Power MOSFETs Address Emerging Eco-design Standards

A new family of rugged, high-efficiency power products from STMicroelectronics is positioned to enable technology companies to satisfy stricter power and efficiency targets set by eco-design standards and to target green-energy applications such as solar micro-inverters, photovoltaic string inverters and electric vehicles. The new devices include what is said to be the industry's first super-junction transistors (MOSFETs) capable of withstanding peak voltages up to 950 V, as well as 900 V devices offering desirable energy efficiency and what are asserted to be the only 850-V devices to be offered in the ultra thin and space-saving PowerFLAT 8x8 HV package. Super-junction technology enables MOSFETs to achieve higher operating voltages with very low electrical on-resistance in relation to device size, enabling power supplies to deliver increased system reliability and energy efficiency within compact overall dimensions.

The new MOSFETs are the first in ST's SuperMESH 5 fifth-generation super-junction family. They include the 900V STx21N90K5, 950V STx20N95K5 and 950V STx6N95K5 in various package options. The STL23N85K5 850V variant in the PowerFLAT 8x8 HV high-voltage surface-mount package has a footprint of 64mm2, which is 56% smaller than the industry-standard D2PAK package. In addition, its mounted height of 1mm is 77% lower than D2PAK allowing use in ultra-slim designs.

For the 900V STP21N90K5, the Figure of Merit (FOM), which indicates the device's overall energy efficiency when turned on as well as when switching on or off, is 62.5% better than the only comparable alternative device in the market. This enables designers to achieve an appreciable efficiency increase simply by using the STP21N90K5 rather than the competing device.

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