

# SS13HE, NRVBSS13HE Series

## Surface Mount Schottky Barrier Rectifiers

1 A, 30 V – 60 V

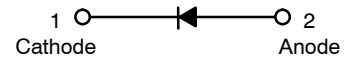
### Features

- Very Low Profile – Typical Height of 0.68 mm
- Low Power Loss, High Efficiency
- Moisture Sensitivity Level 1 per J-STD-020
- UL Flammability 94V-0 Classification
- RoHS Compliant / Green Molding Compound
- NRVB Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable



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### ORDERING INFORMATION

| Part Number | Top Mark | Package   | Packing Method† |
|-------------|----------|-----------|-----------------|
| SS13HE      | 1A       | SOD-323HE | Tape and Reel   |
| SS14HE      | 1B       | SOD-323HE | Tape and Reel   |
| SS16HE      | 1C       | SOD-323HE | Tape and Reel   |
| NRVBSS13HE  | 1A       | SOD-323HE | Tape and Reel   |
| NRVBSS14HE  | 1B       | SOD-323HE | Tape and Reel   |
| NRVBSS16HE  | 1C       | SOD-323HE | Tape and Reel   |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

## SS13HE, NRVBSS13HE Series

**Table 1. ABSOLUTE MAXIMUM RATINGS** Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol      | Parameter   | Value       |        |        | Unit             |
|-------------|---|-------------|--------|--------|------------------|
|             |   | SS13HE      | SS14HE | SS16HE |                  |
| $V_{RRM}$   | Maximum Repetitive Peak Reverse Voltage   | 30          | 40     | 60     | V                |
| $V_R$       | Reverse Voltage   | 30          | 40     | 60     | V                |
| $I_{F(AV)}$ | Maximum Average Forward Rectified Current   | 1           |        |        | A                |
| $I_{FSM}$   | Peak Forward Surge Current: 8.3 ms Single Half Sine-Wave Superimposed on Rated Load | 25          |        |        | A                |
| $T_J$       | Operating Junction Temperature Range  | -55 to +150 |        |        | $^\circ\text{C}$ |
| $T_{STG}$   | Storage Temperature Range   | -55 to +150 |        |        | $^\circ\text{C}$ |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

**Table 2. THERMAL CHARACTERISTICS** (Note 1) Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol          | Parameter  | Value | Unit                      |
|-----------------|--|-------|---------------------------|
| $\Psi_{JL}$     | Junction-to-Lead Thermal Resistance Thermocouple Soldered to Cathode | 21    | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JA}$ | Junction-to-Ambient Thermal Resistance (Note 1)                      | 199   | $^\circ\text{C}/\text{W}$ |

1. Per JESD51-3 Recommended Thermal Test Board. Device mounted on FR-4 PCB, board size = 76.2 mm x 114.3 mm

**Table 3. ELECTRICAL CHARACTERISTICS** Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol   | Parameter                              | Conditions     |   | Min    | Typ  | Max  | Unit          |  |
|----------|--|----------------|---|--------|------|------|---------------|--|
| $V_F$    | Instantaneous Forward Voltage (Note 2) | SS13HE, SS14HE | $I_F = 0.5 \text{ A}, T_J = 25^\circ\text{C}$                       |        | 0.41 |      | V             |  |
|          |  |                | $I_F = 0.5 \text{ A}, T_J = 125^\circ\text{C}$                      |        | 0.31 |      |               |  |
|          |  |                | $I_F = 1.0 \text{ A}, T_J = 25^\circ\text{C}$                       |        | 0.46 | 0.55 |               |  |
|          |  |                | $I_F = 1.0 \text{ A}, T_J = 125^\circ\text{C}$                      |        | 0.40 | 0.50 |               |  |
|          |  | SS16HE         | $I_F = 0.5 \text{ A}, T_J = 25^\circ\text{C}$                       |        | 0.51 |      |               |  |
|          |  |                | $I_F = 0.5 \text{ A}, T_J = 125^\circ\text{C}$                      |        | 0.45 |      |               |  |
|          |  |                | $I_F = 1.0 \text{ A}, T_J = 25^\circ\text{C}$                       |        | 0.61 | 0.68 |               |  |
|          |  |                | $I_F = 1.0 \text{ A}, T_J = 125^\circ\text{C}$                      |        | 0.54 | 0.60 |               |  |
| $I_R$    | Reverse Current at Rated $V_R$         | SS13HE, SS14HE | $T_J = 25^\circ\text{C}$  |        | 5.0  | 50   | $\mu\text{A}$ |  |
|          |  |                | $T_J = 125^\circ\text{C}$   |        | 3.0  | 10   | mA            |  |
|          |  | SS16HE         | $T_J = 25^\circ\text{C}$  |        | 2.0  | 50   | $\mu\text{A}$ |  |
|          |  |                | $T_J = 125^\circ\text{C}$   |        | 1.5  | 10   | mA            |  |
| $T_{rr}$ | Reverse Recovery Time                  | SS13HE, SS14HE | $I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$ |        | 5.6  |      | ns            |  |
|          |  |                |   | SS16HE |      | 8.3  |               |  |
| $C_J$    | Junction Capacitance                   | SS13HE, SS14HE | $V_R = 4.0 \text{ V}, f = 1 \text{ MHz}$                            |        | 55   |      | pF            |  |
|          |  |                |   | SS16HE |      | 43   |               |  |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Pulse test with  $PW = 300 \mu\text{s}$ , 1% duty cycle

