

Product Summary

| V _{RRM} (V) | I _O (A) | V _{F(MAX)} (V) @ +25°C | I _{R(MAX)} (mA) @ +25°C |
|----------------------|--------------------|------------------------------------|-------------------------------------|
| 50 | 25 | 0.52 | 0.5 |

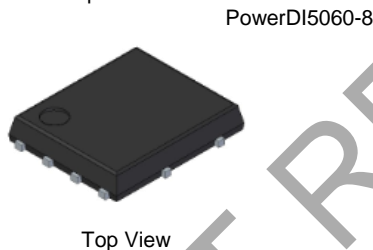
Features and Benefits

- 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
- Less Than 1.1mm Package Profile – Ideal for Thin Applications
- Patented Super Barrier Rectifier SBR® Technology
- **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 refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.** <https://www.diodes.com/quality/product-definitions/>

Description and Applications

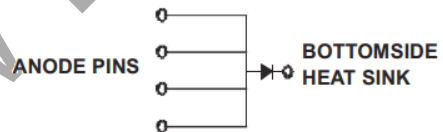
Packaged in the compact thermally efficient PowerDI®5060-8 package, the SBRT25U50SLP provides very low V_F and excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode or blocking diode in:

- DC-DC Converters
- AC-DC Adaptors



Mechanical Data

- Case: PowerDI5060-8
- 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: See Below
- Weight: 0.097 grams (Approximate)



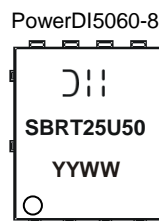
Note: All four anode pins must be electrically connected at the printed circuit board.

Ordering Information (Note 4)

| Part Number | Case | Packaging |
|-----------------|---------------|-------------------|
| SBRT25U50SLP-13 | PowerDI5060-8 | 2,500/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/>.

Marking Information



= Manufacturer's Marking
 SBRT25U50 = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 21 = 2021)
 WW = Week (01 to 53)

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

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| Characteristic | Symbol | Value | Unit |
|---|------------------|-------|------|
| Peak Repetitive Reverse Voltage | V _{RRM} | 50 | V |
| Working Peak Reverse Voltage | V _{RWM} | | |
| DC Blocking Voltage | V _{RM} | | |
| Average Rectified Output Current | I _o | 25 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 200 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|------------------|-------------|------|
| Typical Thermal Resistance Junction to Ambient (Note 5) | R _{θJA} | 10 | °C/W |
| Typical Thermal Resistance Junction to Case (Note 5) | R _{θJC} | 1 | °C/W |
| Operating Temperature Range | T _J | -55 to +150 | °C |
| Storage Temperature Range | 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 (Note 6) | V _F | — | 0.380 | — | V | I _F = 12.5A, T _J = +25°C |
| | | — | 0.455 | 0.52 | | I _F = 25A, T _J = +25°C |
| | | — | 0.430 | — | | I _F = 25A, T _J = +125°C |
| Leakage Current (Note 6) | I _R | — | 0.18 | 0.50 | mA | V _R = 50V, T _J = +25°C |
| | | — | — | 100 | | V _R = 50V, T _J = +125°C |

Notes: 5. Device mounted on Al substrate with 1-inch pad layout and additional HK (48mm × 35mm × 80mm).
6. Short duration pulse test used to minimize self-heating effect.

