# High Voltage Surface-Mount Schottky Rectifier

## High Barrier Technology for Improved High Temperature Performance



**SMC (DO-214AB)**

Cathode ○—▶|—○ Anode

### LINKS TO ADDITIONAL RESOURCES

3D Models

| 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 µA |
| $T_J$ max. | 175 °C |
| Package | SMC (DO-214AB) |
| Circuit configuration | Single |

### FEATURES

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

- 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

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** SMC (DO-214AB)
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 µs, 1 kHz | $I_{RRM}$ | 1.0 | | A |
| Critical rate of rise of reverse voltage | dV/dt | 10 000 | | V/µs |
| Operating junction and storage temperature range | $T_J$, $T_{STG}$ | -65 to +175 | | °C |



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| ELECTRICAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| PARAMETER | TEST CONDITIONS | | SYMBOL | SS3H9 | SS3H10 | UNIT |
| Maximum instantaneous forward voltage [1] | $I_F$ = 3.0 A | $T_J$ = 25 °C | $V_F$ | 0.8 | | V |
| | | $T_J$ = 125 °C | | 0.65 | | |
| Maximum reverse current at rated $V_R$ [2] | | $T_J$ = 25 °C | $I_R$ | 20 | | µA |
| | | $T_J$ = 125 °C | | 4 | | mA |

**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 | SS3H9 | SS3H10 | UNIT |
| Typical thermal resistance, junction-to-lead at $T_L$ = 25 °C | $R_{\theta JL}$ | 20 | | °C/W |
| Typical thermal resistance, junction-to-ambient [1] | $R_{\theta JA}$ | 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_B/H [1] | 0.235 | H | 850 | 7" diameter plastic tape and reel |
| SS3H9HE3_B/I [1] | 0.235 | I | 3500 | 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)

