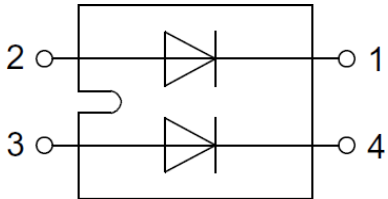


**3<sup>rd</sup> Generation  
650V/100A SiC  
Schottky Barrier Diode****PLS100J065A****Circuit diagram****Package Type: SOT-227****Description**

The PLS100J065A 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 650V. 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
PLS100J065A	650V	103A	1.45V	275nC	PLS100J065A



**PLS100J065A**  
**3<sup>rd</sup> Generation 650V/100A SiC Schottky Barrier Diode**

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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	$V_{RRM}$	650	V	$T_C = 25^\circ\text{C}$
Surge peak reverse voltage	$V_{RSM}$	650		$T_C = 25^\circ\text{C}$
DC reverse voltage	$V_{DC}$	650		$T_C = 25^\circ\text{C}$
Continuous forward current	$I_F$	164	A	$T_C = 25^\circ\text{C}$
		103		$T_C = 110^\circ\text{C}$
		100		$T_C = 114^\circ\text{C}$
Surge non-repetitive forward current	$I_{FSM}$	700	A	$T_C = 25^\circ\text{C}$ , $t_p = 10\text{ms}$ , half sine pulse
Power dissipation	$P_{tot}$	394	W	$T_C = 25^\circ\text{C}$
$i^2t$ value	$\int i^2 dt$	2450	$\text{A}^2\text{s}$	$T_C = 25^\circ\text{C}$ , $t_p = 10\text{ms}$
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	$R_{th(j-c)}$	/	0.38	/	$^\circ\text{C/W}$	

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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	$V_{DC}$	650	/	/	V	$I_R = 200 \mu\text{A}$
Forward voltage	$V_F$	/	1.45	1.70	V	$I_F = 100\text{A}, T_j = 25^\circ\text{C}$
		/	1.70	2.30		$I_F = 100\text{A}, T_j = 175^\circ\text{C}$
Reverse current	$I_R$	/	10	200	$\mu\text{A}$	$V_R = 650\text{V}, T_j = 25^\circ\text{C}$
		/	60	1200		$V_R = 650\text{V}, T_j = 175^\circ\text{C}$

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

Parameter	Symbol	Values			Unit	Test conditions
		Min.	Typ.	Max.		
Total capacitance	C	/	5089	/	pF	$V_R = 0\text{V}, f = 1\text{MHz}$
		/	520	/		$V_R = 200\text{V}, f = 1\text{MHz}$
		/	443	/		$V_R = 400\text{V}, f = 1\text{MHz}$
Total capacitive charge	$Q_C$	/	275	/	nC	$V_R = 400\text{V}$
Capacitance stored energy	$E_C$	/	41	/	$\mu\text{J}$	$V_R = 400\text{V}$

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## Electrical Characteristic Diagrams

