

Inductors

TDK launches automotive power-over-coax (PoC) inductors for up to 1600 mA

- Compatible with high currents of up to 1600 mA
- Ensures high impedance across a wide frequency range
- Suitable for high-temperature environments; supports a wide operation range of -55 °C to +155 °C

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TDK Corporation (TSE: 6762) announces the expansion of the ADL3225VF series (3.2 x 2.5 x 2.3 mm; L x W x T) of wire-wound inductors for automotive power-over-coax (PoC). Mass production of these new components began in March 2025.

Advanced driver-assistance systems (ADAS) are designed to enhance vehicle safety by using automotive cameras and sensors that monitor the driving environment. These systems rely on multiple cameras, typically installed at the front, rear, and sides of the vehicle, to capture real-time imagery for safe and secure driving. In standard configurations, automotive cameras require two separate lines for power and signal transmission: a power line connected to the vehicle's battery and a signal line connected to the electronic control unit (ECU). However, with PoC technology, a single coaxial cable can simultaneously carry both power and data, simplifying and reducing cabling. This can reduce the vehicle's weight, which in turn can improve fuel efficiency and lower carbon emissions.

TDK's new ADL3225VF series implements a rated current of 1.6 A, which is equivalent to that of the ADL4532VK series ([released on February 13, 2025](#)), while achieving a reduction in the mounting area of approximately 45%. The PoC system requires a filter incorporating multiple inductors to separate power from the data signal before processing effectively. In comparison with the conventional products, ADL3225VM-2R2M, the new ADL3225VF series increases the rated current by approximately 20% by using proprietary materials and structural design innovations. At the same time, the ADL3225VF series delivers high impedance across a wide frequency range from tens of megahertz (MHz) to hundreds of megahertz. This reduces the number of inductors used, saving space. Additionally, the inductor ensures high reliability with an upper operation temperature limit of +155 °C.

Looking ahead, TDK is committed to developing inductors for automotive PoC applications by pursuing optimized design by refining multilayer, wire-winding, and thin-film technologies to address market needs. TDK will expand its lineup of products to improve the quality of PoC transmission signals.

Glossary

- PoC: Transmission technology whereby both data and power are simultaneously transmitted over the same coaxial cable
- ADAS: Advanced driver-assistance systems
- ECU: Electronic control unit

Main applications

- PoC circuits for automotive cameras

Main features and benefits

- Compatible with high currents of up to 1600 mA, with the high functionality of automotive cameras
- Ensures high impedance across a wide frequency range, helping to reduce the number of inductors used and save space
- Suitable for high temperature environments; supports a wide operation range of -55 °C to +155 °C

Type	Inductance @ 100KHz [μH] ±20%	DC resistance (max.) [Ω]	I _{sat} (typ., 25 °C) [mA]	I _{temp} (typ., 105 °C) [mA]	I _{temp} (typ., 125 °C) [mA]
ADL3225VF-R49M-TL000	0.49	0.11	≥2000	1600	1250

I_{sat}. (25 °C): when based on inductance variation (30% lower than the nominal inductance value)

I_{temp}. (105 °C): When based on temperature rise (temperature rise of 50 K by self-heating)

I_{temp}. (125 °C): When based on temperature rise (temperature rise of 30 K by self-heating)

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 2024, TDK posted total sales of USD 14.6 billion and employed about 101,000 people worldwide.

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