



Toshiba introduces automotive photocoupler with output withstand voltage of 900V (min)

TLX9152M enables carmakers to replace mechanical relays for high-voltage isolation in EV powertrains and facilitates BMS monitoring

Düsseldorf, Germany, 12th September 2024 – Toshiba Electronics Europe GmbH (“Toshiba”) announces a new automotive-compliant photorelay designed for 400V battery-related control systems. The TLX9152M features a minimum output withstand voltage (V_{OFF}) of 900V to support applications such as battery and fuel-cell control, as well as battery management systems (BMS) in electric vehicles (EV) where it can be used in circuits to monitor voltages, monitor for mechanical relays sticking and to detect ground faults.

The TLX9152M consists of an infrared (IR) emitting diode optically coupled to a photo-MOSFET. Its fast reaction (T_{ON}/T_{OFF}) time of 1ms (max) is a critical decisive specification for design engineers. The trigger current is 3mA (max), which lowers system energy consumption. Moreover, the off-state current (I_{OFF}) of this device is 100nA (max) at ambient temperature, meaning that it draws minimal power while inactive. The IR LED has a 20mA (max) forward current (I_F), while its photodetection element has a 50mA on-state current (I_{ON}).

For a 400V automotive battery system, the test voltage for the withstand voltage test (Hi-Pot test) in the set is 1800V, and the same output withstand voltage as the test voltage can be achieved by using two of the products. In addition, the TLX9152M is housed in a SO16L-T package (Toshiba’s package code 11-10N1A), widely used for high-voltage photorelays. Toshiba’s existing product, the TLX9160T, housed in the same package, offers an output withstand voltage of 1500V in 800V battery systems when the test voltage is set at 2600V. Therefore, this combination allows a 400V and 800V battery system to share the board.

The TLX9152M is supplied in an SO16L-T package, a modified version of the SO16L featuring only 12 pins. It has a space saving 10.3mm x 10.0mm x 2.45mm form factor that helps ease system integration. When used in 1kV systems, this normally-open (1-Form-A) device exhibits 5mm creepage and clearance distances on its output side, ensuring that effective isolation is maintained. The device is capable of operating across a wide temperature range from -40° to +125°C, and is fully qualified according to the AEC-Q101 standard for automotive applications.

Follow the link to read more about the new TLX9152M photocoupler:

<https://toshiba.semicon-storage.com/eu/semiconductor/product/isolators-solid-state-relays/photorelay-mosfet-output/detail.TLX9152M.html>

Volume shipments of the new device start today.

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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 also offers Toshiba's SCiB™ battery cells and modules with lithium titanium oxide (LTO) for heavy-duty applications and Silicon Nitride (SiN) ceramic substrates used in power semiconductor modules, inverters, and converters for their heat dissipation characteristics and strength.

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, www.scib.jp/en and www.toshiba-tmat.co.jp/en/ for further company and product information.

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