



ICSCRM 2023

New-Generation SiC MPS Diodes with low knee voltages

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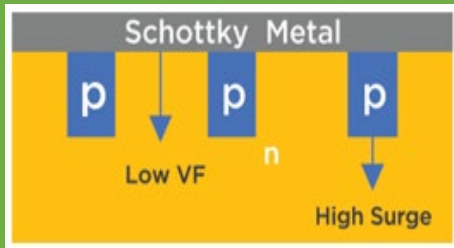
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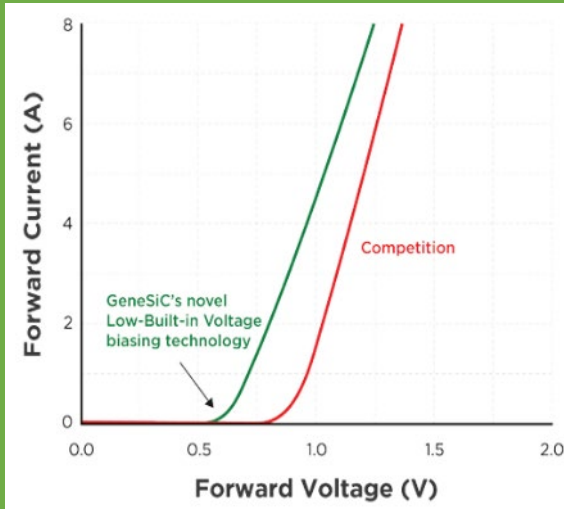
Novel Design



GeneSiC Merged-PiN Schottky (MPS™) design combines the best features from both - Schottky and PiN diode structures, producing the lowest forward voltage drop (V_F), high surge-current capability (I_{FSM}), and minimized temperature-independent ultra-low switching losses.

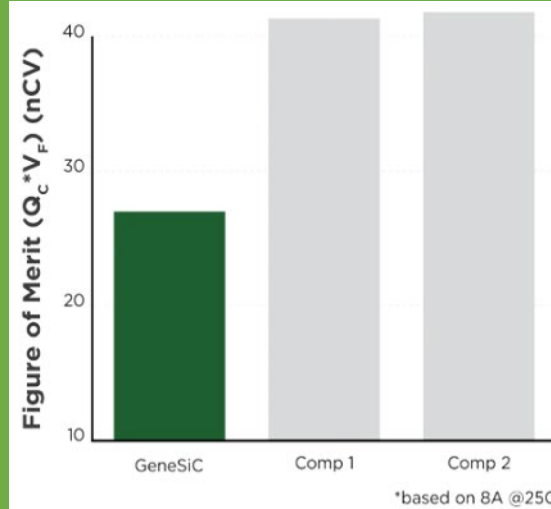
Proprietary thin-chip technology further reduces V_F and improves thermal dissipation for cooler operation.

Low Built-In Voltage Biasing



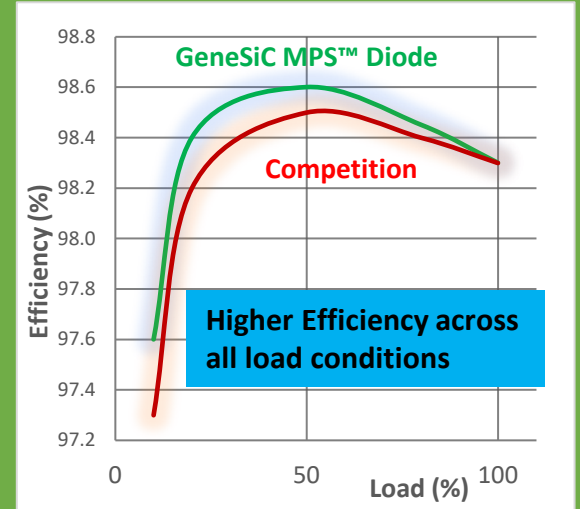
Low-built-in voltage biasing technology for highest efficiency across all load conditions with superior robustness.

Excellent $Q_C * V_F$ FoM



Excellent figure of merit (FoM) comprising of a low V_F (1.3V) and low capacitive charge (Q_C).

