



**THE DATASHEET OF  
S3K-M3/9AT**



## Surface-Mount Glass Passivated Rectifier


**SMC (DO-214AB)**

Cathode Anode

### LINKS TO ADDITIONAL RESOURCES



3D Models

| PRIMARY CHARACTERISTICS |   |
|-------------------------|---|
| $I_{F(AV)}$             | 3.0 A   |
| $V_{RRM}$               | 50 V, 100 V, 200 V, 400 V, 600 V, 800 V, 1000 V |
| $I_{FSM}$               | 100 A   |
| $I_R$                   | 10 $\mu$ A                                      |
| $V_F$                   | 1.15 V  |
| $T_J$ max.              | 175 °C  |
| Package                 | SMC (DO-214AB)                                  |
| Circuit configuration   | Single  |

### 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
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

 AUTOMOTIVE  
GRADE  
Available

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

### TYPICAL APPLICATIONS

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

### 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

Base P/NHE3\_X - RoHS-compliant and AEC-Q101 qualified

Base P/NHM3\_X - halogen-free, 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, M3, HE3, and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)                     |                |             |     |     |     |     |     |      |      |
|--|----------------|-------------|-----|-----|-----|-----|-----|------|------|
| PARAMETER  | SYMBOL         | S3A         | S3B | S3D | S3G | S3J | S3K | S3M  | UNIT |
| Device marking code  |                | SA          | SB  | SD  | SG  | SJ  | SK  | SM   |      |
| Maximum recurrent peak reverse voltage   | $V_{RRM}$      | 50          | 100 | 200 | 400 | 600 | 800 | 1000 | V    |
| Maximum RMS voltage  | $V_{RMS}$      | 35          | 70  | 140 | 280 | 420 | 560 | 700  | V    |
| Maximum DC blocking voltage  | $V_{DC}$       | 50          | 100 | 200 | 400 | 600 | 800 | 1000 | V    |
| Maximum average forward rectified current at $T_L = 133\text{ °C}$                 | $I_{F(AV)}$    | 3.0         |     |     |     |     |     |      | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 100         |     |     |     |     |     |      | A    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | -55 to +175 |     |     |     |     |     |      | °C   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |  |                 |      |     |     |     |     |     |     |      |
|--|--|-----------------|------|-----|-----|-----|-----|-----|-----|------|
| PARAMETER  | TEST CONDITIONS  | SYMBOL          | S3A  | S3B | S3D | S3G | S3J | S3K | S3M | UNIT |
| Maximum instantaneous forward voltage                                      | 2.5 A  | V <sub>F</sub>  | 1.15 |     |     |     |     |     |     | V    |
| Maximum DC reverse current at rated DC blocking voltage                    | T <sub>J</sub> = 25 °C   | I <sub>R</sub>  | 10   |     |     |     |     |     |     | μA   |
|  | T <sub>J</sub> = 125 °C  |                 | 250  |     |     |     |     |     |     |      |
| 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> | 2.5  |     |     |     |     |     |     | μs   |
| Typical junction capacitance   | 4.0 V, 1 MHz   | C <sub>J</sub>  | 60   |     |     |     |     |     |     | pF   |

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                  |     |     |     |     |     |     |     |      |  |
|---|------------------|-----|-----|-----|-----|-----|-----|-----|------|--|
| PARAMETER   | SYMBOL           | S3A | S3B | S3D | S3G | S3J | S3K | S3M | UNIT |  |
| Typical thermal resistance <sup>(1)</sup>                               | R <sub>θJA</sub> | 47  |     |     |     |     |     |     | °C/W |  |
|   | R <sub>θJL</sub> | 13  |     |     |     |     |     |     |      |  |

**Note**

<sup>(1)</sup> Thermal resistance from junction to ambient and from junction to lead mounted on PCB with 0.3" x 0.3" (8.0 mm x 8.0 mm) copper pad area

| ORDERING INFORMATION (Example) |                 |                        |               |                                    |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| S3J-E3/57T                     | 0.211           | 57T                    | 850           | 7" diameter plastic tape and reel  |
| S3J-E3/9AT                     | 0.211           | 9AT                    | 3500          | 13" diameter plastic tape and reel |
| S3JHE3_A/H <sup>(1)</sup>      | 0.211           | H                      | 850           | 7" diameter plastic tape and reel  |
| S3JHE3_A/I <sup>(1)</sup>      | 0.211           | I                      | 3500          | 13" diameter plastic tape and reel |
| S3J-M3/57T                     | 0.211           | 57T                    | 850           | 7" diameter plastic tape and reel  |
| S3J-M3/9AT                     | 0.211           | 9AT                    | 3500          | 13" diameter plastic tape and reel |
| S3JHM3_A/H <sup>(1)</sup>      | 0.211           | H                      | 850           | 7" diameter plastic tape and reel  |
| S3JHM3_A/I <sup>(1)</sup>      | 0.211           | I                      | 3500          | 13" diameter plastic tape and reel |

