



DTMOSVI 600V super junction power MOSFETs with built-in fast-recovery diodes for high-efficiency power supply circuits

$R_{DS(ON)}$ down to 0.050Ω (typ.) in a DFN8×8 package for high efficiency in space-restrained power supply circuits

Düsseldorf, Germany, 19th March 2026 – Toshiba Electronics Europe GmbH (“Toshiba”) has added the DTMOSVI 600V HSD (High-Speed Diode) N-channel power MOSFETs to the DTMOSVI 600V Series featuring a super junction structure. The seven new products are available in TO-247, TOLL, and DFN8×8 packages, providing engineers with options that balance power handling, thermal performance, switching efficiency, and system miniaturisation capabilities for diverse application needs. A product highlight is the TK058V60Z5, which achieves an ultra-low drain-source on-resistance ($R_{DS(ON)}$) of 0.050Ω (typ.) in a DFN8×8 package. Applications include switched-mode power supplies (SMPS) for data center servers, uninterruptible power supplies (UPS), and photovoltaic power conditioners.

The new products employ lifetime control technology, which intentionally introduces defects into the diode to enhance carrier recombination speed. This technique enhances the reverse-recovery performance of the body diode, a critical requirement for bridge and inverter circuit applications. Compared to Toshiba’s existing DTMOSVI 600V series without a built-in high-speed recovery diode, the reverse recovery time (t_{rr}) has been reduced by approximately 60%, and the reverse recovery charge (Q_{rr}) by approximately 85% (measurement conditions: $V_{DD}=400V$, $V_{GS}=0V$, $I_{DR}=20A$, $-dI_{DR}/dt= 100 A/\mu s$, $T_a=25^\circ C$).

In the DTMOSVI 600V series, including the new products, Toshiba’s optimised gate design and process reduce the figure of merit drain-to-source on-resistance ($R_{DS(ON)}$) times total gate charge (Q_g) by approximately 36%, and $R_{DS(ON)}$ times the gate-to-drain charge (Q_{gd}) by approximately 52% compared to Toshiba’s previous generation, the DTMOSIV-H series with the same voltage rating. As a result, conduction, drive, and switching losses are reduced, contributing to higher efficiency in power supply circuits.

Toshiba offers tools that support circuit design for switching power supplies. Alongside the G0 SPICE model, which quickly verifies circuit functionality, highly accurate [G2 SPICE models](#) that reproduce transient characteristics are now available. Toshiba's [Online Circuit Simulator](#) enables engineers to verify circuit operation without the hassle of building a simulation environment and downloading element models.

Toshiba will continue expanding its DTMOSEVI series lineup to improve the efficiency of switched-mode power supplies for industrial equipment, aiming to achieve carbon neutrality.

For further information, please visit Toshiba's website:

[TK034N60Z5](#), [TK055N60Z5](#), [TK073N60Z5](#), [TK055U60Z5](#), [TK073U60Z5](#), [TK077V60Z5](#), [TK058V60Z5](#)

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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 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.

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

Contact details for publication:

Toshiba Electronics Europe GmbH, Hansaallee 181, D-40549 Düsseldorf, Germany

Tel: +49 (0) 211 5296 0

Web: www.toshiba.semicon-storage.com/eu/company/news.html

Contact details for editorial enquiries:

Michelle Shrimpton, Toshiba Electronics Europe GmbH

Tel: +44 (0)7464 493526

E-mail: MShrimpton@teu.toshiba.de

Issued by:

Birgit Schöniger, Pretzl Group Ltd.

Tel: +49 (0) 172 617 8431

Web: www.pretzl.com

E-mail: birgit.schoeniger@pretzl.com