

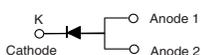


## High Current Density Surface Mount Schottky Barrier Rectifiers

### eSMP™ Series



TO-277A (SMPC)



### PRIMARY CHARACTERISTICS

|                       |            |
|-----------------------|------------|
| $I_{F(AV)}$           | 10 A       |
| $V_{RRM}$             | 30 V, 40 V |
| $I_{FSM}$             | 280 A      |
| $E_{AS}$              | 20 mJ      |
| $V_F$ at $I_F = 10$ A | 0.41 V     |
| $T_J$ max.            | 150 °C     |

### TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, dc-to-dc converters, and polarity protection applications.

### FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Guardring for overvoltage protection
- Low forward voltage drop, low power losses
- High efficiency
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- 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         | SS10P3        | SS10P4 | UNIT |
|---|----------------|---------------|--------|------|
| Device marking code   |                | S103          | S104   |      |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 30            | 40     | 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 | $I_{FSM}$      | 280           |        | A    |
| Non-repetitive avalanche energy at $I_{AS} = 2$ A, $T_J = 25$ °C                  | $E_{AS}$       | 20            |        | mJ   |
| Operating junction and storage temperature range                                  | $T_J, T_{STG}$ | - 55 to + 150 |        | °C   |

# SS10P3 & SS10P4

Vishay General Semiconductor



| ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |   |   |                |              |            |          |
|--|---|---|----------------|--------------|------------|----------|
| PARAMETER  | TEST CONDITIONS                               |   | SYMBOL         | TYP.         | MAX.       | UNIT     |
| Instantaneous forward voltage <sup>(1)</sup>                               | I <sub>F</sub> = 5 A<br>I <sub>F</sub> = 10 A | T <sub>A</sub> = 25 °C                            | V <sub>F</sub> | 0.41<br>0.48 | -<br>0.56  | V        |
|  | I <sub>F</sub> = 5 A<br>I <sub>F</sub> = 10 A | T <sub>A</sub> = 125 °C                           |                | 0.31<br>0.41 | -<br>0.49  |          |
| Reverse current <sup>(2)</sup>   | rated V <sub>R</sub>                          | T <sub>A</sub> = 25 °C<br>T <sub>A</sub> = 125 °C | I <sub>R</sub> | 100<br>50    | 800<br>100 | μA<br>mA |
| Typical junction capacitance   | 4.0 V, 1 MHz                                  |   | C <sub>J</sub> | 750          | -          | pF       |

**Notes:**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted) |                                 |        |        |      |
|---|---------------------------------|--------|--------|------|
| PARAMETER   | SYMBOL                          | SS10P3 | SS10P4 | UNIT |
| Typical thermal resistance  | R <sub>θJA</sub> <sup>(1)</sup> | 60     |        | °C/W |
|   | R <sub>θJL</sub>                | 3      |        |      |

**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                      |
| SS10P4-M3/86A                  | 0.10            | 86A                    | 1500          | 7" diameter plastic tape and reel  |
| SS10P4-M3/87A                  | 0.10            | 87A                    | 6500          | 13" diameter plastic tape and reel |
| SS10P4HM3/86A <sup>(1)</sup>   | 0.10            | 86A                    | 1500          | 7" diameter plastic tape and reel  |
| SS10P4HM3/87A <sup>(1)</sup>   | 0.10            | 87A                    | 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)

