

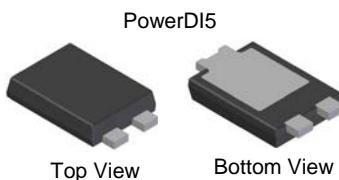
Product Summary

V_{RRM} (V)	I_o (A)	V_F max (V) @ +25°C	I_R max (mA) @ +25°C
100	12	0.78	0.25

Description and Applications

This super barrier rectifier (SBR[®]) diode is designed to meet the stringent requirements of automotive applications. It is ideally suited to use as:

- Polarity Protection Diode
- Recirculating Diode
- Switching Diode



LEFT PIN →
RIGHT PIN →
BOTTOMSIDE
HEAT SINK

Note: Pins Left & Right must
be electrically connected
at the printed circuit

Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
SBR12U100P5Q-13	Automotive	PowerDI5	5000/Tape & Reel
SBR12U100P5Q-13D (Note 6)	Automotive	PowerDI5	5000/Tape & Reel

Notes:

1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
6. "D" suffix designates for the 12mm Tape and Reel option.

Marking Information



S12U100 = Product Type Marking Code

DII = Manufacturers' Code Marking

YYWW = Date Code Marking

YY = Last Two Digits of Year (ex: 17 for 2017)

WW = Week Code (01 to 53)

K = Factory Designator

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}		
Working Peak Reverse Voltage	V_{RWM}	100	V
DC Blocking Voltage	V_{RM}		
Average Rectified Output Current	I_O	12	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	250	A
Non-Repetitive Avalanche Energy ($T_J = +25^\circ\text{C}$, $I_{AS} = 12\text{A}$, $L = 10\text{mH}$)	E_{AS}	592	mJ
Repetitive Peak Avalanche Energy (1μs, +25°C)	P_{ARM}	12,000	W

Characteristic	Symbol	Ratings	Unit
Human Body Mode ESD Protection	ESD HBM	4	kV
Machine Model ESD Protection	ESD MM	400	V
Charged Device Model	ESD CDM	1	kV

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 7)	$R_{\theta JA}$	27	°C/W
Typical Thermal Resistance Junction to Ambient (Note 8)	$R_{\theta JA}$	80	°C/W
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	3	°C/W
Operating and Storage Temperature Range	T_J, STG	-55 to +150	°C

