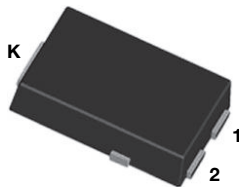
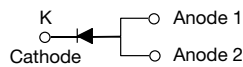


## High Current Density Surface-Mount High Voltage Schottky Rectifiers

**eSMP® Series**

**SMPC (TO-277A)**

**FEATURES**

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- High barrier technology,  $T_J = 175\text{ °C}$  maximum
- Low leakage current
- Meets MSL level 1, per J-STD-020
- 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**
**LINKS TO ADDITIONAL RESOURCES**


3D Models

**PRIMARY CHARACTERISTICS**

$I_{F(AV)}$	10 A
$V_{RRM}$	90 V, 100 V
$I_{FSM}$	200 A
$E_{AS}$	20 mJ
$V_F$ at $I_F = 10\text{ A}$	0.661 V
$I_R$	0.3 $\mu\text{A}$
$T_J$ max.	175 °C
Package	SMPC (TO-277A)
Circuit configuration	Single

**TYPICAL APPLICATIONS**

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, or polarity protection application.

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

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

PARAMETER	SYMBOL	SS10PH9	SS10PH10	UNIT
Device marking code		10H9	10H10	
Maximum repetitive peak reverse voltage	$V_{RRM}$	90	100	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	10		A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	200		A
Non-repetitive avalanche energy at $I_{AS} = 2.0\text{ A}$ , $T_J = 25\text{ °C}$	$E_{AS}$	20		mJ
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175		°C



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.725	-	V
	$I_F = 10\text{ A}$			0.800	0.88	
	$I_F = 5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.581	-	
	$I_F = 10\text{ A}$			0.661	0.74	
Reverse current	Rated $V_R$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	0.3	10	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		0.3	3	mA
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	270	-	pF

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width  $\leq 40\text{ ms}$

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified)				
PARAMETER	SYMBOL	SS10PH9	SS10PH10	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

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS10PH10-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS10PH10-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS10PH10HM3_A/H <sup>(1)</sup>	0.10	H	1500	7" diameter plastic tape and reel
SS10PH10HM3_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)

