Product Summary (@ T_A = +25°C)

V_{RRM} (V)	I_O (A)	$V_{F(MAX)}$ (V)	$I_{R(MAX)}$ (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:

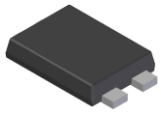
- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode
- Blocking Diode
- DC-DC Converter
- AC-DC Converter

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

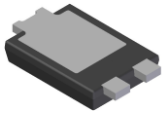
- Polarity (ISO7637-2 for 24V System)

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

PowerDI5



Top View



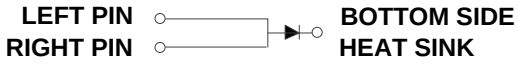
Bottom View

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_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM}	100	V
Average Rectified Output Current	I_O	8	A
Non-Repetitive Peak Forward Surge Current 8.3mS	I_{FSM}	130	A
Non-Repetitive Avalanche Energy at I_{AS} = 5.0A, L = 50mH	E_{AS}	400	mJ
Non-Repetitive Avalanche Energy at I_{AS} = 20.0A, L = 1mH	E_{AS}	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)	$R_{\theta JA}$	25	°C/W
Typical Thermal Resistance Junction to Ambient (Note 7)	$R_{\theta JA}$	90	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +175	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V_F	— — — —	0.72 0.78 0.59 0.65	— 0.88 — 0.74	V	I_F = 4A, T_J = +25°C I_F = 8A, T_J = +25°C I_F = 4A, T_J = +125°C I_F = 8A, T_J = +125°C
Leakage Current (Note 8)	I_R	— —	0.08 15	2.0 100	µA	V_R = 100V, T_J = +25°C V_R = 100V, T_J = +125°C
Junction Capacitance	C_J	—	245	—	pF	V_R = 4V, T_J = +25°C
Switching Speed t_{RR}	t_{RR}	—	16	—	ns	I_F = 0.5A, I_R = 1A, I_{RR} = 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: $dP_D/dT_J < 1/R_{\theta JA}$.

