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Motion control evaluation platform speeds development of BLDC motor applications

Platform provides complete sensorless sine wave motor control and driver solution for industrial, home appliance and automotive applications

Toshiba Electronics Europe (TEE) has launched an evaluation platform that will simplify and speed the development of brushless DC (BLDC) motor drives used in applications ranging from home appliances and pumps to industrial automation and automotive motion control.

The TB6582FG_EVB3 brings together Toshiba's latest motor controller IC ASSP and the company's single-chip inverter drive technology to provide a complete sensorless sine wave motor control and driver solution on a single board. Engineers can quickly test and prototype sensorless motor drive applications with input main voltages of up to 220V(AC) by simply connecting power

supplies for the circuitry and the target motor and providing a suitable speed control signal input.

At the heart of the new platform is the Toshiba TB6582FG single-chip sensorless sine wave motor control ASSP. The TB6582FG takes analogue speed inputs from a host microcontroller and provides a complete full-wave sine wave PWM motor drive output without the need for additional processing. Using the evaluation platform, engineers can combine this IC with one of Toshiba's TPD412x single-chip inverters to provide a complete motor drive system with input main voltages to 220V(AC) and output currents from 1A to 3A. Control of motor rotation speed in both forward and reverse directions is then achieved simply by changing the PWM duty cycle based on the input from a host microcontroller.

The TB6582FG features integral circuitry that accurately calculates rotor speed and position using phase current information, eliminating the need for Hall sensors. A triangular wave generator with a carrier wave frequency of $f_{osc}/252\text{Hz}$ and an integrated dead time function are also incorporated into the device. In addition, a lead angle adjustment capability allows applications to be tuned for optimum efficiency.

Toshiba's new evaluation platform is fully compatible with the company's TPD4120 (2A), TPD4123 (1A) and TPD4125 (3A) single-chip, 500V inverters. Housed in a DIP26 package, each of these chips combines high-and low-side drivers with six IGBTs to supply current to the motor stator coils. Additional integrated features include fast recovery bootstrap diodes and onboard protection against overtemperature, overcurrent and undervoltage conditions.

About Toshiba

Toshiba Corporation is a leader in information and communications systems, electronic components, consumer products and power systems. The company's integration of these wide-ranging capabilities assures its position as an innovator in advanced components, products and systems. Toshiba has more than 172,000 employees worldwide and annual sales of over US\$54 billion (FY2005).

Toshiba Electronics Europe (TEE) is the European Headquarters for the electronic components business of Toshiba Corporation, which is the world's fourth largest semiconductor vendor according to estimates by Dataquest.

Providing design, manufacturing, marketing and sales, TEE was formed in 1973 in Neuss, Germany. The company now has headquarters in Düsseldorf, Germany and subsidiaries in France, Italy, Spain, Sweden and the United Kingdom. Company president is Mr Shikama and the total number of personnel in Europe is around 400.

Toshiba Electronics Europe offers one of the industry's broadest IC and discrete product lines including high-end memory, microcontrollers, ASICs, ASSPs and display products for automotive, multimedia, consumer, telecoms and networking applications. The company also has a wide range of power semiconductor solutions.

For more company information visit Toshiba's web site at www.toshiba-components.com

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