

1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER
Product Summary (@T_A = +25°C)

| V _{RRM} (V) | I _o (A) | V _F Max (V) | I _R Max (μA) |
|----------------------|--------------------|------------------------|-------------------------|
| 600 | 1 | 1.3 | 5 |

Description and Applications

The RS1JDFQ is a rectifier packaged in the low profile D-FLAT package. Providing fast recovery time for high efficiency, this device is ideal for use in general applications such as:

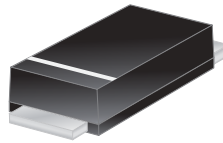
- Reverse Protection
- Switching
- Blocking

Features and Benefits

- Glass Passivated Die Construction
- Fast Recovery Time for High Efficiency
- Surge Overload Rating to 30A Peak
- High Current Capability
- Low Profile Design, Package Height Less than 1.1mm
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

- Case: D-FLAT
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: Cathode Band
- Weight: 0.035 grams (Approximate)

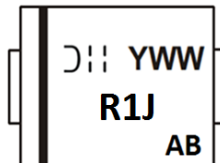
D-FLAT


Top View

Ordering Information (Note 5)

| Part Number | Compliance | Case | Packaging |
|-------------|------------|--------|--------------------|
| RS1JDFQ-13 | Automotive | D-FLAT | 10,000/Tape & Reel |

- 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information
D-FLAT


- R1J= Product Type Marking Code
- ⌋⌋⌋ = Manufacturers' Code Marking
- YWW = Date Code Marking
- Y = Last Digit of Year (ex: 4 for 2014)
- WW = Week Code (01 to 53)
- AB = Foundry and Assembly Code

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

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| Characteristic | Symbol | Value | Unit |
|--|---------------------|-------|------|
| Peak Repetitive Reverse Voltage | V _{RRM} | 600 | V |
| Working Peak Reverse Voltage | V _{RWM} | | |
| DC Blocking Voltage | V _R | | |
| RMS Reverse Voltage | V _{R(RMS)} | 420 | V |
| Average Rectified Output Current @T _A = +100°C | I _O | 1.0 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 30 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Typical Thermal Resistance, Junction to Terminal (Note 9) | R _{θJT} | 26 | °C/W |
| Typical Thermal Resistance, Junction to Air (Note 9) | R _{θJA} | 93 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------------------|--------------------|-----|---------------|-----|----------|---|
| Reverse Breakdown Voltage (Note 10) | V _{(BR)R} | 600 | — | — | V | I _R = 10μA |
| Forward Voltage | V _F | — | 1.1 0.94 | 1.3 | V | I _F = 1A, T _J = +25°C I _F = 1A, T _J = +125°C |
| Reverse Leakage Current (Note 10) | I _R | — | 0.25 0.005 | 5 | μA mA | V _R = 600V, T _J = +25°C V _R = 600V, T _J = +125°C |
| Reverse Recovery Time (Note 6) | t _{RR} | — | — | 250 | ns | I _F = 0.5A, I _R = 1.0A, I _{RR} = 0.25A |
| Total Capacitance (Note 7) | C _T | — | 6 | — | pF | V _R = 4V _{DC} , f = 1MHz |

- Notes:
- 6. Measured with I_F = 0.5A, I_R = 1.0A, I_{RR} = 0.25A. See Figure 7.
 - 7. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.
 - 8. Device mounted on FR-4 substrate, 1"x1", 2oz, single-sided, PC boards with 0.1"x0.15" copper pads.
 - 9. Device mounted on FR-4 substrate, 0.4"x0.5", 2oz, single-sided, PC boards with 0.2"x0.25" copper pads.
 - 10. Short duration pulse test used to minimize self-heating effect.

