AUTOMOTIVE GRADE

Available

COMPLIANT

HALOGEN FREE

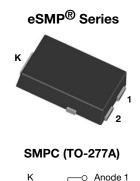


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Vishay General Semiconductor

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

Ultra Low $V_F = 0.60 \text{ V}$ at $I_F = 5 \text{ A}$



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 <u>www.vishay.com/doc?99912</u>

ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | | | | |
|--|----------------|--|--|--|
| I _{F(AV)} | 10 A | | | |
| V_{RRM} | 150 V | | | |
| I _{FSM} | 180 A | | | |
| V _F at I _F = 10 A (125 °C) | 0.66 V | | | |
| T _J max. | 150 °C | | | |
| Package | SMPC (TO-277A) | | | |
| Circuit configuration | Single | | | |

TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, DC/DC converters, 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 - halogen-free, RoHS-compliant and AEC-Q101 qualified

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

| MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted) | | | | |
|---|-----------------------------------|-------------|------|--|
| PARAMETER | SYMBOL | V10P15 | UNIT | |
| Device marking code | | V1015 | | |
| Maximum repetitive peak reverse voltage | V _{RRM} | 150 | V | |
| Maximum DC forward current | I _{F(AV)} ⁽¹⁾ | 10 | А | |
| | I _{F(AV)} (2) | 3 | | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I _{FSM} | 180 | А | |
| 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 pad area



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| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|---|------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | I _F = 5 A | T _A = 25 °C | | 0.75 | - | V |
| | I _F = 10 A | | V _F ⁽¹⁾ | 1.00 | 1.08 | |
| | I _F = 5 A | T _A = 125 °C | | 0.60 | - | |
| | I _F = 10 A | | 1A = 125 C | 0.66 | 0.72 | |
| Reverse current | V _R = 100 V | T _A = 25 °C | | 0.01 | - | |
| | | T _A = 125 °C | I _R ⁽²⁾ | 2.0 | - | mA |
| | V _R = 150 V | T _A = 25 °C | | - | 0.20 | IIIA |
| | VR = 130 V | T _A = 125 °C | | 4 | 14 | |

Notes

 $^{(1)}$ Pulse test: 300 μ s pulse width, 1 % duty cycle

(2) Pulse test: Pulse width \leq 40 ms

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise specified) | | | | |
|---|-----------------------|--------|------|--|
| PARAMETER | SYMBOL | V10P15 | UNIT | |
| Typical thermal registance | R ₀ JA (1) | 75 | °C/W | |
| Typical thermal resistance | R _{0JM} (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 pad areas aluminum PCB, thermal resistance $R_{\theta JM}$ - junction to mount

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|-----------------|--------------|---------------|------------------------------------|--|
| PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE | |
| V10P15-M3/H | 0.10 | Н | 1500 | 7" diameter plastic tape and reel | |
| V10P15-M3/I | 0.10 | I | 6500 | 13" diameter plastic tape and reel | |
| V10P15HM3/H (1) | 0.10 | Н | 1500 | 7" diameter plastic tape and reel | |
| V10P15HM3/I ⁽¹⁾ | 0.10 | I | 6500 | 13" diameter plastic tape and reel | |

Note

(1) AEC-Q101 qualified



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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise specified)

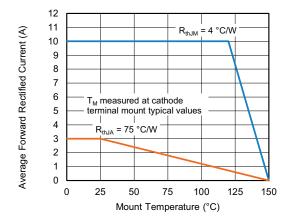


Fig. 1 - Maximum Forward Current Derating Curve

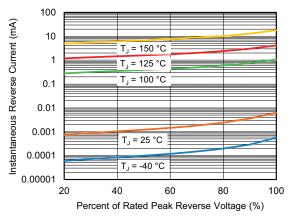


Fig. 4 - Typical Reverse Characteristics

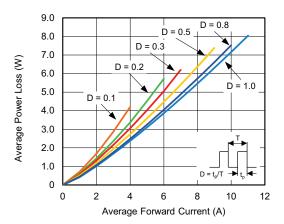


Fig. 2 - Forward Power Loss Characteristics

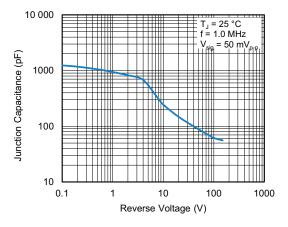


Fig. 5 - Typical Junction Capacitance

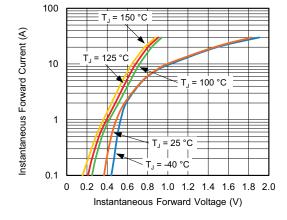


Fig. 3 - Typical Instantaneous Forward Characteristics

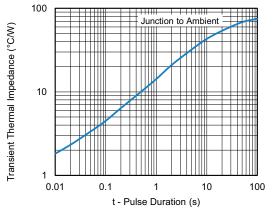
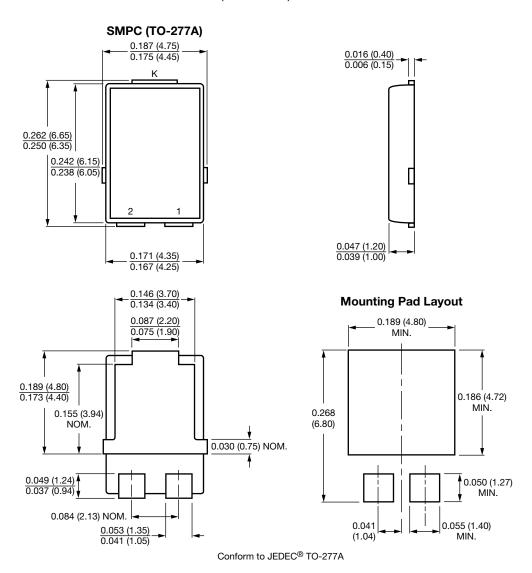


Fig. 6 - Typical Transient Thermal Impedance



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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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