

EMC components

TDK offers miniaturized common-mode filters for automotive high-speed differential transmission

- Supports high-speed differential transmission of over 10 Gbps
- Maximum operating temperature of +125 °C
- Conductive resin-based electrode structure achieves high durability

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TDK Corporation (TSE:6762) has developed the KCZ1210DH series common-mode filters for automotive applications. This series provides a noise control function for high-speed differential transmission signal lines for automobiles and is available in 1210 case size (1.25 x 1.0 x 0.5 mm). Mass-production began in February 2022.

An increase in advanced driver-assistance systems (ADAS) has led to rapidly growing demands for forward-sensing cameras and around-view monitors. Common-mode filters are used in autonomous vehicle camera signal lines as anti-noise products. To handle large-volume video signals, the signal transmission rate will continue increasing to build safe and secure autonomous driving systems.

This product supports high-speed signals with over 10 Gbps transmission rates. Additionally, it contributes to noise control in the GHz band generated due to increased speed. By supporting an operating temperature range from -55 °C to +125 °C and adopting a conductive resin-based electrode, it controls product cracks from thermal shock while increasing durability against mechanical stresses like substrate strains. The outer dimensions are 1.25 (L) x 1.0 (W) x 0.5 mm (H), which saves board mounting space.

TDK is working on enhancing its inductive devices for ADAS, and moving forward, will expand its line of miniaturized common-mode filters, further supporting market demands for higher-speed differential signals.

Main applications

- High-speed interface
- HDMI1.4/ 2.0 (3.4 Gbps / 6 Gbps), LVDS/MIPI D-PHY (4.5 Gbps), USB3.0 / 3.1 Gen1 (5 Gbps), USB3.1 Gen2 (10 Gbps), Next Gen Interface (10 Gbps~)
- Advanced driver-assistance systems (ADAS)

Main features and benefits

- Supports high-speed differential transmission of over 10 Gbps
- Operable at 125 °C, the maximum temperature
- Adoption of a conductive resin-based electrode reduces mechanical and thermal stresses.
- A compact size of 1.25 (L) x 1.0 (W) x 0.5 mm (H), to facilitate space saving

Key data

Type	Common-mode Impedance [Ω] @100 MHz	R _D [Ω]/1line max.	Rated current [mA] max.	Rated voltage [V] max.	Insulation resistance [MΩ] min.
KCZ1210DH120HRTD25	12 ± 5	1.5	100	5	10
KCZ1210DH500HRTD25	45 ± 25 %	2.5	100	5	10

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 2021, TDK posted total sales of USD 13.3 billion and employed about 129,000 people worldwide.

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