

High Voltage NPO MLCC: Driving Efficiency in Modern Power Era

The global push for energy efficiency and advanced electronic devices has driven a surge in demand for high-performance passive components. High Voltage Multilayer Ceramic Capacitors (MLCC) play a pivotal role in power distribution and conversion systems, particularly in emerging applications such as electric vehicle (EV) infrastructure and high-efficiency power supplies.

Power Conversion Demands and Challenges

In power distribution systems, high voltage from the grid is typically converted to intermediate levels before being stepped down to low-voltage AC, such as 120V, 220V, or 440V. This AC voltage is then converted to DC to suit the specific needs of electronic devices. In advanced applications like Level 3 DC fast charging stations, battery architectures have progressed from 400V systems toward 800V systems, leveraging third-generation semiconductors.

These advancements demand higher efficiency and reliability in power distribution, particularly in key components. LLC resonant converters, for example, have become crucial in modern power supply designs due to their ability to reduce power losses. The performance of these systems relies heavily on the quality of passive components used.

Advantages of Class I NPO MLCC

Class I NPO MLCCs stand out as the optimal choice for high-efficiency power designs. Compared to Class II MLCCs such as X5R, X6S, and X7R, NPO capacitors offer:

- **Low Equivalent Series Resistance (ESR):** Minimizing energy dissipation.
- **High Quality Factor (Q):** Enhancing signal integrity and power efficiency.
- **Superior Temperature Stability:** Ensuring consistent performance under varying thermal conditions.

YAGEO Group's 1206/1210 630V/1000V NPO series is specifically engineered for demanding applications. These capacitors deliver industry-leading performance in parameters such as breakdown voltage, ESR, and self-temperature rise, making them ideal for high-efficiency power distribution systems.

Applications and Use Cases

YAGEO Group's High Voltage NPO MLCCs are well-suited for:

- **EV On board Charger**

Voltage	Case Size	General Termination	Soft Termination
630V	1206	AC1206JKNPOZBN103	AS1206JKNPOZBN103
		AC1210JKNPOZBN223	AS1210JKNPOZBN223
	1210	AC1210JKNPOZBN333	AS1210JKNPOZBN333
1kV	1210	AC1210JKNPOCBN103	AS1210JKNPOCBN103
		AC1210JKNPOCBN223	AS1210JKNPOCBN223
		AC1210JKNPOCBN333	AS1210JKNPOCBN333

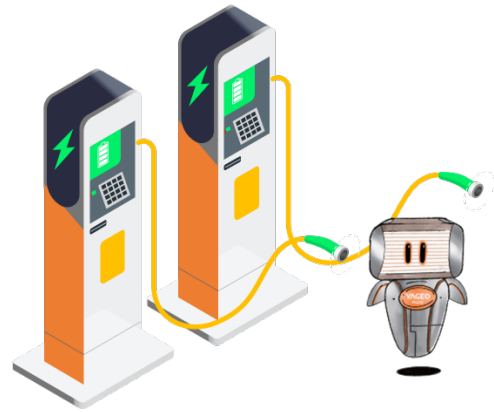
Automotive Grade for
EV On Board Charger



- **EV Charger Station & Industrial Electronics**

Voltage	Case Size	General Termination	Soft Termination
630V	1206	CC1206JKNPOZBN272	CS1206JKNPOZBN272
		CC1206JKNPOZBN332	CS1206JKNPOZBN332
		CC1206JKNPOZBN472	CS1206JKNPOZBN472
		CC1206JKNPOZBN562	CS1206JKNPOZBN562
		CC1206JKNPOZBN682	CS1206JKNPOZBN682
		CC1206JKNPOZBN103	CS1206JKNPOZBN103
	1210	CC1210JKNPOZBN103	CS1210JKNPOZBN103
		CC1210JKNPOZBN223	CS1210JKNPOZBN223
		CC1210JKNPOZBN333	CS1210JKNPOZBN333
1kV	1210	CC1210JKNPOCBN103	CS1210JKNPOCBN103
		CC1210JKNPOCBN223	CS1210JKNPOCBN223
		CC1210JKNPOCBN333	CS1210JKNPOCBN333

