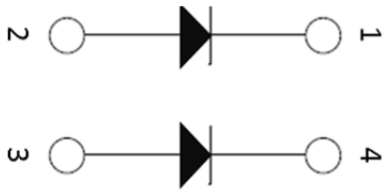
SiC SBD Parallel

Power Module

V_{RRM} = 600V
I_{DAV} = 50A @T_C= 125^{0}C



Parallel

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

Applications

- Supplies for DC power equipment
- Rectifier for induction heating
- Welding equipment
- High temperature and rectifiers

Benefits

- Outstanding performance at high frequency operation
- Low losses and Low EMI noises
- Very rugged and easy mount
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Easy paralleling due to positive T_C of V_F
- RoHS Compliant

Absolute Maximum Ratings (T_j=25^{o}C unless otherwise specified)

Parameters	Symbol	Conditions	Specifications	Units
Maximum Reverse Voltage	V_{RRM}		600	V
Average Forward Current (per SBD)	I_{DAV}	T_C = 25 ^{0}C	134	A
		T_C = 150 ^{0}C	50	A
Non-repetitive Forward Surge Current	I_{FSM}	t=8.3 ms, T_C = 150 ^{0}C	250	A
		T=10 μs, T_C = 25 ^{0}C	1000	A
Operating Junction Temperature	T_j		-55 ~ 175	^{0}C
Storage Temperature	T_{STG}		-55 ~ 150	^{0}C

Electrical Characteristics (T_j=25°C unless otherwise specified)

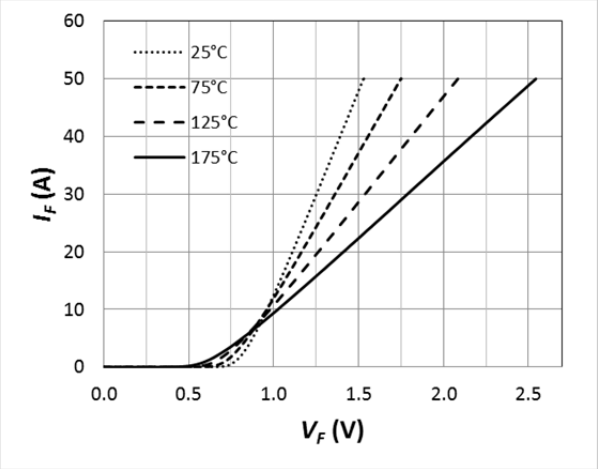
Parameters	Symbol	Conditions	Min	Typ	Max	Units
Maximum peak repetitive reverse voltage	V_{RRM}		600	--	--	V
Maximum Reverse Leakage Current per diode	I_{RM}	V_R = 600V, T_j = 25 °C	--	12.2	100	µA
		V_R = 600V, T_j = 150 °C	--	1455	--	µA
Diode Forward Voltage	V_F	I_F = 50A, T_j = 25 °C	--	1.6	1.8	V
		I_F = 50A, T_j = 175 °C	--	2.5	--	V
Total Capacitive Charge	Q_C	V_R=600 V, I_F<$I_{F,max}$	--	173	--	nC
Switching Time	t_C	dI_F/dt = 200 A/µs, T_j = 175 °C	--	--	10	ns
Total Capacitance	C	V_R = 1V, f = 1 MHz	--	2984	--	pF
		V_R = 300V, f = 1 MHz	--	174	--	pF
		V_R = 600V, f = 1 MHz	--	144	--	pF

Thermal and Package Characteristics (T_j=25°C unless otherwise specified)

