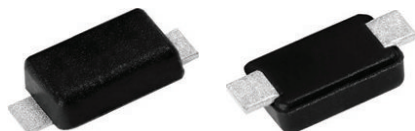


Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

eSMP® Series



Top view

Bottom view

SMF (DO-219AB)

Cathode  Anode

LINKS TO ADDITIONAL RESOURCES



3D Models

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	1.0 A
V_{RRM}	200 V
I_{FSM}	30 A
V_F at $I_F = 1$ A ($T_A = 125$ °C)	0.64 V
T_J max.	175 °C
Package	SMF (DO-219AB)
Circuit configuration	Single

FEATURES

- Trench MOS Schottky technology
- Low profile package
- Ideal for automated placement
- Low forward voltage drop, low power losses
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Wave and reflow solderable
- AEC-Q101 qualified available
 - Automotive ordering code: base P/NHM3
- Compatible to SOD-123W package case outline
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMF (DO-219AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant

Base P/NHM3_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified

("_X" denotes revision code e.g. A, B,.....)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 and HM3 suffix meet JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	V1F22	UNIT
Device marking code		V1D	
Maximum repetitive peak reverse voltage	V_{RRM}	200	V
Maximum DC reverse voltage	V_{DC}	160	V
Maximum average forward rectified current (fig.1)	$I_{F(AV)}$ ⁽¹⁾	1.0	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	30	A
Operating junction temperature range	T_J ⁽²⁾	-40 to +175	°C
Storage temperature range	T_{STG}	-55 to +175	

Notes

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

⁽²⁾ 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	I _F = 0.5 A	T _A = 25 °C	V _F ⁽¹⁾	0.73	-	V
	I _F = 1.0 A			0.80	0.88	
	I _F = 0.5 A	T _A = 125 °C		0.57	-	
	I _F = 1.0 A			0.64	0.72	
Reverse current	V _R = 160 V	T _A = 25 °C	I _R ⁽²⁾	0.1	-	μA
		T _A = 125 °C		100	-	
	V _R = 200 V	T _A = 25 °C		-	35	
		T _A = 125 °C		300	1500	
Typical junction capacitance	4.0 V, 1 MHz		C _J	75	-	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	V1F22	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	125	$^{\circ}\text{C/W}$
	$R_{\theta JM}^{(3)}$	30	

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 recommended copper pad area; thermal resistance $R_{\theta JA}$ - junction to ambient
 (3) Mounted on recommended copper pad area; thermal resistance $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V1F22-M3/H	0.015	H	3000	7" diameter plastic tape and reel
V1F22-M3/I	0.015	I	10 000	13" diameter plastic tape and reel
V1F22HM3_A/H ⁽¹⁾	0.015	H	3000	7" diameter plastic tape and reel
V1F22HM3_A/I ⁽¹⁾	0.015	I	10 000	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

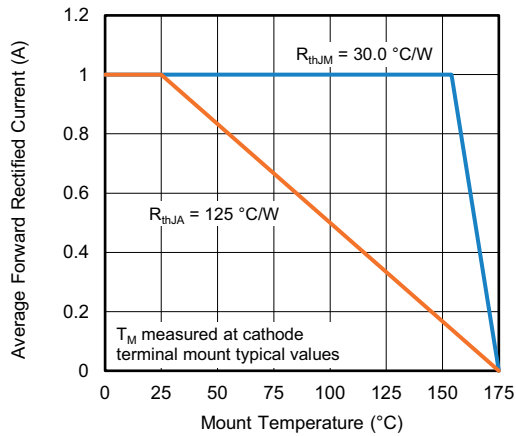
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

