

## 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)**
- **Also Available in Green Molding Compound**
  - **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

- Case: TO-220AB, ITO-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>(e3)</sup>
- Weight: TO-220AB – 1.85 grams (approximate)  
ITO-220AB – 1.65 grams (approximate)



TO-220AB  
Top View



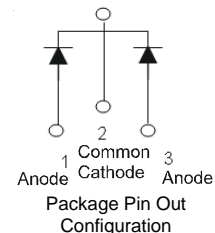
TO-220AB  
Bottom View



ITO-220AB  
Top View



ITO-220AB  
Bottom View

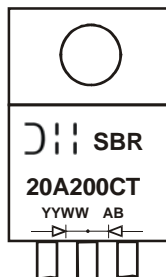


## Ordering Information (Notes 4 & 5)

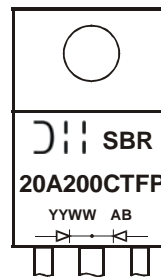
|  | Part Number        | Case                 | Packaging      |
|--|--------------------|----------------------|----------------|
|  | SBR20A200CT        | TO-220AB             | 50 pieces/tube |
|  | SBR20A200CT-G      | TO-220AB             | 50 pieces/tube |
|  | SBR20A200CTFP      | ITO-220AB            | 50 pieces/tube |
|  | SBR20A200CTFP-G    | ITO-220AB            | 50 pieces/tube |
|  | SBR20A200CTFP-JT-G | ITO-220AB(Alternate) | 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> 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: SBR20A200CT-G.
  5. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



SBR20A200CT = Product Type Marking Code  
AB = Foundry and Assembly Code  
YYWW = Date Code Marking  
YY = Last two digits of year (ex: 06 = 2006)  
WW = Week (01 - 53)



SBR20A200CTFP = Product Type Marking Code  
AB = Foundry and Assembly Code  
YYWW = Date Code Marking  
YY = Last two digits of year (ex: 06 = 2006)  
WW = Week (01 - 53)

SBR is a registered trademark of Diodes Incorporated.

SBR20A200

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### 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  | V <sub>RRM</sub> | 200    | V    |
| Working Peak Reverse Voltage   | V <sub>RWM</sub> |        |      |
| DC Blocking Voltage  | V <sub>RM</sub>  |        |      |
| Maximum Voltage Rate of Change (Rated V <sub>R</sub> )   | dv/dt            | 10,000 | V/μs |
| Average Rectified Output Current (Per Leg)   | I <sub>o</sub>   | 10     | A    |
| (Total)  |                  | 20     |      |
| Non-Repetitive Peak Forward Surge Current 8.3ms 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>  | 2000   | V    |

### Thermal Characteristics (Per Leg)

| Characteristic  | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance<br>Package = TO-220AB<br>Package = ITO-220AB | R <sub>θJC</sub>                  | 2           | °C/W |
|   |                                   | 4           |      |
| 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>0.66<br>- | 0.86<br>0.72<br>0.96 | V    | I <sub>F</sub> = 10A, T <sub>J</sub> = 25°C<br>I <sub>F</sub> = 10A, T <sub>J</sub> = 125°C<br>I <sub>F</sub> = 20A, T <sub>J</sub> = 25°C                  |
| Leakage Current (Note 6) | I <sub>R</sub>  | -   | -              | 0.1<br>10            | mA   | V <sub>R</sub> = 200V, T <sub>J</sub> = 25°C<br>V <sub>R</sub> = 200V, T <sub>J</sub> = 125°C   |
| Reverse Recovery Time    | t <sub>rr</sub> | -   | 24<br>20       | 30<br>25             | ns   | I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1A, I <sub>RR</sub> = 0.25A<br>I <sub>F</sub> = 1A, V <sub>R</sub> = 30V,<br>di/dt = 100A/μs, T <sub>J</sub> = 25°C |

Notes: 6. Short duration pulse test used to minimize self-heating effect.

