

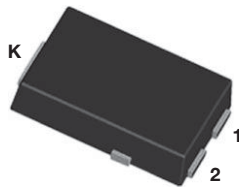
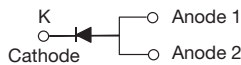


**THE DATASHEET OF  
V10P45HM3\_A/H**



## High Current Density Surface Mount TMBS<sup>®</sup> (Trench MOS Barrier Schottky) Rectifier

 Ultra Low  $V_F = 0.34$  V at  $I_F = 5$  A

**eSMP<sup>®</sup> Series**

**SMPC (TO-277A)**

**ADDITIONAL RESOURCES**

[3D Models](#)

| PRIMARY CHARACTERISTICS |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 10 A           |
| $V_{RRM}$               | 45 V           |
| $I_{FSM}$               | 180 A          |
| $V_F$ at $I_F = 10$ A   | 0.41 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
- AEC-Q101 qualified available  
- Automotive ordering code; base P/NHM3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

 AUTOMOTIVE  
GRADE  
Available

**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

Base P/NHM3\_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified

(“\_X” denotes revision code e.g. A, B,.....)

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

M3 suffix meets JESD 201 class 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                           |                |             |      |
|---|----------------|-------------|------|
| PARAMETER   | SYMBOL         | V10P45      | UNIT |
| Device marking code   |                | V1045       |      |
| Maximum repetitive peak reverse voltage   | $V_{RRM}$      | 45          | V    |
| Maximum DC forward current  | $I_F^{(1)}$    | 10          | A    |
|   | $I_F^{(2)}$    | 4.4         |      |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 180         | 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 ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                      |                                   |             |      |      |               |
|---|----------------------|-----------------------------------|-------------|------|------|---------------|
| PARAMETER   | TEST CONDITIONS      |                                   | SYMBOL      | TYP. | MAX. | UNIT          |
| Instantaneous forward voltage   | $I_F = 5.0\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$  | $V_F^{(1)}$ | 0.42 | -    | V             |
|   | $I_F = 10\text{ A}$  |                                   |             | 0.48 | 0.57 |               |
|   | $I_F = 5.0\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ |             | 0.34 | -    |               |
|   | $I_F = 10\text{ A}$  |                                   |             | 0.41 | 0.50 |               |
| Reverse current   | $V_R = 45\text{ V}$  | $T_A = 25\text{ }^\circ\text{C}$  | $I_R^{(2)}$ | 21   | 800  | $\mu\text{A}$ |
|   |                      | $T_A = 125\text{ }^\circ\text{C}$ |             | 9    | 35   | mA            |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  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                | V10P45 | UNIT               |
| Typical thermal resistance   | $R_{\theta JA}^{(1)}$ | 75     | $^\circ\text{C/W}$ |
|  | $R_{\theta JM}^{(2)}$ | 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                      |
| V10P45-M3/86A                  | 0.10            | 86A                    | 1500          | 7" diameter plastic tape and reel  |
| V10P45-M3/87A                  | 0.10            | 87A                    | 6500          | 13" diameter plastic tape and reel |
| V10P45HM3_A/H <sup>(1)</sup>   | 0.10            | H                      | 1500          | 7" diameter plastic tape and reel  |
| V10P45HM3_A/I <sup>(1)</sup>   | 0.10            | I                      | 6500          | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