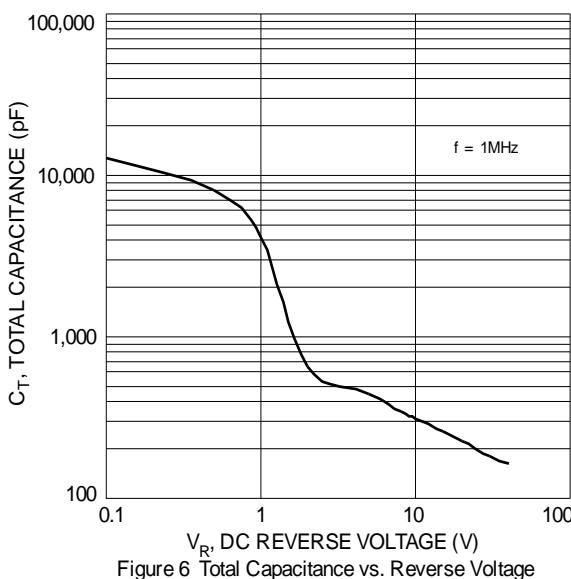
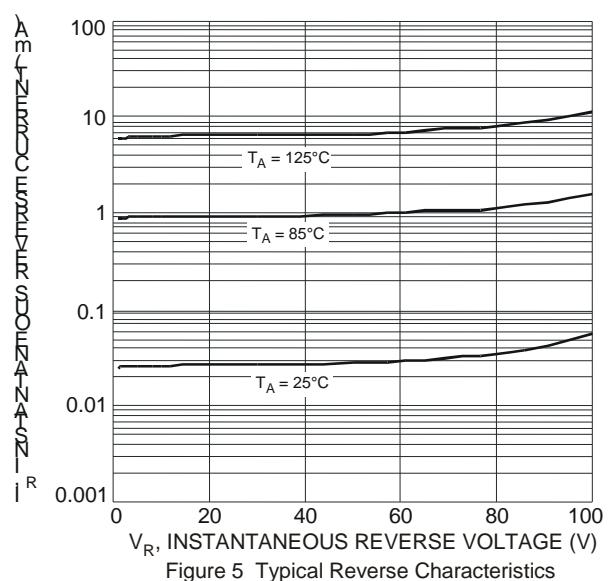
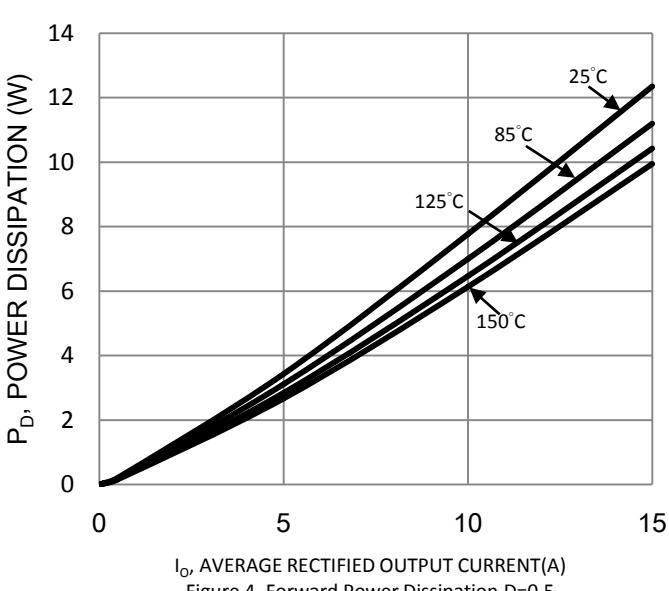
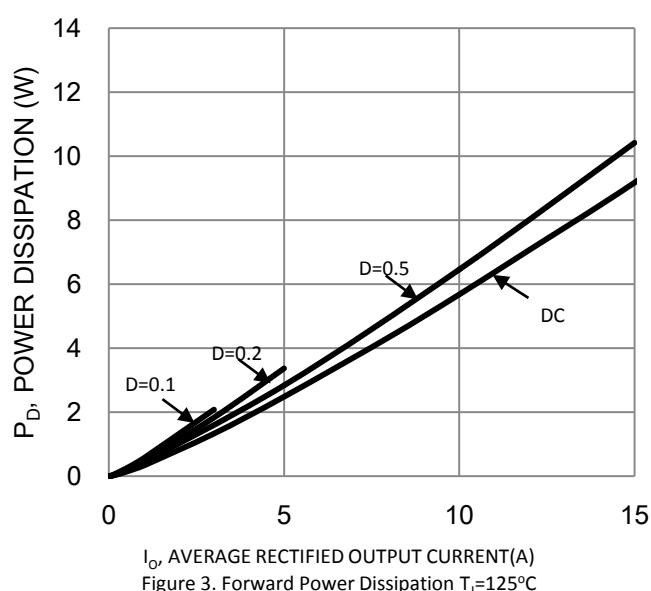
