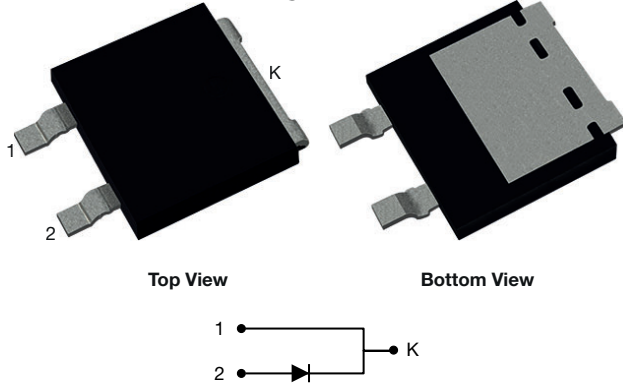


Surface-Mount Low V_F Standard Rectifiers

eSMP® Series SMPD 2L



LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | |
|---|--------------|
| $I_{F(AV)}$ | 12 A |
| V_{RRM} | 400 V, 600 V |
| I_{FSM} | 165 A |
| V_F at $I_F = 12$ A ($T_J = 125$ °C) | 0.83 V |
| T_J max. | 175 °C |
| Package | SMPD 2L |
| Circuit configuration | Single |

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | | |
|---|----------------------|-------------|----------|------|
| PARAMETER | SYMBOL | SE12DTLG | SE12DTLJ | UNIT |
| Device marking code | | SE12DTLG | SE12DTLJ | |
| Maximum repetitive peak reverse voltage | V_{RRM} | 400 | 600 | V |
| Maximum DC forward current | $I_F^{(1)}$ | 12 | | A |
| | $I_F^{(2)}$ | 3.6 | | |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | I_{FSM} | 165 | | A |
| Operating junction and storage temperature range | $T_J, T_{STG}^{(3)}$ | -55 to +175 | | °C |

Notes

- (1) Mounted on infinite heatsink
- (2) Free air, mounted on recommended copper pad area
- (3) The heat generated must be less than the thermal conductivity from junction to ambient $dP_D/dT_J < R_{thJA}$

FEATURES

- Creepage and clearance distance 3.6 mm minimum
- Very low profile - typical height of 1.7 mm
- Low forward voltage drop
- Ideal for automated placement
- Oxide planar chip junction
- AEC-Q101 qualified available
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

 AUTOMOTIVE
GRADE

RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

General purpose, power line polarity protection, in both consumer and automotive on board charger (OBC) applications.

MECHANICAL DATA

Case: SMPD 2L

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

Polarity: as marked



| ELECTRICAL CHARACTERISTICS (T _J = 25 °C unless otherwise noted) | | | | | | |
|--|--|-------------------------|-------------------------------|------|------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | I _F = 6 A | T _J = 25 °C | V _F ⁽¹⁾ | 0.86 | - | V |
| | I _F = 12 A | | | 0.93 | 1 | |
| | I _F = 6 A | T _J = 125 °C | | 0.72 | - | |
| | I _F = 12 A | | | 0.83 | 0.9 | |
| Reverse current | Rated V _R | T _J = 25 °C | I _R ⁽²⁾ | - | 5 | μA |
| | | T _J = 125 °C | | 12 | 70 | |
| Typical reverse recovery time | I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A | | t _{rr} | 300 | - | ns |
| Typical junction capacitance | 4.0 V, 1 MHz | | C _J | 96 | - | pF |

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted) | | | | |
|---|------------------------------------|------|------|------|
| PARAMETER | SYMBOL | TYP. | MAX. | UNIT |
| Typical thermal resistance | R _{θJA} ⁽¹⁾⁽²⁾ | 57 | 71 | °C/W |
| | R _{θJM} ⁽³⁾ | 1.5 | 1.8 | |

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: dP_D/dT_J < 1/R_{θJA}
(2) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance R_{θJA} - junction to ambient to follow JEDEC® 51-2A
(3) Mounted on infinite heatsink thermal resistance R_{θJM} - junction to mount to follow JEDEC® 51-14 transient dual interface test method (TDIM)

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|------------------------|---------------|------------------------------------|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| SE12DTLJ-M3/I | 0.51 | I | 2000/reel | 13" diameter plastic tape and reel |
| SE12DTLJHM3/I ⁽¹⁾ | 0.51 | 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)

