD
Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

One Analog Way, Wilmington, MA 01887-2356, U.S.A.
Tel: 781.935.5565
©2026 Analog Devices, Inc. All rights reserved.
Technical Support **www.analog.com**

NOTES

©2026 Analog Devices, Inc. All rights reserved. Trademarks and registered trademarks are the property of their respective owners.
FSD03723-6/2026(SpD)