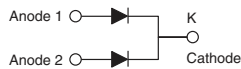
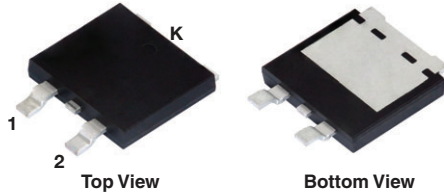


# Dual TMBS<sup>®</sup> (Trench MOS Barrier Schottky) Rectifier

 Ultra Low  $V_F = 0.29\text{ V}$  at  $I_F = 5\text{ A}$ 

## eSMP<sup>®</sup> Series SMPD (TO-263AC)



### FEATURES

- Trench MOS Schottky technology
- Very low profile - typical height of 1.7 mm
- Ideal for automated placement
- 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**

### ADDITIONAL RESOURCES


[3D Models](#)

### TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

### MECHANICAL DATA

**Case:** SMPD (TO-263AC)

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

**Polarity:** as marked

| PRIMARY CHARACTERISTICS      |                 |
|------------------------------|-----------------|
| $I_{F(AV)}$                  | 2 x 15 A        |
| $V_{RRM}$                    | 50 V            |
| $I_{FSM}$                    | 300 A           |
| $V_F$ at $I_F = 15\text{ A}$ | 0.42 V          |
| $T_J$ max.                   | 150 °C          |
| Package                      | SMPD (TO-263AC) |
| Circuit configuration        | Common cathode  |

| MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)                    |                |             |      |
|-----------------------------------------------------------------------------------|----------------|-------------|------|
| PARAMETER                                                                         | SYMBOL         | V30DL50C    | UNIT |
| Maximum repetitive peak reverse voltage                                           | $V_{RRM}$      | 50          | V    |
| Maximum average forward rectified current (fig. 1)                                | $I_{F(AV)}$    | per device  | 30   |
|                                                                                   |                | per diode   | 15   |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 300         | A    |
| Operating junction and storage temperature range                                  | $T_J, T_{STG}$ | -40 to +150 | °C   |

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                      |                                   |             |      |      |               |
|----------------------------------------------------------------------------------------------|----------------------|-----------------------------------|-------------|------|------|---------------|
| PARAMETER                                                                                    | TEST CONDITIONS      | SYMBOL                            | TYP.        | MAX. | UNIT |               |
| Instantaneous forward voltage per diode                                                      | $I_F = 5\text{ A}$   | $T_A = 25\text{ }^\circ\text{C}$  | $V_F^{(1)}$ | 0.39 | -    | V             |
|                                                                                              | $I_F = 7.5\text{ A}$ |                                   |             | 0.42 | -    |               |
|                                                                                              | $I_F = 15\text{ A}$  |                                   |             | 0.49 | 0.57 |               |
|                                                                                              | $I_F = 5\text{ A}$   | $T_A = 125\text{ }^\circ\text{C}$ |             | 0.29 | -    |               |
|                                                                                              | $I_F = 7.5\text{ A}$ |                                   |             | 0.33 | -    |               |
|                                                                                              | $I_F = 15\text{ A}$  |                                   |             | 0.42 | 0.50 |               |
| Reverse current per diode                                                                    | $V_R = 50\text{ V}$  | $T_A = 25\text{ }^\circ\text{C}$  | $I_R^{(2)}$ | -    | 1800 | $\mu\text{A}$ |
|                                                                                              |                      | $T_A = 125\text{ }^\circ\text{C}$ |             | 25   | 60   | $\text{mA}$   |
| Typical junction capacitance                                                                 | 4.0 V, 1 MHz         | $T_A = 25\text{ }^\circ\text{C}$  | $C_J$       | 2800 | -    | $\text{pF}$   |

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
 (2) Pulse test: pulse width  $\leq 40\text{ ms}$

| <b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) |            |                          |      |                    |
|-------------------------------------------------------------------------------------------|------------|--------------------------|------|--------------------|
| PARAMETER                                                                                 | SYMBOL     | V30DL50C                 | UNIT |                    |
| Typical thermal resistance                                                                | per diode  | $R_{\theta JC}$          | 1.7  | $^\circ\text{C/W}$ |
|                                                                                           | per device |                          | 0.9  |                    |
|                                                                                           | per device | $R_{\theta JA}^{(1)(2)}$ | 45   |                    |

**Notes**

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$   
 (2) Free air, without heatsink

| <b>ORDERING INFORMATION</b> (Example) |                 |                        |               |                                    |
|---------------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N                         | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
| V30DL50C-M3/I                         | 0.55            | I                      | 2000/reel     | 13" diameter plastic tape and reel |
| V30DL50CHM3_A/I <sup>(1)</sup>        | 0.55            | I                      | 2000/reel     | 13" diameter plastic tape and reel |

