

# RS1AFA, NRVHPRS1AFA Series

## Surface Mount Fast Recovery Rectifiers

0.8 A, 50 V – 1000 V



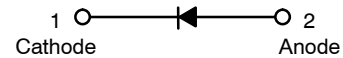
ON Semiconductor®

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### Features

- Glass Passivated Chip Junction
- Fast Switching for High Efficiency
- High Surge Capacity
- Low Forward Voltage: 1.3 V Maximum
- UL Flammability 94V-0 Classification
- MSL 1 per J-STD-020
- RoHS Compliant / Green Molding Compound
- Industrial Device Qualified per AEC-Q101 Standards
- NRVHP Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable

\*See authorized use policy



SOD-123FA  
CASE 425AB

(Color Band Denotes Cathode)

### ORDERING INFORMATION

| Part Number | Top Mark | Package   | Packing Method† |
|-------------|----------|-----------|-----------------|
| RS1AFA      | RAL      | SOD-123FA | Tape and Reel   |
| RS1BFA      | RBL      | SOD-123FA | Tape and Reel   |
| RS1DFA      | RDL      | SOD-123FA | Tape and Reel   |
| RS1GFA      | RGL      | SOD-123FA | Tape and Reel   |
| RS1JFA      | RJL      | SOD-123FA | Tape and Reel   |
| RS1KFA      | RKL      | SOD-123FA | Tape and Reel   |
| RS1MFA      | RML      | SOD-123FA | Tape and Reel   |
| NRVHPRS1AFA | RAL      | SOD-123FA | Tape and Reel   |
| NRVHPRS1BFA | RBL      | SOD-123FA | Tape and Reel   |
| NRVHPRS1DFA | RDL      | SOD-123FA | Tape and Reel   |
| NRVHPRS1GFA | RGL      | SOD-123FA | Tape and Reel   |
| NRVHPRS1JFA | RJL      | SOD-123FA | Tape and Reel   |
| NRVHPRS1KFA | RKL      | SOD-123FA | Tape and Reel   |
| NRVHPRS1MFA | RML      | SOD-123FA | Tape and Reel   |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

## RS1AFA, NRVHPRS1AFA Series

**Table 1. ABSOLUTE MAXIMUM RATINGS** Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol      | Parameter                                                                           | Value       |            |            |            |            |            |            | Unit             |
|-------------|-------------------------------------------------------------------------------------|-------------|------------|------------|------------|------------|------------|------------|------------------|
|             |                                                                                     | RS1<br>AFA  | RS1<br>BFA | RS1<br>DFA | RS1<br>GFA | RS1<br>JFA | RS1<br>KFA | RS1<br>MFA |                  |
| $V_{RRM}$   | Repetitive Peak Reverse Voltage                                                     | 50          | 100        | 200        | 400        | 600        | 800        | 1000       | V                |
| $V_{RMS}$   | RMS Reverse Voltage                                                                 | 35          | 70         | 140        | 280        | 420        | 560        | 700        | V                |
| $V_R$       | DC Blocking Voltage                                                                 | 50          | 100        | 200        | 400        | 600        | 800        | 1000       | V                |
| $I_{F(AV)}$ | Average Forward Rectified Current                                                   | 0.8         |            |            |            |            |            |            | A                |
| $I_{FSM}$   | Peak Forward Surge Current: 8.3 ms Single Half Sine-Wave Superimposed on Rated Load | 30          |            |            |            |            |            |            | A                |
| $T_J$       | Operating Junction Temperature Range                                                | -55 to +150 |            |            |            |            |            |            | $^\circ\text{C}$ |
| $T_{STG}$   | Storage Temperature Range                                                           | -55 to +150 |            |            |            |            |            |            | $^\circ\text{C}$ |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

**Table 2. THERMAL CHARACTERISTICS** (Note 1)

| Symbol          | Parameter                                         | Value | Unit                      |
|-----------------|---------------------------------------------------|-------|---------------------------|
| $\Psi_{JL}$     | Typical Thermal Characteristics, Junction-to-Lead | 32    | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JA}$ | Typical Thermal Resistance, Junction-to-Ambient   | 105   | $^\circ\text{C}/\text{W}$ |

