

Product Summary (@ T_A = +25°C)

| V _{RRM} (V) | I _O (A) | V _F (Max) (V) | I _R (Max) (μA) |
|----------------------|--------------------|--------------------------|---------------------------|
| 120 | 8 | 0.84 | 300 |

Features and Benefits

- Low Forward Voltage Drop
- Excellent High Temperature Stability
- Soft, Fast Switching Capability
- +150°C Operating Junction Temperature
- **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 and Applications

Packaged in the compact and thermally efficient PowerDI[®]5, the SDT8A120P5Q 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: PowerDI5
- 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 (e3)
- Terminal Connections: See Diagram Below
- Weight: 0.093 grams (Approximate)

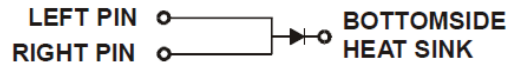
PowerDI5



Top View



Bottom View

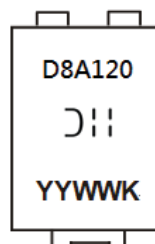


Note: Pins Left & Right must be electrically connected at the printed circuit board.

Ordering Information (Note 5)

| Part Number | Compliance | Case | Packaging |
|--------------------------|------------|----------|-------------------|
| SDT8A120P5Q-7 | Automotive | PowerDI5 | 1,500/Tape & Reel |
| SDT8A120P5Q-7D (Note 6) | Automotive | PowerDI5 | 1,500/Tape & Reel |
| SDT8A120P5Q-13 | Automotive | PowerDI5 | 5,000/Tape & Reel |
| SDT8A120P5Q-13D (Note 6) | Automotive | PowerDI5 | 5,000/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 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"; Diodes Incorporated also provides 12mm tape with 7-inch reel, part number suffix "7D".

Marking Information


- ⤵ = Manufacturers' Marking
- D8A120 = Product Type Marking Code
- YYWW = Date Code Marking
- YY = Last Two Digits of Year (ex: 17 = 2017)
- WW = Week (01 to 53)
- K = Factory Designator

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

| Characteristic | Symbol | Value | Unit |
|--|------------------|-------|------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V _{RRM} | 120 | V |
| Average Rectified Output Current | I _O | 8 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms | I _{FSM} | 150 | A |

