

# Surface Mount Rectifiers

1.2 A, 600 V – 1000 V

## S1JFP - S1MFP

### Features

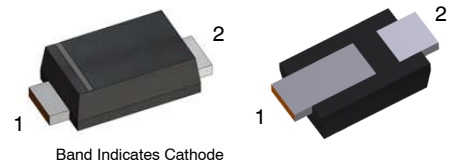
- Low Power Loss, High Efficiency
- Larger Cathode Pad for Improved Power Dissipation
- Ultra Thin Profile – Package Height < 1.0 mm
- High Surge Capability
- Low Forward Voltage: 1.3 V Maximum
- UL Flammability 94V-0 Classification
- MSL 1 per J-STD-020
- Industrial Device Qualified per AEC-Q101 Standards
- These Devices are Pb-Free, Halide Free and are RoHS Compliant

### MAXIMUM RATINGS

T<sub>A</sub> = 25 °C unless otherwise noted

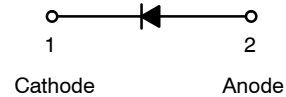
| Symbol             | Rating                                                                              | Value       |       |       | Unit |
|--------------------|-------------------------------------------------------------------------------------|-------------|-------|-------|------|
|                    |                                                                                     | S1JFP       | S1KFP | S1MFP |      |
| V <sub>RRM</sub>   | Repetitive Peak Reverse Voltage                                                     | 600         | 800   | 1000  | V    |
| V <sub>RMS</sub>   | RMS Reverse Voltage                                                                 | 420         | 560   | 700   | V    |
| V <sub>R</sub>     | DC Blocking Voltage                                                                 | 600         | 800   | 1000  | V    |
| I <sub>F(AV)</sub> | Average Forward Rectified Current                                                   | 1.2         |       |       | A    |
| I <sub>FSM</sub>   | Peak Forward Surge Current: 8.3 ms Single Half Sine-Wave Superimposed on Rated Load | 50          |       |       | A    |
| T <sub>J</sub>     | Operating Junction Temperature Range                                                | –55 to +150 |       |       | °C   |
| T <sub>STG</sub>   | Storage Temperature Range                                                           | –55 to +150 |       |       | °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.

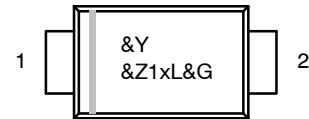


Band Indicates Cathode

SOD-123EP  
CASE 425AC



### MARKING DIAGRAM



- &Y = Binary Calendar Year Coding
- &Z = Assembly Plant Code
- 1xL = Specific Device Code  
x = J, K, M
- &G = Single Digit Week Code

### ORDERING INFORMATION

| Device | Package   | Shipping <sup>†</sup> |
|--------|-----------|-----------------------|
| S1JFP  | SOD-123EP | 3000 / Tape & Reel    |
| S1KFP  | SOD-123EP | 3000 / Tape & Reel    |
| SMFP   | SOD-123EP | 3000 / Tape & Reel    |

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

## S1JFP – S1MFP

### THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted (Note 1))

| Symbol          | Characteristic                                             | Value | Unit                 |
|-----------------|------------------------------------------------------------|-------|----------------------|
| $\Psi_{JL}$     | Typical Thermal Characteristics, Junction-to-Lead (Note 2) | 12    | $^{\circ}\text{C/W}$ |
| $R_{\theta JA}$ | Typical Thermal Resistance, Junction-to-Ambient            | 140   | $^{\circ}\text{C/W}$ |

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

### ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

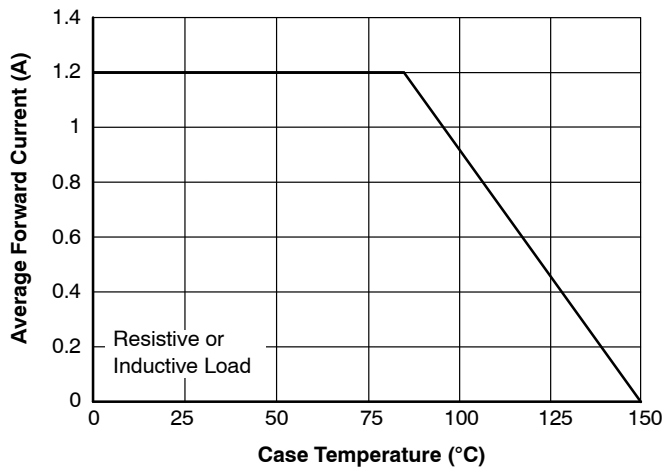
| Symbol   | Parameter                              | Conditions                                                           | Min | Typ | Max | Unit          |
|----------|----------------------------------------|----------------------------------------------------------------------|-----|-----|-----|---------------|
| $V_F$    | Instantaneous Forward Voltage (Note 3) | $I_F = 1.2\text{ A}$                                                 | –   | –   | 1.3 | V             |
| $I_R$    | Reverse Current at Rated $V_R$         | $T_J = 25\text{ }^{\circ}\text{C}$                                   | –   | –   | 5   | $\mu\text{A}$ |
|          |                                        | $T_J = 125\text{ }^{\circ}\text{C}$                                  | –   | –   | 150 |               |
| $C_J$    | Junction Capacitance                   | $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$                              | –   | 18  | –   | pF            |
| $T_{rr}$ | Reverse Recovery Time                  | $I_F = 0.5\text{ A}$ , $I_R = 1\text{ A}$ , $I_{rr} = 0.25\text{ A}$ | –   | 1.5 | –   | $\mu\text{s}$ |

