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}	25 V, 35 V, 45 V
I_{FSM}	40 A
V_F	0.50 V
T_J max.	150 °C
Package	SMA (DO-214AC)
Circuit configuration	Single

FEATURES

RoHS COMPLIANT
HALOGEN FREE Available

- 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
  - Automotive ordering code: base P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see 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

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER		SYMBOL	BYS10-25	BYS10-35	BYS10-45	UNIT
Device marking code			BYS 025	BYS 035	BYS 045	
Maximum repetitive peak reverse voltage		V_{RRM}	25	35	45	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			
Junction and storage temperature range		T_J, T_{STG}	-65 to +150			°C

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)							
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**BYS10-25**	**BYS10-35**	**BYS10-45**	**UNIT**
Maximum instantaneous forward voltage (1)	1.0 A		V_F	500			mV
Maximum DC reverse current (1)	V_{RRM}	T_J = 25 °C	I_R	500			µA
		T_J = 100 °C		10			mA

Note

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

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)					
PARAMETER	**SYMBOL**	**BYS10-25**	**BYS10-35**	**BYS10-45**	**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**
BYS10-45-E3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYS10-45-E3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYS10-45HE3_A/H (1)	0.064	H	1800	7" diameter plastic tape and reel
BYS10-45HE3_A/I (1)	0.064	I	7500	13" diameter plastic tape and reel
BYS10-45-M3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYS10-45-M3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYS10-45HM3_A/H (1)	0.064	H	1800	7" diameter plastic tape and reel
BYS10-45HM3_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)

