

## 1A, 50V - 1000V Surface Mount Fast Recovery Rectifier

### FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low profile package
- Low power loss, high efficiency
- Moisture sensitivity level: level 1, per J-STD-020
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### KEY PARAMETERS

| PARAMETER    | VALUE     | UNIT |
|--------------|-----------|------|
| $I_F$        | 1         | A    |
| $V_{RRM}$    | 50 - 1000 | V    |
| $I_{FSM}$    | 30        | A    |
| $T_{J\ MAX}$ | 150       | °C   |
| Package      | SOD-123FL |      |

### APPLICATIONS

- High frequency rectification
- Freewheeling application
- Switching mode converters and inverters in computer and telecommunication.



SOD-123FL

### MECHANICAL DATA

- Case: SOD-123FL
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: As marked
- Weight: 0.016 g (approximately)

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| PARAMETER                                                                                     | SYMBOL       | RS1A<br>FL   | RS1B<br>FL | RS1D<br>FL | RS1G<br>FL | RS1J<br>FL | RS1K<br>FL | RS1M<br>FL | UNIT |
|-----------------------------------------------------------------------------------------------|--------------|--------------|------------|------------|------------|------------|------------|------------|------|
| Marking code on the device                                                                    |              | RAF          | RBF        | RDF        | RGF        | RJF        | RKF        | RMF        |      |
| Repetitive peak reverse voltage                                                               | $V_{RRM}$    | 50           | 100        | 200        | 400        | 600        | 800        | 1000       | V    |
| Reverse voltage, total rms value                                                              | $V_{R(RMS)}$ | 35           | 70         | 140        | 280        | 420        | 560        | 700        | V    |
| Forward current                                                                               | $I_F$        | 1            |            |            |            |            |            |            | A    |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$    | 30           |            |            |            |            |            |            | A    |
| Junction temperature                                                                          | $T_J$        | - 55 to +150 |            |            |            |            |            |            | °C   |
| Storage temperature                                                                           | $T_{STG}$    | - 55 to +150 |            |            |            |            |            |            | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                                        | SYMBOL          | TYP. | UNIT |
|--------------------------------------------------|-----------------|------|------|
| Junction-to-lead thermal resistance per diode    | $R_{\theta JL}$ | 17   | °C/W |
| Junction-to-ambient thermal resistance per diode | $R_{\theta JA}$ | 84   | °C/W |
| Junction-to-case thermal resistance per diode    | $R_{\theta JC}$ | 19   | °C/W |

**Thermal Performance Note:** Units mounted on PCB (5mm x 5mm Cu pad test board)

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

| PARAMETER                                                       |                                      | CONDITIONS                                                               | SYMBOL          | TYP. | MAX. | UNIT |
|-----------------------------------------------------------------|--------------------------------------|--------------------------------------------------------------------------|-----------------|------|------|------|
| Forward voltage per diode <sup>(1)</sup>                        | RS1AFL<br>RS1BFL<br>RS1DFL<br>RS1GFL | I <sub>F</sub> = 0.5A, T <sub>J</sub> = 25°C                             | V <sub>F</sub>  | 0.84 | -    | V    |
|                                                                 |                                      | I <sub>F</sub> = 1.0A, T <sub>J</sub> = 25°C                             |                 | 0.91 | 1.05 | V    |
|                                                                 |                                      | I <sub>F</sub> = 0.5A, T <sub>J</sub> = 125°C                            |                 | 0.70 | -    | V    |
|                                                                 |                                      | I <sub>F</sub> = 1.0A, T <sub>J</sub> = 125°C                            |                 | 0.78 | 0.90 | V    |
| Forward voltage per diode <sup>(1)</sup>                        | RS1JFL<br>RS1KFL<br>RS1MFL           | I <sub>F</sub> = 0.5A, T <sub>J</sub> = 25°C                             | V <sub>F</sub>  | 0.97 | -    | V    |
|                                                                 |                                      | I <sub>F</sub> = 1.0A, T <sub>J</sub> = 25°C                             |                 | 1.04 | 1.30 | V    |
|                                                                 |                                      | I <sub>F</sub> = 0.5A, T <sub>J</sub> = 125°C                            |                 | 0.80 | -    | V    |
|                                                                 |                                      | I <sub>F</sub> = 1.0A, T <sub>J</sub> = 125°C                            |                 | 0.89 | 1.12 | V    |
| Reverse current @ rated V <sub>R</sub> per diode <sup>(2)</sup> |                                      | T <sub>J</sub> = 25°C                                                    | I <sub>R</sub>  | -    | 5    | μA   |
|                                                                 |                                      | T <sub>J</sub> = 125°C                                                   |                 | -    | 150  | μA   |
| Junction capacitance                                            | RS1AFL<br>RS1BFL<br>RS1DFL<br>RS1GFL | 1 MHz, V <sub>R</sub> =4.0V                                              | C <sub>J</sub>  | 15   | -    | pF   |
|                                                                 | RS1JFL<br>RS1KFL<br>RS1MFL           |                                                                          |                 | 11   | -    | pF   |
| Reverse recovery time                                           | RS1AFL<br>RS1BFL<br>RS1DFL<br>RS1GFL | I <sub>F</sub> =0.5A ,I <sub>R</sub> =1.0A<br><br>I <sub>RR</sub> =0.25A | t <sub>rr</sub> | -    | 150  | ns   |
|                                                                 | RS1JFL<br>RS1KFL<br>RS1MFL           |                                                                          | t <sub>rr</sub> | -    | 250  | ns   |