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.

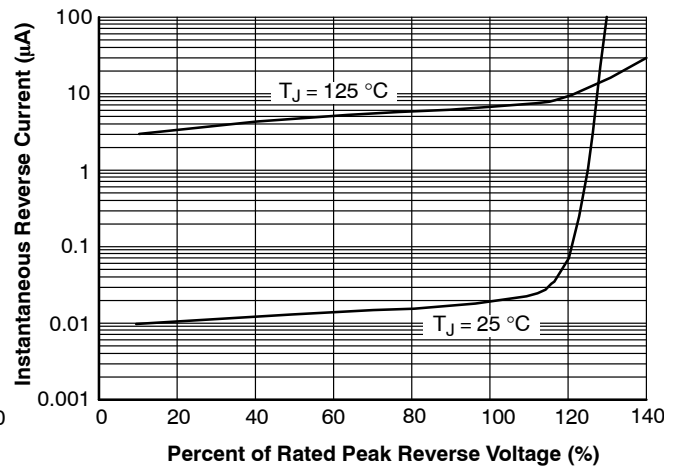
3. Pulse test with  $PW = 300\text{ }\mu\text{s}$ , 1% duty cycle

# S1JFP – S1MFP

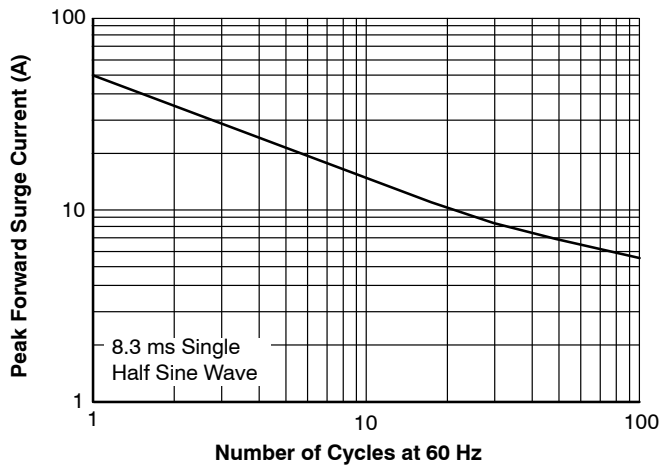
## TYPICAL PERFORMANCE CHARACTERISTICS



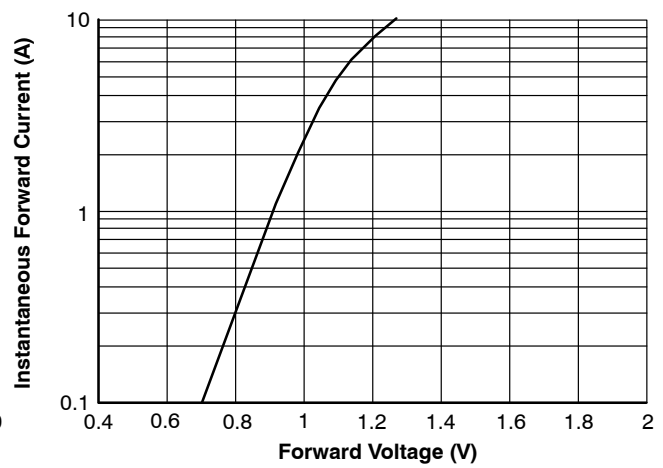
**Figure 1. Maximum Forward Current Derating Curve**



