

## Product Summary

<b>V<sub>RRM</sub> (V)</b>	<b>I<sub>o</sub> (A)</b>	<b>V<sub>F</sub> Max (V) @ +25°C</b>	<b>I<sub>r</sub> Max (mA) @ +25°C</b>
45	20 (Per leg) 40 (Total)	0.52	0.6

## Description

The SBR40U45CT provides very low  $V_F$  and excellent reverse leakage stability at high temperatures.

## Applications

It is ideal for use as a rectifier, freewheel diode or blocking diode in:

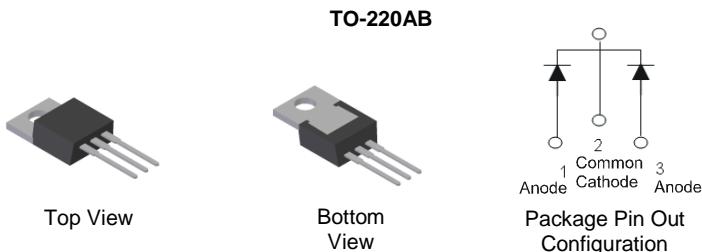
- DC-DC Converters
- AC-DC Adaptors

## Features and Benefits

- Patented SBR® technology provides superior avalanche capability versus 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)**

## Mechanical Data

- Case: TO-220AB
- Case Material: Molded Plastic; UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208<sup>③</sup>
- Weight: TO-220AB – 1.85 grams (Approximate)



## Ordering Information (Notes 4 & 5)

Part Number	Case	Packaging
SBR40U45CT	TO-220AB	50 pieces/tube
SBR40U45CT-G	TO-220AB	50 pieces/tube

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/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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 Green Molding Compound version part numbers, add "-G" suffix to part number above. Examples: SBR40U45CT-G.
5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



SBR40U45CT = Product Type Marking Code  
 AB = Foundry and Assembly Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 15 = 2015)  
 WW = Week (01-52)

**Maximum Ratings** (Per Leg) (@ $T_A = +25^\circ\text{C}$ , 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	$V_{RRM}$		
Working Peak Reverse Voltage	$V_{RWM}$	45	V
DC Blocking Voltage	$V_{RM}$		
Average Rectified Output Current (Per Leg) (Total)	$I_O$	20 40	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	280	A

**Thermal Characteristics** (Per Leg)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Case (Note 6)	$R_{\theta JC}$	2	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	—	0.47 —	0.52 0.49	V	$I_F = 20\text{A}, T_J = +25^\circ\text{C}$ $I_F = 20\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 7)	$I_R$	—	0.2 —	0.6 200	mA	$V_R = 45\text{V}, T_J = +25^\circ\text{C}$ $V_R = 45\text{V}, T_J = +125^\circ\text{C}$

Notes: 6. Test with Aluminum heatsink 50 x 50 x 23mm.  
7. Short duration pulse test used to minimize self-heating effect.

