

## Product Summary

| $V_{RRM}$ (V) | $I_o$ (A) | $V_F(MAX)$ (V)<br>@+25°C | $I_R(MAX)$ (mA)<br>@+25°C |
|---------------|-----------|--------------------------|---------------------------|
| 50            | 15        | 0.54                     | 0.15                      |

## Description and Applications

Packaged in the compact thermally efficient PowerDI<sup>®</sup>5 package, the Trench SBR SBRT15M50AP5 provides excellent low reverse leakage stability at high temperatures. It is ideal for use as a rectification, freewheeling or polarity protection diode in applications such as:

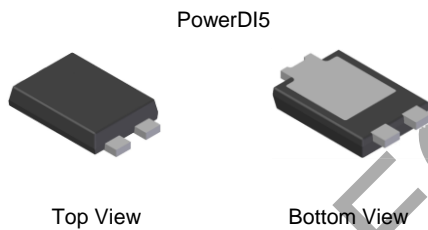
- >10W AC/DC Adaptors/Chargers
- DC/DC Converters

## Features and Benefits

- Excellent reverse leakage ( $I_R$ ) stability at higher temperatures
- Thermally efficient package for cooler running applications
- Less than 1.1mm package profile ideal for thin applications
- Patented Super Barrier Rectifier Technology (SBR<sup>®</sup>)
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## 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)



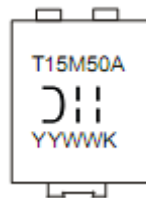
**Note: Pins Left & Right must be electrically connected at the printed circuit board.**

## Ordering Information (Note 4)

| Part Number               | Case     | Packaging        |
|---------------------------|----------|------------------|
| SBRT15M50AP5-13           | PowerDI5 | 5000/Tape & Reel |
| SBRT15M50AP5-13D (Note 5) | PowerDI5 | 5000/Tape & Reel |
| SBRT15M50AP5-7            | PowerDI5 | 1500/Tape & Reel |
| SBRT15M50AP5-7D (Note 5)  | PowerDI5 | 1500/Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  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/>.
  5. PowerDI5 available in 5K quantity on 13inch reel & 12mm tape, part number suffix "13D"; 1.5K quantity on 7inch reel also, part number suffix "7". Diodes also provides 12mm tape with 7inch reel, part number suffix "7D".

## Marking Information



T15M50A = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 14 = 2014)  
 WW = Week code (01 - 53)  
 K = Factory Designator

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**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> | 50    | V    |
| Average Rectified Output Current  | I <sub>O</sub>   | 15    | A    |
| Non-Repetitive Peak Forward Surge Current 8.3mS<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 290   | A    |

**Thermal Characteristics**

| Characteristic   | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Ambient (Note 6)  | R <sub>θJA</sub>                  | 18          | °C/W |
| Typical Thermal Resistance Junction to Case (Note 6)     | R <sub>θJC</sub>                  | 2           | °C/W |
| Typical Thermal Resistance Junction to Lead (Notes 6, 7) | R <sub>θJL</sub>                  | 4           | °C/W |
| Operating and Storage Temperature Range                  | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °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> | —   | 0.42 | 0.50 | V    | I <sub>F</sub> = 10A, T <sub>J</sub> = +25°C  |
|                          |                | —   | 0.37 | 0.44 |      | I <sub>F</sub> = 10A, T <sub>J</sub> = +125°C |
|                          |                | —   | 0.47 | 0.54 |      | I <sub>F</sub> = 15A, T <sub>J</sub> = +25°C  |
|                          |                | —   | 0.43 | 0.50 |      | I <sub>F</sub> = 15A, T <sub>J</sub> = +125°C |
| Leakage Current (Note 8) | I <sub>R</sub> | —   | 0.1  | 0.15 | mA   | V <sub>R</sub> = 50V, T <sub>J</sub> = +25°C  |
|                          |                | —   | 16   | 45   |      | V <sub>R</sub> = 50V, T <sub>J</sub> = +125°C |
| Junction Capacitance     | C <sub>J</sub> | —   | 440  | —    | pF   | V <sub>R</sub> = 25V, T <sub>J</sub> = +25°C  |

- Notes:
- Device mounted on FR4 PCB with 1inch copper pad layout with AL substrate and additional HK1(37mm x 55mm x15mm).
  - Junction to Lead (Cathode Terminal)
  - Short duration pulse test used to minimize self-heating effect.

