

Overvoltage protection

TDK offers extremely small TVS diodes for highly effective ESD protection

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TDK Corporation (TSE:6762) has released tiny high-power TVS diodes for ESD protection, extending its portfolio of components for bidirectional overvoltage protection of I/O interfaces. The space requirement of the so-called chip scale package (CSP) is just 400 x 200 μm^2 (CSP01005) or 600 x 300 μm^2 (CSP0201), while the package height of just 100 μm is also very low.

The new TVS diode types are designed for an operating voltage of 5 V and a response voltage of 6.8 V. The clamping voltages of the two new components are 7.2 V at a peak pulse current of 8 A or 8 V at a peak pulse current of 16 A. The TVS diodes differ in their parasitic capacitances: Type SD0201SL-GP101 (ordering code B74121G0050M060) has a capacitance of 12 pF, while the SD01005SL-GP101 type (B74111G0050M060) has a capacitance value of just 5 pF. Other features include the short response time and low leakage current of just 2 nA at 3.3 V.

The protective components are designed in accordance with IEC 61000-4-2 for an ESD contact discharge of up to 24 kV, exceeding standard requirements. They can withstand a high surge current load of up to 8 A according to IEC 61000-4-5 (8/20 μs), despite their low size.

The new TVS diodes are suitable for various IoT, smart home, and Industry 4.0 applications. Due to their minimal dimensions, the new protective components are ideal for wearables, smartphones, notebooks, tablets, smartwatches or even hearing aids.

Main fields of application

- Devices for IoT, smart home or Industry 4.0.
- Smartphones, notebooks, tablets, smartwatches or hearing aids

Main features and benefits

- Bidirectional protection of I/O interfaces
- ESD protection to IEC 61000-4-2
- Maximum contact discharge voltage of up to 24 kV
- Surge current loads of up to 8 A according to IEC 61000-4-5 (8/20 μs)
- Low clamping voltage of 8 V
- Minimal space requirements of 400 x 200 μm^2 or 600 x 300 μm^2 in chip scale package
- Extremely low package height of just 100 μm

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 2020, TDK posted total sales of USD 12.5 billion and employed about 107,000 people worldwide.

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