

## Surface-Mount Standard Rectifier

### eSMP® Series



Top View

Bottom View

### SlimSAW (DO-221AD)

Cathode  Anode

### LINKS TO ADDITIONAL RESOURCES



3D Models

| PRIMARY CHARACTERISTICS                |                    |
|----------------------------------------|--------------------|
| $I_{F(AV)}$                            | 3 A                |
| $V_{RRM}$                              | 200 V to 600 V     |
| $I_{FSM}$                              | 40 A               |
| $V_F$ at $I_F = 3$ A ( $T_J = 125$ °C) | 0.86 V             |
| $T_J$ max.                             | 175 °C             |
| Package                                | SlimSAW (DO-221AD) |
| Circuit configuration                  | Single             |

### FEATURES

- Low-profile package
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHM3
- Compatible to SOD-128 package case outline
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### TYPICAL APPLICATIONS

General purpose, power line polarity protection and rail-to-rail protection in consumer, industrial, and automotive applications.

### MECHANICAL DATA

**Case:** SlimSAW (DO-221AD)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 and HM3 suffix meet JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)                   |                                   |             |         |         |      |
|-----------------------------------------------------------------------------------|-----------------------------------|-------------|---------|---------|------|
| PARAMETER                                                                         | SYMBOL                            | SE8D30D     | SE8D30G | SE8D30J | UNIT |
| Device marking code                                                               |                                   | SD3D        | SD3G    | SD3J    |      |
| Maximum repetitive peak reverse voltage                                           | V <sub>RRM</sub>                  | 200         | 400     | 600     | V    |
| Maximum average forward rectified current (fig.1)                                 | I <sub>F(AV)</sub> <sup>(1)</sup> | 3           |         |         | A    |
|                                                                                   | I <sub>F(AV)</sub> <sup>(2)</sup> | 1.5         |         |         |      |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I <sub>FSM</sub>                  | 40          |         |         | A    |
| Operating junction temperature range                                              | T <sub>J</sub> <sup>(3)</sup>     | -55 to +175 |         |         | °C   |
| Storage temperature range                                                         | T <sub>STG</sub>                  | -55 to +175 |         |         |      |

### Notes

(1) Mounted on 30 mm x 30 mm pad areas aluminum PCB

(2) Free air, mounted on recommended copper pad area

(3) The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$



| ELECTRICAL CHARACTERISTICS (T <sub>J</sub> = 25 °C unless otherwise noted) |                                                                         |                         |                               |      |      |      |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS                                                         |                         | SYMBOL                        | TYP. | MAX. | UNIT |
| Instantaneous forward voltage                                              | I <sub>F</sub> = 1.5 A                                                  | T <sub>J</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.91 | -    | V    |
|                                                                            | I <sub>F</sub> = 3 A                                                    |                         |                               | 0.97 | 1.1  |      |
|                                                                            | I <sub>F</sub> = 1.5 A                                                  | T <sub>J</sub> = 125 °C |                               | 0.79 | -    |      |
|                                                                            | I <sub>F</sub> = 3 A                                                    |                         |                               | 0.86 | 0.98 |      |
| Reverse current                                                            | Rated V <sub>R</sub>                                                    | T <sub>J</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | -    | 10   | μA   |
|                                                                            |                                                                         | T <sub>J</sub> = 125 °C |                               | 13   | 100  |      |
| Typical reverse recovery time                                              | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 01 A, I <sub>rr</sub> = 0.25 A |                         | t <sub>rr</sub>               | 1500 | -    | ns   |
| Typical junction capacitance                                               | 4.0 V, 1 MHz                                                            |                         | C <sub>J</sub>                | 19   | -    | pF   |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: pulse width  $\leq 5\text{ ms}$ 

| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise specified) |                          |      |      |                      |
|------------------------------------------------------------------------------------------|--------------------------|------|------|----------------------|
| PARAMETER                                                                                | SYMBOL                   | TYP. | MAX. | UNIT                 |
| Typical thermal resistance                                                               | $R_{\theta JA}^{(1)(2)}$ | 120  | 150  | $^{\circ}\text{C/W}$ |
|                                                                                          | $R_{\theta JM}^{(3)}$    | 12   | 15   |                      |

