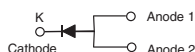


## High Current Density Surface Mount High Voltage Schottky Rectifier

### eSMP® Series



TO-277A (SMPC)



### FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- High barrier technology,  $T_J = 175\text{ }^{\circ}\text{C}$  maximum
- Low leakage current
- Meets MSL level 1, per J-STD-020, LF maximum peak of  $260\text{ }^{\circ}\text{C}$
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc299912](http://www.vishay.com/doc299912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### 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 $^{\circ}\text{C}$ |
| Package                       | TO-277A (SMPC)         |
| Diode variations              | Single                 |

| MAXIMUM RATINGS ( $T_A = 25\text{ }^{\circ}\text{C}$ 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 $I_{AS} = 2.0\text{ A}$ , $T_J = 25\text{ }^{\circ}\text{C}$ | $E_{AS}$       | 20          |         | mJ                 |
| Operating junction and storage temperature range                                                | $T_J, T_{STG}$ | -55 to +175 |         | $^{\circ}\text{C}$ |



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                        |                         |                               |       |      |      |
|----------------------------------------------------------------------------|------------------------|-------------------------|-------------------------------|-------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS        |                         | SYMBOL                        | TYP.  | MAX. | UNIT |
| Instantaneous forward voltage                                              | I <sub>F</sub> = 4.0 A | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.769 | -    | V    |
|                                                                            | I <sub>F</sub> = 8.0 A |                         |                               | 0.850 | 0.90 |      |
|                                                                            | I <sub>F</sub> = 4.0 A | T <sub>A</sub> = 125 °C |                               | 0.634 | -    |      |
|                                                                            | I <sub>F</sub> = 8.0 A |                         |                               | 0.720 | 0.76 |      |
| Reverse current                                                            | Rated V <sub>R</sub>   | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 0.18  | 2.0  | μA   |
|                                                                            |                        | T <sub>A</sub> = 125 °C |                               | 110   | 300  |      |
| Typical junction capacitance                                               | 4.0 V, 1 MHz           |                         | C <sub>J</sub>                | 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 <sub>A</sub> = 25 °C unless otherwise specified) |                                 |        |         |      |
|-----------------------------------------------------------------------------|---------------------------------|--------|---------|------|
| PARAMETER                                                                   | SYMBOL                          | SS8PH9 | SS8PH10 | UNIT |
| Typical thermal resistance                                                  | R <sub>θJA</sub> <sup>(1)</sup> | 65     |         | °C/W |
|                                                                             | R <sub>θJL</sub>                | 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** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