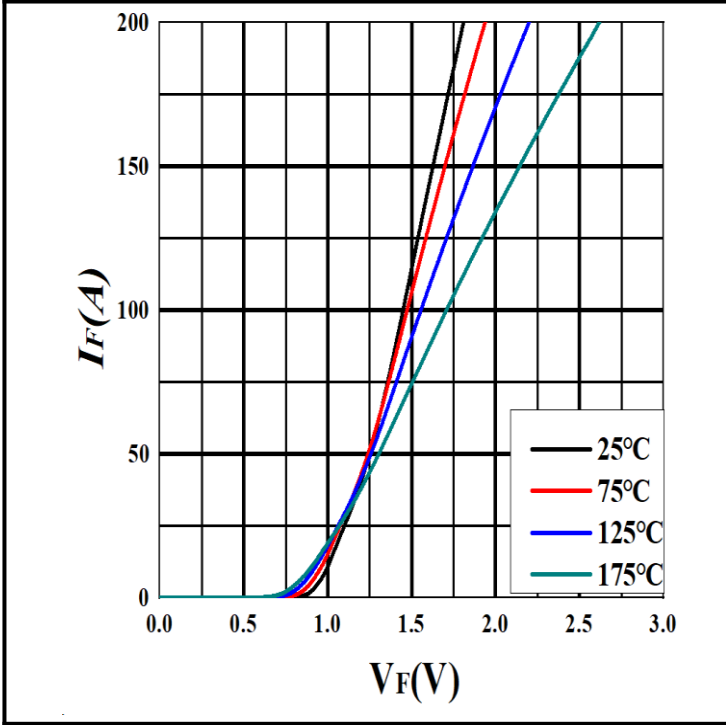


Figure 1. Forward characteristics

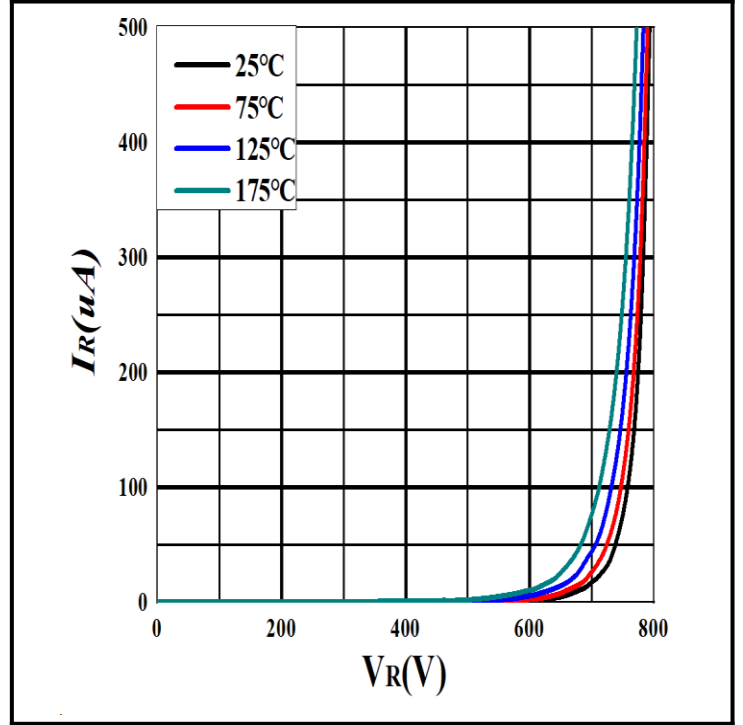


Figure 2. Reverse characteristics

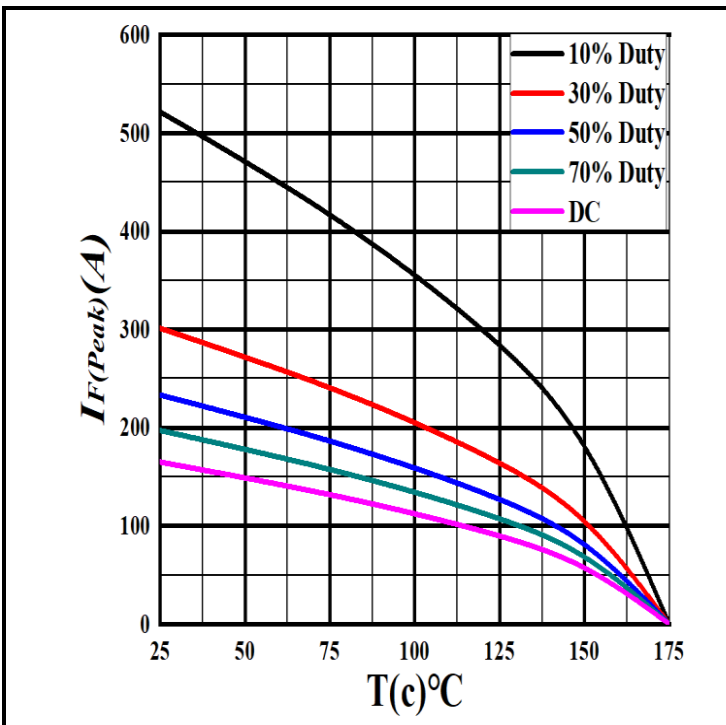


