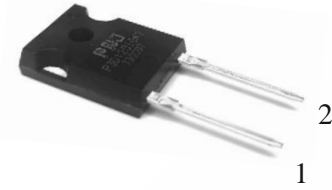


SiC SBD P3D12010K2 1200V SiC Schottky Diode



Features

- Ultra-Fast Switching
- Zero Reverse Recovery Current
- High-Frequency Operation
- Positive Temperature Coefficient on V_F
- High Surge Current
- 100% UIS tested

TO-247-2

Cathode	1
Anode	2



Standards Benefits

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



Application

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



Order Information

Part Number	Package	Marking
P3D12010K2	TO-247-2	P3D12010K2



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PN Junction Semiconductor

1. Maximum Ratings

At $T_J = 25^\circ\text{C}$, unless specified otherwise

Parameter	Symbol	Value	Unit	Test condition
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V	$T_C = 25^\circ\text{C}$
Surge Peak Reverse Voltage	V_{RSM}	1200	V	$T_C = 25^\circ\text{C}$
DC Blocking Voltage	V_R	1200	V	$T_C = 25^\circ\text{C}$
Forward Current	I_F	31 17 10	A	$T_C = 25^\circ\text{C}$ $T_C = 125^\circ\text{C}$ $T_C = 155^\circ\text{C}$
Repetitive Peak Forward Surge Current	I_{FRM}	60 34	A	$T_C = 25^\circ\text{C}, t_p = 10\text{ms}$ $T_C = 125^\circ\text{C}, t_p = 10\text{ms}$
Non-Repetitive Forward Surge Current	I_{FSM}	99 90	A	$T_C = 25^\circ\text{C}, t_p = 10\text{ms}$ $T_C = 125^\circ\text{C}, t_p = 10\text{ms}$
Non-Repetitive Forward Surge Current	$I_{F, MAX}$	720 687	A	$T_C = 25^\circ\text{C}, t_p = 10\mu\text{s}$ $T_C = 125^\circ\text{C}, t_p = 10\mu\text{s}$
Power Dissipation	P_{tot}	156	W	$T_C = 25^\circ\text{C}$
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to +175	$^\circ\text{C}$	
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	$R_{\theta JC}$	0.96	$^\circ\text{C}/\text{W}$

3. Electrical Characteristics

At $T_J = 25^\circ\text{C}$, unless specified otherwise

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	/	1.5	1.8	V	$I_F = 10\text{A}$, $T_J = 25^\circ\text{C}$
			2.1	/		$I_F = 10\text{A}$, $T_J = 175^\circ\text{C}$
Reverse Current	I_R	/	4.32	50	μA	$V_R = 1200\text{V}$, $T_J = 25^\circ\text{C}$
			437	/		$V_R = 1200\text{V}$, $T_J = 175^\circ\text{C}$
Total Capacitance	C	/	619	/	pF	$V_R = 0\text{V}$, $T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$
			45			$V_R = 400\text{V}$, $T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$
			41			$V_R = 800\text{V}$, $T_J = 25^\circ\text{C}$ $f = 1\text{MHz}$
Total Capacitive Charge	Q_C	/	49	/	nC	$V_R = 800\text{V}$, $I_F = 10\text{A}$ $di/dt = 200\text{A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$
Capacitance Stored Energy	E_C	/	13.3	/	μJ	$V_R = 800\text{V}$

4. Typical Performance

At $T_J = 25^\circ\text{C}$, unless specified otherwise

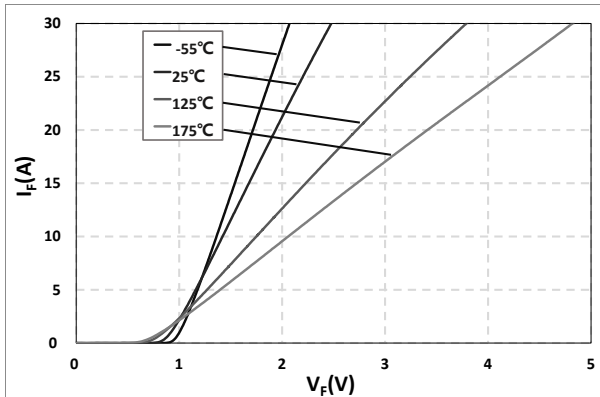


Fig. 1 Typical Forward Characteristics
 $I_F = f(V_F)$; $T_J = -55^\circ\text{C}, 25^\circ\text{C}, 125^\circ\text{C}, 175^\circ\text{C}$

