

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

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

PowerDI5



Top View



Bottom View

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)

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 (63)
- Terminal Connections: See Diagram Below
- Weight: 0.093 grams (Approximate)



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

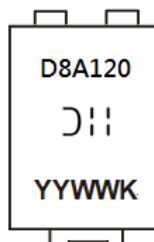
Ordering Information (Note 5)

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:

- EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
- 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.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
- For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.
- 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



DII = 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	V_{RRM}	120	V
DC Blocking Voltage			
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	$^\circ\text{C}/\text{W}$
Typical Thermal Resistance, Junction to Ambient (Note 8)	$R_{\theta JA}$	18	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

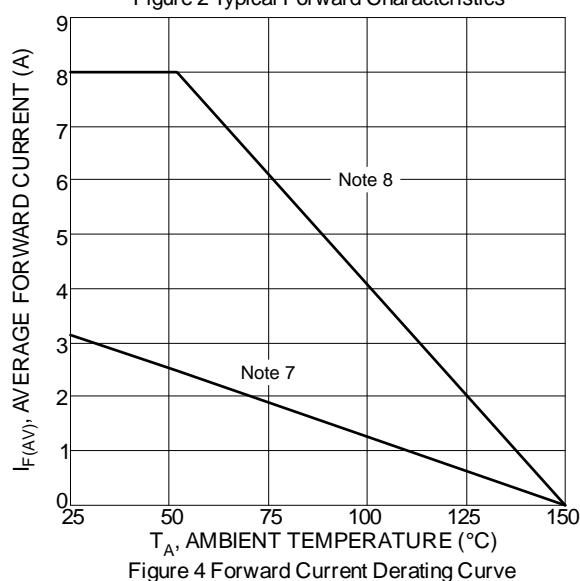
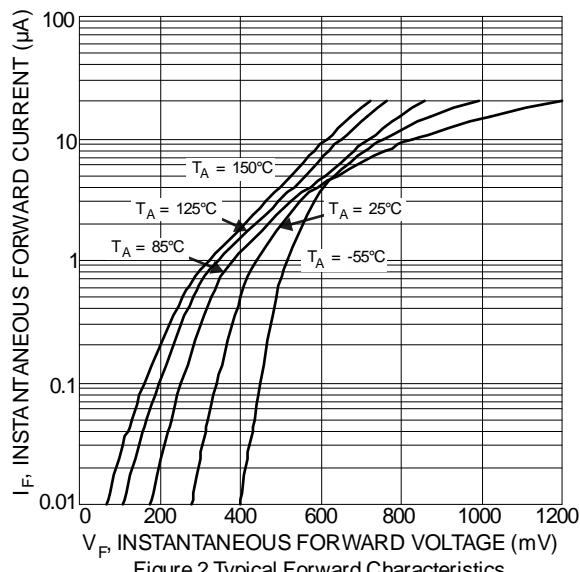
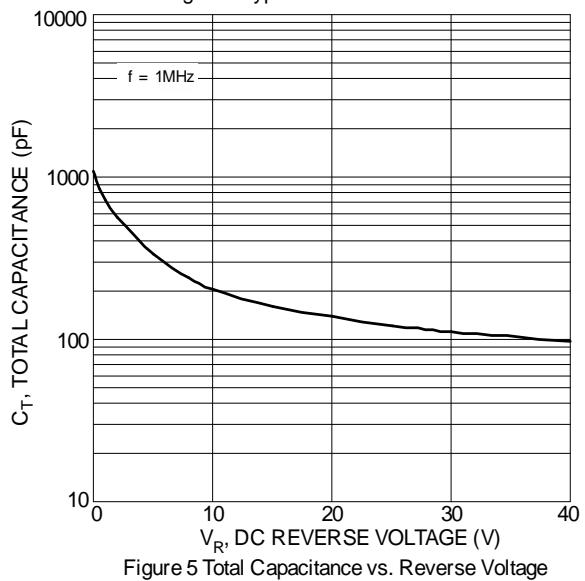
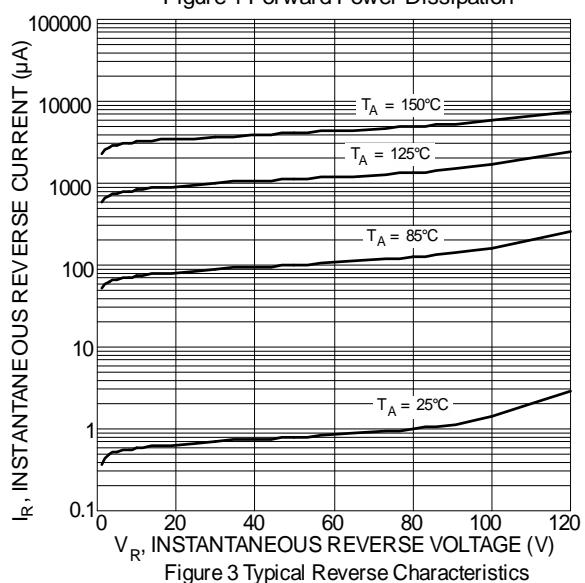
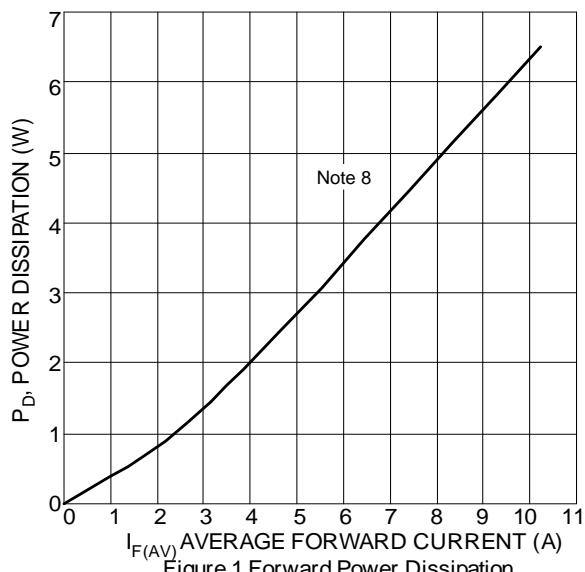
Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

