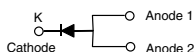


## High Current Density Surface Mount High Voltage Schottky Rectifiers

### 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,  $T_J = 175^\circ\text{C}$  maximum
- Low leakage current
- Meets MSL level 1, per J-STD-020
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



**RoHS**  
COMPLIANT  
HALOGEN  
FREE

### PRIMARY CHARACTERISTICS

|                       |                      |
|-----------------------|----------------------|
| $I_{F(AV)}$           | 10 A                 |
| $V_{RRM}$             | 90 V, 100 V          |
| $I_{FSM}$             | 200 A                |
| $E_{AS}$              | 20 mJ                |
| $V_F$ at $I_F = 10$ A | 0.661 V              |
| $I_R$                 | 0.3 $\mu\text{A}$    |
| $T_J$ max.            | 175 $^\circ\text{C}$ |

### 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 automotive grade

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

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

### TYPICAL APPLICATIONS

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

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

**SS10PH9, SS10PH10**

Vishay General Semiconductor



| 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> = 5 A  | T <sub>A</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 0.725 | -    | V    |
|                                                                            | I <sub>F</sub> = 10 A |                         |                               | 0.800 | 0.88 |      |
|                                                                            | I <sub>F</sub> = 5 A  | T <sub>A</sub> = 125 °C |                               | 0.581 | -    |      |
|                                                                            | I <sub>F</sub> = 10 A |                         |                               | 0.661 | 0.74 |      |
| Reverse current                                                            | Rated V <sub>R</sub>  | T <sub>A</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | 0.3   | 10   | μA   |
|                                                                            |                       | T <sub>A</sub> = 125 °C |                               | 0.3   | 3    | mA   |
| Typical junction capacitance                                               | 4.0 V, 1 MHz          |                         | C <sub>J</sub>                | 270   | -    | pF   |

**Notes**<sup>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle<sup>(2)</sup> Pulse test: Pulse width  $\leq 40\text{ ms}$ 

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise specified) |                                 |         |          |      |
|-----------------------------------------------------------------------------|---------------------------------|---------|----------|------|
| PARAMETER                                                                   | SYMBOL                          | SS10PH9 | SS10PH10 | UNIT |
| Typical thermal resistance                                                  | R <sub>θJA</sub> <sup>(1)</sup> | 60      |          | °C/W |
|                                                                             | R <sub>θJL</sub>                | 3       |          |      |

**Note**<sup>(1)</sup> Units mounted on recommended PCB 1 oz. pad layout

| <b>ORDERING INFORMATION</b> (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 <sup>(1)</sup>        | 0.10            | 86A          | 1500          | 7" diameter plastic tape and reel  |
| SS10PH10HM3/87A <sup>(1)</sup>        | 0.10            | 87A          | 6500          | 13" diameter plastic tape and reel |

