

## 1.5A, 200V - 1000V Surface Mount Rectifiers

### FEATURES

- Ideal for automated placement
- Compact package size
- High surge current capability
- Low power loss, high efficiency
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition

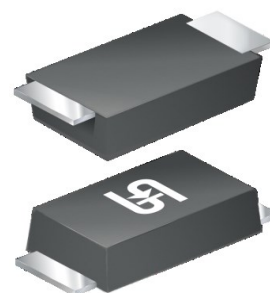
### APPLICATIONS

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

### MECHANICAL DATA

- Case: SOD-123W
- Molding compound meets UL 94V-0 flammability rating
- Moisture sensitivity level: level 1, per J-STD-020
- Part no. with suffix "H" means AEC-Q101 qualified
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 19mg (approximately)

| KEY PARAMETERS |            |      |
|----------------|------------|------|
| PARAMETER      | VALUE      | UNIT |
| $I_{F(AV)}$    | 1.5        | A    |
| $V_{RRM}$      | 200 - 1000 | V    |
| $I_{FSM}$      | 50         | A    |
| $T_{J\ MAX}$   | 175        | °C   |
| Package        | SOD-123W   |      |
| Configuration  | Single die |      |



**SOD-123W**

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

| PARAMETER                                                                                     | SYMBOL       | S15<br>DLW  | S15<br>GLW | S15<br>JLW | S15<br>KLW | S15<br>MLW | UNIT |
|-----------------------------------------------------------------------------------------------|--------------|-------------|------------|------------|------------|------------|------|
| Marking code on the device                                                                    |              | 15<br>DLW   | 15<br>GLW  | 15<br>JLW  | 15<br>KLW  | 15<br>MLW  |      |
| Repetitive peak reverse voltage                                                               | $V_{RRM}$    | 200         | 400        | 600        | 800        | 1000       | V    |
| Reverse voltage, total rms value                                                              | $V_{R(RMS)}$ | 140         | 280        | 420        | 560        | 700        | V    |
| Maximum DC blocking voltage                                                                   | $V_{DC}$     | 200         | 400        | 600        | 800        | 1000       | V    |
| Forward current                                                                               | $I_{F(AV)}$  | 1.5         |            |            |            |            | A    |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$    | 50          |            |            |            |            | A    |
| Junction temperature                                                                          | $T_J$        | -55 to +175 |            |            |            |            | °C   |
| Storage temperature                                                                           | $T_{STG}$    | -55 to +175 |            |            |            |            | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                              | SYMBOL          | LIMIT | UNIT |
|----------------------------------------|-----------------|-------|------|
| Junction-to-lead thermal resistance    | $R_{\theta JL}$ | 29    | °C/W |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 85    | °C/W |
| Junction-to-case thermal resistance    | $R_{\theta JC}$ | 31    | °C/W |

**Thermal Performance Note:** Units mounted on recommended PCB (5mm\*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>               | $I_F = 1\text{A}, T_J = 25^\circ\text{C}$    | $V_F$  | 0.94 | 1.05 | V             |
|                                                        | $I_F = 1.5\text{A}, T_J = 25^\circ\text{C}$  |        | 0.98 | 1.1  | V             |
|                                                        | $I_F = 1\text{A}, T_J = 125^\circ\text{C}$   |        | 0.81 | 1    | V             |
|                                                        | $I_F = 1.5\text{A}, T_J = 125^\circ\text{C}$ |        | 0.87 | 1.05 | V             |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup> | $T_J = 25^\circ\text{C}$                     | $I_R$  | 0.06 | 1    | $\mu\text{A}$ |
|                                                        | $T_J = 125^\circ\text{C}$                    |        | 6.06 | 100  | $\mu\text{A}$ |
| Junction Capacitance                                   | 1 MHz, $V_R = 4.0\text{V}$                   | $C_J$  | 10   | -    | pF            |

**Notes:**

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

**ORDERING INFORMATION**

| PART NO.             | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | PACKAGE  | PACKING           |
|----------------------|-----------------|--------------|---------------------|----------|-------------------|
| S15xLW<br>(Note 1,2) | H               | RV           | G                   | SOD-123W | 3,000 / 7" Reel   |
|                      |                 | RQ           |                     | SOD-123W | 10,000 / 13" Reel |

