



**THE DATASHEET OF
SBR20A100CTB-13**



Product Summary

| V _{RRM} (V) | I _O (A) | V _{F(MAX)} (V) @ +25°C | I _{R(MAX)} (mA) @ +25°C |
|----------------------|----------------------------|------------------------------------|-------------------------------------|
| 100 | 10 (Per leg) 20 (Total) | 0.85 | 0.1 |

Features and Benefits

- Patented Trench SBR[®] 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
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.**
<https://www.diodes.com/quality/product-definitions>

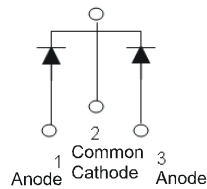
Description and Applications

The SBR20A100CTB 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

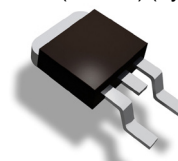
Mechanical Data

- Case: TO263AB (D2PAK), TO263AB (D2PAK) (Type TH)
- Case Material: Molded Plastic, "Green" Molding compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: See Below
- Weight: 1.6 grams (Approximate)



Package Pin Out Configuration

TO263AB (D2PAK)
TO263AB (D2PAK) (Type TH)



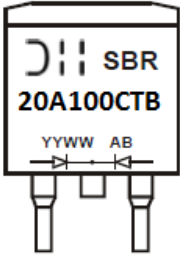
Top View

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|-----------------|---------------------------|-----------------|
| SBR20A100CTB | TO263AB (D2PAK) | 50 Pieces/Tube |
| SBR20A100CTB-13 | TO263AB (D2PAK) | 800/Tape & Reel |
| SBR20A100CTB | TO263AB (D2PAK) (Type TH) | 50 Pieces/Tube |
| SBR20A100CTB-13 | TO263AB (D2PAK) (Type TH) | 800/Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 2. See <https://www.diodes.com/quality/lead-free/> 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



⏏ = Manufacturer's Marking
 SBR20A100CTB = Product Type Marking Code
 AB = Foundry and Assembly Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 20 = 2020)
 WW = Week (01 to 53)

Maximum Ratings (Per Leg) (@ $T_A = +25^\circ\text{C}$, 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 | V_{RRM} | 100 | V |
| Working Peak Reverse Voltage | V_{RWM} | | |
| DC Blocking Voltage | V_{RM} | | |
| Average Rectified Output Current (Per Leg) (Total) | I_O | 10 20 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I_{FSM} | 250 | A |
| Peak Repetitive Reverse Surge Current (2 μ s-1KHz) | I_{RRM} | 3 | A |

Thermal Characteristics (Per Leg)

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|--------------------|
| Typical Thermal Resistance Junction to Case (Per Leg) (Note 5) | $R_{\theta JC}$ | 5 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -65 to +175 | $^\circ\text{C}$ |

Electrical Characteristics (Per Leg) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------|--------|-----|------|------|------|---|
| Forward Voltage Drop | V_F | — | — | 0.75 | V | $I_F = 10\text{A}, T_J = +25^\circ\text{C}$ |
| | | — | 0.60 | 0.64 | | $I_F = 10\text{A}, T_J = +125^\circ\text{C}$ |
| | | — | — | 0.85 | | $I_F = 20\text{A}, T_J = +25^\circ\text{C}$ |
| Leakage Current (Note 6) | I_R | — | — | 0.1 | mA | $V_R = 100\text{V}, T_J = +25^\circ\text{C}$ |
| | | — | — | 40 | | $V_R = 100\text{V}, T_J = +125^\circ\text{C}$ |

Notes: 5. Device mounted on Aluminum substrate 2inch square.
 6. Short duration pulse test used to minimize self-heating effect.

