



650V SiC Schottky Diode

GP3D010A065D

VDC	650 V
Q _C	27 nC
I _F	10 A
T _{j,max}	175 °C

Amp+™ Features

- Unipolar rectifier with surge current
- Zero reverse recovery current
- Fast, temperature-independent switching
- Avalanche tested to 67mJ*
- All parts tested to greater than 715V

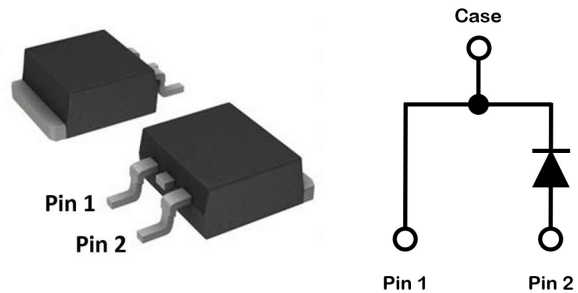
Amp+™ Benefits

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

Amp+™ Applications

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

Package



Part #	Package	Marking
GP3D010A065D	TO-263-2L	3D010A065



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	31	A
		T _C =125 °C, T _J =175 °C	16	
		T _C =150 °C, T _J =175 °C	10	
Surge non-repetitive forward current sine halfwave	I _{FSM}	T _C =25 °C, t _p =8.3 ms	75	A
		T _C =110 °C, t _p =8.3 ms	65	
Non-repetitive peak forward current	I _{F,max}	T _C =25 °C, t _p =10 μs	900	A
² value	∫ ²	T _C =25 °C, t _p =8.3 ms	23	A²s
		T _C =110 °C, t _p =8.3 ms	18	
Repetitive peak reverse voltage	V _{RRM}	T _J =25 °C	650	V
Diode ruggedness		Turn-on slew rate, repetitive	200	V/ns
Power dissipation	P _{tot} **	T _C =25 °C	108	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:

B

b Q B

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
Breakdown voltage	V _{BR}	I _R =330uA, T _j =25 °C	715	-	-	V
Diode forward voltage	V _F	I _F =10A, T _j =25 °C	-	1.41	1.50	V
		I _F =10A, T _j =125 °C	-	1.53	-	
		I _F =10A, T _j =175 °C	-	1.65	1.90	
Reverse current	I _R	V _R =650V, T _j =25 °C	-	1	25	μA
		V _R =715V, T _j =25 °C	-	3	-	
		V _R =650V, T _j =125 °C	-	9	-	
		V _R =650V, T _j =175 °C	-	30	250	
Total capacitive charge	Q _C	V _R =400V, T _j =25 °C	-	27	-	nC
Total capacitance	C	V _R =1V, f=1 MHz	-	440	-	pF
		V _R =200V, f=1 MHz	-	53	-	
		V _R =400V, f=1 MHz	-	43	-	

Thermal Characteristics

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal resistance, junction-case	R _{thJC}	-	-	1.39	1.80	°C/W

Typical Performance

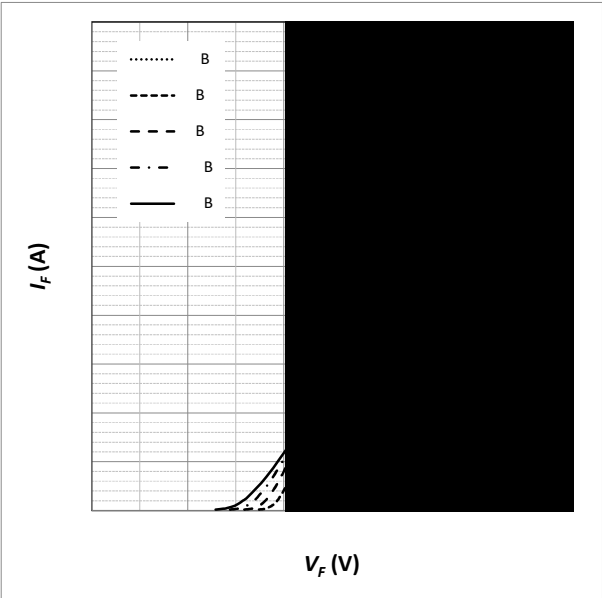


Fig. 1 Forward Characteristics (parameterized on T_j)

