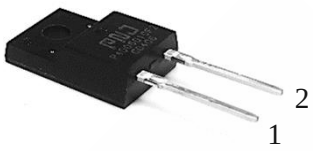
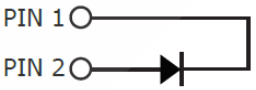
SiC SBD P3D06008F2

650V SiC Schottky Diode



TO-220F-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
- Full Isolated Package for Direct Heat Sinking
- 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
P3D06008F2	TO-220F-2	P3D06008F2

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	18 9 8	A	T_C= 25℃ T_C= 125℃ T_C= 135℃
Repetitive Peak Forward Surge Current	I_{FRM}	33 16	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Non-Repetitive Forward Surge Current	I_{FSM}	61 58	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Non-Repetitive Forward Surge Current	$I_{F, MAX}$	528 565	A	T_C= 25℃, t_p= 10μs T_C= 125℃, t_p= 10μs
Power Dissipation	P_{tot}	55	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	$R_{\theta JC}$	2.72	℃/W

3. Electrical Characteristics

At T_J= 25℃, unless specified otherwise

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	/	1.39	1.6	V	I_F= 8A, T_J= 25℃
			1.65	/		I_F= 8A, T_J= 175℃
Reverse Current	I_R	/	10.2	36	μA	V_R= 650V, T_J=25℃
			301	/		V_R= 650V, T_J= 175℃
Total Capacitance	C	/	323	/	pF	V_R= 0V, T_J= 25℃ f= 1MHz
			32			V_R= 200V, T_J= 25℃ f= 1MHz
			26			V_R= 400V, T_J= 25℃ f= 1MHz
Total Capacitive Charge	Q_C	/	16.6	/	nC	V_R= 400V, I_F= 8A T_J= 25℃
Capacitance Stored Energy	E_C	/	2.1	/	μJ	V_R= 400V

4. Typical Performance

At T_J= 25℃, unless specified otherwise

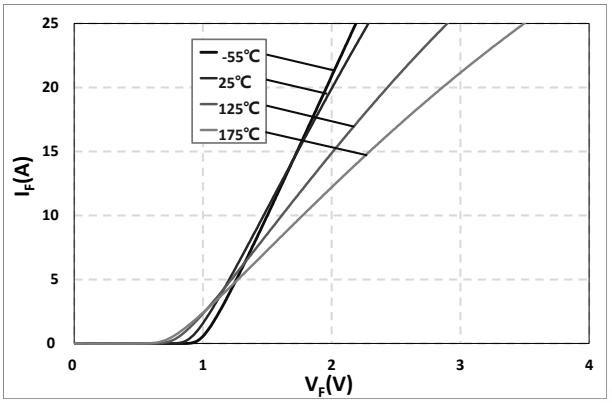


Fig. 1 Typical Forward Characteristics
$I_F = f(V_F)$; T_J = -55℃, 25℃, 125℃, 175℃

