

Product Summary (@T_A = +25°C)

| V _{RRM} (V) | I _o (A) | V _{F(MAX)} (V) | I _{R(MAX)} (mA) |
|----------------------|--------------------|-------------------------|--------------------------|
| 10 | 2 | 0.46 | 2 |

Features and Benefits

- Small Form factor Package with a PCB Footprint of just 1.54mm² - 40% Smaller Than SOT666
- Lower Reverse Leakage Ensuring Greater Stability at Higher Temperatures
- Low Forward Voltage (V_F) Minimises Conduction Losses and Improving Efficiency
- **Totally Lead-Free; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Description and Applications

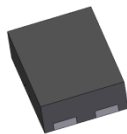
Packaged in the compact X1-DFN1411-3 package, the SBR2U10LP provides ultra-low forward voltage drop (V_F) and provides excellent low reverse leakage stability at high temperatures. It is ideal for use as a bypass, freewheeling or polarity protection diode in applications such as:

- Solar Panels
- Portable Electronics

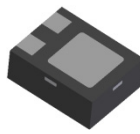
Mechanical Data

- Case: X1-DFN1411-3
- Case Material: Molded Plastic, "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Bar (See Note 5)
- Terminals: Finish – NiPdAu over Copper Lead Frame.
- Solderable per MIL-STD-202, Method 208^(e4)
- Weight: 2.35mg (approximate)

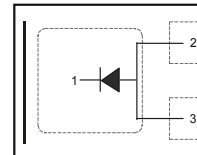
X1-DFN1411-3



Top View



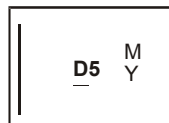
Bottom View


 Top View
Internal Schematic

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|-------------|--------------|------------------|
| SBR2U10LP-7 | X1-DFN1411-3 | 3000/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant
 2. See 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>.
 5. It is recommended that Pins 2 and 3 be electrically connected at the printed circuit board.

Marking Information


D5 = Product Type Marking Code
 Y = Year (ex: B = 2014)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------|------|------|------|------|------|------|------|------|------|
| Code | B | C | D | E | F | G | H | I | J |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

Maximum Ratings (@T_A = +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 | V _{RRM} | 10 | V |
| Working Peak Reverse Voltage | V _{RWM} | | |
| DC Blocking Voltage | V _{RM} | | |
| Average Rectified Output Current (See Figure 1) | I _O | 2 | A |
| Non-Repetitive Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 21 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Thermal Resistance Junction to Case (Note 6) | R _{θJC} | 55 | °C/W |
| Thermal Resistance Junction to Ambient (Note 6) | R _{θJA} | 210 | |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------------|-----------------|-----|------|------|------|--|
| Forward Voltage Drop (Note 7) | V _F | — | 0.40 | 0.46 | V | I _F = 2.0A, T _J = +25°C |
| Leakage Current (Note 8) | I _R | — | 0.5 | 2 | mA | V _R = 10V, T _J = +25°C |
| | | — | 25 | 100 | mA | V _R = 10V, T _J = +125°C |
| Reverse Recovery Time | t _{rr} | — | 43 | 60 | ns | I _F = 10mA, I _{rr} = 0.1*I _{RM} , R _L = 100Ω |
| Junction Capacitance | C _j | — | 102 | — | pF | V _R = 5V, f = 1.0MHz |

- Notes:
6. Device mounted on FR-4 substrate, 1**1", 2oz, single-sided, PC boards with 0.1**0.15" copper pad.
 7. It is recommended to electrically connect both Anode pins together during operation to achieve optimal performance.
 8. Short duration pulse test used to minimize self-heating effect.

