Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Silicon Carbide Power Schottky Diode

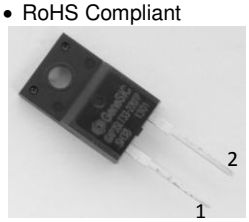
V_{RRM}	=	3300 V
$I_{F\ (Tc \le 125°C)}$	=	0.3 A
Q_C	=	20 nC

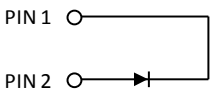
Features

- Industry's leading low leakage currents
- 175 °C maximum operating temperature
- Electrically isolated base-plate
- Positive temperature coefficient of V_F
- Fast switching speeds
- Superior figure of merit Q_C/I_F

Package

- RoHS Compliant





TO – 220FP (Isolated Base-plate Package)

Advantages

- Low standby power losses
- Improved circuit efficiency (Lower overall cost)
- Significantly reduced switching losses compare to Si PiN diodes
- Ease of paralleling devices without thermal runaway
- Smaller heat sink requirements
- Low reverse recovery current
- Low device capacitance

Applications

- Down Hole Oil Drilling, Geothermal Instrumentation
- High Voltage Multipliers
- Military Power Supplies

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

Parameter	Symbol	Conditions	Values	Unit
Repetitive peak reverse voltage	V_{RRM}		3300	V
Continuous forward current	I_F	$T_C \le 125$ °C	0.3	A
RMS forward current	$I_{F(RMS)}$	$T_C \le 125$ °C	0.35	A
Surge non-repetitive forward current, Half Sine Wave	$I_{F,SM}$	T_C = 25 °C, t_P = 10 ms T_C = 125 °C, t_P = 10 ms	2 1	A
Non-repetitive peak forward current	$I_{F,max}$	T_C = 25 °C, t_P = 10 µs	10	A
I^2t value	$\int i^2\,dt$	T_C = 25 °C, t_P = 10 ms	0.1	A^2S
Power dissipation	P_{tot}	T_C = 25 °C	89	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 = 0.3 A, T_j = 25 °C I_F = 0.3 A, T_j = 175 °C			1.7 4.0	2.2 5.0	V
Reverse current	I_R	V_R = 3300 V, T_j = 25 °C V_R = 3300 V, T_j = 175 °C			1 10	10 100	µA
Total capacitive charge	Q_C	$I_F \le I_{F,MAX}$ dI_F/dt = 35 A/µs T_j = 175 °C	V_R = 1500 V		20		nC
Switching time	t_s		V_R = 1500 V		< 60		ns
Total capacitance	C	V_R = 1 V, f = 1 MHz, T_j = 25 °C V_R = 400 V, f = 1 MHz, T_j = 25 °C V_R = 1000 V, f = 1 MHz, T_j = 25 °C			42 8 7		pF

