

GB01SLT12-252

Silicon Carbide Power **Schottky Diode**

V_{RRM} 1200 V 1 A I_F Q_{C} 13 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_{F}
- Extremely fast switching speeds
- Superior figure of merit Q_C/I_F

Package

RoHS Compliant





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

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 _F	T _C ≤ 160 °C	1	Α
RMS forward current	I _{F(RMS)}	T _C ≤ 160 °C	2	Α
Surge non-repetitive forward current, Half Sine Wave	$I_{F,SM}$	T_C = 25 °C, t_P = 10 ms T_C = 160 °C, t_P = 10 ms	10 8	Α
Non-repetitive peak forward current	I _{F,max}	T_C = 25 °C, t_P = 10 μ s	65	Α
l ² t value	∫i² dt	T_C = 25 °C, t_P = 10 ms T_C = 160 °C, t_P = 10 ms	0.5 0.3	A^2s
Power dissipation	P _{tot}	T _C = 25 °C	42	W
Operating and storage temperature	T _j , T _{stg}		-55 to 175	°C

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

Dougranton	Comple al	Conditions —		Values		I I m i 4	
Parameter	Symbol			min.	typ.	max.	Unit
Diode forward voltage	V_{F}	$I_F = 1 A, T_j = 2$	5 °C		1.7	2.0	V
Diode forward voltage	٧F	I _F = 1 A, T _j = 175 °C		2.6	3.0	V	
Reverse current	I _R	V _R = 1200 V, T _j = 25 °C		< 1	2		
		$V_R = 1200 \text{ V}, T_j = 175 ^{\circ}\text{C}$			2	20	μΑ
Total canacitive charge	Q_{C}	V _R = 400			7		nC
Total capacitive charge		$ \begin{array}{c c} I_F \leq I_{F,MAX} \\ dI_F/dt = 200 \text{ A/}\mu\text{s} \\ T_j = 175 \text{ °C} \\ \end{array} \begin{array}{c c} V_R = 960 \text{ V} \\ \hline V_R = 400 \text{ V} \\ V_R = 960 \text{ V} \\ \end{array} $	$V_{R} = 960 \text{ V}$		13		IIC
Switching time	ts		V _R = 400 V		< 17		
				` 17		ns	
		$V_R = 1 V, f = 1 MHz,$	T _j = 25 °C		69		
Total capacitance	С	$V_R = 400 \text{ V}, f = 1 \text{ MHz}, T_j = 25 ^{\circ}\text{C}$		10		pF	
		$V_R = 1000 \text{ V, f} = 1 \text{ MHz, T}_i = 25 ^{\circ}\text{C}$		8			

Thermal Characteristics

Thermal resistance, junction - case

Mechanical Properties			
Mounting torque	M	0.6	Nm

 R_{thJC}

3.6



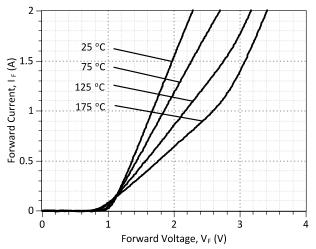


Figure 1: Typical Forward Characteristics

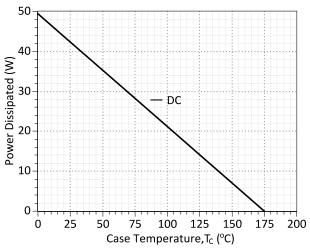


Figure 3: Power Derating Curve

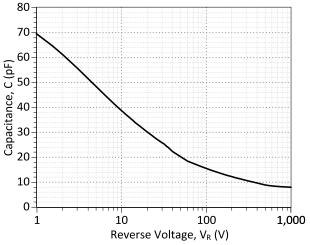


Figure 5: Typical Junction Capacitance vs Reverse Voltage

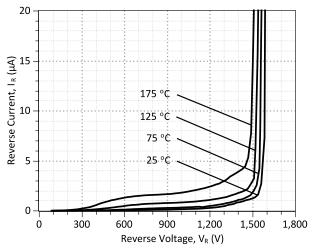


Figure 2: Typical Reverse Characteristics

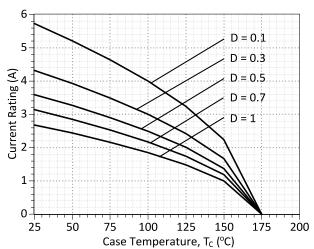


Figure 4: Current Derating Curves (D = t_P/T , t_P = 400 μ s) (Considering worst case Z_{th} conditions)

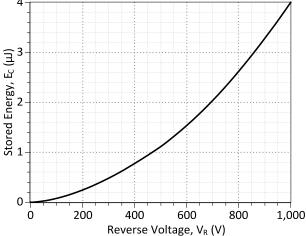


Figure 6: Typical Switching Energy vs Reverse Voltage



Characteristics

10¹ D = 0 D = 0.02Current Rating (A) D = 0.05D = 0.1D = 0.2D = 0.510⁰ 10-5 10-4 10-2 10⁻³ 10⁻¹ 10⁰

Figure 7: Current vs Pulse Duration Curves at T_c = 160 °C

Pulse Width, t_P (s)

Characteristics

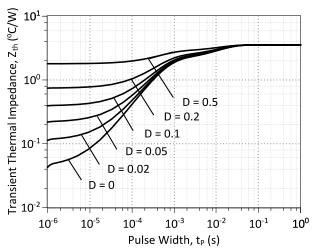
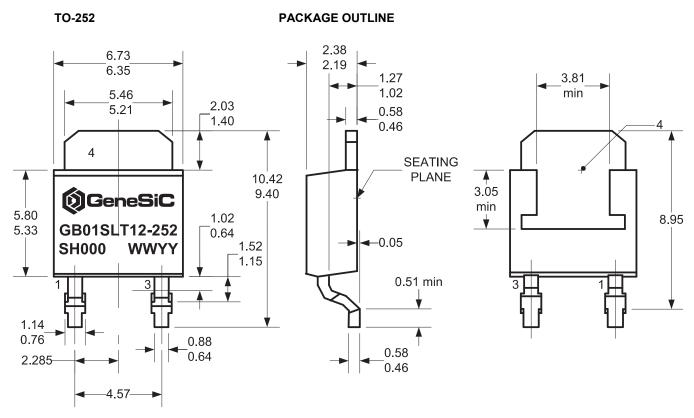


Figure 8: Transient Thermal Impedance

Package Dimensions:



- 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 <0> 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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