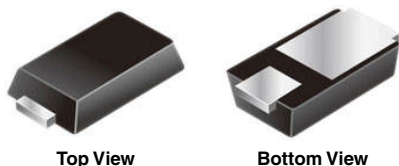


## Surface Mount Schottky Barrier Rectifiers

### eSMP® Series



Top View

Bottom View

### MicroSMP (DO-219AD)

Anode  Cathode

### DESIGN SUPPORT TOOLS

[click logo to get started](#)


| PRIMARY CHARACTERISTICS |                     |
|-------------------------|---------------------|
| $I_{F(AV)}$             | 1.0 A               |
| $V_{RRM}$               | 20 V, 30 V          |
| $I_{FSM}$               | 25 A                |
| $V_F$ at $I_F = 1.0$ A  | 0.35 V              |
| $T_J$ max.              | 150 °C              |
| Package                 | MicroSMP (DO-219AD) |
| Circuit configuration   | Single              |

### FEATURES

- Very low profile - typical height of 0.65 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHM3
- 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

For use in low voltage high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

### MECHANICAL DATA

**Case:** MicroSMP (DO-219AD)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

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

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

("\_X" denotes revision code e.g. A, B,.....)

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

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes the cathode end

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                            |                |             |         |      |
|------------------------------------------------------------------------------------|----------------|-------------|---------|------|
| PARAMETER                                                                          | SYMBOL         | MSS1P2L     | MSS1P3L | UNIT |
| Device marking code                                                                |                | 12L         | 13L     |      |
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$      | 20          | 30      | V    |
| Maximum average forward rectified current (fig. 1)                                 | $I_{F(AV)}$    | 1.0         |         | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 25          |         | A    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | -55 to +150 |         | °C   |

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

| PARAMETER                             | TEST CONDITIONS      | SYMBOL      | TYP. | MAX. | UNIT          |
|---------------------------------------|----------------------|-------------|------|------|---------------|
| Maximum instantaneous forward voltage | $I_F = 0.5\text{ A}$ | $V_F^{(1)}$ | 0.39 | -    | V             |
|                                       | $I_F = 1.0\text{ A}$ |             | 0.44 | 0.50 |               |
|                                       | $I_F = 0.5\text{ A}$ |             | 0.28 | -    |               |
|                                       | $I_F = 1.0\text{ A}$ |             | 0.35 | 0.40 |               |
| Maximum reverse current               | Rated $V_R$          | $I_R^{(2)}$ | 15   | 250  | $\mu\text{A}$ |
|                                       |                      |             | 6.0  | 20   | mA            |
| Typical junction capacitance          | 4.0 V, 1 MHz         | $C_J$       | 65   | -    | pF            |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                  | SYMBOL                | MSS1P2L | MSS1P3L | UNIT                 |
|----------------------------|-----------------------|---------|---------|----------------------|
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 125     |         | $^{\circ}\text{C/W}$ |
|                            | $R_{\theta JL}^{(1)}$ | 30      |         |                      |
|                            | $R_{\theta JC}^{(1)}$ | 40      |         |                      |

**Note**(1) Thermal resistance from junction to ambient and junction to lead mounted on PCB with 6.0 mm x 6.0 mm copper pad areas  $R_{\theta JL}$  is measured at the terminal of cathode band.  $R_{\theta JC}$  is measured at the top center of the body**ORDERING INFORMATION** (Example)

| PREFERRED P/N                 | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                     |
|-------------------------------|-----------------|------------------------|---------------|-----------------------------------|
| MSS1P2L-M3/89A                | 0.006           | 89A                    | 4500          | 7" diameter plastic tape and reel |
| MSS1P2LHM3/89A <sup>(1)</sup> | 0.006           | 89A                    | 4500          | 7" diameter plastic tape and reel |
| MSS1P2LHM3_A/H <sup>(1)</sup> | 0.006           | H                      | 4500          | 7" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

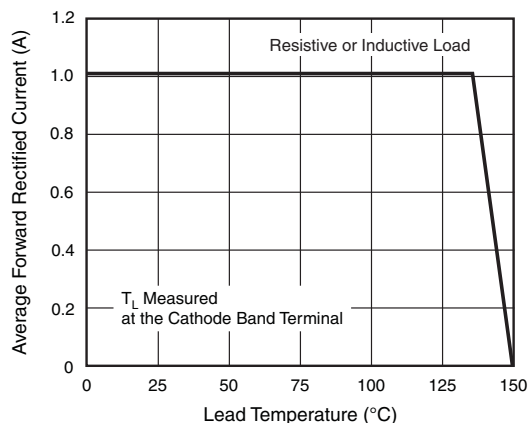
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

