

## Surface Mount Schottky Barrier Rectifier



DO-214AC (SMA)

### 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-020C, LF max peak of 260 °C
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### MAJOR RATINGS AND CHARACTERISTICS

$I_{F(AV)}$	1.5 A
$V_{RRM}$	25 V to 45 V
$I_{FSM}$	40 A
$V_F$	0.50 V
$T_j$ max.	150 °C

### TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, free-wheeling, dc-to-dc converters, and polarity protection applications.

### MECHANICAL DATA

**Case:** DO-214AC (SMA)

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

**Polarity:** Color band denotes the cathode end

### 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	$I_{FSM}$	40 30			A
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>	at 1.0 A	$V_F$	500			mV
Maximum DC reverse current <sup>(1)</sup>	at $V_{RRM}$ $T_j = 25\text{ }^\circ\text{C}$ $T_j = 100\text{ }^\circ\text{C}$	$I_R$	500 10			$\mu\text{A}$ mA

**Note:**

(1) 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 Lead	$R_{\theta JL}$	25			$^\circ\text{C/W}$	
Maximum Thermal Resistance - Junction Ambient	$R_{\theta JA}$	150 <sup>(1)</sup> 125 <sup>(2)</sup> 100 <sup>(3)</sup>			$^\circ\text{C/W}$	

**Note:**

- (1) Mounted on epoxy-glass hard tissue
- (2) Mounted on epoxy-glass hard tissue, 50 mm<sup>2</sup> 35  $\mu\text{m}$  Cu
- (3) 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 & Reel
BYS10-45-E3/TR3	0.064	TR3	7500	13" Diameter Plastic Tape & Reel
BYS10-45HE3/TR <sup>(1)</sup>	0.064	TR	1800	7" Diameter Plastic Tape & Reel
BYS10-45HE3/TR3 <sup>(1)</sup>	0.064	TR3	7500	13" Diameter Plastic Tape & Reel

