L99BM2C

Data brief

Current, voltage, charge and isolation monitor for HV battery packs

Product status link
L99BM2C

Order code	Package	Packing
L99BM2C-TR	TQFP48	Tape and reel

Product label
SUSTAINABLE TECHNOLOGY

Features

- -40°C to +125°C operating temperature range
- HBM ESD classification level 2
- CDM ESD classification level C4B
- 2 independent current sense ADCs
  - 18-bit resolution
  - Input range = ±100 mV
  - Integrated programmable digital filtering with cut-off frequency from 3.5 kHz to 5 Hz for instantaneous current measurement
  - Fully redundant architecture with cross-check on every current sample
- Integrated Coulomb Counter
- Fully redundant short circuit detector with programmable threshold and ultra fast reaction time
- 2 programmable (level/PWM encoded) FAULT outputs
- 10 Gate pre-drivers also compatible with optocouplers
- 11 fully differential analog inputs
- 7 configurable GPIO
- SPI and I2C Controller peripherals to interface up to two external EEPROM, L99BM2P pyro driver, sensors
- SPI Target for direct MCU interface
- 3.3V (VTREF) and 5V (V5V) LDOs for external sensors supply and biasing
- Embedded NVM for configuration parameters storage and runtime configuration integrity check
- Ultra-fast vertical interface peripheral for isolated communication
- Compatible with 18S L99BM218 cell monitoring chip with a max de-synchronization time of 7 us at system level

Applications

- Energy storage systems
- UPS

Description

L99BM2C is a current, voltage, charge and isolation monitor for HV battery packs.

It is part of the L99BM2 chipset for battery management systems and can be inserted as an addressable element of the same isolated daisy chain (VIF).

1 Introduction

The L99BM2C is a highly integrated pack monitor.

It monitors instantaneous pack current by means of an external shunt resistor and provides current measurements synchronized with battery cells voltage when used in conjunction with L99BM218 cell monitoring chip. Current is also integrated over time to accumulate pack charge information.

L99BM2C also monitors pack current to detect overcurrent and short-circuit events.

Current measurement function and short-circuit detection are fully redundant and embed safety checks.

The IC also features 10 gate pre-drivers to drive external FETs and optocouplers.

They can be used in conjunction with 11 analog inputs to perform fully differential voltage measurements, monitoring several key voltages in the HV system.

Voltage ADC supports both absolute and ratiometric measurements to provide maximum flexibility and accuracy for temperature measurement via external NTCs.

L99BM2C integrates 5V and 3.3V LDOs available for biasing external sensors and supplying companion chips such as ST automotive EEPROMs. A SPI Master and an I2C Master allow interfacing the IC with external sensors and EEPROMs.

L99BM2C has been designed to enable easy and reliable interaction with the L99BM2P companion pyro-switch driver. The chipset has been designed to achieve ultra-fast detection and reaction to short-circuit failures.

Revision history

Table 1. **Document revision history**

Date	Version	Changes
01-Oct-2025	1	Initial release.

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