

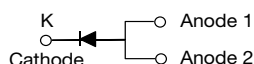
# High Current Density Surface Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low  $V_F = 0.466 \text{ V}$  at  $I_F = 4 \text{ A}$

## 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



3D Models

## PRIMARY CHARACTERISTICS

$I_{F(AV)}$	8.0 A
$V_{RRM}$	100 V
$I_{FSM}$	150 A
$E_{AS}$	100 mJ
$V_F$ at $I_F = 8 \text{ A}$	0.582 V
$T_J \text{ max.}$	150 °C
Package	SMPC (TO-277A)
Diode variations	Single

## TYPICAL APPLICATIONS

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

## 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\_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 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

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

PARAMETER	SYMBOL	V8P10	UNIT
Device marking code		V810	
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	8.0	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	150	A
Non-repetitive avalanche energy at $I_{AS} = 2.0 \text{ A}$ , $T_J = 25 \text{ °C}$	$E_{AS}$	100	mJ
Peak repetitive reverse current at $t_p = 2 \text{ } \mu\text{s}$ , 1 kHz, $T_J = 38 \text{ °C} \pm 2 \text{ °C}$	$I_{RRM}$	1.0	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +150	°C

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

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I <sub>R</sub> = 1 mA	T <sub>A</sub> = 25 °C	V <sub>BR</sub>	100 (minimum)	-	V
Instantaneous forward voltage	I <sub>F</sub> = 4 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.522	-	V
	I <sub>F</sub> = 8 A			0.643	0.68	
	I <sub>F</sub> = 4 A	T <sub>A</sub> = 125 °C		0.466	-	
	I <sub>F</sub> = 8 A			0.582	0.62	
Reverse current	V <sub>R</sub> = 70 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	4.7	-	μA
		T <sub>A</sub> = 125 °C		3.0	-	mA
	V <sub>R</sub> = 100 V	T <sub>A</sub> = 25 °C		14.5	70	μA
		T <sub>A</sub> = 125 °C		7.0	15	mA

**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	V8P10	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	60	$^{\circ}\text{C/W}$
	$R_{\theta JL}$	3	

**Note**

(1) Units mounted on recommended PCB 1 oz. pad layout

**ORDERING INFORMATION** (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V8P10-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
V8P10-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
V8P10HM3_A/H <sup>(1)</sup>	0.10	H	1500	7" diameter plastic tape and reel
V8P10HM3_A/I <sup>(1)</sup>	0.10	I	6500	13" diameter plastic tape and reel

**Note**

(1) AEC-Q101 qualified

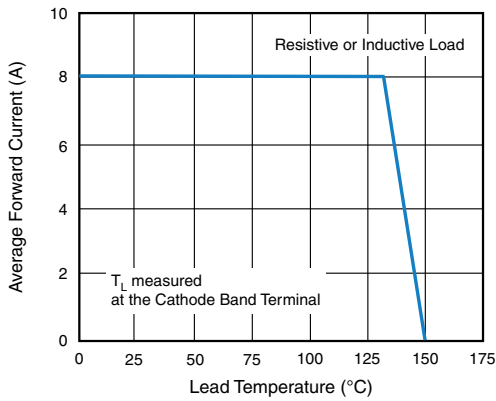
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)


