

## GB02SLT12-252

# Silicon Carbide Power Schottky Diode

$V_{RRM}$	=	1200 V
$V_{F}$	=	1.7 V
I <sub>F</sub>	=	2 A
$\mathbf{Q}_{C}$	=	26 nC

## **Features**

- 1200 V Schottky rectifier
- 175 °C maximum operating temperature
- Temperature independent switching behavior
- · Superior surge current capability
- $\bullet$  Positive temperature coefficient of  $V_{\text{F}}$
- · Extremely fast switching speeds
- Superior figure of merit Q<sub>C</sub>/I<sub>F</sub>

## **Advantages**

- Improved circuit efficiency (Lower overall cost)
- · Low switching losses
- Ease of paralleling devices without thermal runaway
- Smaller heat sink requirements
- Low reverse recovery current
- Low device capacitance
- Low reverse leakage current at operating temperature

## **Package**

RoHS Compliant





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## **Applications**

- Power Factor Correction (PFC)
- Switched-Mode Power Supply (SMPS)
- Solar Inverters
- Wind Turbine Inverters
- Motor Drives
- Induction Heating
- Uninterruptible Power Supply (UPS)
- High Voltage Multipliers

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

Parameter	Symbol	Conditions	Values	Unit
Repetitive peak reverse voltage	$V_{RRM}$		1200	V
Continuous forward current	I <sub>F</sub>	T <sub>C</sub> ≤ 160 °C	2	Α
RMS forward current	I <sub>F(RMS)</sub>	T <sub>C</sub> ≤ 160 °C	3	Α
Surge non-repetitive forward current, Half Sine	1	$T_{\rm C}$ = 25 °C, $t_{\rm P}$ = 10 ms	18	Δ.
Wave	I <sub>F,SM</sub>	$T_C = 160  ^{\circ}\text{C},  t_P = 10  \text{ms}$	15	А
Non-repetitive peak forward current	$I_{F,max}$	$T_C$ = 25 °C, $t_P$ = 10 $\mu$ s	100	Α
l <sup>2</sup> t value	∫i² dt	$T_{\rm C}$ = 25 °C, $t_{\rm P}$ = 10 ms	1.6	A <sup>2</sup> s
i i value	Ji di	$T_C = 160  ^{\circ}\text{C},  t_P = 10  \text{ms}$	1.1	AS
Power dissipation	P <sub>tot</sub>	T <sub>C</sub> = 25 °C	65	W
Operating and storage temperature	$T_{j}$ , $T_{stg}$		-55 to 175	°C

## Electrical Characteristics at T<sub>j</sub> = 175 °C, unless otherwise specified

Douannatau.	Comple ed	Conditions -		Values		1114	
Parameter	Symbol			min.	typ.	max.	Unit
Diode forward voltage	V <sub>F</sub>	I <sub>F</sub> = 2 A, T <sub>j</sub> = 25 °C		1.7	2.0	V	
Diode forward voltage	٧F	$I_F = 2 \text{ A}, T_j = 175 °C$			2.6	3.0	V
Reverse current	1	$V_R = 1200 \text{ V}, T_j = 25 ^{\circ}\text{C}$		< 1	4		
	I <sub>R</sub>	$V_R = 1200 \text{ V}, T_j = 175 ^{\circ}\text{C}$			5	40	μA
Total capacitive charge	0	V <sub>R</sub> = 400 V			14		nC
	$Q_{C}$	$I_F \le I_{F,MAX}$ - $dI_F/dt = 200 \text{ A/}\mu\text{s}$	V <sub>R</sub> = 960 V		26		IIC
Switching time	+	$T_j = 175 ^{\circ}\text{C}$ $V_R = 400 ^{\circ}\text{V}$ $V_R = 960 ^{\circ}\text{V}$			< 17		ns
	ts				\ \ 1 <i>1</i>		
Total capacitance		$V_R = 1 \text{ V, } f = 1 \text{ MHz, } T_j = 25 ^{\circ}\text{C}$		138			
	С	$V_R = 400 \text{ V}, f = 1 \text{ MHz}, T_j = 25 ^{\circ}\text{C}$		20		pF	
		$V_R = 1000 \text{ V}, f = 1 \text{ MHz}, T_i = 25 ^{\circ}\text{C}$		16			

