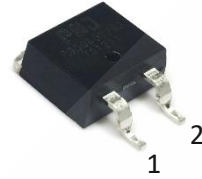


## SiC SBD P3D06008G2

### 650V SiC Schottky Diode



#### Features

- Qualified to AEC-Q101
- Ultra-Fast Switching
- Zero Reverse Recovery Current
- High-Frequency Operation
- Positive Temperature Coefficient on  $V_F$
- High Surge Current
- 100% UIS tested

TO-263-2

Cathode	1
Anode	2



#### Standards Benefits

- Improve System Efficiency
- Reduction of Heat Sink Requirement
- Essentially No Switching Losses
- Parallel Devices Without Thermal Runaway



#### Applications

- Consumer SMPS
- Boost Diodes in PFC or DC/DC Stages
- AC/DC Converters



#### Order Information

Part Number	Package	Marking
P3D06008G2	TO-263-2	P3D06008G2



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PN Junction Semiconductor

## 1. Maximum Ratings

At  $T_J = 25^\circ\text{C}$ , unless specified otherwise

Parameter	Symbol	Value	Unit	Test condition
Repetitive Peak Reverse Voltage	$V_{RRM}$	650	V	$T_C = 25^\circ\text{C}$
Surge Peak Reverse Voltage	$V_{RSM}$	650	V	$T_C = 25^\circ\text{C}$
DC Blocking Voltage	$V_R$	650	V	$T_C = 25^\circ\text{C}$
Forward Current	$I_F$	26	A	$T_C = 25^\circ\text{C}$
		13		$T_C = 125^\circ\text{C}$
		8		$T_C = 150^\circ\text{C}$
Repetitive Peak Forward Surge Current	$I_{FRM}$	51	A	$T_C = 25^\circ\text{C}, t_p = 10\text{ms}$
		25		$T_C = 125^\circ\text{C}, t_p = 10\text{ms}$
Non-Repetitive Forward Surge Current	$I_{FSM}$	66	A	$T_C = 25^\circ\text{C}, t_p = 10\text{ms}$
		42		$T_C = 125^\circ\text{C}, t_p = 10\text{ms}$
Non-Repetitive Forward Surge Current	$I_{F, MAX}$	640	A	$T_C = 25^\circ\text{C}, t_p = 10\mu\text{s}$
		683		$T_C = 125^\circ\text{C}, t_p = 10\mu\text{s}$
Power Dissipation	$P_{tot}$	108	W	$T_C = 25^\circ\text{C}$
Operating Junction and Storage Temperature	$T_J, T_{STG}$	-55 to +175	$^\circ\text{C}$	

## 2. Thermal Characteristics

Parameter	Symbol	Values	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.38	$^\circ\text{C}/\text{W}$

### 3. Electrical Characteristics

At  $T_J = 25^\circ\text{C}$ , unless specified otherwise

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	$V_F$	/	1.39	1.6	V	$I_F = 8\text{A}, T_J = 25^\circ\text{C}$
			1.65	/		$I_F = 8\text{A}, T_J = 175^\circ\text{C}$
Reverse Current	$I_R$	/	10.2	36	$\mu\text{A}$	$V_R = 650\text{V}, T_J = 25^\circ\text{C}$
			301	/		$V_R = 650\text{V}, T_J = 175^\circ\text{C}$
Total Capacitance	C	/	346	/	pF	$V_R = 0\text{V}, T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$
			39			$V_R = 200\text{V}, T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$
			30			$V_R = 400\text{V}, T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$
Total Capacitive Charge	$Q_C$	/	19.6	/	nC	$V_R = 400\text{V}, I_F = 8\text{A}$ $T_J = 25^\circ\text{C}$
Capacitance Stored Energy	$E_C$	/	2.42	/	$\mu\text{J}$	$V_R = 400\text{V}$

## 4. Typical Performance

At  $T_J = 25^\circ\text{C}$ , unless specified otherwise

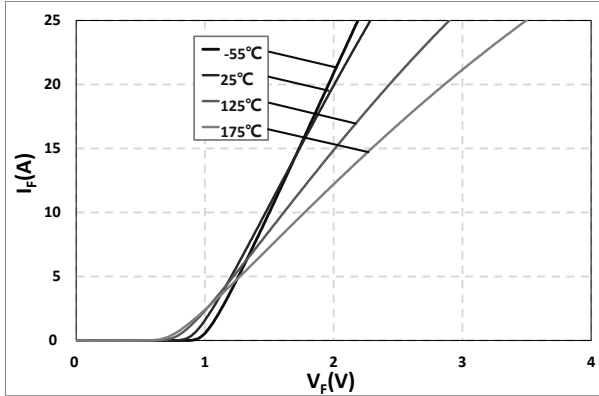


Fig. 1 Typical Forward Characteristics  
 $I_F = f(V_F)$ ;  $T_J = -55^\circ\text{C}, 25^\circ\text{C}, 125^\circ\text{C}, 175^\circ\text{C}$

