

Product Summary (@ T_A = +25°C)

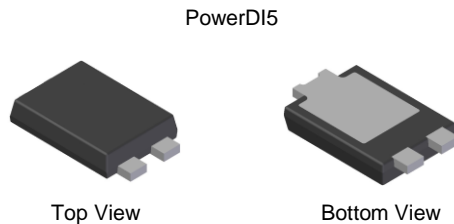
V _{RRM} (V)	I _o (A)	V _F Max (V) @ +25°C	I _R Max (mA) @ +25°C
200	10	0.88	0.1

Description & Applications

Packaged in the compact thermally efficient PowerDI[®]5 package, provides low V_F and low reverse leakage at high temperatures.

It is ideal for use in the following applications:

- Bridge Diodes
- Freewheeling Diodes
- Blocking Diodes
- Reverse Protection Diodes



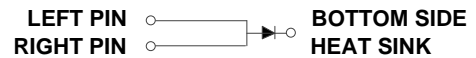
Features and Benefits

- Ultra Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier (SBR[®]) Technology
- Soft, Fast Switching Capability
- +175°C Operating Junction Temperature
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The SBR10U200P5Q 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: PowerDI5
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 @3
- Polarity: See Diagram
- Weight: 0.093 grams (Approximate)



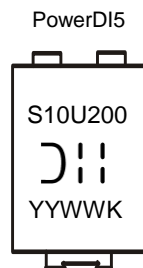
Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
SBR10U200P5Q-13	Automotive	PowerDI5	5,000/Tape & Reel
SBR10U200P5Q-13D	Automotive	PowerDI5	5,000/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/>.

Marking Information



S10U200 = 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.)

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}	200	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _{RM}		
Average Rectified Output Current	I _O	10	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I _{FSM}	180	A
Repetitive Peak Avalanche Power (1μs, +25°C)	P _{ARM}	3,000	W

