

High Current Density Surface Mount Schottky Rectifiers

eSMP® Series



DO-220AA (SMP)

AUTOMOTIVE
GRADE
Available



RoHS
COMPLIANT
HALOGEN
FREE

FEATURES

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition

MECHANICAL DATA

Case: DO-220AA (SMP)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS compliant, and automotive grade

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

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes the cathode end

PRIMARY CHARACTERISTICS

| | |
|--------------------|----------|
| $I_{F(AV)}$ | 3.0 A |
| V_{RRM} | 40 V |
| I_{FSM} | 50 A |
| E_{AS} | 11.25 mJ |
| V_F | 0.50 V |
| $T_J \text{ max.}$ | 150 °C |

TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, DC/DC converters and polarity protection applications.

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)

| PARAMETER | SYMBOL | SS3P4 | UNIT |
|--|----------------|---------------|------------|
| Device marking code | | 34 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 40 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | 3.0 | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 50 | A |
| Non-repetitive avalanche energy at $T_J = 25\text{ °C}$, $I_{AS} = 1.5\text{ A}$, $L = 10\text{ mH}$ | E_{AS} | 11.25 | mJ |
| Voltage rate of change (rated V_R) | dV/dt | 10 000 | V/ μ s |
| 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 | TYP. | MAX. | UNIT |
| Maximum instantaneous forward voltage | I _F = 3 A | T _J = 25 °C | 0.55 | 0.60 | V |
| | | T _J = 125 °C | 0.50 | 0.55 | |
| Maximum reverse current at rated V _R | | T _J = 25 °C | - | 150 | μA |
| | | T _J = 125 °C | 7.5 | 50 | mA |
| Typical junction capacitance | 4.0 V, 1 MHz | C _J | 130 | | pF |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise specified) | | | |
|---|----------------------|-------|------|
| PARAMETER | SYMBOL | SS3P4 | UNIT |
| Typical thermal resistance (1) | R _{θJA} (1) | 85 | °C/W |
| | R _{θJL} (1) | 15 | |
| | R _{θJC} (1) | 20 | |

Note

- (1) Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. with 5.0 mm x 5.0 mm copper pad areas. R_{θJL} is measured at the terminal of cathode band. R_{θJC} is measured at the top center of the body

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| SS3P4-M3/84A | 0.024 | 84A | 3000 | 7" diameter plastic tape and reel |
| SS3P4-M3/85A | 0.024 | 85A | 10 000 | 13" diameter plastic tape and reel |
| SS3P4HM3/84A (1) | 0.024 | 84A | 3000 | 7" diameter plastic tape and reel |
| SS3P4HM3/85A (1) | 0.024 | 85A | 10 000 | 13" diameter plastic tape and reel |