1. Device mounted on 5 mm x 5 mm Cu pad PCB.

**Table 3. ELECTRICAL CHARACTERISTICS** Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol   | Parameter                              | Conditions                                                                  | Min                    | Typ | Max | Unit          |
|----------|----------------------------------------|-----------------------------------------------------------------------------|------------------------|-----|-----|---------------|
| $V_F$    | Instantaneous Forward Voltage (Note 2) | $I_F = 0.8 \text{ A}$                                                       |                        |     | 1.3 | V             |
| $I_R$    | Reverse Current at Rated $V_R$         | $T_J = 25^\circ\text{C}$                                                    |                        |     | 5   | $\mu\text{A}$ |
|          |                                        | $T_J = 125^\circ\text{C}$                                                   |                        |     | 50  |               |
| $C_J$    | Junction Capacitance                   | $V_R = 4 \text{ V}, f = 1 \text{ MHz}$                                      |                        | 10  |     | pF            |
| $T_{rr}$ | Reverse Recovery Time                  | $I_F = 0.5 \text{ A},$<br>$I_R = 1 \text{ A},$<br>$I_{rr} = 0.25 \text{ A}$ | RS1AFA, RS1BFA, RS1DFA |     | 150 | ns            |
|          |                                        |                                                                             | RS1GFA, RS1JFA         |     | 250 |               |
|          |                                        |                                                                             | RS1KFA, RS1MFA         |     | 500 |               |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Pulse test with  $PW = 300 \mu\text{s}$ , 1% duty cycle

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## TYPICAL PERFORMANCE CHARACTERISTICS

