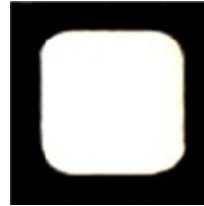


Silicon Carbide Power Schottky Diode

V_{RRM}	=	1200 V
V_F	=	1.55 V
I_F	=	10 A
Q_C	=	52 nC

Features

- 1200 V Schottky rectifier
- 175 °C maximum operating temperature
- Positive temperature coefficient of V_F
- Fast switching speeds
- Superior figure of merit Q_C/I_F


Advantages

- Improved circuit efficiency (Lower overall cost)
- Significantly reduced switching losses compare to Si PiN diodes
- Ease of paralleling devices without thermal runaway
- Smaller heat sink requirements
- Low reverse recovery current
- Low device capacitance

Applications

- Down Hole Oil Drilling, Geothermal Instrumentation
- High Voltage Multipliers
- Military Power Supplies

Maximum Ratings at $T_j = 175\text{ °C}$, unless otherwise specified

Parameter	Symbol	Conditions	Values	Unit
Repetitive peak reverse voltage	V_{RRM}		1200	V
Continuous forward current	I_F	$T_C \leq 150\text{ °C}$	10	A
RMS forward current	$I_{F(RMS)}$	$T_C \leq 150\text{ °C}$	17	A
Surge non-repetitive forward current, Half Sine Wave	$I_{F,SM}$	$T_C = 25\text{ °C}$, $t_p = 10\text{ ms}$	65	A
		$T_C = 150\text{ °C}$, $t_p = 10\text{ ms}$	55	
Non-repetitive peak forward current	$I_{F,max}$	$T_C = 25\text{ °C}$, $t_p = 10\text{ }\mu\text{s}$	280	A
I^2t value	$\int i^2 dt$	$T_C = 25\text{ °C}$, $t_p = 10\text{ ms}$	21	A ² s
		$T_C = 150\text{ °C}$, $t_p = 10\text{ ms}$	15	
Power dissipation	P_{tot}	$T_C = 25\text{ °C}$	190	W
Operating and storage temperature	T_j, T_{stg}		-55 to 175	°C

Electrical Characteristics at $T_j = 175\text{ °C}$, unless otherwise specified

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Diode forward voltage	V_F	$I_F = 10\text{ A}$, $T_j = 25\text{ °C}$	1.35	1.55	1.7	V
		$I_F = 10\text{ A}$, $T_j = 175\text{ °C}$		2.6	3.0	
Reverse current	I_R	$V_R = 1200\text{ V}$, $T_j = 25\text{ °C}$ $V_R = 1200\text{ V}$, $T_j = 175\text{ °C}$	0.5	5.0 13	40 100	μA
Total capacitive charge	Q_C	$I_F \leq I_{F,MAX}$ $dI_F/dt = 200\text{ A}/\mu\text{s}$ $T_j = 175\text{ °C}$	$V_R = 400\text{ V}$	31		nC
Switching time	t_s		$V_R = 400\text{ V}$ $V_R = 960\text{ V}$	< 25		ns
Total capacitance	C	$V_R = 1\text{ V}$, $f = 1\text{ MHz}$, $T_j = 25\text{ °C}$		490		pF
		$V_R = 400\text{ V}$, $f = 1\text{ MHz}$, $T_j = 25\text{ °C}$		45		
		$V_R = 1000\text{ V}$, $f = 1\text{ MHz}$, $T_j = 25\text{ °C}$		33		

*For chip size and metallization, please refer to the mechanical datasheet (must have a non-disclosure agreement with GeneSiC Semiconductor).