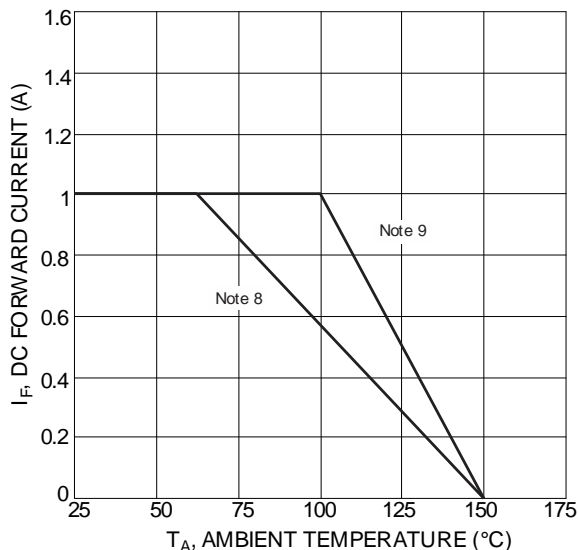


Figure 1 Forward Current Derating Curve

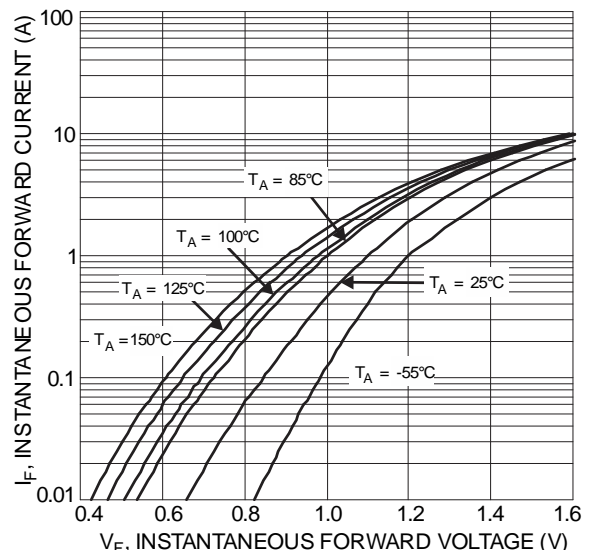


Figure 2 Typical Forward Characteristics

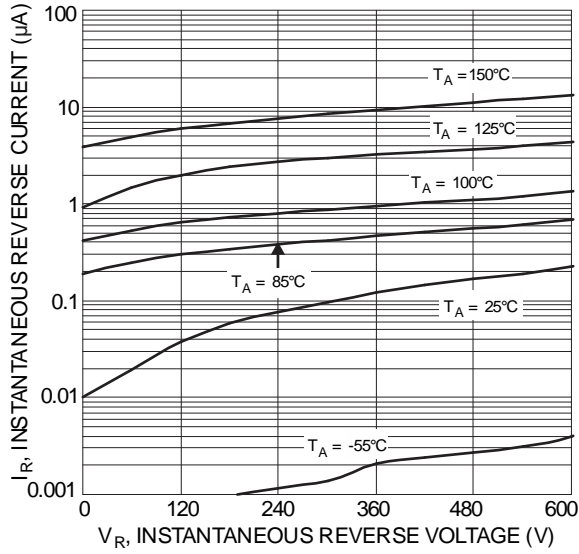


Figure 3 Typical Forward Characteristics

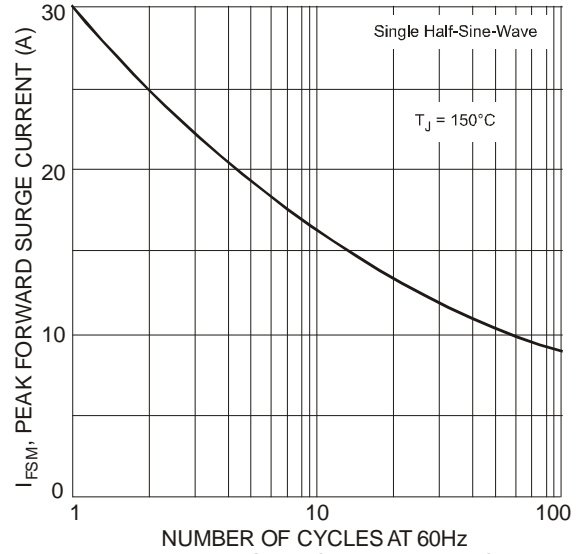


Figure 4 Forward Surge Current Derating Curve

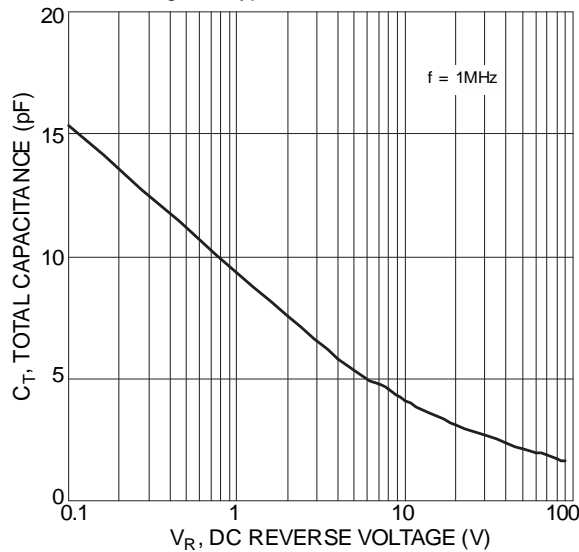


Figure 5 Total Capacitance vs. Reverse Voltage

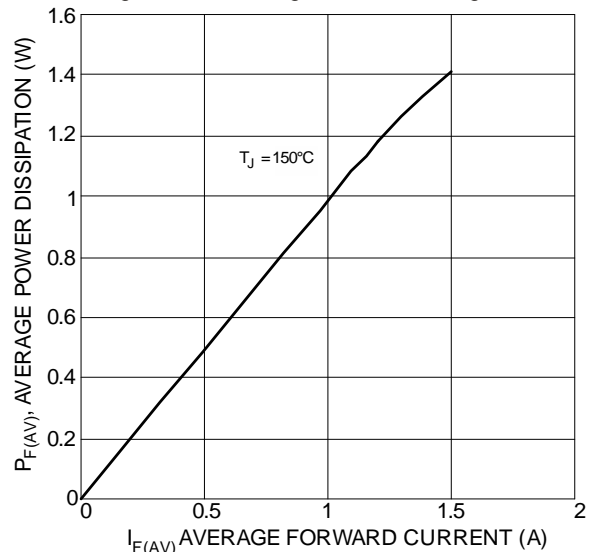
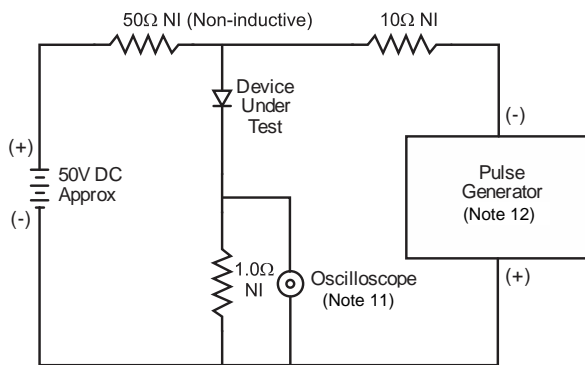
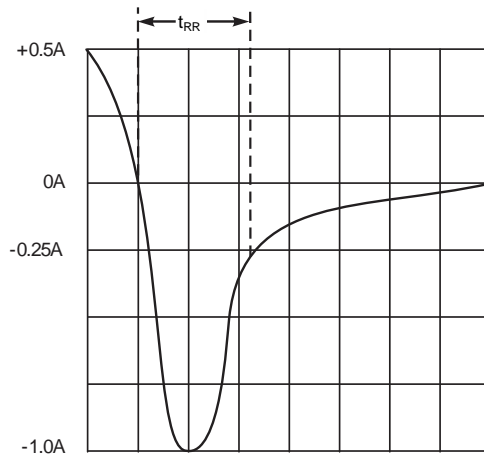


Figure 6 Forward Power Dissipation



Notes:
11. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
12. Rise Time = 10ns max. Input Impedance = 50Ω.

