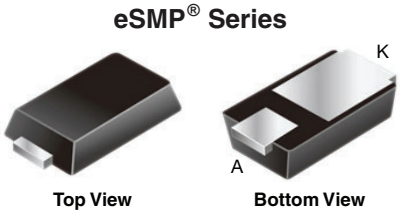
Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier



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

AUTOMOTIVE GRADE Available

RoHS COMPLIANT HALOGEN FREE

LINKS TO ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	1.0 A
V_{RRM}	45 V
I_{FSM}	25 A
V_F at I_F = 1.0 A (125 °C)	0.36 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	V1PL45	UNIT
Device marking code		1LE	
Maximum repetitive peak reverse voltage	V_{RRM}	45	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 +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 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage per diode	I_F = 0.5 A	T_A = 25 °C	V_F (1)	0.41	-	V
	I_F = 1.0 A			0.45	0.53	
	I_F = 0.5 A	T_A = 125 °C		0.30	-	
	I_F = 1.0 A			0.36	0.44	
Reverse current per diode	V_R = 45 V	T_A = 25 °C	I_R (2)	-	0.25	mA
		T_A = 125 °C		2	10	
Typical junction capacitance	4.0 V, 1 MHz		C_J	200	-	pF

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**V1PL45**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)(2)	130	°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**
V1PL45M3/H	0.006	H	4500	7" diameter plastic tape and reel
V1PL45HM3/H (1)	0.006	H	4500	7" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

