

1200V SiC Power Module Dual Diode Pack

Features

- SiC Schottky Diode
 - Zero reverse recovery
 - Zero forward recovery
 - Temperature independent switching behavior
 - Positive temperature coefficient on V_F
- Low stray inductance
- High junction temperature operation
- All parts tested to greater than 1,400V

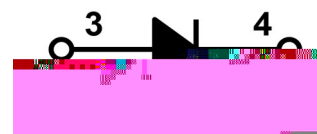
Benefits

- Outstanding performance at high frequency operation
- Low loss and low EMI noise
- Very rugged and easy mounting
- Internally isolated package (AIN)
- Low junction to case thermal resistance
- Easy paralleling due to positive T_C of V_F
- RoHS compliant

Applications

- Switched-mode power supply
- Induction heater
- Welding equipment
- Charging station

Package



Parallel

Part #	Package	Marking
GHXS045A120S-D3	SOT-227	GHXS045A120S-D3



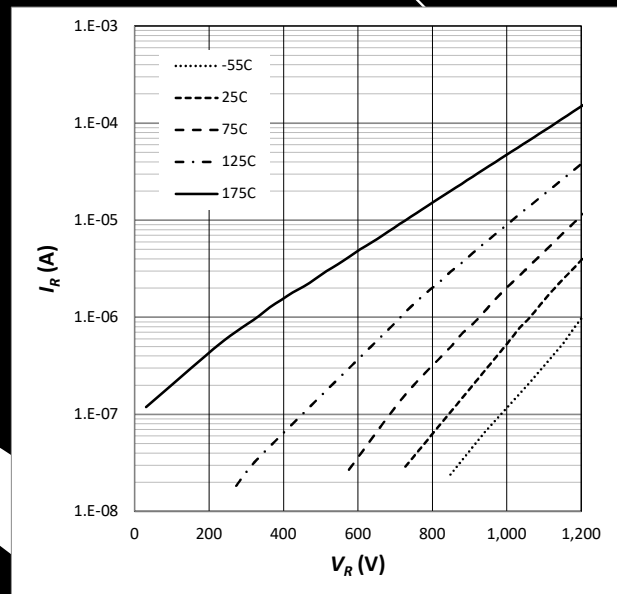
Maximum Ratings, at $T_j=25\text{ }^{\circ}\text{C}$, unless otherwise specified (per leg)

Characteristics	Symbol	Conditions	Values	Unit
Continuous forward current	I_F	$T_C=25\text{ }^{\circ}\text{C}$, $T_j=175\text{ }^{\circ}\text{C}$	116	A
		$T_C=146\text{ }^{\circ}\text{C}$, $T_j=175\text{ }^{\circ}\text{C}$	45	
		$T_C=150\text{ }^{\circ}\text{C}$, $T_j=175\text{ }^{\circ}\text{C}$	40	
Surge non-repetitive forward current sine halfwave	I_{FSM}	$T_C=25\text{ }^{\circ}\text{C}$, $t_p=8.3\text{ ms}$	340	A
		$T_C=110\text{ }^{\circ}\text{C}$, $t_p=8.3\text{ ms}$	310	
Non-repetitive peak forward current	$I_{F,max}$	$T_C=25\text{ }^{\circ}\text{C}$, $t_p=10\text{ }\mu\text{s}$	1700	A
² value	$\int^2$	$T_C=25\text{ }^{\circ}\text{C}$, $t_p=8.3\text{ ms}$	480	A^2s
		$T_C=110\text{ }^{\circ}\text{C}$, $t_p=8.3\text{ ms}$	398	
Repetitive peak reverse voltage	V_{RRM}	$T_j=25\text{ }^{\circ}\text{C}$	1200	V
Diode ruggedness		Turn-on slew rate, repetitive	200	V/ns
Power dissipation	P_{tot*}	$T_C=25\text{ }^{\circ}\text{C}$	484	W
Operating junction temperature	T_j		-55...175	$^{\circ}\text{C}$
Storage temperature	$T_{storage}$		-55...150	$^{\circ}\text{C}$

Notes: *Typical R_{thJC} used



Fig. 1 Reverse Current Characteristics (pA) vs. Reverse Voltage (V) for various temperatures



