

**1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER**

**Product Summary (@T<sub>A</sub> = +25°C)**

|                            |                          |                              |                               |
|----------------------------|--------------------------|------------------------------|-------------------------------|
| <b>V<sub>RRM</sub> (V)</b> | <b>I<sub>o</sub> (A)</b> | <b>V<sub>F</sub> Max (V)</b> | <b>I<sub>R</sub> Max (μA)</b> |
| 600                        | 1                        | 1.3                          | 5                             |

**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**

**Description and Applications**

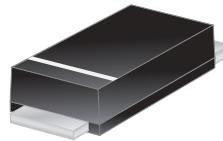
The RS1JDF is a rectifier packaged in the low profile D-FLAT package. Providing fast recovery time for high efficiency, this device is ideal for use in general rectification applications such as:

- Switching Mode Power Supplies
- DC-DC Converters

**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 Ⓔ
- Polarity: Cathode Band
- Weight: 0.035 grams (Approximate)

**D-FLAT**



Top View

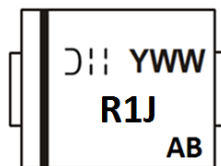
**Ordering Information (Note 4)**

| Part Number | Compliance | Case   | Packaging          |
|-------------|------------|--------|--------------------|
| RS1JDF-13   | AEC-Q101   | 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](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**

**D-FLAT**



- R1J= Product Type Marking Code
- YWW = 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<sub>A</sub> = +25°C, unless otherwise specified.)

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

| 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 (Note 5)   | V <sub>R</sub>      |       |      |
| RMS Reverse Voltage  | V <sub>R(RMS)</sub> | 420   | V    |
| Average Rectified Output Current @T <sub>A</sub> = +100°C  | I <sub>O</sub>      | 1.0   | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>    | 30    | A    |

**Thermal Characteristics**

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

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

| Characteristic                     | Symbol             | Min | Typ   | Max | Unit | Test Condition  |
|------------------------------------|--------------------|-----|-------|-----|------|---|
| Reverse Breakdown Voltage (Note 5) | V <sub>(BR)R</sub> | 600 | —     | —   | V    | I <sub>R</sub> = 10μA   |
| Forward Voltage                    | V <sub>F</sub>     | —   | 1.1   | 1.3 | V    | I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C<br>I <sub>F</sub> = 1A, T <sub>J</sub> = +125°C |
| Reverse Leakage Current (Note 5)   | I <sub>R</sub>     | —   | 0.25  | 5   | μA   | V <sub>R</sub> = 600V, T <sub>J</sub> = +25°C   |
|                                    |                    | —   | 0.005 | —   | mA   | V <sub>R</sub> = 600V, T <sub>J</sub> = +125°C  |
| Reverse Recovery Time (Note 6)     | t <sub>rr</sub>    | —   | —     | 250 | nS   | I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1.0A, I <sub>RR</sub> = 0.25A                       |
| Total Capacitance (Note 7)         | C <sub>T</sub>     | —   | 6     | —   | pf   | V <sub>R</sub> = 4V <sub>DC</sub> , f = 1MHz  |

- Notes:
5. Short duration pulse test used to minimize self-heating effect.
  6. Measured with I<sub>F</sub> = 0.5A, I<sub>R</sub> = 1.0A, I<sub>RR</sub> = 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"×1", 2oz, single-sided, PC boards with 0.1"×0.15" copper pads.
  9. Device mounted on FR-4 substrate, 0.4"×0.5", 2oz, single-sided, PC boards with 0.2"×0.25" copper pads.

