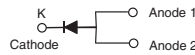


## High Current Density Surface Mount High Voltage Schottky Rectifier

### eSMP® Series



TO-277A (SMPC)



AUTOMOTIVE  
GRADE  
Available



RoHS  
COMPLIANT  
HALOGEN  
FREE

### FEATURES

- 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, LF maximum peak of  $260\text{ °C}$
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://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       |                    |
|-------------------------------|--------------------|
| $I_{F(AV)}$                   | 8.0 A              |
| $V_{RRM}$                     | 90 V, 100 V        |
| $I_{FSM}$                     | 150 A              |
| $E_{AS}$                      | 20 mJ              |
| $V_F$ at $I_F = 8.0\text{ A}$ | 0.720 V            |
| $I_R$                         | 0.18 $\mu\text{A}$ |
| $T_J$ max.                    | 175 °C             |
| Package                       | TO-277A (SMPC)     |
| Diode variations              | Single             |

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)                    |                |             |         |      |
|---|----------------|-------------|---------|------|
| PARAMETER   | SYMBOL         | SS8PH9      | SS8PH10 | UNIT |
| Device marking code   |                | 8H9         | 8H10    |      |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 90          | 100     | V    |
| Maximum average forward rectified current (fig. 1)                                | $I_{F(AV)}$    | 8.0         |         | A    |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 150         |         | 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 ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                      |                                   |             |       |      |               |
|---|----------------------|-----------------------------------|-------------|-------|------|---------------|
| PARAMETER   | TEST CONDITIONS      |                                   | SYMBOL      | TYP.  | MAX. | UNIT          |
| Instantaneous forward voltage   | $I_F = 4.0\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$  | $V_F^{(1)}$ | 0.769 | -    | V             |
|   | $I_F = 8.0\text{ A}$ |                                   |             | 0.850 | 0.90 |               |
|   | $I_F = 4.0\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ |             | 0.634 | -    |               |
|   | $I_F = 8.0\text{ A}$ |                                   |             | 0.720 | 0.76 |               |
| Reverse current   | Rated $V_R$          | $T_A = 25\text{ }^\circ\text{C}$  | $I_R^{(2)}$ | 0.18  | 2.0  | $\mu\text{A}$ |
|   |                      | $T_A = 125\text{ }^\circ\text{C}$ |             | 110   | 300  |               |
| Typical junction capacitance  | 4.0 V, 1 MHz         |                                   | $C_J$       | 140   | -    | pF            |

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  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                | SS8PH9 | SS8PH10 | UNIT               |
| Typical thermal resistance   | $R_{\theta JA}^{(1)}$ | 65     |         | $^\circ\text{C/W}$ |
|  | $R_{\theta JL}$       | 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                      |
| SS8PH10-M3/86A                 | 0.10            | 86A          | 1500          | 7" diameter plastic tape and reel  |
| SS8PH10-M3/87A                 | 0.10            | 87A          | 6500          | 13" diameter plastic tape and reel |
| SS8PH10HM3/86A <sup>(1)</sup>  | 0.10            | 86A          | 1500          | 7" diameter plastic tape and reel  |
| SS8PH10HM3/87A <sup>(1)</sup>  | 0.10            | 87A          | 6500          | 13" diameter plastic tape and reel |
| SS8PH10HM3_A/H <sup>(1)</sup>  | 0.10            | H            | 1500          | 7" diameter plastic tape and reel  |
| SS8PH10HM3_A/I <sup>(1)</sup>  | 0.10            | I            | 6500          | 13" diameter plastic tape and reel |

