

Surface-Mount Schottky Barrier Rectifier


SMA (DO-214AC)

Cathode Anode

LINKS TO ADDITIONAL RESOURCES



Design Tools



Related Documents



3D Models



Simulation Tools



SPICE Models



Application Notes



Technical Notes



Marking

| PRIMARY CHARACTERISTICS | |
|-------------------------|------------------------------|
| $I_{F(AV)}$ | 1.0 A |
| V_{RRM} | 20 V, 30 V, 40 V, 50 V, 60 V |
| I_{FSM} | 40 A |
| V_F | 0.50 V, 0.75 V |
| T_J max. | 150 °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
- 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

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | | | | | |
|--|-------------|-------------|------|------|------|------|------------|
| PARAMETER | SYMBOL | SS12 | SS13 | SS14 | SS15 | SS16 | UNIT |
| Device marking code | | S2 | S3 | S4 | S5 | S6 | V |
| Maximum repetitive peak reverse voltage | V_{RRM} | 20 | 30 | 40 | 50 | 60 | V |
| Maximum RMS voltage | V_{RMS} | 14 | 21 | 28 | 35 | 42 | V |
| Maximum DC blocking voltage | V_{DC} | 20 | 30 | 40 | 50 | 60 | V |
| Maximum average forward rectified current at T_L (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} | 40 | | | | | A |
| Voltage rate of change (rated V_R) | dV/dt | 10 000 | | | | | V/ μ s |
| Operating junction temperature range | T_J | -65 to +150 | | | | | °C |
| Storage temperature range | T_{STG} | -65 to +150 | | | | | °C |



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | | | |
|--|-----------------------------------|-------------|------|------|------|------|------|------|
| PARAMETER | TEST CONDITIONS | SYMBOL | SS12 | SS13 | SS14 | SS15 | SS16 | UNIT |
| Maximum instantaneous forward voltage | 1.0 A | $V_F^{(1)}$ | 0.50 | | | 0.75 | | V |
| Maximum DC reverse current at rated DC blocking voltage | $T_A = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | 0.2 | | | | | mA |
| | $T_A = 100\text{ }^\circ\text{C}$ | | 6.0 | | 5.0 | | | |

Notes

- (1) Pulse test: 300 μs 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 | SS12 | SS13 | SS14 | SS15 | SS16 | UNIT | |
| Typical thermal resistance ⁽¹⁾ | $R_{\theta JA}$ | 88 | | | | | | $^\circ\text{C/W}$ |
| | $R_{\theta JL}$ | 28 | | | | | | |

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 |
| SS16-E3/61T | 0.064 | 61T | 1800 | 7" diameter plastic tape and reel |
| SS16-E3/5AT | 0.064 | 5AT | 7500 | 13" diameter plastic tape and reel |
| SS16HE3_B/H ⁽¹⁾ | 0.064 | H | 1800 | 7" diameter plastic tape and reel |
| SS16HE3_B/I ⁽¹⁾ | 0.064 | I | 7500 | 13" diameter plastic tape and reel |
| SS16-M3/61T | 0.064 | 61T | 1800 | 7" diameter plastic tape and reel |
| SS16-M3/5AT | 0.064 | 5AT | 7500 | 13" diameter plastic tape and reel |
| SS16HM3_B/H ⁽¹⁾ | 0.064 | H | 1800 | 7" diameter plastic tape and reel |
| SS16HM3_B/I ⁽¹⁾ | 0.064 | I | 7500 | 13" diameter plastic tape and reel |