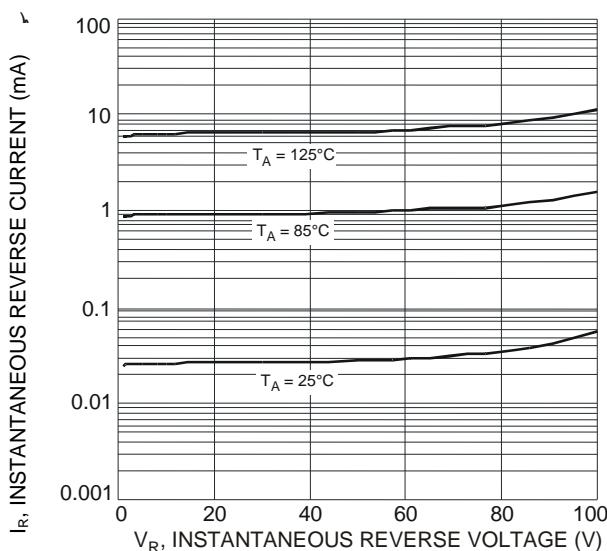
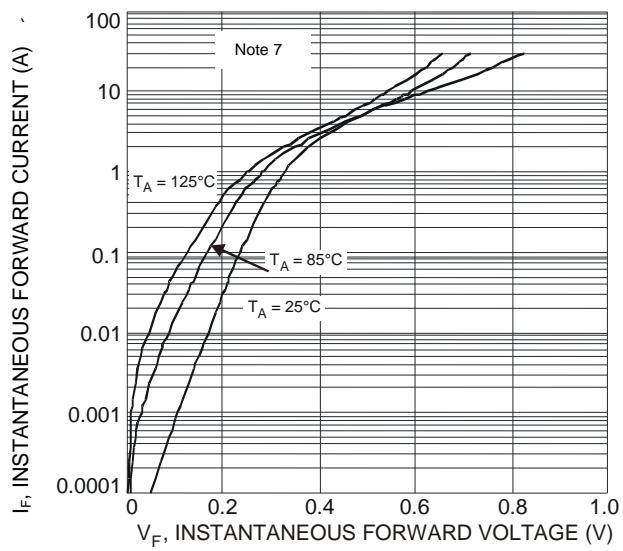
Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

