

Film capacitors

TDK introduces xEVCap, a standardized and modular DC link capacitor design for xEV traction inverters

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TDK Corporation (TSE:6762) introduces the xEVCap, a standardized and modular DC link capacitor design for powertrain inverters in passenger cars, commercial and off-highway vehicles, and machinery tools. Typically, such capacitor designs are fully customized, making the development time-consuming and practical only in large production volumes. In addition, if the customer requirements change during the project, this can further increase the time required for capacitor development and thus delay the overall project.

However, with the scalable and modular xEVCap, TDK helps inverter designers meet varying capacitance and current requirements at lower volumes while saving valuable time. This approach also reduces costs by utilizing standardized capacitor modules, which minimizes the variety of components that need to be stocked. To meet different capacitance and current requirements, multiple xEVCaps can be easily connected in parallel. The complete capacitance range complies with the automotive standards AEC-Q200 rev. E and IEC TS 63337:2024.

The xEVCap is available in two connection styles: the B25654A*001 has lead wires for soldering to busbars or PCBs, while the B25654A*002 has flat terminals for welding or screwing to busbars. Each variant is available in multiple different mechanical versions and voltage levels. The mechanical versions are 85 x 47 x 40.5 mm (L x W x H), 97.5 x 35.5 x 42.5 mm, and 109 x 47 x 40.5 mm. Corresponding with rated voltages, components for 500 V, 650 V, 850 V, and 920 V are available. Depending on the rated voltages, the capacitances range from 60 μ F up to 270 μ F. All xEVCaps are included in TDK's [CLARA \(Capacitor Life And Rating Application\)](#) tool, which simulates the components electrically and thermally under different operating conditions. STEP files and SPICE models for the components are available for download.

For a limited time, the applied voltage can exceed the rated voltage. For example, the 850-V types can withstand 890 V for 100 hours at +105 °C and surge voltages of up to 1200 V. Rated currents range from 35 A to 60 A (at 10 kHz) with ESL values of 14 nH or 17 nH (at 1 MHz). The operating temperature range is -40 °C to +105 °C.

Main applications

- DC link for main traction inverters in passenger cars, commercial and off-highway vehicles, machinery tools

Main features and benefits

- Scalable and modular for different power levels and densities
- Compatible with wide-bandgap power semiconductors (SiC, GaN)
- Good self-healing properties
- Low ESR and low ESL
- Compliant to IEC TS 63337:2024 (all versions)
- Compliant to AEC-Q200 rev. E (lead wire versions)

Key data

Ordering code	Rated voltage V_R [V]	Nominal capacitance C_N [μ F] (120 Hz)	Rated currents I_{max} [A]	Dimensions [mm] (L x W x H)
B25654A5207K*	500	200	40	85 x 47 x 40.5
B25654A5277K*	500	270	50	109 x 47 x 40.5
B25654A6117K*	650	115	60	97.5 x 35.5 x 42.5
B25654A6137K*	650	130	42	85 x 47 x 40.5
B25654A6177K*	650	175	55	109 x 47 x 40.5
B25654A8806K*	850	80	56	97.5 x 35.5 x 42.5
B25654A8107K*	850	100	40	85 x 47 x 40.5
B25654A8137K*	850	135	50	109 x 47 x 40.5
B25654A9606K*	920	60	55	97.5 x 35.5 x 42.5
B25654A9756K*	920	75	35	85 x 47 x 40.5
B25654A9117K*	920	110	45	109 x 47 x 40.5

*: 001 (Wire lead); 002 (Flat terminals)

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 2024, TDK posted total sales of USD 14.6 billion and employed about 101,000 people worldwide.

You can download this text and associated images from www.tdk-electronics.tdk.com/en/241014
 Further information on the products can be found at www.tdk-electronics.tdk.com/en/xEVCap

Contacts for regional media

Region	Contact	Phone	Mail
Europe	Ralf HIGGELKE	TDK Electronics AG München, Deutschland	+49 89 54020 1378 ralf.higgelke@tdk.com
North America	Ms. D. MARTIN	TDK Electronics Inc. Fountain Hills, AZ, USA	+1 480 836 4104 debbie.martin@tdk.com
South America	Mr. C. DALL'AGNOL	TDK Electronics do Brasil Ltda., Gravataí, Brazil	+55 51 3484 7158 candido.dallagnol@tdk.com
India	Mr. H. BAGHEL	TDK India Private Limited Noida, India	+91 12 04 50 58 42 himalaya.baghel@tdk.com
Greater China	Ms. K. Xu	TDK (Shanghai) Electronics Ltd. Shanghai, China	+86 21 2219 1598 Kathy.Xu@tdk.com
Japan	Mr. Y. OSUGA	TDK Corporation Tokyo, Japan	+813 6778 1055 TDK.PR@tdk.com