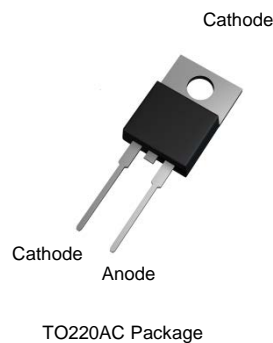


Product Summary

| 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.

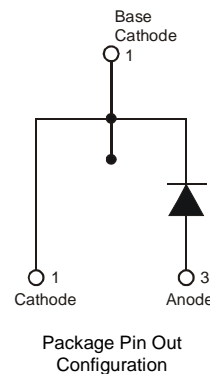


Features and Benefits

- 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)

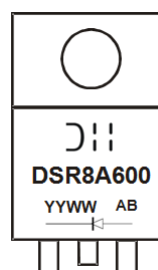


Ordering Information (Note 4)

| 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 |

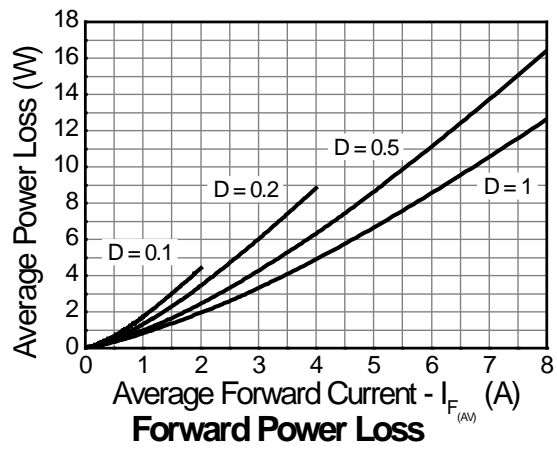
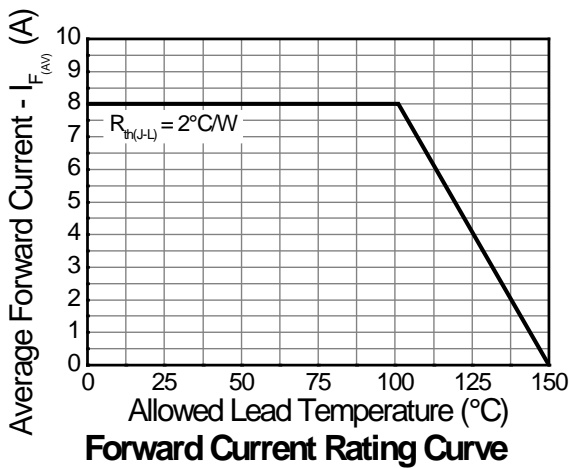
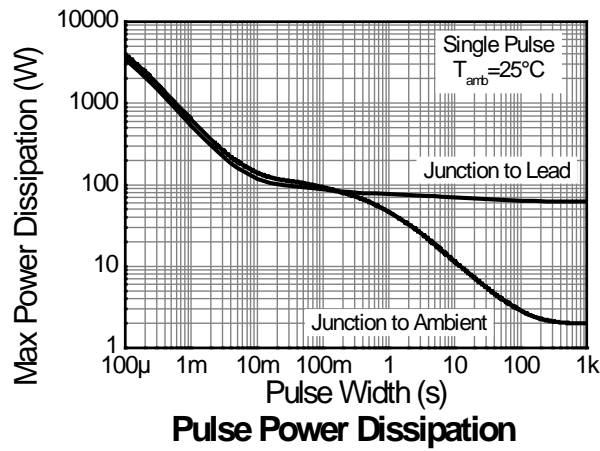
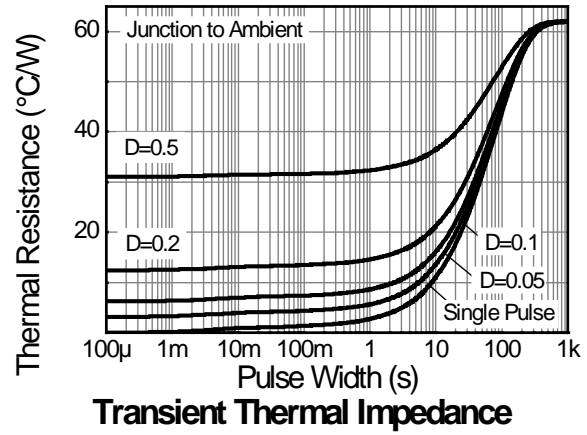
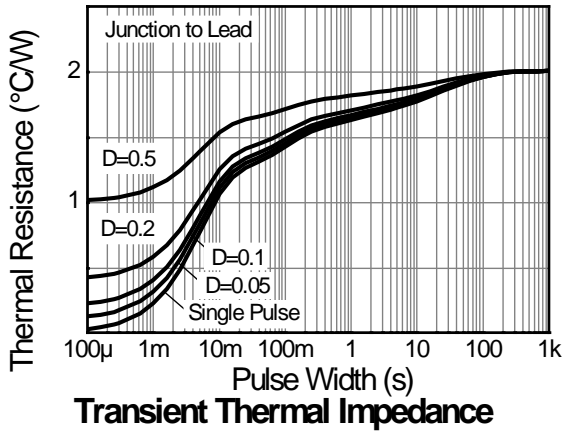
Thermal Characteristics