**Notes:**

1. Pulse test with  $PW = 0.3\text{ ms}$
2. Pulse test with  $PW = 30\text{ ms}$

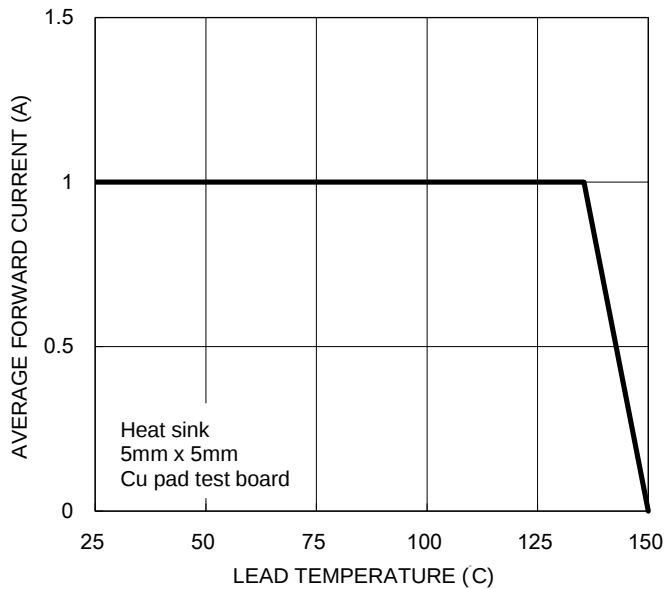
**ORDERING INFORMATION**

| ORDERING CODE | PACKAGE   | PACKING                 |
|---------------|-----------|-------------------------|
| RS1AFL RVG    | SOD-123FL | 3,000 / 7" Plastic reel |
| RS1BFL RVG    | SOD-123FL | 3,000 / 7" Plastic reel |
| RS1DFL RVG    | SOD-123FL | 3,000 / 7" Plastic reel |
| RS1GFL RVG    | SOD-123FL | 3,000 / 7" Plastic reel |
| RS1JFL RVG    | SOD-123FL | 3,000 / 7" Plastic reel |
| RS1KFL RVG    | SOD-123FL | 3,000 / 7" Plastic reel |
| RS1MFL RVG    | SOD-123FL | 3,000 / 7" Plastic reel |

