Third generation 1200V SiC MOSFETs from Toshiba boost industrial power-conversion efficiency

New discrete MOSFETs combine superior $R_{DS(on)}$ x Q_{GD} figure of merit with proven Toshiba innovations for reliability and stability

Düsseldorf, Germany, 30th August 2022 – Toshiba Electronics Europe GmbH ("Toshiba") has launched five 1200V silicon-carbide (SiC) MOSFETs that leverage the Company's third generation SiC technology to boost the energy efficiency of high-voltage industrial applications. They are used in equipment such as EV charging stations, photovoltaic inverters, industrial power supplies, uninterruptible power supplies (UPS), and bidirectional or half-bridge DC-DC converters.

By improving the on-resistance x gate-drain charge ($R_{DS(on)}$ x Q_{GD}) figure of merit by more than 80%, Toshiba's latest SiC technology elevates both conduction and switching performance in power-conversion topologies.

In addition, the new devices contain the innovative embedded Schottky barrier diode (SBD), proven in the previous generation. The embedded SBD enhances the reliability of SiC MOSFETs by overcoming internal parasitic effects to maintain a stable device $R_{DS(on)}$.

Furthermore, the products have a generous maximum gate-source voltage range, from -10V to 25V, which enhances flexibility to operate in various circuit designs and application conditions. The gate-threshold voltage ($V_{GS(th)}$) range from 3.0V to 5.0V, ensures predictable switching performance with minimal drift and permits a simple gate-driver design.

The third generation SiC MOSFETs available now comprise the TW015N120C, TW030N120C, TW045N120C, TW060N120C, and TW140N120C. The devices have $R_{DS(on)}$

values from 15mΩ to 140mΩ (typical, at V_{GS} = 18V) and drain-current ratings from 20A to 100A (DC at T_C=25°C).

All the devices are in full production and ready to order from distributors, in the standard TO-247 power package.

Additional information about Toshiba's power 1200V SiC MOSFETs can be found here: TW015N120C, TW030N120C, TW045N120C, TW060N120C, and TW140N120C

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About Toshiba Electronics Europe
Toshiba Electronics Europe GmbH (TEE) is the European electronic components business of Toshiba Electronic Devices and Storage Corporation. TEE offers European consumers and businesses a wide variety of innovative 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.

TEE has headquarters in Düsseldorf, Germany, with branch offices in France, Italy, Spain, Sweden and the United Kingdom providing marketing, sales and logistics services. The company president is Mr. Tomoaki Kumagai.

For more company information visit TEE's website at www.toshiba.semicon-storage.com.

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