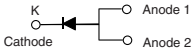
# SS10PH9 & SS10PH10

Vishay General Semiconductor

## High Current Density Surface Mount High Voltage Schottky Rectifier

eSMP™ Series


TO-277A (SMPC)




| 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 µA |
| $T_J$ max. | 175 °C |

### TYPICAL APPLICATIONS

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

### FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- High barrier technology, $T_J$ = 175 °C maximum
- Low leakage current
- Meets MSL level 1, per J-STD-020
- Solder dip 265 °C max. 10 s, per JESD 22-A111
- 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

### MECHANICAL DATA

**Case:** TO-277A (SMPC)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

Base P/NHM3 - halogen-free and RoHS compliant, AEC-Q101 qualified

**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

**MAXIMUM RATINGS** ($T_A$ = 25 °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 A, L = 10 mH, $T_J$ = 25 °C | $E_{AS}$ | 20 | | mJ |
| Operating junction and storage temperature range | $T_J$, $T_{STG}$ | - 55 to + 175 | | °C |



For technical questions within your region, please contact one of the following:
PDD-Americas@vishay.com, PDD-Asia@vishay.com, PDD-Europe@vishay.com

# SS10PH9 & SS10PH10

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## ELECTRICAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Instantaneous forward voltage (1) | $I_F$ = 5 A<br>$I_F$ = 10 A | $T_A$ = 25 °C | $V_F$ | 0.725<br>0.800 | -<br>0.88 | V |
| | $I_F$ = 5 A<br>$I_F$ = 10 A | $T_A$ = 125 °C | | 0.581<br>0.661 | -<br>0.74 | |
| Reverse current (2) | rated $V_R$ | $T_A$ = 25 °C<br>$T_A$ = 125 °C | $I_R$ | 0.3<br>0.3 | 10<br>3 | µA<br>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 noted)

| PARAMETER | SYMBOL | SS10PH9 | SS10PH10 | UNIT |
|---|---|---|---|---|
| Typical thermal resistance | $R_{\theta JA}$ (1)<br>$R_{\theta JL}$ | 60<br>3 | | °C/W |

**Note:**

(1) Units mounted on recommended P.C.B. 1 oz. pad layout

## ORDERING INFORMATION (Example)

| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED 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 |

**Note:**

(1) AEC-Q101 qualified



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## RATINGS AND CHARACTERISTICS CURVES

($T_A$ = 25 °C unless otherwise noted)

