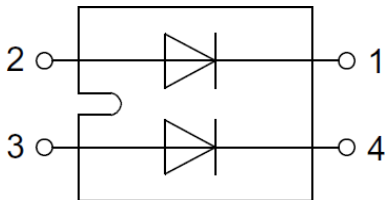


**3rd Generation
1200V/100A SiC
Schottky Barrier Diode**

PLS100J120A



Circuit diagram



Package Type: SOT-227



Description

The PLS100J120A SiC Schottky Barrier Diode (SBD) Module has been developed using Powerex's advanced 3rd generation SiC SBD technology with the highest performance and reliability. It registers higher efficiency, higher operation temperature and lower loss and can be operated at higher frequency than Si-based solutions. As to the Schottky structure, it shows no recovery at turn-off and allows a low leakage current with reverse voltage up to 1200V. It can contribute to system miniaturization and achieve lightweight system design. Using RoHS compliant components, it is qualified for use in industrial application.

Features

- Zero Reverse Recovery Current
- Ceramic Package Provides 2.5kV Isolation
- Positive temperature coefficient
- Temperature-independent performance
- High-speed switching
- Low switching loss
- Low heat dissipation requirements
- RoHS compliant

Applications

- Solar inverter
- Uninterruptible Power Supply (UPS)
- Switched-mode power supplies
- Welding equipment
- High speed rectifier

Product Specifications

Device	V _{RRM}	I _F (110°C)	V _F (25°C)	Q _c	Marking
PLS100J120A	1200V	117A	1.40V	539nC	PLS100J120A



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Maximum Ratings ($T_C = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit	Test conditions
Repetitive peak reverse voltage	V_{RRM}	1200	V	$T_C = 25^\circ\text{C}$
Surge peak reverse voltage	V_{RSM}	1200		$T_C = 25^\circ\text{C}$
DC reverse voltage	V_{DC}	1200		$T_C = 25^\circ\text{C}$
Continuous forward current	I_F	195	A	$T_C = 25^\circ\text{C}$
		117		$T_C = 110^\circ\text{C}$
		100		$T_C = 128^\circ\text{C}$
Surge non-repetitive forward current	I_{FSM}	800	A	$T_C = 25^\circ\text{C}$, $t_p = 10\text{ms}$, half sine pulse
Power dissipation	P_{tot}	535	W	$T_C = 25^\circ\text{C}$
i^2t value	$\int i^2 dt$	3200	A^2s	$T_C = 25^\circ\text{C}$, $t_p = 10\text{ms}$
Virtual junction temperature	T_{VJ}	-40~175	$^\circ\text{C}$	
Operation temperature	T_{OP}	-40~150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-40~150	$^\circ\text{C}$	
Mounting torque	M	1.1	Nm	M4 screw

Thermal Resistance

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
Thermal resistance from junction to case	$R_{th(j-c)}$	/	0.28	/	$^\circ\text{C/W}$	

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Static Electrical Characteristics ($T_j = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Values			Unit	Test conditions
		Min.	Typ.	Max.		
DC blocking voltage	V_{DC}	1200	/	/	V	$I_R = 200 \mu\text{A}$
Forward voltage	V_F	/	1.40	1.60	V	$I_F = 100\text{A}, T_j = 25^\circ\text{C}$
		/	1.90	2.30		$I_F = 100\text{A}, T_j = 175^\circ\text{C}$
Reverse current	I_R	/	20	300	μA	$V_R = 1200\text{V}, T_j = 25^\circ\text{C}$
		/	100	1600		$V_R = 1200\text{V}, T_j = 175^\circ\text{C}$

Dynamic Electrical Characteristics ($T_j = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Values			Unit	Test conditions
		Min.	Typ.	Max.		
Total capacitance	C	/	7821	/	pF	$V_R = 0\text{V}, f = 1\text{MHz}$
		/	503	/		$V_R = 400\text{V}, f = 1\text{MHz}$
		/	375	/		$V_R = 800\text{V}, f = 1\text{MHz}$
Total capacitive charge	Q_C	/	539	/	nC	$V_R = 800\text{V}$
Capacitance stored energy	E_C	/	154	/	μJ	$V_R = 800\text{V}$

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Electrical Characteristic Diagrams