**Note**

<sup>(1)</sup> AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

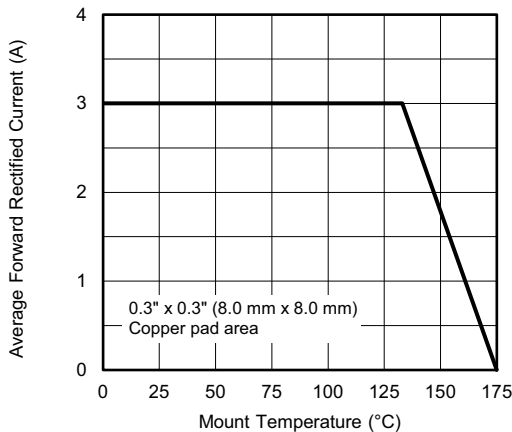


Fig. 1 - Forward Current Derating Curve



Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current



Fig. 3 - Typical Instantaneous Forward Characteristics

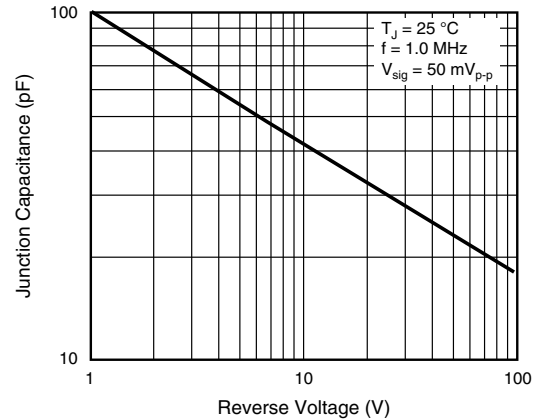


Fig. 5 - Typical Junction Capacitance

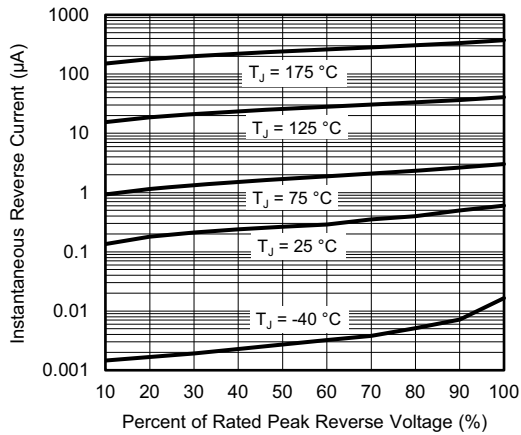


Fig. 4 - Typical Reverse Characteristics

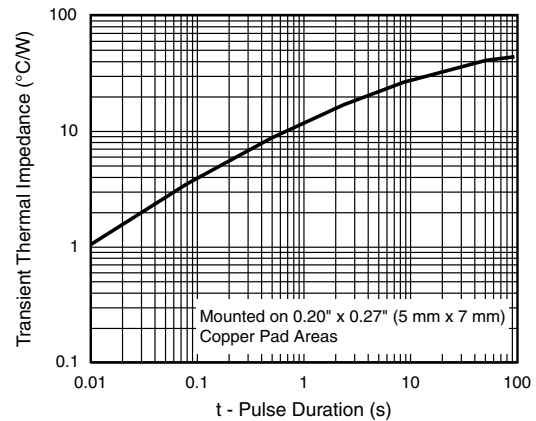
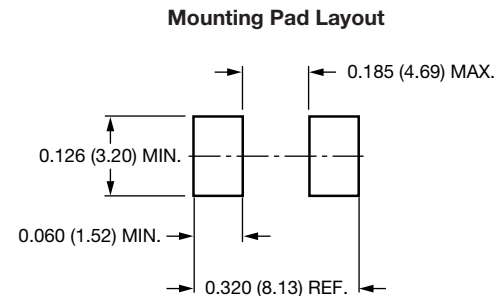


Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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