

# High-Voltage Surface-Mount Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



**SMA (DO-214AC)**

Cathode  Anode

## LINKS TO ADDITIONAL RESOURCES



| 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 $t_p = 2.0\text{ }\mu$ s, 1 kHz           | $I_{RRM}$   | 1.0         |        | A    |
| Storage temperature range                                                          | $T_{STG}$   | -65 to +175 |        | °C   |
| Maximum operating temperature                                                      | $T_J$       | 175         |        | °C   |

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

| PARAMETER                                                      | TEST CONDITIONS        |                         | SYMBOL         | SS1H9 | SS1H10 | UNIT |
|----------------------------------------------------------------|------------------------|-------------------------|----------------|-------|--------|------|
| Maximum instantaneous forward voltage <sup>(1)</sup>           | I <sub>F</sub> = 1.0 A | T <sub>J</sub> = 25 °C  | V <sub>F</sub> | 0.77  |        | V    |
|                                                                |                        | T <sub>J</sub> = 125 °C |                | 0.62  |        |      |
|                                                                | I <sub>F</sub> = 2.0 A | T <sub>J</sub> = 25 °C  |                | 0.86  |        |      |
|                                                                |                        | T <sub>J</sub> = 125 °C |                | 0.70  |        |      |
| Maximum reverse current at rated V <sub>R</sub> <sup>(2)</sup> |                        | T <sub>J</sub> = 25 °C  | I <sub>R</sub> | 1.0   |        | μA   |
|                                                                |                        | T <sub>J</sub> = 125 °C |                | 0.5   |        | mA   |

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

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                  |       |        |      |
|-------------------------------------------------------------------------|------------------|-------|--------|------|
| PARAMETER                                                               | SYMBOL           | SS1H9 | SS1H10 | UNIT |
| Maximum thermal resistance <sup>(1)</sup>                               | R <sub>θJA</sub> | 88    |        | °C/W |
|                                                                         | R <sub>θJL</sub> | 30    |        |      |

**Note**<sup>(1)</sup> 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                      |
|------------------------------|-----------------|------------------------|---------------|------------------------------------|
| 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**<sup>(1)</sup> AEC-Q101 qualified

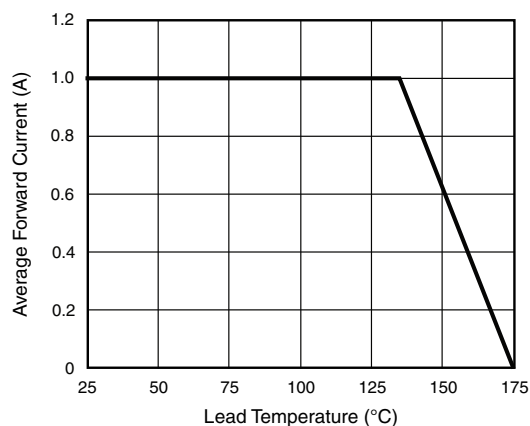
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