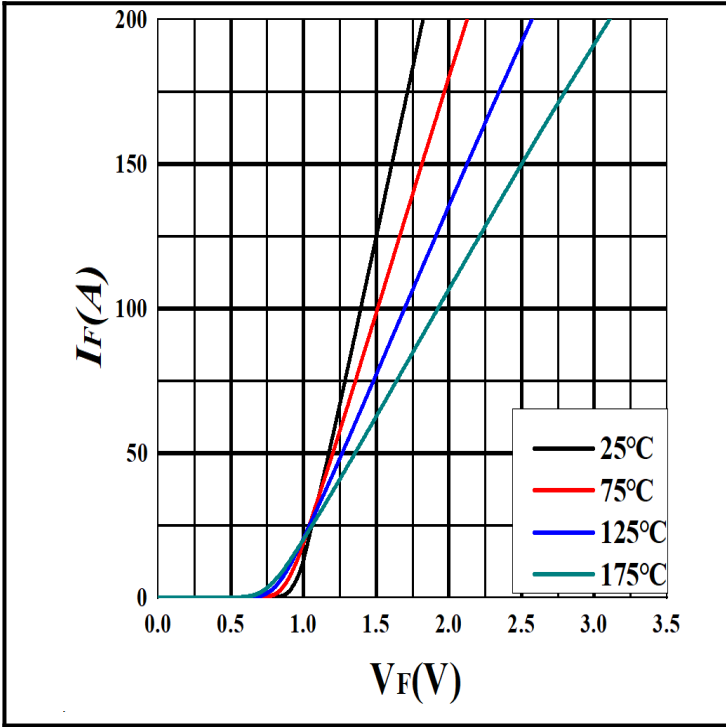


Figure 1. Forward characteristics

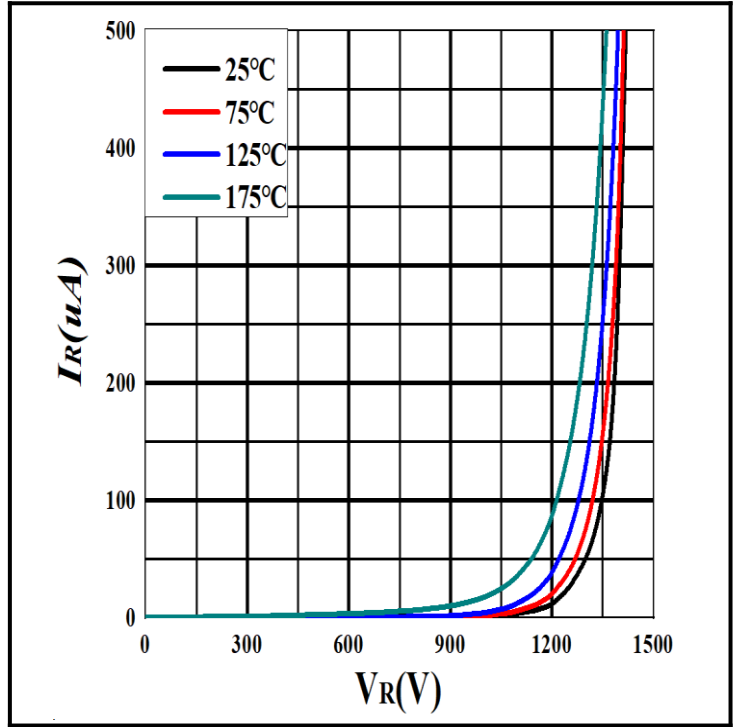


Figure 2. Reverse characteristics

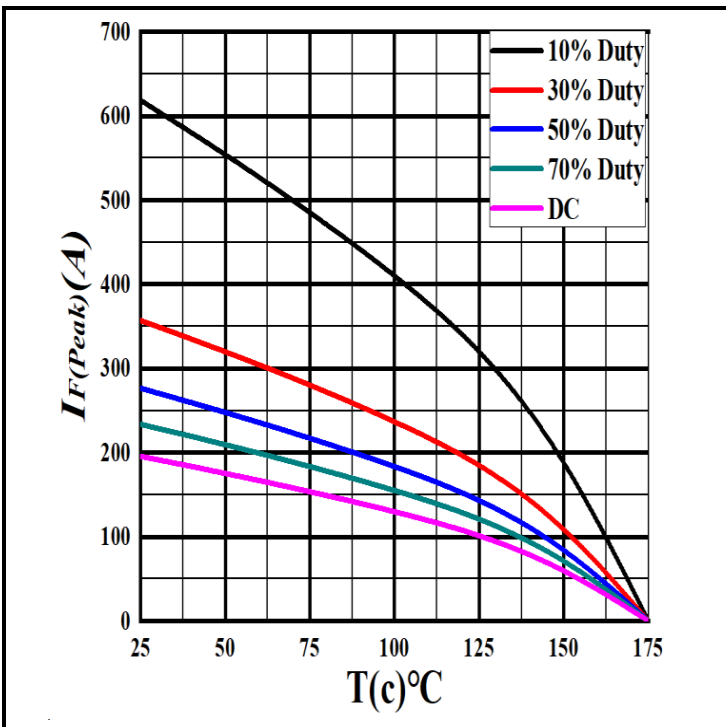


