

Product Summary (@ $T_A = +25^\circ\text{C}$)

| V_{RRM} (V) | I_O (mA) | V_F Max (V) | I_R Max (μA) |
|---------------|------------|---------------|-----------------------------|
| 20 | 500 | 0.5 | 50 |


Features and Benefits

- Ultra-Low Forward Voltage Drop
- Superior Reverse Avalanche Capability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- +150°C Operating Junction Temperature
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

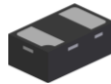
Applications

- SMPS
- DC-DC Converter
- Freewheeling Diodes
- Reverse Polarity Protection

Mechanical Data

- Case: X2-DFN1006-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 
- Weight: 0.001 grams (Approximate)

X2-DFN1006-2



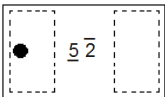
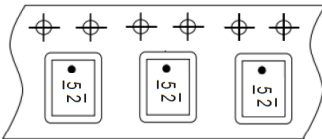
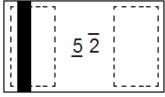
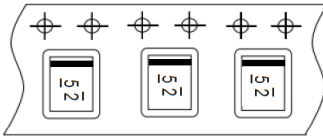
Bottom View

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---------------|--------------|-------------------|
| SBR05U20LPS-7 | X2-DFN1006-2 | 3,000/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>.

Marking Information

| | | |
|-----------------------------|--|--|
| <p>SBR05U20LPS-7</p> |  <p>Top View Dot Denotes Cathode Side</p>  | <p>From date code 1527 (YYWW), this changed to:</p>  <p>Top View Bar Denotes Cathode Side</p>  |
| | <p>$\underline{5} \bar{2}$ = Product Type Marking Code</p> | |

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} | 20 | V |
| Working Peak Reverse Voltage | V _{RWM} | | |
| DC Blocking Voltage | V _{RM} | | |
| RMS Reverse Voltage | V _{R(RMS)} | 14 | V |
| Average Rectified Output Current (See Figure 1) | I _O | 500 | mA |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 6 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Maximum Thermal Resistance (Note 5) | R _{θJA} | 224 | °C/W |
| 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 |
|------------------------------------|--------------------|-----|------|------|------|--|
| Reverse Breakdown Voltage (Note 6) | V _{(BR)R} | 20 | — | — | V | I _R = 50μA |
| Forward Voltage Drop | V _F | — | 0.34 | 0.38 | V | I _F = 0.1A, T _J = +25°C |
| | | | 0.25 | 0.28 | | I _F = 0.1A, T _J = +150°C |
| | | | 0.38 | 0.42 | | I _F = 0.2A, T _J = +25°C |
| | | | 0.31 | 0.34 | | I _F = 0.2A, T _J = +150°C |
| | | | 0.47 | 0.50 | | I _F = 0.5A, T _J = +25°C |
| | | | 0.42 | 0.45 | | I _F = 0.5A, T _J = +150°C |
| Leakage Current (Note 6) | I _R | — | 6 | 50 | μA | V _R = 20V, T _J = +25°C |
| | | | 1.5 | 5 | mA | V _R = 20V, T _J = +150°C |

Notes: 5. Device mounted on FR-4 substrate. 2" x 2" 2oz. Copper, single sided PCB board.
6. Short duration pulse test used to minimize self-heating effect.

