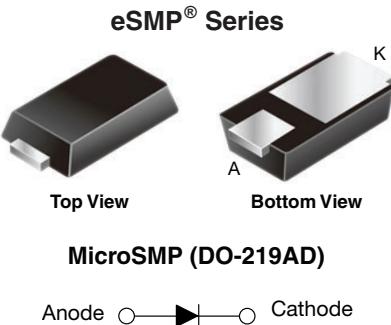


## Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier



### 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](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
FREE

### LINKS TO ADDITIONAL RESOURCES



### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 A
$V_{RRM}$	45 V
$I_{FSM}$	30 A
$V_F$ at $I_F = 2$ A (125 °C)	0.40 V
$T_J$ max.	150 °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	V2PL45	UNIT
Device marking code		2LE	
Maximum repetitive peak reverse voltage	$V_{RRM}$	45	V
Maximum DC forward current	$I_{F(AV)}$	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	$T_J$ (1), $T_{STG}$	-40 to +150	°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** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	$I_F = 1.0 \text{ A}$	$T_A = 25^\circ\text{C}$	$V_F^{(1)}$	0.43	-	V	
	$I_F = 2.0 \text{ A}$			0.48	0.56		
	$I_F = 1.0 \text{ A}$	$T_A = 125^\circ\text{C}$		0.33	-		
	$I_F = 2.0 \text{ A}$			0.40	0.48		
Reverse current per diode	$V_R = 45 \text{ V}$	$T_A = 25^\circ\text{C}$	$I_R^{(2)}$	-	0.35	mA	
		$T_A = 125^\circ\text{C}$		3	10		
Typical junction capacitance	$4.0 \text{ V}, 1 \text{ MHz}$		$C_J$	300	-	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** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	V2PL45		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
V2PL45-M3/H	0.006	H	4500	7" diameter plastic tape and reel
V2PL45HM3/H <sup>(1)</sup>	0.006	H	4500	7" diameter plastic tape and reel

**Note**

(1) AEC-Q101 qualified

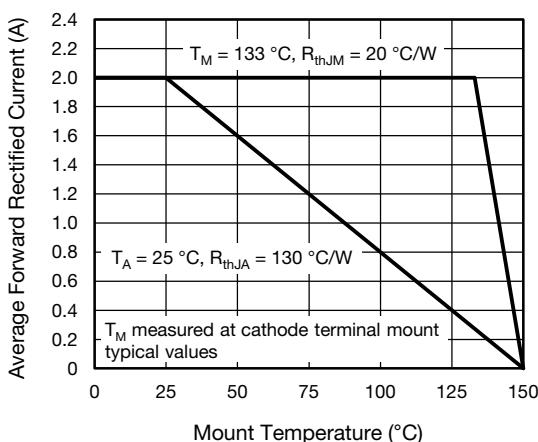
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