Reverse Current Characteristics (pA) vs. Reverse Voltage (V) for various temperatures

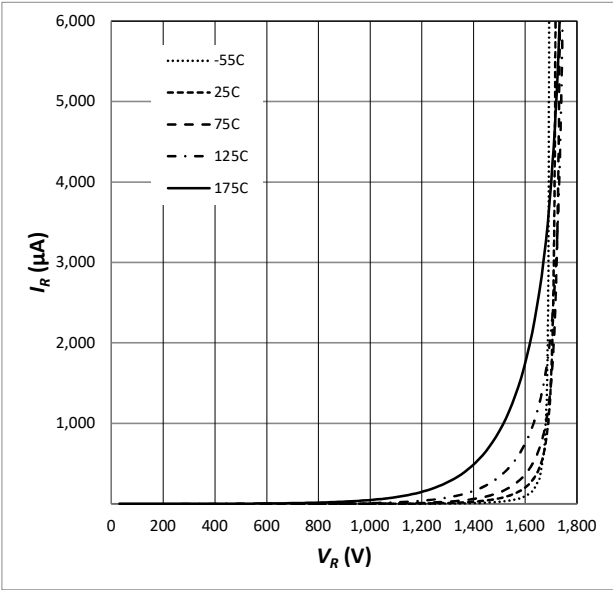


Fig. 3 Reverse Characteristics (parameterized on T_j)

