

Surface Mount Fast Switching Rectifier


SMC (DO-214AB)

RoHS
 COMPLIANT
 HALOGEN
FREE

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in fast switching rectification of power supply, 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-M3 - halogen-free, RoHS-compliant, and commercial grade

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

M3 suffix meets JESD 201 class 1A whisker test

Polarity: color band denotes cathode end

| PRIMARY CHARACTERISTICS | |
|-------------------------|------------------------|
| $I_{F(AV)}$ | 3.0 A |
| V_{RRM} | 50 V to 800 V |
| I_{FSM} | 100 A |
| t_{rr} | 150 ns, 250 ns, 500 ns |
| V_F | 1.3 V |
| T_J max. | 150 °C |
| Package | SMC (DO-214AB) |
| Circuit configuration | Single |

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | | | | | | |
|--|----------------|-------------|------|------|------|------|------|------|
| PARAMETER | SYMBOL | RS3A | RS3B | RS3D | RS3G | RS3J | RS3K | 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 $T_L = 75\text{ °C}$ | $I_{F(AV)}$ | 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 +150 | | | | | | °C |



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | | | | |
|---|---|----------|------|------|------|------|------|------|---------------|
| PARAMETER | TEST CONDITIONS | SYMBOL | RS3A | RS3B | RS3D | RS3G | RS3J | RS3K | UNIT |
| Maximum instantaneous forward voltage | 2.5 A | V_F | 1.3 | | | | | | V |
| Maximum DC reverse current at rated DC blocking voltage | $T_A = 25\text{ }^\circ\text{C}$ | I_R | 10 | | | | | | μA |
| | $T_A = 125\text{ }^\circ\text{C}$ | | 250 | | | | | | |
| Maximum reverse recovery time | $I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$ | t_{rr} | 150 | | | | 250 | 500 | ns |
| Typical junction capacitance | 4.0 V, 1 MHz | C_J | 44 | | | | 34 | | pF |

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | | | | |
|--|-----------------------|------|------|------|------|------|------|--------------------|--|
| PARAMETER | SYMBOL | RS3A | RS3B | RS3D | RS3G | RS3J | RS3K | UNIT | |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 50 | | | | | | $^\circ\text{C/W}$ | |
| | $R_{\theta JL}^{(1)}$ | 15 | | | | | | | |

Note

(1) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. 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 |
| RS3J-M3/57T | 0.211 | 57T | 850 | 7" diameter plastic tape and reel |
| RS3J-M3/9AT | 0.211 | 9AT | 3500 | 13" diameter plastic tape and reel |