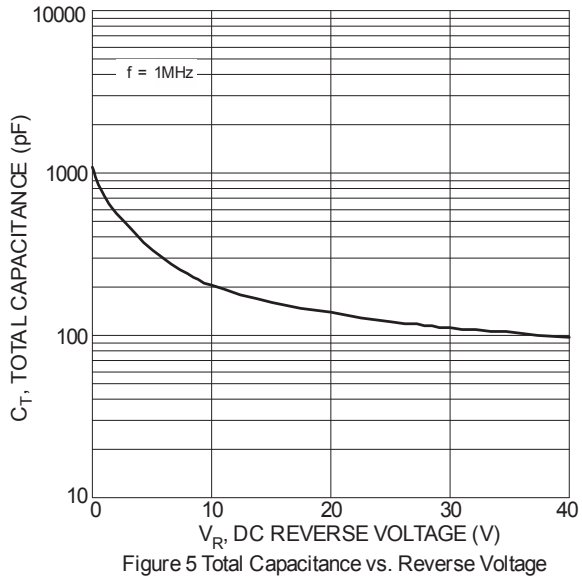
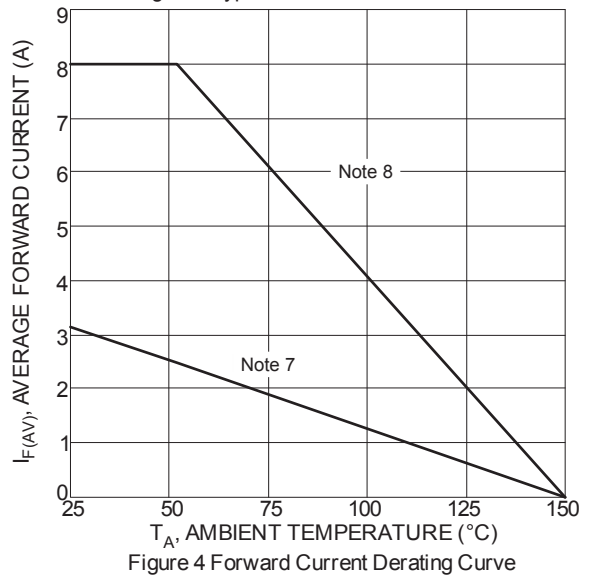
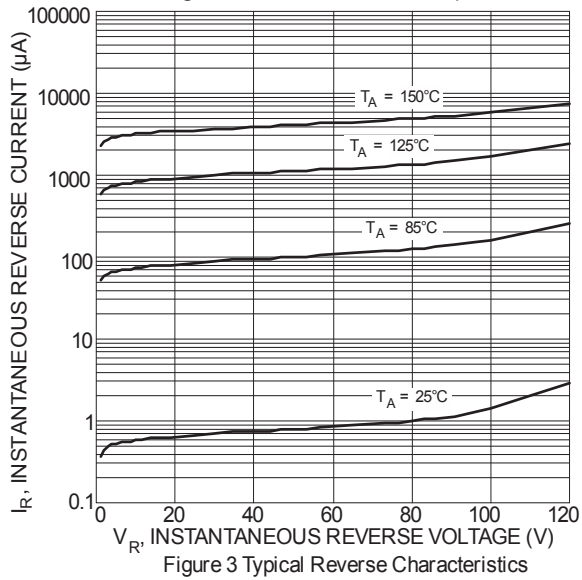
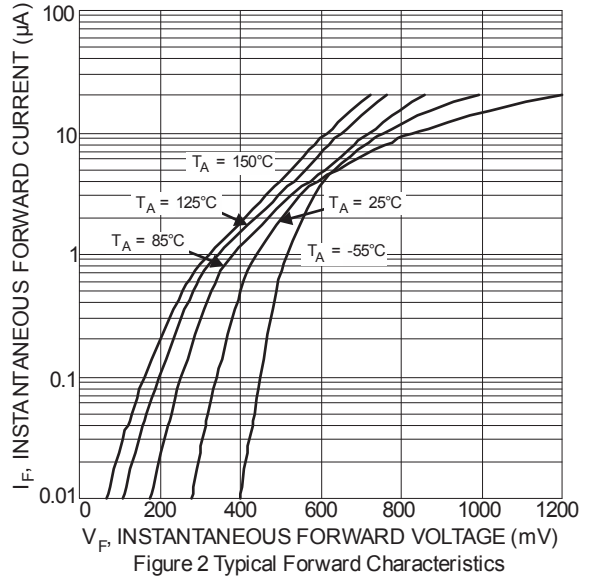
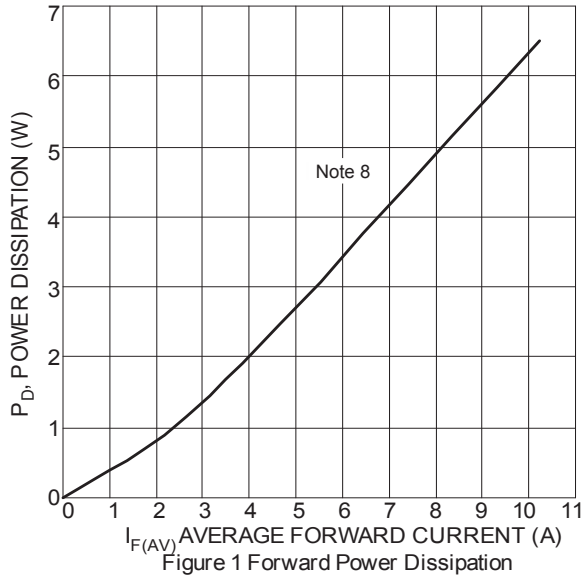
Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Typical Thermal Resistance, Junction to Ambient (Note 7) | R _{θJA} | 88 | °C/W |
| Typical Thermal Resistance, Junction to Ambient (Note 8) | R _{θJA} | 18 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------|----------------|-----|------|------|------|--|
| Forward Voltage Drop | V _F | — | 0.60 | — | V | I _F = 4A, T _J = +25°C |
| | | — | 0.76 | 0.84 | | I _F = 8A, T _J = +25°C |
| | | — | 0.53 | — | | I _F = 4A, T _J = +125°C |
| | | — | 0.63 | 0.71 | | I _F = 8A, T _J = +125°C |
| Leakage Current (Note 9) | I _R | — | — | 0.3 | mA | V _R = 120V, T _J = +25°C |
| | | — | 3.1 | 17 | | V _R = 120V, T _J = +125°C |

