

# Surface-Mount Schottky Barrier Rectifier


**SMA (DO-214AC)**

Cathode  Anode

## LINKS TO ADDITIONAL RESOURCES



## FEATURES

- Low profile package
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency
- High surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

## 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/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

## PRIMARY CHARACTERISTICS

|                        |                  |
|------------------------|------------------|
| $I_{F(AV)}$            | 2.0 A            |
| $V_{RRM}$              | 20 V, 30 V, 40 V |
| $I_{FSM}$              | 40 A             |
| $V_F$ at $I_F = 2.0$ A | 0.517 V          |
| $T_J$ max.             | 150 °C           |
| Package                | SMA (DO-214AC)   |
| Circuit configurations | Single           |

## MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)

| PARAMETER                                                                         | SYMBOL         | SS22S       | SS23S | SS24S | UNIT       |
|-----------------------------------------------------------------------------------|----------------|-------------|-------|-------|------------|
| Device marking code                                                               |                | 22S         | 23S   | 24S   |            |
| Maximum repetitive peak reverse voltage                                           | $V_{RRM}$      | 20          | 30    | 40    | V          |
| Maximum average forward rectified current (fig. 1)                                | $I_{F(AV)}$    | 2.0         |       |       | A          |
| Peak forward surge current 10 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/ $\mu$ s |
| Operating junction and storage temperature range                                  | $T_J, T_{STG}$ | -55 to +150 |       |       | °C         |

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                     | TEST CONDITIONS    |                                     | SYMBOL      | TYP.  | MAX. | UNIT          |
|-------------------------------|--------------------|-------------------------------------|-------------|-------|------|---------------|
| Instantaneous forward voltage | $I_F = 1\text{ A}$ | $T_J = 25\text{ }^{\circ}\text{C}$  | $V_F^{(1)}$ | 0.436 | -    | V             |
|                               | $I_F = 2\text{ A}$ |                                     |             | 0.517 | 0.55 |               |
| Reverse current               | Rated $V_R$        | $T_J = 25\text{ }^{\circ}\text{C}$  | $I_R^{(2)}$ | 13    | 200  | $\mu\text{A}$ |
|                               |                    | $T_J = 100\text{ }^{\circ}\text{C}$ |             | 1.65  | 8    | mA            |
| Typical junction capacitance  | 4.0 V, 1 MHz       |                                     | $C_J$       | 130   | -    | pF            |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  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                | SS22S | SS23S | SS24S | UNIT                 |
|----------------------------|-----------------------|-------|-------|-------|----------------------|
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 75    |       |       | $^{\circ}\text{C/W}$ |
|                            | $R_{\theta JL}^{(1)}$ | 25    |       |       |                      |

**Note**

(1) PCB mounted with 0.4" x 0.4" (10 mm x 10 mm) copper pad areas

**ORDERING INFORMATION** (Example)

| PREFERRED P/N               | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
|-----------------------------|-----------------|------------------------|---------------|------------------------------------|
| SS24S-E3/61T                | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| SS24S-E3/5AT                | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |
| SS24SHE3_B/H <sup>(1)</sup> | 0.064           | H                      | 1800          | 7" diameter plastic tape and reel  |
| SS24SHE3_B/I <sup>(1)</sup> | 0.064           | I                      | 7500          | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

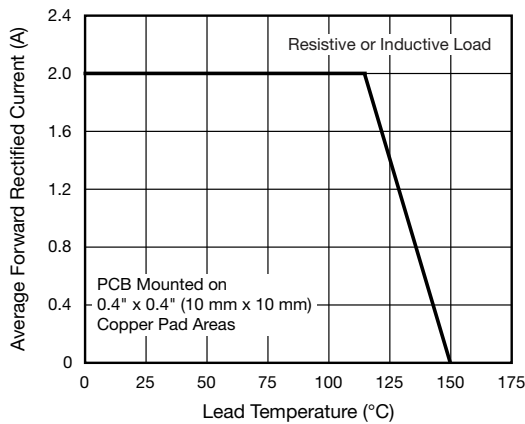
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

