



ROBUST BMS SOLUTION

Ensures Safe Operation of Li-Ion Battery Packs While Reducing System Cost

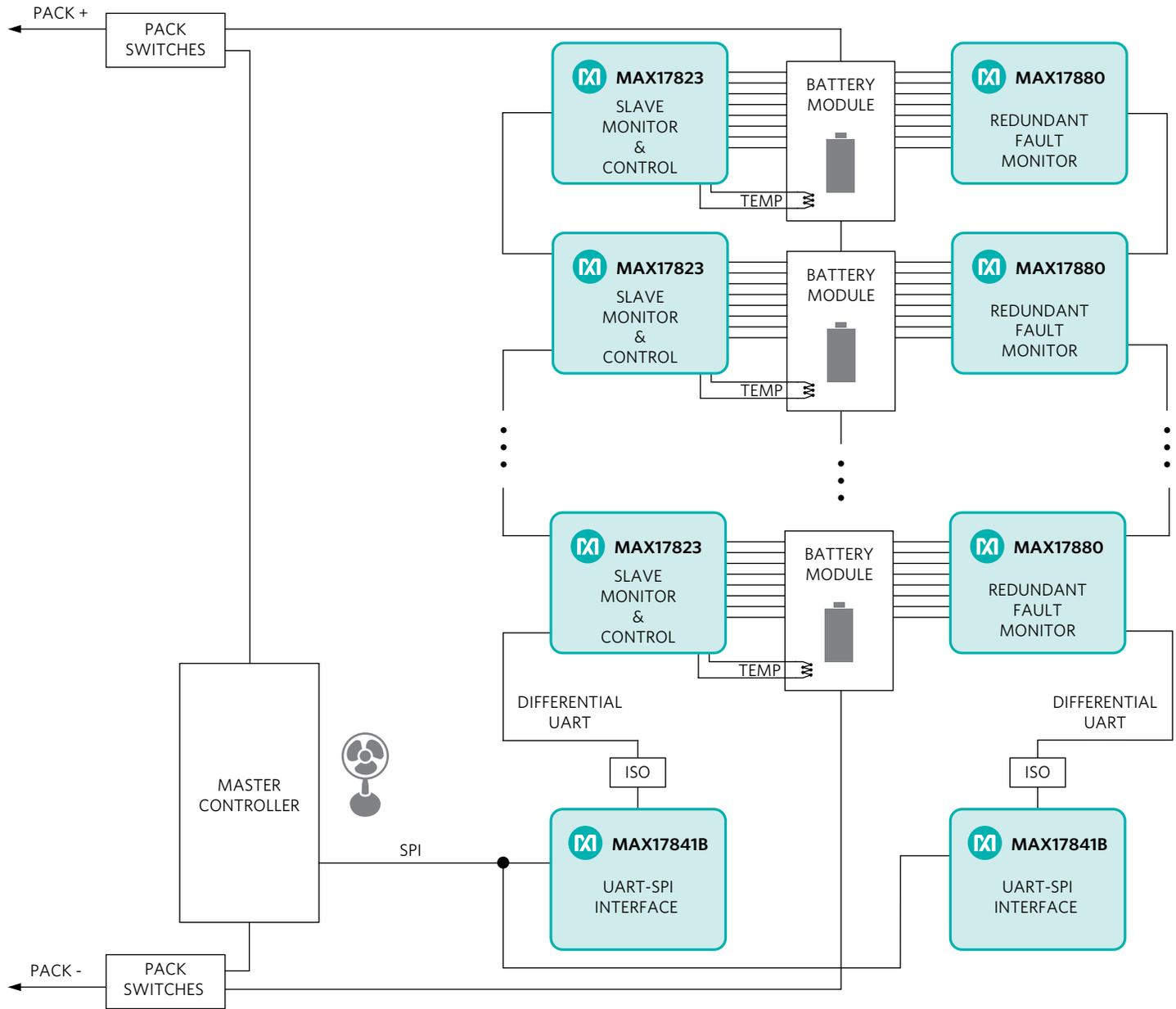
Our groundbreaking BMS architecture provides the most comprehensive safety and reliability available while greatly reducing system cost. It employs a low-power, capacitively coupled daisy chain to overcome the shortcomings of current-driven architectures.

At the heart of the system is Maxim's fourth-generation high-voltage battery-management IC (MAX17823). This daisy-chainable 12-cell device integrates a full suite of ISO-26262 diagnostic features to ensure ASIL D compliance. To minimize isolation requirements, our proprietary architecture utilizes a unidirectional, differential UART-to-SPI bridge (MAX17841B) to provide a robust interface between the cell monitoring ICs and the BMS microprocessor's SPI port. This approach only requires one pair of low-cost transformers at the bottom of the daisy chain to achieve galvanic isolation for the high-voltage electronics. In contrast, current-driven architectures require isolation transformers at each BMS monitoring IC, imposing a significant cost penalty.

Additionally, Maxim's proprietary daisy chain achieves the fastest speeds for cell-stack measurements and ASIL diagnostics. This gives you the most accurate synchronization to pack current measurements and, therefore, most accurate state-of-charge estimation. The result is higher battery service life, higher driving range per charge, and lower system cost.

Key Advantages

- | Safe | Cost Effective | Future Proof |
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| <ul style="list-style-type: none">• Proprietary differential UART daisy chain has best-in-class EMC/EMI robustness• Integrated self-diagnostics for ASIL D compliance• World-class measurement and diagnostic speed at 100 measurements per second | <ul style="list-style-type: none">• Capacitively coupled daisy chain only requires one pair of isolation transformers at bottom of daisy chain• Built-in diagnostics minimize part count and development costs | <ul style="list-style-type: none">• Superior noise immunity for future fast-charge techniques• High robustness for different battery chemistries• Supports cable lengths greater than 1m for optimal distribution of cells |



www.maximintegrated.com/MAX17823
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