AUTOMOTIV

COMPLIANT

HALOGEN FREE



Vishay General Semiconductor

High Voltage Surface-Mount Schottky Barrier Rectifier

High Barrier Technology for Improved High Temperature Performance



LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | | | | | |
|--|----------------|--|--|--|--|
| I _{F(AV)} | 2.0 A | | | | |
| V _{RRM} | 90 V, 100 V | | | | |
| I _{FSM} | 50 A | | | | |
| E _{AS} | 11.25 mJ | | | | |
| V_F at $I_F = 2.0$ A, $T_J = 125$ °C | 0.62 V | | | | |
| I _R max. at rated V _R , T _J = 25 °C | 1.0 μA | | | | |
| T _J max. | 175 °C | | | | |
| Package | SMP (DO-220AA) | | | | |
| Circuit configuration | Single | | | | |

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 <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in 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_X - halogen-free, RoHS-compliant, and

AEC-Q101 qualified

("_X" denotes revision code e.g. A, B,....)

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 | SS2PH9 | SS2PH10 | UNIT | | |
| Device marking code | | 29 | 210 | | | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 90 | 100 | V | | |
| Maximum average forward rectified current (fig. 1) | I _{F(AV)} | 2.0 | | Α | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I _{FSM} | 50 | | А | | |
| 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 +175 | | °C | | |



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| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|---|------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Maximum instantaneous famuard valtage | I _E = 2.0 A | T _J = 25 °C | V _F ⁽¹⁾ | 0.77 | 0.80 | V |
| Maximum instantaneous forward voltage | I _F = 2.0 A | T _J = 125 °C | | 0.62 | 0.66 | |
| Maximum reverse aurement at rated // | | T _J = 25 °C | I _R ⁽²⁾ | 0.1 | 1.0 | - μΑ |
| Maximum reverse current at rated V _R | | T _J = 125 °C | IR (=/ | 60 | 500 | |
| Typical junction capacitance | 4.0 V, 1 MHz | | CJ | 65 | - | 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 | SS2PH9 | SS2PH10 | UNIT | |
| | R _{0JA} (1) | 110 | | °C/W | |
| Typical thermal resistance | R _{0JL} (1) | 15 | | | |
| | R ₀ JC (1) | 25 | | | |

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_{BJC} 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 | | |
| SS2PH9-M3/84A | 0.024 | 84A | 3000 | 7" diameter plastic tape and reel | | |
| SS2PH9-M3/85A | 0.024 | 85A | 10 000 | 13" diameter plastic tape and reel | | |
| SS2PH9HM3_A/H (1) | 0.024 | Н | 3000 | 7" diameter plastic tape and reel | | |
| SS2PH9HM3_A/I (1) | 0.024 | I | 10 000 | 13" diameter plastic tape and reel | | |

Note

(1) AEC-Q101 qualified

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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

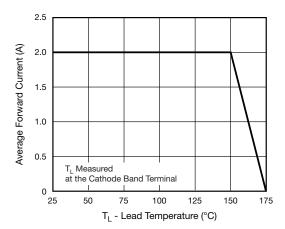


Fig. 1 - Forward Current Derating Curve

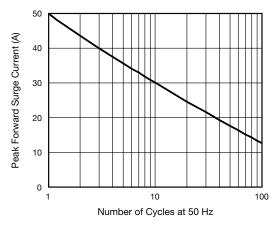


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

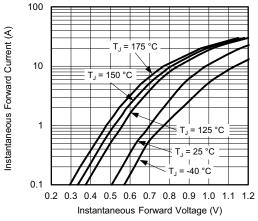


Fig. 3 - Typical Instantaneous Forward Characteristics

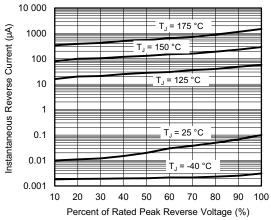


Fig. 4 - Typical Reverse Leakage Characteristics

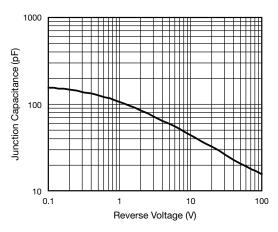


Fig. 5 - Typical Junction Capacitance

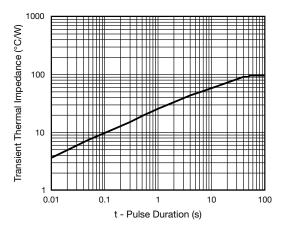


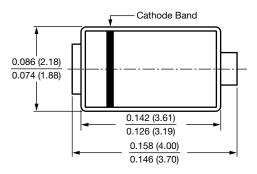
Fig. 6 - Typical Transient Thermal Impedance

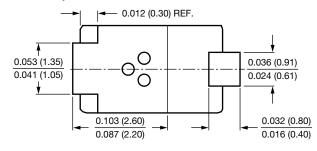


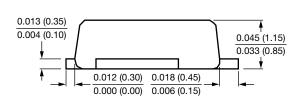
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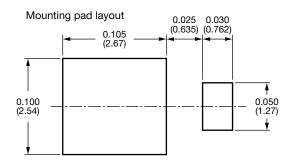
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)











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