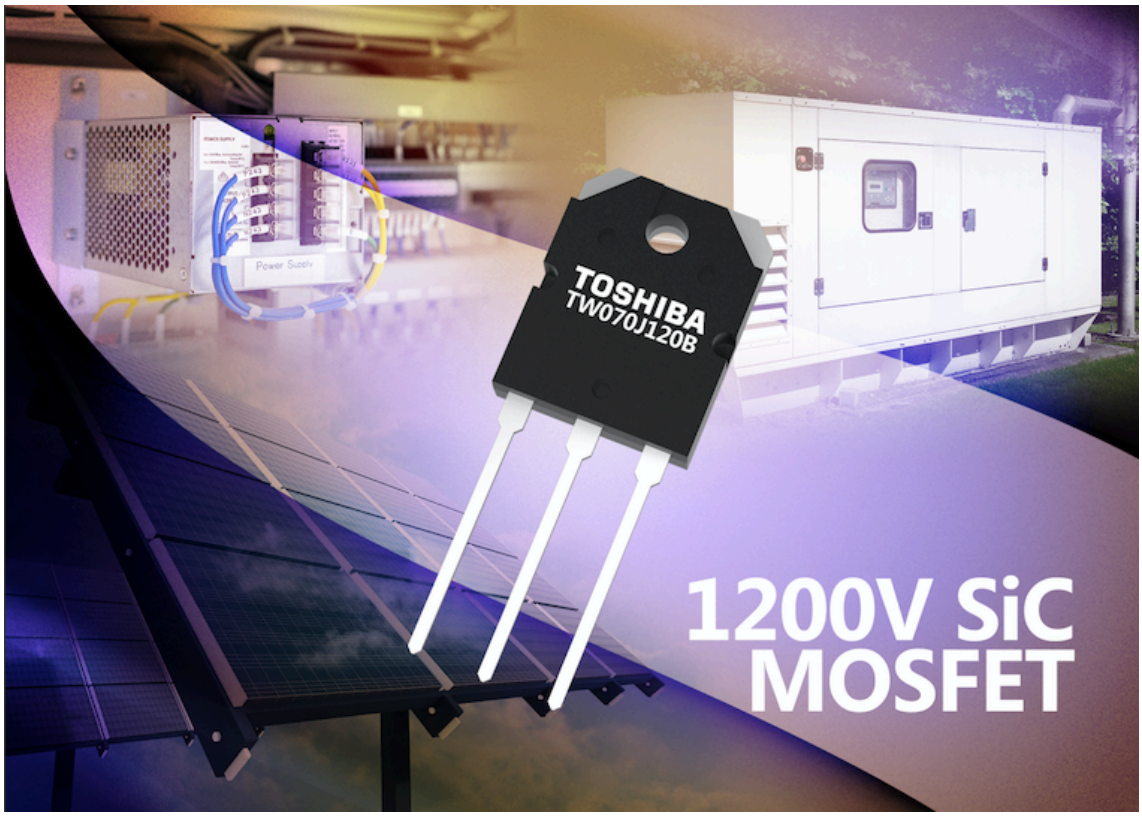

Toshiba Launches 1200V Silicon Carbide (SiC) MOSFET

Device offers significantly reduced losses thereby increasing power solution efficiency

Düsseldorf, Germany, 19th October 2020 – Toshiba Electronics Europe GmbH ("Toshiba") has launched a 1200V silicon carbide (SiC) MOSFET for high power industrial applications including 400V AC input AC-DC power supplies, Photovoltaic (PV) inverters and bi-directional DC-DC converters for uninterruptible power supplies (UPS).

The new TW070J120B power MOSFET is based upon SiC, a new wide bandgap material that allows devices to deliver high voltage resistance, high-speed switching, and low On-resistance when compared to conventional MOSFETs and insulated gate bipolar transistor (IGBT) products based upon silicon (Si). As a result, the new MOSFET will make a significant contribution to reduced power consumption and improved power density, leading to opportunities for system downsizing.

Fabricated with Toshiba's second-generation chip design[1], the new SiC MOSFET offers enhanced reliability. Additionally, the TW070J120B realizes low input capacitance (C_{ISS}) of

1680pF (typ.), a low gate-input charge (Q_g) of 67nC (typ.), and a drain-to-source On-resistance ($R_{DS(ON)}$) of just 70mΩ (typ.).

When compared with a 1200V silicon IGBT such as Toshiba's GT40QR21, the new device reduces turn-Off switching loss by approximately 80% and switching time (fall time) by around 70%, while delivering low On-voltage characteristics with a drain current (I_D) of up to 20A.

The gate threshold voltage (V_{th}) is set high (in the range 4.2V to 5.8V), which reduces the possibility of unintended or spurious turn On or Off. Furthermore, incorporation of a SiC Schottky barrier diode (SBD) with a low forward voltage (V_{DSF}) of just -1.35V (typ.) also helps to reduce losses.

Housed in a TO-3P(N) package, the new TW070J120B MOSFET will enable the design of higher efficiency power solutions, especially in industrial applications, where the increased power density will also contribute to reduced equipment size and weight.

Shipments of the new device start today.

Additional information for this device is available from:
https://toshiba.semicon-storage.com/eu/semiconductor/product/mosfets/detail.TW070J120B.html

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Notes:
[1] Toshiba news release on July 30, 2020: "Toshiba's New Device Structure Improves SiC MOSFET Reliability"
https://toshiba.semicon-storage.com/ap-en/company/news/news-topics/2020/07/mosfet-20200730-1.html

About Toshiba Electronics Europe

Toshiba Electronics Europe GmbH (TEE) is the European electronic components business of Toshiba Electronic Devices and Storage Corporation (Toshiba). 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 web site at www.toshiba.semicon-storage.com.

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