

650V SiC Schottky Diode

VDC	650 V
Q _C	77 nC
I _F	30 A
T _{j,max}	175 °C

Amp+™ Features

- Unipolar rectifier with surge current
- Zero reverse recovery current
- Fast, temperature-independent switching
- Avalanche tested to 200mJ*

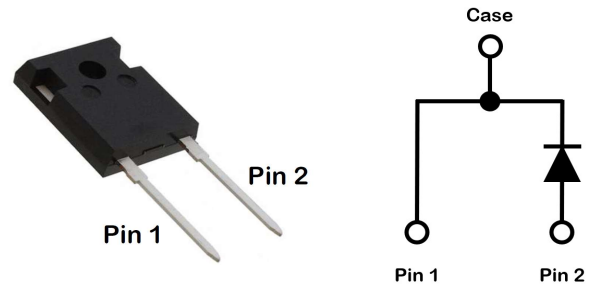
Amp+™ Benefits

- Zero switching loss
- Higher efficiency
- Smaller heat sink
- Easy to parallel

Amp+™ Applications

- Switch mode power supplies, UPS
- Power factor correction
- EV charging stations
- Output rectification

Package



Part #	Package	Marking
GP3D030A065B	TO-247-2L	3D030A065



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	85	A
		T _C =125 °C, T _J =175 °C	45	
		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	200	A
		T _C =110 °C, t _p =8.3 ms	175	
Non-repetitive peak forward current	I _{F,max}	T _C =25 °C, t _p =10 μs	1100	A
i ² t value	∫i ² dt	T _C =25 °C, t _p =8.3 ms	166	A ² s
		T _C =110 °C, t _p =8.3 ms	127	
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	300	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 200 mJ is based on starting T_j = 25°C, L = 1.0 mH, I_{AS} = 20.00 A, V = 50 V.

** Typical R_{thJC} used

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

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
DC blocking voltage	V_{DC}	$T_j=25\text{ }^\circ\text{C}$	650	-	-	V
Diode forward voltage	V_F	$I_F=30\text{A}, T_j=25\text{ }^\circ\text{C}$	-	1.53	1.65	V
		$I_F=30\text{A}, T_j=125\text{ }^\circ\text{C}$	-	1.67	-	
		$I_F=30\text{A}, T_j=175\text{ }^\circ\text{C}$	-	1.81	2.20	
Reverse current	I_R	$V_R=650\text{V}, T_j=25\text{ }^\circ\text{C}$	-	4	75	μA
		$V_R=650\text{V}, T_j=125\text{ }^\circ\text{C}$	-	28	-	
		$V_R=650\text{V}, T_j=175\text{ }^\circ\text{C}$	-	102	750	
Total capacitive charge	Q_C	$V_R=400\text{V}, T_j=25\text{ }^\circ\text{C}$	-	77	-	nC
Total capacitance	C	$V_R=1\text{V}, f=1\text{ MHz}$	-	1247	-	pF
		$V_R=200\text{V}, f=1\text{ MHz}$	-	146	-	
		$V_R=400\text{V}, f=1\text{ MHz}$	-	122	-	

Thermal Characteristics

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal resistance, junction-case	R_{thJC}	-	-	0.50	0.85	$^\circ\text{C/W}$

