



Toshiba's new high-side switch acts as ideal diode controller with reverse polarity protection and current blocking function for safe power control in automotive systems

New compact low-power consumption device supports redundant power supply rails

Düsseldorf, Germany, 26th February 2026 – Toshiba Electronics Europe GmbH ("Toshiba") introduces the TPD7110F, an ideal diode controller designed to enable safe power control and flexible design in automotive systems. Target applications include body control modules (BCM), battery management systems (BMS), and head-up displays (HUD).

The TPD7110F features reverse-polarity protection to prevent damage caused by battery connection errors. In addition, automotive safety designs require redundant configurations, which increases the importance of ideal diode controllers.

The TPD7110F functions by combining a built-in charge pump circuit, which includes an internal capacitor, with an external N-channel MOSFET to create a low-loss ideal diode configuration. This architecture enables significant space savings, particularly through the adoption of Toshiba's PS-8 package. Measuring just 2.9mm by 2.8mm, the PS-8 halves the required mounting area compared to conventional MSOP-8 packages. Furthermore, the inclusion of the internal capacitor eliminates the need for external components, allowing for high-density mounting in space-limited PCB designs.

TPD7110F also includes a reverse-current-blocking function that detects changes in the drain-source voltage (V_{DS}) across the connected MOSFET, preventing current from flowing from the load back to the battery. Together, these features enable designers to construct redundant power systems by using multiple units of this product. Additionally, pairing the device with back-to-back MOSFETs enables an electronically controlled ON/OFF load switch. The reverse current blocking function can be disabled in systems

that require reverse current flow, typically to allow energy to be stored back into the battery.

Beyond size and safety, the controller's low-current design achieves a typical operating current of just 100 μ A. Also, standby current consumption is typically 2 μ A, which contributes to the overall system power budget.

Toshiba will continue to help with the development of a safe and sustainable mobility society through products that deliver lower loss, miniaturisation, and high reliability.

For more information, follow this link: [TPD7110F](#)

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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

Tel: +49 (0) 172 617 8431

Web: www.pretzl.com

E-mail: birgit.schoeniger@pretzl.com