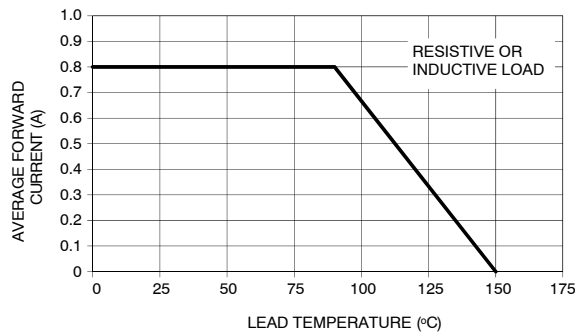


Figure 1. Forward Current Derating Curve

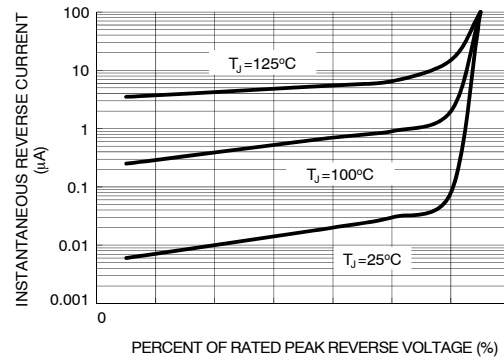


Figure 2. Typical Reverse Characteristics

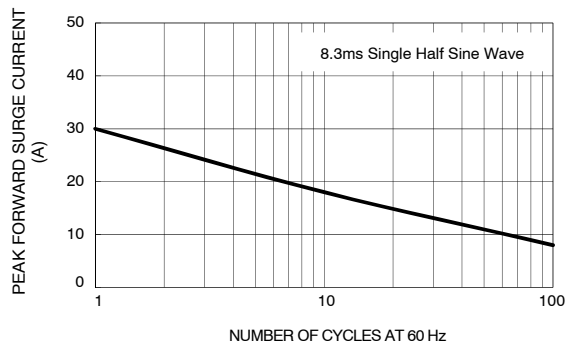


Figure 3. Maximum Non-Repetitive Forward Surge Current

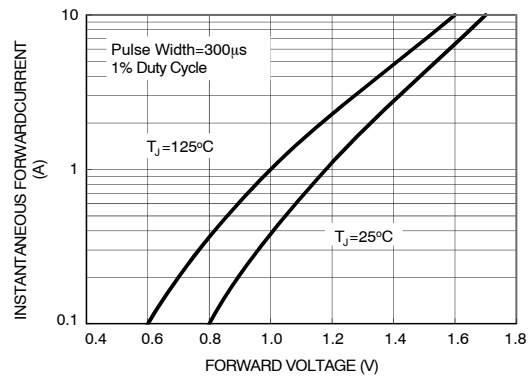


Figure 4. Typical Instantaneous Forward Characteristics

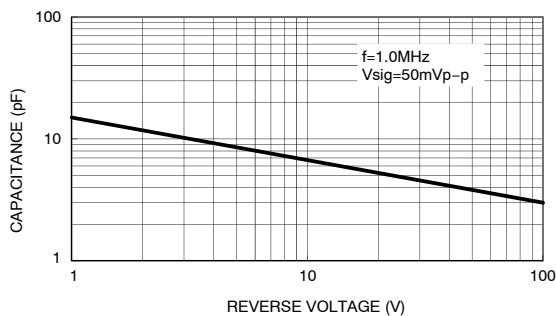


Figure 5. Typical Junction Capacitance

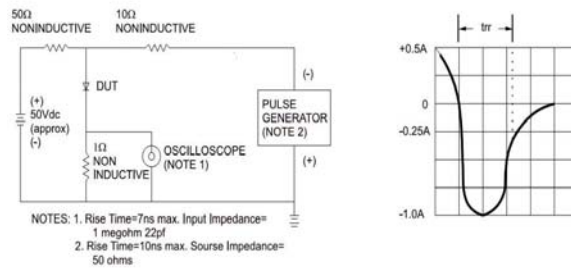
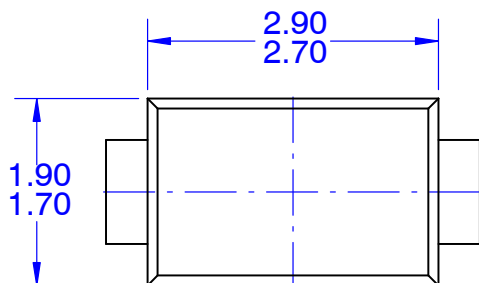


Figure 6. Reverse Recovery Time Characteristic and Test Circuit Diagram

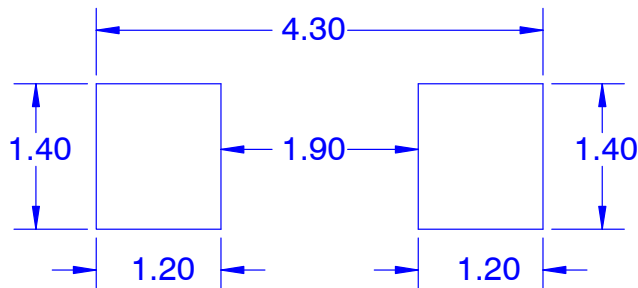
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## PACKAGE DIMENSIONS

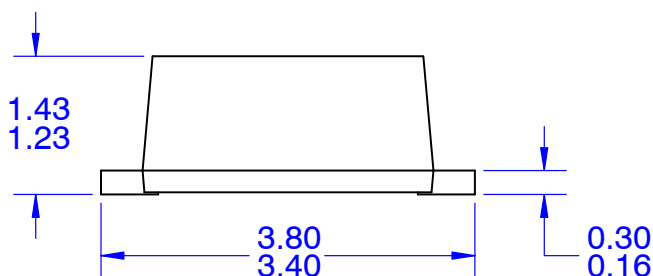
SOD-123FL  
CASE 425AB  
ISSUE O



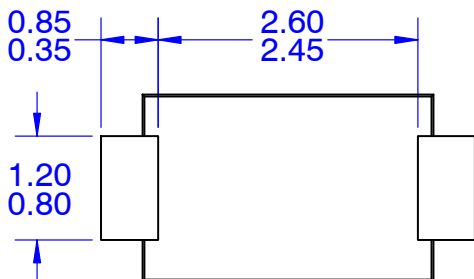
TOP VIEW



LAND PATTERN RECOMMENDATION



FRONT VIEW



BOTTOM VIEW

### NOTES:

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