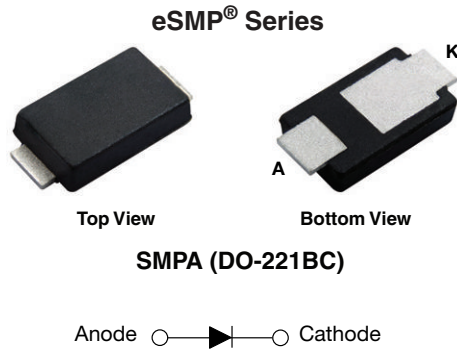


Surface-Mount TMBS[®] (Trench MOS Barrier Schottky) Rectifier



FEATURES

- Very low profile - typical height of 0.95 mm
- Ideal for automated placement
- Trench MOS Schottky technology
- Low power losses, high efficiency
- Low forward voltage drop
- 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



LINKS TO ADDITIONAL RESOURCES



TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	4.0 A
V_{RRM}	45 V
I_{FSM}	80 A
V_F at $I_F = 4.0$ A ($T_A = 125$ °C)	0.41 V
T_J max.	150 °C
Package	SMPA (DO-221BC)
Circuit configuration	Single

MECHANICAL DATA

Case: SMPA (DO-221BC)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

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 JESD22-B102

M3 suffix meets JESD 201 class 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	V4PAL45	UNIT
Device marking code		4L45	
Maximum repetitive peak reverse voltage	V_{RRM}	45	V
Maximum DC forward current	$I_F^{(1)}$	4.0	A
	$I_F^{(2)}$	3.0	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	80	A
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +150	°C

Notes

(1) Units mounted on 15 mm x 15 mm pad areas, 2 oz. PCB

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

ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 2.0 A	T _A = 25 °C	0.43	-	V
	I _F = 4.0 A		0.49	0.57	
	I _F = 2.0 A	T _A = 125 °C	0.33	-	
	I _F = 4.0 A		0.41	0.50	
Reverse current	V _R = 45 V	T _A = 25 °C	-	450	μA
		T _A = 125 °C	5	15	mA
Typical junction capacitance	4.0 V, 1 MHz	C _J	450	-	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 specified)			
PARAMETER	SYMBOL	V4PAL45	UNIT
Typical thermal resistance	R _{θJA} ⁽¹⁾	100	°C/W
	R _{θJM} ⁽¹⁾	9	

Note

- (1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance R_{θJA} - junction to ambient; R_{θJM} - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V4PAL45-M3/I	0.032	I	14 000	13" diameter plastic tape and reel
V4PAL45HM3_A/I ⁽¹⁾	0.032	I	14 000	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

