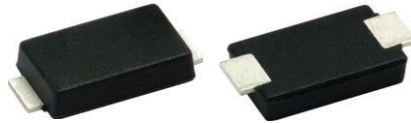


## Surface-Mount Glass Passivated Rectifier

### eSMP® Series



Top View

Bottom View

### SlimSMA (DO-221AC)

Cathode Anode

### FEATURES

- Very low profile - typical height of 0.95 mm
- Ideal for automated placement
- Glass passivated pellet chip junction
- Low forward voltage drop
- Low leakage current
- 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 general purpose rectification of power supplies, inverters, converters and freewheeling diodes for consumer, and industrial applications

### MECHANICAL DATA

**Case:** SlimSMA (DO-221AC)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant

**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 cathode end

### PRIMARY CHARACTERISTICS

|                                 |                             |
|---------------------------------|-----------------------------|
| $I_{F(AV)}$                     | 1.0 A                       |
| $V_{RRM}$                       | 400 V, 600 V, 800 V, 1000 V |
| $I_{FSM}$                       | 35 A                        |
| $I_R$                           | 5 $\mu$ A                   |
| $V_F$ at $I_F = 1.0$ A (125 °C) | 0.85 V                      |
| $T_J$ max.                      | 150 °C                      |
| Package                         | SlimSMA (DO-221AC)          |
| Circuit configuration           | Single                      |

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

| PARAMETER   | SYMBOL                     | S1AFG       | S1AFJ | S1AFK | S1AFM | UNIT |
|---|----------------------------|-------------|-------|-------|-------|------|
| Device marking code   |                            | SG          | SJ    | SK    | SM    |      |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$                  | 400         | 600   | 800   | 1000  | V    |
| Maximum average forward rectified current   | $I_{F(AV)}$ <sup>(1)</sup> | 1.0         |       |       |       | A    |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$                  | 35          |       |       |       | A    |
| Operating junction and storage temperature range                                  | $T_J, T_{STG}$             | -55 to +150 |       |       |       | °C   |

### Notes

<sup>(1)</sup> Free air, mounted on recommended copper pad area



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |  |                                   |             |      |      |               |
|--|--|-----------------------------------|-------------|------|------|---------------|
| PARAMETER  | TEST CONDITIONS  | SYMBOL                            | TYP.        | MAX. | UNIT |               |
| Instantaneous forward voltage  | $I_F = 0.5\text{ A}$   | $T_A = 25\text{ }^\circ\text{C}$  | $V_F^{(1)}$ | 0.90 | -    | V             |
|  | $I_F = 1.0\text{ A}$   |                                   |             | 0.95 | 1.1  |               |
|  | $I_F = 0.5\text{ A}$   | $T_A = 125\text{ }^\circ\text{C}$ |             | 0.78 | -    |               |
|  | $I_F = 1.0\text{ A}$   |                                   |             | 0.85 | 0.98 |               |
| Max. reverse current   | Rated $V_R$  | $T_A = 25\text{ }^\circ\text{C}$  | $I_R^{(2)}$ | -    | 5.0  | $\mu\text{A}$ |
|  |  | $T_A = 125\text{ }^\circ\text{C}$ |             | -    | 100  |               |
| Typical reverse recovery time  | $I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$ |                                   | $t_{rr}$    | 1.47 | -    | $\mu\text{s}$ |
| Typical junction capacitance   | 4.0 V, 1 MHz   |                                   | $C_J$       | 7.9  | -    | pF            |

**Notes**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

(2) Pulse test: Pulse width  $\leq 40\text{ ms}$

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified) |                       |       |       |       |       |                    |
|---|-----------------------|-------|-------|-------|-------|--------------------|
| PARAMETER   | SYMBOL                | S1AFG | S1AFJ | S1AFK | S1AFM | UNIT               |
| Typical thermal resistance  | $R_{\theta JA}^{(1)}$ | 125   |       |       |       | $^\circ\text{C/W}$ |
|   | $R_{\theta JM}^{(2)}$ | 23    |       |       |       |                    |

