



Toshiba's New Stepping Motor Driver IC has an Anti-Stall Feedback Architecture

Innovative integrated features deliver efficient and safe operation

Düsseldorf, Germany, 12 September, 2017 Toshiba Electronics Europe (TEE) today announced the launch of a stepping motor driver (TB67S289FTG) with a Toshiba-developed architecture that automatically detects and prevents stalling during operation.

Stable and highly precise control is a basic operating requirement for motors used in printers, office appliances, banking terminals (including ATMs), cash dispensers and home appliances. Recent requirements have also emphasized more efficient motor drivers that use less power and generate less heat.

Motors stall when the motor rotation deviates from the control signal. Avoiding stalls in stepping motor operation is the highest priority for delivering stable and precise motor control and is achieved by providing additional current to ensure an operating margin for the motor. Real-time monitoring of motor torque and current feedback, using additional sensors and highly advanced MCU control, is also required to improve efficiency and heat generation.

A further way to improve efficiency and cut down heat generation is to improve the built-in MOSFET's on-resistance thereby reducing power loss during operation.

The TB67S289FTG is the first stepping motor driver to apply Toshiba's original anti-stall and efficiency improvement system, Active Gain Control (AGC). AGC enables the driver to monitor the motor and torque, and automatically optimizes the motor control without additional MCU control. In operation, the new TB67S289FTG prevents step-losses and motor stalls, and automatically optimizes motor current, depending upon the torque needed.

Offering step resolutions of full, half, quarter, 1/8, 1/16 and 1/32 steps to cut down noise and vibration, the device includes several built-in, MCU flaggable, error detection functions (thermal shutdown, over-current shutdown, undervoltage lock out, and motor load open detection) that contribute to safety and reliability. It also supports the power-on sequence for a single power drive.

Compared with current solutions, TB67S289FTG reduces motor power by up to 80%, thereby delivering significant improvements in efficiency and heat without relying on the low on-resistance of 0.46Ω (upper + lower typ.).

Further efficiencies can also be achieved when the new stepping motor driver is supported by Toshiba's Advanced Current Detection System (ACDS). The sense resistor-free current monitoring and control system uses less space and fewer external components on the PCB.

Toshiba positions the TB67S289FTG as its flagship stepping motor driver, a high performance motor control and component reduction solution, and will continue to expand its product line-up.

The TB67S289FTG is housed in a small QFN48 package that offers thermal improvements and simplified PCB designs. Mass production has commenced.

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About Toshiba Electronics Europe

[Toshiba Electronics Europe](#) (TEE) is the European electronic components business of [Toshiba Corporation](#). TEE offers a broad IC and discrete product line including high-end memory, microcontrollers, ASICs and ASSPs for automotive, multimedia, industrial, telecoms and networking applications. The company also has a wide range of power semiconductor solutions as well as storage products including HDDs, SSDs, SD Cards and USB sticks.

TEE was formed in 1973 in Neuss, Germany, providing design, manufacturing, marketing and sales and now has headquarters in Düsseldorf, Germany, with branch offices in France, Italy, Spain, Sweden and the United Kingdom. TEE employs approximately 300 people in Europe. Company president is Mr. Akira Morinaga. For more company information visit TEE's web site at www.toshiba.semicon-storage.com.

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