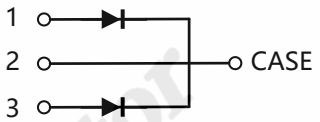
V_{RRM}	= 650	V
Qc	= 2×18.8	nC
I_F(≤160℃)	= 2×8	A
V_F	= 1.39	V

SiC SBD P3D06016K3

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-247-3

Anode	1
Cathode	2
Anode	3

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
P3D06016K3	TO-247-3	P3D06016K3

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 (Per Leg/Device)	I_F	32/64 18/36 8/16	A	T_C= 25℃ T_C= 125℃ T_C= 160℃
Repetitive Peak Forward Surge Current (Per Leg)	I_{FRM}	56 31	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Non-Repetitive Forward Surge Current (Per Leg)	I_{FSM}	77 66	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Non-Repetitive Forward Surge Current (Per Leg)	$I_{F,MAX}$	475 453	A	T_C= 25℃, t_p= 10μs T_C= 125℃, t_p= 10μs
Power Dissipation (Per Leg)	P_{tot}	167	W	T_C= 25℃
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to +175	℃	
TO-247 Mounting Torque	M_d	1 8.8	Nm lbf-in	M3 or 6-32 screw

2. Thermal Characteristics

Parameter	Symbol	Values	Unit
Thermal Resistance from Junction to Case (Per Leg)	$R_{\theta JC}$	0.9	℃/W

3. Electrical Characteristics

At T_J= 25℃, unless specified otherwise (Per Leg)

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	/	372	/	pF	V_R= 0V, T_J= 25℃ f= 1MHz
			36			V_R= 200V, T_J= 25℃ f= 1MHz
			27			V_R= 400V, T_J= 25℃ f= 1MHz
Total Capacitive Charge	Q_C	/	18.8	/	nC	V_R= 400V, I_F= 8A T_J= 25℃
Capacitance Stored Energy	E_C	/	2.17	/	μJ	V_R= 400V

4. Typical Performance

At T_J= 25℃, unless specified otherwise (Per Leg)

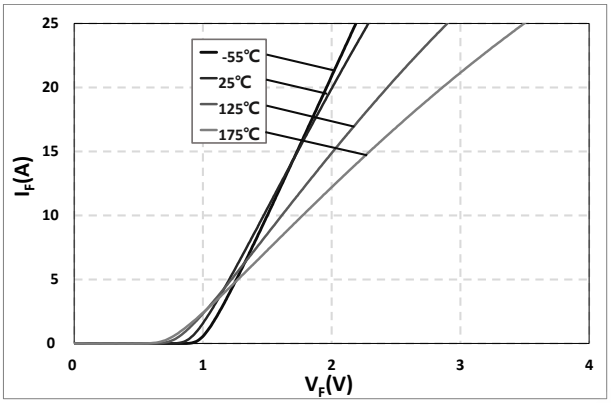


Fig. 1 Typical Forward Characteristics
$I_F = f(V_F)$; T_J = -55℃, 25℃, 125℃, 175℃

