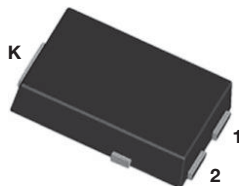


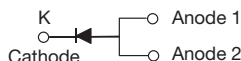
High Current Density Surface Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low $V_F = 0.28\text{ V}$ at $I_F = 5\text{ A}$

eSMP® Series



SMPC (TO-277A)



ADDITIONAL RESOURCES


[3D Models](#)

PRIMARY CHARACTERISTICS

| | |
|------------------------------|----------------|
| $I_{F(AV)}$ | 10 A |
| V_{RRM} | 45 V |
| I_{FSM} | 200 A |
| V_F at $I_F = 10\text{ A}$ | 0.35 V |
| T_J max. | 150 °C |
| Package | SMPC (TO-277A) |
| Circuit configuration | Single |

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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMPC (TO-277A)

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 2 whisker test

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

| PARAMETER | SYMBOL | V10PL45 | UNIT |
|---|----------------|-------------|------|
| Device marking code | | V10L45 | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 45 | V |
| Maximum DC forward current | $I_F^{(1)}$ | 10 | A |
| | $I_F^{(2)}$ | 6.0 | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 200 | |
| Operating junction and storage temperature range (AC mode) | 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 | $I_F = 5.0\text{ A}$ | $V_F^{(1)}$ | 0.39 | - | V |
| | $I_F = 10\text{ A}$ | | 0.44 | 0.52 | |
| | $I_F = 5.0\text{ A}$ | | 0.28 | - | |
| | $I_F = 10\text{ A}$ | | 0.35 | 0.43 | |
| Reverse current | $V_R = 45\text{ V}$ | $I_R^{(2)}$ | - | 5.0 | mA |
| | | | 30 | 75 | |

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 | V10PL45 | UNIT |
| Typical thermal resistance | $R_{\theta JA}^{(1)}$ | 68 | $^{\circ}\text{C/W}$ |
| | $R_{\theta JM}^{(2)}$ | 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 aluminum 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 |
| V10PL45-M3/86A | 0.10 | 86A | 1500 | 7" diameter plastic tape and reel |
| V10PL45-M3/87A | 0.10 | 87A | 6500 | 13" diameter plastic tape and reel |

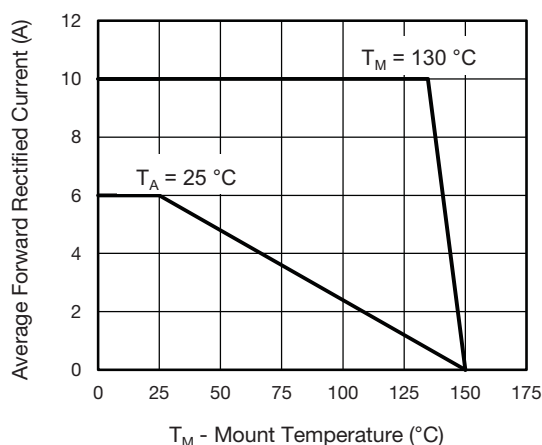
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

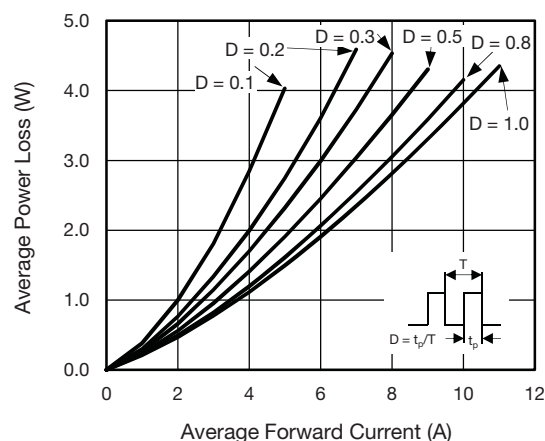


Fig. 2 - Forward Power Loss Characteristics

Notes

(1) Mounted on 30 mm x 30 mm aluminum PCB; T_M measured at the terminal of cathode band ($R_{\theta JM} = 4\text{ }^{\circ}\text{C/W}$)

(2) Free air, mounted on recommended copper pad area ($R_{\theta JA} = 68\text{ }^{\circ}\text{C/W}$)

