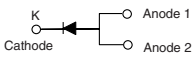
# High Current Density Surface Mount Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F$ = 0.466 V at $I_F$ = 4 A

**TMBS® eSMP™ Series**


**TO-277A (SMPC)**




## FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Trench MOS Schottky Technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020C, LF max peak of 260 °C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

| MAJOR RATINGS AND CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 8 A |
| $V_{RRM}$ | 100 V |
| $I_{FSM}$ | 150 A |
| $E_{AS}$ | 100 mJ |
| $V_F$ at $I_F$ = 8 A | 0.582 V |
| $T_j$ max. | 150 °C |

## TYPICAL APPLICATIONS

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

## MECHANICAL DATA

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

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

| **MAXIMUM RATINGS** ($T_A$ = 25 °C unless otherwise noted) | | | |
|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **V8P10** | **UNIT** |
| Device marking code | | V810 | |
| Maximum repetitive peak reverse voltage | $V_{RRM}$ | 100 | V |
| Maximum average forward rectified current (see Fig. 1) | $I_{F(AV)}$ | 8 | 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 A, L = 50 mH, $T_j$ = 25 °C | $E_{AS}$ | 100 | mJ |
| Voltage rate of change (rated $V_R$) | dv/dt | 10000 | V/µs |
| Operating junction and storage temperature range | $T_J$, $T_{STG}$ | - 40 to + 150 | °C |

| **ELECTRICAL CHARACTERISTICS** ($T_A$ = 25 °C unless otherwise noted) | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITIONS** | **SYMBOL** | **TYP** | **MAX.** | **UNIT** |
| Breakdown voltage | at $I_R$ = 1.0 mA $T_j$ = 25 °C | $V_{(BR)}$ | 100 (minimum) | - | V |
| Instantaneous forward voltage (1) | at $I_F$ = 4 A<br>at $I_F$ = 8 A $T_j$ = 25 °C | $V_F$ | 0.522<br>0.643 | -<br>0.68 | V |
| | at $I_F$ = 4 A<br>at $I_F$ = 8 A $T_j$ = 125 °C | | 0.466<br>0.582 | -<br>0.62 | |
| Reverse current (1) | at $V_R$ = 70 V $T_j$ = 25 °C<br>$T_j$ = 125 °C | $I_R$ | 4.7<br>3.0 | -<br>- | µA<br>mA |
| | at $V_R$ = 100 V $T_j$ = 25 °C<br>$T_j$ = 125 °C | | 14.5<br>7.0 | 70<br>15 | µA<br>mA |

**Note:**

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

| **THERMAL CHARACTERISTICS** ($T_A$ = 25 °C unless otherwise noted) | | | |
|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **V8P10** | **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** |
| V8P10-E3/86A | 0.10 | 86A | 1500 | 7" Diameter Plastic Tape & Reel |
| V8P10-E3/87A | 0.10 | 87A | 6500 | 13" Diameter Plastic Tape & Reel |
| V8P10HE3/86A (1) | 0.10 | 86A | 1500 | 7" Diameter Plastic Tape & Reel |
| V8P10HE3/87A (1) | 0.10 | 87A | 6500 | 13" Diameter Plastic Tape & Reel |

