

Surface Mount Glass Passivated Rectifier



DO-214AC (SMA)

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- Meets MSL level 1, per J-STD-020C, LF max peak of 260 °C
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC


MAJOR RATINGS AND CHARACTERISTICS

| | |
|-------------|--------------------------|
| $I_{F(AV)}$ | 1.0 A |
| V_{RRM} | 50 V to 1000 V |
| I_{FSM} | 40 A, 30 A |
| E_{AS} | 5 mJ |
| I_R | 1.0 μ A, 5.0 μ A |
| V_F | 1.1 V |
| T_j max. | 150 °C |

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: DO-214AC (SMA)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

Polarity: Color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)

| PARAMETER | SYMBOL | S1A | S1B | S1D | S1G | S1J | S1K | S1M | 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 (see Fig.1) | $I_{F(AV)}$ | 1.0 | | | | | | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 40 | | | | | 30 | | A |
| Non-repetitive peak reverse avalanche energy at 25 °C, $I_{AS} = 1$ A, L = 10 mH | E_{AS} | 5 | | | | | | | mJ |
| Operating junction and storage temperature range | T_J, T_{STG} | - 55 to + 150 | | | | | | | °C |

| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | | | | |
|--|--|-----------------|-----|-----|-----|-----|-----|-----|-----|------|
| PARAMETER | TEST CONDITIONS | SYMBOL | S1A | S1B | S1D | S1G | S1J | S1K | S1M | UNIT |
| Maximum instantaneous forward voltage | at 1.0 A | V _F | 1.1 | | | | | | | V |
| Maximum DC reverse current at Rated DC blocking voltage | T _A = 25 °C T _A = 125 °C | I _R | 1.0 | | | | | 5.0 | | μA |
| | | | 50 | | | | | | | |
| Typical reverse recovery time | at I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A | t _{rr} | 1.8 | | | | μs | | | |
| Typical junction capacitance | at 4.0 V, 1 MHz | C _J | 12 | | | | pF | | | |

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | | | | | |
|---|------------------|-----|-----|-----|-----|-----|-----|-----|------|--|
| PARAMETER | SYMBOL | S1A | S1B | S1D | S1G | S1J | S1K | S1M | UNIT | |
| Typical thermal resistance ⁽¹⁾ | R _{θJA} | 75 | | | | | 85 | | °C/W | |
| | R _{θJL} | 27 | | | | | 30 | | | |

Note:

(1) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2 x 0.2" (5.0 x 5.0 mm) copper pad areas

| ORDERING INFORMATION | | | | |
|----------------------|-----------------|-----------------------|---------------|----------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | REFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| S1J-E3/61T | 0.064 | 61T | 1800 | 7" Diameter Plastic Tape & Reel |
| S1J-E3/5AT | 0.064 | 5AT | 7500 | 13" Diameter Plastic Tape & Reel |

