



**THE DATASHEET OF  
SBR20100CTFP-01**



## Product Summary

| $V_{RRM}$ (V) | $I_o$ (A)                  | $V_F(MAX)$ (V)<br>@ +25°C | $I_R(MAX)$ (mA)<br>@ +25°C |
|---------------|----------------------------|---------------------------|----------------------------|
| 100           | 10 (Per leg)<br>20 (Total) | 0.82                      | 0.1                        |

## Description and Applications

The SBR20100CT & SBR20100CTFP provide very low  $V_F$  and excellent reverse leakage stability at high temperatures. They are ideal for use as rectifiers, freewheel diodes or blocking diodes in:

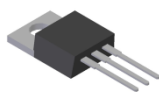
- DC-DC Converters
- AC-DC Adaptors

## Features and Benefits

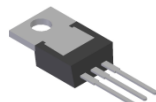
- Patented SBR<sup>®</sup> technology provides superior avalanche capability versus Schottky diodes, ensuring more rugged and reliable end applications.
- Reduced ultra-low forward voltage drop ( $V_F$ ); Better efficiency and cooler operation.
- Reduced high-temperature reverse leakage; Increased reliability against thermal runaway failure in high-temperature operation.
- TO220AB, ITO220AB and ITO220AB (Type E)
  - **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- Available in "Green" Packages: TO220AB and ITO220AB
  - **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
  - **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

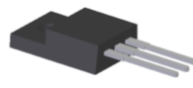
- Case: TO220AB, ITO220AB and ITO220AB (Type E)
- Case Material: Molded Plastic;  
UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish Annealed over Copper Leadframe;  
Solderable per MIL-STD-202, Method 208 @3
- Weight: TO220AB – 1.85 grams (Approximate)  
ITO220AB – 1.65 grams (Approximate)  
ITO220AB (Type E) – 1.65 grams (Approximate)



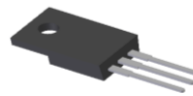
TO220AB  
Top View



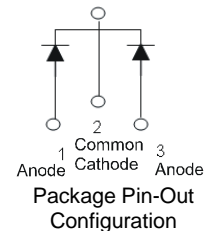
TO220AB  
Bottom View



ITO220AB  
Top View



ITO220AB  
Bottom View

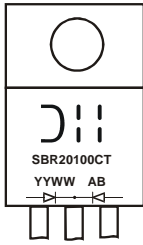


## Ordering Information (Notes 4 & 5)

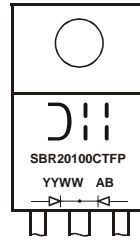
|  | Part Number     | Case              | Packaging      |
|--|-----------------|-------------------|----------------|
|  | SBR20100CT      | TO220AB           | 50 Pieces/Tube |
|  | SBR20100CT-G    | TO220AB           | 50 Pieces/Tube |
|  | SBR20100CTFP    | ITO220AB          | 50 Pieces/Tube |
|  | SBR20100CTFP-G  | ITO220AB          | 50 Pieces/Tube |
|  | SBR20100CTFP-JT | ITO220AB (Type E) | 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/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.
  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: SBR20100CT-G.
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



SBR20100CT = Product Type Marking Code  
AB = Foundry and Assembly Code  
YYWW = Date Code Marking  
YY = Last Two Digits of Year (ex: 16= 2016)  
WW = Week (01 to 53)



SBR20100CTFP = Product Type Marking Code  
AB = Foundry and Assembly Code  
YYWW = Date Code Marking  
YY = Last Two Digits of Year (ex: 16 = 2016)  
WW = Week (01 to 53)