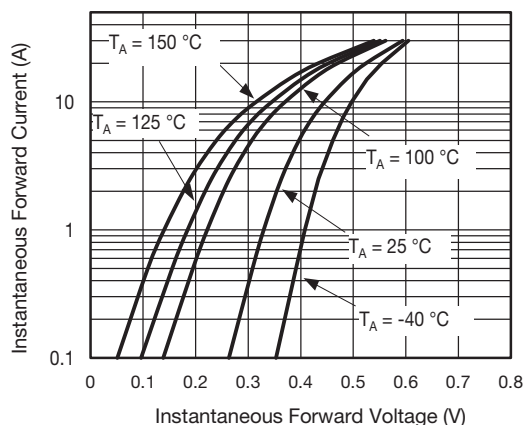


Fig. 3 - Typical Instantaneous Forward Characteristics

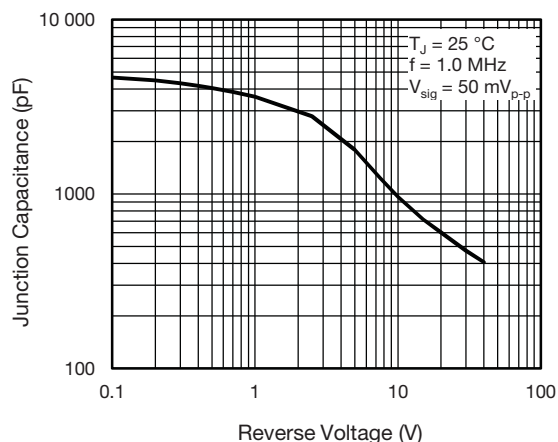


Fig. 5 - Typical Junction Capacitance

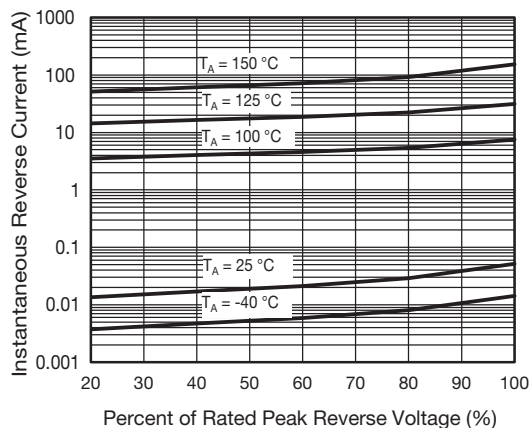


Fig. 4 - Typical Reverse Leakage Characteristics

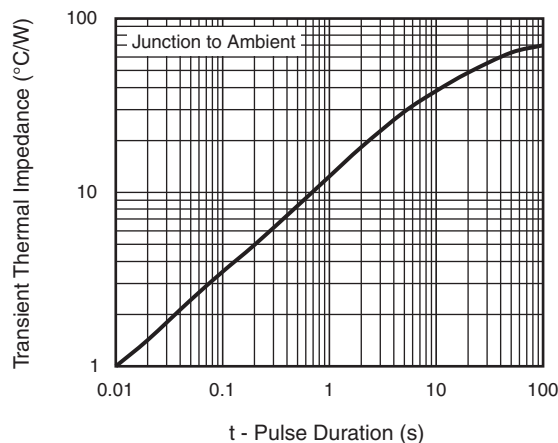
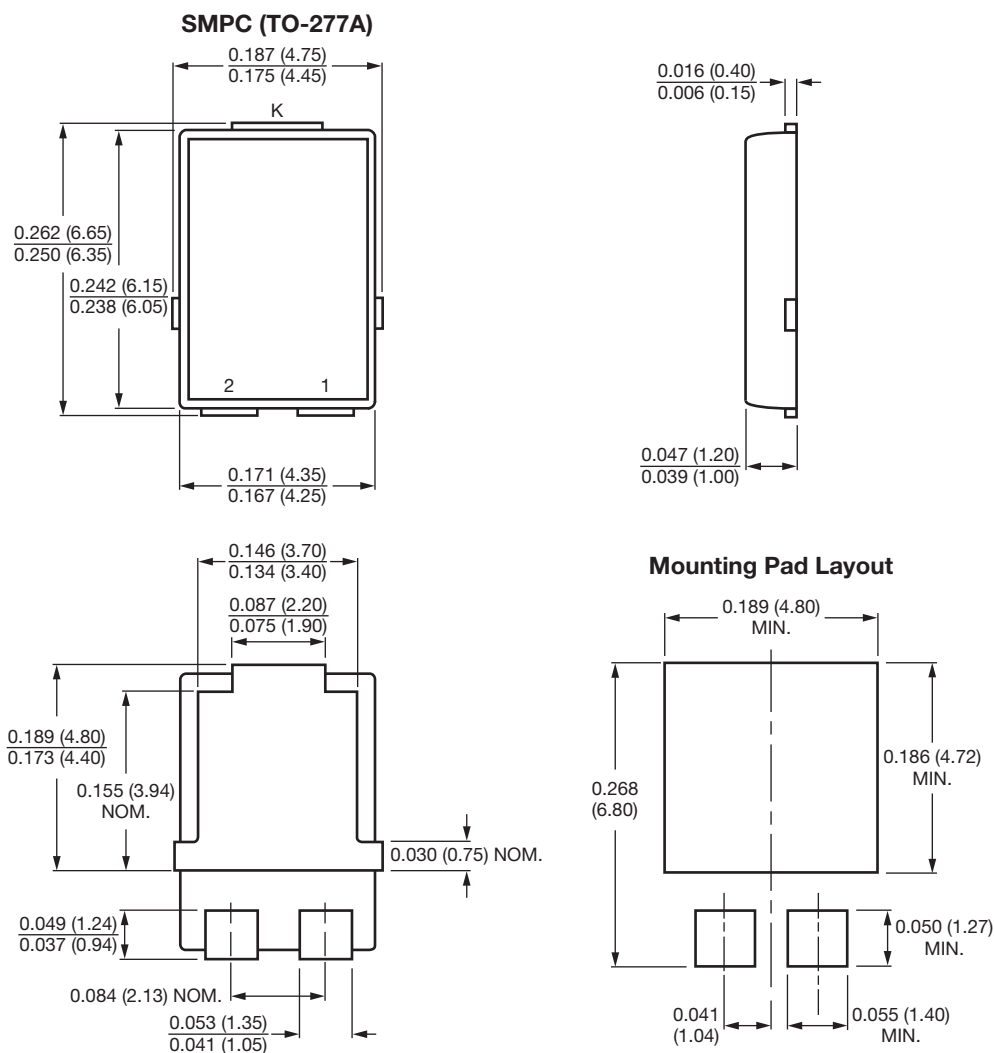


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)




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