

Product Summary

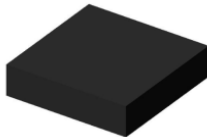
| V_{RRM} (V) | I_o (A) | $V_F(MAX)$ (V) @ +25°C | $I_R(MAX)$ (mA) @ +25°C |
|---------------|-----------|---------------------------|----------------------------|
| 30 | 4 | 0.5 | 0.1 |

Description and Applications

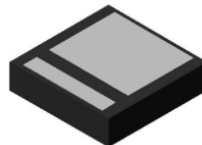
The SBRT4U30LP provides very low V_F and excellent reverse leakage stability at high temperatures. It is ideal for use as bypass diode and rectifier, freewheel diode or blocking diode in applications such as:

- Solar Panels
- Blocking Diode
- Bypass Diode
- Boost Diode
- Recirculating Diode

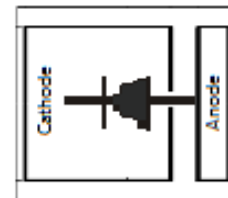
U-DFN2020-2 (Type B)



Top View



Bottom View



Top View
Internal Schematic

Features and Benefits

- Patented TrenchSBR 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.
- **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**

Mechanical Data

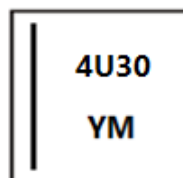
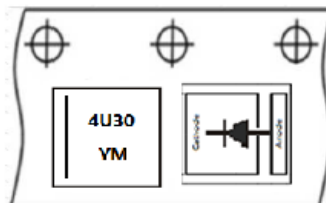
- Case: U-DFN2020-2 (Type B)
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: See Below
- Weight: 6.757 mg (Approximate)

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|--------------|----------------------|-------------------|
| SBRT4U30LP-7 | U-DFN2020-2 (Type B) | 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



4U30 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: C = 2015)
 M = Month (ex: 6 = June)
 Bar= Cathode

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} | 30 | V |
| Working Peak Reverse Voltage | V _{RWM} | | |
| DC Blocking Voltage | V _{RM} | | |
| Average Rectified Output Current | I _O | 4 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 45 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|------------------|---------------------------------------|-------------|
| Typical Thermal Resistance Junction to Case (Note 5) | R _{θJC} | 5 | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 5) | R _{θJA} | 65 | °C/W |
| Operating Temperature Range | T _J | V _R ≤ 80% V _{RRM} | -55 to +150 |
| | | V _R ≤ 50% V _{RRM} | ≤ +175 |
| | | DC Forward Mode (Note 7) | ≤ +200 |
| Storage Temperature Range | T _{STG} | -55 to +150 | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------------|----------------|-----|-----|-----|------|---|
| Forward Voltage Drop (Note 6) | V _F | — | — | 0.5 | V | I _F = 4A, T _J = +25°C |
| Leakage Current (Note 6) | I _R | — | — | 100 | μA | V _R = 30V, T _J = +25°C |
| | | — | 5 | — | mA | V _R = 30V, T _J = +125°C |

Notes:
 5. Device mounted on FR-4 PCB pad layout 1-inch 2oz copper.
 6. Short duration pulse test used to minimize self-heating effect.
 7. Maximum junction temperature guaranteed for two hours.

