Silicon Carbide Power Schottky Diode

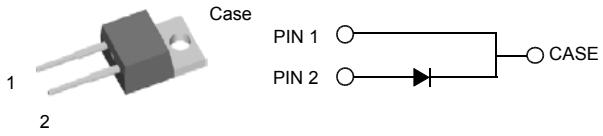
V_{RRM}	=	1200 V
I_F	=	3 A
Q_C	=	11 nC

Features

- 1200 V Schottky rectifier
- 175 °C maximum operating temperature
- Zero reverse recovery charge
- Positive temperature coefficient of V_F
- Extremely fast switching speeds
- Temperature independent switching behavior
- Lowest figure of merit Q_C/I_F

Package

- RoHS Compliant



TO – 220AC

Advantages

- Improved circuit efficiency (Lower overall cost)
- Low switching losses
- Ease of paralleling devices without thermal runaway
- Smaller heat sink requirements
- Industry's lowest reverse recovery charge
- Industry's lowest device capacitance
- Ideal for output switching of power supplies
- Best in class 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)
- Voltage Clamping
- 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	$T_C \leq$ 150 °C	3	A
RMS forward current	$I_{F(RMS)}$	$T_C \leq$ 150 °C	5	A
Surge non-repetitive forward current, Half Sine Wave	$I_{F,SM}$	T_C = 25 °C, t_p = 10 ms	10	A
Non-repetitive peak forward current	$I_{F,max}$	T_C = 25 °C, t_p = 10 µs	45	A
i^2t value	$\int i^2 dt$	T_C = 25 °C, t_p = 10 ms	0.5	A^2s
Power dissipation	P_{tot}	T_C = 25 °C	85	W
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 min.	Values typ.	Values max.	Unit
Diode forward voltage	V_F	I_F = 3 A, T_j = 25 °C		1.65		V
		I_F = 3 A, T_j = 175 °C		2.90		
Reverse current	I_R	V_R = 1200 V, T_j = 25 °C		3		µA
		V_R = 1200 V, T_j = 175 °C		10		
Total capacitive charge	Q_C	V_R = 950 V, $I_F \leq I_{F,max}$		11		nC
Switching time	t_s	dI_F/dt = 330 A/µs, T_j = 150 °C		< 15		ns
Total capacitance	C	V_R = 3 V, f = 1 kHz, T_j = 25 °C		102		pF
		V_R = 200 V, f = 1 kHz, T_j = 25 °C		18		

