EMC components

World's smallest common-mode choke for automotive Ethernet

- 50 percent less volume than existing ACT45L types
- Wide temperature range from -40 °C to +125 °C
- Qualified to AEC-Q200

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TDK Corporation presents the ACT1210L common-mode choke – the world's smallest of its type for automotive Ethernet applications. Its dimensions are just 3.2 mm x 2.5 mm x 2.5 mm, making it just half the size of the existing ACT45L choke which measures in at 4.5 mm x 3.2 mm x 2.8 mm. Series production of the new common-mode chokes starts in June 2017.

Despite the 50 percent reduction in size, the ACT1210L choke – which is qualified to AEC-Q200 – has an excellent Scd21 mode conversion characteristic that is equivalent to that of the existing ACT45L. This key parameter expresses the amplitude relationship between differential and common-mode signal and should be as large as possible. The combination of miniaturization with excellent electrical parameters was made possible by TDK's advanced design and winding technology. Due to the special connection technology of the windings, the common-mode chokes are suitable for a wide temperature range from -40 °C to +125 °C. Furthermore, thanks to the fully automated manufacturing process, the new ACT1210L components offer a very high reliability and meet the highest quality requirements.

Typical applications for these Ethernet common-mode chokes are onboard cameras that can be further miniaturized and designed for even higher operating temperatures. In future, TDK will present components for an even wider temperature range in order to further simplify the design of high-speed communication systems for vehicles.

* Status: March 2017 according to studies by TDK

Glossary

- Scd21 mode conversion characteristic: Amplitude ratio between differential and common-mode signal; the higher this value, the greater the common-mode suppression

Main applications

- Automotive Ethernet applications

Main features and benefits

- World's smallest components of this type
- Scd21 mode conversion characteristic equivalent to that of the existing ACT45L common-mode chokes
- Suitable for automotive applications, thanks to a wide temperature range from -40 °C to +125 °C
- Very high reliability and quality due to fully automated manufacture

Key data

Type	Inductance at 100 kHz [µH]	DC resistance [Ω]	Rated current [mA]	Rated voltage [V]
ACT1210L-201-2P-TL00	200 +30 / -10%	5.5 max.	70 max.	80 max.

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 passive components, such as ceramic, aluminum electrolytic and film capacitors, ferrites and inductors, high-frequency products, and piezo and protection components, as well as sensors and sensor systems and power supplies. These products are marketed under the product brands TDK, EPCOS, InvenSense, Micronas, Tronics and TDK-Lambda. TDK's further main product groups include magnetic application products, energy devices, and flash memory application devices. TDK focuses on demanding markets in the areas of information and communication technology and automotive, industrial and consumer 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 2017, TDK posted total sales of USD 10.5 billion and employed about 100,000 people worldwide.

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