

Surface Mount Schottky Barrier Rectifier



SMA (DO-214AC)

Cathode  Anode

DESIGN SUPPORT TOOLS AVAILABLE



3D Models

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	SMA (DO-214AC)
Circuit configuration	Single

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



RoHS
COMPLIANT

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: SMA (DO-214AC)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
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 and HE3 suffix meet 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/ μ 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 ⁽¹⁾	1.0 A	V_F	750	mV
Maximum DC reverse current ⁽¹⁾	V_{RRM}	$T_J = 25\text{ }^{\circ}\text{C}$	100	μA
		$T_J = 100\text{ }^{\circ}\text{C}$	1	mA

Note

⁽¹⁾ Pulse test: 300 μs 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	$R_{\theta JA}$ ⁽¹⁾	150	$^{\circ}\text{C/W}$
	$R_{\theta JA}$ ⁽²⁾	125	
	$R_{\theta JA}$ ⁽³⁾	100	

Notes

⁽¹⁾ Mounted on epoxy-glass hard tissue

⁽²⁾ Mounted on epoxy-glass hard tissue, 50 mm² 35 μm Cu

⁽³⁾ Mounted on Al-oxide-ceramic (Al_2O_3), 50 mm² 35 μm 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_A/H ⁽¹⁾	0.064	H	1800	7" diameter plastic tape and reel
BYS11-90HE3_A/I ⁽¹⁾	0.064	I	7500	13" diameter plastic tape and reel

