Surface-Mount Schottky Barrier Rectifier



SMA (DO-214AC)

Cathode ○—▶|—○ Anode

LINKS TO ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.5 A
V_{RRM}	90 V
I_{FSM}	40 A
V_F at I_F = 1.0 A	0.75 V
T_J max.	150 °C
Package	SMA (DO-214AC)
Circuit configuration	Single

FEATURES

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

- 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

TYPICAL APPLICATIONS

For use in high frequency inverters, switching power supplies, freewheeling diodes, OR-ing 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, 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 the cathode end

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)				
PARAMETER		**SYMBOL**	**BYS12-90**	**UNIT**
Device marking code			BYS 209	
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	8.3 ms	I_{FSM}	40	A
	10 ms		30	
Voltage rate of change (rated V_R)		dV/dt	10 000	V/µs
Junction and storage temperature range		T_J, T_{STG}	-55 to +150	°C

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)					
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**BYS12-90**	**UNIT**
Maximum instantaneous forward voltage (1)	I_F = 1.0 A	T_J = 25 °C	V_F	750	mV
	I_F = 15 mA			360	
Maximum DC reverse current (1)	V_{RRM}	T_J = 25 °C	I_R	100	µA
		T_J = 100 °C		1	mA

Note

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**BYS12-90**	**UNIT**
Maximum thermal resistance, junction to lead	$R_{\theta JL}$	25	°C/W
Maximum thermal resistance, junction to ambient	$R_{\theta JA}$ (1)	150	°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 mm^2 35 µm Cu
(3) Mounted on Al-oxide-ceramic (Al_2O_3), 50 mm^2 35 µm Cu

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
BYS12-90-E3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYS12-90-E3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYS12-90HE3_A/H (1)	0.064	H	1800	7" diameter plastic tape and reel
BYS12-90HE3_A/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)