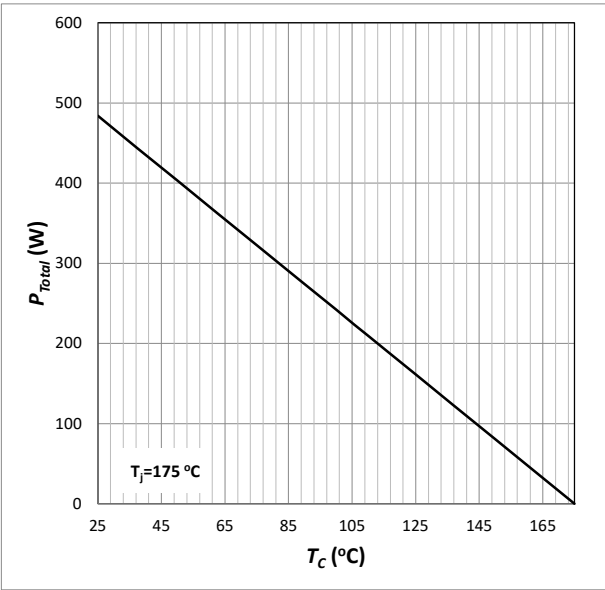


Fig. 4 Power Derating

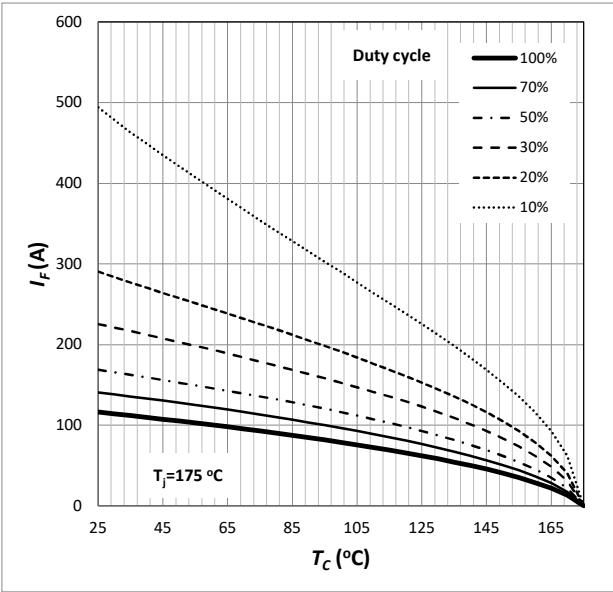


Fig. 5 Current Derating

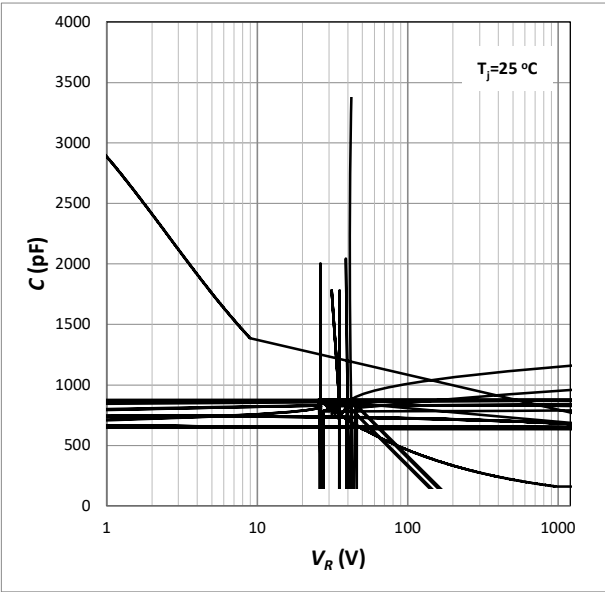


Fig. 6 Capacitance

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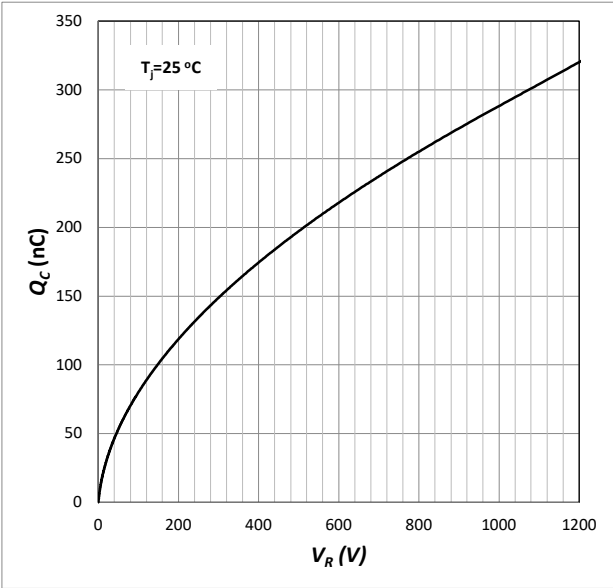


