

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
- 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

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	
$I_{F(AV)}$	1.5 A
V_{RRM}	25 V, 35 V, 45 V
I_{FSM}	40 A
V_F	0.50 V
$T_J \text{ max.}$	150 °C
Package	SMA (DO-214AC)
Diode variations	Single

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ 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	I_{FSM}	8.3 ms	40		A
		10 ms	30		
Junction and storage temperature range	T_J, T_{STG}	-65 to +150			°C



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ 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}	I_R	$T_J = 25\text{ }^\circ\text{C}$			μA
			$T_J = 100\text{ }^\circ\text{C}$			10

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	BYS10-25	BYS10-35	BYS10-45	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 (Al₂O₃), 50 mm² 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

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

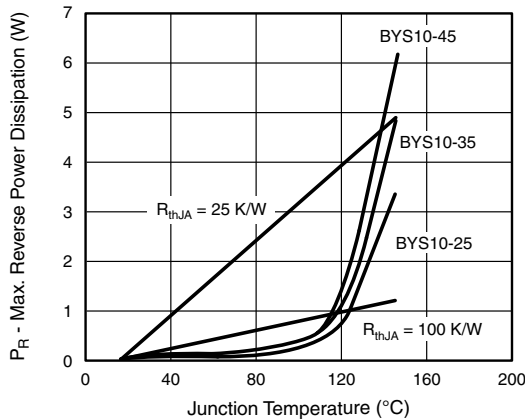


Fig. 1 - Max. Reverse Power Dissipation vs. Junction Temperature

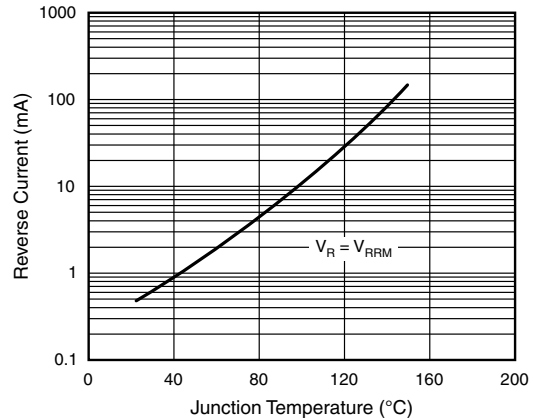


Fig. 2 - Max. Reverse Current vs. Junction Temperature

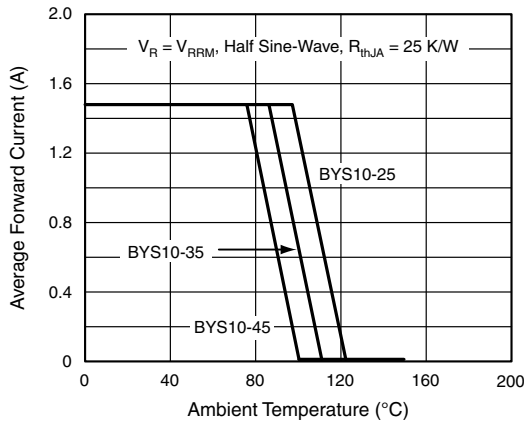


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

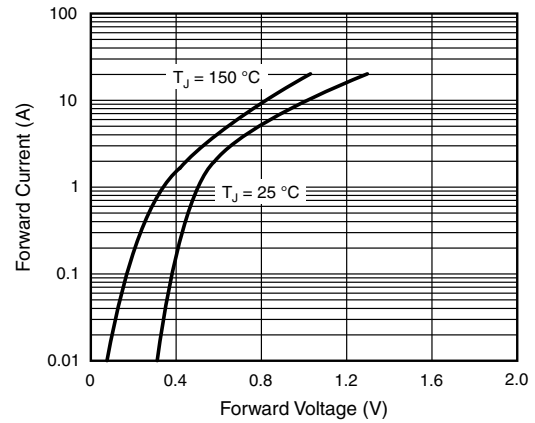


Fig. 5 - Max. Forward Current vs. Forward Voltage

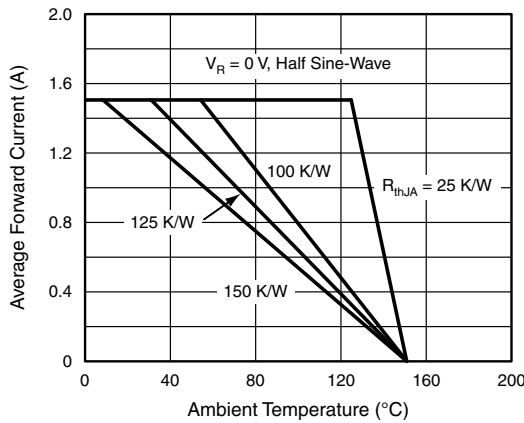


Fig. 4 - Max. Average Forward Current vs. Ambient Temperature

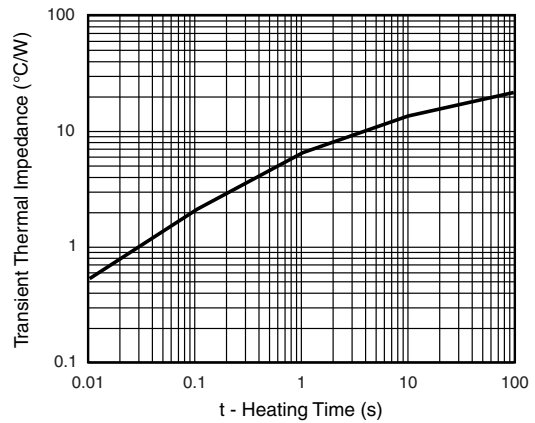
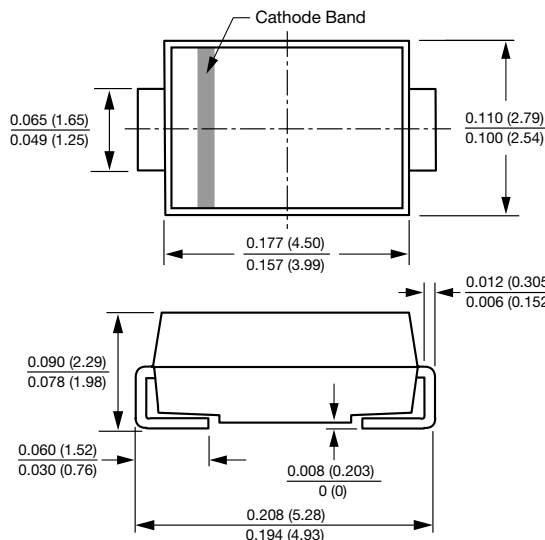


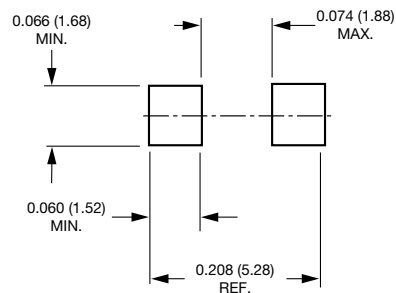
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout





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