

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

 eSMP[®] Series

SMP (DO-220AA)

Cathode Anode

FEATURES

- Low profile package
- Trench MOS Schottky technology
- Low power losses, high efficiency
- Low forward voltage drop
- 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

 AUTOMOTIVE
GRADE
Available

RoHS
COMPLIANT
HALOGEN
FREE

DESIGN SUPPORT TOOLS AVAILABLE



| PRIMARY CHARACTERISTICS | |
|-------------------------|----------------|
| $I_{F(AV)}$ | 2.0 A |
| V_{RRM} | 45 V |
| I_{FSM} | 50 A |
| V_F at $I_F = 2.0$ A | 0.36 V |
| T_J max. | 150 °C |
| Package | SMP (DO-220AA) |
| Circuit configuration | Single |

TYPICAL APPLICATIONS

For use in low voltage, high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

MECHANICAL DATA

Case: SMP (DO-220AA)

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

Polarity: color band denotes the cathode end

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | |
|---|----------------------|-------------|------|
| PARAMETER | SYMBOL | V2PL45L | UNIT |
| Device marking code | | 2LE | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 45 | V |
| Maximum DC forward current | I_F ⁽¹⁾ | 2 | A |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 50 | A |
| Operating junction and storage temperature range | T_J ⁽²⁾ | -40 to +150 | °C |
| Operating junction and storage temperature range | T_{STG} | -55 to +150 | °C |

Notes

(1) Free air, mounted on recommended copper pad area

(2) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$



| ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | | | |
|--|-----------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | I _F = 1 A | T _A = 25 °C | V _F ⁽¹⁾ | 0.41 | - | V |
| | I _F = 2 A | | | 0.45 | 0.53 | |
| | I _F = 1 A | T _A = 125 °C | | 0.30 | - | |
| | I _F = 2 A | | | 0.36 | 0.44 | |
| Reverse current | V _R = 45 V | T _A = 25 °C | I _R ⁽²⁾ | - | 0.3 | mA |
| | | T _A = 125 °C | | 3.5 | 10 | |
| Typical junction capacitance | 4.0 V, 1 MHz | | C _J | 390 | - | pF |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: pulse width ≤ 5 ms

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise specified) | | | |
|---|---------------------------------|---------|------|
| PARAMETER | SYMBOL | V2PL45L | UNIT |
| Typical thermal resistance | R _{θJA} ⁽¹⁾ | 125 | °C/W |
| | R _{θJM} ⁽²⁾ | 15 | |

Notes

- (3) Free air, mounted on recommended PCB, 1 oz. pad area; thermal resistance R_{θJA} - junction-to-ambient
- (4) Mounted on 10 mm x 10 mm copper pad area PCB; thermal resistance R_{θJM} - junction-to-mount

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| V2PL45L-M3/H | 0.024 | H | 3000 | 7" diameter plastic tape and reel |
| V2PL45L-M3/I | 0.024 | I | 10 000 | 13" diameter plastic tape and reel |
| V2PL45LHM3/H ⁽¹⁾ | 0.024 | H | 3000 | 7" diameter plastic tape and reel |
| V2PL45LHM3/I ⁽¹⁾ | 0.024 | I | 10 000 | 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)