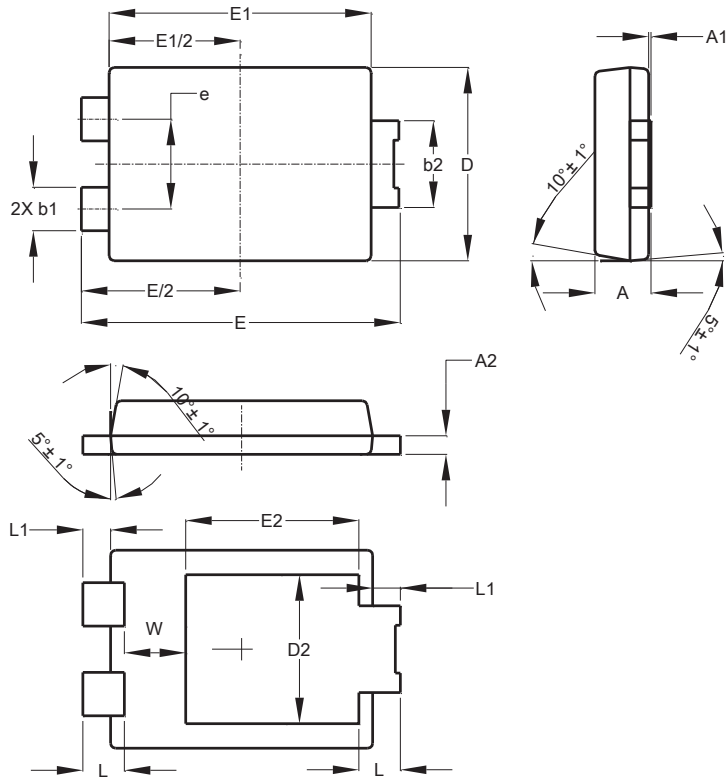
- Notes:
7. FR-4 PCB, 2oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
 8. Aluminum 2-inch x 2-inch substrate PCB with 50mm x 50mm x 23mm Al heat sink.
 9. Short duration pulse test used to minimize self-heating effect.



Package Outline Dimensions

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

PowerDI5

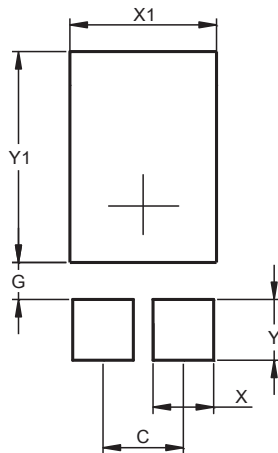


| PowerDI5 | | | |
|----------------------|------|------|-------|
| Dim | Min | Max | Typ |
| A | 1.05 | 1.15 | 1.10 |
| A1 | 0.00 | 0.05 | -- |
| A2 | 0.33 | 0.43 | 0.381 |
| b1 | 0.80 | 0.99 | 0.89 |
| b2 | 1.70 | 1.88 | 1.78 |
| D | 3.90 | 4.05 | 3.966 |
| D2 | -- | -- | 3.054 |
| E | 6.40 | 6.60 | 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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