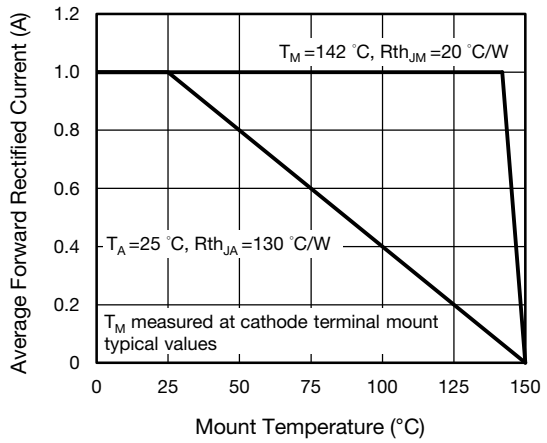


Fig. 1 - Maximum Forward Current Derating Curve

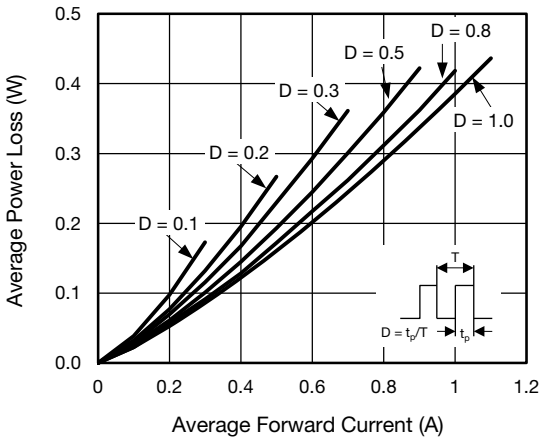


Fig. 2 - Average Power Loss Characteristics

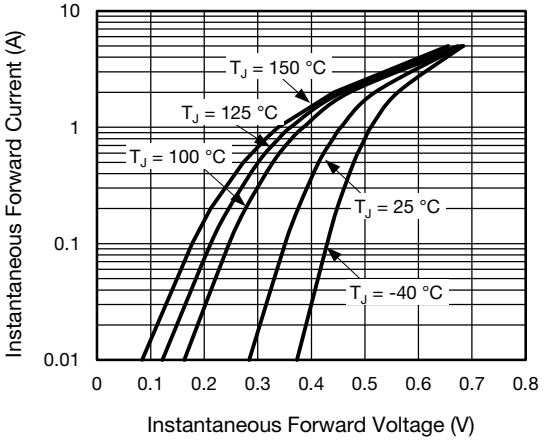


Fig. 3 - Typical Instantaneous Forward Characteristics

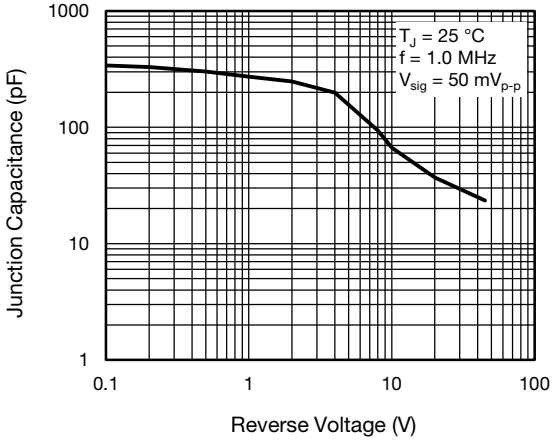


Fig. 5 - Typical Junction Capacitance

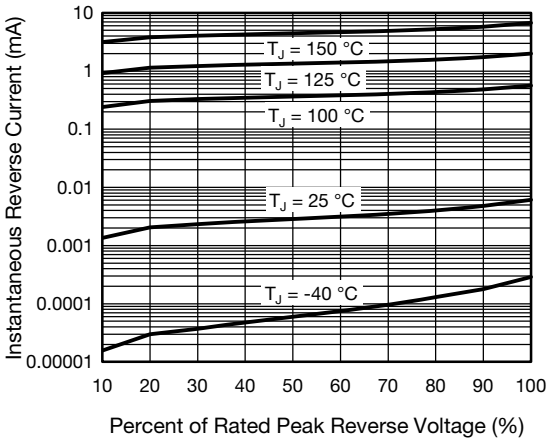


Fig. 4 - Typical Reverse Leakage Characteristics

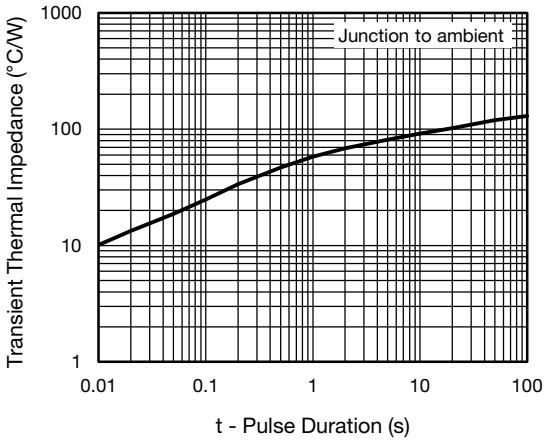
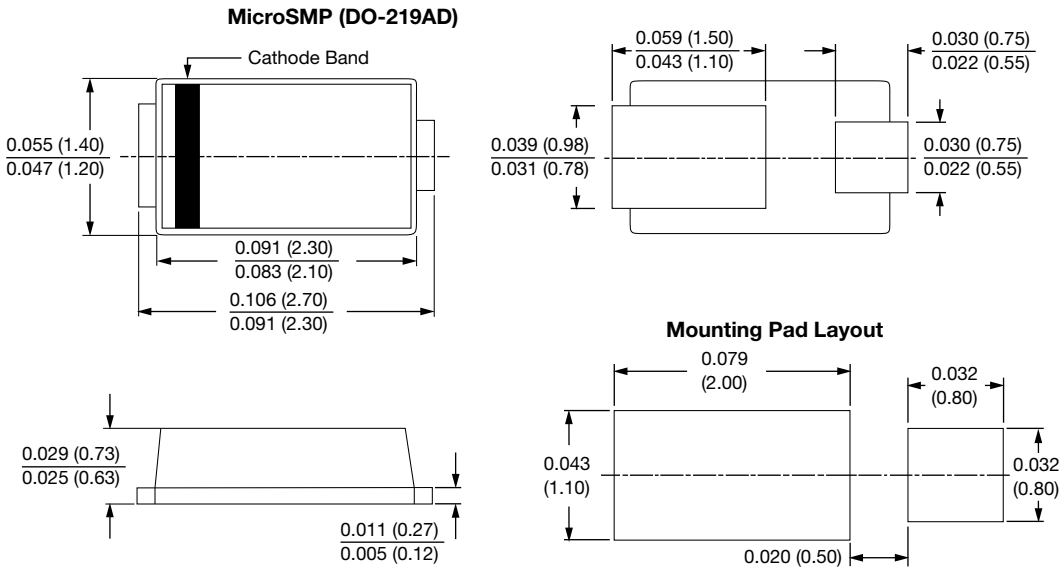


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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