

# 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-020, LF maximum peak of 260 °C
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



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

## TYPICAL APPLICATIONS

For use in high frequency inverters, switching power supplies, freewheeling diodes, oring diode, DC/DC converters and reverse battery protection.

## MECHANICAL DATA

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

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test

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

| PRIMARY CHARACTERISTICS |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 1.5 A          |
| $V_{RRM}$               | 90 V           |
| $I_{FSM}$               | 40 A           |
| $V_F$                   | 0.75 V         |
| $T_J \text{ max.}$      | 150 °C         |
| Package                 | DO-214AC (SMA) |
| Diode variation         | Single die     |

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)              |                |             |            |
|-----------------------------------------------------------------------------|----------------|-------------|------------|
| PARAMETER                                                                   | SYMBOL         | BYS11-90    | UNIT       |
| Device marking code                                                         |                | BYS109      |            |
| Maximum repetitive peak reverse voltage                                     | $V_{RRM}$      | 90          | 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          | A          |
|                                                                             |                | 30          |            |
| Voltage rate of change (rated $V_R$ )                                       | $dV/dt$        | 10 000      | V/ $\mu$ s |
| Junction and storage temperature range                                      | $T_J, T_{STG}$ | -55 to +150 | °C         |

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

| PARAMETER                             | TEST CONDITIONS | SYMBOL                              | BYS11-90 | UNIT          |
|---------------------------------------|-----------------|-------------------------------------|----------|---------------|
| Maximum instantaneous forward voltage | 1.0 A           | $V_F^{(1)}$                         | 750      | mV            |
| Maximum DC reverse current            | $V_{RRM}$       | $T_J = 25\text{ }^{\circ}\text{C}$  | 100      | $\mu\text{A}$ |
|                                       |                 | $T_J = 100\text{ }^{\circ}\text{C}$ | 1        | mA            |

**Note**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle**THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                                       | SYMBOL                | BYS11-90 | 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 mm<sup>2</sup> 35  $\mu\text{m}$  Cu(3) Mounted on Al-oxide-ceramic ( $\text{Al}_2\text{O}_3$ ), 50 mm<sup>2</sup> 35  $\mu\text{m}$  Cu**ORDERING INFORMATION** (Example)

| PREFERRED P/N   | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
|-----------------|-----------------|------------------------|---------------|------------------------------------|
| BYS11-90-M3/TR  | 0.064           | TR                     | 1800          | 7" diameter plastic tape and reel  |
| BYS11-90-M3/TR3 | 0.064           | TR3                    | 7500          | 13" diameter plastic tape and reel |

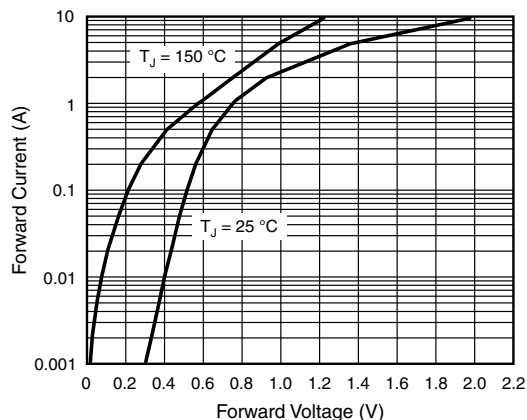
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current vs. Forward Voltage

