

Silicon Carbide Power Schottky Diode

$V_{RRM} = 1200V$
 $I_F = 12 A$
 $Q_C = 23 nC$

Features

- 1200 V Schottky Rectifier
- 225 °C Maximum Operating Temperature
- Zero Reverse Recovery Current
- Positive temperature coefficient of V_f
- Temperature Independent Switching Behavior
- Lowest Figure of Merit Q_C/I_F

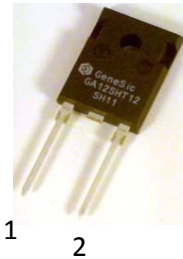
Applications

- Solar Inverter
- SMPS
- Power Factor Correction
- Motor Drives
- Induction Heating
- UPS

Advantages

- No Switching Losses
- Higher Efficiency

TO-247 Package



CASE



Maximum ratings, at $T_j = 225\text{ °C}$, unless otherwise specified

Parameter	Symbol	Conditions	Values	Unit
Repetitive peak reverse voltage	V_{RRM}		1200	V
Continuous forward current	I_F	$T_C \leq 150\text{ °C}$	12	A
RMS forward current	$I_{F(RMS)}$	$T_C \leq 150\text{ °C}$	21	A
Surge non-repetitive forward current, Half Sine Wave	$I_{F,SM}$	$T_C = 25\text{ °C}$, $t_p = 10\text{ ms}$	tbd	A
Non-repetitive peak forward current	$I_{F,max}$	$T_C = 25\text{ °C}$, $t_p = 10\text{ }\mu\text{s}$	tbd	A
i^2t value	$\int i^2 dt$	$T_C = 25\text{ °C}$, $t_p = 10\text{ ms}$	tbd	A^2s
Power dissipation	P_{tot}	$T_C = 25\text{ °C}$	224	W
Operating and storage temperature	T_j, T_{stg}		-55 to 225	$^{\circ}\text{C}$

Electrical characteristics, at $T_j = 225\text{ °C}$, unless otherwise specified

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Diode forward voltage	V_F	$I_F = 12\text{ A}$, $T_j = 25\text{ °C}$	2.15	2.27	2.6	V
		$I_F = 12\text{ A}$, $T_j = 225\text{ °C}$		6.32		
Reverse current	I_R	$V_R = 1200\text{ V}$, $T_j = 25\text{ °C}$	0.1	0.5	0.7	μA
		$V_R = 1200\text{ V}$, $T_j = 225\text{ °C}$	15	20	30	
Total capacitive charge	Q_C	$V_R = 950\text{ V}$, $I_F \leq I_{F,max}$		23		nC
Switching time	t_s	$di_F/dt = 330\text{ A}/\mu\text{s}$, $T_j = 150\text{ °C}$		< 15		ns
		$V_R = 3\text{ V}$, $f = 1\text{ kHz}$, $T_j = 25\text{ °C}$		242		pF
Total capacitance	C	$V_R = 200\text{ V}$, $f = 1\text{ kHz}$, $T_j = 25\text{ °C}$		45		
		$V_R = 1200\text{ V}$, $f = 1\text{ kHz}$, $T_j = 25\text{ °C}$		tbd		

Thermal characteristics

Thermal resistance, junction - case	R_{thJC}	0.89	$^{\circ}\text{C}/\text{W}$
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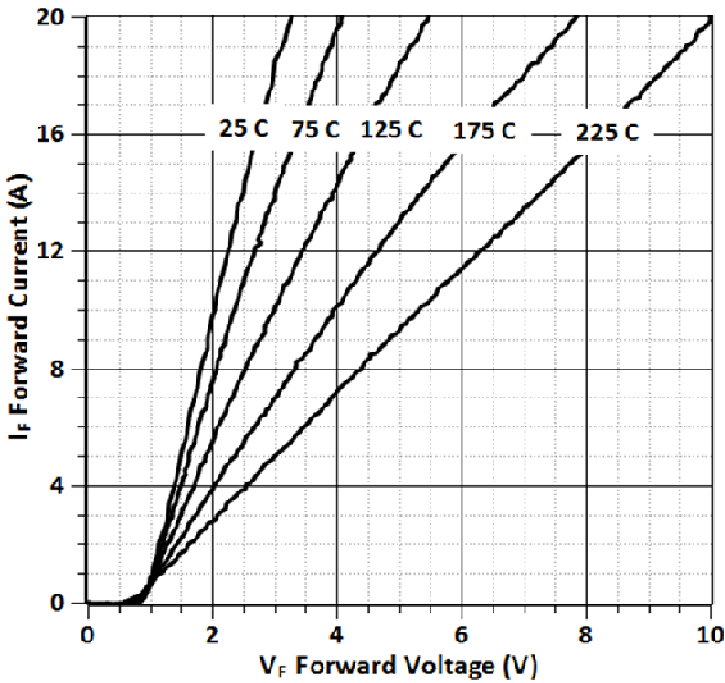