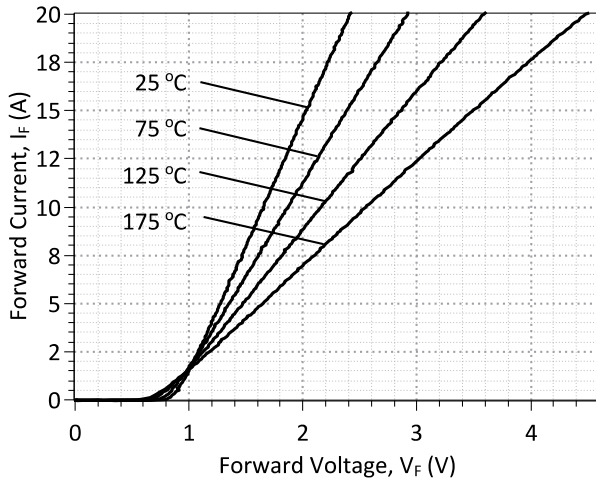


Figure 1: Typical Forward Characteristics

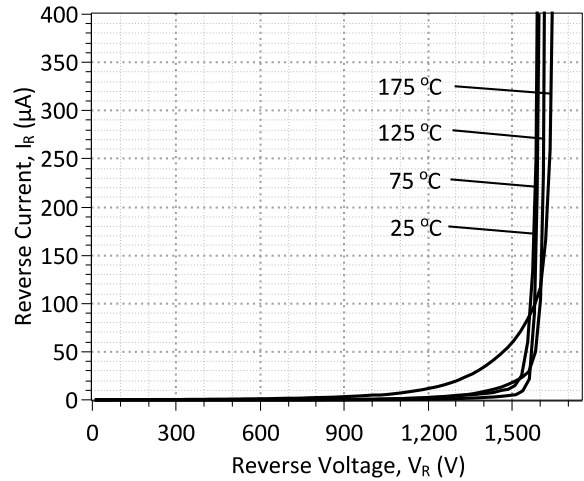


Figure 2: Typical Reverse Characteristics

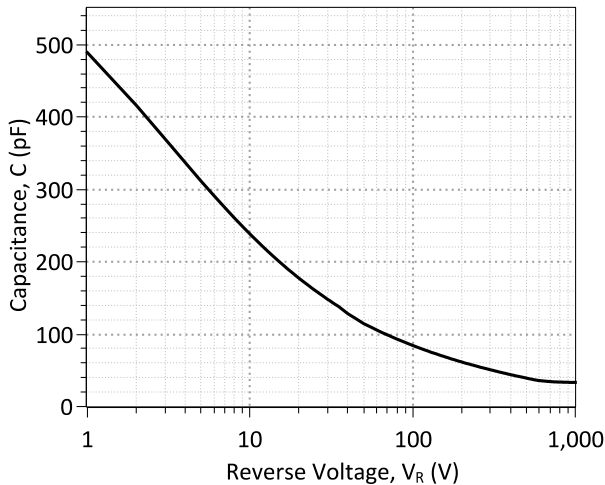


Figure 3: Typical Junction Capacitance vs Reverse Voltage Characteristics

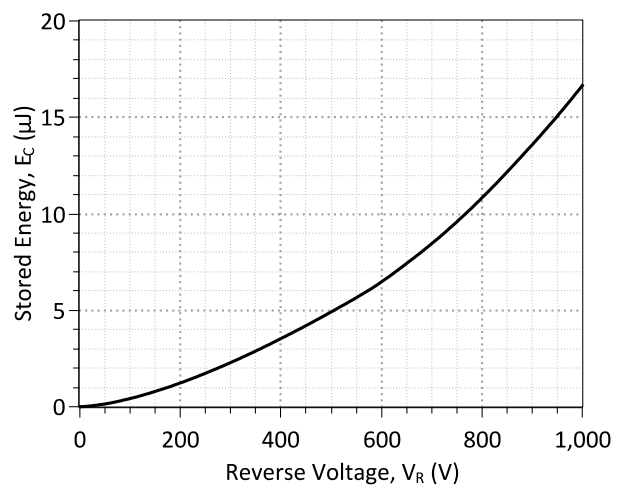


Figure 4: Typical Switching Energy vs Reverse Voltage Characteristics

Revision History

Date	Revision	Comments	Supersedes
2013/10/15	0	Initial release	

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SPICE Model Parameters

Copy the following code into a SPICE software program for simulation of the GB10SLT12-CAL device.

```
*      MODEL OF GeneSiC Semiconductor Inc.
*
*      $Revision:   1.0           $
*      $Date:      20-SEP-2013   $
*
*      GeneSiC Semiconductor Inc.
*      43670 Trade Center Place Ste. 155
*      Dulles, VA 20166
*      http://www.genesicsemi.com/index.php/sic-products/schottky
*
*      COPYRIGHT (C) 2013 GeneSiC Semiconductor Inc.
*      ALL RIGHTS RESERVED
*
*      These models are provided "AS IS, WHERE IS, AND WITH NO WARRANTY
*      OF ANY KIND EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED
*      TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A
*      PARTICULAR PURPOSE."
*      Models accurate up to 2 times rated drain current.
*
*      Start of GB10SLT12-CAL SPICE Model
*
.SUBCKT GB10SLT12 ANODE KATHODE
D1 ANODE KATHODE GB10SLT12_SCHOTTKY
D2 ANODE KATHODE GB10SLT12_PIN
.MODEL GB10SLT12_SCHOTTKY D
+ IS      4.55E-15      RS      0.0736
+ N       1            IKF     1000
+ EG      1.2          XTI     -2
+ TRS1    0.0054347826 TRS2    2.71739E-05
+ CJO     6.40E-10     VJ      0.469
+ M       1.508        FC      0.5
+ TT      1.00E-10     BV      1500
+ IBV     1.00E-03     VPK     1200
+ IAVE    10          TYPE    SiC_Schottky
+ MFG     GeneSiC_Semi
.MODEL GB10SLT12_PIN D
+ IS      1.54E-22     RS      0.19
+ TRS1    -0.004      N       3.941
+ EG      3.23        IKF     19
+ XTI     0           FC      0.5
+ TT      0           BV      1500
+ IBV     1.00E-03     VPK     1200
+ IAVE    10          TYPE    SiC_PiN
.ENDS
*
*      End of GB10SLT12-CAL SPICE Model
```