

## Surface-Mount Glass Passivated Rectifier



**SMC (DO-214AB)**

Cathode  Anode



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

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated pellet chip junction
- Low forward voltage drop
- Low leakage current
- High forward 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)

### LINKS TO ADDITIONAL RESOURCES



### TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, and telecommunication.

| PRIMARY CHARACTERISTICS                |                             |
|----------------------------------------|-----------------------------|
| $I_{F(AV)}$                            | 8.0 A                       |
| $V_{RRM}$                              | 400 V, 600 V, 800 V, 1000 V |
| $I_{FSM}$                              | 200 A                       |
| $I_R$                                  | 10 $\mu$ A                  |
| $V_F$ at $I_F = 8$ A ( $T_J = 125$ °C) | 0.87 V                      |
| $T_J$ max.                             | 150 °C                      |
| Package                                | SMC (DO-214AB)              |
| Circuit configuration                  | Single                      |

### MECHANICAL DATA

**Case:** SMC (DO-214AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/N-M3 - halogen-free, RoHS-compliant, commercial grade

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

E3 and M3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                            |                   |             |      |      |      |      |
|------------------------------------------------------------------------------------|-------------------|-------------|------|------|------|------|
| PARAMETER                                                                          | SYMBOL            | S8GS        | S8JS | S8KS | S8MS | UNIT |
| Device marking code                                                                |                   | S8GS        | S8JS | S8KS | S8MS |      |
| Maximum repetitive peak reverse voltage                                            | $V_{RRM}$         | 400         | 600  | 800  | 1000 | V    |
| Maximum RMS voltage                                                                | $V_{RMS}$         | 280         | 420  | 560  | 700  | V    |
| Maximum DC blocking voltage                                                        | $V_{DC}$          | 400         | 600  | 800  | 1000 | V    |
| Maximum average forward rectified current                                          | $I_{F(AV)}^{(1)}$ | 8.0         |      |      |      | A    |
|                                                                                    | $I_{F(AV)}^{(2)}$ | 1.6         |      |      |      | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$         | 200         |      |      |      | A    |
| Peak forward surge current single half sine-wave at 1.0 ms                         | $I_{FSM}$         | 450         |      |      |      | A    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$    | -55 to +150 |      |      |      | °C   |

#### Notes

(1) Mounted on aluminum PCB 30 mm x 30 mm with aluminum heatsink

(2) Free air, mounted on recommended copper pad area

| ELECTRICAL CHARACTERISTICS (T <sub>J</sub> = 25 °C unless otherwise noted) |                                                                          |                         |                               |      |       |      |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------|-------------------------------|------|-------|------|
| PARAMETER                                                                  | TEST CONDITIONS                                                          |                         | SYMBOL                        | TYP. | MAX.  | UNIT |
| Instantaneous forward voltage                                              | I <sub>F</sub> = 4.0 A                                                   | T <sub>J</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.90 | -     | V    |
|                                                                            | I <sub>F</sub> = 8.0 A                                                   |                         |                               | 0.97 | 0.985 |      |
|                                                                            | I <sub>F</sub> = 4.0 A                                                   | T <sub>J</sub> = 125 °C |                               | 0.80 | -     |      |
|                                                                            | I <sub>F</sub> = 8.0 A                                                   |                         |                               | 0.87 | 0.971 |      |
| Reverse current                                                            | Rated V <sub>R</sub>                                                     | T <sub>J</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | -    | 10    | μA   |
|                                                                            |                                                                          | T <sub>J</sub> = 125 °C |                               | -    | 180   |      |
| Typical reverse recovery time                                              | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A |                         | t <sub>rr</sub>               | 3.4  | -     | μs   |
| Typical junction capacitance                                               | 4.0 V, 1 MHz                                                             |                         | C <sub>J</sub>                | 63   | -     | 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 <sub>A</sub> = 25 °C unless otherwise noted) |                                    |      |      |      |      |      |
|-------------------------------------------------------------------------|------------------------------------|------|------|------|------|------|
| PARAMETER                                                               | SYMBOL                             | S8GS | S8JS | S8KS | S8MS | UNIT |
| Typical thermal resistance                                              | R <sub>θJA</sub> <sup>(1)(2)</sup> | 88   |      |      |      | °C/W |
|                                                                         | R <sub>θJM</sub> <sup>(3)</sup>    | 4.5  |      |      |      |      |

**Notes**

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/R_{\theta JA}$   
(2) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz., standard footprint  
(3) Thermal resistance junction-to-mount to follow JEDEC® 51-14 transient dual interface test method (TDIM)

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| S8JS-E3/I                             | 0.243           | I                      | 3500          | 13" diameter plastic tape and reel |
| S8JS-M3/I                             | 0.243           | I                      | 3500          | 13" diameter plastic tape and reel |

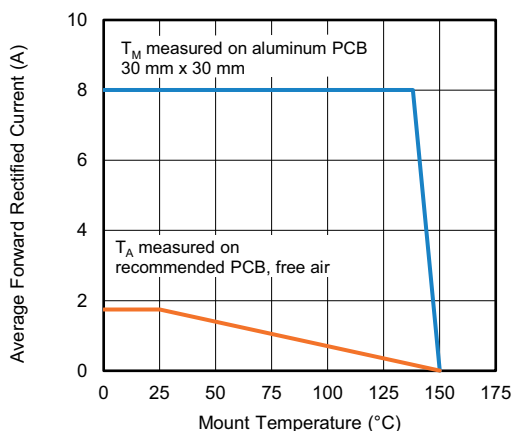
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

