

Multilayer Ceramic Capacitors

TDK expands MLCC lineup with new state-of-the-art, low-resistance soft termination types

- Resin layers in the new products cover only a board mounting side
- Achieve both high reliability and low resistance by the original TDK design and structure
- Large capacitance with new lineup featuring up to 22 μF in 3216 size and 47 μF in 3225 size
- Upgrades for automotive grade (compliant with AEC-Q200) and commercial grade

September 12, 2023

TDK Corporation (TSE:6762) has expanded its CN series of multilayer ceramic capacitors (MLCCs) with a unique design and structure. Unlike conventional soft termination MLCCs with the entire terminal electrodes covered with resin layers, the new design features resin layers covering only a board mounting side, allowing electric current to pass outside the layers, reducing electrical resistance. The soft termination product with this structure is the first in the industry.* Adding CNA series (automotive grade) and CNC series (commercial grade) products addresses market needs for large-value capacitances.

The new MLCCs feature up to 22 μF in 3216 size ($3.2 \times 1.6 \times 1.6 \text{ mm}$ - L x W x T) and 47 μF in 3225 size ($3.2 \times 2.5 \times 2.5 \text{ mm}$ - L x W x T) with low-resistance soft termination, translating to higher capacitances than conventional products and thereby helping reduce the number of parts and size.

MLCCs with soft termination prevent short circuits in power and battery lines. However, since soft termination has a slightly higher terminal electrode resistance, it is necessary to keep the resistance low to reduce loss.

The automotive grade CNA series are AEC-Q200 compliant.

Mass production will commence in September 2023. These products are an addition to the CN series originally released in September of 2021 due to the continuing need for higher capacitance.

* As of September 2023, according to TDK

Glossary

- μF : microfarad is a unit of capacitance, equivalent to 0.000001 F
- Soft termination: Standard terminal electrodes have a two-layer plating structure with the base electrodes Cu and Ni-Sn, while soft termination has a conductive resin applied between the two layers of plating with the base electrodes Cu and Ni-Sn
- AEC-Q200: a standard set by the Automotive Electronics Council regarding passive components

Main applications

- Smoothing and decoupling of the power lines for various kinds of electronic control units (ECU) for automobiles
- Smoothing and decoupling of the power lines for industrial robots, etc.

Main features and benefits

- High reliability, compliant with AEC-Q200
- Higher capacitances of 22 μF in 3216 size and 47 μF in 3225 size enable space-saving designs and a reduction in the number of components
- TDK's unique terminal structure realizes soft termination that has a low resistance equivalent to that of standard products

Type*	Outer dimensions [mm]	Temperature characteristics	Rated voltage [V]	Capacitance [μF]
CNA5L1X7R1H106K160AE	3.2 x 1.6 x 1.6	X7R	50	10
CNC5L1X7R1H106K160AE				
CNA5L1X7S1A226M160AE		X7S	10	22
CNC5L1X7S1A226M160AE				
CNA6P1X7S1A476M250AE	3.2 x 2.5 x 2.5	X7S	10	47
CNC6P1X7S1A476M250AE				

* CNA is for automotive grade, and CNC is for commercial grade.

Samples may be purchased from the product page that is displayed after clicking Type.

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.

You can download this text and associated images from
https://www.tdk.com/en/news_center/press/20230912_01.html

Further information on the products can be found under
https://product.tdk.com/system/files/dam/doc/product/capacitor/ceramic/mlcc/catalog/mlcc_automotive_soft_cna_en.pdf (Automotive grade)
https://product.tdk.com/system/files/dam/doc/product/capacitor/ceramic/mlcc/catalog/mlcc_commercial_soft_cnc_en.pdf (Commercial grade)

Contacts for regional media

Region	Contact		Phone	Mail
Japan	Mr. Daiki ITO	TDK Corporation Tokyo, Japan	+813 6778-1055	TDK.PR@tdk.com
ASEAN	Ms. Jiang MAN Ms. Pei Lu LEE	TDK Singapore (Pte) Ltd. Singapore	+65 6273 5022	asean.inquiry@sg.tdk.com
Greater China	Ms. Clover XU	TDK China Co., Ltd. Shanghai, China	+86 21 61962307	TDK.PR-CN@tdk.com
Europe	Mr. Frank TRAMPNAU	TDK Management Services GmbH Duesseldorf, Germany	+49 211 9077 127	frank.trampnau@tdk.com
America	Ms. Sara M. LAMBETH	TDK Corporation of America Irving, TX, USA	+1 972-409-4519	sara.lambeth@us.tdk.com