

## Surface Mount Schottky Barrier Rectifier


**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
- 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
$V_{RRM}$	20 V, 30 V, 40 V, 50 V, 60 V
$I_{FSM}$	40 A
$V_F$	0.50 V, 0.75 V
$T_J$ max.	150 °C
Package	SMA (DO-214AC)
Circuit configuration	Single

MAXIMUM RATINGS ( $T_A = 25$ °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	$V_{RMS}$	14	21	28	35	42	V
Maximum DC blocking voltage	$V_{DC}$	20	30	40	50	60	V
Maximum average forward rectified current at $T_L$ (fig. 1)	$I_{F(AV)}$	1.0					A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	40					A
Voltage rate of change (rated $V_R$ )	$dV/dt$	10 000					V/ $\mu$ s
Operating junction temperature range	$T_J$	-65 to +150					°C
Storage temperature range	$T_{STG}$	-65 to +150					°C



ELECTRICAL CHARACTERISTICS (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 rated DC blocking voltage	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	0.2						mA
	T <sub>A</sub> = 100 °C		6.0		5.0				

**Notes**

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

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL	SS12	SS13	SS14	SS15	SS16	UNIT	
Typical thermal resistance <sup>(1)</sup>	R <sub>θJA</sub>	88					°C/W	
	R <sub>θJL</sub>	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 <sup>(1)</sup>	0.064	H	1800	7" diameter plastic tape and reel
SS16HE3_B/I <sup>(1)</sup>	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	H	1800	7" diameter plastic tape and reel
SS16HM3_B/I <sup>(1)</sup>	0.064	I	7500	13" diameter plastic tape and reel

**Note**

- (1) AEC-Q101 qualified

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

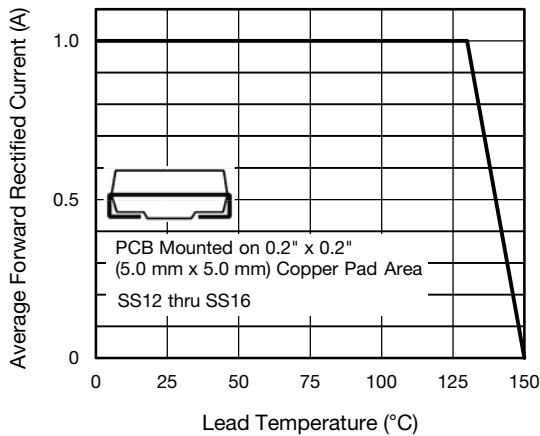


Fig. 1 - Forward Current Derating Curve

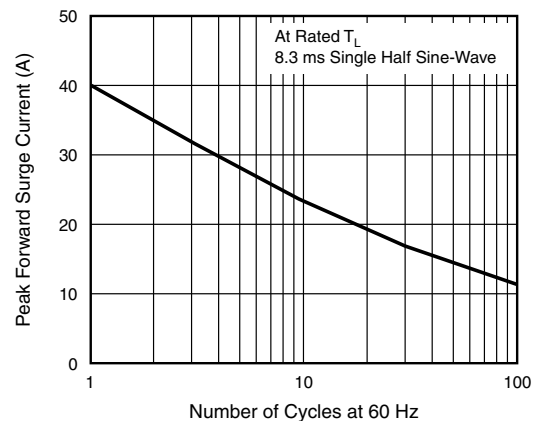


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

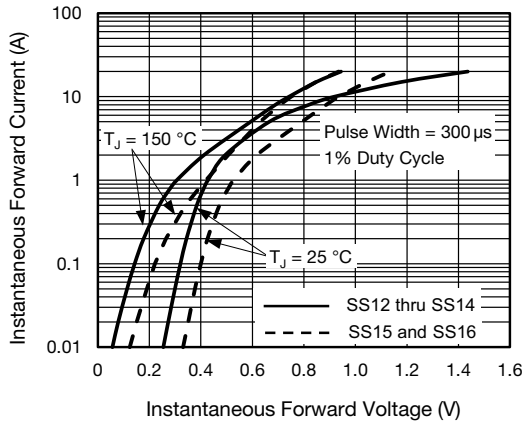


Fig. 3 - Typical Instantaneous Forward Characteristics

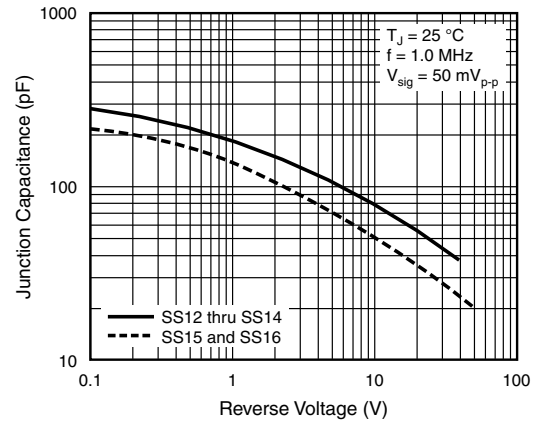


Fig. 5 - Typical Junction Capacitance

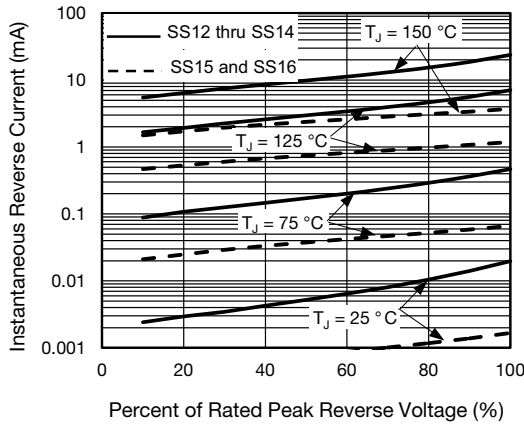
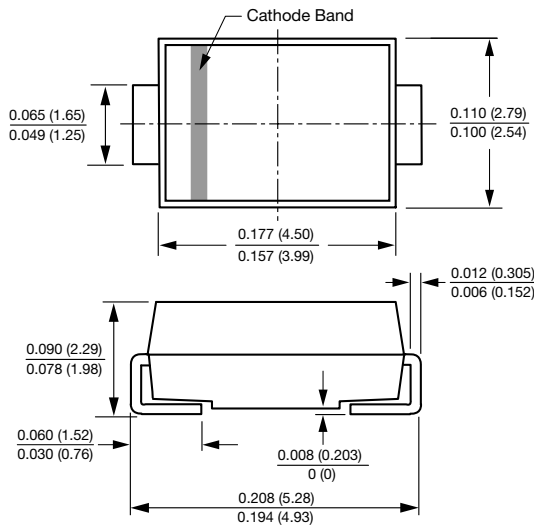


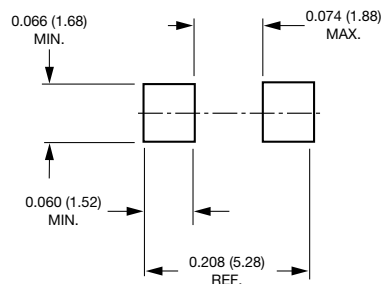
Fig. 4 - Typical Reverse Characteristics

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### SMA (DO-214AC)



### Mounting Pad Layout





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