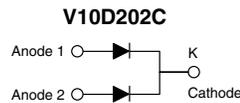
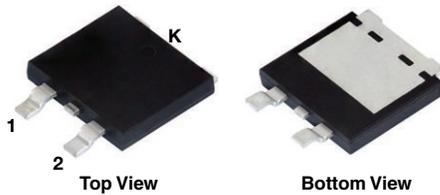


Dual High-Voltage TMBS[®] (Trench MOS Barrier Schottky) Rectifier

eSMP[®] Series SMPD (TO-263AC)



LINKS TO ADDITIONAL RESOURCES



FEATURES

- Trench MOS Schottky technology generation 2
- 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



RoHS
COMPLIANT
HALOGEN
FREE

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

Base P/NHM3_X - halogen-free, RoHS-compliant, and

AEC-Q101 qualified

("_X" denotes revision code e.g. A, B,....) qualified

(X_denotes revision code e.g. A, B, ...)

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

M3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: As marked

| PRIMARY CHARACTERISTICS | |
|--|-----------------|
| $I_{F(AV)}$ | 2 x 5 A |
| V_{RRM} | 200 V |
| I_{FSM} | 100 A |
| V_F at $I_F = 5.0$ A ($T_A = 125$ °C) | 0.67 V |
| T_J max. | 175 °C |
| Package | SMPD (TO-263AC) |
| Circuit configuration | Common cathode |

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | |
|--|----------------|-------------|------------|
| PARAMETER | SYMBOL | V10D202C | UNIT |
| Maximum repetitive peak reverse voltage | V_{RRM} | 200 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | per device | 10 |
| | | per diode | 5 |
| Maximum DC reverse voltage | V_{DC} | 160 | V |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 100 | 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 +175 | °C |

| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | | |
|--|----------------------|-----------------------------------|-------------|------|------|---------------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage per diode | $I_F = 2.5\text{ A}$ | $T_A = 25\text{ }^\circ\text{C}$ | $V_F^{(1)}$ | 0.75 | - | V |
| | $I_F = 5\text{ A}$ | | | 0.82 | 0.9 | |
| | $I_F = 2.5\text{ A}$ | $T_A = 125\text{ }^\circ\text{C}$ | | 0.6 | - | |
| | $I_F = 5\text{ A}$ | | | 0.67 | 0.74 | |
| Reverse current at rated V_R per diode | $V_R = 160\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | $I_R^{(2)}$ | 0.4 | - | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 0.5 | - | mA |
| | $V_R = 200\text{ V}$ | $T_A = 25\text{ }^\circ\text{C}$ | | - | 50 | μA |
| | | $T_A = 125\text{ }^\circ\text{C}$ | | 1.3 | 5 | mA |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
 (2) Pulse test: Pulse width $\leq 5\text{ ms}$

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | |
|---|------------|--------------------------|----------|--------------------|
| PARAMETER | | SYMBOL | V10D202C | UNIT |
| Typical thermal resistance | per diode | $R_{\theta JC}$ | 3.5 | $^\circ\text{C/W}$ |
| | per device | | 2.5 | |
| | per device | $R_{\theta JA}^{(1)(2)}$ | 58 | |

Notes

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

| ORDERING INFORMATION (Example) | | | | |
|---------------------------------------|-----------------|--------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| V10D202C-M3/I | 0.55 | I | 2000/reel | 13" diameter plastic tape and reel |
| V10D202CHM3_B/I ⁽¹⁾ | 0.55 | I | 2000/reel | 13" diameter plastic tape and reel |

Note

- (1) AEC-Q101 qualified

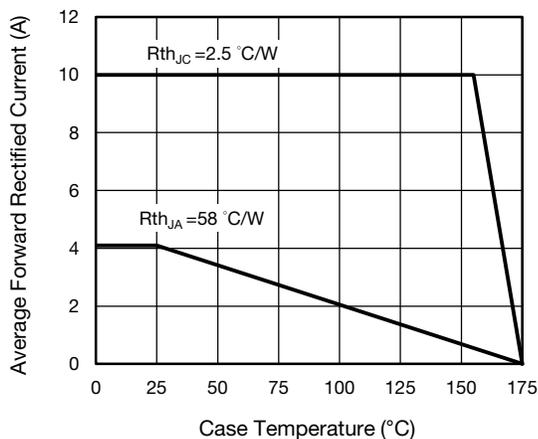
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

