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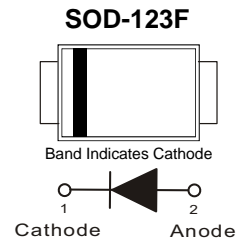
ON Semiconductor®

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 <sup>(1)</sup>	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  $\mu\text{s}$  pulse width, 1% duty cycle

## Thermal Characteristics<sup>(2)</sup>

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

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

### Note:

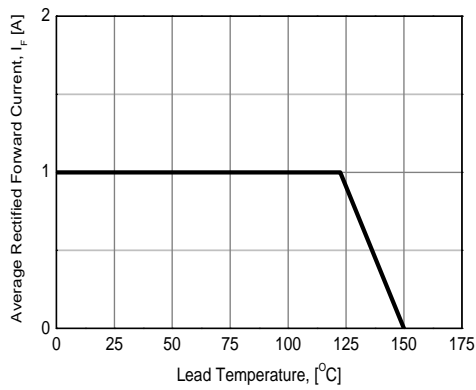
- Per JESD51-3 recommended thermal test board. Device mounted on FR-4 PCB, board size = 76.2 mm x 114.3 mm.
- Thermocouple soldered at cathode lead.

## Electrical Characteristics

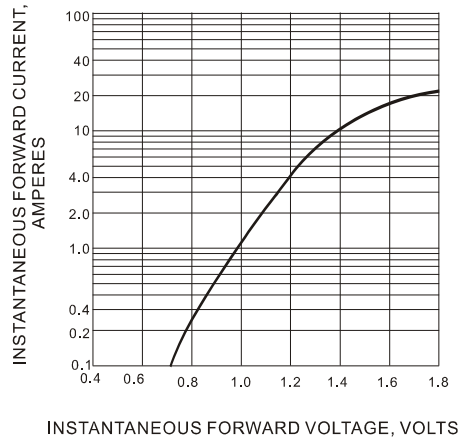
Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

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	$\mu\text{A}$
					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	$\mu\text{s}$
$C_J$	Junction Capacitance	$V_R = 4\text{ V}, f = 1.0\text{ MHz}$		4		pF

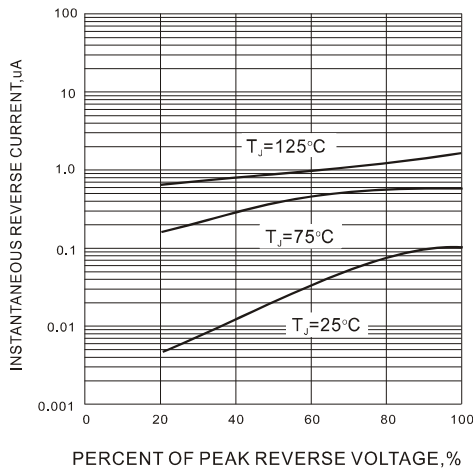
## Typical Performance Characteristics



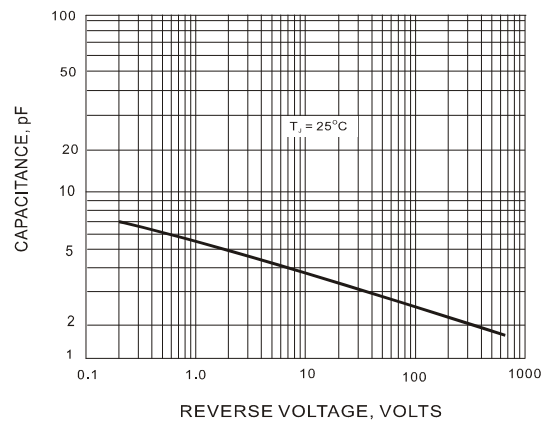
**Figure 1. Forward Current Derating Curve**



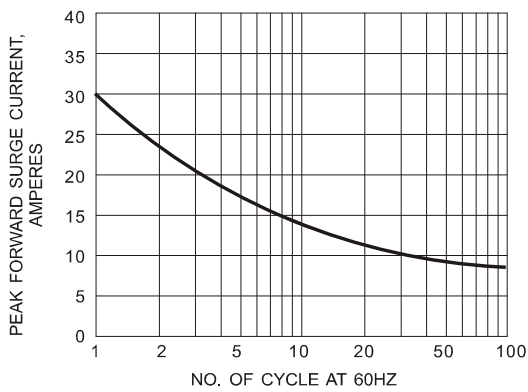
**Figure 2. Typical Instantaneous Forward Characteristics**