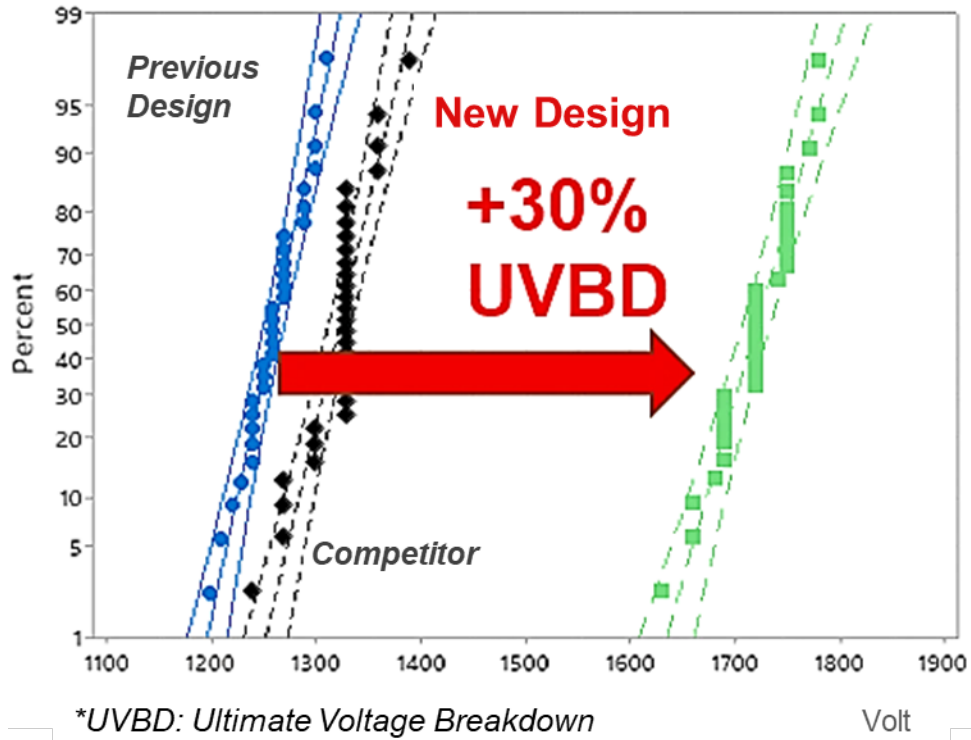
Commercial Grade for
EV Charging Station