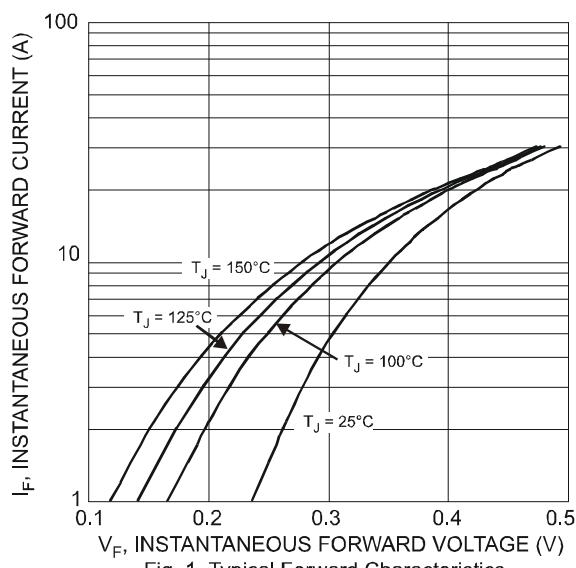


Fig. 1 Typical Forward Characteristics

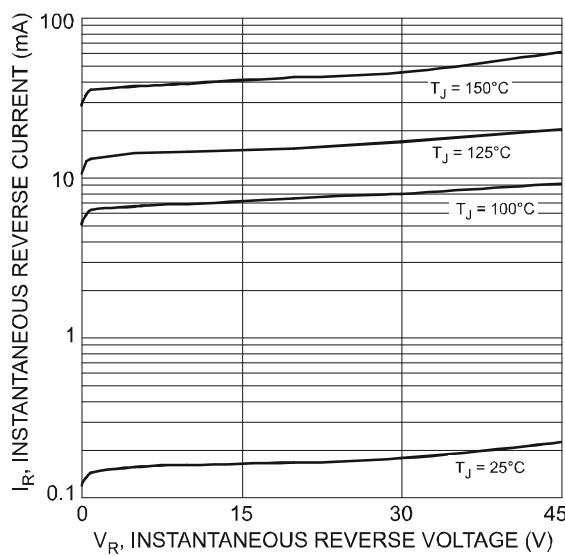


Fig. 2 Typical Reverse Characteristics

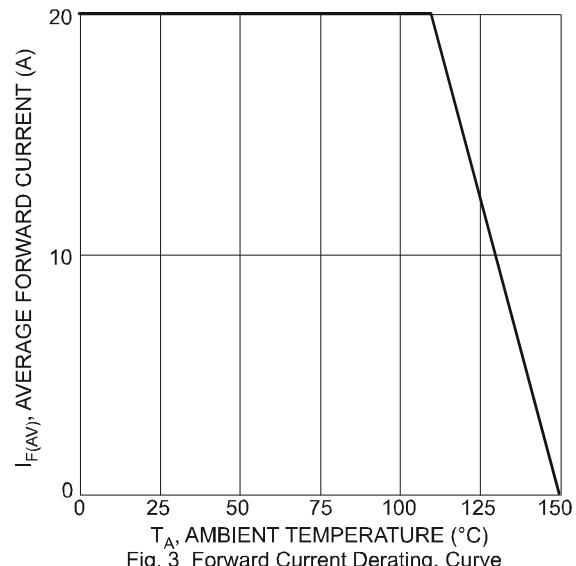
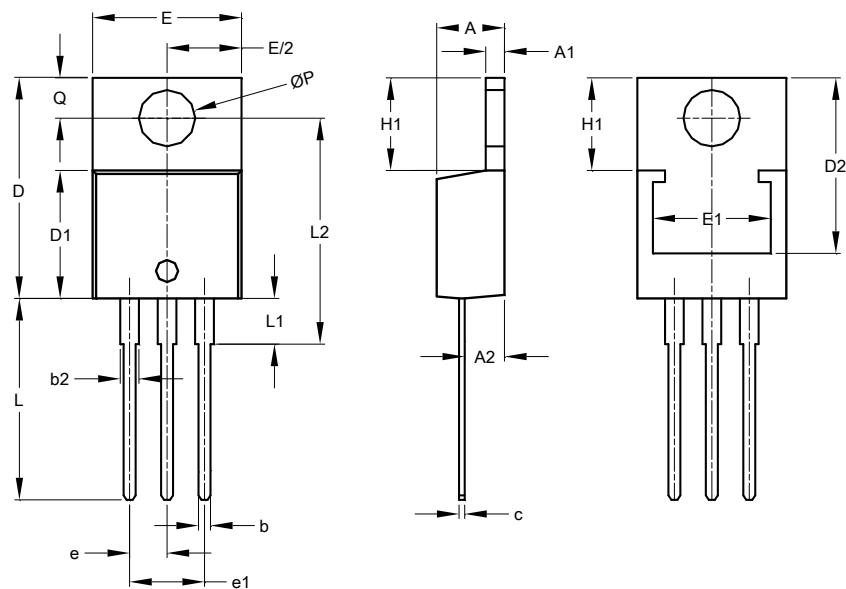


Fig. 3 Forward Current Derating, Curve

## Package Outline Dimensions

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

**TO-220AB**



TO-220AB			
Dim	Min	Max	Typ
<b>A</b>	3.56	4.82	—
<b>A1</b>	0.51	1.39	—
<b>A2</b>	2.04	2.92	—
<b>b</b>	0.39	1.01	0.81
<b>b2</b>	1.15	1.77	1.24
<b>c</b>	0.356	0.61	—
<b>D</b>	14.22	16.51	—
<b>D1</b>	8.39	9.01	—
<b>D2</b>	11.45	12.87	—
<b>e</b>	—	—	2.54
<b>e1</b>	—	—	5.08
<b>E</b>	9.66	10.66	—
<b>E1</b>	6.86	8.89	—
<b>H1</b>	5.85	6.85	—
<b>L</b>	12.70	14.73	—
<b>L1</b>	—	6.35	—
<b>L2</b>	15.80	16.20	16.00
<b>P</b>	3.54	4.08	—
<b>Q</b>	2.54	3.42	—

**All Dimensions in mm**

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