

Surface Mount Glass Passivated Rectifier



SMC (DO-214AB)

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



RoHS
COMPLIANT
HALOGEN
FREE
Available

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

| 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 μ A |
| V_F | 1.15 V |
| T_J max. | 150 °C |
| Package | SMC (DO-214AB) |
| Circuit configuration | Single |

| MAXIMUM RATINGS ($T_A = 25$ °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 $T_L = 103$ °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 | S3A | S3B | S3D | S3G | S3J | S3K | S3M | UNIT |
|---|--|-------------------------|-----------------|------|-----|-----|-----|-----|-----|-----|------|
| Maximum instantaneous forward voltage | 2.5 A | | V _F | 1.15 | | | | | | | V |
| Maximum DC reverse current at rated DC blocking voltage | | T _A = 25 °C | I _R | 10 | | | | | | | μA |
| | | T _A = 125 °C | | 250 | | | | | | | |
| Typical reverse recovery time | I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A | | t _{rr} | 2.5 | | | | | | | μs |
| Typical junction capacitance | 4.0 V, 1 MHz | | C _J | 60 | | | | | | | pF |

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

| PARAMETER | SYMBOL | S3A | S3B | S3D | S3G | S3J | S3K | S3M | UNIT |
|---|------------------|-----|-----|-----|-----|-----|-----|-----|------|
| Typical thermal resistance ⁽¹⁾ | R _{θJA} | 47 | | | | | | | °C/W |
| | R _{θJL} | 13 | | | | | | | |

Note

⁽¹⁾ 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 ⁽¹⁾ | 0.211 | H | 850 | 7" diameter plastic tape and reel |
| S3JHE3_A/I ⁽¹⁾ | 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 ⁽¹⁾ | 0.211 | H | 850 | 7" diameter plastic tape and reel |
| S3JHM3_A/I ⁽¹⁾ | 0.211 | I | 3500 | 13" diameter plastic tape and reel |

Note

⁽¹⁾ AEC-Q101 qualified

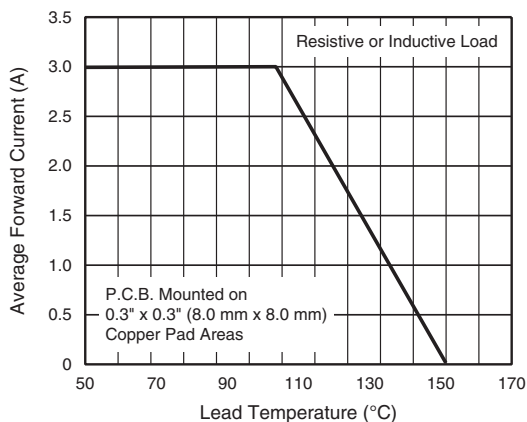
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