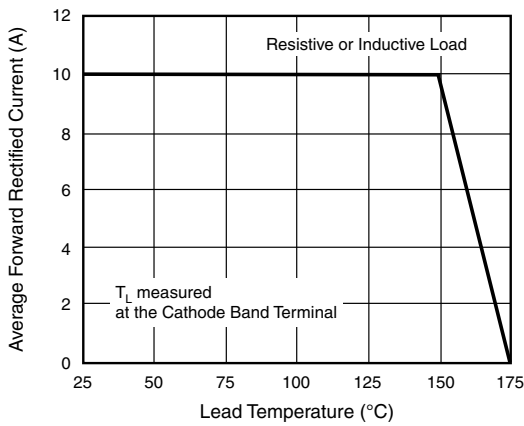


Fig. 1 - Maximum Forward Current Derating Curve

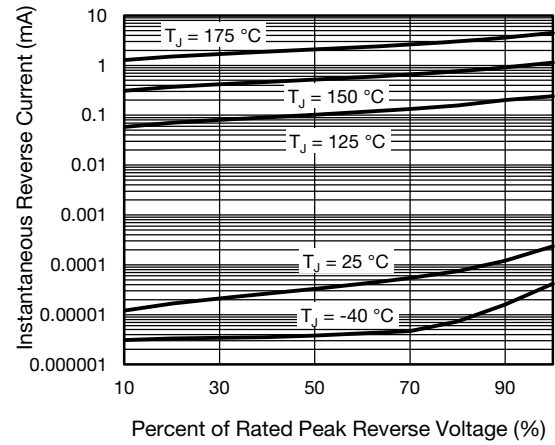


Fig. 4 - Typical Reverse Characteristics

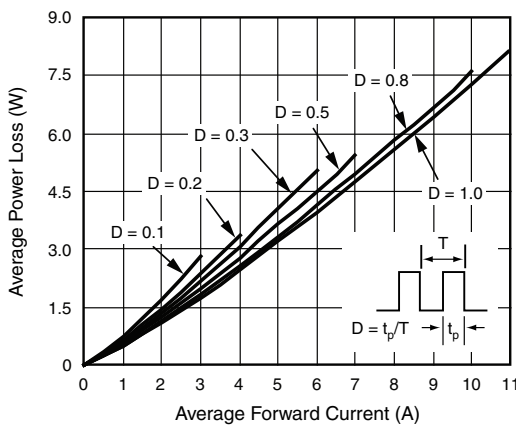


Fig. 2 - Forward Power Loss Characteristics

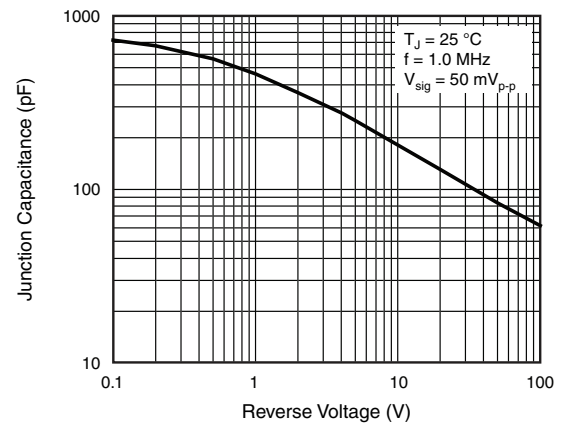


Fig. 5 - Typical Junction Capacitance

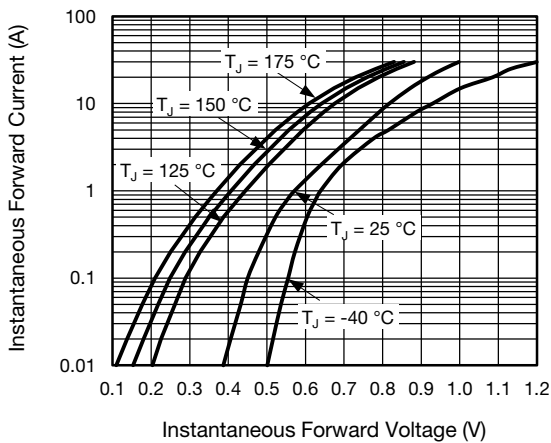


Fig. 3 - Typical Instantaneous Forward Characteristics

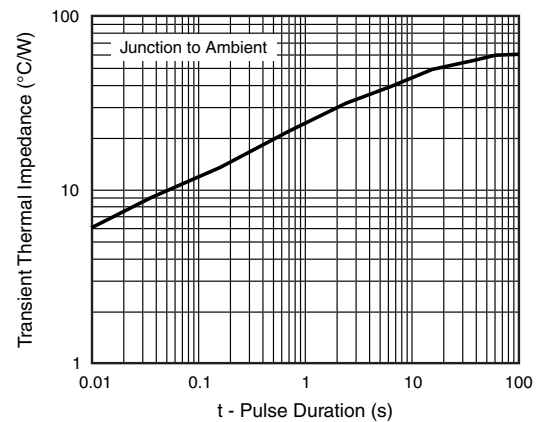
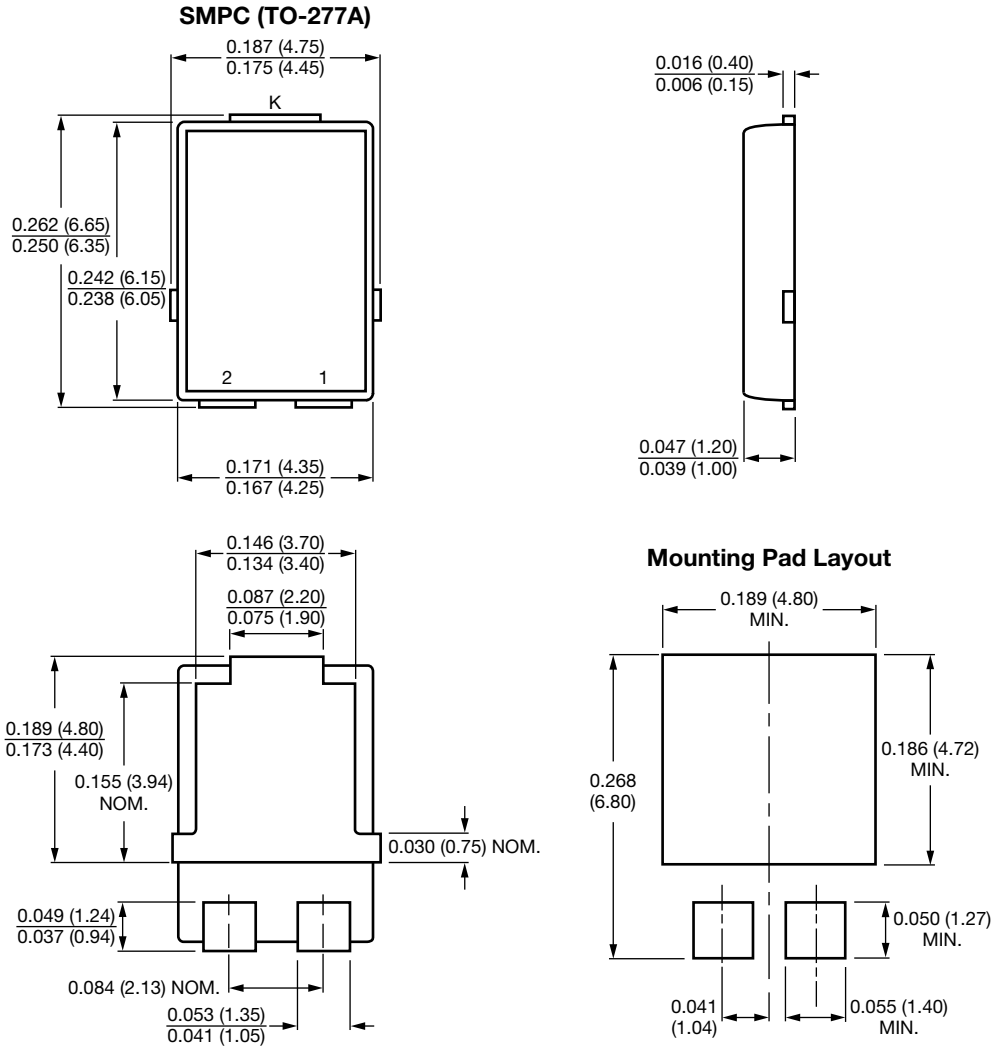


Fig. 6 - Typical Transient Thermal Impedance



### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC® TO-277A



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