**Note**

- (1) AEC-Q101 qualified



RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

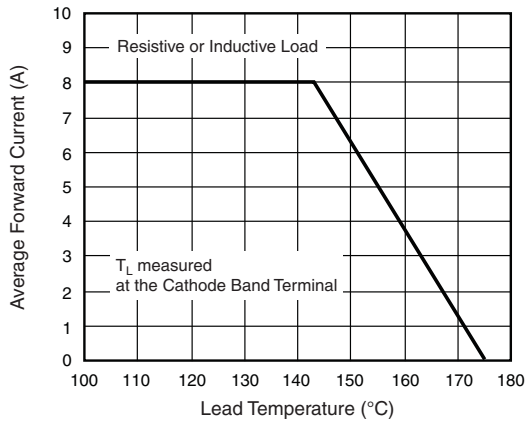


Fig. 1 - Maximum Forward Current Derating Curve

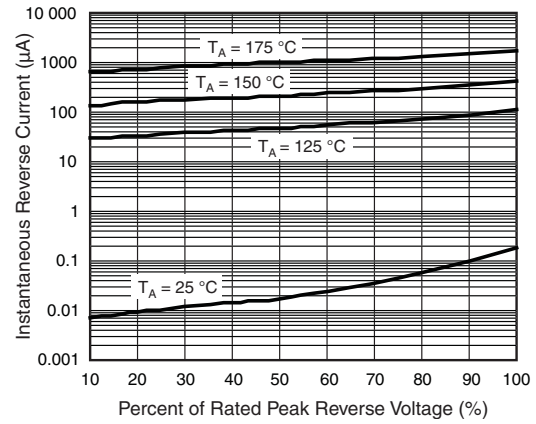


Fig. 4 - Typical Reverse Characteristics

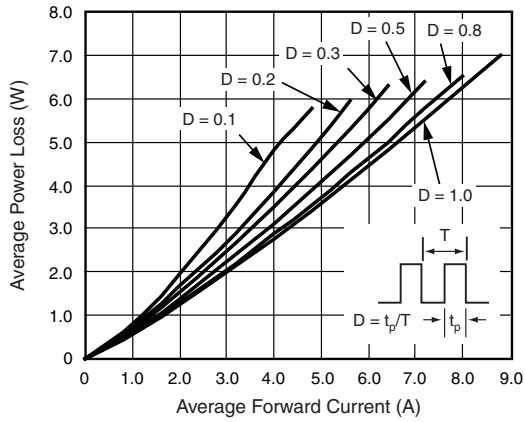


Fig. 2 - Forward Power Loss Characteristics

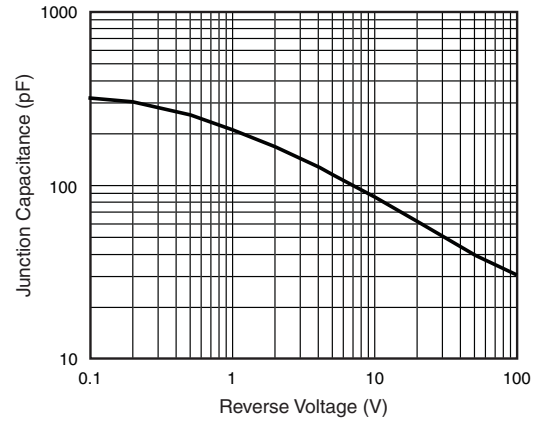


