

**Product Summary (@ TA = +25°C)**

VRRM (V)	Io (A)	VF(MAX) (V)	IR(MAX) (μA)
100	8	0.88	2

**Description and Applications**

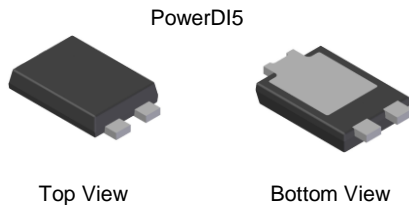
This Super Barrier Rectifier (SBR) diode has been designed to meet the stringent requirements of Automotive Application. It is ideally suited to such as:

- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode
- Blocking Diode
- DC-DC Converter
- AC-DC Converter

This device is suitable to protect sensitive automotive circuits against surges defined in ISO7637-2.

- Polarity (ISO7637-2 for 24V System)

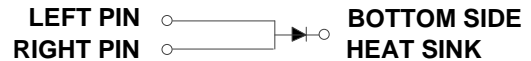
Pulse 1: US = -600V  
Pulse 2a: US = +112V  
Pulse 3a: US = -300V  
Pulse 3b: US = +300V


**Features and Benefits**

- Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier SBR® Technology
- Soft, Fast Switching Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The SBR8M100P5Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**  
<https://www.diodes.com/quality/product-definitions/>

**Mechanical Data**

- Case: PowerDI®5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Terminal Connections: See Diagram Below
- Weight: 0.093 grams (Approximate)

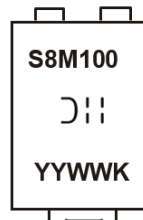


**Note: Pins Left & Right must be electrically connected at the printed circuit board.**

**Ordering Information (Note 4)**

Part Number	Compliance	Case	Packaging
SBR8M100P5Q-13	Automotive	PowerDI5	5000/Tape & Reel
SBR8M100P5Q-13D (Note 5)	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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
  5. Suffix -13D is designated for 12mm tape width.

**Marking Information**


S8M100 = Product Type Marking Code  
 ⌋⌋⌋ = Manufacturers' Code Marking  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 21 for 2021)  
 WW = Week Code (01 to 53)  
 K = Factory Designator

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub>	100	V
Average Rectified Output Current	I <sub>O</sub>	8	A
Non-Repetitive Peak Forward Surge Current 8.3mS	I <sub>FSM</sub>	130	A
Non-Repetitive Avalanche Energy at I <sub>AS</sub> = 5.0A, L = 50mH	E <sub>AS</sub>	400	mJ
Non-Repetitive Avalanche Energy at I <sub>AS</sub> = 20.0A, L = 1mH	E <sub>AS</sub>	150	mJ
Electrostatic Discharge	HBM	4000	V
Electrostatic Discharge	MM	400	V
Electrostatic Discharge	CDM	1	kV

**Thermal Characteristics** (Note 9)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	25	°C/W
Typical Thermal Resistance Junction to Ambient (Note 7)	R <sub>θJA</sub>	90	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +175	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V <sub>F</sub>	—	0.72	—	V	I <sub>F</sub> = 4A, T <sub>J</sub> = +25°C
		—	0.78	0.88		I <sub>F</sub> = 8A, T <sub>J</sub> = +25°C
		—	0.59	—		I <sub>F</sub> = 4A, T <sub>J</sub> = +125°C
		—	0.65	0.74		I <sub>F</sub> = 8A, T <sub>J</sub> = +125°C
Leakage Current (Note 8)	I <sub>R</sub>	—	0.08	2.0	μA	V <sub>R</sub> = 100V, T <sub>J</sub> = +25°C
		—	15	100		V <sub>R</sub> = 100V, T <sub>J</sub> = +125°C
Junction Capacitance	C <sub>J</sub>	—	245	—	pF	V <sub>R</sub> = 4V, T <sub>J</sub> = +25°C
Switching Speed t <sub>RR</sub>	t <sub>RR</sub>	—	16	—	ns	I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1A, I <sub>RR</sub> = 0.25A (RG1)

- Notes:
6. 2inch sq. Al board.
  7. MRP FR-4 PC board, 2oz.
  8. Short duration pulse test used to minimize self-heating effect.
  9. The heat generated must be less than thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .

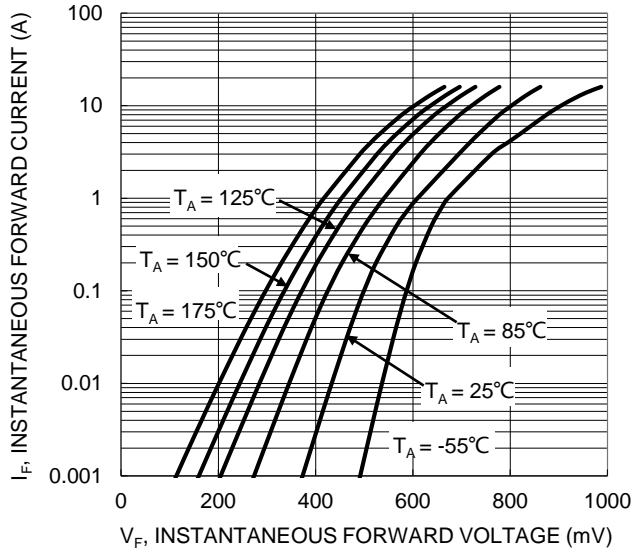


Figure 1. Typical Forward Characteristics

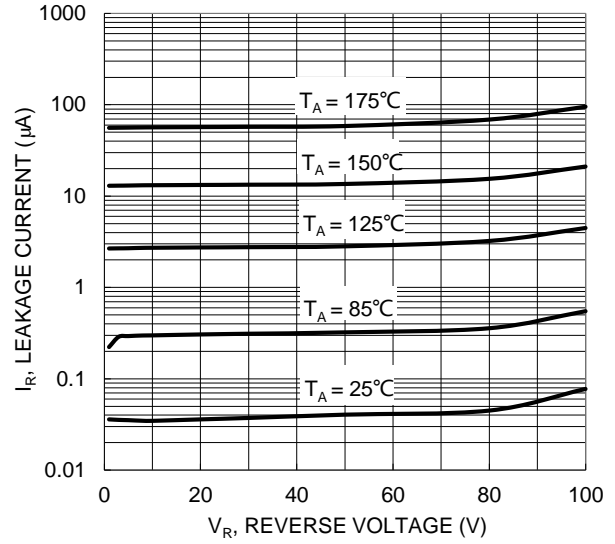


Figure 2. Typical Reverse Characteristics

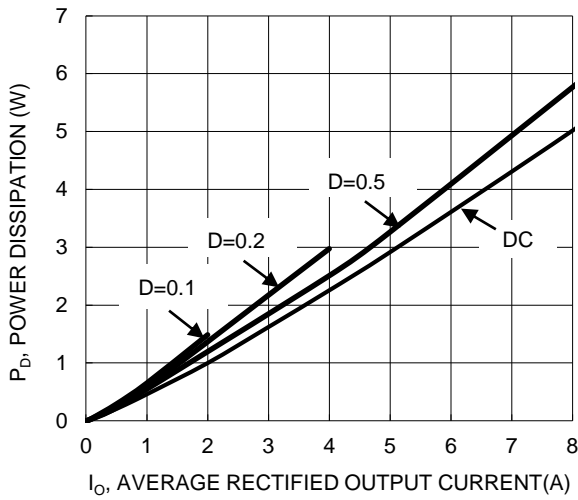


Figure 3. Forward Power Dissipation  $T_J=125^\circ\text{C}$

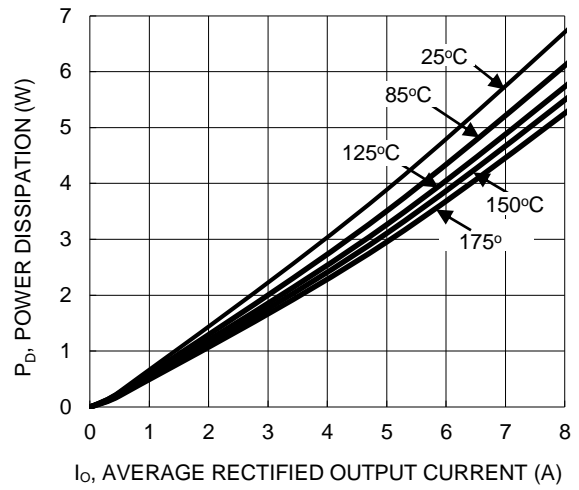


Figure 4. Forward Power Dissipation  $D=0.5$

