

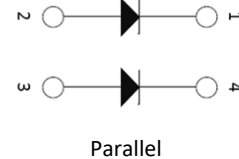
VDC	1200 V
I_F	60 A
$T_{j,max}$	175 °C

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

Package



Benefits

- Outstanding performance at high frequency operation
- Low loss and low EMI noise
- 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

Part #	Package	Marking
GHXS060B120S-D3	SOT-227	GHXS060B120S-D3

Applications

- DC power supply
- Induction heater
- Welding equipment
- Charging station



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

Characteristics	Symbol	Conditions	Value	Unit
Continuous forward current	I_F	$T_C=25\text{ °C}$, $T_j=175\text{ °C}$	114	A
		$T_C=125\text{ °C}$, $T_j=175\text{ °C}$	60	
		$T_C=150\text{ °C}$, $T_j=175\text{ °C}$	38	
Surge non-repetitive forward current sine halfwave	I_{FSM}	$T_C=25\text{ °C}$, $T_j=25\text{ °C}$, $t_p=8.3\text{ ms}$	500	A
		$T_C=110\text{ °C}$, $T_j=110\text{ °C}$, $t_p=8.3\text{ ms}$	430	
Non-repetitive peak forward current	$I_{F,max}$	$T_C=25\text{ °C}$, $t_p=10\text{ }\mu\text{s}$	1200	A
i^2t value	$\int i^2 dt$	$T_C=25\text{ °C}$, $t_p=8.3\text{ ms}$	1038	A ² s
		$T_C=110\text{ °C}$, $t_p=8.3\text{ ms}$	767	
Repetitive peak reverse voltage	V_{RRM}	$T_j \geq 25\text{ °C}$	1200	V
Diode dv/dt ruggedness	dv/dt	Turn-on slew rate, repetitive	200	V/ns
Power dissipation	P_{tot}	$T_C=25\text{ °C}$	375	W
Operating junction temperature	T_j		-55...175	°C
Storage temperature	$T_{storage}$		-55...150	°C

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

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
DC blocking voltage	V_{DC}	$I_R=120\mu\text{A}$, $T_j=25\text{ }^\circ\text{C}$	1200	-	-	V
Diode forward voltage	V_F	$I_F=60\text{A}$, $T_j=25\text{ }^\circ\text{C}$	-	1.50	1.65	V
		$I_F=60\text{A}$, $T_j=125\text{ }^\circ\text{C}$	-	1.83	-	
		$I_F=60\text{A}$, $T_j=175\text{ }^\circ\text{C}$	-	2.12	2.70	
Reverse current	I_R	$V_R=1200\text{V}$, $T_j=25\text{ }^\circ\text{C}$	-	4	120	μA
		$V_R=1200\text{V}$, $T_j=125\text{ }^\circ\text{C}$	-	42	-	
		$V_R=1200\text{V}$, $T_j=175\text{ }^\circ\text{C}$	-	185	1800	
Total capacitive charge	Q_C	$V_R=800\text{V}$, $T_j=25\text{ }^\circ\text{C}$	-	343	-	nC
Total capacitance	C	$V_R=1\text{V}$, $f=1\text{ MHz}$	-	3828	-	pF
		$V_R=400\text{V}$, $f=1\text{ MHz}$	-	323	-	
		$V_R=800\text{V}$, $f=1\text{ MHz}$	-	235	-	

Thermal and Package Characteristics, at $T_j=25\text{ }^\circ\text{C}$, unless otherwise specified

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal resistance, junction-case	R_{thJC}	Per leg	-	0.27	0.40	$^\circ\text{C/W}$
Mounting torque	M_d	M4-0.7 screws	1.1	-	1.5	N-m
Terminal connection torque	M_{dt}	M4-0.7 screws	-	1.1	1.3	N-m
Package weight	W_t		-	32	-	g
Isolation voltage	V_{ISOL}	$I_{ISOL} < 1\text{ mA}$, 50/60 Hz, 1 min	2500	-	-	V