**Note:**

(1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

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

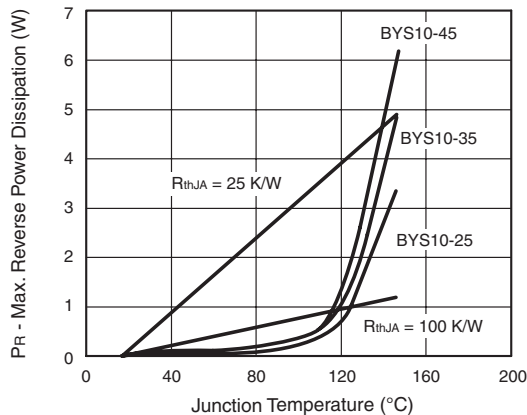


Figure 1. Max. Reverse Power Dissipation vs. Junction Temperature

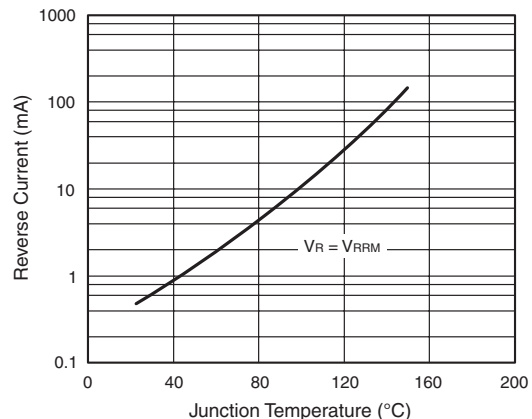


Figure 2. Max. Reverse Current vs. Junction Temperature

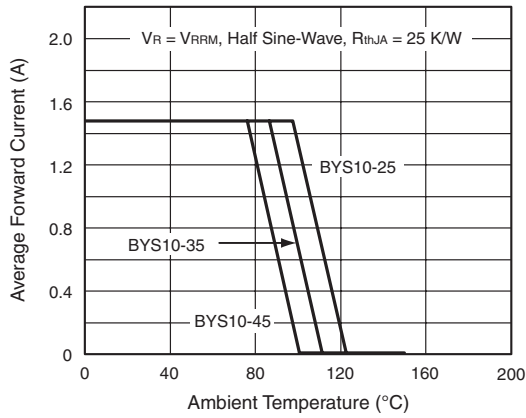


Figure 3. Max. Average Forward Current vs. Ambient Temperature

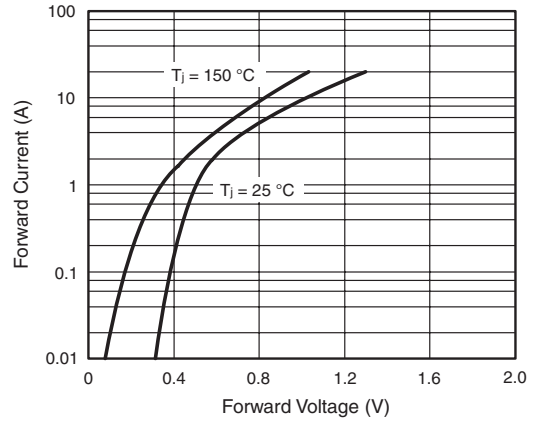


Figure 5. Max. Forward Current vs. Forward Voltage

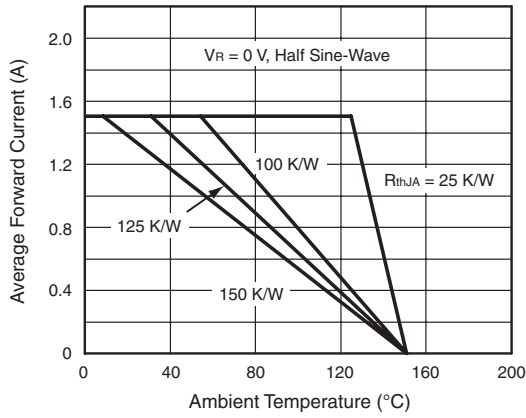


Figure 4. Max. Average Forward Current vs. Ambient Temperature

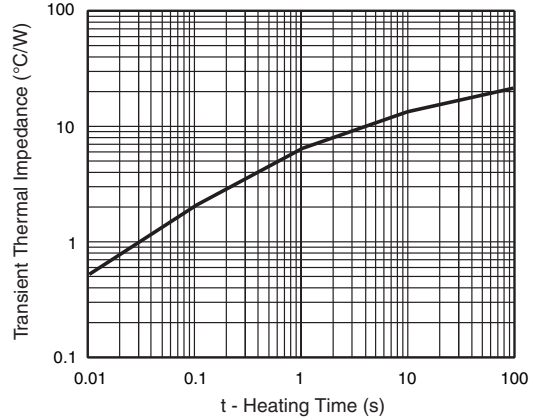
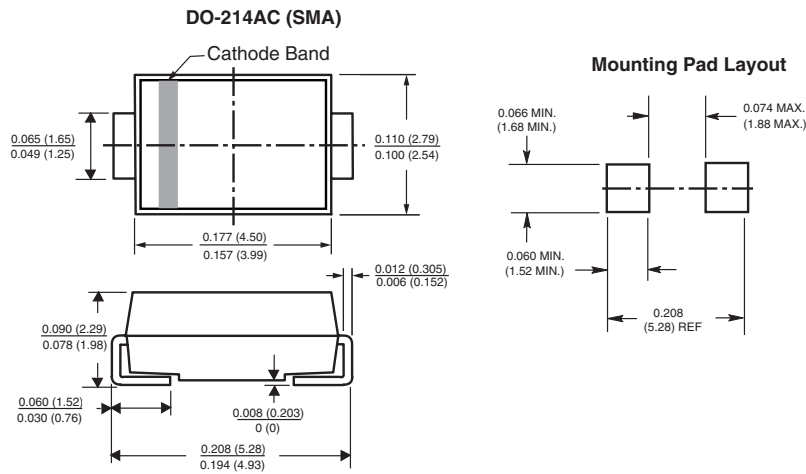


Figure 6. Diode Capacitance vs. Reverse Voltage

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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