

## Product Summary (Per leg)

| $V_{RRM}$ (V) | $I_o$ (A) | $V_F$ (MAX) (V)<br>@ +25°C | $I_R$ (MAX) (mA)<br>@ +25°C |
|---------------|-----------|----------------------------|-----------------------------|
| 150           | 10        | 0.82                       | 0.1                         |

## Application

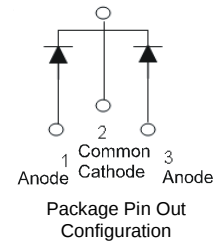
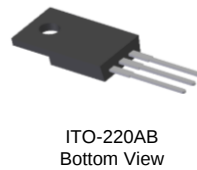
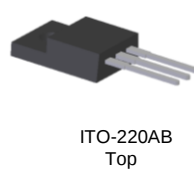
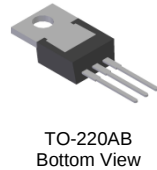
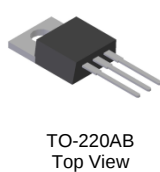
- Switching Power Supplies
- DC-DC Converters
- Freewheeling Diodes

## Features and Benefits

- 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)**
- Also Available in Green Molding Compound**

## Mechanical Data

- Case: TO-220AB, ITO-220AB, ITO-220AB (Type E)
- 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 ③
- Weight: TO-220AB – 1.85 grams (Approximate)  
ITO-220AB – 1.65 grams (Approximate)



## Ordering Information (Notes 4 & 5)

| Part Number                                                                                            | Case                  | Packaging      |
|--------------------------------------------------------------------------------------------------------|-----------------------|----------------|
|  SBR20A150CT        | TO-220AB              | 50 pieces/tube |
|  SBR20A150CT-G      | TO-220AB              | 50 pieces/tube |
|  SBR20A150CTFP      | ITO-220AB             | 50 pieces/tube |
|  SBR20A150CTFP-G    | ITO-220AB             | 50 pieces/tube |
|  SBR20A150CTFP-JT-G | ITO-220AB (Alternate) | 50 pieces/tube |

- Notes:
- EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  - 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.
  - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  - For Green Molding Compound version part numbers, add "-G" suffix to part number above. Examples: SBR20A150CT-G.
  - For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



SBR20A150CT = Product Type Marking Code  
AB = Foundry and Assembly Code  
YYWW = Date Code Marking  
YY = Last two Digits of Year (ex: 14 = 2014)  
WW = Week (01 – 53)



SBR20A150CTFP = Product Type Marking Code  
AB = Foundry and Assembly Code  
YYWW = Date Code Marking  
YY = Last two Digits of Year (ex: 14 = 2014)  
WW = Week (01 – 53)

### Maximum Ratings (Per Leg) (@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<br>Working Peak Reverse Voltage<br>DC Blocking Voltage              | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>RM</sub> | 150      | V    |
| Average Rectified Output Current Per Device (Per Leg)<br>(Total)                                    | I <sub>O</sub>                                          | 10<br>20 | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>                                        | 180      | A    |
| Peak Repetitive Reverse Surge Current (2μS-1KHz)                                                    | I <sub>RRM</sub>                                        | 3        | A    |
| Isolation Voltage (ITO-220AB Only)<br>From terminal to heatsink t = 3 sec.                          | V <sub>AC</sub>                                         | 2,000    | V    |

### Thermal Characteristics (Per Leg)

| Characteristic                                                                   | Symbol                            | Value       | Unit |
|----------------------------------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Thermal Resistance (Note 6)<br>Package = TO-220AB<br>Package = ITO-220AB | R <sub>θJC</sub>                  | 2<br>4      | °C/W |
| Operating and Storage Temperature Range                                          | T <sub>J</sub> , T <sub>STG</sub> | -65 to +175 | °C   |

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

| Characteristic           | Symbol         | Min | Typ       | Max          | Unit | Test Condition                                                                                  |
|--------------------------|----------------|-----|-----------|--------------|------|-------------------------------------------------------------------------------------------------|
| Forward Voltage Drop     | V <sub>F</sub> | —   | —<br>0.64 | 0.82<br>0.68 | V    | I <sub>F</sub> = 10A, T <sub>J</sub> = +25°C<br>I <sub>F</sub> = 10A, T <sub>J</sub> = +125°C   |
| Leakage Current (Note 7) | I <sub>R</sub> | —   | —         | 0.1<br>10    | mA   | V <sub>R</sub> = 150V, T <sub>J</sub> = +25°C<br>V <sub>R</sub> = 150V, T <sub>J</sub> = +125°C |

Notes: 6. Device mounted on additional heatsink, (50mm x 50mm x 23mm Al heatsink).  
7. Short duration pulse test used to minimize self-heating effect.