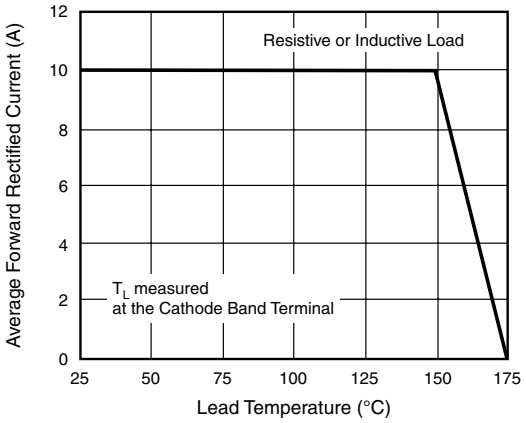



Figure 1. Maximum Forward Current Derating Curve

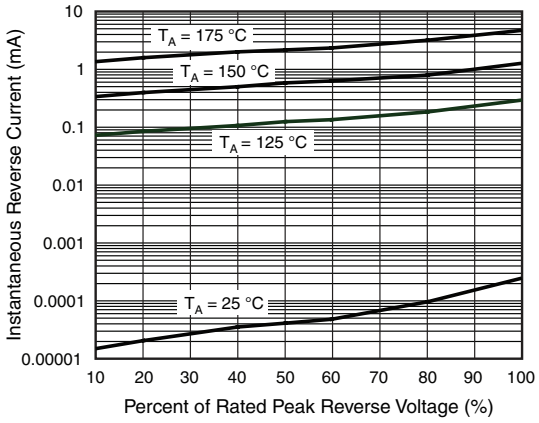



Figure 4. Typical Reverse Characteristics

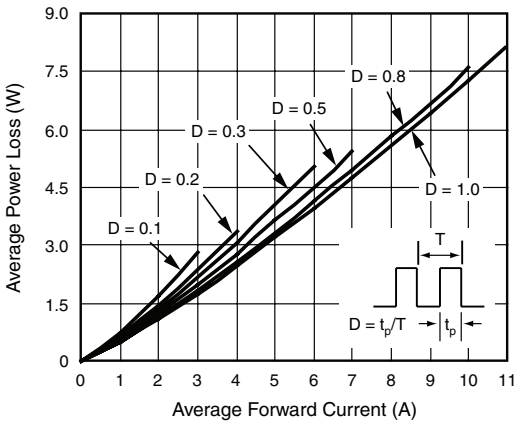



Figure 2. Forward Power Loss Characteristics

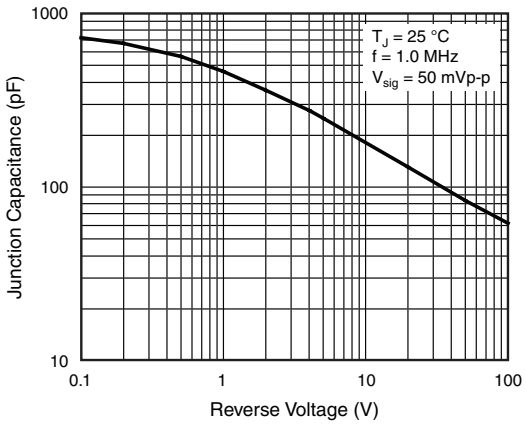



Figure 5. Typical Junction Capacitance

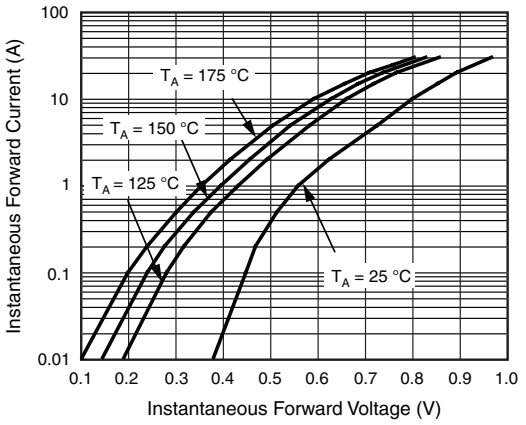



Figure 3. Typical Instantaneous Forward Characteristics

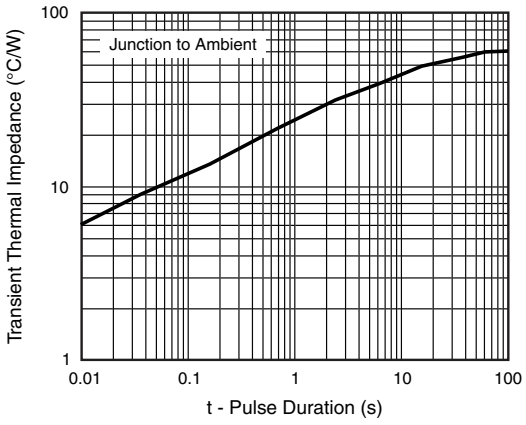
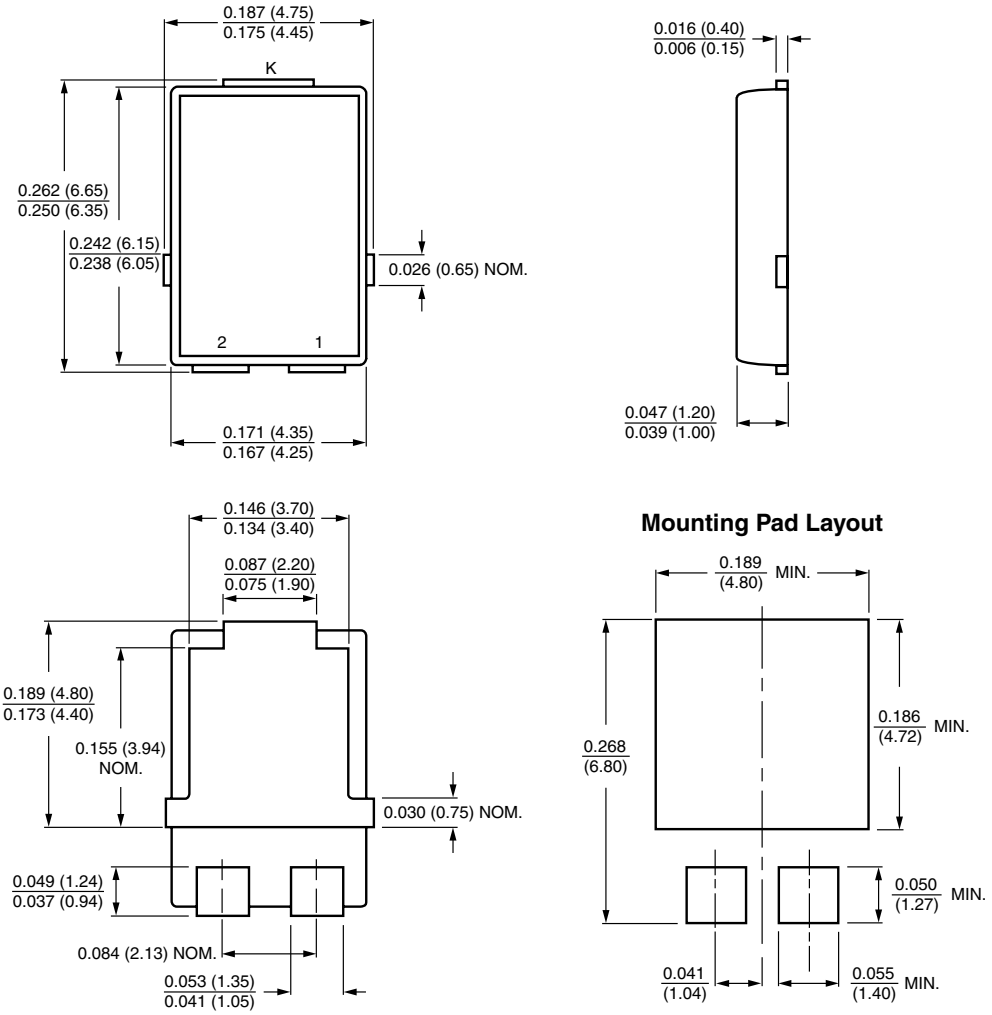



Figure 6. Typical Transient Thermal Impedance

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

### TO-277A (SMPC)




### Mounting Pad Layout




Conform to JEDEC TO-277A

# Disclaimer

All product specifications and data are subject to change without notice.

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