Note

⁽¹⁾ AEC-Q101 qualified



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

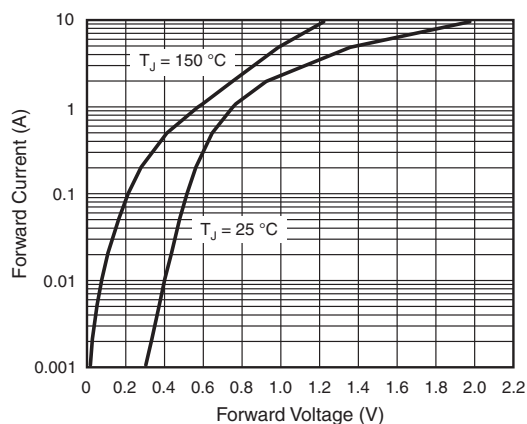


Fig. 1 - Forward Current vs. Forward Voltage

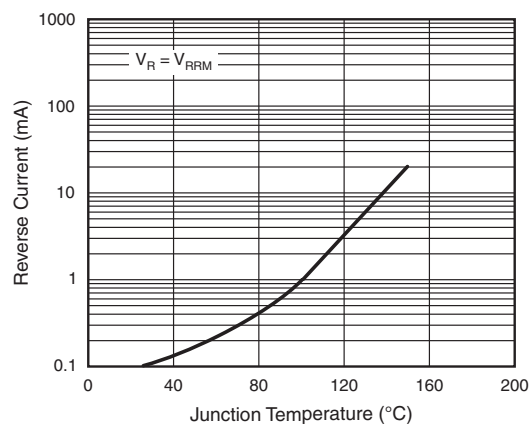


Fig. 4 - Reverse Current vs. Junction Temperature

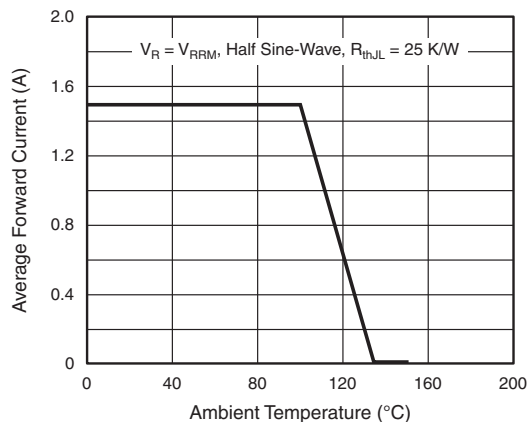


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

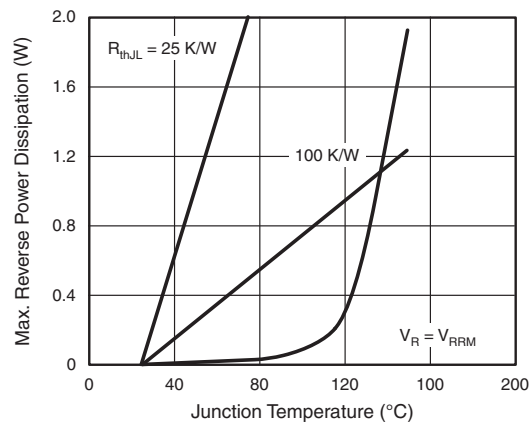


Fig. 5 - Max. Reverse Power Dissipation vs. Junction Temperature

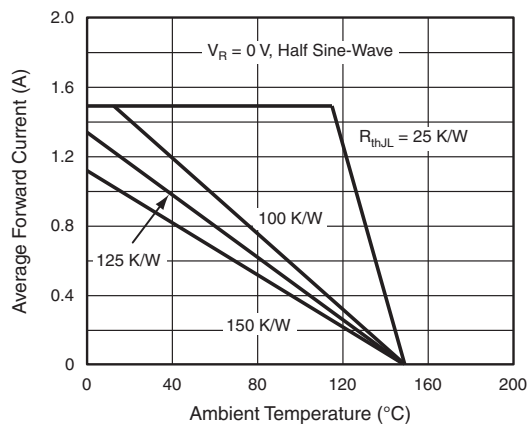


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

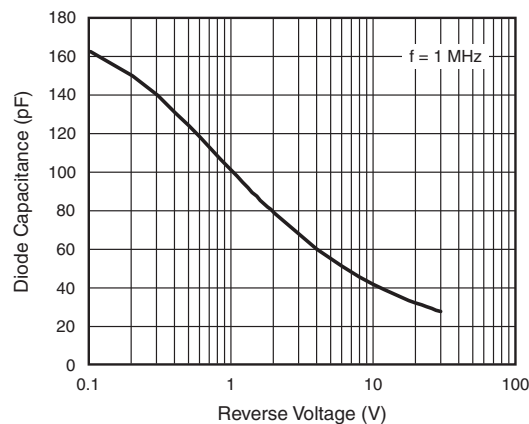
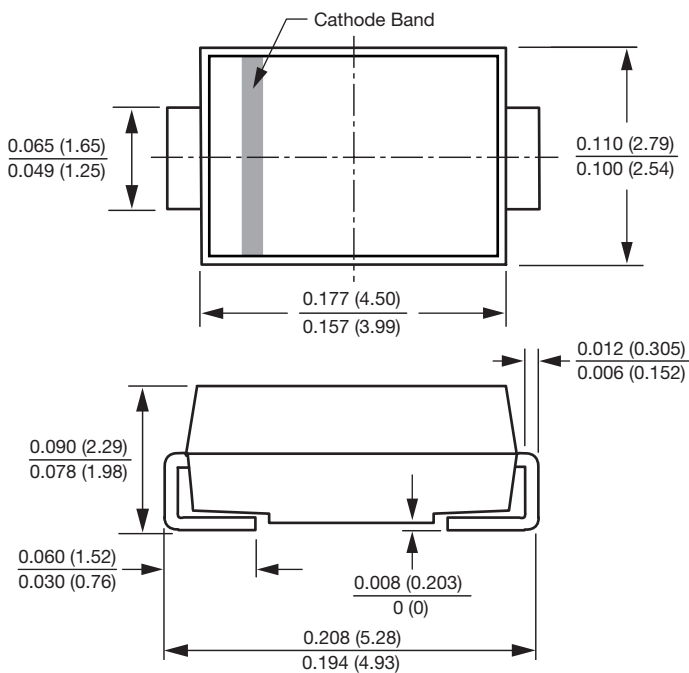


Fig. 6 - Diode Capacitance vs. Reverse Voltage

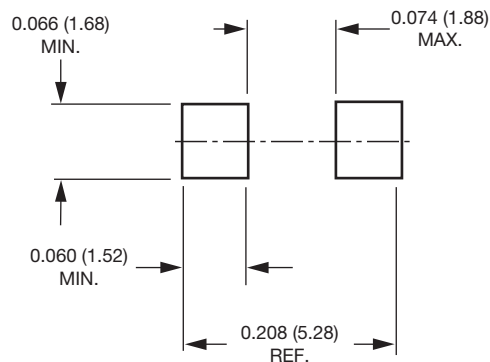


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout





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