GHXS050B065S-D3

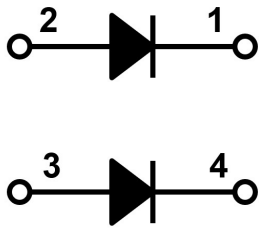
VDC	650 V
I_F	50 A
T_j,max	175 °C

650V 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 715V

Package



Parallel

Benefits

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

Part #	Package	Marking
GHXS050B065S-D3	SOT-227	GHXS050B065S-D3

Applications

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

RoHS

Maximum Ratings, at T_j=25 °C, unless otherwise specified (per leg)

Characteristics	Symbol	Conditions	Values	Unit
Continuous forward current	I_{F*}	T_C=25 °C, T_j=175 °C	95	A
		T_C=117 °C, T_j=175 °C	50	
		T_C=150 °C, T_j=175 °C	29	
Surge non-repetitive forward current sine halfwave	I_{FSM}	T_C=25 °C, t_p=8.3 ms	300	A
		T_C=110 °C, t_p=8.3 ms	275	
Non-repetitive peak forward current	$I_{F,max}$	T_C=25 °C, t_p=10 µs	2000**	A
i^2t value	$\int i^2dt$	T_C=25 °C, t_p=8.3 ms	374	A^2s
		T_C=110 °C, t_p=8.3 ms	314	
Repetitive peak reverse voltage	V_{RRM}	T_j=25 °C	650	V
Diode *dv/dt* ruggedness	*dv/dt*	Turn-on slew rate, repetitive	200	V/ns
Power dissipation	P_{tot*}	T_C=25 °C	232	W
Operating junction temperature	T_j		-55…175	°C
Storage temperature	$T_{storage}$		-55…150	°C

Notes: *Typical Rth_{JC} used
**Limited by testing equipment

Electrical Characteristics, at T_j=25 °C, unless otherwise specified (per leg)

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
DC blocking voltage	V_{DC}	I_R=125μA, T_j=25 °C	650	-	-	V
Breakdown voltage	V_{BR}	I_R=1.65mA, T_j=25 °C	715	-	-	V
Diode forward voltage	V_F	I_F=50A, T_j=25 °C	-	1.45	1.60	V
		I_F=50A, T_j=125 °C	-	1.61	-	
		I_F=50A, T_j=175 °C	-	1.77	2.00	
Reverse current	I_R	V_R=650V, T_j=25 °C	-	6	125	μA
		V_R=715V, T_j=25 °C	-	22	-	
		V_R=650V, T_j=125 °C	-	41	-	
		V_R=650V, T_j=175 °C	-	147	500	
Total capacitive charge	Q_C	V_R=400V, T_j=25 °C	-	120	-	nC
Total capacitance	C	V_R=1V, f=1 MHz	-	1946	-	pF
		V_R=200V, f=1 MHz	-	228	-	
		V_R=400V, f=1 MHz	-	189	-	

Thermal and Package Characteristics, at Tj=25 °C, unless otherwise specified

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal resistance, junction-case	R_{thJC}	Per leg	-	0.65	0.81	°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} < 1mA, 50/60 Hz, 1 min	2500	-	-	V

Typical Performance Per Leg

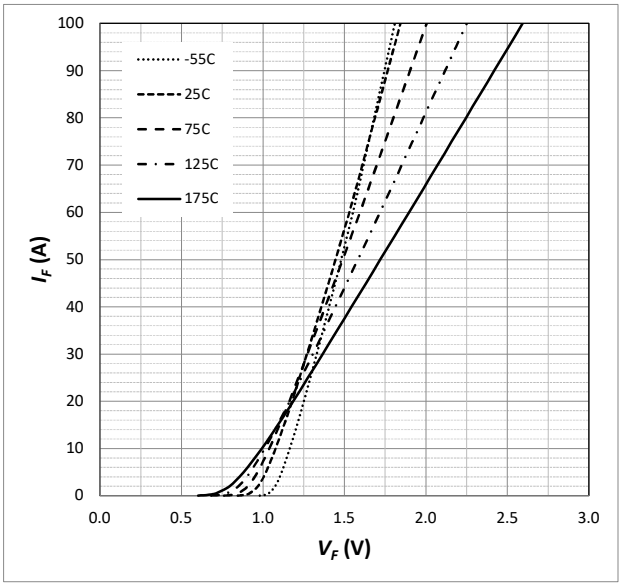


Fig. 1 Forward Characteristics (parameterized on T_j)