Figure 1: Forward Characteristics

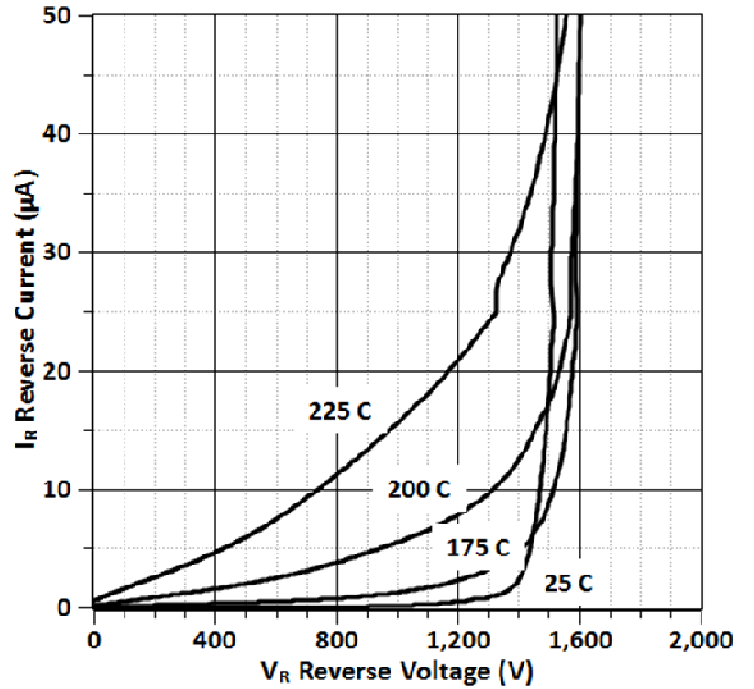


Figure 2: Reverse Characteristics

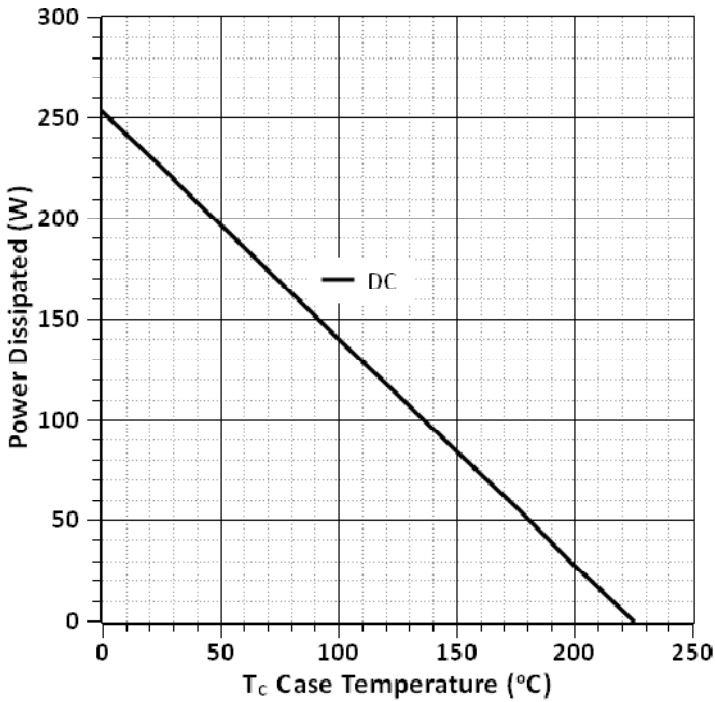


Figure 3: Power Derating

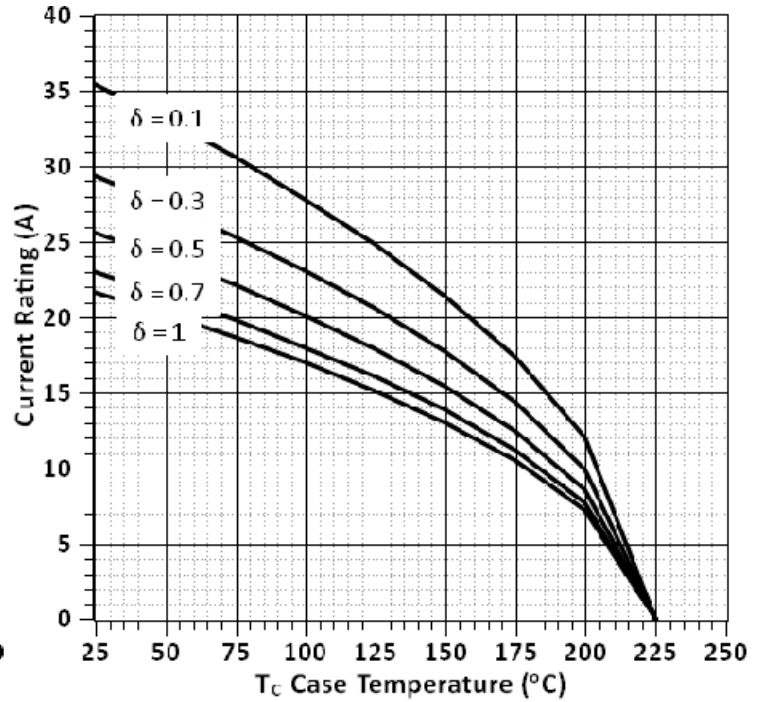


Figure 4: Current Derating

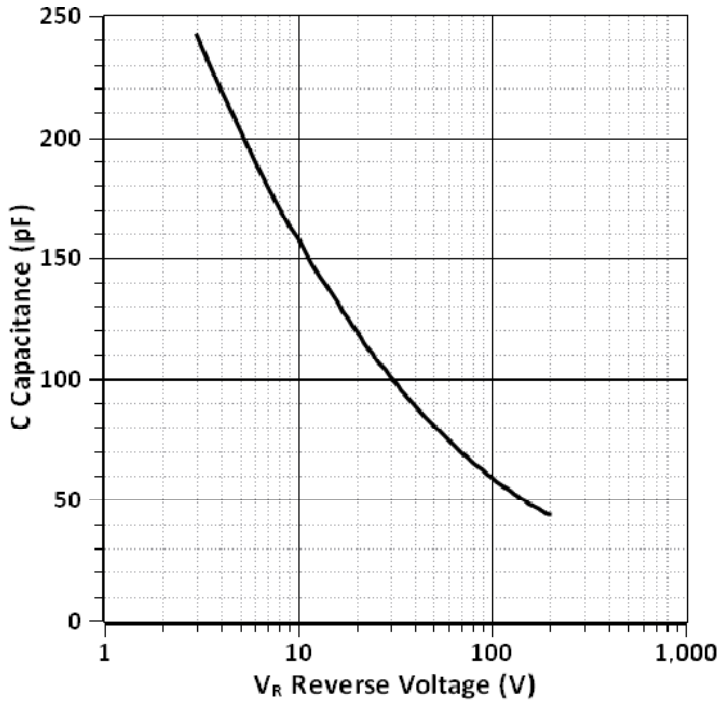