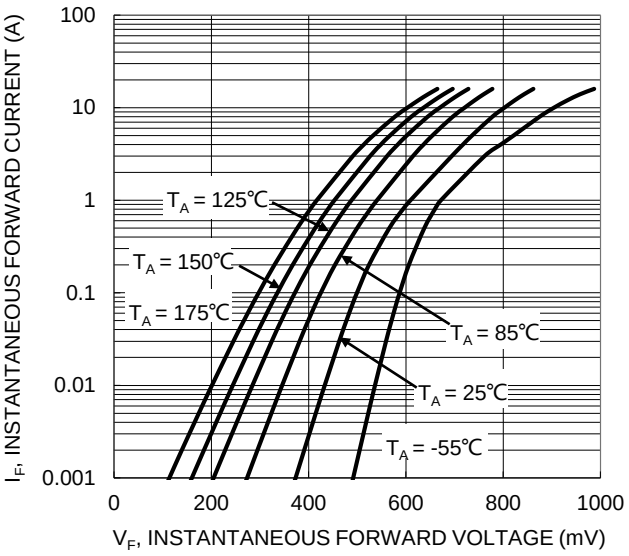


Figure 1. Typical Forward Characteristics

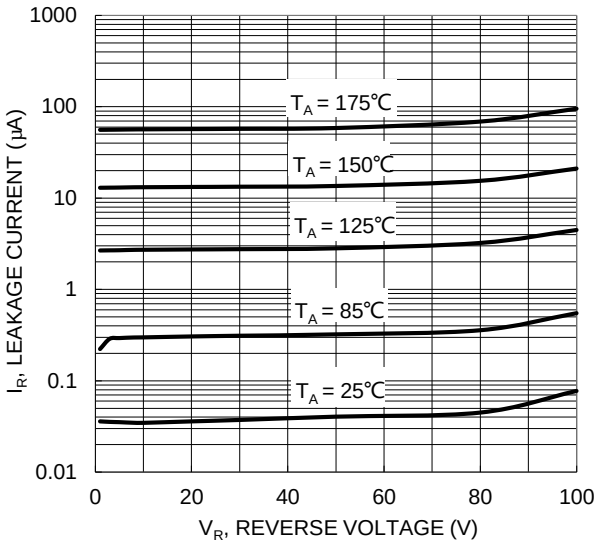


Figure 2. Typical Reverse Characteristics

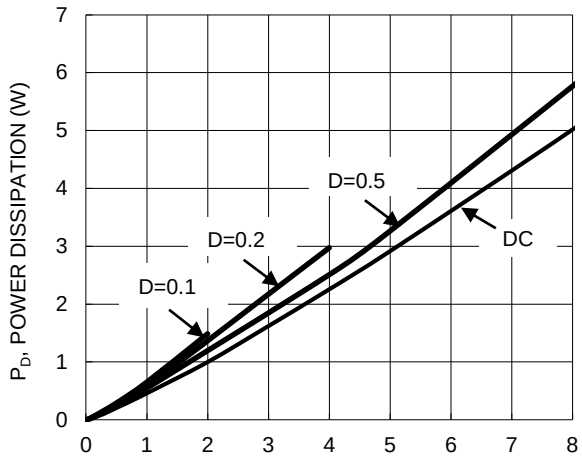


Figure 3. Forward Power Dissipation T_J=125ºC

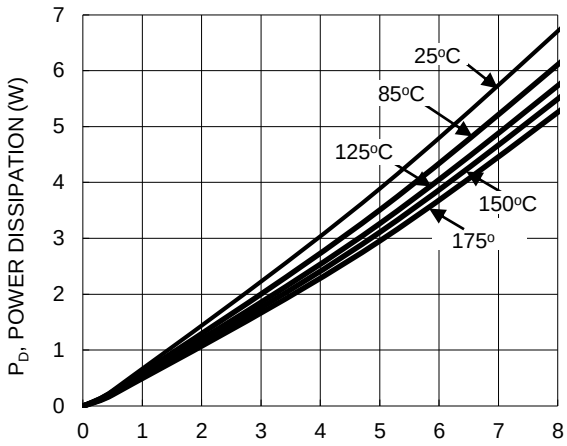


Figure 4. Forward Power Dissipation D=0.5

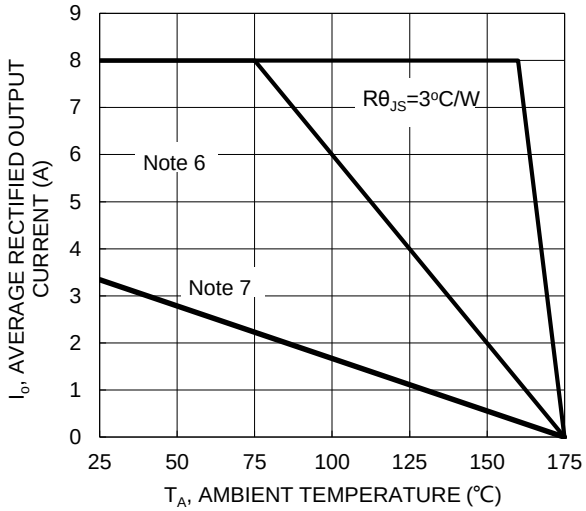


Figure 5. Forward Current Derating Curve

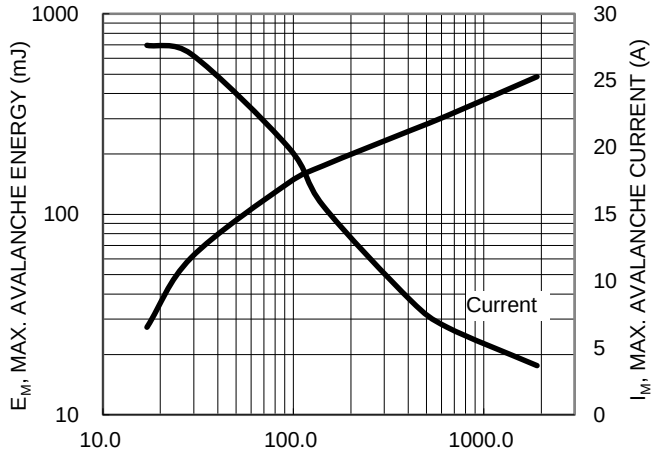


Figure 6. Typical Single Pulse Max. Avalanche Energy and Current

