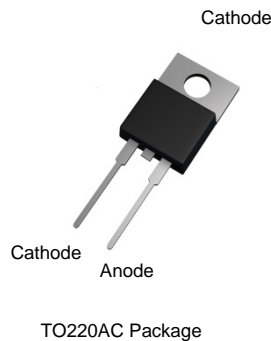


## Product Summary

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F typ</sub> (V) @ +25°C	t <sub>rr typ</sub> (nS) @ +25°C	I <sub>RM typ</sub> (A) @ +25°C
600	8	2.3	20	6.9

## Description and Application

The DIODESTAR™ DSR8A600 has been 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.

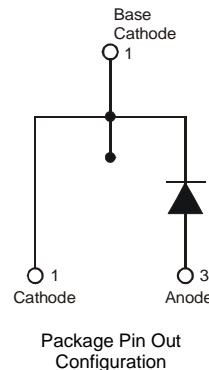


## Features and Benefits

- Low V<sub>F</sub> minimises Boost Diode conduction losses
- Very fast t<sub>rr</sub> reduces MOSFET PFC switching losses
- Soft switching ensures ringing and EMI are reduced
- Low Q<sub>rr</sub> and I<sub>RM</sub> 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
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Weight: 1.75 grams (approximate)

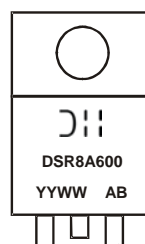


## Ordering Information (Note 4)

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](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: 13 = 2013)  
 WW = Week (01 - 53)

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

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

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

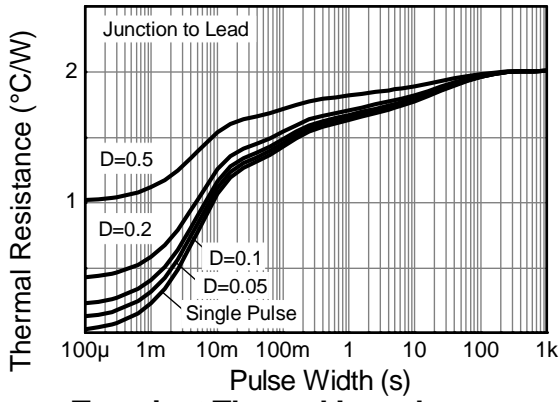
**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Lead (Note 4)	R <sub>θJL</sub>	2	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	62	°C/W
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C
Maximum Operating Junction Temperature	T <sub>J</sub>	+150	°C

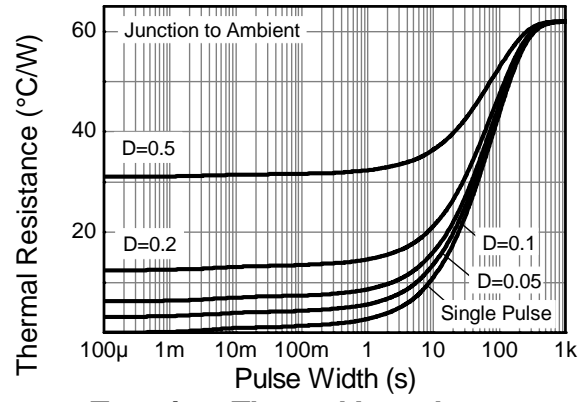
**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V <sub>F</sub>	—	2.3	3.2	V	I <sub>F</sub> = 8A, T <sub>J</sub> = +25°C
		—	1.6	—		I <sub>F</sub> = 8A, T <sub>J</sub> = +125°C
Leakage Current (Note 6)	I <sub>R</sub>	—	<1	20	μA	V <sub>R</sub> = 600V, T <sub>J</sub> = +25°C
		—	100	—		V <sub>R</sub> = 600V, T <sub>J</sub> = +125°C
Reverse Recovery Time	t <sub>rr</sub>	—	25	30	ns	I <sub>F</sub> = 1A, I <sub>R</sub> = 0.5A, I <sub>RR</sub> = 0.25A, RG1
Reverse Recovery Time	t <sub>rr</sub>	—	20	—	ns	I <sub>F</sub> = 8A, dI/dt = 500A/μs, V <sub>R</sub> = 390V, T <sub>J</sub> = +25°C
Reverse Recovery Current	I <sub>RM</sub>	—	6.9	—	A	
Reverse Recovery Charges	Q <sub>rr</sub>	—	85	—	nC	I <sub>F</sub> = 8A, dI/dt = 500A/μs, V <sub>R</sub> = 390V, T <sub>J</sub> = +125°C
Reverse Recovery Time	t <sub>rr</sub>	—	37	—	ns	
Reverse Recovery Current	I <sub>RM</sub>	—	8.3	—	A	I <sub>F</sub> = 8A, dI/dt = 500A/μs, V <sub>R</sub> = 390V, T <sub>J</sub> = +125°C
Reverse Recovery Charges	Q <sub>rr</sub>	—	161	—	nC	
Junction Capacitance	C <sub>J</sub>	—	7.7	—	pF	100.0V, 1MHz