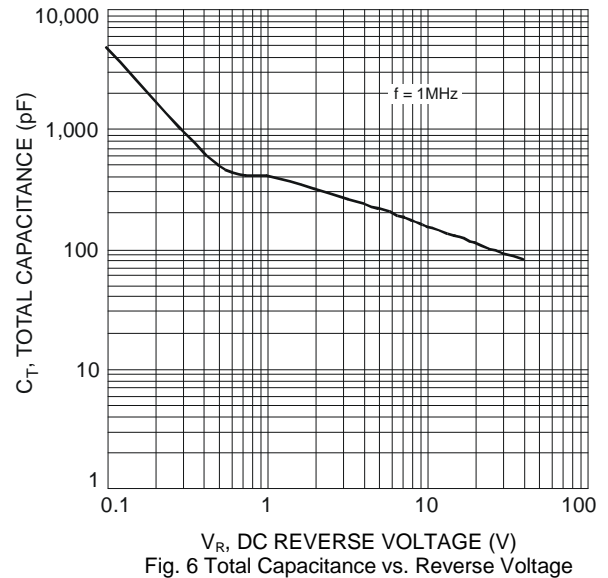
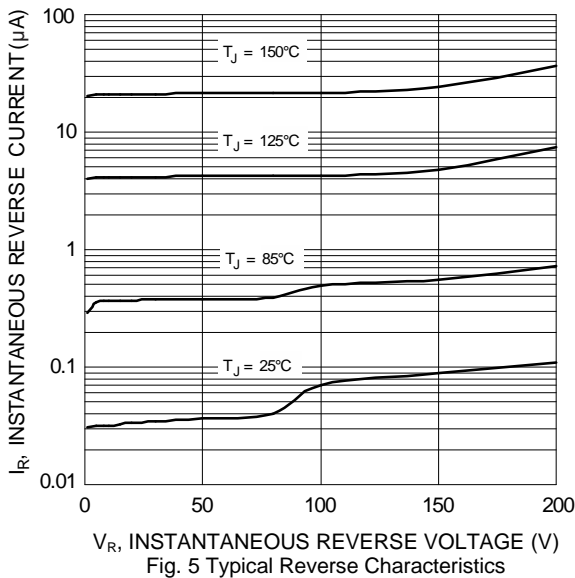
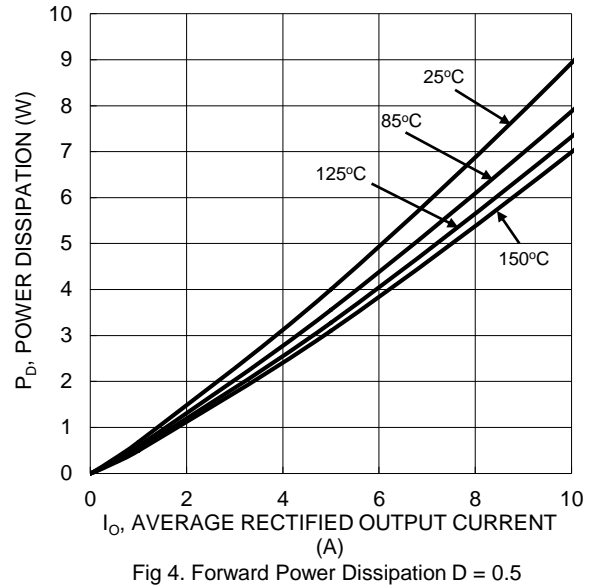
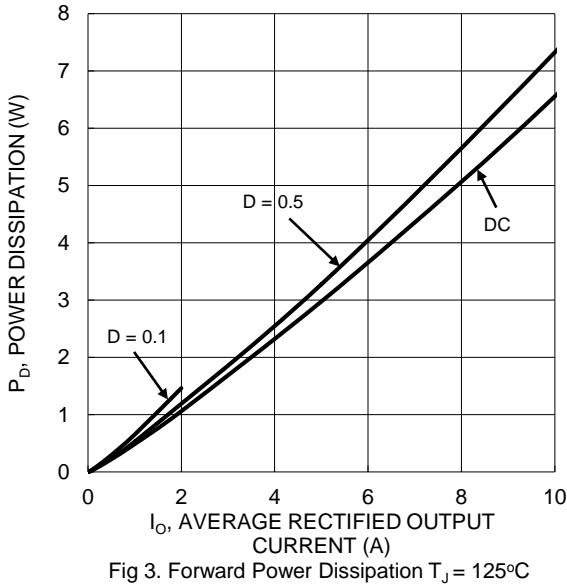
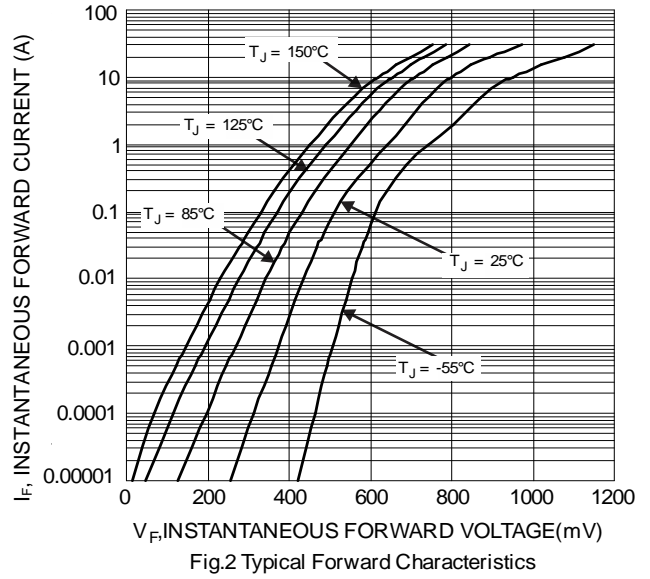
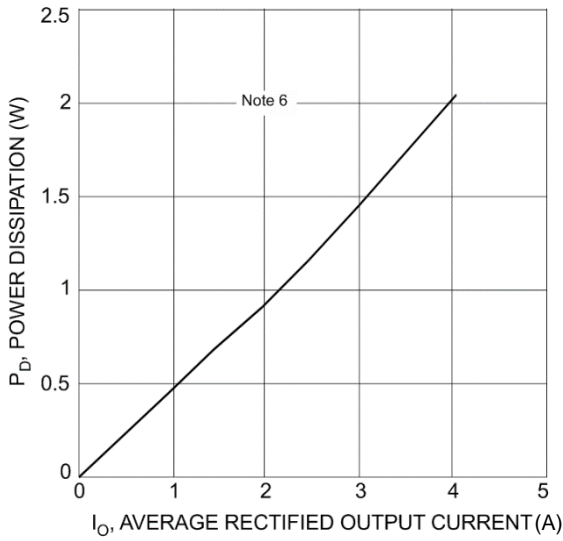
Thermal Characteristics (Note 9)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	R _{θJA}	70	°C/W
Typical Thermal Resistance Junction to Case (Note 5)	R _{θJC}	14	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	R _{θJA}	20	°C/W
Typical Thermal Resistance Junction to Case (Note 6)	R _{θJC}	3	°C/W
Operating Temperature Range	T _J	-65 to +175 ≤200	°C
Storage Temperature Range	T _{STG}	-65 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	—	0.75	0.82	V	I _F = 5A, T _J = +25°C
		—	0.62	0.67		I _F = 5A, T _J = +125°C
		—	0.83	0.88		I _F = 10A, T _J = +25°C
Leakage Current (Note 8)	I _R	—	—	0.8	mA	V _R = 100V, T _J = +125°C
		—	—	10	μA	V _R = 150V, T _J = +25°C
		—	—	4.5	mA	V _R = 150V, T _J = +125°C
		—	—	20	μA	V _R = 200V, T _J = +25°C
		—	0.18	10	mA	V _R = 200V, T _J = +125°C
Switching Speed	t _{RR}	—	19	—	ns	I _F = 0.5A, I _R = 1A, I _{RR} = 0.25A (RG1)

- Notes:
- Device mounted on FR-4 PCB with minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
 - Device mounted on FR-4 PCB with 1-inch pad layout and additional HK2 (45mm x 20mm x 12mm).
 - Max junction temperature guaranteed for 2 hours.
 - Short duration pulse test used to minimize self-heating effect.
 - The heat generated must be less than thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$.



