

## Features

- Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Mechanical Data

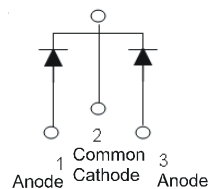
- Package: TO220AB
- Package Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish annealed over copper lead frame. Solderable per MIL-STD-202, Method 208 @3
- Weight: TO-220AB – 1.85 grams (Approximate)



TO220AB  
Top View



TO220AB  
Bottom View



Package Pin Out  
Configuration

## Ordering Information (Notes 4 & 5)

| Orderable Part Number | Package | Packing   |         |
|-----------------------|---------|-----------|---------|
|                       |         | Quantity  | Carrier |
| SBR30A50CT            | TO220AB | 50 Pieces | Tube    |
| SBR30A50CT-G          | TO220AB | 50 Pieces | Tube    |

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> 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: SBR30A50CT-G.
  5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



SBR30A50CT = Product Type Marking Code  
 DII = Manufacturers' Code Marking  
 AB = Foundry and Assembly Code  
 YYWW = Date Code Marking  
 YY = Last two digits of year (ex: 23 = 2023)  
 WW = Week (01 - 53)

**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                                                                     | $V_{RRM}$ | 50    | V    |
| Working Peak Reverse Voltage                                                                        | $V_{RWM}$ |       |      |
| DC Blocking Voltage                                                                                 | $V_{RM}$  |       |      |
| Average Rectified Output Current Per Device                                                         | $I_O$     | 15    | A    |
| (Per Leg)<br>(Total)                                                                                |           | 30    |      |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 260   | A    |
| Isolation Voltage (ITO-220AB Only)<br>From terminal to heatsink $t = 3$ sec.                        | $V_{AC}$  | 2000  | V    |

**Thermal Characteristics (Per Leg)**

| Characteristic                                  | Symbol          | Value       | Unit               |
|-------------------------------------------------|-----------------|-------------|--------------------|
| Typical Thermal Resistance                      | -               | -           | $^\circ\text{C/W}$ |
| Thermal Resistance Junction to Ambient (Note 6) | $R_{\theta JA}$ | 9.5         |                    |
| Thermal Resistance Junction to Case             | $R_{\theta JC}$ | 2           |                    |
| 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     | $V_F$  | -   | -   | 0.55 | V    | $I_F = 15\text{A}, T_J = 25^\circ\text{C}$  |
|                          |        |     |     | 0.50 |      | $I_F = 15\text{A}, T_J = 125^\circ\text{C}$ |
| Leakage Current (Note 7) | $I_R$  | -   | -   | 0.5  | mA   | $V_R = 50\text{V}, T_J = 25^\circ\text{C}$  |
|                          |        |     |     | 100  |      | $V_R = 50\text{V}, T_J = 125^\circ\text{C}$ |

Notes: 6. Test with additional heatsink, (Black Aluminum, 50mm\*37mm\*15mm)  
7. Short duration pulse test used to minimize self-heating effect.

