

# High-Voltage Surface-Mount Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance


**SMA (DO-214AC)**

**LINKS TO ADDITIONAL RESOURCES**

[3D Models](#)

| PRIMARY CHARACTERISTICS |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 1.0 A          |
| $V_{RRM}$               | 90 V, 100 V    |
| $I_{FSM}$               | 50 A           |
| $V_F$                   | 0.62 V         |
| $I_R$                   | 1.0 $\mu$ A    |
| $T_J$ max.              | 175 °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
- Low leakage current
- 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)


**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      | SS1H9       | SS1H10 | UNIT |
| Device marking code  |             | S9          | S10    |      |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$   | 90          | 100    | V    |
| Working peak reverse voltage   | $V_{RWM}$   | 90          | 100    | V    |
| Maximum DC blocking voltage  | $V_{DC}$    | 90          | 100    | V    |
| Maximum average forward rectified current (fig. 1)                                 | $I_{F(AV)}$ | 1.0         |        | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$   | 50          |        | A    |
| Peak repetitive reverse surge current at $t_p = 2.0\ \mu$ s, 1 kHz                 | $I_{RRM}$   | 1.0         |        | A    |
| Storage temperature range  | $T_{STG}$   | -65 to +175 |        | °C   |
| Maximum operating temperature  | $T_J$       | 175         |        | °C   |



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                      |                                   |        |       |        |               |
|--|----------------------|-----------------------------------|--------|-------|--------|---------------|
| PARAMETER  | TEST CONDITIONS      |                                   | SYMBOL | SS1H9 | SS1H10 | UNIT          |
| Maximum instantaneous forward voltage <sup>(1)</sup>   | $I_F = 1.0\text{ A}$ | $T_J = 25\text{ }^\circ\text{C}$  | $V_F$  | 0.77  |        | V             |
|  |                      | $T_J = 125\text{ }^\circ\text{C}$ |        | 0.62  |        |               |
|  | $I_F = 2.0\text{ A}$ | $T_J = 25\text{ }^\circ\text{C}$  |        | 0.86  |        |               |
|  |                      | $T_J = 125\text{ }^\circ\text{C}$ |        | 0.70  |        |               |
| Maximum reverse current at rated $V_R$ <sup>(2)</sup>  |                      |                                   | $I_R$  | 1.0   |        | $\mu\text{A}$ |
|  |                      |                                   |        | 0.5   |        | mA            |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: pulse width  $\leq 40\text{ ms}$ 

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                 |       |        |                    |
|---|-----------------|-------|--------|--------------------|
| PARAMETER   | SYMBOL          | SS1H9 | SS1H10 | UNIT               |
| Maximum thermal resistance <sup>(1)</sup>   | $R_{\theta JA}$ | 88    |        | $^\circ\text{C/W}$ |
|   | $R_{\theta JL}$ | 30    |        |                    |

**Note**

(1) 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                      |
| SS1H10-E3/61T                         | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| SS1H10-E3/5AT                         | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |
| SS1H10HE3_B/H <sup>(1)</sup>          | 0.064           | H                      | 1800          | 7" diameter plastic tape and reel  |
| SS1H10HE3_B/I <sup>(1)</sup>          | 0.064           | I                      | 7500          | 13" diameter plastic tape and reel |
| SS1H10-M3/61T                         | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| SS1H10-M3/5AT                         | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |
| SS1H10HM3_B/H <sup>(1)</sup>          | 0.064           | H                      | 1800          | 7" diameter plastic tape and reel  |
| SS1H10HM3_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)

