

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

eSMP® Series


SMP (DO-220AA)

Cathode ○ —► Anode

FEATURES

- Low profile package
- 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


RoHS
COMPLIANT
HALOGEN
FREE

DESIGN SUPPORT TOOLS AVAILABLE



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2.0 A
V_{RRM}	120 V
I_{FSM}	50 A
V_F at $I_F = 2.0$ A	0.60 V
T_J max.	175 °C
Package	SMP (DO-220AA)
Circuit configuration	Single

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMP (DO-220AA)

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

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 suffix meets JESD 201 class 2 whisker test, 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	V2PM12L	UNIT
Device marking code		2MS	
Maximum repetitive peak reverse voltage	V_{RRM}	120	V
Maximum DC forward current	I_F ⁽¹⁾	2	A
	I_F ⁽²⁾	1.8	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	50	A
Operating junction and storage temperature range	T_J ⁽³⁾	-40 to +175	°C
Operating junction and storage temperature range	T_{STG}	-55 to +175	°C

Notes

(1) Mounted on 10 mm x 10 mm copper pad area PCB

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

(3) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{0JA}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 1.0 \text{ A}$	$T_A = 25^\circ\text{C}$	V_F ⁽¹⁾	0.62	-	V	
	$I_F = 2.0 \text{ A}$			0.77	0.86		
	$I_F = 1.0 \text{ A}$	$T_A = 125^\circ\text{C}$		0.52	-		
	$I_F = 2.0 \text{ A}$			0.60	0.68		
Reverse current	$V_R = 90 \text{ V}$	$T_A = 25^\circ\text{C}$	I_R ⁽²⁾	0.001	-	mA	
		$T_A = 125^\circ\text{C}$		0.4	-		
	$V_R = 120 \text{ V}$	$T_A = 25^\circ\text{C}$		-	0.2		
		$T_A = 125^\circ\text{C}$		0.7	3.0		
Typical junction capacitance	4.0 V, 1 MHz		C_J	180	-	pF	

Notes

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

(2) Pulse test: pulse width $\leq 5 \text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)					
PARAMETER	SYMBOL	V2PM12L			UNIT
Typical thermal resistance	$R_{\theta JA}$ ⁽¹⁾	125			°C/W
	$R_{\theta JM}$ ⁽²⁾	15			

Notes

(1) Free air, mounted on recommended PCB, 1 oz. pad area; thermal resistance $R_{\theta JA}$ - junction-to-ambient

(2) Units mounted on PCB with specific 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	
V2PM12L-M3/H	0.024	H	3000	7" diameter plastic tape and reel	
V2PM12L-M3/I	0.024	I	10 000	13" diameter plastic tape and reel	
V2PM12LHM3/H ⁽¹⁾	0.024	H	3000	7" diameter plastic tape and reel	
V2PM12LHM3/I ⁽¹⁾	0.024	I	10 000	13" diameter plastic tape and reel	

Note

(1) AEC-Q101 qualified

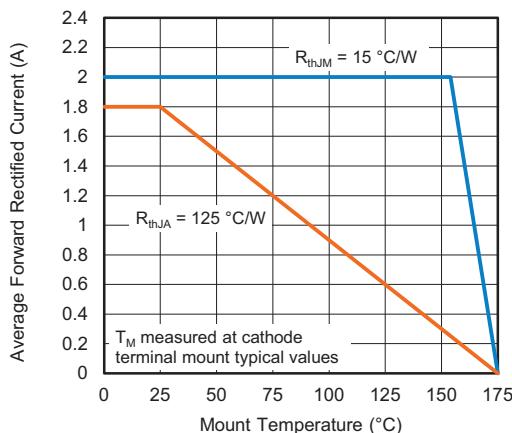
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