# SS13HE, NRVBSS13HE Series

## TYPICAL PERFORMANCE CHARACTERISTICS

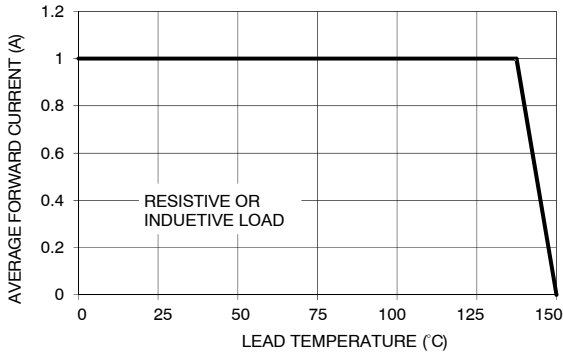


Figure 1. Forward Current Derating Curve

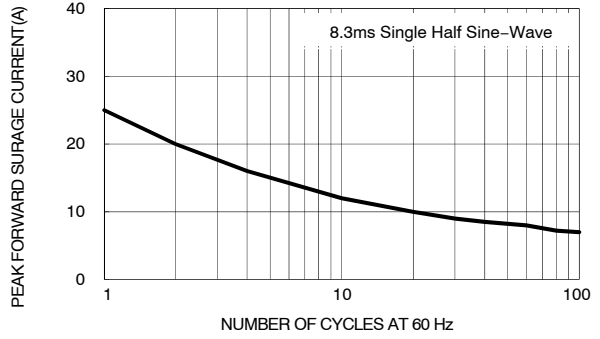


Figure 2. Maximum Non-Repetitive Forward Surge Current

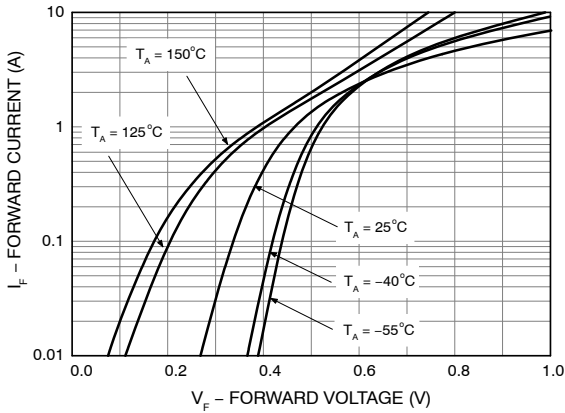


Figure 3. Typical Forward Characteristics - SS13HE / SS14HE

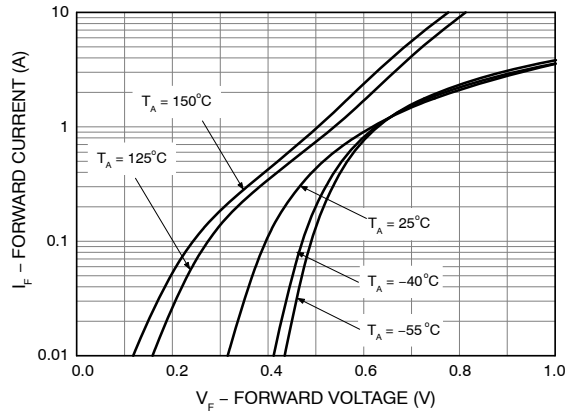


Figure 4. Typical Forward Characteristics - SS16HE

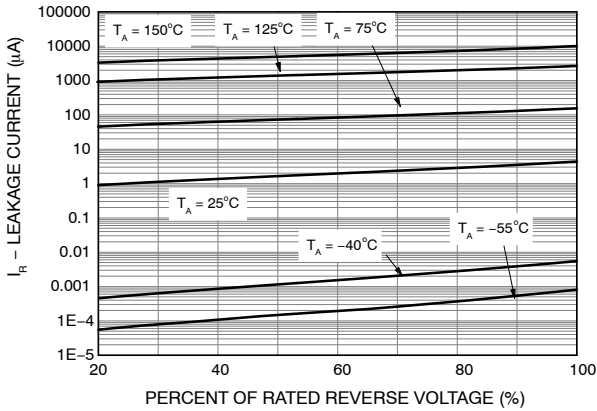


Figure 5. Typical Reverse Characteristics - SS13HE / SS14HE

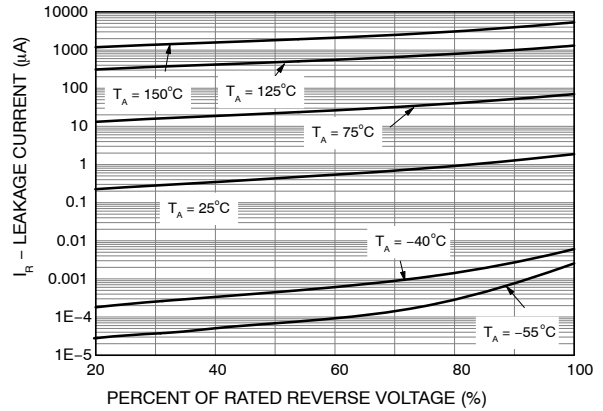


Figure 6. Typical Reverse Characteristics - SS16HE

# SS13HE, NRVBSS13HE Series

## TYPICAL PERFORMANCE CHARACTERISTICS

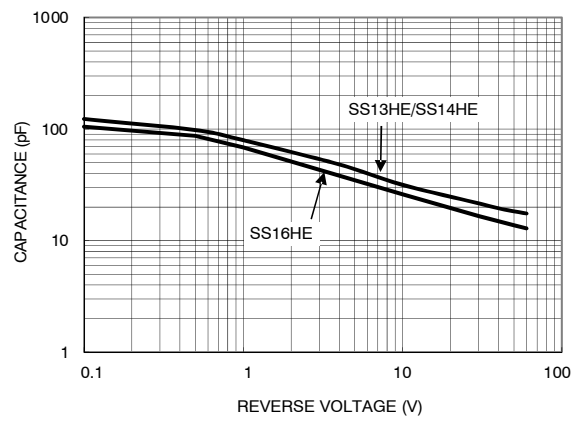


