

## Surface Mount Fast Switching Rectifier


**SMA (DO-214AC)**
**DESIGN SUPPORT TOOLS**
[click logo to get started](#)
**3D**  
Models  
Available

| 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)


**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   |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |  |                 |      |      |      |      |      |      |      |
|--|--|-----------------|------|------|------|------|------|------|------|
| PARAMETER  | TEST CONDITIONS  | SYMBOL          | RS1A | RS1B | RS1D | RS1G | RS1J | RS1K | UNIT |
| Maximum instantaneous forward voltage                                      | 1.0 A  | V <sub>F</sub>  | 1.3  |      |      |      |      |      | V    |
| Maximum DC reverse current at rated DC blocking voltage                    | T <sub>A</sub> = 25 °C   | I <sub>R</sub>  | 5.0  |      |      |      |      |      | μA   |
|  | T <sub>A</sub> = 125 °C  |                 | 50   |      |      |      |      |      |      |
| Maximum 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> | 150  |      |      |      | 250  | 500  | ns   |
| Typical junction capacitance   | 4.0 V, 1 MHz   | C <sub>J</sub>  | 10   |      |      |      | 7.0  |      | pF   |

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                 |      |      |      |      |      |      |      |  |
|---|---------------------------------|------|------|------|------|------|------|------|--|
| PARAMETER   | SYMBOL                          | RS1A | RS1B | RS1D | RS1G | RS1J | RS1K | UNIT |  |
| Typical thermal resistance  | R <sub>θJA</sub> <sup>(1)</sup> | 105  |      |      |      |      |      | °C/W |  |
|   | R <sub>θJL</sub> <sup>(1)</sup> | 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

| ORDERING INFORMATION (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<sub>A</sub> = 25 °C unless otherwise noted)**

