

**Product Summary (@ T<sub>A</sub> = +25°C)**

| V <sub>RRM</sub> (V) | I <sub>O</sub> (A) | V <sub>F</sub> Max (V)<br>@ +25°C | I <sub>R</sub> Max (mA)<br>@ +25°C |
|----------------------|--------------------|-----------------------------------|------------------------------------|
| 60                   | 3                  | 0.60                              | 0.06                               |

**Description & Applications**

Packaged in the compact thermally efficient PowerDI5 package, the SBR3U60P5 provides low V<sub>F</sub> and low reverse leakage at high temperatures. It is ideal for use in the following applications:

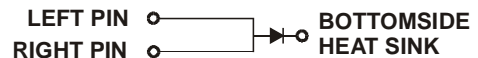
- Bridge Diodes
- Freewheeling Diodes
- Blocking Diodes
- Reverse Protection Diodes



Top View



Bottom View

**PowerDI5**


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

**Features and Benefits**

- Very Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented SBR<sup>®</sup> 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**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([SBR3U60P5Q](#))**

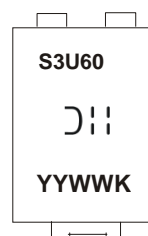
**Mechanical Data**

- 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)

**Ordering Information (Note 4)**

| Part Number            | Compliance | Case     | Packaging         |
|------------------------|------------|----------|-------------------|
| SBR3U60P5-13           | Commercial | PowerDI5 | 5,000/Tape & Reel |
| SBR3U60P5-13D (Note 5) | Commercial | PowerDI5 | 5,000/Tape & Reel |
| SBR3U60P5-7 (Note 5)   | Commercial | PowerDI5 | 1,500/Tape & Reel |
| SBR3U60P5-7D (Note 5)  | Commercial | 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](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>.
  5. 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 "7D". 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<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic  | Symbol           | Value | Unit |
|---|------------------|-------|------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage      | V <sub>RRM</sub> | 60    | V    |
| Average Rectified Output Current  | I <sub>O</sub>   | 3     | A    |
| Non-Repetitive Avalanche Energy<br>(T <sub>J</sub> = +25°C, I <sub>AS</sub> = 2A, L = 50mH) | E <sub>AS</sub>  | 120   | mJ   |
| Non-Repetitive Peak Forward Surge Current 8.3mS   | I <sub>FSM</sub> | 80    | A    |

**Thermal Characteristics**

| Characteristic                          | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance (Note 6)     | R <sub>θJA</sub>                  | 95          | °C/W |
| Typical Thermal Resistance (Note 7)     | R <sub>θJA</sub>                  | 35          | °C/W |
| Typical Thermal Resistance (Note 6)     | R <sub>θJC</sub>                  | 15          | °C/W |
| Operating and Storage Temperature Range | T <sub>J</sub> , T <sub>STG</sub> | -55 to +175 | °C   |

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic           | Symbol         | Min | Typ   | Max  | Unit | Test Condition  |
|--------------------------|----------------|-----|-------|------|------|---|
| Forward Voltage Drop     | V <sub>F</sub> | —   | 0.43  | —    | V    | I <sub>F</sub> = 1.5A, T <sub>J</sub> = +25°C         |
|                          |                | —   | 0.53  | 0.60 |      | I <sub>F</sub> = 3.0A, T <sub>J</sub> = +25°C         |
|                          |                | —   | 0.40  | —    |      | I <sub>F</sub> = 1.5A, T <sub>J</sub> = +125°C        |
|                          |                | —   | 0.52  | —    |      | I <sub>F</sub> = 3.0A, T <sub>J</sub> = +125°C        |
| Leakage Current (Note 8) | I <sub>R</sub> | —   | 0.009 | 0.06 | mA   | V <sub>R</sub> = 60V, T <sub>J</sub> = +25°C          |
|                          |                | —   | 2.7   | 15   |      | V <sub>R</sub> = 60V, T <sub>J</sub> = +125°C         |
| Total Capacitance        | C <sub>T</sub> | —   | 110   | —    | pF   | V <sub>R</sub> = 4V, T <sub>J</sub> = +25°C, f = 1MHz |

