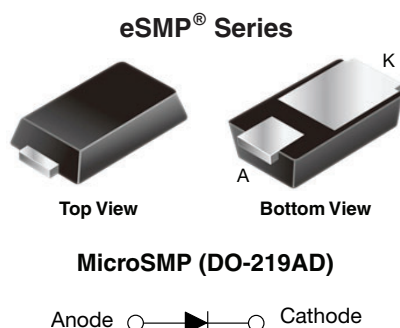


Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier



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



RoHS
COMPLIANT
HALOGEN
FREE

LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | |
|---------------------------------|---------------------|
| $I_{F(AV)}$ | 1.0 A |
| V_{RRM} | 150 V |
| I_{FSM} | 25 A |
| V_F at $I_F = 1.0$ A (125 °C) | 0.64 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 | V1PM15 | UNIT |
| Device marking code | | 1MC | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 150 | 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 | |
| Operating junction and storage temperature range | $T_J^{(1)}, T_{STG}$ | -40 to +175 | °C |

Note

(1) 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 | $I_F = 0.5\text{ A}$ | $V_F^{(1)}$ | 0.78 | - | V |
| | $I_F = 1.0\text{ A}$ | | 1.13 | 1.21 | |
| | $I_F = 0.5\text{ A}$ | | 0.58 | - | |
| | $I_F = 1.0\text{ A}$ | | 0.64 | 0.72 | |
| Reverse current | $V_R = 100\text{ V}$ | $I_R^{(2)}$ | 0.001 | - | mA |
| | $T_A = 25\text{ }^{\circ}\text{C}$ | | 0.15 | - | |
| | $T_A = 125\text{ }^{\circ}\text{C}$ | | - | 0.05 | |
| | $V_R = 150\text{ V}$ | | 0.3 | 1.5 | |
| Typical junction capacitance | 4.0 V, 1 MHz | C_J | 65 | - | pF |

Notes

(1) Pulse test: 300 μs 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 | V1PM15 | 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

ORDERING INFORMATION (Example)

| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|----------------------------|-----------------|------------------------|---------------|-----------------------------------|
| V1PM15-M3/H | 0.006 | H | 4500 | 7" diameter plastic tape and reel |
| V1PM15HM3/H ⁽¹⁾ | 0.006 | H | 4500 | 7" diameter plastic tape and reel |

Note

(1) AEC-Q101 qualified

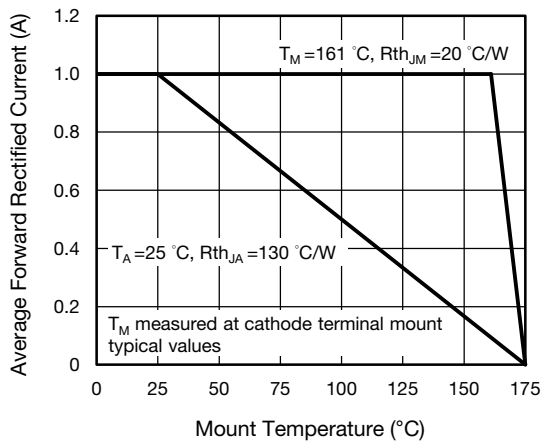
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