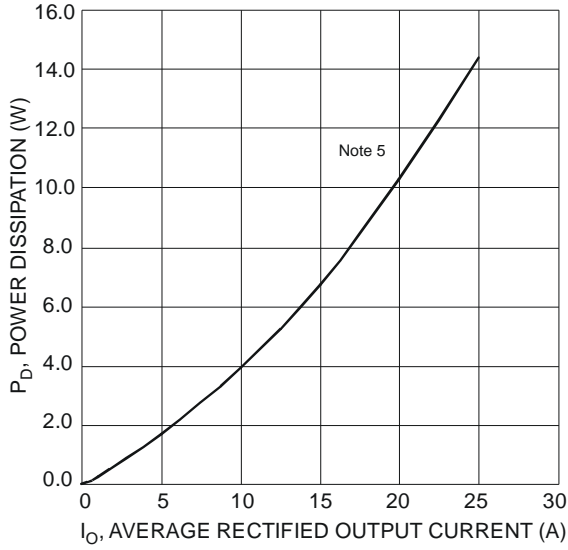


Figure 1 Forward Power Dissipation

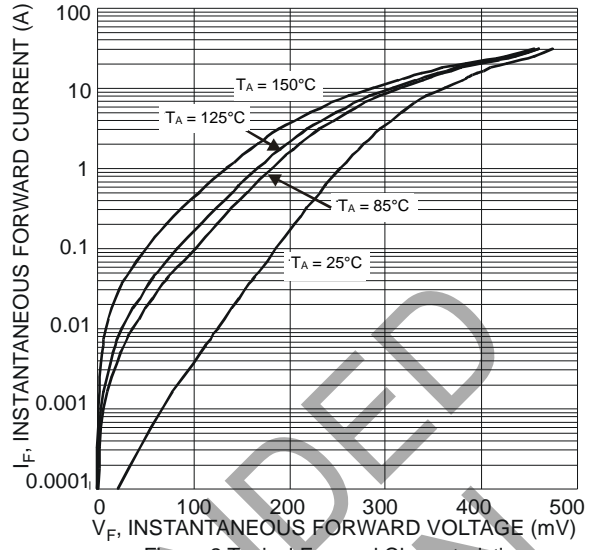


Figure 2 Typical Forward Characteristics

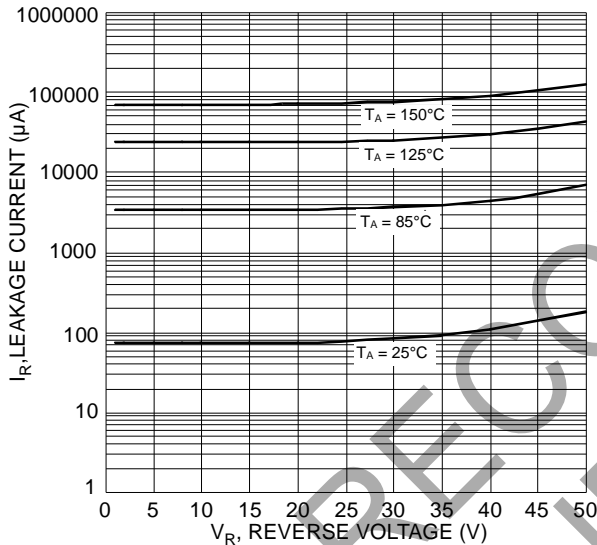


Figure 3 Typical Reverse Characteristics

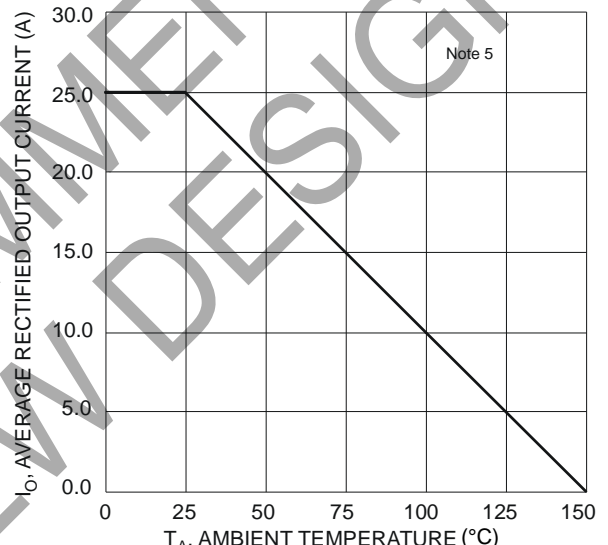


Figure 4 Forward Current Derating Curve

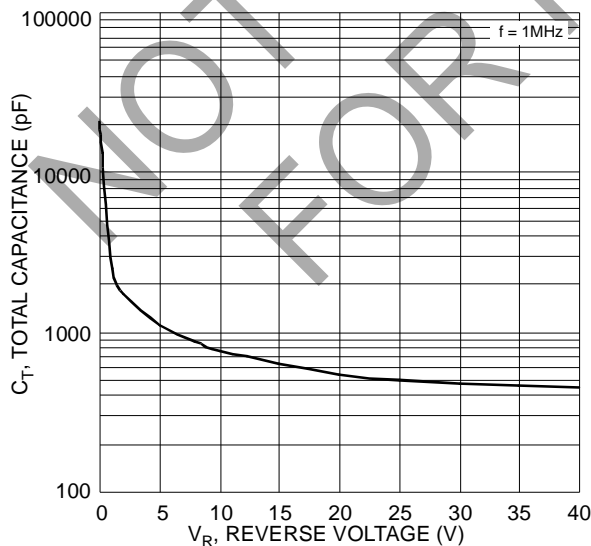
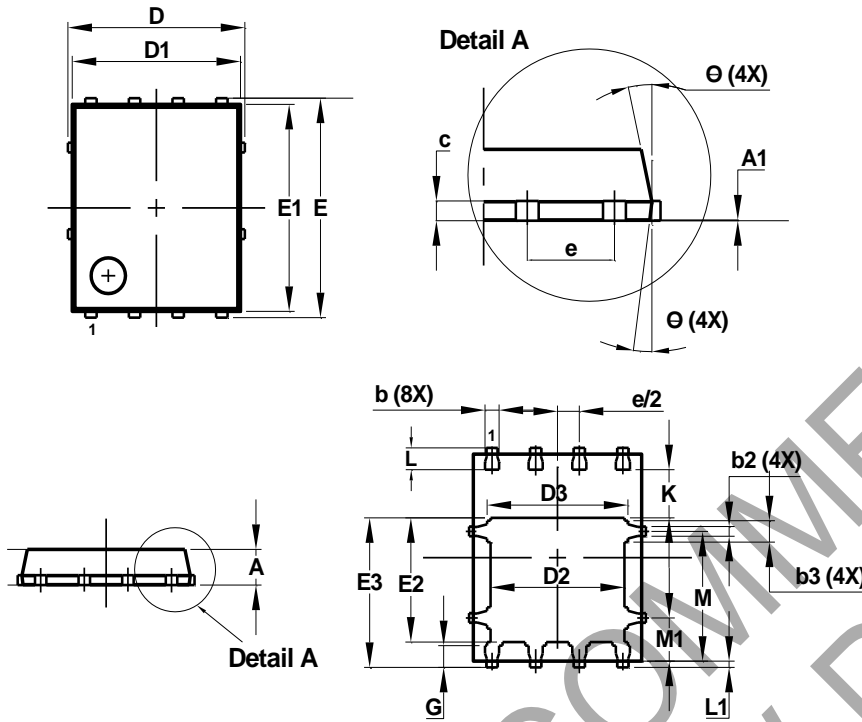


Figure 5 Typical Junction Capacitance

Package Outline Dimensions

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

PowerDI5060-8

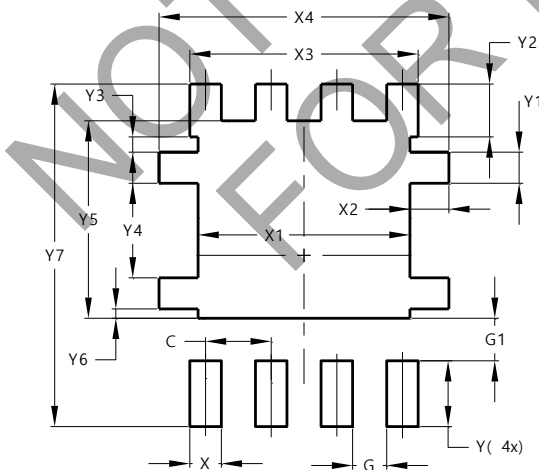


| PowerDI5060-8 | | | |
|----------------------|----------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.90 | 1.10 | 1.00 |
| A1 | 0.00 | 0.05 | — |
| b | 0.33 | 0.51 | 0.41 |
| b2 | 0.200 | 0.350 | 0.273 |
| b3 | 0.40 | 0.80 | 0.60 |
| c | 0.230 | 0.330 | 0.277 |