Thermal Characteristics

Thermal resistance, junction – Cu lead frame	R_{thJC}	1.69	°C/W

Mechanical Properties

Mounting torque, M3 screw	M	0.6	Nm

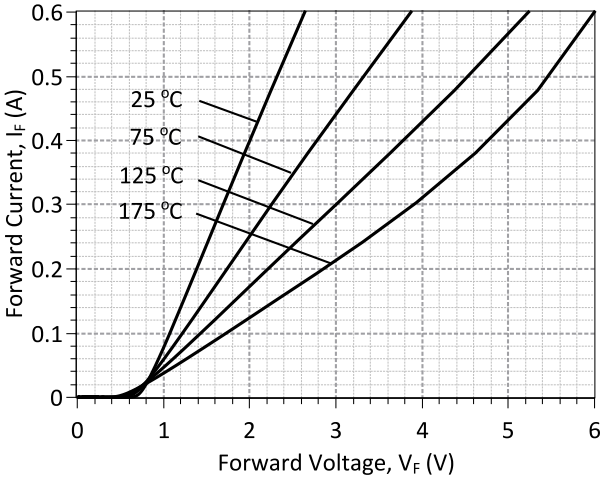


Figure 1: Typical Forward Characteristics

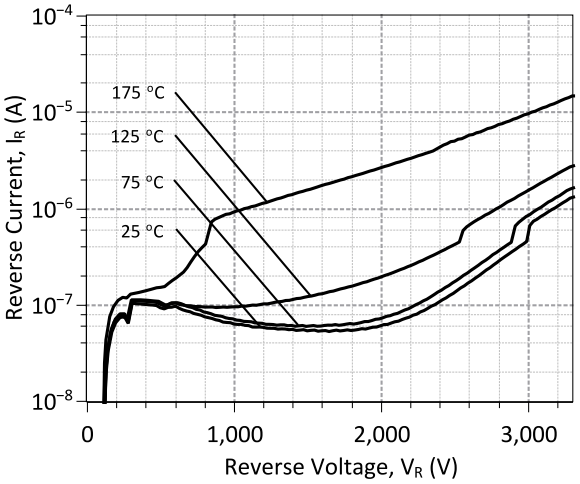


Figure 2: Typical Reverse Characteristics

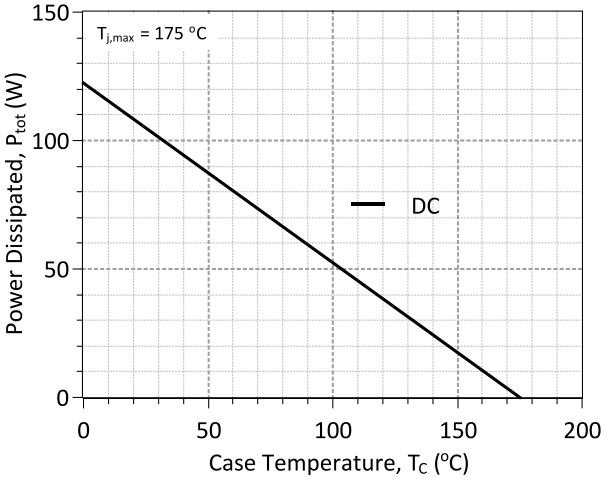


Figure 3: Power Derating Curve

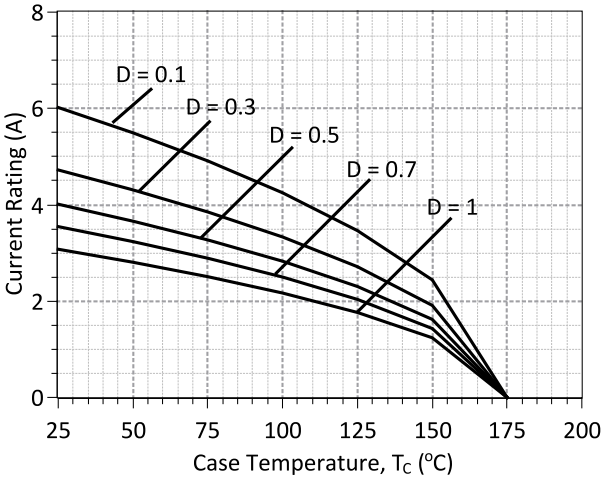


Figure 4: Current Derating Curves (D = t_p/T, t_p = 400 µs) (Considering worst case Zth conditions)