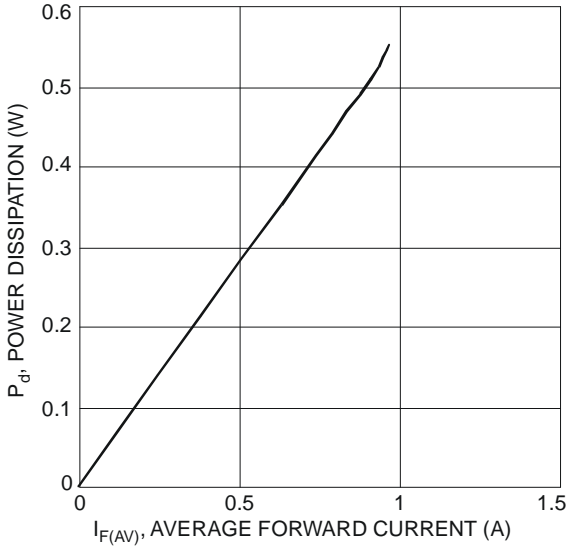


Fig. 1 Forward Power Dissipation

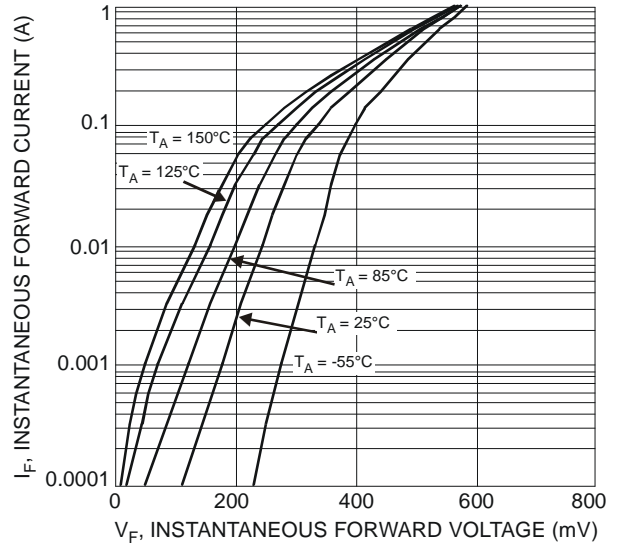


Fig. 2 Typical Forward Characteristics

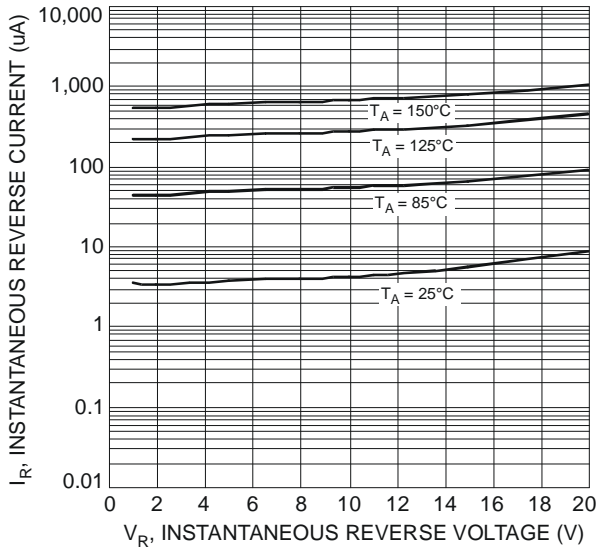


Fig. 3 Typical Reverse Characteristics

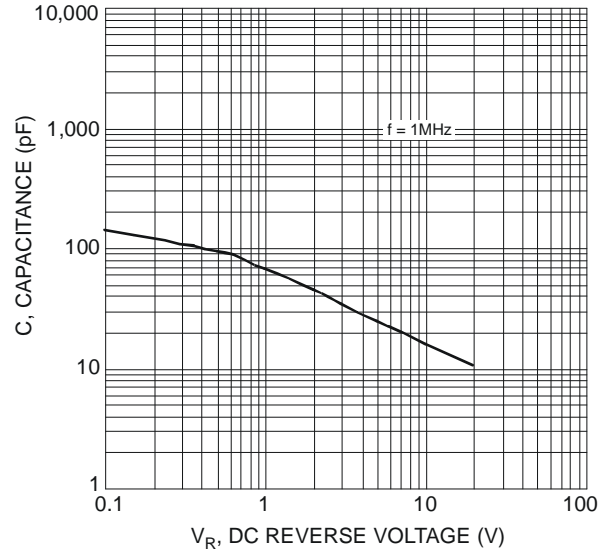


Fig. 4 Total Capacitance vs. Reverse Voltage

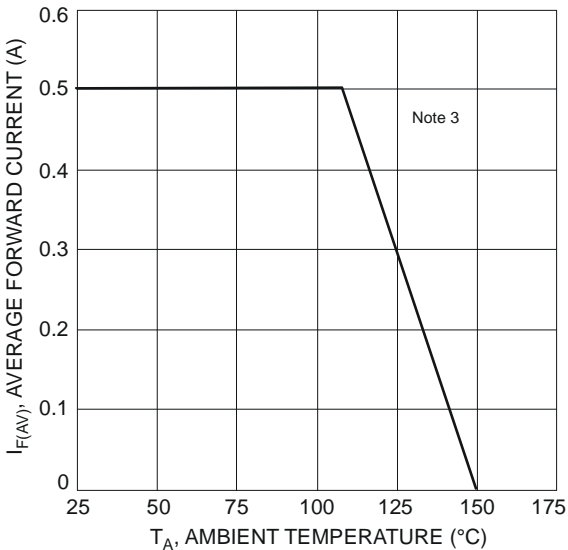


Fig. 5 Forward Current Derating Curve

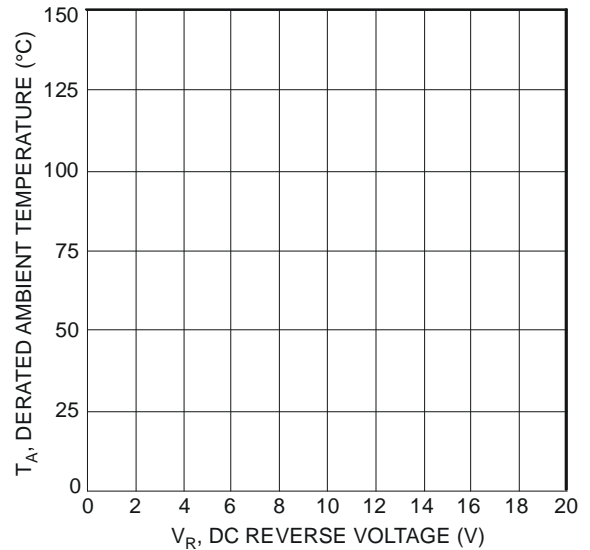
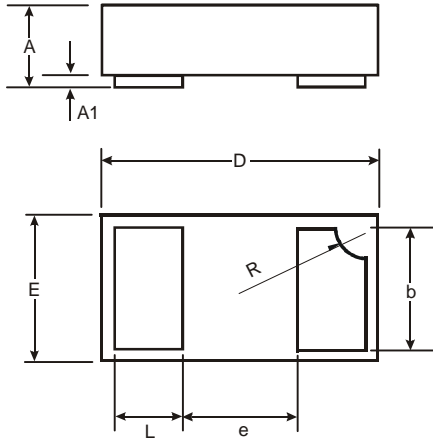


Fig. 6 Operating Temperature Derating

Package Outline Dimensions

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