**Notes:**

1. "x" defines voltage from 200V (S15DLW) to 1000V (S15MLW)
2. Whole series with green compound (halogen-free)

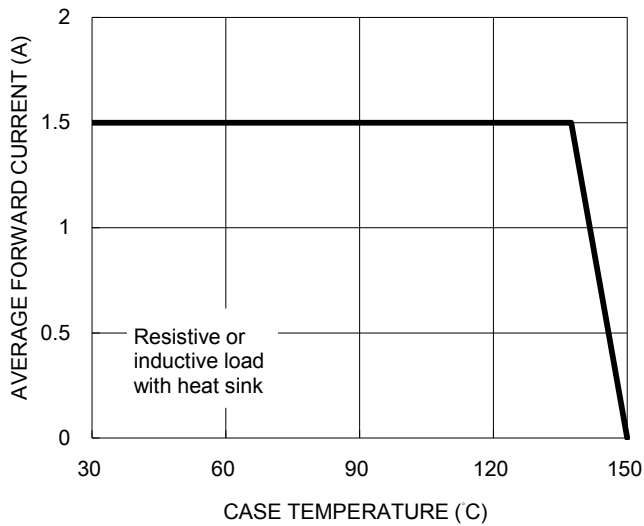
**EXAMPLE P/N**

| EXAMPLE P/N | PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION                          |
|-------------|----------|-----------------|--------------|---------------------|--------------------------------------|
| S15MLWHRVG  | S15MLW   | H               | RV           | G                   | AEC-Q101 qualified<br>Green compound |

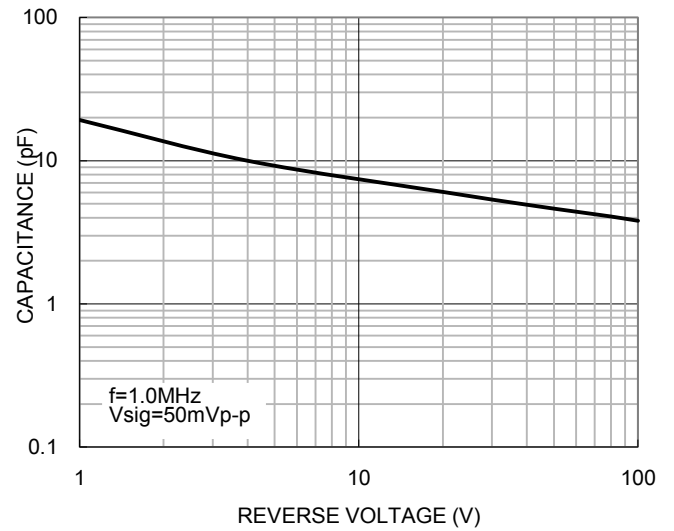
## CHARACTERISTICS CURVES

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

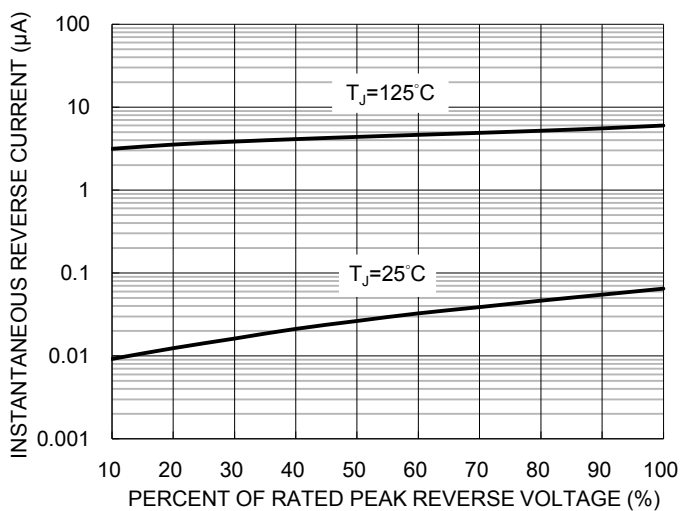
**Fig.1 Forward Current Derating Curve**



