



**THE DATASHEET OF
SS3P4HE3/84A**



High Current Density Surface-Mount Schottky Rectifiers

eSMP® Series


SMP (DO-220AA)

Cathode Anode

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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

 AUTOMOTIVE
GRADE
Available

RoHS
COMPLIANT
HALOGEN
FREE

LINKS TO ADDITIONAL RESOURCES



3D Models

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 |
| Package | SMP (DO-220AA) |
| Circuit configuration | Single |

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMP (DO-220AA)

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

| PARAMETER | TEST CONDITIONS | SYMBOL | TYP. | MAX. | UNIT | |
|--|--------------------|-----------------------------------|-------------|------|------|---------------|
| Maximum instantaneous forward voltage | $I_F = 3\text{ A}$ | $T_J = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 0.55 | 0.60 | V |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 0.50 | 0.55 | |
| Maximum reverse current at rated V_R | | $T_J = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | - | 150 | μA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 7.5 | 15 | 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 $\leq 40\text{ ms}$

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

| PARAMETER | SYMBOL | SS3P4 | UNIT |
|---|-----------------------|-------|--------------------|
| Typical thermal resistance ⁽¹⁾ | $R_{\theta JA}^{(1)}$ | 85 | $^\circ\text{C/W}$ |
| | $R_{\theta JL}^{(1)}$ | 15 | |
| | $R_{\theta JC}^{(1)}$ | 20 | |

Note

- (1) Thermal resistance from junction to ambient and junction to lead mounted on PCB with 15 mm 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 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 ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified)

