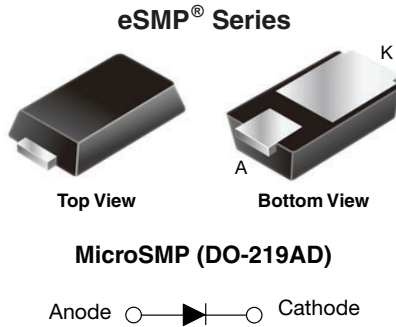


# Surface-Mount TMBS<sup>®</sup> (Trench MOS Barrier Schottky) Rectifier



## 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)

AUTOMOTIVE  
GRADE  
Available



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

## LINKS TO ADDITIONAL RESOURCES



## TYPICAL APPLICATIONS

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

## PRIMARY CHARACTERISTICS

|                                 |                     |
|---------------------------------|---------------------|
| $I_{F(AV)}$                     | 1.0 A               |
| $V_{RRM}$                       | 100 V               |
| $I_{FSM}$                       | 25 A                |
| $V_F$ at $I_F = 1.0$ A (125 °C) | 0.58 V              |
| $T_J$ max.                      | 175 °C              |
| Package                         | MicroSMP (DO-219AD) |
| Circuit configuration           | Single              |

## 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         | V1PM10      | UNIT |
|---|----------------|-------------|------|
| Device marking code   |                | 1MB         |      |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 100         | V    |
| Maximum DC forward current  | $I_{F(AV)}$    | 1.0         | A    |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 25          | A    |
| Operating junction and storage temperature range                                  | $T_J, T_{STG}$ | -40 to +175 | °C   |

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                      |                                   |             |      |      |               |
|--|----------------------|-----------------------------------|-------------|------|------|---------------|
| PARAMETER  | TEST CONDITIONS      |                                   | SYMBOL      | TYP. | MAX. | UNIT          |
| Instantaneous forward voltage  | $I_F = 0.5\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$  | $V_F^{(1)}$ | 0.58 | -    | V             |
|  | $I_F = 1.0\text{ A}$ |                                   |             | 0.69 | 0.77 |               |
|  | $I_F = 0.5\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ |             | 0.50 | -    |               |
|  | $I_F = 1.0\text{ A}$ |                                   |             | 0.58 | 0.66 |               |
| Reverse current  | $V_R = 70\text{ V}$  | $T_A = 25\text{ }^\circ\text{C}$  | $I_R^{(2)}$ | 1    | -    | $\mu\text{A}$ |
|  | $V_R = 100\text{ V}$ |                                   |             | -    | 50   |               |
|  | $V_R = 70\text{ V}$  | $T_A = 125\text{ }^\circ\text{C}$ |             | 0.2  | -    | mA            |
|  | $V_R = 100\text{ V}$ |                                   |             | 0.5  | 1.5  |               |
| Typical junction capacitance   | 4.0 V, 1 MHz         |                                   | $C_J$       | 100  | -    | pF            |

**Notes**

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

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                          |        |                    |
|---|--------------------------|--------|--------------------|
| PARAMETER   | SYMBOL                   | V1PM10 | 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 FR4 PCB, 2 oz. standard footprint,  $R_{\theta JM}$  - junction to mount

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                   |
|---------------------------------------|-----------------|------------------------|---------------|-----------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                     |
| V1PM10-M3/H                           | 0.006           | H                      | 4500          | 7" diameter plastic tape and reel |
| V1PM10HM3/H <sup>(1)</sup>            | 0.006           | H                      | 4500          | 7" diameter plastic tape and reel |

**Note**

- (1) AEC-Q101 qualified

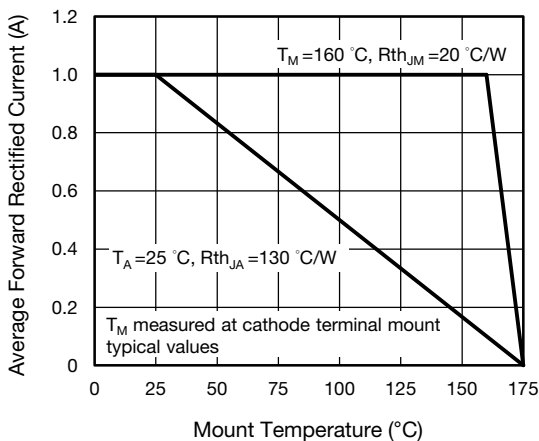
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