**Note**<sup>(1)</sup> Automotive grade

## RATINGS AND CHARACTERISTICS CURVES

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

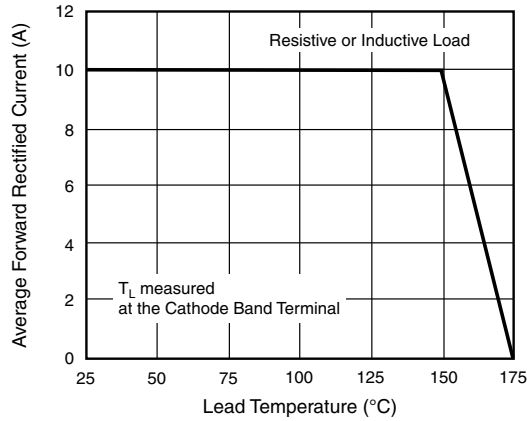


Fig. 1 - Maximum Forward Current Derating Curve

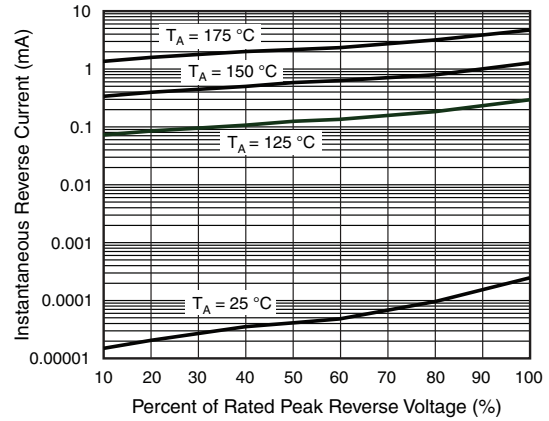


Fig. 4 - Typical Reverse Characteristics Per Diode

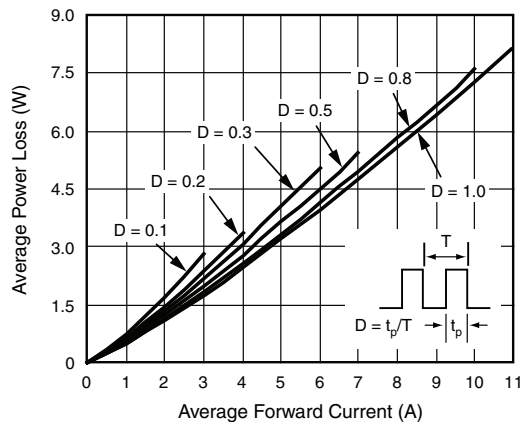


Fig. 2 - Forward Power Loss Characteristics Per Diode

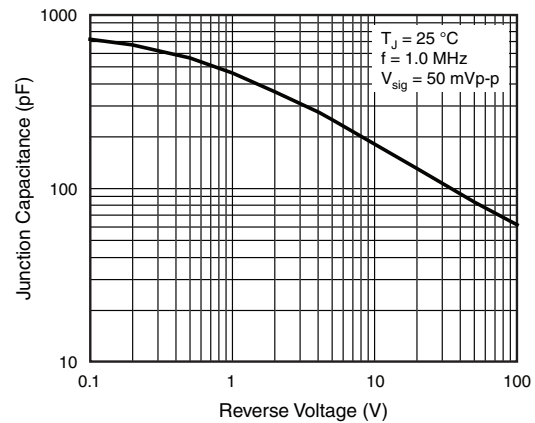


Fig. 5 - Typical Junction Capacitance Per Diode

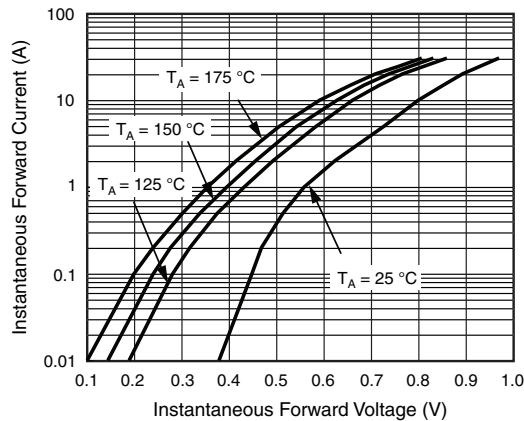


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

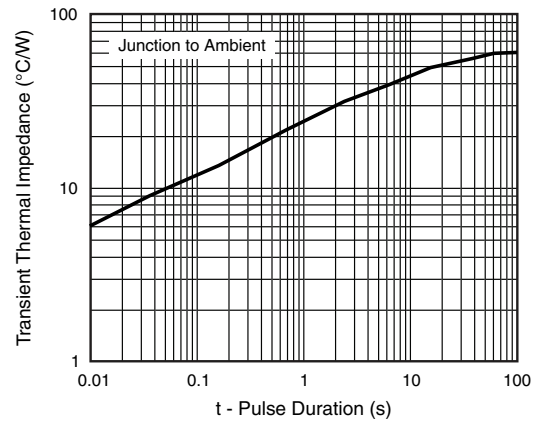
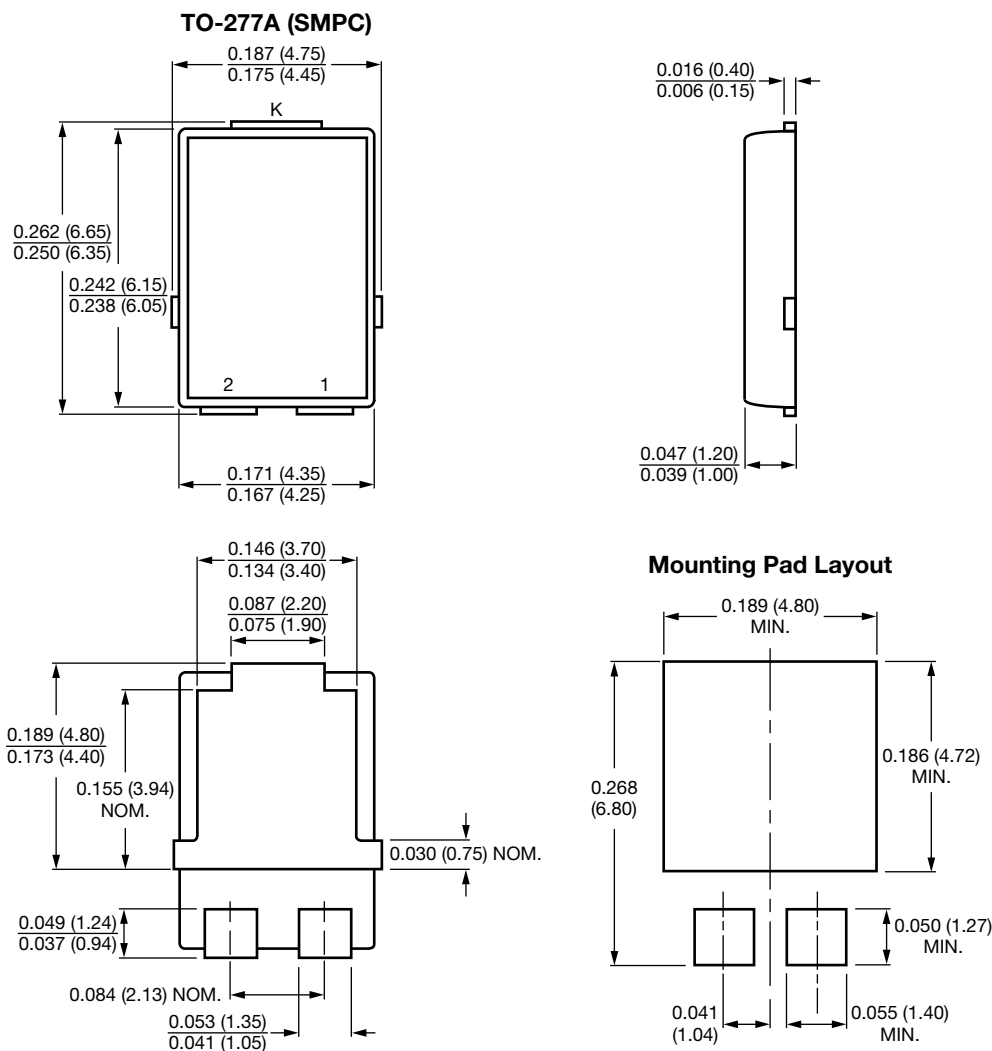


Fig. 6 - Typical Transient Thermal Impedance Per Diode

**SS10PH9, SS10PH10**

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**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

Conform to JEDEC TO-277A



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Электрон  
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