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

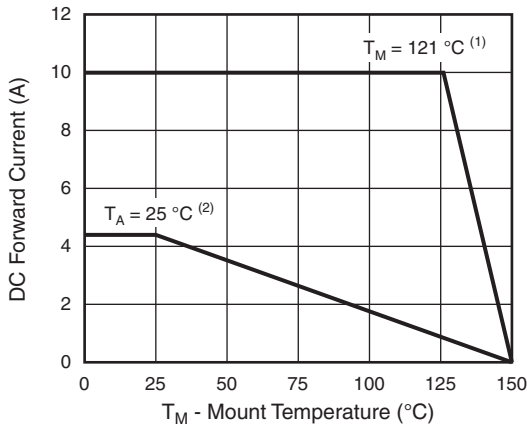


Fig. 1 - Maximum Forward Current Derating Curve

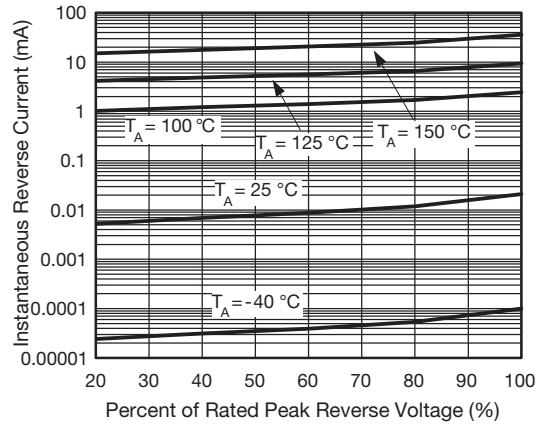


Fig. 4 - Typical Reverse Leakage Characteristics

**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 ( $R_{\theta JA} = 75\text{ }^\circ\text{C/W}$ )

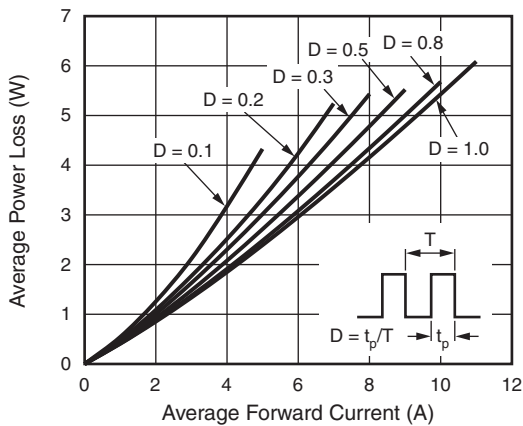


Fig. 2 - Forward Power Loss Characteristics

