

## Product Summary

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F(MAX)</sub> (V)	I <sub>R(MAX)</sub> (mA)
30	15	0.49	0.3

## Description

These Super Barrier Rectifier (SBR<sup>®</sup>) diodes have been designed to meet the stringent requirements of automotive applications. They are ideally suited to use as:

- Polarity protection diodes
- Re-circulating diodes
- Switching diodes

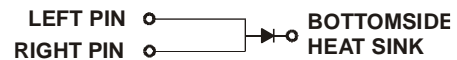
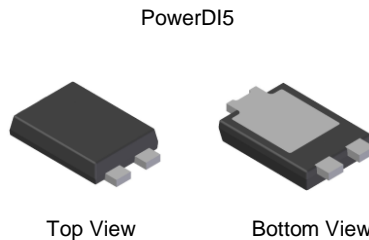
## Features and Benefits

- Patented SBR technology provides a superior avalanche capability than Schottky diodes ensuring more rugged and reliable end applications.
- Reduced ultra-low forward voltage drop (V<sub>F</sub>); better efficiency and cooler operation.
- Reduced high-temperature reverse leakage; Increased reliability against thermal runaway failure in high-temperature operation
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The SBR15U30SP5Q 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

- Package: PowerDI<sup>®</sup>5
- Package 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)
- Polarity: See Below
- Weight: 0.093 grams (Approximate)



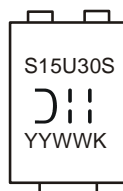
**Note: Pins Left & Right must be electrically connected at the printed circuit board.**

## Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
SBR15U30SP5Q-13	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/>.

## Marking Information



S15U30S = Product Type Marking Code  
 J11 = Manufacturers' Code Marking  
 K = Factory Designator  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 24 for 2024)  
 WW = Week Code (01 to 53)

**Maximum Ratings** (@T<sub>A</sub> = +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 <sub>RRM</sub>	30	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>RM</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	21	V
Average Rectified Output Current	I <sub>O</sub>	15	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	I <sub>FSM</sub>	280	A
Non-Repetitive Avalanche Energy (T <sub>J</sub> = +25°C, I <sub>AS</sub> = 14.5A, L = 8.5mH)	E <sub>AS</sub>	1074	mJ
Repetitive Peak Avalanche Power (1μs, +25°C)	P <sub>ARM</sub>	20000	W

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	26	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	78	°C/W
Operating Temperature Range (Note 8)	T <sub>J</sub>	-55 to +150	°C
Storage Temperature Range	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 (Per Leg) (Note 7)	V <sub>F</sub>	—	0.42	0.49	V	I <sub>F</sub> = 15A, T <sub>J</sub> = +25°C
		—	0.35	0.42		I <sub>F</sub> = 15A, T <sub>J</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	—	0.1	0.3	mA	V <sub>R</sub> = 30V, T <sub>J</sub> = +25°C
		—	30	80		V <sub>R</sub> = 30V, T <sub>J</sub> = +125°C
Total Capacitance	C <sub>T</sub>	—	400	—	pF	V <sub>R</sub> = 30V, f = 1MHz
Switching Speed	t <sub>RR</sub>	—	66	—	ns	I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1A, I <sub>RR</sub> = 0.25A (RG1)

- Notes:
5. Polyimide, 2oz. copper 16mmx16mm minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
  6. Device mounted on FR-4 PCB, 2oz. copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
  7. Short duration pulse test used to minimize self-heating effect.
  8. The heat generated must be less than thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .