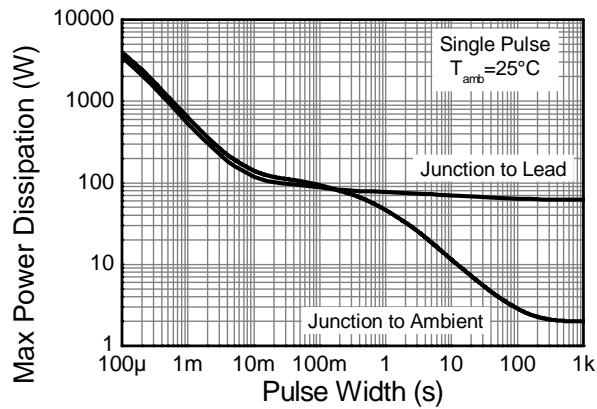
- Notes:
4. Measured from Cathode Tab.
  5. Device free standing with no Heat sink.
  6. Short duration pulse test used to minimize self-heating effect.



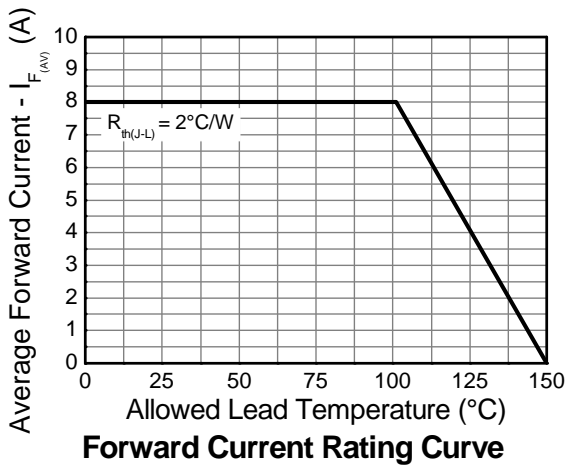
**Transient Thermal Impedance**



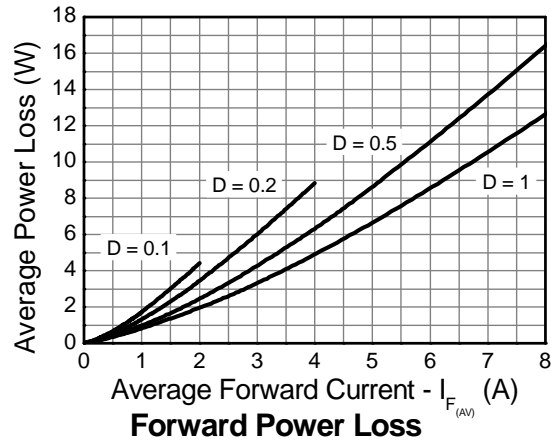
**Transient Thermal Impedance**



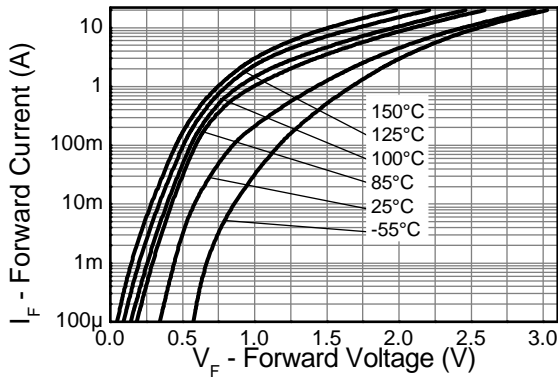
**Pulse Power Dissipation**



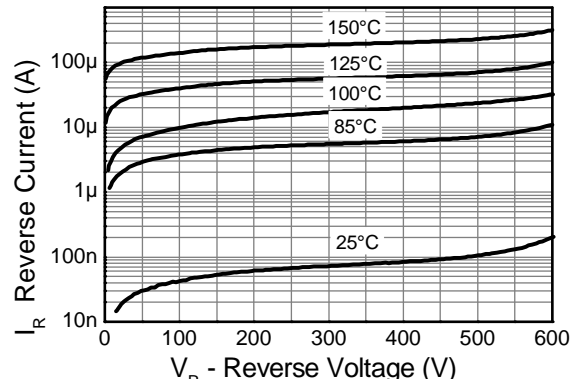
**Forward Current Rating Curve**



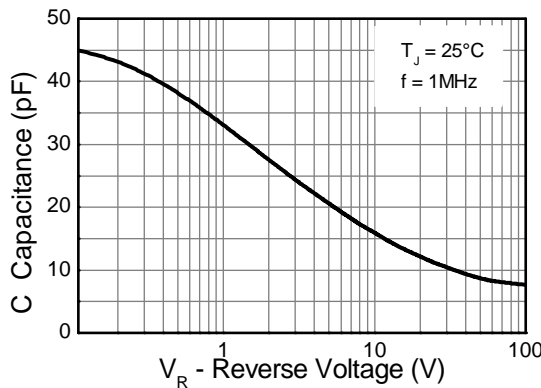
**Forward Power Loss**



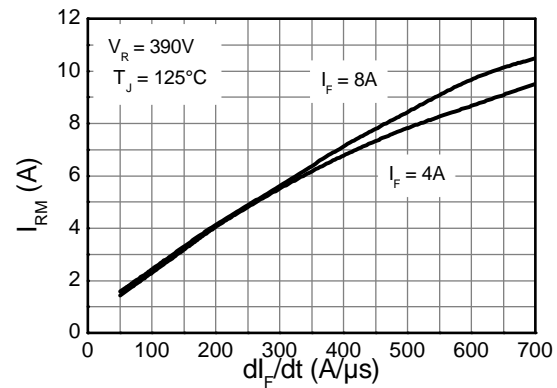
