

**20A SBR®**  
**Super Barrier Rectifier**

NEW PRODUCT

**Features**

- Low Forward Voltage Drop
- Excellent High Temperature Stability
- Super Barrier Design
- Soft, Fast Switching Capability
- Molded Plastic TO-220AB and ITO-220AB packages
- **Lead Free Finish, RoHS Compliant (Note 2)**

**Mechanical Data**

- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 **(e3)**
- Marking: See Page 3
- Ordering Information: See Page 3

**Maximum Ratings @  $T_A = 25^\circ\text{C}$  unless otherwise specified**

Single phase, half wave, 60Hz, resistive or inductive load.  
 For capacitive load, derate current by 20%.

| Characteristic                                                                                      | Symbol                             | Value       | Unit               |
|-----------------------------------------------------------------------------------------------------|------------------------------------|-------------|--------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage              | $V_{RRM}$<br>$V_{RWM}$<br>$V_{RM}$ | 300         | V                  |
| RMS Reverse Voltage                                                                                 | $V_{R(RMS)}$                       | 212         | V                  |
| Average Rectified Output Current @ $T_C = 150^\circ\text{C}$                                        | $I_O$                              | 20          | A                  |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$                          | 180         | A                  |
| Peak Repetitive Reverse Surge Current (2uS-1Khz)                                                    | $I_{RRM}$                          | 3           | A                  |
| Maximum Thermal Resistance (per leg)<br>Package = TO-220AB<br>Package = ITO-220AB                   | $R_{\theta JC}$                    | 2<br>4      | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range                                                             | $T_J, T_{STG}$                     | -65 to +175 | $^\circ\text{C}$   |

**Electrical Characteristics @  $T_A = 25^\circ\text{C}$  unless otherwise specified**

| Characteristic                     | Symbol      | Min | Typ  | Max                  | Unit | Test Condition                                                                                                                          |
|------------------------------------|-------------|-----|------|----------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Reverse Breakdown Voltage (Note 1) | $V_{(BR)R}$ | 300 | -    | -                    | V    | $I_R = 0.1 \text{ mA}$                                                                                                                  |
| Forward Voltage Drop               | $V_F$       | -   | 0.70 | 0.92<br>0.78<br>1.06 | V    | $I_F = 10\text{A}, T_J = 25^\circ\text{C}$<br>$I_F = 10\text{A}, T_J = 125^\circ\text{C}$<br>$I_F = 20\text{A}, T_J = 25^\circ\text{C}$ |
| Leakage Current (Note 1)           | $I_R$       | -   | -    | 0.1<br>10            | mA   | $V_R = 300\text{V}, T_J = 25^\circ\text{C}$<br>$V_R = 300\text{V}, T_J = 125^\circ\text{C}$                                             |

**Notes:**

1. Short duration pulse test used to minimize self-heating effect.
2. RoHS revision 13.2.2003. High temperature solder exemption applied, see *EU Directive Annex Note 7*.

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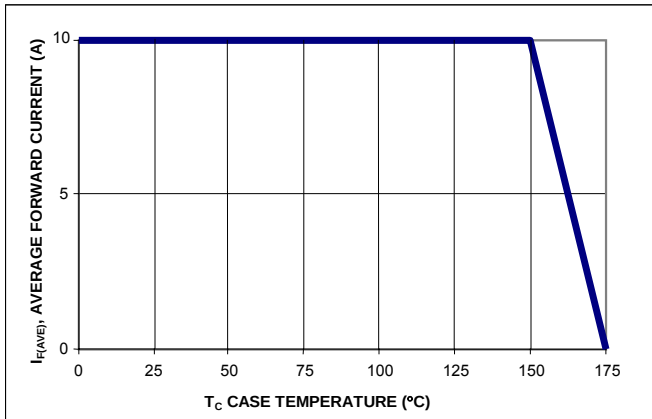