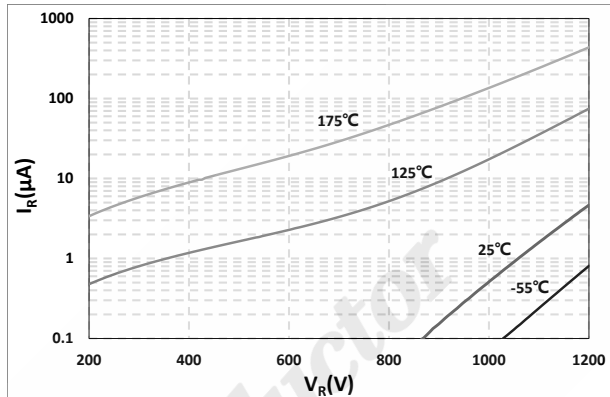


Fig. 2 Reverse Characteristics
 $I_R = f(V_R)$; $T_J = -55^\circ\text{C}, 25^\circ\text{C}, 125^\circ\text{C}, 175^\circ\text{C}$

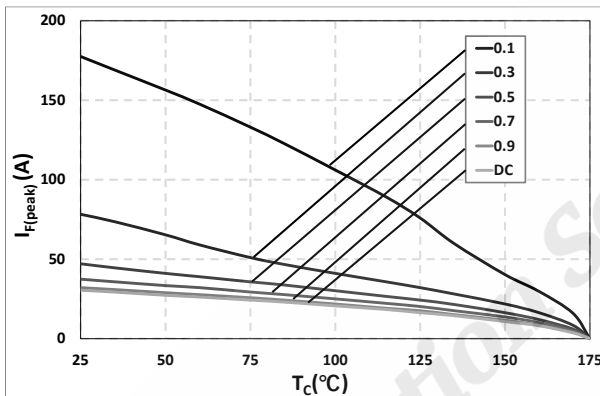


Fig. 3 Current Derating

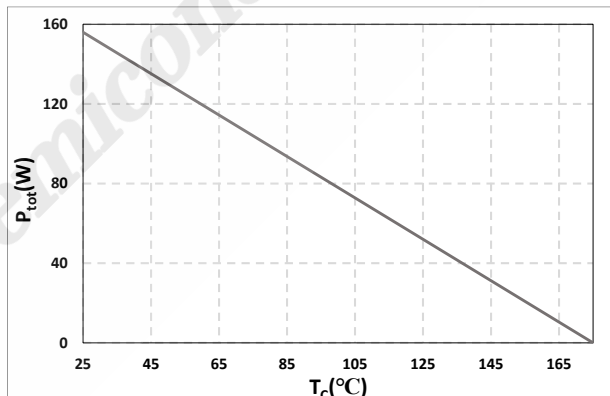


Fig. 4 Typical Power Derating
 $P_{tot} = f(T_C)$

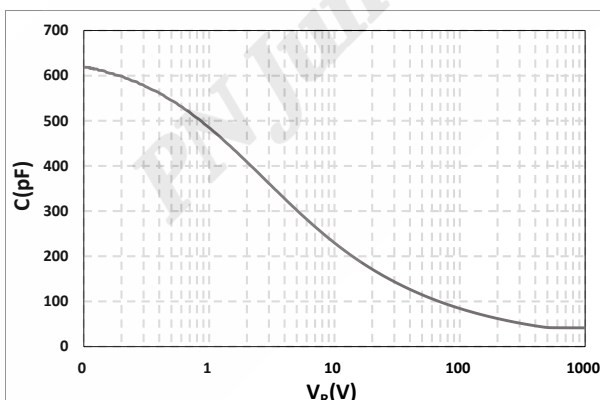


Fig. 5 Typical Total Capacitance
 $C = f(V_R)$

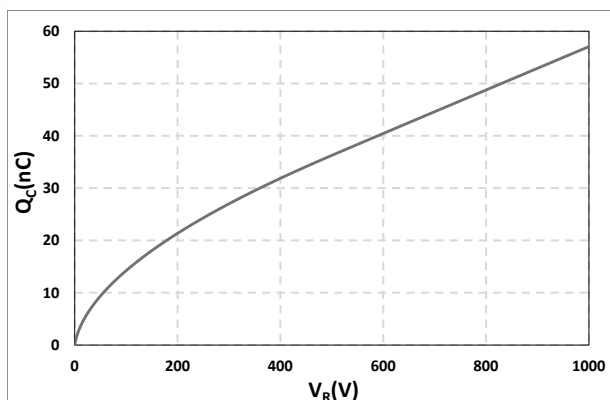


Fig. 6 Typical Total Capacitive Charge
 $Q_C = f(V_R)$

