

# 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
- Low forward voltage drop
- High surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

## TYPICAL APPLICATIONS

For use in low voltage, high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

## MECHANICAL DATA

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

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade  
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified  
Base P/NHE3\_X - 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 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

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

| PRIMARY CHARACTERISTICS |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 1.0 A          |
| $V_{RRM}$               | 20 V to 60 V   |
| $I_{FSM}$               | 40 A           |
| $V_F$                   | 0.50 V, 0.75 V |
| $T_J \text{ max.}$      | 125 °C, 150 °C |

| MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)                    |                    |               |      |      |               |      |      |
|------------------------------------------------------------------------------------|--------------------|---------------|------|------|---------------|------|------|
| PARAMETER                                                                          | SYMBOL             | SS12          | SS13 | SS14 | SS15          | SS16 | UNIT |
| Device marking code                                                                |                    | S2            | S3   | S4   | S5            | S6   | V    |
| Maximum repetitive peak reverse voltage                                            | V <sub>RRM</sub>   | 20            | 30   | 40   | 50            | 60   | V    |
| Maximum RMS voltage                                                                | V <sub>RMS</sub>   | 14            | 21   | 28   | 35            | 42   | V    |
| Maximum DC blocking voltage                                                        | V <sub>DC</sub>    | 20            | 30   | 40   | 50            | 60   | V    |
| Maximum average forward rectified current at T <sub>L</sub> (fig. 1)               | I <sub>F(AV)</sub> | 1.0           |      |      |               |      | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I <sub>FSM</sub>   | 40            |      |      |               |      | A    |
| Voltage rate of change (rated V <sub>R</sub> )                                     | dV/dt              | 10 000        |      |      |               |      | V/μs |
| Operating junction temperature range                                               | T <sub>J</sub>     | - 65 to + 125 |      |      | - 65 to + 150 |      | °C   |
| Storage temperature range                                                          | T <sub>STG</sub>   | - 65 to + 150 |      |      |               |      | °C   |

| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                         |                |      |      |      |      |      |      |
|----------------------------------------------------------------------------|-------------------------|----------------|------|------|------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS         | SYMBOL         | SS12 | SS13 | SS14 | SS15 | SS16 | UNIT |
| Maximum instantaneous forward voltage <sup>(1)</sup>                       | 1.0 A                   | V <sub>F</sub> | 0.50 |      |      | 0.75 |      | V    |
| Maximum DC reverse current at rated DC blocking voltage <sup>(1)</sup>     | T <sub>A</sub> = 25 °C  | I <sub>R</sub> | 0.2  |      |      |      |      | mA   |
|                                                                            | T <sub>A</sub> = 100 °C |                | 6.0  |      |      | 5.0  |      |      |

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

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                  |      |      |      |      |      |      |
|-------------------------------------------------------------------------|------------------|------|------|------|------|------|------|
| PARAMETER                                                               | SYMBOL           | SS12 | SS13 | SS14 | SS15 | SS16 | UNIT |
| Typical thermal resistance <sup>(1)</sup>                               | R <sub>θJA</sub> | 88   |      |      |      |      | °C/W |
|                                                                         | R <sub>θJL</sub> | 28   |      |      |      |      |      |

**Note**
<sup>(1)</sup> PCB mounted with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| SS14-E3/61T                           | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| SS14-E3/5AT                           | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |
| SS14HE3/61T <sup>(1)</sup>            | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| SS14HE3/5AT <sup>(1)</sup>            | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |
| SS14HE3_A/H <sup>(1)</sup>            | 0.064           | H                      | 1800          | 7" diameter plastic tape and reel  |
| SS14HE3_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**

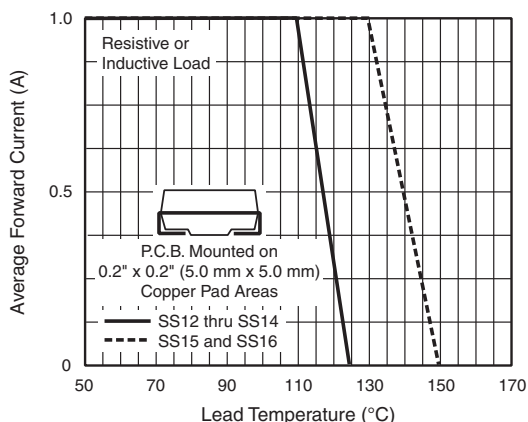
( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

