

## EMC components

# **TDK's latest high-impedance multilayer common mode filters mitigate noise issues in ultra-high speed automotive interfaces**

- Major improvements in noise control capabilities compared to conventional products
- Support for high-speed differential transmissions of over 10 Gbps
- Wide operating temperature range of -55 to +125 °C
- Impedance of 1000  $\Omega$  at 1 GHz

March 14, 2023

TDK Corporation (TSE: 6762) has announced the introduction of its new KCZ1210DH800HRTD25 common mode filter for deployment in ultra-high-speed automotive interfaces (1.25 x 1.0 x 0.5 mm - L x W x H). Mass production of the product began this month, March 2023.

This product is an addition to the KCZ1210DH Series that was released in February 2022. It enables substantial enhancements in noise control functions compared to conventional filters, with an impedance of 1000  $\Omega$  at 1 GHz and insertion loss of more than 25 db. Due to the recent spread of advanced driver-assistance system (ADAS) implementation, the speed of signal processing has ramped up significantly. Through this, the move to safer and more secure autonomous driving will be achieved. The new TDK filter contributes to preventing errors in high-speed signal processing in relation to front sensing cameras, mmWave radar, LiDAR, etc.

Through TDK's proprietary internal electrode pattern arrangement plus the integrated and sintered configuration of optimal low dielectric materials, this product achieves superior properties, alongside long-term reliability. Furthermore, by adding a conductive resin-based layer to the terminal electrodes, the risk of cracks appearing (due to thermal shocks) is reduced. It also heightens durability to mechanical stresses, such as substrate strains.

The automotive-grade KCZ1210DH800HRTD25 common mode filter is extremely compact. It has 1.25 mm x 1.0 mm x 0.5 mm dimensions. An operating temperature range of -55 to +125 °C is supported.

TDK offers a diverse portfolio of multilayer automotive products, including chip beads that can be used at up to 150 °C and common-mode filters to address radiant noise reduction in high-speed differential transmissions. The company will continue to develop and service noise control products to contribute to communication quality in increasingly faster autonomous driving systems.

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### Main applications

- This filter supports ultra-high speed interfaces - including 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).

### Main features and benefits

- Major improvements in noise control capabilities compared to conventional products
- Support for high-speed differential transmissions of over 10 Gbps
- Wide operating temperature range of -55 to +125 °C
- Impedance of 1000 Ω at 1 GHz

### Key data

| Type                | Common impedance [Ω] at 100MHz | DC resistance [Ω] max. | Rated current [mA] max. | Rated voltage [V] max. | Insulation resistance [MΩ] min. |
|---------------------|--------------------------------|------------------------|-------------------------|------------------------|---------------------------------|
| KCZ1210DH800HR TD25 | 80 ± 25 %                      | 3.0                    | 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 2022, TDK posted total sales of USD 15.6 billion and employed about 117,000 people worldwide.

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