

Product Summary (Per Leg)

| V _{RRM} (V) | I _O (A) | V _F (TYP) (V) @ +25°C | I _R (MAX) (mA) @ +25°C |
|----------------------|--------------------|-------------------------------------|--------------------------------------|
| 100 | 20 | 0.61 | 0.5 |

Description and Applications

Packaged in the robust industry-standard TO220AB and ITO220AB packages, the SBRTF40U100CT and SBRTF40U100CTFP provide ultra 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:

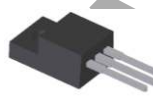
- DC-DC Converters
- AC-DC Adaptors



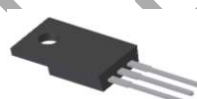
TO220AB
Top View



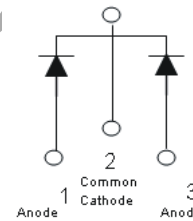
TO220AB
Bottom View



ITO220AB
Top View



ITO220AB
Bottom View



Package Pin-Out
Configuration

Features and Benefits

- Reduced Ultra-Low Forward Voltage Drop (V_F). Better Efficiency. V_F=0.34V at I_F=5A
- Avalanche Rated
- Patented Super Barrier Rectifier Technology (SBR[®])
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: TO220AB, ITO220AB
- 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.Ⓔ
- Weight
TO220AB – 1.85 grams (Approximate)
ITO220AB – 1.65 grams (Approximate)

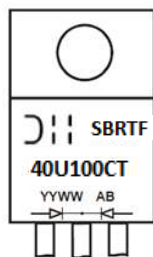
Ordering Information (Note 4)

| Part Number | Case | Packaging |
|-----------------|----------|----------------|
| SBRTF40U100CT | TO220AB | 50 Pieces/Tube |
| SBRTF40U100CTFP | ITO220AB | 50 Pieces/Tube |

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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



SBRTF40U100CT = Product Type Marking Code
AB = Foundry and Assembly Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 18 = 2018)
WW = Week (01 to 53)



SBRTF40U100CTFP = Product Type Marking Code
AB = Foundry and Assembly Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 18 = 2018)
WW = Week (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|------------------|----------|------|
| Peak Repetitive Reverse Voltage | V _{RRM} | 100 | V |
| Average Rectified Output Current (Per Leg) (Total) | I _O | 20 40 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load (Per Leg) | I _{FSM} | 200 | A |
| Peak Avalanche Power (1μs, +25°C) | P _{ARM} | 10,000 | W |
| Non-Repetitive Avalanche Energy (T _J = +25°C, I _{AS} = 9A, L = 10mH) | E _{AS} | 340 | mJ |

Thermal Characteristics (Per Leg)

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance | | | |
| TO220AB (Note 5) | R _{θJA} | 55 | °C/W |
| TO220AB (Note 6) | R _{θJC} | 1 | |
| TO220AB (Note 6) | R _{θJA} | 7 | |
| ITO220AB (Note 5) | R _{θJA} | 45 | |
| ITO220AB (Note 6) | R _{θJC} | 1.6 | |
| ITO220AB (Note 6) | R _{θJA} | 11 | |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

Electrical Characteristics (Per Leg) (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------------|----------------|-----|------|------|------|--|
| Forward Voltage Drop (Note 7) | V _F | — | 0.40 | — | V | I _F = 5A, T _J = +25°C |
| | | — | 0.48 | 0.58 | | I _F = 10A, T _J = +25°C |
| | | — | 0.61 | 0.68 | | I _F = 20A, T _J = +25°C |
| | | — | 0.34 | — | | I _F = 5A, T _J = +125°C |
| | | — | — | 0.65 | | I _F = 20A, T _J = +125°C |
| Leakage Current (Note 7) | I _R | — | 0.08 | 0.25 | mA | V _R = 90V, T _J = +25°C |
| | | — | 0.15 | 0.5 | | V _R = 100V, T _J = +25°C |
| | | — | — | 30 | | V _R = 80V, T _J = +125°C |
| | | — | 35 | — | | V _R = 100V, T _J = +125°C |
| Junction Capacitance | C _J | — | 250 | — | pF | V _R = 40V, f = 1.0MHz |

- Notes:
5. Test with no additional heatsink.
 6. Test with additional heatsink (Aluminum, 50mm x 50mm x 23mm).
 7. Short duration pulse test used to minimize self-heating effect.

