

Overvoltage protection

TDK offers a sample kit for TVS diodes

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TDK Corporation (TSE:6762) introduces a sample kit (B74999T9999M099) consisting of ten different types of ultra-compact TVS diodes. Five of them belong to the general-purpose GP series, which protects against overvoltage on applications such as smartphones, tablets, notebooks, wearables, and network components; five others belong to the high-speed ULC series, which are tuned for particularly sensitive high-speed interfaces (e.g., USB-C, Thunderbolt, HDMI, Display Port, MIPI, FireWire, DVI, S-ATA, or SWP/NFC). These protection diodes are available in the ultra-compact packages WL-CSP01005 (400 x 200 μm) and WL-CSP0201 (600 x 300 μm).

Thanks to the wide range of clamping voltages from 3.8 V to 27 V, the low leakage currents and the fast response time, the TVS diodes reliably protect diverse applications from electrostatic discharges. Because of the ultra-low profile of 100 μm or 150 μm , they are an excellent solution to protect smartphones, wireless earphones, smartwatches, and many other portable applications with limited space against ESD. Due to the very low capacitances starting at 0.18 pF, signal integrity is guaranteed even with very demanding high-speed interfaces.

Main applications

- ESD protection for smartphones, tablets, notebooks, wearables and networking equipment
- ESD protection of high-speed interfaces such as USB-C, Thunderbolt, HDMI, Display Port, MIPI, FireWire, DVI, S-ATA, or SWP/NFC

Main features and benefits

- Low clamping voltages starting from 3.8 V at I_{TLP} of 8 A
- Capacitance values starting from 0.18 pF
- Compact packages size WL-CSP01005 and WL-CSP0201
- Extremely low-profile heights of 100 μm (01005) or 150 μm (0201)
- Extremely robust against ESD contact discharge voltages of up to 25 kV

Type	Operating voltage $V_{RWM,max}$ [V]	Capacity C_{typ} [pF]	Leakage current $I_{leak,typ}$ [nA]	Clamping voltage 1 $V_{clamp1,typ}$ [V] $I_{TLP} = 8 \text{ A}$	Clamping voltage 2 $V_{clamp2,typ}$ [V] $I_{TLP} = 16 \text{ A}$
General-Purpose Series GP					
B74121G0050M060	±5.0	12.0	40	7,2	8.0
B74111G0050M060	±5.0	5.0	20	7,6	8.9
B74111G0055M060	±5.5	5.0	10	8,5	10.1
B74121G0160M060	±16.0	5.5	5	23	25.7
B74121G0200M060	±20.0	4.0	20	27	32
High-Speed Series ULC					
B74121U0028M060	±2.8	0.18	5	5.5	8.2
B74121U0033M060	±3.3	0.65	1	3.9	5.2
B74111U0033M060	±3.3	0.48	1	3.8	5.0
B74121U0055M060	±5.5	0.55	1	4.1	5.6
B74111U0055M060	±5.5	0.43	1	3.9	5.1

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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