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	mA	$V_R = 120\text{V}, T_J = +25^\circ\text{C}$
		—	3.1	17		$V_R = 120\text{V}, T_J = +125^\circ\text{C}$

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.

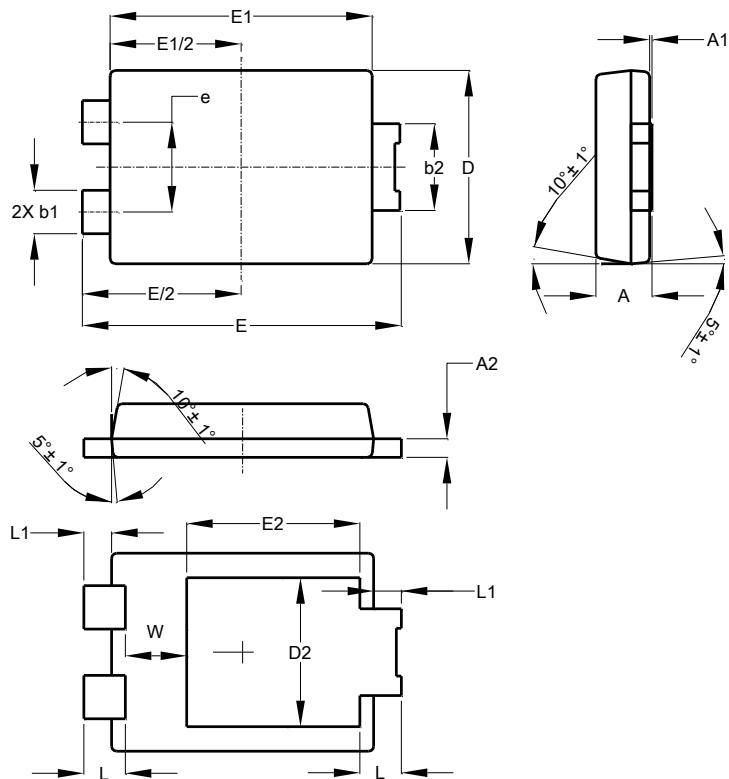
9. Short duration pulse test used to minimize self-heating effect.



Package Outline Dimensions

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

PowerDI5



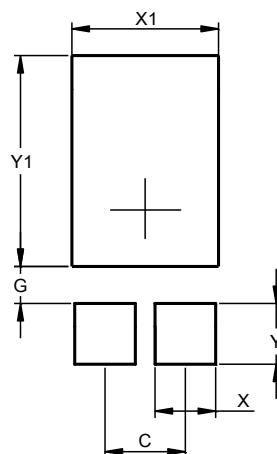
PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.504
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255

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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