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

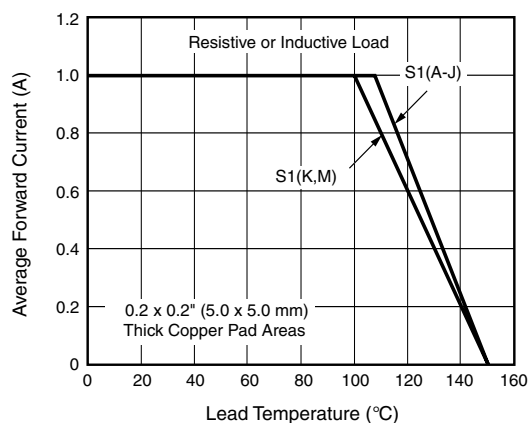


Figure 1. Forward Current Derating Curve

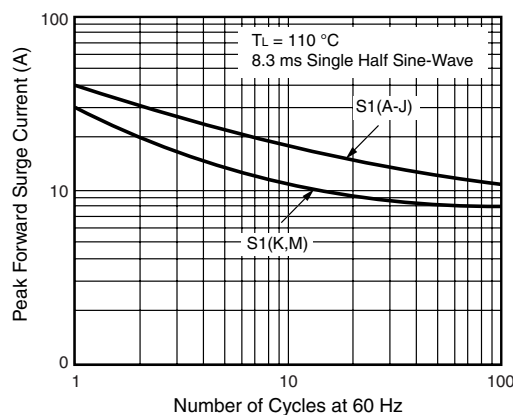


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

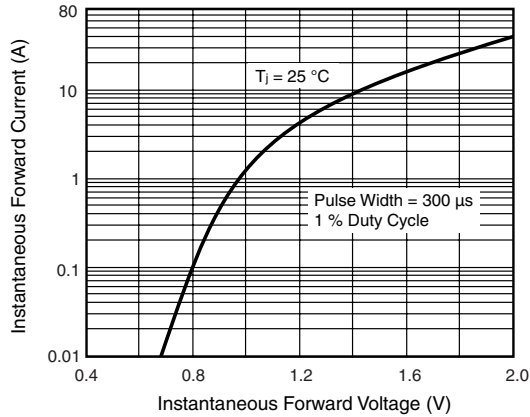


Figure 3. Typical Instantaneous Forward Characteristics

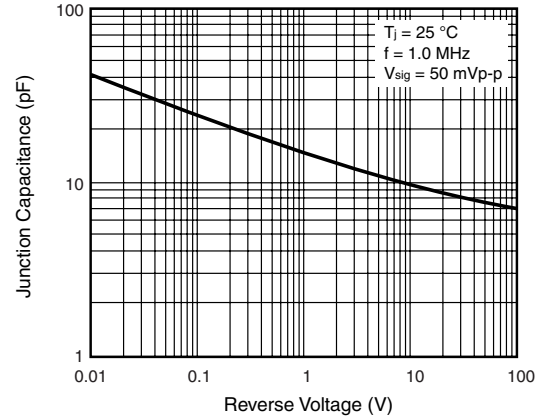


Figure 5. Typical Junction Capacitance

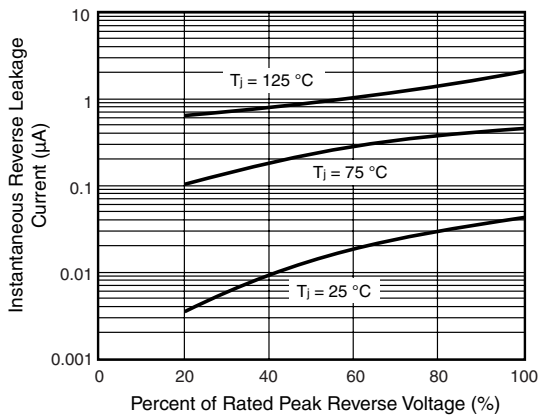


Figure 4. Typical Reverse Leakage Characteristics

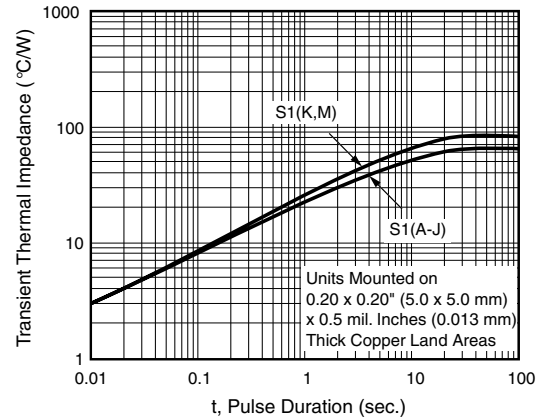
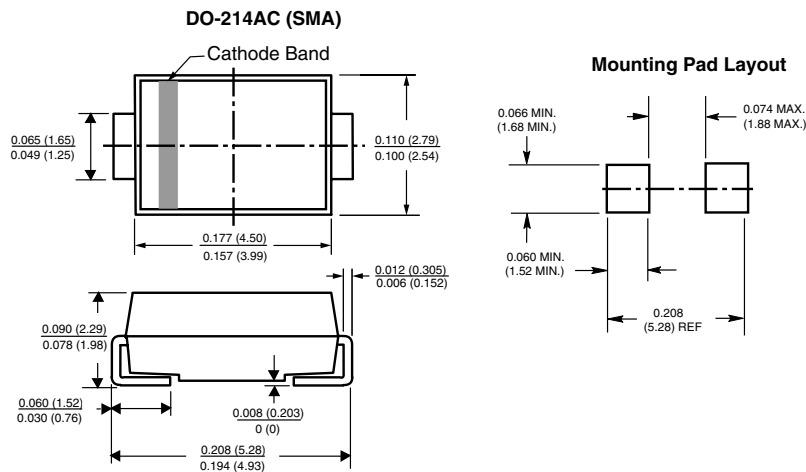


Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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