

## 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

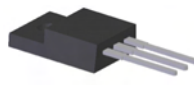
- Case: TO-220AB, ITO-220AB
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 
- Weight: TO-220AB – 1.85 grams (approximate)  
ITO-220AB – 1.65 grams (approximate)



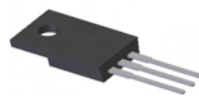
TO-220AB  
Top View



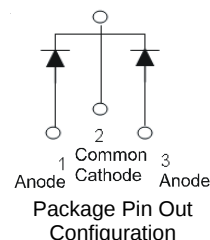
TO-220AB  
Bottom View



ITO-220AB  
Top View



ITO-220AB  
Bottom View

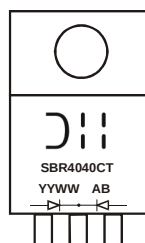


## Ordering Information (Notes 4 and 5)

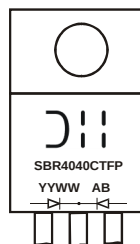
|                                                                                     | Part Number    | Case                  | Packaging      |
|-------------------------------------------------------------------------------------|----------------|-----------------------|----------------|
|  | SBR4040CT      | TO-220AB              | 50 pieces/tube |
|  | SBR4040CT-G    | TO-220AB              | 50 pieces/tube |
|  | SBR4040CTFP    | ITO-220AB             | 50 pieces/tube |
|  | SBR4040CTFP-G  | ITO-220AB             | 50 pieces/tube |
|  | SBR4040CTFP-JT | 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: SBR4040CT-G.
  5. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



SBR4040CT = 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)



SBR4040CTFP = 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)

**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> | 40       | V    |
| Working Peak Reverse Voltage                                                                        | V <sub>RWM</sub> |          |      |
| DC Blocking Voltage                                                                                 | V <sub>RM</sub>  |          |      |
| Average Rectified Output Current Per Device (Per Leg)<br>(Total)                                    | I <sub>O</sub>   | 20<br>40 | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 280      | A    |
| Peak Repetitive Reverse Surge Current (2μS - 1KHz)                                                  | I <sub>RRM</sub> | 2        | A    |
| Isolation Voltage (ITO-220AB Only)<br>From terminal to heatsink t = 3 sec.                          | V <sub>AC</sub>  | 2000     | V    |

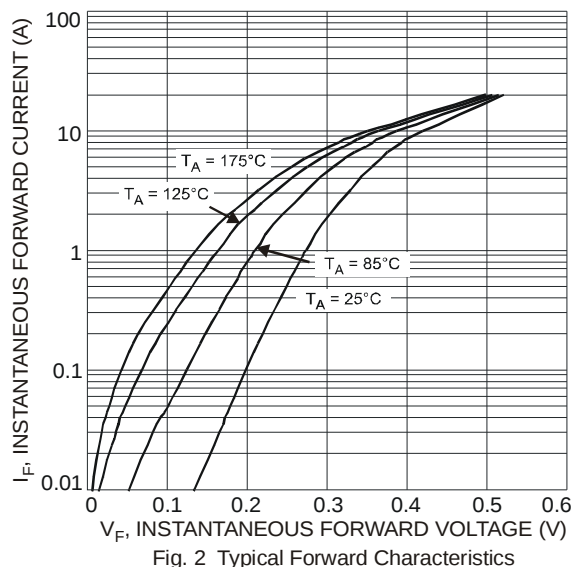
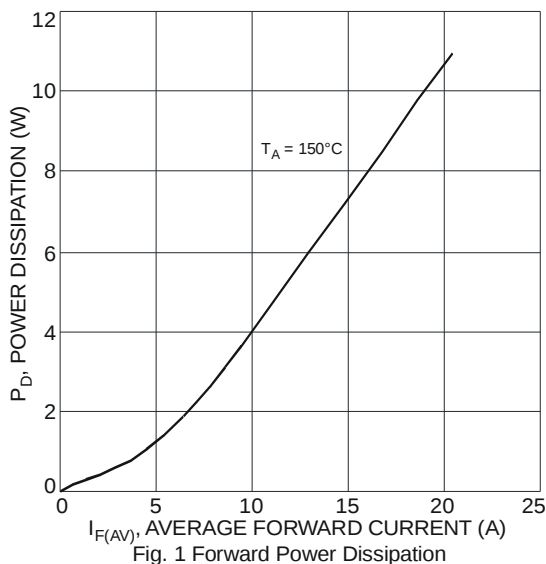
**Thermal Characteristics (Per Leg)**

