Silicon Carbide Schottky Diodes Improve Energy Efficiency in Solar Micro Inverter Designs

Cree, a market leader in silicon carbide (SiC) power devices, continues its mission of advancing the adoption of SiC into mainstream power applications with its latest additions to its 1200V SiC Schottky diode family. The surface-mount devices come in 2A, 5A, 8A, and 10A current ratings packaged in the TO-252 D-Pak. Designers of systems, such as solar micro inverters, now have more options to develop smaller, lighter and less costly power conversion circuits. The new surface mount devices deliver the same proven performance as Cree's TO-220 Schottky diodes, but with a smaller PCB footprint and lower profile.

"These new surface mount devices provide all the proven benefits of SiC Schottky diodes - zero reverse recovery losses, temperature-independent switching, higher frequency operation with low EMI, and significantly higher surge and avalanche capability - with a smaller footprint and a lower board-mounted profile," explained Cengiz Balkas, Cree VP and GM, Power and RF. "The new 2A device is ideally suited for lower power applications allowing them to benefit from the advantages of SiC while providing the best performance and cost option. With the addition of the 8A and 10A devices, the same space and cost savings can be extended to higher power applications"

"There are significant design advantages to implementing SiC power devices in high efficiency power electronics systems, including the ability to achieve higher current and voltage ratings with fewer components. By reducing the component count, designers can achieve lower overall system costs with increased reliability and maximum efficiency," continued Balkas. "When used in conjunction with Cree's new series of 1200V SiC Power MOSFETs in an all-SiC design, these Schottky diodes

make it possible to achieve high-efficiency power electronics systems with switching frequencies that are 5x to 8x higher when compared to conventional silicon solutions. The higher switching frequencies enable smaller magnetic and capacitive elements, thereby shrinking system size, weight and cost."

Cree's C4D02120E Series Schottky diodes are rated for 2A/1200V; the C4D05120E Series diodes are rated for 5A/1200V; the C4D08120E Series diodes are rated for 8A/1200V; and the C4D10120E Series diodes are rated for 10A/1200V. Operating junction temperature for all C4DXX120E devices is rated for -55°C to +175°C.

The C4DXX120E surface mount Schottky diodes are fully qualified and released for production use. Check with Cree for availability of devices in die form. For samples and more information about Cree's SiC power devices, please visit www.cree.com/power <http://www.cree.com/power> .

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