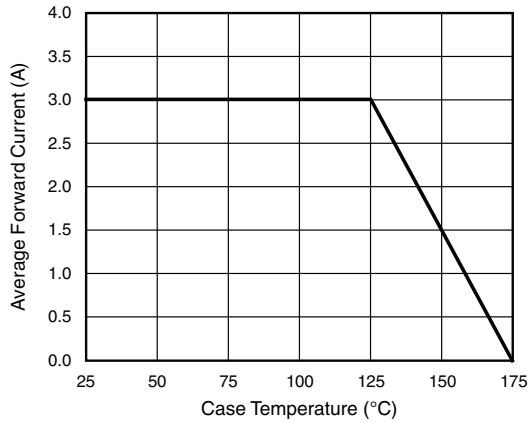


Fig. 1 - Forward Current Derating Curve

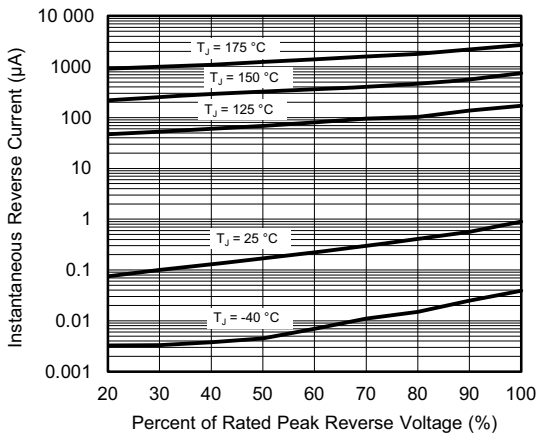


Fig. 4 - Typical Reverse Characteristics

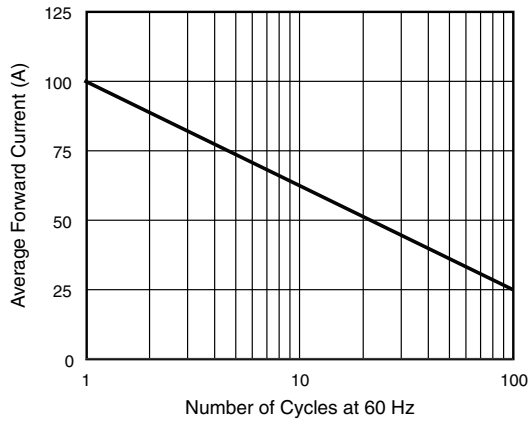


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

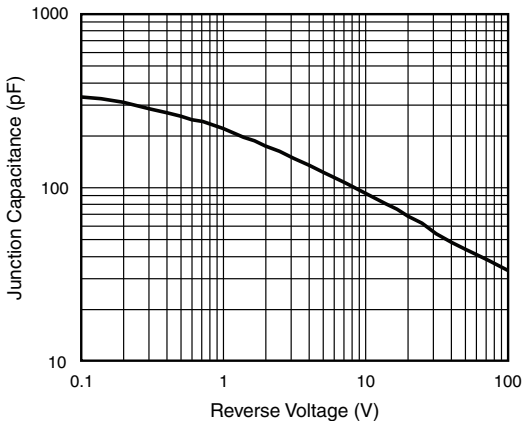


Fig. 5 - Typical Junction Capacitance

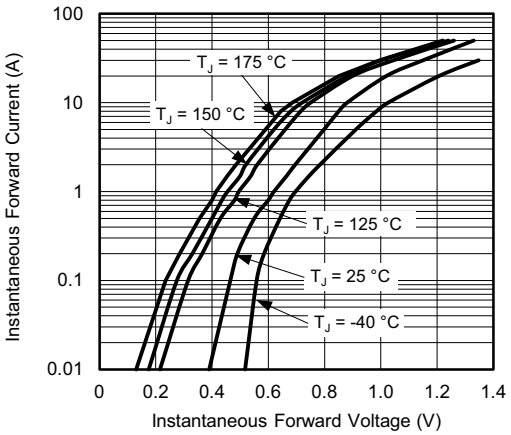


Fig. 3 - Typical Instantaneous Forward Characteristics

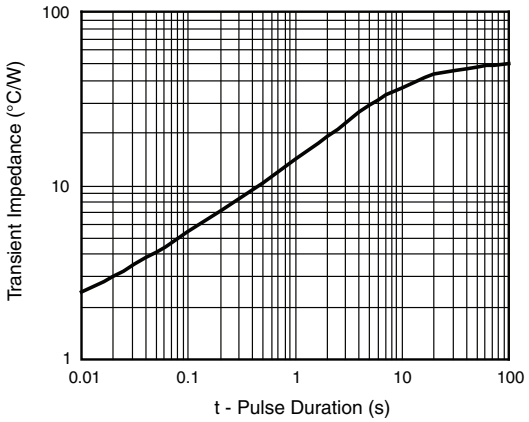


Fig. 6 - Typical Transient Thermal Impedance


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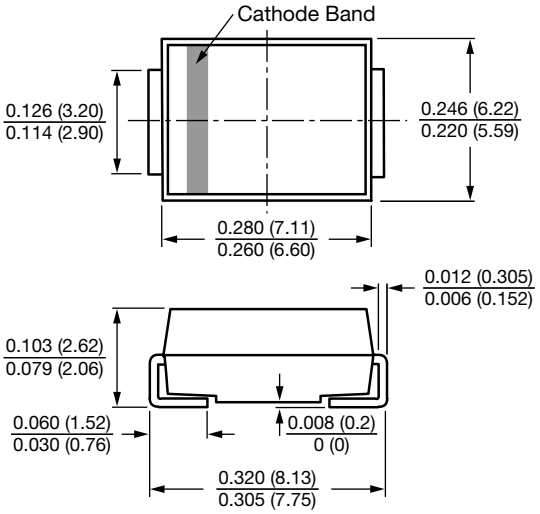
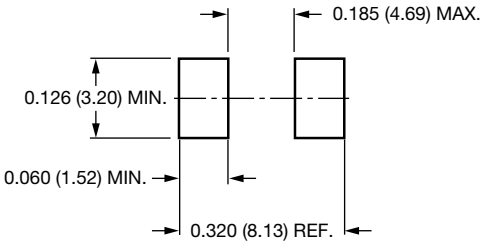
**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**SMC (DO-214AB)**




**Mounting Pad Layout**



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