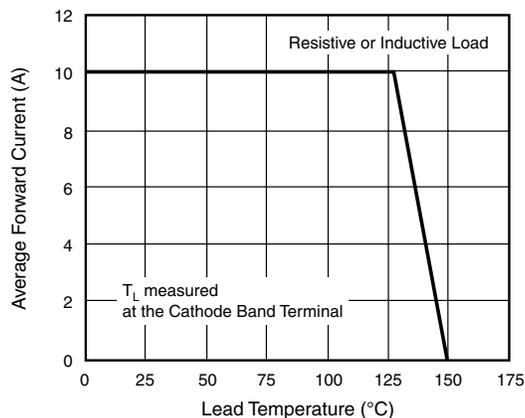


Figure 1. Maximum Forward Current Derating Curve

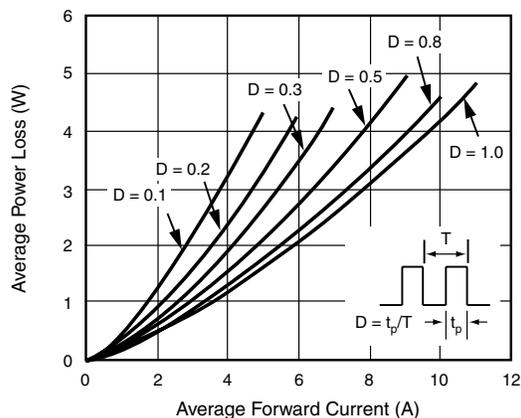


Figure 2. Forward Power Loss Characteristics

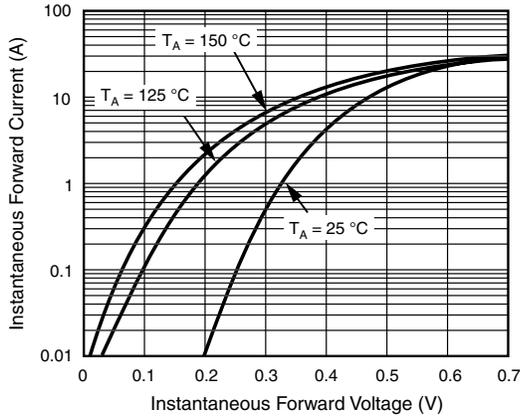


Figure 3. Typical Instantaneous Forward Characteristics

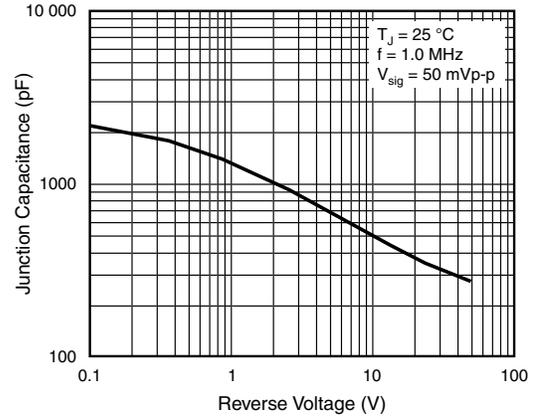


Figure 5. Typical Junction Capacitance

