

## Surface-Mount Schottky Barrier Rectifier


**SMA (DO-214AC)**

Cathode  Anode

### LINKS TO ADDITIONAL RESOURCES



Design Tools



Related Documents



3D Models



Simulation Tools



SPICE Models



Application Notes



Technical Notes



Marking

| PRIMARY CHARACTERISTICS |                              |
|-------------------------|------------------------------|
| $I_{F(AV)}$             | 1.0 A                        |
| $V_{RRM}$               | 20 V, 30 V, 40 V, 50 V, 60 V |
| $I_{FSM}$               | 40 A                         |
| $V_F$                   | 0.50 V, 0.75 V               |
| $T_J$ 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
- Low forward voltage drop
- 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      | SS12        | SS13 | SS14 | SS15 | SS16 | UNIT       |
| Device marking code                                                                |             | S2          | S3   | S4   | S5   | S6   | V          |
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$   | 20          | 30   | 40   | 50   | 60   | V          |
| Maximum RMS voltage                                                                | $V_{RMS}$   | 14          | 21   | 28   | 35   | 42   | V          |
| Maximum DC blocking voltage                                                        | $V_{DC}$    | 20          | 30   | 40   | 50   | 60   | V          |
| Maximum average forward rectified current at $T_L$ (fig. 1)                        | $I_{F(AV)}$ | 1.0         |      |      |      |      | A          |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$   | 40          |      |      |      |      | A          |
| Voltage rate of change (rated $V_R$ )                                              | $dV/dt$     | 10 000      |      |      |      |      | V/ $\mu$ s |
| Operating junction temperature range                                               | $T_J$       | -65 to +150 |      |      |      |      | °C         |
| Storage temperature range                                                          | $T_{STG}$   | -65 to +150 |      |      |      |      | °C         |

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

| PARAMETER                                               | TEST CONDITIONS                     | SYMBOL      | SS12 | SS13 | SS14 | SS15 | SS16 | UNIT |    |
|---------------------------------------------------------|-------------------------------------|-------------|------|------|------|------|------|------|----|
| Maximum instantaneous forward voltage                   | 1.0 A                               | $V_F^{(1)}$ | 0.50 |      |      | 0.75 |      | V    |    |
| Maximum DC reverse current at rated DC blocking voltage | $T_A = 25\text{ }^{\circ}\text{C}$  | $I_R^{(2)}$ | 0.2  |      |      |      |      |      | mA |
|                                                         | $T_A = 100\text{ }^{\circ}\text{C}$ |             | 6.0  |      |      | 5.0  |      |      |    |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: pulse width  $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  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**

(1) PCB mounted with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

**ORDERING INFORMATION** (Example)

| PREFERRED P/N              | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
|----------------------------|-----------------|------------------------|---------------|------------------------------------|
| SS16-E3/61T                | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| SS16-E3/5AT                | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |
| SS16HE3_B/H <sup>(1)</sup> | 0.064           | H                      | 1800          | 7" diameter plastic tape and reel  |
| SS16HE3_B/I <sup>(1)</sup> | 0.064           | I                      | 7500          | 13" diameter plastic tape and reel |
| SS16-M3/61T                | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| SS16-M3/5AT                | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |
| SS16HM3_B/H <sup>(1)</sup> | 0.064           | H                      | 1800          | 7" diameter plastic tape and reel  |
| SS16HM3_B/I <sup>(1)</sup> | 0.064           | I                      | 7500          | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

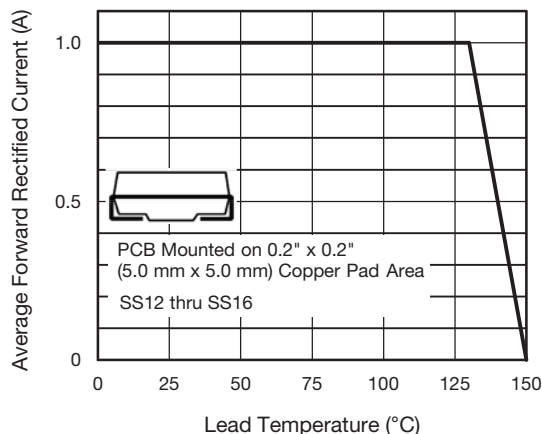
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

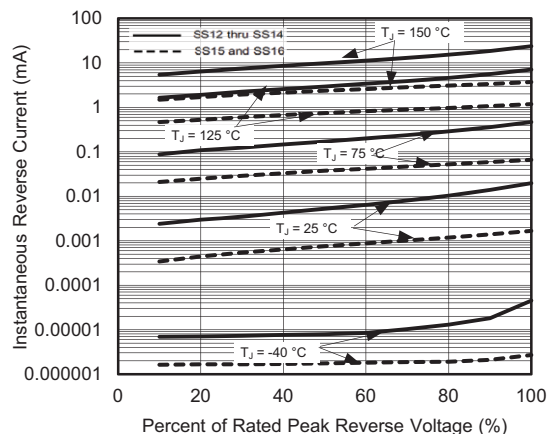


Fig. 4 - Typical Reverse Characteristics



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

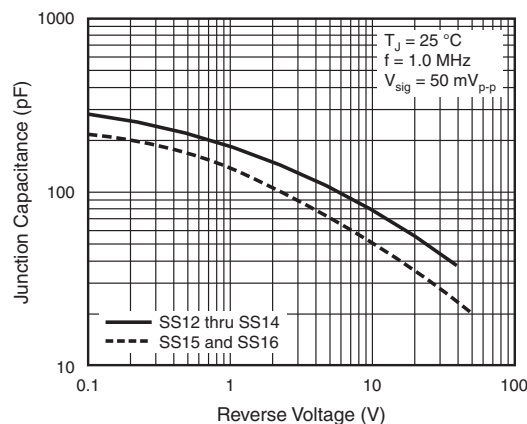


Fig. 5 - Typical Junction Capacitance



Fig. 3 - Typical Instantaneous Forward Characteristics



**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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