

## EMC components

### **World's smallest common-mode choke for automotive Ethernet**

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- World's best common-mode noise suppression
- Qualified to AEC-Q200

November 7, 2013

TDK Corporation presents a new series of common-mode chokes for automotive Ethernet that features the world's best common-mode noise suppression. Measuring in with a footprint of 4.5 mm x 3.2 mm and an insertion height of just 2.8 mm, the miniaturized ACT45L series is the world's smallest common-mode choke for automotive Ethernet and fulfills the standard's stiffest requirements. Mass production of the new common-mode choke starts in November 2013.

Ethernet, which supports data rates of up to 100 Mbit/s, is quickly becoming the networking protocol of choice for high-speed multimedia infotainment applications in cars. Because it employs lightweight unshielded twisted-pair (UTP) wires, automotive Ethernet is able to save space and weight. The specifications of the new automotive Ethernet standard with regard to common-mode noise suppression are significantly more demanding than the requirements of CAN and FlexRay. The higher the attenuation of the noise is, the better the performance of the common-mode choke. Thanks to TDK's advanced technologies, the noise suppression of the ACT45L is 15 dB to 25 dB better than existing products over a broad frequency range up to 100 MHz.

The new ACT45L series is designed to be manufactured using fully-automated processes that include a high-precision autowinding process and the bonding of ferrite cores with a highly temperature- and moisture-resistant adhesive. The result is a new series of automotive components qualified to AEC-Q200 with high reliability and consistent quality.

The new product joins the existing ACT45B and ACT45R series of common-mode chokes for CAN and FlexRay, respectively, to form a highly versatile lineup of high-performance EMC components for automotive networks.

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#### **Main applications**

- Automotive Ethernet systems for in-vehicle multimedia and infotainment such as cameras for driver assistance, navigation systems and audio information applications

#### **Main features and benefits**

- World's best common-mode suppression
- World's smallest common-mode choke for automotive Ethernet with dimensions of 4.5 mm x 3.2 mm x 2.8 mm
- Manufactured with fully-automated processes for high reliability and consistent quality
- Qualified to AEC-Q200

## Key data

Type	Common-mode inductance @ 100 MHz [μH]	DC resistance* [Ω]	Typ. insulation resistance [MΩ]	Rated current* [mA DC]	Rated voltage* [V DC]
ACT45L-201-2P	200	4.5	10	100	50

\* Maximum

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## 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 portfolio includes electronic components, modules and systems marketed under the product brands TDK and EPCOS, power supplies, magnetic application products as well as energy devices, flash memory application devices, and others. TDK 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 2013, TDK posted total sales of USD 9.1 billion and employed about 80,000 people worldwide.

## About TDK-EPC Corporation

TDK-EPC Corporation, a TDK group company, is the manufacturer of TDK's electronic components, modules and systems and is headquartered in Tokyo, Japan. TDK-EPC was founded on October 1, 2009, from the combination of the electronic components business of TDK and the EPCOS Group. The product portfolio includes ceramic, aluminum electrolytic and film capacitors, ferrites, inductors, high-frequency components such as surface acoustic wave (SAW) filter products and modules, piezo and protection components, and sensors.

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