**Notes**(1) The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ 

(2) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz., standard footprint

(3) Thermal resistance junction-to-mount to follow JEDEC 51-14 transient dual interface test method (TDIM)

| ORDERING INFORMATION (Example) |                 |                        |               |                                    |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| SE8D30J-M3/H                   | 0.033           | H                      | 3500          | 7" diameter plastic tape and reel  |
| SE8D30J-M3/I                   | 0.033           | I                      | 14 000        | 13" diameter plastic tape and reel |
| SE8D30JHM3/H <sup>(1)</sup>    | 0.033           | H                      | 3500          | 7" diameter plastic tape and reel  |
| SE8D30JHM3/I <sup>(1)</sup>    | 0.033           | I                      | 14 000        | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified



## RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

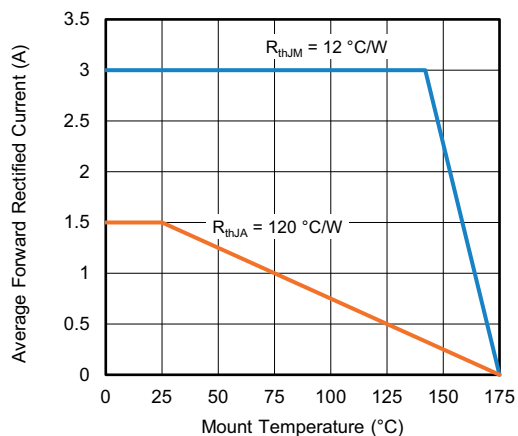


Fig. 1 - Maximum Forward Current Derating Curve

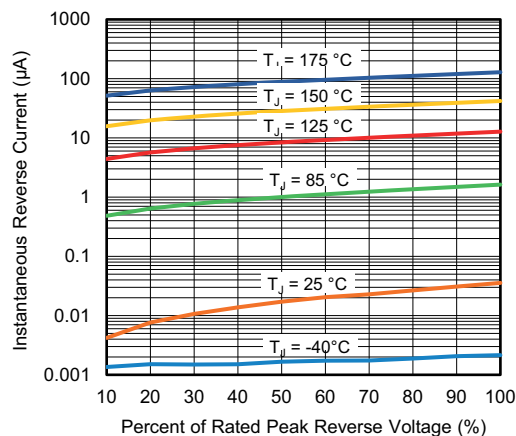


Fig. 4 - Typical Reverse Leakage Characteristics

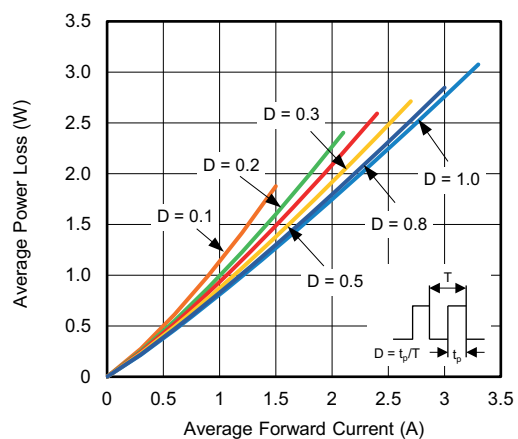


Fig. 2 - Forward Power Loss Characteristics

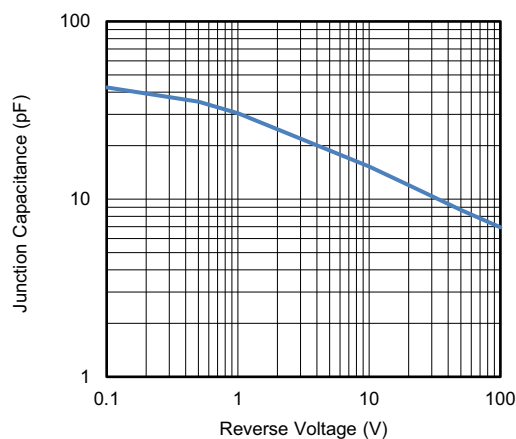


Fig. 5 - Typical Junction Capacitance

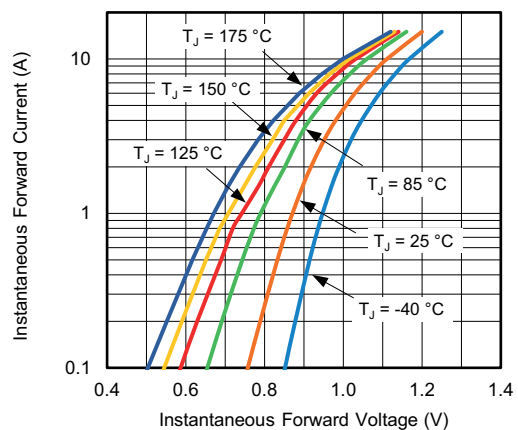


Fig. 3 - Typical Instantaneous Forward Characteristics

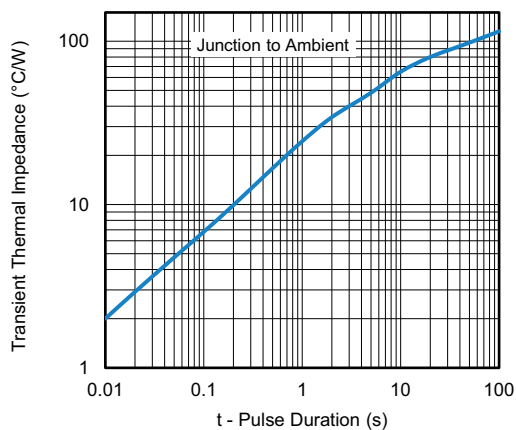
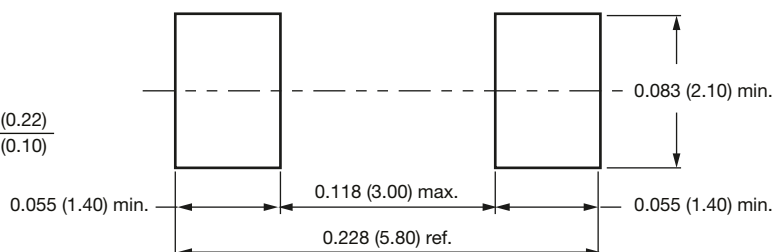
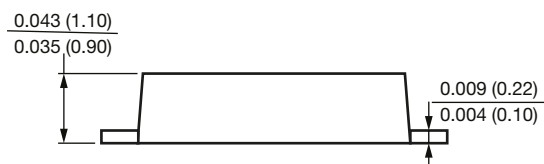
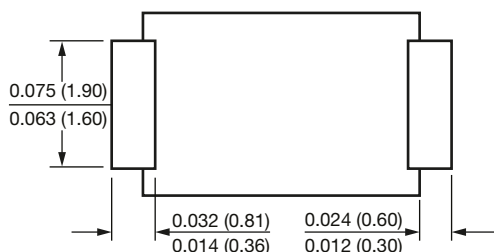
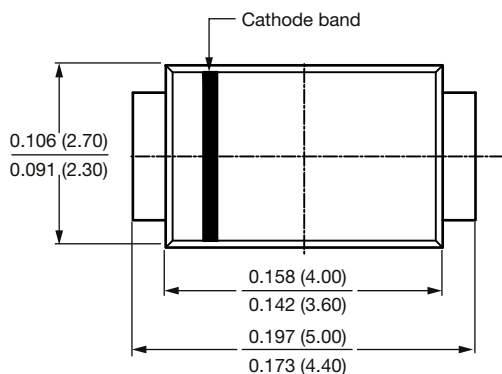


Fig. 6 - Typical Transient Thermal Impedance



**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**SlimSMAW (DO-221AD)**



**Mounting pad layout**



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