



### **Toshiba launches 40V, 0.67mΩ N-channel MOSFET using latest-generation process technology to enhance power supply efficiency**

New U-MOS11-H technology delivers ultra-low on-resistance, fast switching, improved EMI performance, and higher efficiency for industrial power supplies

**Düsseldorf, Germany, 31<sup>st</sup> March 2026** – Toshiba Electronics Europe GmbH (“Toshiba”) introduces the TPHR6704RL, a 40V N-channel power MOSFET fabricated using its latest-generation U-MOS11-H process. The device is optimised for switched-mode power supplies used in data centers, as well as industrial equipment such high-efficiency DC-DC converters, switching voltage regulators, and motor drivers.

By adopting the U-MOS11-H process, the TPHR6704RL achieves a typical drain-source on-resistance ( $R_{DS(ON)}$ ) of 0.52mΩ at a gate-source voltage ( $V_{GS}$ ) of 10V, and a maximum  $R_{DS(ON)}$  of 0.67mΩ at a  $V_{GS}$  of 10V. Compared to the existing 40V product (TPHR8504PL) manufactured using the U-MOS IX-H process, the  $R_{DS(ON)}$  is approximately 21% lower. In addition, the switching performance of the new device improves, with a typical total gate charge ( $Q_g$ ) of 88nC and a gate switch charge ( $Q_{sw}$ ) of 24nC, resulting in a reduction in the  $R_{DS(ON)} \times Q_g$  figure-of-merit by approximately 37%, enabling low-loss operation.

TPHR6704RL will help designers to reduce EMI in switched-mode power supplies by minimising voltage spikes generated between the drain and source during switching.

The TPHR6704RL also offers robust current and thermal performance, with a drain current ( $I_D$ ) rating of up to 420A and a channel-to-case thermal resistance of 0.71°C/W at 25°C, enabling stable operation under high-load conditions. The device operates over a wide temperature range, with a maximum channel temperature ( $T_{ch}$ ) of 175°C, supporting reliable operation in demanding industrial environments.

Housed in the SOP Advance (N) package, the device offers high footprint compatibility with existing SOP Advance designs, simplifying replacement and board-level upgrades.

To support efficient power supply design, Toshiba offers a comprehensive set of circuit design tools. In addition to the G0 SPICE model for rapid functional verification, high-accuracy G2 SPICE models are available to accurately reproduce transient and switching characteristics, helping designers optimise efficiency, EMI, and thermal performance.

Toshiba will continue to expand its lineup of power MOSFETs that enable higher-efficiency power supplies that reduce power consumption and improve performance across a wide range of industrial equipment.

For more information, visit: [TPHR6704RL](#)

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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 SCiB™ battery cells and modules with lithium titanium oxide (LTO) for heavy-duty applications.

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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