

# High Voltage Surface Mount Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



DO-214AB (SMC)

## 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
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

## PRIMARY CHARACTERISTICS

|                  |                |
|------------------|----------------|
| $I_{F(AV)}$      | 3.0 A          |
| $V_{RRM}$        | 90 V, 100 V    |
| $I_{FSM}$        | 100 A          |
| $V_F$            | 0.65 V         |
| $I_R$            | 20 $\mu$ A     |
| $T_J$ max.       | 175 °C         |
| Package          | DO-214AB (SMC) |
| Diode variations | Single         |

## TYPICAL APPLICATIONS

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

## MECHANICAL DATA

**Case:** DO-214AB (SMC)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade  
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 2 whisker test, HE3 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         | SS3H9       | SS3H10 | UNIT       |
|--|----------------|-------------|--------|------------|
| Device marking code  |                | MS9         | MS10   |            |
| 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 at: $T_L = 115$ °C                       | $I_{F(AV)}$    | 3.0         |        | A          |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 100         |        | A          |
| Peak repetitive reverse surge current at $t_p = 2.0$ $\mu$ s, 1 kHz                | $I_{RRM}$      | 1.0         |        | A          |
| Critical rate of rise of reverse voltage   | $dV/dt$        | 10 000      |        | V/ $\mu$ s |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | -65 to +175 |        | °C         |

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

| PARAMETER  | TEST CONDITIONS        |                         | SYMBOL         | SS3H9 | SS3H10 | UNIT |
|--|------------------------|-------------------------|----------------|-------|--------|------|
| Maximum instantaneous forward voltage <sup>(1)</sup>           | I <sub>F</sub> = 3.0 A | T <sub>J</sub> = 25 °C  | V <sub>F</sub> | 0.8   |        | V    |
|  |                        | T <sub>J</sub> = 125 °C |                | 0.65  |        |      |
| Maximum reverse current at rated V <sub>R</sub> <sup>(2)</sup> |                        | T <sub>J</sub> = 25 °C  | I <sub>R</sub> | 20    |        | μA   |
|  |                        | T <sub>J</sub> = 125 °C |                | 4     |        | mA   |

**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           | SS3H9 | SS3H10 | UNIT |
|--|------------------|-------|--------|------|
| Typical thermal resistance, junction to lead at T <sub>L</sub> = 25 °C | R <sub>θJL</sub> | 20    |        | °C/W |
| Typical thermal resistance, junction to ambient <sup>(1)</sup>         | R <sub>θJA</sub> | 50    |        |      |

**Note**

- (1) Units mounted on PCB with 0.55" x 0.55" (14 mm x 14 mm) copper pad areas

**ORDERING INFORMATION** (Example)

| PREFERRED P/N               | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
|-----------------------------|-----------------|------------------------|---------------|------------------------------------|
| SS3H9-E3/57T                | 0.235           | 57T                    | 850           | 7" diameter plastic tape and reel  |
| SS3H9-E3/9AT                | 0.235           | 9AT                    | 3500          | 13" diameter plastic tape and reel |
| SS3H9HE3_A/H <sup>(1)</sup> | 0.235           | H                      | 850           | 7" diameter plastic tape and reel  |
| SS3H9HE3_A/I <sup>(1)</sup> | 0.235           | I                      | 3500          | 13" diameter plastic tape and reel |
| SS3H9HE3_B/H <sup>(1)</sup> | 0.235           | H                      | 850           | 7" diameter plastic tape and reel  |
| SS3H9HE3_B/I <sup>(1)</sup> | 0.235           | I                      | 3500          | 13" diameter plastic tape and reel |

**Note**

- (1) AEC-Q101 qualified

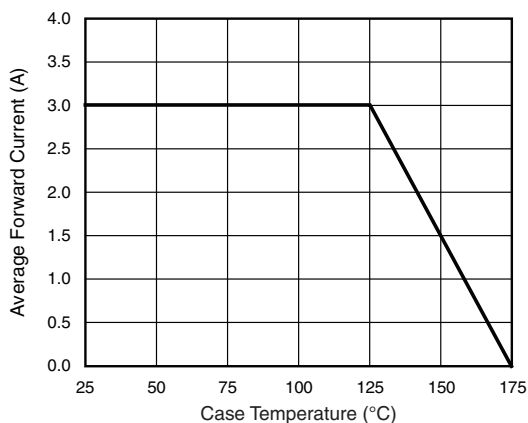
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

