Silicon Carbide Power Schottky Diode Chip

Features

- 650 V Schottky rectifier
- 175 °C maximum operating temperature
- Temperature independent switching behavior
- Superior surge current capability
- Positive temperature coefficient of V_F
- Extremely fast switching speeds
- Superior figure of merit Q_C/I_F

Maximum Ratings at T_j = 175 °C, unless otherwise specified

Parameter	Symbol	Conditions	Values	Unit
Repetitive peak reverse voltage	V_{RRM}		650	V
Continuous forward current	I_F	T_C = 25 °C	5	A
Continuous forward current	I_F	T_C ≤ 160 °C	2	A
RMS forward current	$I_{F(RMS)}$	T_C ≤ 160 °C	3	A
Operating and storage temperature	T_j , T_{stg}		-55 to 175	°C

Electrical Characteristics at T_j = 175 °C, unless otherwise specified

Parameter	Symbol	Conditions		Values			Unit
				min.	typ.	max.	
Diode forward voltage	V_F	I_F = 2 A, T_j = 25 °C I_F = 2 A, T_j = 175 °C			1.45 2.6		V
Reverse current	I_R	V_R = 650 V, T_j = 25 °C V_R = 650 V, T_j = 175 °C			5 50		µA
Total capacitive charge	Q_C	$I_F \le I_{F,MAX}$ dI_F/dt = 200 A/µs T_j = 175 °C	V_R = 400 V		9		nC
Switching time	t_s		V_R = 400 V		< 17		ns
Total capacitance	C	V_R = 1 V, f = 1 MHz, T_j = 25 °C V_R = 400 V, f = 1 MHz, T_j = 25 °C			131 12		pF