Thermal Characteristics

Thermal resistance, junction - case	R_{thJC}	1.76	°C/W

Mechanical Properties

Mounting torque	M	0.6	Nm

1. Considering worst case Z_{th} conditions

http://www.genesicsemi.com/index.php/sic-products/schottky

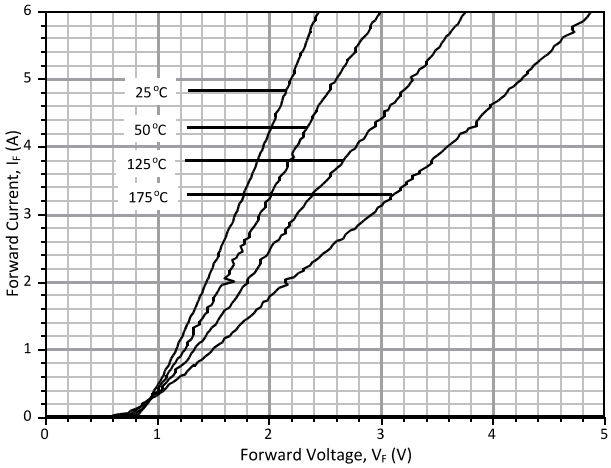


Figure 1: Typical Forward Characteristics

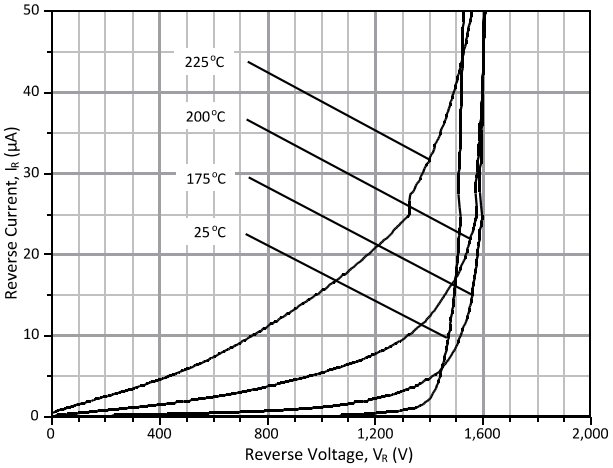


Figure 2: Typical Reverse Characteristics

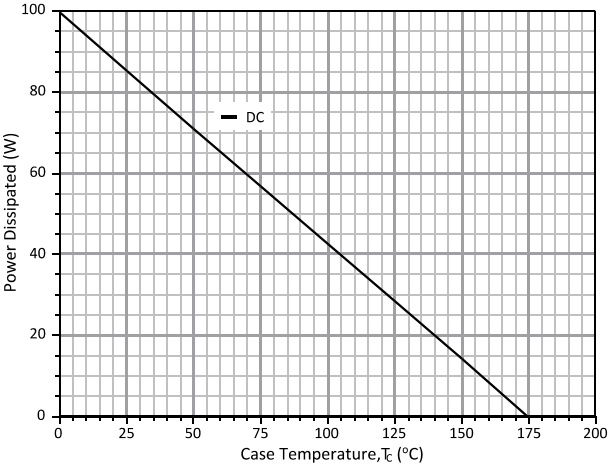


Figure 3: Typical Power Derating Curve

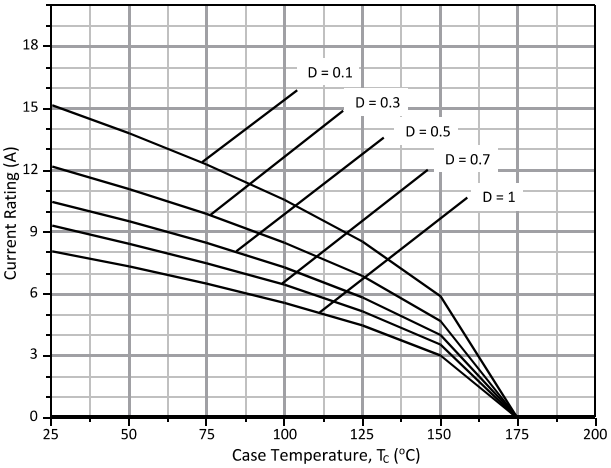


Figure 4: Typical Current Derating Curves ($D = t_P/T$, t_P = 400 µs[1])