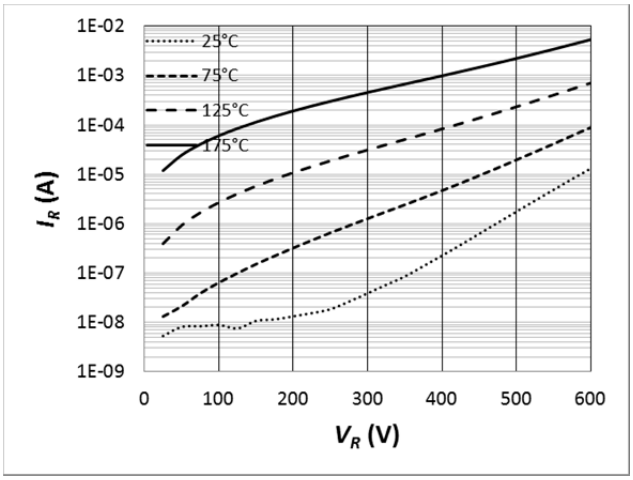
Parameters	Symbol	Conditions	Min	Typ	Max	Units
Junction to Case Thermal Resistance	R_{THJC}	Per Diode	--	--	0.25	°C /W
Junction to Ambient Thermal Resistance	R_{THJA}	Per Diode	--	--	20	°C /W
Mounting Torque	M_d				1.5	N-m
Terminal Connection Torque	M_{dt}		1.3	--	1.5	N-m
Package Weight	W_t			32		g
Isolation Voltage	V_{ISOL}	I_{ISOL} < 1mA, 50/60Hz, t=1 min	2500	V		

Product Number and Pin Descriptions

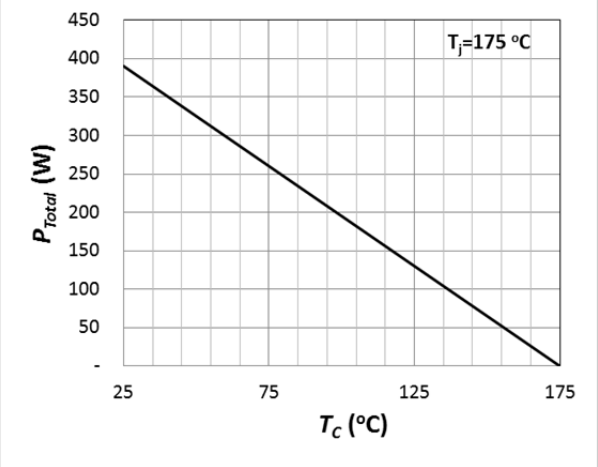
Part Number	Rating	Pin 1	Pin 2	Pin 3	Pin 4
GHXS050A060S-D3	600V, 50A	Cathode 1	Anode 1	Anode 2	Cathode 2



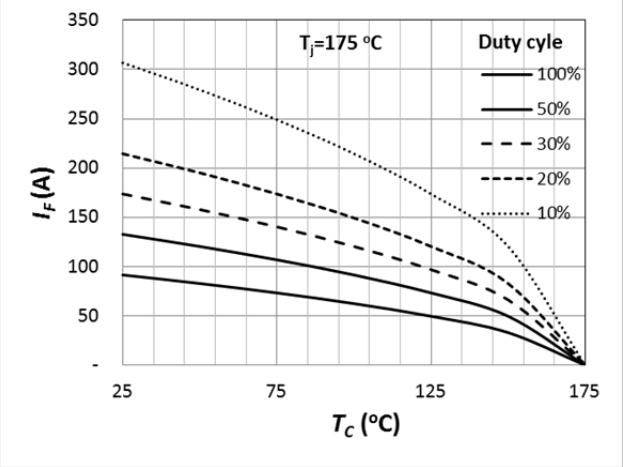
Forward Characteristics (parameterized on Tj)



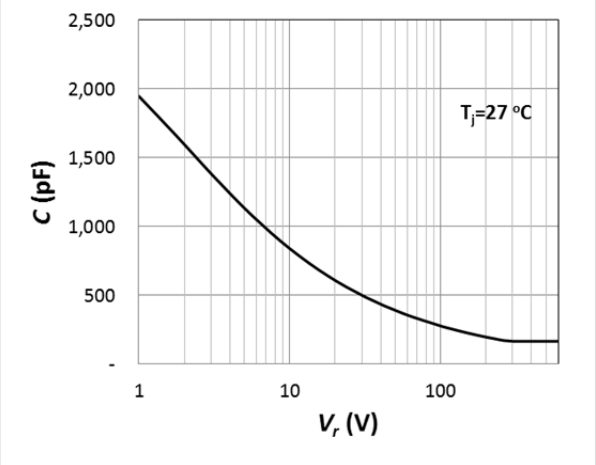
Reverse Characteristics (parameterized on Tj)