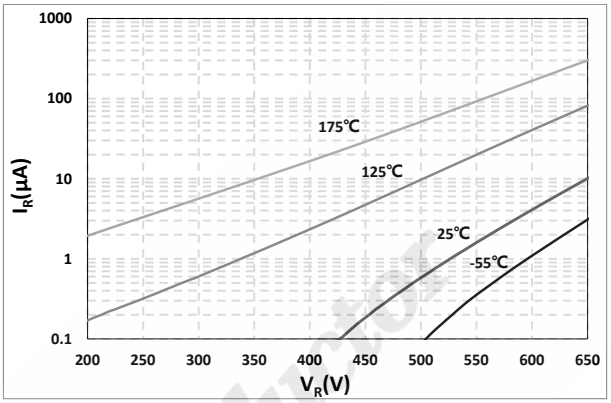


Fig. 2 Reverse Characteristics
$I_R=f(V_R)$; T_J = -55℃, 25℃, 125℃, 175℃

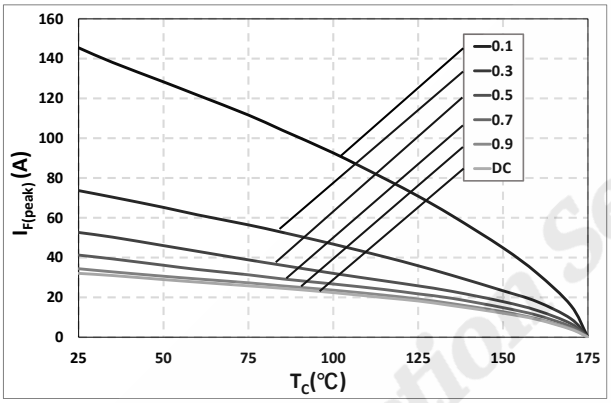


Fig. 3 Current Derating

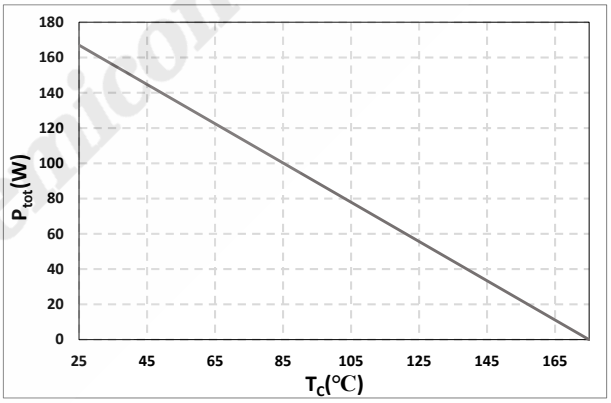


Fig. 4 Typical Power Derating
$P_{tot} = f(T_C)$

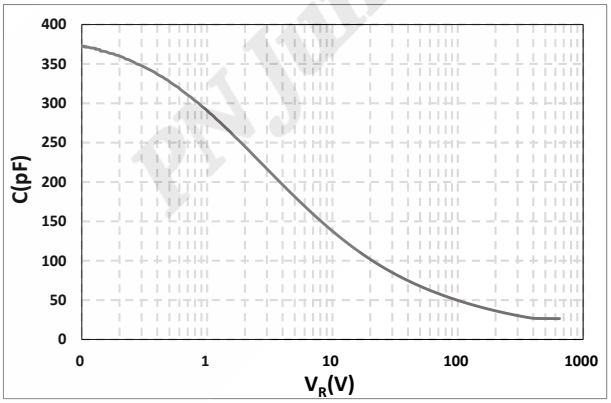


Fig. 5 Typical Total Capacitance
$C=f(V_R)$

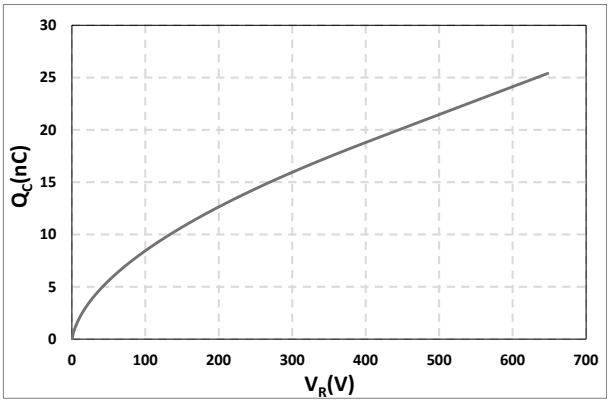


Fig. 6 Typical Total Capacitive Charge
$Q_C = f(V_R)$

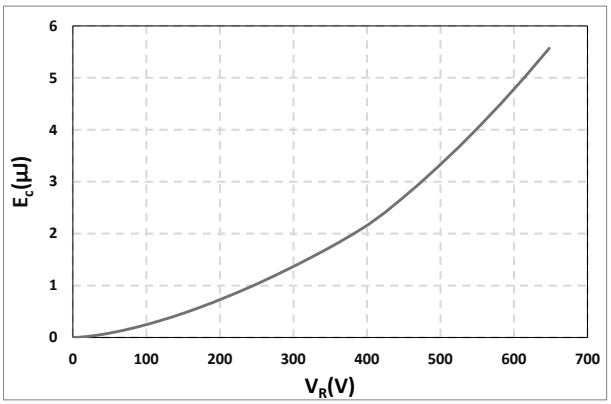


Fig. 7 Capacitance Stored Energy
$E_C = f(V_R)$

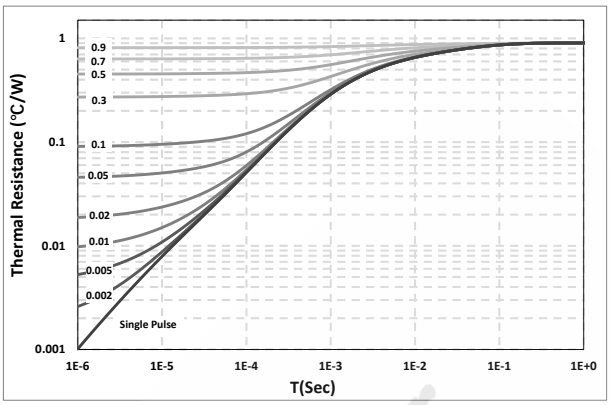
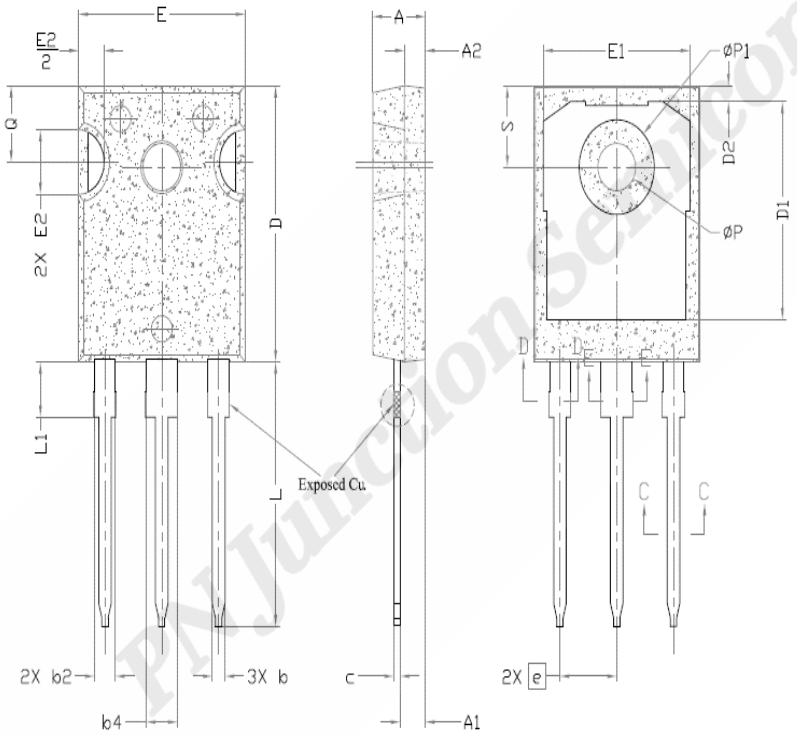


Fig. 8 Transient Thermal Impedance

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	
b4	2.87	3.00	3.22	6, 8
b5	2.87	3.00	3.18	
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