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

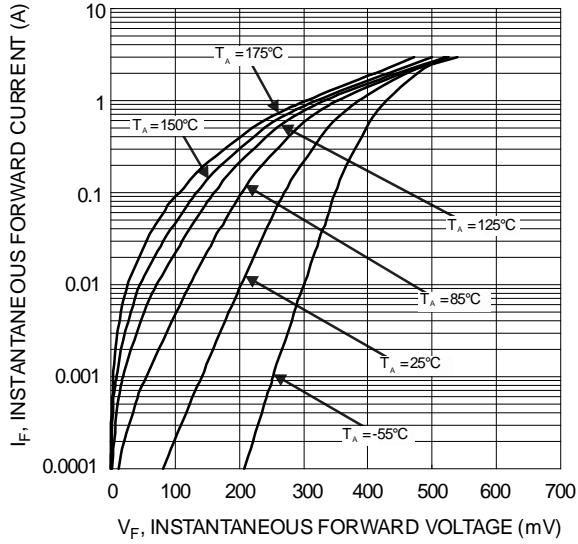


Figure 1 Typical Forward Characteristics

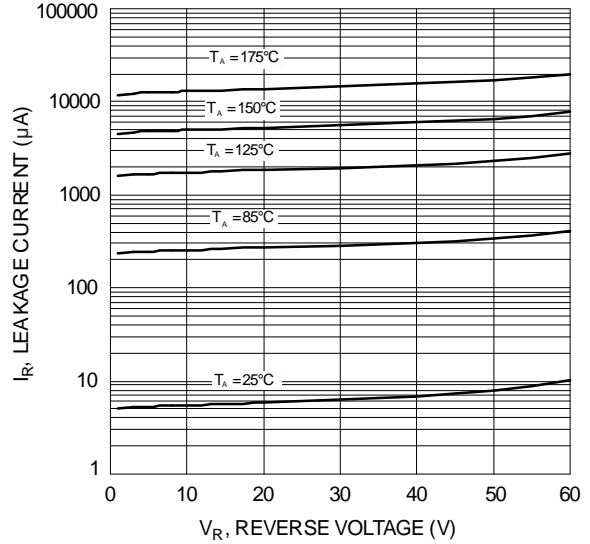


Figure 2 Typical Reverse Characteristics

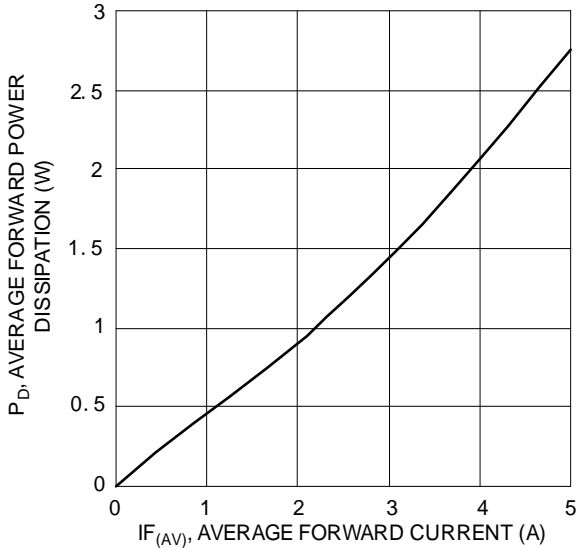


Figure 3 Forward Power Dissipation

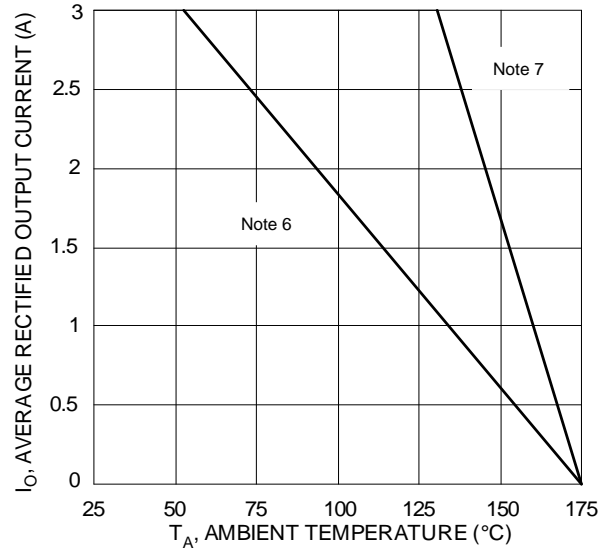


Figure 4 DC Forward Current Derating Curve

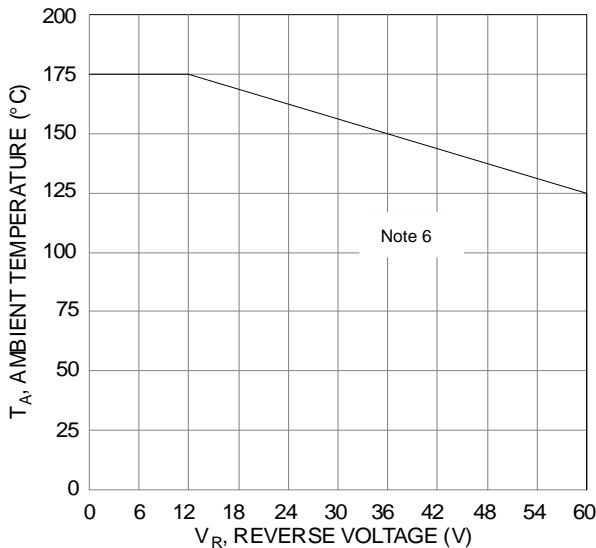


Figure 5 Operating Temperature Derating

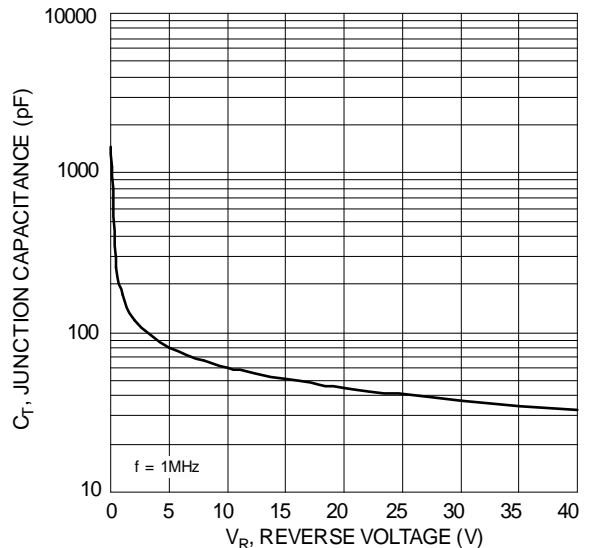
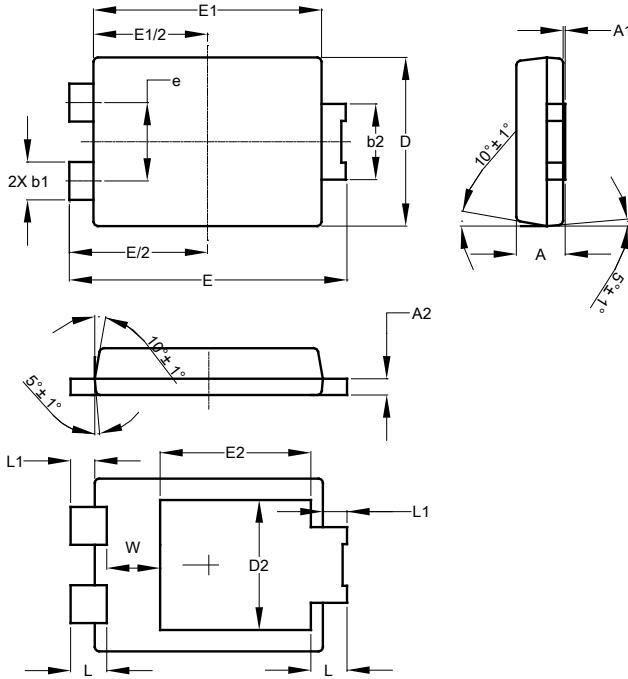


Figure 6 Typical Junction Capacitance

**Package Outline Dimensions**

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

**PowerDI5**



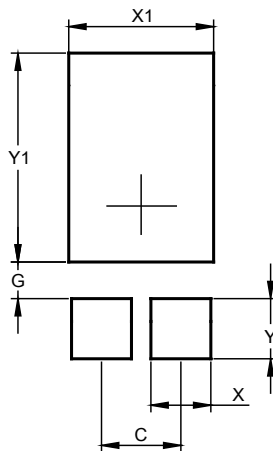
| PowerDI5             |      |      |       |
|----------------------|------|------|-------|
| Dim                  | Min  | Max  | Typ   |
| A                    | 1.05 | 1.15 | 1.10  |
| A1                   | 0.00 | 0.05 | --    |
| A2                   | 0.33 | 0.43 | 0.381 |
| b1                   | 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 |      |      |       |

NEW PRODUCT

**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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