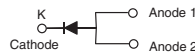


High Current Density Surface Mount High Voltage Schottky Rectifiers

eSMP® Series


TO-277A (SMPC)

RoHS
COMPLIANT
HALOGEN
FREE

FEATURES

- Power pack
- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- High barrier technology, $T_J = 175\text{ °C}$ maximum
- Low leakage current
- Meets MSL level 1, per J-STD-020
- AEC-Q101 qualified available
 - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, or polarity protection application.

MECHANICAL DATA

Case: TO-277A (SMPC)

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 AEC-Q101 qualified

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

| PRIMARY CHARACTERISTICS | |
|------------------------------|-------------------|
| $I_{F(AV)}$ | 10 A |
| V_{RRM} | 90 V, 100 V |
| I_{FSM} | 200 A |
| E_{AS} | 20 mJ |
| V_F at $I_F = 10\text{ A}$ | 0.661 V |
| I_R | 0.3 μA |
| T_J max. | 175 °C |
| Package | TO-277A (SMPC) |
| Diode variations | Single die |

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | | |
|---|----------------|-------------|----------|------|
| PARAMETER | SYMBOL | SS10PH9 | SS10PH10 | UNIT |
| Device marking code | | 10H9 | 10H10 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 90 | 100 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | 10 | | A |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 200 | | A |
| Non-repetitive avalanche energy at $I_{AS} = 2.0\text{ A}$, $T_J = 25\text{ °C}$ | E_{AS} | 20 | | mJ |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +175 | | °C |



| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|--|-----------------------|-------------------------|-------------------------------|-------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | I _F = 5 A | T _A = 25 °C | V _F ⁽¹⁾ | 0.725 | - | V |
| | I _F = 10 A | | | 0.800 | 0.88 | |
| | I _F = 5 A | T _A = 125 °C | | 0.581 | - | |
| | I _F = 10 A | | | 0.661 | 0.74 | |
| Reverse current | Rated V _R | T _A = 25 °C | I _R ⁽²⁾ | 0.3 | 10 | μA |
| | | T _A = 125 °C | | 0.3 | 3 | mA |
| Typical junction capacitance | 4.0 V, 1 MHz | | C _J | 270 | - | 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 specified) | | | | |
|---|---------------------------------|---------|----------|------|
| PARAMETER | SYMBOL | SS10PH9 | SS10PH10 | UNIT |
| Typical thermal resistance | R _{θJA} ⁽¹⁾ | 60 | | °C/W |
| | R _{θJL} | 3 | | |

Note

- (1) Units mounted on recommended PCB 1 oz. pad layout

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|--------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| SS10PH10-M3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| SS10PH10-M3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |
| SS10PH10HM3/86A ⁽¹⁾ | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| SS10PH10HM3/87A ⁽¹⁾ | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |
| SS10PH10HM3_A/H ⁽¹⁾ | 0.10 | H | 1500 | 7" diameter plastic tape and reel |
| SS10PH10HM3_A/I ⁽¹⁾ | 0.10 | I | 6500 | 13" diameter plastic tape and reel |