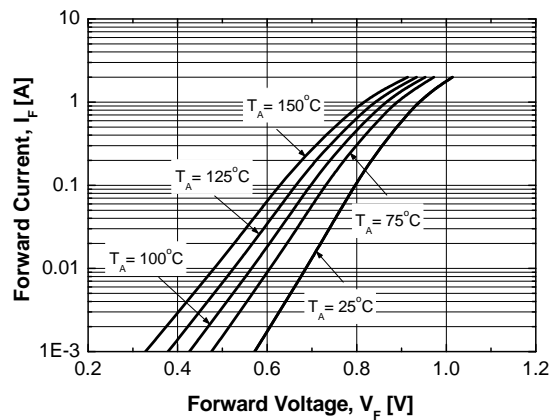
**Figure 3. Typical Reverse Characteristic**



**Figure 4. Typical Junction Capacitance**

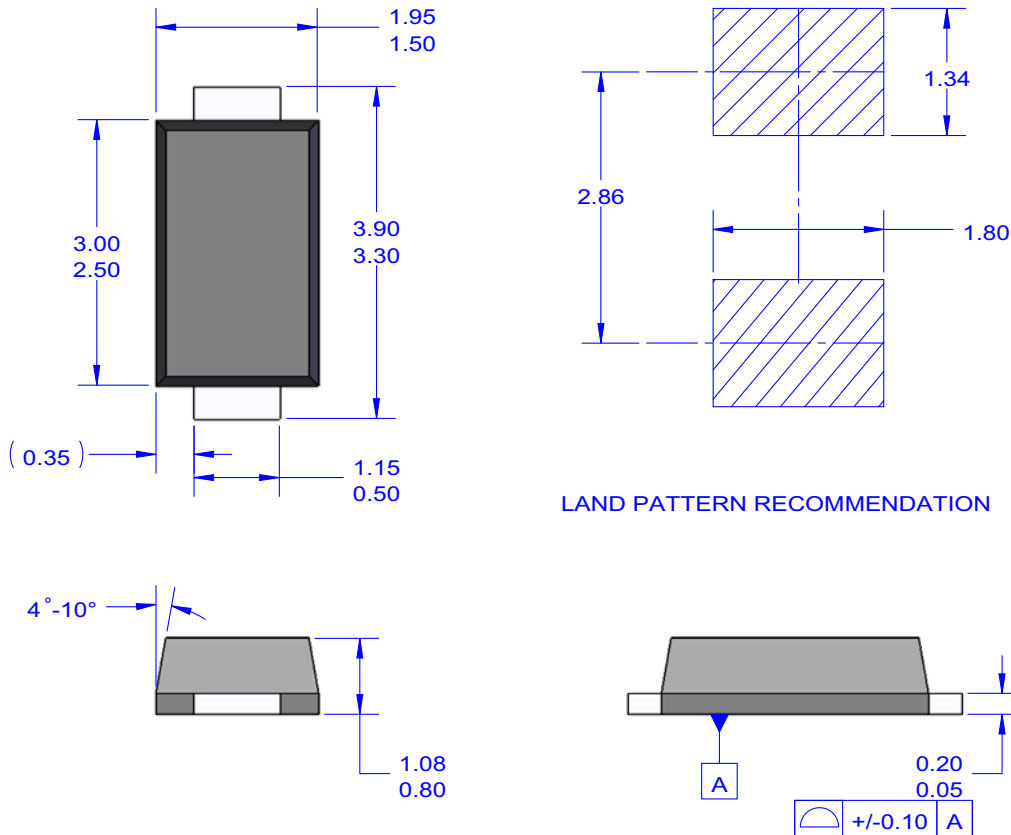


**Figure 5. Maximum Non-Repetitive Surge Current**



**Figure 6. Typical Forward Characteristics**

## Physical Dimensions



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- 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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