Fig. 1 - Maximum Forward Current Derating Curve

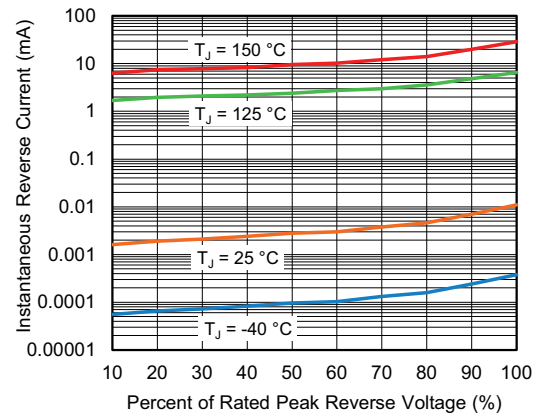


Fig. 4 - Typical Reverse Characteristics

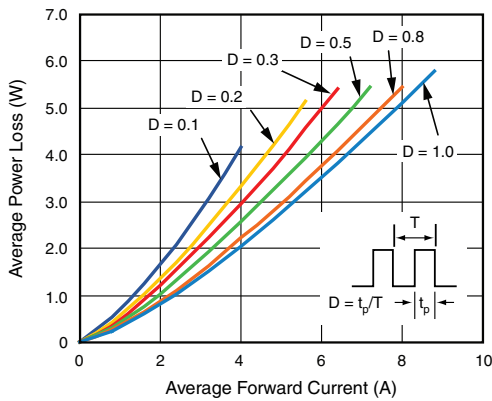


Fig. 2 - Forward Power Loss Characteristics

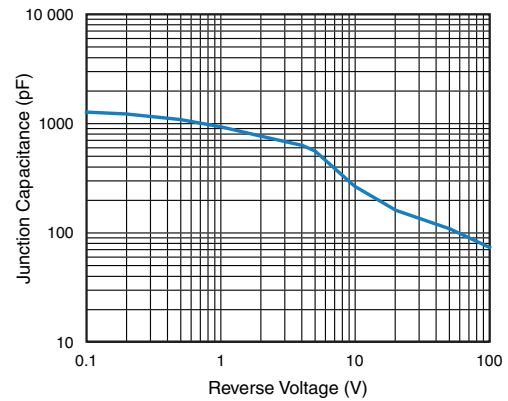


Fig. 5 - Typical Junction Capacitance

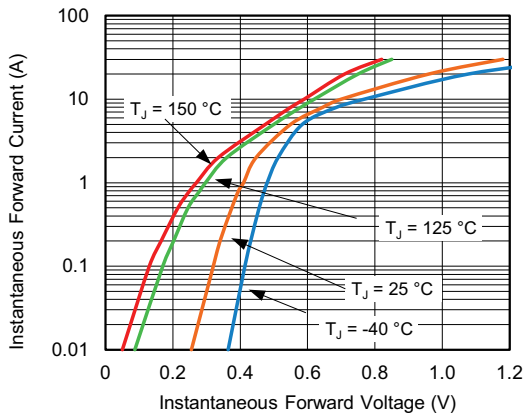


Fig. 3 - Typical Instantaneous Forward Characteristics

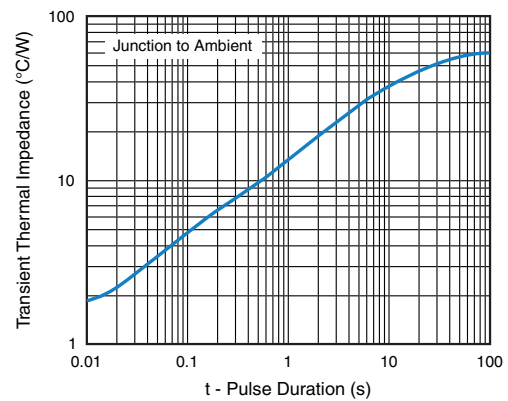
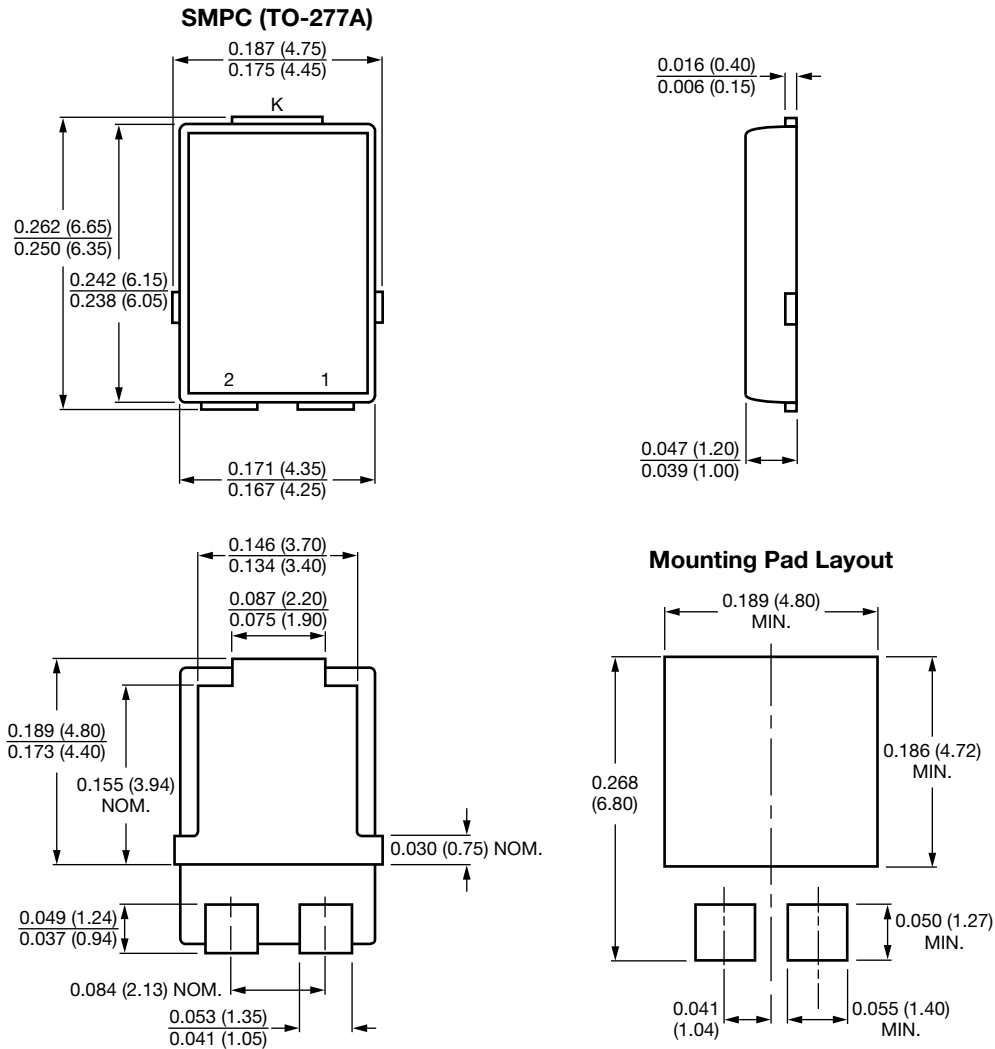


Fig. 6 - Typical Transient Thermal Impedance

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


Conform to JEDEC® TO-277A



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