SBR12A45SD1

12A SBR®
SUPER BARRIER RECTIFIER

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
Pb	SBR12A45SD1-T	DO-201AD	1200/Tape & Reel, 13-inch
Pb Green	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_A = +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 Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_{RM}	45	V
RMS Reverse Voltage	$V_{R(RMS)}$	32	V
Average Rectified Output Current	I_O	12	A
Non-Repetitive Avalanche Energy (T_J = +25°C , I_{AS} = 20A , L = 8.5mH)	E_{AS}	20	mJ
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	200	A
Peak Repetitive Reverse Surge Current (2µS – 1KHz)	I_{RRM}	2	A

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Typical Thermal Resistance Thermal Resistance Junction to Ambient (Note 6) Thermal Resistance Junction to Lead (Note 6) T_L = +135°C		$R_{\theta JA}$ $R_{\theta JL}$	31 7.2	°C/W
Operating Temperature Range	$V_R \le 80\% V_{RRM}$	T_J	-65 to +150	°C
	$V_R \le 50\% V_{RRM}$		≤180	
	DC Forward Mode		≤200	
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
Reverse Breakdown Voltage (Note 7)	$V_{(BR)R}$	45	—	—	V	I_R = 0.5mA
Forward Voltage Drop	V_F	— —	0.43 0.40	0.48 0.44	V	I_F = 12A, T_J = +25°C I_F = 12A, T_J = +125°C
Leakage Current (Note 7)	I_R	— — —	50 — 27	500 40 100	µA mA mA	V_R = 45V, T_J = +25°C V_R = 45V, T_J = +125°C V_R = 45V, T_J = +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.

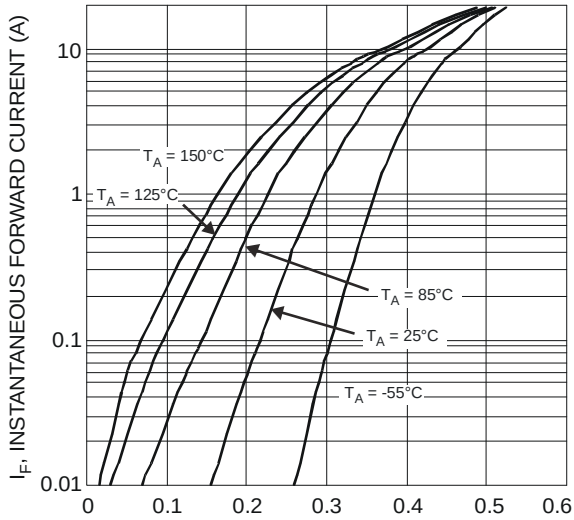


Figure 1 Typical Forward Characteristics

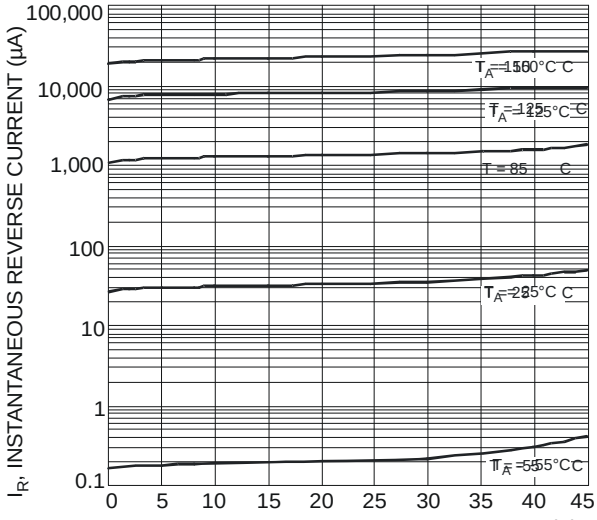


Figure 2 Typical Reverse Characteristics

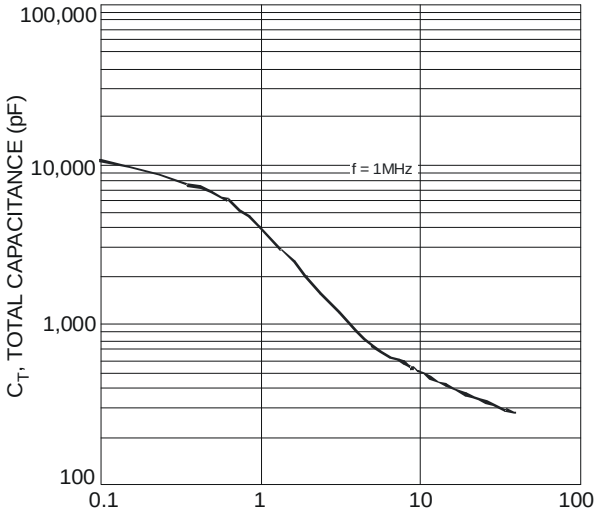


Figure 3 Total Capacitance vs. Reverse Voltage

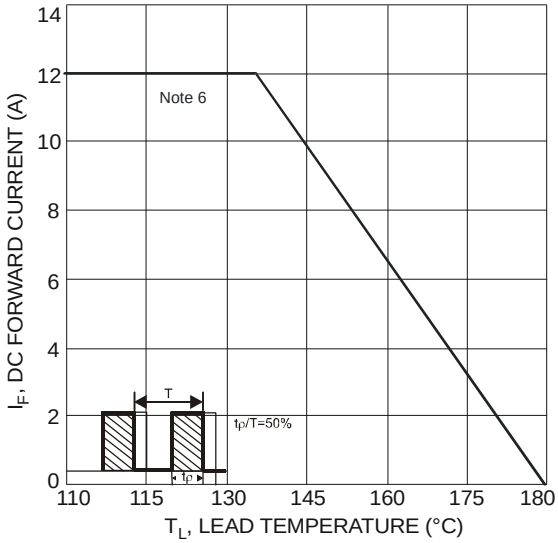


Figure 4 Maximum DC Forward Current Derating

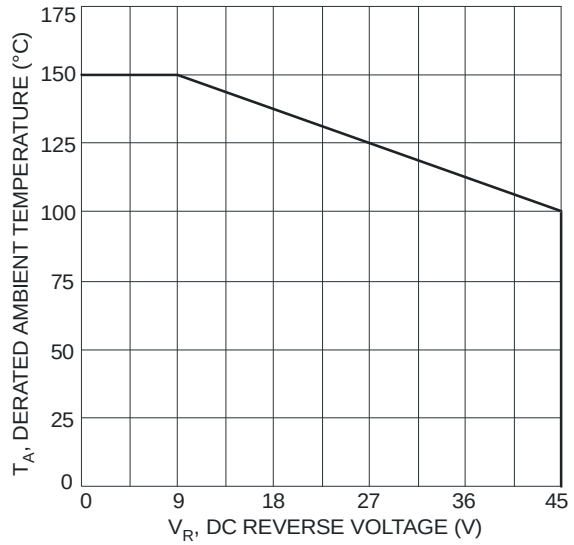
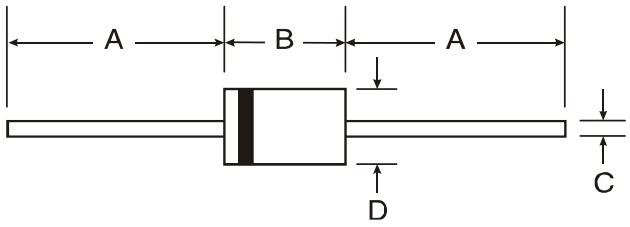


Figure 5 Operating Temperature Derating

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		