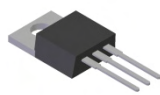


## Features

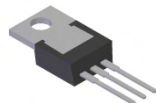
- Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- **Lead Free Finish, RoHS Compliant (Note 2)**
- **Also Available in Green Molding Compound (Note 4)**

## Mechanical Data

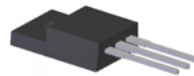
- Case: TO-220AB, ITO-220AB
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 <sup>(3)</sup>
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: TO-220AB – 1.85 grams (approximate)  
ITO-220AB – 1.65 grams (approximate)



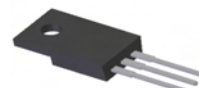
TO-220AB  
Top View



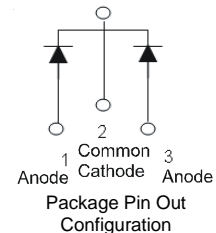
TO-220AB  
Bottom View



ITO-220AB  
Top View



ITO-220AB  
Bottom View



## 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) (Total)                                    | I <sub>O</sub>   | 10<br>20 | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 200      | A    |
| Peak Repetitive Reverse Surge Current (2µs-1KHz)   | I <sub>RRM</sub> | 3        | A    |
| Isolation Voltage (ITO-220AB Only) From terminal to heatsink t = 3 sec.                          | V <sub>AC</sub>  | 2000     | V    |

## Thermal Characteristics (Per Leg)

| Characteristic                          | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance (per leg)    | R <sub>θJC</sub>                  | 2           | °C/W |
| Package = TO-220AB                      |                                   | 4           |      |
| 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> | -   | -    | 0.47 | V    | I <sub>F</sub> = 10A, T <sub>J</sub> = 25°C  |
|                          |                |     | 0.41 | 0.44 |      | I <sub>F</sub> = 10A, T <sub>J</sub> = 125°C |
|                          |                |     | -    | 0.60 |      | I <sub>F</sub> = 20A, T <sub>J</sub> = 25°C  |
| Leakage Current (Note 1) | I <sub>R</sub> | -   | -    | 0.5  | mA   | V <sub>R</sub> = 40V, T <sub>J</sub> = 25°C  |
|                          |                |     |      | 100  |      | V <sub>R</sub> = 40V, T <sub>J</sub> = 125°C |

- Notes:
1. Short duration pulse test used to minimize self-heating effect.
  2. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.
  3. Using heatsink (by Black Aluminum, 45mm\*20mm\*12mm)

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July 2010

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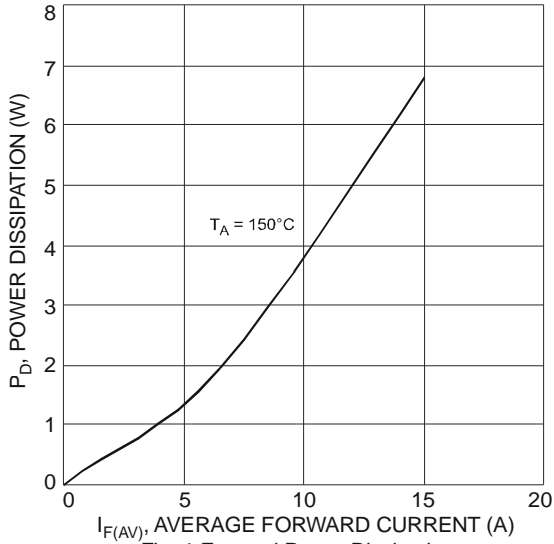


