

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

| V <sub>RRM</sub> (V) | I <sub>O</sub> (A) | V <sub>F</sub> max (V) | I <sub>R</sub> max (mA) |
|----------------------|--------------------|------------------------|-------------------------|
| 60                   | 3                  | 0.59                   | 0.1                     |

**Description and Application**

Packaged in the compact thermally efficient POWERDI®123 package, the SBRT3M60P1 provides very low reverse leakage and excellent V<sub>F</sub> stability at high temperatures. It is ideally suited to use as a rectifier diode in MR16 bridge rectifier applications.

- Bridge Diodes
- Blocking Diodes
- Reverse Protection Diodes

POWERDI®123



Top View

**Features and Benefits**

- Reduced Low Forward Voltage Drop (V<sub>F</sub>); Better Efficiency and Cooler Operation
- Reduced High Temperature Reverse Leakage; Increased Reliability Against Thermal Runaway Failure in High Temperature Operation
- <1.1mm Package Profile – Ideal for Thin 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**

**Mechanical Data**

- Case: POWERDI®123
- 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 ③
- Polarity: Cathode Band
- Weight: 0.01 grams (Approximate)



Device Symbol

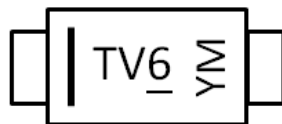
**Ordering Information** (Note 4)

| Part Number  | Case        | Packaging         |
|--------------|-------------|-------------------|
| SBRT3M60P1-7 | POWERDI®123 | 3,000/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>.

**Marking Information**

POWERDI®123



TV6 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: C = 2015)  
 M = Month (ex: 9 = September)

**Date Code Key**

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|------|------|------|------|------|------|------|------|------|
| Code | A    | B    | C    | D    | E    | F    | G    | H    |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

**Maximum Ratings** (@T<sub>A</sub> = +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 <sub>RRM</sub> | 60    | V    |
| Working Peak Reverse Voltage   | V <sub>RWM</sub> |       |      |
| DC Blocking Voltage  | V <sub>RM</sub>  |       |      |
| Average Rectified Output Current   | I <sub>O</sub>   | 3     | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 70    | A    |

**Thermal Characteristics**

| Characteristic  | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 60          | °C/W |
| Typical Thermal Resistance Junction to Case (Note 5)    | R <sub>θJC</sub>                  | 2.4         | °C/W |
| Operating and Storage Temperature Range                 | T <sub>J</sub> , T <sub>STG</sub> | -65 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 (Note 6) | V <sub>F</sub> | —   | 0.52 | 0.59<br>0.57 | V    | I <sub>F</sub> = 3A, T <sub>J</sub> = +25°C<br>I <sub>F</sub> = 3A, T <sub>J</sub> = +125°C   |
| Leakage Current (Note 6)      | I <sub>R</sub> | —   | —    | 0.1<br>15    | mA   | V <sub>R</sub> = 60V, T <sub>J</sub> = +25°C<br>V <sub>R</sub> = 60V, T <sub>J</sub> = +125°C |

Notes: 5. Device mounted on 1inch sq. copper pad,2oz.  
6. Short duration pulse test used to minimize self-heating effect.

