

High Current Density Surface-Mount Schottky Barrier Rectifier

High Barrier Technology for Improved High Temperature Performance

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 available
- Automotive ordering code: base P/NHM3
- 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

| | |
|--|----------------|
| $I_{F(AV)}$ | 2.0 A |
| V_{RRM} | 50 V, 60 V |
| I_{FSM} | 50 A |
| V_F at $I_F = 2.0$ A ($T_A = 125$ °C) | 0.59 V |
| T_J max. | 175 °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 in commercial, industrial, and automotive applications

MECHANICAL DATA

Case: SMP (DO-220AA)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

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

M3 suffix meets JESD 201 class 2 whisker test, HM3 suffix 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 | SS2PH5 | SS2PH6 | UNIT |
|--|----------------------------|-------------|--------|------|
| Device marking code | | 2H5 | 2H6 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 50 | 60 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ ⁽¹⁾ | 2.0 | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 50 | | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +175 | | °C |

Note

⁽¹⁾ Free air, mounted on recommended copper pad area



| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|--|----------------------|-----------------------------------|-------------|------|------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | $I_F = 1.0\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 0.63 | - | V |
| | $I_F = 2.0\text{ A}$ | | | 0.72 | 0.80 | |
| | $I_F = 1.0\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.52 | - | |
| | $I_F = 2.0\text{ A}$ | | | 0.59 | 0.70 | |
| Reverse current at rated V_R | | | $I_R^{(2)}$ | 0.2 | 2.0 | μA |
| | | | | 0.13 | 1.0 | mA |
| Typical junction capacitance | 4.0 V, 1 MHz | | C_J | 93 | - | pF |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width $\leq 5\text{ ms}$

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | |
|---|-----------------------|--------|--------|--------------------|
| PARAMETER | SYMBOL | SS2PH5 | SS2PH6 | UNIT |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 130 | | $^\circ\text{C/W}$ |
| | $R_{\theta JM}^{(1)}$ | 20 | | |

Note

- (1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient, $R_{\theta JM}$ - junction to mount

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| SS2PH6-M3/84A | 0.024 | 84A | 3000 | 7" diameter plastic tape and reel |
| SS2PH6-M3/85A | 0.024 | 85A | 10 000 | 13" diameter plastic tape and reel |
| SS2PH6HM3/84A ⁽¹⁾ | 0.024 | 84A | 3000 | 7" diameter plastic tape and reel |
| SS2PH6HM3/85A ⁽¹⁾ | 0.024 | 85A | 10 000 | 13" diameter plastic tape and reel |