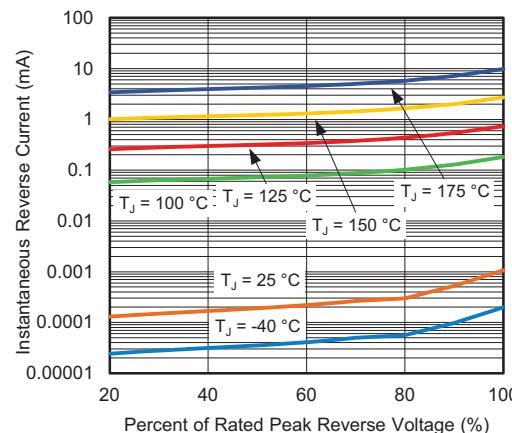


Fig. 4 - Typical Reverse Characteristics

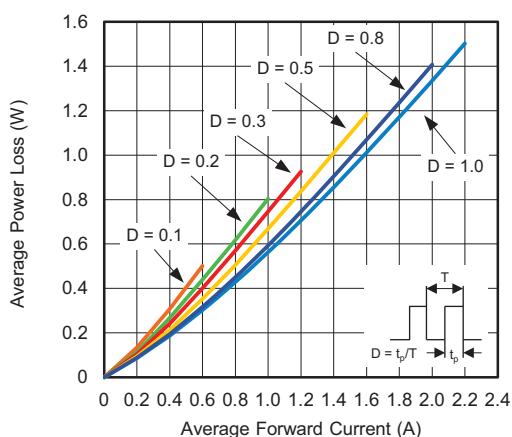


Fig. 2 - Forward Power Loss Characteristics

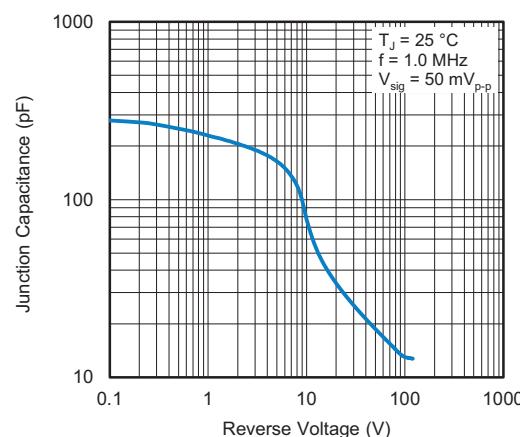


Fig. 5 - Typical Junction Capacitance

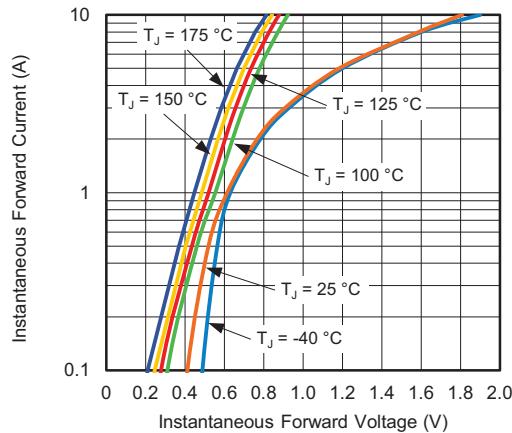


Fig. 3 - Typical Instantaneous Forward Characteristics

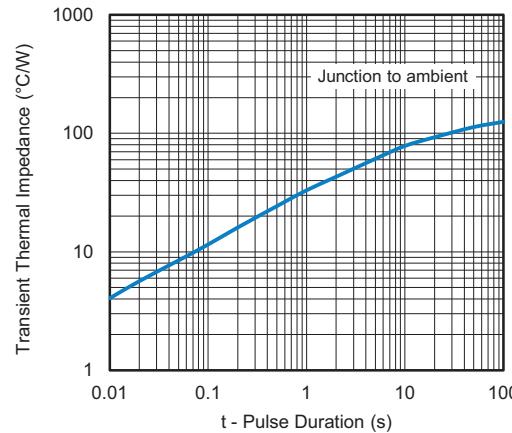
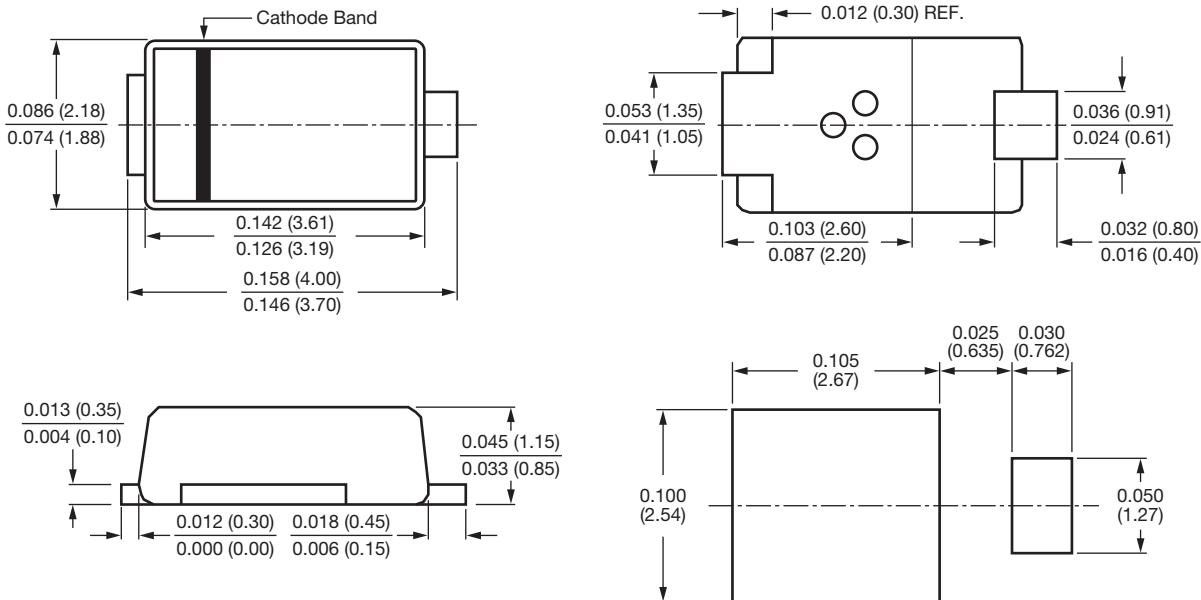


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)


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