**SBR3U60P5Q**

**3A SBR**
**SUPER BARRIER RECTIFIER**
**PowerDI5**

## Product Summary (@ $T_A$ = +25°C)

| $V_{RRM}$ (V) | $I_O$ (A) | $V_F$ Max (V) @ +25°C | $I_R$ Max (mA) @ +25°C |
|---|---|---|---|
| 60 | 3 | 0.60 | 0.06 |

## Features and Benefits

- Very Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented SBR® technology provides a superior avalanche capability than Schottky diodes ensuring more rugged and reliable end applications.
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

## Description & Applications

Packaged in the compact thermally efficient PowerDI5 package, provides low $V_F$ and low reverse leakage at high temperatures.

It is ideal for use in the following applications:

- Bridge Diodes
- Freewheeling Diodes
- Blocking Diodes
- Reverse Protection Diodes

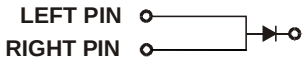
## Mechanical Data

- Case: PowerDI5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Weight: 0.093 grams (Approximate)

**PowerDI5**

Top View

Bottom View




**Note: Pins Left & Right must be electrically connected at the printed circuit board.**

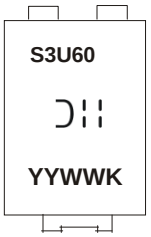
## Ordering Information (Note 5)

| Part Number | Compliance | Case | Packaging |
|---|---|---|---|
| SBR3U60P5Q-13 | Automotive | PowerDI5 | 5,000/Tape & Reel |
| SBR3U60P5Q-13D (Note 6) | Automotive | PowerDI5 | 5,000/Tape & Reel |
| SBR3U60P5Q-7 (Note 6) | Automotive | PowerDI5 | 1,500/Tape & Reel |
| SBR3U60P5Q-7D (Note 6) | Automotive | PowerDI5 | 1,500/Tape & Reel |

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.
6. PowerDI5 available in 5K quantity on 13-inch reel & 12mm tape, part number suffix "13D"; 1.5K quantity on 7-inch reel, part number suffix "7". Diodes also provides 12mm tape with 7-inch reel, part number suffix "7D".

## Marking Information

**PowerDI5**




= Manufacturers' Marking
S3U60 = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 15 = 2015)
WW = Week Code (01 to 53)
K = Factory Designator

## Maximum Ratings (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$ | 60 | V |
| Average Rectified Output Current | $I_O$ | 3 | A |
| Non-Repetitive Avalanche Energy<br>($T_J$= +25°C, $I_{AS}$= 2A, L = 50mH) | $E_{AS}$ | 120 | mJ |
| Non-Repetitive Peak Forward Surge Current 8.3mS | $I_{FSM}$ | 80 | A |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Typical Thermal Resistance (Note 7) | $R_{\theta JA}$ | 95 | °C/W |
| Typical Thermal Resistance (Note 8) | $R_{\theta JA}$ | 35 | °C/W |
| Typical Thermal Resistance (Note 7) | $R_{\theta JC}$ | 15 | °C/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 | $V_F$ | —<br>—<br>—<br>— | 0.43<br>0.53<br>0.40<br>0.52 | —<br>0.60<br>—<br>— | V | $I_F$ =1.5A, $T_J$ = +25°C<br>$I_F$ =3.0A, $T_J$ = +25°C<br>$I_F$ =1.5A, $T_J$ = +125°C<br>$I_F$ =3.0A, $T_J$ = +125°C |
| Leakage Current (Note 9) | $I_R$ | —<br>— | 0.009<br>2.7 | 0.06<br>15 | mA | $V_R$ = 60V , $T_J$ = +25°C<br>$V_R$ = 60V , $T_J$ = +125°C |
| Total Capacitance | $C_T$ | — | 110 | — | pF | $V_R$ = 4V , $T_J$ = +25°C, f=1MHz |

Notes: 7. Device mounted on FR-4 PCB, 2oz. copper, minimum recommended pad layout per http://www.diodes.com/package-outlines.html.
8. Device mounted on 2 inch x 2 inch Al board.
9. Short duration pulse test used to minimize self-heating effect.