Figure 1: Current Derating Curve, Per Element

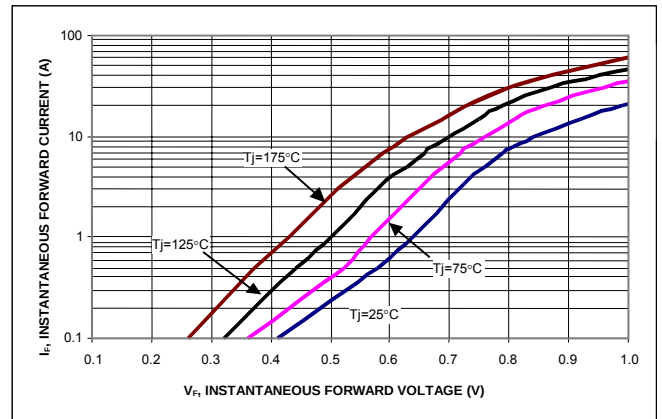


Figure 2: Typical Forward Characteristics, Per Element

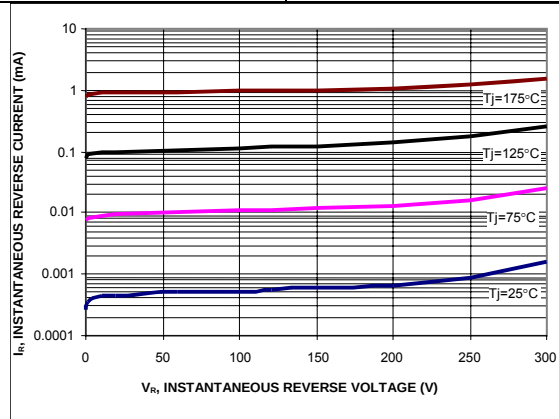
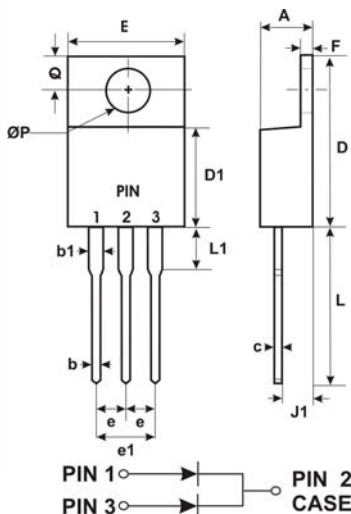


Figure 3: Typical Reverse Characteristics, Per Element

## Package Outline Drawings

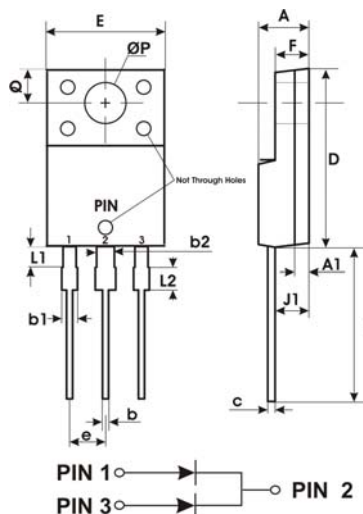
### TO-220AB



| TO-220AB |          |       |
|----------|----------|-------|
| DIM.     | MIN.     | MAX.  |
| A        | 4.47     | 4.67  |
| b        | 0.71     | 0.91  |
| b1       | 1.17     | 1.37  |
| c        | 0.31     | 0.53  |
| D        | 14.65    | 15.35 |
| D1       | 8.50     | 8.90  |
| E        | 10.01    | 10.31 |
| e        | 2.54 typ |       |
| e1       | 4.98     | 5.18  |
| F        | 1.17     | 1.37  |
| J1       | 2.52     | 2.82  |
| L        | 13.40    | 13.80 |
| L1       | 3.56     | 3.96  |
| ØP       | 3.735    | 3.935 |
| Q        | 2.59     | 2.89  |

All Dimensions in Millimeters

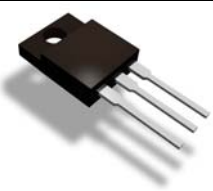
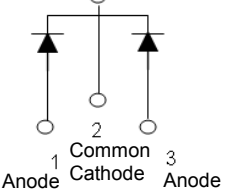
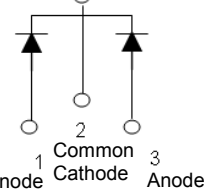
### ITO-220AB



| ITO-220AB |          |       |
|-----------|----------|-------|
| DIM.      | MIN.     | MAX.  |
| A         | 4.30     | 4.70  |
| 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  |
| ØP        | 3.50 typ |       |
| Q         | 2.70 typ |       |

All Dimensions in Millimeters

**Marking, Polarity, Weight & Ordering Information**

|            | SBR20A300CT                                                                                   | SBR20A300CTFP                                                                                    |
|------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Case Style | <br>TO-220AB | <br>ITO-220AB |
| Polarity   |              |               |
| Marking    |             |              |
| Weight     | 2.1g                                                                                          | 1.9g                                                                                             |

|                           |                                                                   |                                 |
|---------------------------|-------------------------------------------------------------------|---------------------------------|
| Ordering Information      | SBR20A300CT<br>50 pieces/tube                                     | SBR20A300CTFP<br>50 pieces/tube |
| Date Code                 | YY = Last two digits of year, ex = 06 = 2006<br>WW = Week (01-52) |                                 |
| Other Marking Information | A = Foundry Code<br>B = Assembly Code                             |                                 |

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