Figure 3. Current derating

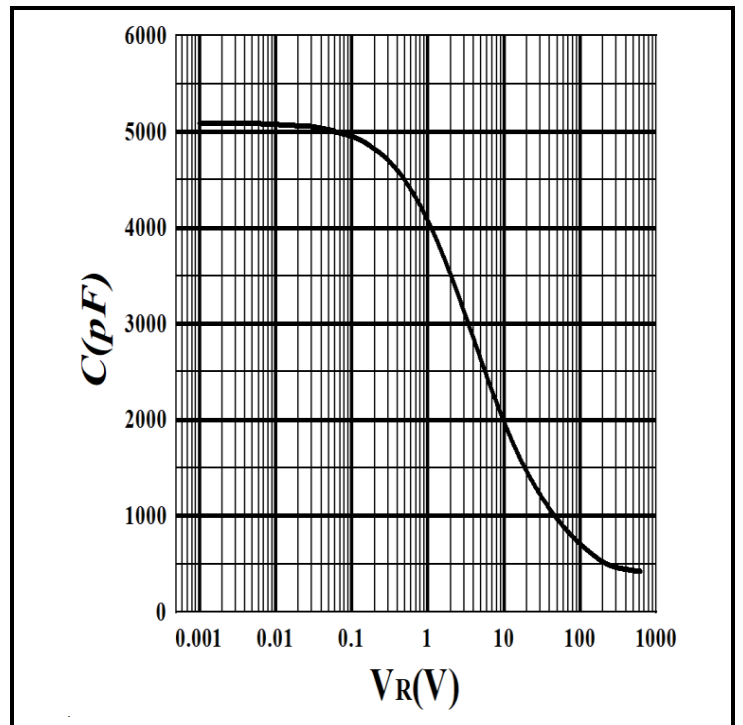


Figure 4. Capacitance vs. reverse voltage

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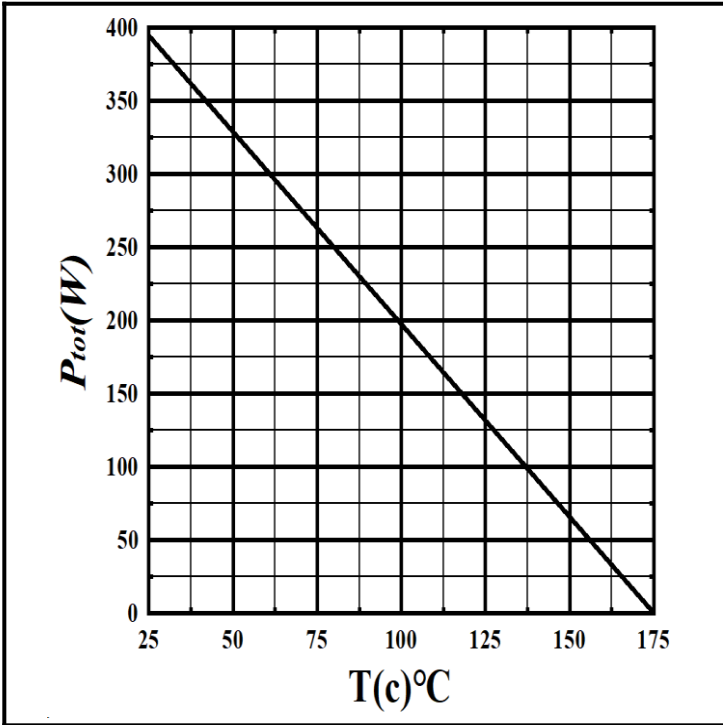


