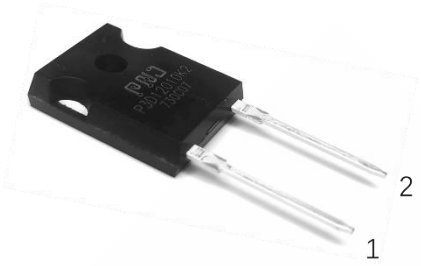
V_{RRM}	= 1200	V
Qc	= 167	nC
I_F(≤145℃)	= 40	A
V_F	= 1.5	V

SiC SBD P3D12040K2

1200V SiC Schottky Diode

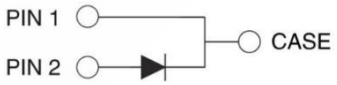


TO-247-2

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



Standards 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
P3D12040K2	TO-247-2	P3D12040K2

Contents

1. Maximum Ratings

At T_J= 25℃, unless specified otherwise

Parameter	Symbol	Value	Unit	Test condition
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V	T_C= 25℃
Surge Peak Reverse Voltage	V_{RSM}	1200	V	T_C= 25℃
DC Blocking Voltage	V_R	1200	V	T_C= 25℃
Forward Current	I_F	93 52 40	A	T_C= 25℃ T_C= 125℃ T_C= 145℃
Repetitive Peak Forward Surge Current	I_{FRM}	173 90	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Non-Repetitive Forward Surge Current	I_{FSM}	300 273	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Power Dissipation	P_{tot}	428	W	T_C= 25℃
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to +175	℃	
TO-247 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	$R_{\theta JC}$	0.35	℃/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	1.8	V	I_F= 40A, T_J= 25℃
			2.2	/		I_F= 40A, T_J= 175℃
Reverse Current	I_R	/	15	70	μA	V_R= 1200V, T_J= 25℃
			1974	/		V_R= 1200V, T_J= 175℃
Total Capacitance	C	/	2248	/	pF	V_R= 0V, T_J= 25℃ f= 1MHz
			152			V_R= 400V, T_J= 25℃ f= 1MHz
			141			V_R= 800V, T_J= 25℃ f= 1MHz
Total Capacitive Charge	Q_C	/	167	/	nC	V_R= 800V, I_F= 40A di/dt= 200A/μs T_J= 25℃
Capacitance Stored Energy	E_C	/	45	/	μJ	V_R= 800V

4. Typical Performance

At T_J= 25℃, unless specified otherwise

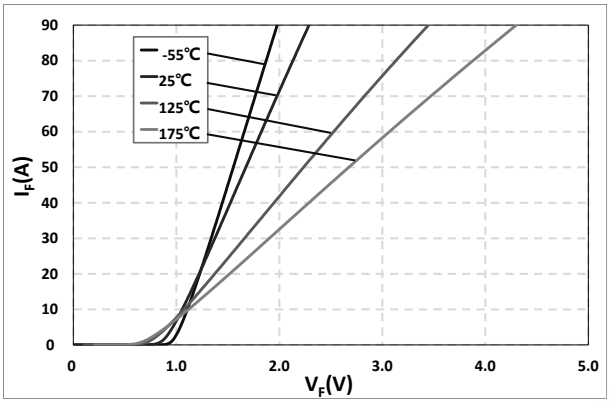


Fig. 1 Typical Forward Characteristics
$I_F = f(V_F)$; T_J = -55℃, 25℃, 125℃, 175℃

