

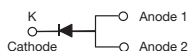
High Current Density Surface Mount Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.31$ V at $I_F = 5$ 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 DC/DC converters, freewheeling, 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 | |
|-------------------------|--------|
| $I_{F(AV)}$ | 15 A |
| V_{RRM} | 45 V |
| I_{FSM} | 210 A |
| V_F at $I_F = 15$ A | 0.42 V |
| T_J max. | 150 °C |

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | |
|---|----------------|---------------|------|
| PARAMETER | SYMBOL | V15P45 | UNIT |
| Device marking code | | V1545 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 45 | V |
| Maximum DC forward current | $I_F^{(1)}$ | 15 | A |
| | $I_F^{(2)}$ | 4.8 | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 210 | A |
| 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 °C unless otherwise noted) | | | | | | |
|--|------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | I _F = 5.0 A | T _A = 25 °C | V _F ⁽¹⁾ | 0.40 | - | V |
| | I _F = 7.5 A | | | 0.45 | - | |
| | I _F = 15 A | | | 0.49 | 0.58 | |
| | I _F = 5.0 A | T _A = 125 °C | | 0.31 | - | |
| | I _F = 7.5 A | | | 0.34 | - | |
| | I _F = 15 A | | | 0.42 | 0.51 | |
| Reverse current | V _R = 45 V | T _A = 25 °C | I _R ⁽²⁾ | - | 1500 | μA |
| | | T _A = 125 °C | | 15 | 50 | mA |

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 | V15P45 | UNIT |
| Typical thermal resistance | R _{θJA} ⁽¹⁾ | 75 | °C/W |
| | R _{θJM} ⁽²⁾ | 4 | |

Notes

- ⁽¹⁾ Free air, mounted on recommended copper pad area; thermal resistance R_{θJA} - junction to ambient
- ⁽²⁾ Mounted on 30 mm x 30 mm aluminum PCB; thermal resistance R_{θJM} - junction to mount

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| V15P45-M3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| V15P45-M3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

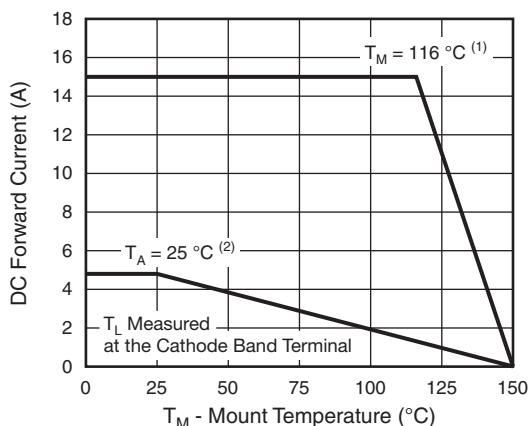


Fig. 1 - Forward Current Derating Curve

Notes

- ⁽¹⁾ Mounted on 30 mm x 30 mm aluminum PCB; T_M measured at the terminal of cathode band (R_{θJM} = 4 °C/W)
- ⁽²⁾ Free air, mounted on recommended copper pad area (R_{θJA} = 75 °C/W)

