V8PM10

Vishay General Semiconductor

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

Ultra Low $V_F = 0.50$ V at $I_F = 4$ A



www.vishay.com

SMPC (TO-277A)

| K | 0 | Anode 1 |
|-----|---|---------|
| O K | | Anode 2 |

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DESIGN SUPPORT TOOLS



| PRIMARY CHARACTERISTICS | | | |
|---|----------------|--|--|
| I _{F(AV)} | 8 A | | |
| V _{RRM} | 100 V | | |
| I _{FSM} | 140 A | | |
| V _F at I _F = 8 A (125 °C) | 0.60 V | | |
| T _J max. | 175 °C | | |
| Package | SMPC (TO-277A) | | |
| Circuit configuration | Single | | |

FEATURES

- Very low profile typical height of 1.1 mm
- 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

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 meet JESD 201 class 2 whisker test

| MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted) | | | | |
|--|-----------------------------------|-------------|------|--|
| PARAMETER | SYMBOL | V8PM10 | UNIT | |
| Device marking code | | 8M10 | | |
| Maximum repetitive peak reverse voltage | V _{RRM} | 100 | V | |
| Maximum DC forward current | I _{F(AV)} ⁽¹⁾ | 8 | А | |
| | I _{F(AV)} ⁽²⁾ | 3.7 | | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I _{FSM} | 140 | A | |
| Operating junction temperature range | T _J ⁽³⁾ | -40 to +175 | °C | |
| Storage temperature range | T _{STG} | -55 to +175 | °C | |

Notes

(1) Mounted on 30 mm x 30 mm pad areas aluminum PCB

⁽²⁾ Free air. mounted on recommended pad area

⁽³⁾ The heat generated must be less than the thermal conductivity from junction to ambient: $dP_D/dT_1 < 1/R_{0.1A}$

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AUTOMOTIV

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| ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted) | | | | | | | |
|---|------------------------|--|---------------------------------|------|------|------|---|
| PARAMETER | TEST CO | TEST CONDITIONS | | TYP. | MAX. | UNIT | |
| Instantaneous forward voltage | $I_F = 4 A$ | | V _E ⁽¹⁾ | 0.57 | - | V | |
| | I _F = 8 A | | | 0.69 | 0.75 | | |
| | $I_F = 4 A$ | – T _A = 125 °C | | VE | 0.50 | - | v |
| | I _F = 8 A | | 125 C | 0.60 | 0.66 | | |
| Reverse current | $\lambda = 70 \lambda$ | T _A = 25 °C | | 0.01 | - | | |
| | V _R = 70 V | T _A = 125 °C | L (2) | 1.5 | - | | |
| | V 100 V | T _A = 25 °C | — I _R ⁽²⁾ | - | 0.06 | mA | |
| | V _R = 100 V | $V_{\rm R} = 100 \text{ V}$ $T_{\rm A} = 125 \text{ °C}$ | | 3 | 8 | | |
| Typical junction capacitance | 4.0 V, 1 MHz | 4.0 V, 1 MHz | | 800 | - | pF | |

Notes

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

⁽²⁾ Pulse test: pulse width \leq 5 ms

| THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise specified) | | | | |
|--|------------------------------------|----|------|--|
| PARAMETER | SYMBOL V8PM10 | | | |
| Typical thermal resistance | R _{0JA} ⁽¹⁾⁽²⁾ | 75 | °C/W | |
| | R _{0JM} ⁽³⁾ | 4 | C/W | |

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, mounted on recommended PCB, 2 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient

 $^{(3)}$ Units 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) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE | |
| V8PM10-M3/H | 0.10 | Н | 1500 | 7" diameter plastic tape and reel | |
| V8PM10-M3/I | 0.10 | I | 6500 | 13" diameter plastic tape and reel | |
| V8PM10HM3/H ⁽¹⁾ | 0.10 | Н | 1500 | 7" diameter plastic tape and reel | |
| V8PM10HM3/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)

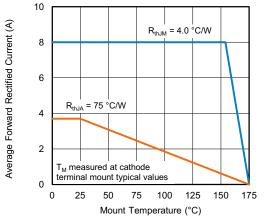


Fig. 1 - Maximum Forward Current Derating Curve

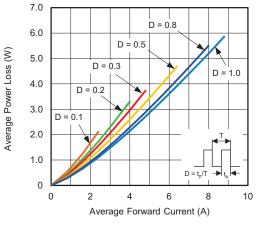


Fig. 2 - Forward Power Loss Characteristics

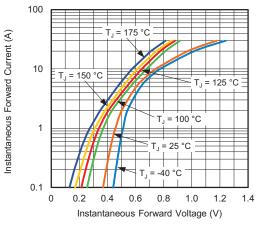
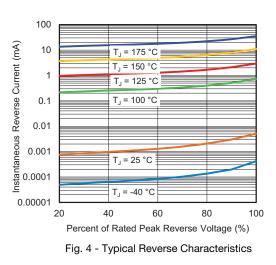


Fig. 3 - Typical Instantaneous Forward Characteristics



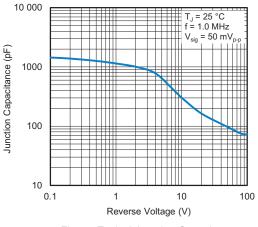
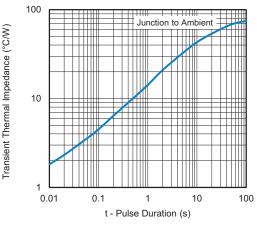
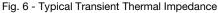


Fig. 5 - Typical Junction Capacitance





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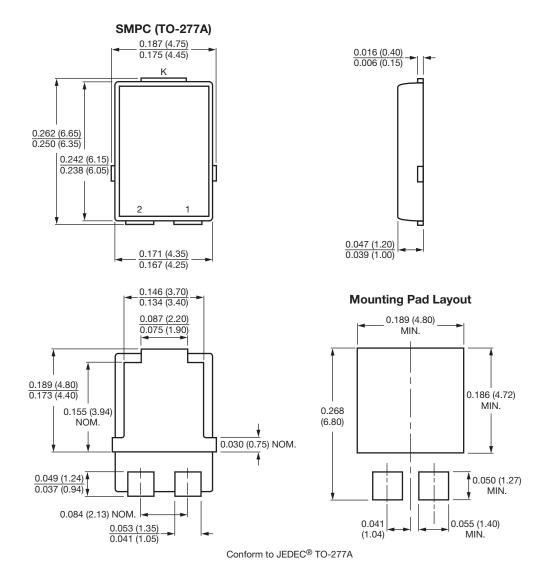
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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