**Notes**

(1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance  $R_{\theta JA}$  - junction to ambient,  $R_{\theta JM}$  - junction to mount

(2) Mounted on 5.0 mm x 5.0 mm pad areas, 2 oz. FR4 PCB;  $R_{\theta JM}$  - junction to mount

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| S1AFJ-M3/6A                           | 0.032           | 6A                     | 3500          | 7" diameter plastic tape and reel  |
| S1AFJ-M3/6B                           | 0.032           | 6B                     | 14 000        | 13" diameter plastic tape and reel |

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

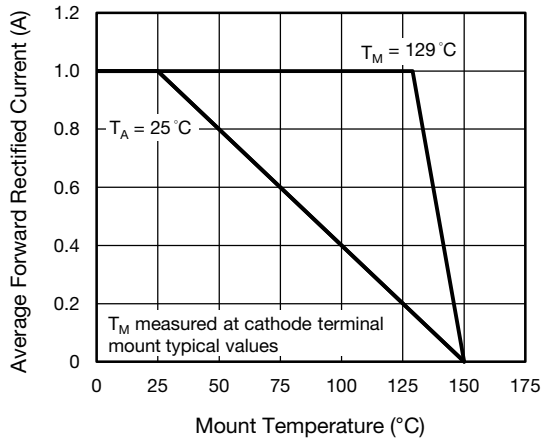


Fig. 1 - Maximum Forward Current Derating Curve

