L99BM2T / L99BM2TS

Data brief

Industrial SPI to isolated SPI transceiver

Product status link
L99BM2T/L99BM2TS

Order code	Package	Packing
L99BM2T-TR	LQFP32 7x7 mm	Tape and reel
L99BM2TS-TR		Tape and reel

Product label


Features

- -40°C to +125°C operating temperature range
- HBM ESD classification level 2
- CDM ESD classification level C4B
- Automatic wake-up of BMS / BMU MCU and PMIC from SHUTDOWN / SLEEP mode in case of fault detected in the chain
- Single or dual channel p/n in the same package for ring connection
- Up to 59 devices in chain supported
- Cable lengths verified up to 10 meters
- 10 MHz 4-wire SPI interface
- 4 Mbps 2-wire vertical interface (VIF)
- Supports both transformer and capacitive isolation
- Compressed burst data read for enhanced communication speed over the whole chain
- Broadcast write command to configure and control all devices in the chain (or a subset)
- Very Low EMI Susceptibility and Emissions
- Compatible with 3.3V and 5V logics
- Supply voltage from 6 to 24V

Applications

- Energy storage systems
- UPS

Description

L99BM2T/L99BM2TS are bidirectional SPI transceivers that, in a BMS system, allow communication between isolated devices in different voltage domains through a twisted-pair connection.

The devices belong to the L99BM2 chipset family for high-voltage battery management systems monitoring and control.

1 Introduction

In a high-voltage battery management system, the controller MCU accesses the cell monitor and the pack current monitor devices for diagnostics and control purposes. Since the different BMS ICs are located in different voltage domains, isolated communication between them is required.

The L99BM2T/L99BM2TS allow isolated daisy-chain connection through a simple two-wire protocol in L99BM2x-based HV BMS applications. It converts data from a standard 4-wire SPI protocol to a 2-wire proprietary protocol (and vice versa), supporting signal isolation by capacitors or transformers.

All the devices in the daisy chain recognize the protocol and can be addressed in read-write mode by a single transceiver. Ring connection can be implemented by the dual channel device L99BM2T.

L99BM2T/L99BM2TS implement two physical communication interfaces:

- SPI target interface
  - This interface is used by the controller MCU to configure and send commands to L99BM2T/TS and, through it, to all the devices in the chain.
- Isolated vertical interface (VIF)
  - This interface is typically used to connect BMS daisy-chained devices L99BM218/C to L99BM2T/TS and to each other on the VIF bus.

The L99BM2T/TS manage periodic wakeup of the devices in the chain for diagnostic purposes, and are sensitive to fault tones from the devices in the chain when in low-power mode. They implement a set of commands to optimize the communication over the chain, such as broadcast commands to configure all devices in the chain (or a subset) and burst read, to enable high data rate transmission from all devices in the chain with negligible impact on the power consumption.

Revision history

Table 1. **Document revision history**

Date	Version	Changes
26-Sep-2025	1	Initial release.

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