Figure 5: Junction Capacitance versus Reverse Voltage

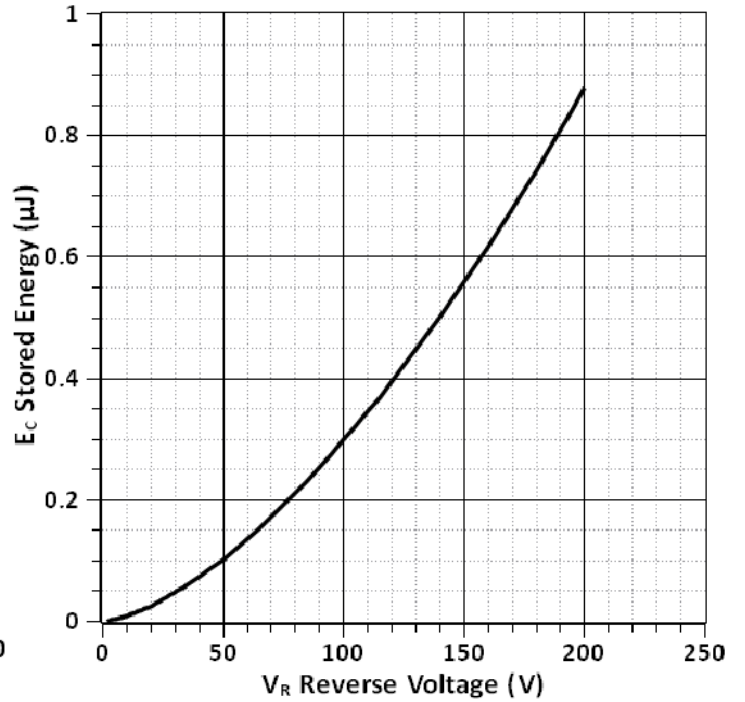


Figure 6: Switching energy versus Reverse voltage

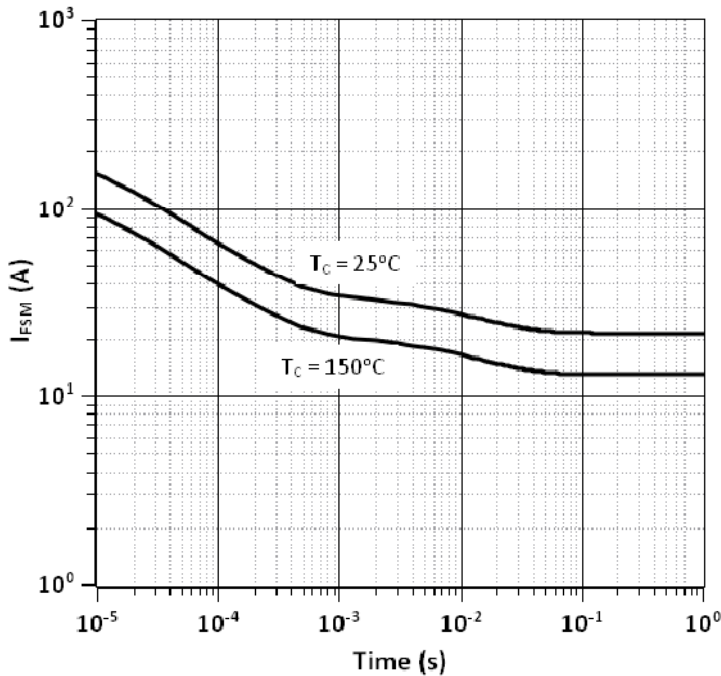


Figure 7: Non-repetitive peak surge forward current versus pulse duration