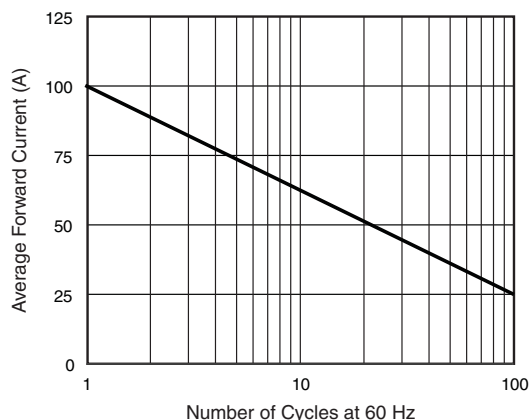


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

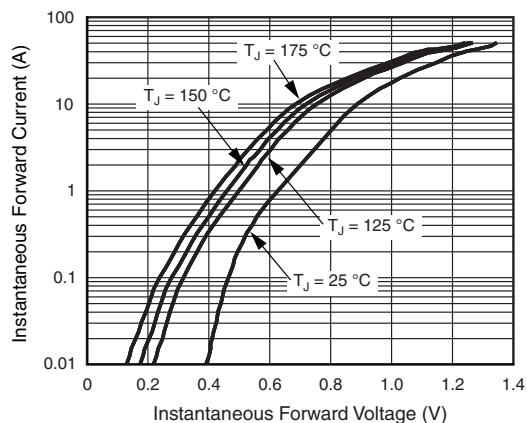


Fig. 3 - Typical Instantaneous Forward Characteristics

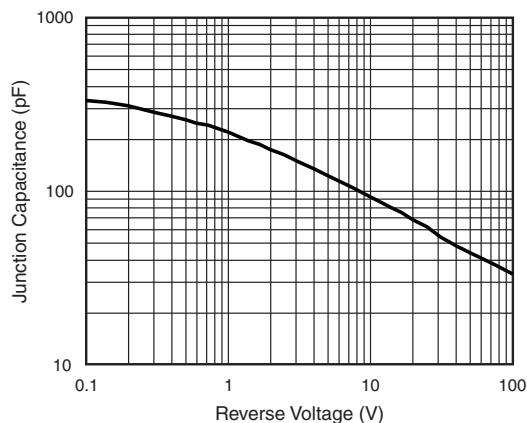


Fig. 5 - Typical Junction Capacitance

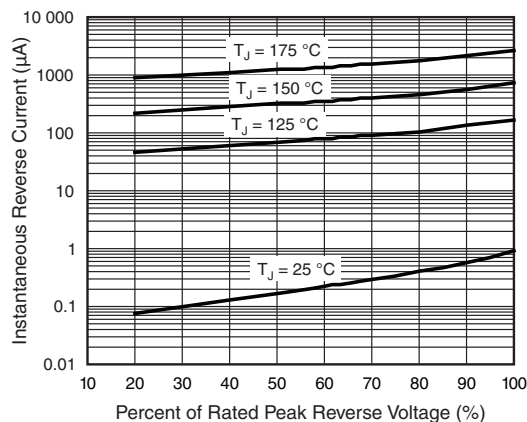


Fig. 4 - Typical Reverse Characteristics

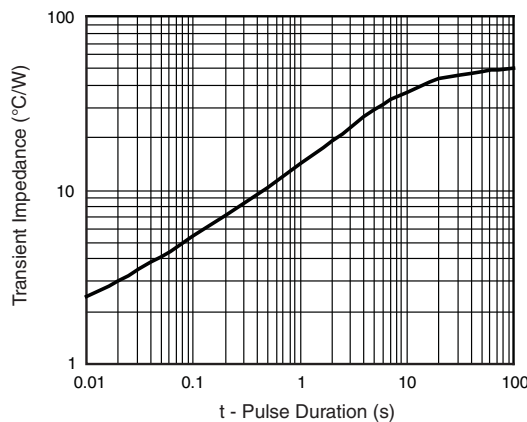
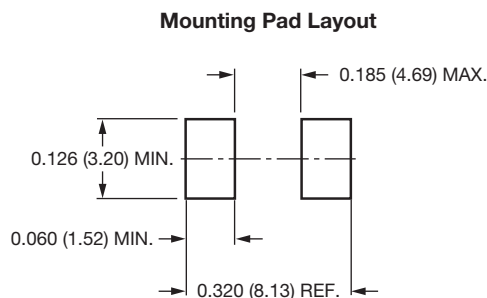
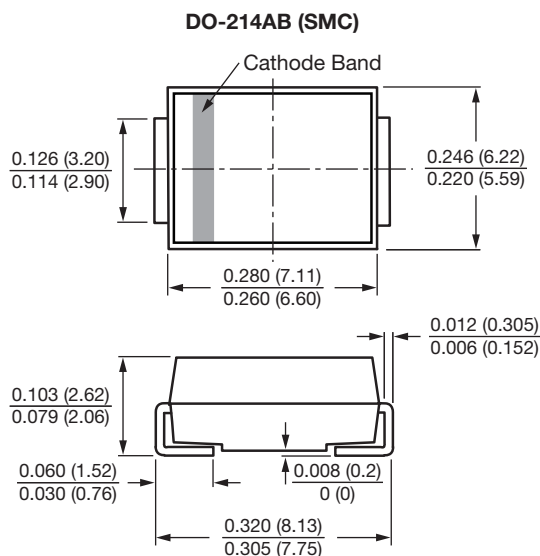


Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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