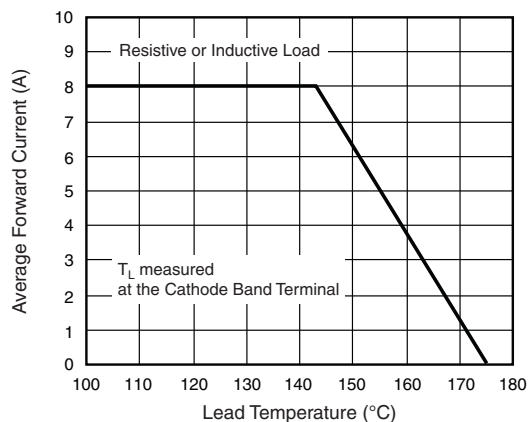


Fig. 1 - Maximum Forward Current Derating Curve

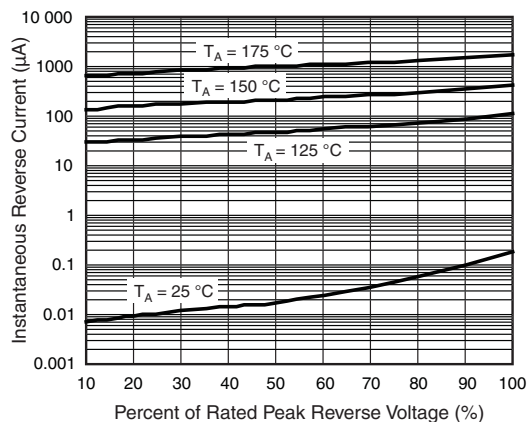


Fig. 4 - Typical Reverse Characteristics

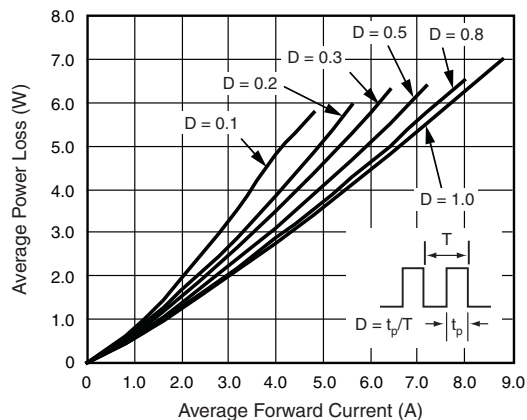


Fig. 2 - Forward Power Loss Characteristics

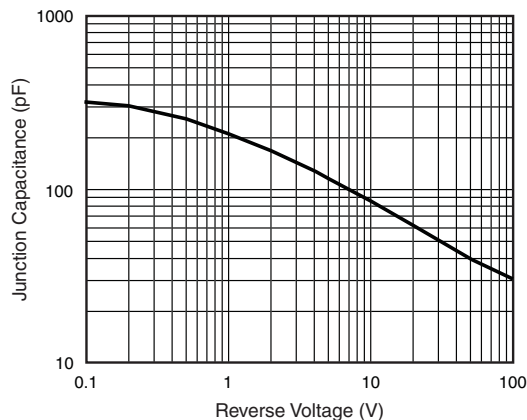


Fig. 5 - Typical Junction Capacitance

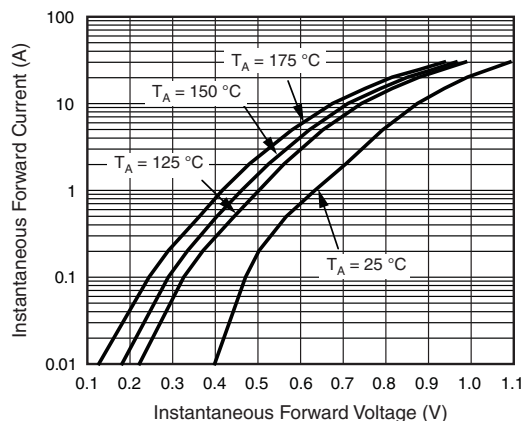


Fig. 3 - Typical Instantaneous Forward Characteristics

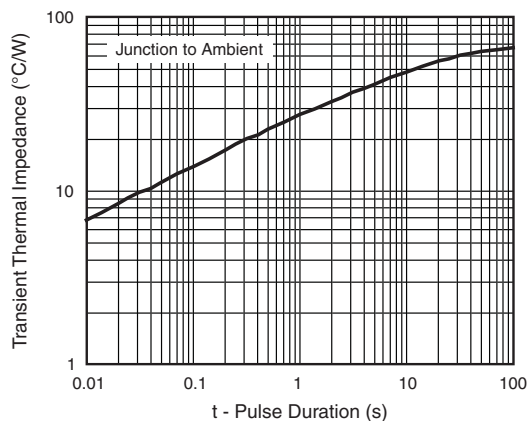
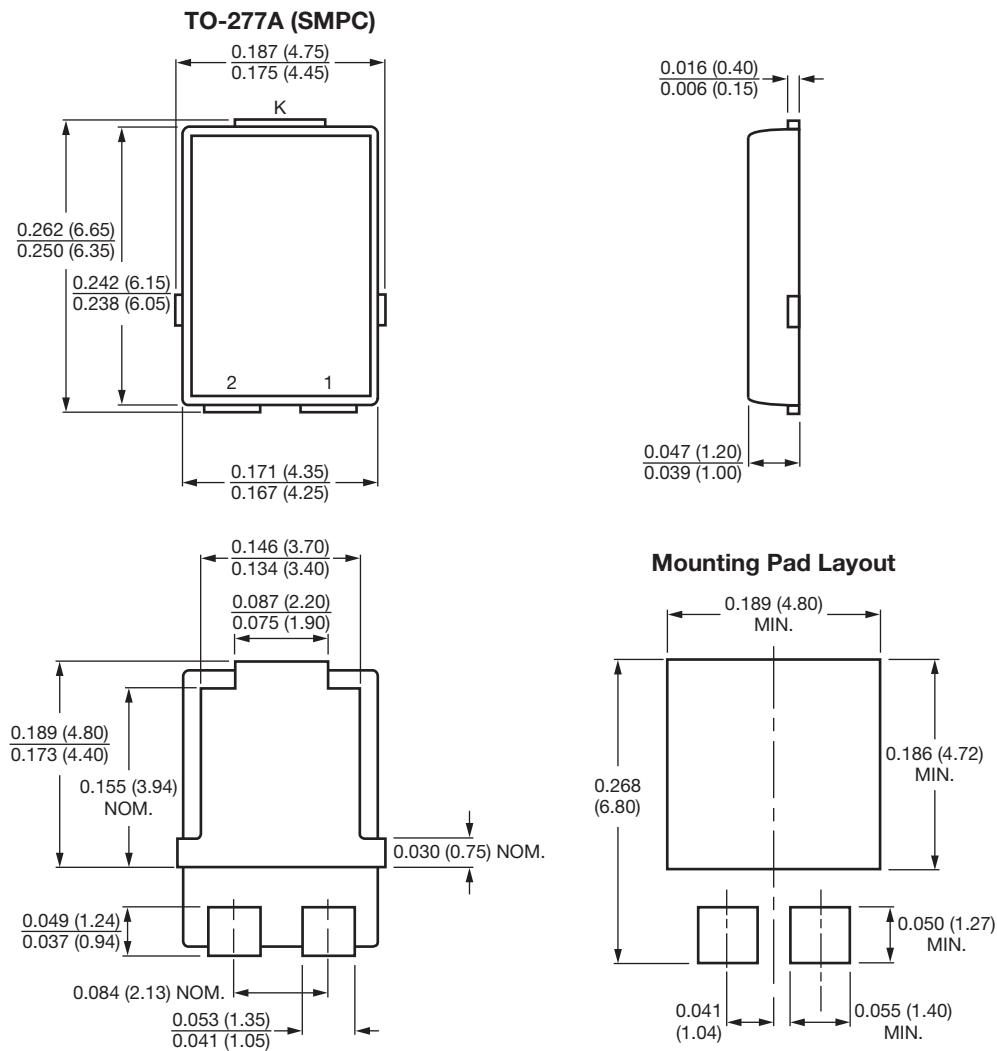


Fig. 6 - Typical Transient Thermal Impedance



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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