

High-Voltage Surface Mount Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



SMA (DO-214AC)



RoHS
COMPLIANT
HALOGEN
FREE
Available

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

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

| 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 μ A |
| T_J max. | 175 °C |
| Package | SMA (DO-214AC) |
| Diode variations | Single |

| MAXIMUM RATINGS ($T_A = 25$ °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 $t_p = 2.0$ μ 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 °C unless otherwise noted) | | | | | | |
|--|------------------------|-------------------------|----------------|-------|--------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | SS1H9 | SS1H10 | UNIT |
| Maximum instantaneous forward voltage ⁽¹⁾ | I _F = 1.0 A | T _J = 25 °C | V _F | 0.77 | | V |
| | | T _J = 125 °C | | 0.62 | | |
| | I _F = 2.0 A | T _J = 25 °C | | 0.86 | | |
| | | T _J = 125 °C | | 0.70 | | |
| Maximum reverse current at rated V _R ⁽²⁾ | | | I _R | 1.0 | | μA |
| | | | | 0.5 | | 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 | SS1H9 | SS1H10 | UNIT |
| Maximum thermal resistance ⁽¹⁾ | R _{θJA} | 88 | | °C/W |
| | R _{θJL} | 30 | | |

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 |
| 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 ⁽¹⁾ | 0.064 | H | 1800 | 7" diameter plastic tape and reel |
| SS1H10HE3_B/I ⁽¹⁾ | 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 ⁽¹⁾ | 0.064 | H | 1800 | 7" diameter plastic tape and reel |
| SS1H10HM3_B/I ⁽¹⁾ | 0.064 | I | 7500 | 13" diameter plastic tape and reel |

