Product Summary

V_{RRM} (V)	I_O (A)	$V_{F\ typ}$ (V) @ +25°C	$t_{rr\ typ}$ (nS) @ +25°C	$I_{RM\ typ}$ (A) @ +25°C
600	8	2.3	20	6.9

Features and Benefits

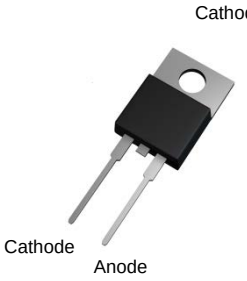
- Low V_F minimises Boost Diode conduction loses
- Very fast trr reduces MOSFET PFC switching losses
- Soft switching ensures ringing and EMI are reduced
- Low Q_{rr} and I_{RM} minimize boost diode recovery losses
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Description and Application

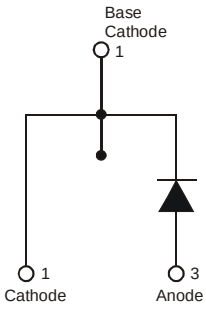
The DIODESTAR™ DSR8A600 is designed specifically for use as a boost diode in Power Factor Correction (PFC) applications. Its soft fast switching characteristics make it ideal for use in hard switching and Continuous Conduction Mode (CCM) PFC circuits.

Mechanical Data

- Case: TO220AC
- Case Material: Molded Plastic, "Green" Molding compound. UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 e3
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Weight: 1.75 grams (approximate)



TO220AC Package



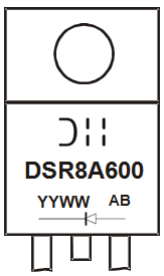
Package Pin Out Configuration

Ordering Information (Note 4)

Part Number	Case	Packaging
DSR8A600	TO220AC	50 pieces/tube

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. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



DSR8A600 = Product Type Marking Code
AB = Foundry and Assembly Code
YYWW = Date Code Marking
YY = Last two digits of year (ex: 14 = 2014)
WW = Week (01 - 53)

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

Single phase, half wave, 60Hz, resistive or inductive load.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_{RM}	600	V
Average Rectified Output Current T ≤ +101°C	I_O	8	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	65	A
Non-Repetitive Peak Forward Surge Current 10ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	60	A

Thermal Characteristics

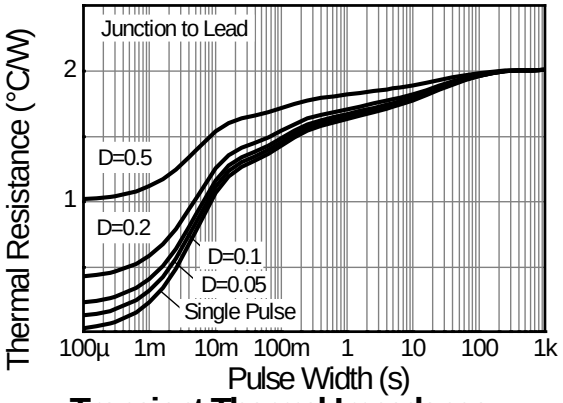
Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Lead (Note 4)	$R_{\theta JL}$	2	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	62	°C/W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Maximum Operating Junction Temperature	T_J	+150	°C

