

Product Summary

V _{RRM} (V)	I _o (A)	V _{F(MAX)} (V)	I _{R(MAX)} (mA)
30	15	0.49	0.3

Description

These Super Barrier Rectifier (SBR[®]) 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

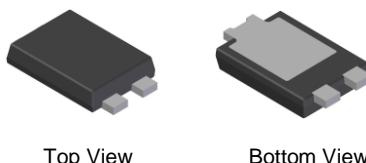
- Patented SBR technology provides a superior avalanche capability than Schottky diodes ensuring more rugged and reliable end applications.
- Reduced ultra-low forward voltage drop (V_F); better efficiency and cooler operation.
- Reduced high-temperature reverse leakage; Increased reliability against 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

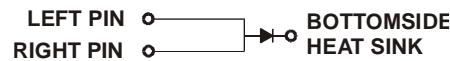
- Package: PowerDI[®]5
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: See Below
- Weight: 0.093 grams (Approximate)

PowerDI5



Top View

Bottom View



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

D = 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 (@ $T_A = +25^\circ\text{C}$, 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}	30	V
DC Blocking Voltage	V_{RM}		
RMS Reverse Voltage	$V_{R(\text{RMS})}$	21	V
Average Rectified Output Current	I_o	15	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	I_{FSM}	280	A
Non-Repetitive Avalanche Energy ($T_J = +25^\circ\text{C}$, $I_{AS} = 14.5\text{A}$, $L = 8.5\text{mH}$)	E_{AS}	1074	mJ
Repetitive Peak Avalanche Power (1μs, +25°C)	P_{ARM}	20000	W