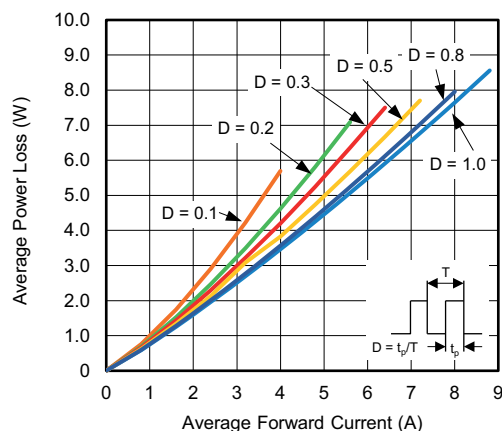


Fig. 2 - Average Power Loss Characteristics

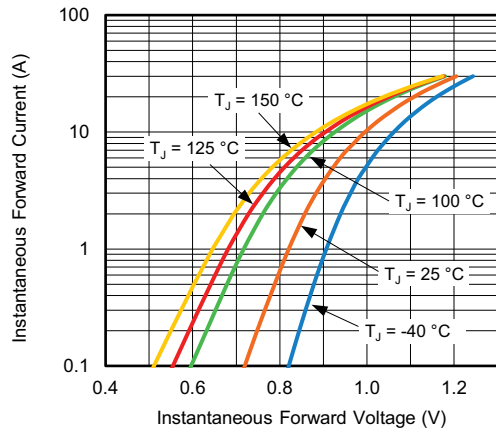


Fig. 3 - Typical Instantaneous Forward Characteristics

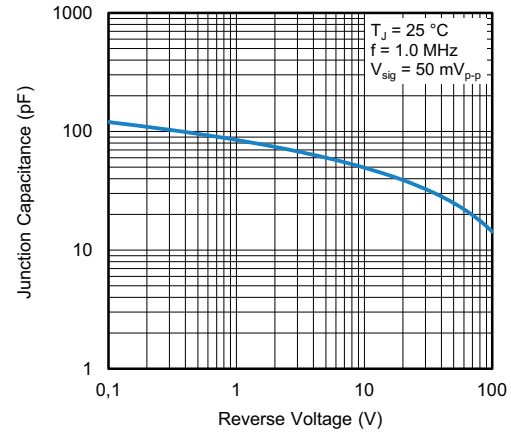


Fig. 5 - Typical Junction Capacitance

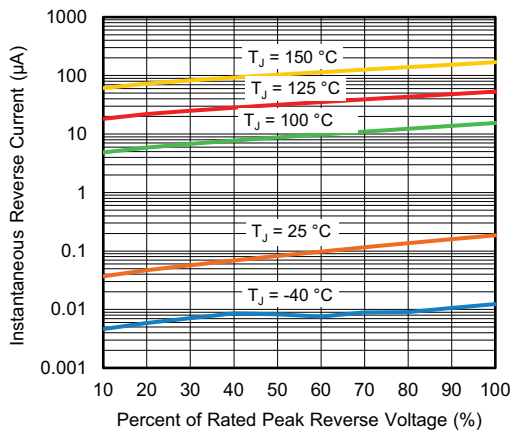


Fig. 4 - Typical Reverse Characteristics

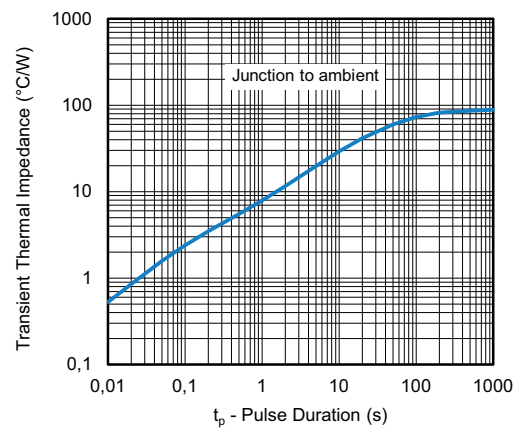
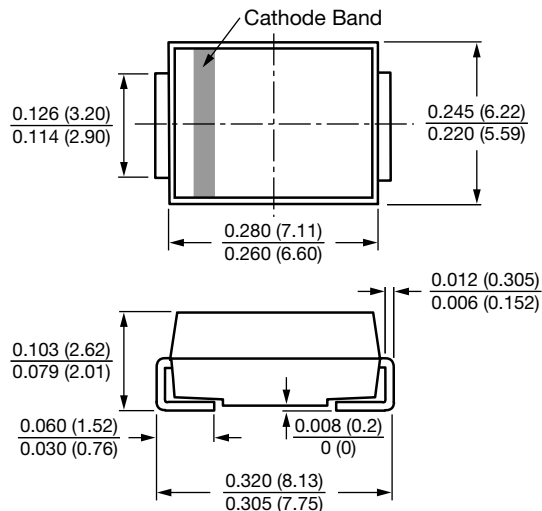


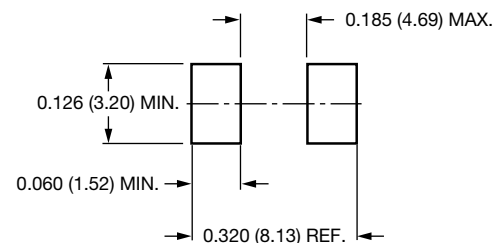
Fig. 6 - Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### SMC (DO-214AB)



### Mounting Pad Layout





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