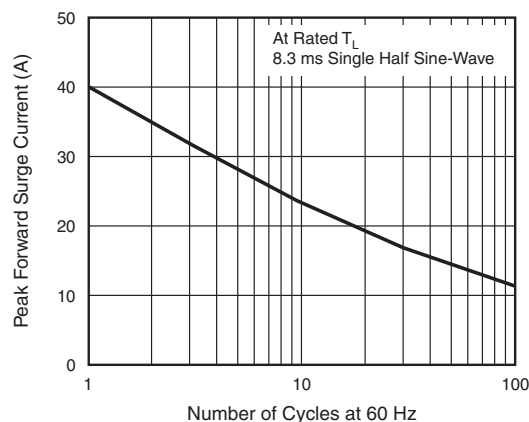


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

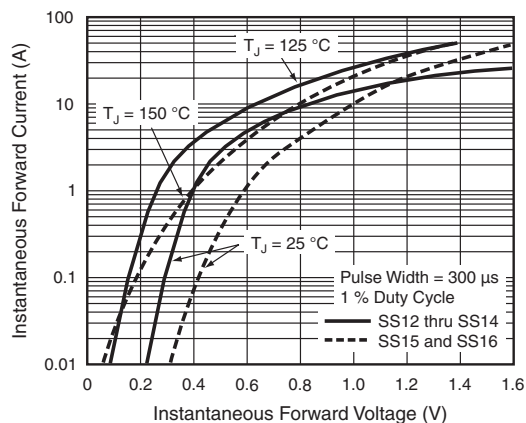


Fig. 3 - Typical Instantaneous Forward Characteristics

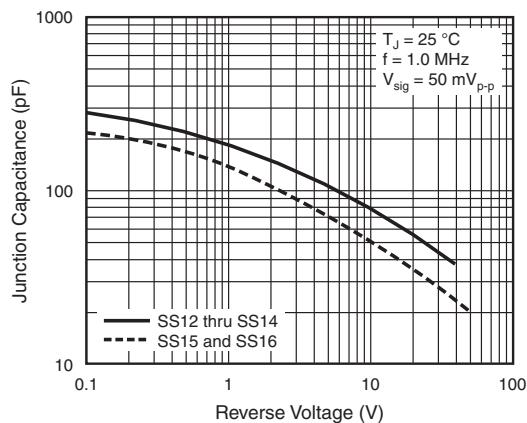


Fig. 5 - Typical Junction Capacitance

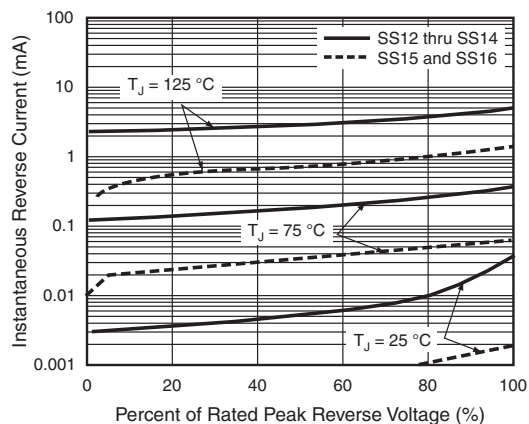
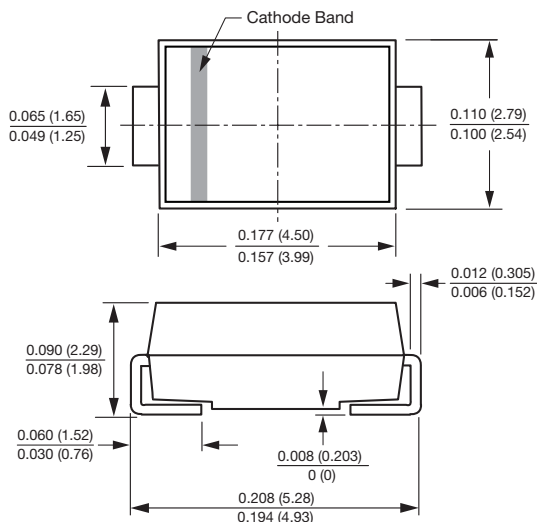


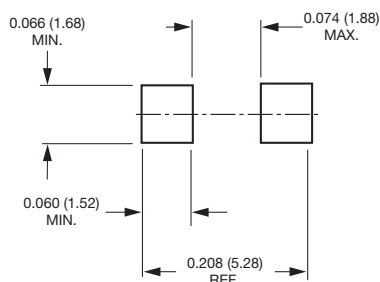
Fig. 4 - Typical Reverse Characteristics

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

#### DO-214AC (SMA)



#### Mounting Pad Layout





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