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

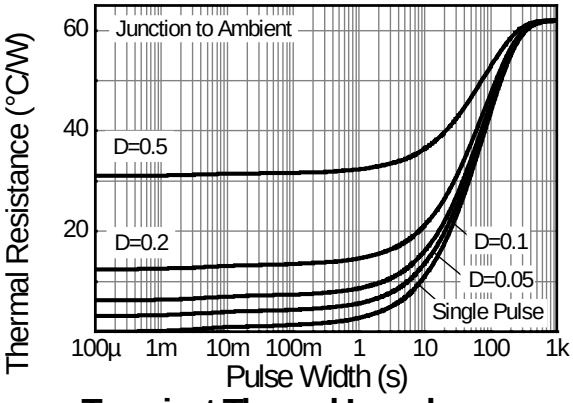
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V_F	—	2.3	3.2	V	I_F = 8A, T_J = +25°C
		—	1.6	—		I_F = 8A, T_J = +125°C
Leakage Current (Note 6)	I_R	—	<1	20	μA	V_R = 600V, T_J = +25°C
		—	100	—		V_R = 600V, T_J = +125°C
Reverse Recovery Time	t_{rr}	—	25	30	ns	I_F = 1A, I_R = 0.5A, I_{RR} = 0.25A , RG1
Reverse Recovery Time	t_{rr}	—	20	—	ns	I_F = 8A, dI/dt = 500A/μs, V_R = 390V, T_J = +25°C
Reverse Recovery Current	I_{RM}	—	6.9	—	A	
Reverse Recovery Charges	Q_{rr}	—	85	—	nC	
Reverse Recovery Time	t_{rr}	—	37		ns	I_F = 8A, dI/dt = 500A/μs, V_R = 390V, T_J = +125°C
Reverse Recovery Current	I_{RM}	—	8.3	—	A	
Reverse Recovery Charges	Q_{rr}	—	161	—	nC	
Junction Capacitance	C_J	—	7.7	—	pF	100.0V, 1MHz

Notes: 4. Measured from Cathode Tab.
5. Device free standing with no Heat sink.
6. Short duration pulse test used to minimize self-heating effect.

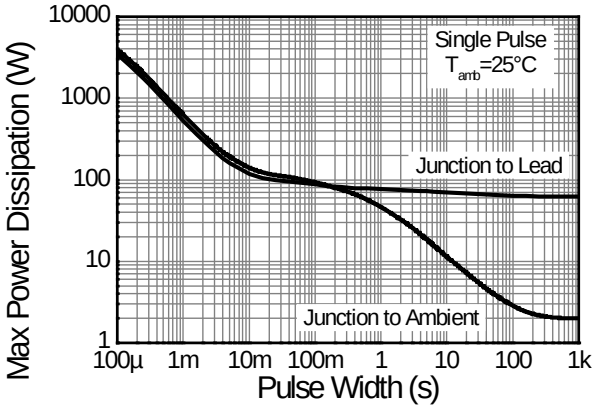
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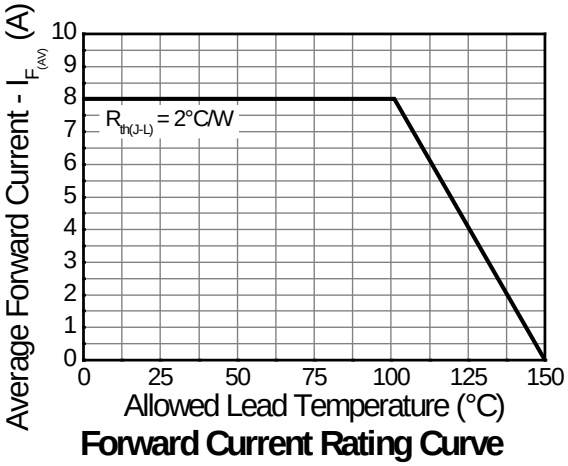
Transient Thermal Impedance



