

High Current Density Surface Mount Schottky Rectifier

eSMP™ Series



DO-220AA (SMP)

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-to-dc converters and polarity protection applications.

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**
- Find out more about Vishay's Automotive Grade Product requirements at: www.vishay.com/applications



RoHS
COMPLIANT
HALOGEN
FREE

AUTOMOTIVE
GRADE
Available

MECHANICAL DATA

Case: DO-220AA (SMP)

Molding compound meets UL 94 V-0 flammability rating.

Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

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

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 ⁽¹⁾ | I _F = 3 A | T _J = 25 °C T _J = 125 °C | V _F | 0.55 0.50 | 0.60 0.55 | V |
| Maximum reverse current at rated V _R ⁽²⁾ | | T _J = 25 °C T _J = 125 °C | I _R | - 7.5 | 150 15 | μA mA |
| Typical junction capacitance | 4.0 V, 1 MHz | | C _J | 105 | | 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 noted) | | | |
|---|------------------|-------|------|
| PARAMETER | SYMBOL | SS3P4 | UNIT |
| Typical thermal resistance ⁽¹⁾ | R _{θJA} | 85 | °C/W |
| | R _{θJL} | 15 | |
| | R _{θJC} | 20 | |

Note:

- (1) Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. with 15 mm x 15 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)

