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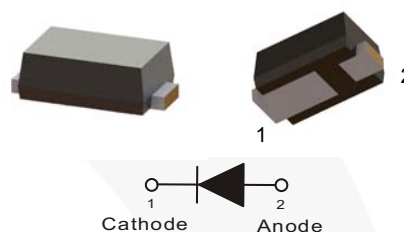
February 2017

# SS13HE - SS16HE

## 1 A, 30 V - 60 V Surface Mount Schottky Barrier Rectifiers

### 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 Mold Compound
  - Industrial Devices Qualified Per AEC-Q101 Rev. C Standards
- \* see authorized use policy



### 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  |

### Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. 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 |        |        | $^\circ\text{C}$ |

SS13HE - SS16HE — 1 A, 30 V - 60 V Surface Mount Schottky Barrier Rectifiers

**Thermal Characteristics<sup>(1)</sup>**

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    | $^\circ\text{C/W}$ |
| $R_{\theta JA}$ | Junction to Ambient Thermal Resistance (1)                           | 199   | $^\circ\text{C/W}$ |

Note 1: Per JE51-3 Recommended Thermal Test Board. Device mounted on FR-4 PCB, board size = 76.2mm x 114.3mm

**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 <sup>(2)</sup> | $I_F = 0.5\text{ A}, T_J = 25^\circ\text{C}$                     |                  | 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 |               |
|          |                                              | $I_F = 0.5\text{ A}, T_J = 25^\circ\text{C}$                     | SS16HE           | 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 $V_R$               | $T_J = 25^\circ\text{C}$                                         | SS13HE<br>SS14HE | 5.0  | 50   | $\mu\text{A}$ |
|          |                                              | $T_J = 125^\circ\text{C}$                                        | SS13HE<br>SS14HE | 3.0  | 10   | mA            |
|          |                                              | $T_J = 25^\circ\text{C}$                                         | SS16HE           | 2.0  | 50   | $\mu\text{A}$ |
|          |                                              | $T_J = 125^\circ\text{C}$                                        | SS16HE           | 1.5  | 10   | mA            |
| $T_{rr}$ | Reverse Recovery Time                        | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$ | SS13HE<br>SS14HE | 5.6  |      | ns            |
|          |                                              |                                                                  | SS16HE           | 8.3  |      |               |
| $C_J$    | Junction Capacitance                         | $V_R = 4.0\text{ V}, f = 1\text{ MHz}$                           | SS13HE<br>SS14HE | 55   |      | pF            |
|          |                                              |                                                                  | SS16HE           | 43   |      |               |