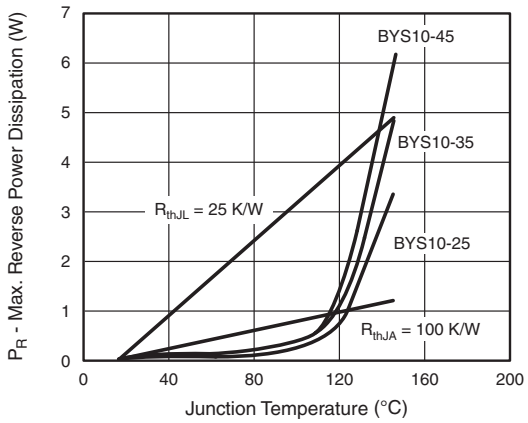

Fig. 1 - Max. Reverse Power Dissipation vs. Junction Temperature

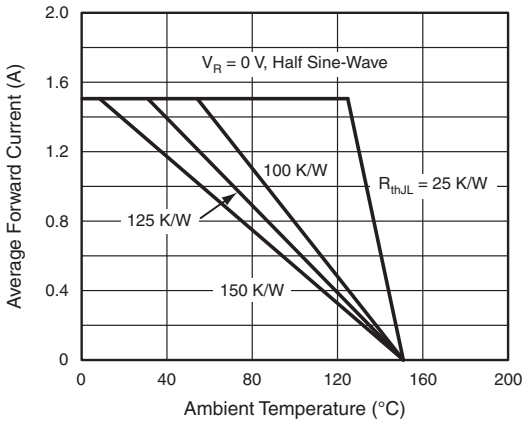

Fig. 4 - Max. Average Forward Current vs. Ambient Temperature

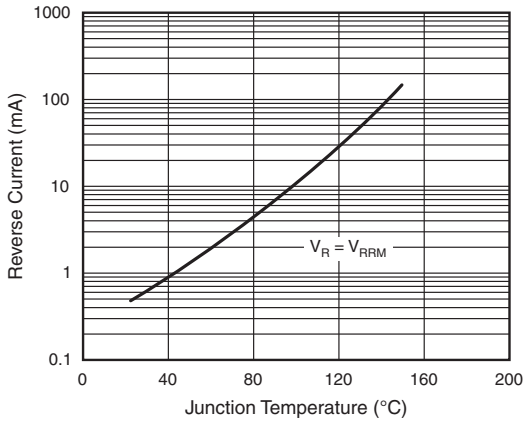

Fig. 2 - Max. Reverse Current vs. Junction Temperature

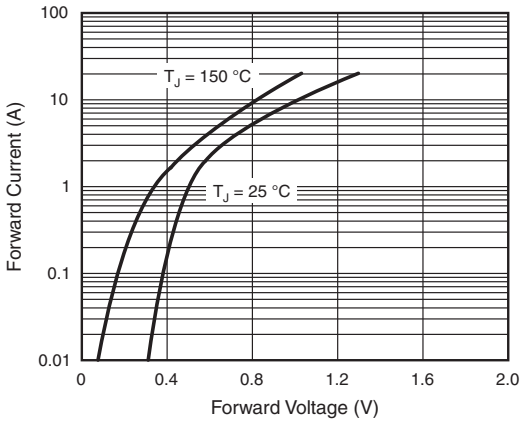

Fig. 5 - Max. Forward Current vs. Forward Voltage

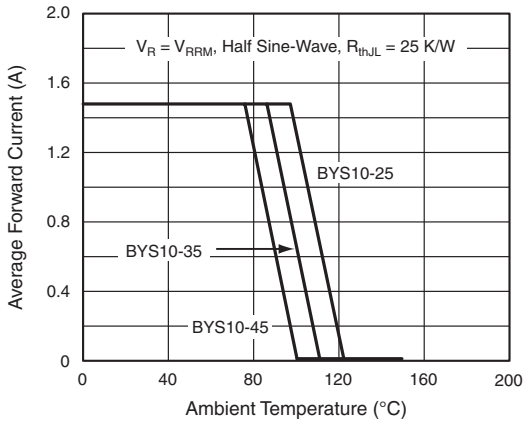

Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

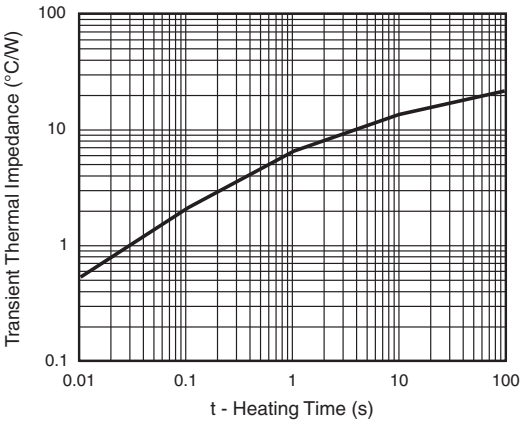

Fig. 6 - Typical Transient Thermal Impedance

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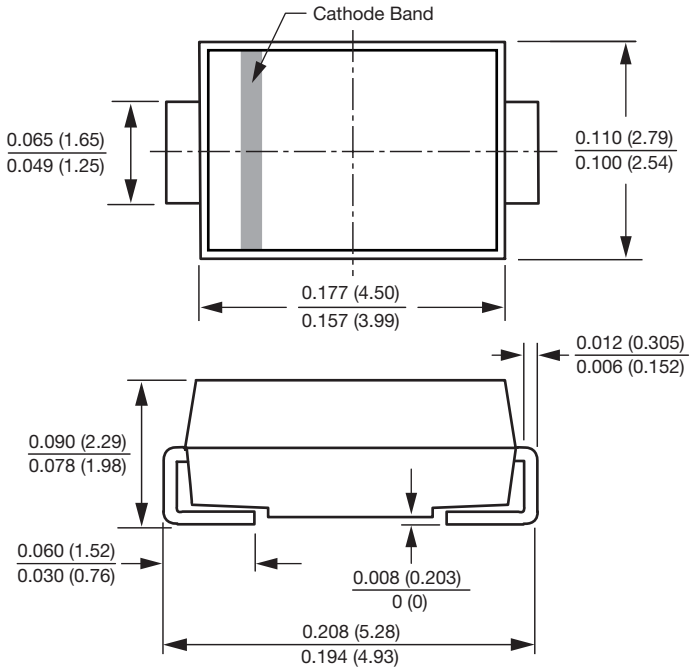
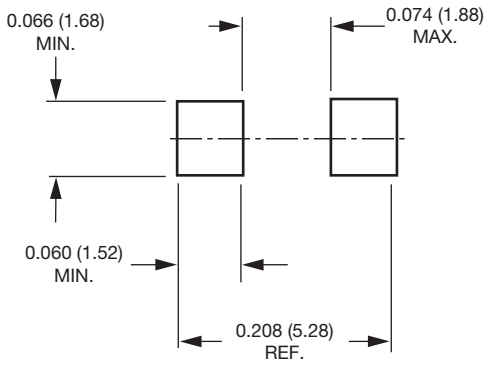
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout



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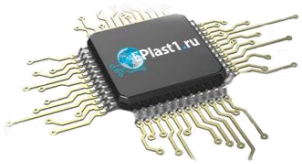

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