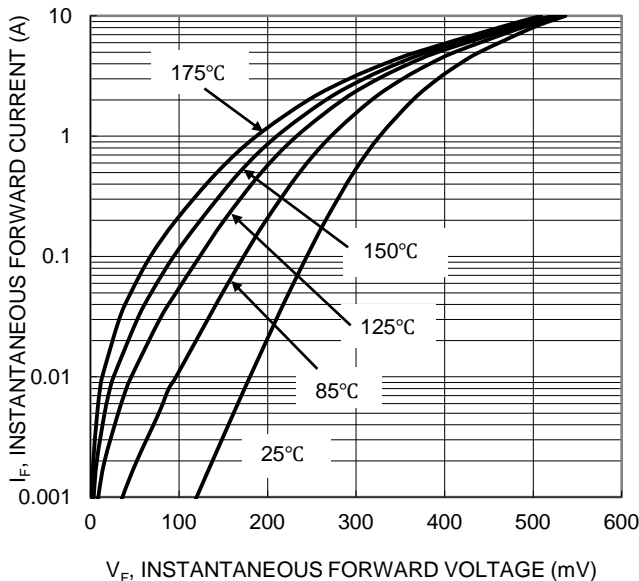


Figure 1. Typical Forward Characteristics

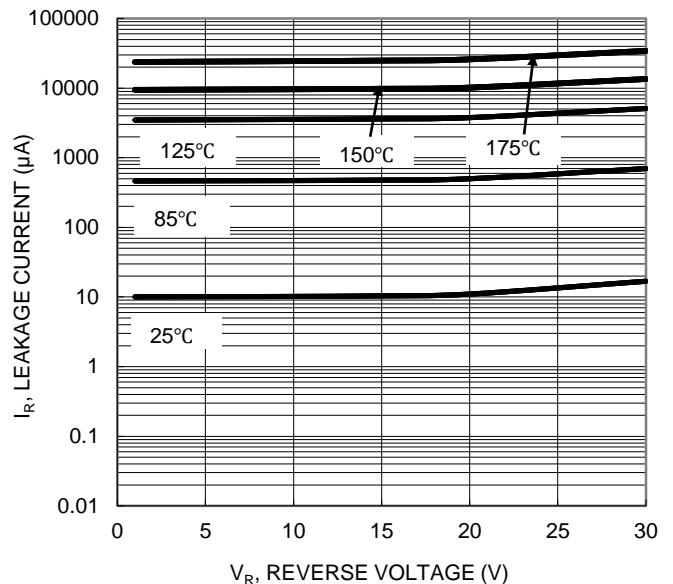


Figure 2. Typical Reverse Characteristics

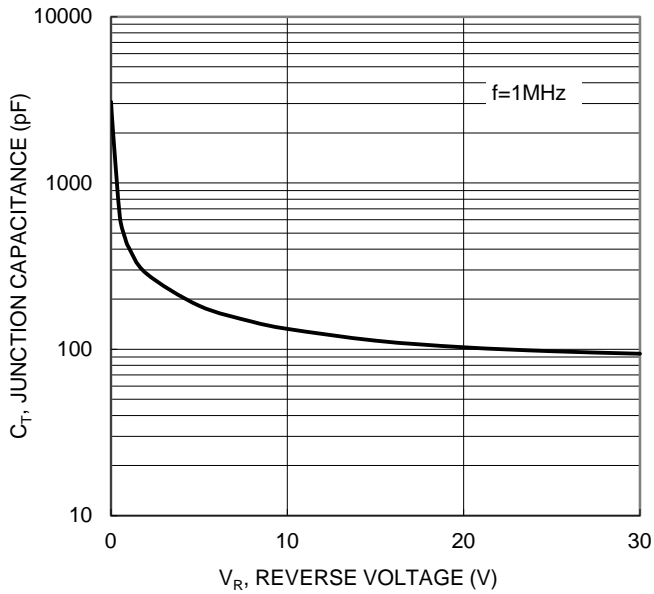


Figure 3. Typical Junction Capacitance

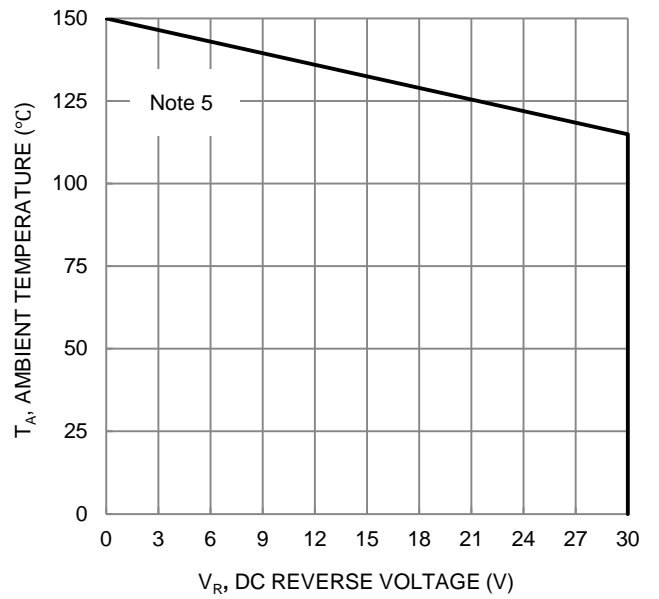


Figure 4. Operating Temperature Derating

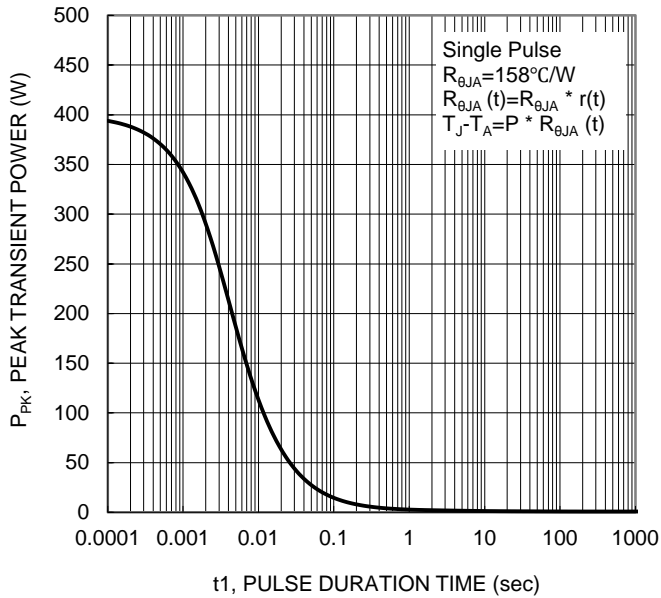


Figure 5. Single Pulse Maximum Power Dissipation

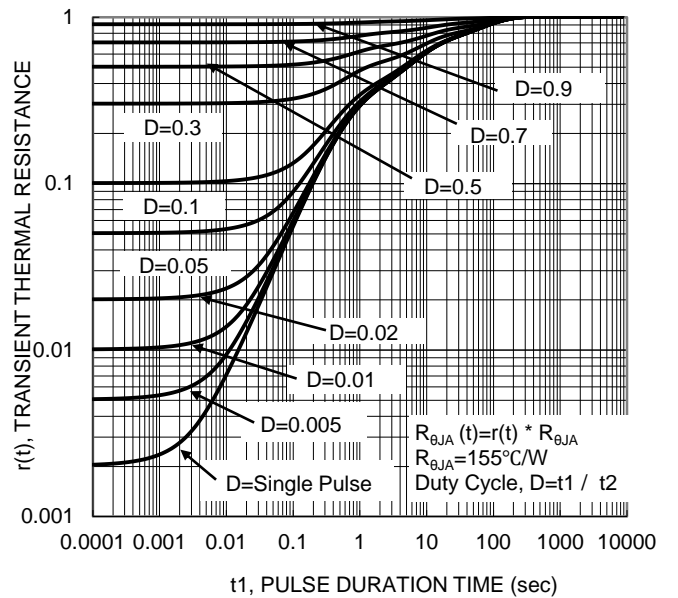
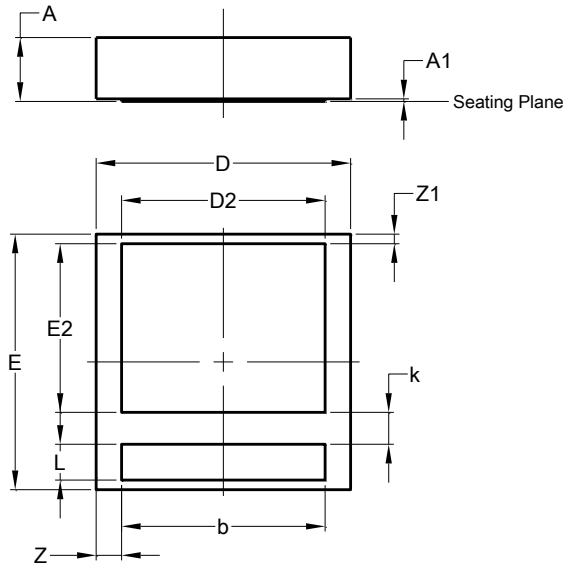


Figure 6. Transient Thermal Resistance

Package Outline Dimensions

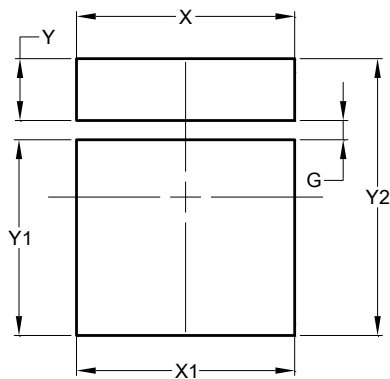
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| U-DFN2020-2 (Type B) | | | |
|-----------------------------|-----------|------|------|
| Dim | Min | Max | Typ |
| A | 0.47 | 0.53 | 0.50 |
| A1 | 0.00 | 0.05 | 0.02 |
| b | 1.55 | 1.65 | 1.60 |
| D | 1.95 | 2.05 | 2.00 |
| D2 | 1.50 | 1.70 | 1.60 |
| E | 1.95 | 2.05 | 2.00 |
| E2 | 1.22 | 1.42 | 1.32 |
| k | 0.25 BSC | | |
| L | 0.23 | 0.33 | 0.28 |
| Z | 0.20 BSC | | |
| Z1 | 0.075 BSC | | |
| All Dimensions in mm | | | |

Suggested Pad Layout

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



| Dimensions | Value (in mm) |
|------------|---------------|
| G | 0.150 |
| X | 1.700 |
| X1 | 1.700 |
| Y | 0.480 |
| Y1 | 1.520 |
| Y2 | 2.150 |

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