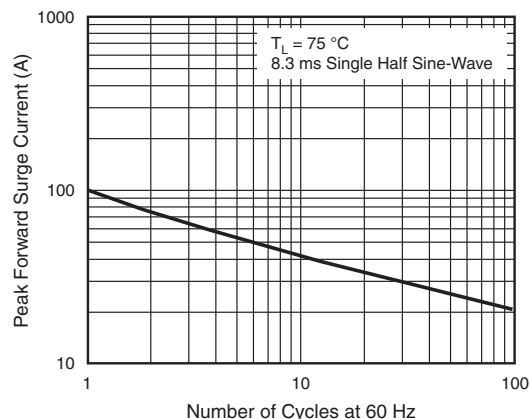


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

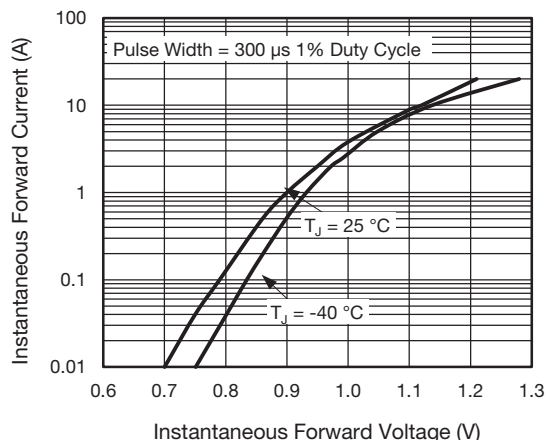


Fig. 3 - Typical Instantaneous Forward Characteristics

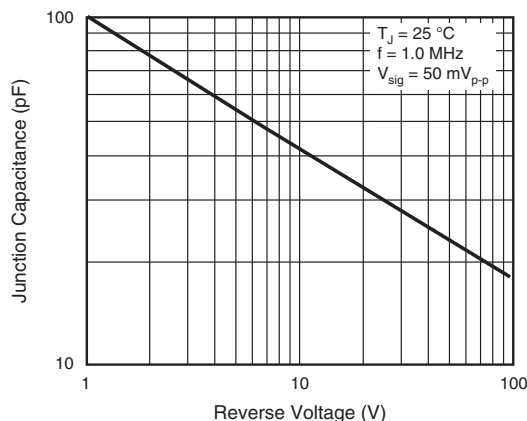


Fig. 5 - Typical Junction Capacitance

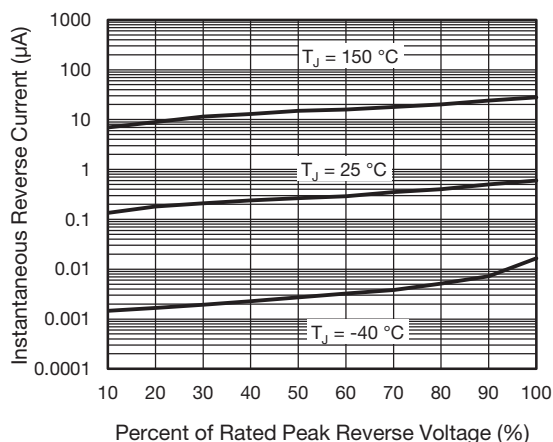


Fig. 4 - Typical Reverse Characteristics

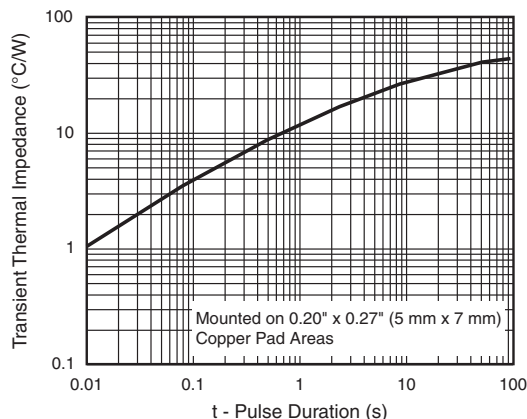
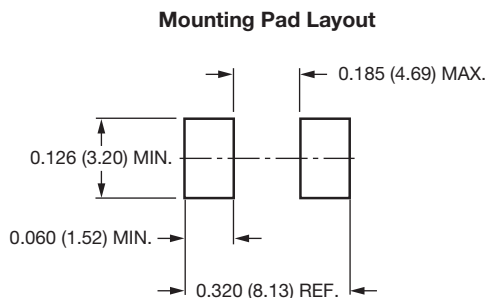
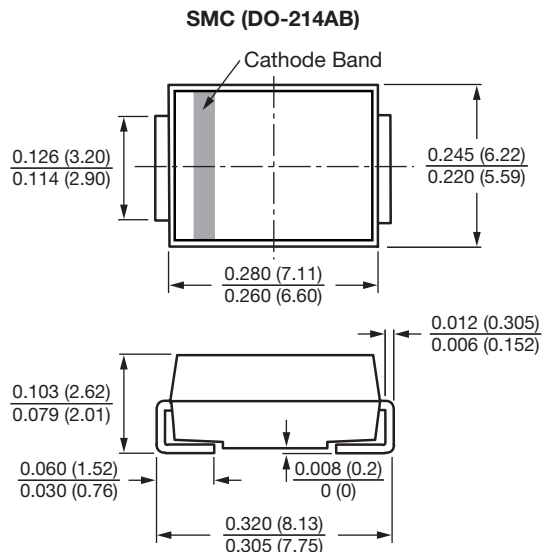


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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