

High Current Density Surface Mount High-Voltage Schottky Rectifier



FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- High barrier technology, $T_J = 175\text{ }^\circ\text{C}$ maximum
- Low leakage current
- Meets MSL level 1, per J-STD-020
- Solder dip $260\text{ }^\circ\text{C}$, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- **Halogen-free**



RoHS
COMPLIANT
HALOGEN
FREE

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 μA
T_J max.	175 $^\circ\text{C}$

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: TO-277A (SMPC)

Molding compound meets UL 94V-0 flammability rating.

Base P/N-E3 - RoHS compliant, commercial grade

Base P/NHE3 - RoHS compliant, high reliability/automotive grade (AEC-Q101 qualified)

Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

Base P/NHM3 - halogen-free and RoHS compliant, high reliability/automotive grade (AEC-Q101 qualified)

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 and M3 suffix meets JESD 201 class 1A whisker test, HE3 and HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ 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 $I_{AS} = 2\text{ A}$, $L = 10\text{ mH}$, $T_J = 25\text{ }^\circ\text{C}$	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 ⁽¹⁾	$I_F = 5\text{ A}$ $I_F = 10\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	V_F	0.725 0.800	- 0.88	V
	$I_F = 5\text{ A}$ $I_F = 10\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.581 0.661	- 0.74	
Reverse current ⁽²⁾	rated V_R	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$	I_R	0.3 0.3	10 3	μA 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 noted)				
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 P.C.B. 1 oz. pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS10PH10-E3/86A	0.10	86A	1500	7" diameter plastic tape and reel
SS10PH10-E3/87A	0.10	87A	6500	13" diameter plastic tape and reel
SS10PH10HE3/86A ⁽¹⁾	0.10	86A	1500	7" diameter plastic tape and reel
SS10PH10HE3/87A ⁽¹⁾	0.10	87A	6500	13" diameter plastic tape and reel
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

Note:

(1) High reliability/automotive grade (AEC-Q101 qualified)

