

## Transformer

# TDK offers compact SMT transformers for gate driver applications

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TDK Corporation (TSE:6762) presents two new types of the EPCOS InsuGate series (B78541A). These compact SMT transformers with high working voltage are suitable for gate driver applications for IGBTs and MOSFETs in e-mobility (qualification according to AEC-Q200 as well as according to AQG vibration profile) and in industrial electronics. The components with a MnZn ferrite core are designed for operating frequencies of 100 kHz to 500 kHz and operating temperatures of -40 °C to +150 °C. Depending on the type, the transformation ratios of the windings are 1:1.08 (B78541A2467A003) or 1:1.07:0.6 (B78541A2492A003). With a low coupling capacitance of only 4 pF, the SMT transformers are also suitable for use with SiC or GaN semiconductors.

Combining the highly resistive plastic material with a CTI  $\geq$  600 and the special coil design, shorter clearances and creepage distances are possible compared to conventional insulated or potted components, despite the dimensions of only 13.85 x 10.5 x 9.2 mm (L x W x H). The UI7 platform, for example, offers creepage distances between primary and secondary windings of  $>9.2$  mm. With a partial discharge extinction voltage of at least 840 V (peak voltage) and AC high voltage testing at 3 kV (50 Hz, 1 s), the 2 g lightweight components meet IEC 61558 for reinforced insulation for working voltages up to 300 V (AC) or 700 V (DC) for basic insulation. This is sufficient for many industrial and automotive applications.

The new UI7 family includes two reference models to allow possible winding configurations for forward and push-pull topologies with the appropriate number of outputs.

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### Main applications

- Switched power supplies (bridge topologies)
- Gate driver circuits
- Isolated DC-DC converters
- Galvanically isolated single-channel IGBT driver ICs

### Main features and benefits

- Compact dimensions 13.85 x 10.5 x 9.2 mm (L x W x H)
- Surface mountable (SMT)
- Clearance and creepage distances 8.14 mm and 9.2 mm respectively
- Low coupling capacitance of 4 pF (typical)
- Qualified according to AEC-Q200 and AQG vibration profile

## About TDK Corporation

TDK Corporation is a world leader in electronic solutions for the smart society based in Tokyo, Japan. Built on a foundation of material sciences mastery, TDK welcomes societal transformation by resolutely remaining at the forefront of technological evolution and deliberately “Attracting Tomorrow.” It was established in 1935 to commercialize ferrite, a key material in electronic and magnetic products. TDK’s comprehensive, innovation-driven portfolio features passive components such as ceramic, aluminum electrolytic and film capacitors, as well as magnetics, high-frequency, and piezo and protection devices. The product spectrum also includes sensors and sensor systems such as temperature and pressure, magnetic, and MEMS sensors. In addition, TDK provides power supplies and energy devices, magnetic heads and more. These products are marketed under the product brands TDK, EPCOS, InvenSense, Micronas, Tronics and TDK-Lambda. TDK focuses on demanding markets in automotive, industrial and consumer electronics, and information and communication technology. The company has a network of design and manufacturing locations and sales offices in Asia, Europe, and in North and South America. In fiscal 2023, TDK posted total sales of USD 16.1 billion and employed about 103,000 people worldwide.

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