

## Surface-Mount Fast Switching Rectifier


**SMA (DO-214AC)**

 Cathode  Anode 

### LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

| PRIMARY CHARACTERISTICS |   |
|-------------------------|---|
| $I_{F(AV)}$             | 1.0 A                                   |
| $V_{RRM}$               | 50 V, 100 V, 200 V, 400 V, 600 V, 800 V |
| $I_{FSM}$               | 30 A                                    |
| $t_{rr}$                | 150 ns, 250 ns, 500 ns                  |
| $V_F$                   | 1.3 V                                   |
| $T_J$ max.              | 150 °C                                  |
| Package                 | SMA (DO-214AC)                          |
| Circuit configuration   | Single                                  |

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated pellet chip junction
- Fast switching for high efficiency
- 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 fast switching rectification of power supply, inverters, converters, and freewheeling diodes for consumer, automotive and telecommunication.

### 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/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         | RS1A        | RS1B | RS1D | RS1G | RS1J | RS1K | UNIT |
| Device marking code  |                | RA          | RB   | RD   | RG   | RJ   | RK   |      |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$      | 50          | 100  | 200  | 400  | 600  | 800  | V    |
| Maximum RMS voltage  | $V_{RMS}$      | 35          | 70   | 140  | 280  | 420  | 500  | V    |
| Maximum DC blocking voltage  | $V_{DC}$       | 50          | 100  | 200  | 400  | 600  | 800  | V    |
| Maximum average forward rectified current at $T_L = 90\text{ °C}$                  | $I_{F(AV)}$    | 1.0         |      |      |      |      |      | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 30          |      |      |      |      |      | A    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | -55 to +150 |      |      |      |      |      | °C   |



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |   |          |      |      |      |      |      |      |               |
|--|---|----------|------|------|------|------|------|------|---------------|
| PARAMETER  | TEST CONDITIONS   | SYMBOL   | RS1A | RS1B | RS1D | RS1G | RS1J | RS1K | UNIT          |
| Maximum instantaneous forward voltage  | 1.0 A   | $V_F$    | 1.3  |      |      |      |      |      | V             |
| Maximum DC reverse current at rated DC blocking voltage                                      | $T_A = 25\text{ }^\circ\text{C}$  | $I_R$    | 5.0  |      |      |      |      |      | $\mu\text{A}$ |
|  | $T_A = 125\text{ }^\circ\text{C}$   |          | 50   |      |      |      |      |      |               |
| Maximum reverse recovery time  | $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ ,<br>$I_{rr} = 0.25\text{ A}$ | $t_{rr}$ | 150  |      |      |      | 250  | 500  | ns            |
| Typical junction capacitance   | 4.0 V, 1 MHz  | $C_J$    | 10   |      |      |      | 7.0  |      | pF            |

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                       |      |      |      |      |      |      |                    |  |
|---|-----------------------|------|------|------|------|------|------|--------------------|--|
| PARAMETER   | SYMBOL                | RS1A | RS1B | RS1D | RS1G | RS1J | RS1K | UNIT               |  |
| Typical thermal resistance  | $R_{\theta JA}^{(1)}$ | 105  |      |      |      |      |      | $^\circ\text{C/W}$ |  |
|   | $R_{\theta JL}^{(1)}$ | 32   |      |      |      |      |      |                    |  |

**Note**

<sup>(1)</sup> Thermal resistance from junction to ambient and from junction to lead mounted on PCB with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| RS1J-E3/61T                           | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| RS1J-E3/5AT                           | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |
| RS1JHE3_A/H <sup>(1)</sup>            | 0.064           | H                      | 1800          | 7" diameter plastic tape and reel  |
| RS1JHE3_A/I <sup>(1)</sup>            | 0.064           | I                      | 7500          | 13" diameter plastic tape and reel |
| RS1J-M3/61T                           | 0.064           | 61T                    | 1800          | 7" diameter plastic tape and reel  |
| RS1J-M3/5AT                           | 0.064           | 5AT                    | 7500          | 13" diameter plastic tape and reel |
| RS1JHM3_A/H <sup>(1)</sup>            | 0.064           | H                      | 1800          | 7" diameter plastic tape and reel  |
| RS1JHM3_A/I <sup>(1)</sup>            | 0.064           | I                      | 7500          | 13" diameter plastic tape and reel |