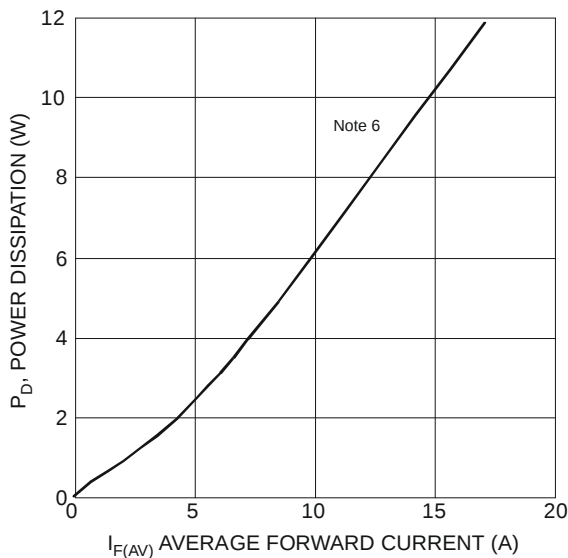


Figure 1 Forward Power Dissipation

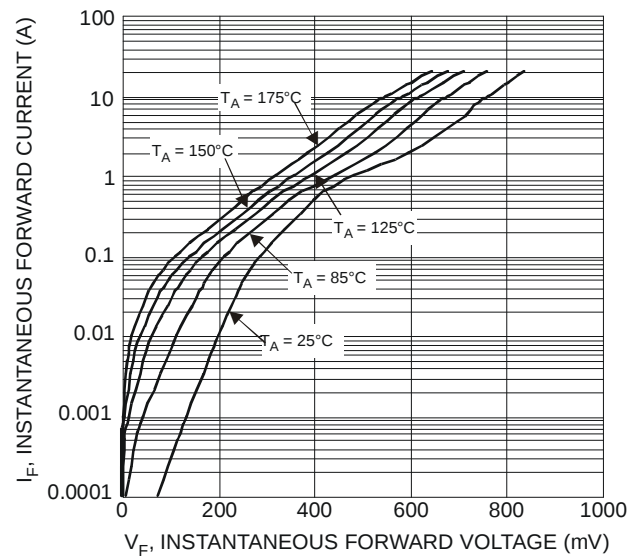


Figure 2 Typical Forward Characteristics

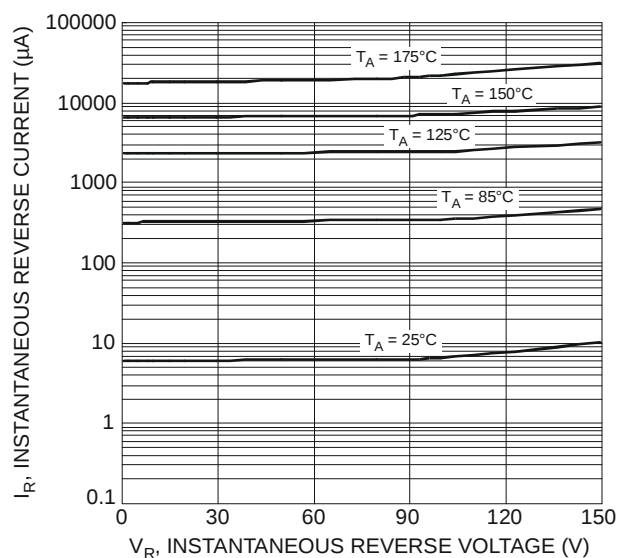


Figure 3 Typical Reverse Characteristics

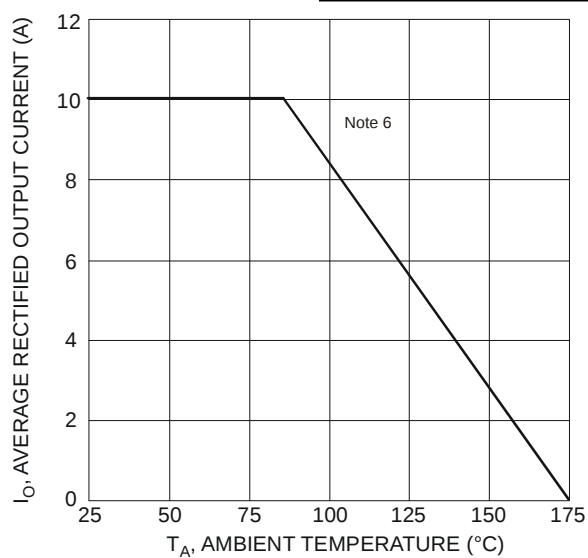
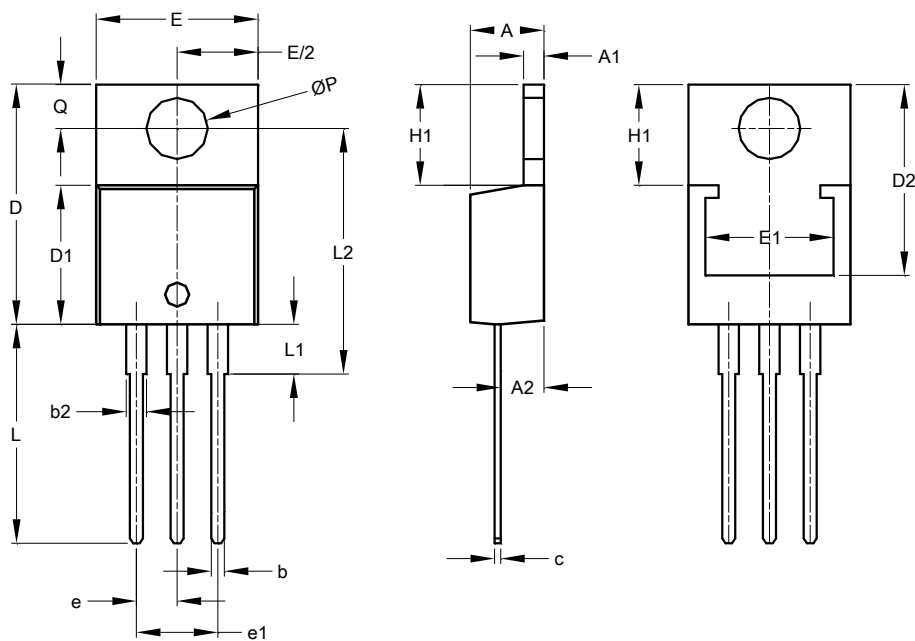