**Note**

- (1) AEC-Q101 qualified

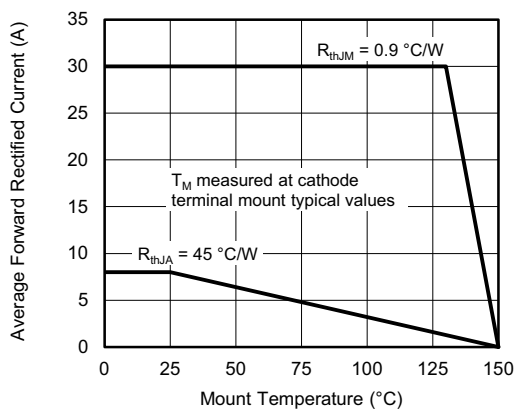
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

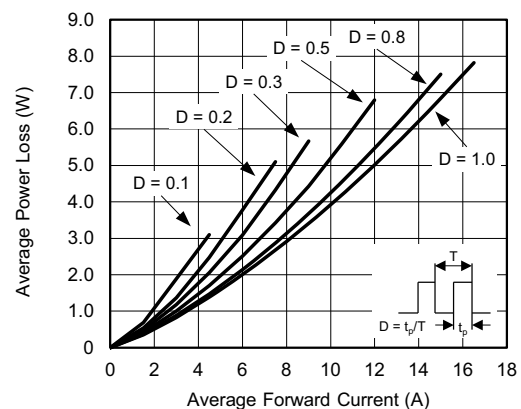


Fig. 2 - Forward Power Loss Characteristics Per Diode

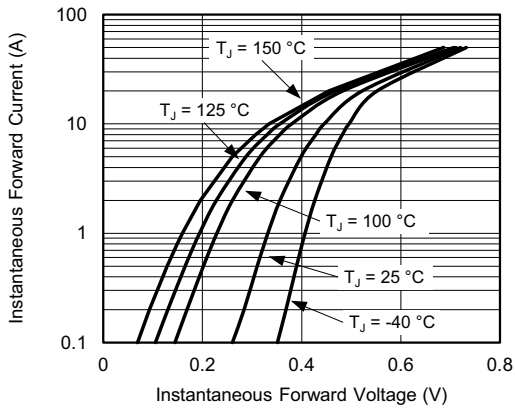


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

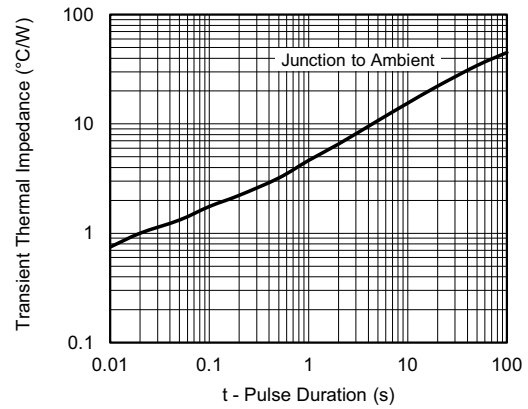


Fig. 6 - Typical Transient Thermal Impedance Per Device

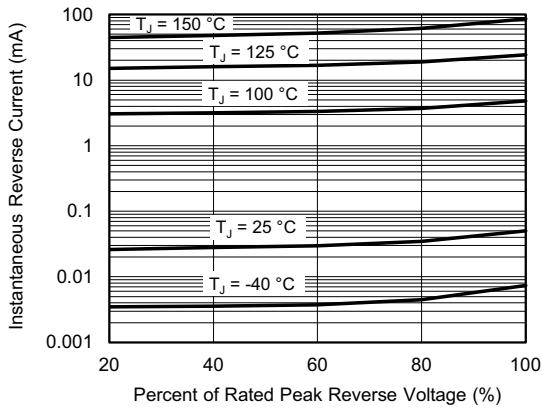