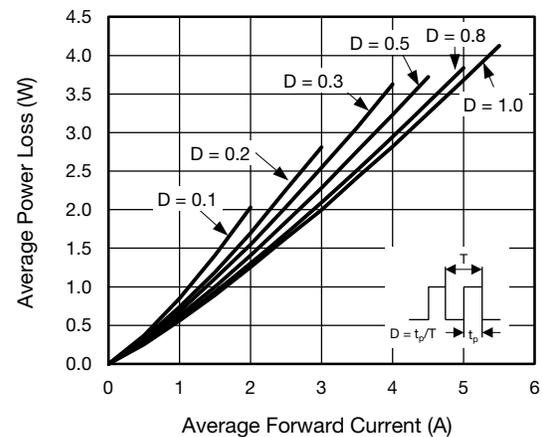


Fig. 2 - Forward Power Loss Characteristics

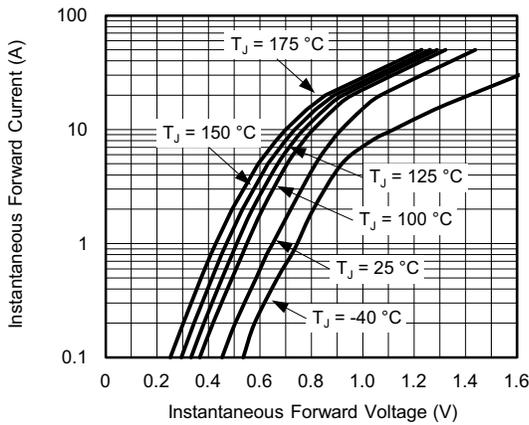


Fig. 3 - Typical Instantaneous Forward Characteristics

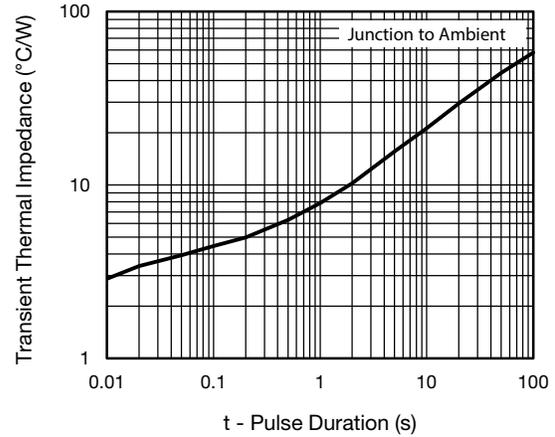


Fig. 6 - Typical Transient Thermal Impedance

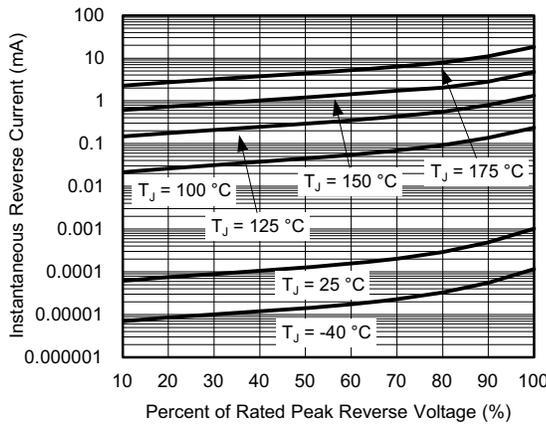


Fig. 4 - Typical Reverse Characteristics

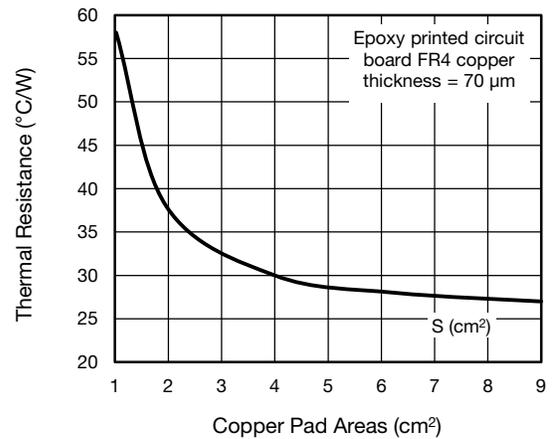