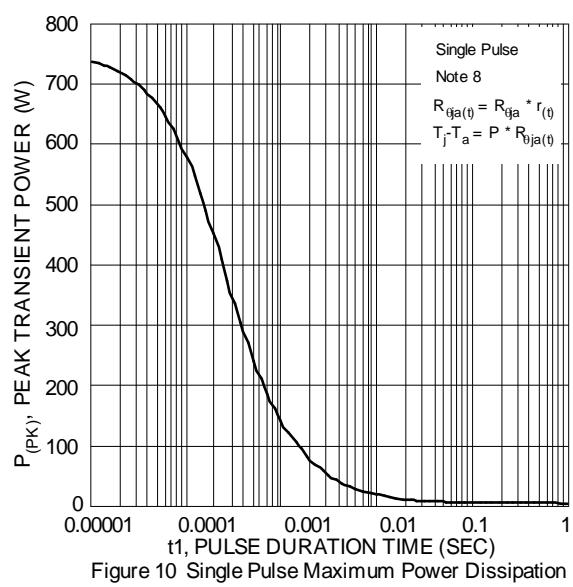
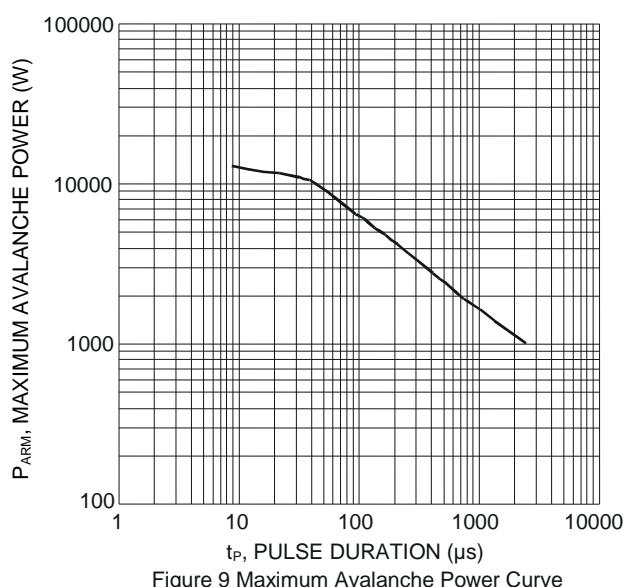
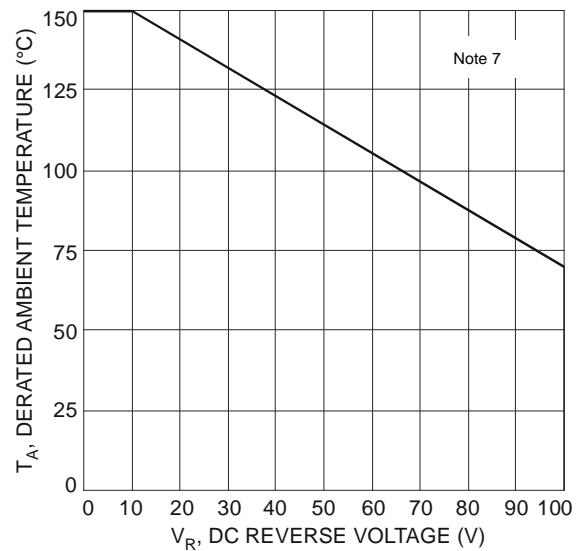
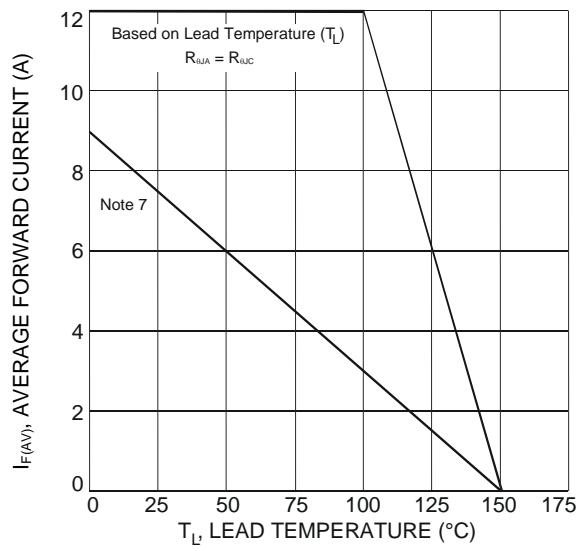
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop (Note 9)	V_F	—	0.49	—	V	$I_F = 5\text{A}$, $T_J = +25^\circ\text{C}$
		—	0.67	0.78		$I_F = 12\text{A}$, $T_J = +25^\circ\text{C}$
		—	0.58	—		$I_F = 12\text{A}$, $T_J = +125^\circ\text{C}$
Leakage Current (Note 9)	I_R	—	0.06	0.25	mA	$V_R = 100\text{V}$, $T_J = +25^\circ\text{C}$
		—	11	40		$V_R = 100\text{V}$, $T_J = +125^\circ\text{C}$
Switching Speed t_{RR}	t_{RR}	—	24	—	ns	$I_F=0.5\text{A}$, $I_R=1\text{A}$, $I_{RR}=0.25\text{A}$ (RG1)

