

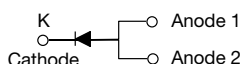
# High Current Density Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low  $V_F = 0.45\text{ V}$  at  $I_F = 5\text{ A}$

## eSMP® Series



SMPC (TO-277A)



## FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- 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)

AUTOMOTIVE  
GRADE  
Available



RoHS  
COMPLIANT  
HALOGEN  
FREE

## ADDITIONAL RESOURCES



## TYPICAL APPLICATIONS

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

## PRIMARY CHARACTERISTICS

$I_{F(AV)}$	15 A
$V_{RRM}$	120 V
$I_{FSM}$	220 A
$V_F$ at $I_F = 15\text{ A}$ (125 °C)	0.63 V
$T_J$ max.	150 °C
Package	SMPC (TO-277A)
Circuit configuration	Single

## MECHANICAL DATA

### Case: SMPC (TO-277A)

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 and HM3 suffix meets JESD 201 class 2 whisker test

## MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	V15P12	UNIT
Device marking code		V1512	
Maximum repetitive peak reverse voltage	$V_{RRM}$	120	V
Maximum DC forward current	$I_{F(AV)}^{(1)}$	15	A
	$I_{F(AV)}^{(2)}$	3.7	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	220	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +150	°C

## Notes

(1) Mounted on 30 mm x 30 mm pad areas aluminum PCB

(2) Free air, mounted on recommended pad area

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

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.51	-	V
	I <sub>F</sub> = 7.5 A			0.57	-	
	I <sub>F</sub> = 15 A			0.74	0.81	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.45	-	
	I <sub>F</sub> = 7.5 A			0.52	-	
	I <sub>F</sub> = 15 A			0.63	0.70	
Reverse current	V <sub>R</sub> = 90 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	0.02	-	mA
		T <sub>A</sub> = 125 °C		9	-	
	V <sub>R</sub> = 120 V	T <sub>A</sub> = 25 °C		-	1	
		T <sub>A</sub> = 125 °C		17	70	

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)

PARAMETER	SYMBOL	V15P12	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	75	$^{\circ}\text{C/W}$
	$R_{\theta JM}^{(2)}$	4	

**Notes**(1) Free air, mounted on recommended copper pad area; thermal resistance  $R_{\theta JA}$  - junction-to-ambient(2) Mounted on 30 mm x 30 mm pad areas aluminum PCB, thermal resistance  $R_{\theta JM}$  - junction-to-mount**ORDERING INFORMATION** (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V15P12-M3/H	0.10	H	1500	7" diameter plastic tape and reel
V15P12-M3/I	0.10	I	6500	13" diameter plastic tape and reel
V15P12HM3/H <sup>(1)</sup>	0.10	H	1500	7" diameter plastic tape and reel
V15P12HM3/I <sup>(1)</sup>	0.10	I	6500	13" diameter plastic tape and reel

**Note**

(1) AEC-Q101 qualified

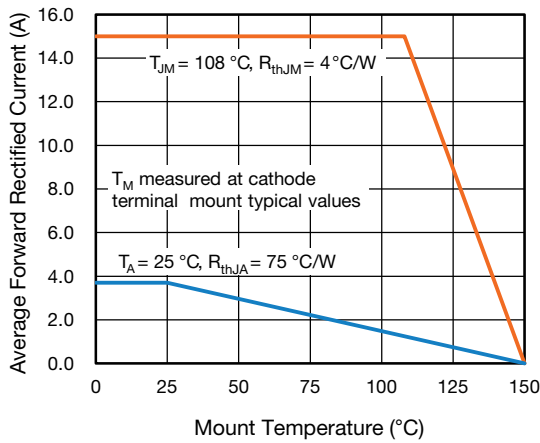
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)