Typical Performance Per Leg

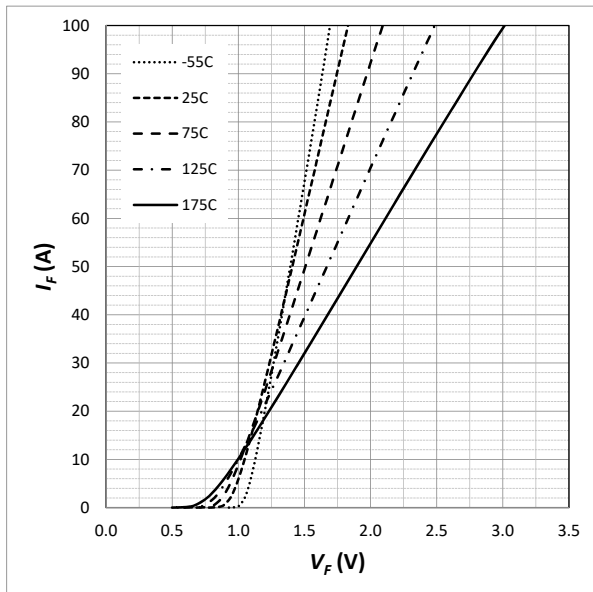


Fig. 1 Forward Characteristics (parameterized on T_j)

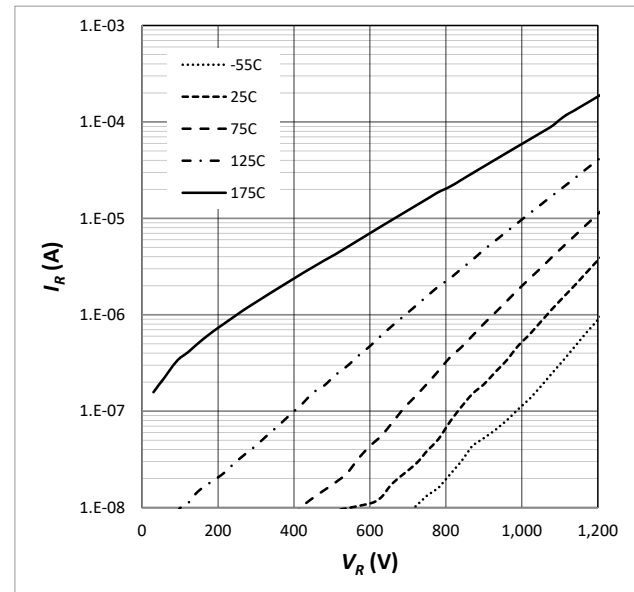


Fig. 2 Reverse Characteristics (parameterized on T_j)

