

## 1A, 200V - 600V Super Fast Surface Mount Rectifier

### FEATURES

- AEC-Q101 qualified
- Glass passivated chip junction
- Ideal for automated placement
- Low profile package
- Low power loss, high efficiency
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- DC to DC converter
- Automotive application
- Car lighting
- Snubber
- Freewheeling application

### MECHANICAL DATA

- Case: SOD-123W
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.016g (approximately)

| KEY PARAMETERS |            |      |
|----------------|------------|------|
| PARAMETER      | VALUE      | UNIT |
| $I_F$          | 1          | A    |
| $V_{RRM}$      | 200 - 600  | V    |
| $I_{FSM}$      | 30         | A    |
| $T_{JMAX}$     | 175        | °C   |
| Package        | SOD-123W   |      |
| Configuration  | Single die |      |


**HALOGEN  
FREE**

**SOD-123W**


| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)        |              |              |         |         |      |
|--|--------------|--------------|---------|---------|------|
| PARAMETER  | SYMBOL       | ES1DLWH      | ES1GLWH | ES1JLWH | UNIT |
| Marking code on the device   |              | EDLW         | EGLW    | EJLW    |      |
| Repetitive peak reverse voltage  | $V_{RRM}$    | 200          | 400     | 600     | V    |
| Reverse voltage, total rms value   | $V_{R(RMS)}$ | 140          | 280     | 420     | V    |
| Forward current  | $I_F$        | 1            |         |         | A    |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load | $I_{FSM}$    | 30           |         |         | A    |
| Junction temperature   | $T_J$        | - 55 to +175 |         |         | °C   |
| Storage temperature  | $T_{STG}$    | - 55 to +175 |         |         | °C   |

| <b>THERMAL PERFORMANCE</b>             |                 |            |             |
|--|-----------------|------------|-------------|
| <b>PARAMETER</b>                       | <b>SYMBOL</b>   | <b>TYP</b> | <b>UNIT</b> |
| Junction-to-lead thermal resistance    | $R_{\theta JL}$ | 25         | °C/W        |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 80         | °C/W        |

| <b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |         |   |               |            |            |               |
|---|---------|---|---------------|------------|------------|---------------|
| <b>PARAMETER</b>  |         | <b>CONDITIONS</b>   | <b>SYMBOL</b> | <b>TYP</b> | <b>MAX</b> | <b>UNIT</b>   |
| Forward voltage <sup>(1)</sup>  | ES1DLWH | $I_F = 1\text{A}, T_J = 25^\circ\text{C}$                         | $V_F$         | -          | 0.95       | V             |
|   | ES1GLWH |   |               | -          | 1.30       | V             |
|   | ES1JLWH |   |               | -          | 1.70       | V             |
| Reverse current @ rated $V_R$ <sup>(2)</sup>  |         | $T_J = 25^\circ\text{C}$  | $I_R$         | -          | 5          | $\mu\text{A}$ |
|   |         | $T_J = 125^\circ\text{C}$   |               | -          | 100        | $\mu\text{A}$ |
| Junction capacitance  |         | 1MHz, $V_R = 4.0\text{V}$   | $C_J$         | 20         | -          | pF            |
| Reverse recovery time   |         | $I_F = 0.5\text{A}, I_R = 1.0\text{A}$<br>$I_{rr} = 0.25\text{A}$ | $t_{rr}$      | -          | 35         | ns            |

**Notes:**

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

| <b>ORDERING INFORMATION</b>         |                |                      |
|-------------------------------------|----------------|----------------------|
| <b>ORDERING CODE</b> <sup>(1)</sup> | <b>PACKAGE</b> | <b>PACKING</b>       |
| ES1xLWH                             | SOD-123W       | 10,000 / Tape & Reel |