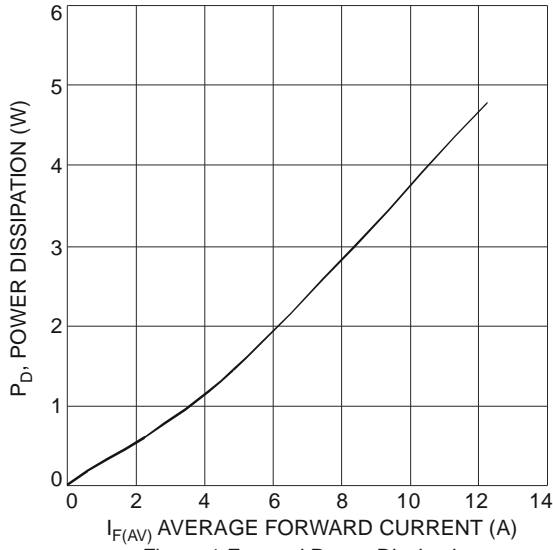


Figure 1 Forward Power Dissipation

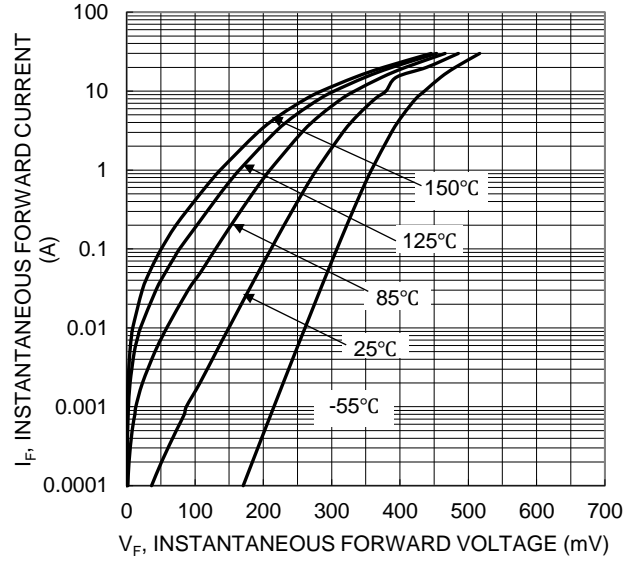


Figure 2 Typical Forward Characteristics

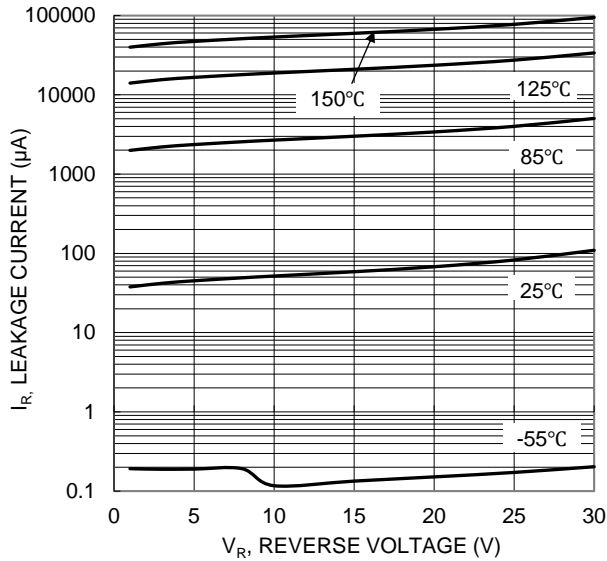


Figure 3 Typical Reverse Characteristics

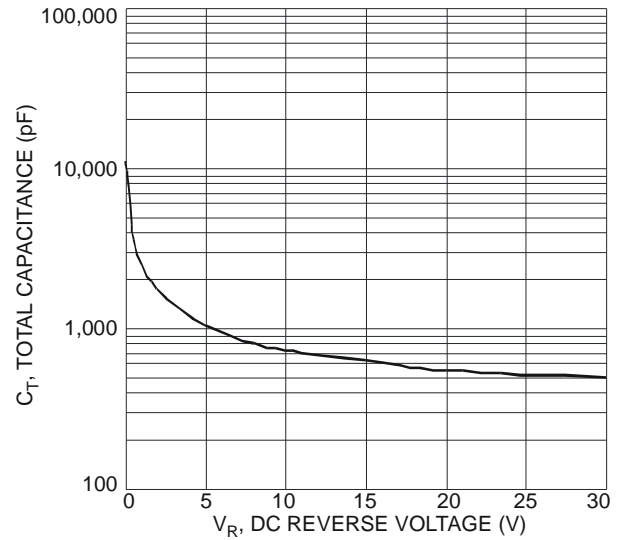


