

Product Summary

V _{RRM} (V)	I _O (A)	V _F TYP (V) @ +25°C	t _{RR} max (ns) @ +25°C	I _{RM} TYP (A) @ +25°C
600	8	1.95	20	3.9

Description and Application

The DSR8F600 Hyperfast Rectifier has been designed specifically for use as a boost diode in Power Factor Correction (PFC) applications. Its soft very fast switching characteristics make it ideal for use in hard switching and Continuous Conduction Mode (CCM) PFC circuits. It can be used in

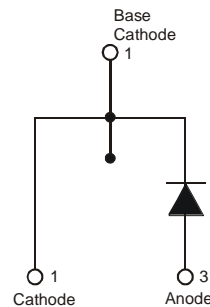
- High Output SMPS
- Servers and Telecom Equipment
- Flat-panel TVs

Features and Benefits

- Low V_F Minimizes 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)**

Mechanical Data

- Case: TO220AC
- Case Material: Molded Plastic, 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)



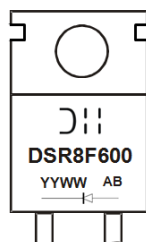
Package Pin Out Configuration

Ordering Information (Note 4)

Part Number	Case	Packaging
DSR8F600	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



DSR8F600 = Product Type Marking Code
 AB = Foundry and Assembly Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 15 = 2015)
 WW = Week (01 to 53)

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	V _{RRM}	600	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _{RM}		
Average Rectified Output Current	I _O	8	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I _{FSM}	75	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	3.4	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	46	°C/W
Typical Thermal Resistance, Junction to Case (Note 6)	R _{θJC}	1.6	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	7	°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	—	1.8	—	V	I _F = 5A, T _J = +25°C
		—	1.95	2.7		I _F = 8A, T _J = +25°C
		—	1.6	—		I _F = 8A, T _J = +125°C
Leakage Current (Note 7)	I _R	—	9	80	μA	V _R = 600V, T _J = +25°C
		—	500	1500		V _R = 500V, T _J = +100°C
Reverse Recovery Time	t _{RR}	—	14.6	20	ns	I _F = 0.5A, I _R = 1.0A, I _{RR} = 0.25A
Reverse Recovery Time	t _{RR}	—	35	45	ns	I _F = 8A, dI/dt = 300A/μs,
Reverse Recovery Charges	Q _{RR}	—	85	—	nC	V _R = 400V, T _J = +25°C
Reverse Recovery Current	I _{RM}	—	5.9	—	A	I _F = 8A, dI/dt = 300A/μs, V _R = 400V, T _J = +125°C
Junction Capacitance	C _T	—	9.3	—	pF	40.0V, 1MHz

- Notes:
- 5. Device free standing no heat sink.
 - 6. Device with 50mm*50mm*23mm Al heat sink.
 - 7. Short duration pulse test used to minimize self-heating effect.

