

# Surface Mount Schottky Barrier Rectifier



DO-214AC (SMA)

## FEATURES

- Low profile package
- Ideal for automated placement
- Guardring for overvoltage protection
- Low power losses, high efficiency
- Very low switching losses
- 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
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

## PRIMARY CHARACTERISTICS

$I_{F(AV)}$	1.5 A
$V_{RRM}$	90 V
$I_{FSM}$	40 A
$V_F$	0.75 V
$T_J \text{ max.}$	150 °C
Package	DO-214AC (SMA)
Diode variations	Single

## TYPICAL APPLICATIONS

For use in high frequency inverters, switching power supplies, freewheeling diodes, oring diode, DC/DC converters, and reverse battery protection.

## MECHANICAL DATA

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

Molding compound meets UL 94 V-0 flammability rating  
 Base P/N-E3 - RoHS-compliant, commercial grade  
 Base P/NHE3 - RoHS-compliant and AEC-Q101 qualified  
 Base P/NHE3\_X - 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 suffix meets JESD 201 class 2 whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes cathode end

## MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	BYS11-90	UNIT
Device marking code		BYS109	
Maximum repetitive peak reverse voltage	$V_{RRM}$	90	V
Maximum average forward rectified current	$I_{F(AV)}$	1.5	A
Peak forward surge current single half sine-wave superimposed on rated load	$I_{FSM}$	40	A
		30	
Voltage rate of change (rated $V_R$ )	$dV/dt$	10 000	V/ $\mu$ s
Junction and storage temperature range	$T_J, T_{STG}$	-55 to +150	°C

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

PARAMETER	TEST CONDITIONS	SYMBOL	BYS11-90	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	1.0 A	$V_F$	750	mV
Maximum DC reverse current <sup>(1)</sup>	$V_{RRM}$	$T_J = 25\text{ }^{\circ}\text{C}$	100	$\mu\text{A}$
		$T_J = 100\text{ }^{\circ}\text{C}$	1	mA

**Note**

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

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

PARAMETER	SYMBOL	BYS11-90	UNIT
Maximum thermal resistance, junction to lead	$R_{\theta JL}$	25	$^{\circ}\text{C/W}$
Maximum thermal resistance, junction to ambient	$R_{\theta JA}$ <sup>(1)</sup>	150	$^{\circ}\text{C/W}$
	$R_{\theta JA}$ <sup>(2)</sup>	125	
	$R_{\theta JA}$ <sup>(3)</sup>	100	

**Notes**

<sup>(1)</sup> Mounted on epoxy-glass hard tissue

<sup>(2)</sup> Mounted on epoxy-glass hard tissue, 50 mm<sup>2</sup> 35  $\mu\text{m}$  Cu

<sup>(3)</sup> Mounted on Al-oxide-ceramic ( $\text{Al}_2\text{O}_3$ ), 50 mm<sup>2</sup> 35  $\mu\text{m}$  Cu

**ORDERING INFORMATION** (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
BYS11-90-E3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYS11-90-E3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYS11-90HE3/TR <sup>(1)</sup>	0.064	TR	1800	7" diameter plastic tape and reel
BYS11-90HE3/TR3 <sup>(1)</sup>	0.064	TR3	7500	13" diameter plastic tape and reel
BYS11-90HE3_A/H <sup>(1)</sup>	0.064	H	1800	7" diameter plastic tape and reel
BYS11-90HE3_A/I <sup>(1)</sup>	0.064	I	7500	13" diameter plastic tape and reel

**Note**

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

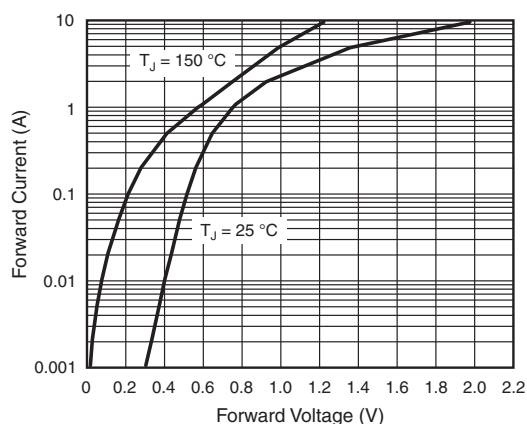
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current vs. Forward Voltage