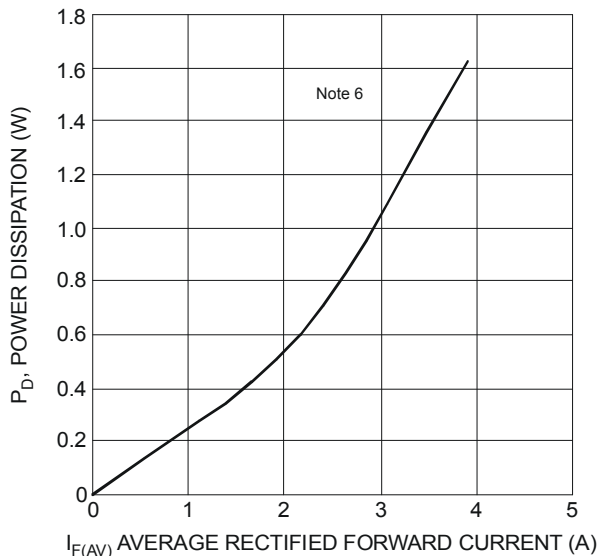


Figure 1 Forward Power Dissipation

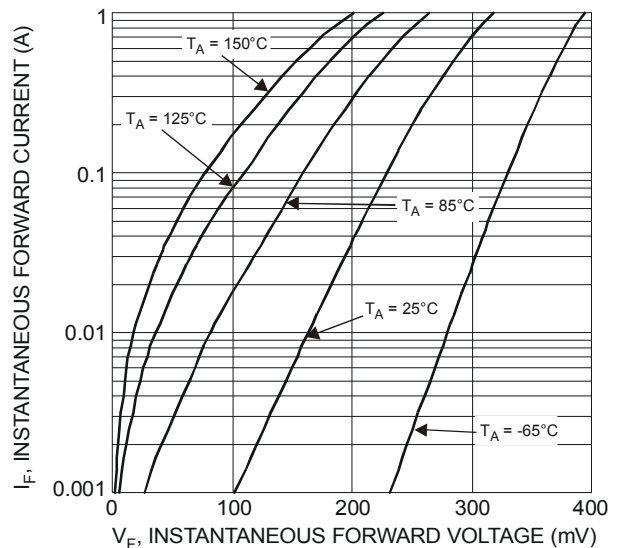


Figure 2 Typical Forward Characteristics

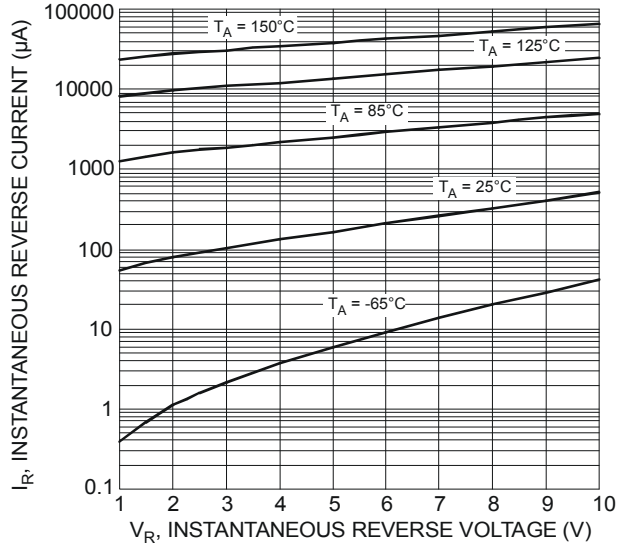


Figure 3 Typical Reverse Characteristics

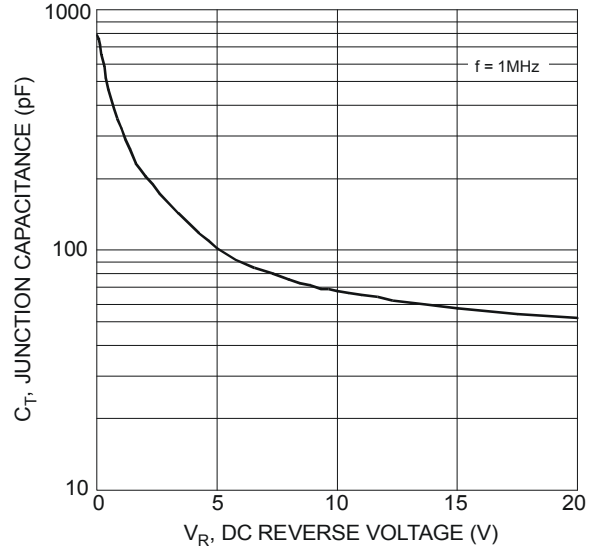


Figure 4 Typical Junction Capacitance

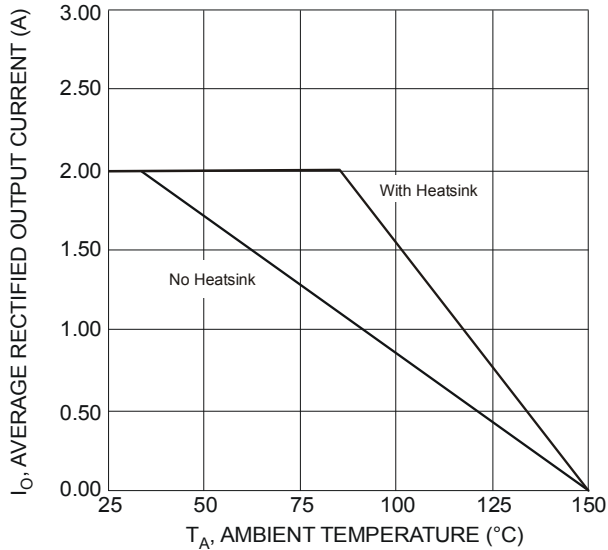


Figure 5 Forward Current Derating Curve

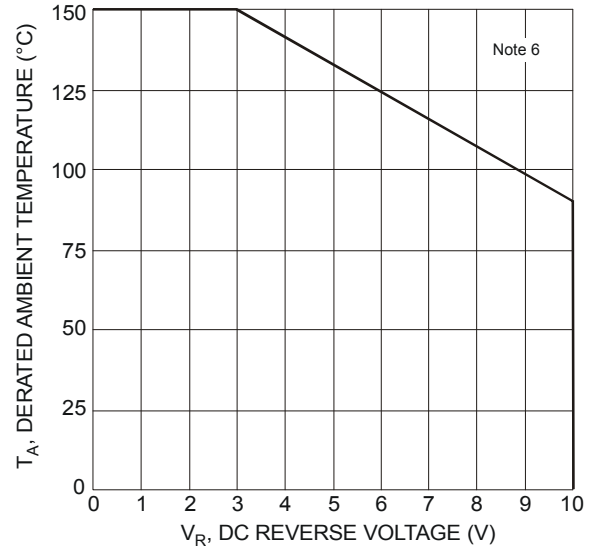
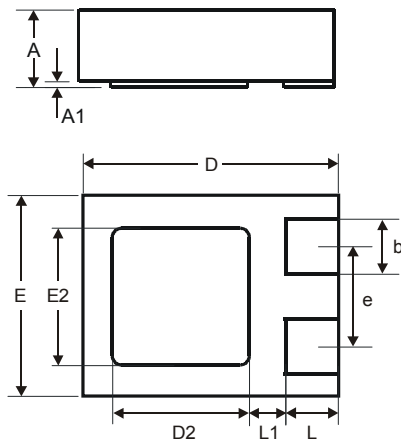


Figure 6 Operating Temperature Derating

Package Outline Dimensions

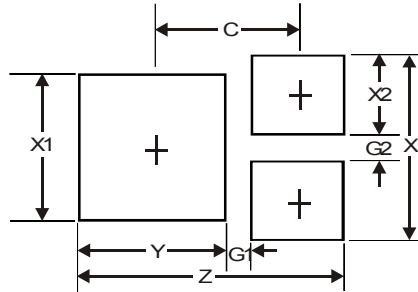
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| X1-DFN1411-3 | | | |
|----------------------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.47 | 0.53 | 0.50 |
| A1 | 0 | 0.05 | 0.02 |
| b | 0.25 | 0.35 | 0.30 |
| D | 1.35 | 1.475 | 1.40 |
| D2 | 0.65 | 0.85 | 0.75 |
| E | 1.05 | 1.175 | 1.10 |
| E2 | 0.65 | 0.85 | 0.75 |
| e | — | — | 0.55 |
| L | 0.225 | 0.325 | 0.275 |
| L1 | — | — | 0.20 |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| <i>Dimensions</i> | <i>Value (in mm)</i> |
|-------------------|----------------------|
| Z | 1.38 |
| G1 | 0.15 |
| G2 | 0.15 |
| X | 0.95 |
| X1 | 0.75 |
| X2 | 0.40 |
| Y | 0.75 |
| C | 0.76 |

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