

## Surface-Mount Schottky Barrier Rectifier


**SMA (DO-214AC)**

 Cathode  Anode

### LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

| PRIMARY CHARACTERISTICS |                  |
|-------------------------|------------------|
| $I_{F(AV)}$             | 1.5 A            |
| $V_{RRM}$               | 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)   |
| Circuit configuration   | Single           |

### 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 available
  - 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)


**RoHS**  
 COMPLIANT  
 HALOGEN  
**FREE**  
 Available

### 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 ( $T_A = 25\text{ °C}$ 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>  | $V_{RRM}$       | $T_J = 25\text{ }^\circ\text{C}$  | $I_R$  |          | 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)

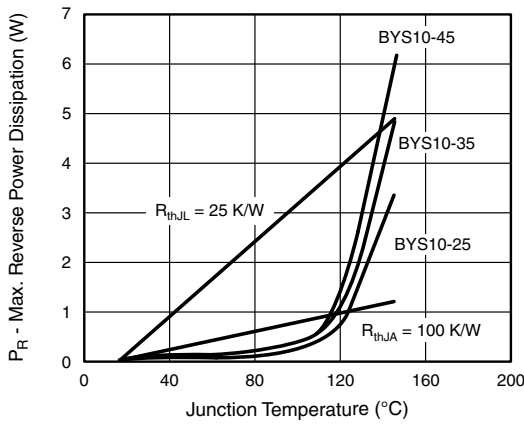