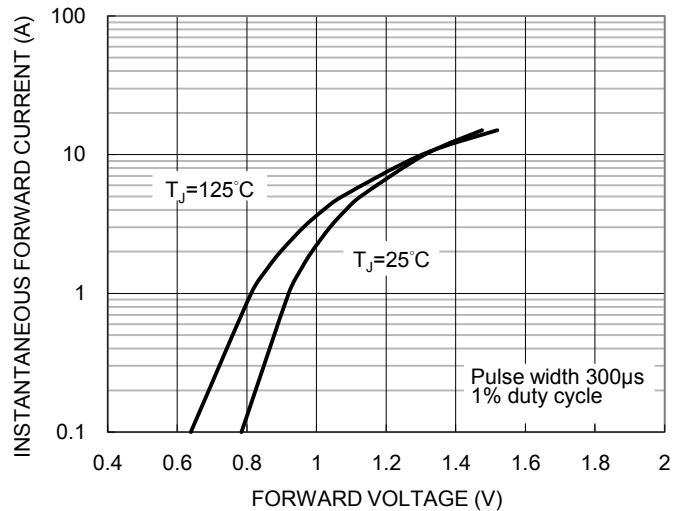
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**

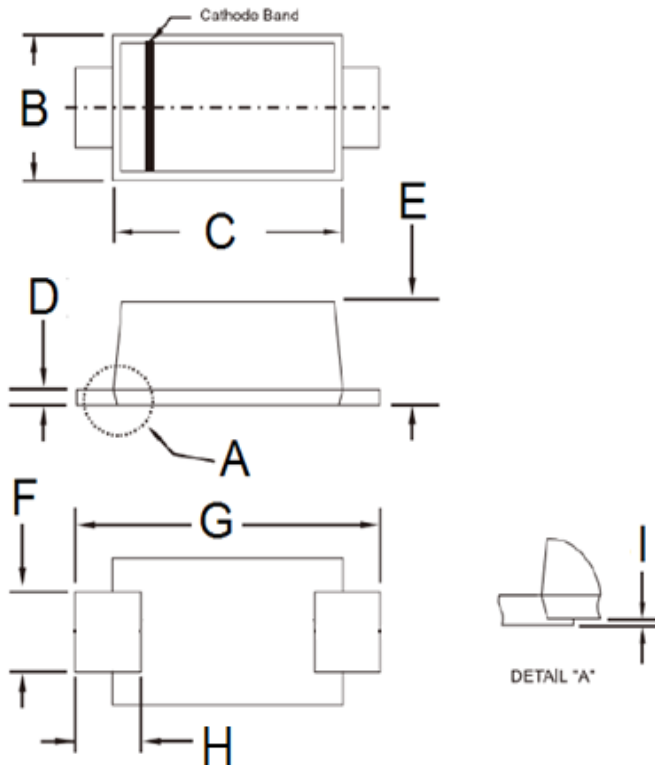


**Fig.4 Typical Forward Characteristics**



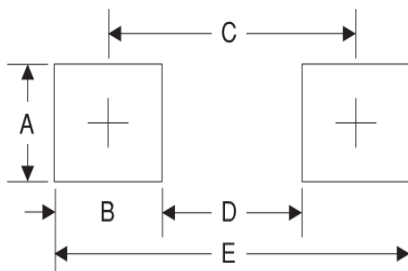
## PACKAGE OUTLINE DIMENSIONS

### SOD-123W



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| B    | 1.70      | 1.90 | 0.067       | 0.075 |
| C    | 2.60      | 2.90 | 0.102       | 0.114 |
| D    | 0.10      | 0.22 | 0.004       | 0.009 |
| E    | 0.90      | 1.02 | 0.035       | 0.040 |
| F    | 0.90      | 1.05 | 0.035       | 0.041 |
| G    | 3.60      | 3.80 | 0.142       | 0.150 |
| H    | 0.50      | 0.85 | 0.020       | 0.033 |
| I    | 0.00      | 0.10 | 0.000       | 0.004 |

## 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  
G = Green Compound  
YW = Date Code  
F = Factory Code

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