Fig. 5 - Typical Junction Capacitance

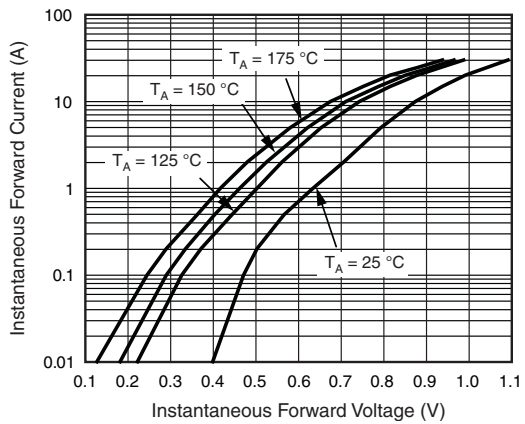


Fig. 3 - Typical Instantaneous Forward Characteristics

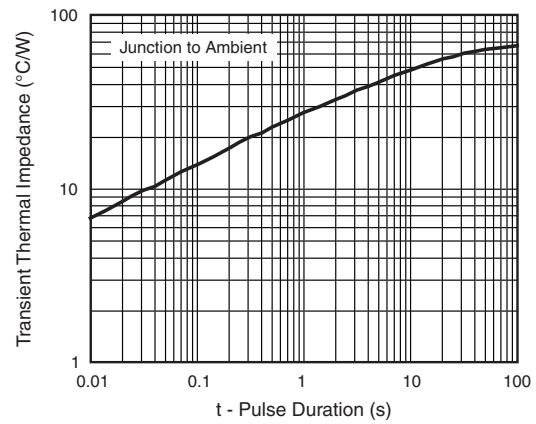
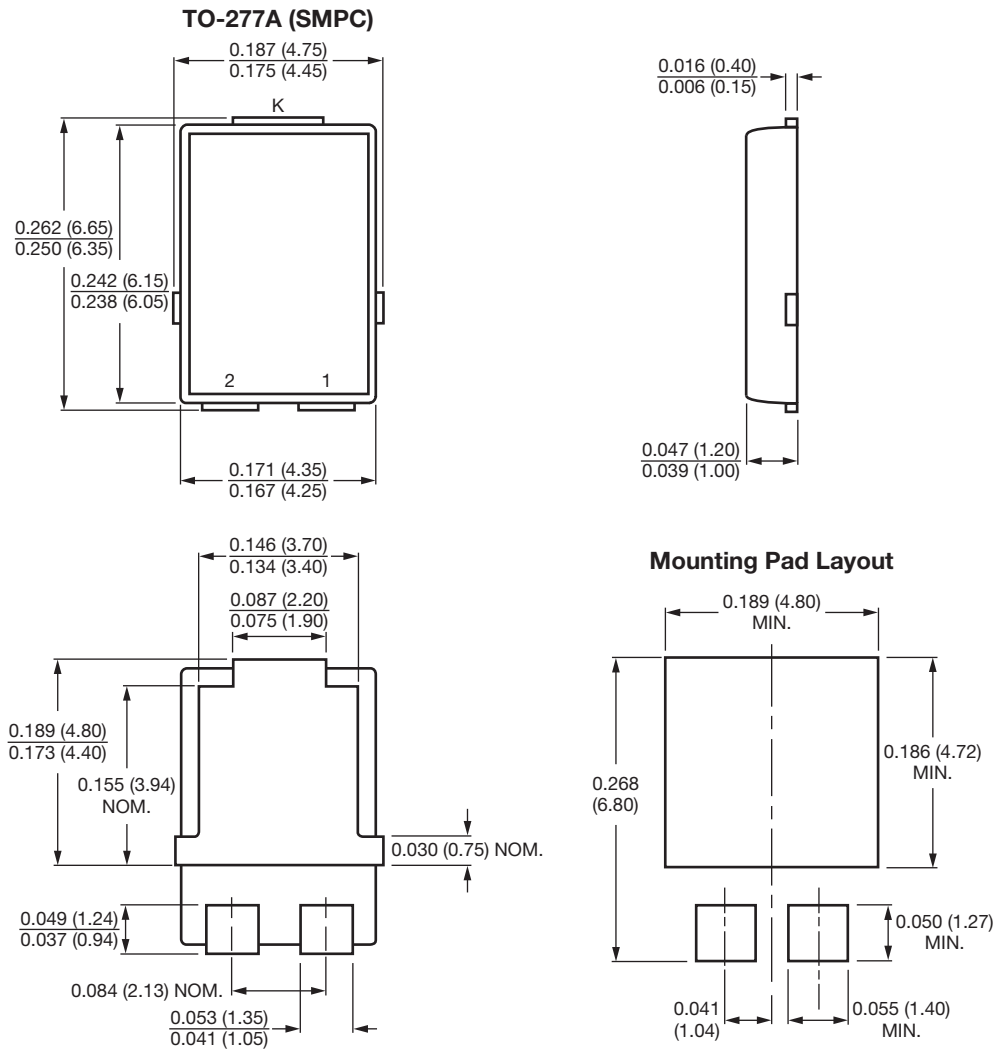


Fig. 6 - Typical Transient Thermal Impedance



### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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