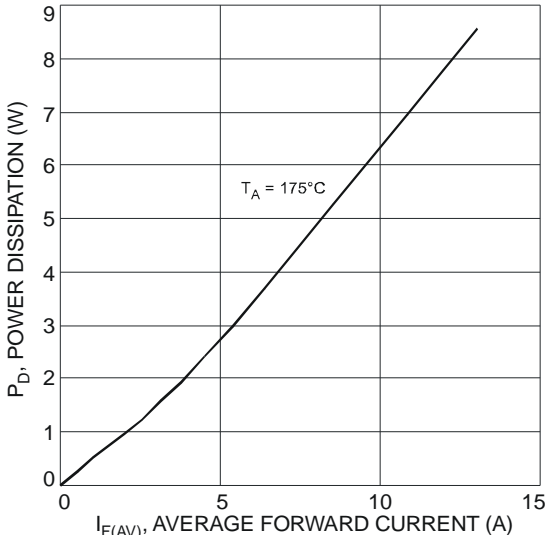


Fig. 1 Forward Power Dissipation

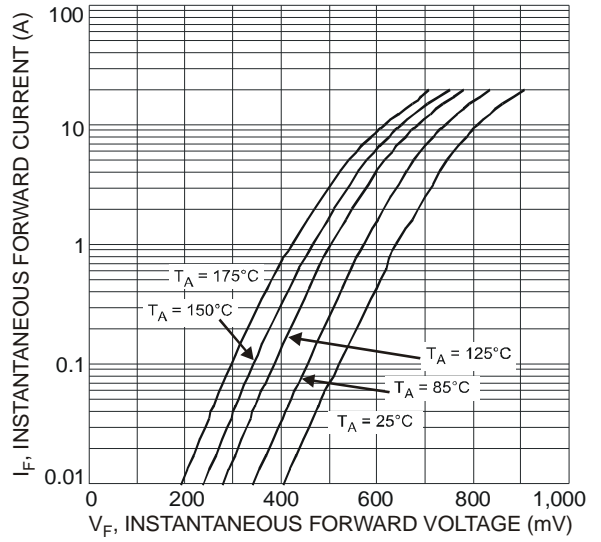


Fig. 2 Typical Forward Characteristics

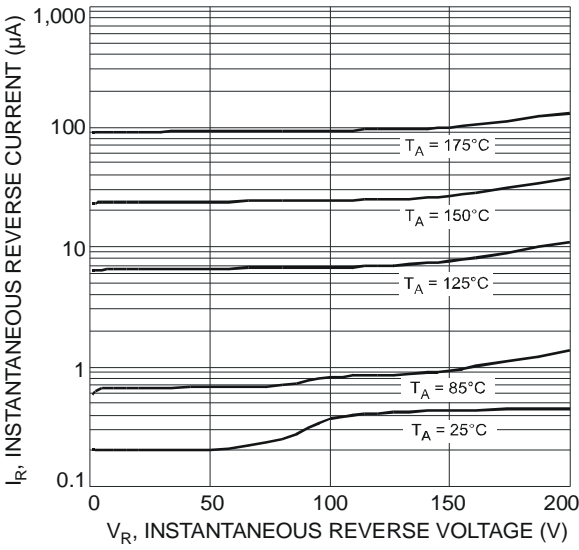


Fig. 3 Typical Reverse Characteristics

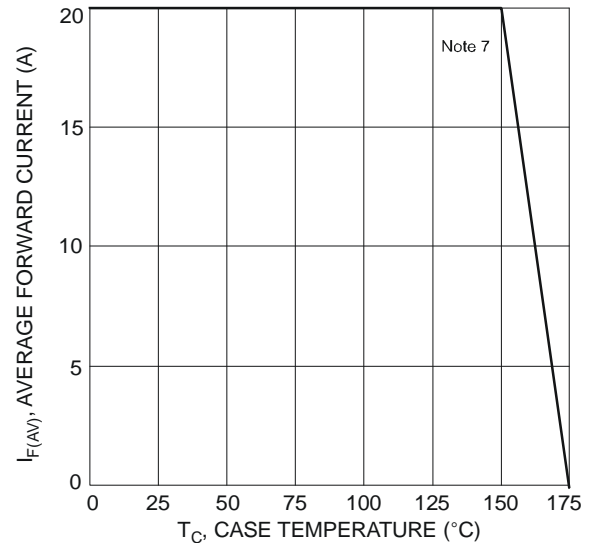


Fig. 4 Forward Current Derating Curve

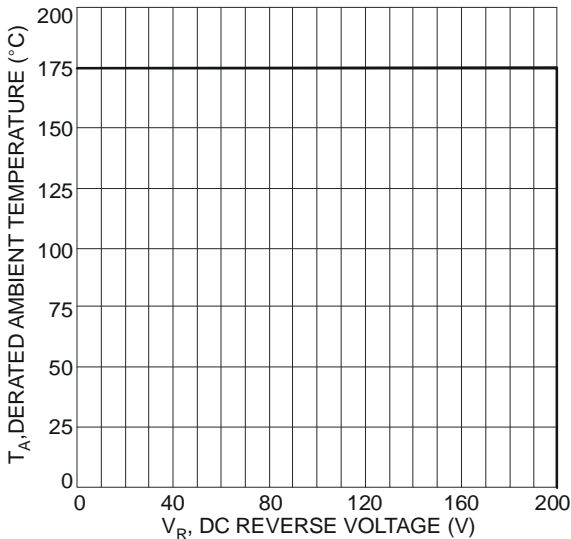
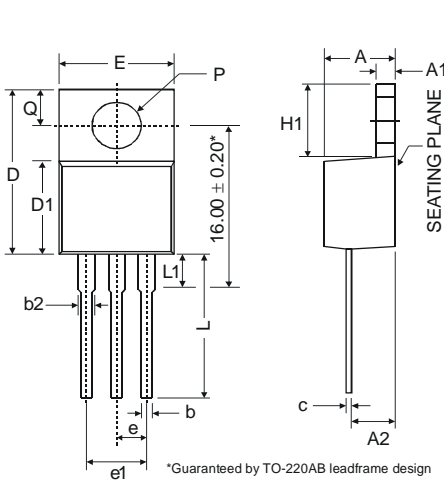


Fig. 5 Operating Temperature Derating

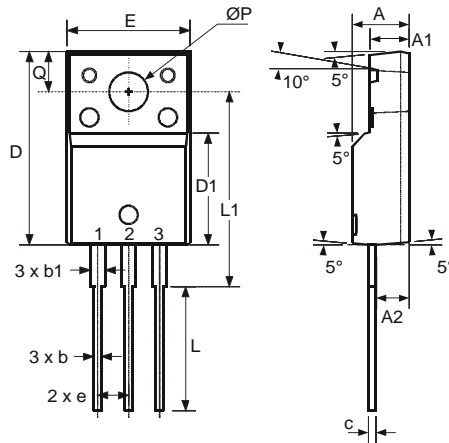
Notes: 7. Using heatsink (by black Aluminum 45mm \* 20mm \* 12mm)

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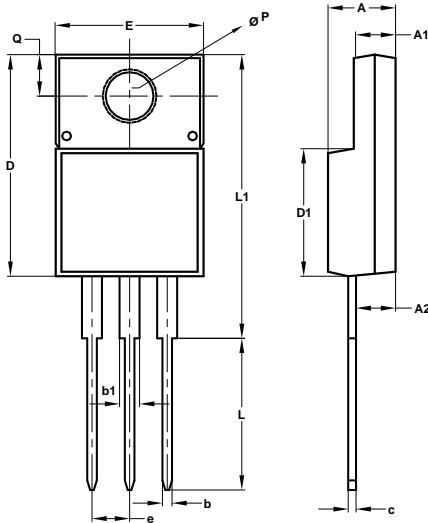
### Package Outline Dimensions



| TO-220AB                    |       |      |       |
|-----------------------------|-------|------|-------|
| Dim                         | Min   | Typ  | Max   |
| A                           | 3.56  | -    | 4.82  |
| A1                          | 0.51  | -    | 1.39  |
| A2                          | 2.04  | -    | 2.92  |
| b                           | 0.39  | 0.81 | 1.01  |
| b2                          | 1.15  | 1.24 | 1.77  |
| c                           | 0.356 | -    | 0.61  |
| D                           | 14.22 | -    | 16.51 |
| D1                          | 8.39  | -    | 9.01  |
| e                           | 2.54  |      |       |
| e1                          | 5.08  |      |       |
| E                           | 9.66  | -    | 10.66 |
| H1                          | 5.85  | -    | 6.85  |
| L                           | 12.70 | -    | 14.73 |
| L1                          | -     | -    | 6.35  |
| P                           | 3.54  | -    | 4.08  |
| Q                           | 2.54  | -    | 3.42  |
| <b>All Dimensions in mm</b> |       |      |       |



| 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  |
| <b>All Dimensions in mm</b> |       |       |       |



| ITO220AB (Alternate)        |       |       |
|-----------------------------|-------|-------|
| 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  |
| <b>All Dimensions in mm</b> |       |       |

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