



**THE DATASHEET OF  
BYS10-45-E3/TR**



## Surface Mount Schottky Barrier Rectifier


**SMA (DO-214AC)**

Cathode Anode


**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](http://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

### 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

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



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS	SYMBOL	BYS10-25	BYS10-35	BYS10-45	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	1.0 A	$V_F$	500			mV
Maximum DC reverse current <sup>(1)</sup>	$V_{RRM}$	$T_J = 25\text{ }^\circ\text{C}$	500			$\mu\text{A}$
		$T_J = 100\text{ }^\circ\text{C}$	10			mA

**Note**

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

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ 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**

- <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 (Al<sub>2</sub>O<sub>3</sub>), 50 mm<sup>2</sup> 35  $\mu\text{m}$  Cu

<b>ORDERING INFORMATION</b> (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 <sup>(1)</sup>	0.064	H	1800	7" diameter plastic tape and reel
BYS10-45HE3_A/I <sup>(1)</sup>	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 <sup>(1)</sup>	0.064	H	1800	7" diameter plastic tape and reel
BYS10-45HM3_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)

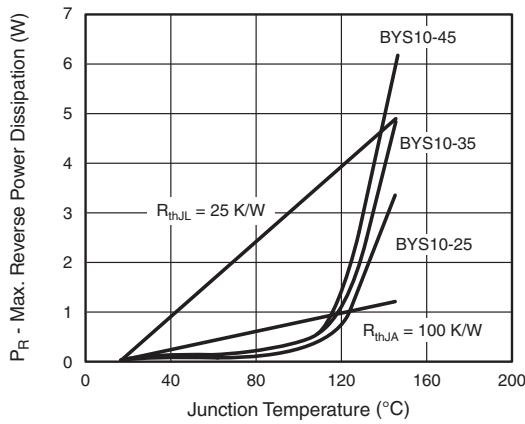


Fig. 1 - Max. Reverse Power Dissipation vs. Junction Temperature

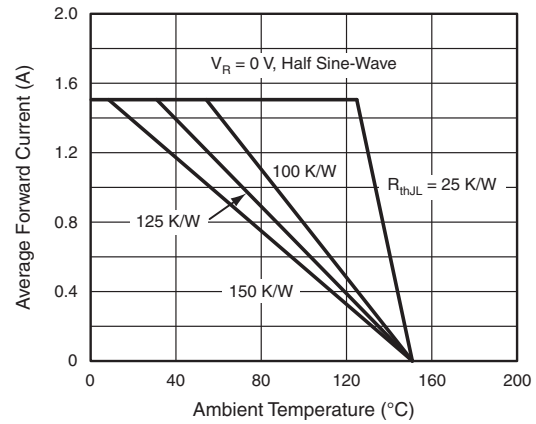


Fig. 4 - Max. Average Forward Current vs. Ambient Temperature

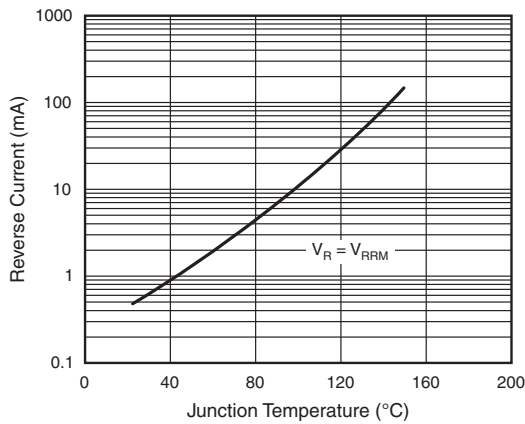


Fig. 2 - Max. Reverse Current vs. Junction Temperature

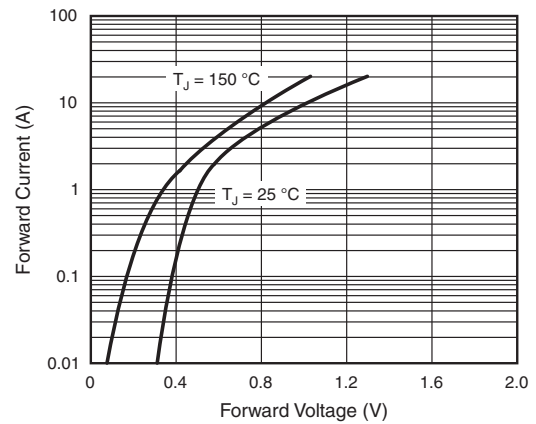


Fig. 5 - Max. Forward Current vs. Forward Voltage

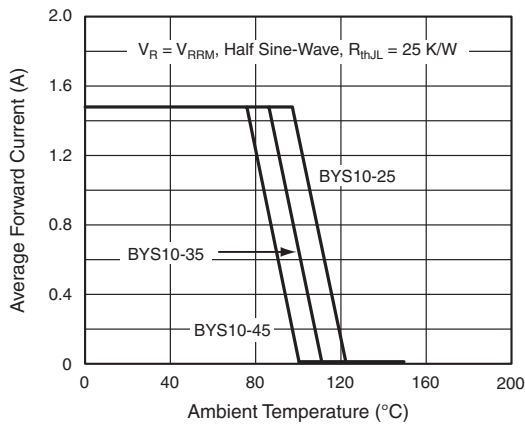


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

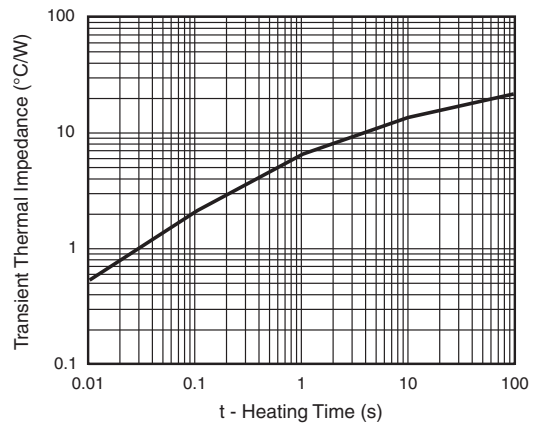
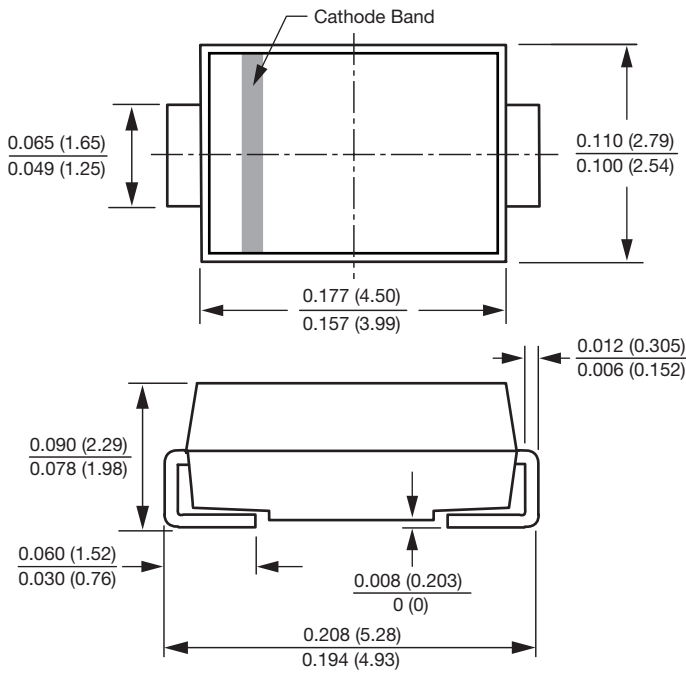


Fig. 6 - Typical Transient Thermal Impedance

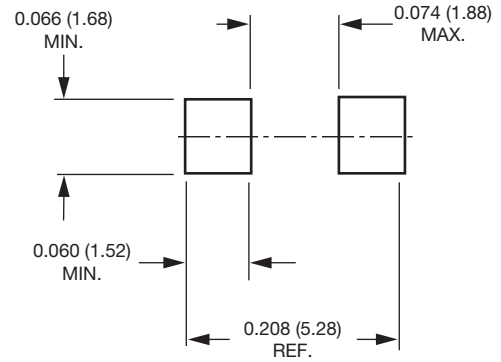


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### SMA (DO-214AC)



### Mounting Pad Layout





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