Fig. 1 - Maximum Forward Current Derating Curve

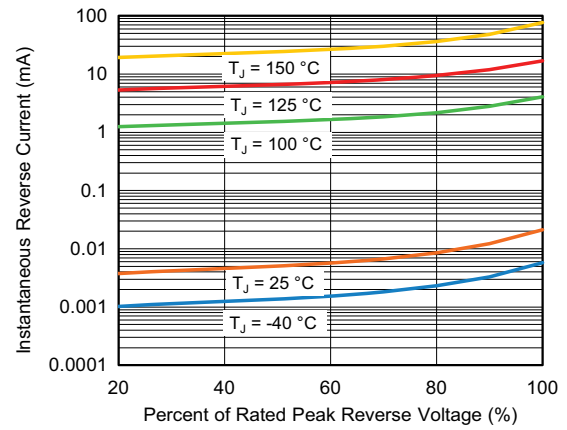


Fig. 4 - Typical Reverse Characteristics

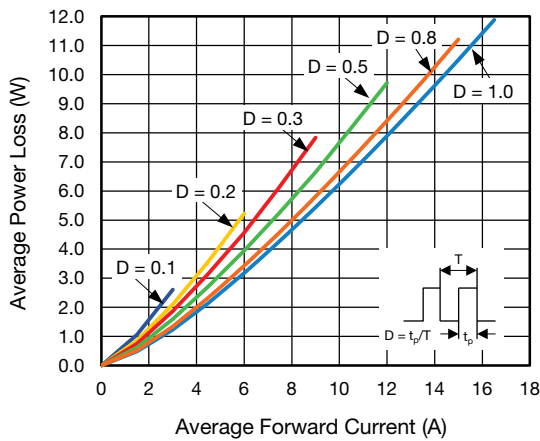


Fig. 2 - Forward Power Loss Characteristics

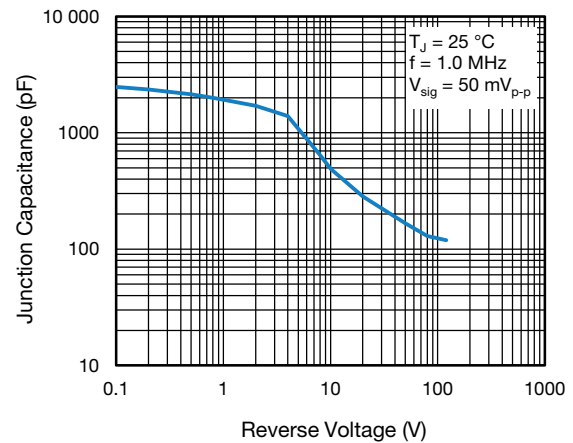


Fig. 5 - Typical Junction Capacitance