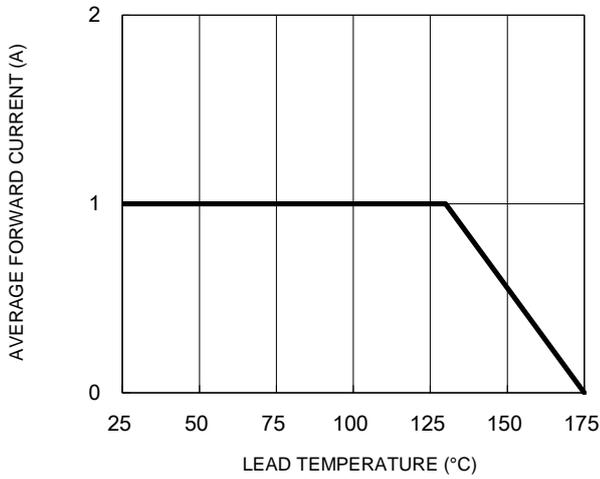
**Notes:**

1. "x" defines voltage from 200V(ES1DLWH) to 600V(ES1JLWH)

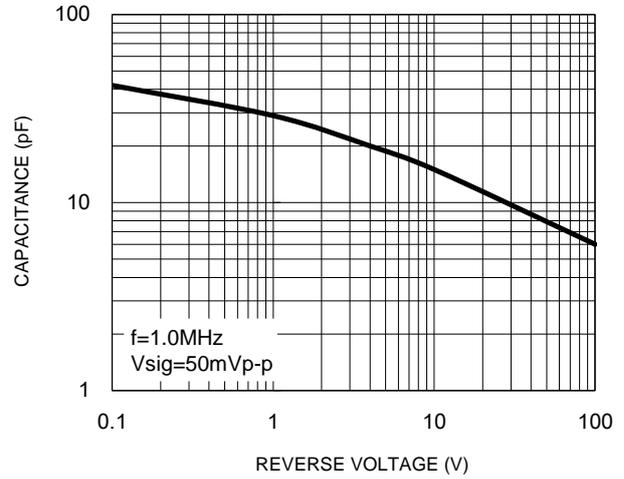
**CHARACTERISTICS CURVES**

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

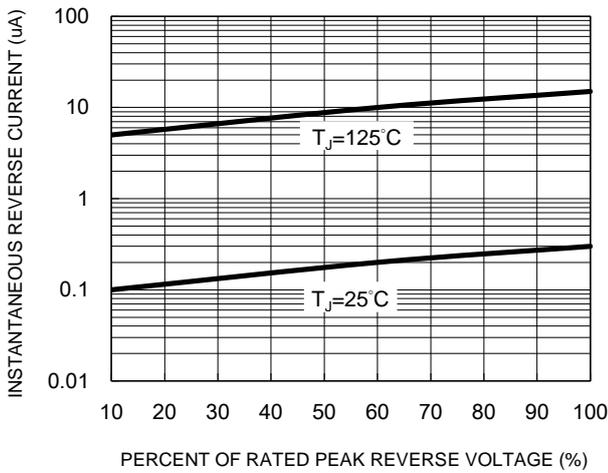
**Fig.1 Forward Current Derating Curve**