NEW PRODUCT

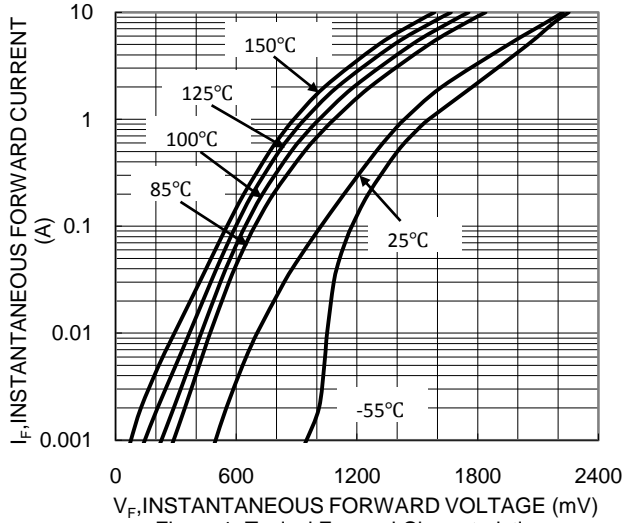


Figure 1. Typical Forward Characteristics

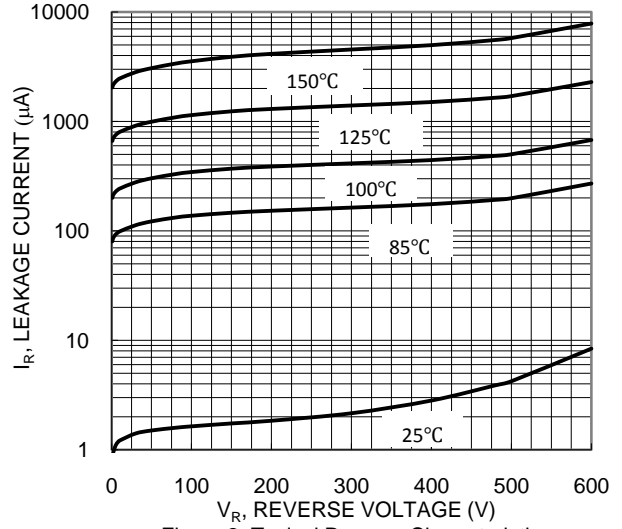


Figure 2. Typical Reverse Characteristics

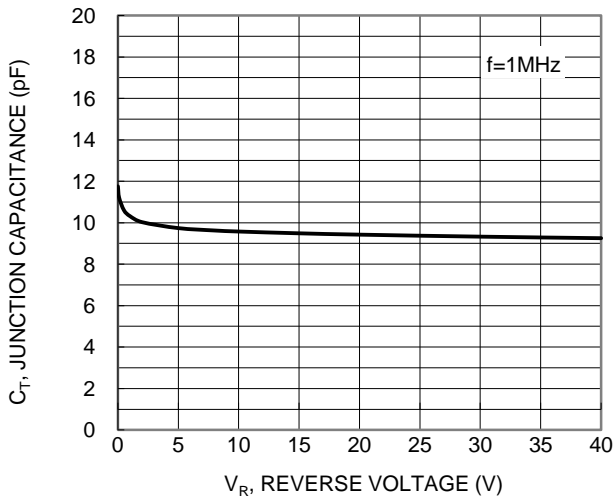


Figure 3. Typical Junction Capacitance

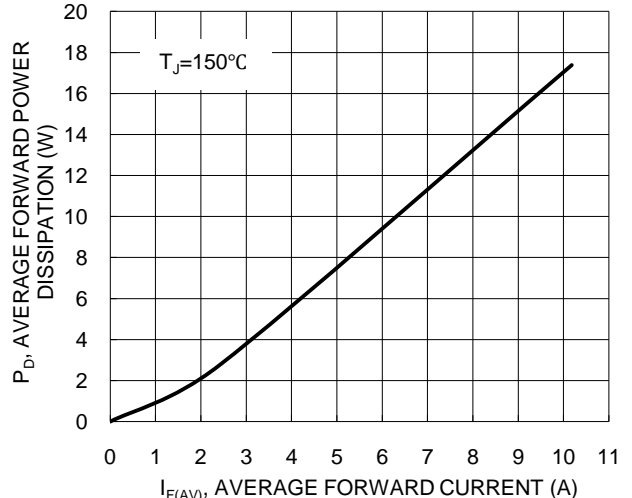


