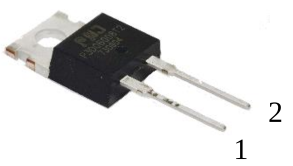
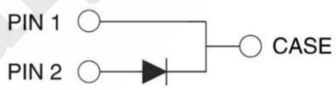
SiC SBD P3D06002T2

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 VF
- High Surge Current
- 100% UIS Tested

Standards Benefits

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

RoHS

Application

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

Halogen

Order Information

Part Number	Package	Marking
P3D06002T2	TO-220-2	P3D06002T2

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	6 5 2	A	T_C= 25℃ T_C= 125℃ T_C= 160℃
Repetitive Peak Forward Surge Current	I_{FRM}	16 7	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Non-Repetitive Forward Surge Current	I_{FSM}	23 21	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Non-Repetitive Forward Surge Current	$I_{F,\ MAX}$	181 182	A	T_C= 25℃, t_p= 10μs T_C= 125℃, t_p= 10μs
Power Dissipation	P_{tot}	44	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. Electrical Characteristics

Parameter	Symbol	Values	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3.4	℃/W

3. Thermal 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= 2A, T_J= 25℃
			1.9	/		I_F= 2A, T_J= 175℃
Reverse Current	I_R	/	2.9	10	μA	V_R= 650V, T_J= 25℃
			130	/		V_R= 650V, T_J= 175℃
Total Capacitance	C	/	67.5	/	pF	V_R= 0V, T_J= 25℃ f= 1MHz
			7.8			V_R= 200V, T_J= 25℃ f= 1MHz
			6.3			V_R= 400V, T_J= 25℃ f= 1MHz
Total Capacitive Charge	Q_C	/	3.9	/	nC	V_R= 400V, I_F= 2A di/dt= 500A/μs T_J= 25℃
Capacitance Stored Energy	E_C	/	5.1	/	μJ	V_R= 400V

4. Typical Performance

At T_J= 25℃, unless specified otherwise

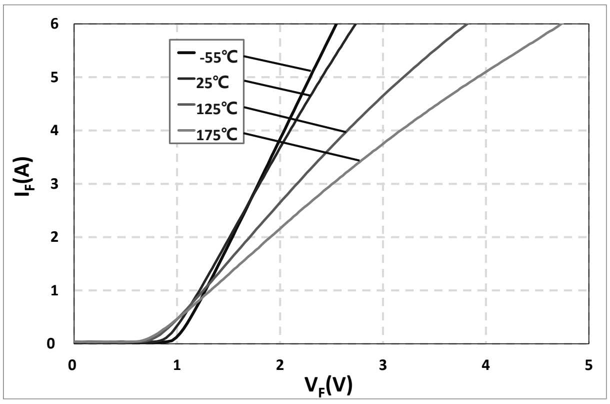


Fig. 1 Typical Forward Characteristics
$I_F = f(V_F)$; T_J = -55℃, 25℃, 125℃, 175℃