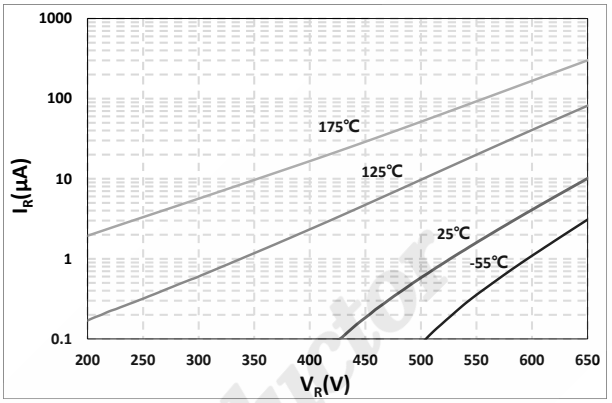


Fig. 2 Reverse Characteristics
$I_R=f(V_R)$; T_J = -55℃, 25℃, 125℃, 175℃

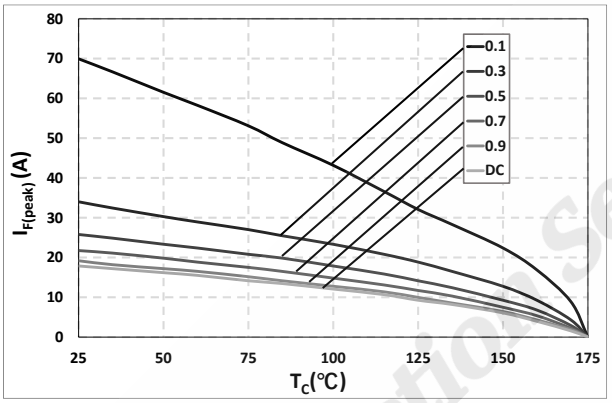


Fig. 3 Current Derating

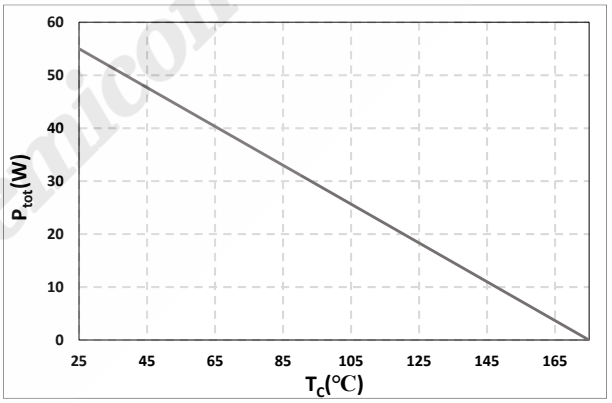


Fig. 4 Typical Power Derating
$P_{tot} = f(T_C)$

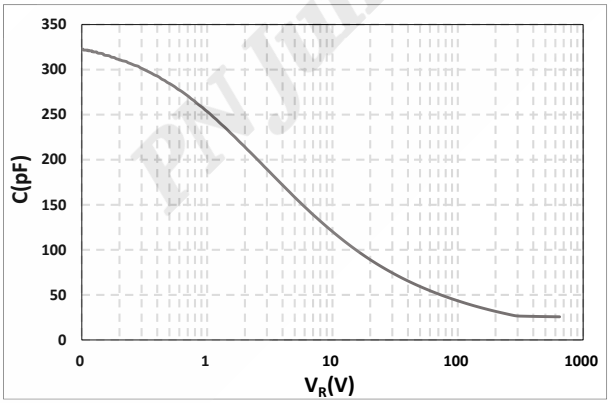


Fig. 5 Typical Total Capacitance
$C=f(V_R)$

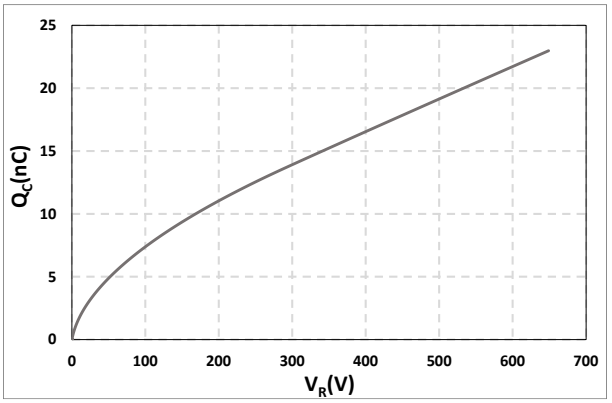


Fig. 6 Typical Total Capacitive Charge
$Q_C = f(V_R)$

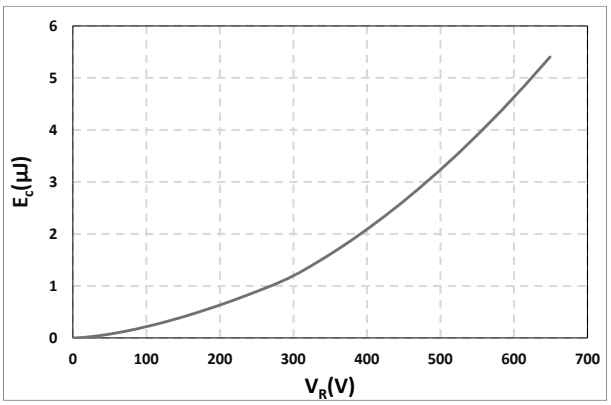


Fig. 7 Capacitance Stored Energy
$E_C = f(V_R)$

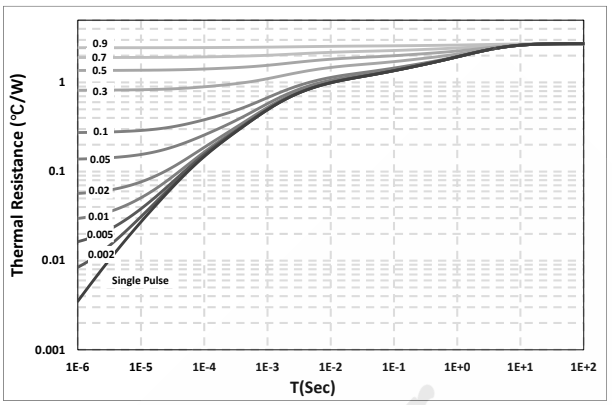
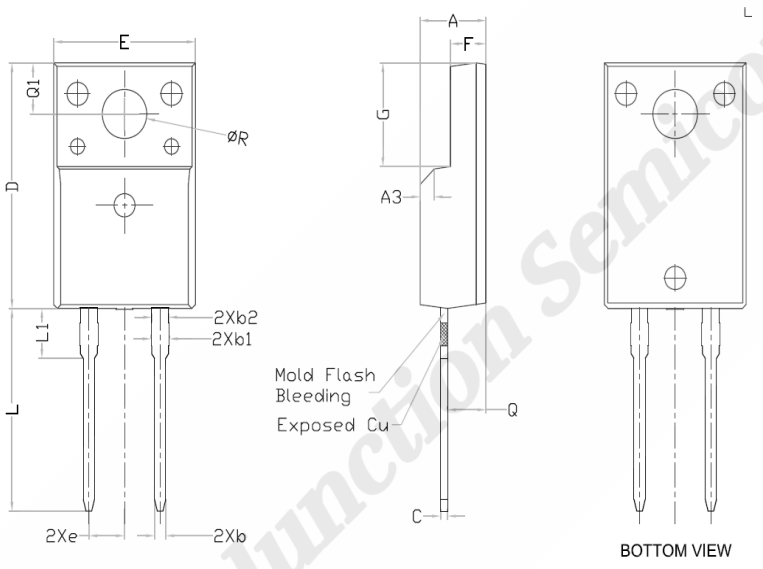


Fig. 8 Transient Thermal Impedance

5. Package Outlines



SYMBOL	DIMENSIONS		
	Min.	Nom.	Max.
A	4.60	4.70	4.80
b	0.70	0.80	0.91
b1	1.20	1.30	1.47
b2	1.10	1.20	1.30
C	0.45	0.50	0.63
D	15.80	15.87	15.97
e		2.54	
E	10.00	10.10	10.30
F	2.44	2.54	2.64
G	6.50	6.70	6.90
L	12.90	13.10	13.30
L1	3.13	3.23	3.33
Q	2.65	2.75	2.85
Q1	3.20	3.30	3.40
ΦR	3.08	3.18	3.28

Drawing and dimensions