Thermal Characteristics

Thermal resistance, junction - case	R_{thJC}	Assuming TO-220 package		2.3	°C/W

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

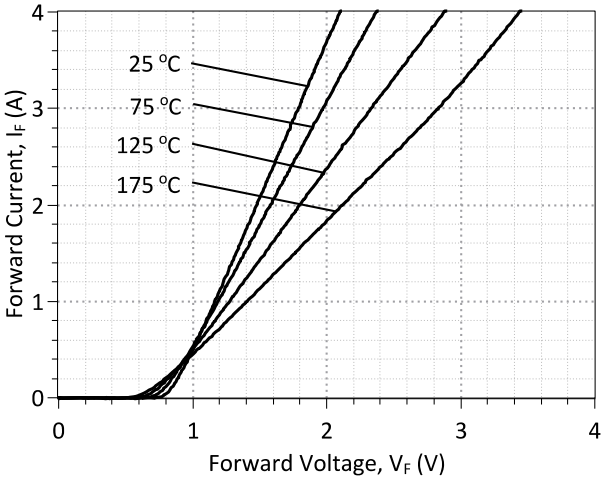

Figure 1: Typical Forward Characteristics

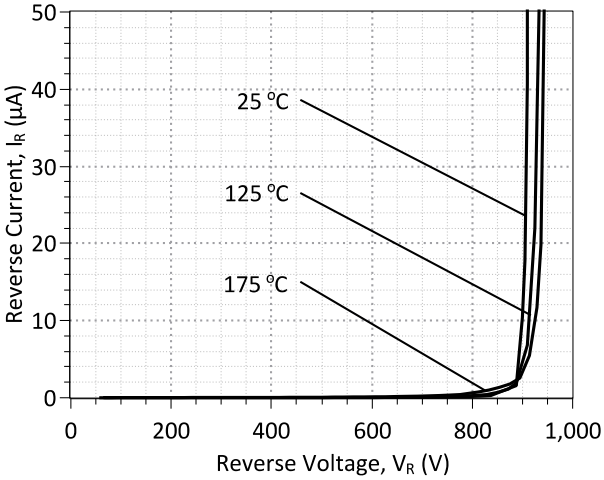

Figure 2: Typical Reverse Characteristics

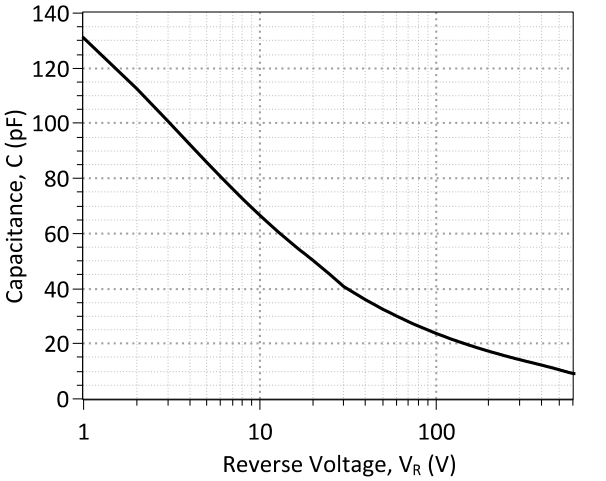

Figure 3: Typical Junction Capacitance vs Reverse Voltage Characteristics

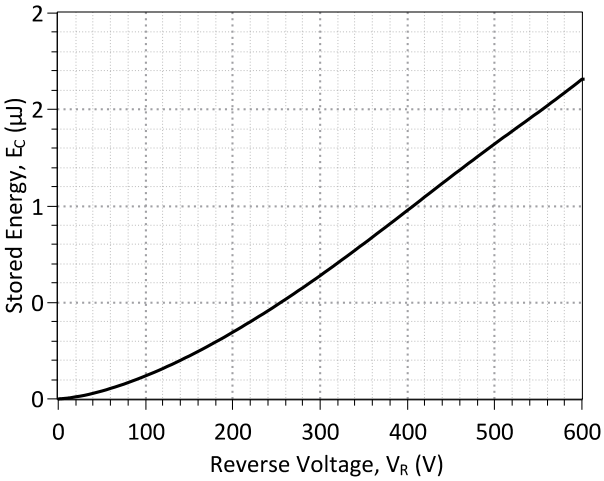

Figure 4: Typical Switching Energy vs Reverse Voltage Characteristics

Revision History			
Date	Revision	Comments	Supersedes
2014/09/12	1	Updated Electrical Characteristics	
2013/11/06	0	Initial release	

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SPICE Model Parameters

Copy the following code into a SPICE software program for simulation of the GB02SLT06-CAL device.

```
*     MODEL OF GeneSiC Semiconductor Inc.
*
*     $Revision:   1.0           $
*     $Date:   06-NOV-2013       $
*
*     GeneSiC Semiconductor Inc.
*     43670 Trade Center Place Ste. 155
*     Dulles, VA 20166
*     http://www.genesicsemi.com/index.php/hit-sic/baredie
*
*     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 GB02SLT06-CAL SPICE Model
*
.SUBCKT GB02SLT06 ANODE KATHODE
D1 ANODE KATHODE GB02SLT06
D2 ANODE KATHODE GB02SLT06_PIN
.MODEL GB02SLT06 D
+ IS       2.05E-15        RS         0.282
+ TRS1     0.0054          TRS2       3E-05
+ N        1               IKF        251
+ EG       1.2             XTI        -1.8
+ CJO      1.61E-10        VJ         0.4508
+ M        1.586           FC         0.5
+ TT       1.00E-10        BV         650
+ IBV      1.00E-03        VPK        650
+ IAVE     2               TYPE       SiC_Schottky
+ MFG      GeneSiC_Semi
.MODEL GB02SLT06_PIN D
+ IS       1.54E-25        RS         0.39
+ TRS1     -0.003          N          3.941
+ EG       3.23            IKF        19
+ XTI      0               FC         0.5
+ TT       0               BV         650
+ IBV      1.00E-03        VPK        650
+ IAVE     10              TYPE       SiC_PiN
.ENDS
*
* End of GB02SLT06-CAL SPICE Model
```