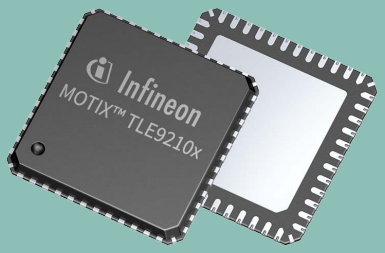

Product brief

MOTIX™ Driver
Multi MOSFET driver TLE9210x

The MOTIX™ TLE9210x 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 such as power seat modules, power closure systems and many more.

A 24-bit Serial Parallel Interface (SPI) enables configuration of the MOTIX™ TLE9210x 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 overtemperature 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 current sense amplifier 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 PG-VQFN-48 with exposed pad, which supports optical lead tip inspection while providing optimal thermal performance and minimizing the required PCB space.

Overall, the MOTIX™ TLE9210x 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 MOTIX™ TLE9210x allows driving up to 4 or even 8 half-bridges with one single driver IC, providing a very cost-effective solution on 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 MOTIX™ TLE9210x a perfect choice for many different applications.
- **Motor brake mode** – all variants are pin and software compatible. The MOTIX™ TLE9210x-232QX versions offer in addition a unique protection feature even 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 overvoltage caused by motor working in generator mode to protect the system.

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Key features

- Adaptive multi-stage MOSFET gate control
- Configurable brake mode feature
- Up to 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

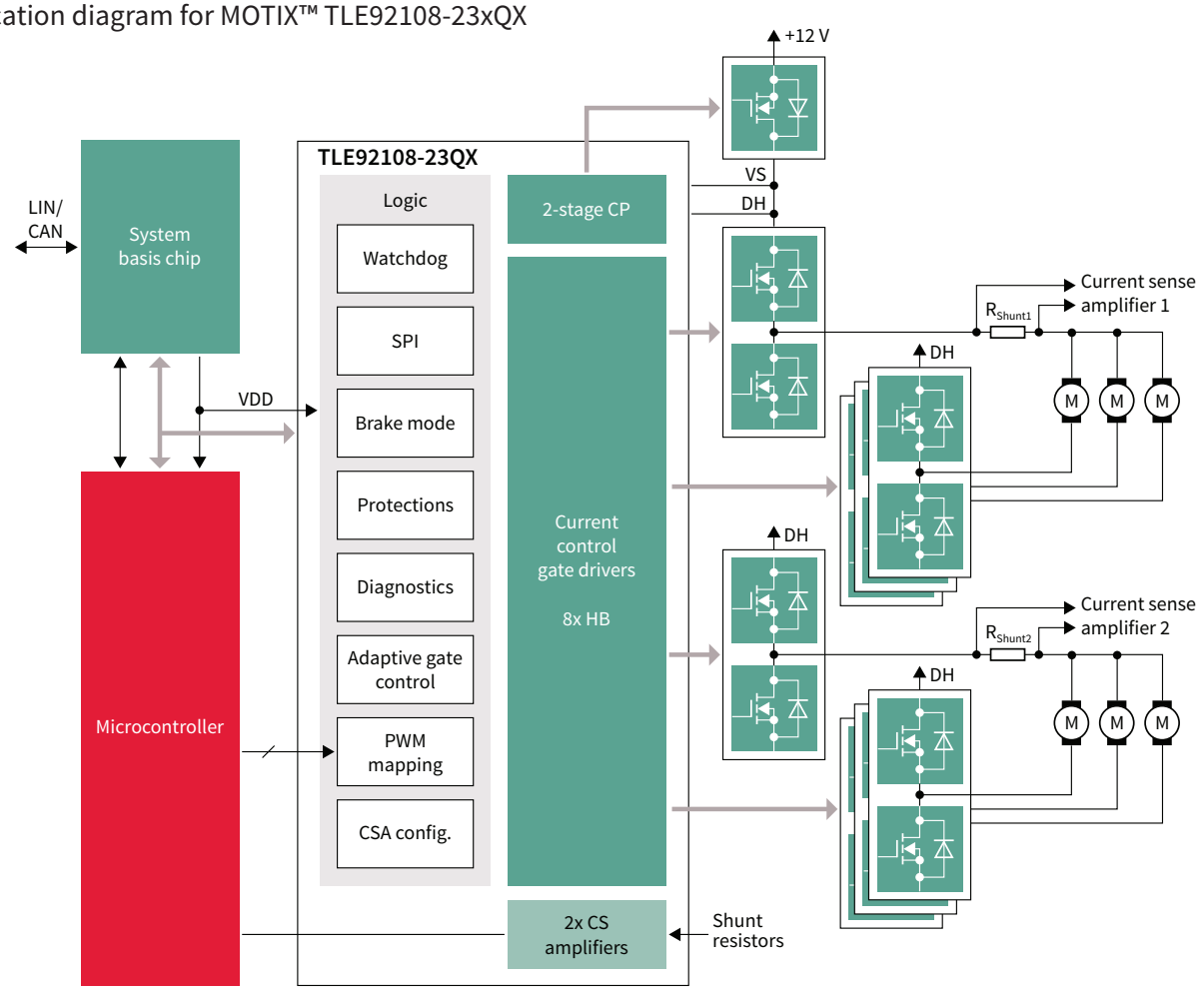
Automotive DC motor control, e.g.:

- 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…)

MOTIX™ multi MOSFET driver – TLE9210x

Multiple half-bridge drivers for automotive motor control applications

Application diagram for MOTIX™ TLE92108-23xQX



Product table

Type	Description	Brake mode	Package
MOTIX™ TLE92108-231QX	8-fold multi-MOSFET driver IC	No	PG-VQFN-48
MOTIX™ TLE92108-232QX	8-fold multi-MOSFET driver IC	Yes	PG-VQFN-48
MOTIX™ TLE92104-131QX	4-fold multi-MOSFET driver IC	No	PG-VQFN-48
MOTIX™ TLE92104-232QX	4-fold multi-MOSFET driver IC	Yes	PG-VQFN-48

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Date: 2021-10

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