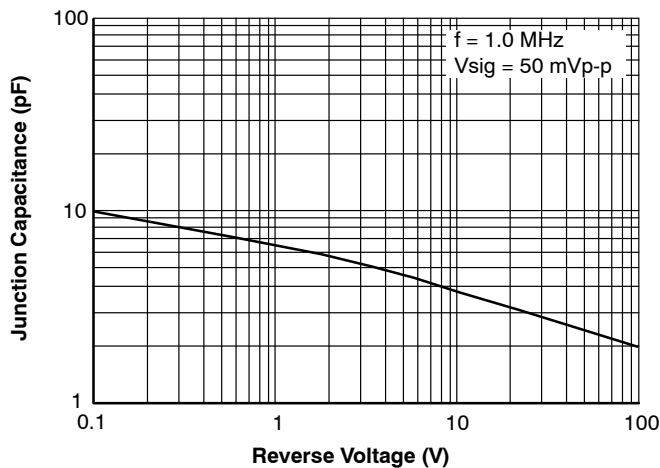
**Figure 2. Typical Reverse Characteristics**



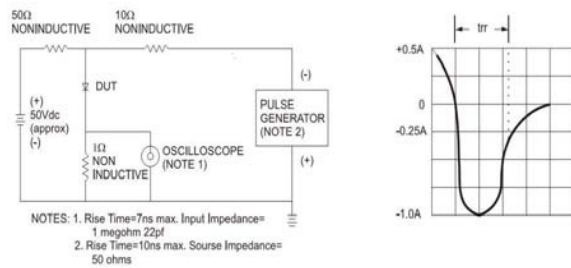
**Figure 3. Maximum Non-Repetitive Forward Surge Current**



**Figure 4. Typical Instantaneous Forward Characteristics**



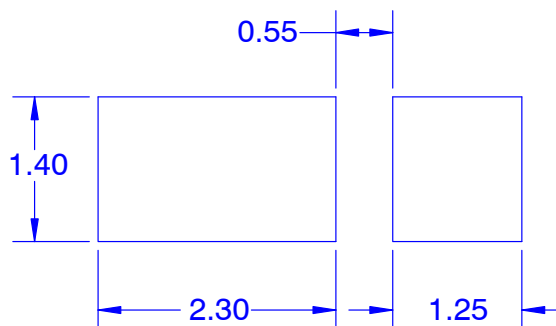
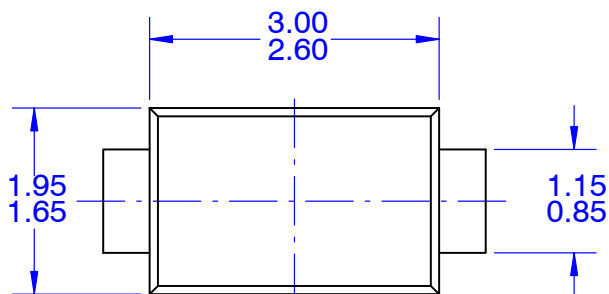
**Figure 5. Typical Junction Capacitance**



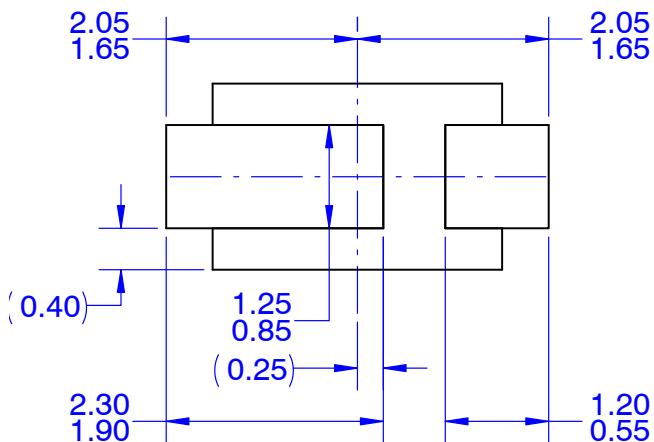
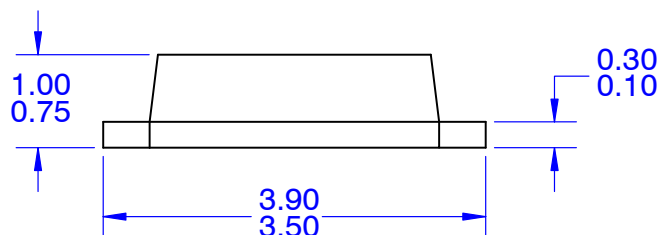
**Figure 6. Reverse Recovery Time Characteristic and Test Circuit Diagram**

**SOD-123EP**  
**CASE 425AC**  
**ISSUE O**

DATE 31 AUG 2016



**LAND PATTERN RECOMMENDATION**  
LONG PAD IS CATHODE



**NOTES:**

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- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.

|                         |                    |                                                                                                                                                                                     |
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