

Temperature sensors

TDK launches new Au wire bond-optional NTC thermistors for laser diode temperature measurement

- Available with Au wire bonding
- Within ±1% tolerance of both resistance and B value, enabling highly accurate temperature sensing
- Used to measure temperature of laser diodes in optical communication transceivers and LiDAR

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TDK Corporation (TSE:6762) has announced the introduction of its new NTCWS series of NTC thermistors, available with Au wire bonding. These bondable NTC thermistors can be mounted with Au wire bonding inside the package for highly accurate temperature detection of laser diodes (LDs) used for optical communication. Mass production of the product series began in September 2023.

The use of LD devices in optical communication transceivers is increasing, as typified by 5G and LiDAR used for inter-vehicle distance measurement. Since the wavelength of LDs changes with temperature, controlling the temperature of LDs is the key to improving their performance.

The new NTCWS series of temperature sensors from TDK supports a narrow tolerance (\pm 1%) of resistance and B value and can be mounted with Au wire bonding near the LD for highly accurate temperature sensing. Featuring a compact and lead-free design, the NTCWS series thermistors can withstand operating temperatures of -40 \sim 125 °C. TDK has initially released sensors with a B value of 3930 K ± 1 % (the NTCWS3UF103FC1GT and NTCWS3UF103HC1GT) and plans to release additional products with other characteristics in the future.

TDK is committed to improving temperature sensor products for industrial and automotive applications and will continue to expand its NTC thermistor portfolio to meet market needs.

Main applications

• Temperature sensing of LD for optical communication transceiver and LiDAR

Main features and benefits

- Supports Au wire bonding that can be mounted inside the LD package
- Narrow tolerance (± 1 %) of both resistance and B value

Туре	Dimensions [mm] (L x W x T (max.))	Resistance R25 [K Ω]	B value B25/85 [K]	Electrode
NTCWS3UF103FC1GT	L, W : 0.33 ± 0.04	10.0 ± 1 %	B25/85-2020 + 10/	Au Thick film
NTCWS3UF103HC1GT	T : 0.25 max	10.0 ± 3 %	D20/00-3930 ± 1%	



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 2023, TDK posted total sales of USD 16.1 billion and employed about 103,000 people worldwide.

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