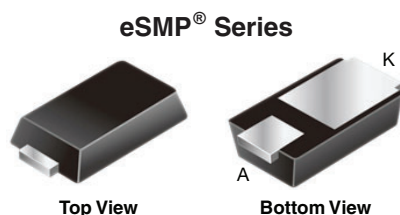


# Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier



**MicroSMP (DO-219AD)**

Anode  Cathode

## FEATURES

- Very low profile - typical height of 0.65 mm
- Ideal for automated placement
- Trench MOS Schottky technology
- Low forward voltage drop
- Low power loss, 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**

## LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS       |                     |
|-------------------------------|---------------------|
| $I_{F(AV)}$                   | 2 A                 |
| $V_{RRM}$                     | 120 V               |
| $I_{FSM}$                     | 30 A                |
| $V_F$ at $I_F = 2$ A (125 °C) | 0.65 V              |
| $T_J$ max.                    | 175 °C              |
| Package                       | MicroSMP (DO-219AD) |
| Circuit configuration         | Single              |

## TYPICAL APPLICATIONS

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

## MECHANICAL DATA

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

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, and 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 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               | V2PM12      | UNIT |
| Device marking code                                                               |                      | 2MS         |      |
| Maximum repetitive peak reverse voltage                                           | $V_{RRM}$            | 120         | V    |
| Maximum DC forward current                                                        | $I_{F(AV)}^{(1)}$    | 1.4         | A    |
|                                                                                   | $I_{F(AV)}^{(2)}$    | 2           | A    |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$            | 30          | A    |
| Operating junction and storage temperature range                                  | $T_J^{(3)}, T_{STG}$ | -40 to +175 | °C   |

## Notes

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

(2) Mounted on 8.0 mm x 8.0 mm 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** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                     | TEST CONDITIONS                                          | SYMBOL      | TYP.  | MAX. | UNIT |
|-------------------------------|----------------------------------------------------------|-------------|-------|------|------|
| Instantaneous forward voltage | $I_F = 1.0\text{ A}$ $T_A = 25\text{ }^{\circ}\text{C}$  | $V_F^{(1)}$ | 0.70  | -    | V    |
|                               | $I_F = 2.0\text{ A}$ $T_A = 25\text{ }^{\circ}\text{C}$  |             | 0.90  | 0.98 |      |
|                               | $I_F = 1.0\text{ A}$ $T_A = 125\text{ }^{\circ}\text{C}$ |             | 0.57  | -    |      |
|                               | $I_F = 2.0\text{ A}$ $T_A = 125\text{ }^{\circ}\text{C}$ |             | 0.65  | 0.73 |      |
| Reverse current               | $V_R = 90\text{ V}$ $T_A = 25\text{ }^{\circ}\text{C}$   | $I_R^{(2)}$ | 0.001 | -    | mA   |
|                               | $V_R = 90\text{ V}$ $T_A = 125\text{ }^{\circ}\text{C}$  |             | 0.25  | -    |      |
|                               | $V_R = 120\text{ V}$ $T_A = 25\text{ }^{\circ}\text{C}$  |             | -     | 0.05 |      |
|                               | $V_R = 120\text{ V}$ $T_A = 125\text{ }^{\circ}\text{C}$ |             | 0.5   | 2    |      |
| Typical junction capacitance  | 4.0 V, 1 MHz                                             | $C_J$       | 140   | -    | 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 noted)

| PARAMETER                  | SYMBOL                   | V2PM12 | UNIT                 |
|----------------------------|--------------------------|--------|----------------------|
| Typical thermal resistance | $R_{\theta JA}^{(1)(2)}$ | 130    | $^{\circ}\text{C/W}$ |
|                            | $R_{\theta JM}^{(3)}$    | 20     |                      |

**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) Free air, mounted on FR4 PCB, 2 oz. standard footprint,  $R_{\theta JA}$  - junction to ambient

(3) Mounted on PCB with 8.0 mm x 8.0 mm copper pad areas,  $R_{\theta JM}$  - junction to mount

**ORDERING INFORMATION** (Example)

| PREFERRED P/N              | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                     |
|----------------------------|-----------------|------------------------|---------------|-----------------------------------|
| V2PM12-M3/H                | 0.006           | H                      | 4500          | 7" diameter plastic tape and reel |
| V2PM12HM3/H <sup>(1)</sup> | 0.006           | H                      | 4500          | 7" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

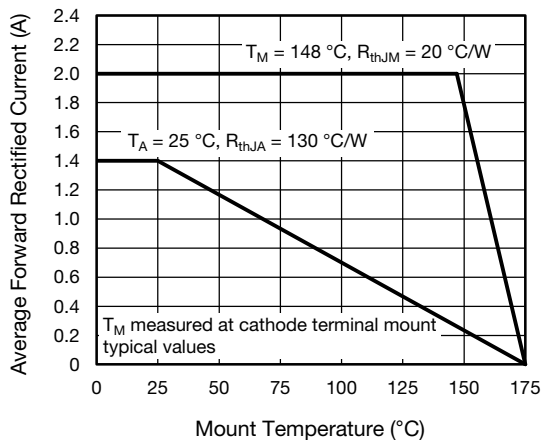
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