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

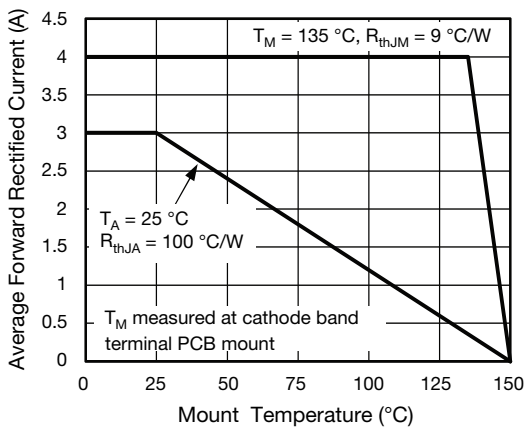


Fig. 1 - Maximum Forward Current Derating Curve

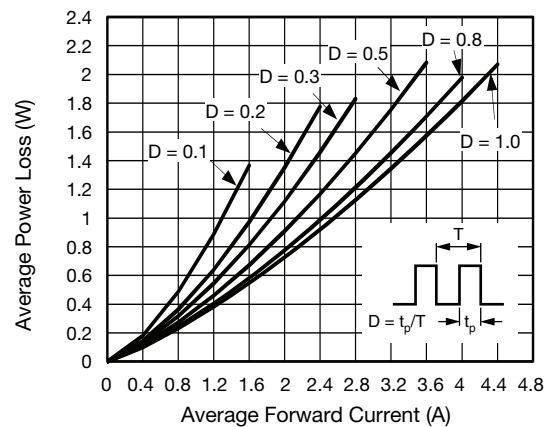


Fig. 2 - Forward Power Loss Characteristics

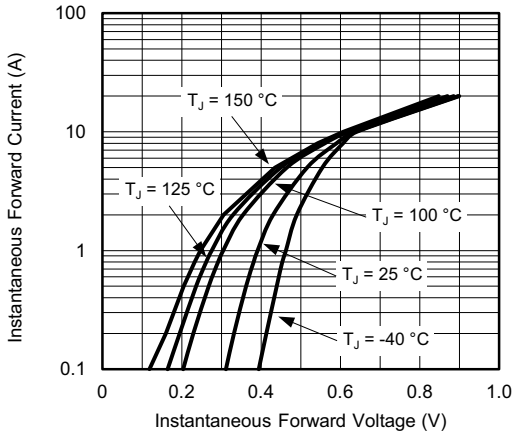


Fig. 3 - Typical Instantaneous Forward Characteristics

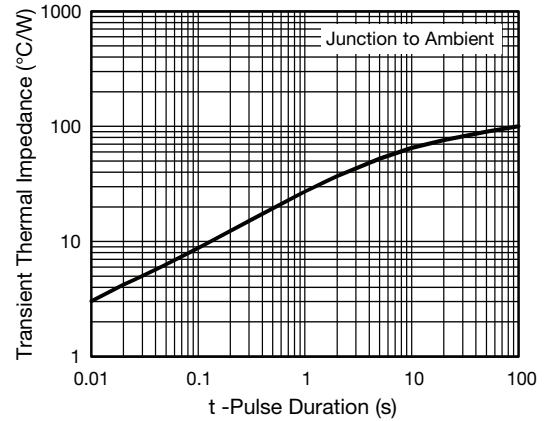


Fig. 6 - Typical Transient Thermal Impedance

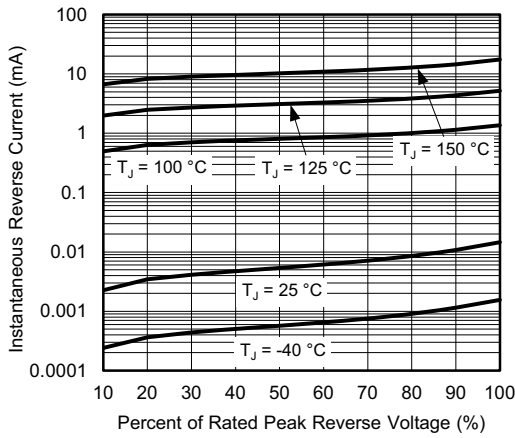


Fig. 4 - Typical Reverse Leakage Characteristics

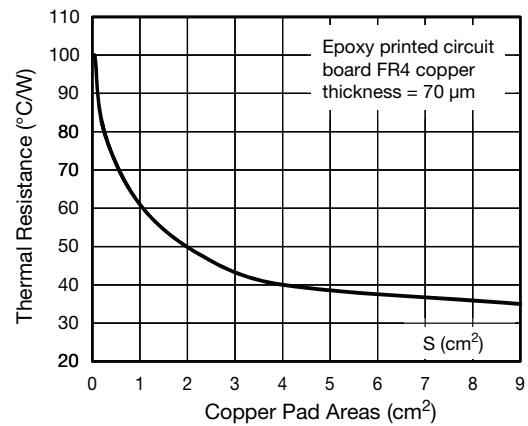


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Areas

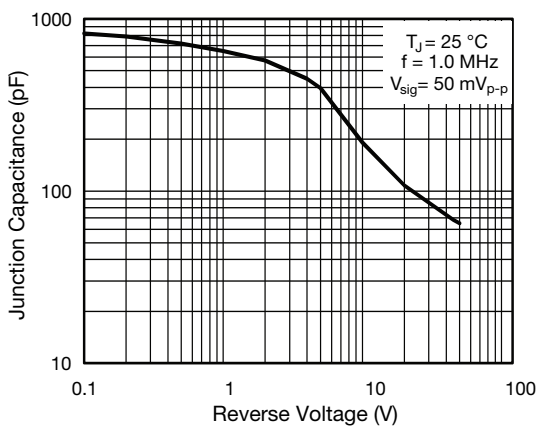
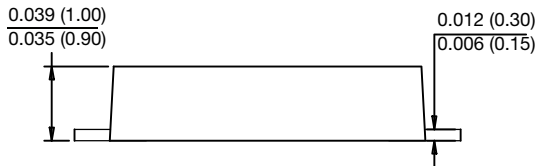
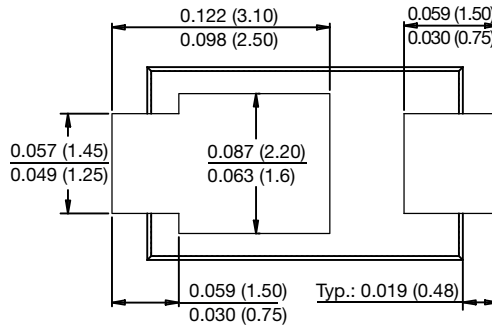
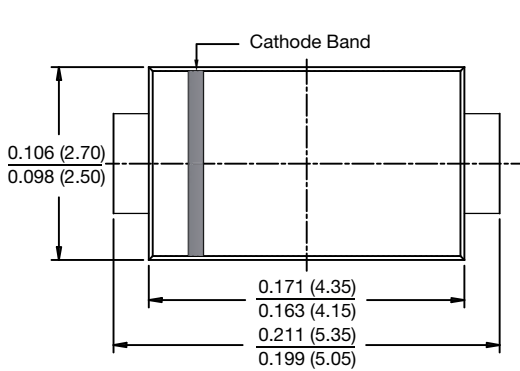


Fig. 5 - Typical Junction Capacitance

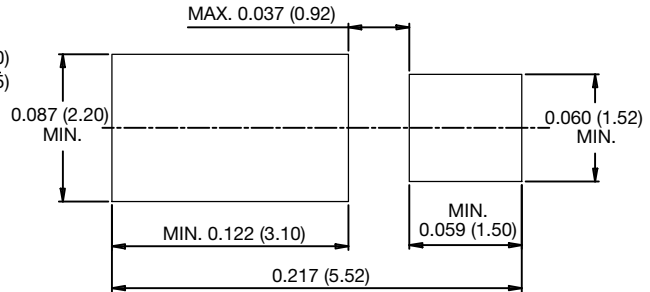


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPA (DO-221BC)



Mounting Pad Layout





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