Fig. 1 Forward Power Dissipation

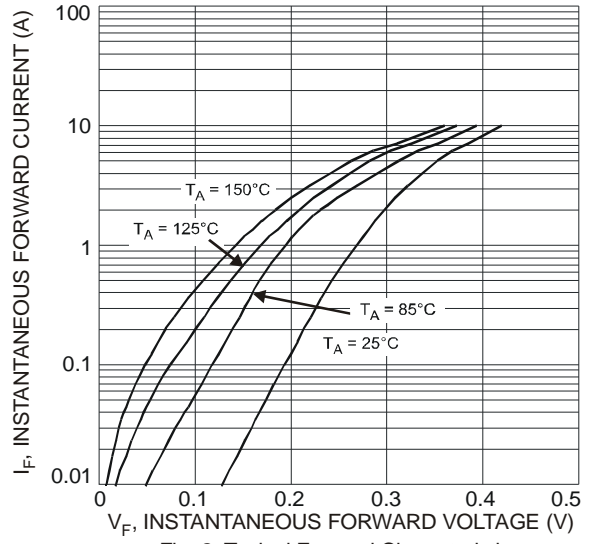


Fig. 2 Typical Forward Characteristics

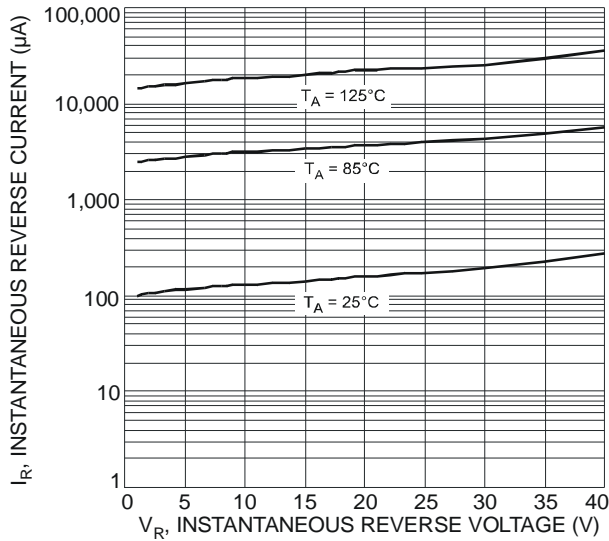


Fig. 3 Typical Reverse Characteristics

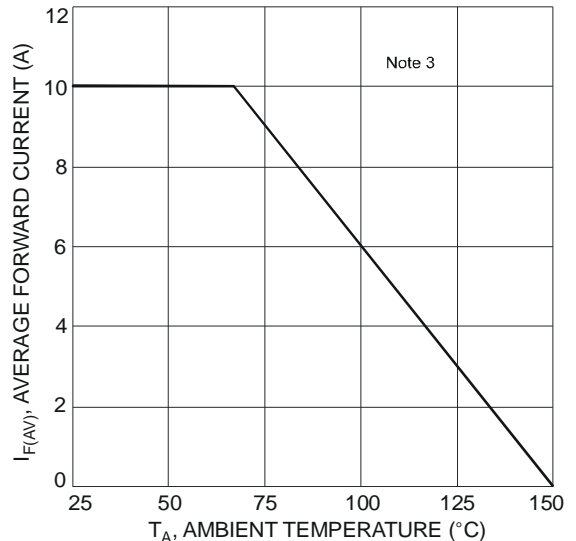


Fig. 4 Forward Current Derating Curve

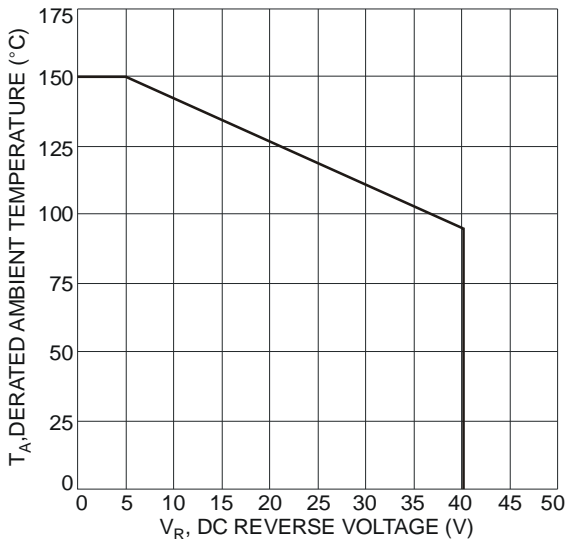


Fig. 5 Operating Temperature Derating

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### Ordering Information (Notes 4 & 5)