Figure 4 Total Capacitance vs. Reverse Voltage

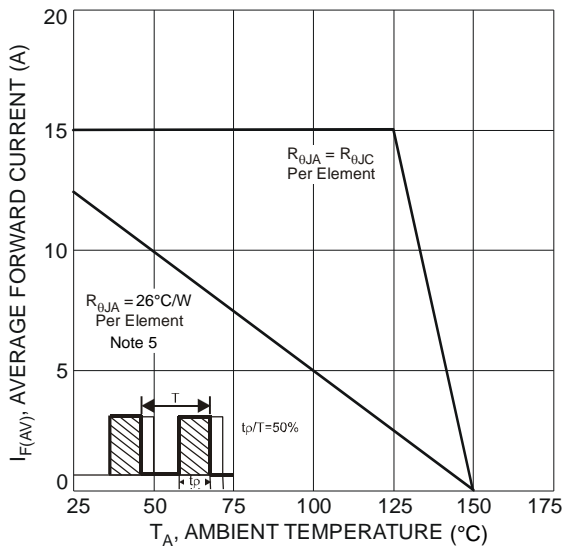


Figure 5 Forward Current Derating Curve

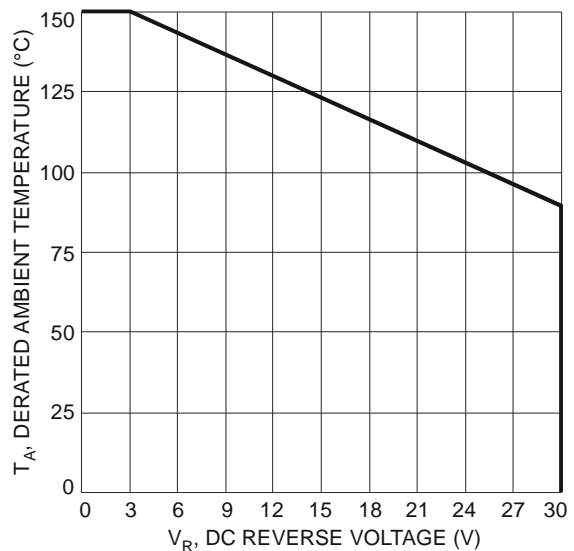
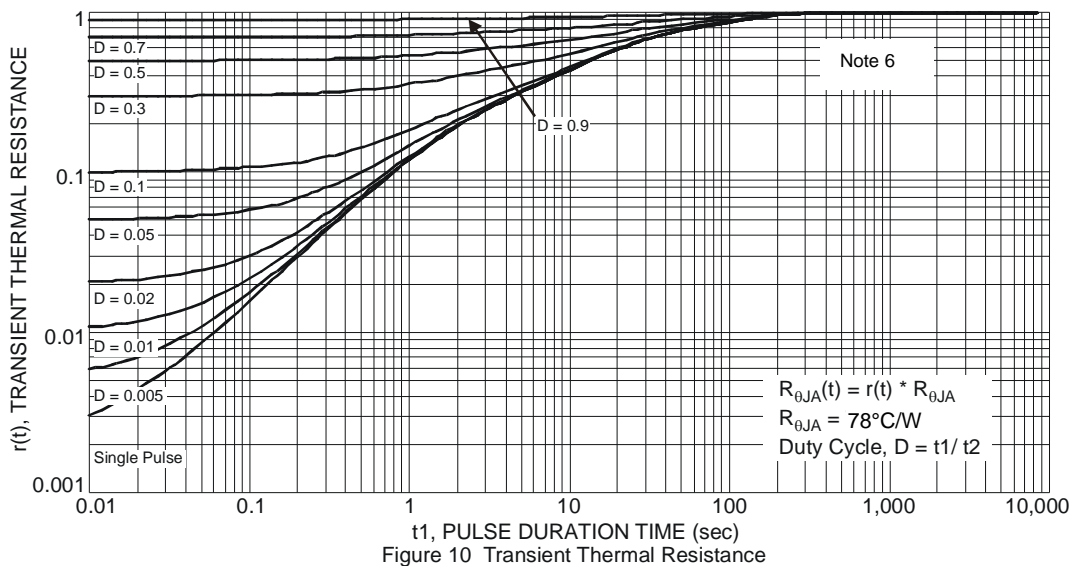
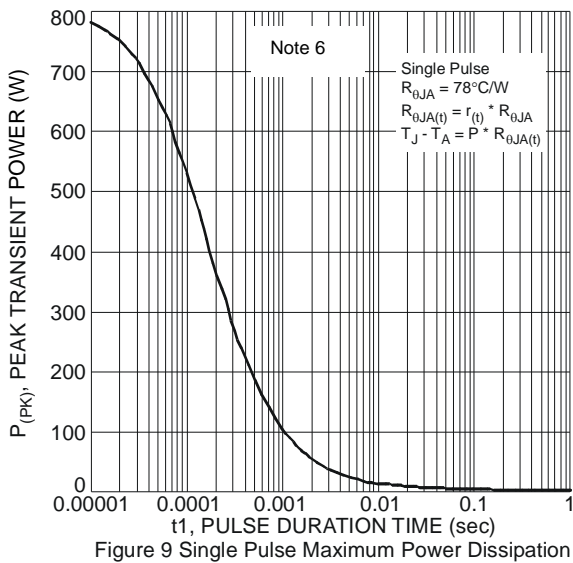
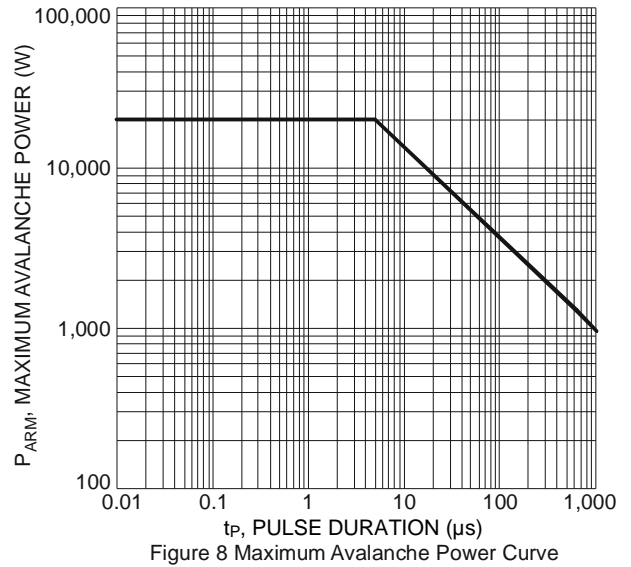
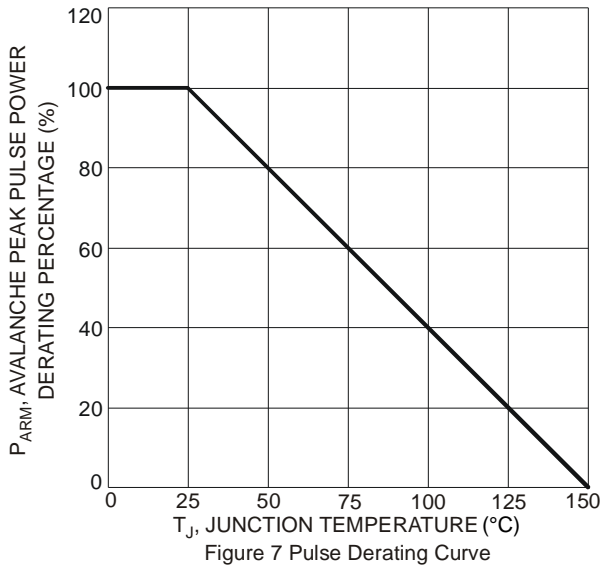