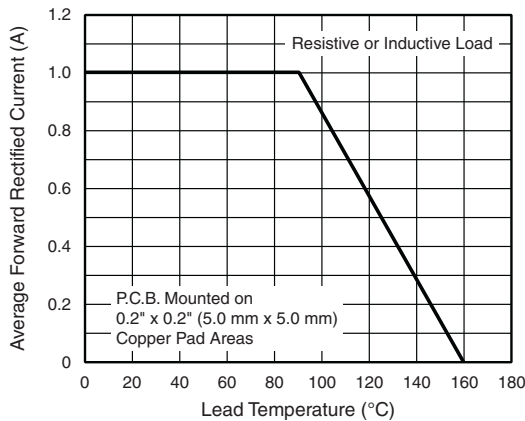


Fig. 1 - Forward Current Derating Curve

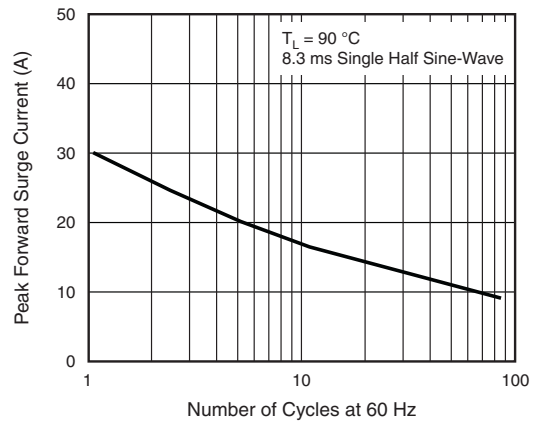


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

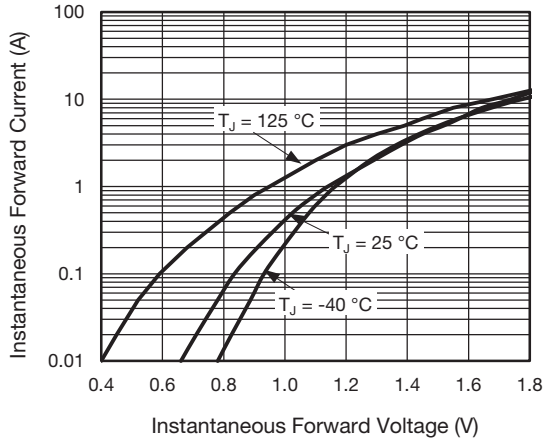


Fig. 3 - Typical Instantaneous Forward Characteristics

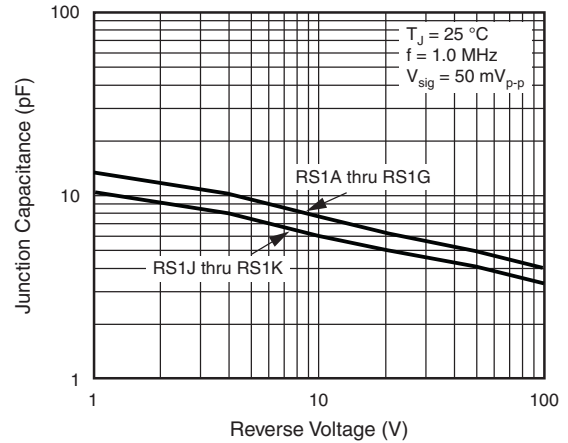


Fig. 5 - Typical Junction Capacitance

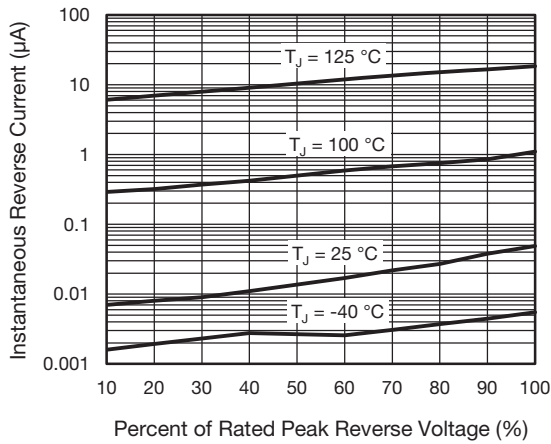


Fig. 4 - Typical Reverse Characteristics

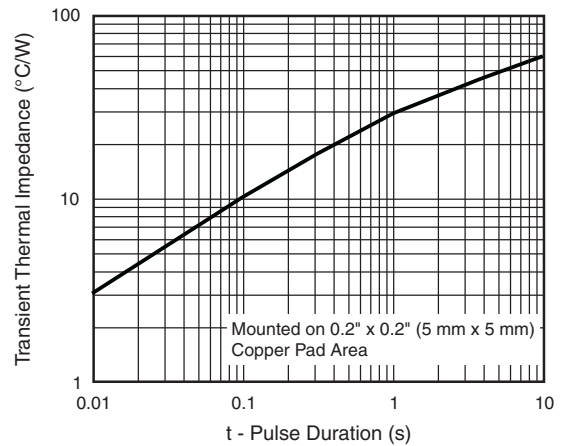
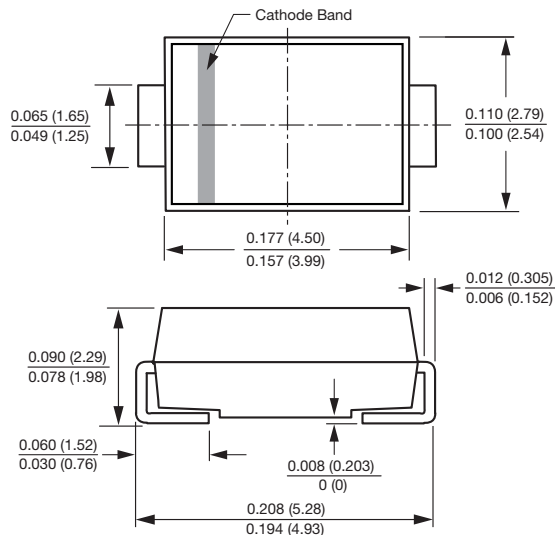


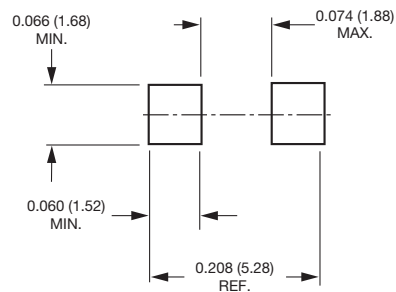
Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### SMA (DO-214AC)



### Mounting Pad Layout





## Disclaimer

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