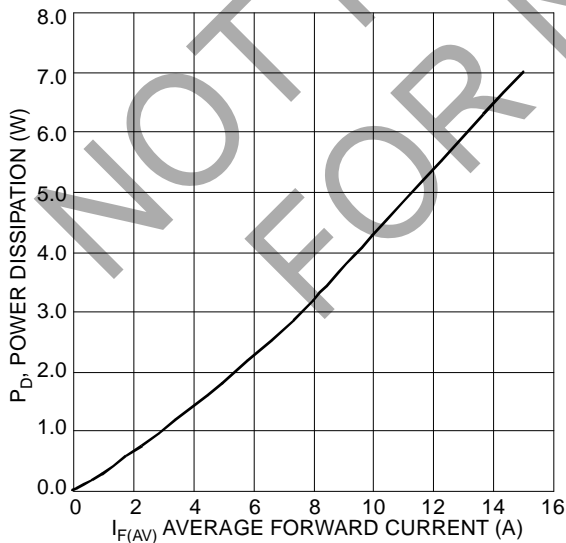


Figure 1 Forward Power Dissipation

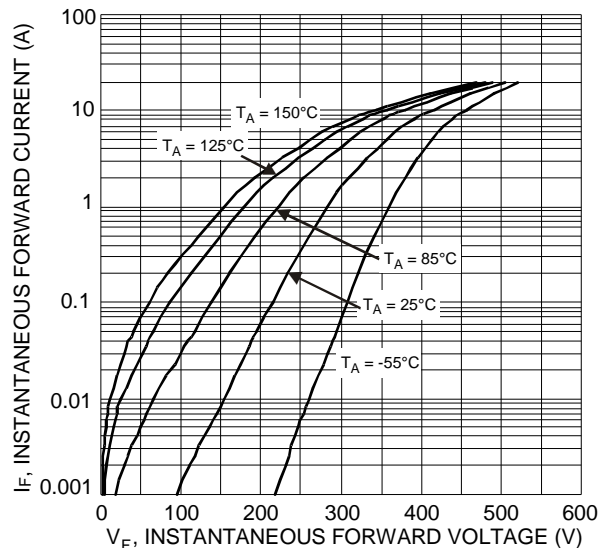
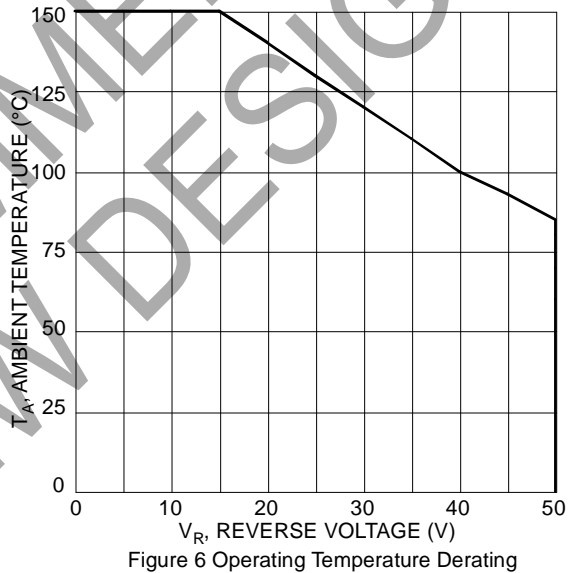
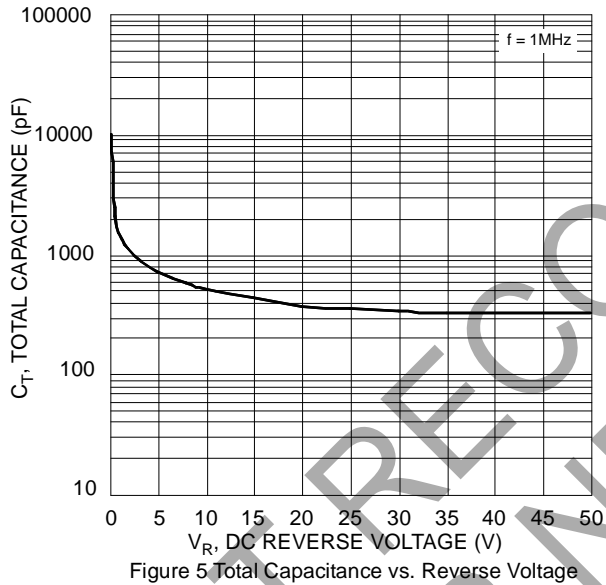
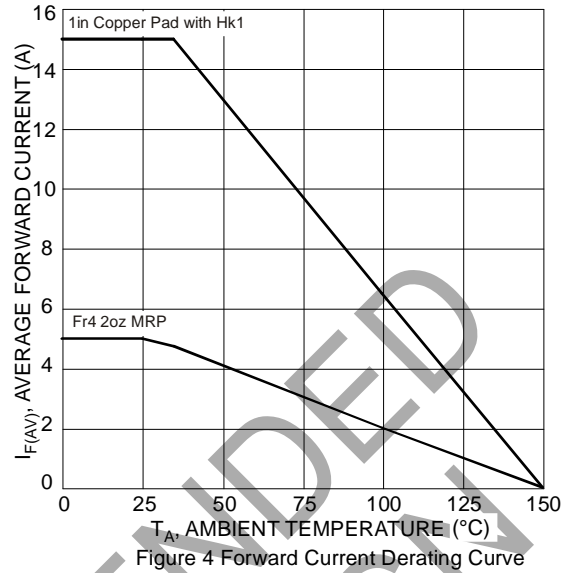
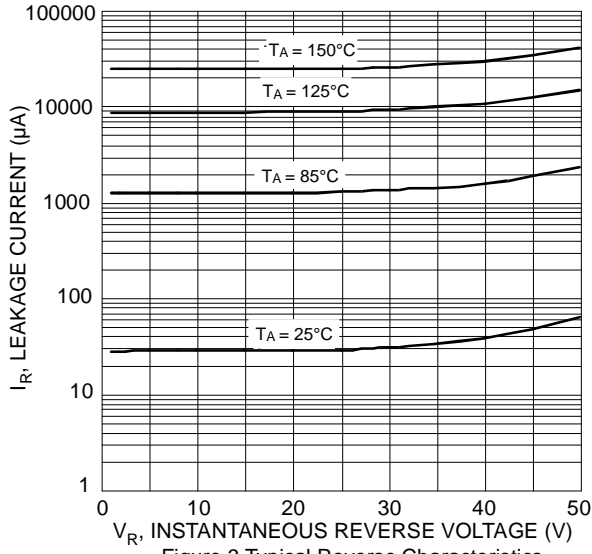