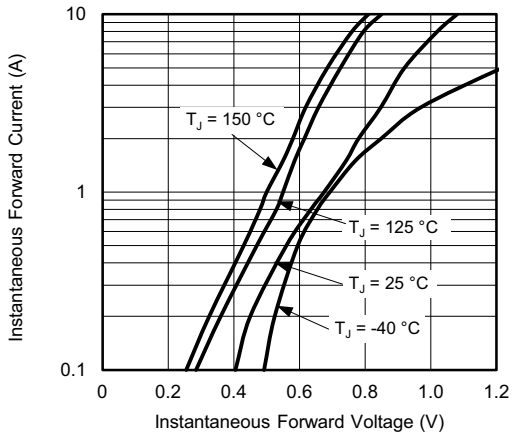


Fig. 1 - Typical Instantaneous Forward Characteristics

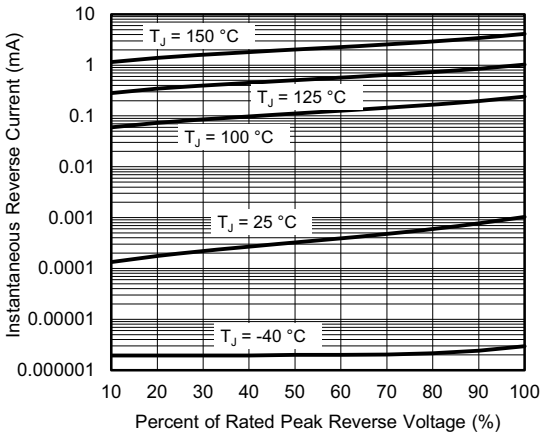


Fig. 4 - Typical Reverse Characteristics

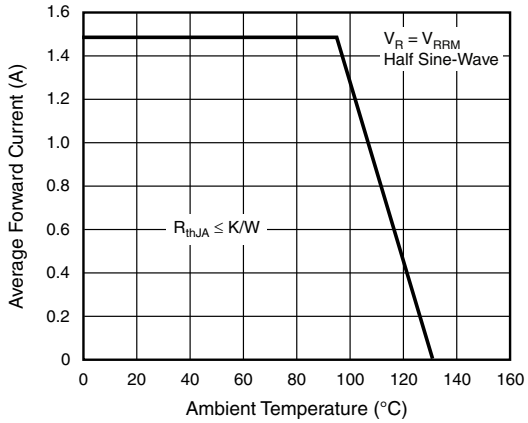


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

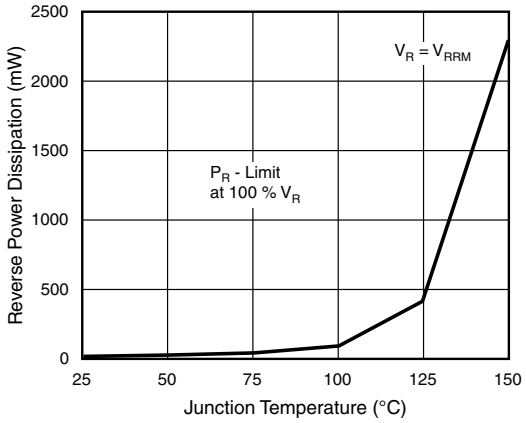


Fig. 5 - Max. Reverse Power Dissipation vs. Junction Temperature

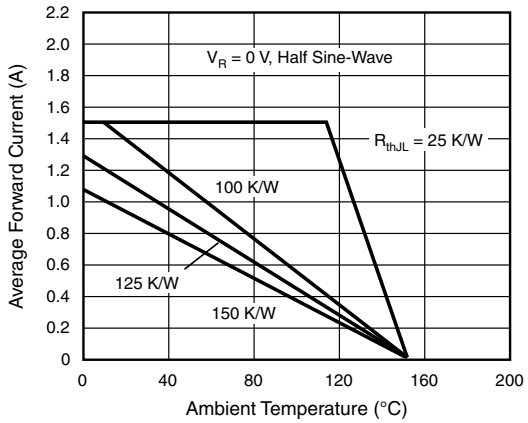


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

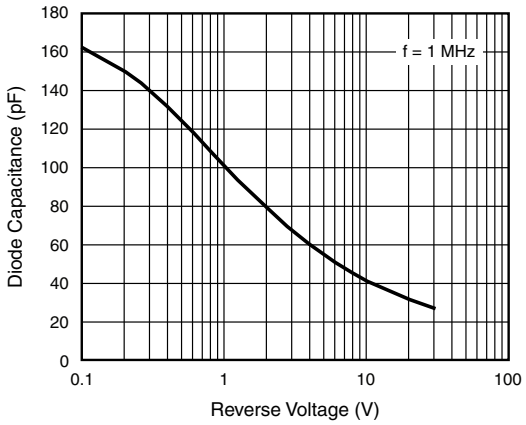
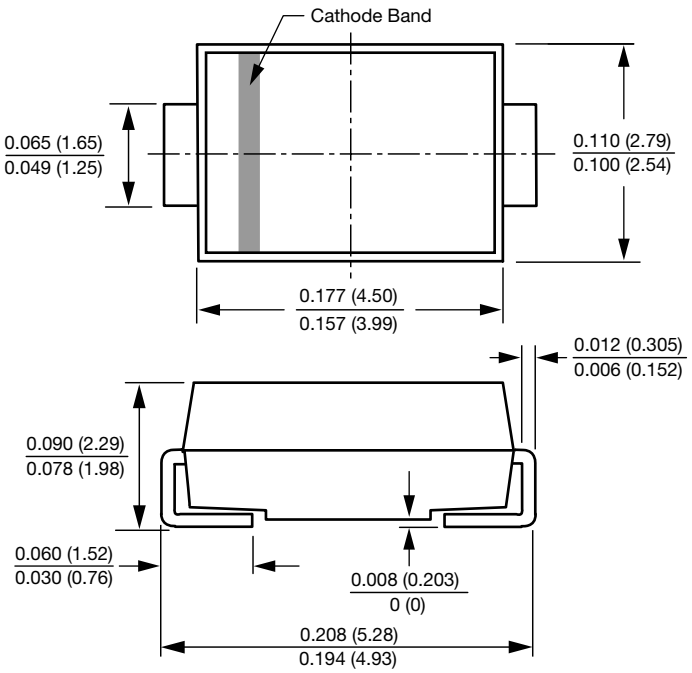


Fig. 6 - Diode Capacitance vs. Reverse Voltage

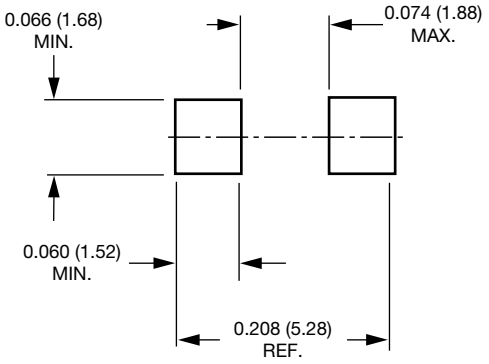
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout



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