



Toshiba extends miniature MOSFET gate driver family for portable applications

Series supports back-to-back connection of external N-channel MOSFETs

Düsseldorf, Germany, 9 June 2022 – Toshiba Electronics Europe GmbH (“Toshiba”) has added five new MOSFET gate-driver ICs in the TCK42xG series, suitable for a wide range of applications including battery powered, consumer and industrial equipment. The devices in this series control the applied gate voltage independent of the input voltage and feature an over-voltage lockout function to protect the circuit.

The new products are now joining the TCK421G, announced earlier this year. Products in the series can be selected for a gate-source voltage of 10V or 5.6V, allowing use with a wide variety of MOSFETs. A choice of detection voltages for the input over-voltage lockout allows them to operate from power lines from 5V to 24V. The drivers available are the TCK420G for 24V power lines, TCK422G and TCK423G for 12V, TCK424G for 9V, and TCK425G for 5V.

Each new driver in the series features a built-in charge pump that ensures a stable gate-source voltage at the external MOSFET while the input can vary from 2.7V to 28V. This allows large currents to be switched. In addition, when used to control two N-channel MOSFETs connected back-to-back, they are suitable for configuring load-switch or power-multiplexer circuits with reverse-current blocking.

Housed in a 1.2mm x 0.8mm WCSP6G package, one of the smallest in the industry^[1], Toshiba’s TCK42xG gate drivers have a tiny footprint that allows high-density mounting in space-constrained portable products. They also have a low input OFF current, I_Q (OFF), of 0.5 μ A (maximum, at $V_{IN}=5V$) that helps to prolong battery runtime.

To further assist customers' projects, Toshiba has developed the Power Multiplexer Circuit Reference Design, which provides a design example for power multiplexers that utilize the functions of TCK42xG. The reference design is available from the following link: https://toshiba.semicon-storage.com/eu/semiconductor/design-development/referencedesign/articles/power-multiplexer-circuit_powermanagement_rd221.html.

Further information about these new MOSFET gate driver ICs can be found here: <https://toshiba.semicon-storage.com/eu/semiconductor/product/power-management-ics/mosfet-gate-driver-ics/articles/mosfet-gate-driver-ic-overview.html>.

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Notes:

[1] In MOSFET gate driver IC, Toshiba survey as of April 2022.

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 web site at www.toshiba.semicon-storage.com.

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