

## Product Summary (Per Leg)

| $V_{RRM}$ (V) | $I_O$ (A) | $V_F$ (MAX) (V)<br>@ +25°C | $I_R$ (MAX) (mA)<br>@ +25°C |
|---------------|-----------|----------------------------|-----------------------------|
| 60            | 10        | 0.55                       | 0.3                         |

## Description and Applications

Packaged in the robust industry-standard TO-220AB package, the SBRT20V60CT provides very low  $V_F$  and excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode or blocking diode in:

- DC-DC Converters
- AC-DC Adaptors

## Features and Benefits

- 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.
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

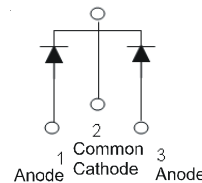
- Case: TO-220AB
- Case Material: Molded Plastic, "Green" Molding Compound.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish.  
Solderable per MIL-STD-202, Method 208 **e3**
- Polarity: See Below
- Weight: TO-220AB – 1.85 grams (Approximate)



TO-220AB  
Top View



TO-220AB  
Bottom View



Package Pin-Out  
Configuration

## Ordering Information (Note 4)

| Part Number | Case     | Packaging      |
|-------------|----------|----------------|
| SBRT20V60CT | TO-220AB | 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 packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information

### TO-220AB



SBRT20V60CT = Product Type Marking Code  
 AB = Foundry and Assembly Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 14 = 2014)  
 WW = Week (01 - 53)

## Maximum Ratings (@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<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                        | V <sub>RRM</sub><br>V <sub>RWM</sub><br>V <sub>RM</sub> | 60       | V    |
| Average Rectified Output Current (Per Leg)<br>(Total)                                                         | I <sub>O</sub>                                          | 10<br>20 | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load (Per leg) | I <sub>FSM</sub>                                        | 190      | A    |

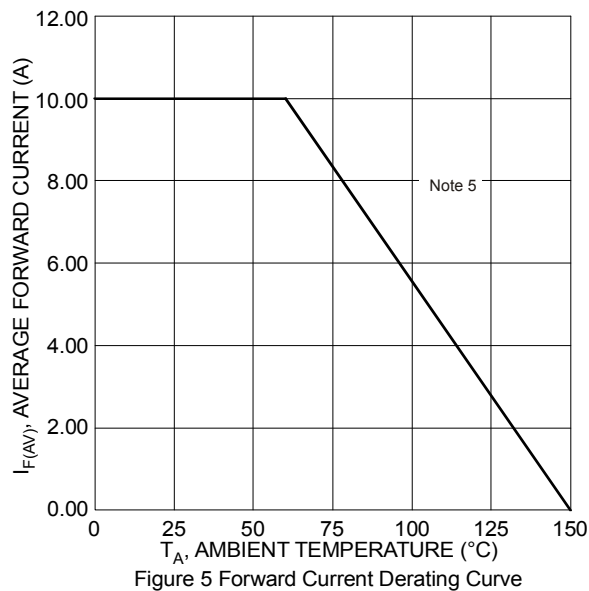
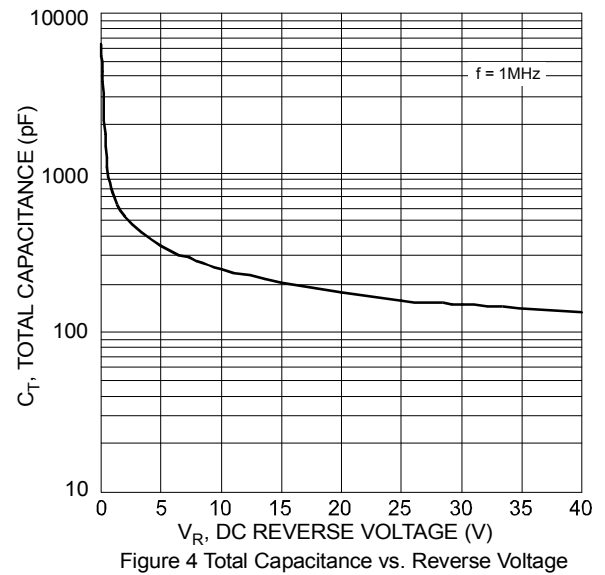
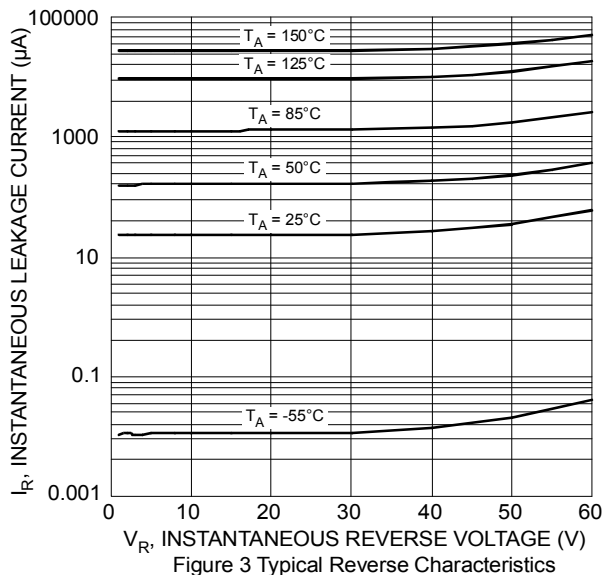
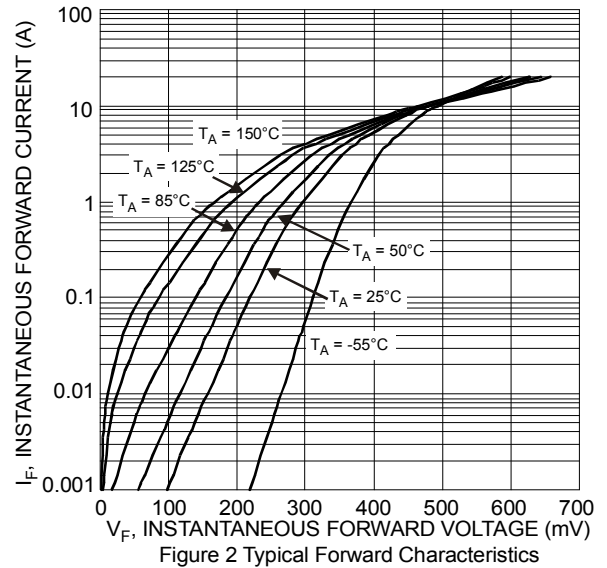
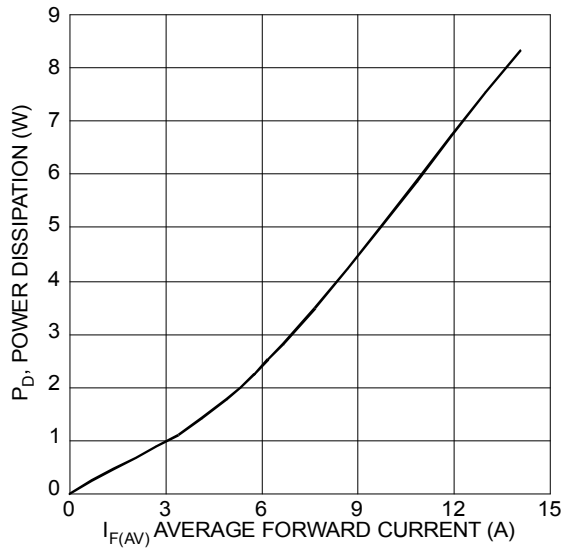
## Thermal Characteristics (Per Leg)