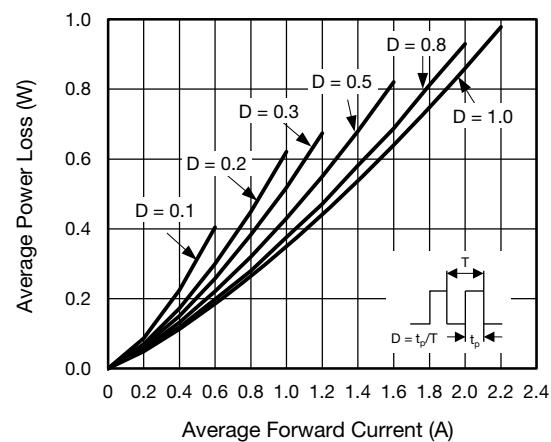


Fig. 2 - Average Power Loss Characteristics

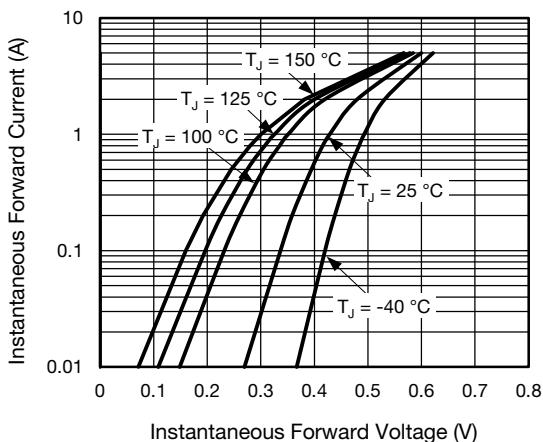


Fig. 3 - Typical Instantaneous Forward Characteristics

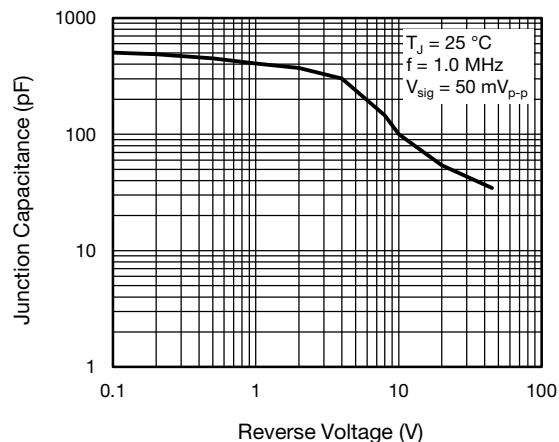


Fig. 5 - Typical Junction Capacitance

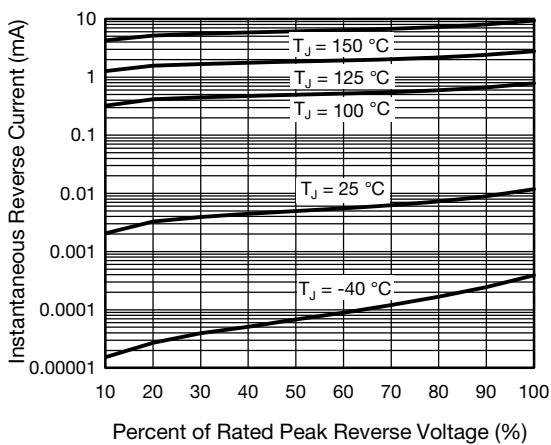


Fig. 4 - Typical Reverse Leakage Characteristics

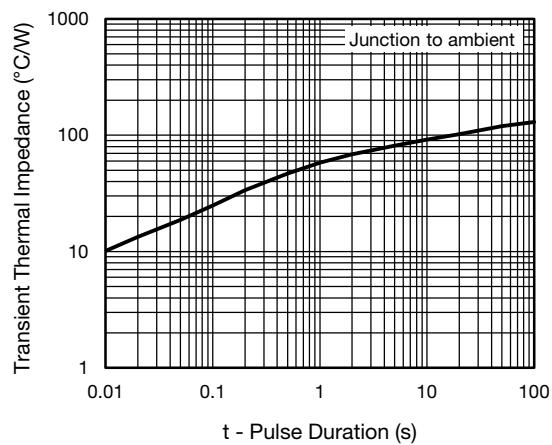
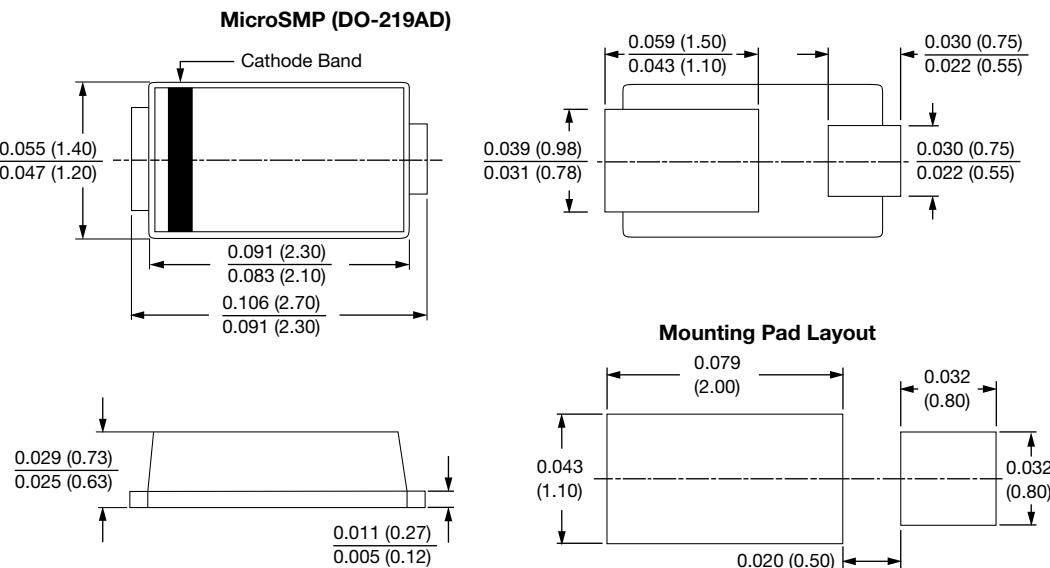


Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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