Note

- (1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

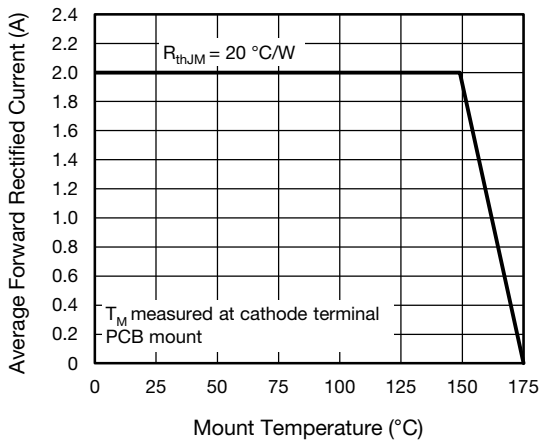


Fig. 1 - Typical Forward Current Derating Curve

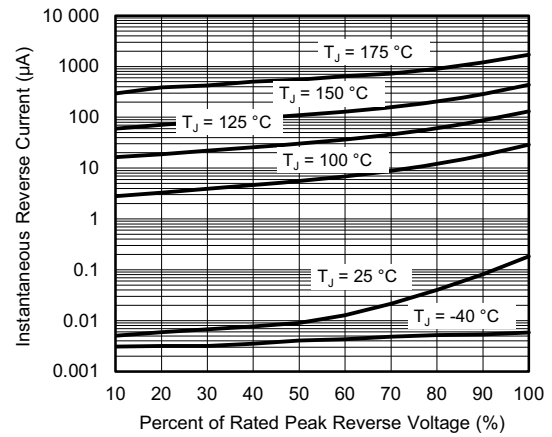


Fig. 4 - Typical Reverse Leakage Characteristics

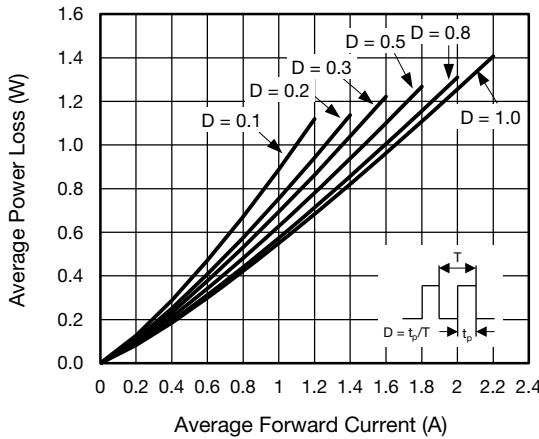


Fig. 2 - Forward Power Loss Characteristics

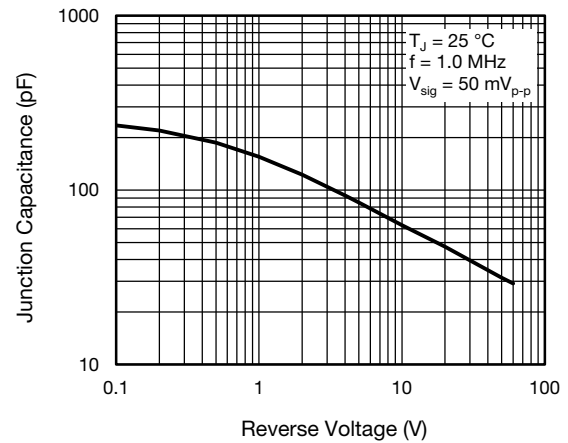


Fig. 5 - Typical Junction Capacitance

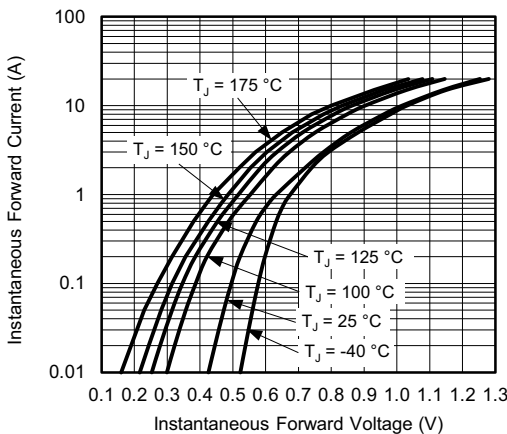


Fig. 3 - Typical Instantaneous Forward Characteristics

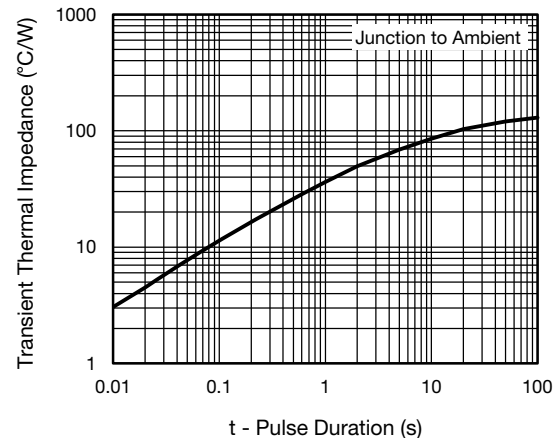
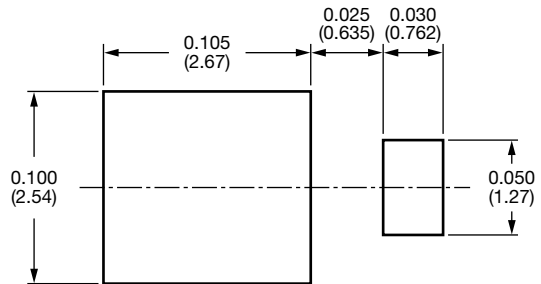
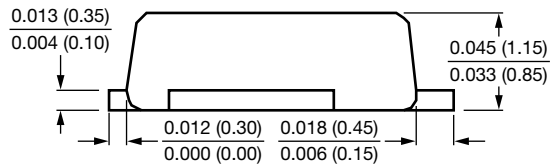
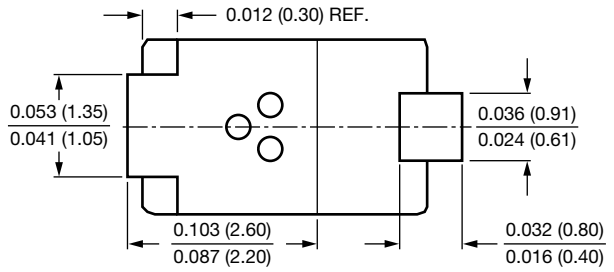
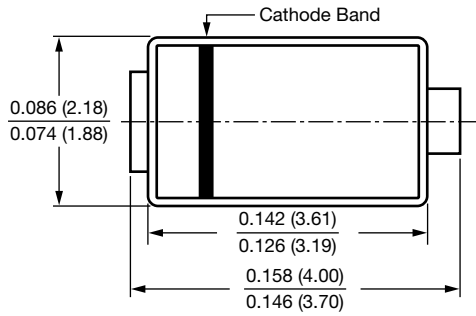


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)





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