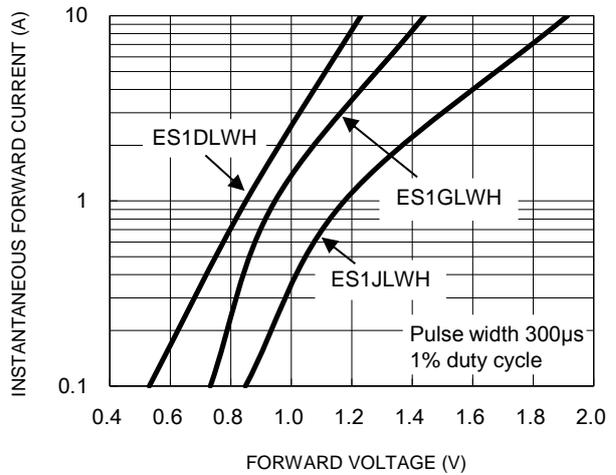
**Fig.2 Typical Junction Capacitance**



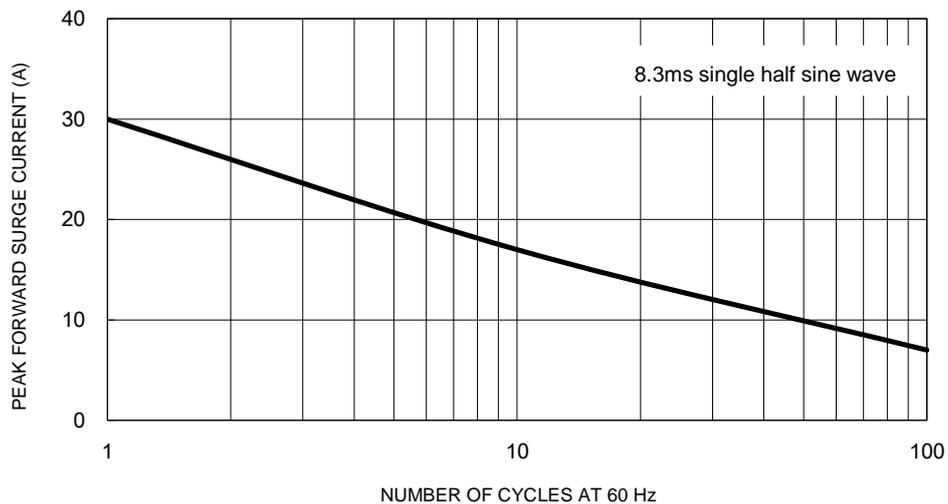
**Fig.3 Typical Reverse Characteristics**



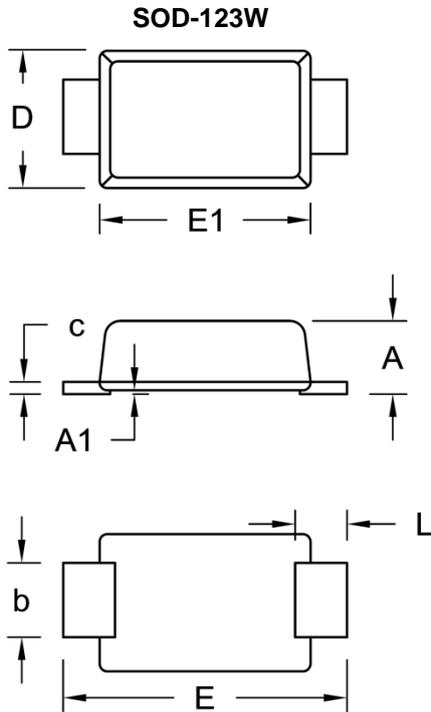
**Fig.4 Typical Forward Characteristics**



**Fig.5 Maximum Non-Repetitive Forward Surge Current**

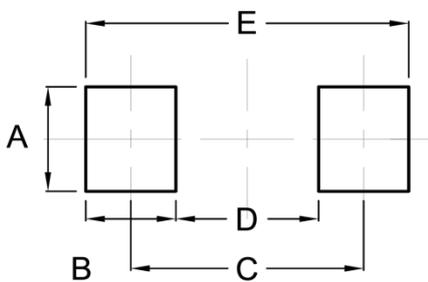


**PACKAGE OUTLINE DIMENSIONS**



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min.      | Max. | Min.        | Max.  |
| A    | 0.90      | 1.02 | 0.035       | 0.040 |
| A1   | 0.00      | 0.10 | 0.000       | 0.004 |
| b    | 0.90      | 1.05 | 0.035       | 0.041 |
| c    | 0.10      | 0.22 | 0.004       | 0.009 |
| D    | 1.70      | 1.90 | 0.067       | 0.075 |
| E    | 3.60      | 3.80 | 0.142       | 0.150 |
| E1   | 2.60      | 2.90 | 0.102       | 0.114 |
| L    | 0.50      | 0.85 | 0.020       | 0.033 |

**SUGGESTED PAD LAYOUT**



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.40      | 0.055       |
| B      | 1.20      | 0.047       |
| C      | 3.10      | 0.122       |
| D      | 1.90      | 0.075       |
| E      | 4.30      | 0.169       |

**MARKING DIAGRAM**



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

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