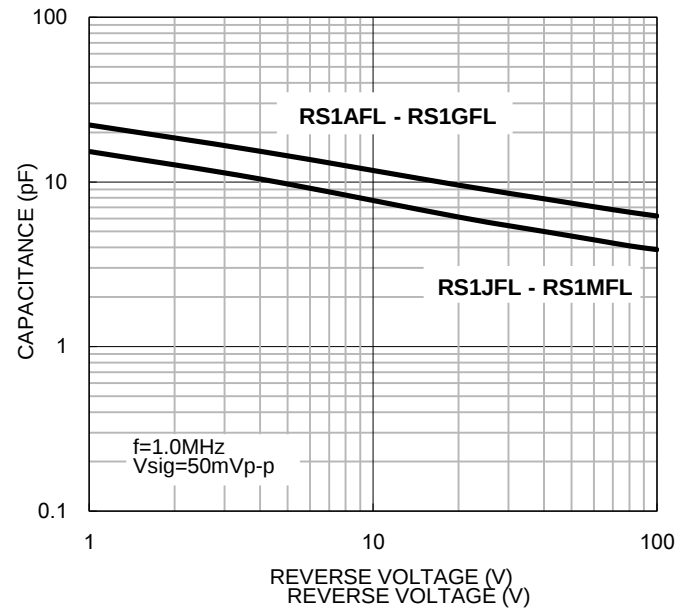
## CHARACTERISTICS CURVES

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

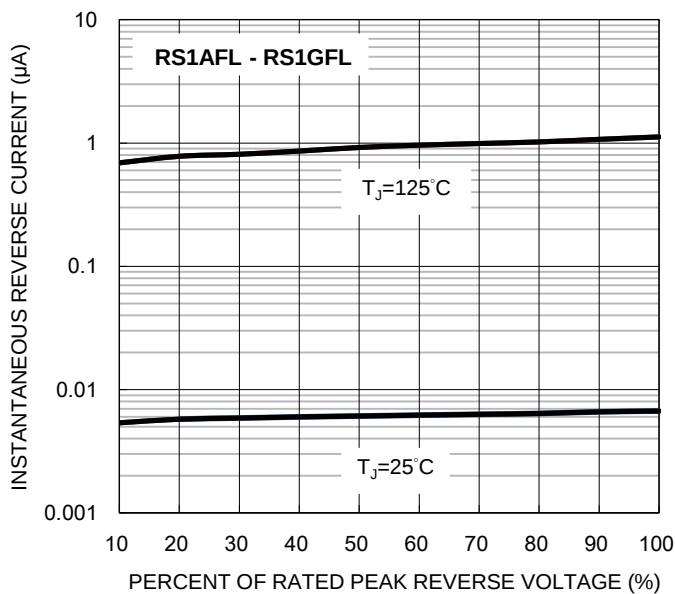
**Fig.1 Forward Current Derating Curve**



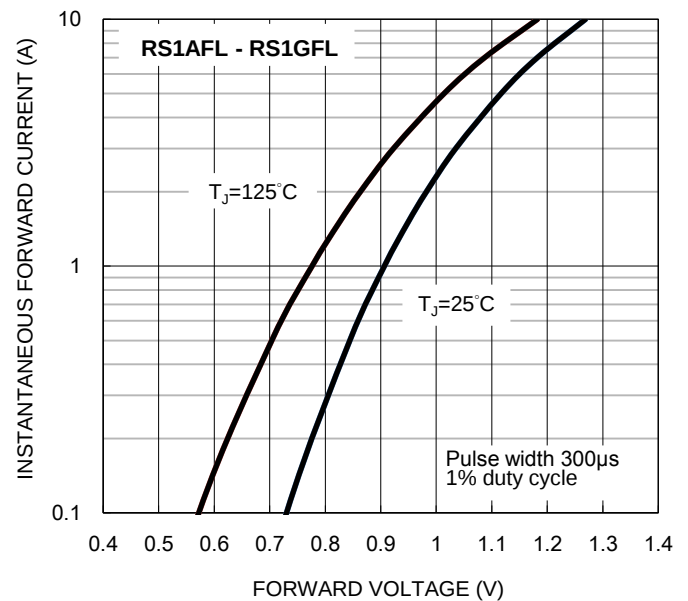
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



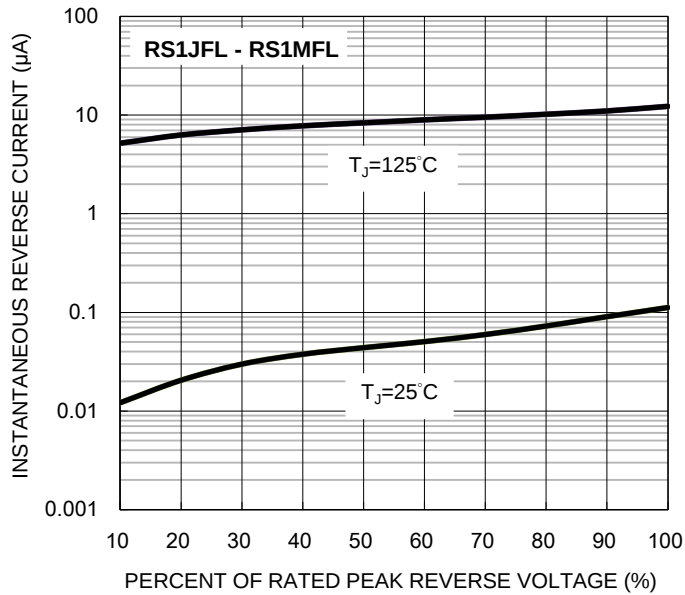
**Fig.4 Typical Forward Characteristics**



