



Toshiba announces new three-phase brushless motor control pre-driver IC

New device features intelligent phase control and closed-loop speed control

Düsseldorf, Germany, 29th October 2019 – Toshiba Electronics Europe (“Toshiba”) has announced a three-phase brushless motor control pre-driver IC with Intelligent Phase Control technology that enables optimum operating efficiency in a wide variety of applications including high-velocity server fans, blowers and pumps.

In recent years, advances in server capacity and performance require physically larger and higher velocity fans for cooling any excess heat generated by the equipment. Similarly, small blowers, vacuums and pumps also operate with high-speed impellers that require high power capability. The new TC78B027FTG is a brushless motor controller with integrated pre-driver that can drive a wide range of external MOSFETs to meet the challenges of these applications across a wide range of power levels.

The new controller IC features Intelligent Phase Control and closed loop speed control technologies. Intelligent Phase Control delivers high-efficiency drive by synchronizing the phases of the driving voltage and current, thereby delivering maximum real power to the motor. This is usually not possible without introducing compensation, requires significant motor characterizations in the design phase, as well as operational adjustments in real time to achieve optimum efficiency throughout the speed range. Intelligent Phase Control is an automatic function that only requires simple initialization during design, thereby minimizing adjustment burdens and reducing development time.

Either open-loop or closed-loop speed control can be selected. The closed-loop speed control function regulates and maintains the rotational speed of the motor during dynamic power fluctuations and load variations, a valuable feature for mission-critical applications such as server fans and other cooling applications. Precise setting of a speed profile is done by the built-in non-volatile memory (NVM) and, as a result, the TC78B027FTG eliminates the need for an external MCU for closed-loop speed control.

A further benefit is the device's ability to simplify motor selections as it only requires one Hall sensor input allowing use with a single Hall sensor motor or a more conventional 3 Hall sensors motors. The IC also allows the choice of either an analog or digital Hall signal for rotor position detection, giving designers more flexibility in their choice of motor.

The new device is housed in a small VQFN24 (4 mm x 4 mm x 0.9 mm) package and operates from a 5 to 16 V supply. It can accept either a PWM or analog input signal and the sine wave drive includes a soft-start function for precision start-up of motors.

For low power applications, there is also the TC78B025FTG fully integrated driver version which is suitable for 16V/3.5A applications.

For more information about the new product, please visit:

<https://toshiba.semicon-storage.com/eu/product/linear/motordriver/detail.TC78B027FTG.html>

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About Toshiba Electronics Europe

[Toshiba Electronics Europe GmbH](#) (TEE) is the European electronic components business of [Toshiba Electronic Devices and Storage Corporation](#). TEE offers European consumers and businesses a wide variety of innovative hard disk drive (HDD) products plus semiconductor solutions for automotive, industrial, IoT, motion control, telecoms, networking, consumer and white goods applications. The company's broad portfolio encompasses integrated wireless ICs, power semiconductors, microcontrollers, optical semiconductors, ASICs, ASSPs and discrete devices ranging from diodes to logic ICs.

TEE has headquarters in Düsseldorf, Germany, with branch offices in France, Italy, Spain, Sweden and the United Kingdom providing design, manufacturing, marketing and sales. Company president is Mr. Tomoaki Kumagai

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