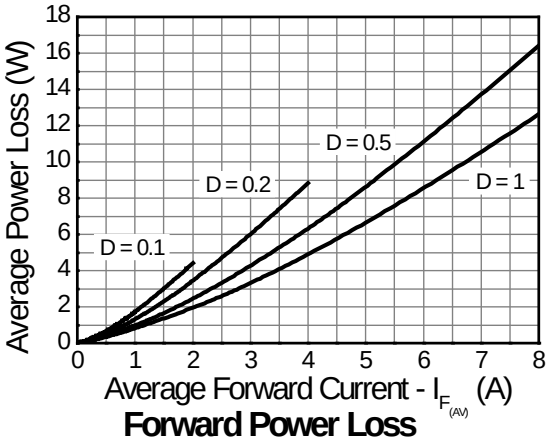
Transient Thermal Impedance



Pulse Power Dissipation

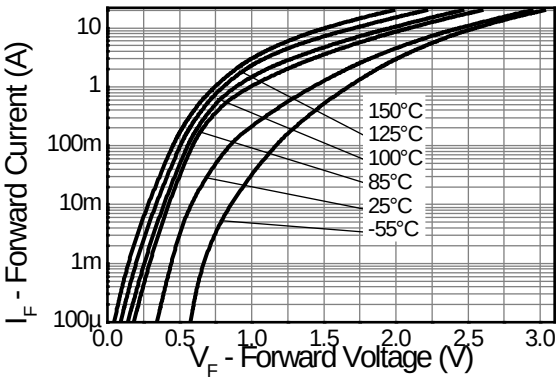


Forward Current Rating Curve

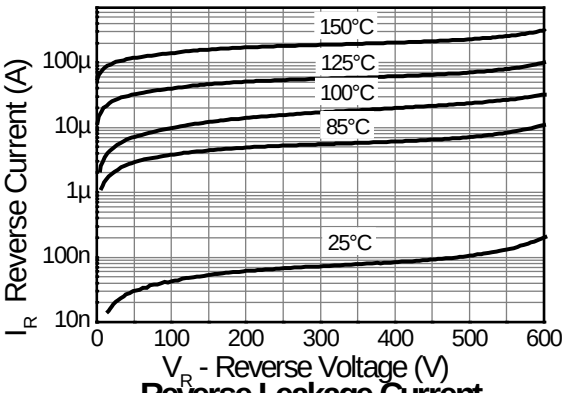


Forward Power Loss

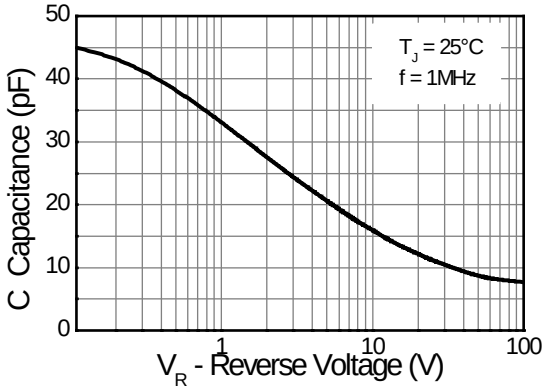
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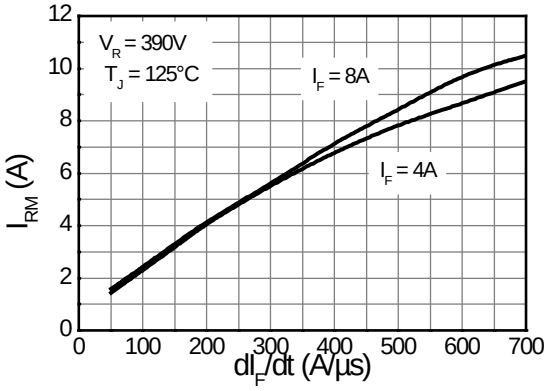
Instantaneous Forward Voltage (V)