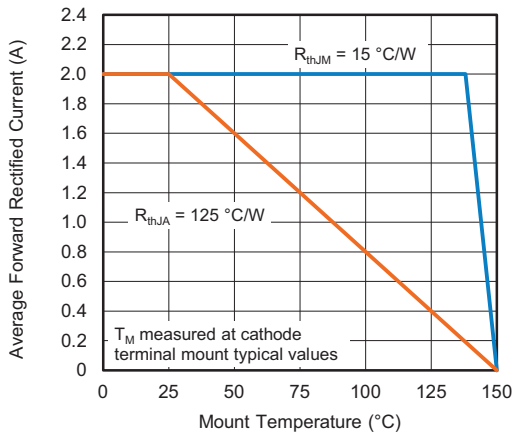


Fig. 1 - Maximum Forward Current Derating Curve

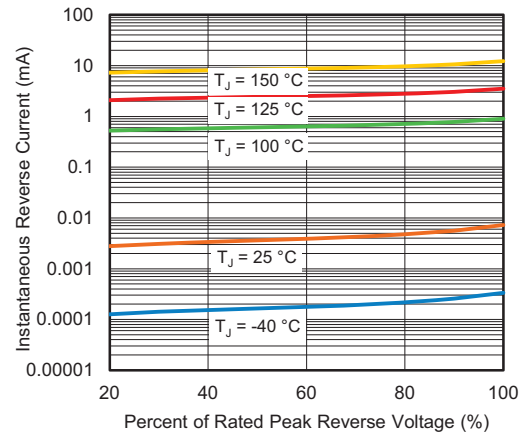


Fig. 4 - Typical Reverse Characteristics

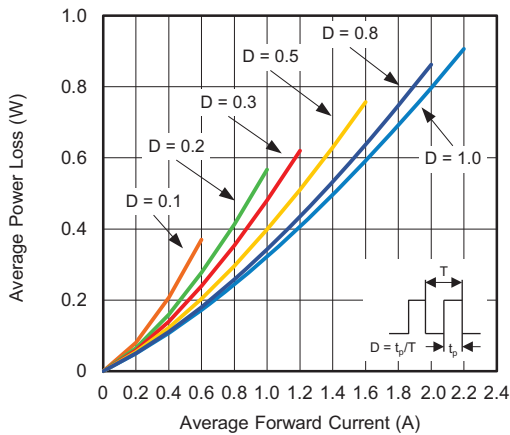


Fig. 2 - Forward Power Loss Characteristics

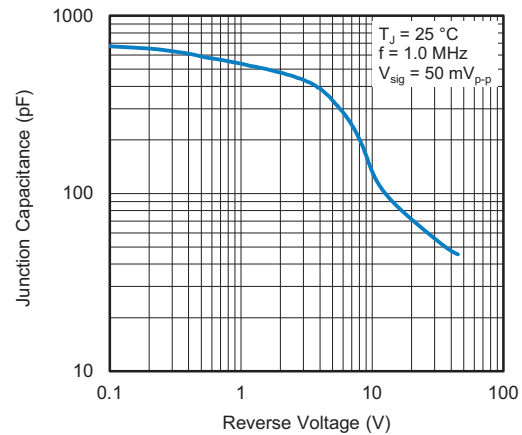


Fig. 5 - Typical Junction Capacitance

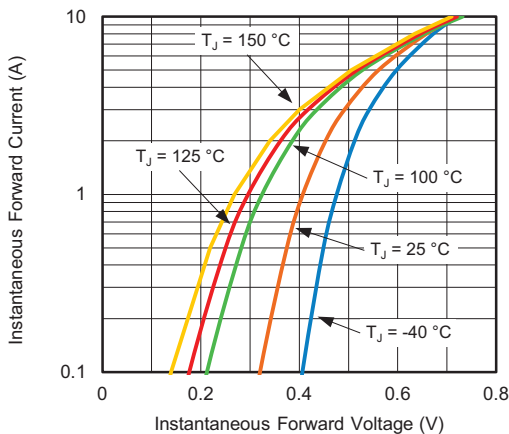


Fig. 3 - Typical Instantaneous Forward Characteristics

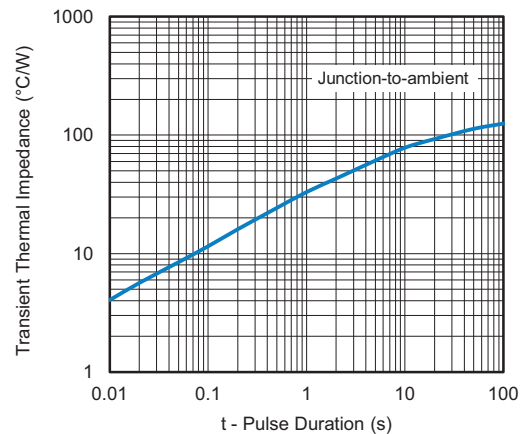
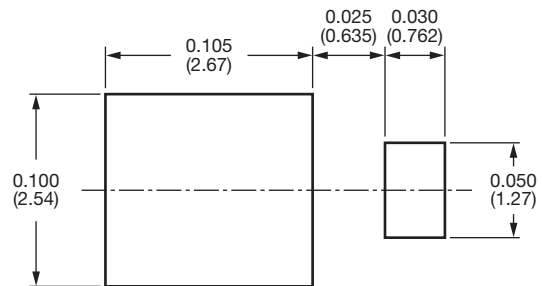
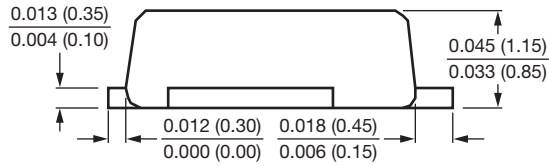
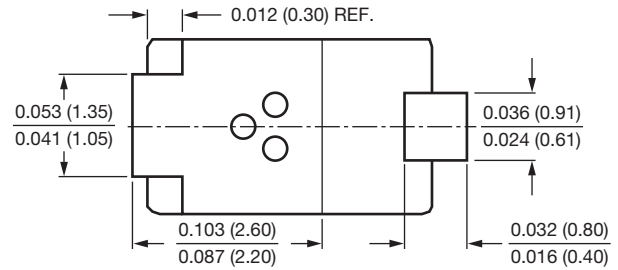
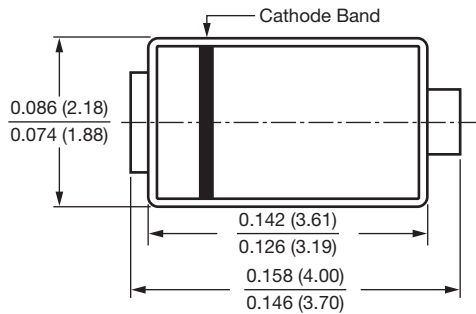


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)





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