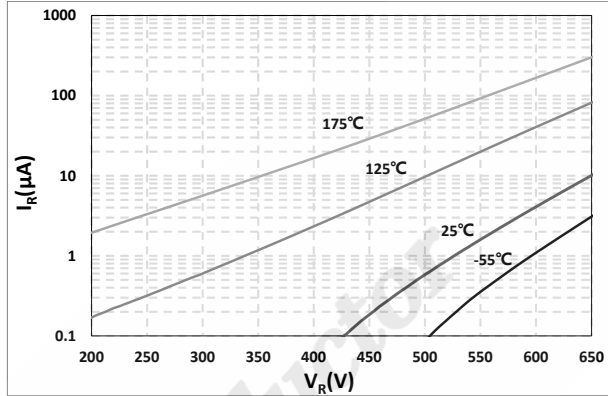


Fig. 2 Reverse Characteristics  
 $I_R = f(V_R)$ ;  $T_J = -55^\circ\text{C}, 25^\circ\text{C}, 125^\circ\text{C}, 175^\circ\text{C}$

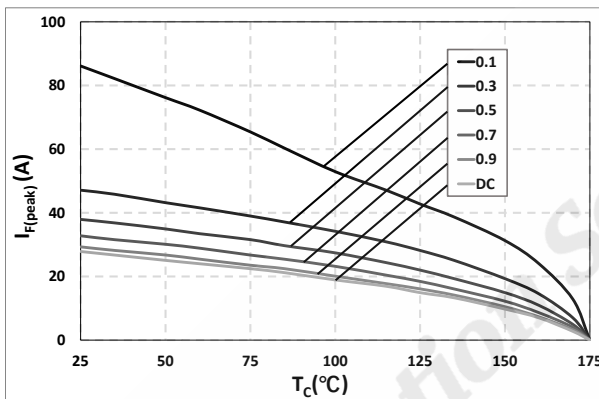


Fig. 3 Current Derating

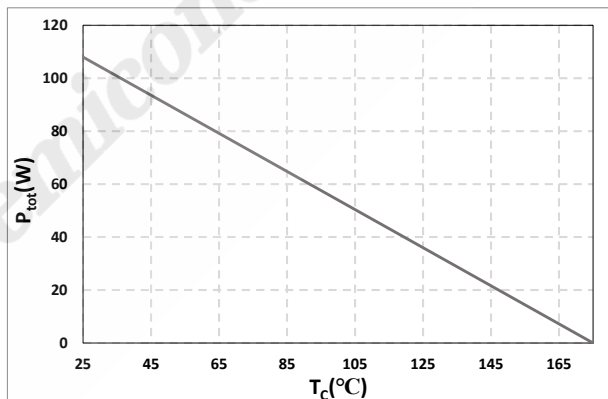


Fig. 4 Typical Power Derating  
 $P_{tot} = f(T_C)$

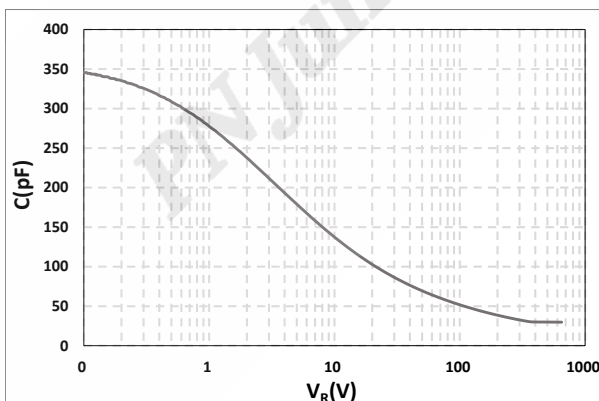


Fig. 5 Typical Total Capacitance  
 $C = f(V_R)$

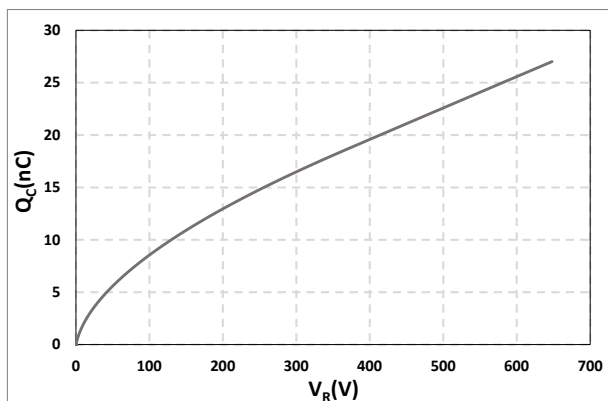


Fig. 6 Typical Total Capacitive Charge  
 $Q_C = f(V_R)$

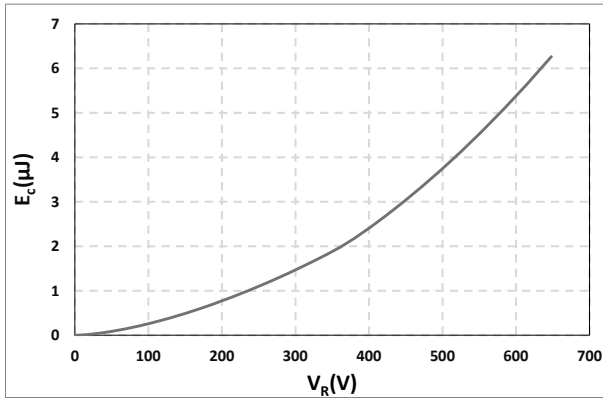


Fig. 7 Capacitance Stored Energy  
 $E_C = f(V_R)$

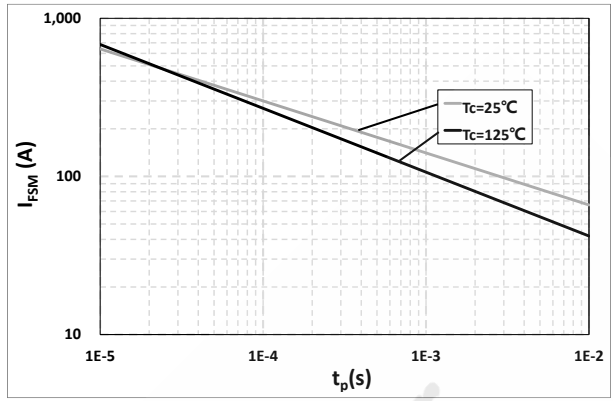