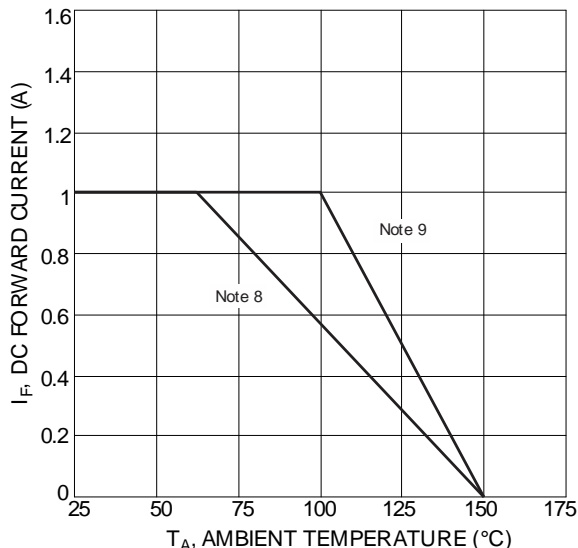


Figure 1 Forward Current Derating Curve

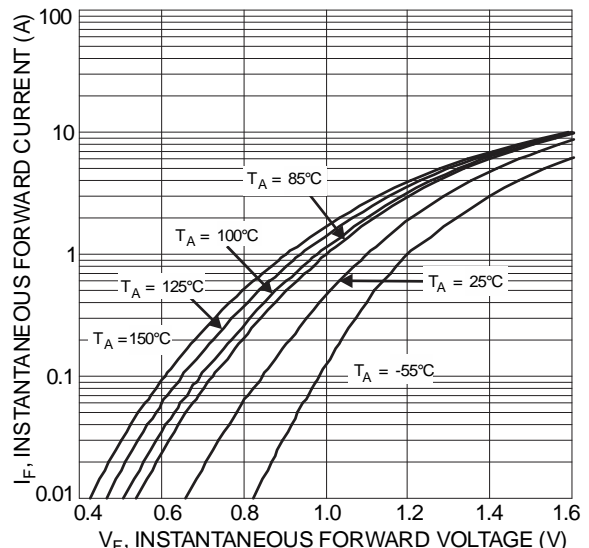


Figure 2 Typical Forward Characteristics

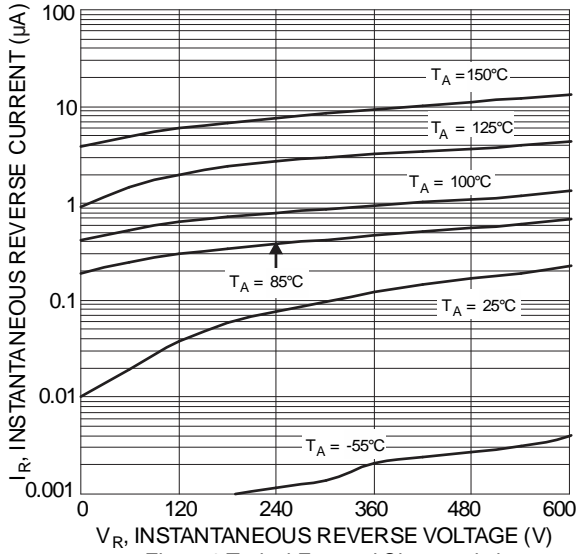


Figure 3 Typical Forward Characteristics

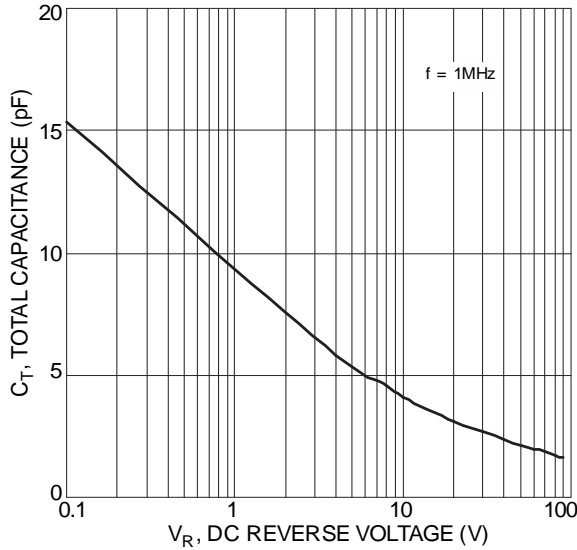


Figure 5 Total Capacitance vs. Reverse Voltage

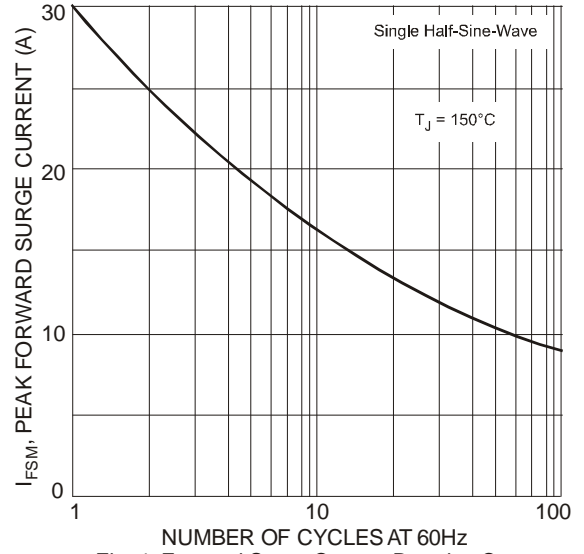


Figure 4 Forward Surge Current Derating Curve

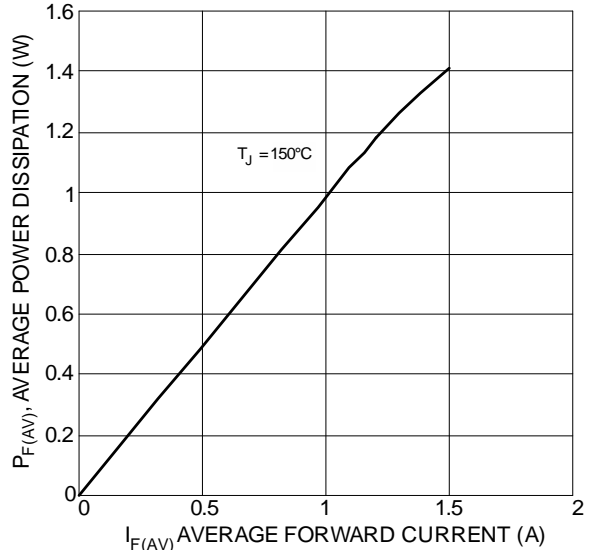
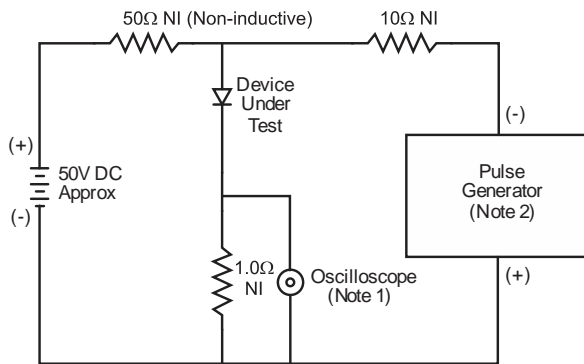
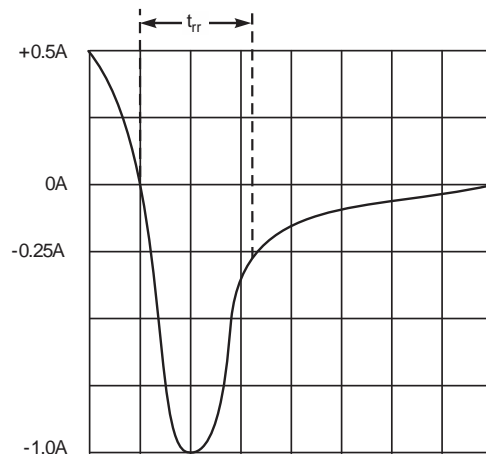


Figure 6 Forward Power Dissipation



- Notes:
1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
  2. Rise Time = 10ns max. Input Impedance = 50Ω.



Set time base for 50/100 ns/cm