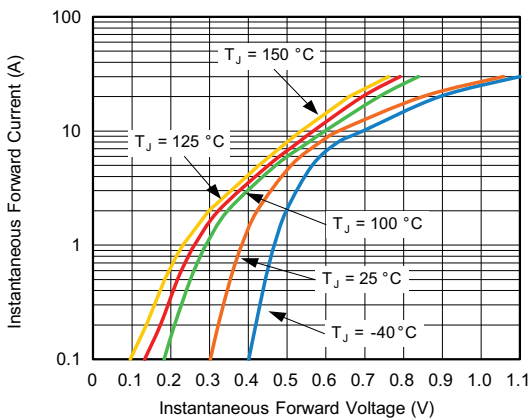


Fig. 3 - Typical Instantaneous Forward Characteristics

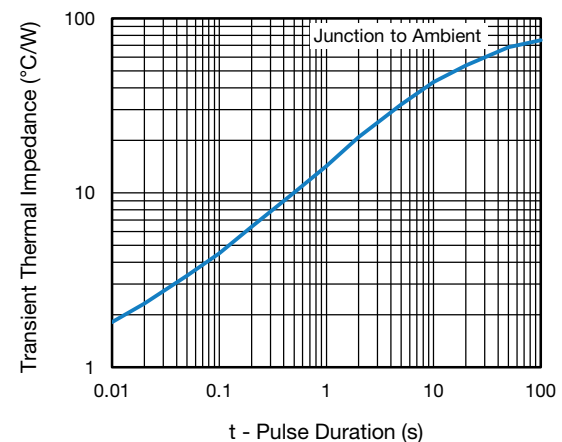
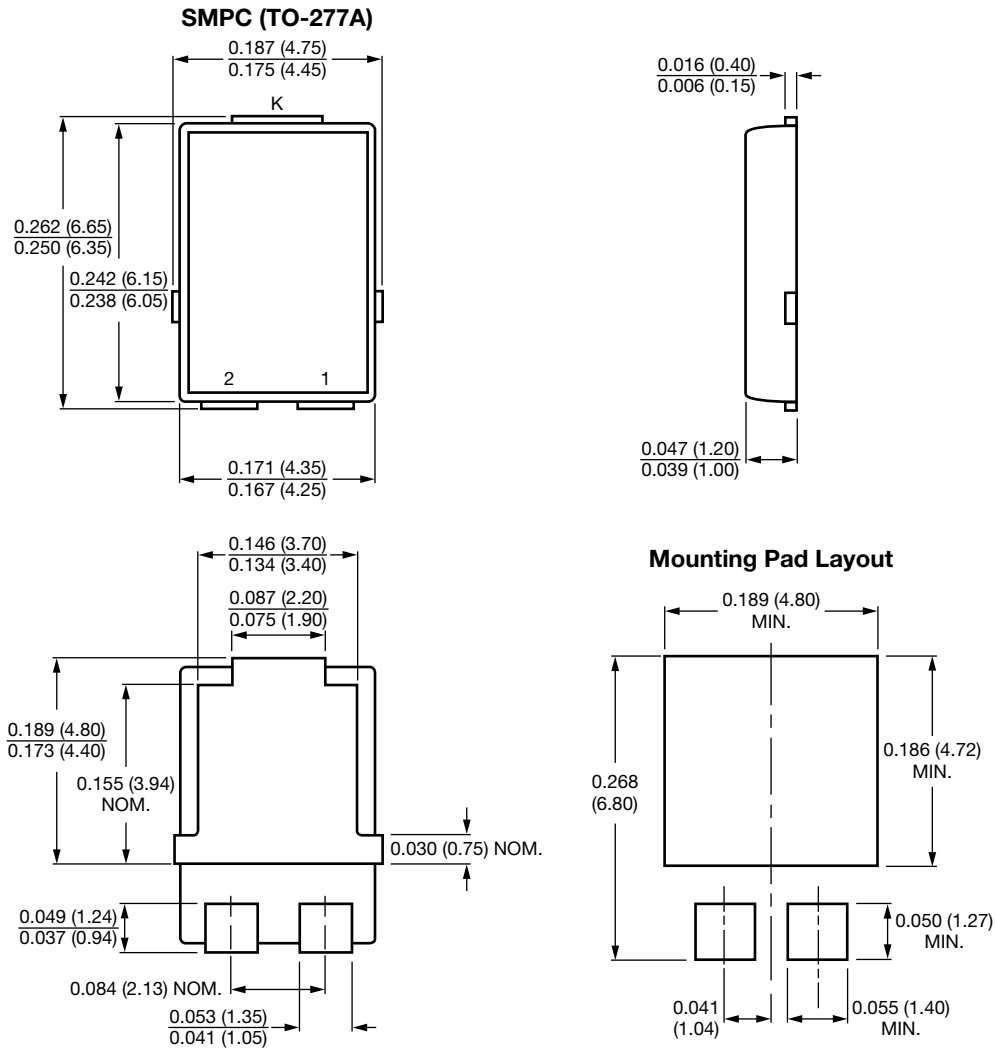


Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)


Conform to JEDEC® TO-277A



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