


## Features

- Low Forward Voltage Drop
- Low Leakage Current
- Superior Reverse Avalanche Capability
- Excellent High Temperature Stability
- Patented Interlocking Clip Design for High Surge Current Capacity
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- 150°C Operating Junction Temperature
- ±16KV ESD Protection (HBM, 3B)
- ±25KV ESD Protection (IEC61000-4-2 Level 4, Air Discharge)
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **“Green” Molding Compound (No Br, Sb)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: PowerDI<sup>®</sup>123
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Polarity Indicator: Cathode Band
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.018 grams (approximate)



Top View

## Maximum Ratings @T<sub>A</sub> = 25°C unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load.  
 For capacitance 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 (See Figure 1)	I <sub>O</sub>	2.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	75	A

## Thermal Characteristics

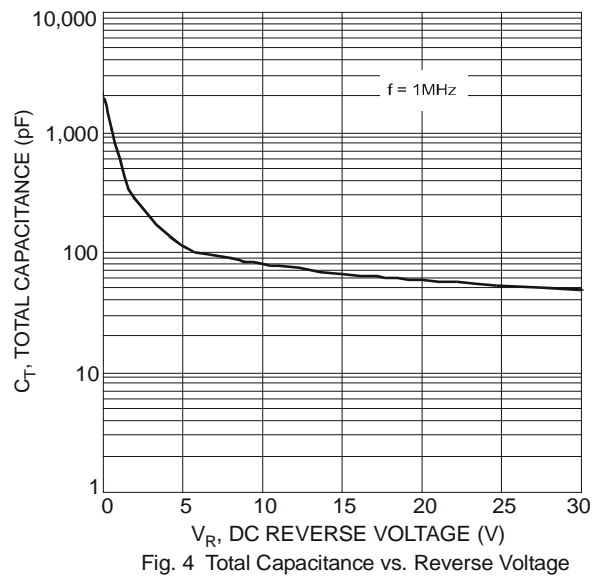
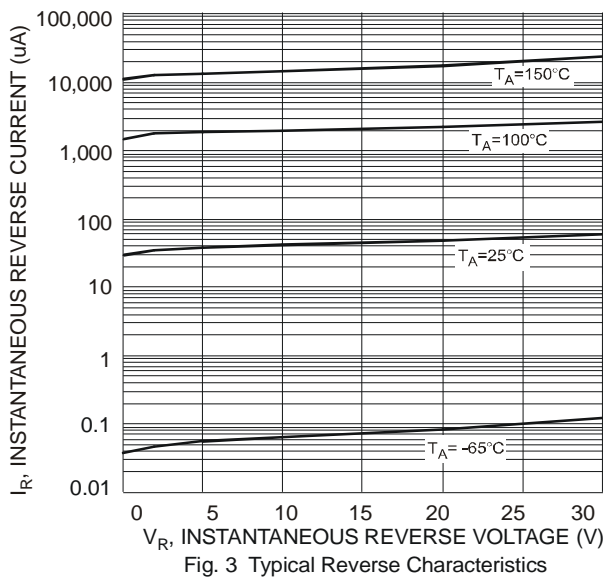
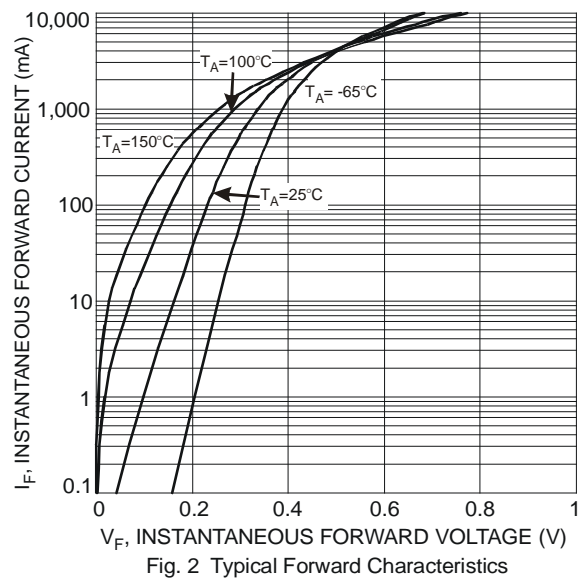
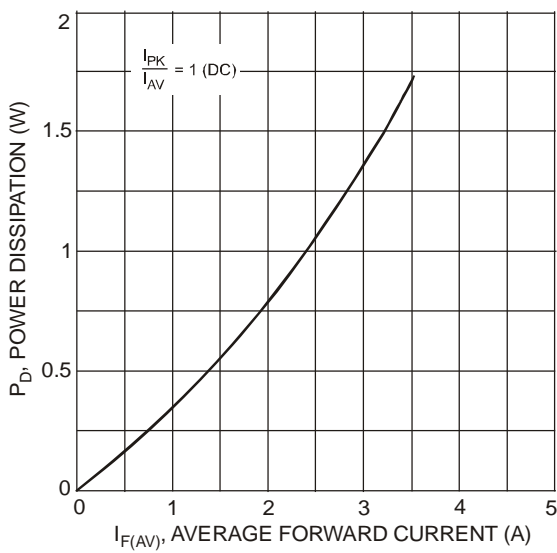
Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance	R <sub>θJS</sub>	5	°C/W
Thermal Resistance Junction to Soldering (Note 2)	R <sub>θJA</sub>	175	
Thermal Resistance Junction to Ambient (Note 3)	R <sub>θJA</sub>	100	
Thermal Resistance Junction to Ambient (Note 4)			
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