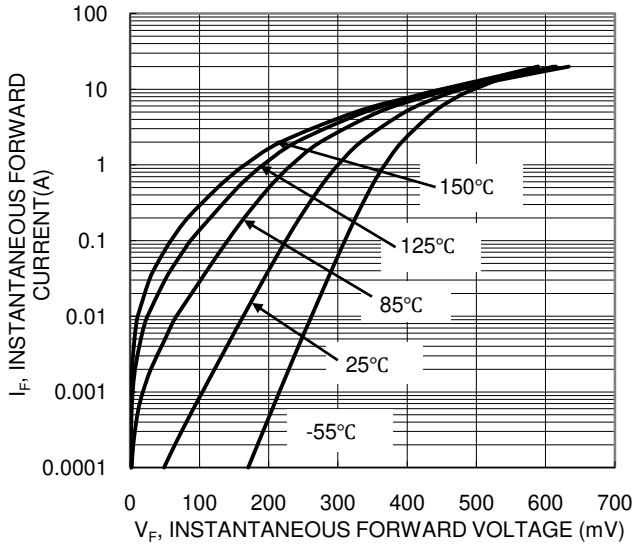


Figure 1. Typical Forward Characteristics

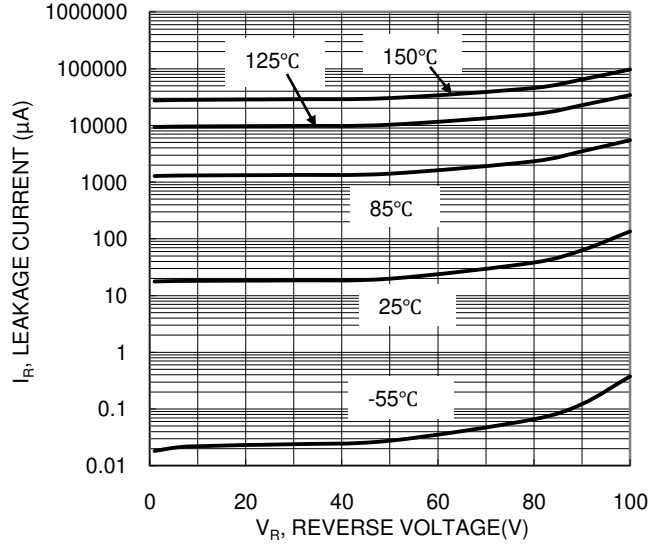


Figure 2. Typical Reverse Characteristics

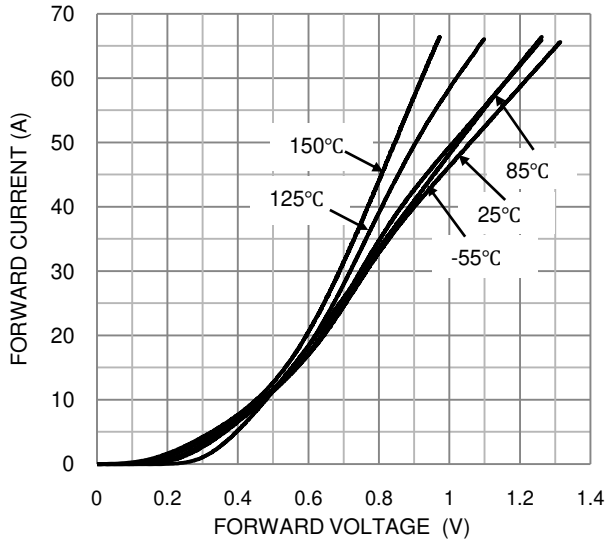


Figure 3. High Current Forward Characteristics

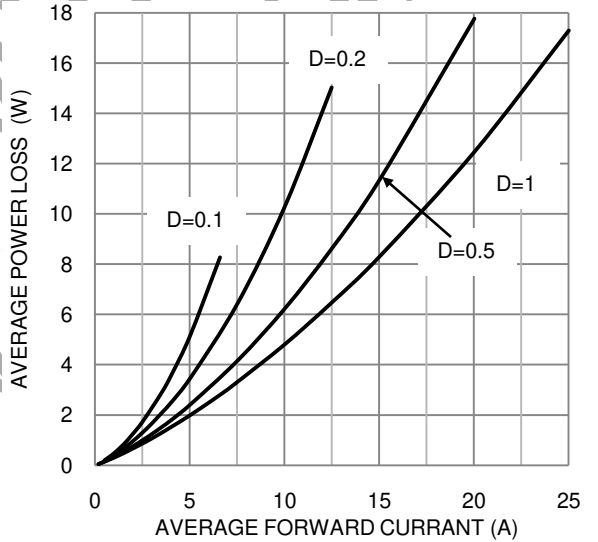


Figure 4. Forward Power Loss Characteristics
Per Diode $T_A = +25^\circ\text{C}$