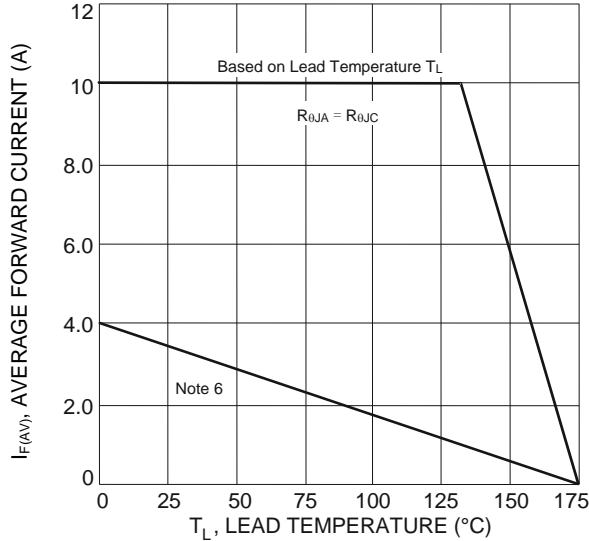


Fig. 7 Forward Current Derating Curve

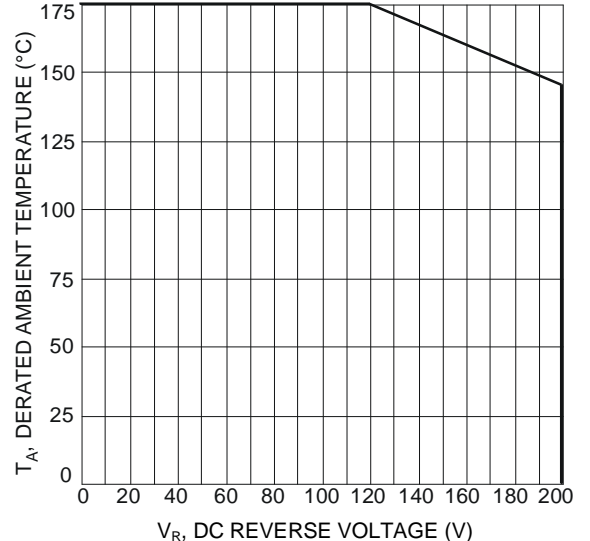


Fig. 8 Operating Temperature Derating

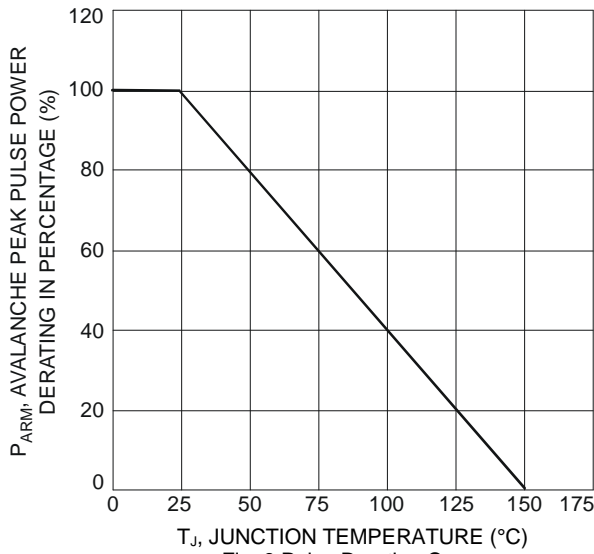


Fig. 9 Pulse Derating Curve

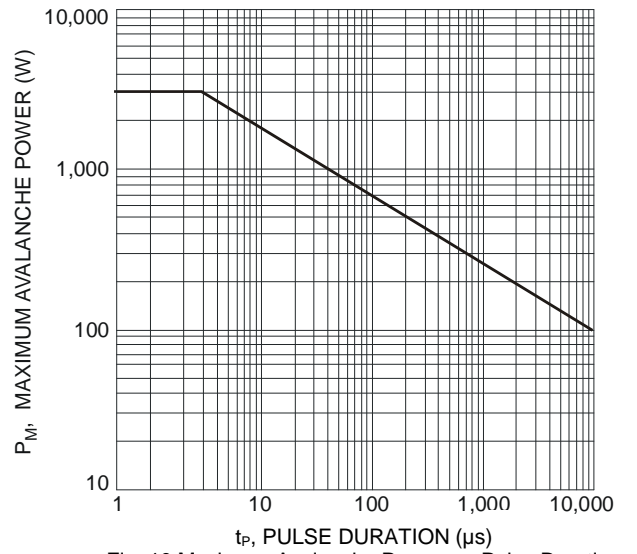


Fig. 10 Maximum Avalanche Power vs. Pulse Duration

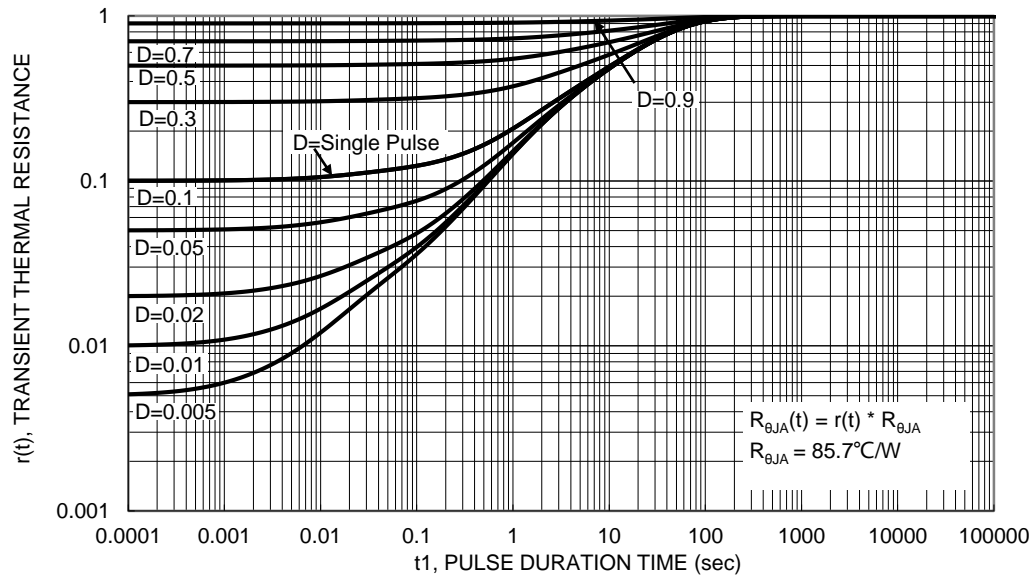