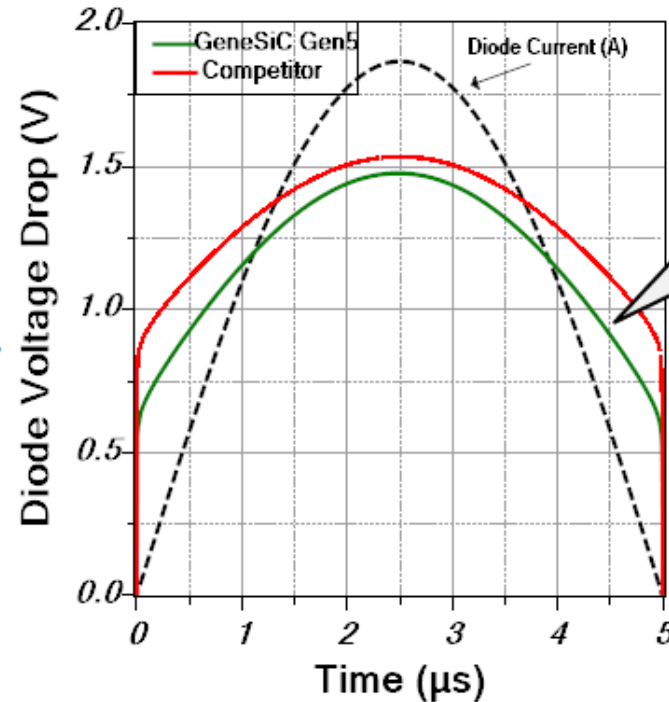
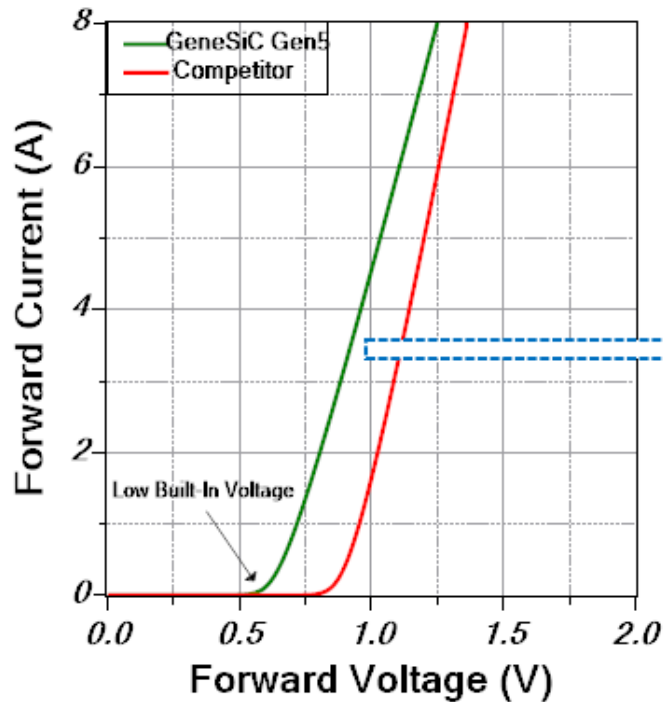
Highest Efficiency



3 kW Interleaved Boost PFC
At light load, $T_j = 25^\circ\text{C}$, Full load = $T_j = 125^\circ\text{C}$

Gen5 MPS™ diodes are ideal in PFC circuits in CCM due to excellent FoM. Zero diode reverse recovery improves MOSFET turn-on performance, resulting in a cooler, more reliable system.

Low Built-In Voltage and Low V_F for Lowest Losses at All Load Conditions



PFC (2x GE08MPS06A)

- $I_{RMS} = 7.9 A$; $I_{AVG} = 7.1 A$ (Per Diode)
- **9% Lower SiC Diode Losses**
- Best-in-class Efficiency & Cooler Operation