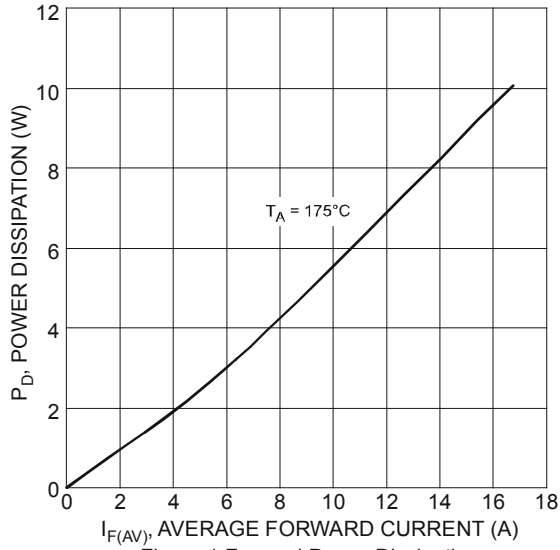


Figure 1 Forward Power Dissipation

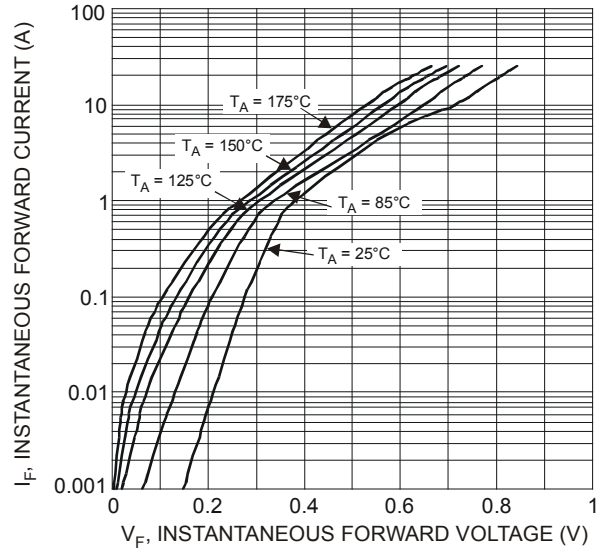


Figure 2 Typical Forward Characteristics

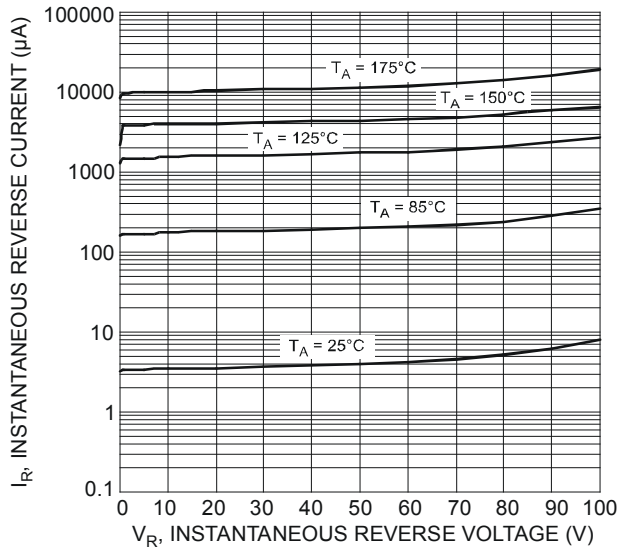


Figure 3 Typical Reverse Characteristics

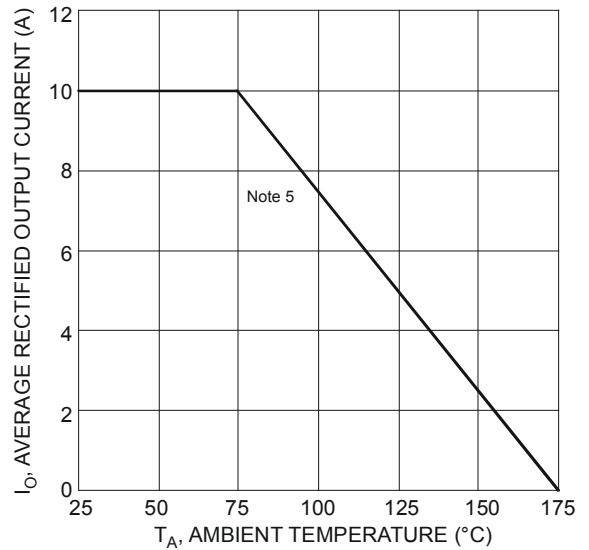
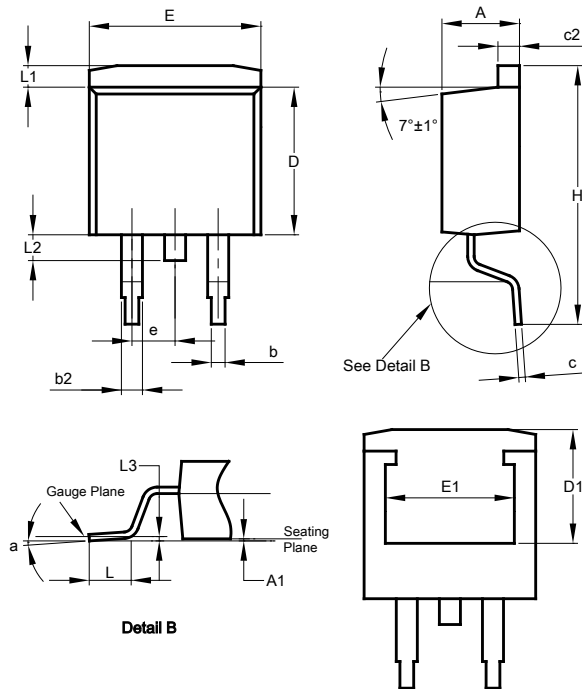


Figure 4 Forward Current Derating Curve

Package Outline Dimensions

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

TO263AB (D2PAK)