Note

- ⁽¹⁾ AEC-Q101 qualified

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

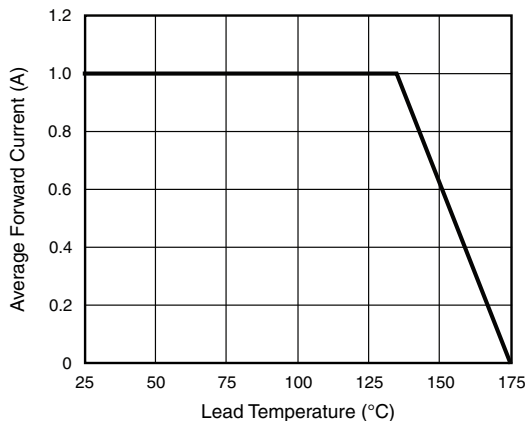


Fig. 1 - Forward Current Derating Curve

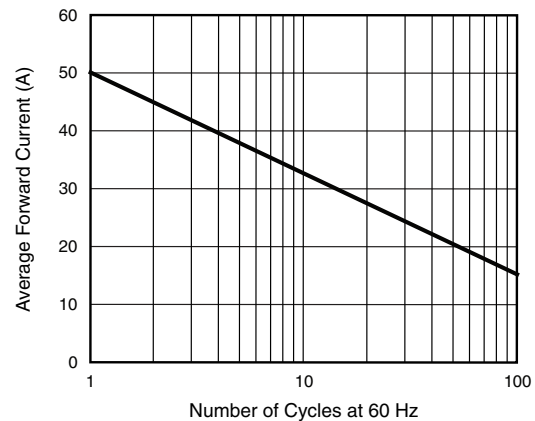


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

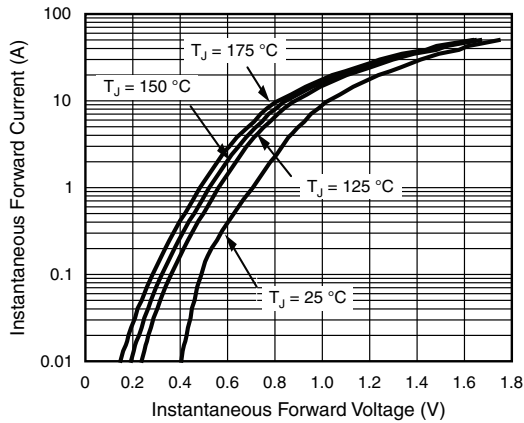


Fig. 3 - Typical Instantaneous Forward Characteristics

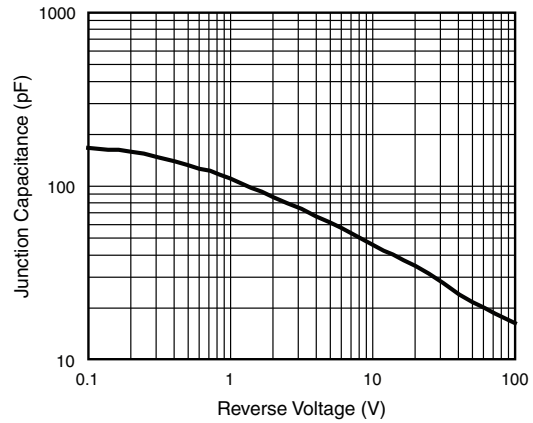


Fig. 5 - Typical Junction Capacitance

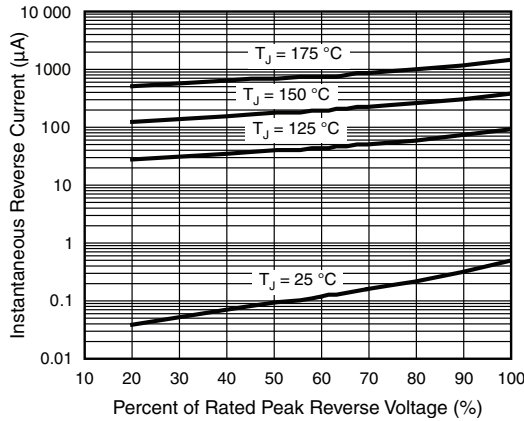


Fig. 4 - Typical Reverse Characteristics

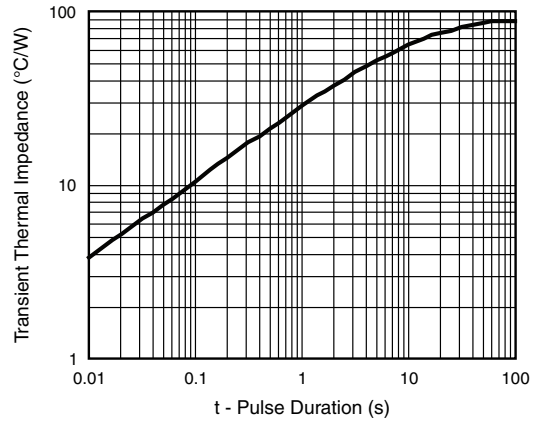
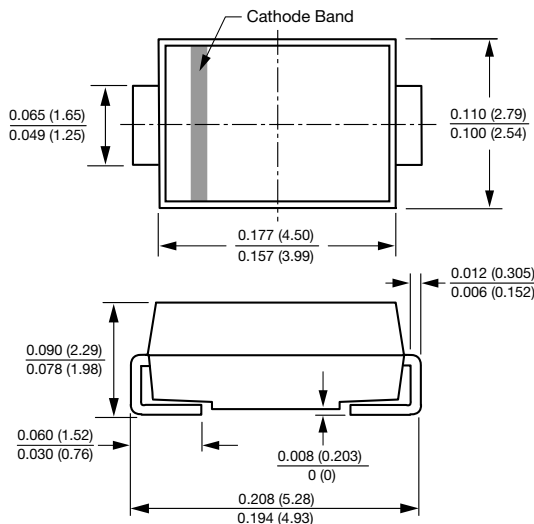


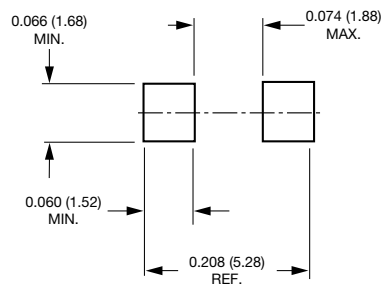
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout





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