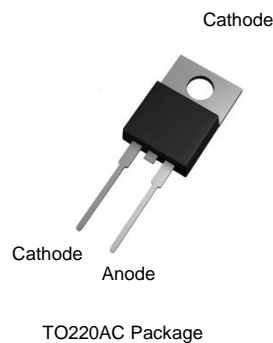


Product Summary

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

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.

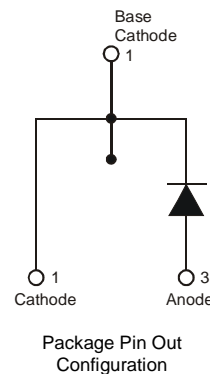


Features and Benefits

- Low V_F minimises Boost Diode conduction losses
- Very fast t_{rr} 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**

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 ③
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Weight: 1.75 grams (approximate)

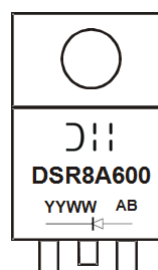


Ordering Information (Note 4)

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)

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

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

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}	600	V
Working Peak Reverse Voltage	V_{RWM}		
DC Blocking Voltage	V_{RM}		
Average Rectified Output Current $T \leq +101^\circ\text{C}$	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

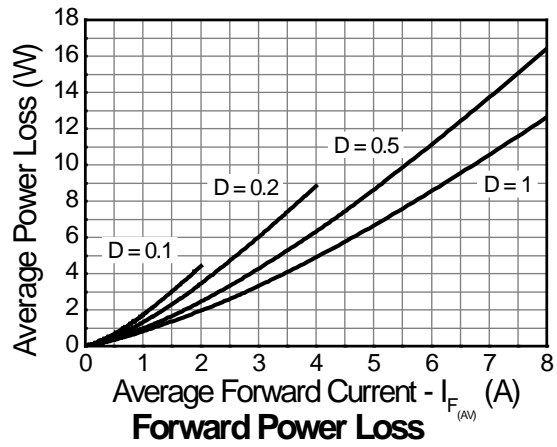
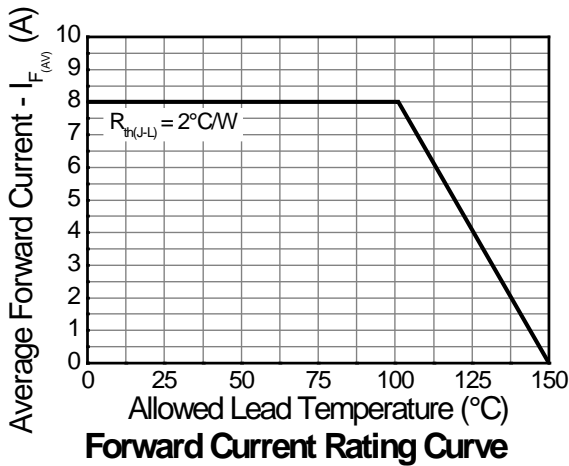
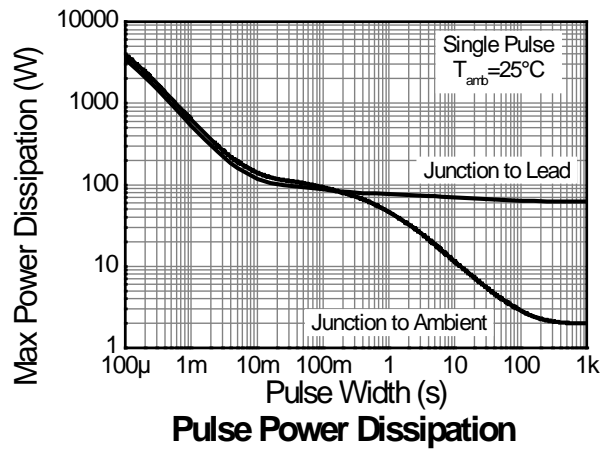
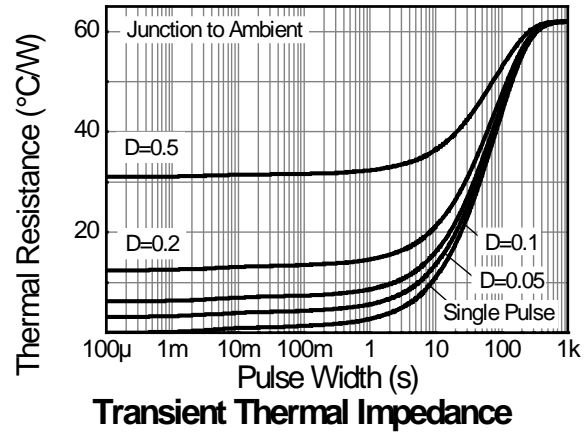
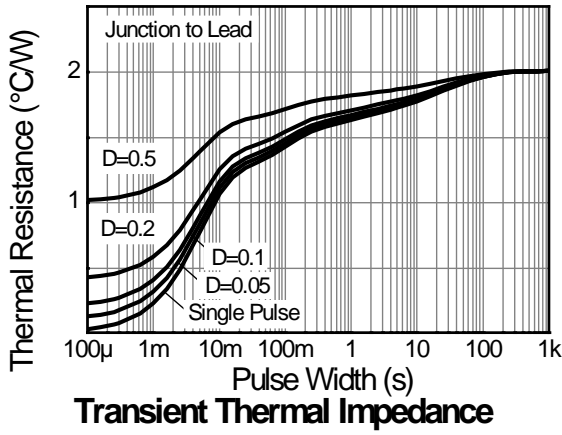
Thermal Characteristics

