

# TMC249

**Microstep Driver  
for External MOSFETs  
for up to 4A  
with stallGuard™**

**INFO** The TMC249 is a smart high current microstepping driver for bipolar stepper motors. The integrated unique sensorless stall detection stallGuard™ makes it a good choice for applications where a reference point is needed, but where a switch cannot be used. The ability to predict an overload makes the TMC249 an optimum choice for drives where a high reliability is desired. It provides an SPI™ interface as well as the classical analog/digital control. A full set of protection and diagnostic features makes this device very rugged. It directly drives external MOSFETs for currents of up to 4A. (A list of compatible power MOSFETs is given within the datasheet.) This way it reaches an extremely high efficiency and allows driving of a high motor current without cooling measures even at high environment temperatures. With the new chip-scale QFN package a 4A motor driver can be realized on the size of a stamp!

The high motor current makes this device ideal for miniaturized highly dynamic and high torque drive systems.

MAIN CHARACTERISTICS

- sensorless stall detection StallGuard™
- full protection and diagnostics
- low power dissipation
- 16 times microstepping via SPI, 64 times using additional shift register, even more via analog control
- mixed decay for smooth operation
- programmable slope control for low EME
- internal or external chopper clock
- standby and shutdown mode

INTERFACE

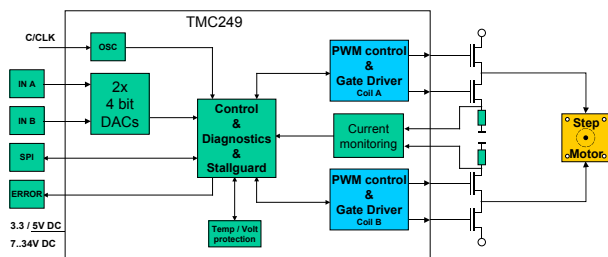
- easy-to-use SPI™ interface
- classical analog interface

ELECTRICAL DATA

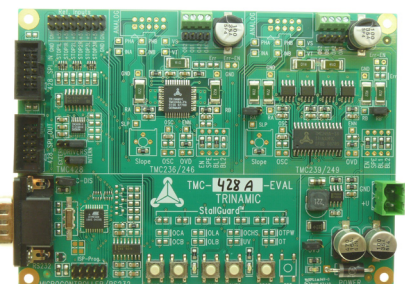
- up to 4000 mA coil current (peak) with just 4 external dual MOSFETs
- 7V to 34V motor supply (TMC249A), up to 60V using a few add. components
- higher current / voltage using additional gate drivers
- 3.3V or 5V operation for digital part

PACKAGE

- standard SO28 package
- chip size QFN32 7x7 mm<sup>2</sup> package
- RoHS compliant



10 mm



ORDER CODE	DESCRIPTION
TMC249A-SA	4A driver with stallGuard™ for external MOSFETs, SO28
TMC249A-LA	4A driver with stallGuard™ for external MOSFETs, QFN32
<b>Related product:</b>	TMC32NP, TMC32NP2, TMC34NP
TMC428A-EVAL	Evaluation board for TMC428, TMC246A and TMC249A with stallGuard™