Figure 4. Forward Power Dissipation

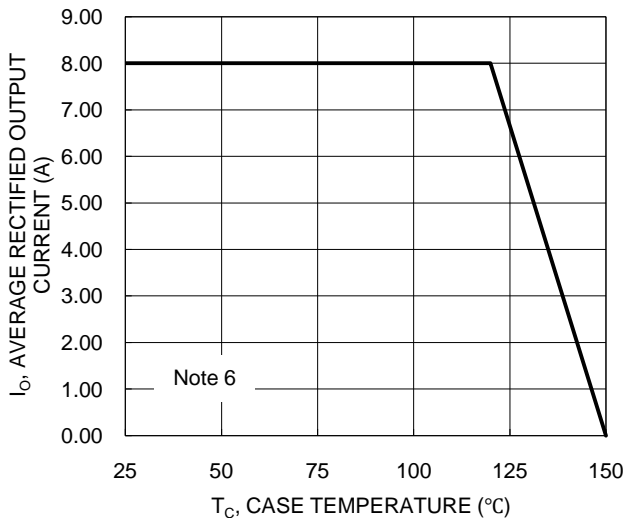


Figure 5. DC Forward Current Derating

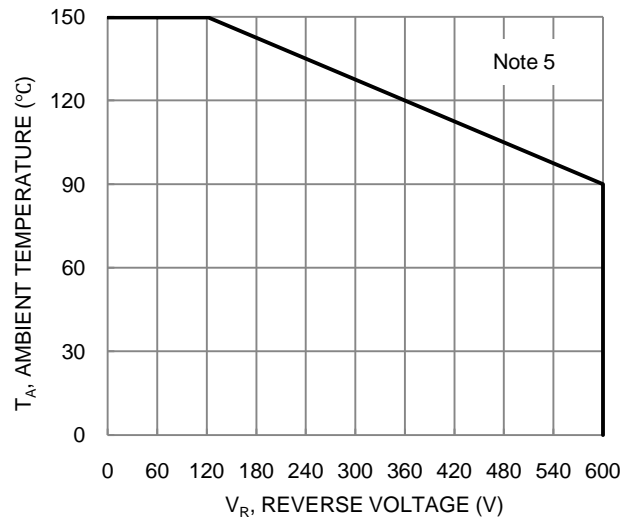


Figure 6. Operating Temperature Derating

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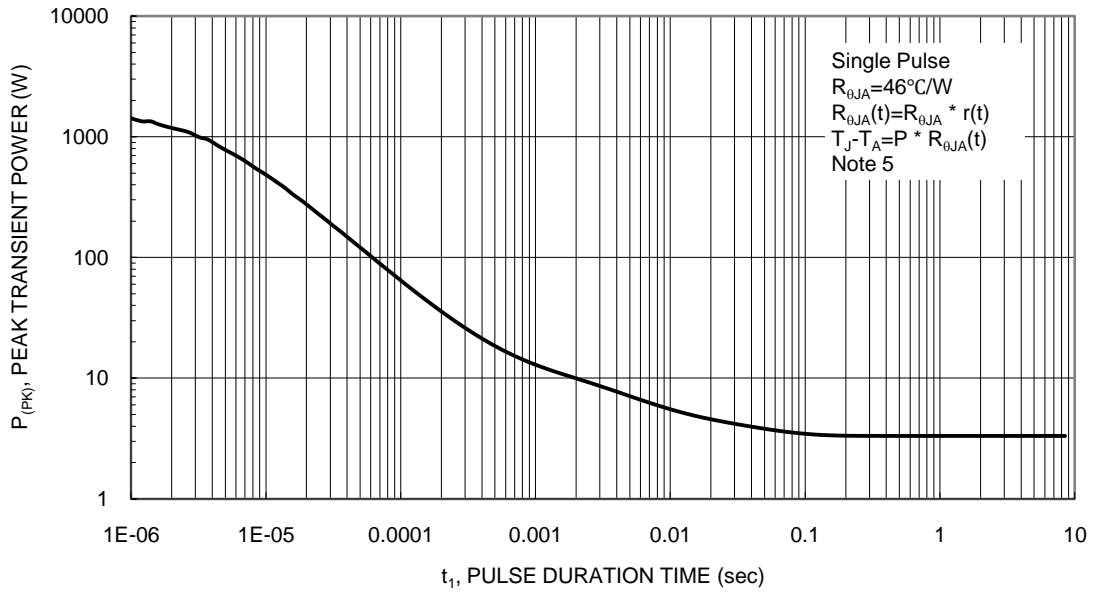