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

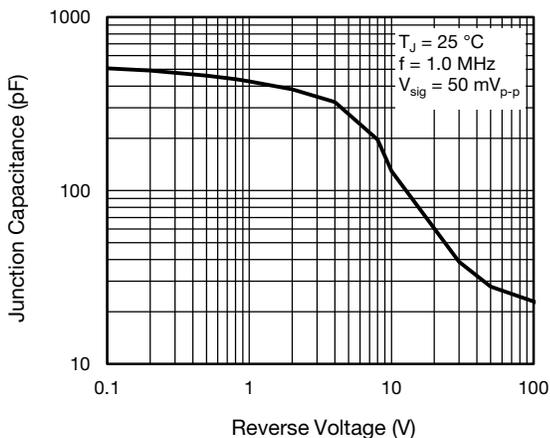
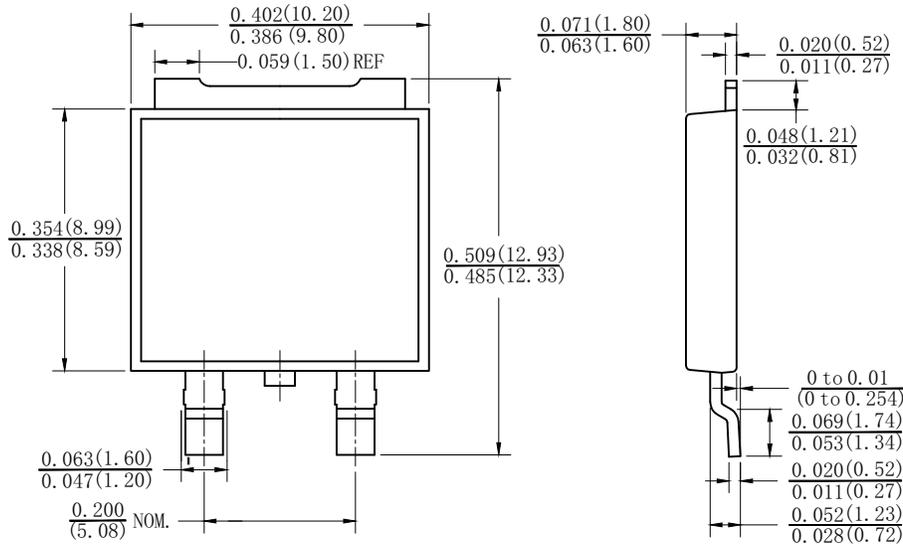


Fig. 5 - Typical Junction Capacitance

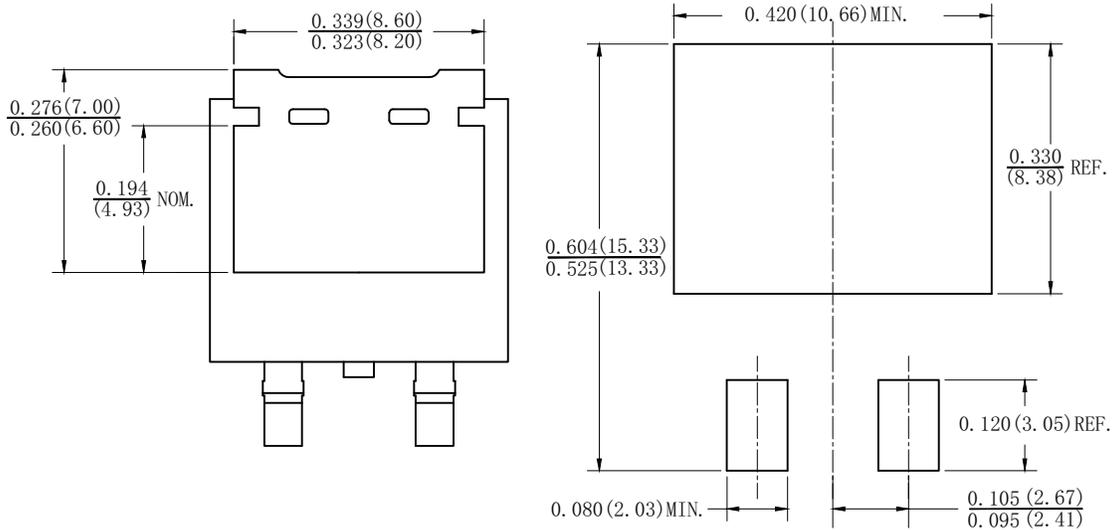


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPD (TO-263AC)



Mounting Pad Layout





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