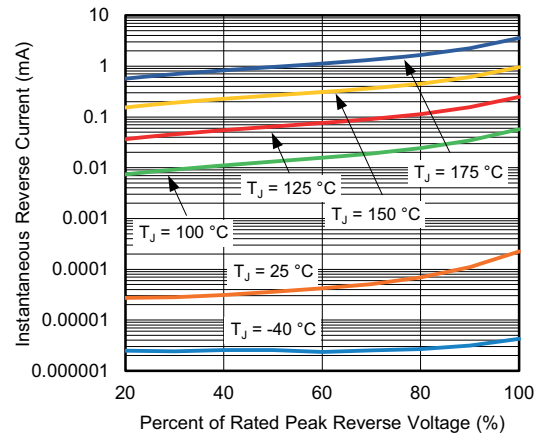


Fig. 4 - Typical Reverse Leakage Characteristics

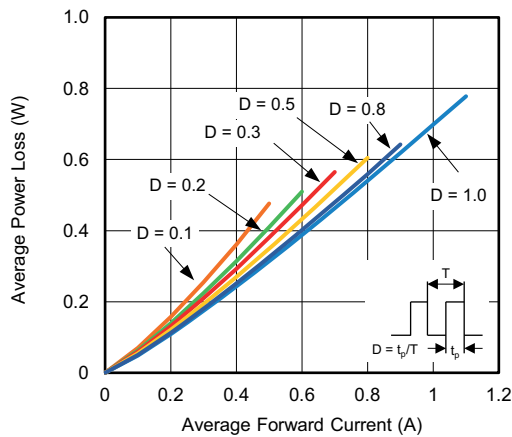


Fig. 2 - Average Power Loss Characteristics

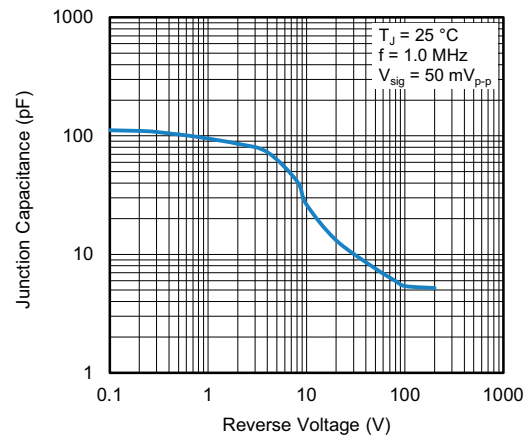


Fig. 5 - Typical Junction Capacitance

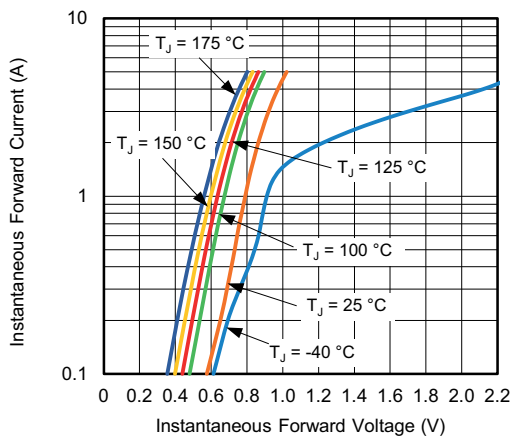


Fig. 3 - Typical Instantaneous Forward Characteristics

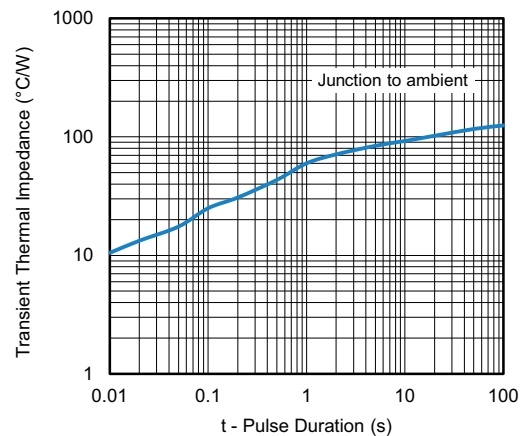