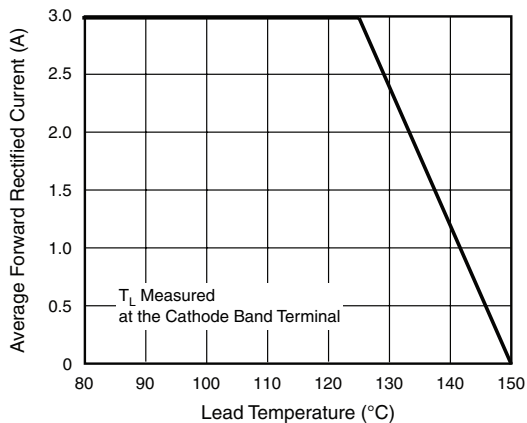


Figure 1. Forward Current Derating Curve

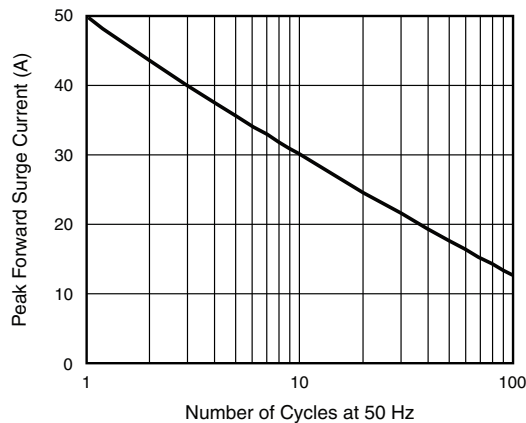


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

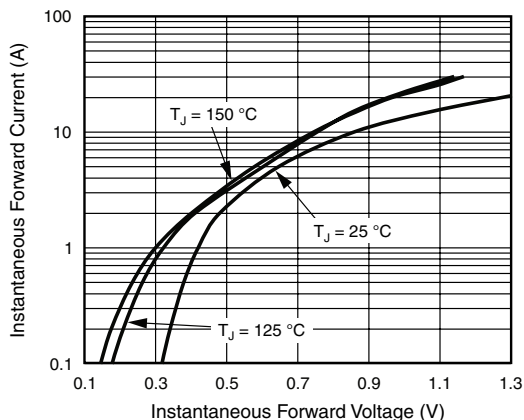


Figure 3. Typical Instantaneous Forward Characteristics

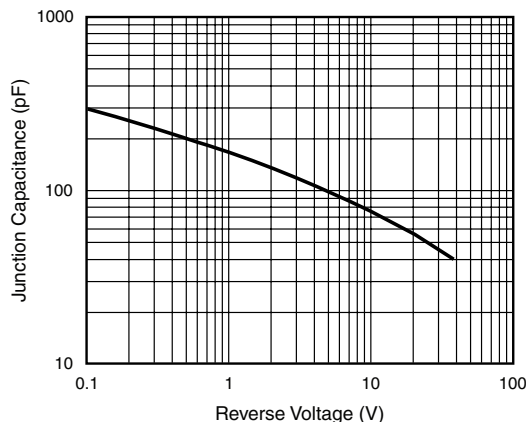


Figure 5. Typical Junction Capacitance

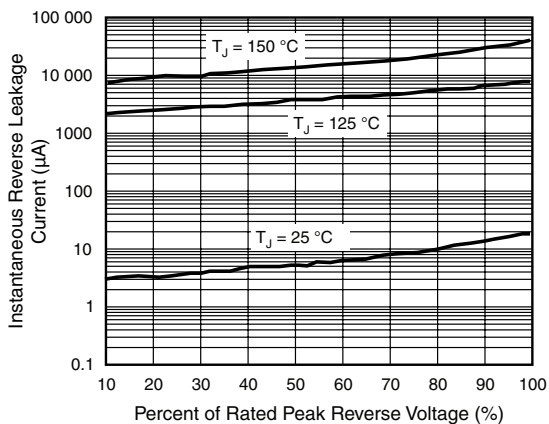


Figure 4. Typical Reverse Leakage Characteristics

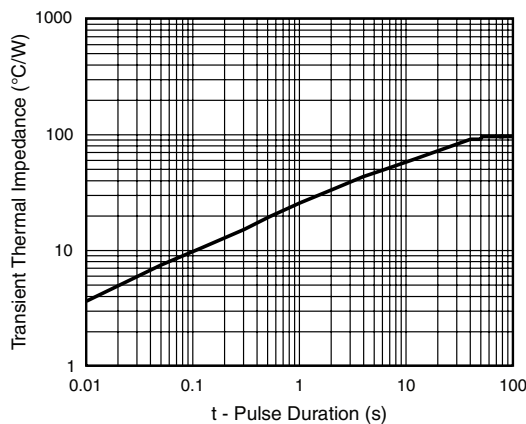
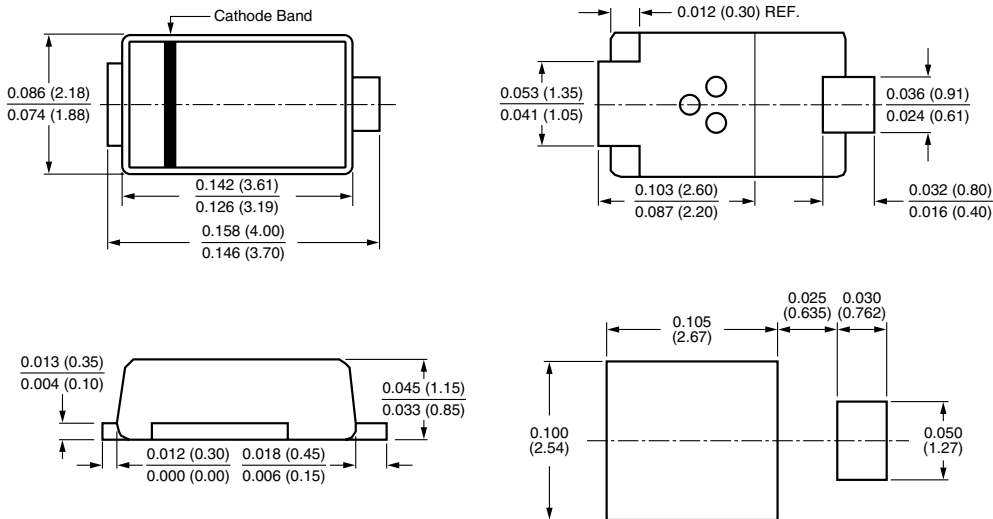


Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)





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