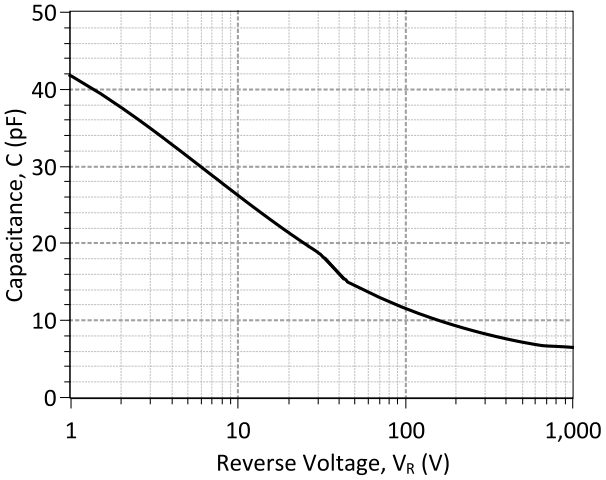


Figure 5: Typical Junction Capacitance vs Reverse Voltage Characteristics

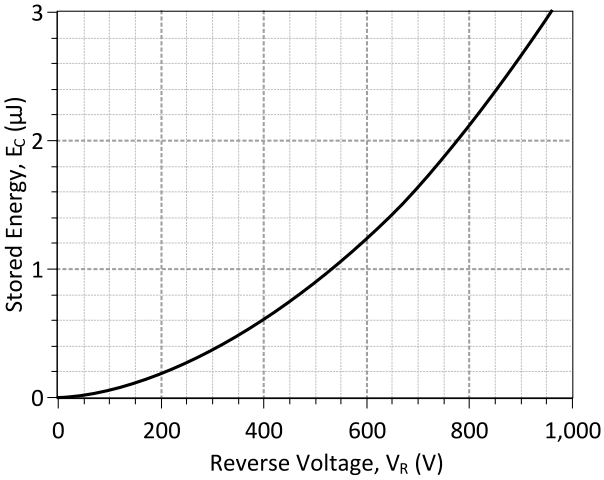


Figure 6: Typical Capacitive Energy vs Reverse Voltage Characteristics

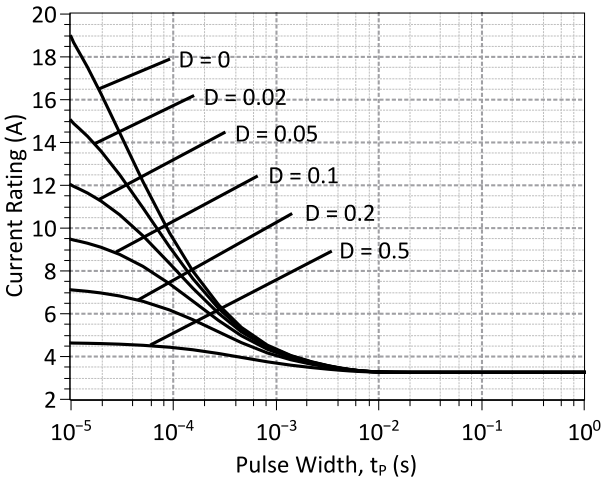


Figure 7: Current vs Pulse Duration Curves at T_C = 150 °C

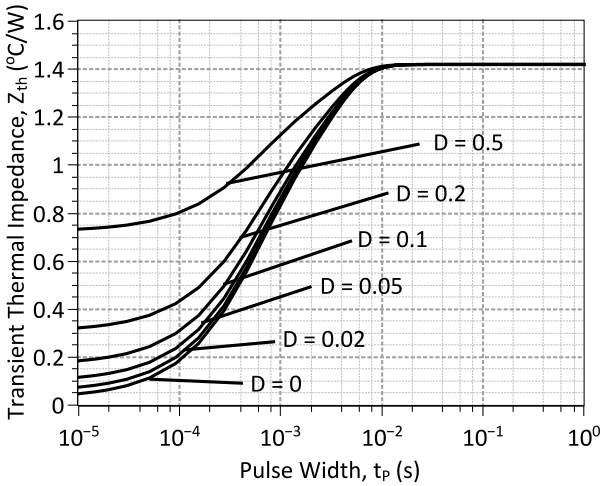
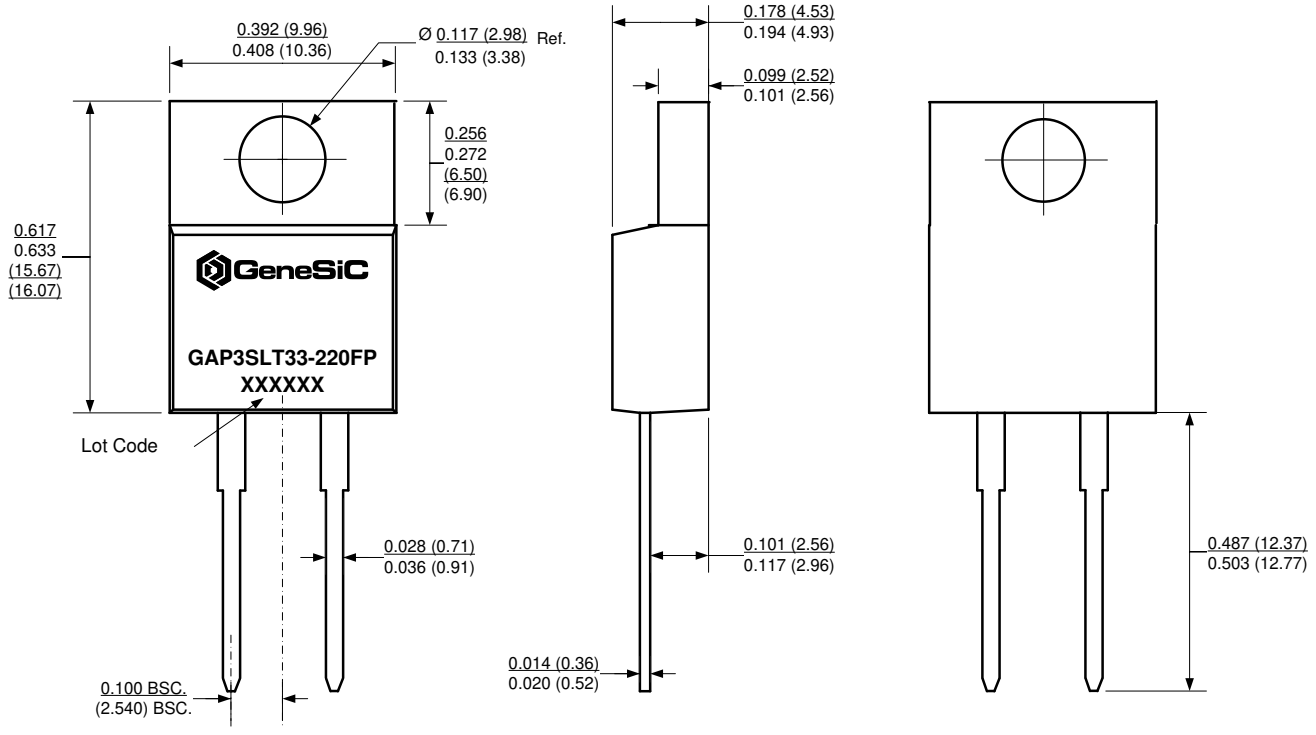