Figure 5. Power derating

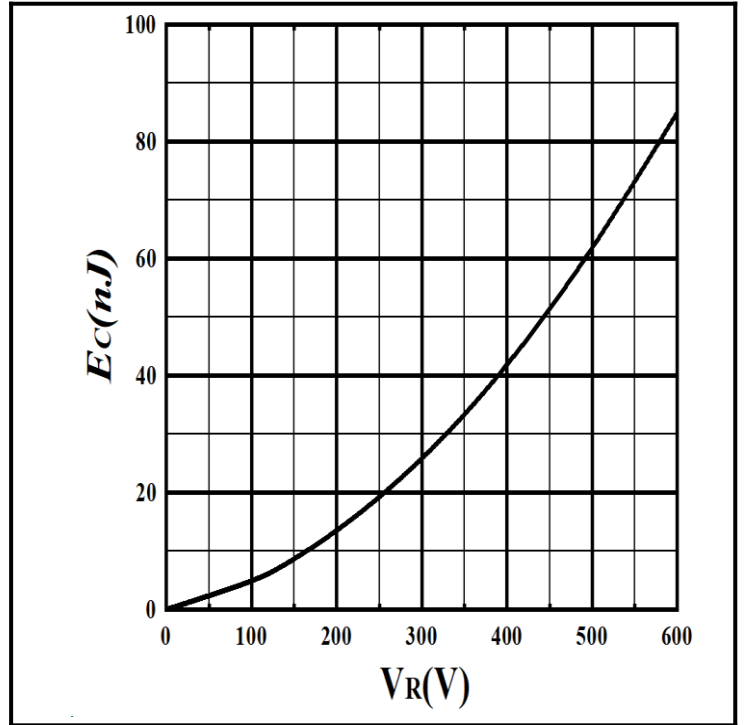


Figure 6. Capacitance stored energy

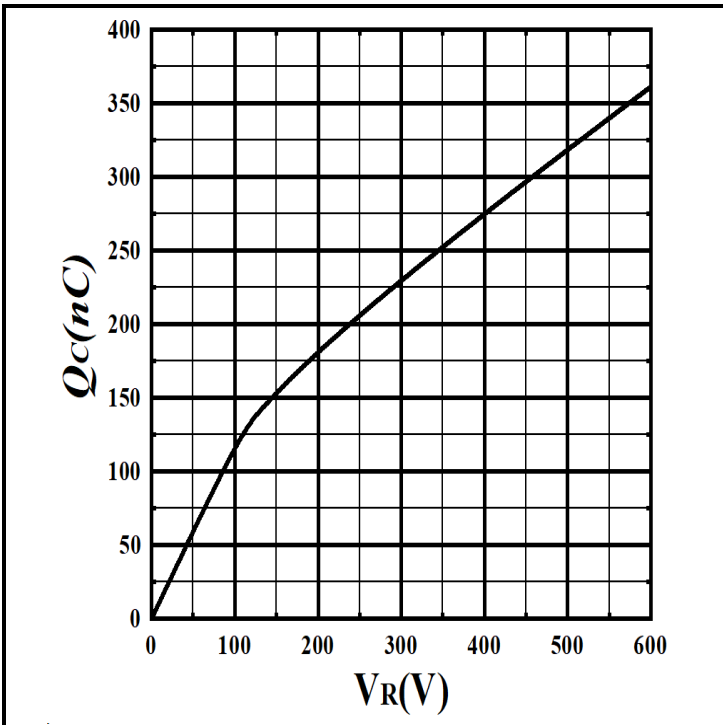
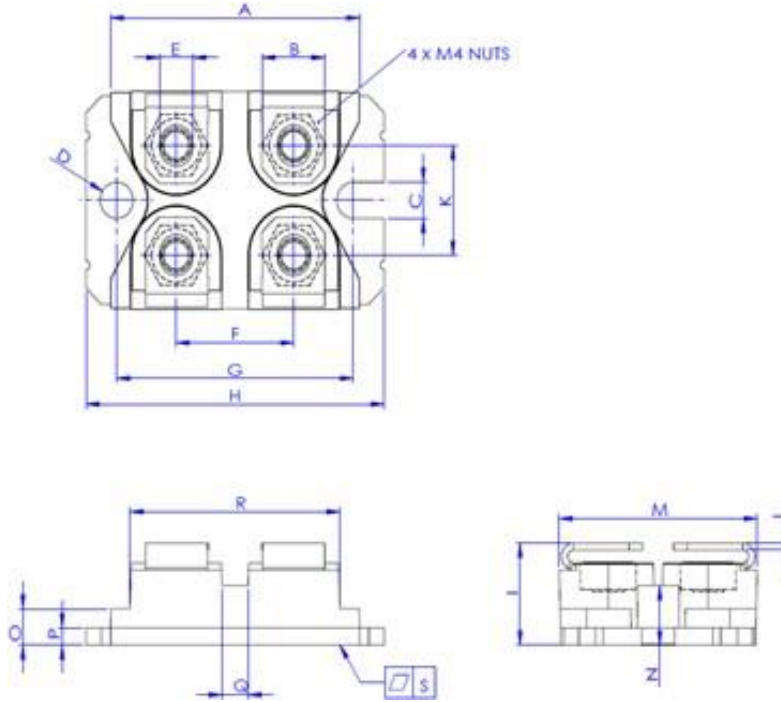


Figure 7. Total capacitance charge vs. reverse voltage

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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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Powerex, Inc., 173 Pavilion Lane, Youngwood, Pennsylvania 15697 (724) 925-7272 [www.pwrx.com](http://www.pwrx.com)

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