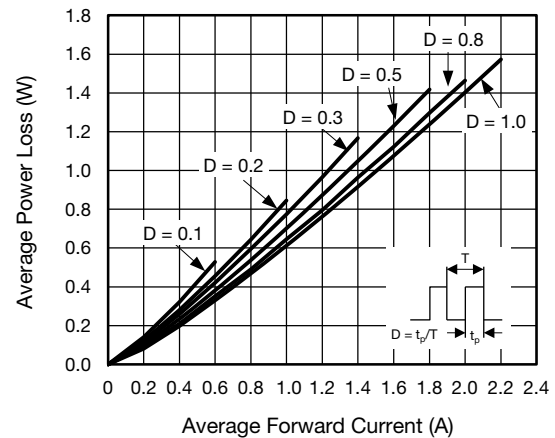


Fig. 2 - Average Power Loss Characteristics

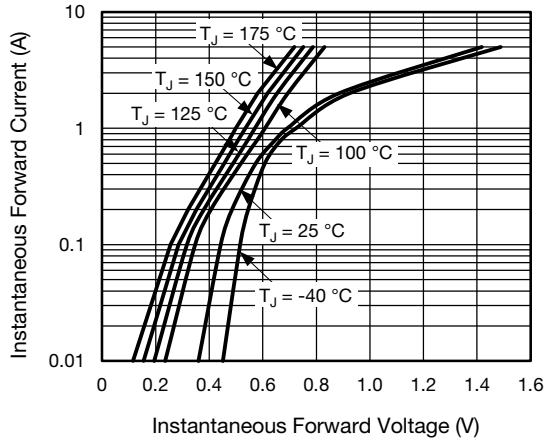


Fig. 3 - Typical Instantaneous Forward Characteristics

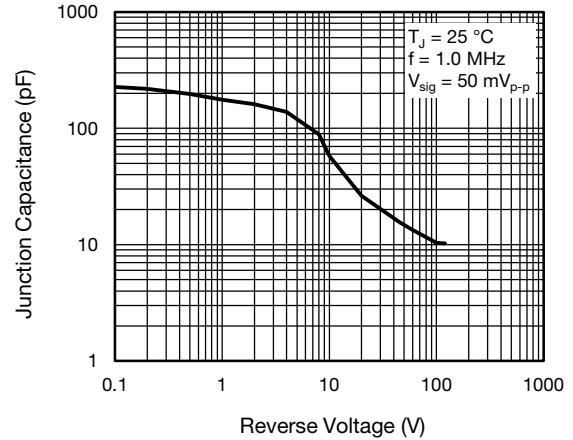


Fig. 5 - Typical Junction Capacitance

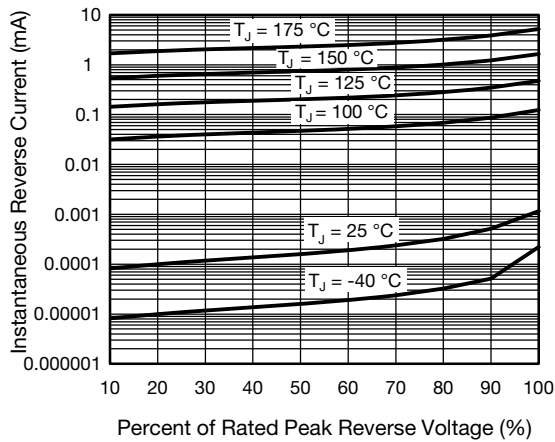


Fig. 4 - Typical Reverse Leakage Characteristics

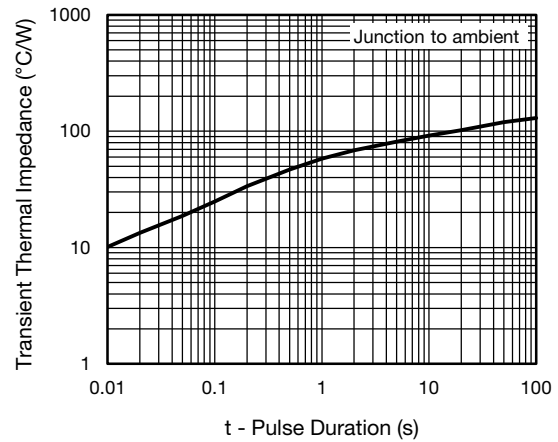
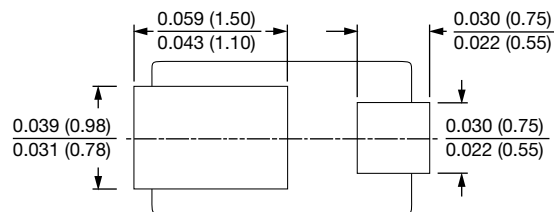
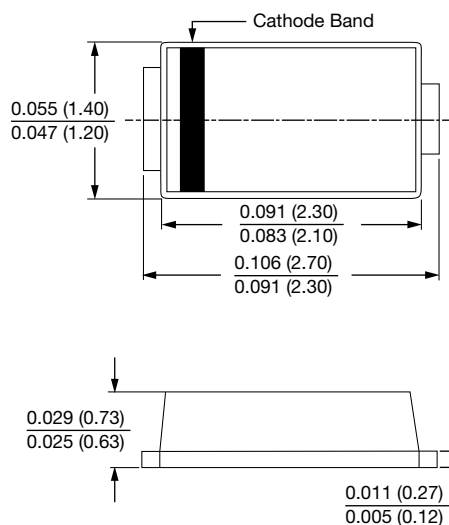


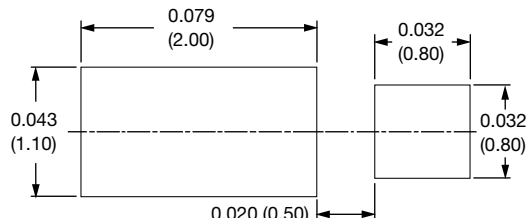
Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### MicroSMP (DO-219AD)



### Mounting Pad Layout





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