| D | 5.15 BSC | | |
| D1 | 4.70 | 5.10 | 4.90 |
| D2 | 3.70 | 4.10 | 3.90 |
| D3 | 3.90 | 4.30 | 4.10 |
| E | 6.15 BSC | | |
| E1 | 5.60 | 6.00 | 5.80 |
| E2 | 3.28 | 3.68 | 3.48 |
| E3 | 3.99 | 4.39 | 4.19 |
| e | 1.27 BSC | | |
| G | 0.51 | 0.71 | 0.61 |
| K | 0.51 | — | — |
| L | 0.51 | 0.71 | 0.61 |
| L1 | 0.100 | 0.20 | 0.175 |
| M | 3.235 | 4.035 | 3.635 |
| M1 | 1.00 | 1.40 | 1.21 |
| Θ | 10° | 12° | 11° |
| Θ 1 | 6° | 8° | 7° |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

PowerDI5060-8



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 1.270 |
| G | 0.660 |
| G1 | 0.820 |
| X | 0.610 |
| X1 | 4.100 |
| X2 | 0.755 |
| X3 | 4.420 |
| X4 | 5.610 |
| Y | 1.270 |
| Y1 | 0.600 |
| Y2 | 1.020 |
| Y3 | 0.295 |
| Y4 | 1.825 |
| Y5 | 3.810 |
| Y6 | 0.180 |
| Y7 | 6.610 |

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