Typical Performance

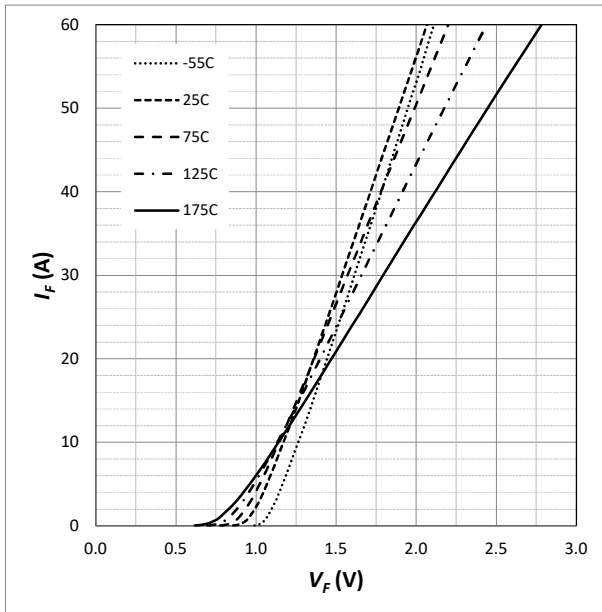


Fig. 1 Forward Characteristics (parameterized on T_j)

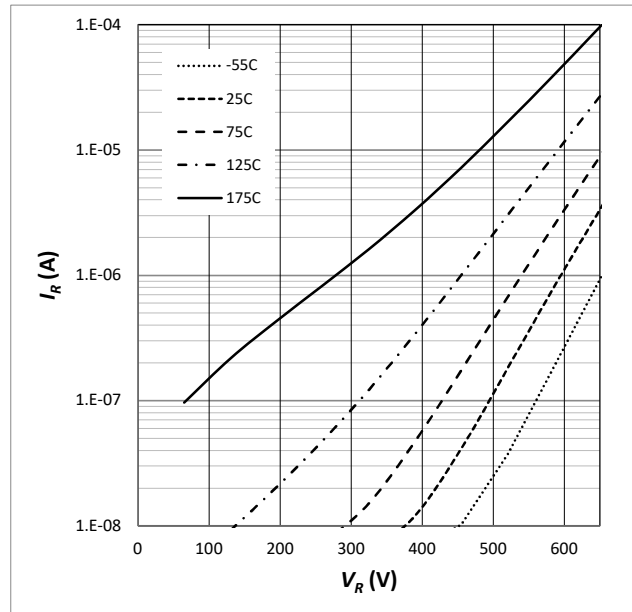


Fig. 2 Reverse Characteristics (parameterized on T_j)

