

High Current Density Surface Mount High Voltage Schottky Rectifiers

eSMP® Series



TO-277A (SMPC)



FEATURES

- Power pack
- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- High barrier technology, $T_J = 175^\circ\text{C}$ 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



RoHS
COMPLIANT
HALOGEN
FREE

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: TO-277A (SMPC)

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

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
V_{RRM}	90 V, 100 V
I_{FSM}	200 A
E_{AS}	20 mJ
V_F at $I_F = 10$ A	0.661 V
I_R	0.3 μA
T_J max.	175 $^\circ\text{C}$
Package	TO-277A (SMPC)
Diode variations	Single die

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ 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 $I_{AS} = 2.0$ A, $T_J = 25^\circ\text{C}$	E_{AS}	20		mJ
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175		$^\circ\text{C}$

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

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 5\text{ A}$	$T_A = 25\text{ }^{\circ}\text{C}$	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	$T_A = 25\text{ }^{\circ}\text{C}$	0.3	10	μA
		$T_A = 125\text{ }^{\circ}\text{C}$	0.3	3	mA
Typical junction capacitance	4.0 V, 1 MHz	C_J	270	-	pF

Notes(1) Pulse test: 300 μs 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	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

ORDERING INFORMATION (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
SS10PH10HM3/86A ⁽¹⁾	0.10	86A	1500	7" diameter plastic tape and reel
SS10PH10HM3/87A ⁽¹⁾	0.10	87A	6500	13" diameter plastic tape and reel
SS10PH10HM3_A/H ⁽¹⁾	0.10	H	1500	7" diameter plastic tape and reel
SS10PH10HM3_A/I ⁽¹⁾	0.10	I	6500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

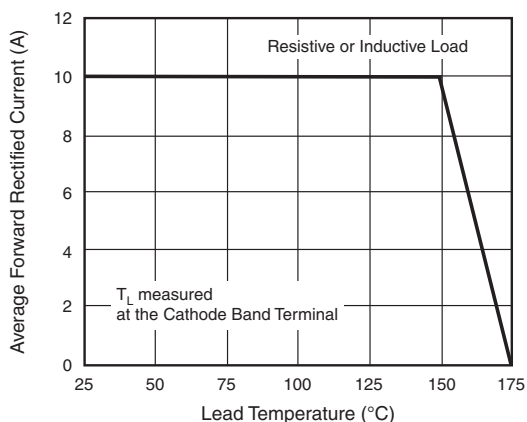
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

