GP3D008A065A

VDC	650 V
Q_C	21 nC
I_F	8 A
$T_{j,max}$	175 °C

650V SiC Schottky Diode

Amp+™ Features

- Unipolar rectifier with surge current
- Zero reverse recovery current
- Fast, temperature-independent switching
- Avalanche tested to 54mJ*

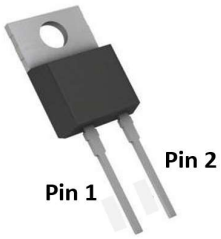
Amp+™ Benefits

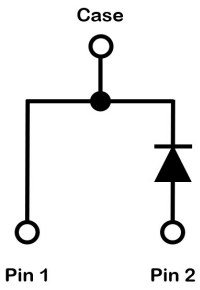
- Near zero switching loss
- Higher efficiency
- Smaller heat sink
- Easy to parallel

Amp+™ Applications

- Switch mode power supplies, UPS
- Power factor correction
- Output rectification
- General Purpose

Package





Part #	Package	Marking
GP3D008A065A	TO-220-2L	3D008A065

RoHS

Maximum Ratings, at T_j=25 °C, unless otherwise specified

Characteristics	Symbol	Conditions	Values	Unit
Continuous forward current	I_{F**}	T_C=25 °C, T_j=175 °C	27	A
		T_C=125 °C, T_j=175 °C	14	
		T_C=150 °C, T_j=175 °C	9	
Surge non-repetitive forward current sine halfwave	I_{FSM}	T_C=25 °C, t_p=8.3 ms	70	A
		T_C=110 °C, t_p=8.3 ms	60	
Non-repetitive peak forward current	$I_{F,max}$	T_C=25 °C, t_p=10 µs	580	A
i^2t value	$\int i^2dt$	T_C=25 °C, t_p=8.3 ms	20	A^2s
		T_C=110 °C, t_p=8.3 ms	15	
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	102	W
Operating junction & storage temperature	T_j, $T_{storage}$	Continuous	-55…175	°C
Soldering temperature	T_{solder}	Wave soldering leads	260	°C
Mounting torque		M3 Screw	1	N-m

Notes:

* EAS of 54 mJ is based on starting Tj = 25°C, L = 1.0 mH, IAS = 10.39 A, V = 50 V.

** Typical Rth_{JC} used

Electrical Characteristics, at T_j=25 °C, unless otherwise specified

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
DC blocking voltage	V_{DC}	T_j=25 °C	650	-	-	V
Diode forward voltage	V_F	I_F=8A, T_j=25 °C	-	1.45	1.60	V
		I_F=8A, T_j=125 °C	-	1.57	-	
		I_F=8A, T_j=175 °C	-	1.69	2.20	
Reverse current	I_R	V_R=650V, T_j=25 °C	-	1	20	μA
		V_R=650V, T_j=125 °C	-	8	-	
		V_R=650V, T_j=175 °C	-	31	200	
Total capacitive charge	Q_C	V_R=400V, T_j=25 °C	-	21	-	nC
Total capacitance	C	V_R=1V, f=1 MHz	-	336	-	pF
		V_R=200V, f=1 MHz	-	41	-	
		V_R=400V, f=1 MHz	-	34	-	

Thermal Characteristics

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal resistance, junction-case	R_{thJC}	-	-	1.48	1.82	°C/W