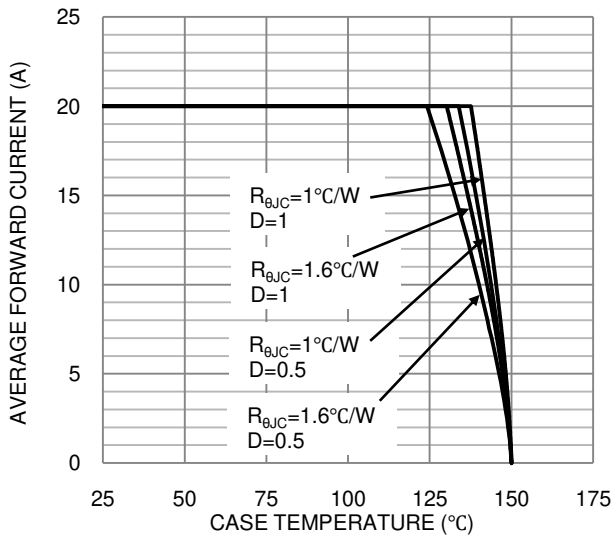


Figure 5. Current Derating per Leg

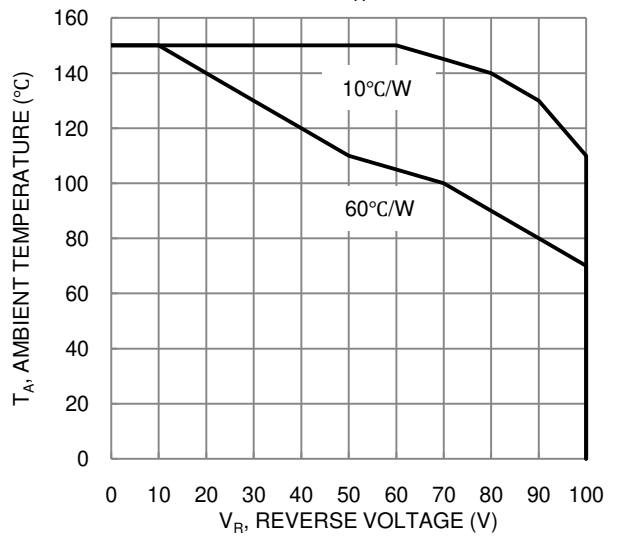


Figure 6. Reverse Safe Operating Area

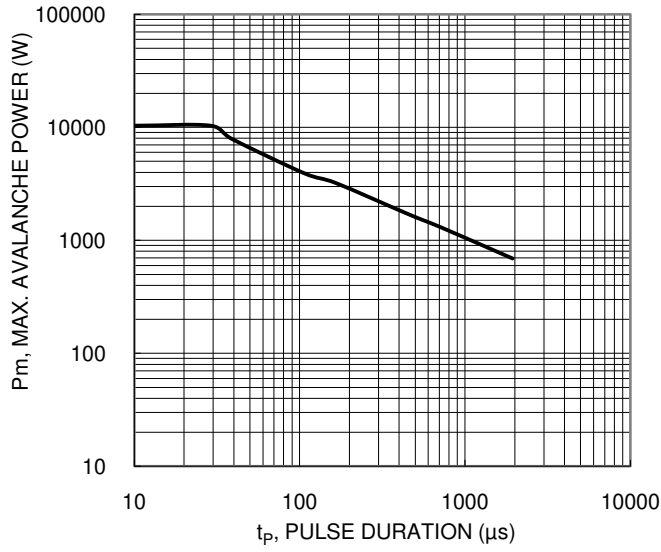


Figure 7. Max. Avalanche Power

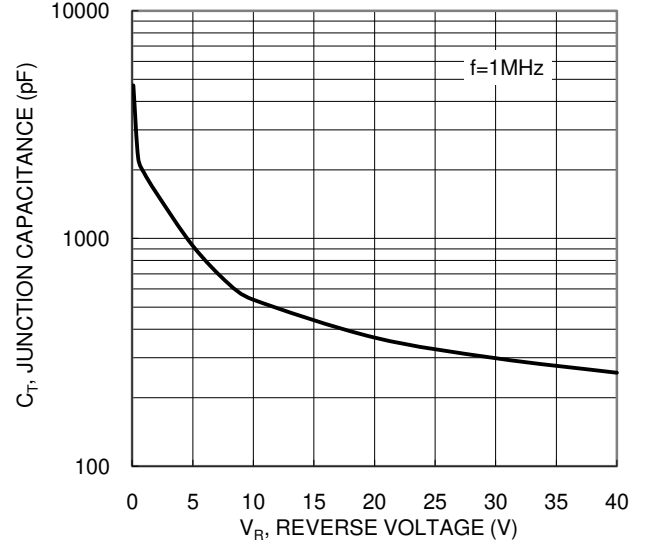


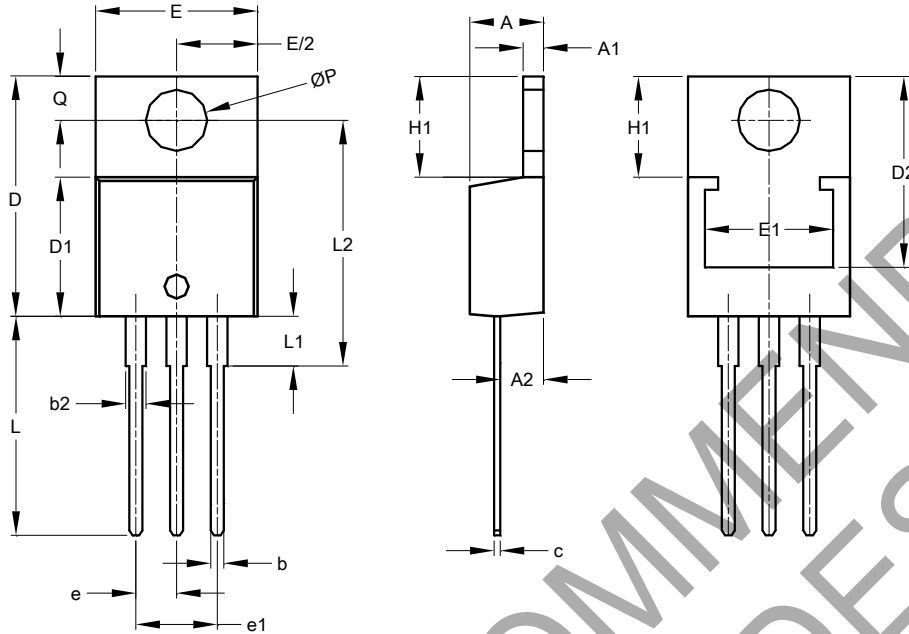
Figure 8. Typical Junction Capacitance

