



**THE DATASHEET OF  
SDT8A120P5Q-13D**



**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) (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<sup>®</sup>5, the SDT8A120P5Q provides very low V<sub>F</sub> 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)

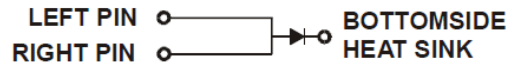
PowerDI5



Top View



Bottom View

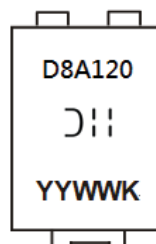


**Note: Pins Left & Right must be electrically connected at the printed circuit board.**

**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](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](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** (@ $T_A = +25^\circ\text{C}$ , 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

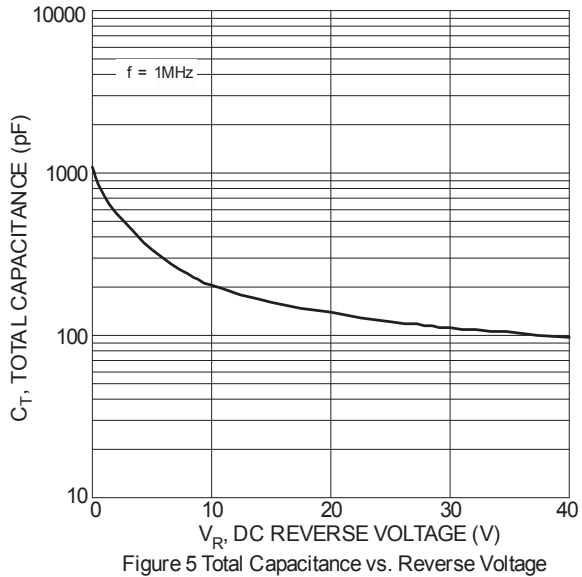
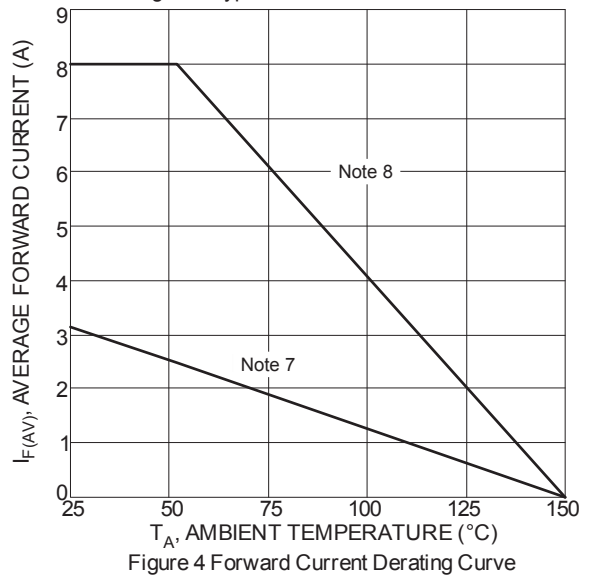
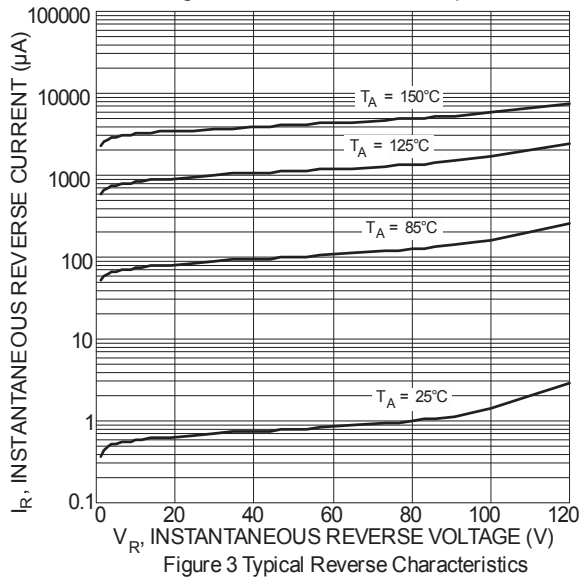
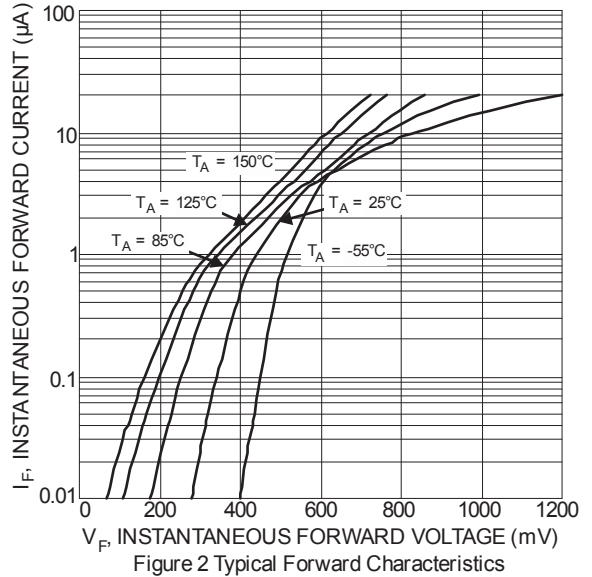
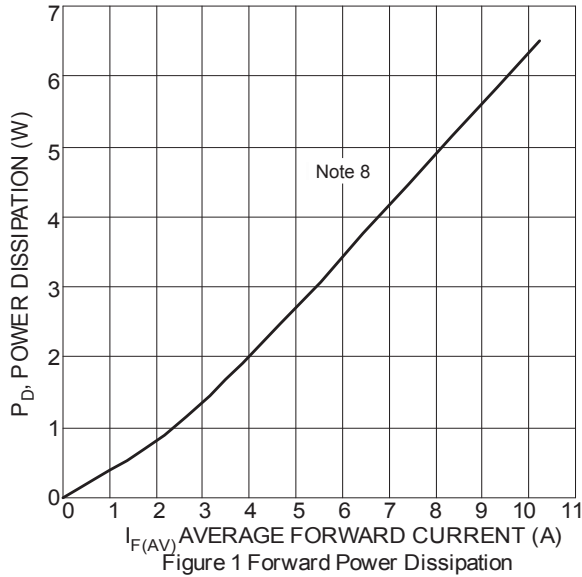
**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Ambient (Note 7)	$R_{\theta JA}$	88	$^\circ\text{C/W}$
Typical Thermal Resistance, Junction to Ambient (Note 8)	$R_{\theta JA}$	18	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	—	0.60	—	V	$I_F = 4\text{A}, T_J = +25^\circ\text{C}$
		—	0.76	0.84		$I_F = 8\text{A}, T_J = +25^\circ\text{C}$
		—	0.53	—		$I_F = 4\text{A}, T_J = +125^\circ\text{C}$
		—	0.63	0.71		$I_F = 8\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 9)	$I_R$	—	—	0.3 17	mA	$V_R = 120\text{V}, T_J = +25^\circ\text{C}$
						$V_R = 120\text{V}, T_J = +125^\circ\text{C}$