Fig. 1 - Max. Reverse Power Dissipation vs. Junction Temperature

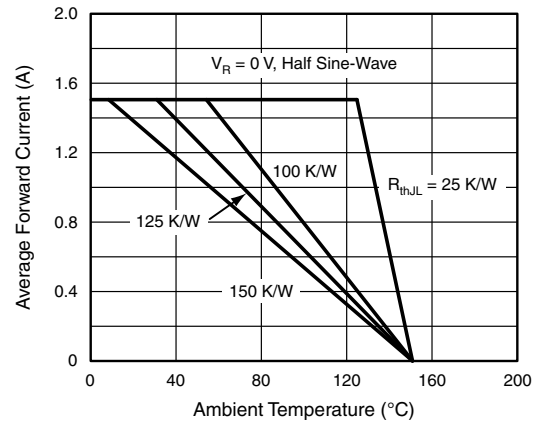


Fig. 4 - Max. Average Forward Current vs. Ambient Temperature

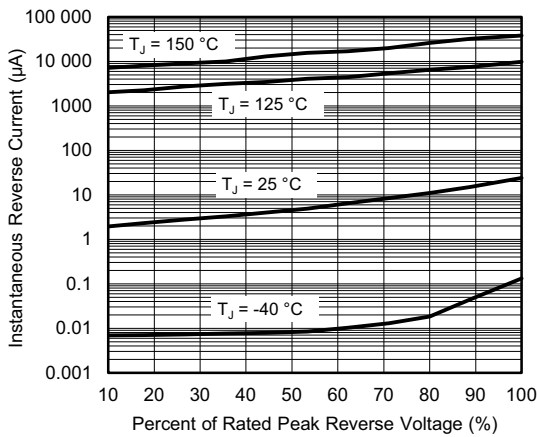


Fig. 2 - Typical Reverse Characteristics

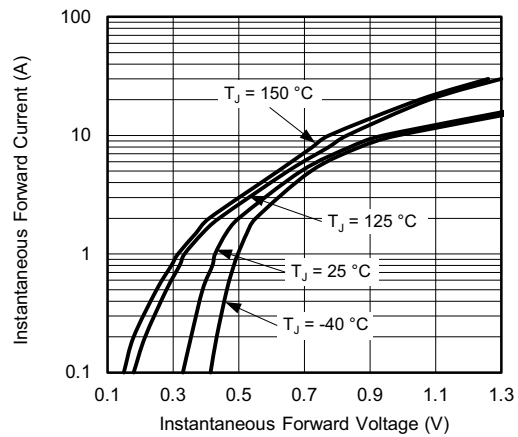


Fig. 5 - Typical Instantaneous Forward Characteristics

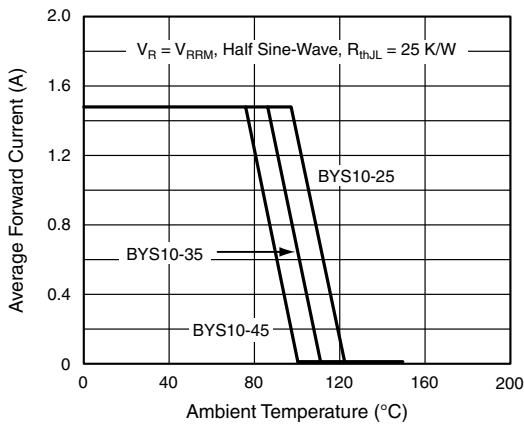


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

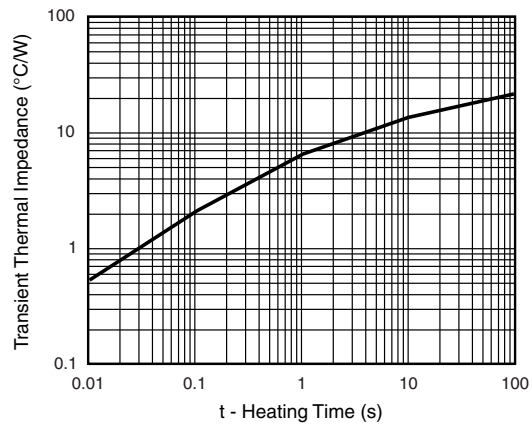
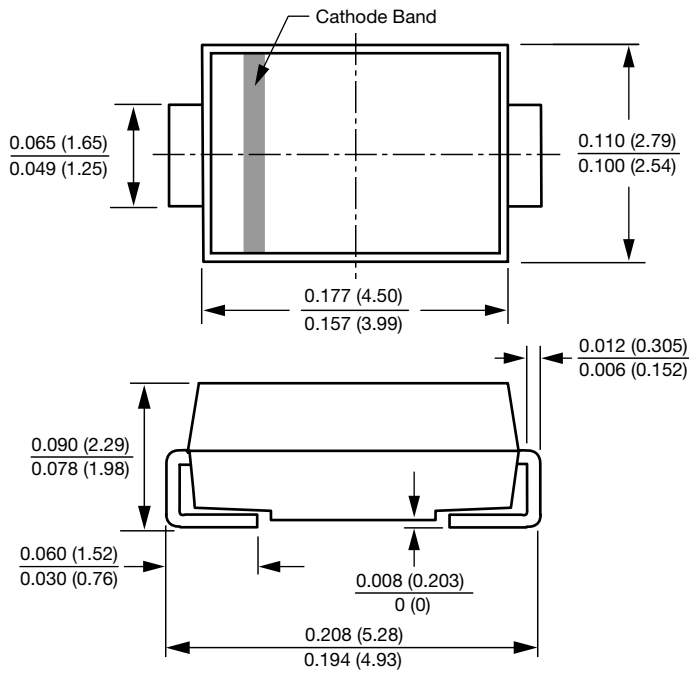


Fig. 6 - Typical Transient Thermal Impedance

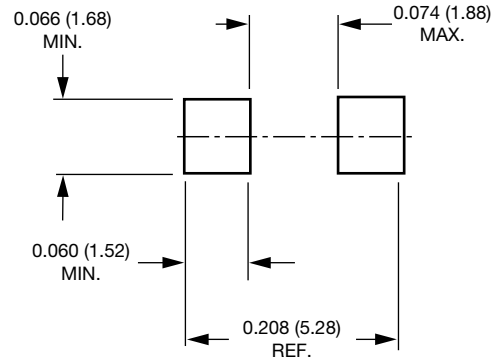


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### SMA (DO-214AC)



### Mounting Pad Layout





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