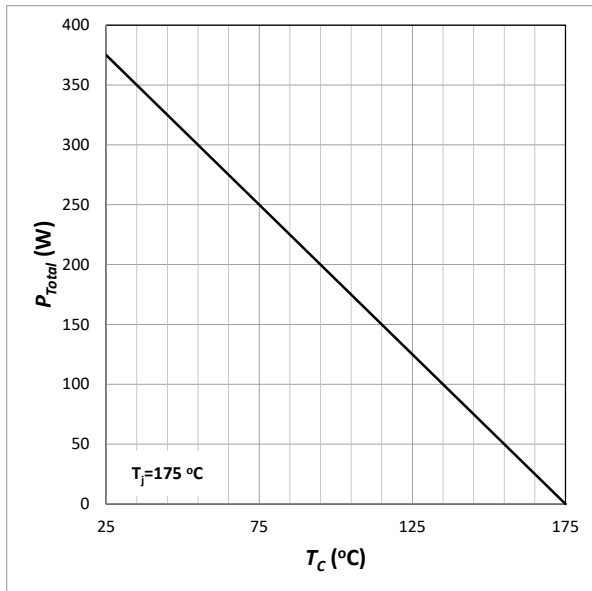


Fig. 3 Power Derating

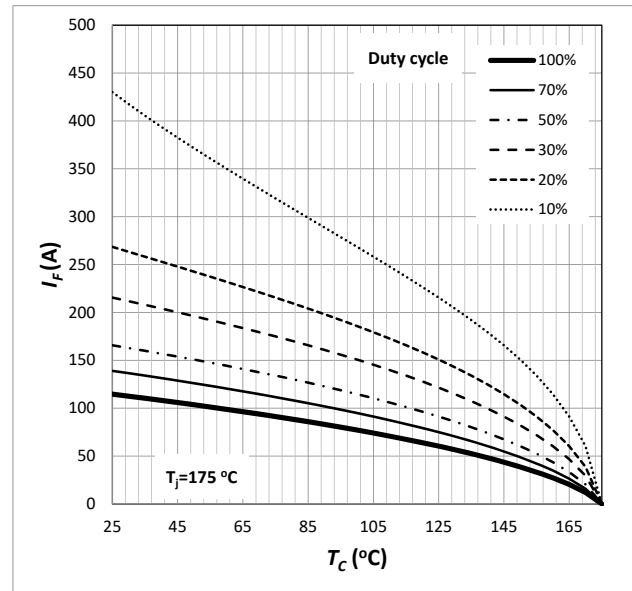


Fig. 4 Current Derating

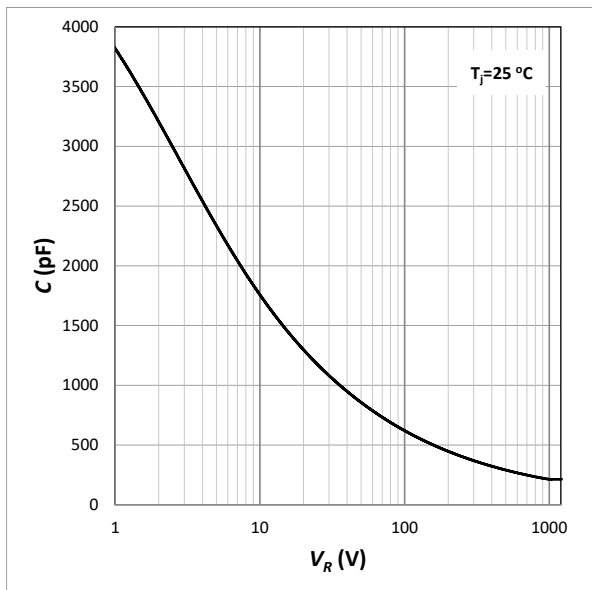


Fig. 5 Capacitance

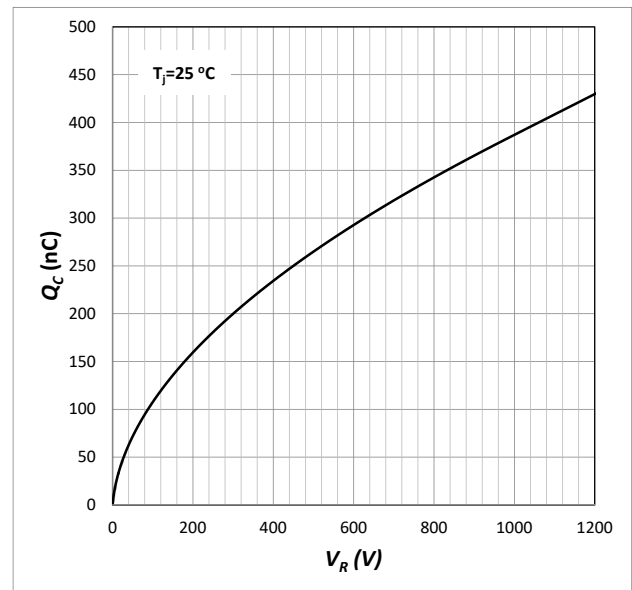


Fig. 6 Capacitive Charge

1200V SiC Power Module