## Maximum Ratings (Per Leg) (@T<sub>A</sub> = +25°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   | V <sub>RRM</sub> | 100      | V    |
| Working Peak Reverse Voltage  | V <sub>RWM</sub> |          |      |
| DC Blocking Voltage   | V <sub>RM</sub>  |          |      |
| Average Rectified Output Current Per Device<br>(Per Leg)<br>(Total)   | I <sub>O</sub>   | 10<br>20 | A    |
| Non-Repetitive Avalanche Energy<br>(T <sub>J</sub> = +25°C, I <sub>AS</sub> = 20A, L = 0.05mH, t <sub>p</sub> = 10µs) | E <sub>AS</sub>  | 10       | mJ   |
| Max. Avalanche Power<br>(10µs, +25°C)   | P <sub>ARM</sub> | 2,900    | W    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load                   | I <sub>FSM</sub> | 150      | A    |
| Peak Repetitive Reverse Surge Current (2µs - 1KHz)  | I <sub>RSM</sub> | 2        | A    |
| Isolation Voltage (ITO220AB Only)<br>From Terminal to Heatsink t = 3 seconds  | V <sub>AC</sub>  | 2,000    | V    |

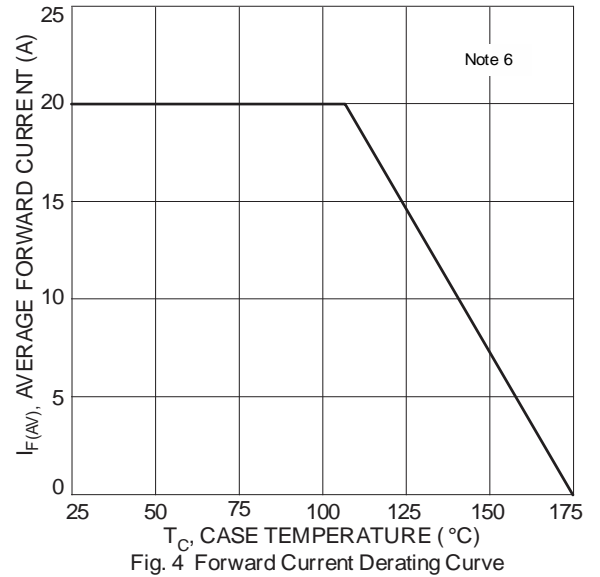
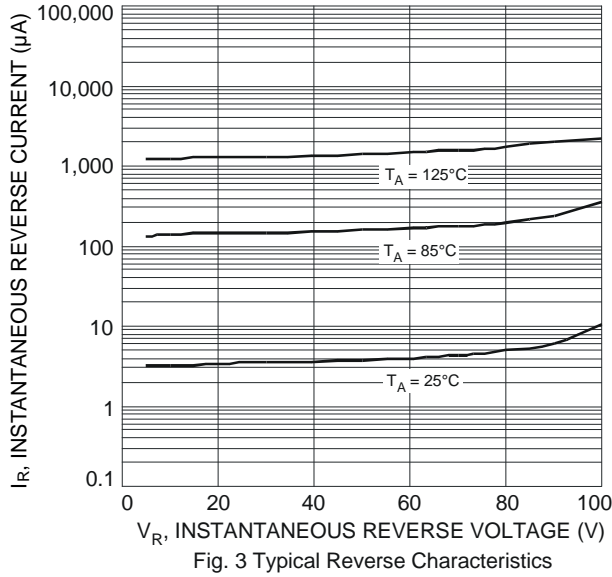
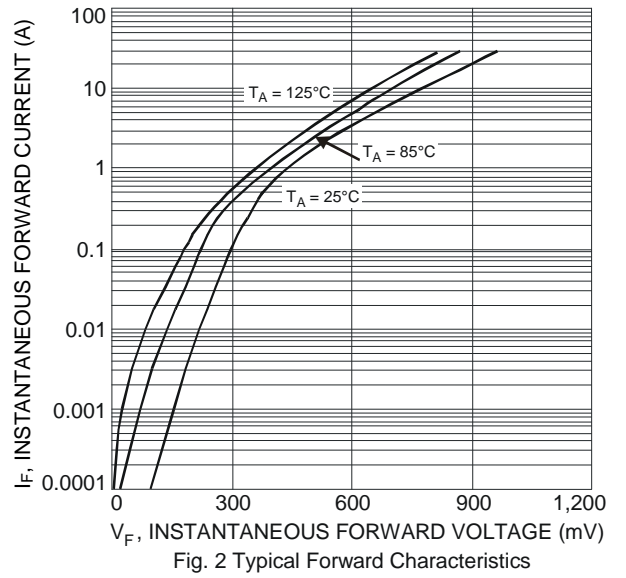
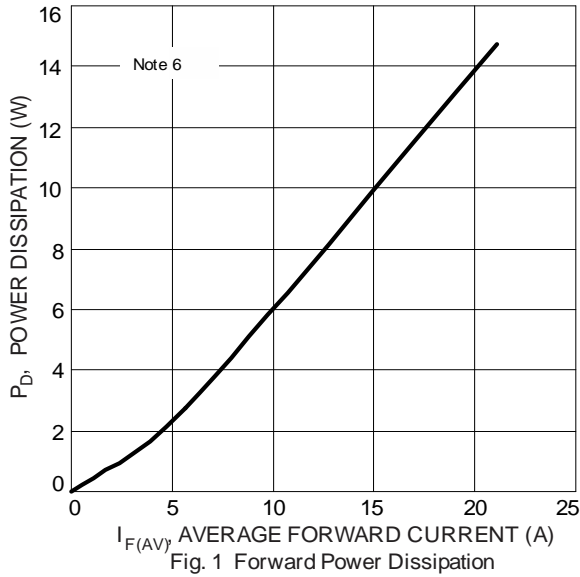
## Thermal Characteristics (Per Leg)