| Characteristic                                                          | Symbol                            | Value       | Unit |
|-------------------------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Thermal Resistance<br>Package = TO-220AB<br>Package = ITO-220AB | R <sub>θJC</sub>                  | 2<br>4      | °C/W |
| Operating and Storage Temperature Range                                 | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °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>0.44 | 0.53<br>0.48 | V    | I <sub>F</sub> = 20A, T <sub>J</sub> = 25°C<br>I <sub>F</sub> = 20A, T <sub>J</sub> = 125°C |
| Leakage Current (Note 6) | I <sub>R</sub> | -   | -         | 0.5<br>100   | mA   | V <sub>R</sub> = 40V, T <sub>J</sub> = 25°C<br>V <sub>R</sub> = 40V, T <sub>J</sub> = 125°C |

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



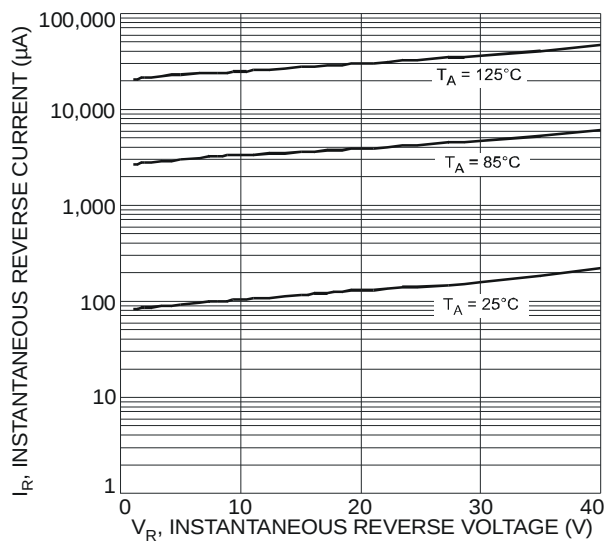


Fig. 3 Typical Reverse Characteristics

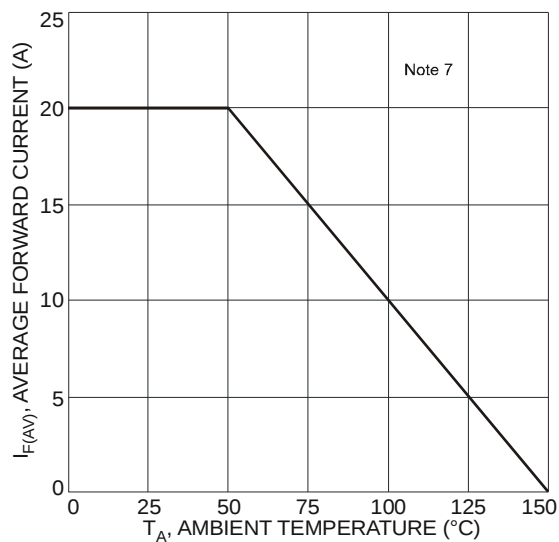


Fig. 4 Forward Current Derating Curve

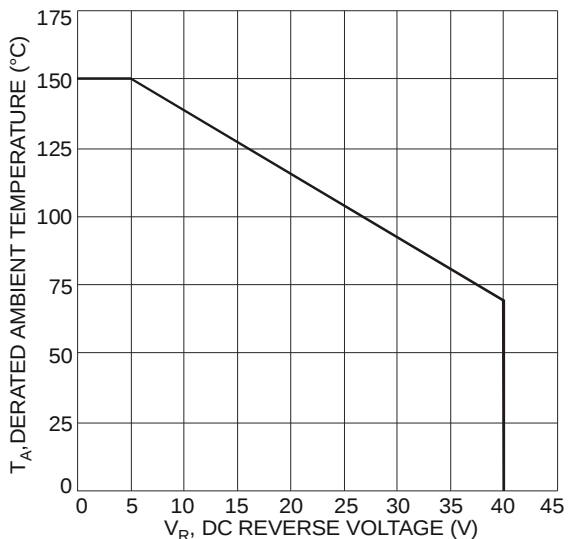
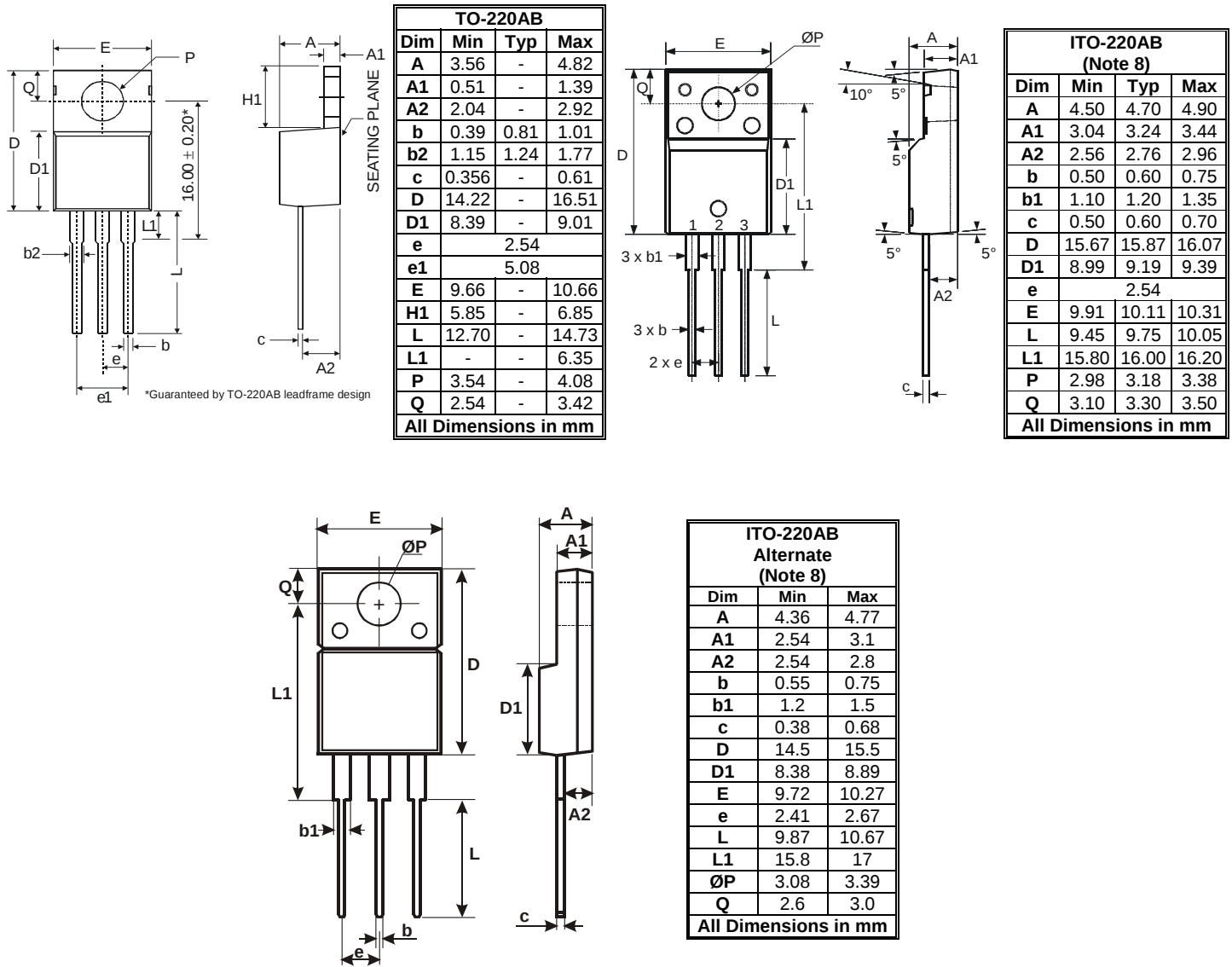


Fig. 5 Operating Temperature Derating

## Package Outline Dimensions



Notes: 8. For product manufactured with Date Code 0733 (week 33, 2007) and newer, please refer to ITO-220AB dimensions. For product manufactured prior to Date Code 0733, please refer to ITO-220AB ALTERNATE dimensions.

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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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