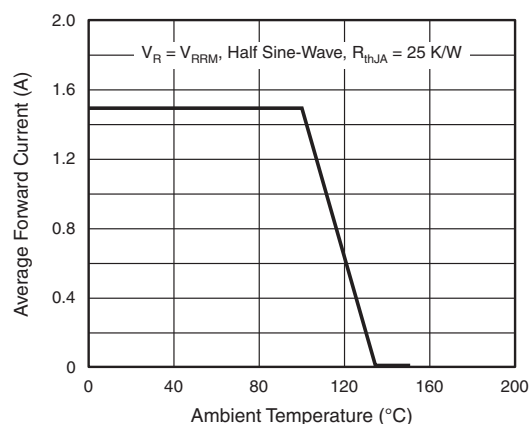


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

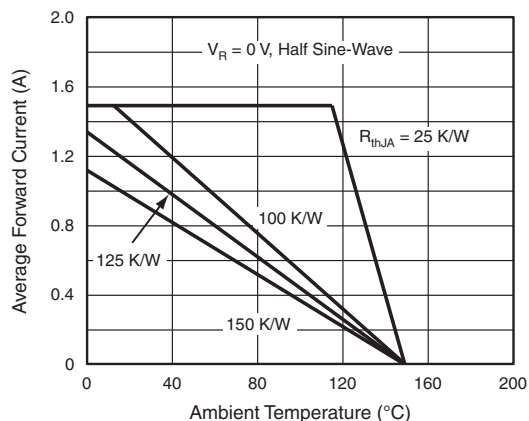


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

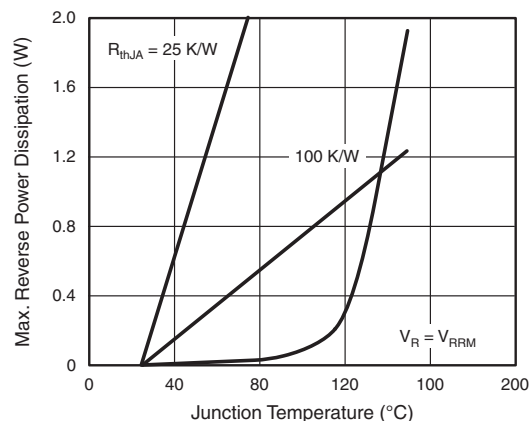


Fig. 5 - Max. Reverse Power Dissipation vs. Junction Temperature

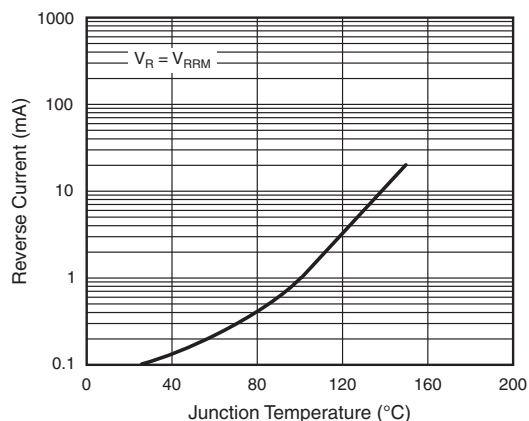


Fig. 4 - Reverse Current vs. Junction Temperature

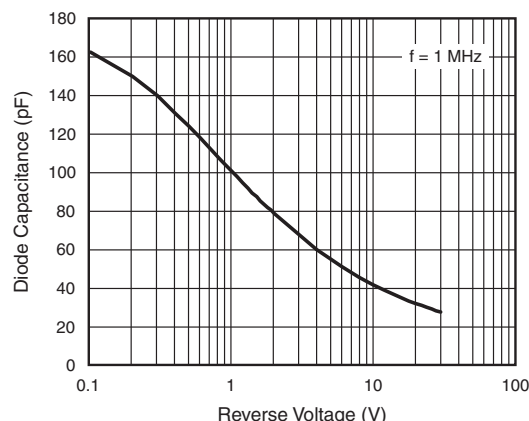
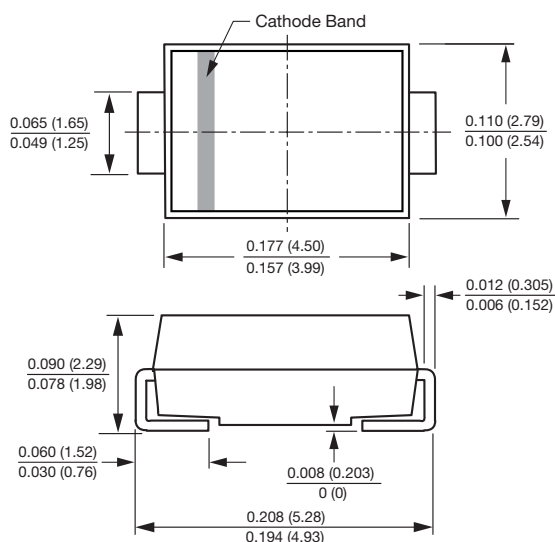


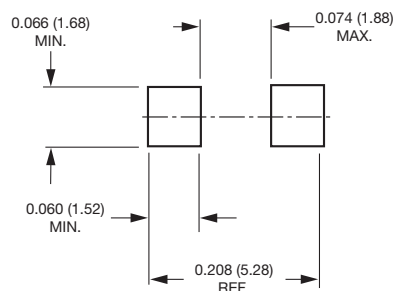
Fig. 6 - Diode Capacitance vs. Reverse Voltage

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-214AC (SMA)



### Mounting Pad Layout





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