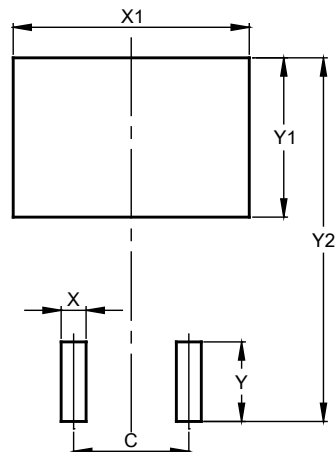


| TO263AB (D2PAK) | | | |
|----------------------|----------|-------|-------|
| Dim | Min | Max | Typ |
| A | 4.07 | 4.82 | - |
| A1 | 0.00 | 0.25 | - |
| b | 0.51 | 0.99 | - |
| b2 | 1.15 | 1.77 | - |
| c | 0.356 | 0.73 | - |
| c2 | 1.143 | 1.65 | - |
| D | 8.39 | 9.65 | - |
| D1 | 6.55 | 6.95 | - |
| e | 2.54 TYP | | - |
| E | 9.66 | 10.66 | - |
| E1 | 6.23 | 8.23 | - |
| H | 14.61 | 15.87 | - |
| L | 1.78 | 2.79 | - |
| L1 | - | 1.67 | - |
| L2 | - | 1.77 | - |
| L3 | - | - | 0.254 |
| a | 0° | 8° | - |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

TO263AB (D2PAK)

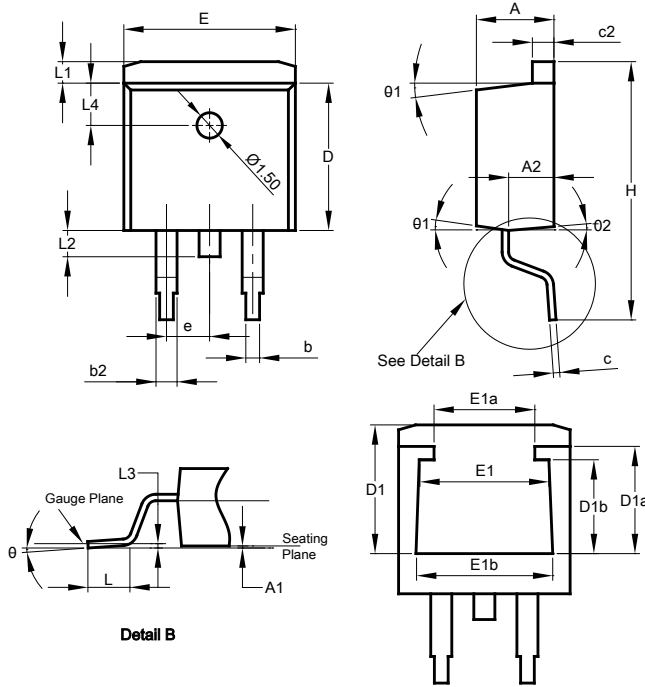


| Dimensions | Value (in mm) |
|------------|---------------|
| C | 5.08 |
| X | 1.10 |
| X1 | 10.41 |
| Y | 3.50 |
| Y1 | 7.01 |
| Y2 | 15.99 |

Package Outline Dimensions (Cont.)

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

TO263AB (D2PAK) (Type TH)

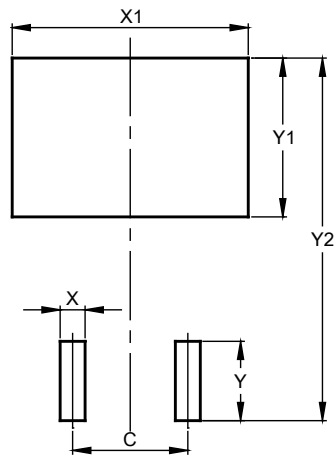


| TO263AB (D2PAK) (Type TH) | | | |
|------------------------------|----------|-------|-------|
| Dim | Min | Max | Typ |
| A | 4.40 | 4.70 | 4.57 |
| A1 | 0.00 | 0.20 | 0.10 |
| A2 | 2.59 | 2.79 | 2.69 |
| b | 0.77 | 0.90 | 0.813 |
| b2 | 1.20 | 1.36 | 1.27 |
| c | 0.356 | 0.47 | 0.381 |
| c2 | 1.22 | 1.32 | 1.27 |
| D | 8.60 | 8.80 | 8.70 |
| D1 | 6.60 | 7.80 | 7.60 |
| D1a | 5.33 | 6.53 | 6.33 |
| D1b | 4.54 | 5.74 | 5.54 |
| e | 2.54 BSC | | |
| E | 10.00 | 10.20 | 10.10 |
| E1 | 6.67 | 7.87 | 7.67 |
| E1a | 4.94 | 6.14 | 5.94 |
| E1b | 7.06 | 8.26 | 8.06 |
| H | 14.70 | 15.50 | 15.10 |
| L | 2.00 | 2.60 | 2.30 |
| L1 | 1.17 | 1.40 | 1.27 |
| L2 | 1.45 | 1.70 | 1.55 |
| L3 | 0.25 BSC | | |
| L4 | 2.50 REF | | |
| θ | 0° | 8° | 5° |
| θ1 | 5° | 9° | 7° |
| θ2 | 1° | 5° | 3° |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

TO263AB (D2PAK) (Type TH)



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 5.08 |
| X | 1.10 |
| X1 | 10.41 |
| Y | 3.50 |
| Y1 | 7.01 |
| Y2 | 15.99 |

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