

Product Summary (@T_A = +25°C)

| V _{RRM} (V) | I _O (A) | V _F MAX (V) | I _R MAX (μA) |
|----------------------|--------------------|------------------------|-------------------------|
| 60 | 4 | 0.52 | 150 |

Description and Applications

The SBRT4U60LP is a 4A, 60V single rectifier packaged in the low profile DFN3030 package. Providing low V_F and excellent high temperature stability, this device is ideal for use in general rectification applications such as:

- Bypass Diode
- Boost Diode
- Blocking Diode
- Recirculating Diode

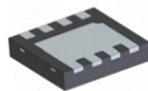
Features and Benefits

- 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)**

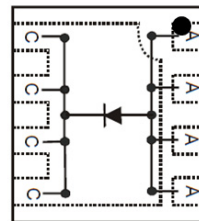
Mechanical Data

- 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 – NiPdAu Annealed over Copper Lead Frame
Solderable per MIL-STD-202, Method 208 **(4)**
- Weight: 0.0172 grams (approximate)

U-DFN3030-8



Bottom View

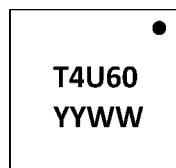

 C = CATHODE
 A = ANODE

 Top View
 Schematic and Pin Configuration

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|--------------|-------------|------------------|
| SBRT4U60LP-7 | U-DFN3030-8 | 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>.

Marking Information


T4U60 = Product Type Marking Code
 YYWW = Date Code Marking
 Y Y= Last two digit of year (ex: 14 for 2014)
 WW = Week code 01 to 53

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} | 60 | 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} | 25 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Ambient (Note 5) | R _{θJA} | 110 | °C/W |
| Typical Thermal Resistance Junction to Case (Note 5) | R _{θJC} | 10 | °C/W |
| Typical Thermal Resistance Junction to Ambient (Note 6) | R _{θJA} | 70 | °C/W |
| Typical Thermal Resistance Junction to Case (Note 6) | R _{θJC} | 4 | °C/W |
| Total Power Dissipation (Note 5) | P _{TOT} | 1.4 | W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +175 | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------|----------------|-----|------|------|------|---|
| Forward Voltage Drop | V _F | — | 0.38 | — | V | I _F = 2A, T _J = +25°C |
| | | | 0.46 | 0.52 | | I _F = 4A, T _J = +25°C |
| | | | 0.33 | — | | I _F = 2A, T _J = +125°C |
| | | | 0.45 | — | | I _F = 4A, T _J = +125°C |
| Leakage Current (Note 7) | I _R | — | 30 | 150 | μA | V _R = 60V, T _J = +25°C |
| | | | 6 | — | mA | V _R = 60V, T _J = +125°C |
| Total capacitance | C _T | — | 180 | — | pF | V _R = 5V, f = 1MHz |

- Notes:
- Device mounted on FR-4 substrate, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>.
 - Device mounted on FR-4 substrate, 2 oz. Copper, 1 sq. inch Cu pad.
 - Short duration pulse test used to minimize self-heating effect.

