TMC603

Three Phase Motor Driver with BLDC Back EMF Commutation HallFX™ and Current Sensing

INFO The TMC603 is a three phase BLDC motor driver IC for highly compact and energy efficient drive solutions. Control algorithms previously only found in much more complex servo drives can now be realized with a minimum of external components. The TMC603 directly drives 6 external N-channel MOSFETs for motor currents up to 20A and up to 50V. It integrates current measurement without the need for high current sense resistors, and the sensorless commutation circuitry HallFX™. Its integrated support for sine commutation as well as for back EMF sensing and commutation saves cost and allows for maximum drive efficiency. Depending on the desired commutation scheme and the bus interface requirements, the TMC603 forms a complete motor driver system in combination with an external 8 bit processor or with a more powerful 32 bit processor. Protection and diagnostic features as well as a step down switching regulator further reduce system cost and increase reliability.

The TMC603 also supports control of three phase stepper motors as well as two phase stepper motors using two devices.

MAIN CHARACTERISTICS

- low power dissipation
- integrated phase current measurement via R_{DSon} of power MOSFETs
- sensorless back EMF commutation hallFX™ (hall sensor like signals - phase shift free)
- integrated break-before-make logic: no special microcontroller PWM hardware required
- integrated overcurrent / short to GND and undervoltage protection and diagnostics
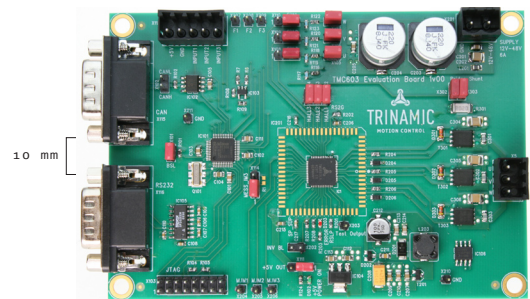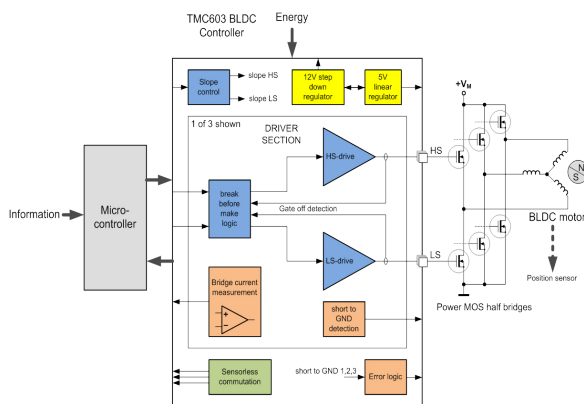- integrated step down switching regulator up to 500mA / 300kHz

ELECTRICAL DATA
- up to 20A motor current
- 9V to 50V operating voltage
- EMV optimized current controlled gate drivers - up to 150mA
- internal Q_{GD} protection: Supports latest generation of power MOSFETs

INTERFACE
- 3.3V or 5V interface

PACKAGE
- QFN52 package 8 x 8 mm²
- RoHS compliant

ORDER CODE	DESCRIPTION
TMC603-LA	Driver for external 20A MOSFETs, QFN52 package
Related product:	
TMC603-Eval	Evaluation board for TMC603