| Characteristic  | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance<br>Package = TO220AB (Note 6)<br>Package = ITO220AB (Note 6) | 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> | —   | —   | 0.82<br>0.75 | 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> = 100V, T <sub>J</sub> = +25°C<br>V <sub>R</sub> = 100V, T <sub>J</sub> = +125°C |

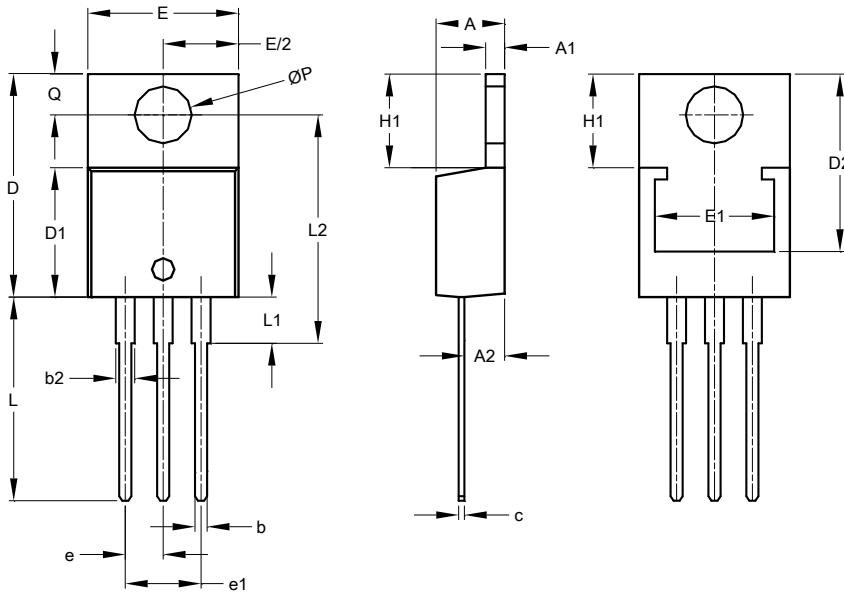
Notes: 6. Test with Aluminum heatsink 50 x 50 x 23mm.  
7. Short duration pulse test used to minimize self-heating effect.



