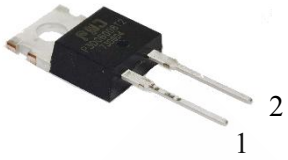
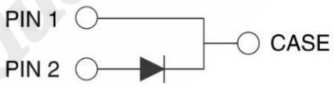
SiC SBD P3D06004T2

650V SiC Schottky Diode



TO-220-2

Cathode	1
Anode	2



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

Benefits

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

RoHS

Applications

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

Halogen

Order Information

Part Number	Package	Marking
P3D06004T2	TO-220-2	P3D06004T2

Contents

1. Maximum Ratings

At T_J= 25℃, unless specified otherwise

Parameter	Symbol	Value	Unit	Test condition
Repetitive Peak Reverse Voltage	V_{RRM}	650	V	T_C= 25℃
Surge Peak Reverse Voltage	V_{RSM}	650	V	T_C= 25℃
DC Blocking Voltage	V_R	650	V	T_C= 25℃
Forward Current	I_F	15 8 4	A	T_C= 25℃ T_C= 125℃ T_C= 160℃
Repetitive Peak Forward Surge Current	I_{FRM}	26 14	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Non-Repetitive Forward Surge Current	I_{FSM}	30 29	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Non-Repetitive Forward Surge Current	$I_{F, MAX}$	332 337	A	T_C= 25℃, t_p= 10μs T_C= 125℃, t_p= 10μs
Power Dissipation	P_{tot}	81	W	T_C= 25℃
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to +175	℃	
TO-220 Mounting Torque M3 Screw	T_{orq}	1 8.8	Nm lbf-in	

2. Thermal Characteristics

Parameter	Symbol	Values	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.85	℃/W

3. Electrical Characteristics

At T_J= 25℃, unless specified otherwise

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	/	1.5	1.7	V	I_F= 4A, T_J= 25℃
			1.8	/		I_F= 4A, T_J= 175℃
Reverse Current	I_R	/	1	20	μA	V_R= 650V, T_J= 25℃
			48	/		V_R= 650V, T_J= 175℃
Total Capacitance	C	/	145	/	pF	V_R= 0V, T_J= 25℃ f= 1MHz
			15.7			V_R= 200V, T_J= 25℃ f= 1MHz
			12.2			V_R= 400V, T_J= 25℃ f= 1MHz
Total Capacitive Charge	Q_C	/	8.03	/	nC	V_R= 400V, I_F= 4A T_J= 25℃
Capacitance Stored Energy	E_C	/	1	/	μJ	V_R= 400V