| Characteristic                                                              | Symbol                            | Value       | Unit |
|-----------------------------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Thermal Resistance, Junction to Case (Note 5)<br>Package = TO-220AB | R <sub>θJC</sub>                  | 2.5         | °C/W |
| Operating and Storage Temperature Range                                     | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

## Electrical Characteristics (Per Leg) (@T<sub>A</sub> = +25°C, unless otherwise specified.)

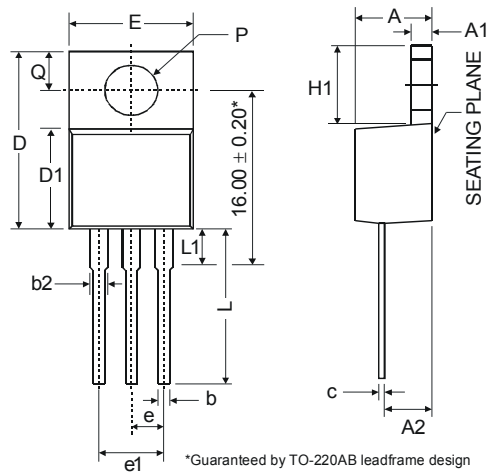
| Characteristic                | Symbol         | Min | Typ  | Max                  | Unit | Test Condition                                                                                                                                |
|-------------------------------|----------------|-----|------|----------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Forward Voltage Drop (Note 6) | V <sub>F</sub> | —   | 0.48 | 0.55<br>0.53<br>0.69 | 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> | —   | 0.10 | 0.30<br>50           | mA   | V <sub>R</sub> = 60V, T <sub>J</sub> = +25°C<br>V <sub>R</sub> = 60V, T <sub>J</sub> = +125°C                                                 |

Notes: 5. Test with additional heatsink (Black Aluminum heatsink 45mmX20mmX12mm).  
6. Short duration pulse test used to minimize self-heating effect.



## Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| 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 |       |      |       |

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