

# High-Voltage Surface Mount Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



SMA (DO-214AC)



**RoHS**  
COMPLIANT  
**HALOGEN**  
**FREE**  
Available

## FEATURES

- Low profile package
- Ideal for automated placement
- Guardring for overvoltage protection
- Low power losses, high efficiency
- Low forward voltage drop
- Low leakage current
- High surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available  
- Automotive ordering code: base P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

## TYPICAL APPLICATIONS

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

## MECHANICAL DATA

**Case:** SMA (DO-214AC)

Molding compound meets UL 94 V-0 flammability rating

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

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

Base P/NHE3\_X - 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

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

**Polarity:** color band denotes the cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
$V_{RRM}$	90 V, 100 V
$I_{FSM}$	50 A
$V_F$	0.62 V
$I_R$	1.0 $\mu$ A
$T_J$ max.	175 °C
Package	SMA (DO-214AC)
Diode variations	Single

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	SS1H9	SS1H10	UNIT
Device marking code		S9	S10	
Maximum repetitive peak reverse voltage	$V_{RRM}$	90	100	V
Working peak reverse voltage	$V_{RWM}$	90	100	V
Maximum DC blocking voltage	$V_{DC}$	90	100	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	1.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	50		A
Peak repetitive reverse surge current at $t_p = 2.0$ $\mu$ s, 1 kHz	$I_{RRM}$	1.0		A
Storage temperature range	$T_{STG}$	-65 to +175		°C
Maximum operating temperature	$T_J$	175		°C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	SS1H9	SS1H10	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	I <sub>F</sub> = 1.0 A	T <sub>J</sub> = 25 °C	V <sub>F</sub>	0.77		V
		T <sub>J</sub> = 125 °C		0.62		
	I <sub>F</sub> = 2.0 A	T <sub>J</sub> = 25 °C		0.86		
		T <sub>J</sub> = 125 °C		0.70		
Maximum reverse current at rated V <sub>R</sub> <sup>(2)</sup>			I <sub>R</sub>	1.0		μA
				0.5		mA

**Notes**

- <sup>(1)</sup> Pulse test: 300 μs pulse width, 1 % duty cycle
- <sup>(2)</sup> Pulse test: pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	SS1H9	SS1H10	UNIT
Maximum thermal resistance <sup>(1)</sup>	R <sub>θJA</sub>	88		°C/W
	R <sub>θJL</sub>	30		

**Note**

- <sup>(1)</sup> PCB mounted with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS1H10-E3/61T	0.064	61T	1800	7" diameter plastic tape and reel
SS1H10-E3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel
SS1H10HE3_B/H <sup>(1)</sup>	0.064	H	1800	7" diameter plastic tape and reel
SS1H10HE3_B/I <sup>(1)</sup>	0.064	I	7500	13" diameter plastic tape and reel
SS1H10-M3/61T	0.064	61T	1800	7" diameter plastic tape and reel
SS1H10-M3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel
SS1H10HM3_B/H <sup>(1)</sup>	0.064	H	1800	7" diameter plastic tape and reel
SS1H10HM3_B/I <sup>(1)</sup>	0.064	I	7500	13" diameter plastic tape and reel