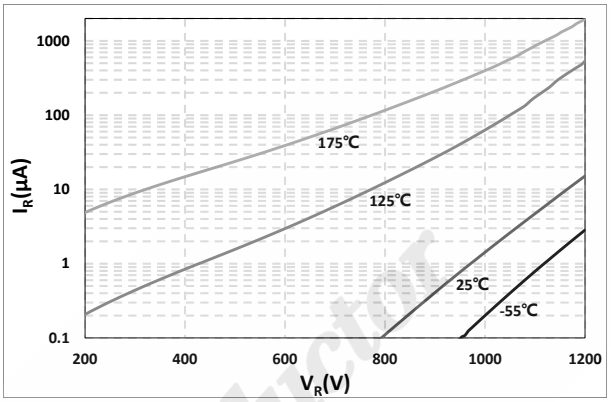


Fig. 2 Reverse Characteristics
$I_R=f(V_R)$; T_J = -55℃, 25℃, 125℃, 175℃

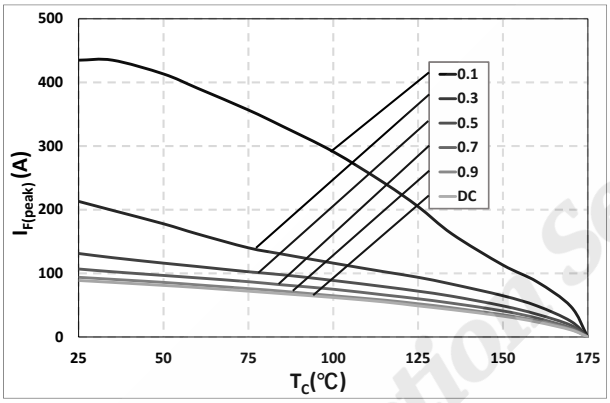


Fig. 3 Current Derating

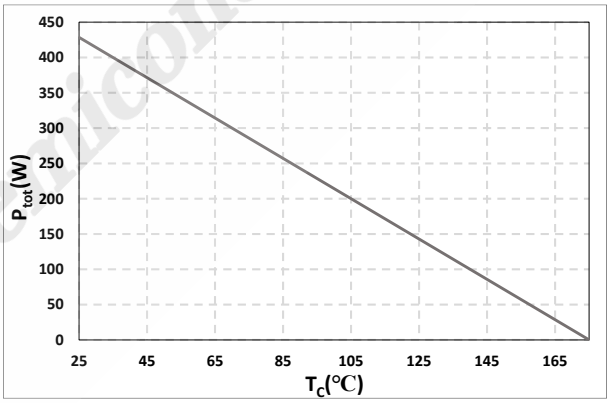


Fig. 4 Typical Power Derating
$P_{tot} = f(T_C)$

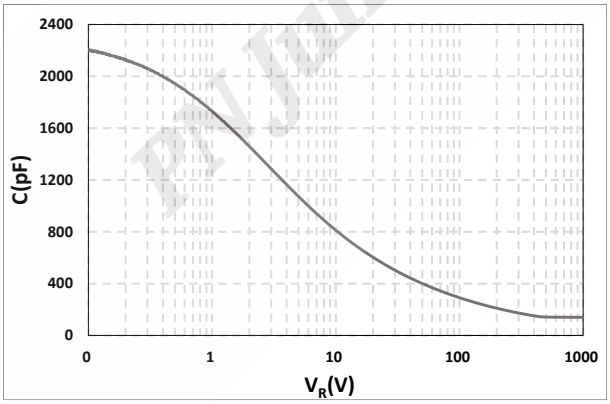


Fig. 5 Typical Total Capacitance
$C=f(V_R)$

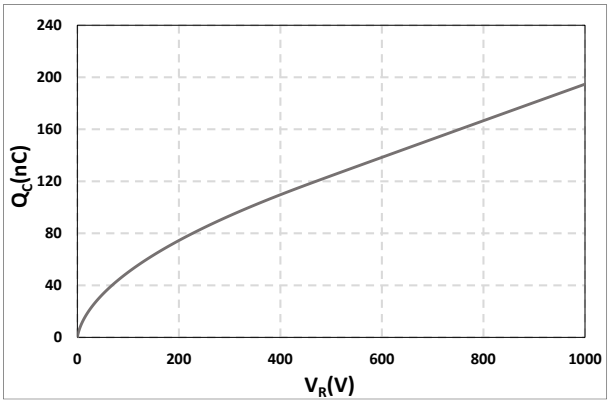


Fig. 6 Typical Total Capacitive Charge
$Q_C = f(V_R)$

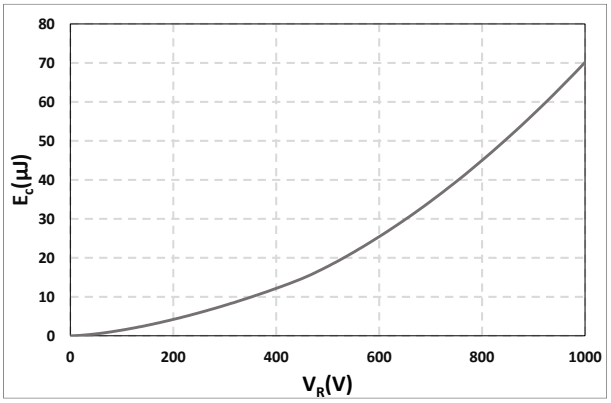


Fig. 7 Capacitance Stored Energy
$E_C = f(V_R)$

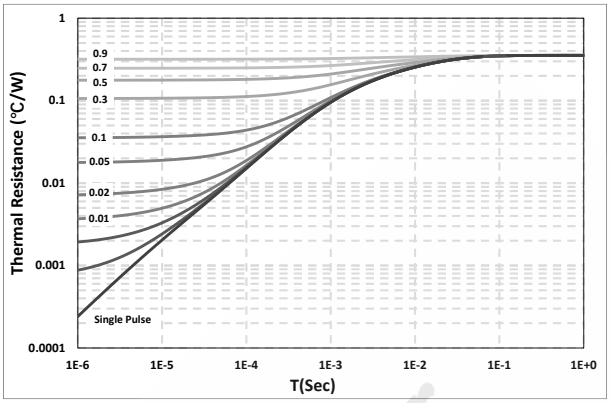
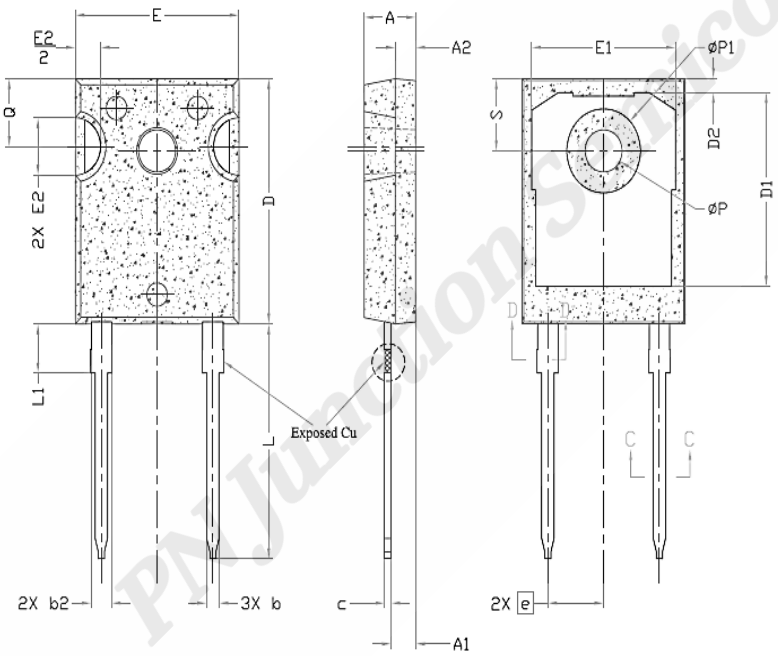


Fig. 8 Transient Thermal Impedance

5. Package Outlines



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.83	5.02	5.21	
A1	2.29	2.41	2.55	
A2	1.50	2.00	2.49	
b	1.12	1.20	1.33	
b1	1.12	1.20	1.28	
b2	1.91	2.00	2.39	6
b3	1.91	2.00	2.34	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20.80	20.95	21.10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15.75	15.94	16.13	4
E1	13.46	14.02	14.16	5
E2	4.32	4.91	5.49	3
e	5.44BSC			
L	19.81	20.07	20.32	
L1	4.10	4.19	4.40	6
øP	3.56	3.61	3.65	7
øP1	7.19REF.			
Q	5.39	5.79	6.20	
S	6.04	6.17	6.30	

Drawing and Dimensions

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