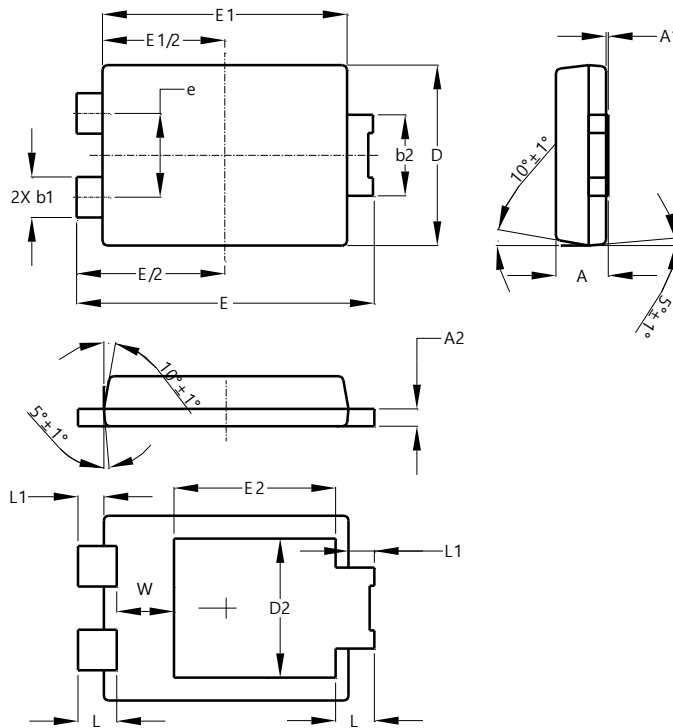
Figure 6 Operating Temperature Derating



**Package Outline Dimensions**

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

**PowerDI5**

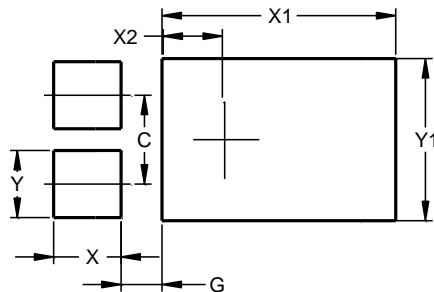


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

**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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