- Notes:
1. RoHS revision 13.2.2003. High temperature solder exemption applied, see *EU Directive Annex Note 7*.
  2. Theoretical R<sub>θJS</sub> calculated from the top center of the die straight down to the PCB cathode tab solder junction.
  3. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
  4. Polyimide PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 5)	$V_{(BR)R}$	30	-	-	V	$I_R = 250\mu\text{A}$
Forward Voltage Drop	$V_F$	-	0.23	0.28	V	$I_F = 0.1\text{A}, T_J = 25^\circ\text{C}$
		-	0.34	0.39		$I_F = 1.0\text{A}, T_J = 25^\circ\text{C}$
		-	0.40	0.45		$I_F = 2.0\text{A}, T_J = 25^\circ\text{C}$
		-	0.50	-		$I_F = 4.0\text{A}, T_J = 125^\circ\text{C}$
		-	0.13	0.19		$I_F = 0.1\text{A}, T_J = 125^\circ\text{C}$
		-	0.275	0.33		$I_F = 1.0\text{A}, T_J = 125^\circ\text{C}$
Leakage Current (Note 5)	$I_R$	-	50	100	$\mu\text{A}$	$V_R = 5\text{V}, T_J = 25^\circ\text{C}$
		-	55	200	$\mu\text{A}$	$V_R = 30\text{V}, T_J = 25^\circ\text{C}$
		-	5	10	$\text{mA}$	$V_R = 5\text{V}, T_J = 125^\circ\text{C}$
		-	7	15	$\text{mA}$	$V_R = 30\text{V}, T_J = 125^\circ\text{C}$

Notes: 5. Short duration pulse test used to minimize self-heating effect.