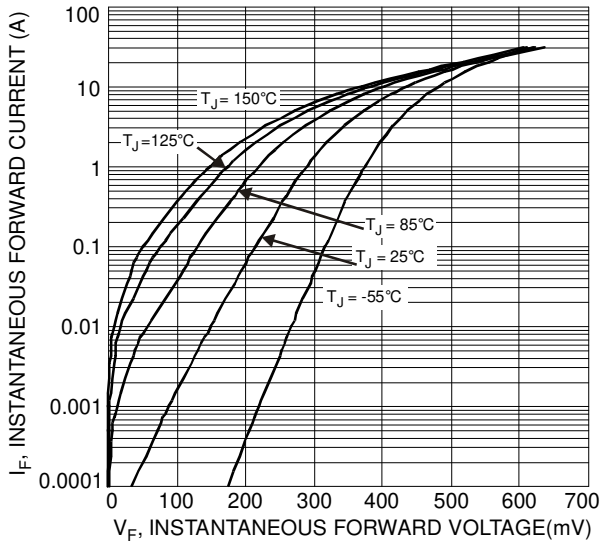


Fig. 1 Typical Forward Characteristics

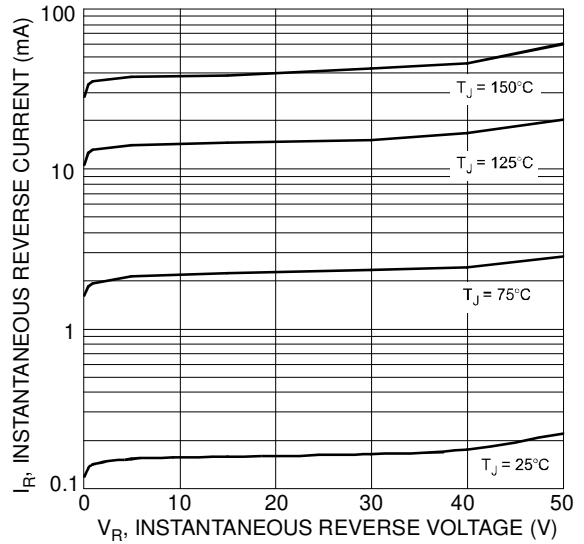


Fig. 2 Typical Reverse Characteristics, Per Element

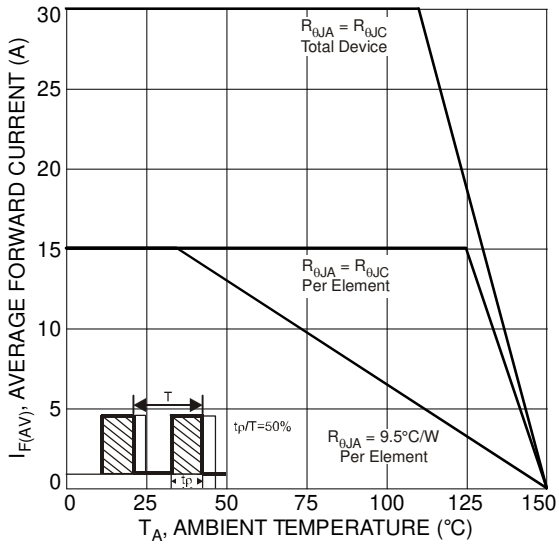
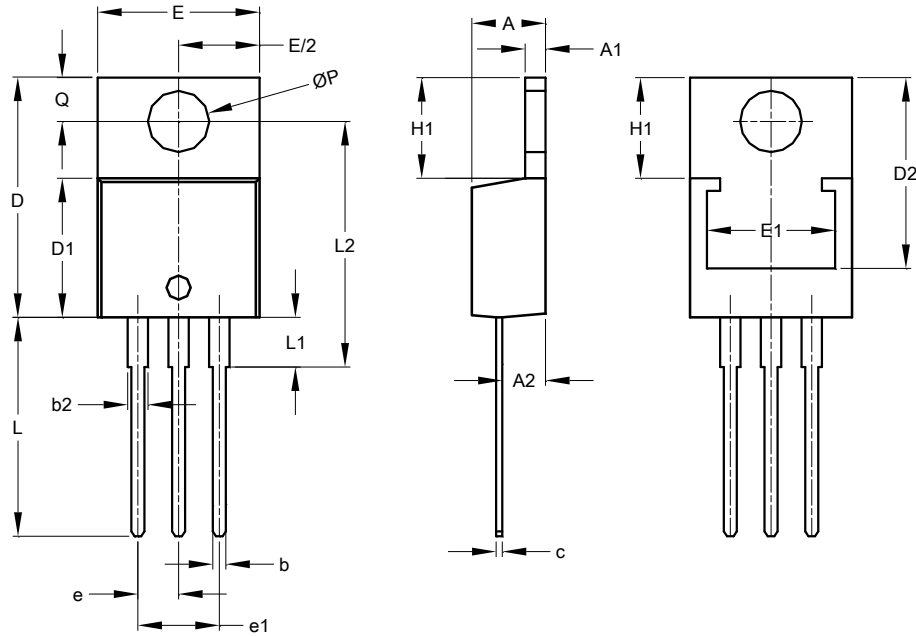


Fig. 3 Forward Current Derating Curve, Per Element

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**TO220AB**



| TO220AB                     |       |       |       |
|-----------------------------|-------|-------|-------|
| 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                          | -     | 4.42  | -     |
| L2                          | 15.80 | 17.51 | 16.00 |
| P                           | 3.54  | 4.08  | -     |
| Q                           | 2.54  | 3.42  | -     |
| <b>All Dimensions in mm</b> |       |       |       |

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