**Package Outline Dimensions**

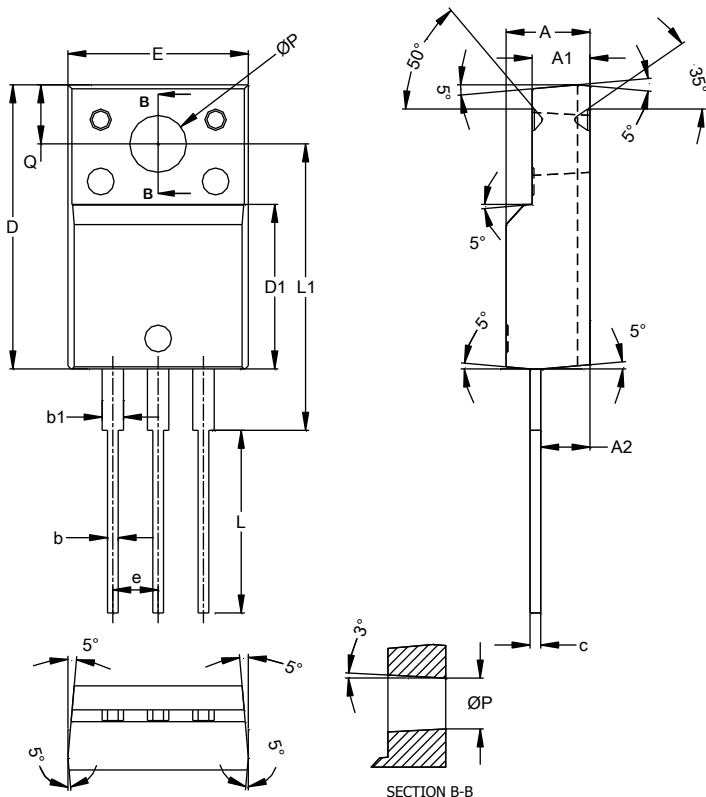
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**TO220AB**



| 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                   | -     | 4.42  | -     |
| L2                   | 15.80 | 17.51 | 16.00 |
| P                    | 3.54  | 4.08  | -     |
| Q                    | 2.54  | 3.42  | -     |
| All Dimensions in mm |       |       |       |

**ITO220AB**

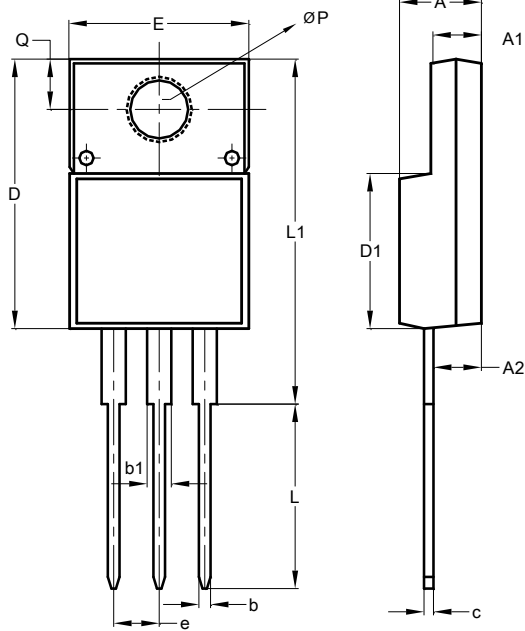


| ITO220AB             |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 4.50  | 4.90  | 4.70  |
| A1                   | 3.04  | 3.44  | 3.24  |
| A2                   | 2.56  | 2.96  | 2.76  |
| b                    | 0.50  | 0.75  | 0.60  |
| b1                   | 1.10  | 1.35  | 1.20  |
| c                    | 0.50  | 0.70  | 0.60  |
| D                    | 15.67 | 16.07 | 15.87 |
| D1                   | 8.99  | 9.39  | 9.19  |
| E                    | 9.91  | 10.31 | 10.11 |
| e                    | --    | --    | 2.54  |
| L                    | 9.45  | 10.05 | 9.75  |
| L1                   | 15.80 | 16.20 | 16.00 |
| P                    | 2.98  | 3.38  | 3.18  |
| Q                    | 3.10  | 3.50  | 3.30  |
| All Dimensions in mm |       |       |       |

**Package Outline Dimensions (Cont.)**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**ITO220AB (Type E)**



| ITO220AB<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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