

Product Summary

| V_{RRM} (V) | I_o (A) | V_F Max (V) @ +25°C | I_R Max (mA) @ +25°C |
|---------------|----------------------------|--------------------------|---------------------------|
| 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:

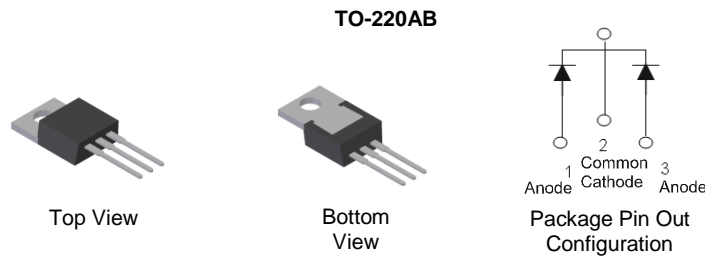
- DC-DC Converters
- AC-DC Adaptors

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 208③
- 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 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} | 45 | V |
| Working Peak Reverse Voltage | V_{RWM} | | |
| DC Blocking Voltage | V_{RM} | | |
| Average Rectified Output Current | I_O | 20 | A |
| (Per Leg) | | 40 | |
| (Total) | | | |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I_{FSM} | 280 | A |

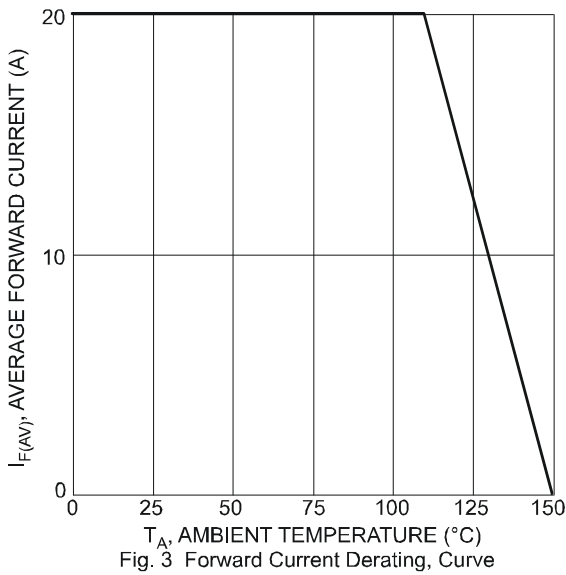
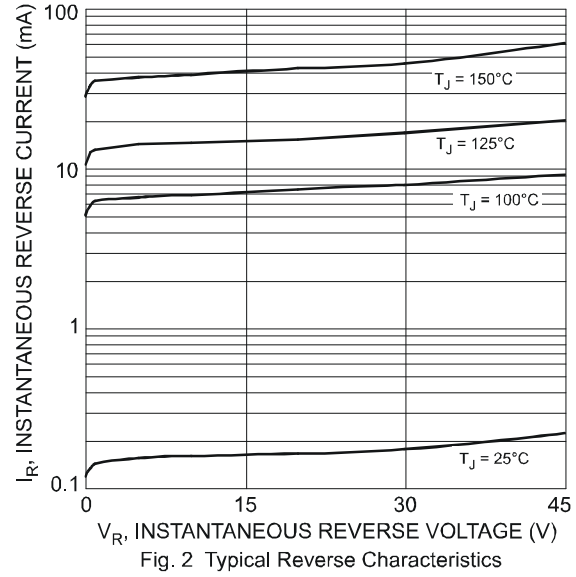
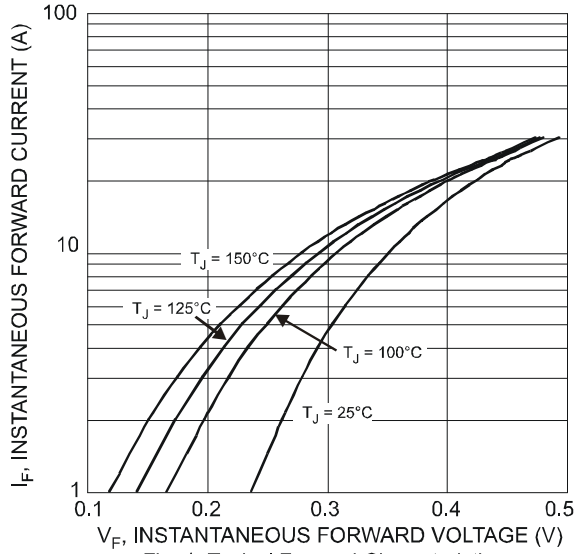
Thermal Characteristics (Per Leg)

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

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 | $V_R = 45\text{V}, T_J = +25^\circ\text{C}$ $V_R = 45\text{V}, T_J = +125^\circ\text{C}$ |

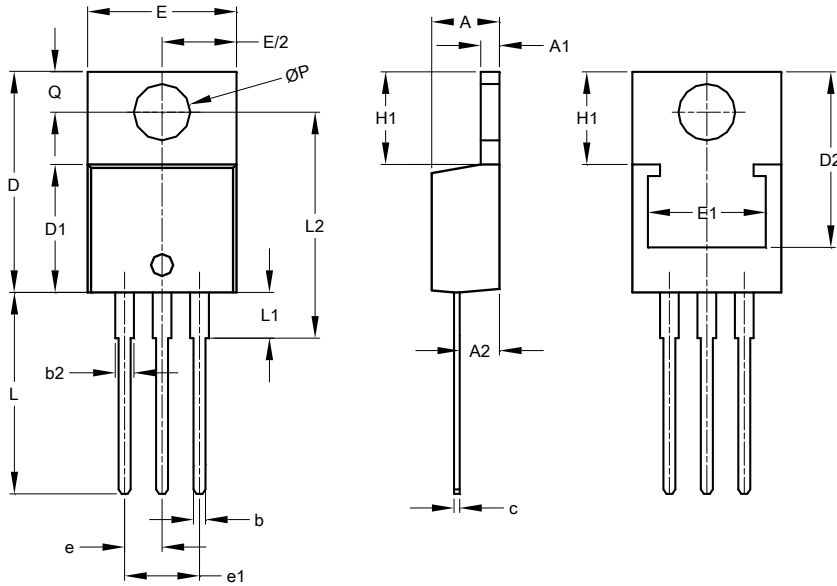
Notes: 6. Test with Aluminum heatsink 50 x 50 x 23mm.
7. Short duration pulse test used to minimize self-heating effect.



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 |
| A | 3.56 | 4.82 | — |
| A1 | 0.51 | 1.39 | — |
| A2 | 2.04 | 2.92 | — |
| b | 0.39 | 1.01 | 0.81 |
| b2 | 1.15 | 1.77 | 1.24 |
| c | 0.356 | 0.61 | — |
| D | 14.22 | 16.51 | — |
| D1 | 8.39 | 9.01 | — |
| D2 | 11.45 | 12.87 | — |
| e | — | — | 2.54 |
| e1 | — | — | 5.08 |
| E | 9.66 | 10.66 | — |
| E1 | 6.86 | 8.89 | — |
| H1 | 5.85 | 6.85 | — |
| L | 12.70 | 14.73 | — |
| L1 | — | 6.35 | — |
| L2 | 15.80 | 16.20 | 16.00 |
| P | 3.54 | 4.08 | — |
| Q | 2.54 | 3.42 | — |
| All Dimensions in mm | | | |

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