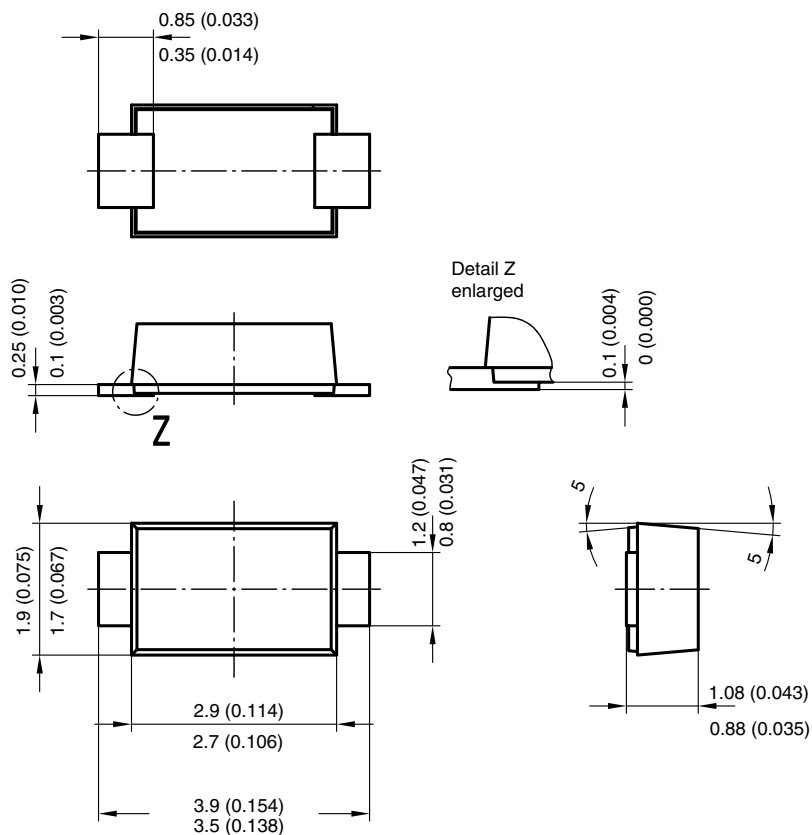
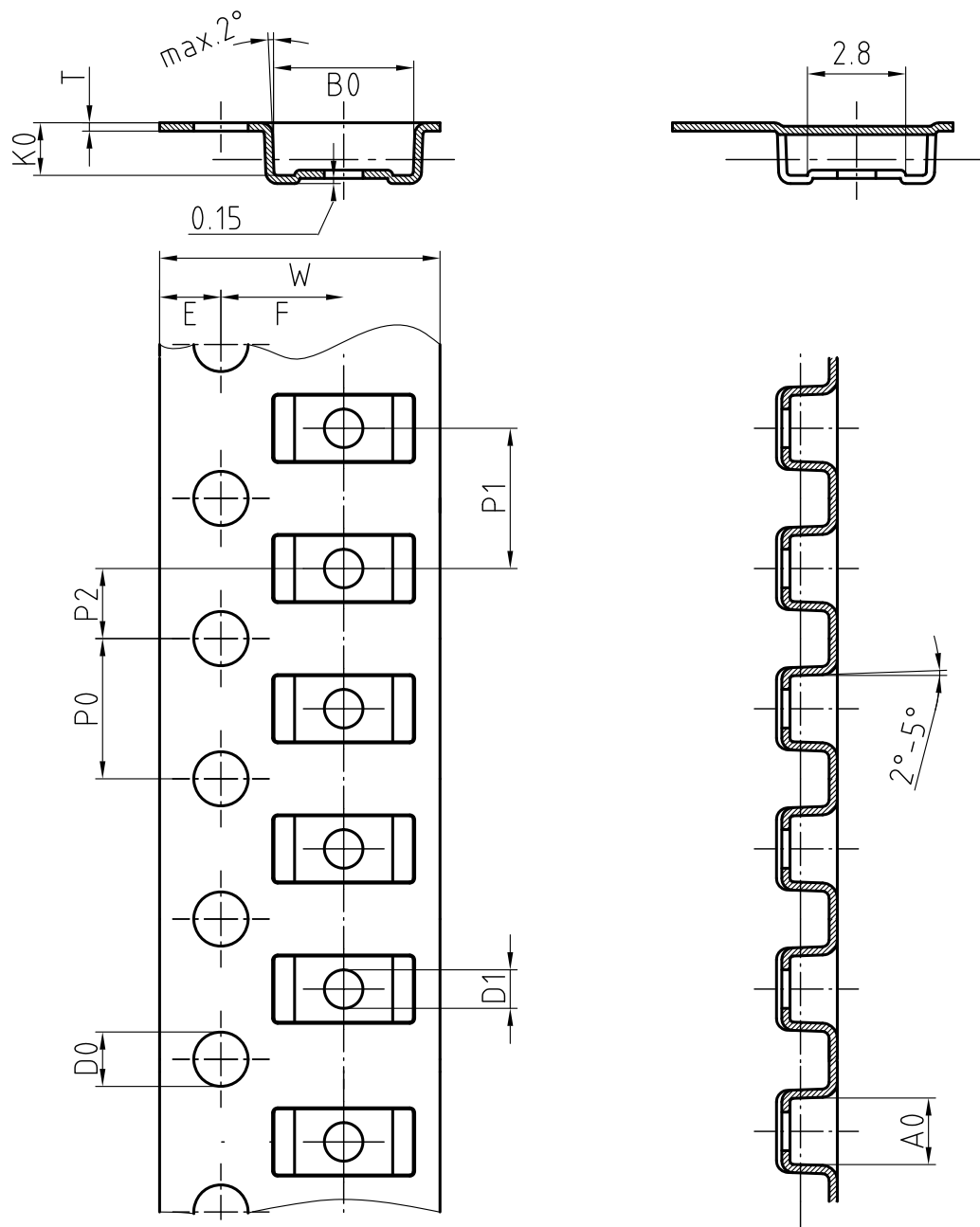


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in millimeters (inches)


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BLISTERTAPE DIMENSIONS in millimeters: **SMF (DO-219AB)**


Mat:	A0	B0	K0	W	T	P0	P2	P1	D0	D1	E	F
PS	1.9	4.0	1.5	8.0	0.235	4.0	2.0	4.0	1.5	1	1.75	3.5

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