# 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

AUTOMOTIVE GRADE Available

Pb 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 °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/μs |
| Operating junction temperature range | $T_J$ | -65 to +150 | | | | | °C |
| Storage temperature range | $T_{STG}$ | -65 to +150 | | | | | °C |


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| **ELECTRICAL CHARACTERISTICS** ($T_A$ = 25 °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 °C | $I_R$ (2) | 0.2 | | | | | mA |
| | $T_A$ = 100 °C | | 6.0 | | | 5.0 | | |

**Notes**

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: pulse width ≤ 40 ms

| **THERMAL CHARACTERISTICS** ($T_A$ = 25 °C unless otherwise noted) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **SS12** | **SS13** | **SS14** | **SS15** | **SS16** | **UNIT** |
| Typical thermal resistance (1) | $R_{\theta JA}$ | 88 | | | | | °C/W |
| | $R_{\theta JL}$ | 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 (1) | 0.064 | H | 1800 | 7" diameter plastic tape and reel |
| SS16HE3_B/I (1) | 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 (1) | 0.064 | H | 1800 | 7" diameter plastic tape and reel |
| SS16HM3_B/I (1) | 0.064 | I | 7500 | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified


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**RATINGS AND CHARACTERISTICS CURVES** ($T_A$ = 25 °C unless otherwise noted)

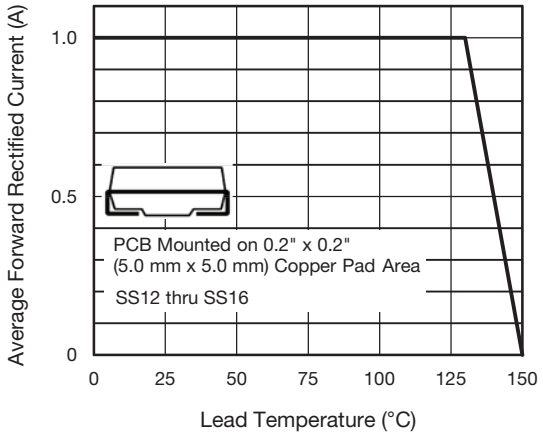


Fig. 1 - Forward Current Derating Curve

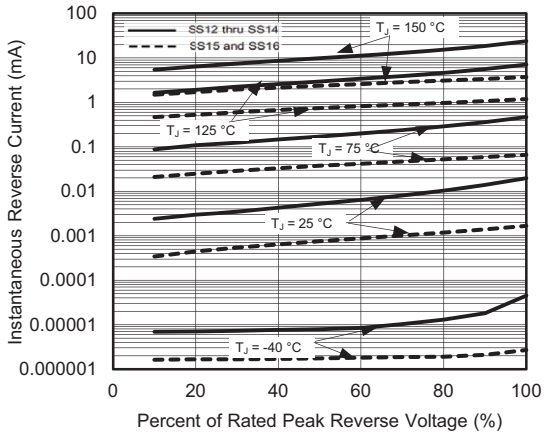


Fig. 4 - Typical Reverse Characteristics

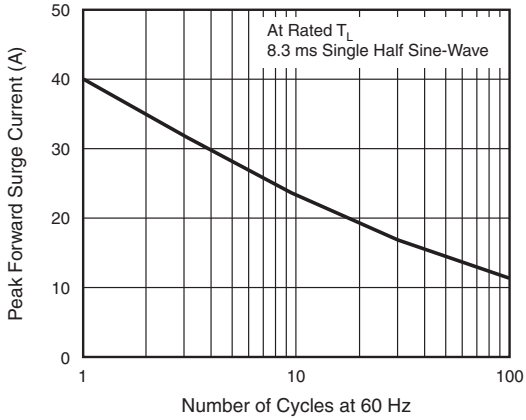


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

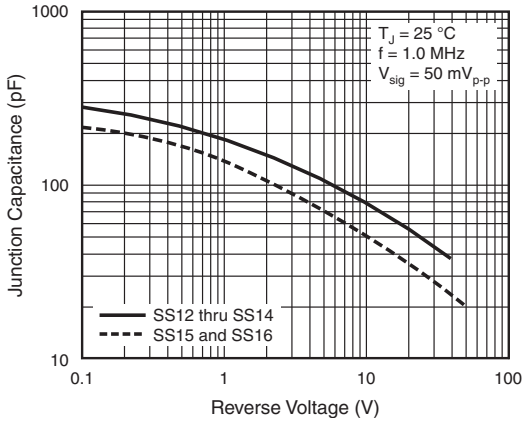


Fig. 5 - Typical Junction Capacitance

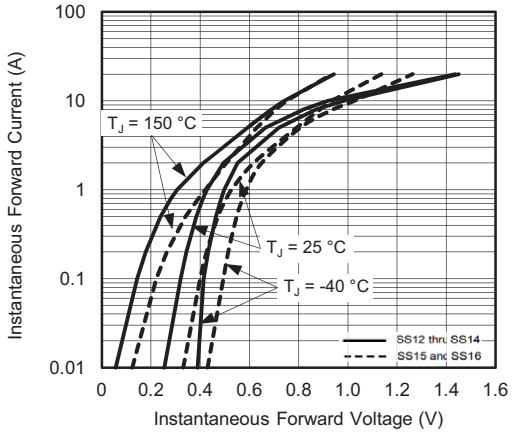


Fig. 3 - Typical Instantaneous Forward Characteristics


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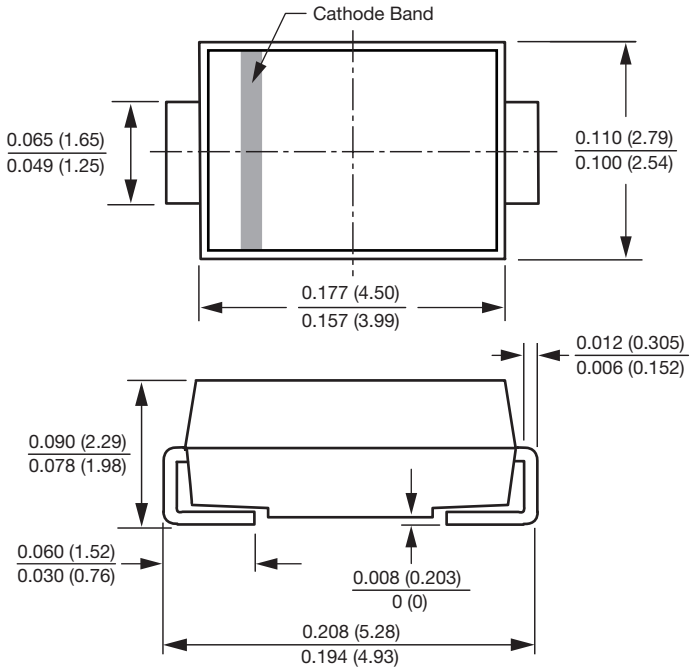
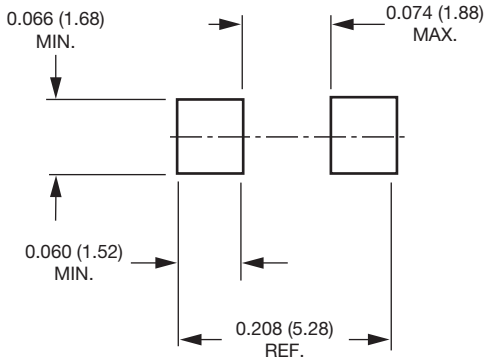
**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**SMA (DO-214AC)**




**Mounting Pad Layout**





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