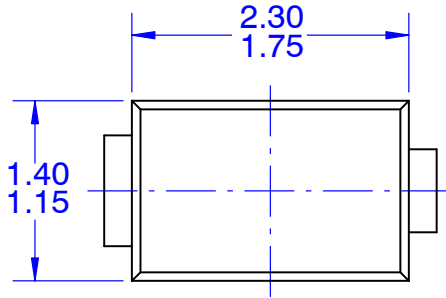
Figure 7. Typical Junction Capacitance

**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

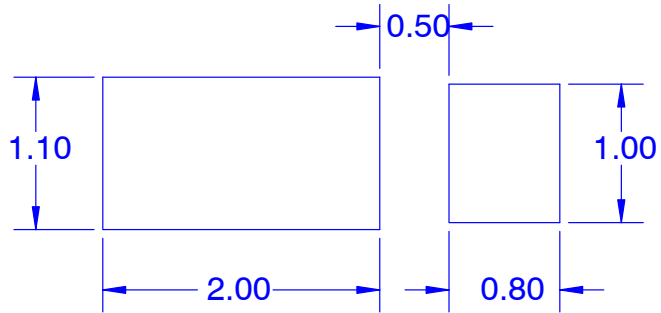


SOD-323EP  
CASE 477AD  
ISSUE O

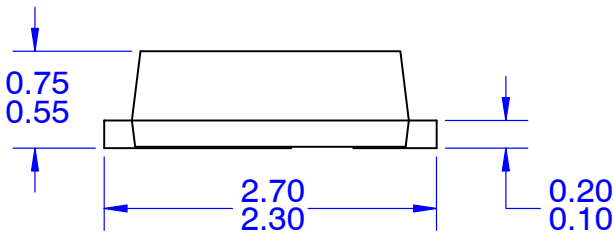
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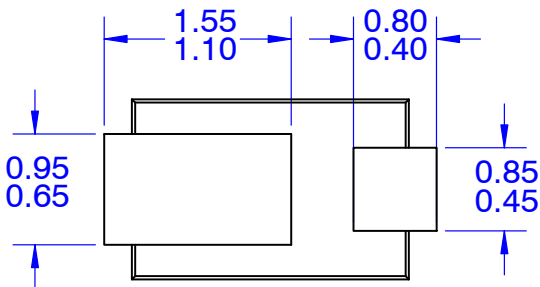
TOP VIEW



LAND PATTERN RECOMMENDATION



FRONT VIEW



BOTTOM VIEW

NOTES:

- A. THIS PACKAGE DOES NOT CONFORM TO ANY STANDARDS.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.

|                         |                    |   |
|-------------------------|--------------------|---|
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