Note

- (1) AEC-Q101 qualified

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

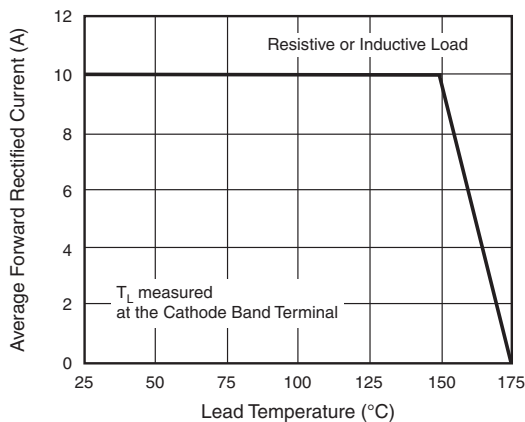


Fig. 1 - Maximum Forward Current Derating Curve

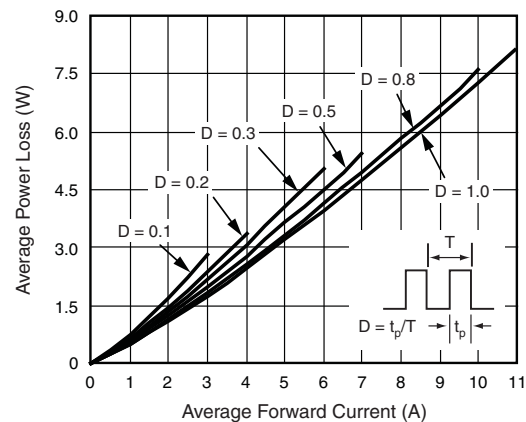


Fig. 2 - Forward Power Loss Characteristics

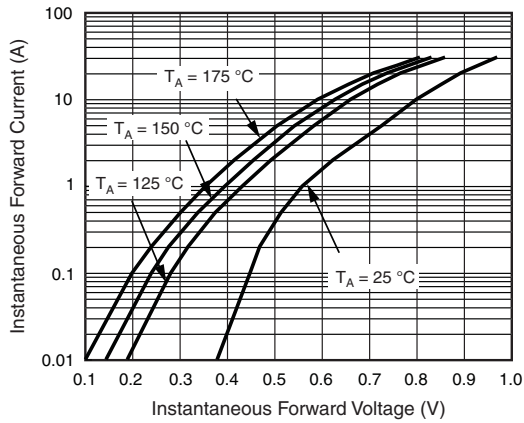


Fig. 3 - Typical Instantaneous Forward Characteristics

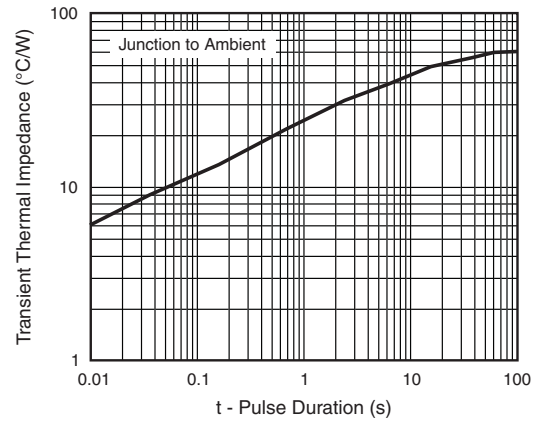