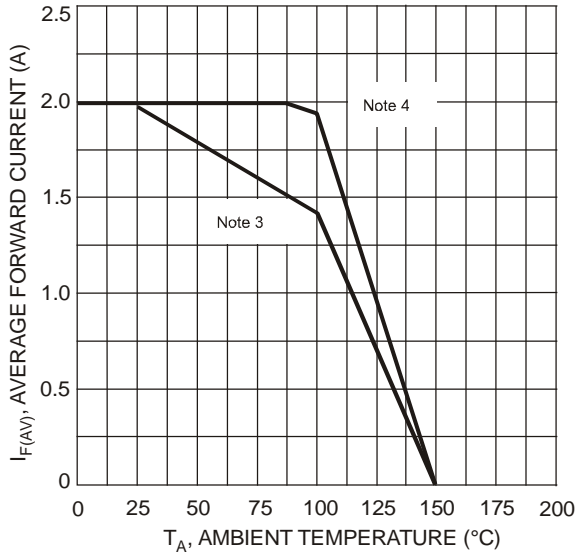


Fig. 5 Forward Current Derating Curve

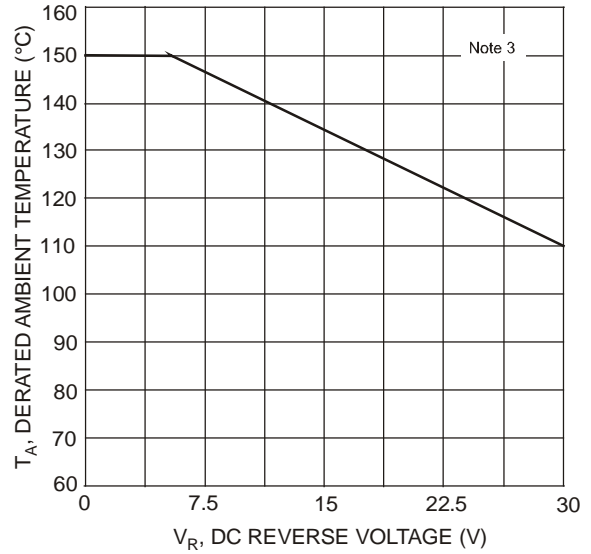


Fig. 6 Operating Temperature Derating

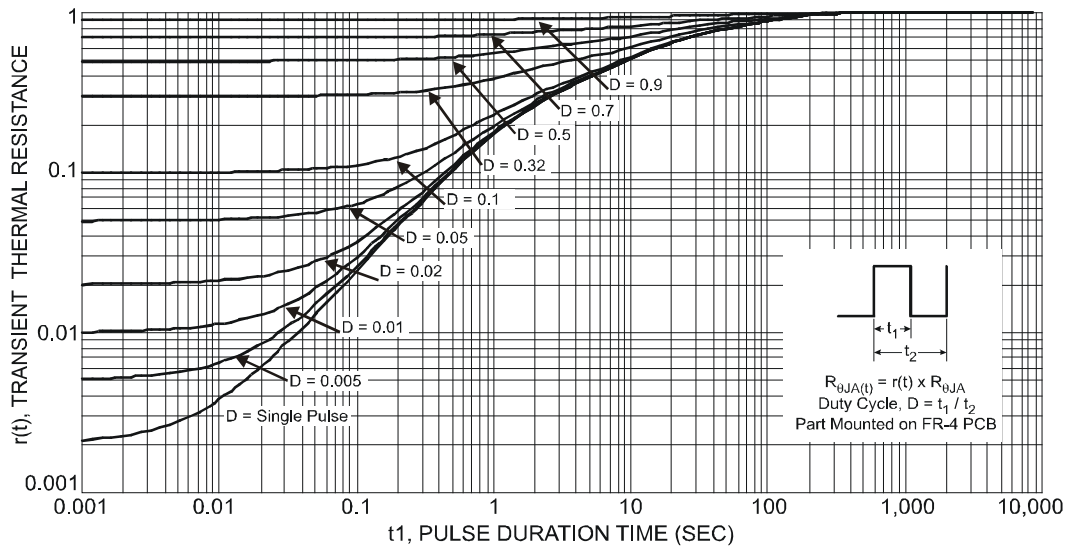


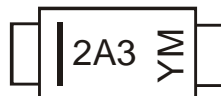
Fig. 7 Transient Thermal Resistance

**Ordering Information** (Note 6)

Part Number	Case	Packaging
SBR2A30P1-7	PowerDI <sup>®</sup> 123	3000/Tape & Reel

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



2A3 = Product Type Marking Code  
YM = Date Code Marking  
Y = Year (ex: T = 2006)  
M = Month (ex: 9 = September)

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Code	T	U	V	W	X	Y	Z	A	B	C

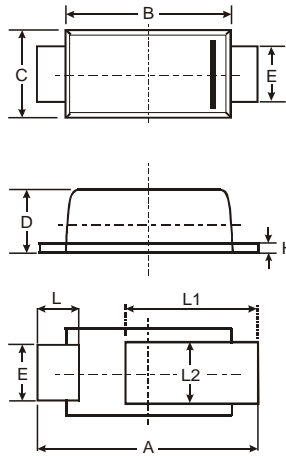
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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SBR2A30P1

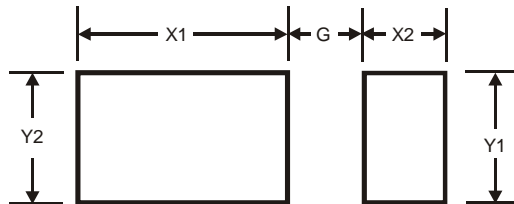
Document number: DS30920 Rev. 11 - 2

## Package Outline Dimensions



PowerDI <sup>®</sup> 123			
Dim	Min	Max	Typ
A	3.50	3.90	3.70
B	2.60	3.00	2.80
C	1.63	1.93	1.78
D	0.93	1.00	0.98
E	0.85	1.25	1.00
H	0.15	0.25	0.20
L	0.55	0.75	0.65
L1	1.80	2.20	2.00
L2	0.95	1.25	1.10
All Dimensions in mm			

## Suggested Pad Layout



Dimensions	Value (in mm)
G	1.0
X1	2.2
X2	0.9
Y1	1.4
Y2	1.4

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