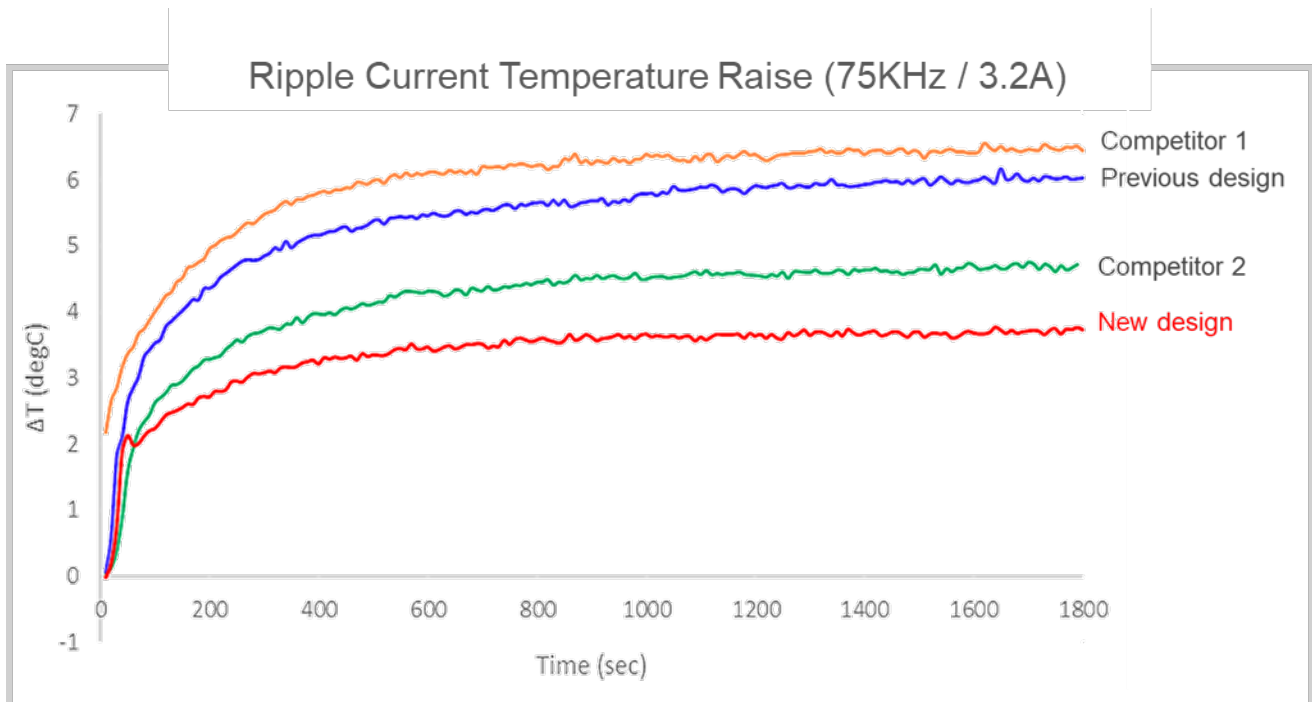
Competitive Comparison

When compared to other leading brands, YAGEO Group's NPO MLCC series excels in key performance metrics:

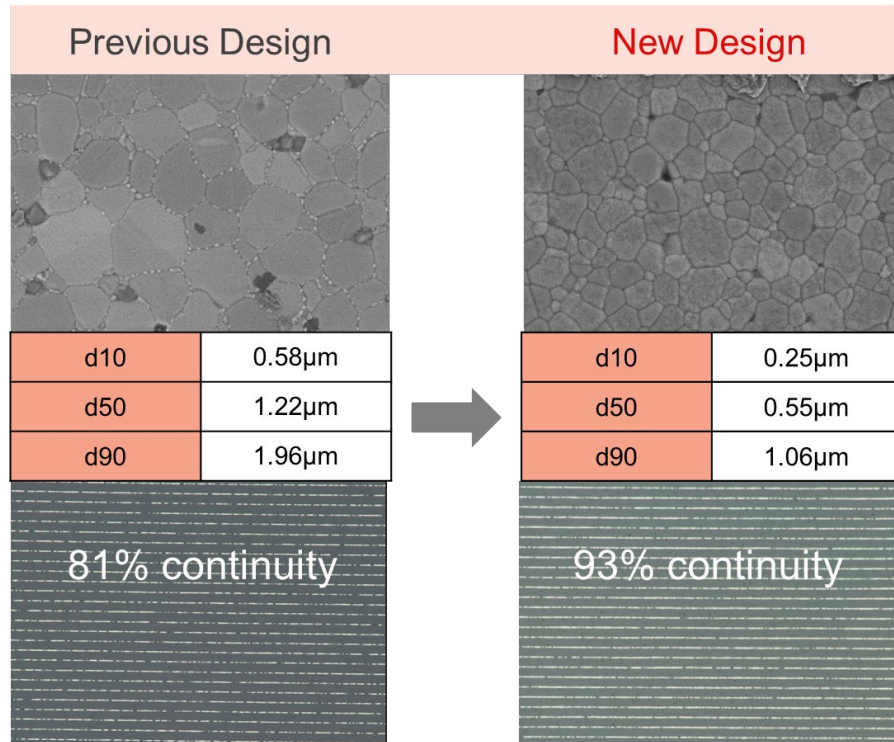
- **Breakdown Voltage:** Higher tolerance ensures reliability under high-voltage stress.



- **Lower Temperature Rise:** Superior thermal performance supports sustained operation in challenging environments.



- **Inner Electrode continuity increased from 85% to 93%: Enhanced Performance**



While YAGEO Group entered the high voltage NPO market later than some competitors, their products still stand out for superior quality, offering unmatched value for customers seeking high-efficiency, reliable solutions.

See YAGEO Group Solutions here:

[YAGEO Group - Multilayer Ceramic Capacitors](#)

[YAGEO Group - Brands - Products](#)