

EMC components

TDK launches industry's smallest thin-film common mode filters for high-speed differential transmission applications

- The new common mode filter series is now the industry's smallest* size (0.45 x 0.3 x 0.23 mm - L x W x H), and uses TDK's proprietary fine patterning for the coil conductor
- Offers noise control in high-speed differential transmission, as well as high common mode attenuation

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TDK Corporation (TSE: 6762) has announced the introduction of its new TCM0403T series of noise reduction common mode filters for high-speed interface differential transmission (0.45 x 0.3 x 0.23 mm - L x W x H). Mass production of the product series began this month, June 2023.

In recent years, as digital electronic equipment has become more sophisticated and multi-functional, the speed of transmission signals has increased. The noise emitted from the related equipment has a high frequency, interfering with other devices and affecting communication.

The TCM0403T-200-2P-T210 and TCM0403T-080-2P-T210 products in this lineup have a differential insertion loss cutoff frequency of 8 GHz or higher and can support transfer speeds up to a maximum of 12 Gbps. Common mode attenuation, which is an important index for noise countermeasures, has improved in this series compared to conventional products. TCM0403T-200-2P-T210 offers a high common mode attenuation of 42 dB at 2.4 GHz, and TCM0403T-080-2P-T210 products have a high common mode attenuation of 34 dB at 5.0 GHz.

The coil conductor pattern is designed using TDK's proprietary fine patterning, which uses a thin-film production method and applies a technology cultivated through the development of TDK's magnetic heads. The implementation of this industry's new smallest size common mode filter will support the miniaturization, thinning, and weight reduction of electronic devices.

To control radiation and exogenous noise in the differential transmission lines that are expected to increase in speed in the future, TDK will continue to develop small-sized thin-film common mode filters and provide services contributing to the quality improvement of wireless communication systems.

* As of June 2023, according to TDK

Main applications

- High-speed interface for smartphones, tablets, wearable devices, etc.
- USB3.0/3.1/3.2, HDMI2.0/2.1, Display port/eDP, MIPI D-PHY

Main features and benefits

- Contribution to savespace with the industry's smallest size (0.45 x 0.3 x 0.23 mm - L x W x H), which has been realized using a thin-film production method
- Offers noise control in high-speed differential transmission, as well as high common mode attenuation

Key data

Type	Common mode Attenuation [dB] typ.	Cutoff frequency [GHz] typ.	DC resistance [Ω]/1line	Rated current [mA]max	Rated voltage [V]	Insulation resistance [M Ω]min.
TCM0403T-200-2P-T210	42 @2.4GHz	8.0	3.0 \pm 30%	35	5	10
TCM0403T-080-2P-T210	34 @5.0GHz	15.0	1.2 \pm 30%	50	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 2023, TDK posted total sales of USD 16.1 billion and employed about 103,000 people worldwide.

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