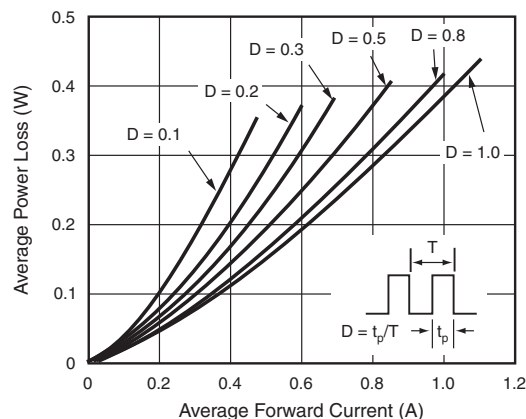


Fig. 2 - Forward Power Loss Characteristics

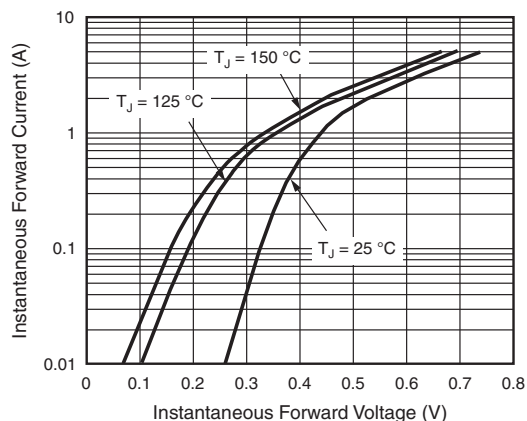


Fig. 3 - Typical Instantaneous Forward Characteristics

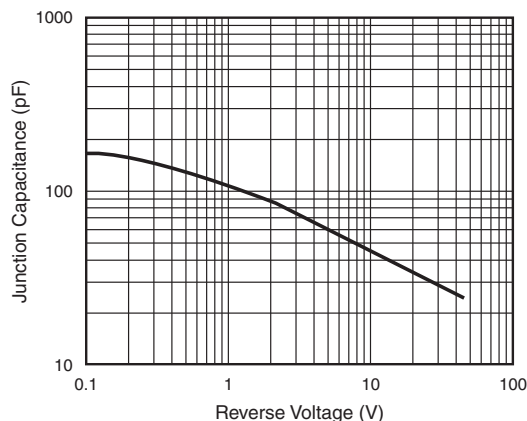


Fig. 5 - Typical Junction Capacitance

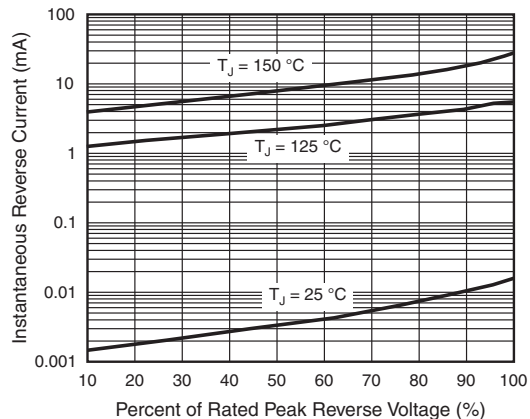


Fig. 4 - Typical Reverse Characteristics

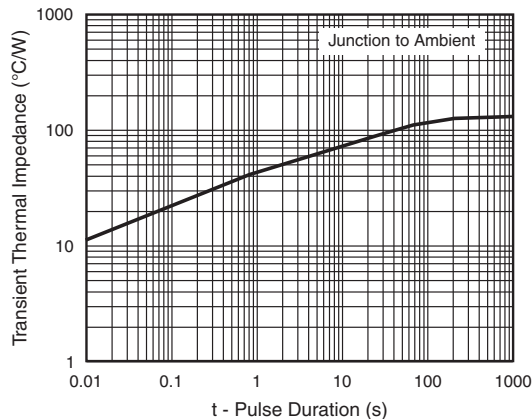
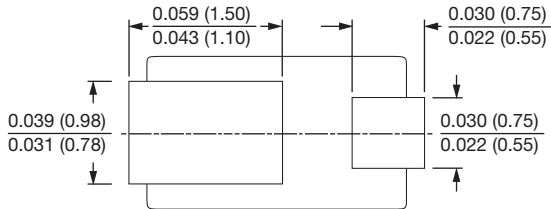
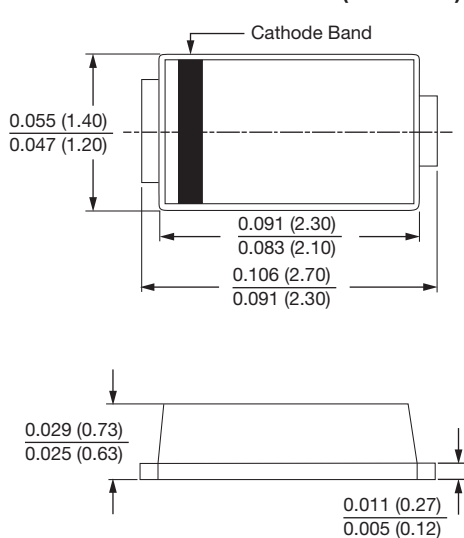


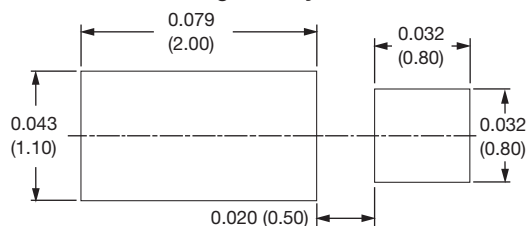
Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### MicroSMP (DO-219AD)



### Mounting Pad Layout





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