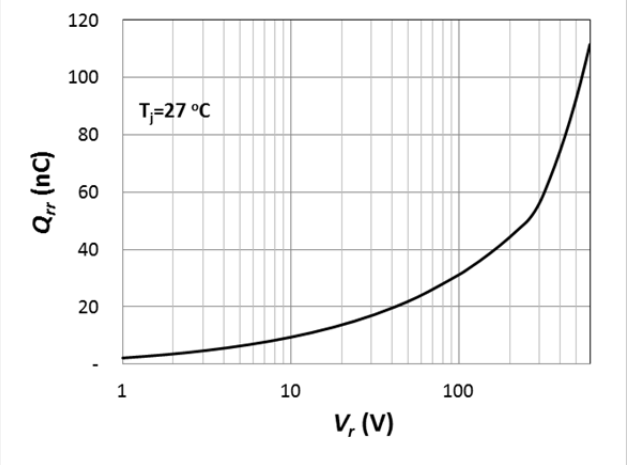
Power Derating



Current Derating

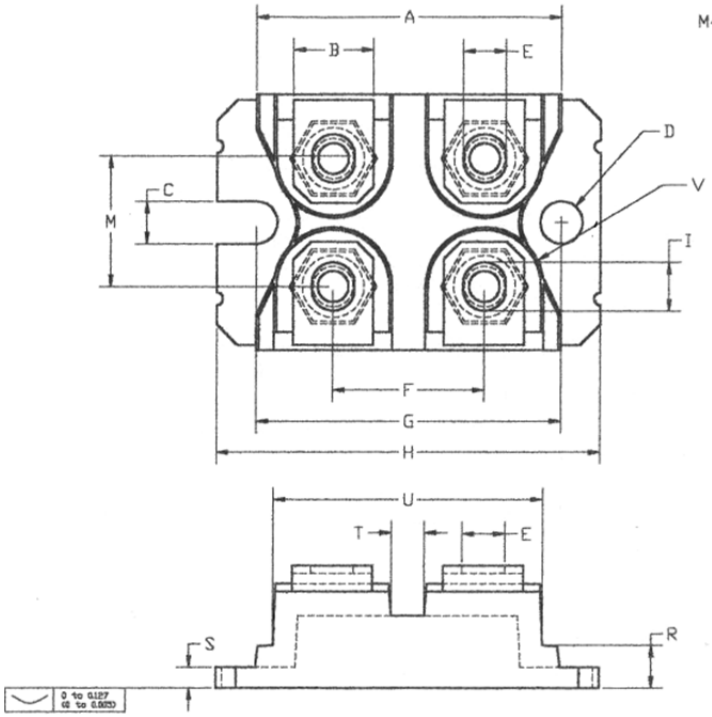


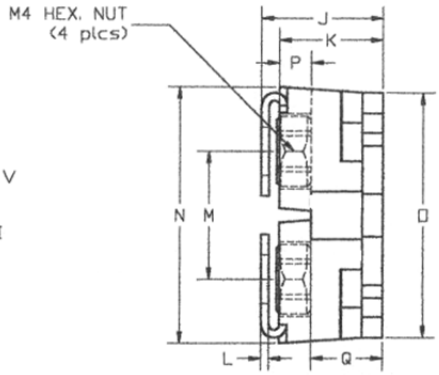
Capacitance Curve



Recovery Charge

SOT-227 Package Outline





DIM.	MILLIMETER		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	11.76	12.19	0.463	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	0990	0.996
O	24.79	25.04	0.976	0.986
P	2.74	3.15	0.108	0.124
Q	6.91	6.99	0.272	0.275
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	3.94	4.04	0.155	0.159

Revision History

Date	Revision	Notes
9/6/2013	1.0	Initial release
6/4/2014	1.1	Add the part number, pin assignment table.
01/03/2020	1.2	Applied company name change

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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