# High Current Density Surface Mount Schottky Rectifier

**eSMP™ Series**

**DO-220AA (SMP)**

## 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
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

**RoHS** COMPLIANT

## TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, dc-to-dc converters and polarity protection applications.

| 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 |
| $T_J$ max. | 150 °C |

## MECHANICAL DATA

**Case:** DO-220AA (SMP)

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC-Q101 qualified), meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes the cathode end

**MAXIMUM RATINGS** ($T_A$ = 25 °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 °C, $I_{AS}$ = 1.5 A, L = 10 mH | $E_{AS}$ | 11.25 | mJ |
| Voltage rate of change (rated $V_R$) | dV/dt | 10 000 | V/µs |
| 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<br>$T_J$ = 125 °C | $V_F$ | 0.55<br>0.50 | 0.60<br>0.55 | V |
| Maximum reverse current at rated $V_R$ (2) | | $T_J$ = 25 °C<br>$T_J$ = 125 °C | $I_R$ | -<br>7.5 | 150<br>15 | µA<br>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) | $R_{\theta JA}$<br>$R_{\theta JL}$<br>$R_{eJC}$ | 85<br>15<br>20 | °C/W |

**Note:**

(1) Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. with 15 x 15 mm copper pad areas. $R_{\theta JL}$ is measured at the terminal of cathode band. $R_{\theta JC}$ is measured at the top centre of the body

| **ORDERING INFORMATION** (Example) | | | | |
|---|---|---|---|---|
| **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PREFERRED PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| SS3P4-E3/84A | 0.024 | 84A | 3000 | 7" diameter plastic tape and reel |
| SS3P4-E3/85A | 0.024 | 85A | 10 000 | 13" diameter plastic tape and reel |
| SS3P4HE3/84A (1) | 0.024 | 84A | 3000 | 7" diameter plastic tape and reel |
| SS3P4HE3/85A (1) | 0.024 | 85A | 10 000 | 13" diameter plastic tape and reel |

**Note:**

(1) Automotive grade AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

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

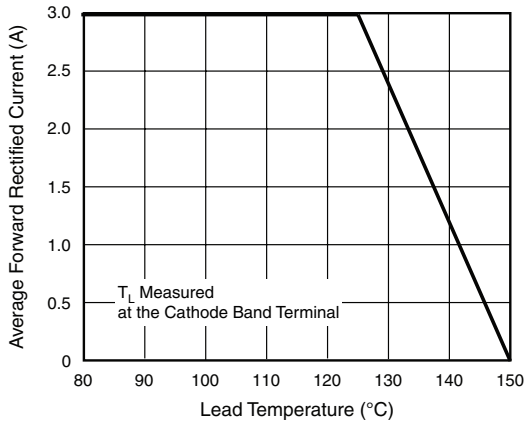



Figure 1. Forward Current Derating Curve

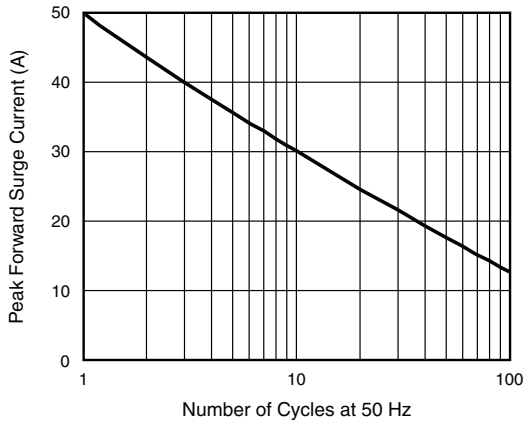



Figure 2. Maximum Non-Repetitive Peak Forward Surge Current



For technical questions within your region, please contact one of the following:
PDD-Americas@vishay.com, PDD-Asia@vishay.com, PDD-Europe@vishay.com