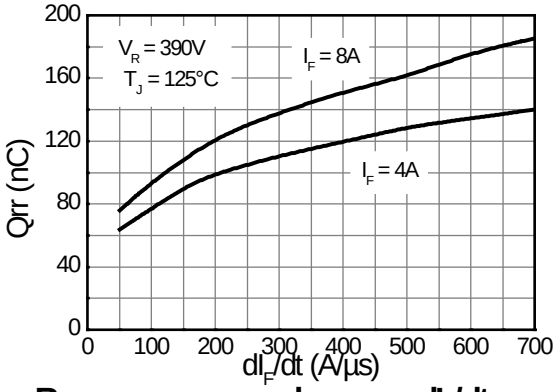
Reverse Leakage Current



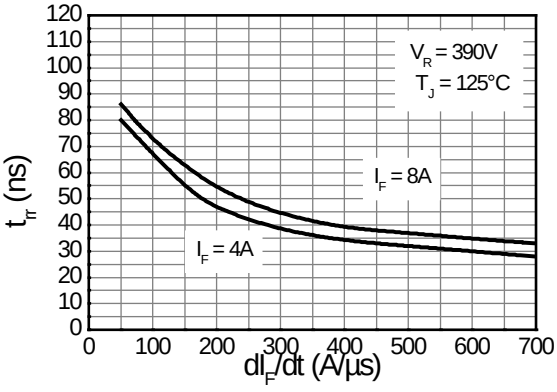
Capacitance vs Reverse Voltage



Peak reverse current vs dI_F/dt



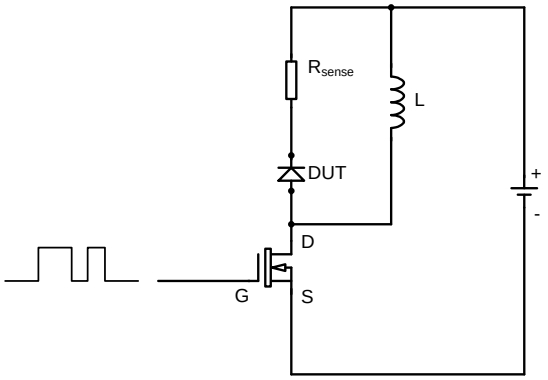
Reverse recovery charge vs dI_F/dt



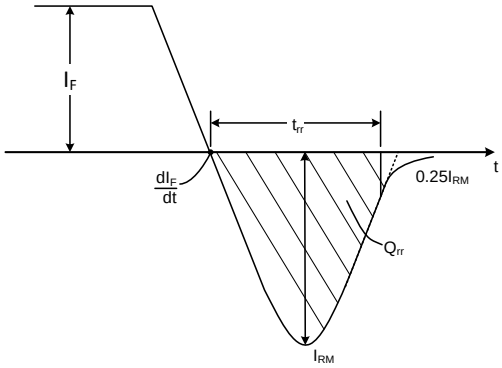
Reverse Recovery Time vs dI_F/dt

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Test Circuit and Waveform definitions



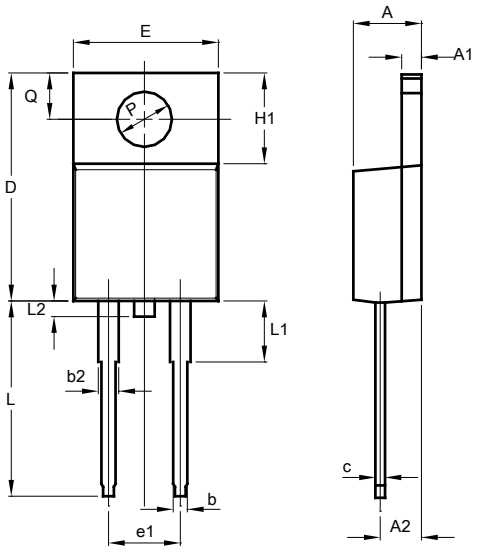
t_{rr} Test Circuit



t_{rr} Waveform and definitions

Package Outline Dimensions

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



TO220AC			
Dim	**Min**	**Typ**	**Max**
A	4.40	-	4.82
A1	1.1	-	1.40
A2	2.05	-	2.92
b	0.72	-	1.00
b2	1.16	-	1.45
c	0.36	-	0.68
D	14.70	-	15.87
e1	5.08		
E	9.80	-	10.26
H1	5.80	-	6.40
L	12.70	-	13.96
L1	3.56	-	4.50
P	3.70	-	3.90
Q	2.54	-	3.30
All Dimensions in mm			

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