**Note:**

(1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

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

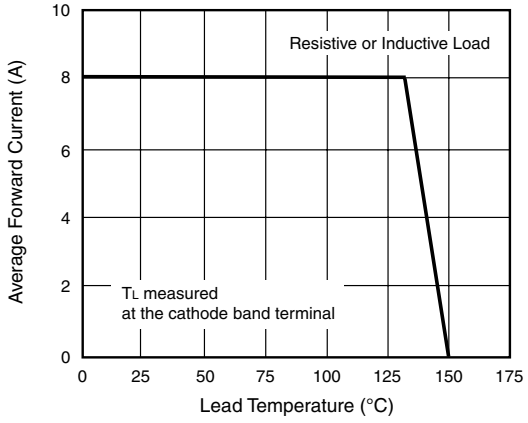



Figure 1. Maximum Forward Current Derating Curve

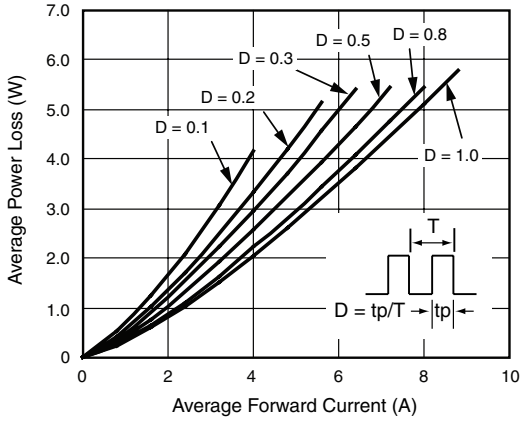



Figure 2. Forward Power Loss Characteristics

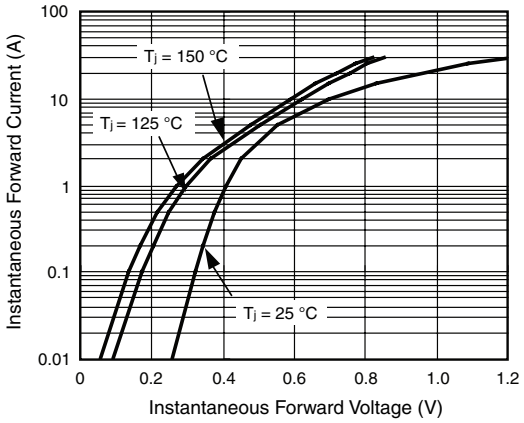



Figure 3. Typical Instantaneous Forward Characteristics

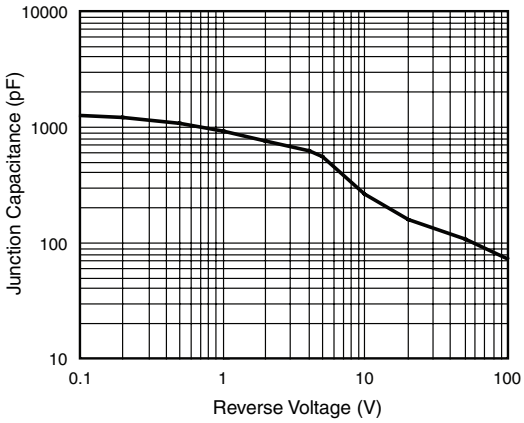



Figure 5. Typical Junction Capacitance

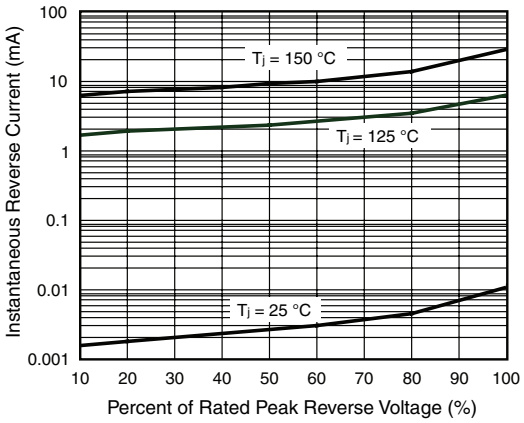



Figure 4. Typical Reverse Characteristics

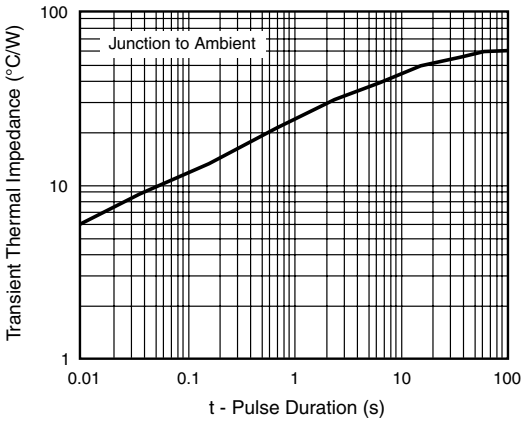



Figure 6. Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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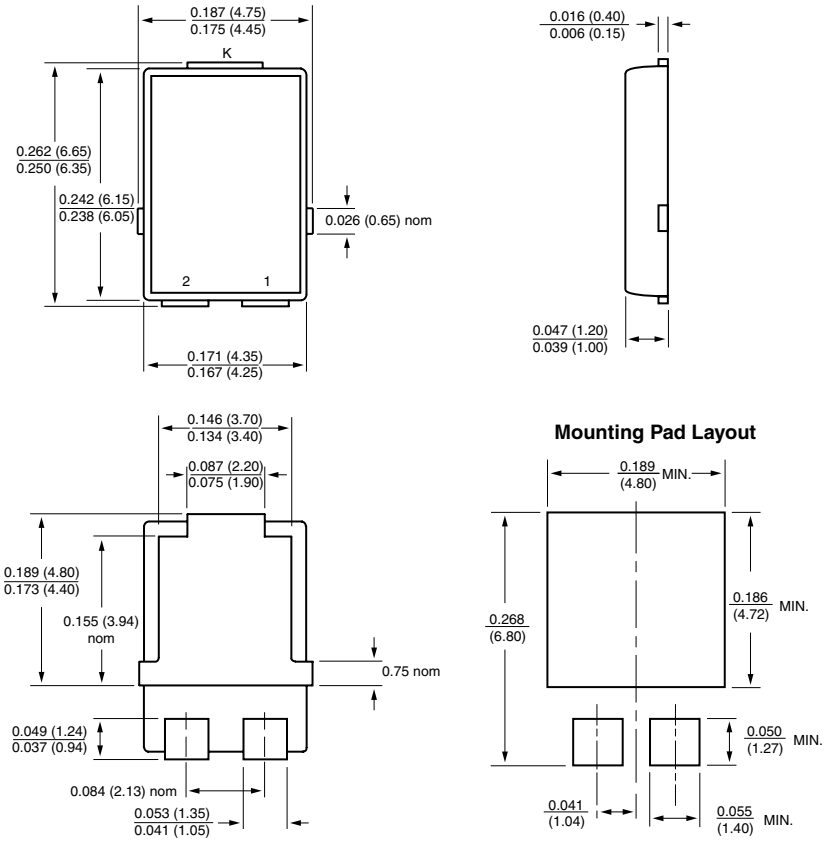


Conform to JEDEC TO-277A

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