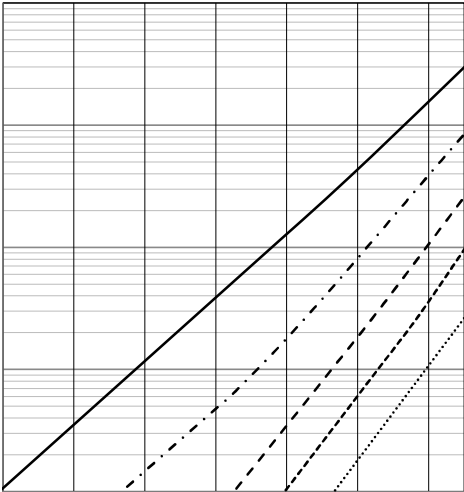


Fig. 2 Reverse Characteristics (parameterized on T_j)

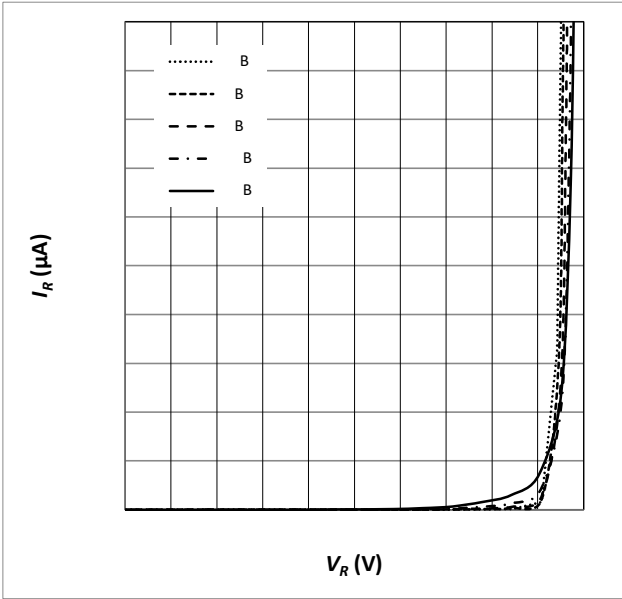


Fig. 3 Reverse Characteristics (parameterized on T_j)

