

GB05SLT12-252

Silicon Carbide Power **Schottky Diode**

V_{RRM} 1200 V 5 A I_F Q_{C} 35 nC

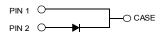
Features

- 1200 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

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 ≤ 155 °C	5	Α
RMS forward current	I _{F(RMS)}	T _C ≤ 155 °C	8	Α
Surge non-repetitive forward current, Half Sine Wave	$I_{F,SM}$	$T_C = 25 ^{\circ}\text{C}, t_P = 10 \text{ms}$ $T_C = 155 ^{\circ}\text{C}, t_P = 10 \text{ms}$	32 26	Α
Non-repetitive peak forward current	$I_{F,max}$	T_C = 25 °C, t_P = 10 μ s	120	Α
I ² t value	∫i² dt	T_C = 25 °C, t_P = 10 ms T_C = 155 °C, t_P = 10 ms	5 3.4	A ² s
Power dissipation	P _{tot}	T _C = 25 °C	117	W
Operating and storage temperature	T_{j} , T_{stg}		-55 to 175	°C

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

Domonoston	O. mah al	Conditions mi		Values			
Parameter	Symbol			min.	typ.	max. Un	
Diode forward voltage	V _F	I _F = 5 A, T _j = 25 °C		1.7	2.0	V	
	'	I _F = 5 A, T _j = 175 °C		2.7	3.0		
Reverse current	I_R	$V_R = 1200 \text{ V}, T_j = 25 ^{\circ}\text{C}$		3	20	μΑ	
		V _R = 1200 V, T _j = 175 °C		6	50		
Total capacitive charge	$Q_{\rm c}$		V _R = 400 V		21		nC
Total dapaolitie charge	~ c	$I_F \le I_{F,MAX}$ $dI_F/dt = 200 A/\mu s$	V _R = 960 V		35	55	
Switching time	ts	T _i = 175 °C	V _R = 400 V		< 25		ns
	ıs	,	$V_{R} = 960 \text{ V}$		120		113
Total capacitance		$V_R = 1 \text{ V, f} = 1 \text{ MHz, T}_j = 25 \text{ °C}$		260		pF	
	С	$V_R = 400 \text{ V}, f = 1 \text{ MHz}, T_j = 25 ^{\circ}\text{C}$		25			
		$V_P = 1000 \text{ V. } f = 1 \text{ MHz. } T_1 = 25 ^{\circ}\text{C}$		20			

Thermal Characteristics

Thermal resistance, junction - case	R _{thJC}	1.4	°C/W
Mechanical Properties			
Mounting torque	M	0.6	Nm



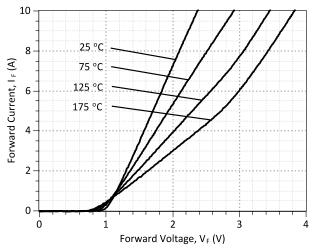


Figure 1: Typical Forward Characteristics

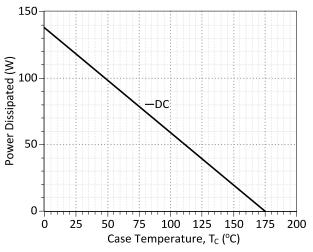


Figure 3: Power Derating Curve

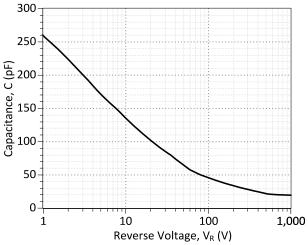


Figure 5: Typical Junction Capacitance vs Reverse Voltage

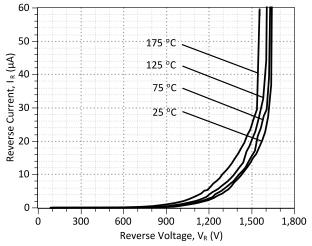


Figure 2: Typical Reverse Characteristics

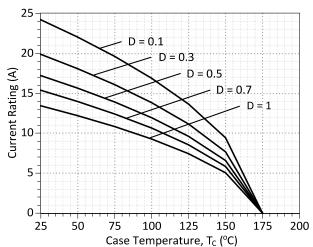


Figure 4: Current Derating Curves (D = t_p/T , t_p = 400 μ s) (Considering worst case Z_{th} conditions)

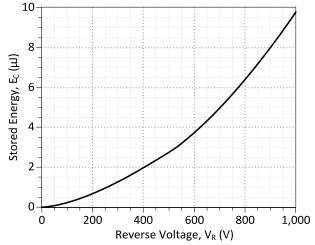


Figure 6: Typical Switching Energy vs Reverse Voltage



Characteristics

10² D = 0D = 0.02D = 0.05Current Rating (A) D = 0.1D = 0.2D = 0.510⁰ 10⁻⁵ 10-4 10⁻³ 10-2 10⁻¹ 10⁰ Pulse Width, t_P (s)

Figure 7: Current vs Pulse Duration Curves at T_c = 155 °C

Characteristics

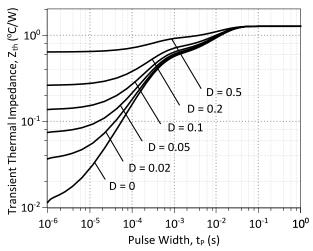
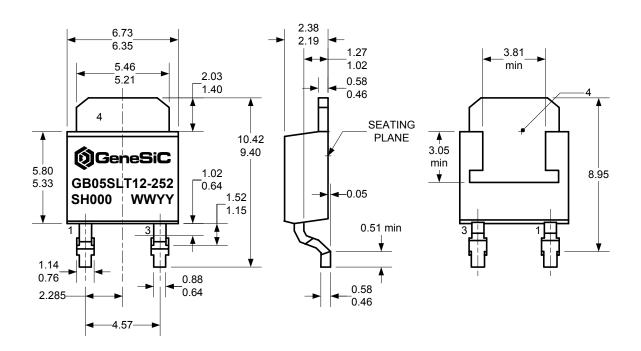


Figure 8: Transient Thermal Impedance

Package Dimensions:

TO-252

PACKAGE OUTLINE



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		
2012/12/19	2	Second generation update			
2012/05/22	1	Second generation release			
2010/12/14	0	Initial release			

Published by GeneSiC Semiconductor, Inc. 43670 Trade Center Place Suite 155 Dulles, VA 20166

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