Fig. 8 Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

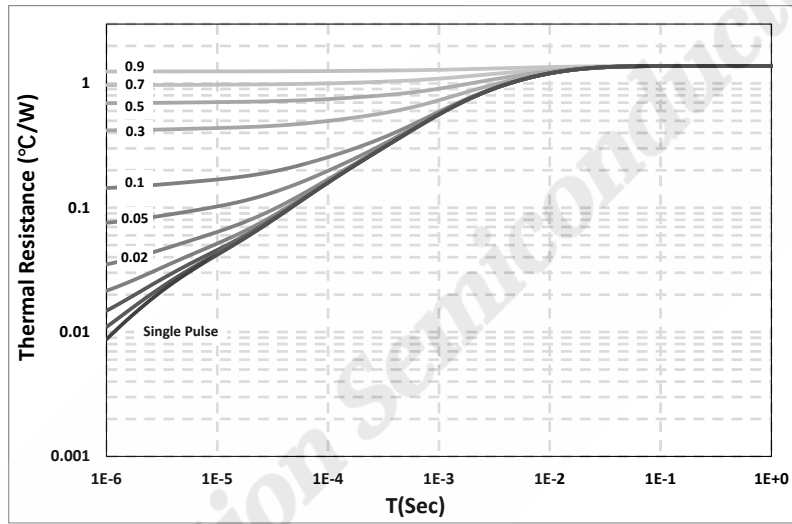
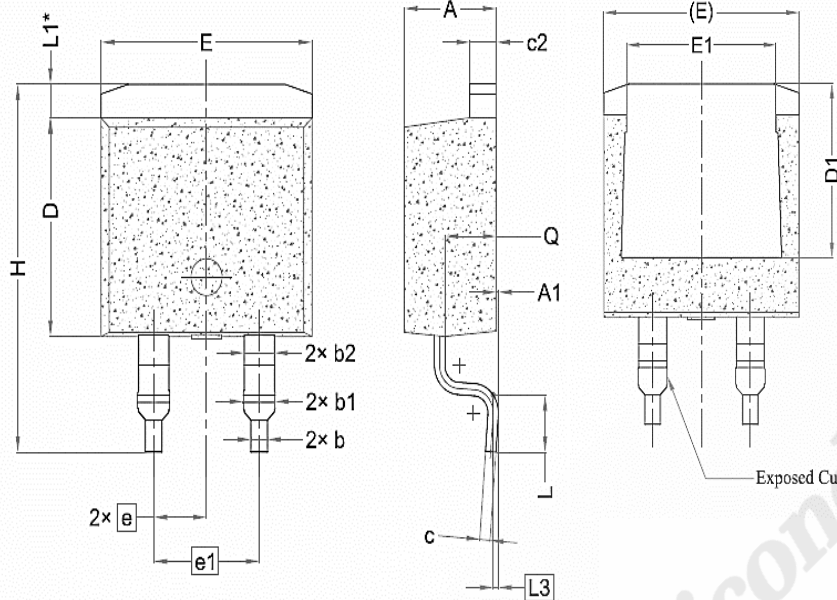


Fig. 9 Transient Thermal Impedance

## 5. Package Outlines



SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	4.24	4.44	4.64
A1	0.00	0.10	0.25
b	0.70	0.80	0.90
b1	1.20	1.55	1.75
b2	1.20	1.45	1.70
c	0.40	0.50	0.60
c2	1.15	1.27	1.40
D	8.82	8.92	9.02
D1	6.86	7.65	—
E	9.96	10.16	10.36
E1	6.89	7.77	7.89
e	2.54 BSC		
e1	5.08 BSC		
H	14.61	15.00	15.88
L	1.78	2.32	2.79
L1	1.36 REF.		
L3	0.25 BSC		
Q	2.30	2.48	2.70

Drawing and Dimensions

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