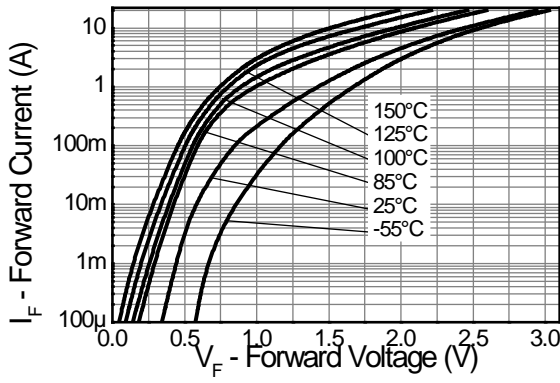
Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Lead (Note 4)	$R_{\theta JL}$	2	$^\circ\text{C/W}$
Typical Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$
Maximum Operating Junction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

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

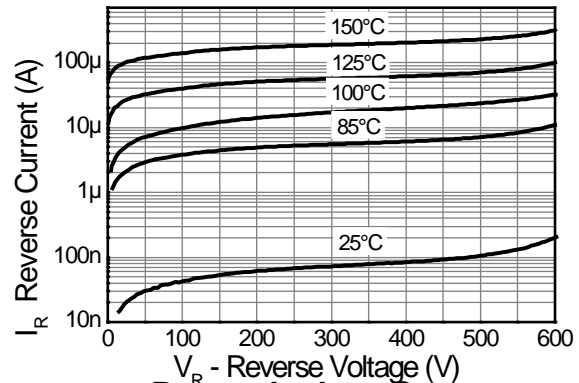
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V_F	—	2.3	3.2	V	$I_F = 8\text{A}, T_J = +25^\circ\text{C}$
		—	1.6	—		$I_F = 8\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 6)	I_R	—	<1	20	μA	$V_R = 600\text{V}, T_J = +25^\circ\text{C}$
		—	100	—		$V_R = 600\text{V}, T_J = +125^\circ\text{C}$
Reverse Recovery Time	t_{rr}	—	25	30	ns	$I_F = 1\text{A}, I_R = 0.5\text{A}, I_{RR} = 0.25\text{A}, R_{G1}$
Reverse Recovery Time	t_{rr}	—	20	—	ns	$I_F = 8\text{A}, dI/dt = 500\text{A}/\mu\text{s}, V_R = 390\text{V}, T_J = +25^\circ\text{C}$
Reverse Recovery Current	I_{RM}	—	6.9	—	A	
Reverse Recovery Charges	Q_{rr}	—	85	—	nC	$I_F = 8\text{A}, dI/dt = 500\text{A}/\mu\text{s}, V_R = 390\text{V}, T_J = +125^\circ\text{C}$
Reverse Recovery Time	t_{rr}	—	37	—	ns	
Reverse Recovery Current	I_{RM}	—	8.3	—	A	$I_F = 8\text{A}, dI/dt = 500\text{A}/\mu\text{s}, V_R = 390\text{V}, T_J = +125^\circ\text{C}$
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.

