



**THE DATASHEET OF  
SBR12A45SD1-T**



## Features

- Designed as Bypass Diodes for Solar Panels
- Selectively Rated for +200°C Maximum Junction Temperature for High Thermal Reliability
- Patented Super Barrier Rectifier Technology
- High Forward Surge Capability
- Ultra Low Forward Voltage Drop
- Excellent High Temperature Stability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**



## Mechanical Data

- Case: DO-201AD
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Tin Plated Leads. Solderable per MIL-STD-202, Method 208 **e3**
- Weight: 1.21 grams (approximate)



Top View


## Ordering Information (Notes 4 & 5)

	Part Number	Case	Packaging
	SBR12A45SD1-T	DO-201AD	1200/Tape & Reel, 13-inch
	SBR12A45SD1-T-G	DO-201AD	1200/Tape & Reel, 13-inch

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  2. See <http://www.diodes.com> 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 <http://www.diodes.com>.
  5. For Green Molding version, add '-G' to part number (ex. SBR12A45SD1-T-G)

## Marking Information



SBR12A45 = Product Type Marking Code  
 AB = Foundry and Assembly Code  
 = Manufacturers' code marking  
 YWW = Date Code Marking  
 Y = Last digit of year (ex: 8 for 2008)  
 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 capacitance load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	45	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>RM</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	32	V
Average Rectified Output Current	I <sub>O</sub>	12	A
Non-Repetitive Avalanche Energy (T <sub>J</sub> = +25°C, I <sub>AS</sub> = 20A, L = 8.5mH)	E <sub>AS</sub>	20	mJ
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	200	A
Peak Repetitive Reverse Surge Current (2μS – 1KHz)	I <sub>RRM</sub>	2	A

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance	R <sub>θJA</sub> R <sub>θJL</sub>	31	°C/W
Thermal Resistance Junction to Ambient (Note 6)		7.2	
Thermal Resistance Junction to Lead (Note 6) T <sub>L</sub> = +135°C			
Operating Temperature Range	T <sub>J</sub>	V <sub>R</sub> ≤ 80% V <sub>RRM</sub>	-65 to +150
		V <sub>R</sub> ≤ 50% V <sub>RRM</sub>	≤180
		DC Forward Mode	≤200
Storage Temperature Range	T <sub>STG</sub>	-65 to +175	°C

### Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	V <sub>(BR)R</sub>	45	—	—	V	I <sub>R</sub> = 0.5mA
Forward Voltage Drop	V <sub>F</sub>	—	0.43	0.48	V	I <sub>F</sub> = 12A, T <sub>J</sub> = +25°C
		—	0.40	0.44		I <sub>F</sub> = 12A, T <sub>J</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	—	50	500	μA	V <sub>R</sub> = 45V, T <sub>J</sub> = +25°C
		—	—	40	mA	V <sub>R</sub> = 45V, T <sub>J</sub> = +125°C
		—	27	100	mA	V <sub>R</sub> = 45V, T <sub>J</sub> = +150°C

Notes: 6. Device mounted on 2" x 2" (50mm x 50mm) copper pad, with lead length 0.5".  
7. Short duration pulse test used to minimize self-heating effect.

