

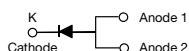
High Current Density Surface Mount Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.60\text{ V}$ at $I_F = 4\text{ A}$

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-020, LF maximum peak of 260 °C
- 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

TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, DC/DC converters and polarity protection applications.

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

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

M3 suffix meets JESD 201 class 1A whisker test

PRIMARY CHARACTERISTICS

| | |
|-------------------------------|--------|
| $I_{F(AV)}$ | 8.0 A |
| V_{RRM} | 200 V |
| I_{FSM} | 150 A |
| V_F at $I_F = 8.0\text{ A}$ | 0.68 V |
| T_J max. | 150 °C |

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)

| PARAMETER | SYMBOL | V8P20 | UNIT |
|---|----------------|---------------|------------|
| Device marking code | | V820 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 200 | V |
| Maximum average forward rectified current (fig. 1) | $I_F^{(1)}$ | 8.0 | A |
| | $I_F^{(2)}$ | 2.2 | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 150 | A |
| Voltage rate of change (rated V_R) | dV/dt | 10 000 | V/ μ s |
| Operating junction and storage temperature range | T_J, T_{STG} | - 40 to + 150 | °C |

Notes

(1) Mounted on 30 mm x 30 mm pad areas aluminum PCB

(2) Free air, mounted on recommended copper pad area

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

| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
|-------------------------------|------------------------|-------------------------|-------------------------------|------|------|------|
| Instantaneous forward voltage | I _F = 4 A | T _A = 25 °C | V _F ⁽¹⁾ | 0.80 | - | V |
| | I _F = 8 A | | | 0.95 | 1.40 | |
| | I _F = 4 A | T _A = 125 °C | | 0.60 | - | |
| | I _F = 8 A | | | 0.68 | 0.76 | |
| Reverse current | V _R = 180 V | T _A = 25 °C | I _R ⁽²⁾ | 2.0 | - | μA |
| | | T _A = 125 °C | | 2.1 | - | mA |
| | V _R = 200 V | T _A = 25 °C | | 6.4 | 250 | μA |
| | | T _A = 125 °C | | 3.4 | 20 | mA |

Notes(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: Pulse width $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | V8P20 | UNIT |
|----------------------------|-----------------------|-------|----------------------|
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 80 | $^{\circ}\text{C/W}$ |
| | $R_{\theta JM}^{(2)}$ | 4 | |

Notes(1) Free air, mounted on recommended copper pad area; thermal resistance $R_{\theta JA}$ - junction to ambient(2) Mounted on 30 mm x 30 mm Al PCB; thermal resistance $R_{\theta JM}$ - junction to mount**ORDERING INFORMATION** (Example)

| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|---------------|-----------------|------------------------|---------------|------------------------------------|
| V8P20-M3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| V8P20-M3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |

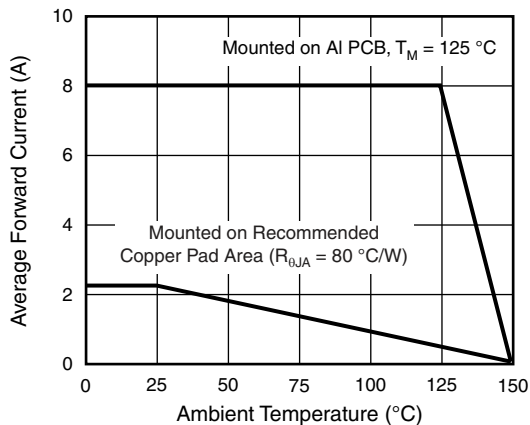
RATINGS AND CHARACTERISTICS CURVES($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