GHXS060B120S-D3

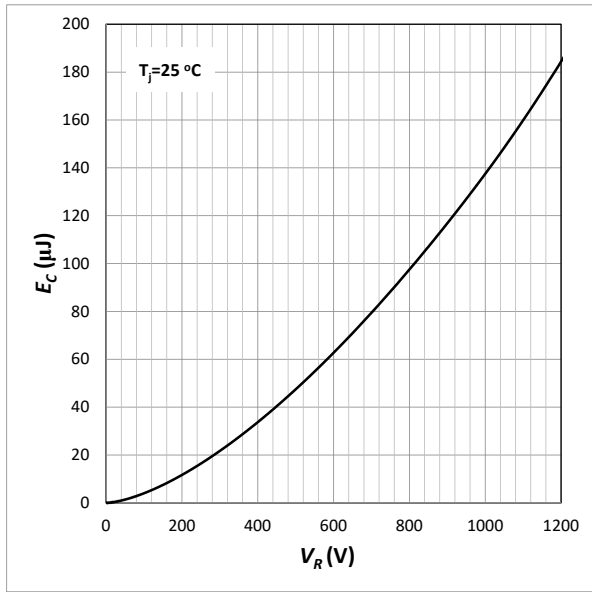


Fig. 7 Typical Capacitance Stored Energy

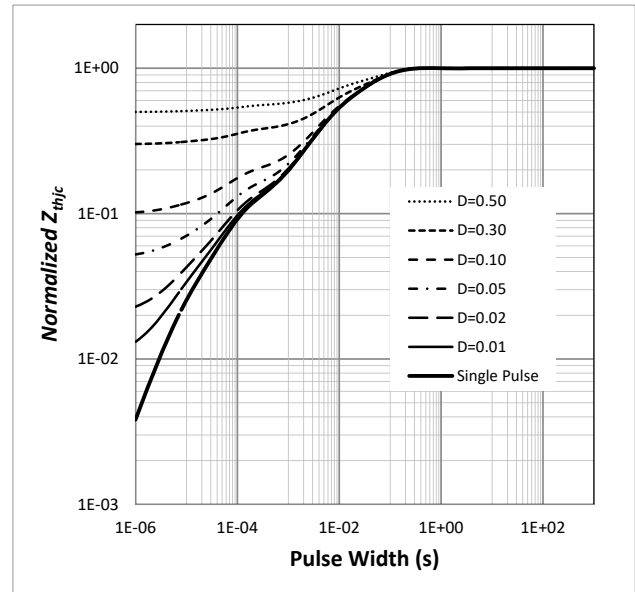
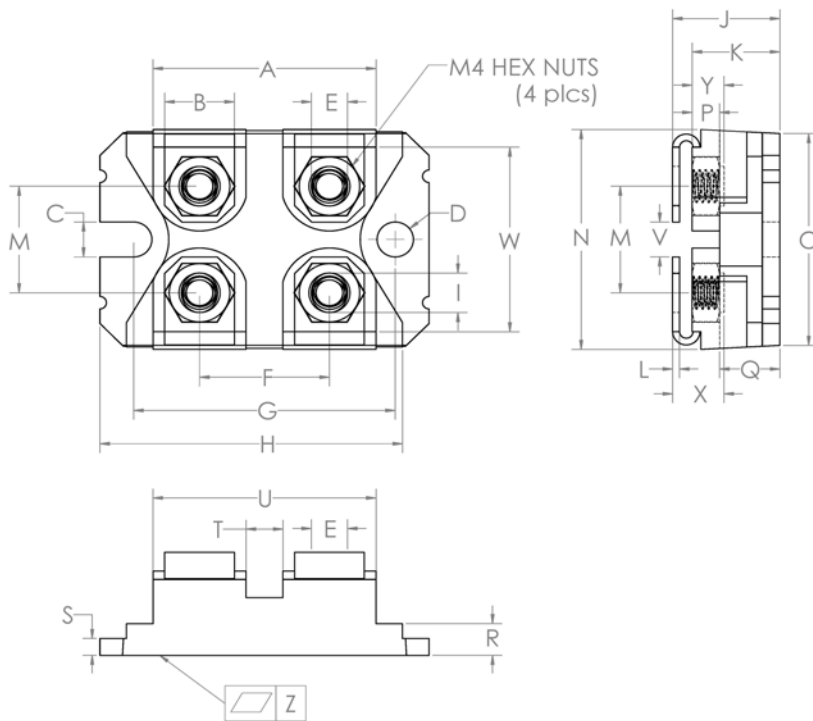


Fig. 8 Transient Thermal Impedance

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