4. Typical Performance

At T_J= 25℃, unless specified otherwise

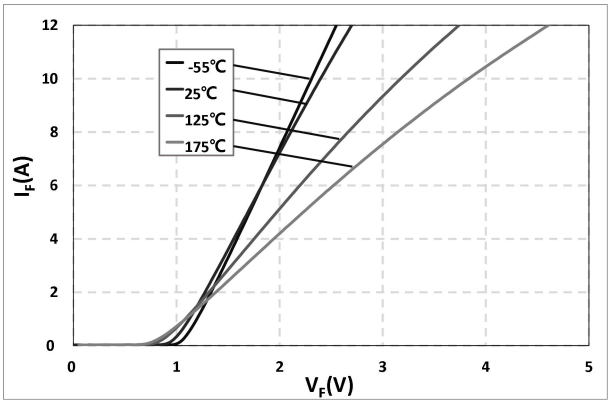


Fig. 1 Typical Forward Characteristics
I_F = f(V_F); T_J = -55℃, 25℃, 125℃, 175℃

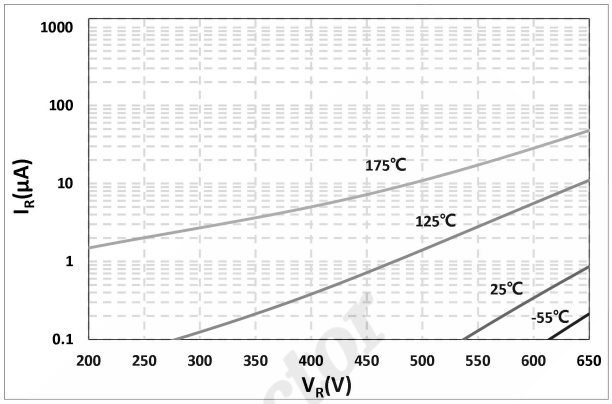


Fig. 2 Reverse Characteristics
I_R=f(V_R); T_J = -55℃, 25℃, 125℃, 175℃

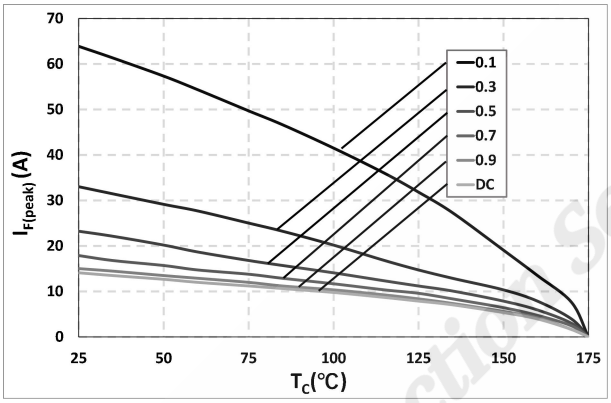


Fig. 3 Current Derating

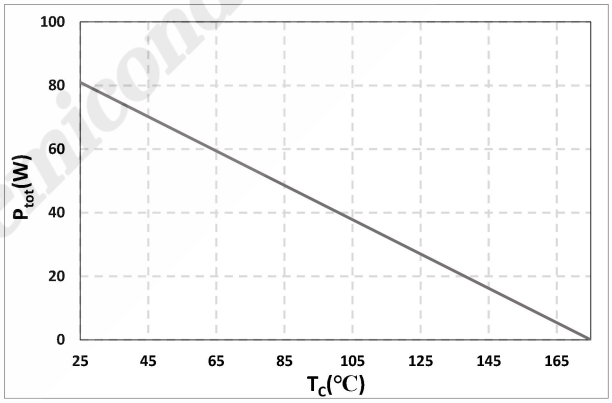


Fig. 4 Typical Power Derating
P_{tot} = f(T_C)

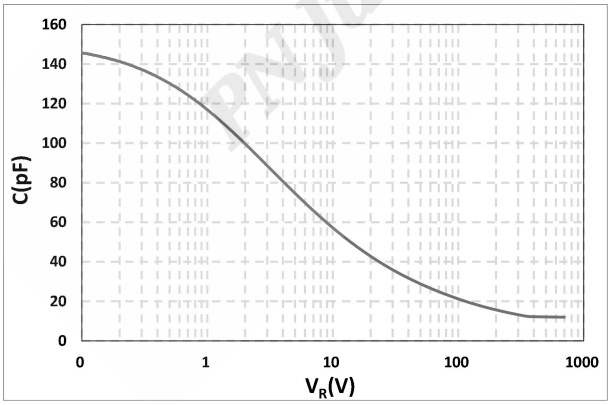


Fig. 5 Typical Total Capacitance
C=f(V_R)

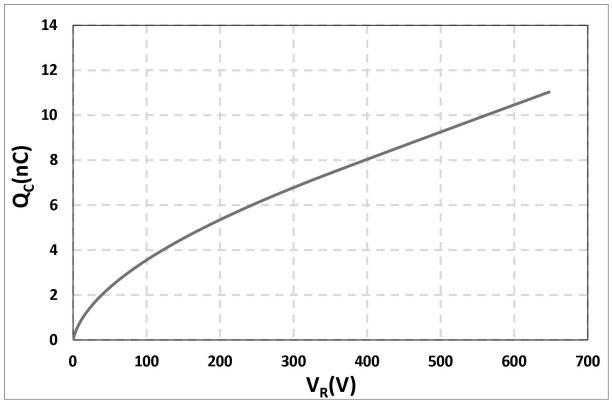


Fig. 6 Typical Total Capacitive Charge
Q_C = f(V_R)

