



Toshiba announces small intelligent power device for BLDC motor drives

3A / 600V rating supports a wide range of motor drives

Düsseldorf, Germany, 27th August 2024 – Toshiba Electronics Europe GmbH (“Toshiba”) has launched a small new intelligent power device (IPD) for space-constrained brushless DC (BLDC) motor drive applications such as air conditioners, air purifiers, and pumps.

The new IPD (TPD4165K) has an increased maximum output current of 3A, compared to the 2A rating of Toshiba’s existing products like TPD4163K, or TPD4164K. This extends the range of supported equipment and allows use in higher power applications. The device is suitable for sine-wave drive.

As power supply voltage may fluctuate significantly in some regions where the IP could be used, the absolute maximum voltage rating (V_{BB}) has been increased to 600V to enhance long-term reliability. This represents a 20% increase over Toshiba’s previous products (TPD4123K, TPD4123AK, TPD4144K, TPD4144AK, TPD4135K, TPD4135AK).

The new TPD4165K is housed in a through-hole HDIP30 package. This has a 21% smaller footprint than the DIP26 package used for many of Toshiba’s previous products, simplifying the design process for challenging space-constrained applications. The new device measures just 32.8mm x 13.5mm x 3.525mm. It supports either three-shunt or single-shunt resistor circuit for current sensing.

Built into the new IPD is a range of safety features including over-current, under-voltage and thermal shutdown. Additionally, an external signal can be applied to the SD pin to control the behaviour of the output stage. The DIAG output pin provides the status of the safety conditions.

Designers can freely access a reference design for a sensorless BLDC motor drive circuit based upon the new TPD4165K and Toshiba's TMPM374FWUG microcontroller with vector control engine capability. The reference design data can be [downloaded](#) from Toshiba's website.

Toshiba will continue to expand its product range by adding devices with improved characteristics. This will assist designers by improving design flexibility as well as contributing to carbon neutrality through energy-saving motor control.

Volume shipments of the new device are starting immediately.

Find out more about the new IPD on Toshiba's website: <https://toshiba.semicon-storage.com/eu/semiconductor/product/intelligent-power-ics/detail.TPD4165K.html>

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About Toshiba Electronics Europe

[Toshiba Electronics Europe GmbH](#) (TEE) offers European consumers and businesses a wide variety of hard disk drive (HDD) products plus semiconductor solutions for automotive, industrial, IoT, motion control, telecoms, networking, consumer, and white goods applications. Next to HDDs, the company's broad portfolio encompasses power semiconductors and other discrete devices ranging from diodes to logic ICs, optical semiconductors as well as microcontrollers and application specific standard products (ASSPs) amongst others.

In addition, TEE also offers Toshiba's SCiB™ battery cells and modules with lithium titanium oxide (LTO) for heavy-duty applications and Silicon Nitride (SiN) ceramic substrates used in power semiconductor modules, inverters, and converters for their heat dissipation characteristics and strength.

TEE has its headquarters in Düsseldorf, Germany, with branch offices in France, Italy, Spain, Sweden and the United Kingdom providing marketing, sales and logistics services.

Visit Toshiba's websites at www.toshiba.semicon-storage.com, www.scib.jp/en and www.toshiba-tmat.co.jp/en/ for further company and product information.

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