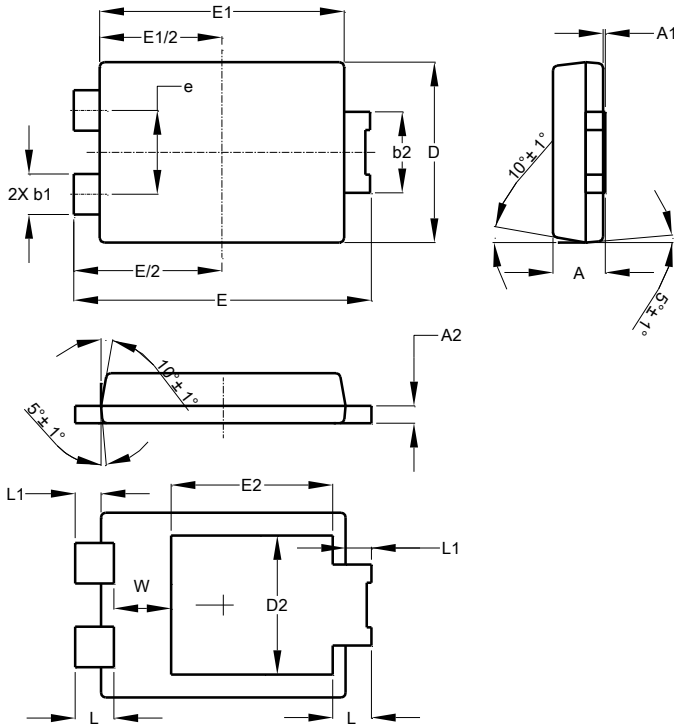


Fig. 11 Transient Thermal Resistance

Package Outline Dimensions

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

PowerDI5

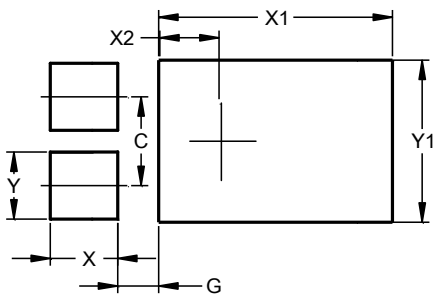


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

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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