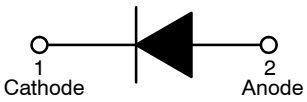
# Surface Mount General Purpose Rectifiers

## S1AFL, S1BFL, S1DFL, S1GFL, S1JFL, S1MFL, NRVS1AFL, NRVS1BFL, NRVS1DFL, NRVS1GFL, NRVS1JFL, NRVS1MFL

# S1MFL Series, NRVS1MFL Series



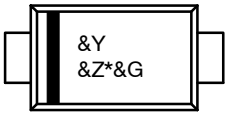

**General−Purpose Rectifier**

**SOD−123F**
**CASE 425AD**

### Features

- Ultra Thin Profile − Maximum Height of 1.08 mm
- UL Flammability 94V−0 Classification
- MSL 1
- Green Mold Compound
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free, Halogen Free and RoHS Compliant

### MARKING DIAGRAM




Band Indicates Cathode

| | |
|---|---|
| &Y | = Binary Calendar Year Coding Scheme |
| &Z | = Assembly Plant Code |
| * | = Specific Device Code<br>1A, 1B, 1D, 1G, 1J, 1M |
| &G | = Single Digit Weekly Data Code |

### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

**ABSOLUTE MAXIMUM RATINGS** ($T_A$ = 25°C unless otherwise noted)

| Symbol | Rating | Value | | | | | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | S1AFL | S1BFL | S1DFL | S1GFL | S1JFL | S1MFL | |
| $V_{RRM}$ | Recurrent Peak Reverse Voltage | 50 | 100 | 200 | 400 | 600 | 1000 | V |
| $V_{RMS}$ | RMS Voltage | 35 | 70 | 140 | 280 | 420 | 700 | V |
| $V_{DC}$ | DC Blocking Voltage | 50 | 100 | 200 | 400 | 600 | 1000 | V |
| $I_{F(AV)}$ | Average Forward Current (Note 1) | 1 | | | | | | A |
| $I_{FSM}$ | Peak One Cycle Forward Current (Non−Repetitive) at 60Hz | 30 | | | | | | A |
| $T_J$, $T_{STG}$ | Operating and Storage Temperature Range | −55 to +175 | | | | | | °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.

1. Pulse test: 300 μs pulse width, 1 % duty cycle.

**THERMAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted) (Note 2)

| Symbol | Characteristic | Value | Unit |
|---|---|---|---|
| $\Psi_{JL}$ | Typical Thermal Characteristics, Junction−to−Lead (Note 3) | 25 | °C/W |
| $R_{\theta JA}$ | Typical Thermal Resistance, Junction−to−Ambient | 140 | °C/W |

2. Per JESD51−3 recommended thermal test board. Device mounted on FR−4 PCB, board size = 76.2 mm x 114.3 mm.
3. Thermocouple soldered at cathode lead.

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted)

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $V_F$ | Forward Voltage | $I_F$ = 1 A | | − | − | 1.1 | V |
| $I_R$ | Reverse Current | $V_R = V_{DC}$ | $T_A$ = 25°C | − | − | 1 | μA |
| | | | $T_A$ = 125°C | − | − | 50 | |
| $T_{rr}$ | Reverse Recovery Time | $I_F$ = 0.5 A, $I_R$ = 1 A, $I_{rr}$ = 0.25 A | | − | 1.304 | 2 | μs |
| $C_J$ | Junction Capacitance | $V_R$ = 4 V, f = 1.0 MHz | | − | 4 | − | pF |

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.

**ORDERING INFORMATION**

| Part Number | Top Mark | Package | Shipping† |
|---|---|---|---|
| S1AFL, NRVS1AFL* | 1A | SOD−123F (Pb−Free/Halogen Free) | 3000 / Tape & Reel |
| S1BFL, NRVS1BFL* | 1B | SOD−123F (Pb−Free/Halogen Free) | 3000 / Tape & Reel |
| S1DFL, NRVS1DFL* | 1D | SOD−123F (Pb−Free/Halogen Free) | 3000 / Tape & Reel |
| S1GFL, NRVS1GFL* | 1G | SOD−123F (Pb−Free/Halogen Free) | 3000 / Tape & Reel |
| S1JFL, NRVS1JFL* | 1J | SOD−123F (Pb−Free/Halogen Free) | 3000 / Tape & Reel |
| S1MFL, NRVS1MFL* | 1M | SOD−123F (Pb−Free/Halogen Free) | 3000 / Tape & 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.

*NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable.