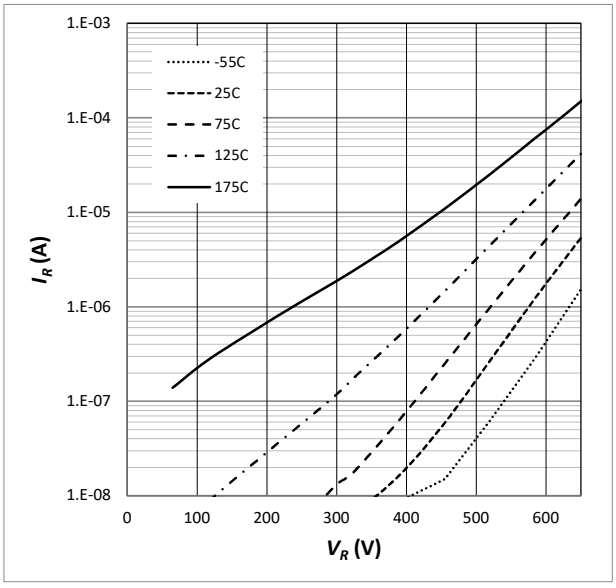


Fig. 2 Reverse Characteristics (parameterized on T_j)

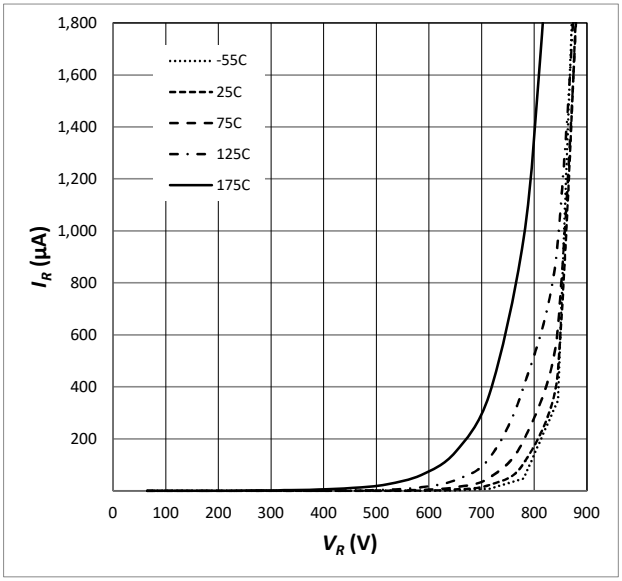


Fig. 3 Reverse Characteristics (parameterized on Tj)