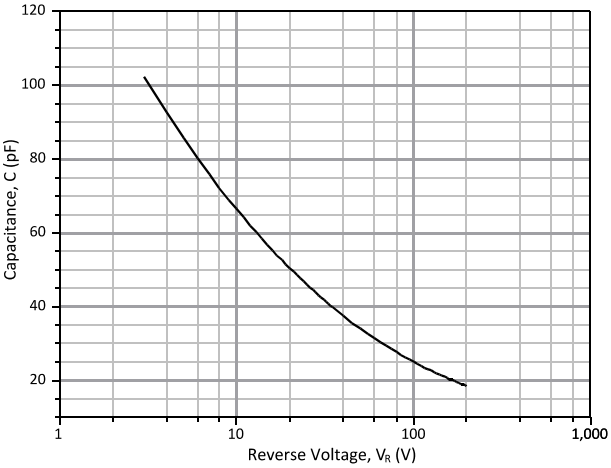


Figure 5: Typical Junction Capacitance versus Reverse Voltage Characteristics

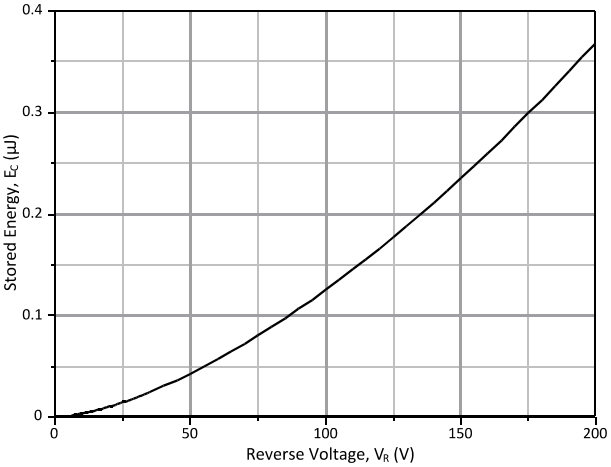


Figure 6: Typical Switching Energy versus Reverse Voltage Characteristics

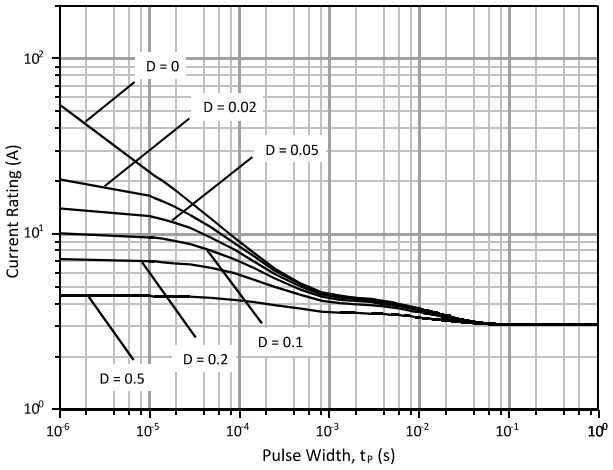


Figure 7: Typical Current versus Pulse Duration Curves at T_C =150 ^{O}C

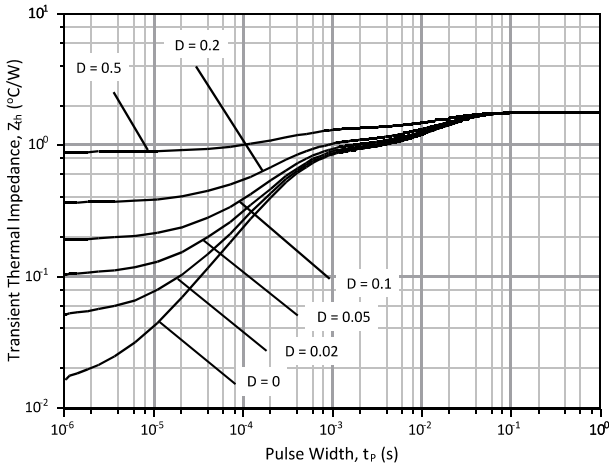
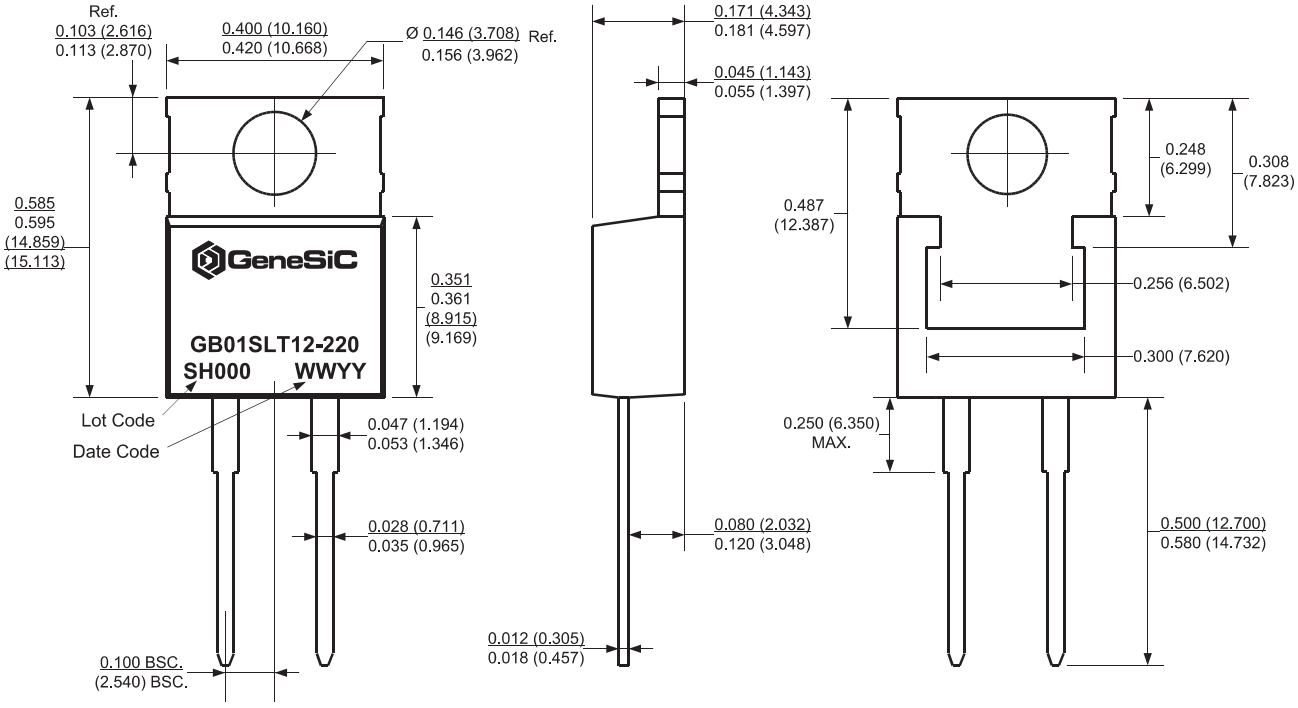


Figure 8: Typical Transient Thermal Impedance

Package Dimensions:

TO-220AC **PACKAGE OUTLINE**



NOTE

1. CONTROLLED DIMENSION IS INCH. DIMENSION IN BRACKET IS MILLIMETER.
2. DIMENSIONS DO NOT INCLUDE END FLASH, MOLD FLASH, MATERIAL PROTRUSIONS

Revision History			
Date	Revision	Comments	Supersedes
2010/11/20	1	Second generation release	GA03SLT12-220

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