## TYPICAL PERFORMANCE CHARACTERISTICS

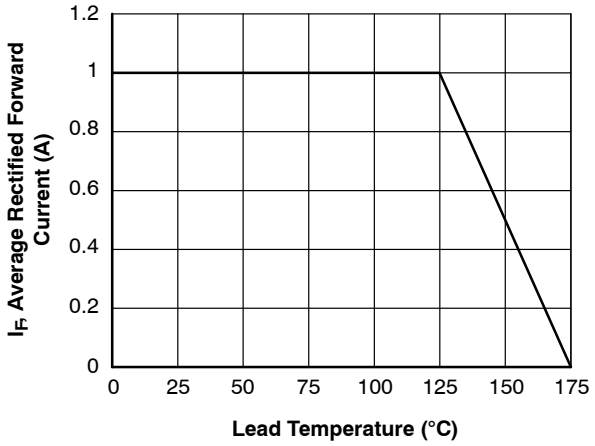



**Figure 1. Forward Current Derating Curve**

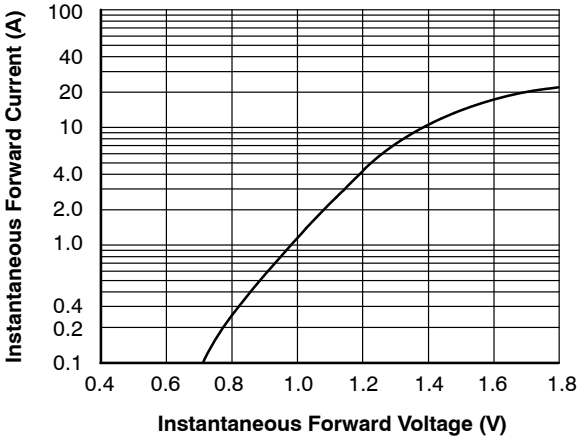



**Figure 2. Typical Instantaneous Forward Characteristics**

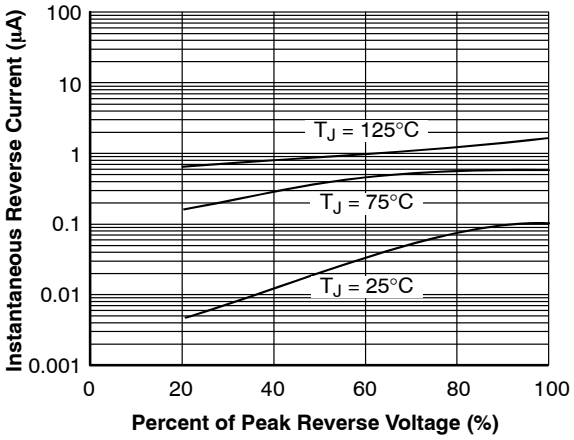



**Figure 3. Typical Reverse Characteristics**

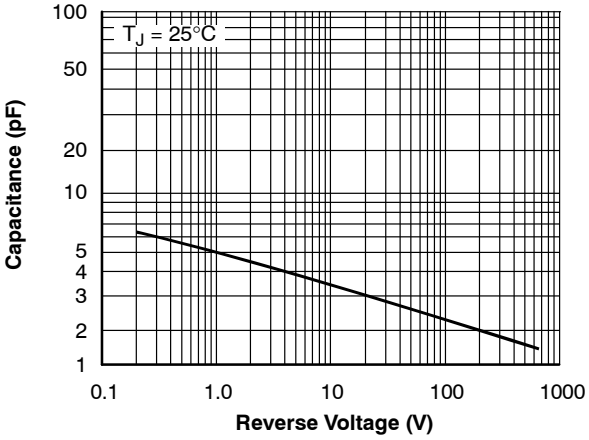



**Figure 4. Typical Junction Capacitance**

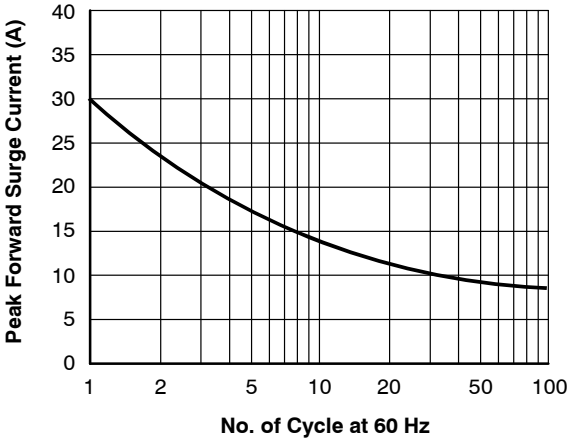



**Figure 5. Maximum Non−Repetitive Surge Current**

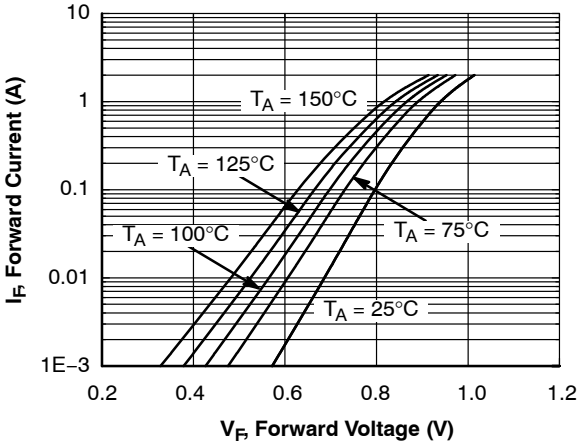
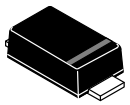