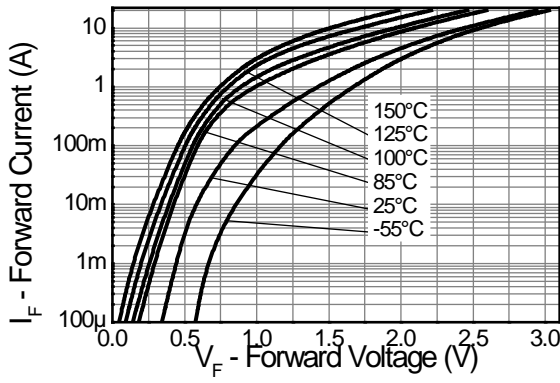
| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Typical Thermal Resistance, Junction to Lead (Note 4) | $R_{\theta JL}$ | 2 | $^\circ\text{C/W}$ |
| Typical Thermal Resistance, Junction to Ambient (Note 5) | $R_{\theta JA}$ | 62 | $^\circ\text{C/W}$ |
| 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.)

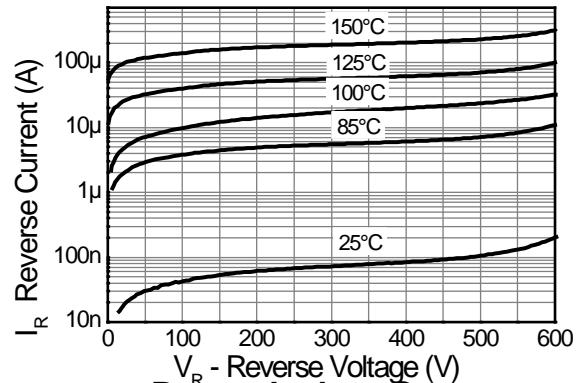
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------|----------|-----|-----|-----|---------------|---|
| | | | | | | |
| Forward Voltage Drop | V_F | — | 2.3 | 3.2 | V | $I_F = 8\text{A}, T_J = +25^\circ\text{C}$ |
| | | — | 1.6 | — | | $I_F = 8\text{A}, T_J = +125^\circ\text{C}$ |
| 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.

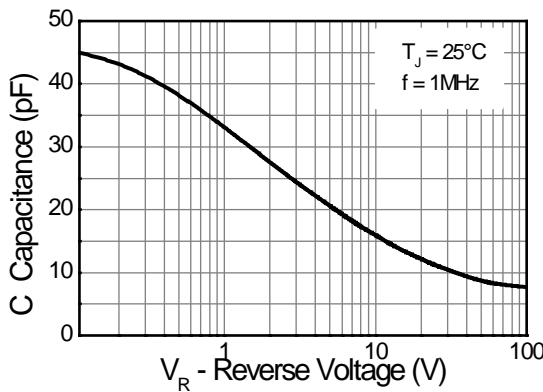




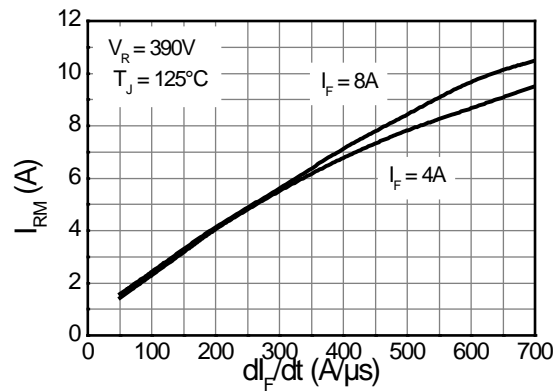
Instantaneous Forward Voltage (V)