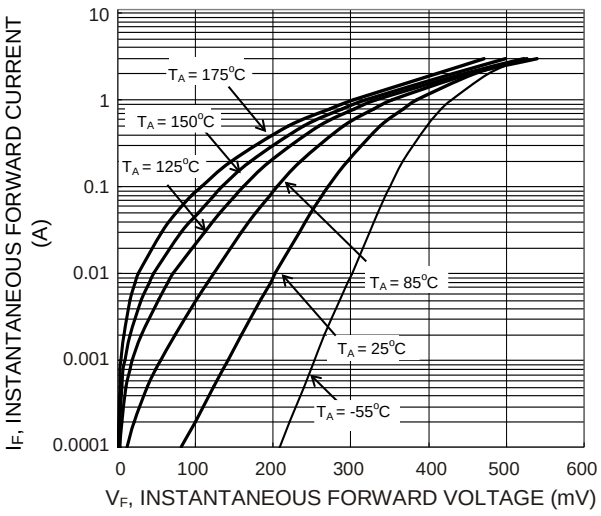



Figure 1 Typical Forward Characteristics

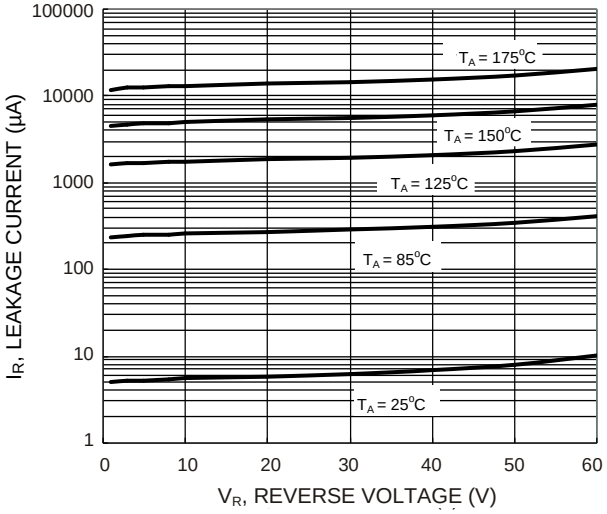



Figure 2 Typical Reverse Characteristics

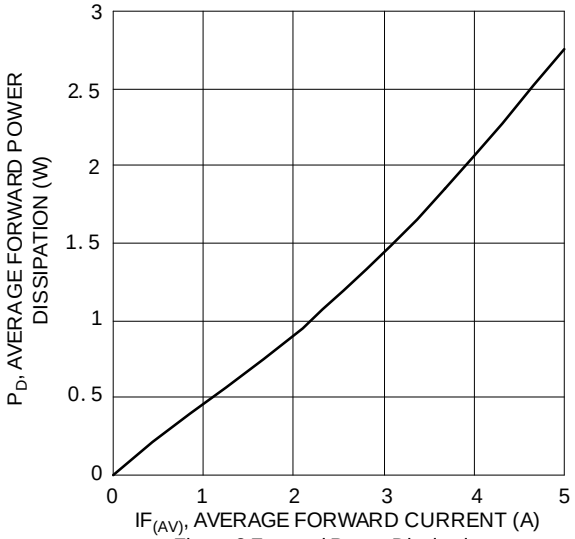



Figure 3 Forward Power Dissipation

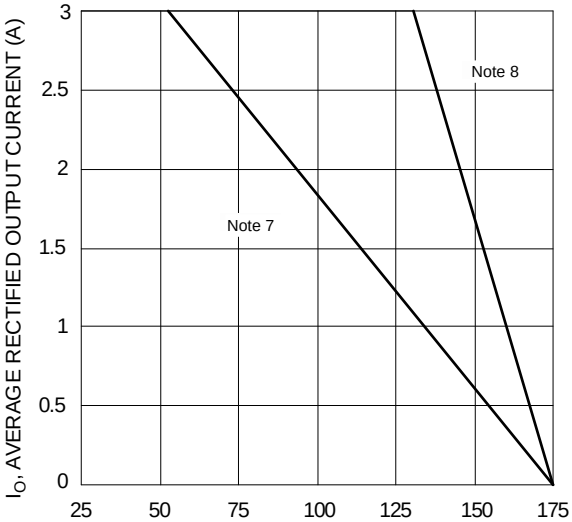



Figure 4 DC Forward Current Derating Curve

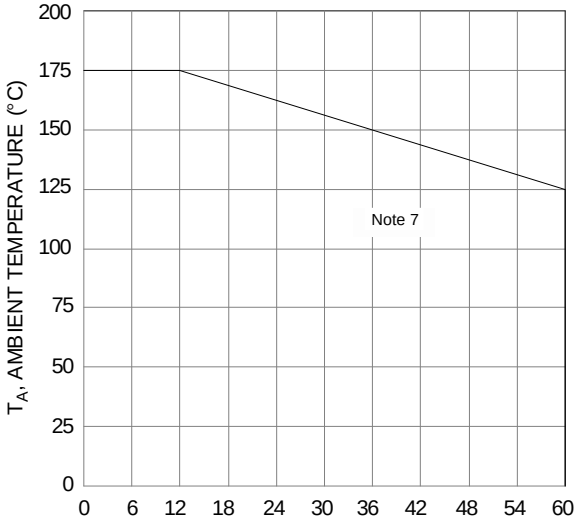



Figure 5 Operating Temperature Derating

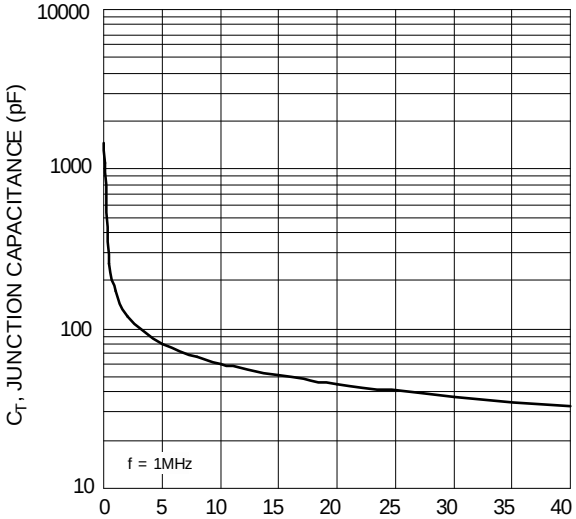
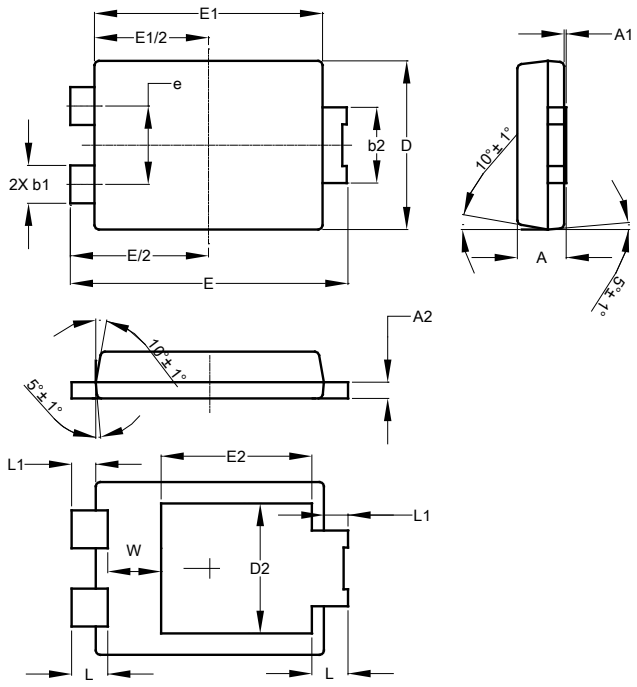



Figure 6 Typical Junction Capacitance

## Package Outline Dimensions

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

**PowerDI5**

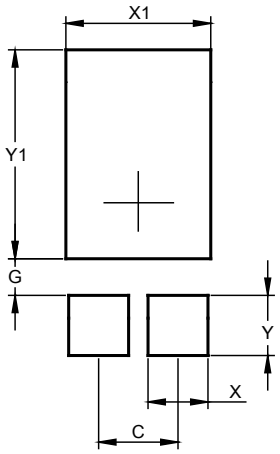



| PowerDI5 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 1.05 | 1.15 | 1.10 |
| **A1** | 0.00 | 0.05 | -- |
| **A2** | 0.33 | 0.43 | 0.381 |
| **b1** | 0.80 | 0.99 | 0.89 |
| **b2** | 1.70 | 1.88 | 1.78 |
| **D** | 3.90 | 4.05 | 3.966 |
| **D2** | -- | -- | 3.054 |
| **E** | 6.40 | 6.60 | 6.504 |
| **e** | -- | -- | 1.84 |
| **E1** | 5.30 | 5.45 | 5.37 |
| **E2** | -- | -- | 3.549 |
| **L** | 0.75 | 0.95 | 0.85 |
| **L1** | 0.50 | 0.65 | 0.57 |
| **W** | 1.10 | 1.41 | 1.255 |
| **All Dimensions in mm** | | | |

## Suggested Pad Layout

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

**PowerDI5**




| Dimensions | Value (in mm) |
|---|---|
| **C** | 1.840 |
| **G** | 0.852 |
| **X** | 1.390 |
| **X1** | 3.360 |
| **Y** | 1.400 |
| **Y1** | 4.860 |

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