**Note**

- <sup>(1)</sup> AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

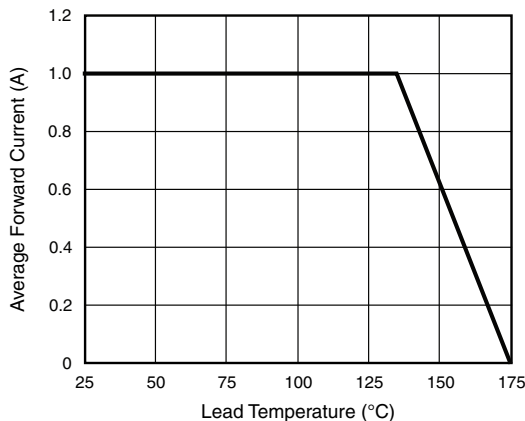


Fig. 1 - Forward Current Derating Curve

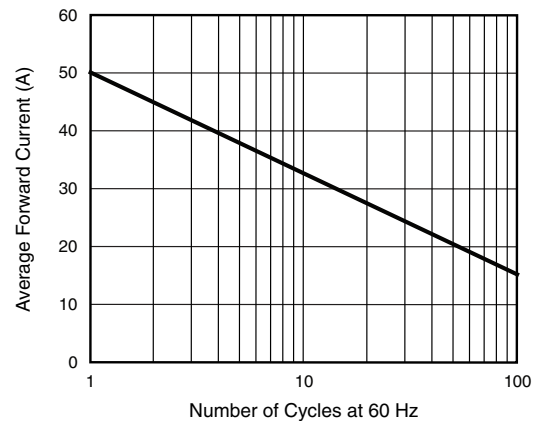


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

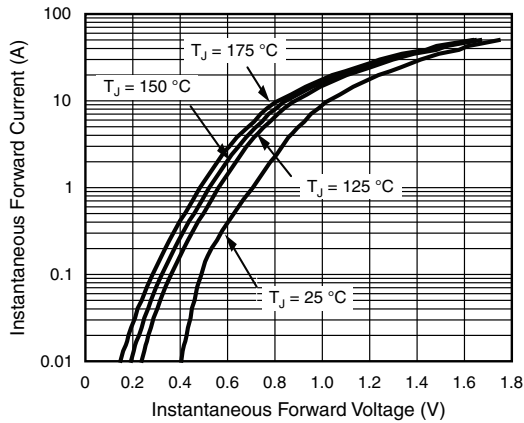


Fig. 3 - Typical Instantaneous Forward Characteristics

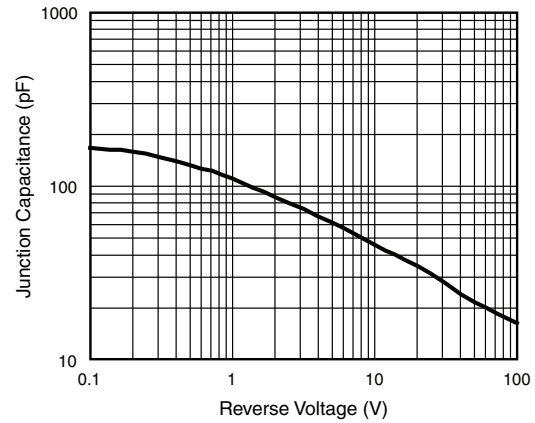


Fig. 5 - Typical Junction Capacitance

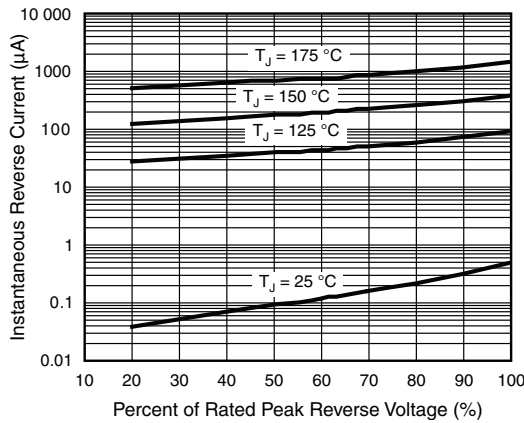


Fig. 4 - Typical Reverse Characteristics

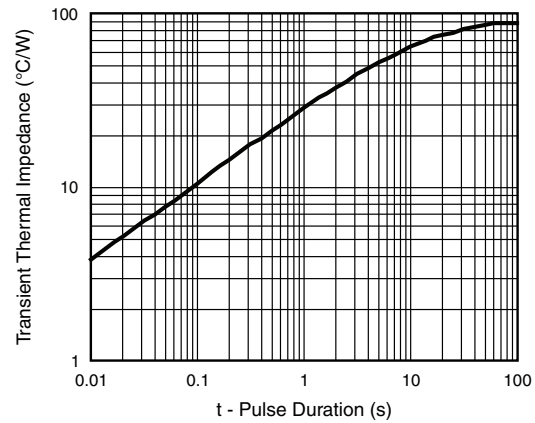
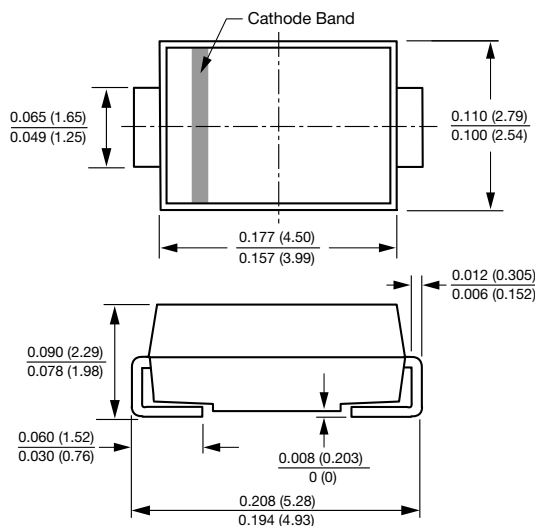


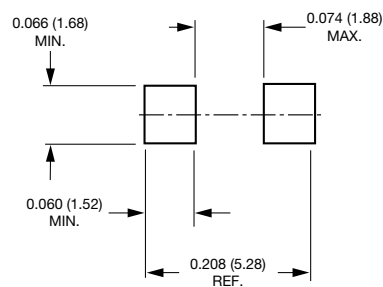
Fig. 6 - Typical Transient Thermal Impedance

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

**SMA (DO-214AC)**



**Mounting Pad Layout**





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