Figure 4 Forward Current Derating Curve

## Package Outline Dimensions

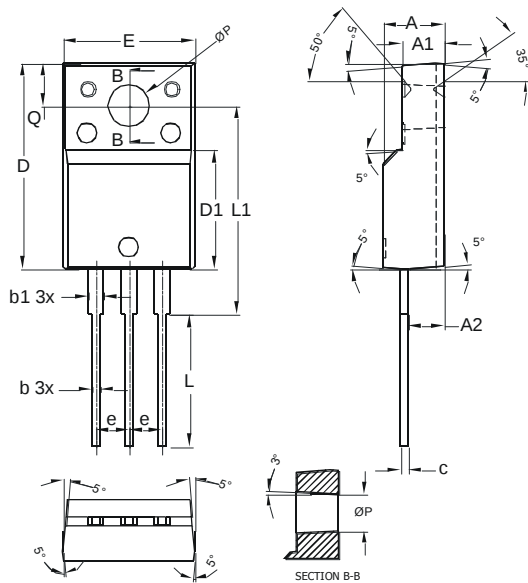
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



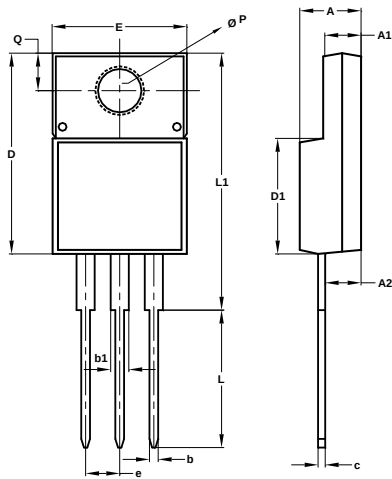
| TO220AB              |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 3.56  | 4.82  | -     |
| A1                   | 0.51  | 1.39  | -     |
| A2                   | 2.04  | 2.92  | -     |
| b                    | 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                   | -     | 6.35  | -     |
| L2                   | 15.80 | 16.20 | 16.00 |
| P                    | 3.54  | 4.08  | -     |
| Q                    | 2.54  | 3.42  | -     |
| All Dimensions in mm |       |       |       |

## Package Outline Dimensions (continued)

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



| ITO-220AB            |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Typ   | Max   |
| A                    | 4.50  | 4.70  | 4.90  |
| A1                   | 3.04  | 3.24  | 3.44  |
| A2                   | 2.56  | 2.76  | 2.96  |
| b                    | 0.50  | 0.60  | 0.75  |
| b1                   | 1.10  | 1.20  | 1.35  |
| c                    | 0.50  | 0.60  | 0.70  |
| D                    | 15.67 | 15.87 | 16.07 |
| D1                   | 8.99  | 9.19  | 9.39  |
| e                    | 2.54  |       |       |
| E                    | 9.91  | 10.11 | 10.31 |
| L                    | 9.45  | 9.75  | 10.05 |
| L1                   | 15.80 | 16.00 | 16.20 |
| P                    | 2.98  | 3.18  | 3.38  |
| Q                    | 3.10  | 3.30  | 3.50  |
| All Dimensions in mm |       |       |       |



| ITO-220AB<br>(Type E) |       |       |
|-----------------------|-------|-------|
| Dim                   | Min   | Max   |
| A                     | 4.36  | 4.77  |
| A1                    | 2.54  | 3.10  |
| A2                    | 2.54  | 2.80  |
| b                     | 0.55  | 0.75  |
| b1                    | 1.20  | 1.50  |
| c                     | 0.38  | 0.68  |
| D                     | 14.50 | 15.50 |
| D1                    | 8.38  | 8.89  |
| e                     | 2.41  | 2.67  |
| E                     | 9.72  | 10.27 |
| L                     | 9.87  | 10.67 |
| L1                    | 15.8  | 17.00 |
| P                     | 3.08  | 3.39  |
| Q                     | 2.60  | 3.00  |
| All Dimensions in mm  |       |       |

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