

600V SiC Power Module Rectifier Bridge

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 715V

Benefits

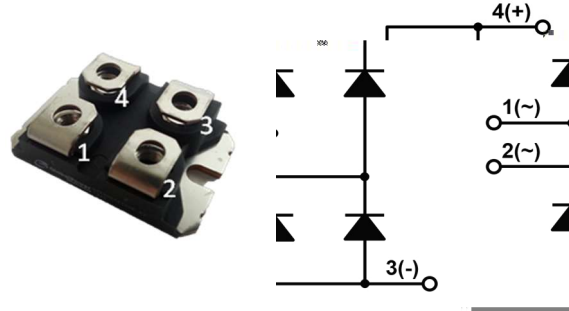
- Outstanding performance at high frequency operation
- Low loss and low EMI noise
- Very rugged and easy mounting
- Internally isolated package (Al_2O_3)
- Low junction to case thermal resistance
- Easy paralleling due to positive T_C of V_F
- RoHS compliant

Applications

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

VDC	600 V
I_F	30 A
$T_{j,max}$	175 °C

Package



Rectifier Bridge

Part #	Package	Marking
GHXS030A060S-D1E	SOT-227	GHXS030A060S-D1E



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

Characteristics	Symbol	Conditions	Values	Unit
Continuous forward current	I_F	$T_C=25\text{ °C}$, $T_j=175\text{ °C}$	84	A
		$T_C=145\text{ °C}$, $T_j=175\text{ °C}$	30	
		$T_C=150\text{ °C}$, $T_j=175\text{ °C}$	27	
Surge non-repetitive forward current sine halfwave	I_{FSM}	$T_C=25\text{ °C}$, $t_p=8.3\text{ ms}$	280	A
		$T_C=110\text{ °C}$, $t_p=8.3\text{ ms}$	260	
Non-repetitive peak forward current	$I_{F,max}$	$T_C=25\text{ °C}$, $t_p=10\text{ }\mu\text{s}$	2000**	A
² value	$\int^2$	$T_C=25\text{ °C}$, $t_p=8.3\text{ ms}$	325	A ² s
		$T_C=110\text{ °C}$, $t_p=8.3\text{ ms}$	281	
Repetitive peak reverse voltage	V_{RRM}	$T_j=25\text{ °C}$	600	V
Diode ruggedness		Turn-on slew rate, repetitive	200	V/ns
Power dissipation	P_{tot}	$T_C=25\text{ °C}$	225	W
Operating junction temperature	T_j		-55...175	°C
Storage temperature	$T_{storage}$		-55...150	°C

Notes: *Typical R_{thJC} used

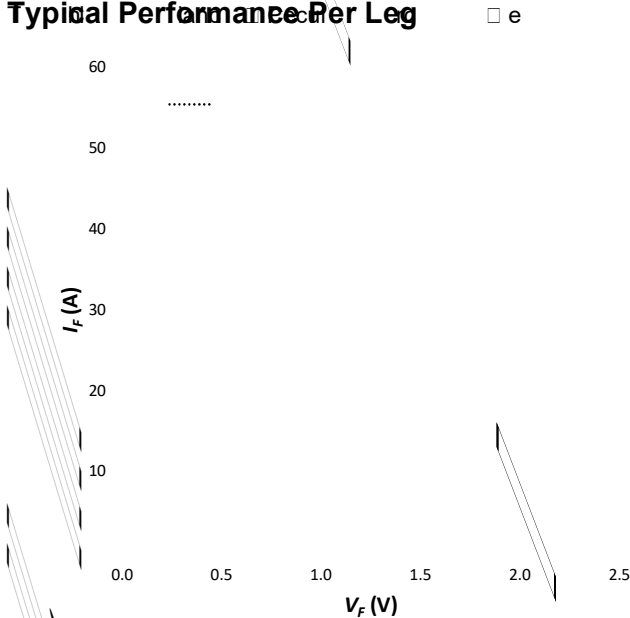
**Limited by testing equipment

600V SiC Power Module

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Characteristics	Values	Unit
DC blocking voltage	600	V

Typical Performance Per Leg



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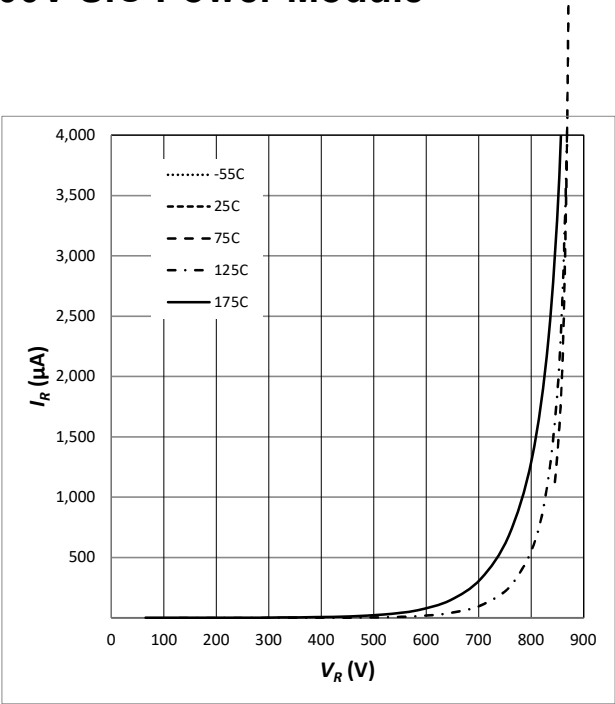


Fig. 3 Reverse Characteristics (parameterized on T_J)