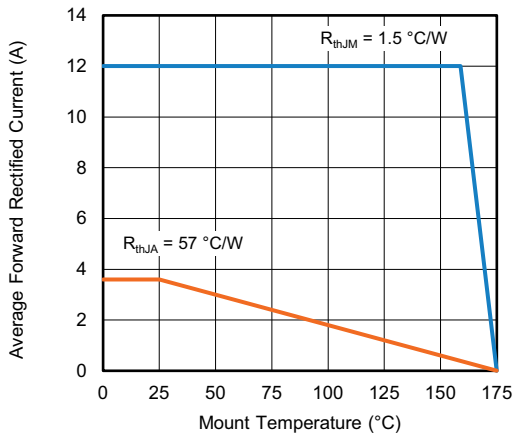


Fig. 1 - Forward Current Derating Curve

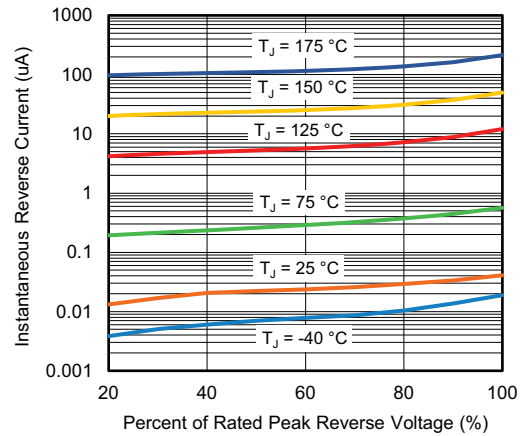


Fig. 4 - Typical Reverse Leakage Characteristics

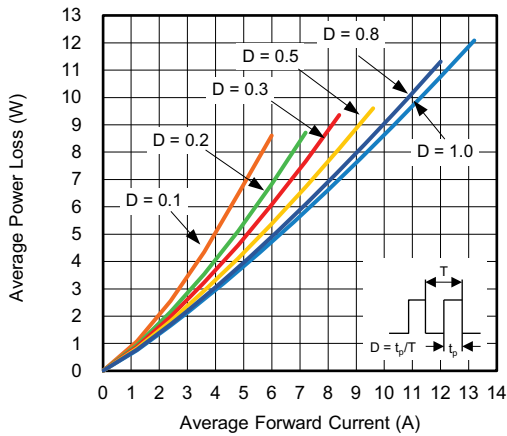


Fig. 2 - Forward Power Loss Characteristics

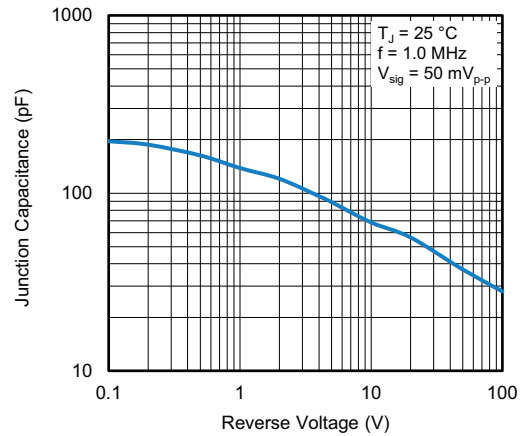


Fig. 5 - Typical Junction Capacitance

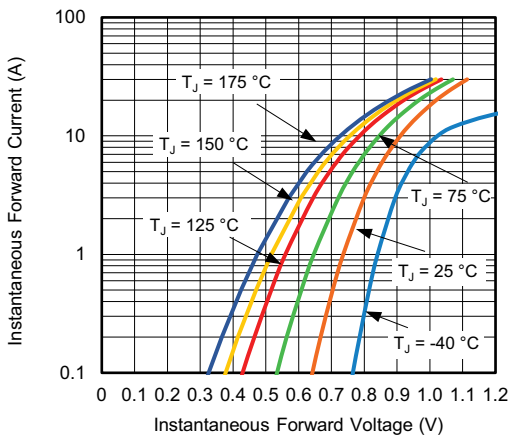


Fig. 3 - Typical Instantaneous Forward Characteristics

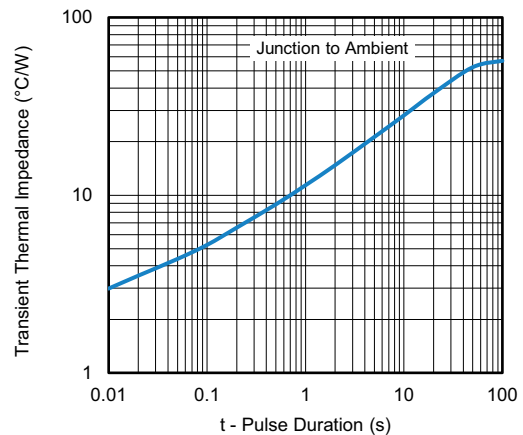