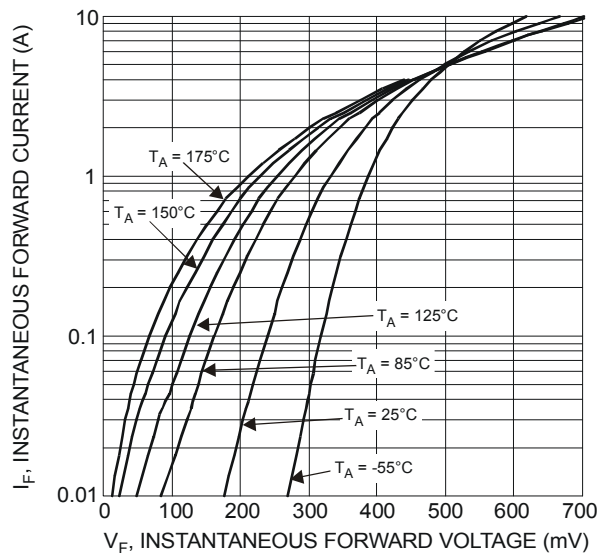


Figure 1 Typical Forward Characteristics

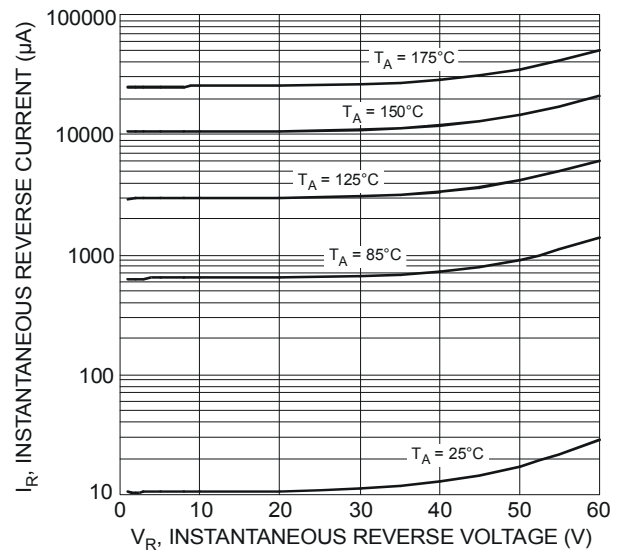


Figure 2 Typical Reverse Characteristics

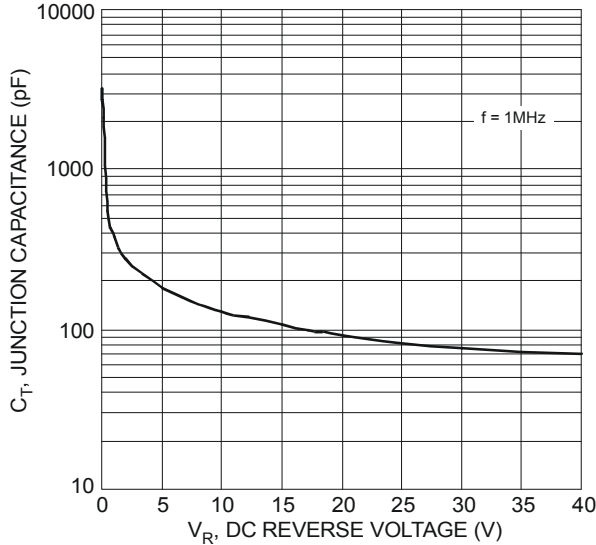


Figure 3 Typical Junction Capacitance

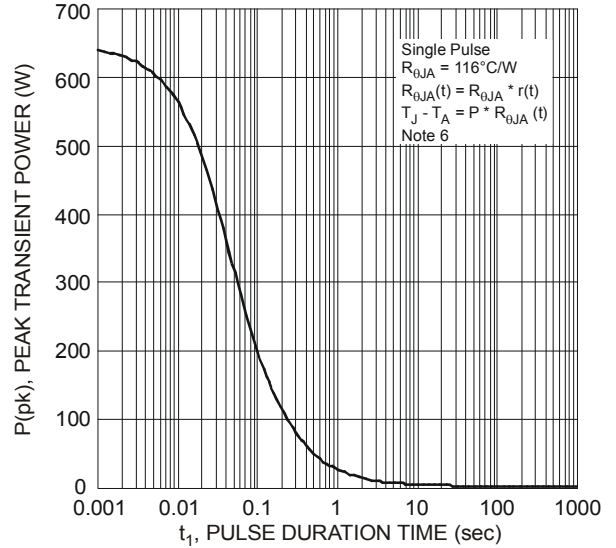


Figure 4 Single Pulse Maximum Power Dissipation

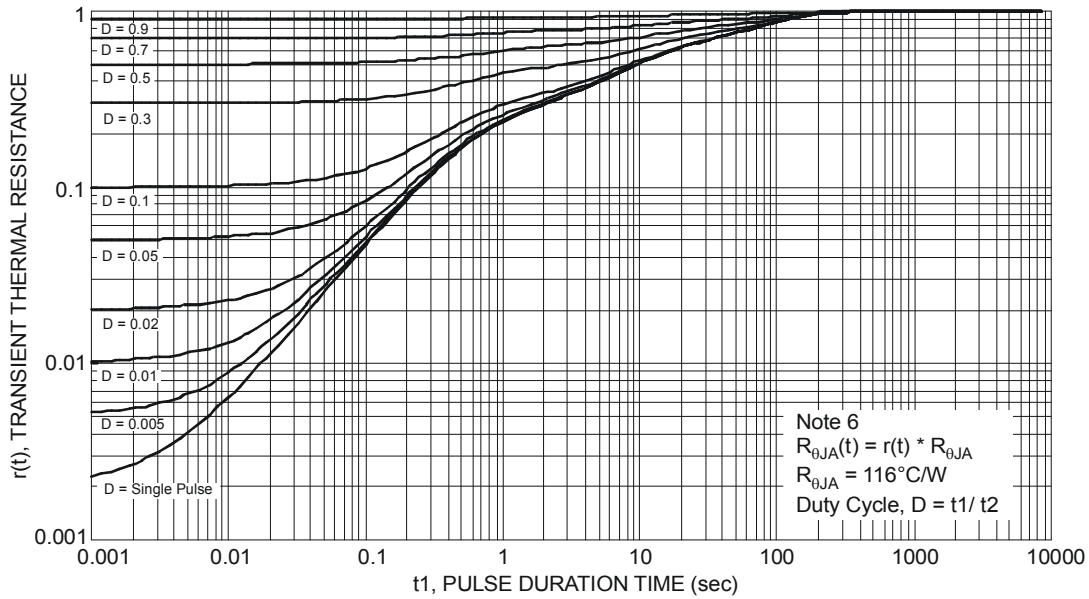