Notes: 7. Polymide, 2oz. Copper 16x minimum recommended pad layout per <http://www.diodes.com/package-outlines.html> for the latest version.

8. MRP FR-4 PC board, 2oz.

9. Short duration pulse test used to minimize self-heating effect.





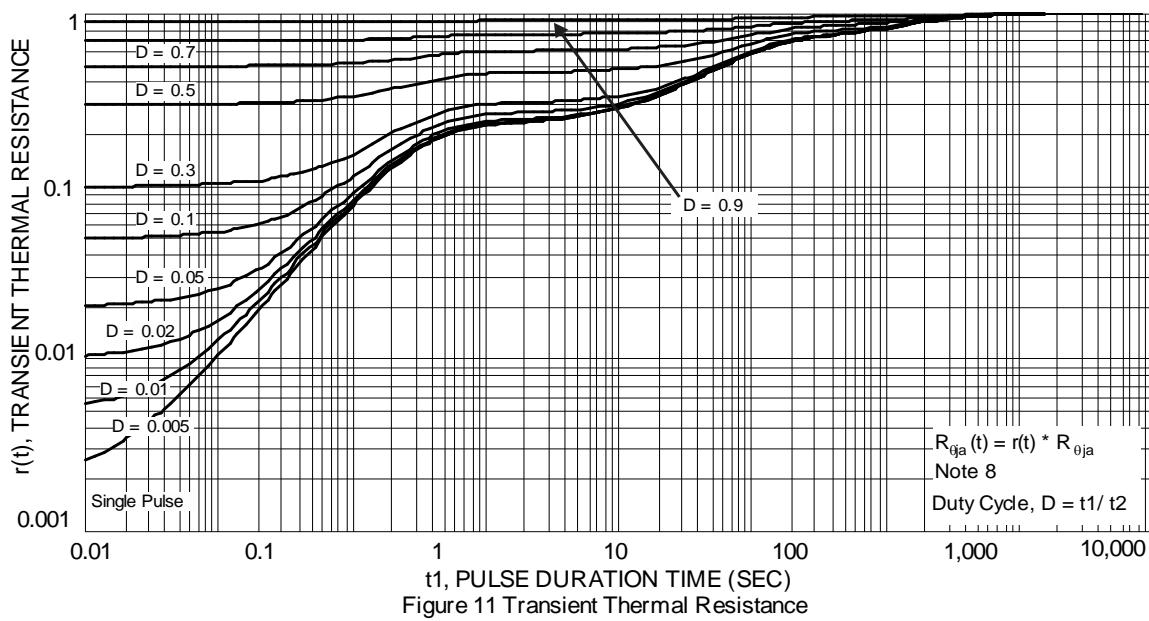
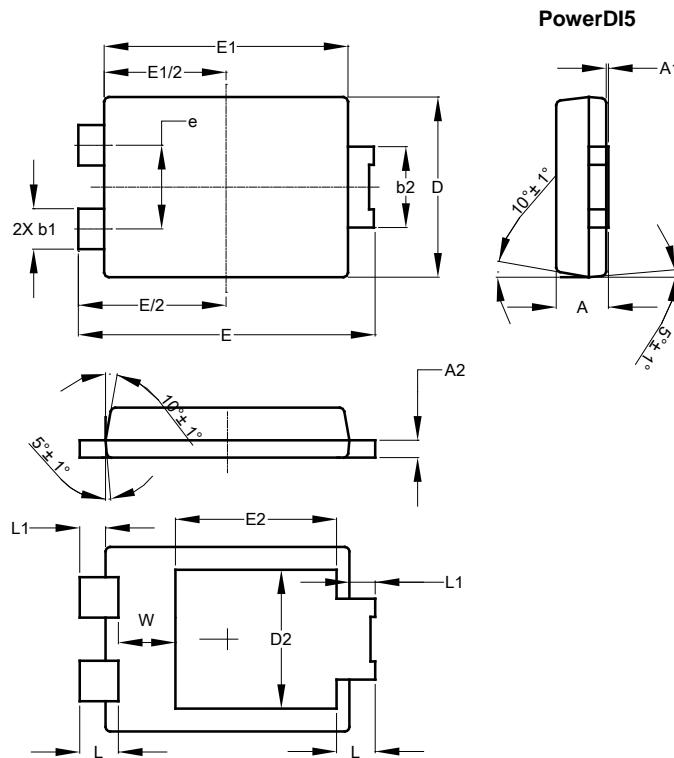


Figure 11 Transient Thermal Resistance

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.



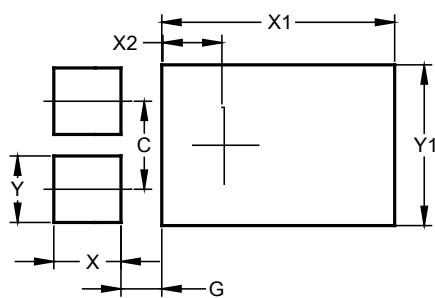
PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255

All Dimensions in mm

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

PowerDI5



Dimensions	Value (in mm)
C	1.840
G	0.852
X	1.400
X1	4.860
X2	1.310
Y	1.390
Y1	3.360

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