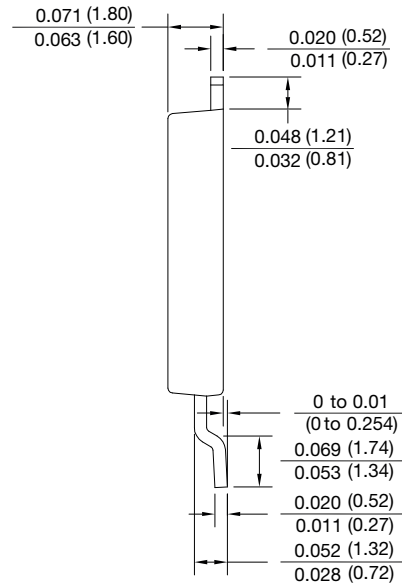
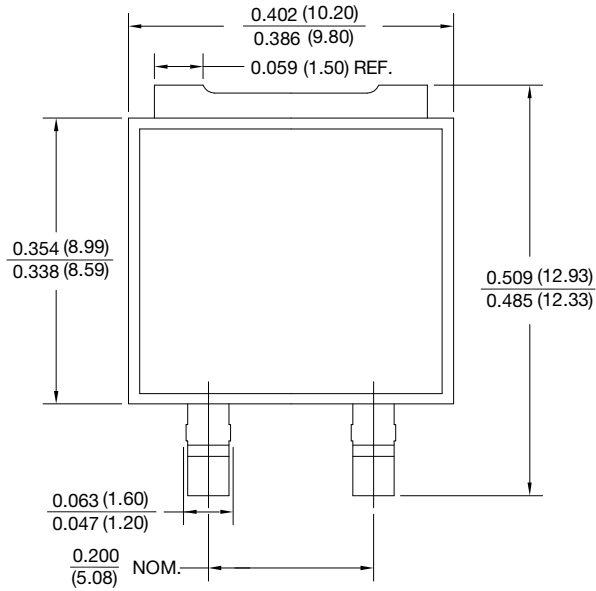


Fig. 6 - Typical Transient Thermal Impedance

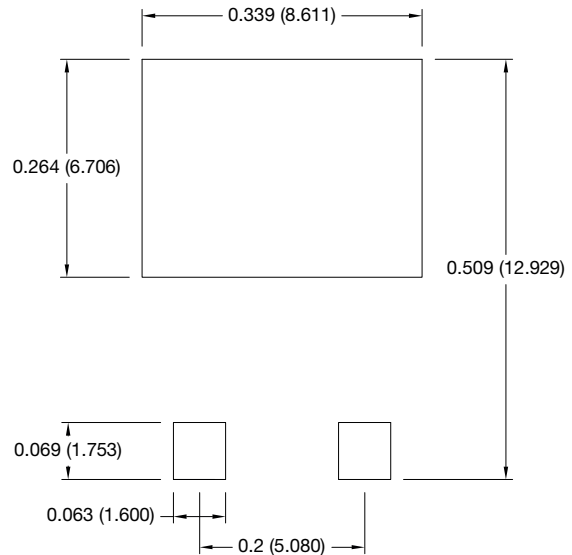
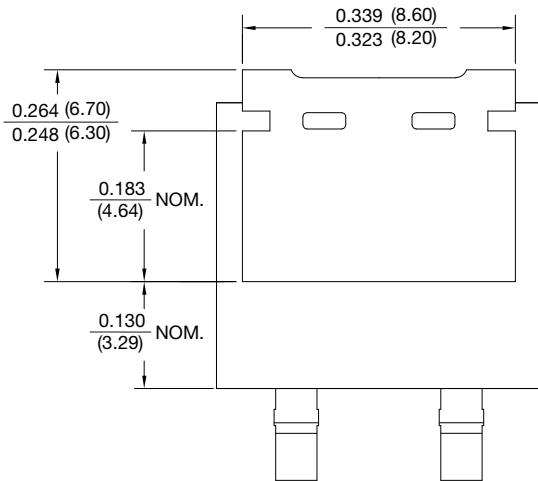


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPD 2L



Mounting Pad Layout



Note

- The suggested mounting pad layout is provided for reference only, as actual pad layouts may vary depending on application



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