Thermal Characteristics

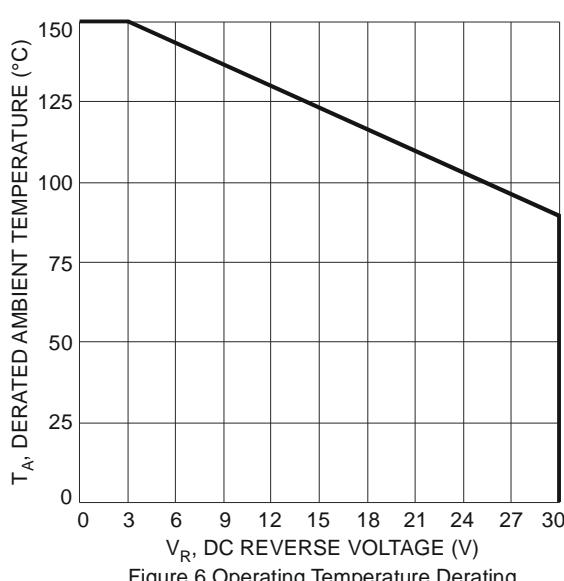
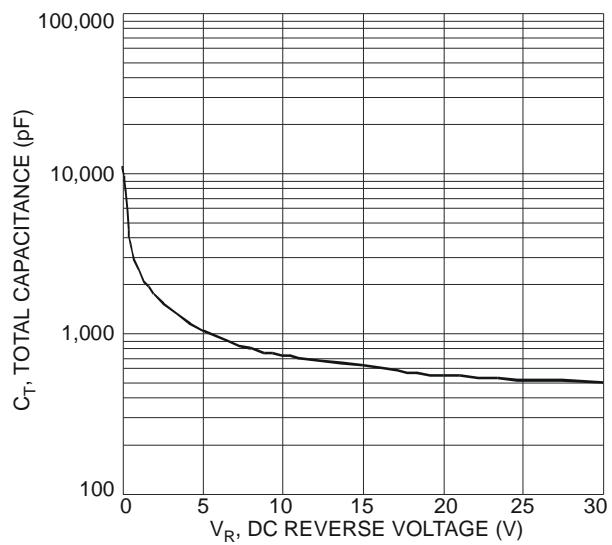
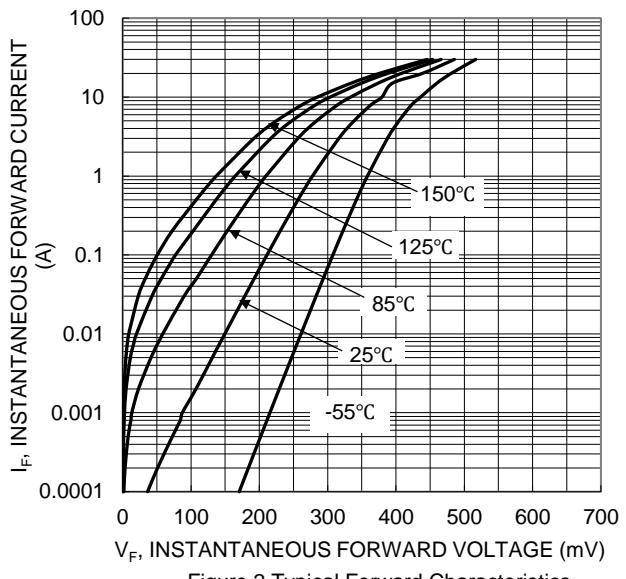
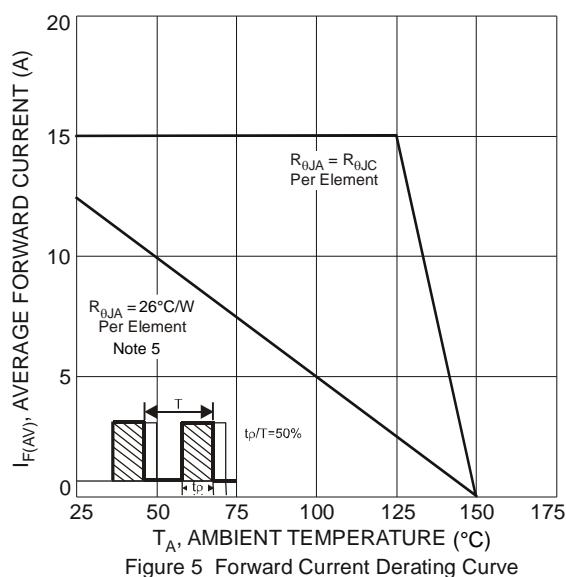
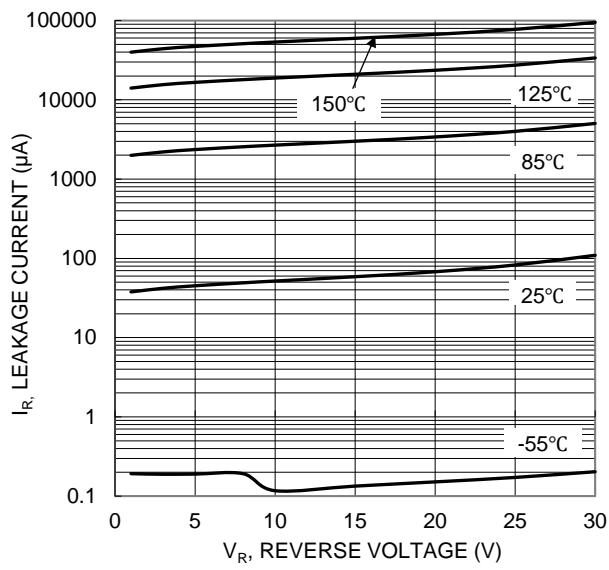
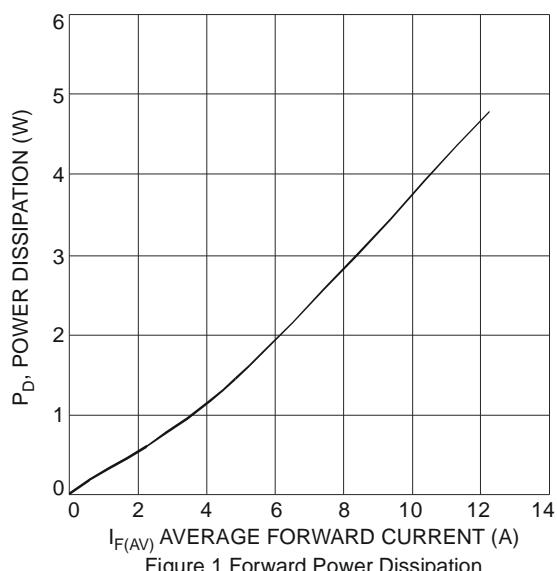
Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	26	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	78	°C/W
Operating Temperature Range (Note 8)	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop (Per Leg) (Note 7)	V_F	—	0.42	0.49	V	$I_F = 15\text{A}$, $T_J = +25^\circ\text{C}$ $I_F = 15\text{A}$, $T_J = +125^\circ\text{C}$
Leakage Current (Note 7)	I_R	—	0.1	0.3	mA	$V_R = 30\text{V}$, $T_J = +25^\circ\text{C}$ $V_R = 30\text{V}$, $T_J = +125^\circ\text{C}$
Total Capacitance	C_T	—	400	—	pF	$V_R = 30\text{V}$, $f = 1\text{MHz}$
Switching Speed	t_{RR}	—	66	—	ns	$I_F = 0.5\text{A}$, $I_R = 1\text{A}$, $I_{RR} = 0.25\text{A}$ (RG1)

