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### Vishay General Semiconductor

AUTOMOTIVE

RoHS

COMPLIANT

HALOGEN **FREE** 

# **Surface-Mount Schottky Barrier Rectifier**



SMA (DO-214AC)



#### **LINKS TO ADDITIONAL RESOURCES**

















PRIMARY CHARACTERISTICS						
I <sub>F(AV)</sub> 1.0 A						
$V_{RRM}$	20 V, 30 V, 40 V, 50 V, 60 V					
I <sub>FSM</sub>	40 A					
V <sub>F</sub>	0.50 V, 0.75 V					
T <sub>J</sub> max.	150 °C					
Package	SMA (DO-214AC)					
Circuit configuration	Single					

#### **FEATURES**

- Low profile package
- · Ideal for automated placement
- · Guardring for overvoltage protection
- Low power losses, high efficiency
- Low forward voltage drop
- · 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.vishav.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

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	SYMBOL	SS12	SS13	SS14	SS15	SS16	UNIT
Device marking code		S2	S3	S4	S5	S6	V
Maximum repetitive peak reverse voltage	$V_{RRM}$	20	30	40	50	60	V
Maximum RMS voltage	V <sub>RMS</sub>	14	21	28	35	42	V
Maximum DC blocking voltage	$V_{DC}$	20	30	40	50	60	V
Maximum average forward rectified current at T <sub>L</sub> (fig. 1)	I <sub>F(AV)</sub>	1.0				Α	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	40			А		
Voltage rate of change (rated V <sub>R</sub> )	dV/dt	dt 10 000			V/µs		
Operating junction temperature range	TJ	-65 to +150			°C		
Storage temperature range	T <sub>STG</sub>	stg -65 to +150 °C			°C		

# SS12, SS13, SS14, SS15, SS16

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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)								
PARAMETER	TEST CONDITIONS	SYMBOL	SS12	SS13	SS14	SS15	SS16	UNIT
Maximum instantaneous forward voltage	1.0 A	V <sub>F</sub> <sup>(1)</sup>	0.50		0.75		V	
Maximum DC reverse current at	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	0.2			mA		
rated DC blocking voltage	T <sub>A</sub> = 100 °C	IR (=/		6.0		5.0		IIIA

#### **Notes**

 $^{(1)}\,$  Pulse test: 300  $\mu s$  pulse width, 1 % duty cycle

 $^{(2)}$  Pulse test: pulse width  $\leq 40 \text{ ms}$ 

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	SYMBOL SS12 SS13 SS14 SS15 SS16 UNIT					UNIT	
Typical thermal resistance (1)	$R_{\theta JA}$	88					°C/W
Typical thermal resistance (*)	$R_{\theta JL}$	28					

#### Note

 $^{(1)}$  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				
SS16-E3/61T	0.064	61T	1800	7" diameter plastic tape and reel				
SS16-E3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel				
SS16HE3_B/H (1)	0.064	Н	1800	7" diameter plastic tape and reel				
SS16HE3_B/I (1)	0.064	I	7500	13" diameter plastic tape and reel				
SS16-M3/61T	0.064	61T	1800	7" diameter plastic tape and reel				
SS16-M3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel				
SS16HM3_B/H <sup>(1)</sup>	0.064	Н	1800	7" diameter plastic tape and reel				
SS16HM3_B/I (1)	0.064	I	7500	13" diameter plastic tape and reel				

#### Note

(1) AEC-Q101 qualified

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### **RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25$ °C unless otherwise noted)

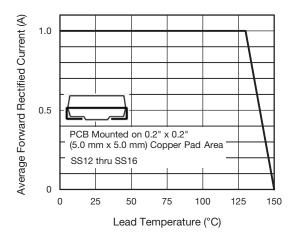


Fig. 1 - Forward Current Derating Curve

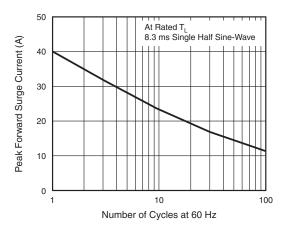


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

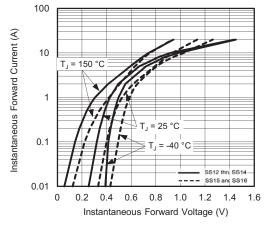


Fig. 3 - Typical Instantaneous Forward Characteristics

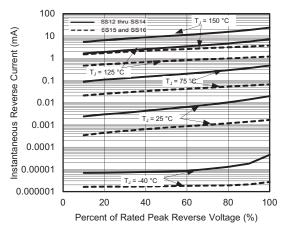


Fig. 4 - Typical Reverse Characteristics

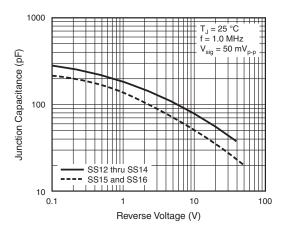


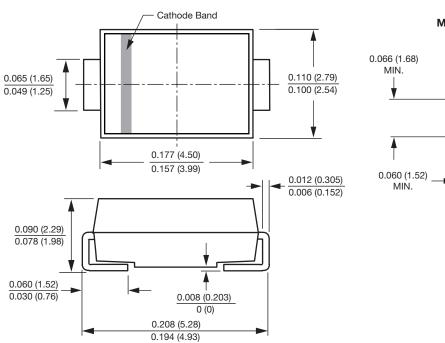
Fig. 5 - Typical Junction Capacitance

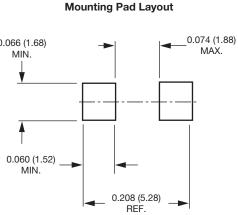


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### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

#### SMA (DO-214AC)







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