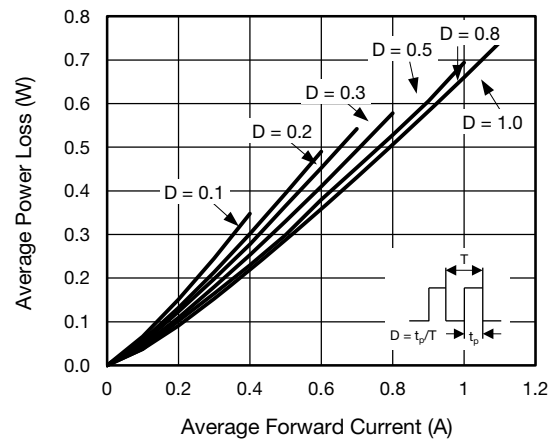


Fig. 2 - Average Power Loss Characteristics

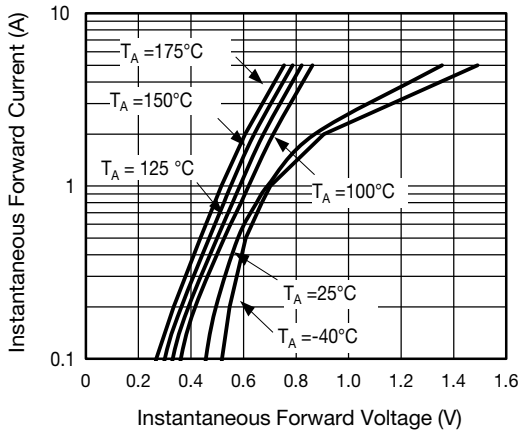


Fig. 3 - Typical Instantaneous Forward Characteristics

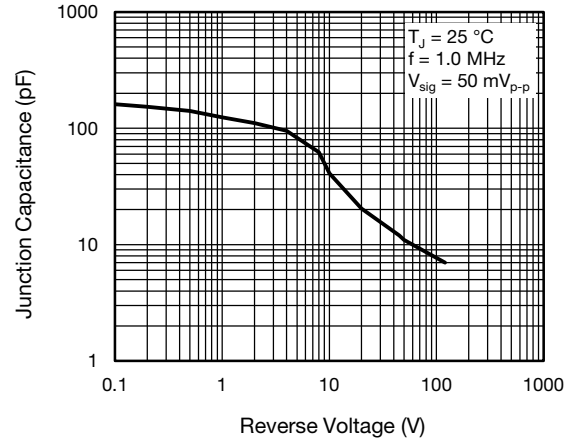


Fig. 5 - Typical Junction Capacitance

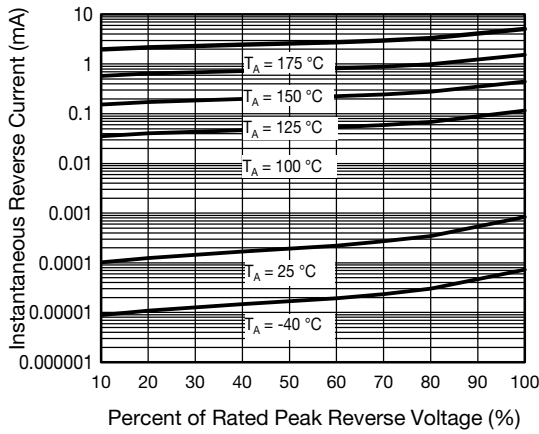


Fig. 4 - Typical Reverse Leakage Characteristics

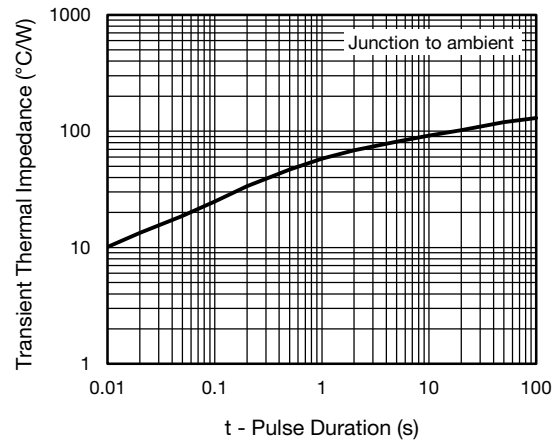
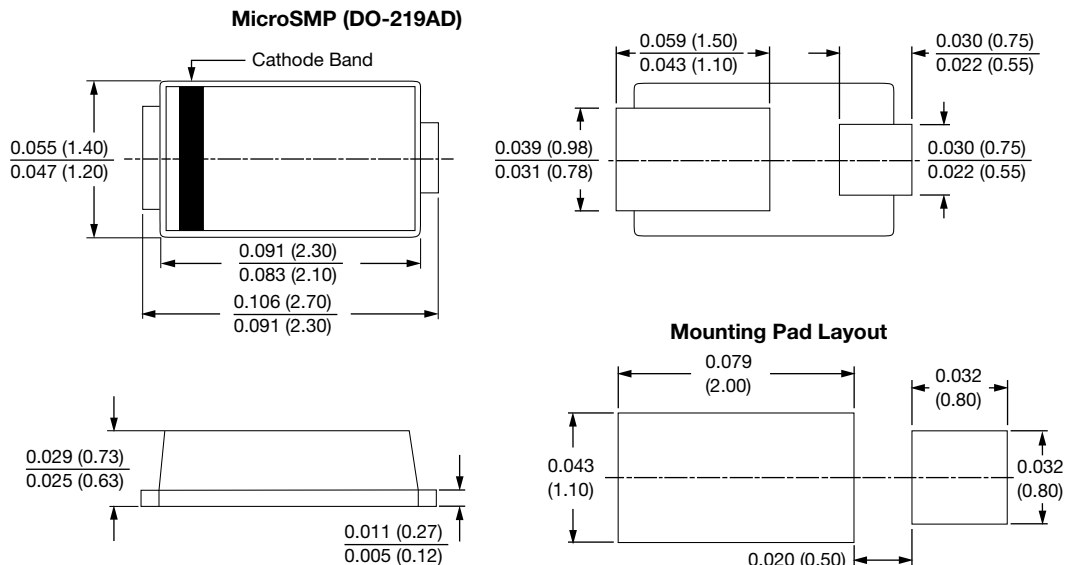


Fig. 6 - Typical Transient Thermal Impedance

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





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