**Note:**

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

## Typical Performance Characteristics

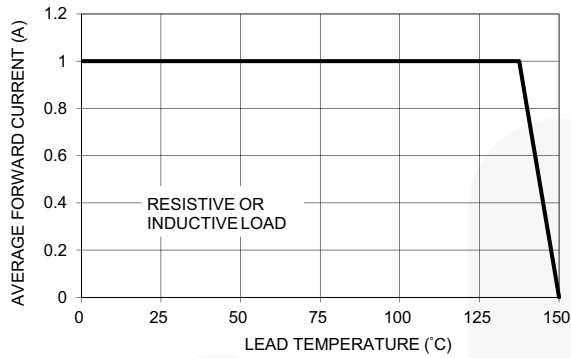


Figure 1. Forward Current Derating Curve

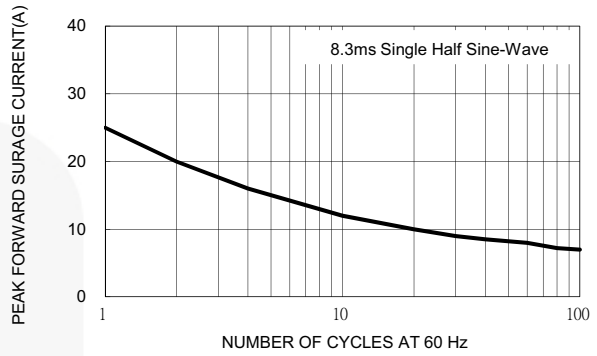


Figure 2. Maximum Non-Repetitive Forward Surge Current

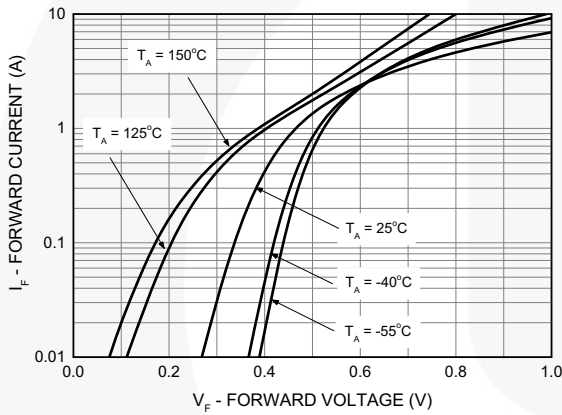


Figure 3. Typical Forward Characteristics  
- SS13HE / SS14HE

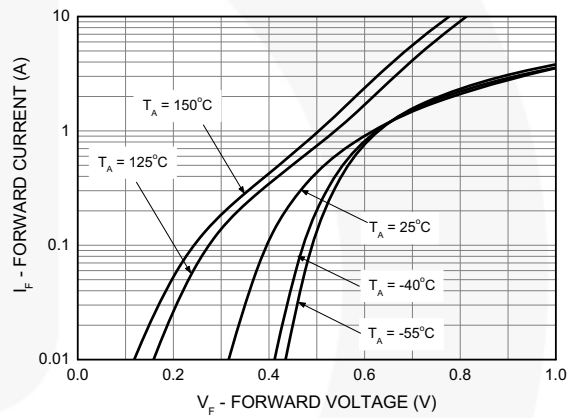


Figure 4. Typical Forward Characteristics  
- SS16HE

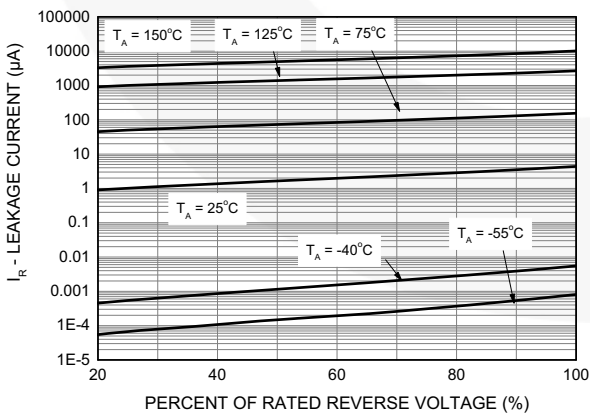


Figure 5. Typical Reverse Characteristics  
- SS13HE / SS14HE

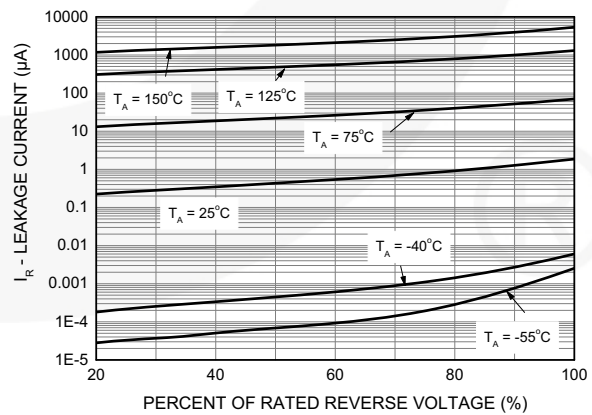
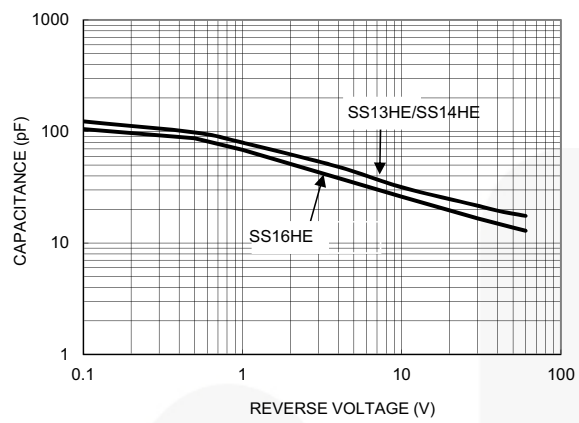
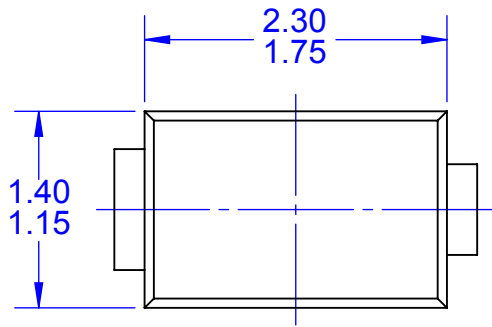


Figure 6. Typical Reverse Characteristics  
- SS16HE

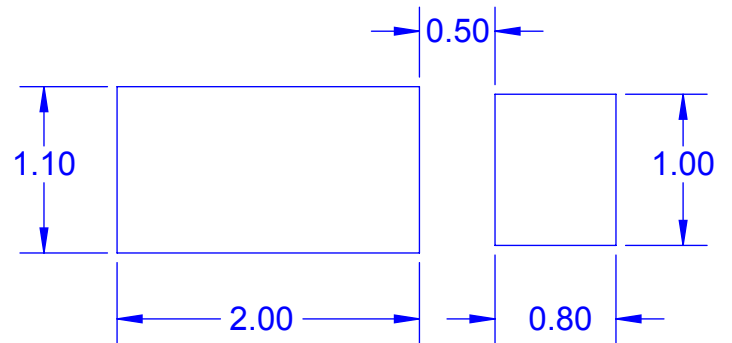
**Typical Performance Characteristics** (Continued)



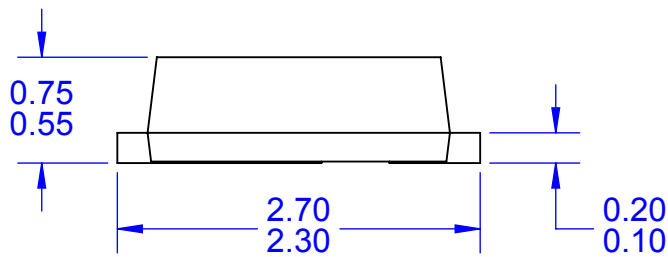
**Figure 7. Typical Junction Capacitance**



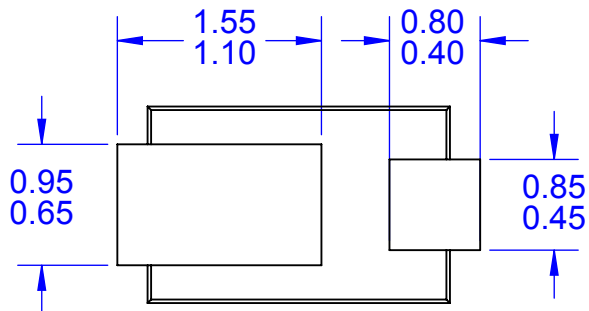
TOP VIEW



LAND PATTERN RECOMMENDATION



FRONT VIEW



BOTTOM VIEW

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