

# 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)

**DESIGN SUPPORT TOOLS AVAILABLE**


3D Models

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)
Circuit configuration	Single

**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

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



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	SS1H9	SS1H10	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	$I_F = 1.0\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	$V_F$	0.77		V
		$T_J = 125\text{ }^\circ\text{C}$		0.62		
	$I_F = 2.0\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$		0.86		
		$T_J = 125\text{ }^\circ\text{C}$		0.70		
Maximum reverse current at rated $V_R$ <sup>(2)</sup>			$I_R$	$T_J = 25\text{ }^\circ\text{C}$	1.0	$\mu\text{A}$
				$T_J = 125\text{ }^\circ\text{C}$	0.5	mA

**Notes**

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

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	SS1H9	SS1H10	UNIT
Maximum thermal resistance <sup>(1)</sup>	$R_{\theta JA}$	88		$^\circ\text{C/W}$
	$R_{\theta JL}$	30		

**Note**

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

<b>ORDERING INFORMATION</b> (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** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

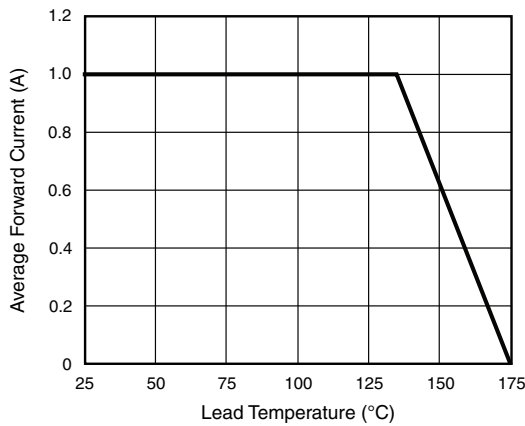


Fig. 1 - Forward Current Derating Curve

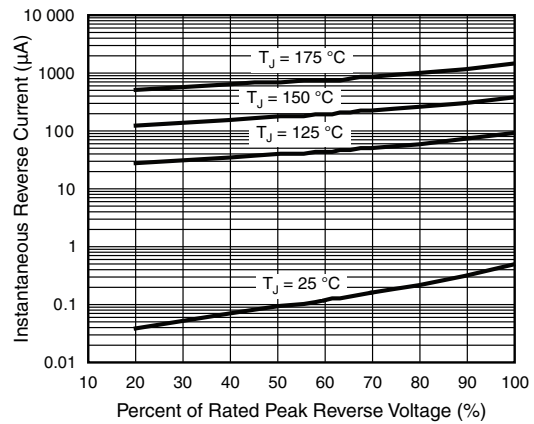


Fig. 4 - Typical Reverse Characteristics

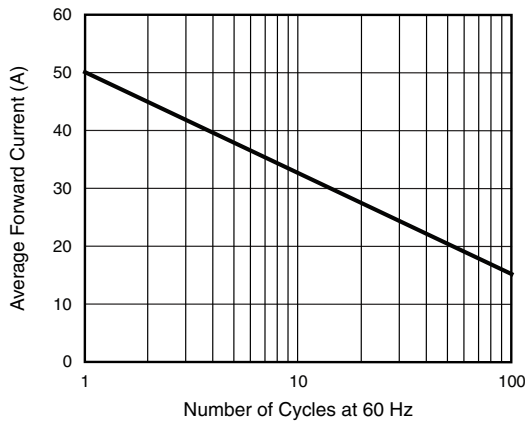


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

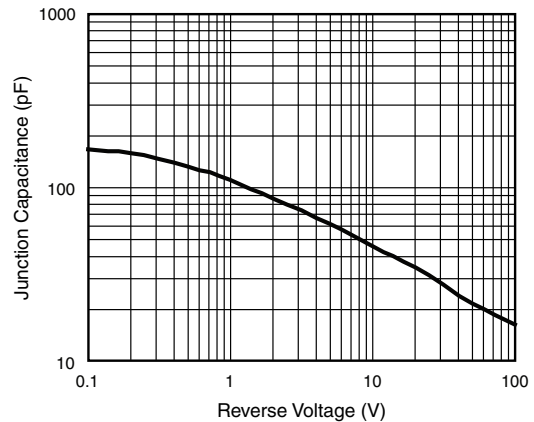


Fig. 5 - Typical Junction Capacitance

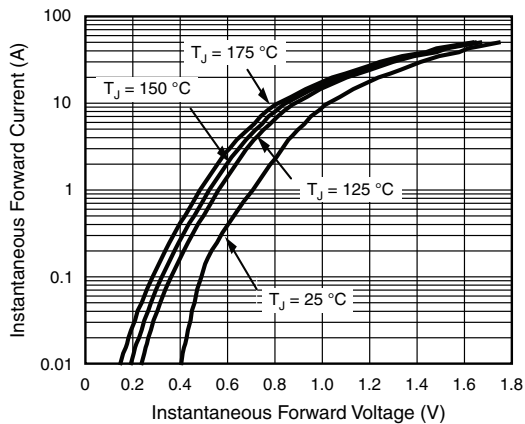


Fig. 3 - Typical Instantaneous Forward Characteristics

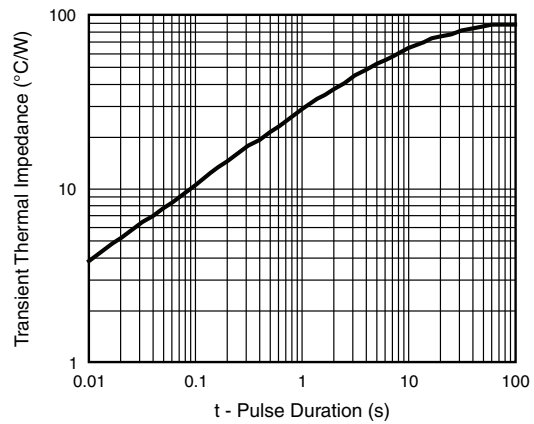
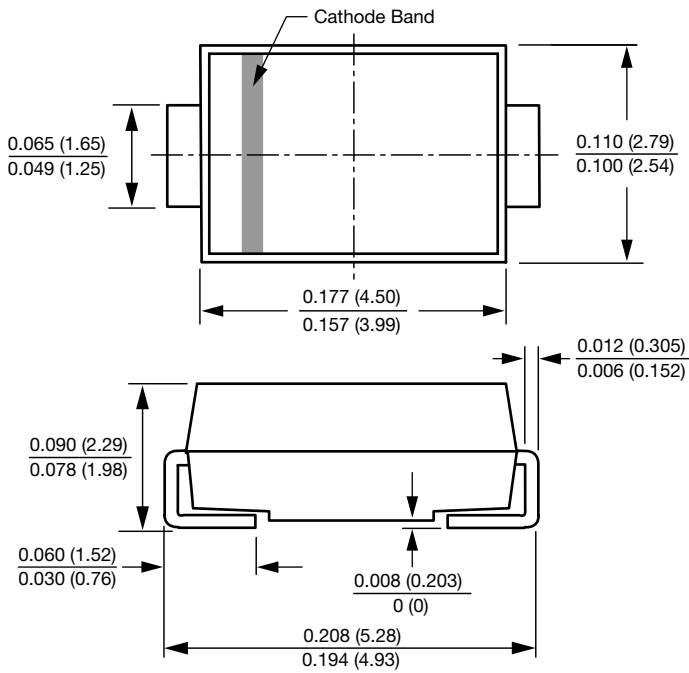


Fig. 6 - Typical Transient Thermal Impedance

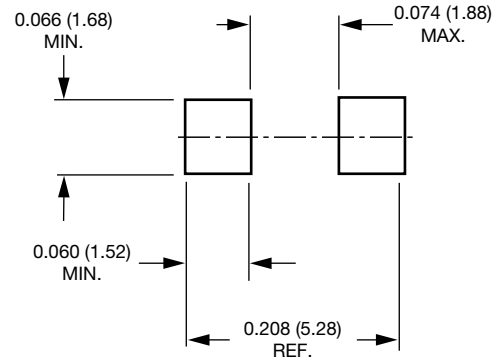


### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

#### SMA (DO-214AC)



#### Mounting Pad Layout





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