Figure 7. Single Pulse Maximum Power Dissipation

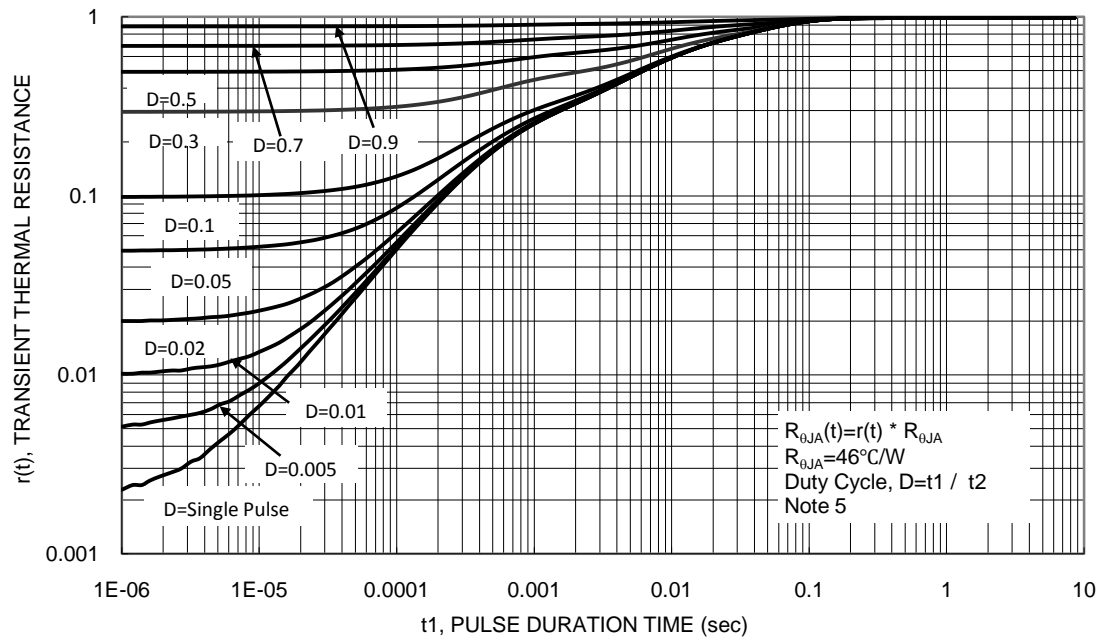
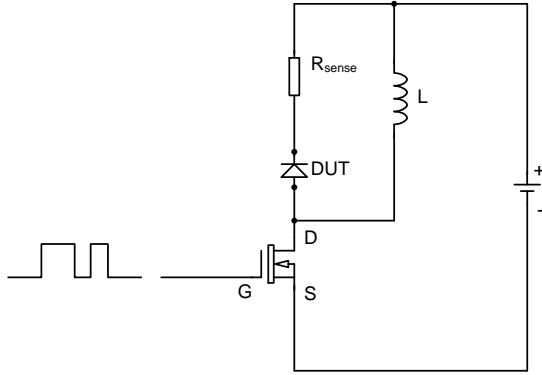
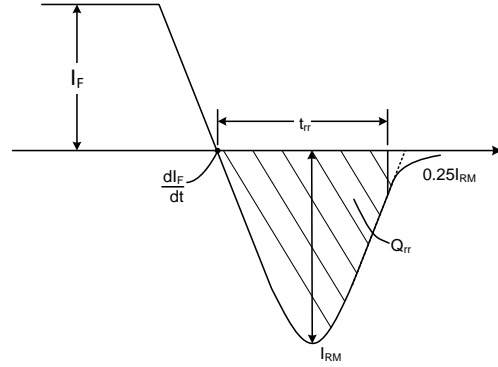


Figure 8. Transient Thermal Resistance

Test Circuit and Waveform definitions



t_{RR} Test Circuit

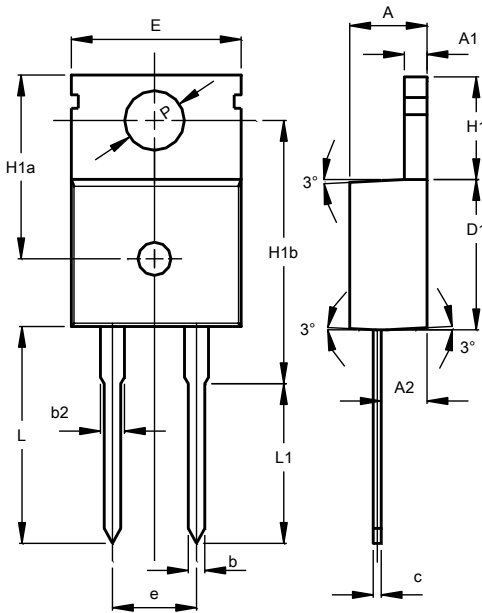


t_{RR} Waveform and definitions

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Package Outline Dimensions

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



TO220AC (Type BR)			
Dim	Min	Max	Typ
A	4.30	4.70	4.50
A1	1.20	1.40	1.30
A2	2.20	2.60	2.40
b	0.70	0.90	0.80
b2	-	-	1.27
c	0.40	0.60	0.50
D1	9.00	9.40	9.20
E	9.80	10.20	10.00
e	4.88	5.28	5.08
H1	6.30	6.70	6.50
H1a	10.90	11.30	11.10
H1b	15.70	16.10	15.90
L	12.60	13.60	13.10
L1	9.60	10.60	10.10
P	3.56	3.64	3.60
All Dimensions in mm			

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