TDK presents the X-series, a new family of eco-friendly SMD varistors

TDK Corporation presents the first five parts of its new X-series of SMD multilayer varistors (MLVs). This family is continually being expanded with the X-series for standard and the X1-series for automotive applications. Both series are the result of further optimization of the products to further reduce costs and contribute to a lower carbon footprint while maintaining the same high level of reliability and performance.

The first five parts are coming already with automotive qualification (AEC-Q200). As part of the X1-series, they are generally used to protect a vehicle's engine management system, electronic control units (ECUs), airbags, ABS, ESP, etc. against transient overvoltages on the battery lines resulting from events such as load dump and jump start. They provide ESD protection up to 30 kV according to IEC 61000-4-2 and comply with automotive pulses according to ISO 7637-2/16750-2.

Available in four EIA package sizes (0603, 0805, 1206, and 1210), the new components of the X1-series support maximum RMS operating voltages of 14 V, 25 V, and 30 V respectively, with response times to voltage transients ranging from 10 ps to 500 ps. They handle surge currents from 5 A to 400 A for 8/20 µs pulses, while maintaining a leakage current of just 1 µA to 25 µA at the rated DC voltage and room temperature. Their operating temperature spans from -55 °C to +150 °C without derating even at higher temperatures.

Typical applications

Transient overvoltage protection for:

automotive battery lines

engine management systems

electronic control units

Airbag, ABS, ESP, etc.

Main features and benefits

Reliable ESD protection up to 30 kV according to IEC 61000-4-2

Comply with automotive pulses according to ISO 7637-2/16750-2

Load-dump and jump-start protection

Low leakage current

Qualified based on AEC-Q200 (X1-Series)

No temperature derating up to +125 °C (X1-series up to +150 °C)

High lifetime robustness

Stable protection level