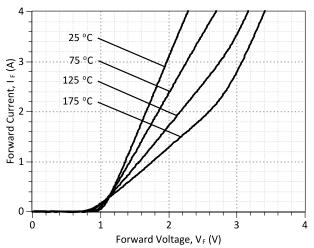
#### **Thermal Characteristics**

Thermal resistance, junction - case	$R_{thJC}$	2.3	°C/W
Machanical Dropoutics			

#### **Mechanical Properties**

Mounting torque M	0.6	Nm
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**Figure 1: Typical Forward Characteristics** 

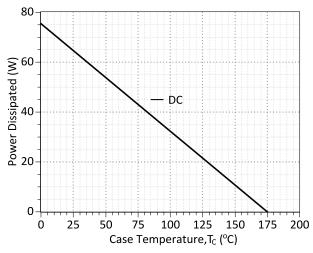


Figure 3: Power Derating Curve

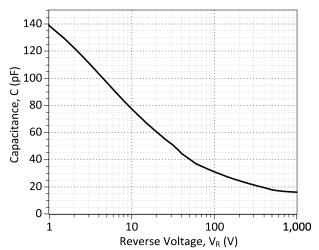


Figure 5: Typical Junction Capacitance vs Reverse Voltage Characteristics

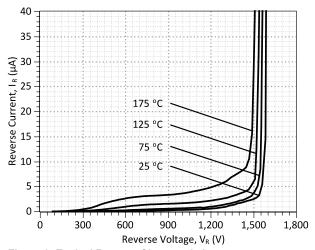


Figure 2: Typical Reverse Characteristics

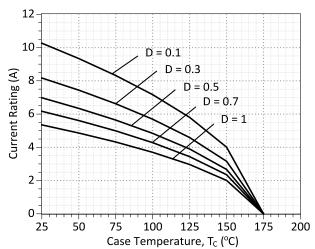


Figure 4: Current Derating Curves (D =  $t_p/T$ ,  $t_p$ = 400  $\mu$ s) (Considering worst case  $Z_{th}$  conditions )

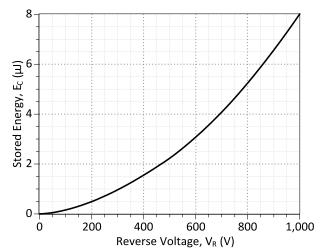


Figure 6: Typical Switching Energy vs Reverse Voltage Characteristics



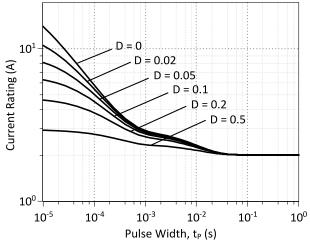


Figure 7: Current vs Pulse Duration Curves at  $T_{\rm C}$  = 160 °C

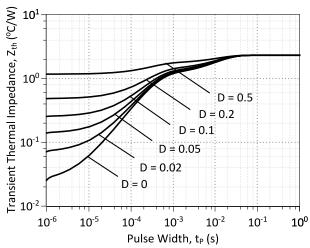
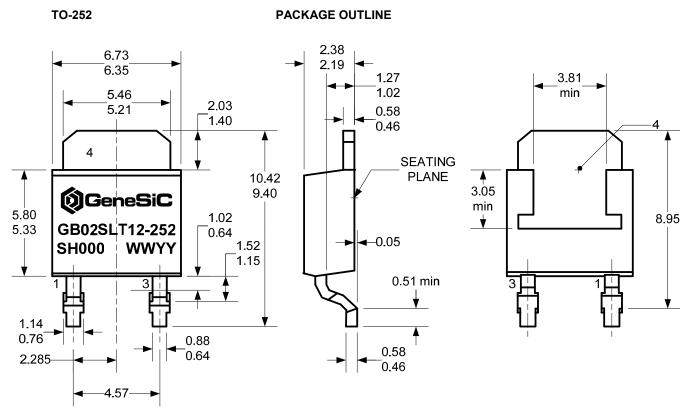


Figure 8: Transient Thermal Impedance

## **Package Dimensions:**



#### NOTE

- 1. CONTROLLED DIMENSION IS INCH. DIMENSION IN BRACKET IS MILLIMETER.
- 2. DIMENSIONS DO NOT INCLUDE END FLASH, MOLD FLASH, MATERIAL PROTRUSIONS
- 3. CONTROLLED LEAD COPLANARITY <D> 0.004 INCH MAXIMUM



Revision History					
Date	Revision	Comments	Supersedes		
2012/12/18	2	Second generation update			
2012/05/22	1	Second generation release			
2010/12/13	0	Initial release			

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