Figure 3. Current derating

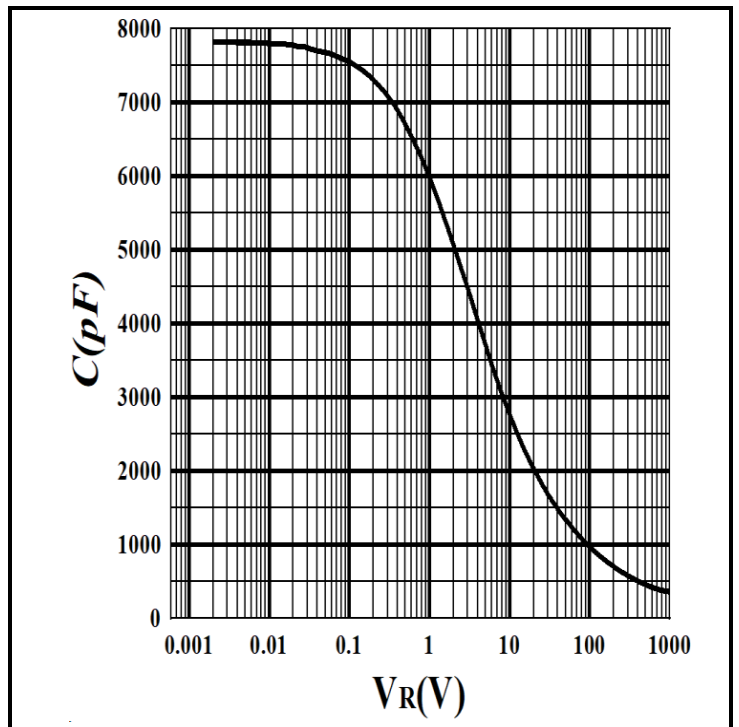


Figure 4. Capacitance vs. reverse voltage

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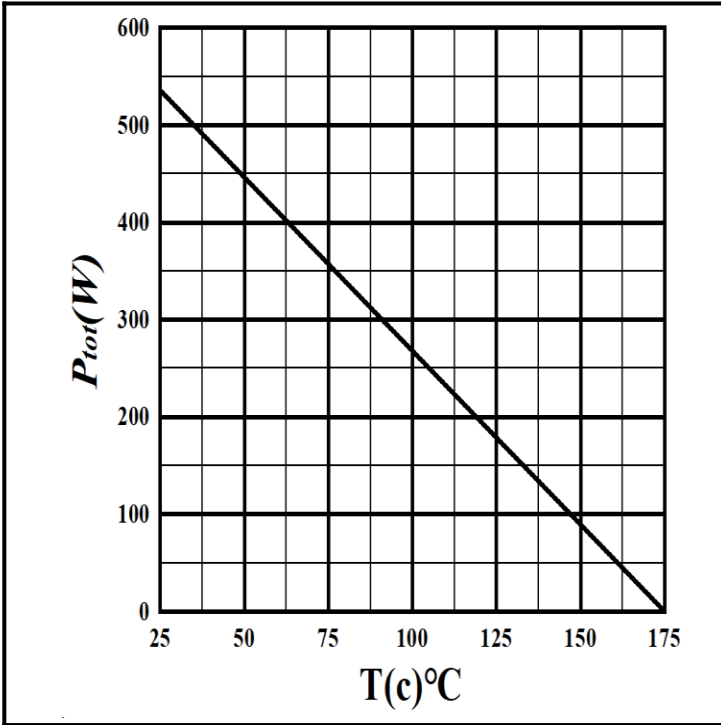