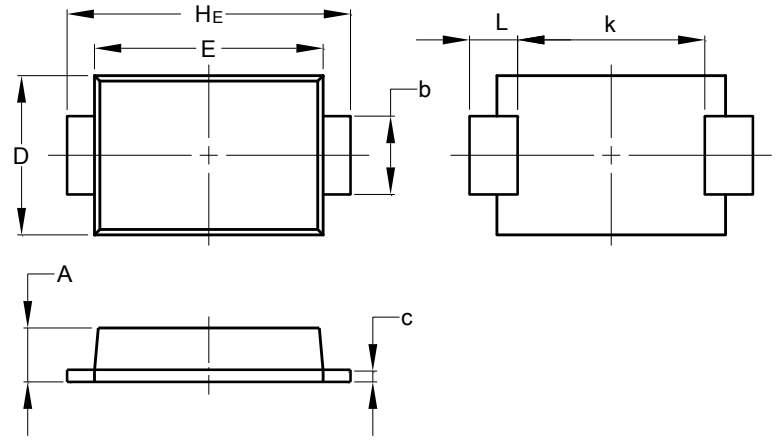
Figure 7 Reverse Recovery Time Characteristic and Test Circuit

NEW PRODUCT

**Package Outline Dimensions**

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

**D-FLAT**

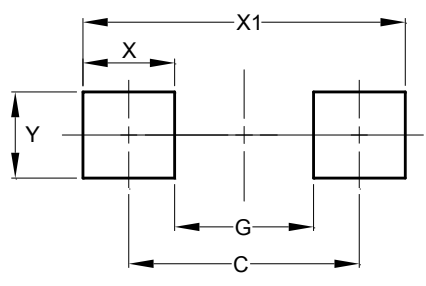


| D-FLAT               |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 0.90 | 1.10 |
| b                    | 1.25 | 1.65 |
| c                    | 0.10 | 0.40 |
| D                    | 2.25 | 2.95 |
| E                    | 3.95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

**Suggested Pad Layout**

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

**D-FLAT**



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

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