Fig. 6 - Typical Transient Thermal Impedance

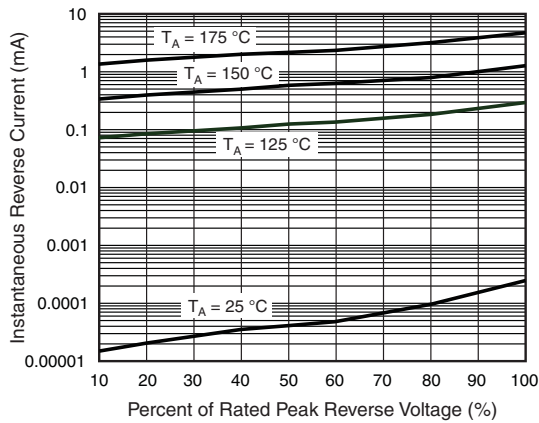


Fig. 4 - Typical Reverse Characteristics

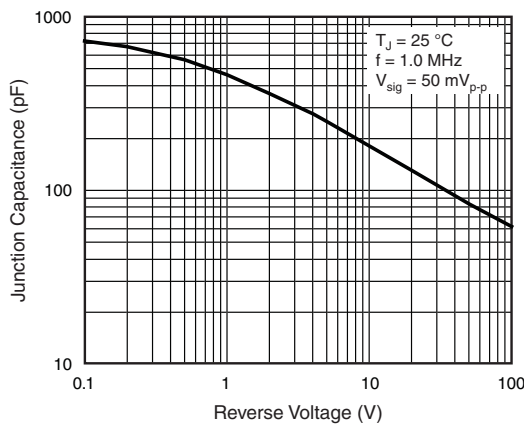
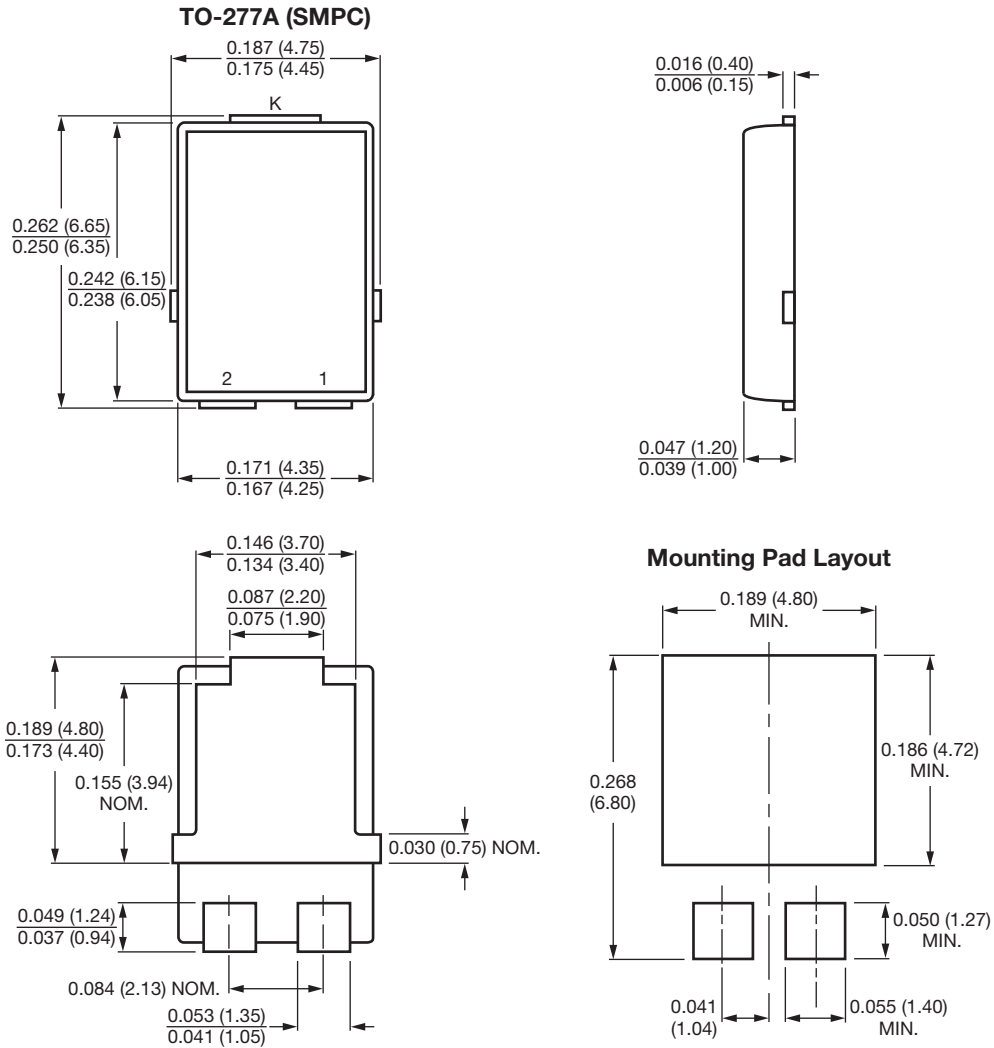


Fig. 5 - Typical Junction Capacitance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC® TO-277A



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