RATINGS AND CHARACTERISTICS CURVES

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

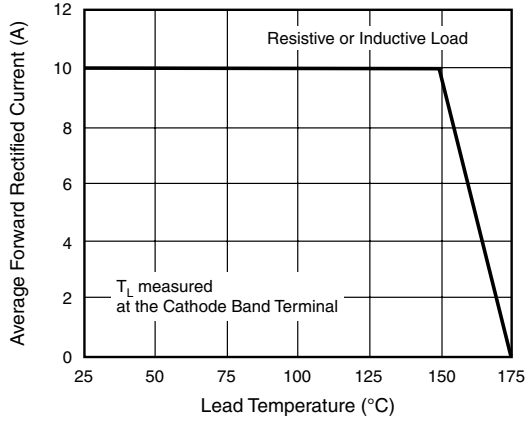


Figure 1. Maximum Forward Current Derating Curve

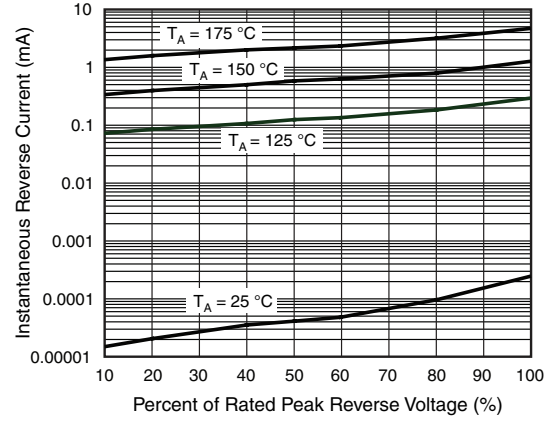


Figure 4. Typical Reverse Characteristics

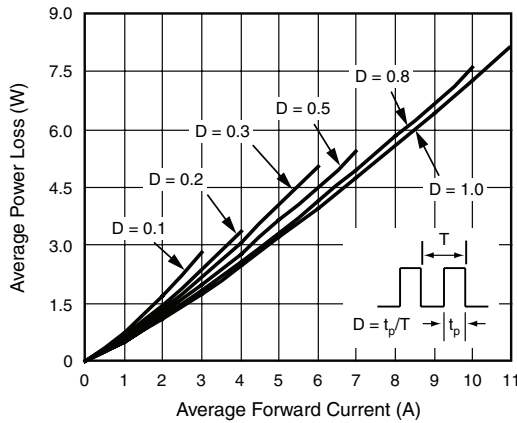


Figure 2. Forward Power Loss Characteristics

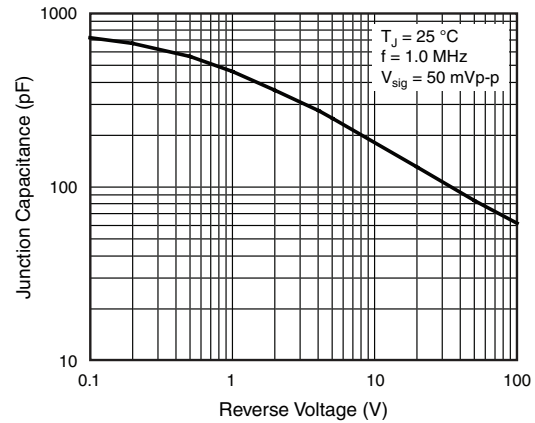


Figure 5. Typical Junction Capacitance

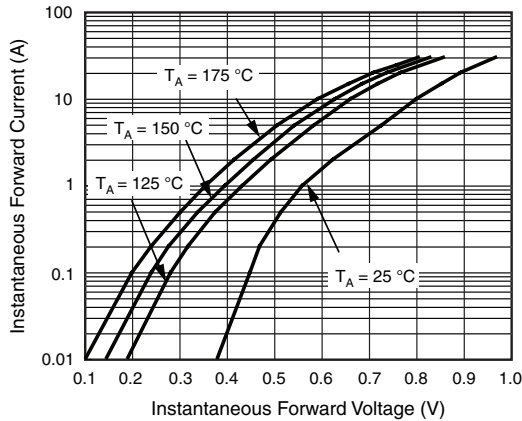


Figure 3. Typical Instantaneous Forward Characteristics

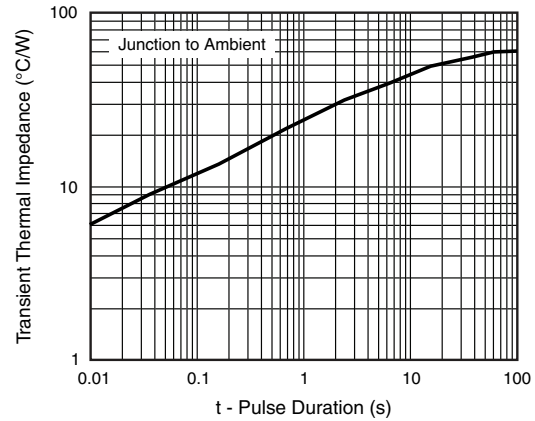


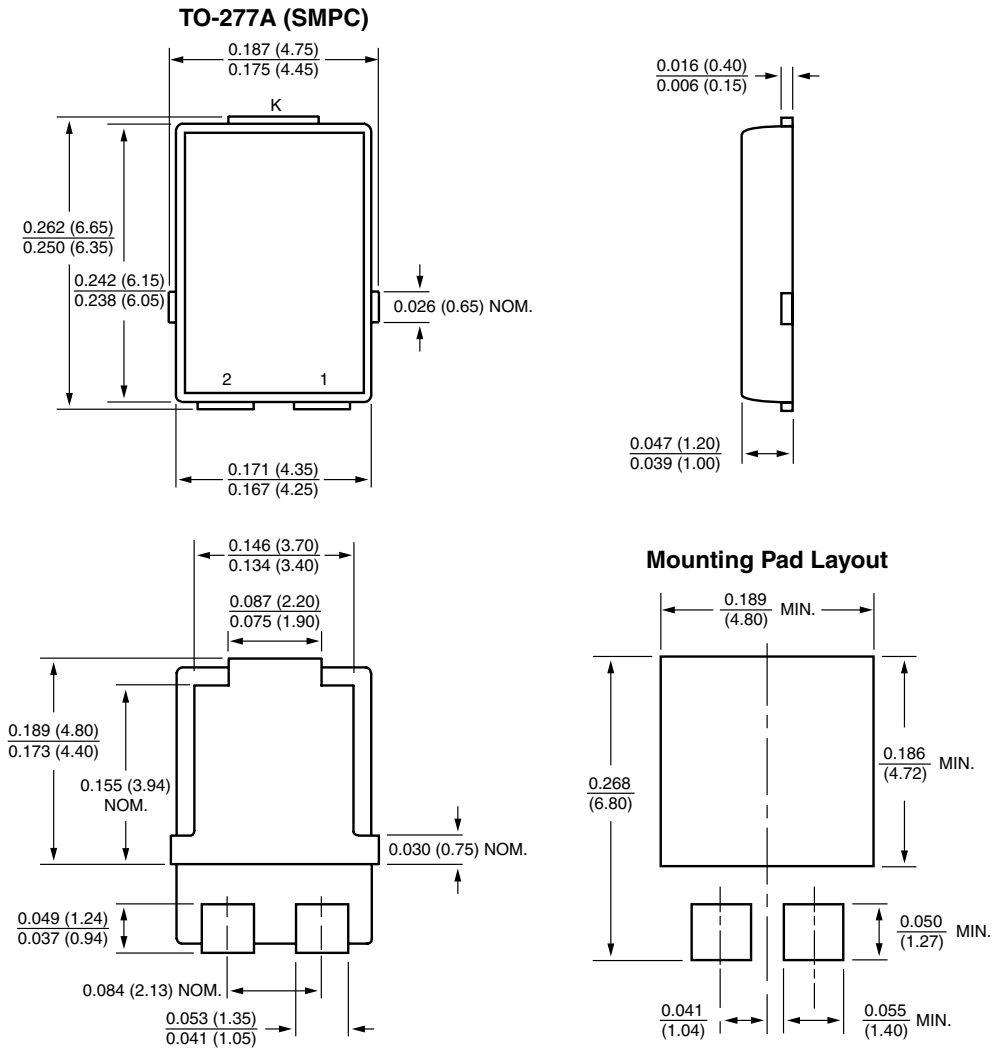
Figure 6. Typical Transient Thermal Impedance

SS10PH9 & SS10PH10

Vishay General Semiconductor



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC TO-277A



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