## Product Summary

| $V_{RRM}$ (V) | $I_O$ (A) | $V_{F(MAX)}$ (V) @ +25°C | $I_{R(MAX)}$ (mA) @ +25°C |
|---|---|---|---|
| 45 | 6 | 0.52 | 0.15 |

## 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
- **Totally Lead-Free Finish & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Description and Applications

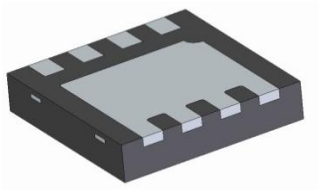
The SBRT6U45LP provides very low $V_F$ and excellent reverse leakage stability at high temperatures. It is ideal for use as bypass diode and rectifier, freewheel diode or blocking diode in applications such as:

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

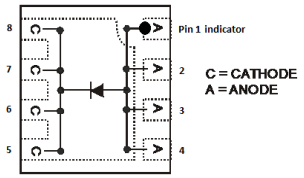
## Mechanical Data

- Case: U-DFN3030-8
- 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: 0.0199 grams (Approximate)

U-DFN3030-8



Bottom View



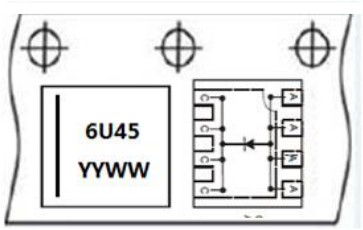

Top View
Schematic and Pin Configuration

## Ordering Information (Note 4)

| Part Number | Case | Packaging |
|---|---|---|
| SBRT6U45LP-7 | U-DFN3030-8 | 3,000/Tape & Reel |

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
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





6U45 = Product Type Marking Code
YYWW = Date Code Marking
YY= Last Two Digits of Year (ex: 19 = 2019)
WW = Week Code (ex: 01 to 53)
Bar = Cathode

## Maximum Ratings (@$T_A$ = +25°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 | $V_{RRM}$ | 45 | V |
| Working Peak Reverse Voltage | $V_{RWM}$ | | |
| DC Blocking Voltage | $V_{RM}$ | | |
| Average Rectified Output Current | $I_O$ | 6 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 55 | A |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Typical Thermal Resistance Junction to Case (Note 5) | $R_{\theta JC}$ | 5.5 | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 5) | $R_{\theta JA}$ | 65 | °C/W |
| Operating Temperature Range $V_R \leqslant 80\% V_{RRM}$ | $T_J$ | -55 to +150 | °C |
| $V_R \leqslant 50\% V_{RRM}$ | | ⩽+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) | $V_F$ | — | — | 0.52 | V | $I_F$ = 6A, $T_J$ = +25°C |
| Leakage Current (Note 6) | $I_R$ | — | — | 150 | μA | $V_R$ = 45V, $T_J$ = +25°C |
| | | — | 6.5 | — | mA | $V_R$ = 45V, $T_J$ = +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. Max junction temperature guaranteed for two hours.

