

Automotive-Qualified Trench Schottkys Feature Wettable-Flank Packaging

[Taiwan Semiconductor](#)'s TSUP series AEC-101-qualified trench Schottky rectifiers include 5-A, 10-A, and 15-A-rated devices with peak repetitive reverse voltage ratings (V_{RRM}) of 60 V or 45 V and a 1.0-ms peak forward surge current (I_{FSM}) of nearly 300 A. The SMPC4.6U-package offers both headroom and footprint advantages desirable in many automotive and industrial applications. According to the company, the TSUP series' patented trench technology provides industry-leading performance—in particular, lower forward voltage drop, low leakage current and fast, controlled reverse recovery time (T_{rr}) (see the figure).

The TSUP series package's wettable flank is an essential feature for meeting automotive requirements, as well as for facilitating automated visual inspection during assembly. In addition, the wettable-flank package reduces parasitic dc resistance by increasing the contact area with the PCB. This improves both steady-state and transient-thermal performance and power converter efficiency, while also increasing power density and overall reliability.

"Designing and manufacturing to meet AEC-Q101 requirements is a nearly universal attribute of our power semiconductor devices, and this automotive-level reliability is desirable in many commercial applications as well," said Sam Wang, vice president, TSC Products. "The TSUP Series' exceptional performance, manufacturability and test features offer benefits to a range of non-automotive applications, including switch-mode power supplies and LED lighting."

The devices are RoHS-compliant, halogen-free (per IEC-61249-2-21). Design resources include [comprehensive datasheets](#), 3D CAD and Spice models (via links on the website). The TSUP series rectifiers are priced from 0.435 to 0.743 each in OEM quantities.

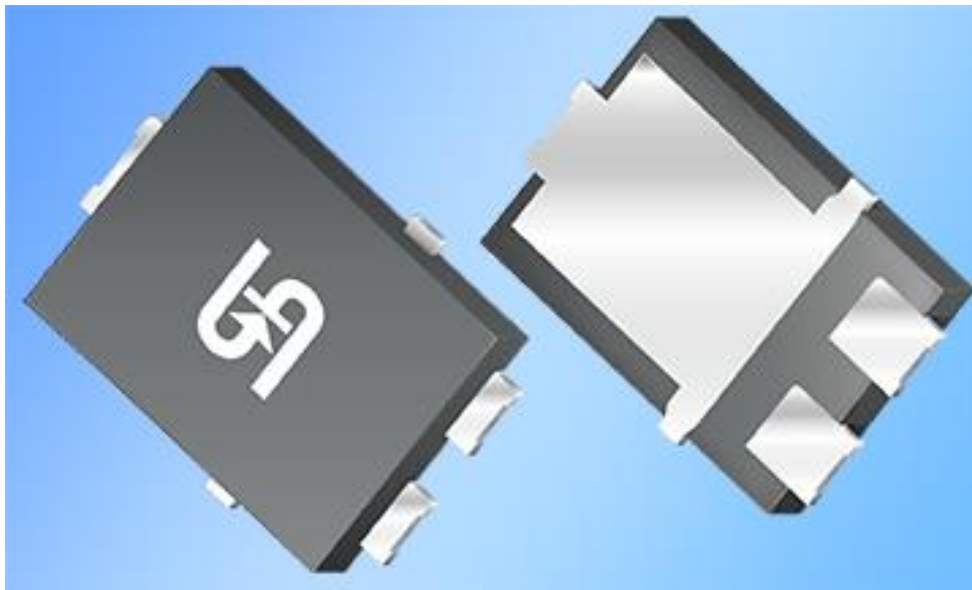


Figure. The TSUP series rectifiers offer forward current ratings of 5 to 15 A and peak repetitive reverse voltage ratings of 45 V and 60 V. Their patented trench technology offers industry-leading forward voltage drop, leakage current and reverse recovery time, according to the vendor. The wettable-flank packaging enables automated visual inspection.