Typical Performance

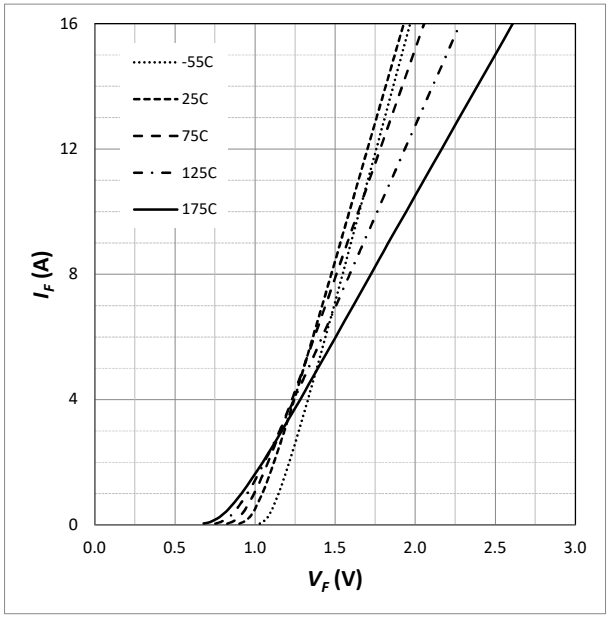


Fig. 1 Forward Characteristics (parameterized on T_j)

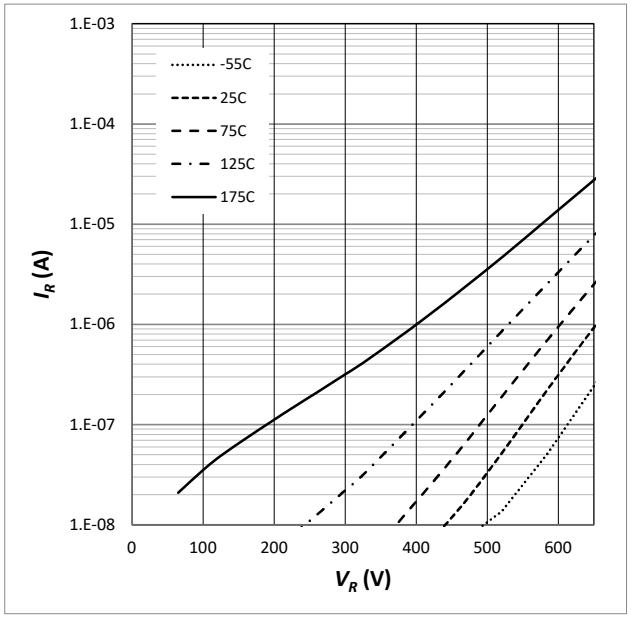


Fig. 2 Reverse Characteristics (parameterized on T_j)