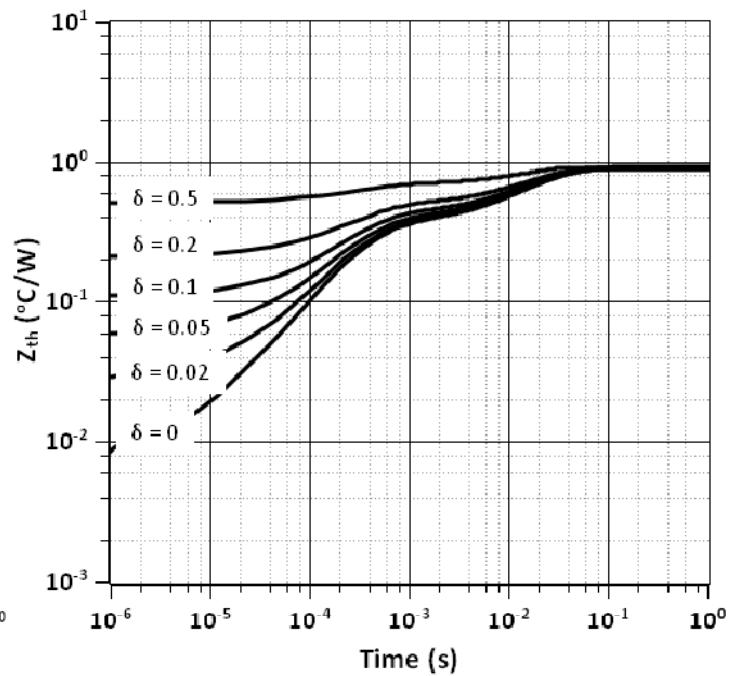


Figure 8: Transient Thermal Impedance

Revision History

Date	Revision	Changes
5/4/2010	1	Initial release, called GA08SHT12
5/12/2010	2	Rated for High temperature operation
6/23/2010	3	TO - 220 Package
7/20/2010	4	

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