Note

- (1) Automotive grade

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

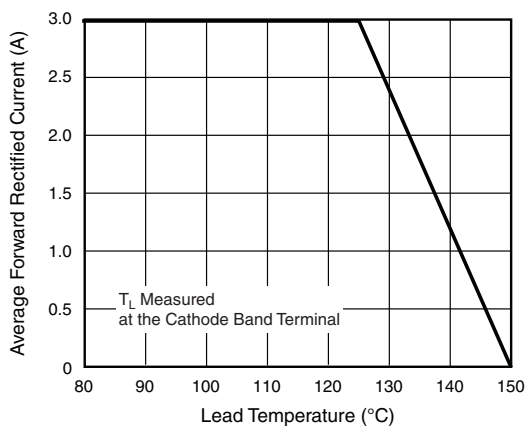


Fig. 1 - Forward Current Derating Curve

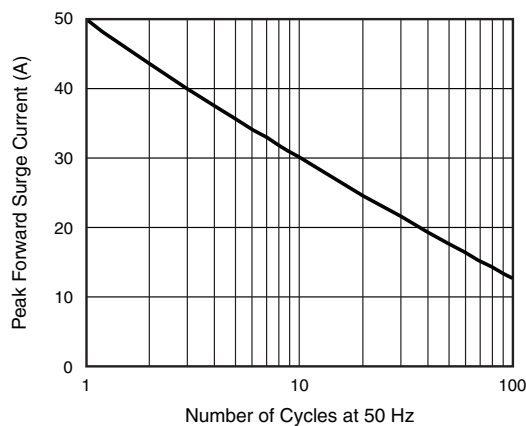


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

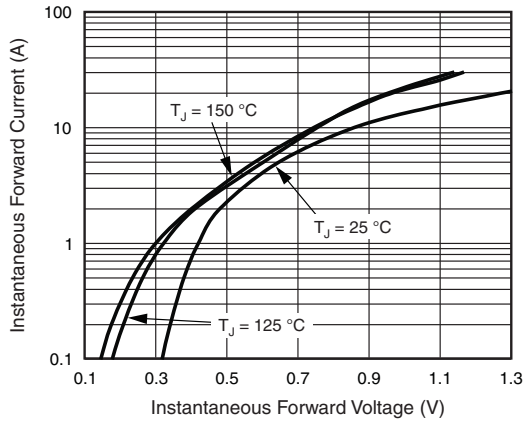


Fig. 3 - Typical Instantaneous Forward Characteristics

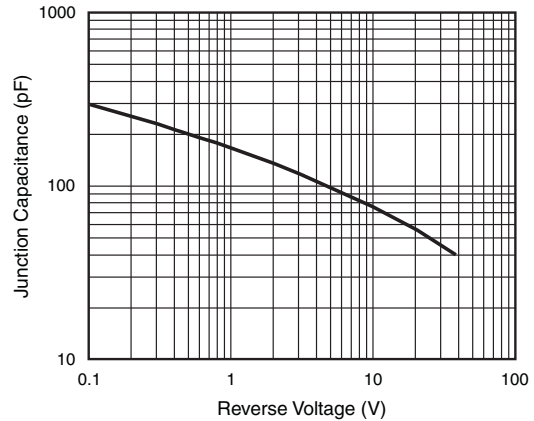


Fig. 5 - Typical Junction Capacitance

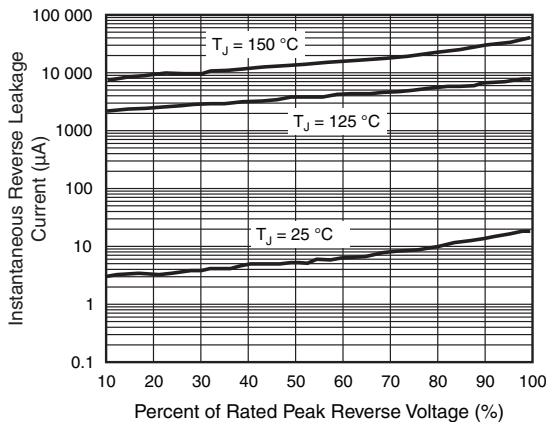


Fig. 4 - Typical Reverse Leakage Characteristics

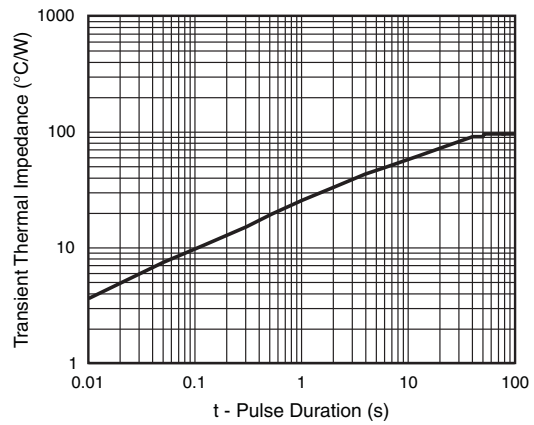
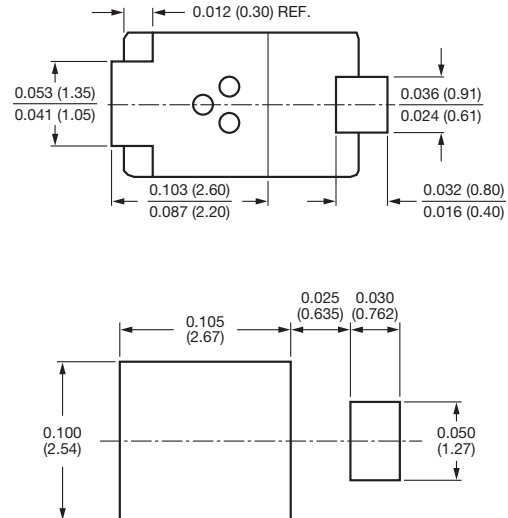
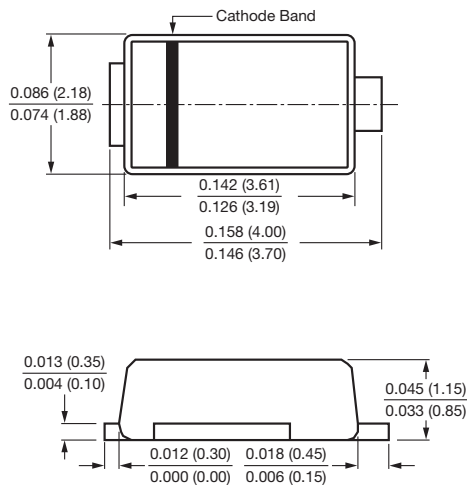


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)





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