**Note**

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



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

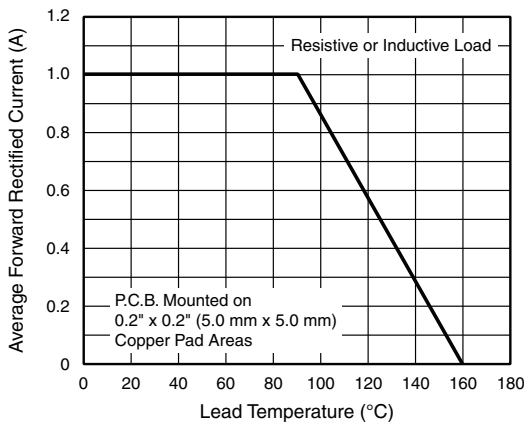


Fig. 1 - Forward Current Derating Curve

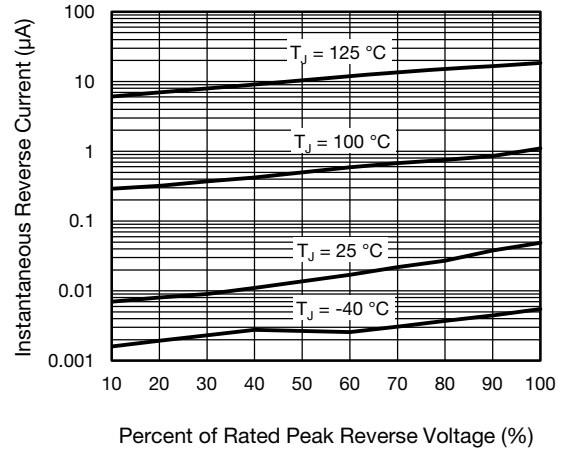


Fig. 4 - Typical Reverse Characteristics

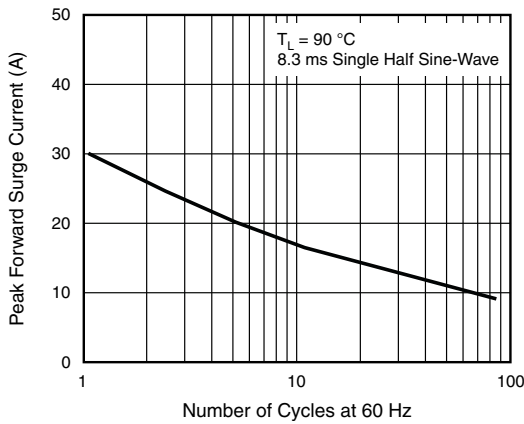


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

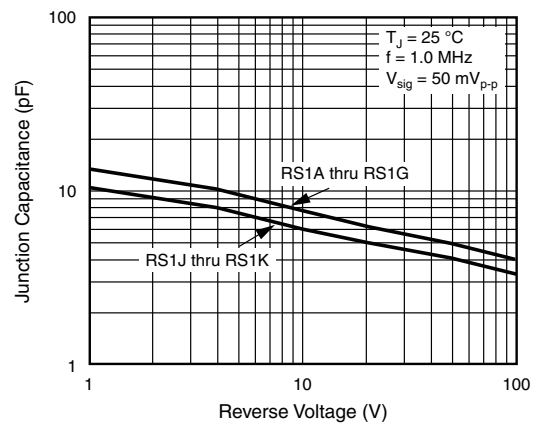


Fig. 5 - Typical Junction Capacitance

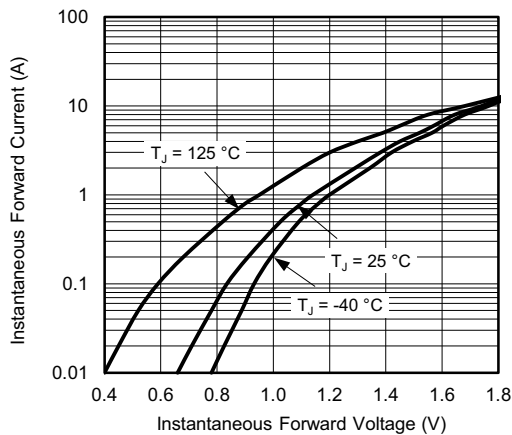


Fig. 3 - Typical Instantaneous Forward Characteristics

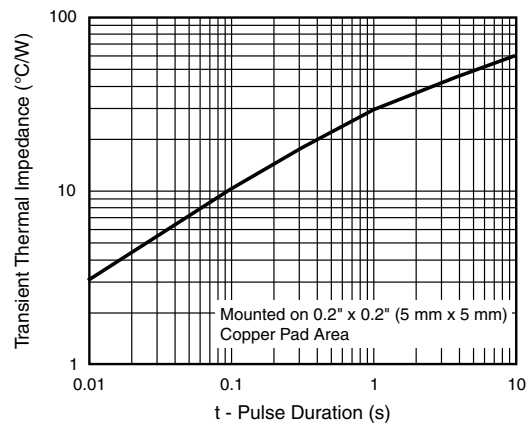


Fig. 6 - Typical Transient Thermal Impedance



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### SMA (DO-214AC)



### Mounting Pad Layout





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