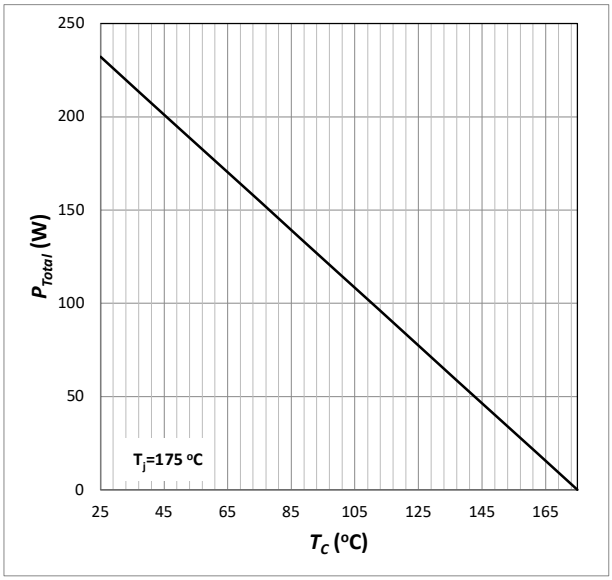


Fig. 4 Power Derating

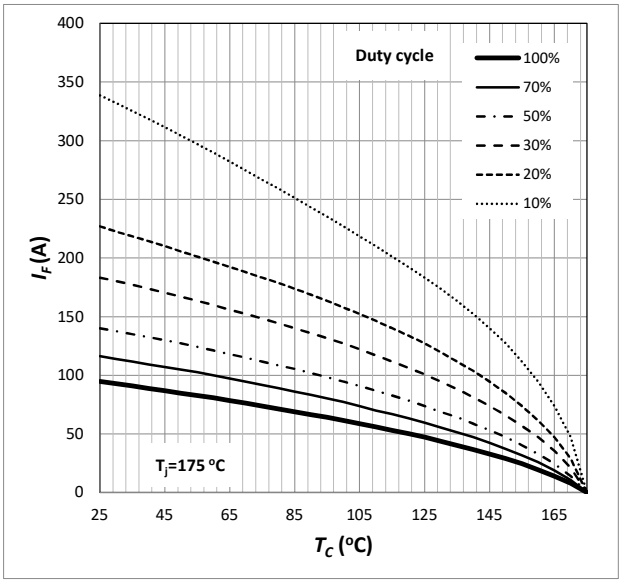


Fig. 5 Current Derating

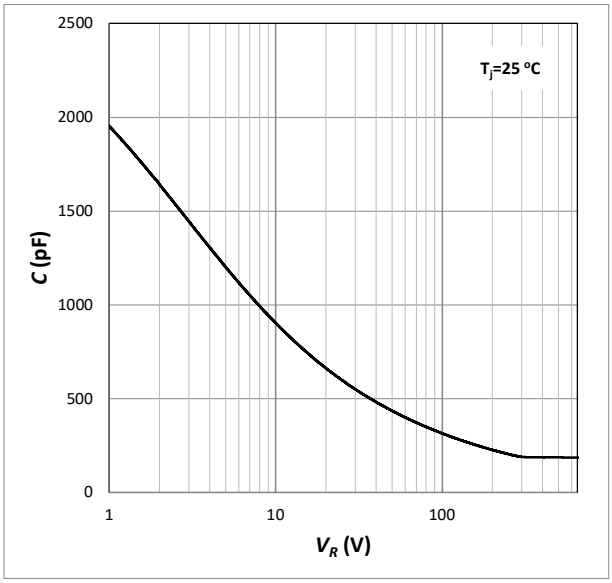


Fig. 6 Capacitance

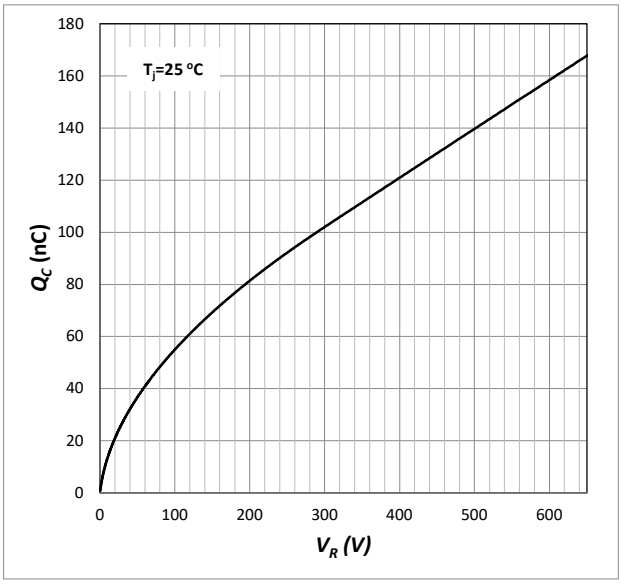


Fig. 7 Capacitive Charge

