



## Toshiba Extends 150V N-Channel Power U-MOS X-H MOSFET Lineup to Reduce Power Consumption for Power Supplies

*New additions have improved reverse recovery characteristics that are critical for synchronous rectification applications*

**Düsseldorf, Germany, 18th July 2024** – Toshiba Electronics Europe GmbH (“Toshiba”) adds two new 150V N-channel power MOSFET products based upon their latest generation U-MOS X-H Trench process. The TPH1100CQ5 and TPH1400CQ5 devices are designed specifically for use in high-performance switching power supplies, such as those used in data centres and communication base stations as well as other industrial applications.

With a maximum drain-source voltage ( $V_{DS}$ ) rating of 150V and drain current ( $I_D$ ) handling 49A (TPH1100CQ5) and 32A (TPH1400CQ5), the new devices feature a maximum drain-source on-resistance ( $R_{DS(ON)}$ ) of 11m $\Omega$  and 14m $\Omega$ , respectively.

The new products offer improved reverse recovery characteristics that are critical in synchronous rectification applications. In the case of TPH1400CQ5, the reverse recovery charge ( $Q_{rr}$ ) is reduced by approximately 73% to 27nC (typ.) and the reverse recovery time ( $t_{rr}$ ) of 36 ns (typ.) is approximately 45% faster compared with Toshiba’s existing TPH1400CQH, which offers the same voltage and  $R_{DS(ON)}$ . Used in synchronous rectification applications, the TPH1400CQ5 reduces the power loss of switching power supplies and helps improve efficiency. If the device is used in a circuit that does not operate in reverse recovery mode, the power loss is equivalent to that of the TPH1400CQH.

When used in a circuit that operates in reverse recovery mode, the new products reduce spike voltages generated during switching, helping to improve EMI characteristics of

designs, and reducing the need for external filtering. The devices are housed in a versatile, surface-mount SOP Advance(N) package measuring just 4.9mm x 6.1mm x 1.0mm.

To support designers, Toshiba has developed a G0 SPICE model for rapid verification of the circuit function as well as highly accurate G2 SPICE models, for accurate reproduction of transient characteristics.

Shipments of the new devices start today, and Toshiba will continue to expand their lineup of power MOSFETs that help improve equipment efficiency.

For more information about the TPH1100CQ5 and TPH1400CQ5 150V N-channel power MOSFETs, please visit:

<https://toshiba.semicon-storage.com/eu/semiconductor/product/mosfets/12v-300v-mosfets/detail.TPH1100CQ5.html>

<https://toshiba.semicon-storage.com/eu/semiconductor/product/mosfets/12v-300v-mosfets/detail.TPH1400CQ5.html>

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[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.

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