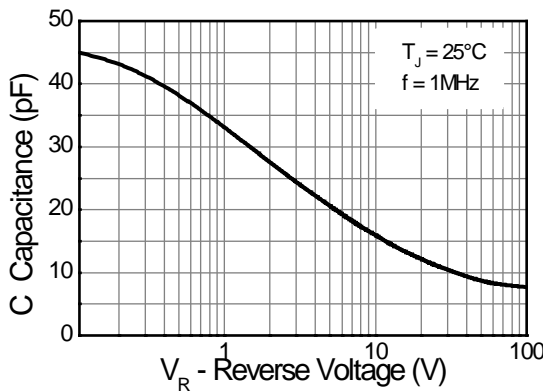




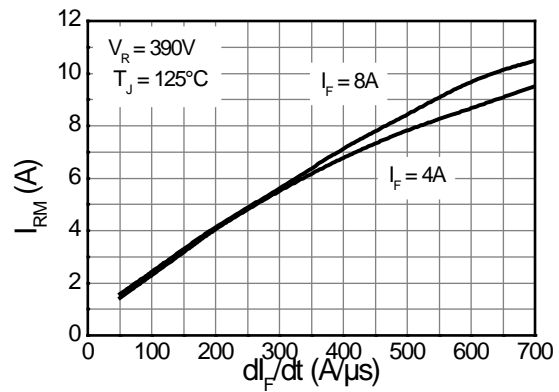
Instantaneous Forward Voltage (V)



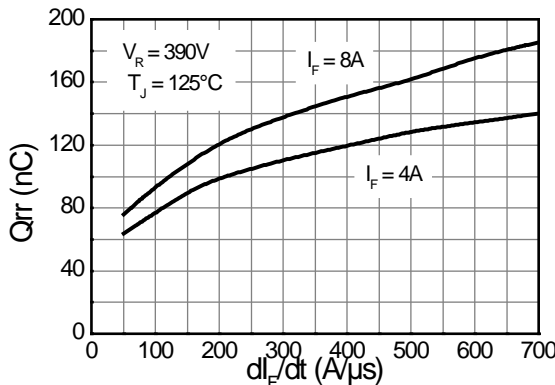
Reverse Leakage Current



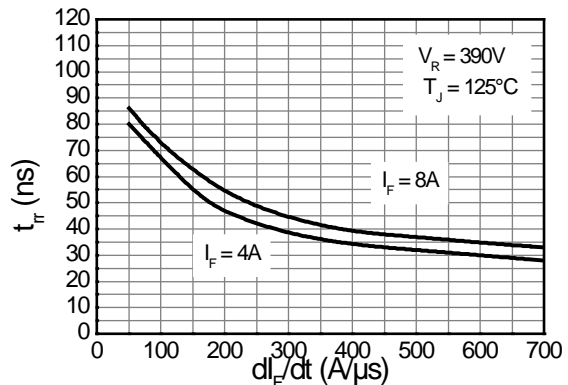
Capacitance vs Reverse Voltage



Peak reverse current vs di_F/dt

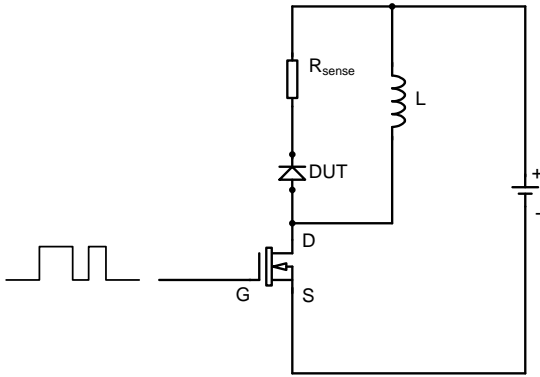


Reverse recovery charge vs di_F/dt

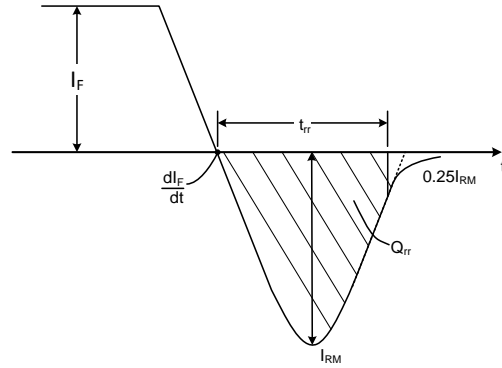


Reverse Recovery Time vs di_F/dt

Test Circuit and Waveform definitions



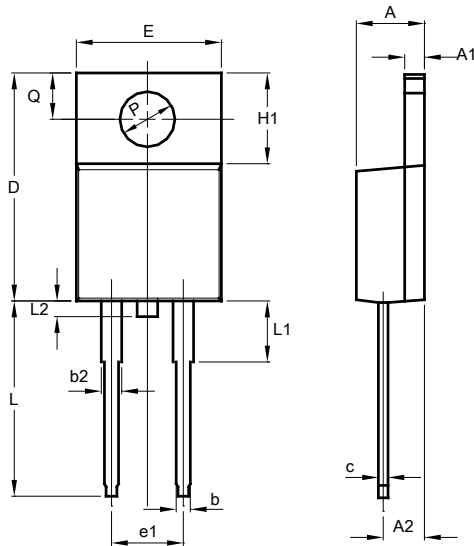
t_{rr} Test Circuit



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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