

Transformers

Compact SMT current sense transformers for power electronics

- Creepage distances according to IEC 60664 (basic insulation)
- Qualified to AEC-Q200

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TDK Corporation presents two new series of EPCOS SMT current sense transformers for power electronics. The various types in the B78417A* series are based on EP7 ferrite cores, have compact dimensions of just 10.6 mm x 12.2 mm x 11.0 mm and are designed to measure pulse currents of up to 20 A. The maximum DC resistance on the primary winding is 1.9 mΩ. The SMT current sense transformers in the B78419A* series are designed with EP10 ferrite cores. These components have dimensions of 12.8 mm x 13.6 mm x 14.4 mm and their measurement range extends up to 30 A. The DC resistance is just 0.5 mΩ.

Each series is available with a variety of turn ratios: While the EP7-based transformers are available in four versions with turn ratios of between 1:50 and 1:125, the EP10 transformers offer five versions with turn ratios of between 1:50 and 1:180. The permissible operating temperature range extends from -40 °C to +150 °C. The transformers are suitable for measuring currents in the frequency range from 50 kHz to 250 kHz.

Possible applications include switch-mode power supplies and all types of converters. The test voltage between the primary and secondary sides is 2400 V AC and the creepage distances meet the requirements for basic insulation according to IEC 60664. As the components are qualified to AEC-Q200, they can also be used in xEV applications, e.g. for measuring the currents in DC/DC inverters.

Main applications

- Switch-mode power supplies and all types of converters
- DC/DC inverters in xEV applications
- Current measurement in 48 volt on-board power supplies

Main features and benefits

- Wide measuring range up to 30 A
- Low ohmic resistance
- Creepage distances according to IEC 60664 (basic insulation)
- High dielectric strength for compact design
- Qualified to AEC-Q200
- Wide range of turn ratios

Key data

Type	Dimensions [mm]	Max. DC resistance primary winding [mΩ]	Max. current [A]	Turns ratio
B78417A2285A003	10.6 x 12.2 x 11.0	1.9	20	1:50
B78417A2286A003				1:70
B78417A2185A003				1:100
B78417A2287A003				1:125
B78419A2288A003	12.8 x 13.6 x 14.4	0.5	30	1:50
B78419A2289A003				1:70
B78419A2251A003				1:100
B78419A2290A003				1:125
B78419A2271A003				1:180

About TDK Corporation

TDK Corporation is a leading electronics company based in Tokyo, Japan. It was established in 1935 to commercialize ferrite, a key material in electronic and magnetic products. TDK's portfolio includes electronic components, modules and systems* marketed under the product brands TDK and EPCOS, power supplies, magnetic application products as well as energy devices, flash memory application devices, and others. TDK focuses on demanding markets in the areas of information and communication technology and consumer, automotive and industrial electronics. The company has a network of design and manufacturing locations and sales offices in Asia, Europe, and in North and South America. In fiscal 2015, TDK posted total sales of USD 9.0 billion and employed about 88,000 people worldwide.

* The product portfolio includes ceramic, aluminum electrolytic and film capacitors, ferrites, inductors, high-frequency components such as surface acoustic wave (SAW) filter products and modules, piezo and protection components, and sensors.

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