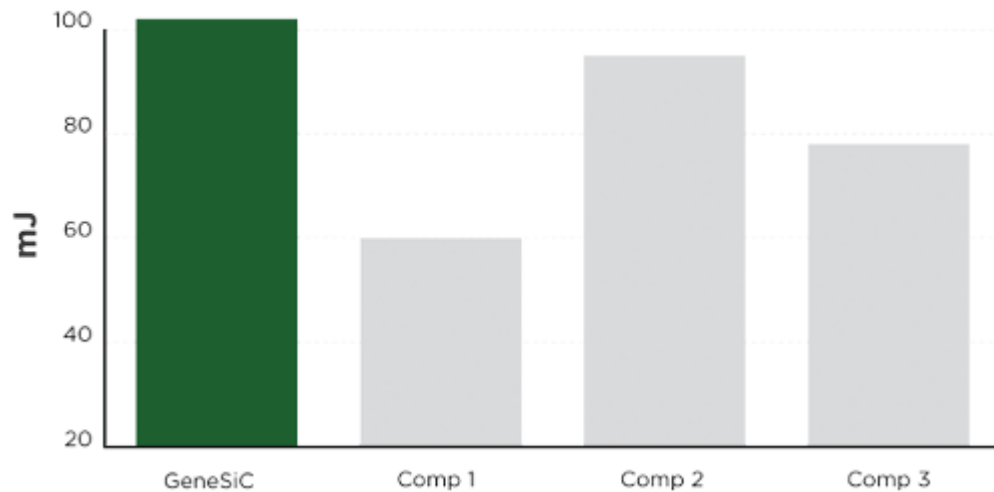


- Gen5 technology with low built-in voltage and low V_F optimized for best-in-class efficiency in rectification and PFC circuits used in OBC, SMPS and UPS.

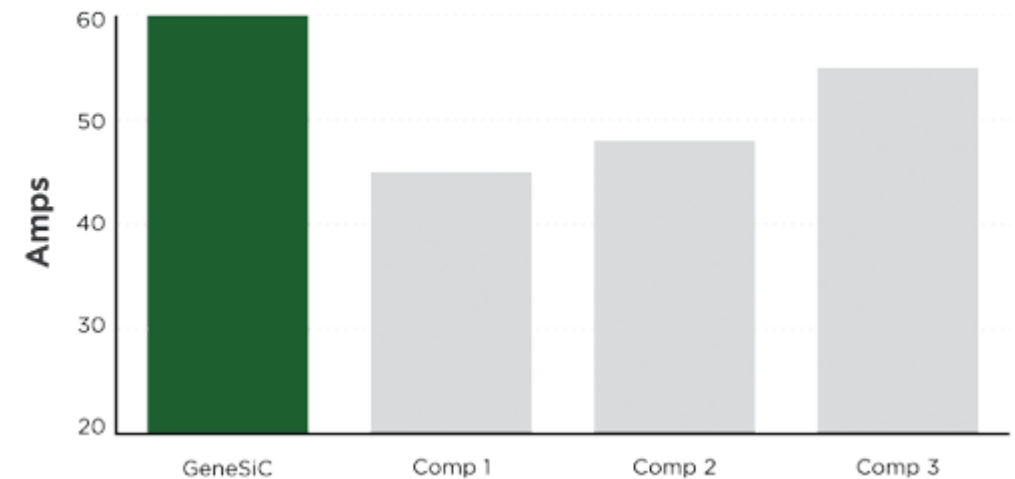
- 100% avalanche (UIL) production tested to ensure the highest level of ruggedness in over-voltage conditions.

- Best-in-class robustness and ruggedness for applications demanding high surge current and avalanche capability.

Avalanche Ruggedness



Surge Current Robustness



Typical Applications and Circuits

Boost (Solar Inverter)		Boost converters are used in Solar inverters to generate a fixed, higher DC voltage. SiC diodes in QFN8x8 and TO-252 offering highest efficiencies for <3 kW microinverters.
CCM PFC		For PFC applications such as continuous-current mode (CCM) that require fastest reverse recovery to minimize switching losses and increase system efficiency, the TO-220-2 offer excellent performance with high thermal dissipation.
Interleaved PFC		The TO-247-3 package offers great flexibility for higher power density and BOM reduction in applications like the interleaved power factor correction (PFC) that shares a common cathode between two diodes.



PC Power



LED/LCD TVs



Solar microinverters



Motion Control



Server/Telecom Power



Lighting

Portfolio



V_{RRM} (V)	I_F (A)	PQFN 8x8	TO-252-2 DPAK	TO-220-2	TO-247-3
650					
	4	GE04MPS06Q	GE04MPS06E	GE04MPS06A	
	6	GE06MPS06Q	GE06MPS06E	GE06MPS06A	
	8	GE08MPS06Q	GE08MPS06E	GE08MPS06A	
	10	GE10MPS06Q	GE10MPS06E	GE10MPS06A	
	12	GE12MPS06Q	GE12MPS06E	GE12MPS06A	
	16				GE2X8MPS06D
	20				GE2X10MPS06D
24				GE2X12MPS06D	

With production lead times as low as 20 weeks, please contact your local distributor or sales rep at: <https://genesicsemi.com/sales-support/global-distributors/>

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