Fig. 1 - Maximum Forward Current Derating Curve

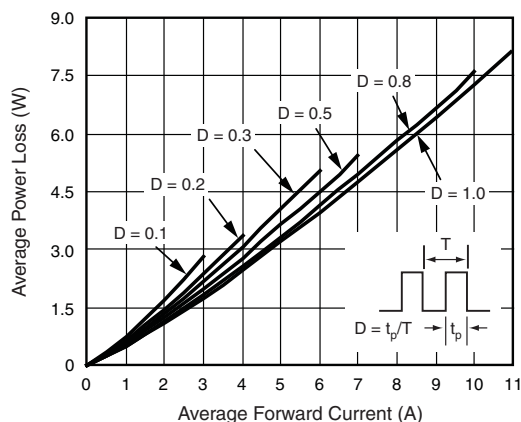


Fig. 2 - Forward Power Loss Characteristics

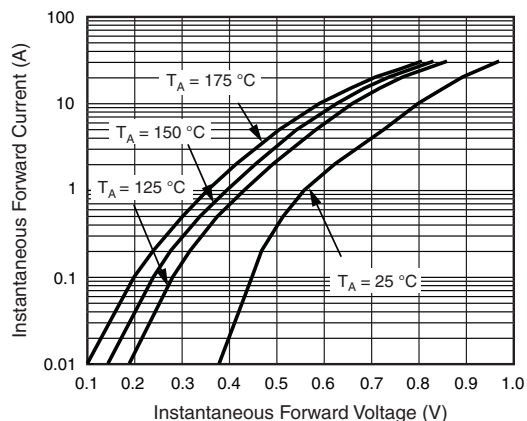


Fig. 3 - Typical Instantaneous Forward Characteristics

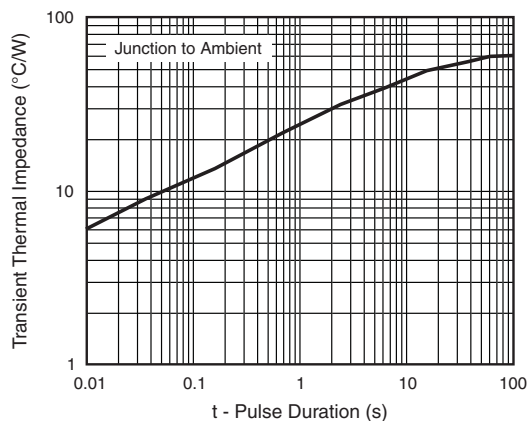


Fig. 6 - Typical Transient Thermal Impedance

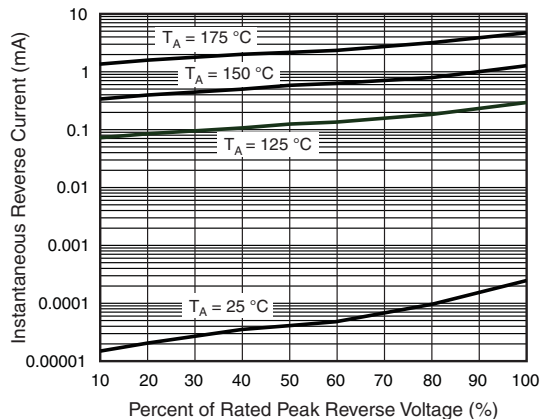


Fig. 4 - Typical Reverse Characteristics

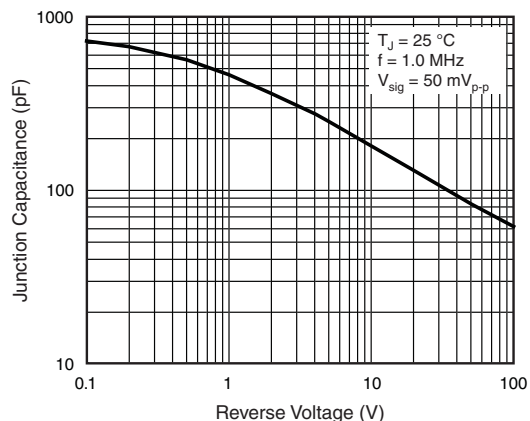
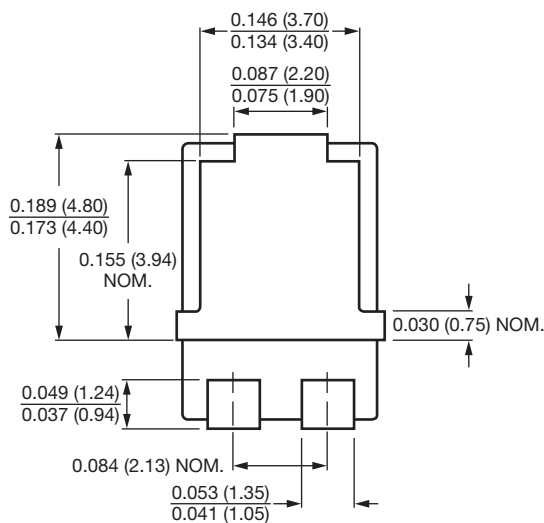
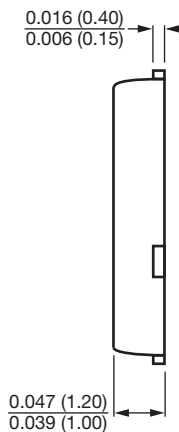
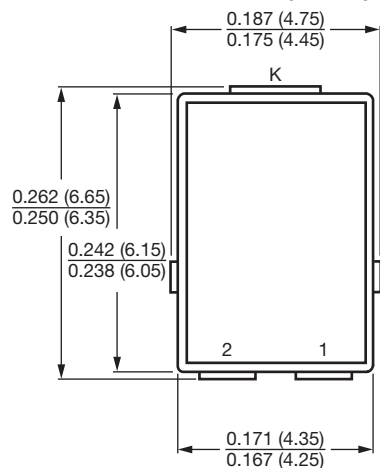


Fig. 5 - Typical Junction Capacitance

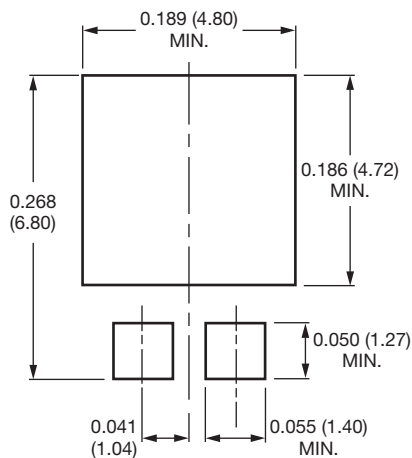


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-277A (SMPC)



Mounting Pad Layout



Conform to JEDEC® TO-277A



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