Figure 5. Power derating

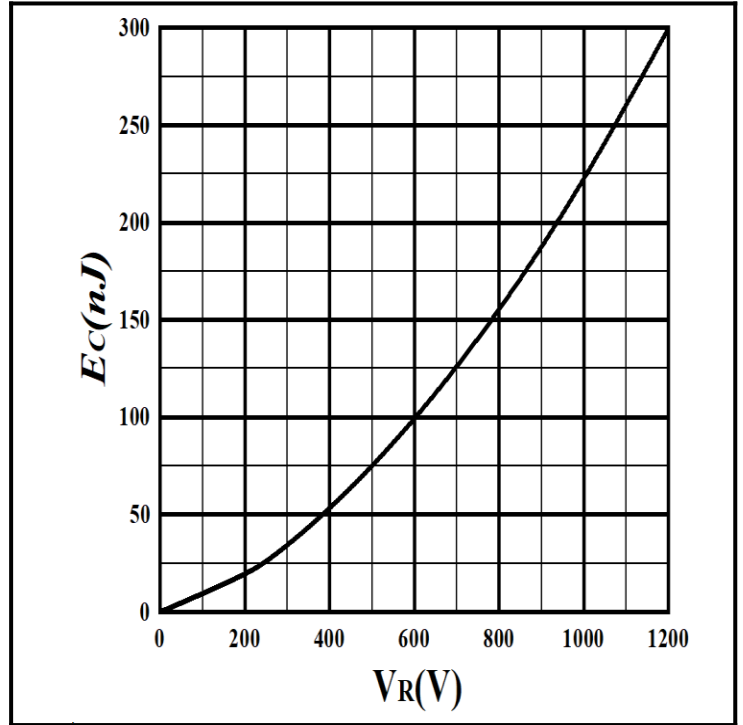


Figure 6. Capacitance stored energy

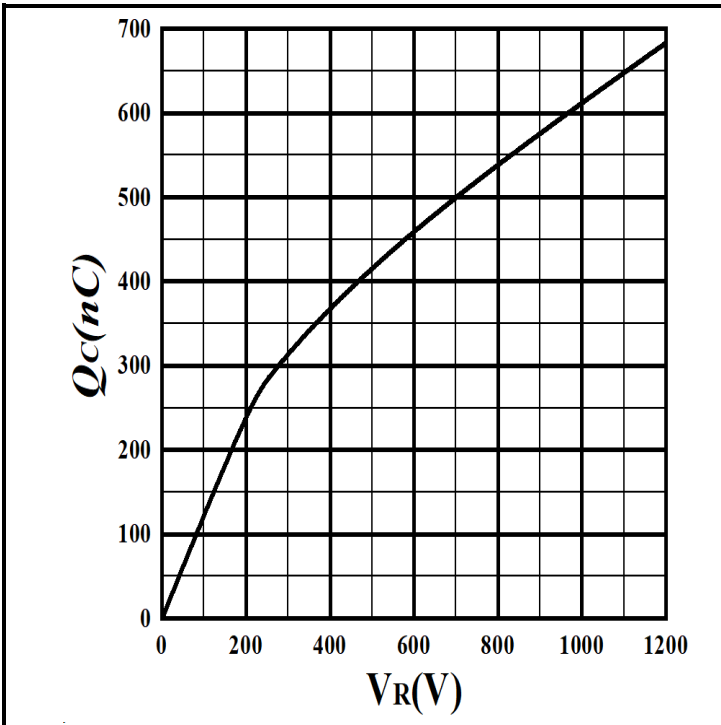
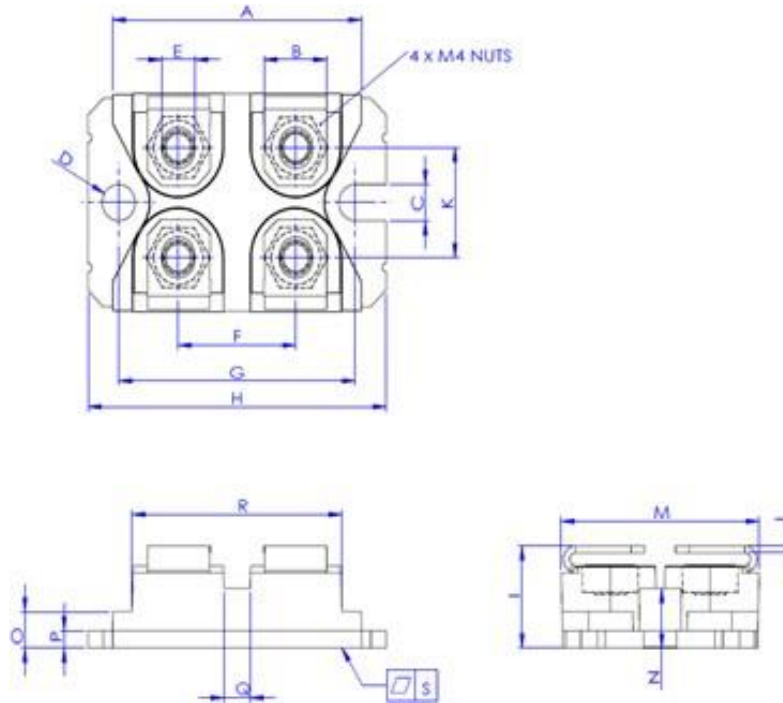


Figure 7. Total capacitance charge vs. reverse voltage

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Package Information



Dimension unit: [mm]			
Symbol	Min	Nom	Max
A	31.50	31.80	32.10
B	7.70	8.00	8.30
C	4.10	4.20	4.30
D	4.10	4.20	4.30
E	4.10	4.24	4.30
F	14.90	15.00	15.15
G	29.80	30.20	30.50
H	37.80	38.00	38.30
I	11.70	11.82	12.20
J	0.75	0.80	0.85
K	12.50	12.75	13.00
M	25.00	25.75	25.50
N	6.70	6.90	7.05
O	4.10	4.20	4.50
P	1.90	2.00	2.10
Q	3.20	3.36	3.60
R	26.60	26.78	27.00
S	-0.03	0.05	0.10



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