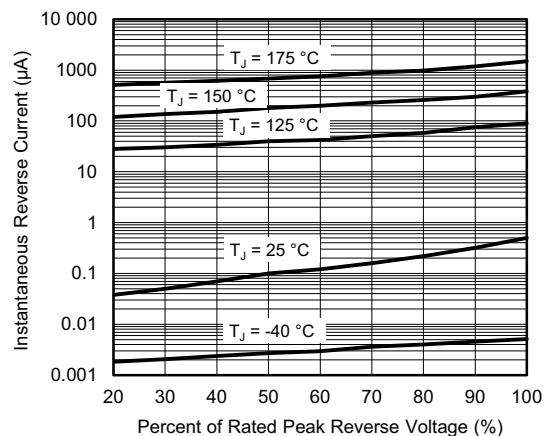


Fig. 4 - Typical Reverse Characteristics

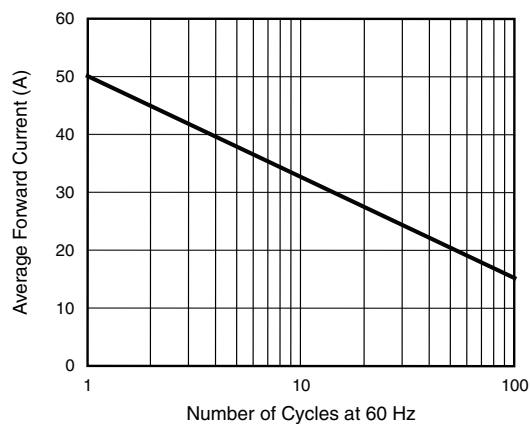


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

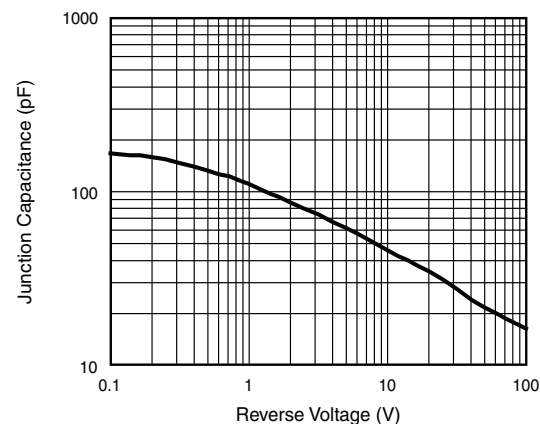


Fig. 5 - Typical Junction Capacitance

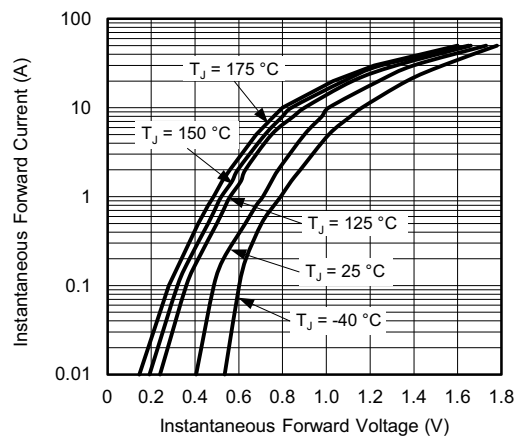


Fig. 3 - Typical Instantaneous Forward Characteristics

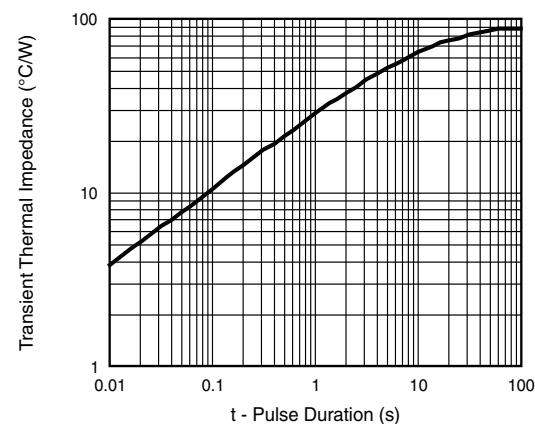
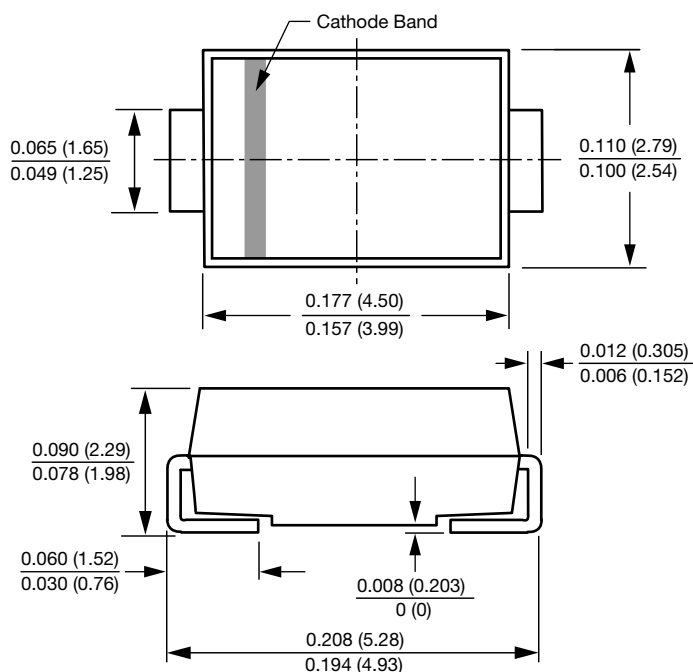


Fig. 6 - Typical Transient Thermal Impedance

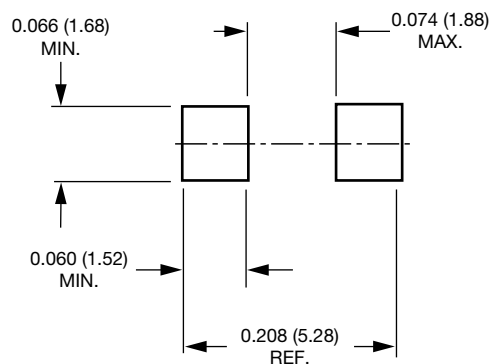


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### SMA (DO-214AC)



### Mounting Pad Layout





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