

EMC Components

TDK offers miniaturized, high performance thin-film common-mode filters for mobile devices

- New to the series, the product provides high-attenuation and high-speed signal transmission
- Footprint is 58% smaller and weight is 56% lighter than existing products due to thin-film method

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TDK Corporation (TSE:6762) has developed the TCM0403M Series of miniaturized thin-film common-mode filters for mobile devices. The 0403 case size (0.45 x 0.3 x 0.23 mm) is 58 % smaller and 56 % lighter than previous products. With its high common-mode attenuation characteristic, these products reduce intruding noise and improve wireless signal reception sensitivity. The common mode attenuation at 2.4 GHz is 21 dB, and 28 dB at 5.0 GHz, with a maximum permissible current of 50 mA. Mass production started in August 2021.

Due to the growing multifunctionality of wireless devices such as smartphones, wearables and other mobile products, noises generated inside the devices are deteriorating wireless signals. It is critical to prevent the deterioration of signal reception sensitivity and to prevent external noise that has the potential to cause device malfunction; this series addresses those common challenges.

The products are mountable in ultra-small spaces due to their 58 % footprint reduction, which was previously impossible with the existing TCM0605 Series (0.65 x 0.5 mm case size). By improving TDK's proprietary fine pattern technology and optimizing design, the products feature a common-mode attenuation characteristic that equals existing products and a differential transmission characteristic capable of supporting high-speed signal transmission.

TDK's wide array of products meets the needs for common filters for high-speed differential signal lines, including for USB, MIPI and HDMI.

Glossary

- Mode transfer characteristic: Differential - common-mode transfer characteristic (Scd21)

Main applications

- High-speed differential interfaces (USB, MIPI, HDMI, etc.) in mobile devices such as wearable devices, smartphones and tablets.

Main features and benefits

- A compact size of 0.45 (L) x 0.3 (W) x 0.23 (H) mm to facilitate space saving
- 58 % smaller footprint and 56 % lighter weight than existing products
- High common-mode attenuation, supporting high-speed signal transmission and great mode transfer characteristic (Scd21)

Key data

Type	Common-mode attenuation [dB] typ.	DC resistance [Ω] / 1 line	Rated current [mA] max.	Rated voltage [V] max.	Insulation resistance [M Ω] min.
TCM0403M-120-2P-T210	21 @ 2.4 GHz	1.0 \pm 30 %	50	5	10
TCM0403M-350-2P-T210	28 @ 5.0 GHz	2.0 \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 2021, TDK posted total sales of USD 13.3 billion and employed about 129,000 people worldwide.

You can download this text and associated images from www.tdk.com/en/news_center/press/20210831_01.html.

Further information on the products can be found under https://product.tdk.com/system/files/dam/doc/product/emc/emc/cmfcmc/catalog/cmfccommercial_signal_tcm0403m_en.pdf.

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