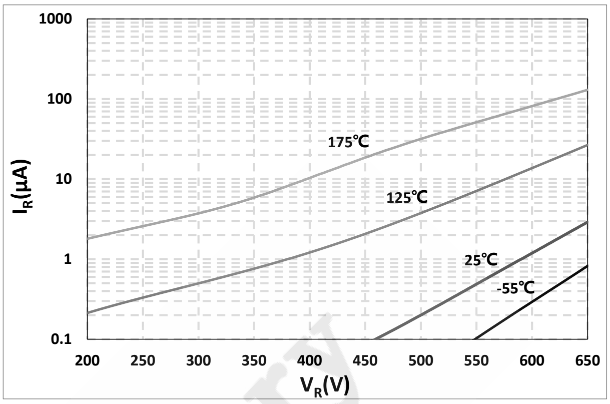


Fig. 2 Reverse Characteristics
$I_R=f(V_R)$; T_J = -55℃, 25℃, 125℃, 175℃

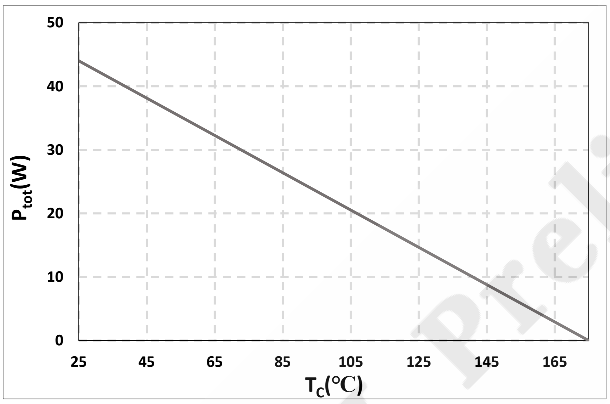


Fig. 3 Typical Power Derating
$P_{tot} = f(T_C)$

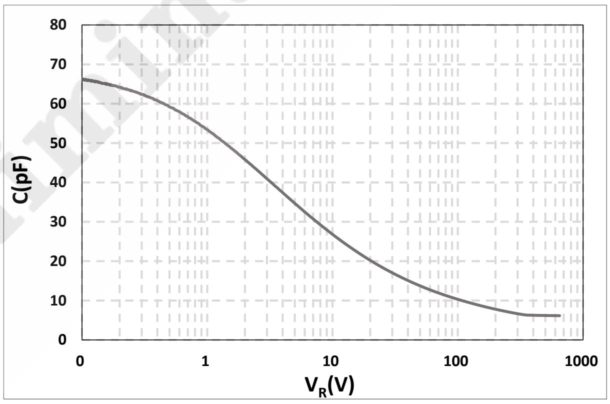


Fig. 4 Typical Total Capacitance
$C=f(V_R)$

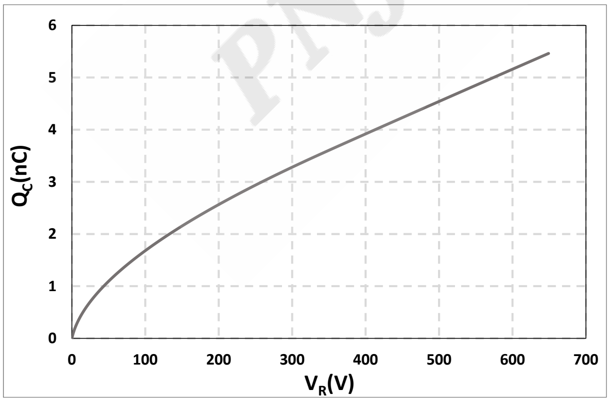


Fig. 5 Typical Total Capacitive Charge
$Q_C = f(V_R)$

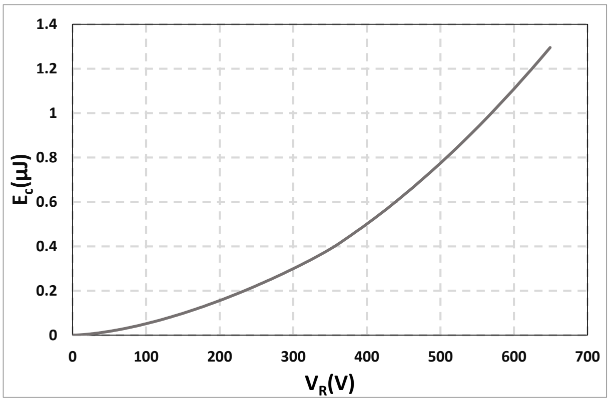
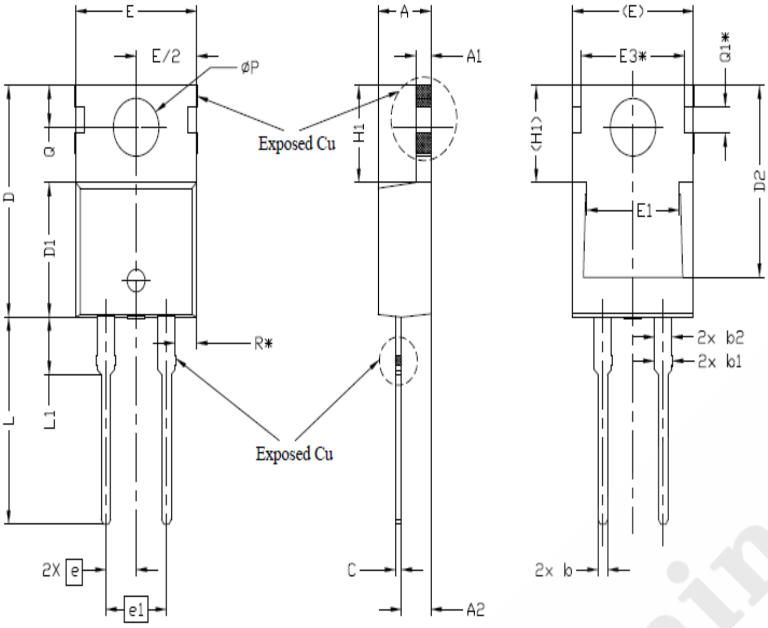


Fig. 6 Capacitance Stored Energy
$E_C = f(V_R)$

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