**Figure 6. Typical Forward Characteristics**

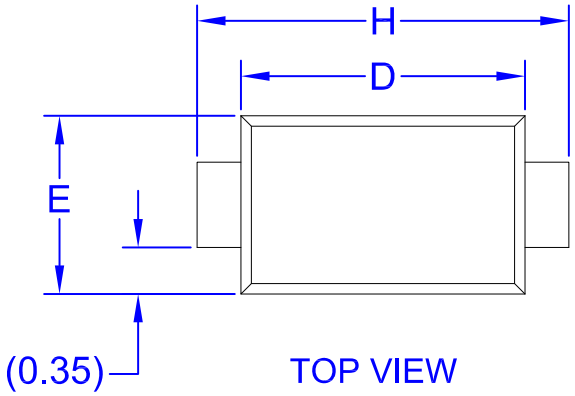


SCALE 4:1

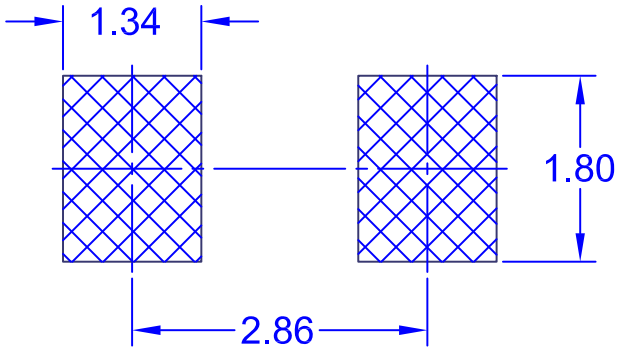
**SOD−123FL**
CASE 425AD
ISSUE A

DATE 04 AUG 2017

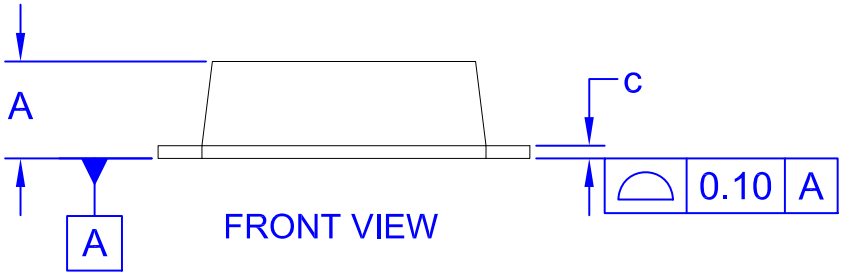
NOTES:
A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
B. ALL DIMENSIONS ARE IN MILLIMETERS
C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.



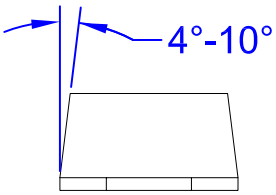

TOP VIEW



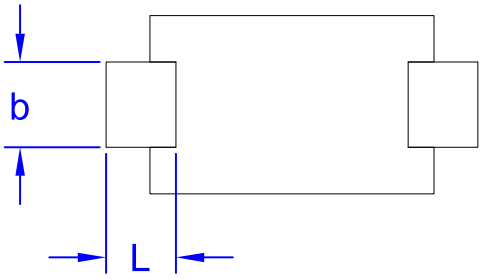

LAND PATTERN RECOMMENDATION




FRONT VIEW




SIDE VIEW




BOTTOM VIEW

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | MIN | MAX | MIN | MAX |
| A | 0.031 | 0.043 | 0.80 | 1.08 |
| b | 0.020 | 0.045 | 0.50 | 1.15 |
| c | 0.002 | 0.008 | 0.05 | 0.20 |
| D | 0.098 | 0.118 | 2.50 | 3.00 |
| E | 0.059 | 0.077 | 1.50 | 1.95 |
| H | 0.130 | 0.154 | 3.30 | 3.90 |
| L | 0.018 | 0.035 | 0.45 | 0.90 |

| | | |
|---|---|---|
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| **DESCRIPTION:** | **SOD−123FL** | **PAGE 1 OF 1** |

## ADDITIONAL INFORMATION

**TECHNICAL PUBLICATIONS**:
**Technical Library:** www.onsemi.com/design/resources/technical−documentation
**onsemi Website:** www.onsemi.com

**ONLINE SUPPORT**: www.onsemi.com/support
**For additional information, please contact your local Sales Representative at** www.onsemi.com/support/sales