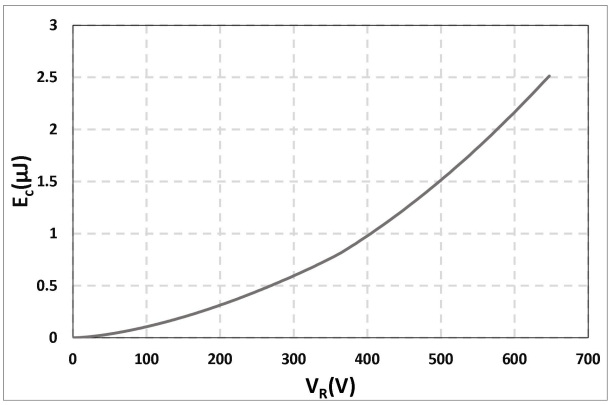


Fig. 7 Capacitance Stored Energy
$E_C = f(V_R)$

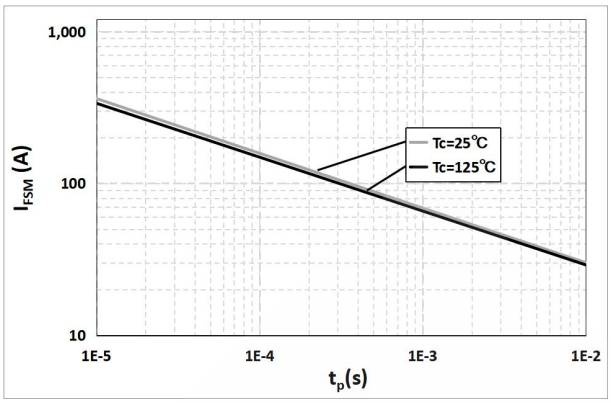


Fig. 8 Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

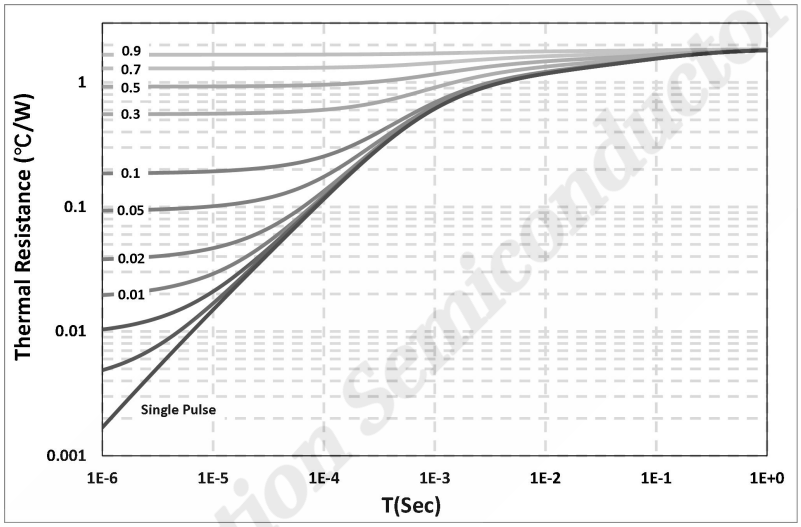
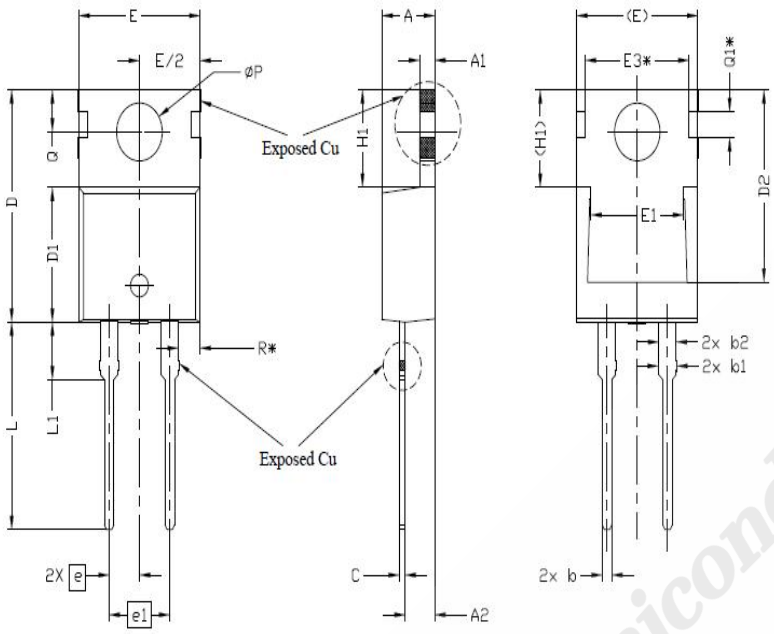


Fig. 9 Transient Thermal Impedance

5. Package Outlines



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.24	4.44	4.64	
A1	1.15	1.27	1.40	
A2	2.30	2.48	2.70	
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	
D	14.70	15.37	16.00	4
D1	8.82	8.92	9.02	
D2	12.63	12.73	12.83	5
E	9.96	10.16	10.36	4,5
E1	6.86	7.77	8.89	5
E3*	8.70REF.			
e	2.54BSC			
e1	5.08BSC			
H1	6.30	6.45	6.60	5,6
L	13.47	13.72	13.97	
L1	3.60	3.80	4.00	
ØP	3.75	3.84	3.93	
Q	2.60	2.80	3.00	
Q1*	1.73REF.			
R*	1.82REF.			

Drawing and Dimensions

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