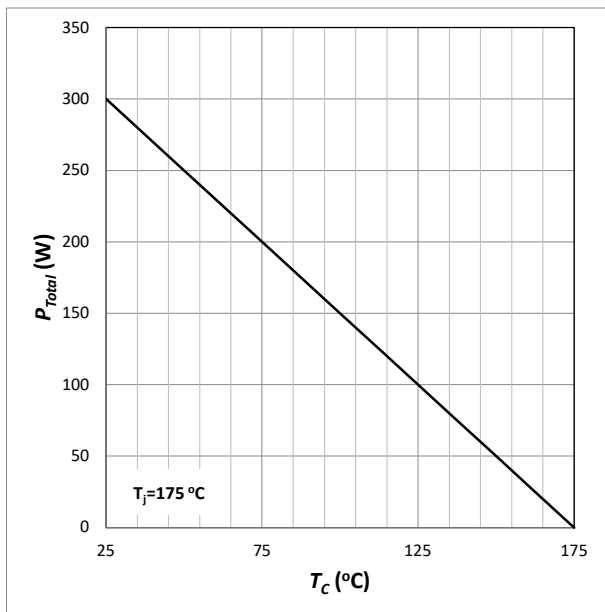


Fig. 3 Power Derating

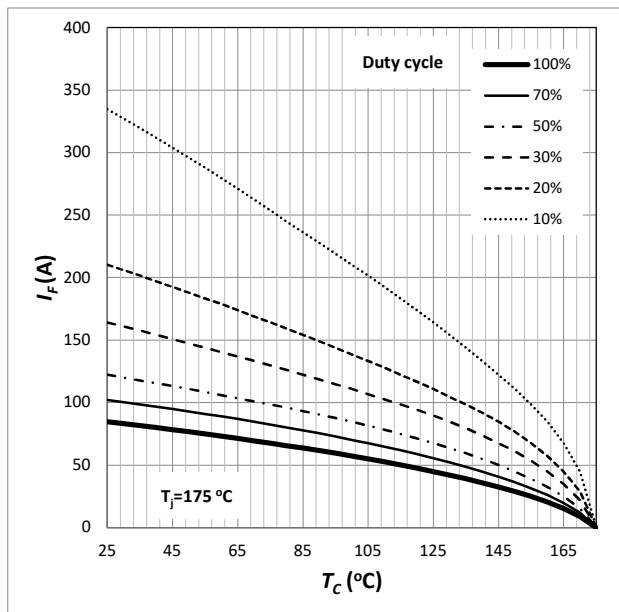


Fig. 4 Current Derating

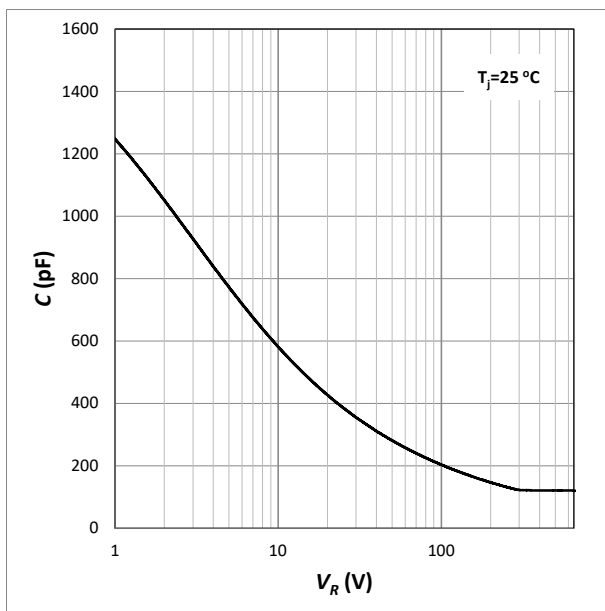


Fig. 5 Capacitance

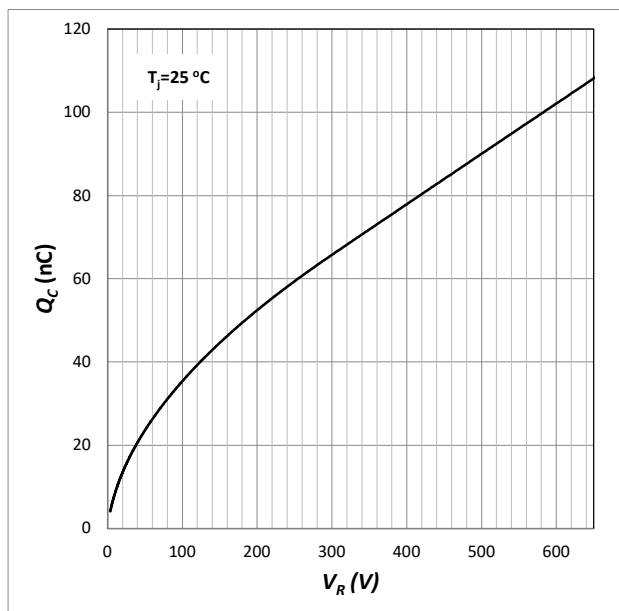


Fig. 6 Capacitive Charge

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Amp+™

GP3D030A065B

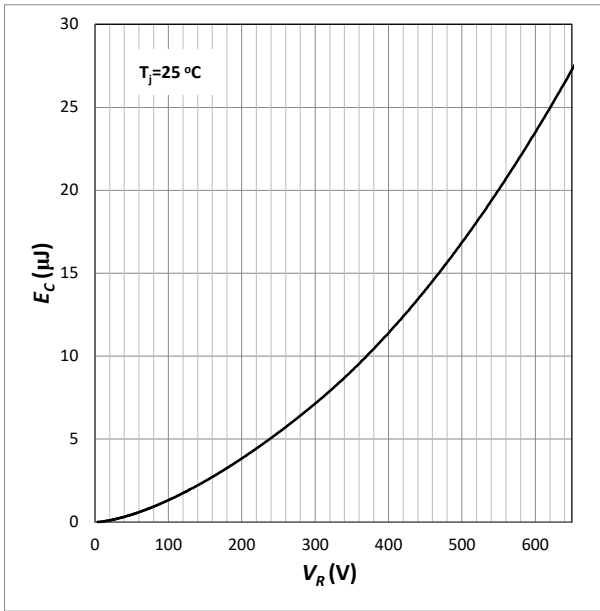


Fig. 7 Typical Capacitance Stored Energy

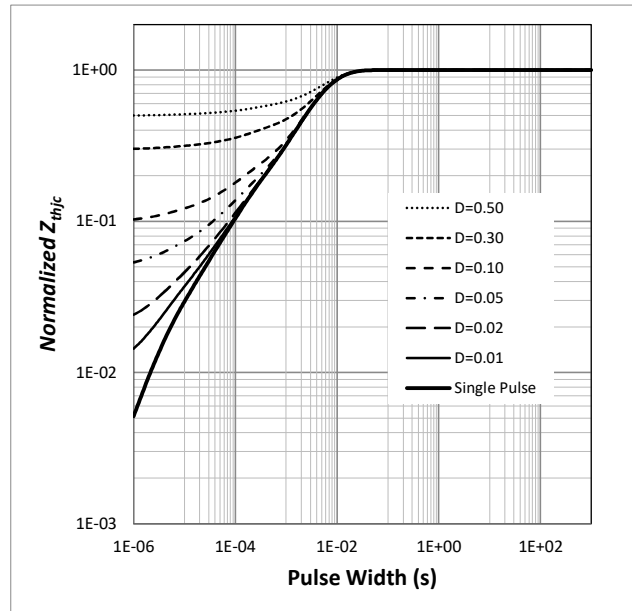
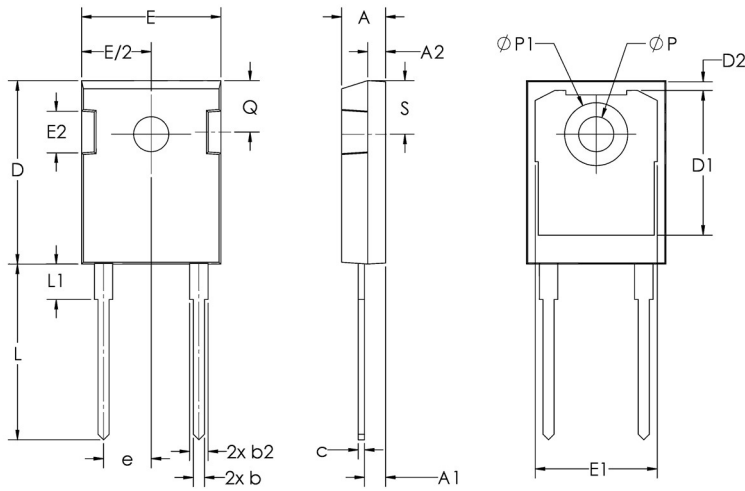


Fig. 8 Transient Thermal Impedance

Package Dimensions TO-247-2L



Sym	Millimeters		Inches	
	Min	Max	Min	Max
A	4.70	5.31	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
c	0.38	0.89	0.015	0.035
D	20.80	21.46	0.819	0.845
D1	13.08	17.65	0.515	0.695
D2	0.51	1.35	0.020	0.053
E	15.49	16.26	0.610	0.640
E1	13.46	14.16	0.530	0.557
E2	3.43	5.49	0.135	0.216
e	5.44 BSC		.214 BSC	
L	19.81	20.32	0.780	0.800
L1	4.10	4.50	0.161	0.177
ØP	3.56	3.66	0.140	0.144
ØP1	7.06	7.39	0.278	0.291
Q	5.38	6.20	0.212	0.244
S	6.04	6.30	0.238	0.248