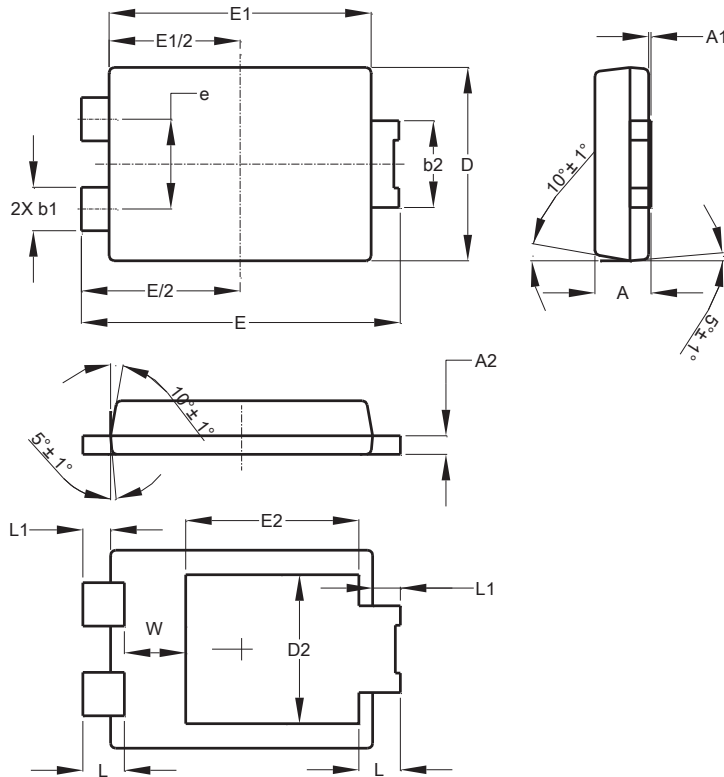
- Notes:
7. FR-4 PCB, 2oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
  8. Aluminum 2-inch x 2-inch substrate PCB with 50mm x 50mm x 23mm Al heat sink.
  9. Short duration pulse test used to minimize self-heating effect.



## Package Outline Dimensions

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

**PowerDI5**

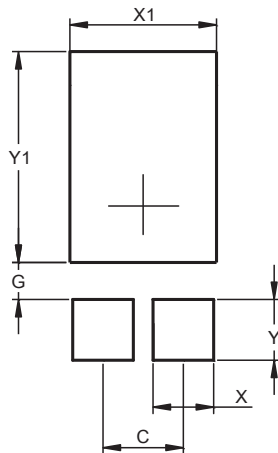


PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.504
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

## 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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