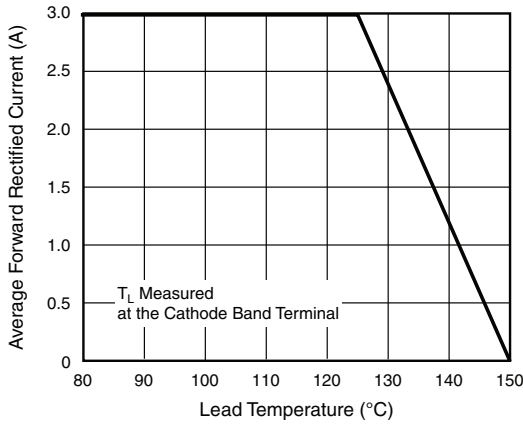


Fig. 1 - Forward Current Derating Curve

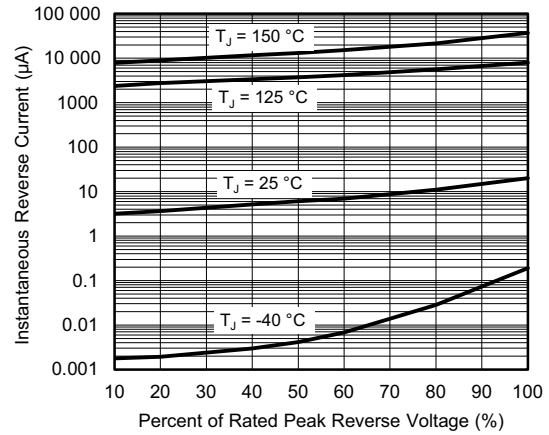


Fig. 4 - Typical Reverse Leakage Characteristics

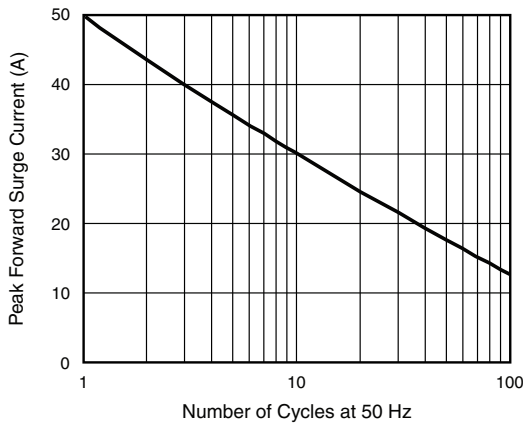


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

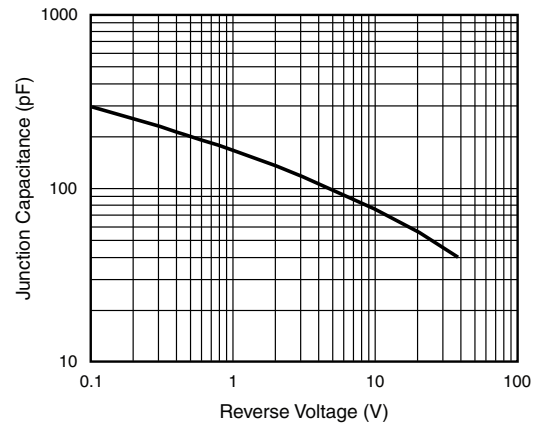


Fig. 5 - Typical Junction Capacitance

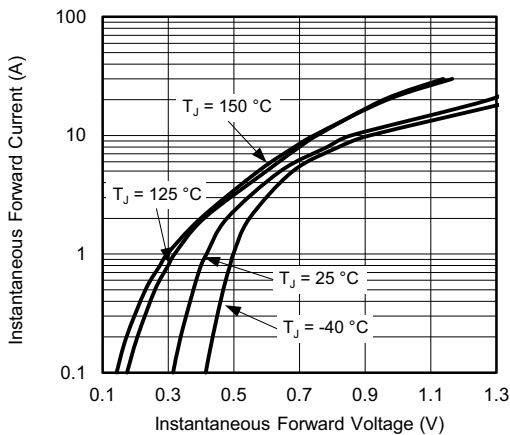


Fig. 3 - Typical Instantaneous Forward Characteristics

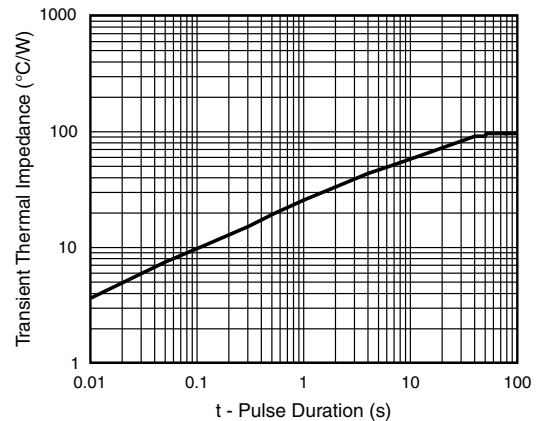
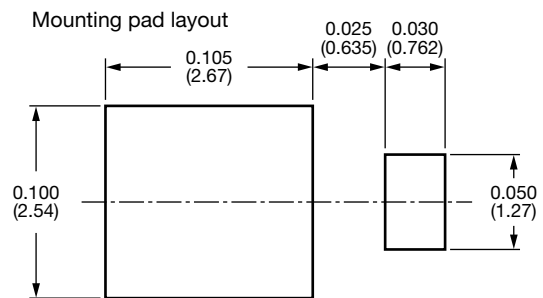
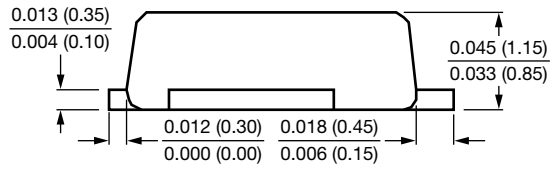
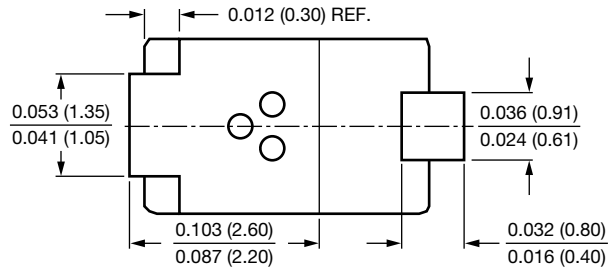
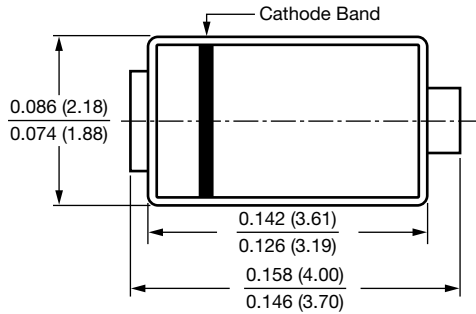


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)





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