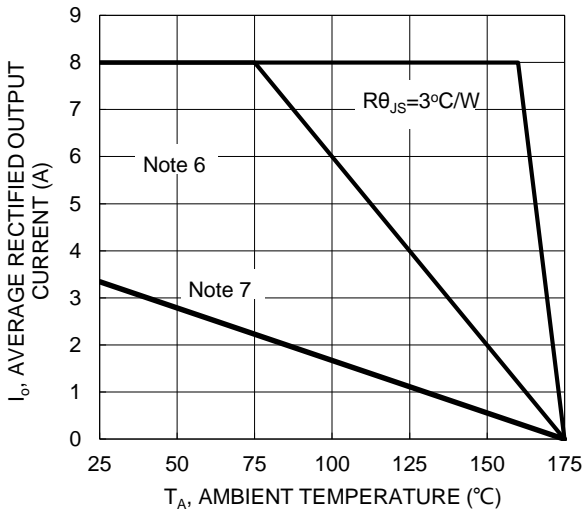


Figure 5. Forward Current Derating Curve

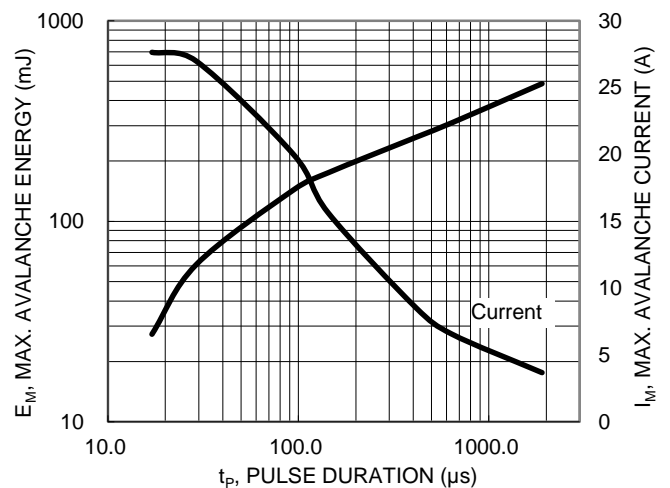


Figure 6. Typical Single Pulse Max. Avalanche Energy and Current

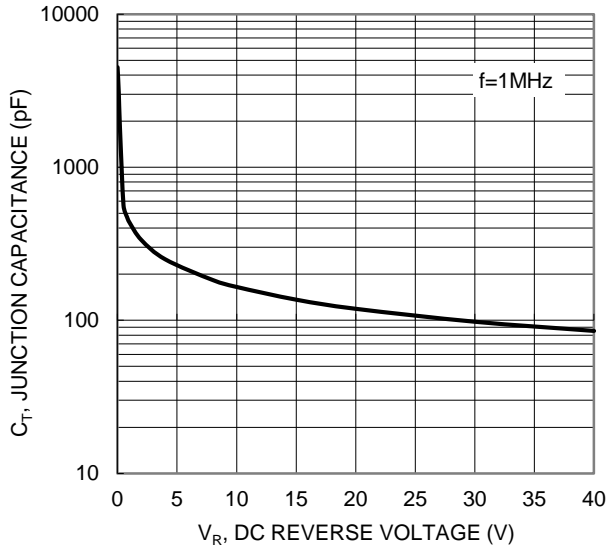


Figure 7. Typical Junction Capacitance

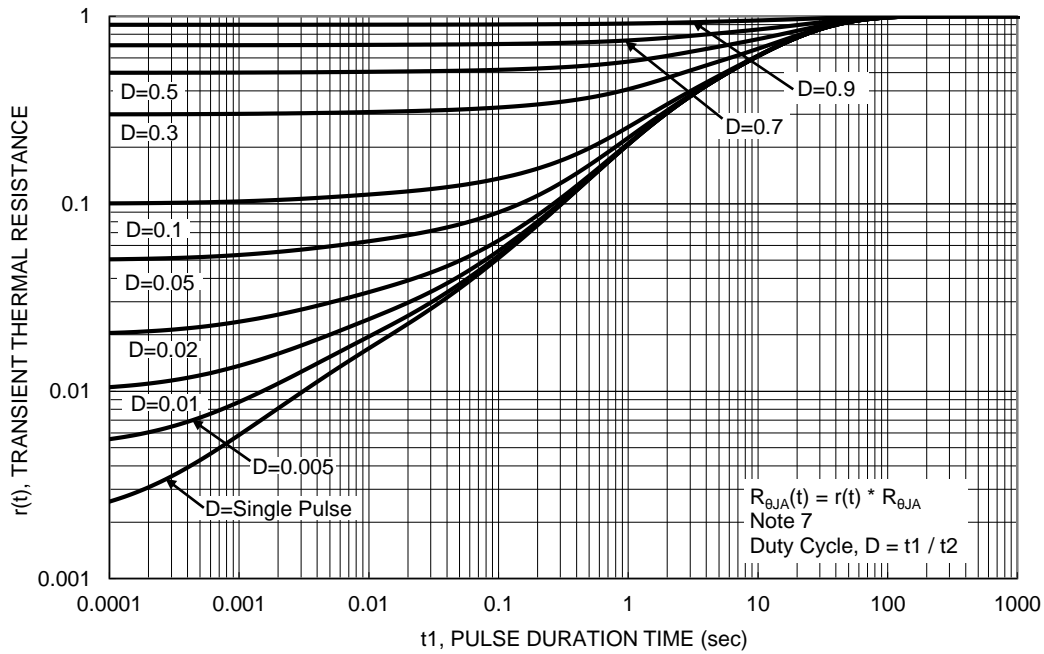
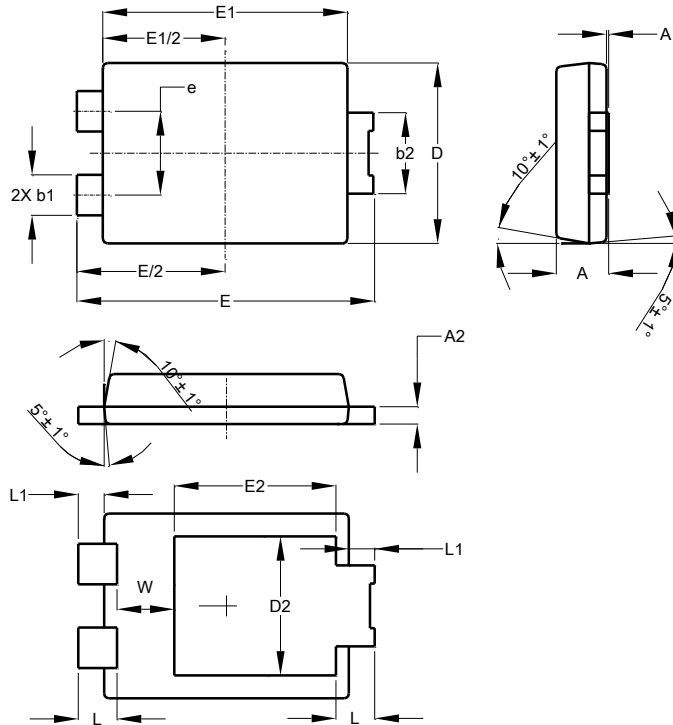


Figure 8. Transient Thermal Resistance MRP (Note 7)

## Package Outline Dimensions

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

PowerDI5

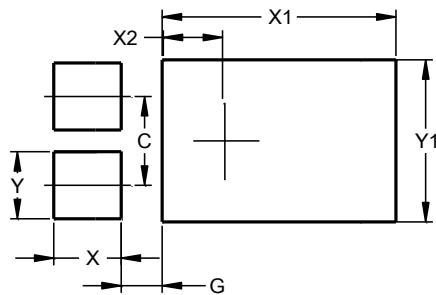


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

## 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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