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

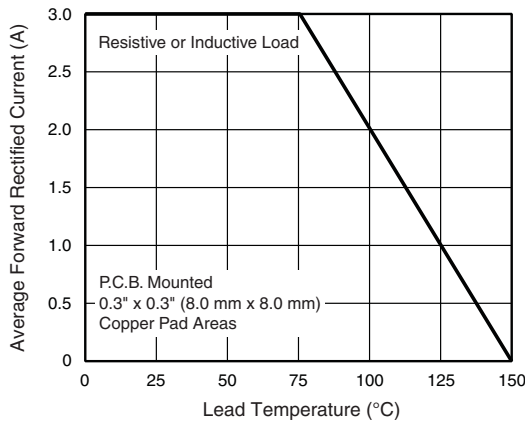


Fig. 1 - Forward Current Derating Curve

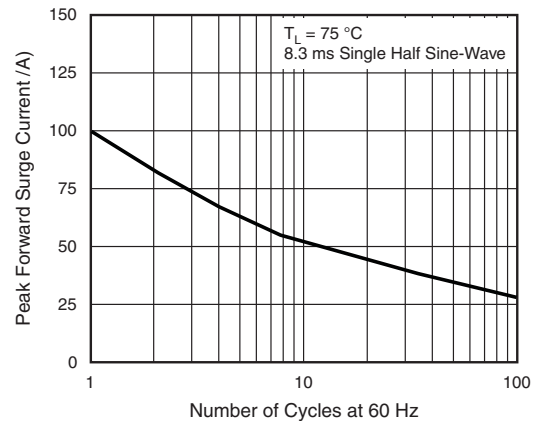


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

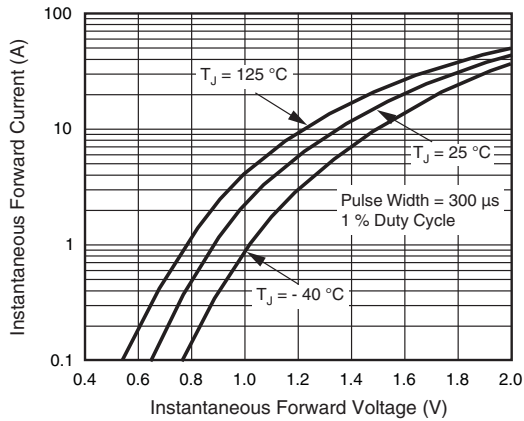


Fig. 3 - Typical Instantaneous Forward Characteristics

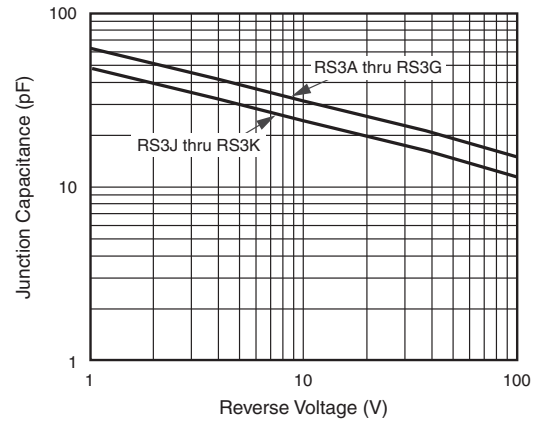


Fig. 5 - Typical Junction Capacitance

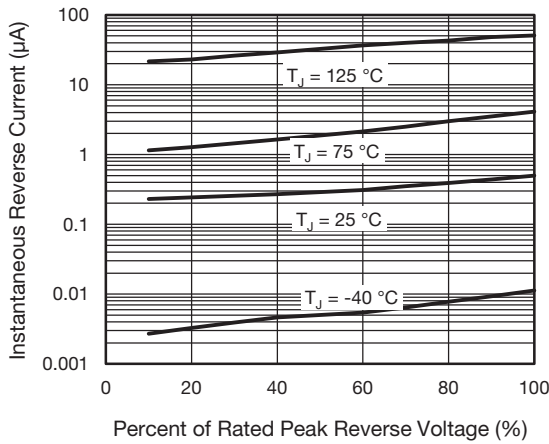


Fig. 4 - Typical Reverse Characteristics

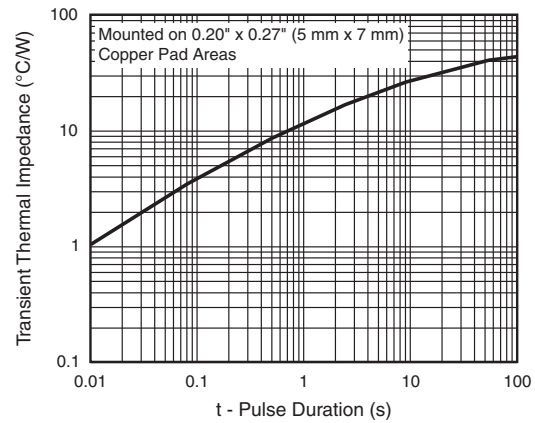
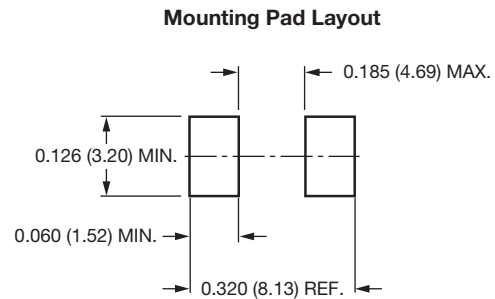
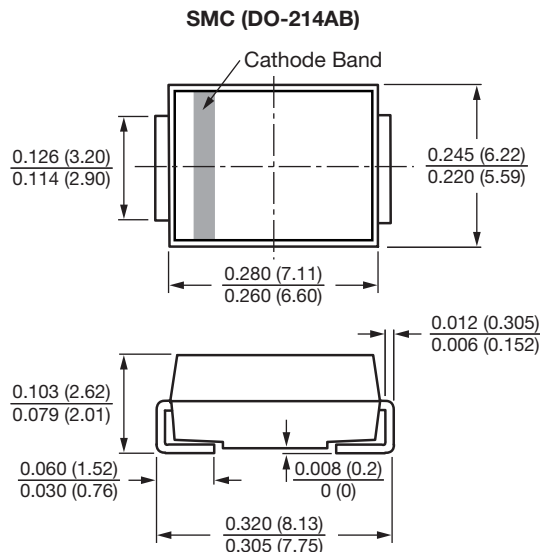


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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