Notes:

5. Polymide, 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: $dP_D/dT_J < 1/R_{\theta JA}$.



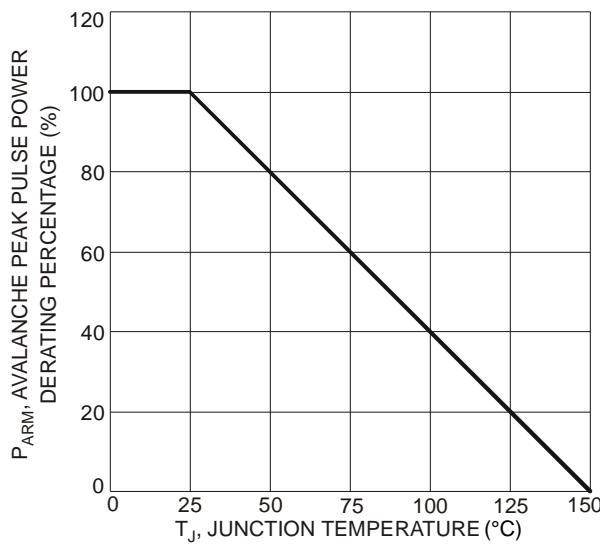


Figure 7 Pulse Derating Curve

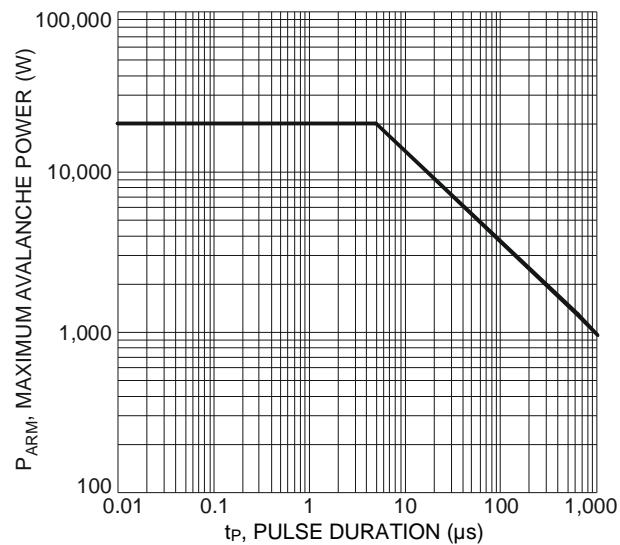


Figure 8 Maximum Avalanche Power Curve

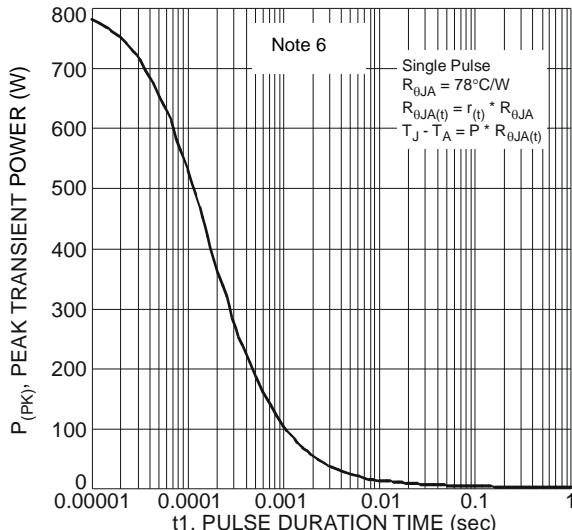


Figure 9 Single Pulse Maximum Power Dissipation

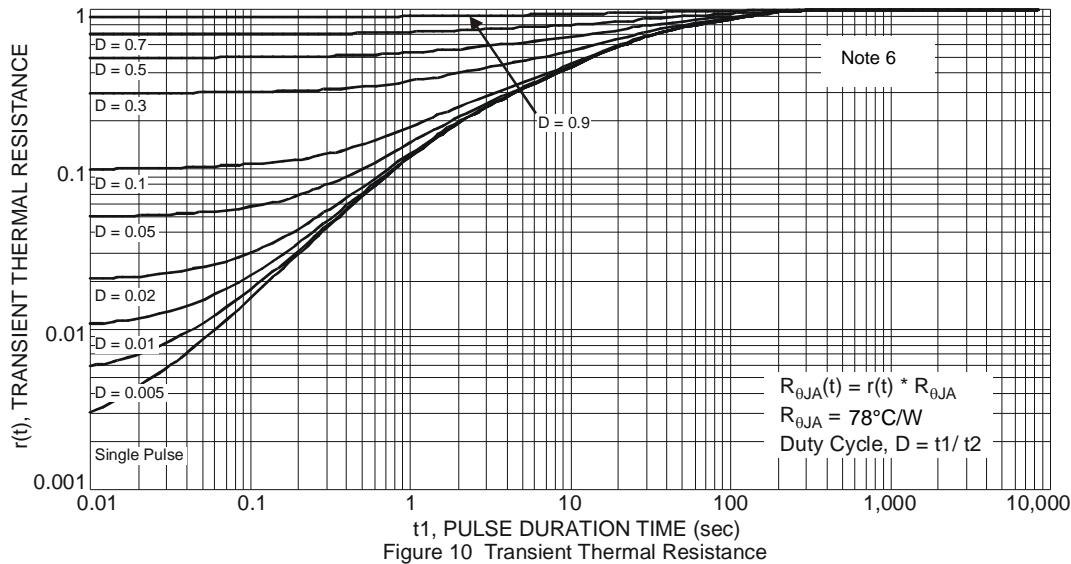