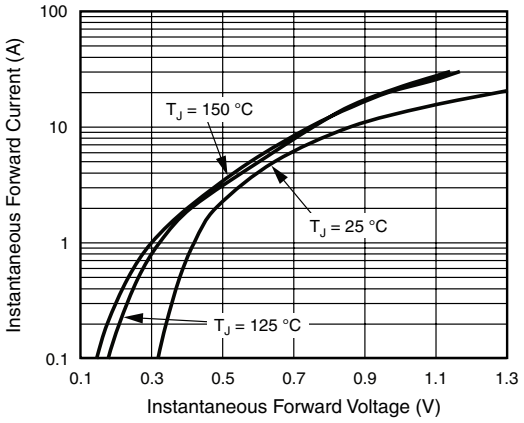



Figure 3. Typical Instantaneous Forward Characteristics

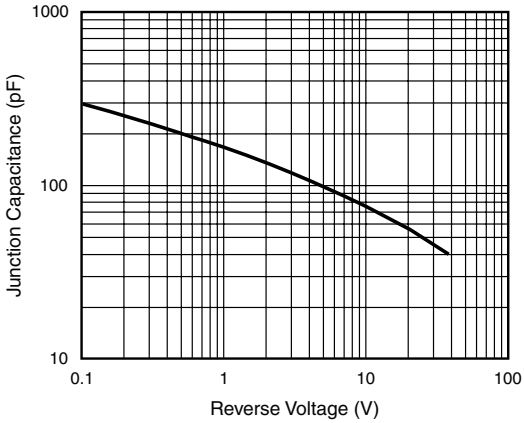



Figure 5. Typical Junction Capacitance

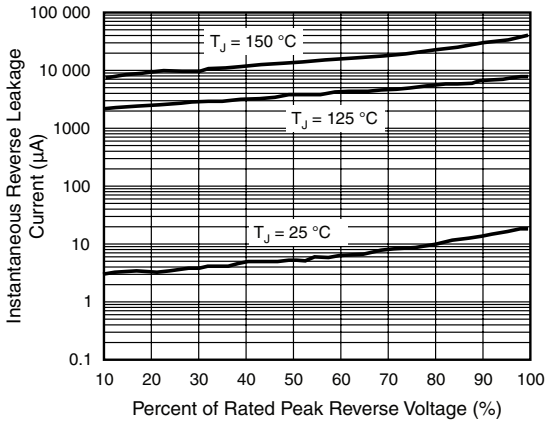



Figure 4. Typical Reverse Leakage Characteristics

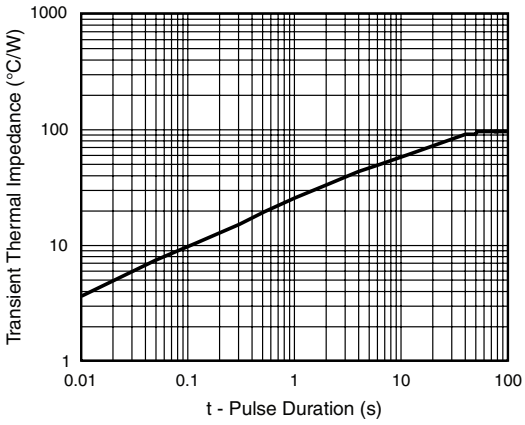
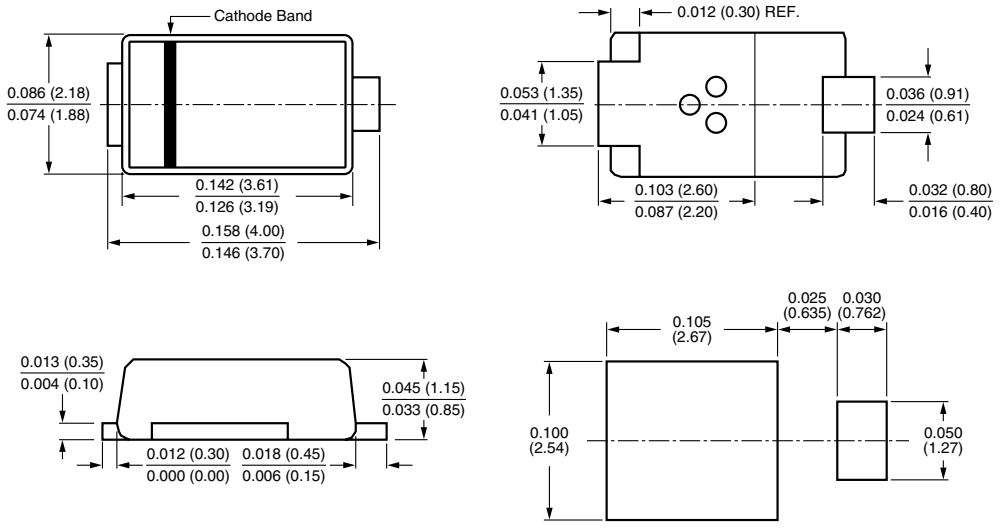



Figure 6. Typical Transient Thermal Impedance

## **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**DO-220AA (SMP)**



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