Figure 5 Transient Thermal Resistance

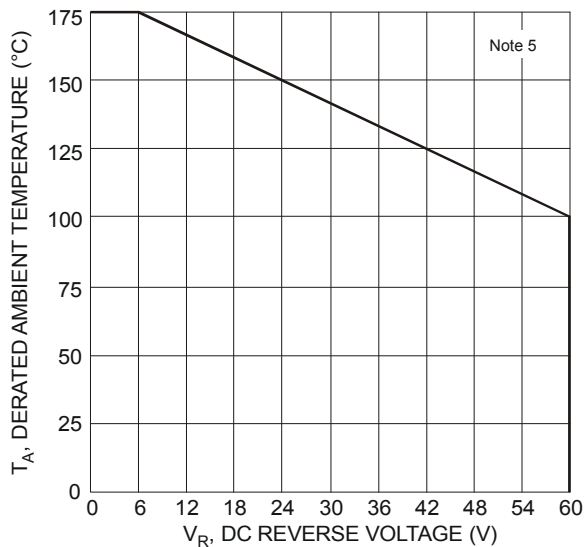
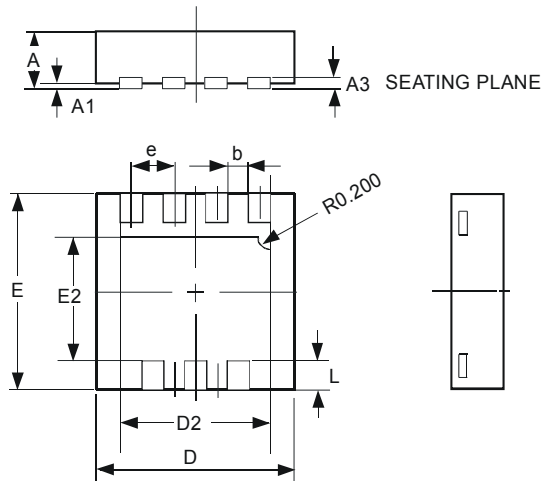


Figure 6 Operating Temperature Derating

Package Outline Dimensions

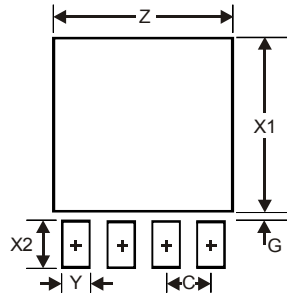
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 2.59 |
| G | 0.11 |
| X1 | 2.49 |
| X2 | 0.65 |
| Y | 0.39 |
| C | 0.65 |

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