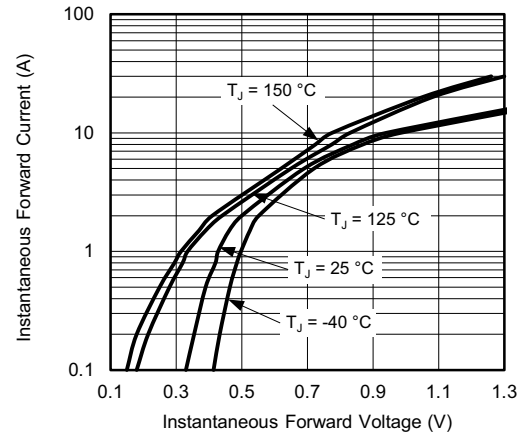


Fig. 4 - Typical Instantaneous Forward Characteristics

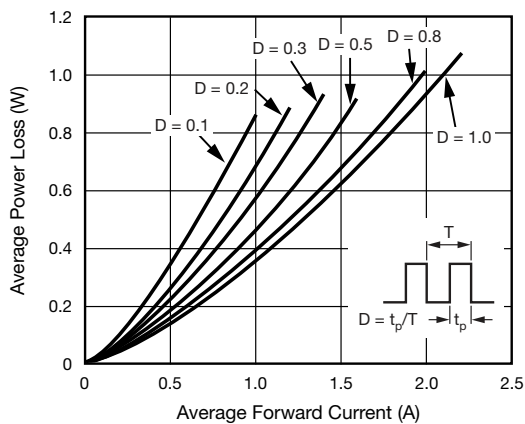


Fig. 2 - Forward Power Loss Characteristics

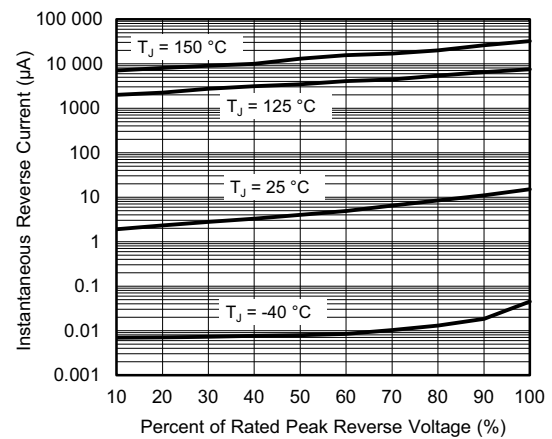


Fig. 5 - Typical Reverse Leakage Characteristics

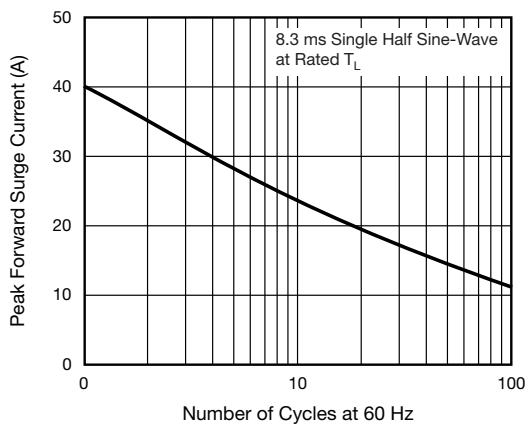


Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current

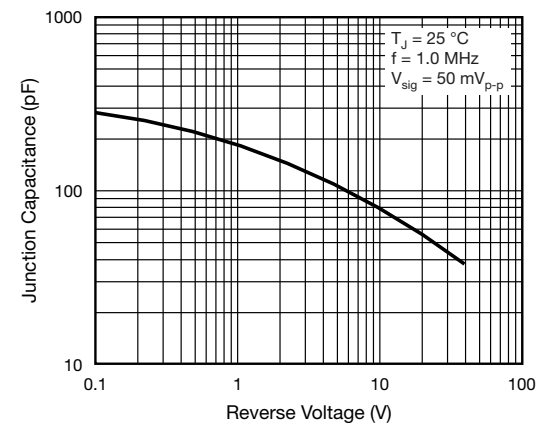
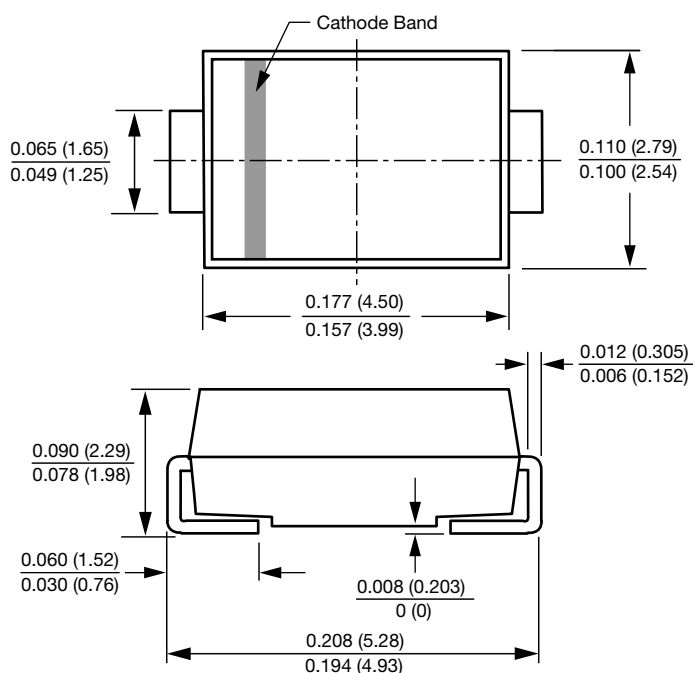


Fig. 6 - Typical Junction Capacitance

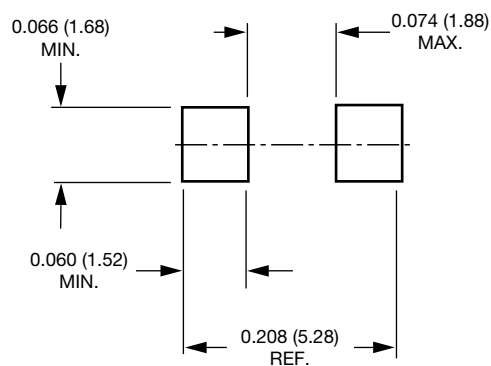


**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**SMA (DO-214AC)**



**Mounting Pad Layout**





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