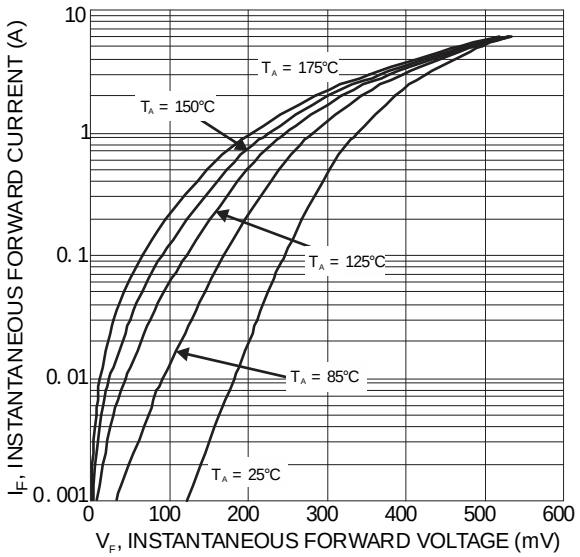


Figure 1 Typical Forward Characteristics

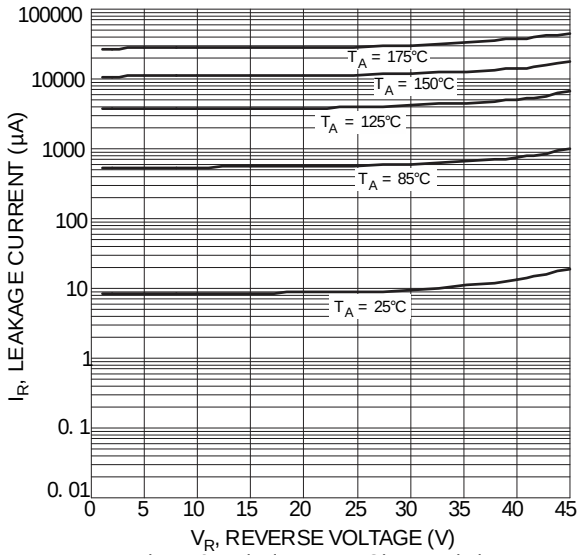


Figure 2 Typical Reverse Characteristics

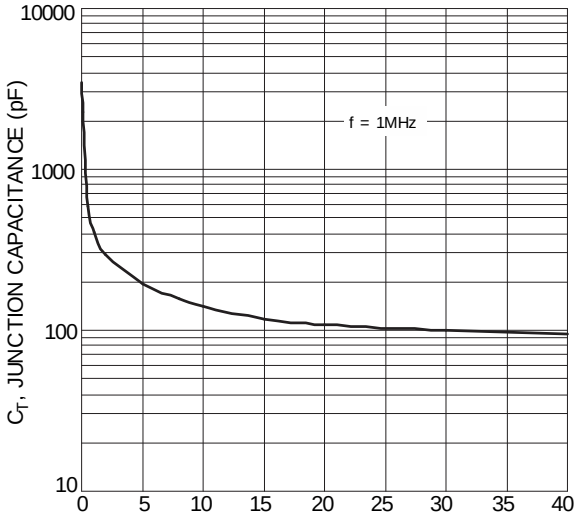



Figure 3 Typical Junction Capacitance

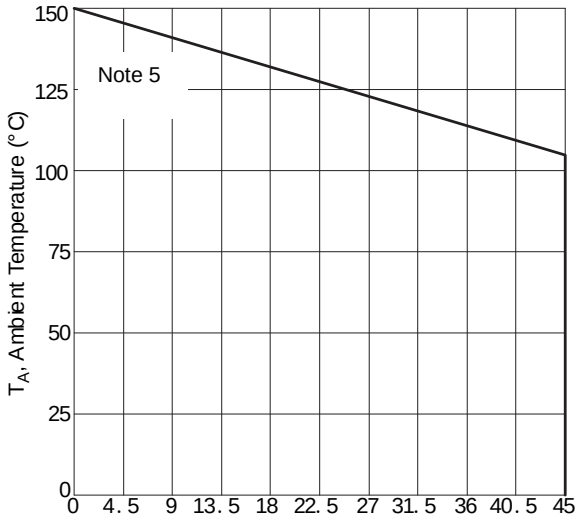



Figure 4 Operating Temperature Derating

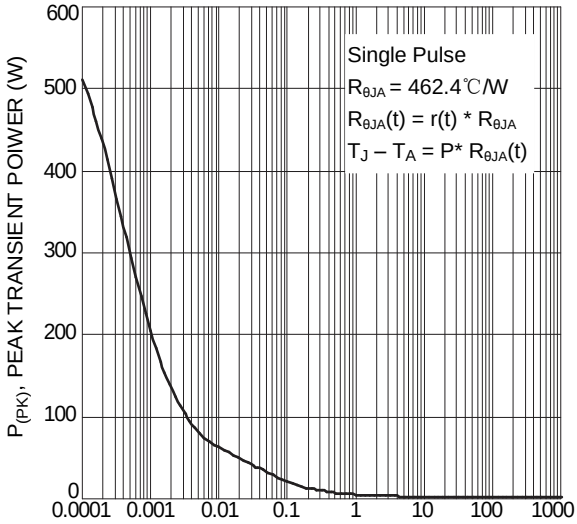



Figure 5 Single Pulse Maximum Power Dissipation

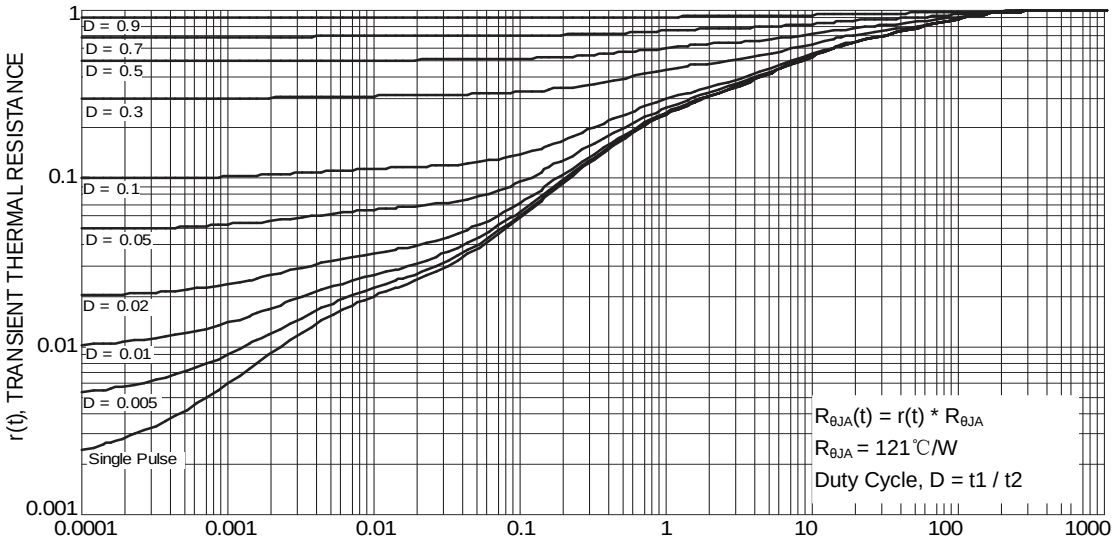
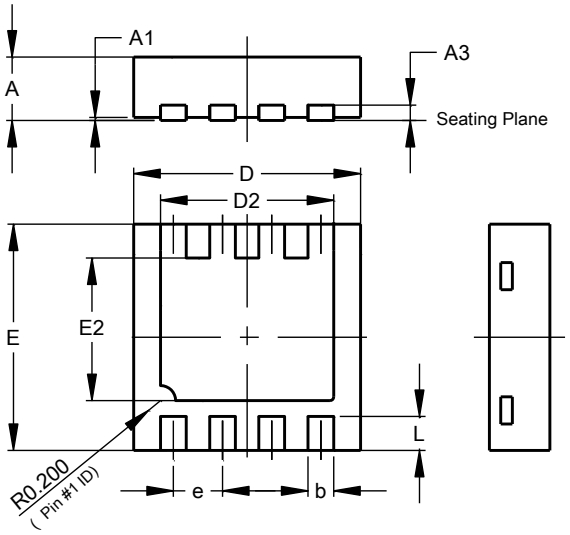



Figure 6 Transient Thermal Resistance

## Package Outline Dimensions

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

**U-DFN3030-8**

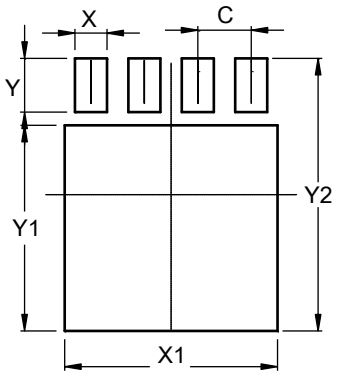



| U-DFN3030-8 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 0.57 | 0.63 | 0.60 |
| **A1** | 0 | 0.05 | 0.02 |
| **A3** | - | - | 0.15 |
| **b** | 0.29 | 0.39 | 0.34 |
| **D** | 2.90 | 3.10 | 3.00 |
| **D2** | 2.19 | 2.39 | 2.29 |
| **e** | - | - | 0.65 |
| **E** | 2.90 | 3.10 | 3.00 |
| **E2** | 1.64 | 1.84 | 1.74 |
| **L** | 0.30 | 0.60 | 0.45 |
| **All Dimensions in mm** | | | |

## Suggested Pad Layout

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

**U-DFN3030-8**




| Dimensions | Value (in mm) |
|---|---|
| **C** | 0.650 |
| **X** | 0.390 |
| **X1** | 2.590 |
| **Y** | 0.650 |
| **Y1** | 2.490 |
| **Y2** | 3.300 |

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