

### FEATURES

- ▶ Battery Pack Current Measurement
  - ▶ Buffered Analog Inputs
  - ▶ Continuous Operation Option
  - ▶ Lossless Measurement for Coulomb Counting
  - ▶ 1 ms Update Rate
  - ▶ 0.1% Total Measurement Error
  - ▶  $\pm 1\mu\text{V}$  Maximum Offset
  - ▶ Redundant Implementation
- ▶ Battery Pack Voltage Measurement
  - ▶ Buffered Analog Inputs
  - ▶ Synchronous with Current Measurement
  - ▶ Differential and Single-ended Mode
  - ▶ Redundant Implementation
- ▶ 10 Additional Voltage Measurement Channels
  - ▶ Buffered Analog Inputs
  - ▶ On-demand Operation
  - ▶ Differential and Single-ended Mode
  - ▶ Redundant Implementation
- ▶ Overcurrent Detection
  - ▶ Triple Redundancy with Majority Voting
  - ▶ PWM Output Options
- ▶ Built-in isoSPI™ Interface
  - ▶ 2 Mbps Isolated Serial Communications
  - ▶ Capacitor or Transformer Coupled
  - ▶ Daisy-chaining Option
  - ▶ 4-wire SPI Option
- ▶ General-purpose Digital IO
  - ▶ 6 General-purpose Outputs (GPOs)
  - ▶ Dual Threshold Read-back of GPOs
  - ▶ 4 GPIOs Configurable as an I2C or SPI controller
- ▶ 48-Lead Side-Solderable QFN Package
- ▶ AEC-Q100 Qualified
- ▶ The ADBMS295xWFS models are developed for use in ISO 26262 applications for Automotive Safety Integrity Level Capability D (ASIL D)

### APPLICATIONS

- ▶ Electric and Hybrid Electric Vehicles
- ▶ Backup Battery Systems

- ▶ Grid Energy Storage

### GENERAL DESCRIPTION

ADBMS2950 and ADBMS2952 are Battery Pack Monitors for electrical and hybrid vehicles, and other current or voltage sense applications. ADBMS2950 and ADBMS2952 measure the current flowing in and out of a battery pack by sensing the voltage drop over a shunt resistor with a very low offset.

ADBMS2950 and ADBMS2952 also detect Overcurrent conditions using fast Overcurrent ADCs with digital threshold comparators and communicate their results through dedicated Overcurrent alert lines with minimum delay.

ADBMS2950 and ADBMS2952 feature a total of 12 internally buffered high impedance inputs for measuring voltages from external sensors or resistor dividers, enabling measurement of pack voltages, temperatures, HV-Link voltages, chassis isolation, and the supervision of the state of contactors and fuses.

Six digital outputs (GPO) supporting open-drain or push-pull can be used to control high voltage transistors to disconnect external resistor dividers. Four digital general-purpose inputs/outputs (GPIO) also allow operation as an I2C or SPI controller interface to address an external EEPROM or other serial peripherals.

The built-in serial interface of ADBMS2950 can be configured for SPI or isolated isoSPI communication to the host. An additional isoSPI port allows to connect a daisy chain of ADBMS2950 devices; optionally extended with ADBMS6830 or ADBMS6832 (ADBMS683x) Cell Monitors. The ADBMS2952 supports SPI communication only.

### TYPICAL APPLICATION CIRCUIT

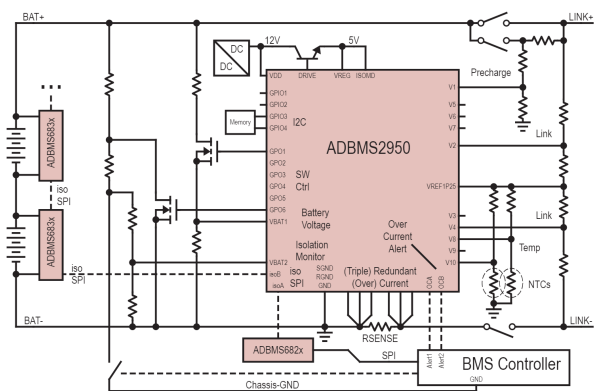


Figure 1. Typical ADBMS2950 Application

For more information about the ADBMS2950/ADBMS2952, contact [BMS\\_Doc\\_Request@analog.com](mailto:BMS_Doc_Request@analog.com).