Fig. 7 Capacitive Charge

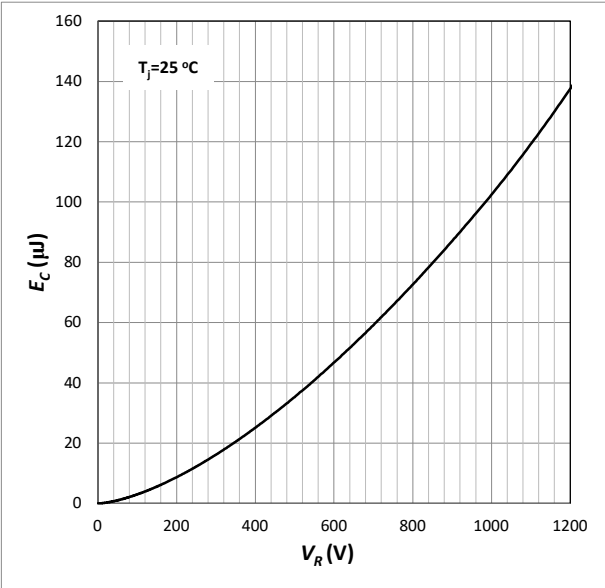


Fig. 8 Typical Capacitance Stored Energy

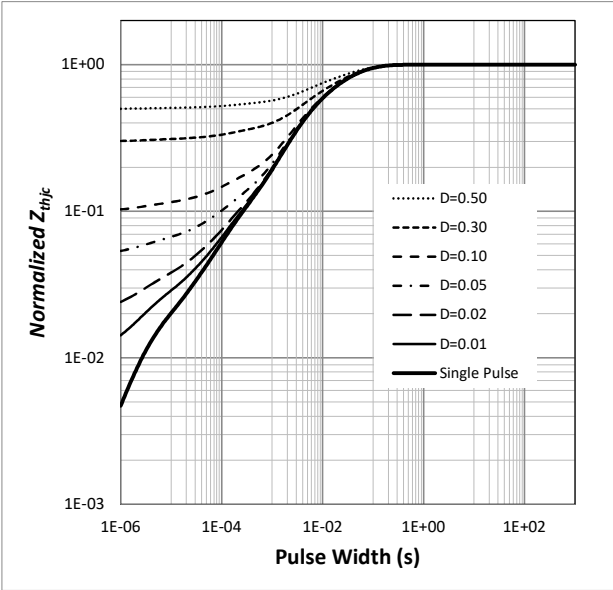
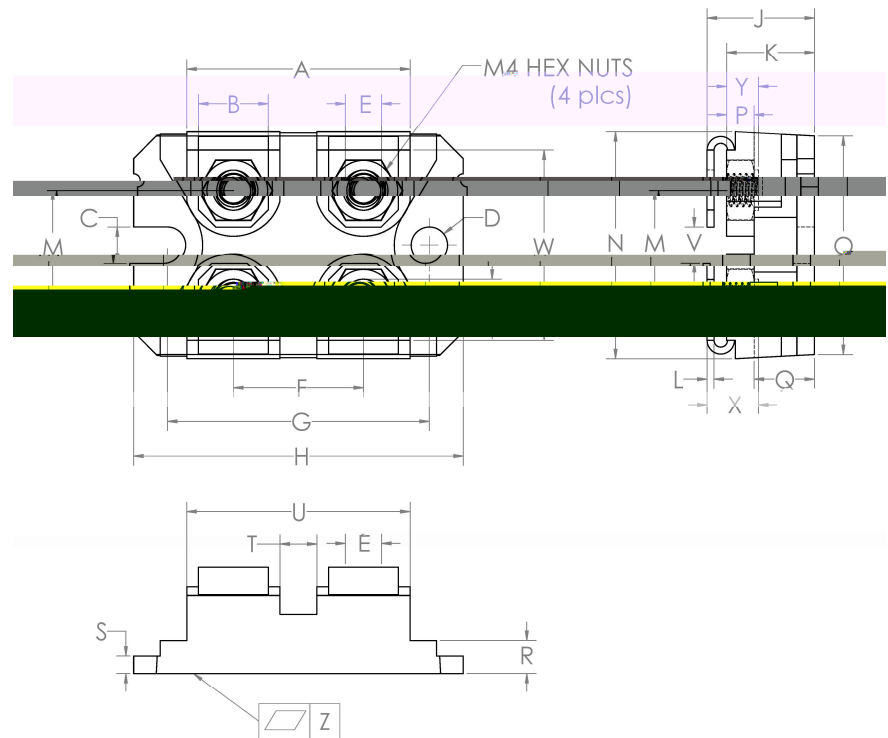


Fig. 9 Transient Thermal Impedance

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Package Dimensions SOT-227



Sym	Millimeters		Inches	
	Min	Max	Min	Max
A	31.67	31.90	1.247	1.256
B	7.95	8.18	0.313	0.322
C	4.14	4.24	0.163	0.167
D	4.14	4.24	0.163	0.167
E	4.14	4.24	0.163	0.167
F	14.94	15.09	0.588	0.594
G	30.15	30.25	1.187	1.191
H	38.00	38.10	1.496	1.500
I	4.75	4.83	0.187	0.190
J	11.68	12.19	0.460	0.480
K	9.45	9.60	0.372	0.378
L	0.76	0.84	0.030	0.033
M	12.62	12.88	0.497	0.507
N	25.15	25.30	0.990	0.996
O	24.79	25.04	0.976	0.986
P	3.02	3.15	0.119	0.124
Q	6.71	6.96	0.264	0.274
R	4.17	4.42	0.164	0.174
S	2.08	2.13	0.082	0.084
T	3.28	3.63	0.129	0.143
U	26.75	26.90	1.053	1.059
V	3.86	4.24	0.152	0.167
W	20.55	26.90	0.809	0.814
X	5.45	5.85	0.215	0.230
Y	3.15	3.66	0.124	0.144
Z	0.00	0.13	0.000	0.005

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Revision History

Date	Revision	Notes
9/6/2013	1.0	Initial release
6/4/2014	1.1	Add the part number, pin assignment table.
1/3/2020	1.2	Applied company name change.
11/12/2020	1.3	Updated parameters.

Notes

RoHS Compliance

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented March, 2013. RoHS Declarations for this product can be obtained from the Product Documentation sections of www.SemiQ.com.

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