

EMC components

Thin-film common-mode filter with the world's highest cutoff frequency

- Lineup of thin-film common-mode filters expanded with high cutoff frequency types
- Mass production is scheduled to start from August 2012

August 23, 2012

TDK Corporation has developed a new thin-film common-mode filter with the world's highest cutoff frequency of 10 GHz*, enabling it to efficiently reduce high frequency noise emissions, especially in the 5 GHz band. The common-mode insertion loss peak of the new TCM0806T-060-2P filter is thus much higher than that of existing common-mode filters, which achieve their best noise suppression in the range from several hundred MHz to 2.5 GHz. The high cutoff frequency of the new filter ensures that no signal degradation occurs when the filter is used in communication circuits for high-speed interfaces such as Thunderbolt, USB 3.0, and Serial-ATA (Gen III), making the thin-film common-mode filter suitable for sophisticated electronic devices with high signal transfer speeds. The new component, which offers a typical impedance of 6 Ω at 100 MHz, measures in at 0.85 x 0.65 x 0.40 mm³ (EIA case size 0806). Mass production is scheduled to start from August 2012.

In recent years, digital electronic devices have evolved towards higher performance, multi-functionality, and higher data handling volumes. Consequently, the speed of signal transfer has increased as well. As a result the noise components generated within such a device are generally of a higher frequency as well. At the same time, space is limited and components need to be extremely small and thin for higher mounting density. Since multiple signal paths exist in close proximity in a single device, interference from one may affect the signal in another, leading to signal quality deterioration known as internal contamination.

TDK harnessed its high frequency expertise and proprietary thin-film patterning technology to create a miniature component that features extremely compact and highly precise coil patterns and is thus able to offer the performance demanded in high-speed digital devices.

* As of August 2012, according to TDK investigations.

Glossary

- Thunderbolt: A high-speed data interface that is implemented in a serial bus specification for connecting peripheral devices to computers. The maximum transfer speed is rated at 10 Gbit/s, or approximately twice as fast as USB 3.0 and 20 times faster than USB 2.0.

Main applications

- High-speed interfaces (Thunderbolt, USB 3.0, S-ATA Gen III etc.) for notebook PCs, hard disk drives, solid-state drives (SSD) etc.

Main features and benefits

- High cutoff frequency maintains signal quality in high frequency band.
- Excellent noise suppression capability in high frequency band

Key data

Type	Dimensions [mm]	Impedance at 100 MHz [Ω]	Cutoff frequency [GHz]	DC resistance [Ω]
TCM0806T-060-2P	0.85 x 0.65 x 0.40	6.0*	10.0*	1.40*

* Typical

About TDK Corporation

TDK Corporation is a leading electronics company based in Tokyo, Japan. It was established in 1935 to commercialize ferrite, a key material in electronic and magnetic products. TDK's current product line includes passive components, magnetic application products as well as energy devices, flash memory application devices, and others. TDK today focuses on demanding markets in the areas of information and communication technology and consumer, automotive and industrial electronics. The company has a network of design and manufacturing locations and sales offices in Asia, Europe, and in North and South America. In fiscal 2012, TDK posted total sales of USD 9.9 billion and employed about 79,000 people worldwide.

About TDK-EPC Corporation

TDK-EPC Corporation, a TDK group company, is a leading manufacturer of electronic components, modules and systems, headquartered in Tokyo, Japan. TDK-EPC was founded in 2009 from the combination of the passive components business of TDK and the EPCOS Group. The portfolio includes ceramic, aluminum electrolytic and film capacitors, ferrites and inductors, magnets, high-frequency components such as surface acoustic wave (SAW) filter products and modules, piezo and protection components, and sensors. The company markets the product brands TDK and EPCOS.

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Contacts for regional media

Region	Contact	Phone	Mail
Japan	Ms. Mari KONISHI TDK Corporation Tokyo, Japan	+813 5201-7102	pr@jp.tdk.com
ASEAN	Ms. Tomoko KAMEDA TDK Singapore (Pte) Ltd. Singapore	+65 6273 5022	asean.inquiry@sg.tdk.com
Greater China	Ms. Clover XU TDK China Co., Ltd. Shanghai, China	+86 21 61962307	pr@cn.tdk.com
Europe	Mr. Frank TRAMPNAU TDK Electronics Europe GmbH Dusseldorf, Germany	+49 211 9077 127	trampnau@eu.tdk.com
America	Ms. Sara M. REYNOSO TDK Corporation of America Irving, TX, USA	+1 972-409-4519	sara.reynoso@us.tdk.com