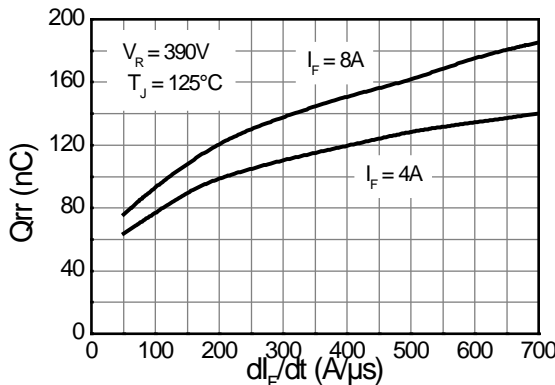
Reverse Leakage Current



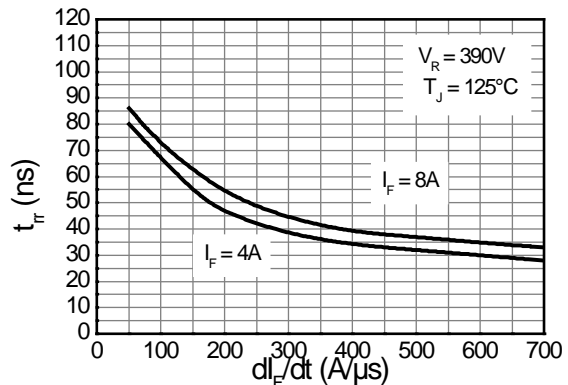
Capacitance vs Reverse Voltage



Peak reverse current vs di_F/dt

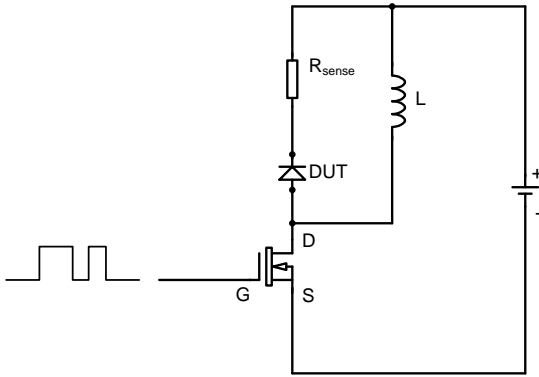


Reverse recovery charge vs di_F/dt

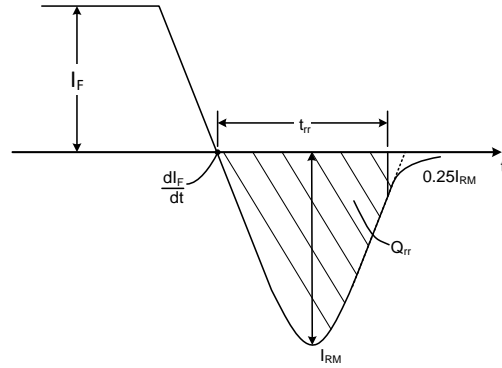


Reverse Recovery Time vs di_F/dt

Test Circuit and Waveform definitions



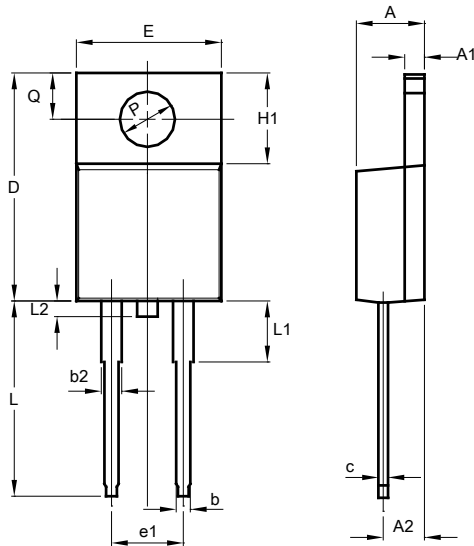
t_{rr} Test Circuit



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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