Figure 8: Transient Thermal Impedance

Package Dimensions:

TO-220FP **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
2014/12/19	3	Updated Electrical Characteristics	
2014/08/26	2	Updated Electrical Characteristics	
2013/03/22	1	Added Thermal Characteristics	
2013/01/23	0	Initial Release	

Published by
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43670 Trade Center Place Suite 155
Dulles, VA 20166

SPICE Model Parameters

This is a secure document. Please copy this code from the SPICE model PDF file on our website (http://www.genesicsemi.com/images/products_sic/rectifiers/GAP3SLT33-220FP_SPICE.pdf) into LTSPICE (version 4) software for simulation of the GAP3SLT33-220FP.

```
*     MODEL OF GeneSiC Semiconductor Inc.
*
*     $Revision:   1.0           $
*     $Date:   04-SEP-2013       $
*
*     GeneSiC Semiconductor Inc.
*     43670 Trade Center Place Ste. 155
*     Dulles, VA 20166
*
*     COPYRIGHT (C) 2013 GeneSiC Semiconductor Inc.
*     ALL RIGHTS RESERVED
*
* 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 GAP3SLT33-220FP SPICE Model
*
.SUBCKT GAP3SLT33 ANODE KATHODE
R1 ANODE INT R=((TEMP-24)*0.0535); Temperature Dependant Resistor
D1 INT KATHODE GAP3SLT33_25C; Call the 25C Diode Model
D2 ANODE KATHODE GAP3SLT33_PIN; Call the PiN Diode Model
.MODEL GAP3SLT33_25C D
+ IS       1.39E-14        RS         2.88
+ N        1.0120127       IKF        36.05007504
+ EG       1.2             XTI        -3
+ CJO      6.01E-11        VJ         0.924257443
+ M        0.3084545       FC         0.5
+ TT       1.00E-10        BV         3300
+ IBV      1.00E-03        VPK        3300
+ IAVE     3.00E-01        TYPE       SiC_Schottky
+ MFG      GeneSiC_Semiconductor
.MODEL GAP3SLT33_PIN D
+ IS       178.99E-18      RS         15
+ N        5               EG         3.23
+ XTI      50              FC         0.5
+ TT       0               BV         3300
+ IBV      1.00E-03        VPK        3300
+ IAVE     3.00E-01        TYPE       SiC_PiN
.ENDS
* End of GAP3SLT33-220FP SPICE Model
```