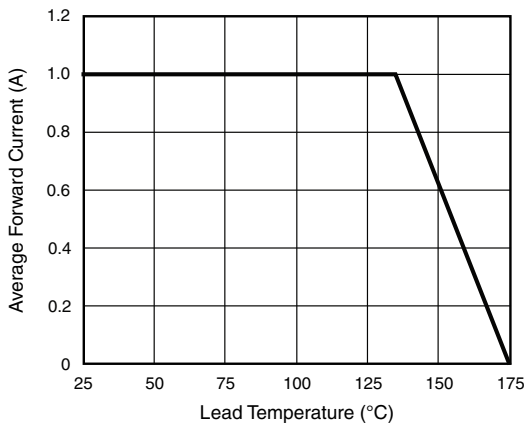


Fig. 1 - Forward Current Derating Curve

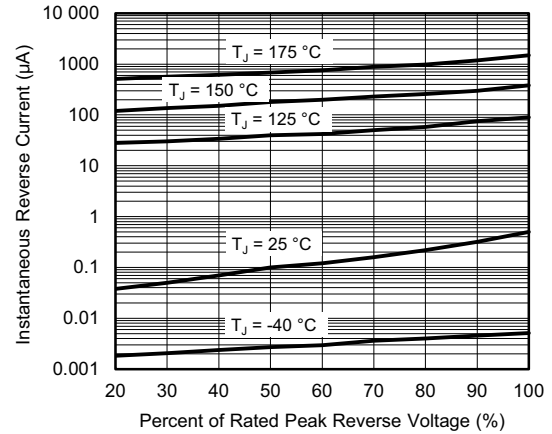


Fig. 4 - Typical Reverse Characteristics

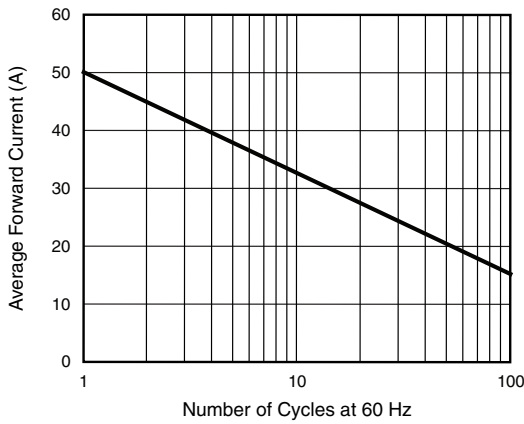


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

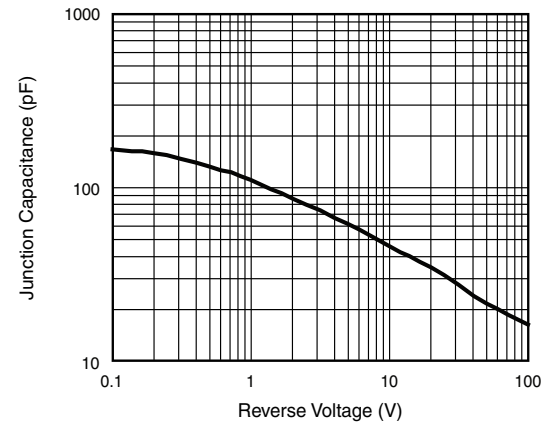


Fig. 5 - Typical Junction Capacitance

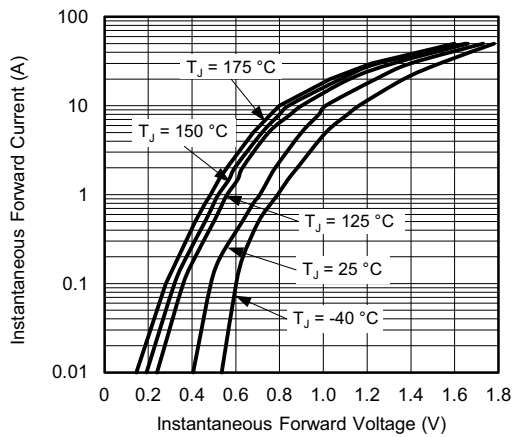


Fig. 3 - Typical Instantaneous Forward Characteristics

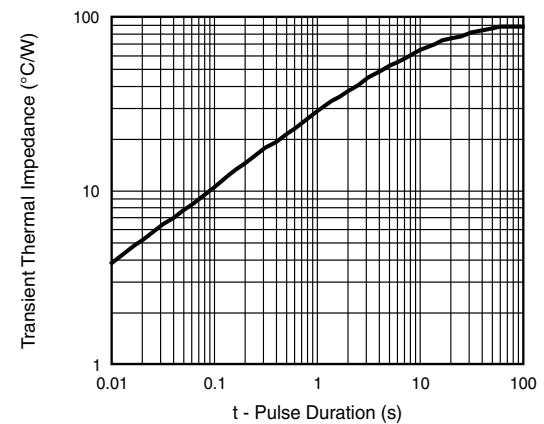
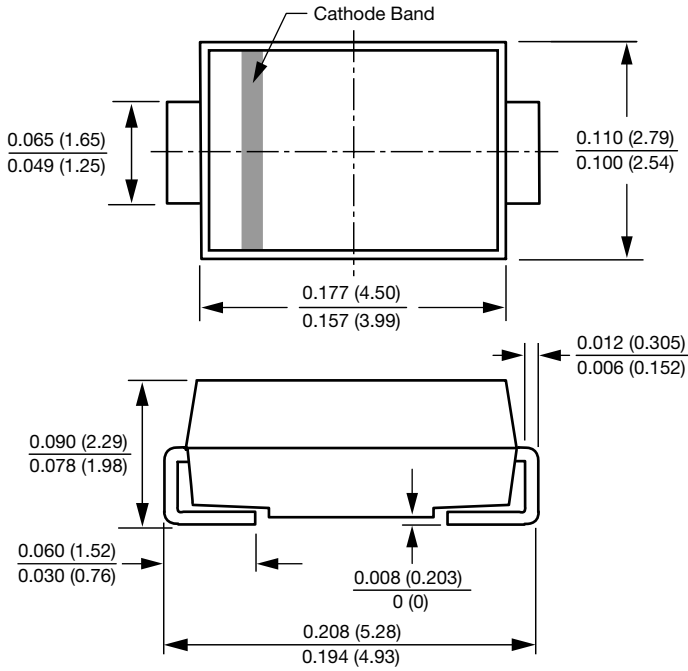


Fig. 6 - Typical Transient Thermal Impedance

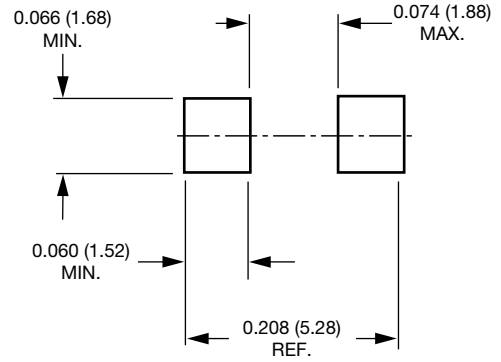


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout





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