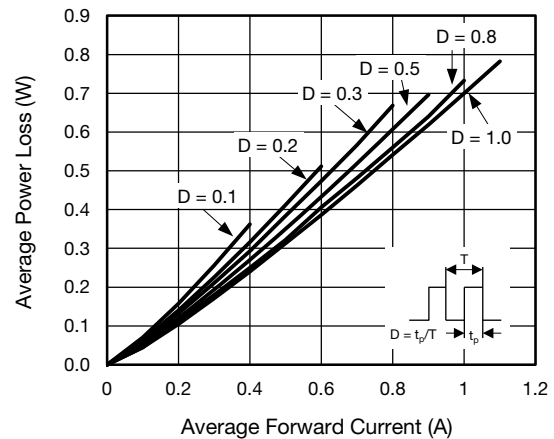


Fig. 2 - Average Power Loss Characteristics

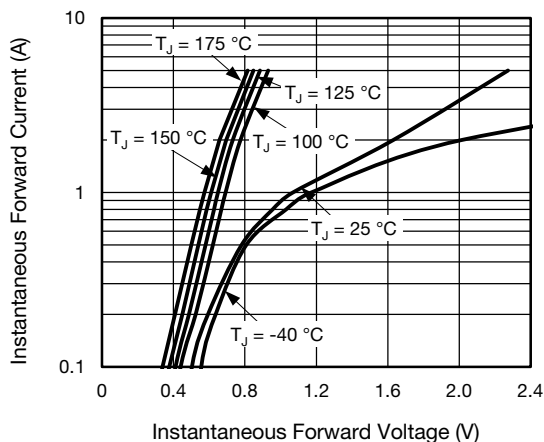


Fig. 3 - Typical Instantaneous Forward Characteristics

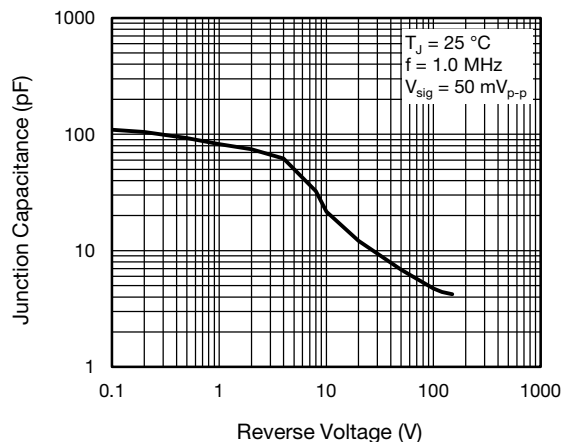


Fig. 5 - Typical Junction Capacitance

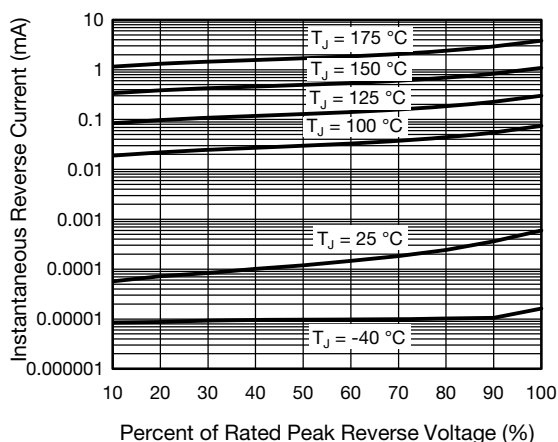


Fig. 4 - Typical Reverse Leakage Characteristics

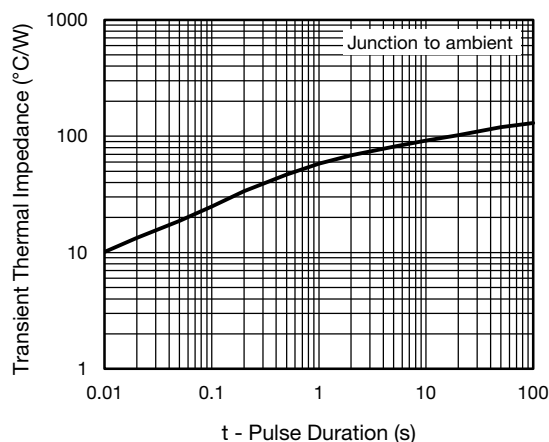
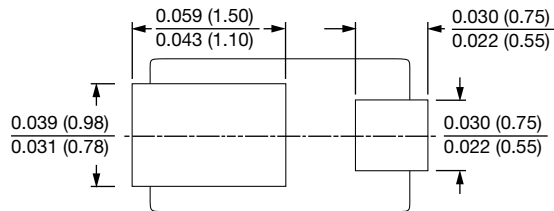
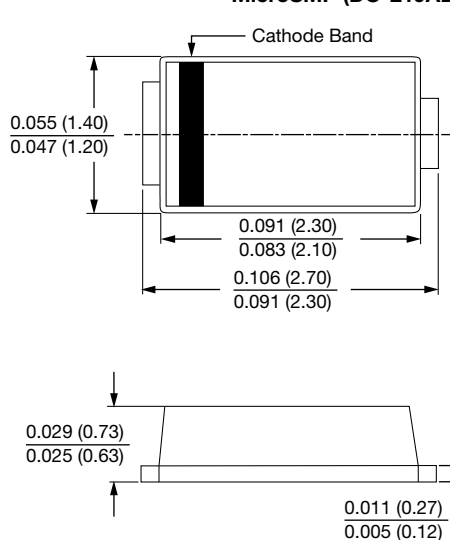


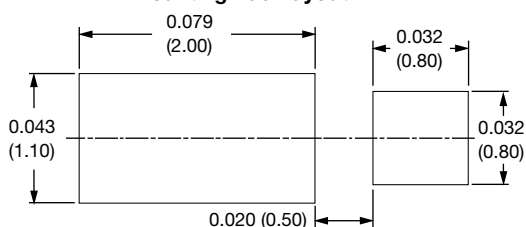
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

MicroSMP (DO-219AD)



Mounting Pad Layout





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