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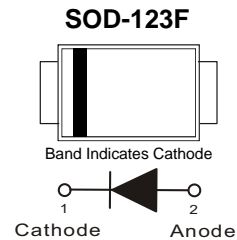
ON Semiconductor®

April 2017

S1AFL - S1MFL Surface General-Purpose Rectifier

Features

- Ultra Thin Profile – Maximum Height of 1.08 mm
- UL Flammability 94V-0 Classification
- Glass Passivated Junction
- MSL 1
- RoHS Compliant / Green Mold Compound
- Industrial Device Qualified per AEC-Q101 Standards.
* see authorized use policy



Ordering Information

| Part Number | Top Mark | Package | Packing Method |
|-------------|----------|----------|----------------|
| S1AFL | 1A | SOD-123F | Tape and Reel |
| S1BFL | 1B | SOD-123F | Tape and Reel |
| S1DFL | 1D | SOD-123F | Tape and Reel |
| S1GFL | 1G | SOD-123F | Tape and Reel |
| S1JFL | 1J | SOD-123F | Tape and Reel |
| S1MFL | 1M | SOD-123F | Tape and Reel |

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | 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 ⁽¹⁾ | 1 | | | | | | A |
| I_{FSM} | Peak One Cycle Surge Forward Current (Non-Repetitive) at 60Hz | 30 | | | | | | A |
| T_J, T_{STG} | Operating and Storage Temperature Range | -50 to +150 | | | | | | °C |

Note:

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

Thermal Characteristics⁽²⁾

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Value | Unit |
|-----------------|--|-------|---------------------------|
| Ψ_{JL} | Typical Thermal Characteristics, Junction-to-Lead ⁽³⁾ | 25 | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JA}$ | Typical Thermal Resistance, Junction-to-Ambient | 140 | $^\circ\text{C}/\text{W}$ |

Note:

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

Electrical Characteristics

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

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

Typical Performance Characteristics

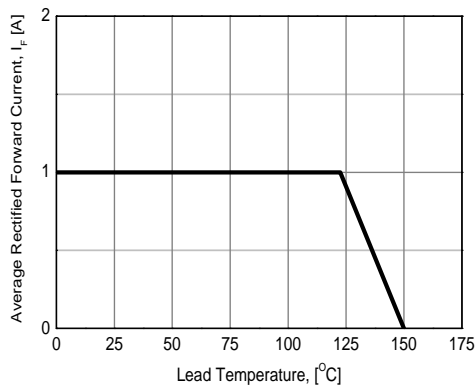


Figure 1. Forward Current Derating Curve

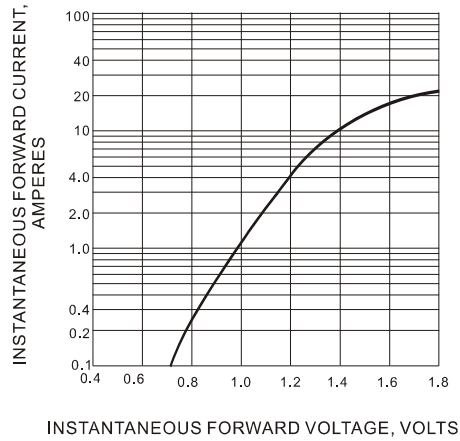


Figure 2. Typical Instantaneous Forward Characteristics

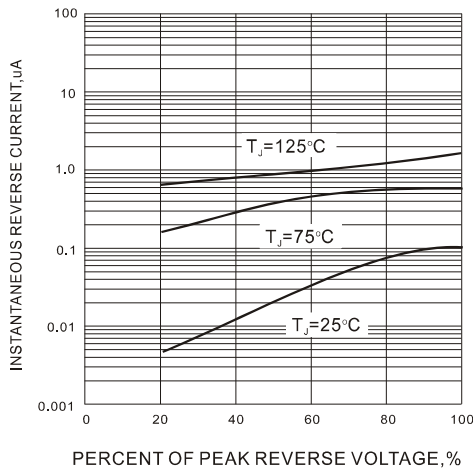


Figure 3. Typical Reverse Characteristic

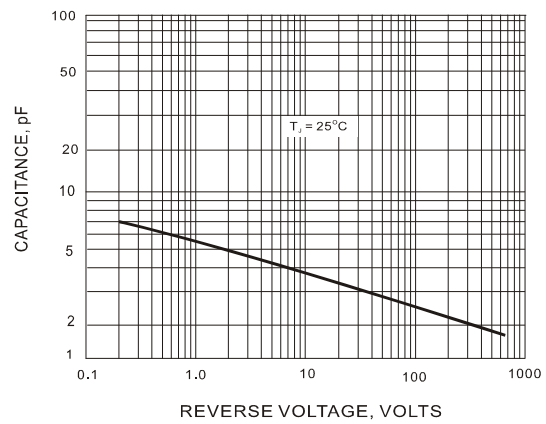


Figure 4. Typical Junction Capacitance

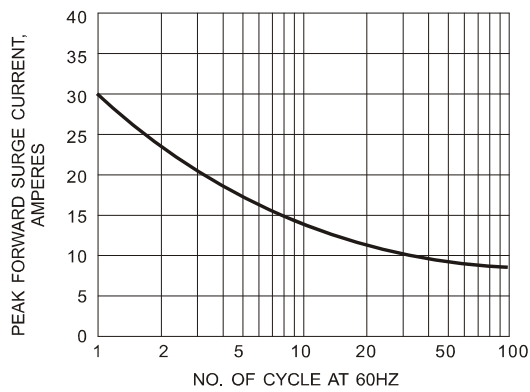


Figure 5. Maximum Non-Repetitive Surge Current

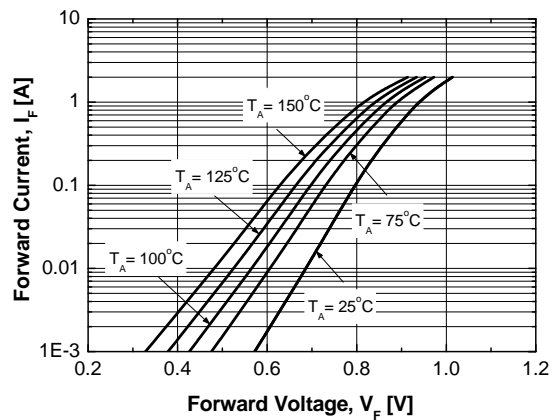
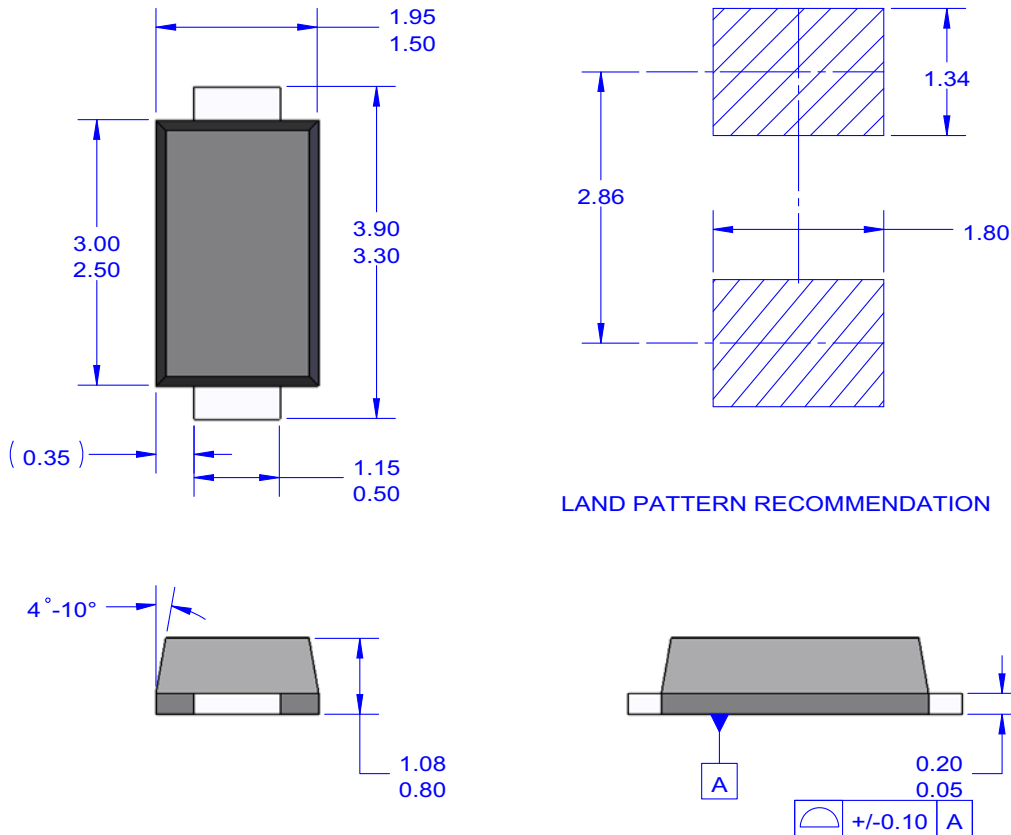


Figure 6. Typical Forward Characteristics


Physical Dimensions



NOTES:

- A. THIS PACKAGE DOES NOT CONFORM TO ANY STANDARDS.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
- D. DRAWING FILE NAME: MA02BREV5

Figure 7. 2-LEAD, SOD123F, NON-JEDEC, FLAT TERMINAL

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