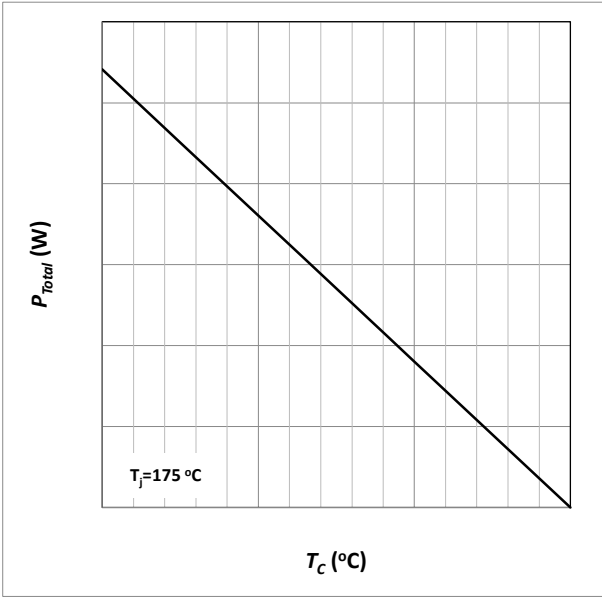


Fig. 4 Power Derating

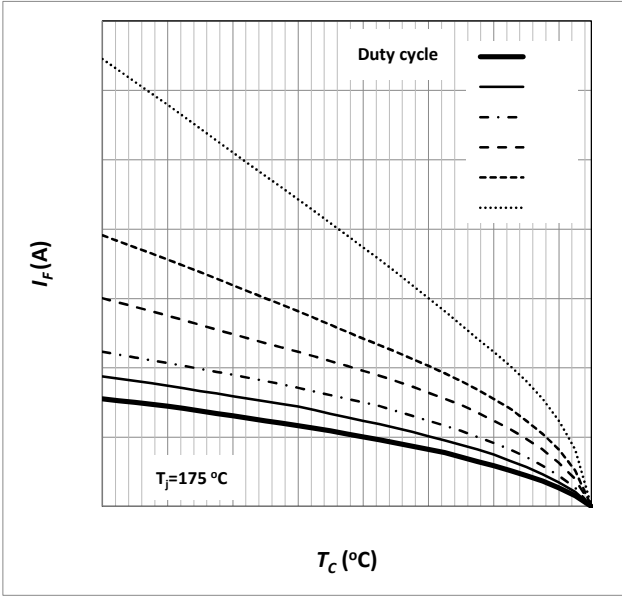


Fig. 5 Current Derating

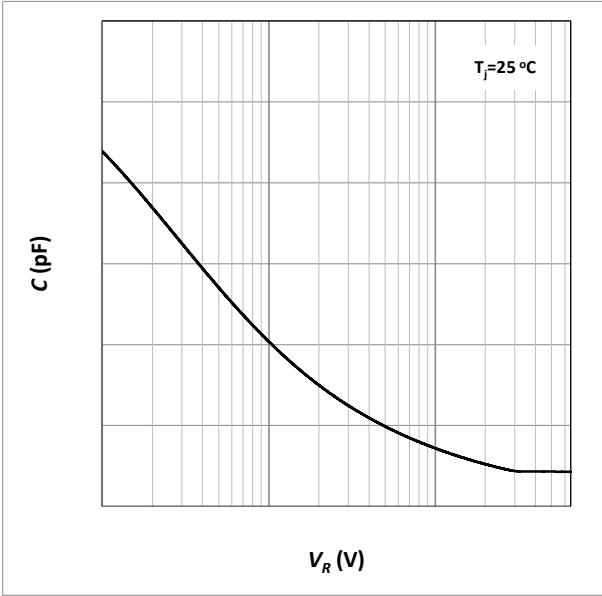


Fig. 6 Capacitance

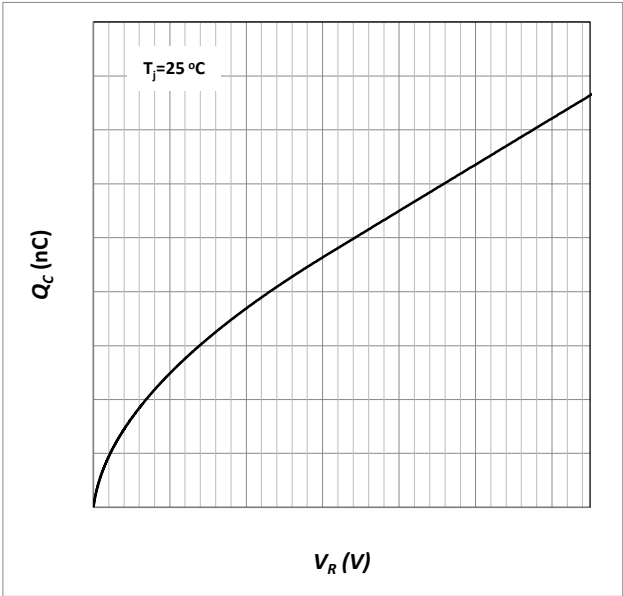


Fig. 7 Capacitive Charge

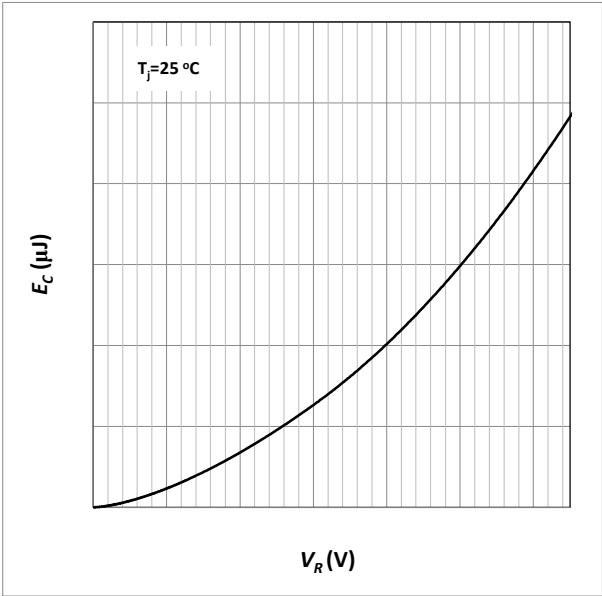


Fig. 8 Typical Capacitance Stored Energy

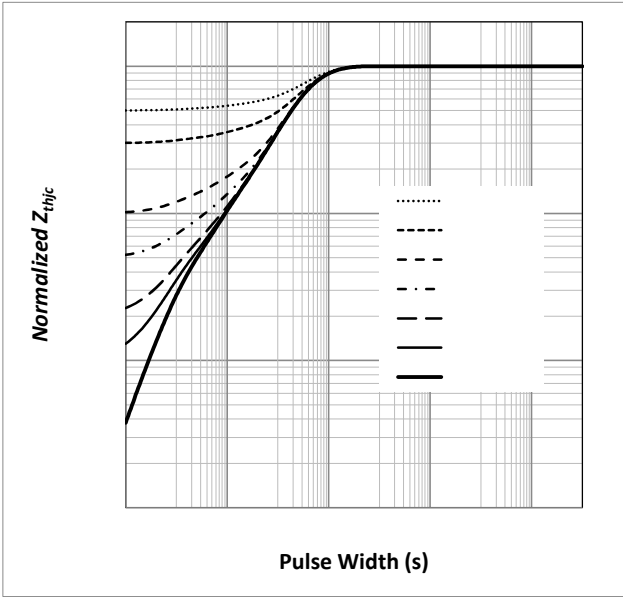


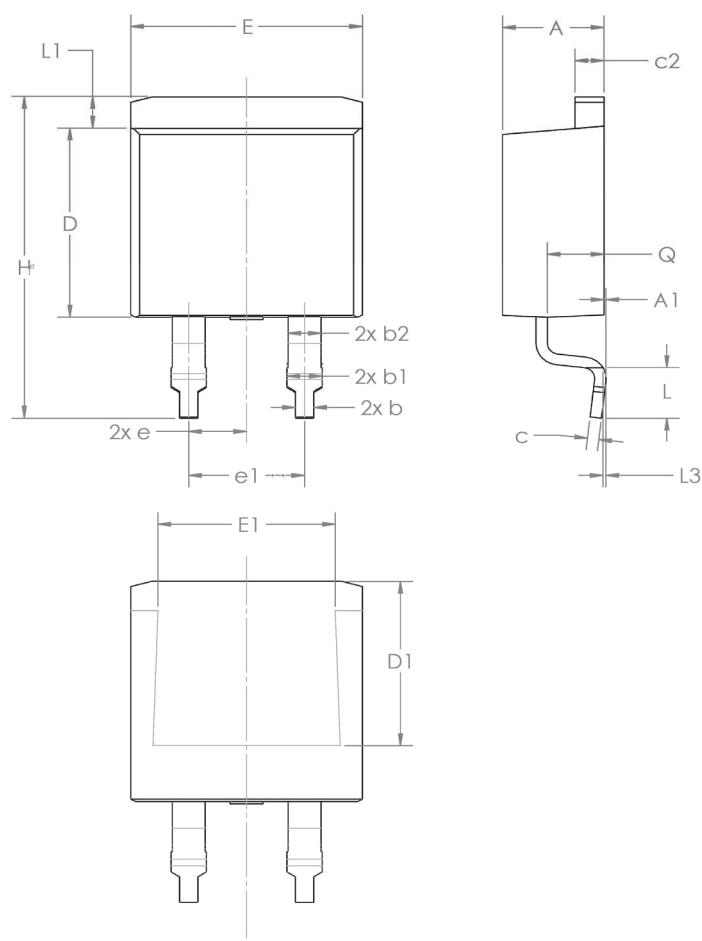
Fig. 9 Transient Thermal Impedance

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Amp+™

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Package Dimensions TO-263-2L



Sym	Millimeters		Inches	
	Min	Max	Min	Max
A	4.24	4.64	0.167	0.183
A1	0.00	0.25	0.000	0.010
b	0.70	0.90	0.028	0.035
b1	1.20	1.75	0.047	0.069
b2	1.20	1.70	0.047	0.067
c	0.40	0.60	0.016	0.024
c2	1.15	1.40	0.045	0.055
D	8.82	9.02	0.347	0.355
D1	6.86	-	0.270	-
E	9.96	10.36	0.392	0.408
E1	6.89	7.89	0.271	0.311
e	2.54 BSC		.100 BSC	
e1	5.08 BSC		.200 BSC	
H1	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	1.36 REF		0.054 REF	
L3	0.25 BSC		0.010 BSC	
Q	2.30	2.70	0.091	0.106

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Amp⁺™

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Revision History

Date	Revision	Notes
9/3/2020	1.0	Initial release of datasheet
4/30/2021	1.1	Updated forward voltage spec, surge, Rthjc - valid for date codes after 2101 (YYWW format)

M

RoHS Compliance

none compliance

REACH Compliance

[illegible]