

Silicon Carbide Power Schottky Diode Chip

Features

- 650 V Schottky rectifier
- 250 °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 $T_j = 250$ °C, unless otherwise specified

Parameter	Symbol	Conditions	Values	Unit
Repetitive peak reverse voltage	V_{RRM}		650	V
Continuous forward current	I_F	$T_C \leq 235$ °C	1	A
RMS forward current	$I_{F(RMS)}$	$T_C \leq 235$ °C	2	A
Operating and storage temperature	T_j, T_{stg}		-55 to 250	°C

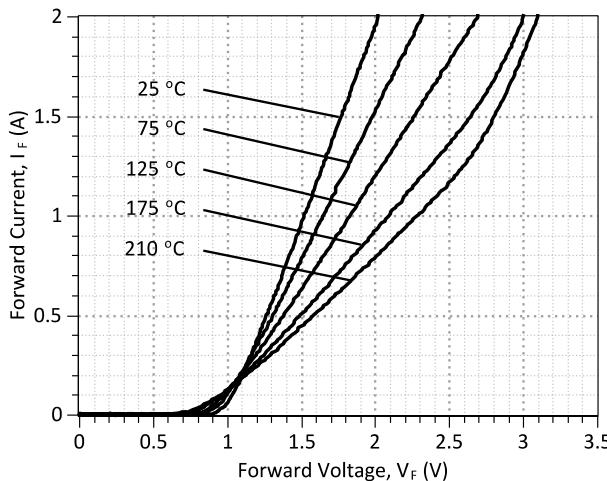
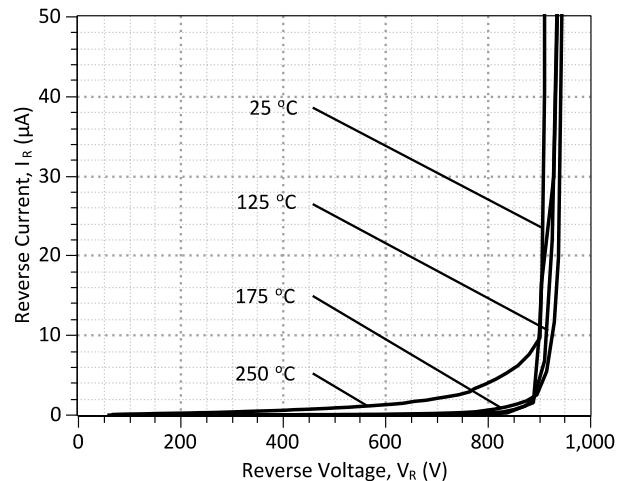
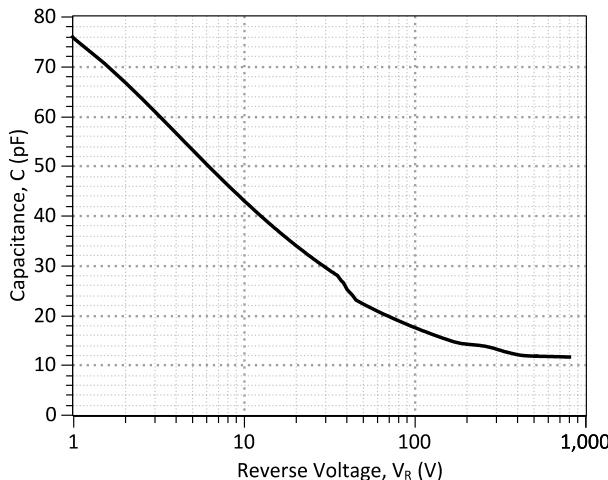
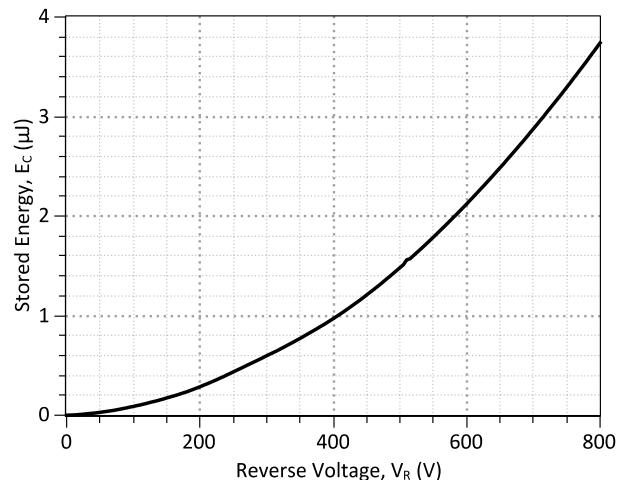
Electrical Characteristics at $T_j = 250$ °C, unless otherwise specified

Parameter	Symbol	Conditions	Values		
			min.	typ.	max.
Diode forward voltage	V_F	$I_F = 1$ A, $T_j = 25$ °C	1.5		
		$I_F = 1$ A, $T_j = 210$ °C	2.3		
Reverse current	I_R	$V_R = 650$ V, $T_j = 25$ °C	0.03	5	
		$V_R = 650$ V, $T_j = 250$ °C	1.7	20	μA
Total capacitive charge	Q_C	$I_F \leq I_{F,MAX}$	7		nC
Switching time	t_s	$dI_F/dt = 200$ A/μs	$V_R = 400$ V	< 17	ns
		$T_j = 210$ °C	$V_R = 400$ V		
Total capacitance	C	$V_R = 1$ V, $f = 1$ MHz, $T_j = 25$ °C	76		
		$V_R = 400$ V, $f = 1$ MHz, $T_j = 25$ °C	12		pF
		$V_R = 800$ V, $f = 1$ MHz, $T_j = 25$ °C	11		

Thermal Characteristics

Thermal resistance, junction - case	R_{thJC}	Assuming TO-276 package	3.55	°C/W
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*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
2012/04/03	0	Initial release	

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SPICE Model Parameters

Copy the following code into a SPICE software program for simulation of the GB01SHT06-CAU device.

```

* MODEL OF GeneSiC Semiconductor Inc.
*
* $Revision: 1.0      $
* $Date: 05-SEP-2013   $
*
* GeneSiC Semiconductor Inc.
* 43670 Trade Center Place Ste. 155
* Dulles, VA 20166
* http://www.genesicsemi.com/index.php/sic-products/schottky
*
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*
* 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 GB01SHT06-CAU SPICE Model
*
.SUBCKT GB01SHT06 ANODE KATHODE
D1 ANODE KATHODE GB01SHT06_25C; Call the Schottky Diode Model
D2 ANODE KATHODE GB01SHT06_PIN; Call the PiN Diode Model
.MODEL GB01SHT06_25C D
+ IS      3.57E-18      RS      0.49751
+ TRS1    0.0057      TRS2    2.40E-05
+ N       1            IKF     322
+ EG      1.2          XTI     3
+ CJO     9.12E-11     VJ      0.371817384
+ M       1.527759838   FC      0.5
+ TT      1.00E-10     BV      800
+ IBV     1.00E-03     VPK     650
+ IAVE    1            TYPE    Sic_Schottky
+ MFG     GeneSiC_Semiconductor
.MODEL GB01SHT06_PIN D
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+ N       5            IKF     800
+ EG      3.23         XTI     -14
+ FC      0.5          TT      0
+ BV      800          IBV     1.00E-03
+ VPK     650          IAVE    1
+ TYPE    Sic_Pin
.ENDS
*
* End of GB01SHT06-CAU SPICE Model

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