X2-DFN1006-2

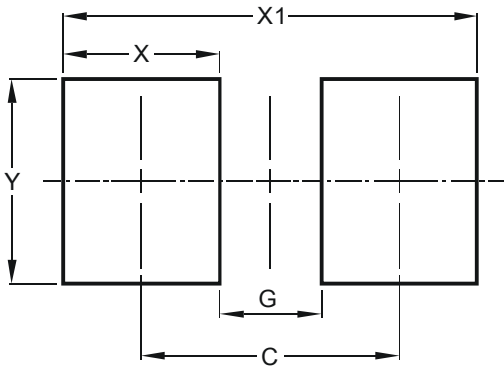


| X2-DFN1006-2 | | | |
|-----------------------------|------|-------|------|
| Dim | Min | Max | Typ |
| A | 0.34 | 0.4 | 0.37 |
| A1 | 0 | 0.05 | 0.03 |
| b | 0.45 | 0.55 | 0.50 |
| D | 0.95 | 1.075 | 1.00 |
| E | 0.55 | 0.675 | 0.60 |
| e | — | — | 0.40 |
| L | 0.20 | 0.30 | 0.25 |
| R | 0.05 | 0.15 | 0.10 |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

X2-DFN1006-2



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 0.70 |
| G | 0.30 |
| X | 0.40 |
| X1 | 1.10 |
| Y | 0.70 |

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