Fig. 4 - Typical Reverse Characteristics Per Diode

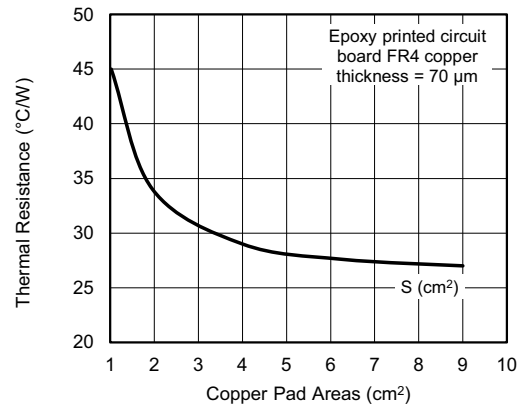


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

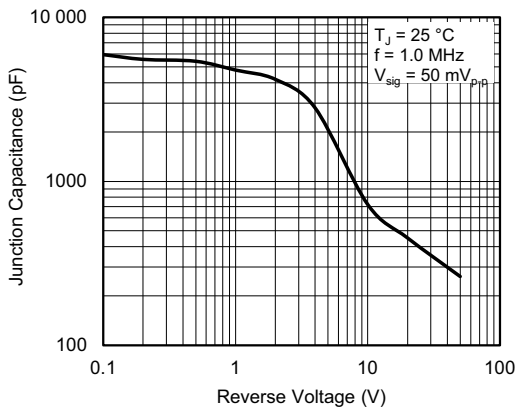
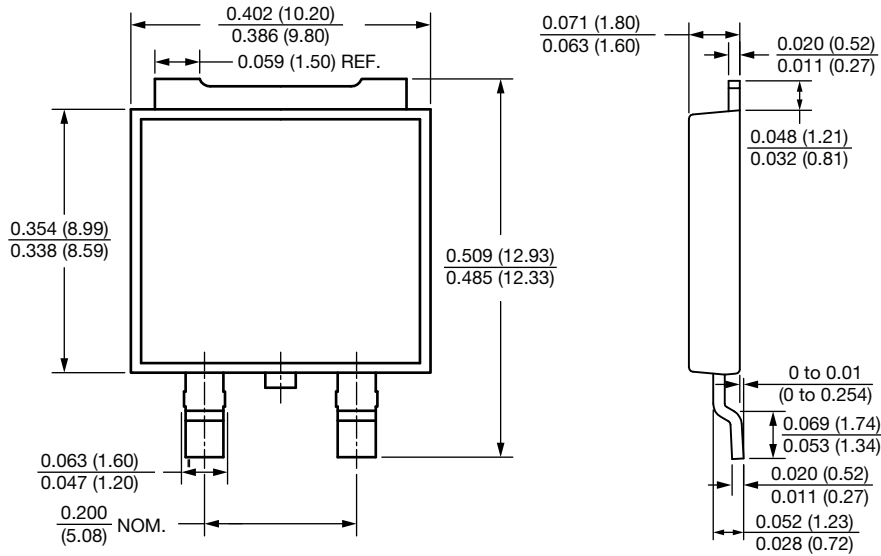


Fig. 5 - Typical Junction Capacitance Per Diode

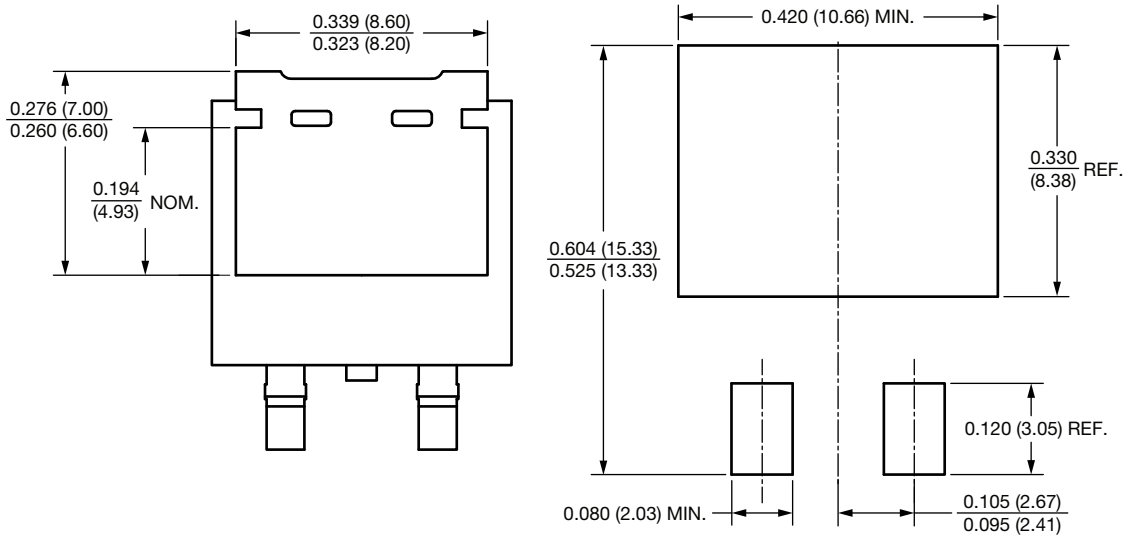


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPD (TO-263AC)



Mounting Pad Layout





## Disclaimer

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