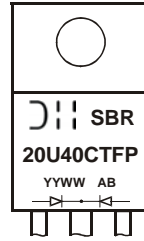
| Part Number     | Case                  | Packaging      |
|-----------------|-----------------------|----------------|
| SBR20U40CT      | TO-220AB              | 50 pieces/tube |
| SBR20U40CT-G    | TO-220AB              | 50 pieces/tube |
| SBR20U40CTFP    | ITO-220AB             | 50 pieces/tube |
| SBR20U40CTFP-G  | ITO-220AB             | 50 pieces/tube |
| SBR20U40CTFP-JT | ITO-220AB (Alternate) | 50 pieces/tube |

Notes: 4. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.  
5. For Green Molding Compound version part numbers, add "-G" suffix to part number above. Examples: SBR20U40CT-G.

### Marking Information

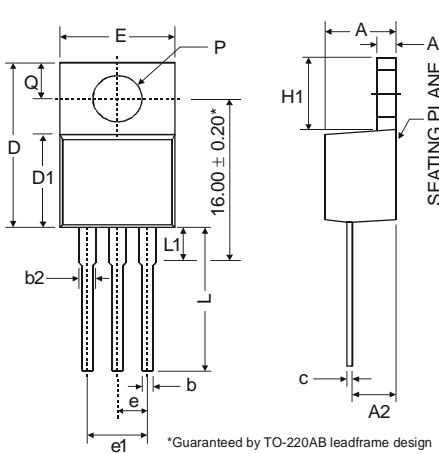


SBR20U40CT = Product Type Marking Code  
AB = Foundry and Assembly Code  
YYWW = Date Code Marking  
YY = Last two digits of year (ex: 06 = 2006)  
WW = Week (01 - 53)

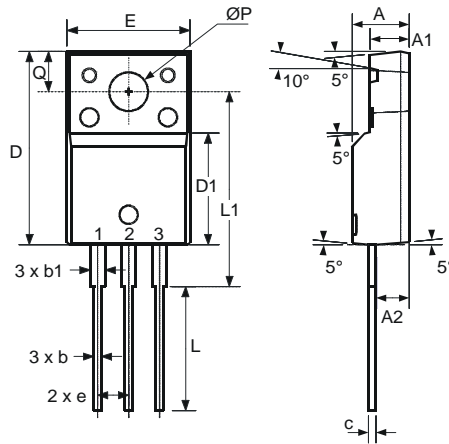


SBR20U40CTFP = Product Type Marking Code  
AB = Foundry and Assembly Code  
YYWW = Date Code Marking  
YY = Last two digits of year (ex: 06 = 2006)  
WW = Week (01 - 53)

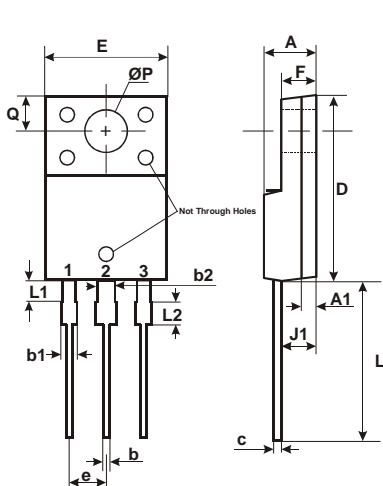
### Package Outline Dimensions



| 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  |
| All Dimensions in mm |       |      |       |



| 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 ALTERNATE  |          |       |
|----------------------|----------|-------|
| DIM.                 | MIN.     | MAX.  |
| A                    | 4.30     | 4.70  |
| A1                   | 1.3      |       |
| b                    | 0.50     | 0.75  |
| b1                   | 1.10     | 1.35  |
| b2                   | 1.50     | 1.75  |
| c                    | 0.50     | 0.75  |
| D                    | 14.80    | 15.20 |
| E                    | 9.96     | 10.36 |
| e                    | 2.54 typ |       |
| F                    | 2.80     | 3.20  |
| J1                   | 2.50     | 2.90  |
| L                    | 12.80    | 13.60 |
| L1                   | 1.70     | 1.90  |
| L2                   | 1.90     | 2.10  |
| ØP                   | 3.50 typ |       |
| Q                    | 2.70 typ |       |
| All Dimensions in mm |          |       |

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