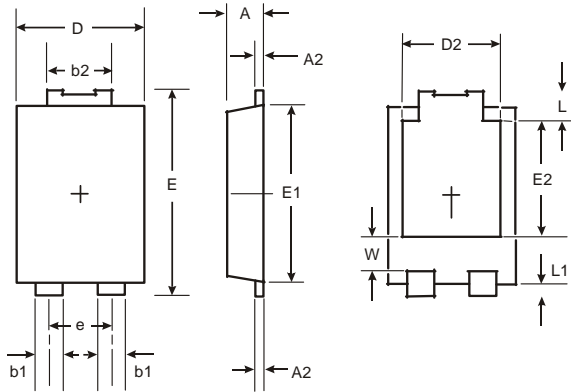
Figure 2 Typical Forward Characteristics



## Package Outline Dimensions

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

PowerDI5

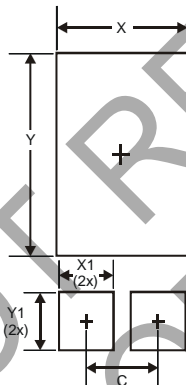


| PowerDI5             |           |      |
|----------------------|-----------|------|
| Dim                  | Min       | Max  |
| A                    | 1.05      | 1.15 |
| A2                   | 0.33      | 0.43 |
| b1                   | 0.80      | 0.99 |
| b2                   | 1.70      | 1.88 |
| D                    | 3.90      | 4.05 |
| D2                   | 3.054 Typ |      |
| E                    | 6.40      | 6.60 |
| e                    | 1.84 Typ  |      |
| E1                   | 5.30      | 5.45 |
| E2                   | 3.549 Typ |      |
| L                    | 0.75      | 0.95 |
| L1                   | 0.50      | 0.65 |
| W                    | 1.10      | 1.41 |
| 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          | 3.360         |
| X1         | 1.390         |
| Y          | 4.860         |
| Y1         | 1.400         |

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