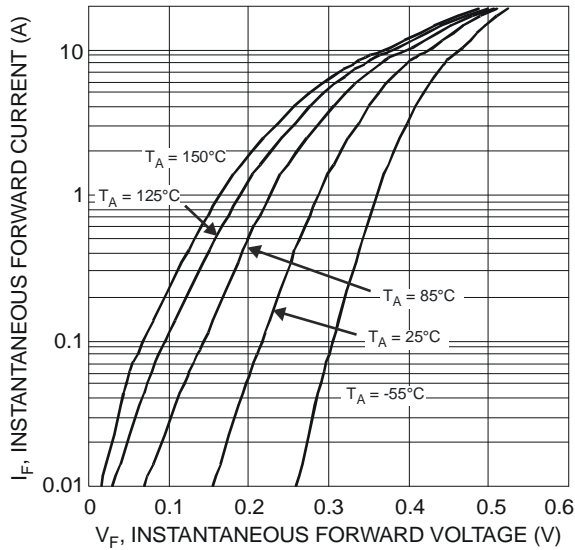


Figure 1 Typical Forward Characteristics

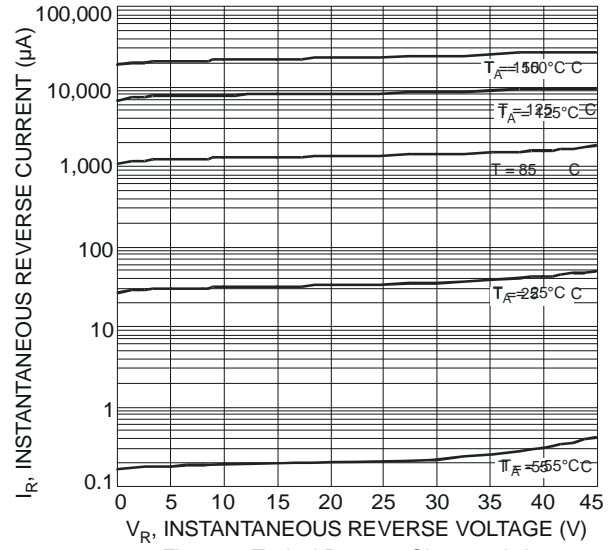


Figure 2 Typical Reverse Characteristics

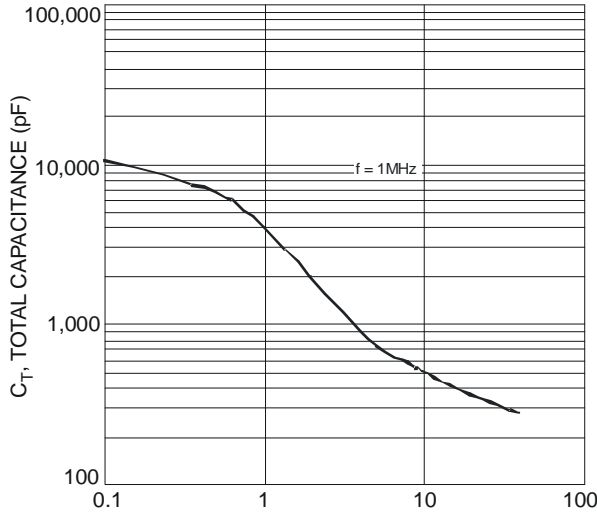


Figure 3 Total Capacitance vs. Reverse Voltage

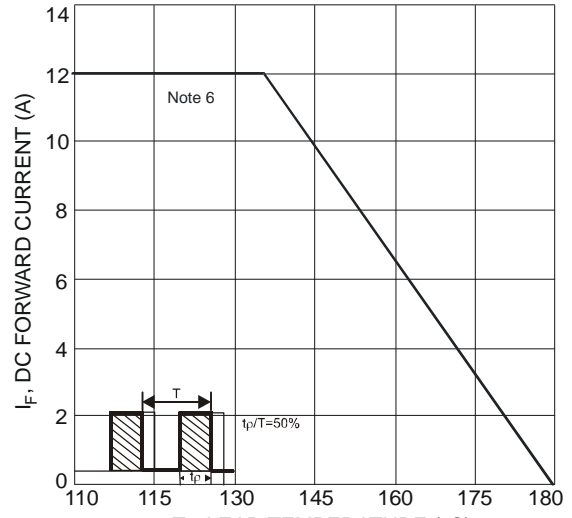


Figure 4 Maximum DC Forward Current Derating

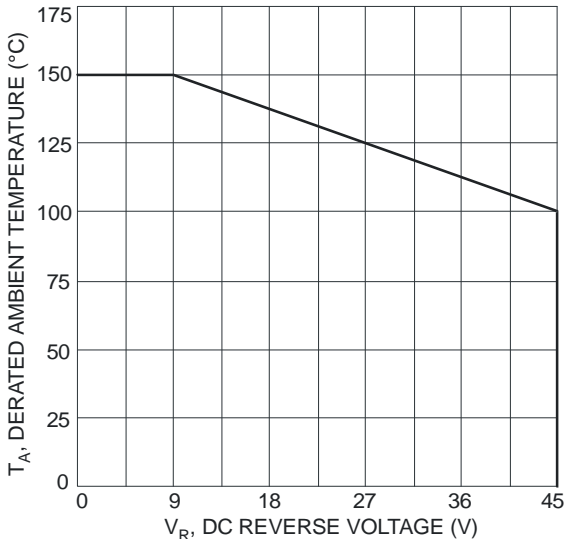
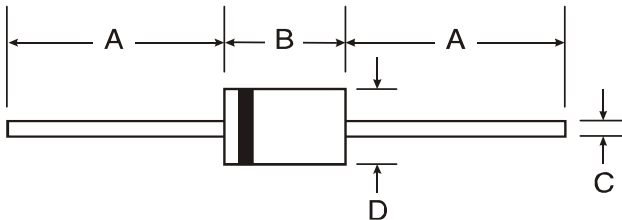


Figure 5 Operating Temperature Derating

## Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



DO-201AD		
Dim	Min	Max
A	25.40	—
B	7.20	9.50
C	1.20	1.30
D	4.80	5.30
All Dimensions in mm		

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