Next-generation package for power MOSFETs achieves significant on-resistance and thermal resistance reductions

New SOP Advance(E) package enables lower loss and higher efficiency for industrial equipment, data centres, and communication base stations

Düsseldorf, Germany, 22nd July 2025 – Toshiba Electronics Europe GmbH ("Toshiba") announces the launch of two new N-channel power MOSFETs, the 80V TPM1R908QM and the 150V TPM7R10CQ5. These latest offerings adopt Toshiba's innovative SOP Advance(E) package, designed to significantly enhance performance in switched-mode power supplies for demanding industrial equipment, including data centres and communication base stations.

The new SOP Advance(E) package marks a substantial improvement over Toshiba's existing SOP Advance(N) package, reducing package resistance by approximately 65% and thermal resistance by approximately 15%. These package enhancements directly translate into superior device performance. The 80V TPM1R908QM exhibits a reduction in drain-source on-resistance ($R_{DS(ON)}$) of approximately 21% and channel-case thermal resistance ($R_{th(ch-c)}$) of approximately 15% when compared to Toshiba's existing product, the TPH2R408QM, of same voltage rating. Similarly, the 150V TPM7R10CQ5 achieves approximately 21% lower $R_{DS(ON)}$ and approximately 15% lower $R_{th(ch-c)}$ than Toshiba's existing TPH9R00CQ5, also at the same voltage. The TPM7R10CQ5 is equipped with a high speed body diode for increased efficiency in synchronous rectification.

The reductions in on-resistance and suppressed temperature rise due to improved thermal resistance contribute to a lower overall on-resistance, even considering positive temperature characteristics. This combination ultimately achieves lower loss and higher efficiency in critical applications such as switched-mode power supplies for industrial equipment, including those powering data centres and communication base stations.

The TPM1R908QM features a drain-source voltage (V_{DSS}) of 80V, a drain current (I_D) of 238A (T_c=25°C), and a maximum $R_{DS(ON)}$ of 1.9mΩ (V_{GS}=10V). The TPM7R10CQ5 offers a V_{DSS} of 150V, an I_D of 120A (T_c=25°C), and a maximum $R_{DS(ON)}$ of 7.1mΩ (V_{GS}=10V). Both products have a channel temperature (T_{ch}) of 175°C and a maximum $R_{th(ch-c)}$ of 0.6°C/W (T_c=25°C). The SOP Advance(E) package typically measures 4.9mm × 6.1mm.

To further support circuit design for switched-mode power supplies, Toshiba also provides a G0 SPICE model for quick circuit function verification, alongside highly accurate G2 SPICE models that precisely reproduce transient characteristics.

Toshiba is committed to expanding its portfolio of power MOSFETs to facilitate more efficient power supplies, thereby aiding in the reduction of overall equipment power consumption.

Please follow the links for more information on the TPM1R908QM and TPM7R10CQ5.

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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 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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News Release

TOSHIBA

July 2025 **Ref. 7628(A)E**