**Instantaneous Forward Voltage (V)**



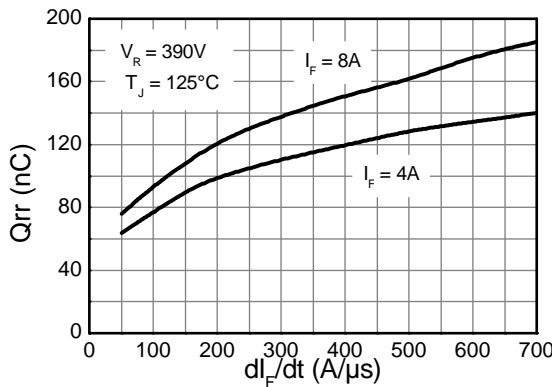
**Reverse Leakage Current**



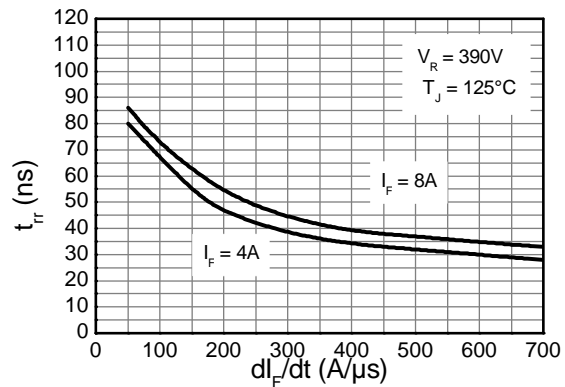
**Capacitance vs Reverse Voltage**



**Peak reverse current vs  $di_F/dt$**

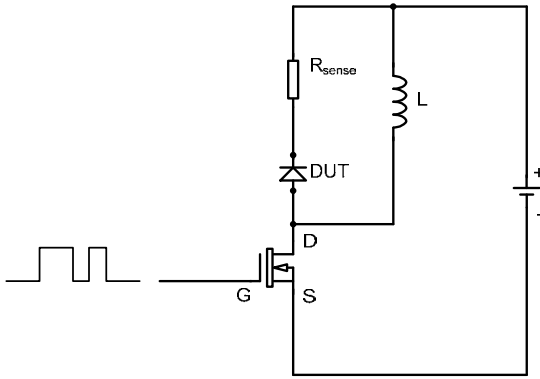


**Reverse recovery charge vs  $di_F/dt$**

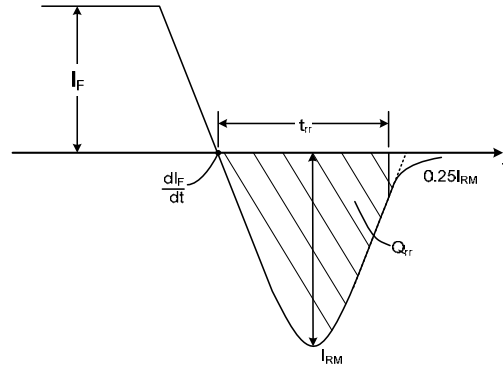


**Reverse Recovery Time vs  $di_F/dt$**

**Test Circuit and Waveform definitions**



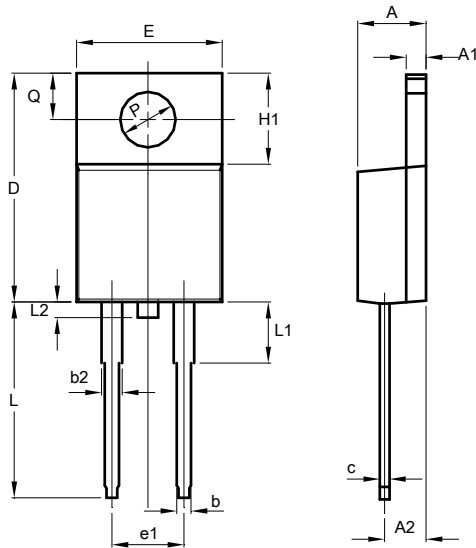
**$t_{rr}$  Test Circuit**



**$t_{rr}$  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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