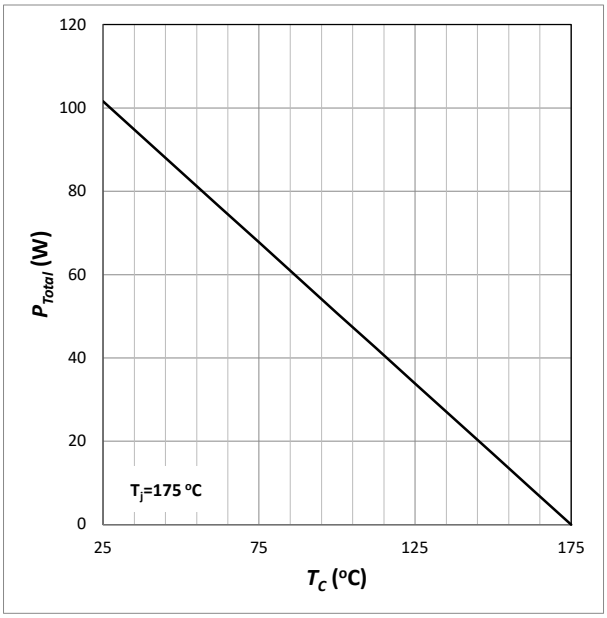


Fig. 3 Power Derating

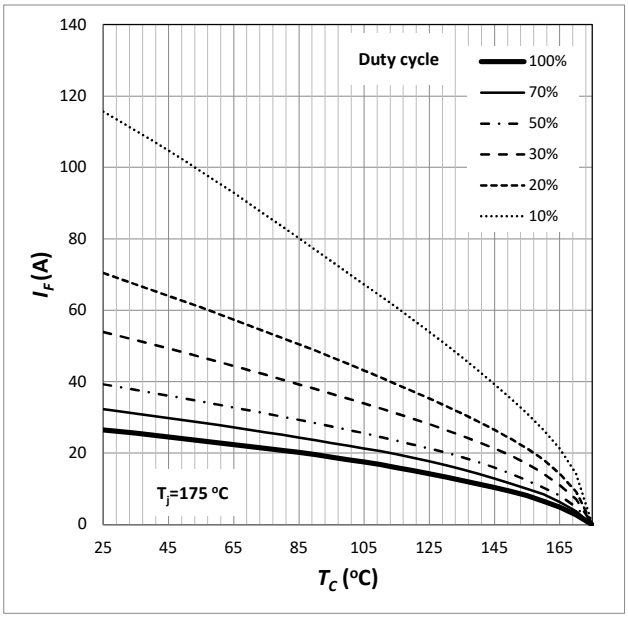


Fig. 4 Current Derating

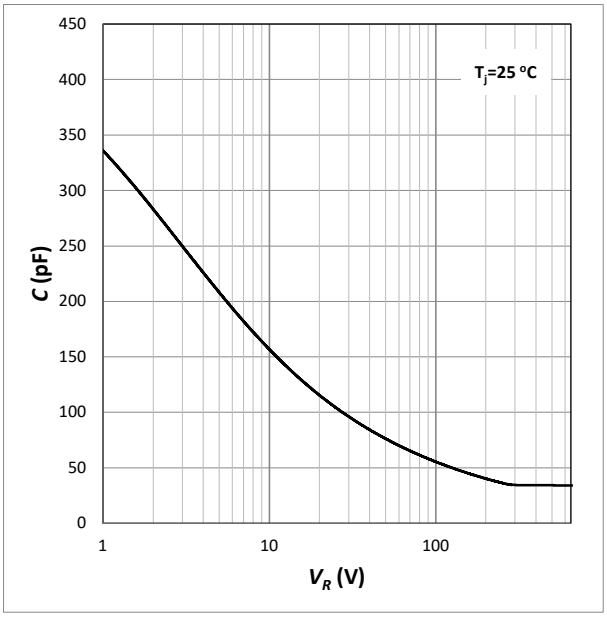


Fig. 5 Capacitance

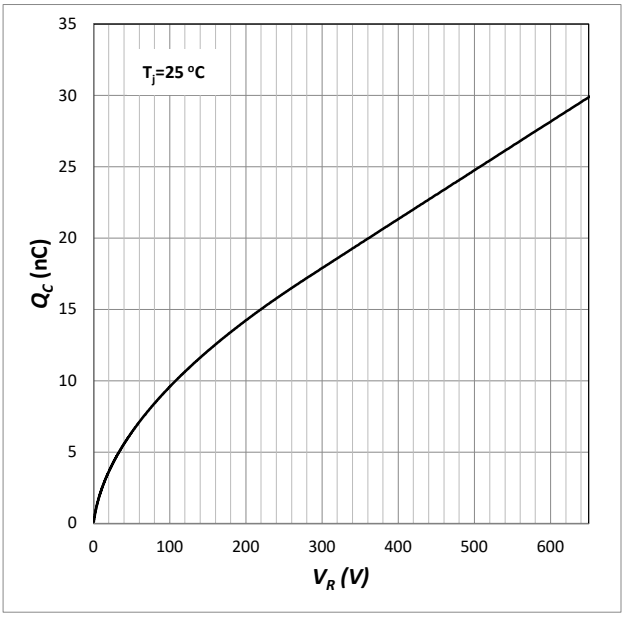


Fig. 6 Capacitive Charge

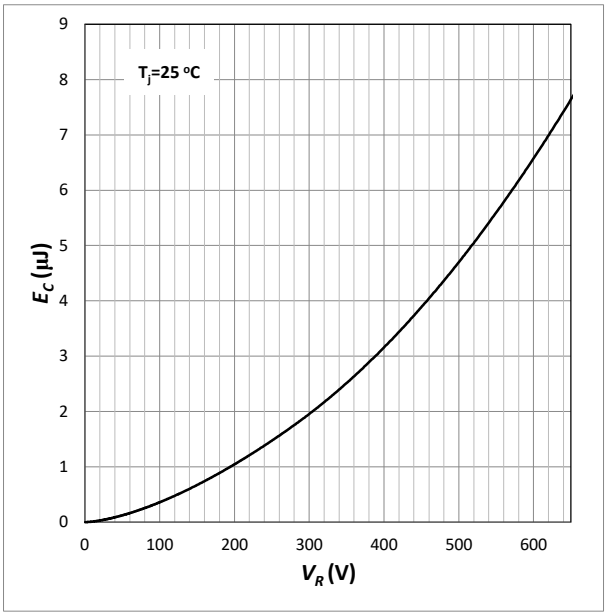


Fig. 7 Typical Capacitance Stored Energy

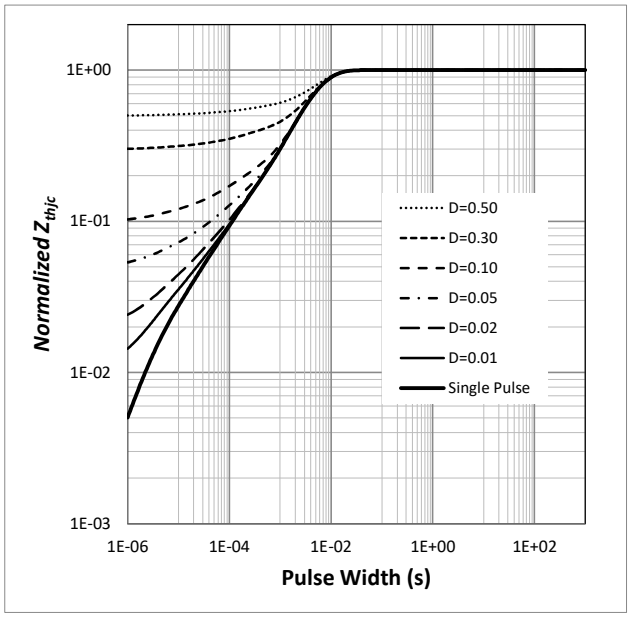
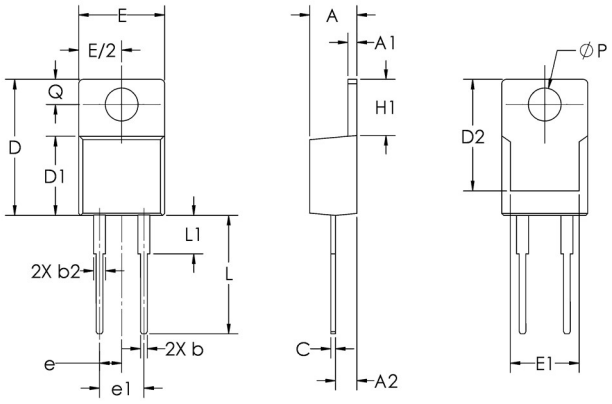


Fig. 8 Transient Thermal Impedance

Package Dimensions TO-220-2L



Sym	Millimeters		Inches	
	Min	Max	Min	Max
A	3.56	4.83	0.140	0.190
A1	0.51	1.40	0.020	0.055
A2	2.03	2.92	0.080	0.115
b	0.38	1.02	0.015	0.040
b2	1.02	1.78	0.040	0.070
c	0.36	0.76	0.014	0.030
D	14.22	16.51	0.560	0.650
D1	8.38	9.40	0.330	0.370
D2	12.19	13.13	0.480	0.517
E	9.65	10.67	0.380	0.420
E1	6.86	8.89	0.270	0.350
e	2.54 BSC		.100 BSC	
e1	5.08 BSC		.200 BSC	
H1	5.84	6.86	0.230	0.270
L	12.57	14.73	0.495	0.580
L1	3.60	6.35	0.142	0.250
ØP	3.53	4.09	0.139	0.161
Q	2.54	3.43	0.100	0.135