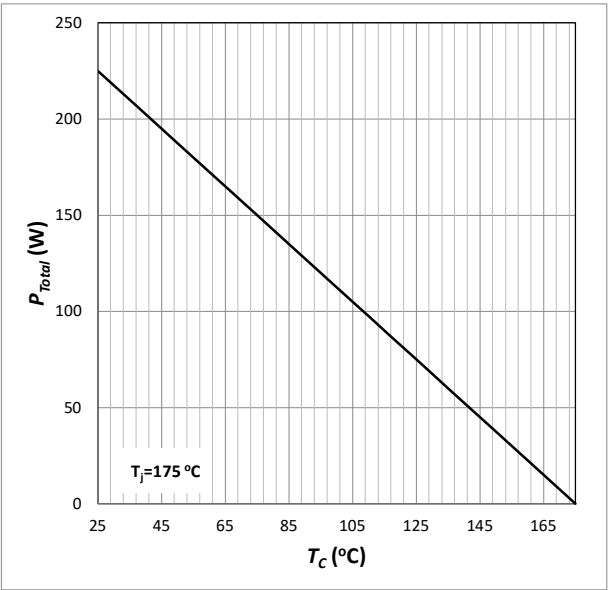


Fig. 4 Power Derating

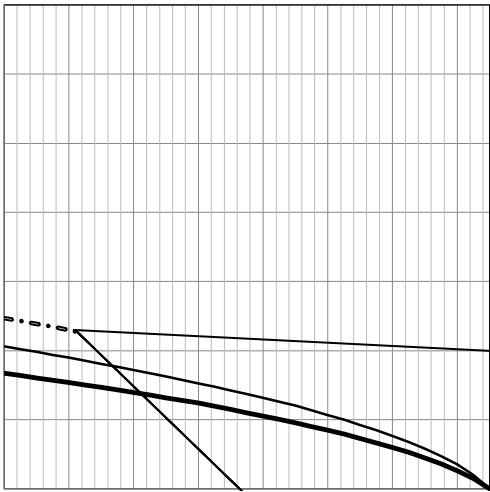


Fig. 5 Current Derating

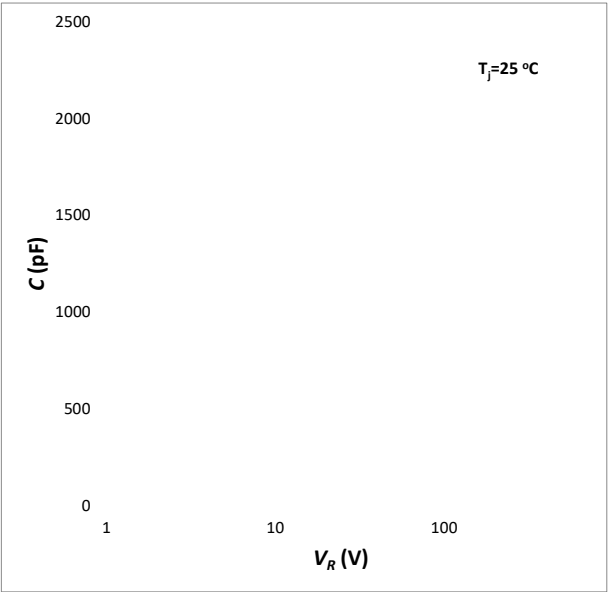
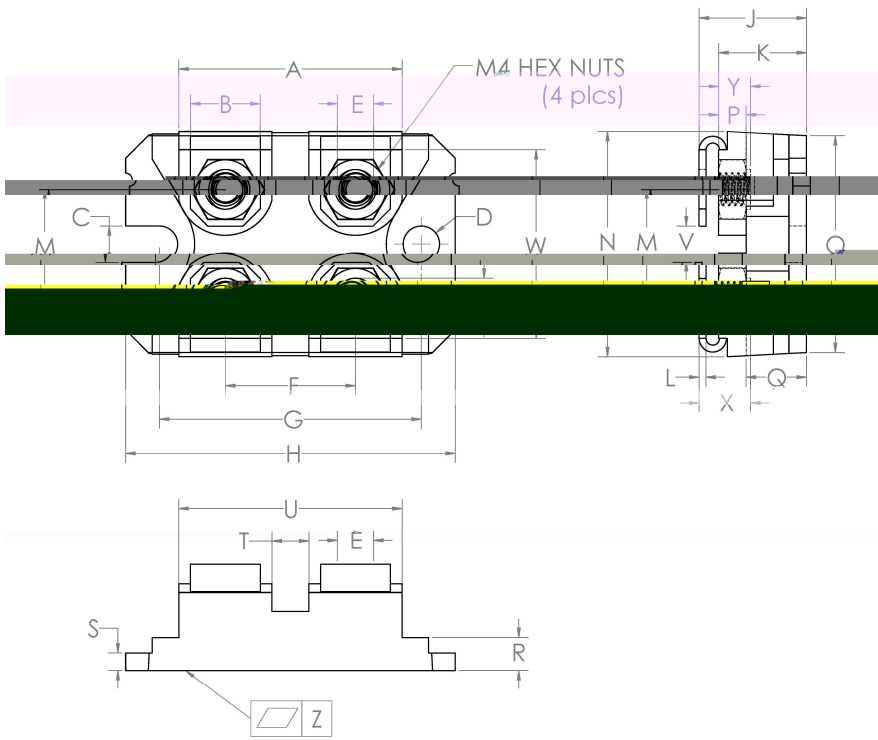


Fig. 6 Capacitance

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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
9/6/2011	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.
12/18/2020	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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