

Inductors

Thin-film common mode filter with integrated ESD suppression

- World's first common-mode filter to integrate both EMI and ESD suppression in a single component*

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TDK-EPC, a group company of the TDK Corporation, introduces the world's first thin-film common mode filter (TCE1210 from TDK) with both high-speed differential transmission common mode noise suppression and ESD protection in a single component. Mass production is scheduled to begin in April 2010.

The new filter is the same size as existing TDK common mode filters ($1.25 \times 1.00 \times 0.60 \text{ mm}^3$), but using the proprietary thin-film circuit formation and materials technologies, TDK successfully added an ESD suppressor function to the EMI function already present in the internal structure of existing filters. As a result, an additional varistor for ESD suppression is no longer needed. For manufacturers this means a reduction in the number of components and their mounting area, thus contributing to the further miniaturization of mobile devices.

The new filter's cutoff frequency is 5.0 GHz, the common mode impedance is $90 \Omega \pm 25 \Omega$, rated current is 100 mA, and ESD immunity complies with the IEC 61000-4-2 international surge standards. In addition, the filter's low parasitic capacitance has nearly no effect on the impedance characteristic (TDR measurement), making this filter perfect for use with high-speed, high-volume interfaces such as HDMI, USB 3.0, and SATA in consumer electronics applications.

*As of April 2010, according to TDK investigations.

Glossary

- EMI: Electromagnetic interference. Refers to interference caused by electromagnetic radiation mainly from electronic devices. EMI suppression is a type of EMC (electromagnetic compatibility) measure.
- ESD: Electrostatic discharge. Surges caused by static electricity can harm semiconductor components and cause electronic devices to malfunction.
- ESD suppressor: A type of electrostatic discharge protection device that prevents damage to and malfunction of circuits caused by static electricity.
- IEC: International Electrotechnical Commission. An international organization established in 1906 that coordinates the standards of various countries in the electrical, electronics, communications, and other fields.
- TDR: Time-domain reflectometry.

Main applications

- Noise and electrostatic suppression for high-speed differential transmission in general consumer electronics products such as mobile devices.

Main features and benefits

- A single component can provide common mode noise and electrostatic suppression. The number of components and mounting area can be reduced.

Key data

Type	TCE1210-900-2P-T000
Common mode impedance	90 Ω \pm 25 Ω
Cutoff frequency	5.0 GHz
Rated voltage (max.)	10 V
Rated current	100 mA
Dimensions	1.25 \times 1.00 \times 0.60 mm ³

About TDK-EPC Corporation

TDK-EPC Corporation (TDK-EPC), a TDK group company, is a leading manufacturer of electronic components, modules and systems headquartered in Tokyo, Japan. TDK-EPC has emerged from the combination of the electronic components business of TDK and the EPCOS Group and markets its products under the product brands, TDK and EPCOS.

The product portfolio includes ceramic, aluminum electrolytic and film capacitors, ferrites and inductors, high-frequency components such as surface acoustic wave (SAW) filter products and modules, piezo and protection components, and sensors. With this product spectrum TDK-EPC offers a broad range of products and solutions of outstanding value from a single source and focuses on demanding markets in the areas of information and communication technology and automotive, industrial and consumer electronics. The company has design and manufacturing locations and sales offices in Asia, Europe, and in North and South America.

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