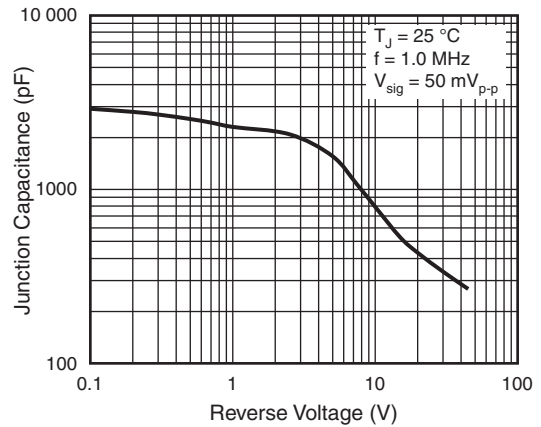


Fig. 5 - Typical Junction Capacitance

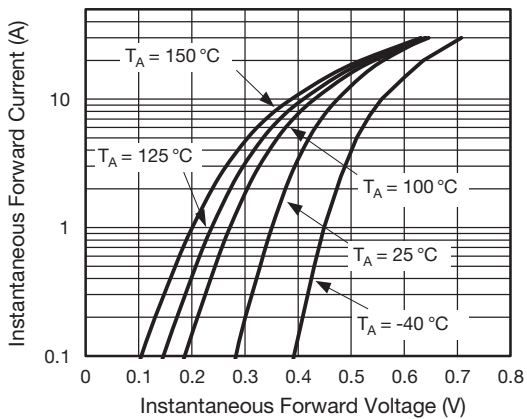


Fig. 3 - Typical Instantaneous Forward Characteristics

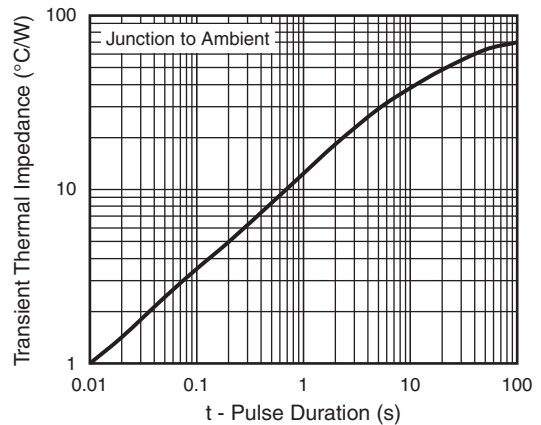
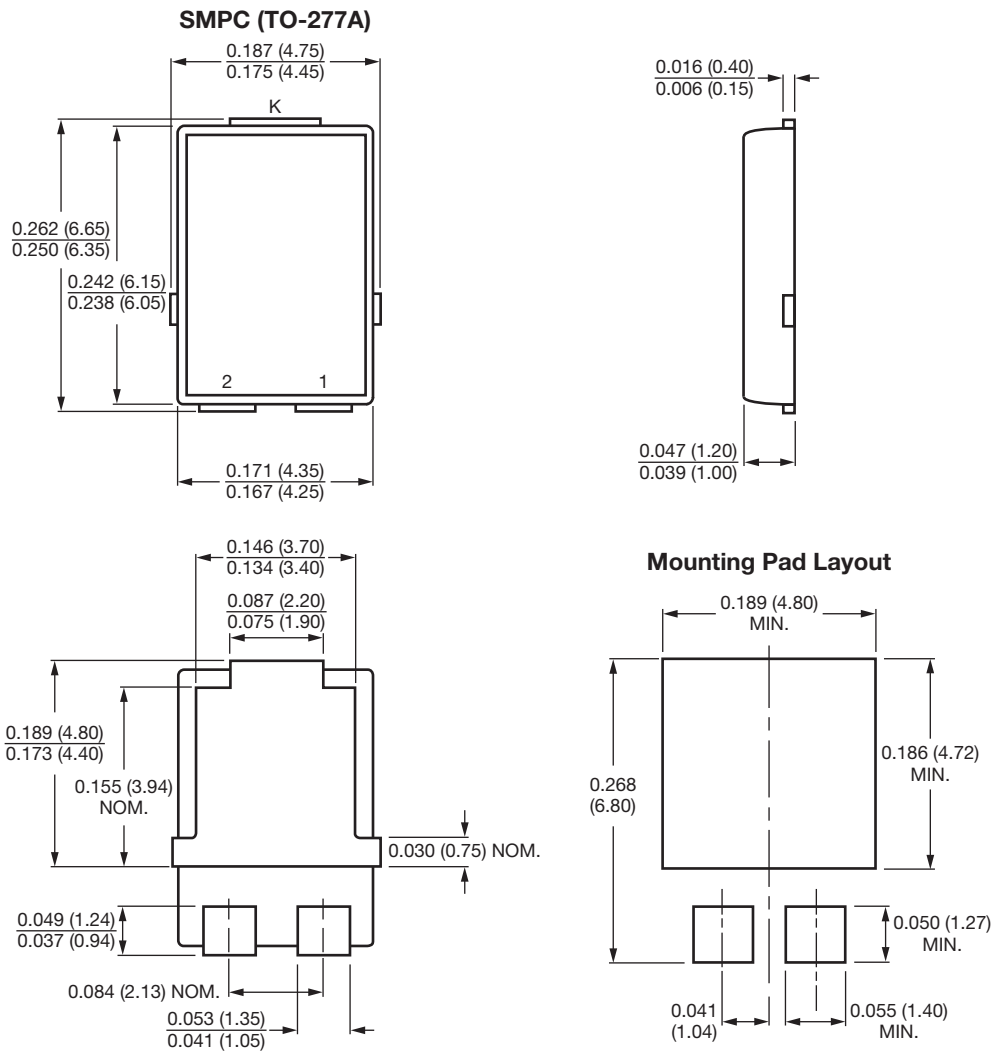


Fig. 6 - Typical Transient Thermal Impedance



**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)



Conform to JEDEC® TO-277A



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