Inductors

TDK launches compact thin-film inductors for optical transceivers that reduce losses in AI data centers

- The component achieves a high inductance of 10 µH despite a small 1206 case size
- High impedance characteristics over a wide frequency range of 10 MHz to 200 MHz
- DC resistance reduced by approximately 70%, rated current increased by 1.7 times

August 26, 2025

TDK Corporation (TSE: 6762) has expanded its PLEC69B series (1.2 x 0.6 x 0.95 mm – L x W x H) of thin-film inductors, used for separating the data signal from the power in optical transceivers in AI data centers. Mass production of these components began in August 2025.

The widespread adoption of AI led to a skyrocketing demand for high-speed and high-capacity optical transceivers. Bias-tee circuits, which are used in these transceivers, are designed to superimpose signals and power on a single transmission line. Because of the impedance characteristics, inductors like the PLEC69B separate the signal from the power in bias-tee circuits, preventing the signal from flowing into the power side.

The new component achieves the highest standard performance* for an inductor with 10 µH in 1206 size with TDK's proprietary metallic magnetic materials and structural designs. With a wide frequency range of 10 MHz to 200 MHz, signals can be separated from power with high impedance, which improves communication quality. Additionally, the DC resistance of 1.4 Ω (typ.) is approximately 70% lower than that of similar products on the market. This reduces power loss and heat generation. The rated current (I_{sat}) of 0.2 A is also 1.7 times higher than that of similar products. In addition, the smaller dimensions require less space on the PCB. The PLEC69B ensures high reliability with an upper operating temperature limit of +125 °C.

TDK will continue contributing to its extensive lineup by developing products to meet market needs for lower power consumption and high-speed communications designed for data centers, servers, as well as optical communication devices and edge devices, supporting the AI market in anticipation of significant future growth.

*Source: TDK, as of August 2025

Glossary

- Bias-tee circuit: A circuit that superimposes and separates the signal and power along a single transmission line

Main applications

- For signal circuits: Bias-tee circuits for optical communication modules
- For power supply circuits: Smartphones, TWS, wearable devices

Main features and benefits

- High impedance characteristics with a wide frequency range of 10 MHz to 200 MHz
- DC resistance reduced by approximately 70%, producing a typical resistance of 1.4 Ω to help reduce power loss and heat generation
- Rated current (I_{sat}) of 0.2 A, increased by 1.7 times

Key data

Type	Inductance [µH] @ 1 MHz	DC resistance [Ω] (max./typ.)	I_{sat} [A] (max.)	I_{sat} [A] (typ.)	I_{temp} [A] (max.)	I_{temp} [A] (typ.)
PLEC69BCA100M-1PT00	10±20%	1.68/1.4	0.2	0.25	0.35	0.4

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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