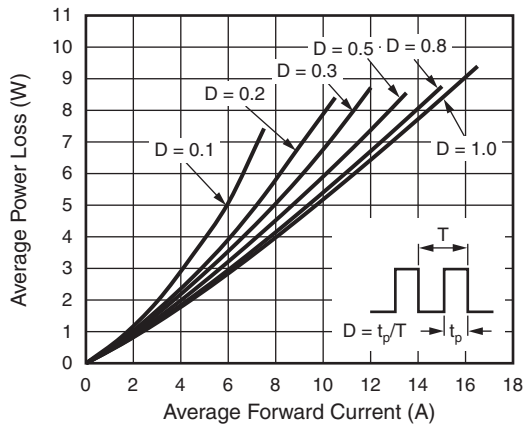


Fig. 2 - Forward Power Loss Characteristics Per Diode

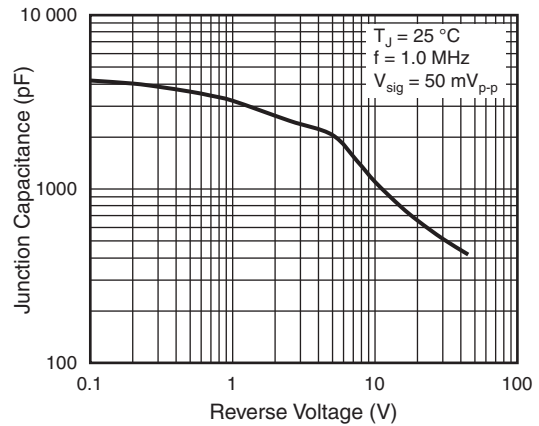


Fig. 5 - Typical Junction Capacitance

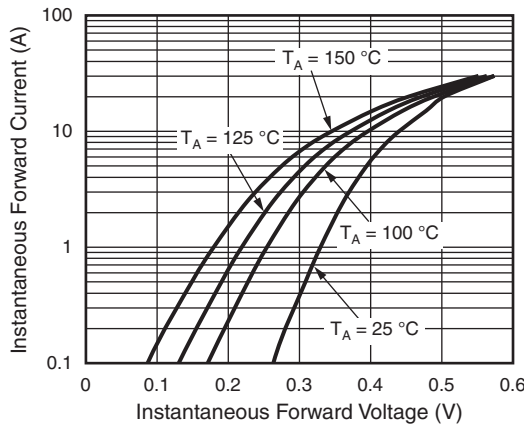


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

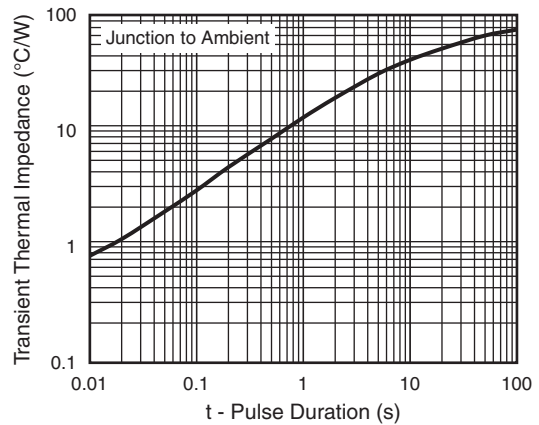


Fig. 6 - Typical Transient Thermal Impedance Per Diode

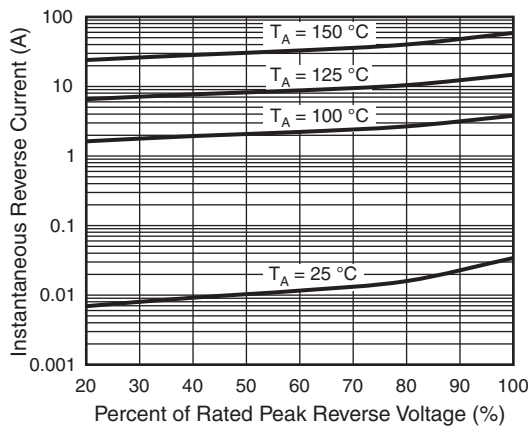
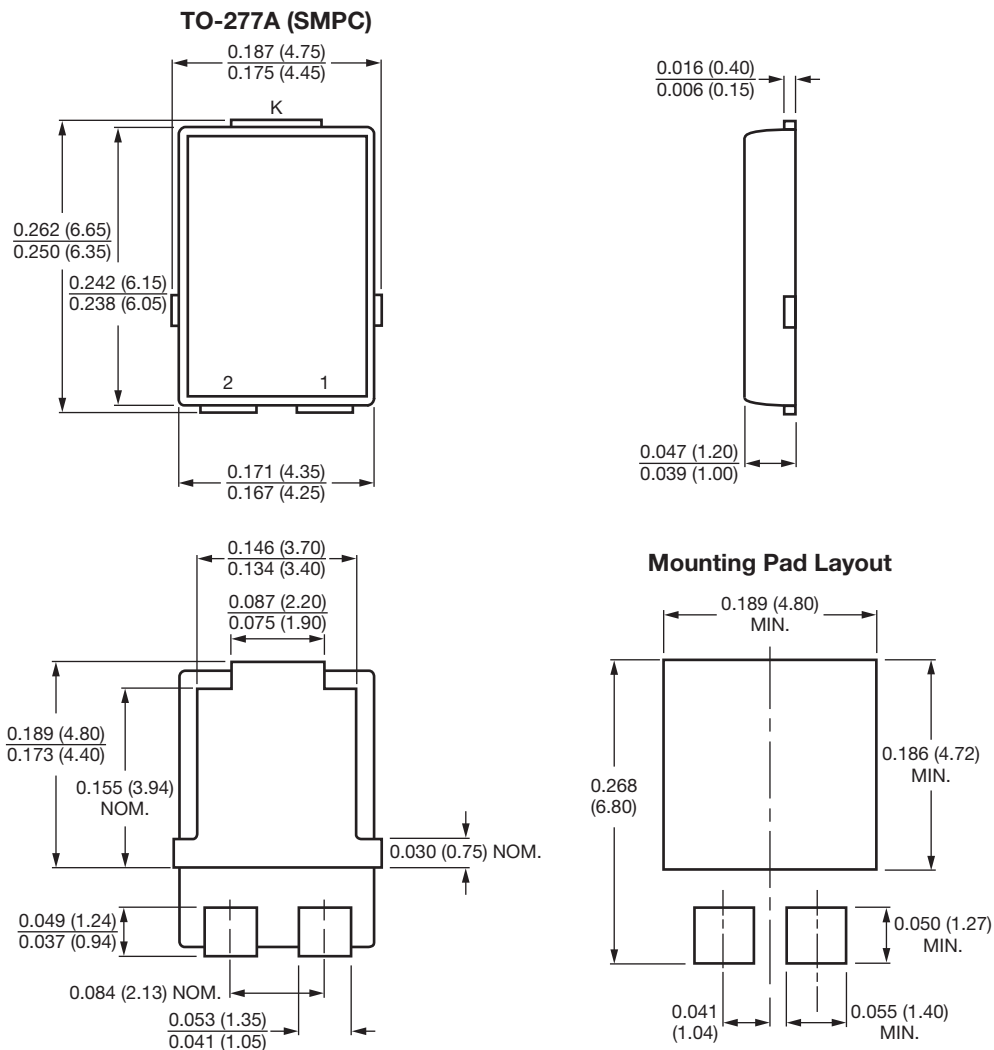


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC TO-277A



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