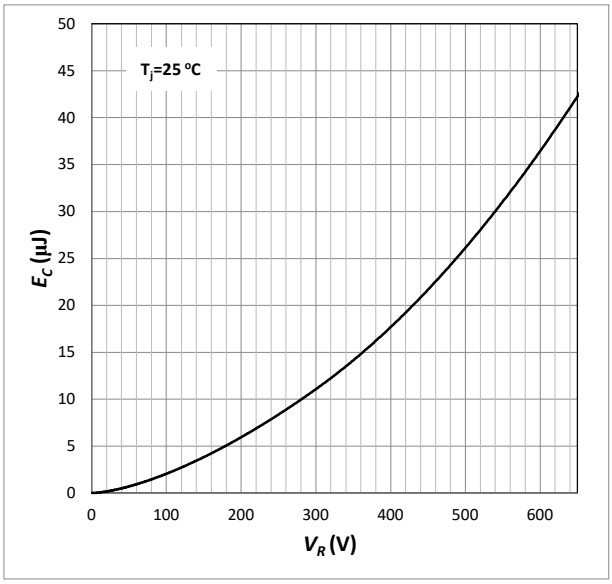


Fig. 8 Typical Capacitance Stored Energy

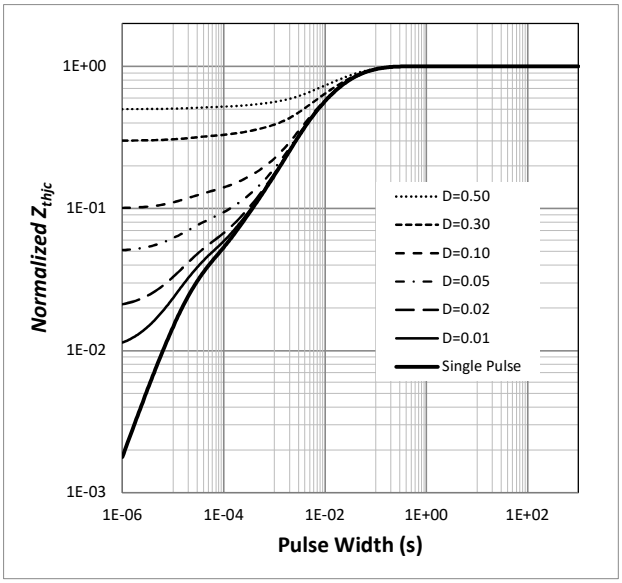
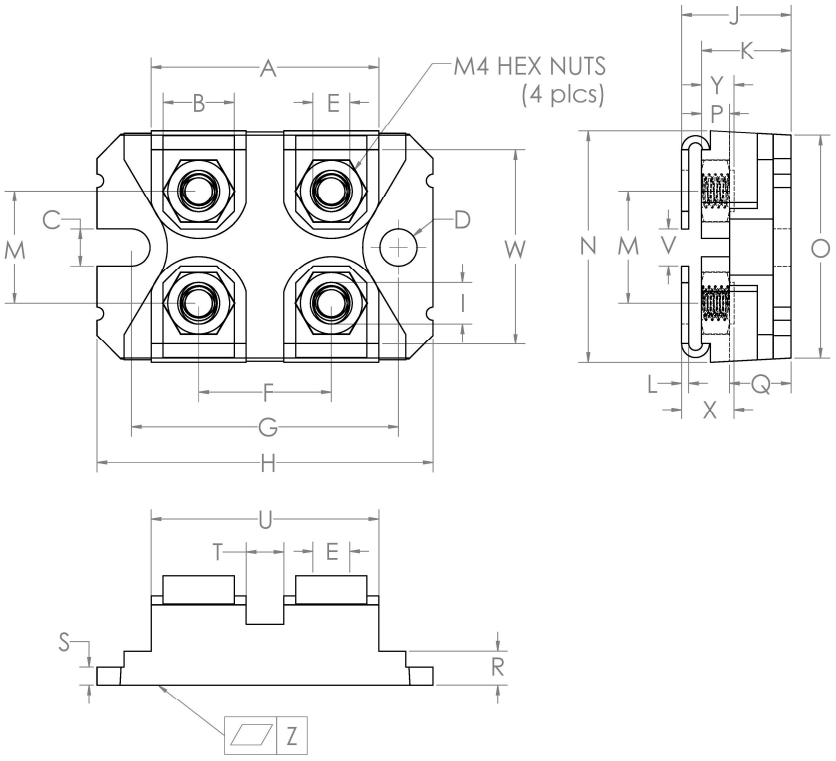


Fig. 9 Transient Thermal Impedance

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