

## Surface-Mount Schottky Barrier Rectifier


**SMA (DO-214AC)**

 Cathode  Anode

### 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
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
 COMPLIANT  
 HALOGEN  
**FREE**

### LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

### 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-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 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 configuration  | 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 ( $T_A = 25$ °C unless otherwise noted)

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

#### Notes

<sup>(1)</sup> Pulse test: 300  $\mu$ s pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: Pulse width  $\leq$  40 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-M3/61T                   | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| SS24S-M3/5AT                   | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |

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

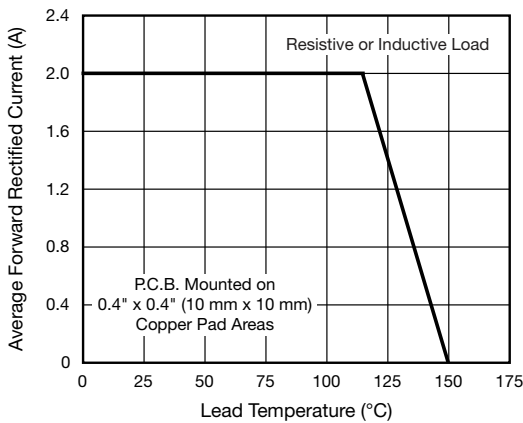


Fig. 1 - Forward Current Derating Curve

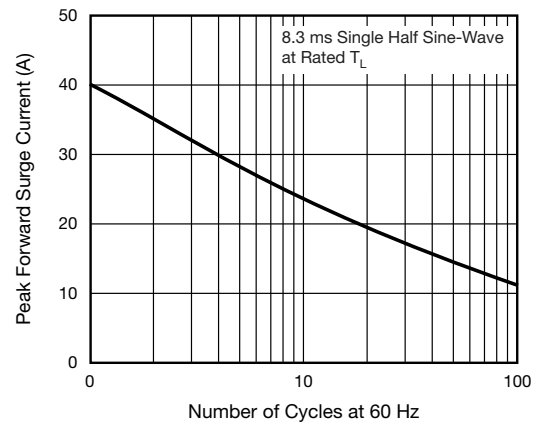


Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current

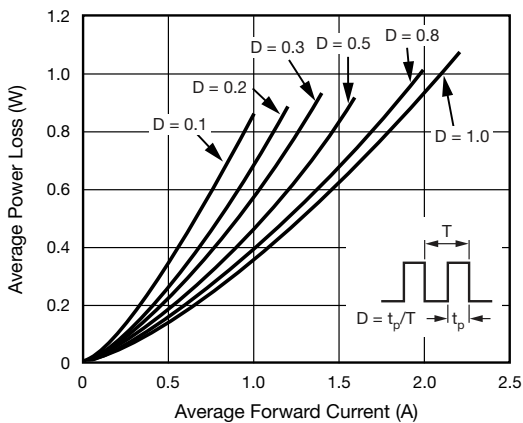


Fig. 2 - Forward Power Loss Characteristics

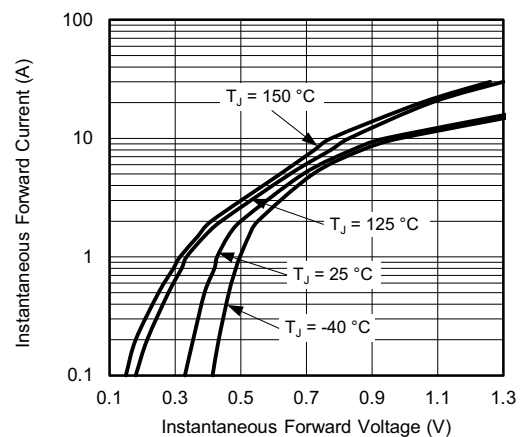


Fig. 4 - Typical Instantaneous Forward Characteristics

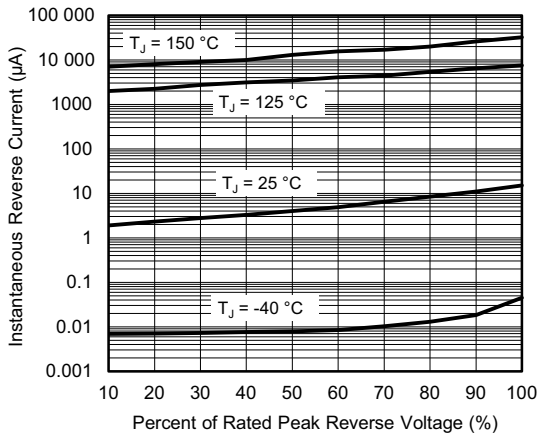


Fig. 5 - Typical Reverse Leakage Characteristics

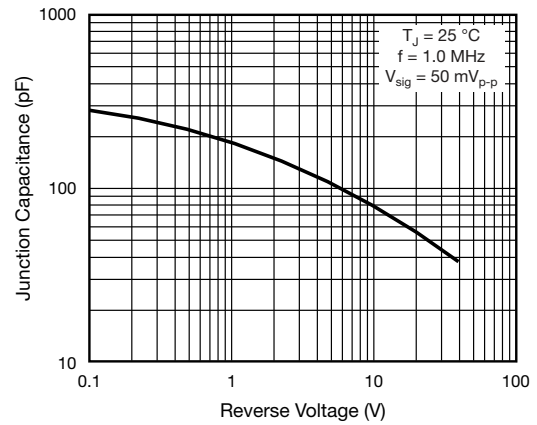
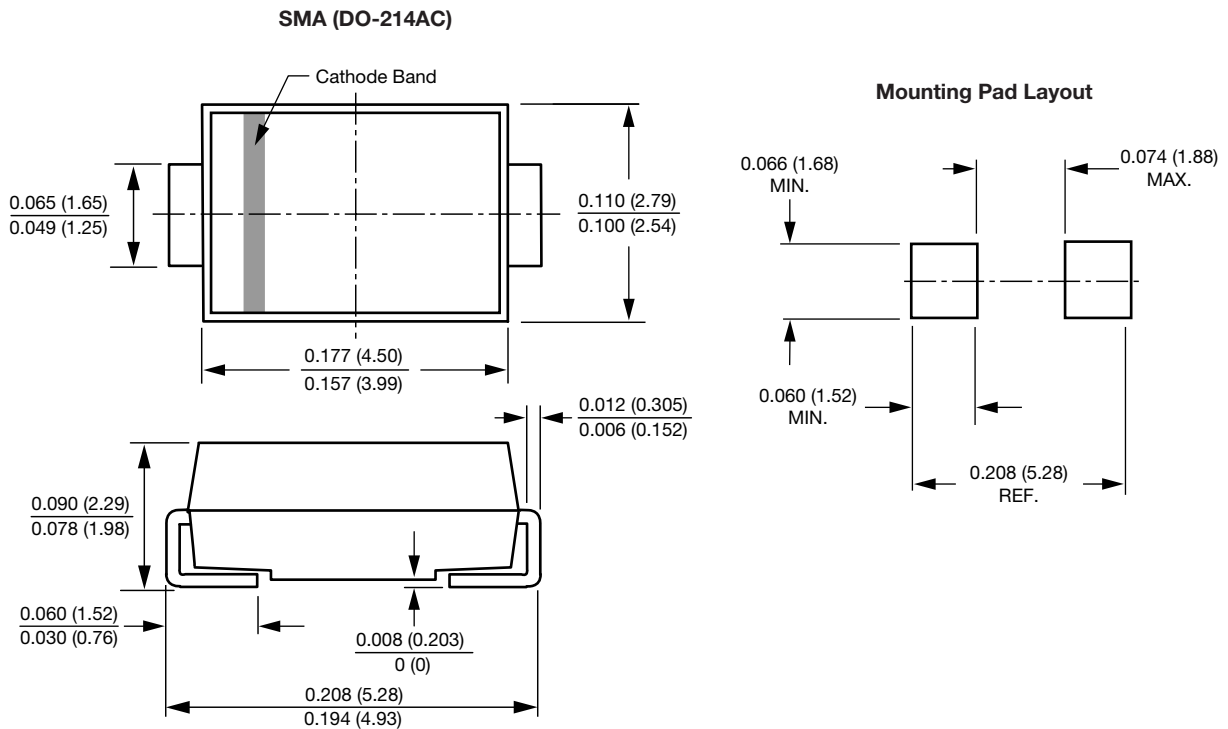


Fig. 6 - Typical Junction Capacitance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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