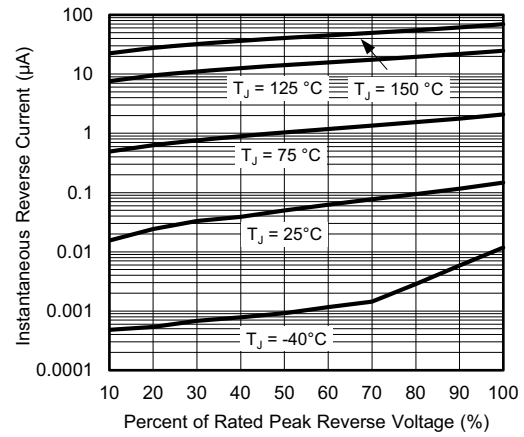


Fig. 4 - Typical Reverse Leakage Characteristics

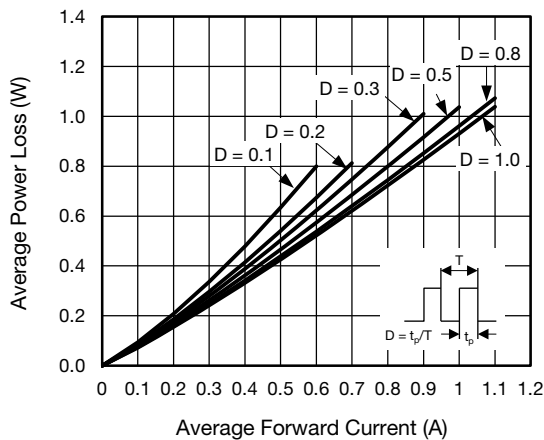


Fig. 2 - Average Power Loss Characteristics

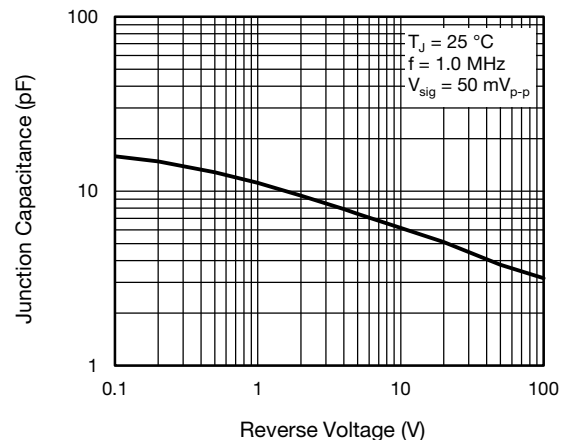


Fig. 5 - Typical Junction Capacitance

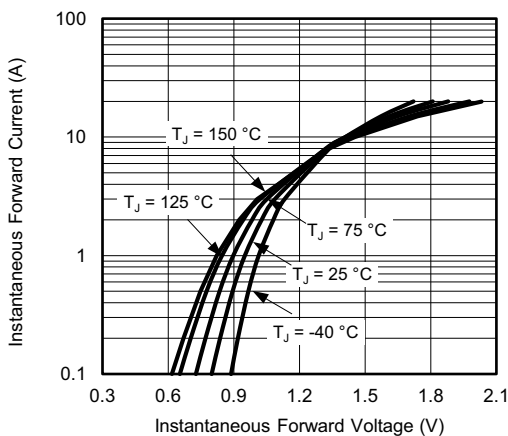


Fig. 3 - Typical Instantaneous Forward Characteristics

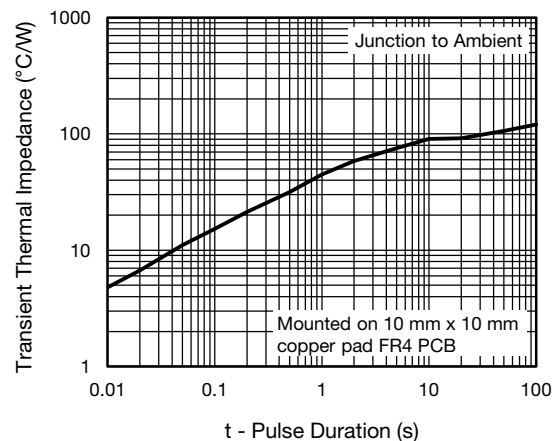
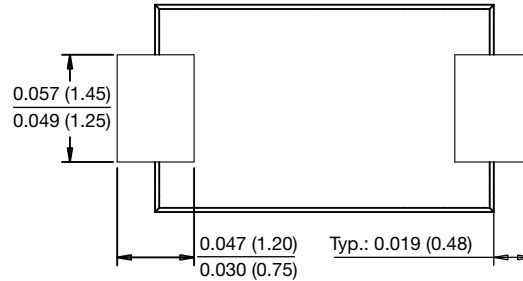
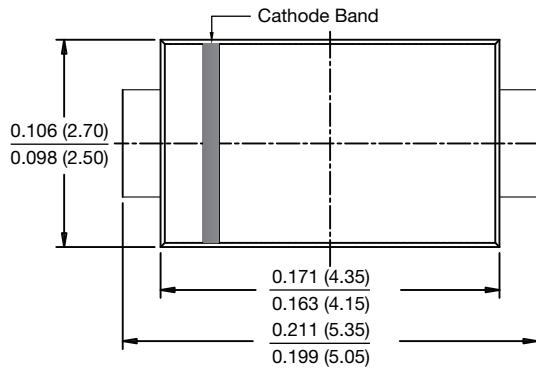


Fig. 6 - Typical Transient Thermal Impedance

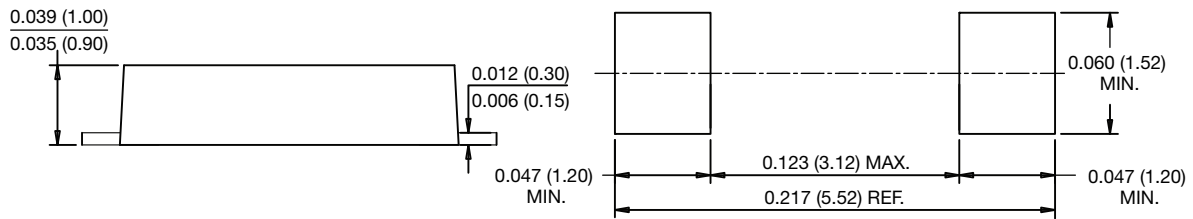


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### SlimSMA (DO-221AC)



### Mounting Pad Layout





## Disclaimer

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