



Highly integrated gate driver photocoupler from Toshiba enhances safety when switching SiC MOSFETs in industrial applications

Built-in active Miller clamp simplifies design, saves space and lowers system cost

Düsseldorf, Germany, 29th April 2025 – Toshiba Electronics Europe GmbH (“Toshiba”) has launched a gate driver photocoupler suitable for driving silicon carbide (SiC) MOSFETs in industrial equipment like industrial inverters, uninterruptible power supplies (UPS), and photovoltaic (PV) inverters, which experience harsh thermal environments. The TLP5814H is a highly integrated gate driver featuring a built-in active Miller clamp circuit that helps improve system safety and lower overall solution size by minimising the number of additional external components required.

The integrated active Miller clamp circuit in the TLP5814H has a channel resistance of 0.69Ω (typ.) and a peak clamp sink current rating of 6.8A. These features help to prevent the self-turn-on phenomenon associated with some power devices like SiC MOSFETs and insulated gate bipolar transistors (IGBTs) which are highly sensitive to changes in gate voltage. The integrated Miller clamp in the TLP5814H reduces system cost, size and complexity by mitigating the requirement for designers to include an additional negative power supply and implement an external active Miller Clamp circuit.

This gate driver photocoupler can provide a maximum peak output current of +6.8/-4.8A with rail-to-rail output, which helps to improve system switching performance while ensuring stable operation. An internal Faraday shield ensures common-mode transient immunity of ±70kV/μs (min).

TLP5814H can operate reliably in temperatures ranging from -40 to 125°C due to the enhanced optical output of the infrared light emitting diode (LED) on the input side and an optimised high-gain, high-speed light-detecting photodiode array, which helps to improve optical coupling efficiency.

To improve board layout flexibility, the TLP5814H is offered in a small SO8L package measuring only 5.85 × 10 × 2.1mm. Furthermore, it has a minimum creepage distance of 8.0mm which makes it suitable for use in applications requiring high insulation performance.

Learn more about the TLP5814H gate driver photocoupler on Toshiba's website:
<https://toshiba.semicon-storage.com/eu/semiconductor/product/isolators-solid-state-relays/detail.TLP5814H.html>

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About Toshiba Electronics Europe

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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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