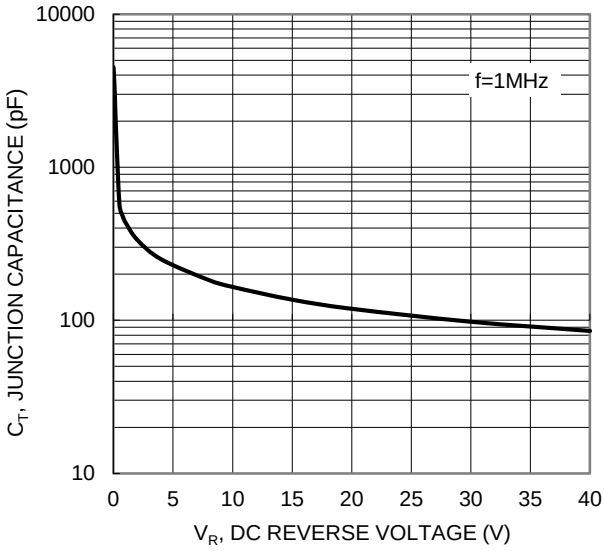


Figure 7. Typical Junction Capacitance

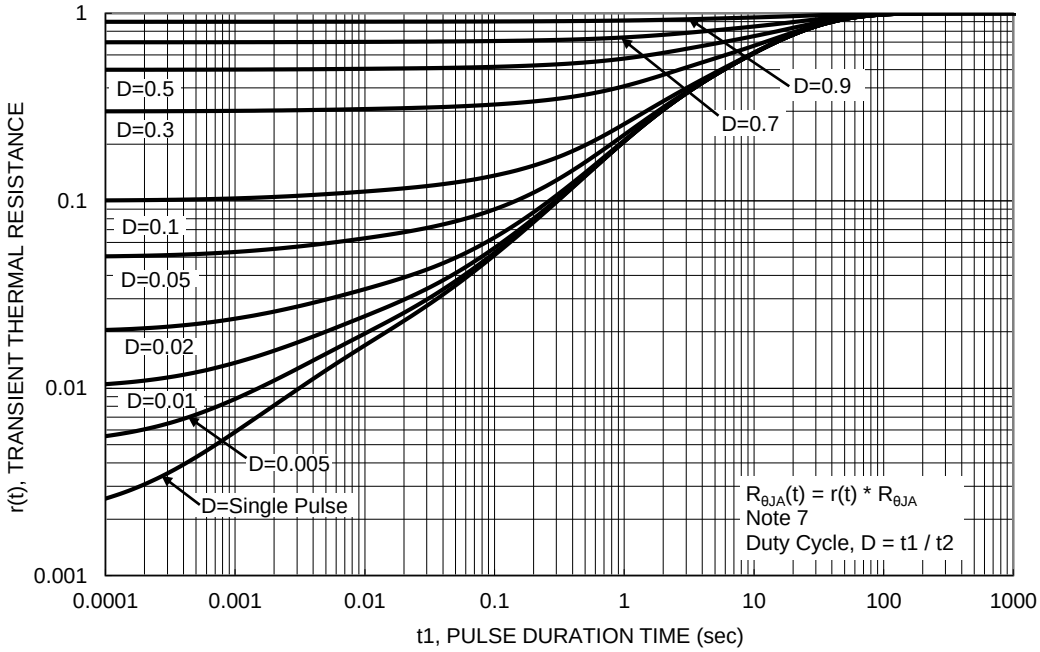
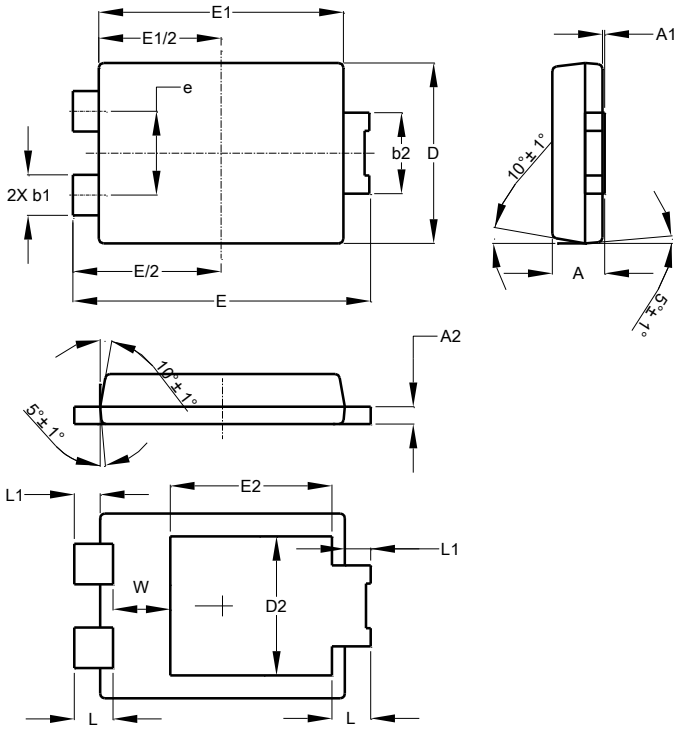


Figure 8. Transient Thermal Resistance MRP (Note 7)

Package Outline Dimensions

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

PowerDI5

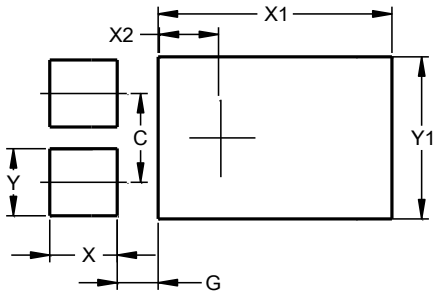


PowerDI5			
Dim	**Min**	**Max**	**Typ**
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

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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