Note

- (1) AEC-Q101 qualified

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

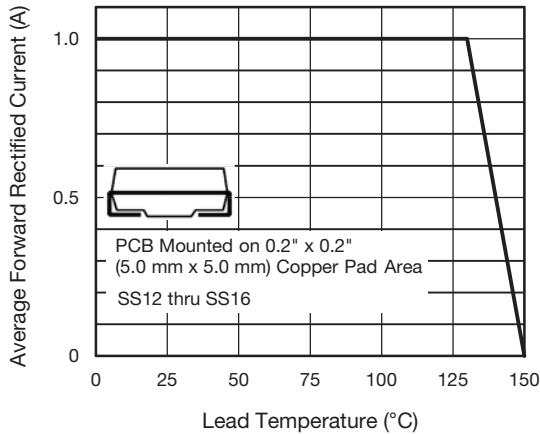


Fig. 1 - Forward Current Derating Curve

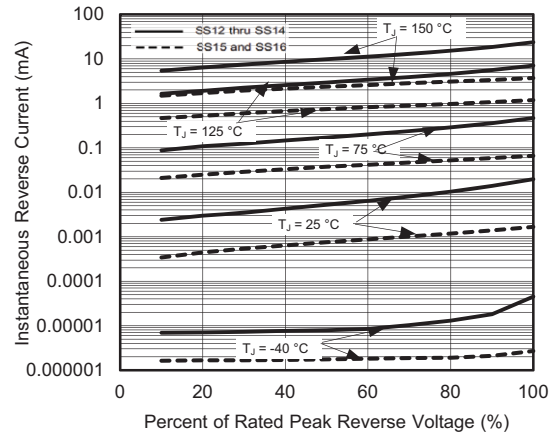


Fig. 4 - Typical Reverse Characteristics

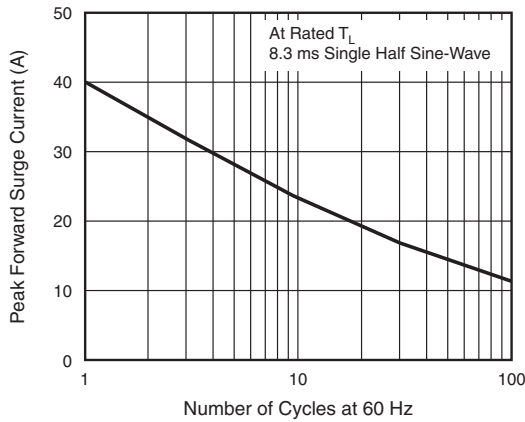


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

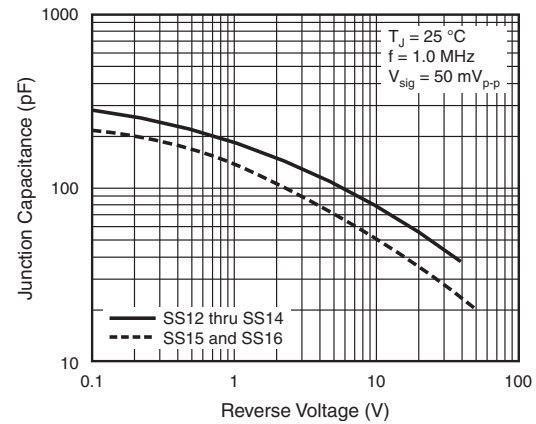


Fig. 5 - Typical Junction Capacitance

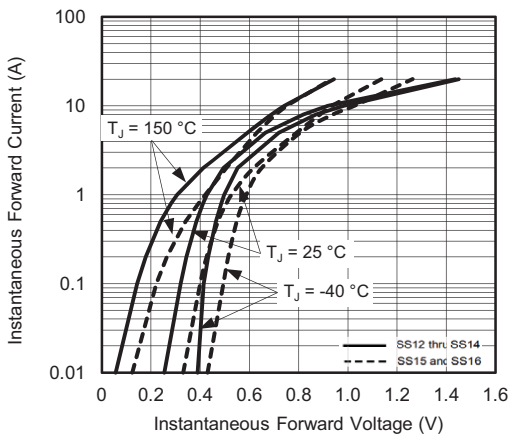
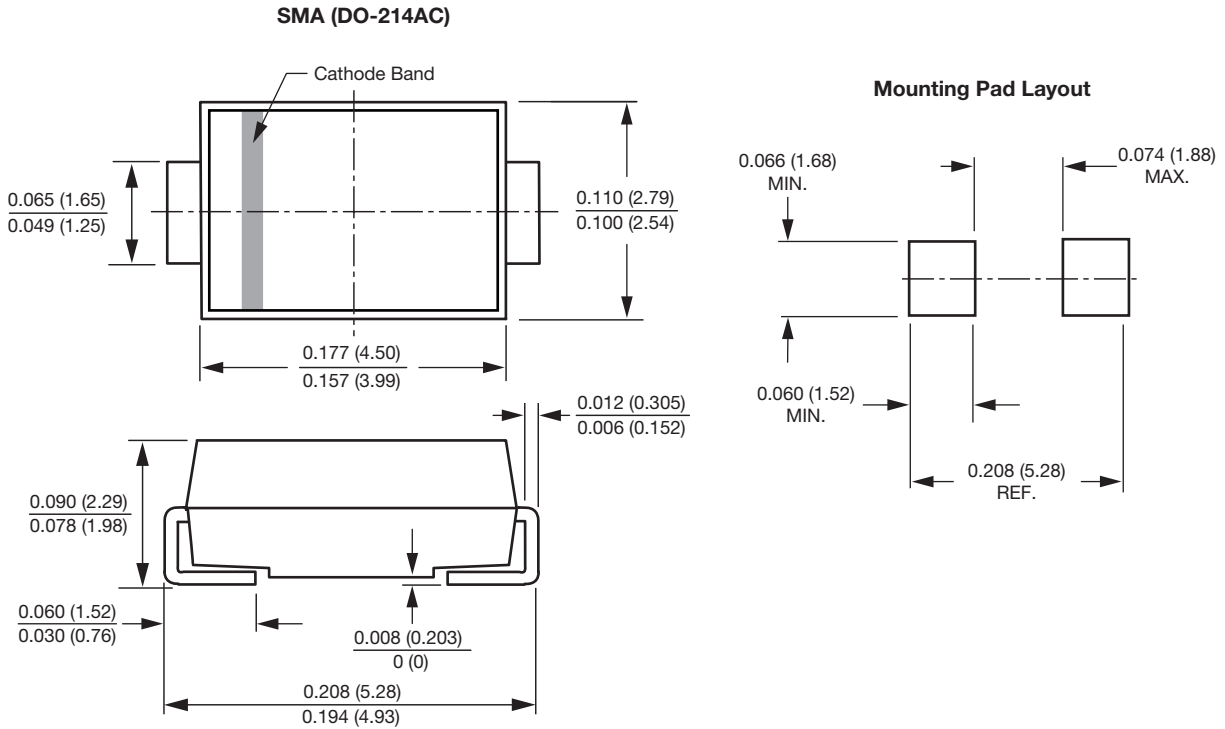


Fig. 3 - Typical Instantaneous Forward Characteristics



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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