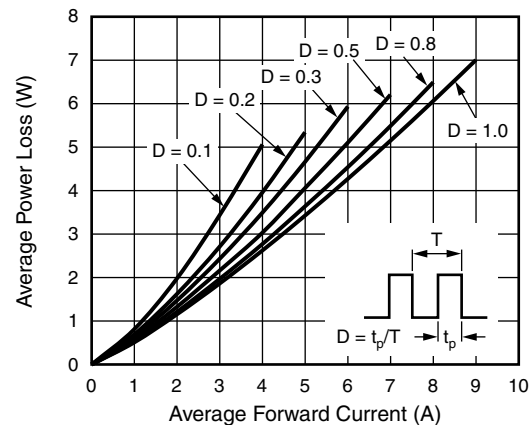


Fig. 2 - Forward Power Loss Characteristics

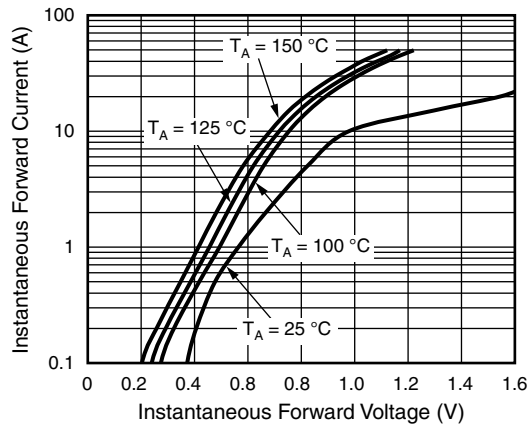


Fig. 3 - Typical Instantaneous Forward Characteristics

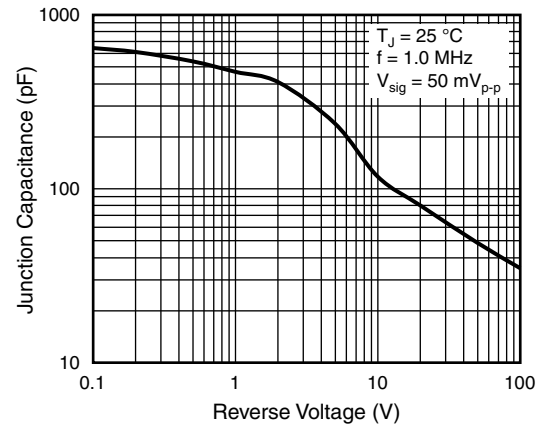


Fig. 5 - Typical Junction Capacitance

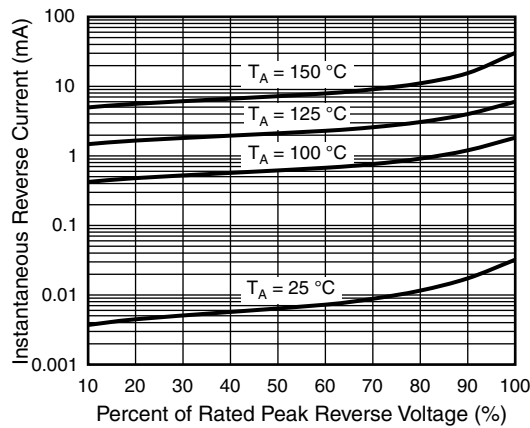


Fig. 4 - Typical Reverse Characteristics

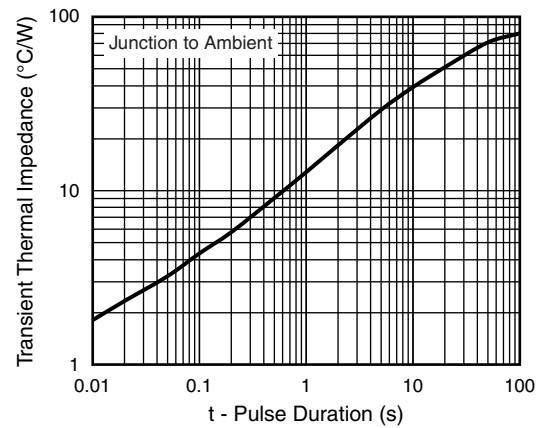
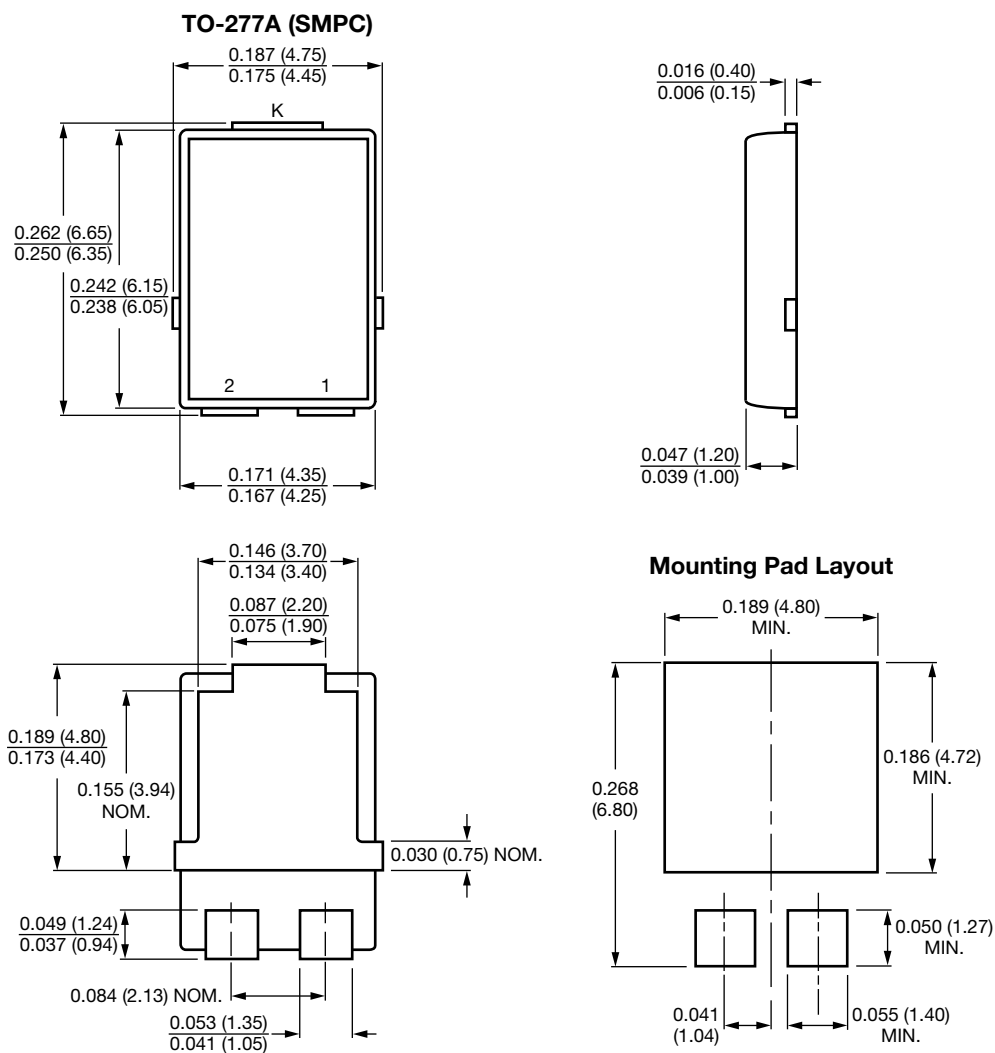


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

Conform to JEDEC TO-277A



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