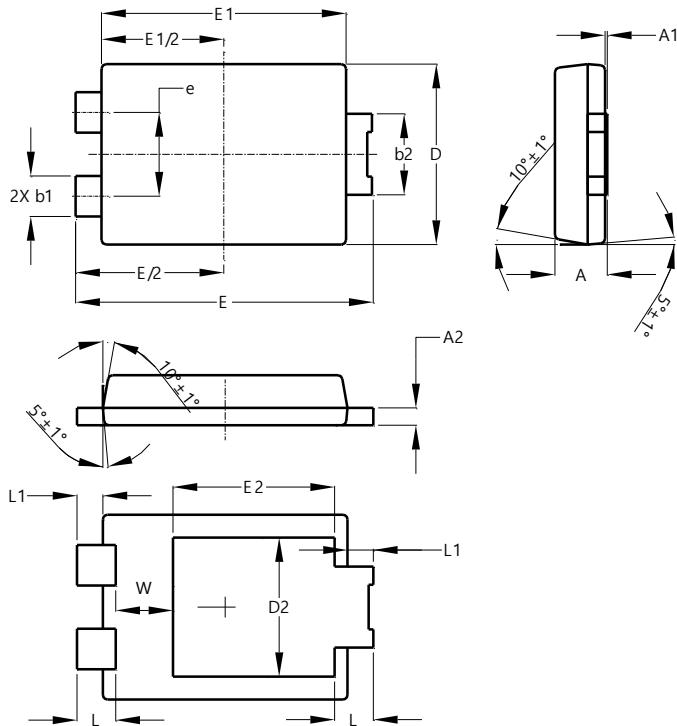


Figure 10 Transient Thermal Resistance

Package Outline Dimensions

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

PowerDI5



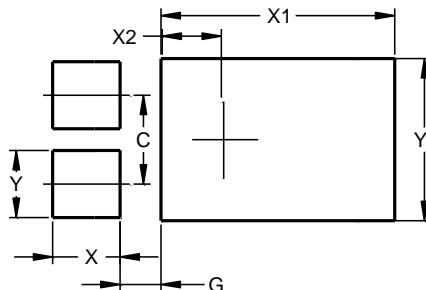
PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255

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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