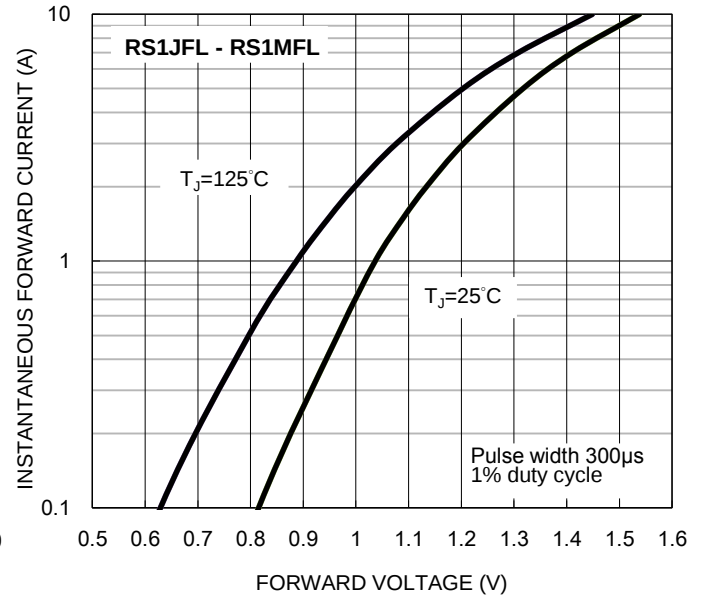
## CHARACTERISTICS CURVES

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

**Fig.5 Typical Reverse Characteristics**

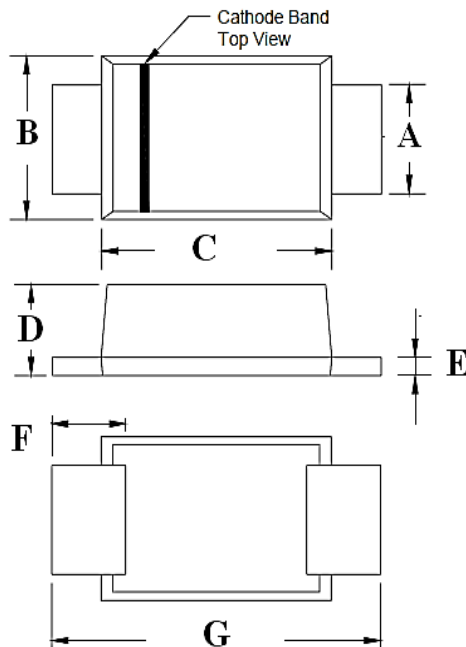


**Fig.6 Typical Forward Characteristics**



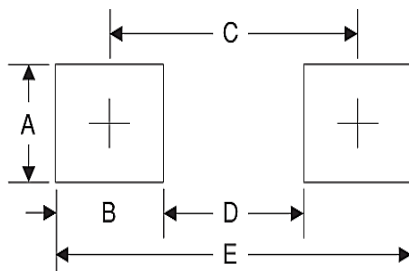
## PACKAGE OUTLINE DIMENSIONS

SOD-123FL



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 0.80      | 1.15 | 0.031       | 0.045 |
| B    | 1.70      | 2.10 | 0.067       | 0.083 |
| C    | 2.60      | 3.10 | 0.102       | 0.122 |
| D    | 0.88      | 1.35 | 0.035       | 0.053 |
| E    | 0.10      | 0.30 | 0.004       | 0.012 |
| F    | 0.30      | 0.90 | 0.012       | 0.035 |
| G    | 3.45      | 3.95 | 0.136       | 0.156 |

## SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.4       | 0.055       |
| B      | 1.2       | 0.047       |
| C      | 3.1       | 0.122       |
| D      | 1.9       | 0.075       |
| E      | 4.3       | 0.169       |

## MARKING DIAGRAM



P/N = Marking Code  
YW = Date Code  
F = Factory Code

## Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Taiwan Semiconductor:](#)

[RS1MFL RVG](#) [RS1GFL RVG](#) [RS1JFL RVG](#) [RS1KFL RVG](#) [RS1AFL RVG](#) [RS1BFL RVG](#) [RS1DFL RVG](#) [RS1DFL](#)  
[RS1GFL](#) [RS1JFL](#) [RS1KFL](#) [RS1MFL](#)