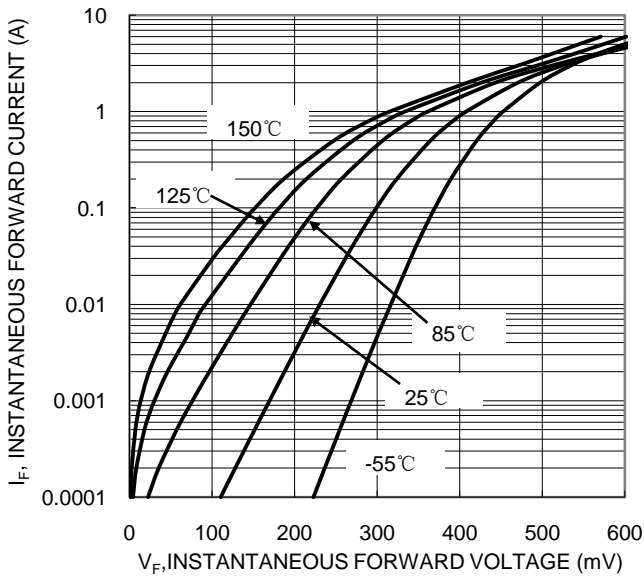


Figure 1. Typical Forward Characteristics

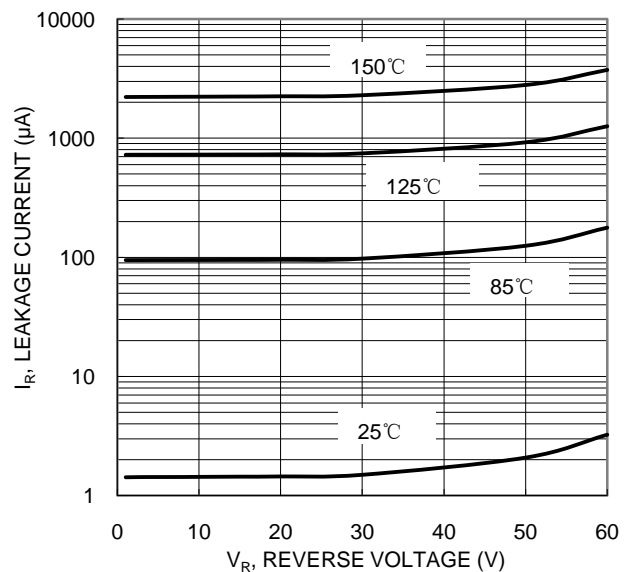


Figure 2. Typical Reverse Characteristics

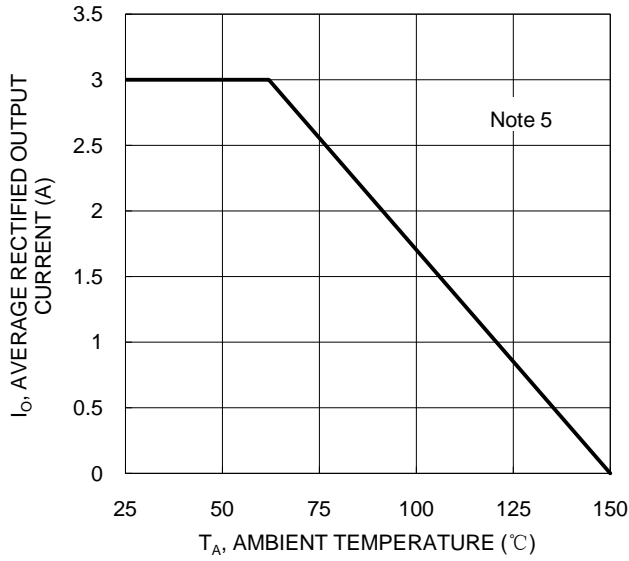


Figure 3. DC Forward Current Derating

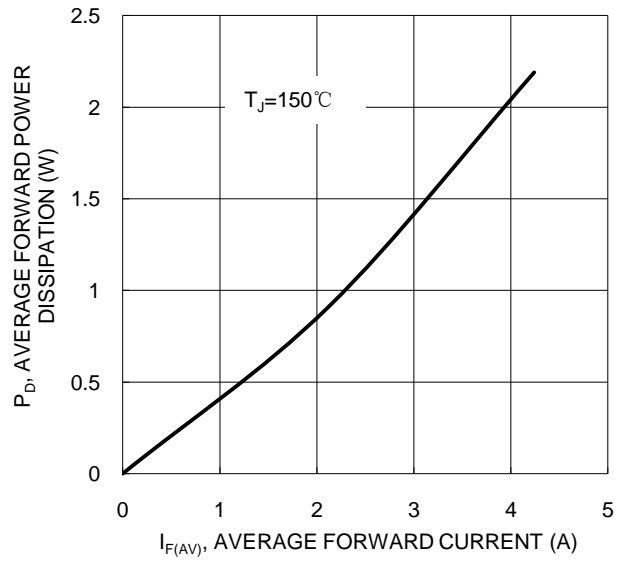


Figure 4. Forward Power Dissipation

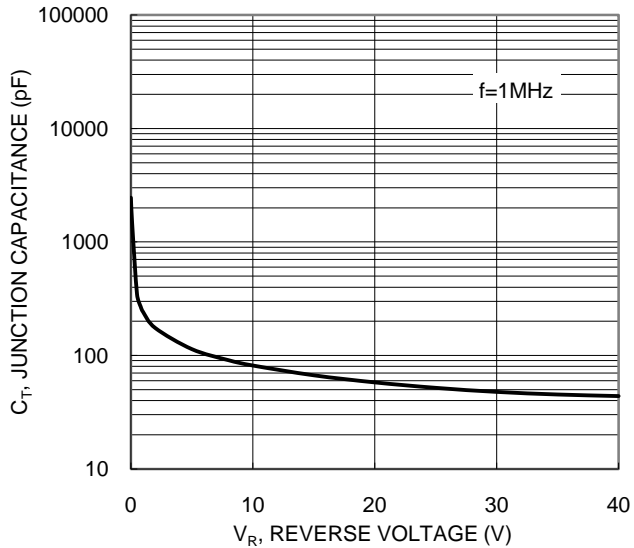
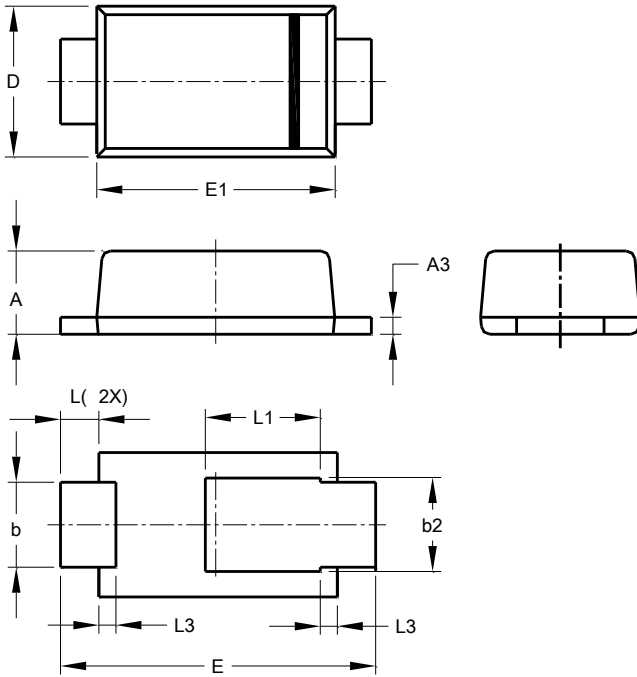


Figure 5. Typical Junction Capacitance

**Package Outline Dimensions**

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

**POWERDI<sup>®</sup>123**

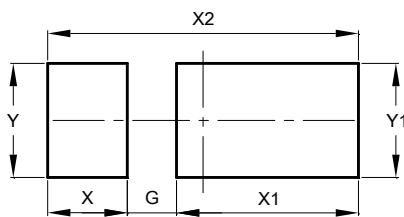


| POWERDI <sup>®</sup> 123 |       |       |      |
|--------------------------|-------|-------|------|
| Dim                      | Min   | Max   | Typ  |
| A                        | 0.93  | 1.00  | 0.98 |
| A3                       | 0.15  | 0.25  | 0.20 |
| b                        | 0.85  | 1.25  | 1.00 |
| b2                       | 1.025 | 1.125 | 1.10 |
| D                        | 1.63  | 1.93  | 1.78 |
| E                        | 3.50  | 3.90  | 3.70 |
| E1                       | 2.60  | 3.00  | 2.80 |
| L                        | 0.40  | 0.50  | 0.45 |
| L1                       | 1.25  | 1.40  | 1.35 |
| L3                       | 0.125 | 0.275 | 0.20 |
| All Dimensions in mm     |       |       |      |

**Suggested Pad Layout**

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

**POWERDI<sup>®</sup>123**



| Dimensions | Value (in mm) |
|------------|---------------|
| G          | 0.65          |
| X          | 1.05          |
| X1         | 2.40          |
| X2         | 4.10          |
| Y          | 1.50          |
| Y1         | 1.50          |

NEW PRODUCT

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