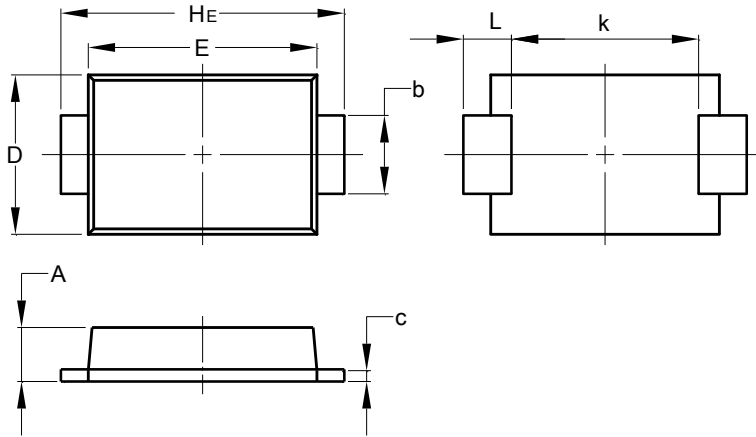


Set time base for 50/100 ns/cm

Figure 7 Reverse Recovery Time Characteristic and Test Circuit

Package Outline Dimensions

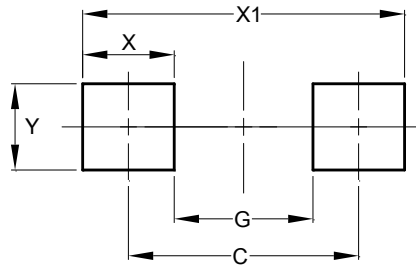
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



| D-FLAT | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 0.90 | 1.10 |
| b | 1.25 | 1.65 |
| c | 0.10 | 0.40 |
| D | 2.25 | 2.95 |
| E | 3.95 | 4.60 |
| k | 2.80 | - |
| HE | 5.00 | 5.60 |
| L | 0.50 | 1.30 |
| All Dimensions in mm | | |

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 4.65 |
| G | 2.80 |
| X | 1.85 |
| X1 | 6.50 |
| Y | 1.70 |

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