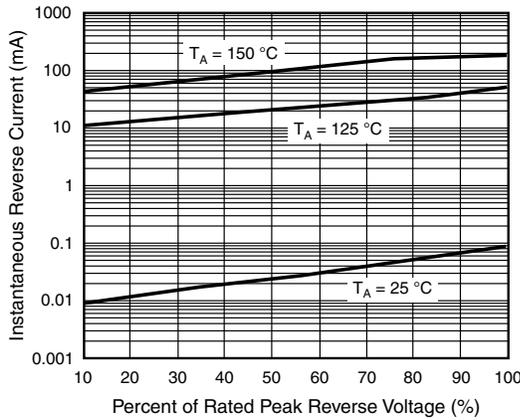


Figure 4. Typical Reverse Leakage Characteristics

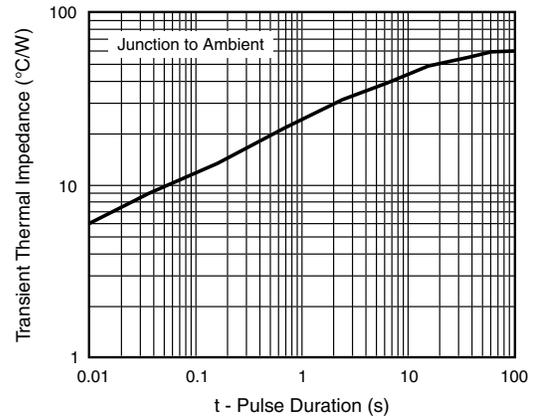


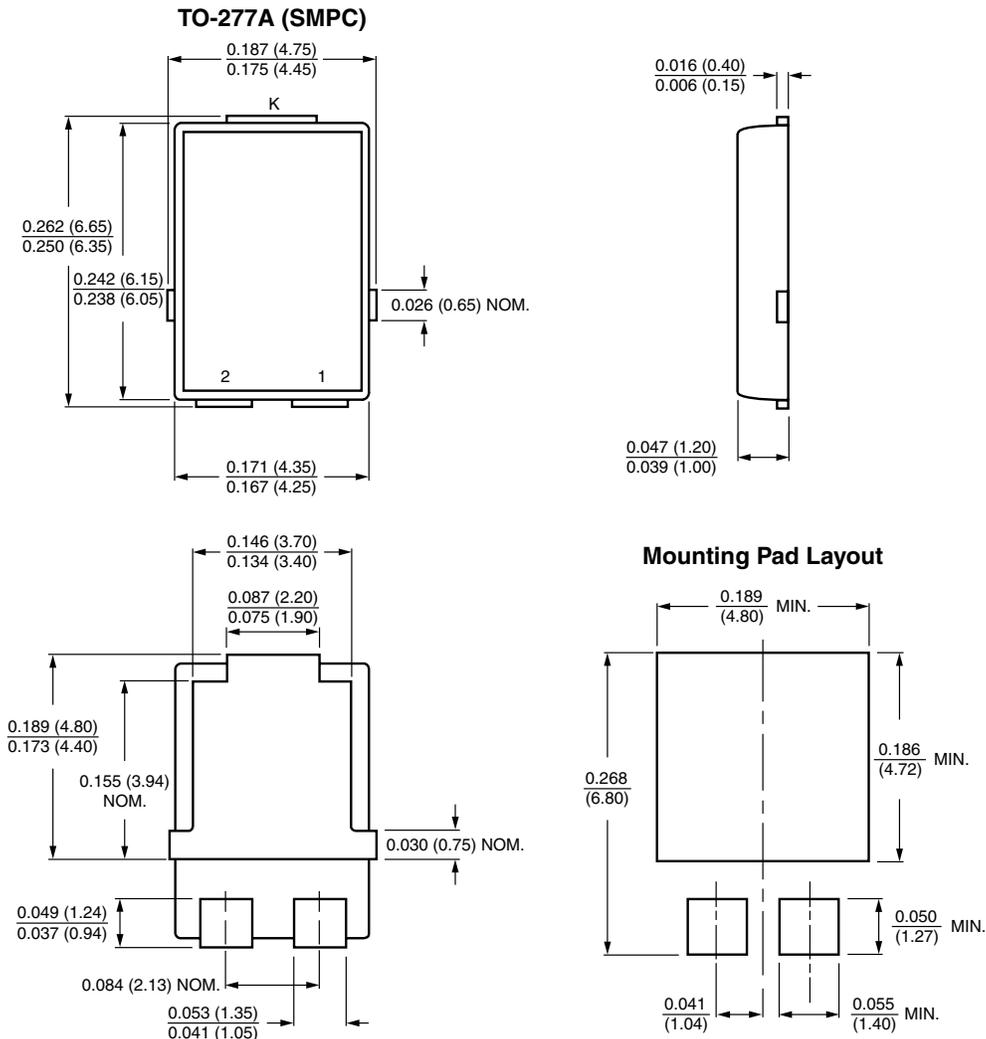
Figure 6. Typical Transient Thermal Impedance

# SS10P3 & SS10P4

Vishay General Semiconductor



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC TO-277A



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