NOT RECOMMENDED FOR NEW DESIGN

Package Outline Dimensions

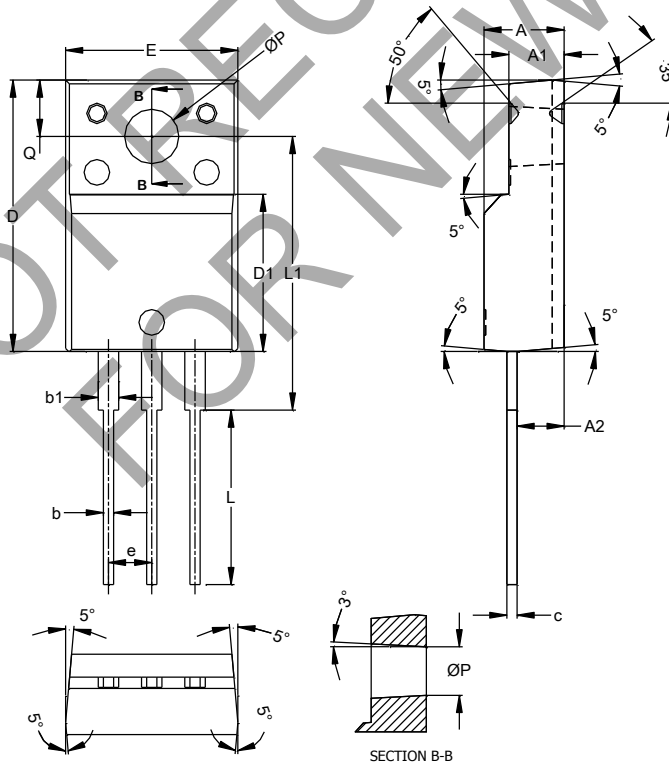
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

(1) Package Type: 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 | | | |

(2) Package Type: 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 | | | |

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