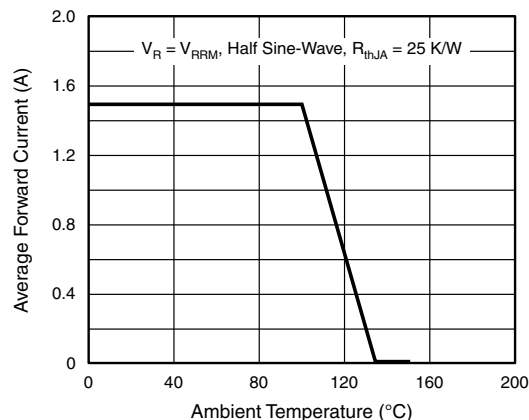


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

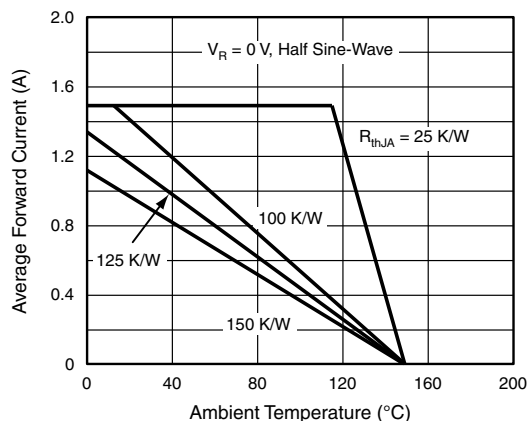


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

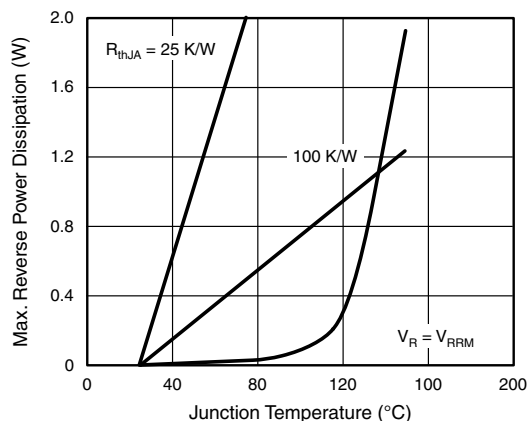


Fig. 5 - Max. Reverse Power Dissipation vs. Junction Temperature

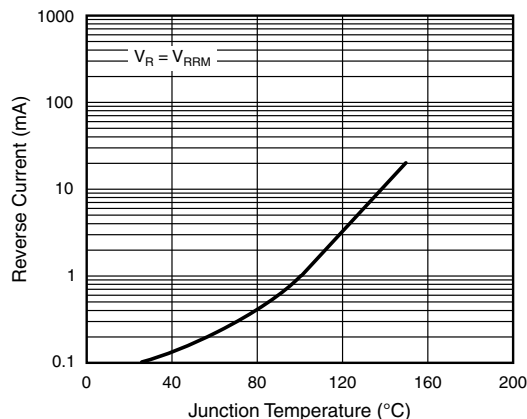


Fig. 4 - Reverse Current vs. Junction Temperature

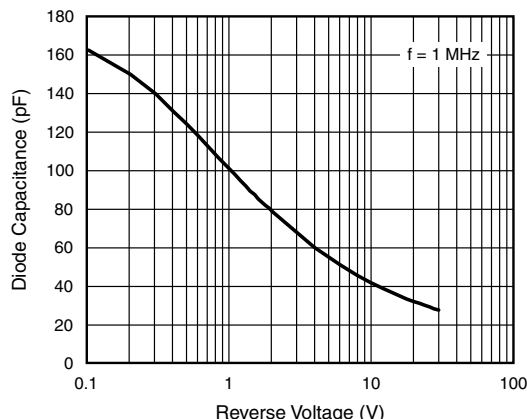
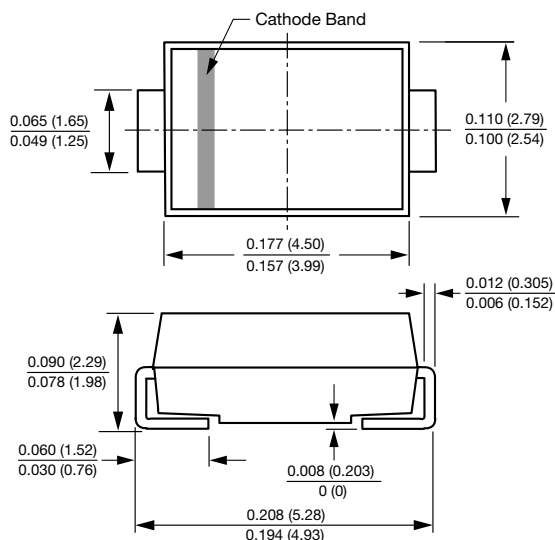


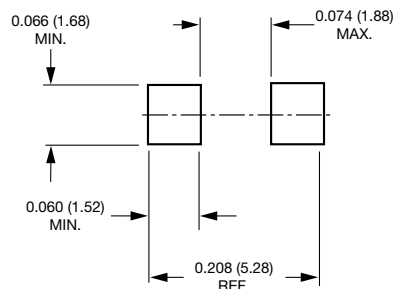
Fig. 6 - Diode Capacitance vs. Reverse Voltage

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-214AC (SMA)



### Mounting Pad Layout





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