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.

www.infineon.com/multi-mosfet-driver

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

<table>
<thead>
<tr>
<th>Product variant</th>
<th># Current sense amplifier</th>
<th># PWM inputs</th>
<th>Adaptive gate control</th>
<th>Motor brake mode</th>
<th>Package</th>
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