

Inductors

TDK expands thin-film power inductors for automotive applications to higher currents

- 16% higher rated current and 31% lower DC resistance compared to conventional products
- Highly reliable for use in high-temperature environments up to +150 °C

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TDK Corporation (TSE: 6762) has expanded its TFM201612BLEA series (2.0 x 1.6 x 1.2 mm – L x W x H) of thin-film power inductors for automotive power circuits to higher currents up to 5.6 A. The two new components have a rated inductance of 0.33 μ H and 0.47 μ H, respectively. Mass production of this product series began in July 2025.

In recent years, demand for inductors for automotive power circuits has continued to increase as electric vehicles and ADAS for safe driving have become more widespread. Highly efficient power supply circuits are necessary to lower energy consumption, driving the development of low-loss, high-efficiency inductors. Inductors for power supply circuits must be compact, as they need to be installed within the limited space of ECUs. High reliability is also crucial, as they must operate in harsh, high-temperature environments.

Compared to the conventional TFM-ALMA series of the same size with an inductance of 0.47 μ H, this new product achieves a 16% higher rated current of 5.6 A and a 31% lower DC resistance of 22 m Ω , offering the highest standard* of electrical performance. This helps to reduce loss and to improve efficiency for power supply circuits, enabling support for high-current applications within the same footprint as conventional models. Additionally, the inductor ensures high reliability with an upper operation temperature range limit of +150 °C, thanks to a product design assuming use in high-temperature environments in automotive applications.

With TDK's proprietary materials and structural designs adapted to the diverse needs of automotive power circuits, TDK will work to expand its comprehensive lineup, utilizing not only thin-film technology but also wire-winding and multilayer processing technologies, thereby contributing to the enhancement of the quality of automotive power circuits.

*Source: TDK, as of July 2025

Glossary

- ADAS: Advanced Driver-Assistance Systems. A system that assists drivers in driving and parking functions.
- ECU: Electronic Control Unit. Electrical circuits controlling vehicle systems.

Main applications

- Various automotive power circuits
ADAS, xEV, automotive camera modules, cellular V2X

Main features and benefits

- 16% higher rated current compared to conventional products, supporting high-current applications

- 31% lower DC resistance compared to conventional products, contributing to low-loss, high-efficiency power circuits
- Highly reliable for use in high-temperature environments up to +150 °C

Key data

Type	Inductance [μH] @1MHz	Rated voltage [V]	DC resistance (max.) [mΩ]	I _{sat} (max.) [A]	I _{temp} (max.) [A]
TFM201612BLEAR33MTCA	0.33±20%	20	17	6.7	5.3
TFM201612BLEAR47MTCA	0.47±20%	20	22	5.6	4.4

Rated current: I_{sat} or I_{temp}, whichever is less

I_{sat}: Current value based on inductance variation (30% lower than the initial inductance value)

I_{temp}: Current value based on temperature increase (Temperature increase of 40 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. 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, software 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 2025, TDK posted total sales of USD 14.4 billion and employed about 105,000 people worldwide.

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