



## Product brief

# Multi-MOSFET driver family – TLE92108

## 8x half-bridge drivers for automotive motor control applications

The TLE92108 is a family of multi-MOSFET driver ICs, designed to control up to eight half-bridges (up to 16 N-Channel MOSFETs) with one packaged device. Target applications involve automotive DC motor and solenoid control, such as power seat modules, power closure systems and many more.

A 24-bit Serial Parallel Interface (SPI) enables configuration of the TLE92108 and is used to control the half-bridges. The SPI offers a wide range of diagnostic features such as the monitoring of the supply voltage, the charge pump voltage, temperature warning and over-temperature shutdown. Further, each gate driver monitors its external MOSFET drain-source voltage for hard-short circuit conditions, while the devices can observe the current passing through the integrated op amps providing configurable soft-short circuit detection, in both cases providing active latching hardware protection independent of any software measures.

The device is housed in a VQFN-48 with exposed pad, which supports optical lead tip inspection while providing optimal thermal performance and minimizing the required PCB space.

Overall, the TLE92108 series is an easier, smaller & more cost efficient way for customers to drive multiple-half-bridges in DC motor control applications.

### Key benefits

- › **Enable cost and board space improvements** – the TLE92108 allows driving up to 8 half-bridges with one single driver IC, providing a very cost effective solution on a system level. Having only one driver device for several half-bridges enables further savings, such as less pick & place costs as well as less required PCB space compared to competing (discrete) solutions.
- › **Adaptive driver capability** – multi-stage slew rate control enables EMC tuning via SPI, including adjusting slew rate with independence from dead-time and turn on/off delays. The on-board measurement and self-adaption of external MOSFET switching times allows balancing of power dissipation vs. EMC performance, adjusts for MOSFET lot-to-lot variations, and makes the TLE92108 a perfect choice for many different applications.
- › **Motor brake mode** – TLE92108-232QX is pin and software compatible to TLE92108-231QX and offers in addition a unique protection feature in sleep mode. It can be configured as a permanent motor brake to avoid unintended movement of the motor. The motor brake can also be configured to be activated in case of supply over-voltage caused by motor working in generator mode to protect the system.

### Key features

- › Adaptive multi-stage MOSFET gate control
- › 2x flexible current sense amplifiers (high-side capable and bidirectional) with configurable gain
- › 24-bit serial peripheral interface
- › Integrated charge pump for reverse battery protection
- › Drain-source monitoring for hard short circuit detection
- › Current sense monitoring for soft short circuit detection
- › Overtemperature warning and shutdown
- › Timeout watchdog
- › Detailed off-state diagnostic (open load, short circuit to battery or to GND) via SPI
- › 3x PWM inputs (up to 25 kHz)
- › Best-in-class low current consumption in sleep mode
- › AEC Q-100 qualified

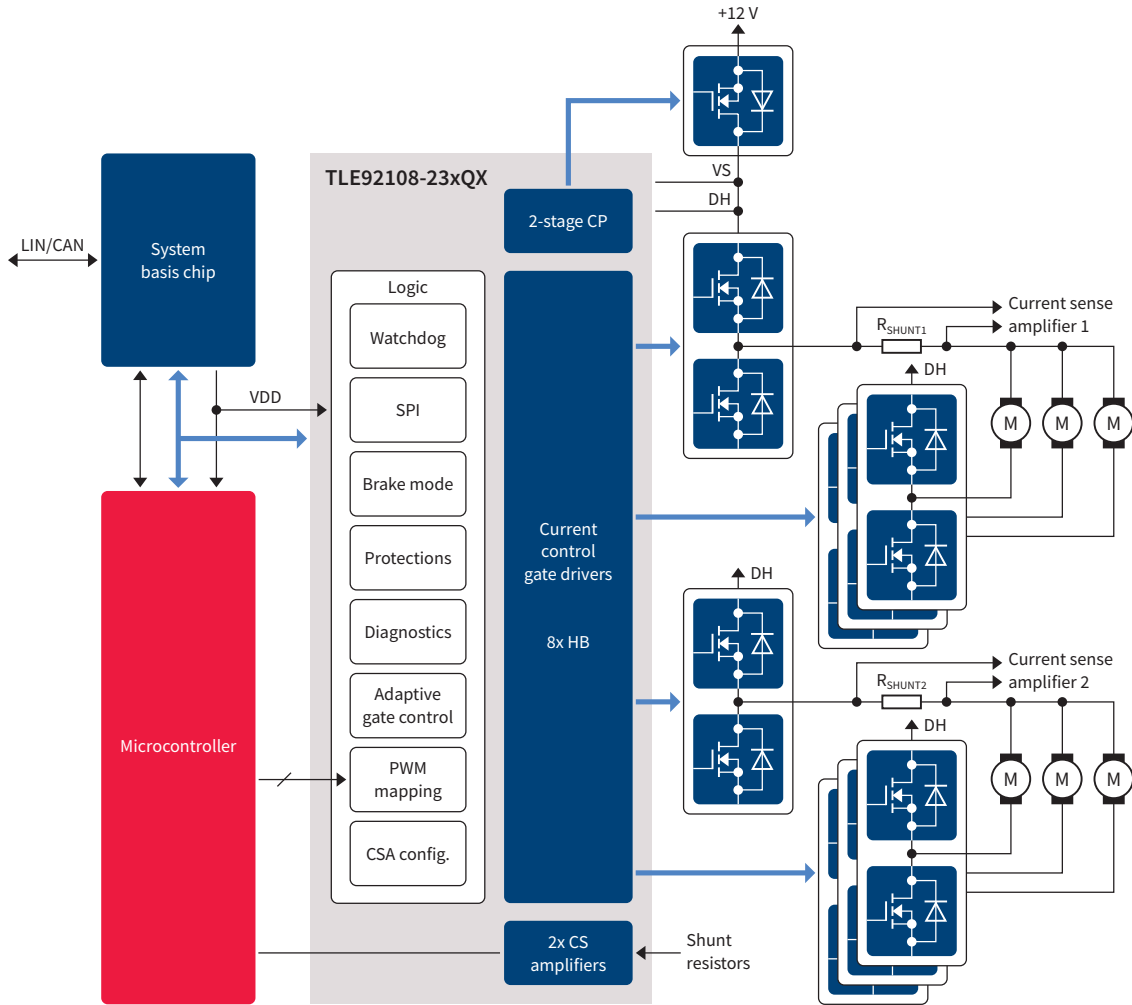
### Key applications

- Automotive DC motor control, e.g.:
- › Seat module and extended functions (steering column adjustment, gas pedal adjustment)
  - › Closure systems (e.g. trunk opener, sliding door, sun-roof)
  - › Central door lock
  - › Body control module (cargo cover, washer pump, window lift, wiper...)

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Application diagram for TLE92108-23xQX



### Product table

Product variant	# Current sense amplifier	# PWM inputs	Adaptive gate control	Motor brake mode	Package
TLE92108-231QX	2	3	✓	×	VQFN-48
TLE92108-232QX	2	3	✓	✓	VQFN-48

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