



Robust, reliable
analog solutions

MC33771 and MC33664 Battery Cell Controller and Transformer Physical Layer

The MC33664 transformer physical layer and MC33771 battery cell controller solution enable reliable, safe low-cost Li-ion cell control applications with affordable, robust and high-speed isolated communication.

AUTOMOTIVE APPLICATIONS

- ▶ High-voltage battery management systems (> 800 V)
- ▶ 48 V battery management systems

INDUSTRIAL APPLICATIONS

- ▶ Energy storage systems (ESS)
- ▶ Uninterrupted power supply (UPS)
- ▶ E-bikes, E-scooters

These fully integrated battery monitoring devices are for automotive and industrial mission-critical applications. Battery topology flexibility is supported with compatibility including 48 V batteries with one analog front end (AFE).

High-speed and robust daisy chain provides a smart alternative to CAN solutions. Fast data acquisition and communication to the pack controller can be achieved in only 3.0 ms for the pack controller to acquire conversions from 96 cells. Also, determination of individual cell impedances in one shot is synchronized for cell voltages and current measurements within 114 μ s.

With functional verification and diagnostics, the MC33664 transformer physical layer and MC33771 battery cell controller support ISO 26262 SafeAssure® functional safety. Functional verification of cell measure, current measure, cell terminal openings or leakage and ADC precision checks are all performed.

FEATURES

- ▶ $9.6\text{ V} \leq \text{VPWR} \leq 61.6\text{ V}$ operation, 75 V transient
- ▶ Isolated 2 Mbps differential communication or 4 Mbps SPI
- ▶ 14 x differential cells voltage and stack voltage measurements
- ▶ High-precision current measurement ($\pm 1500\text{ A}$) with low resolution
- ▶ Coulomb counter
- ▶ Synchronized cell voltage/current measurement 100 μ s skew
- ▶ 7 x ADC/GPIO/temperature sensor inputs
- ▶ Addressable on initialization
- ▶ Onboard 300 mA passive cell balancing low ohmic MOSFETS with diagnostics
- ▶ Low-power modes
- ▶ 64-pin LQFP package
- ▶ Designed to support ISO 26262, up to ASIL D safety capability



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