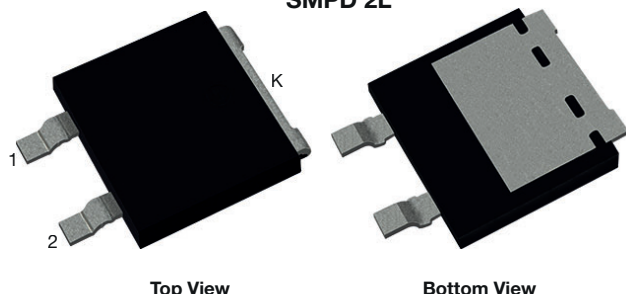


# Surface-Mount High Voltage Rectifier

## eSMP® Series SMPD 2L



## LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS                 |            |
|-----------------------------------------|------------|
| $I_{F(AV)}$                             | 30 A       |
| $V_{RRM}$                               | 1200 V     |
| $I_{FSM}$                               | 300 A      |
| $V_F$ at $I_F = 30$ A ( $T_J = 150$ °C) | 1.01 V     |
| $I_R$                                   | 10 $\mu$ A |
| $T_J$ max.                              | 175 °C     |
| Package                                 | SMPD 2L    |
| Circuit configuration                   | Single     |

## FEATURES

- Creepage and clearance distance 3.6 mm minimum
- Very low profile - typical height of 1.7 mm
- Ideal for automated placement
- Oxide planar chip junction
- Low forward voltage drop
- AEC-Q101 qualified
- 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](http://www.vishay.com/doc?99912)



## TYPICAL APPLICATIONS

- ON Board charger (OBC)
- Charging stations
- Bridge function

## 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 meets JESD 201 class 2 whisker test

**Polarity:** as marked

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                           |                |             |      |
|-----------------------------------------------------------------------------------|----------------|-------------|------|
| PARAMETER                                                                         | SYMBOL         | SE30DT12    | UNIT |
| Device marking code                                                               |                | SE30DT12    | V    |
| Maximum repetitive peak reverse voltage                                           | $V_{RRM}$      | 1200        | V    |
| Maximum DC forward current                                                        | $I_F^{(1)}$    | 30          | A    |
|                                                                                   | $I_F^{(2)}$    | 3.5         |      |
| Peak forward surge current 10 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 300         | A    |
| Operating junction and storage temperature range                                  | $T_J, T_{STG}$ | -55 to +175 | °C   |

## Notes

(1) With heatsink

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



| ELECTRICAL CHARACTERISTICS (T <sub>J</sub> = 25 °C unless otherwise noted) |                                                                          |                         |                               |      |      |      |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------|-------------------------------|------|------|------|
| PARAMETER                                                                  | TEST CONDITIONS                                                          |                         | SYMBOL                        | TYP. | MAX. | UNIT |
| Instantaneous forward voltage                                              | I <sub>F</sub> = 15 A                                                    | T <sub>J</sub> = 25 °C  | V <sub>F</sub> <sup>(1)</sup> | 1.03 | -    | V    |
|                                                                            | I <sub>F</sub> = 30 A                                                    |                         |                               | 1.16 | 1.29 |      |
|                                                                            | I <sub>F</sub> = 15 A                                                    | T <sub>J</sub> = 150 °C |                               | 0.87 | -    |      |
|                                                                            | I <sub>F</sub> = 30 A                                                    |                         |                               | 1.01 | -    |      |
| Reverse current                                                            | Rated V <sub>R</sub>                                                     | T <sub>J</sub> = 25 °C  | I <sub>R</sub> <sup>(2)</sup> | -    | 10   | μA   |
|                                                                            |                                                                          | T <sub>J</sub> = 150 °C |                               | 62   | 300  |      |
| Typical reverse recovery time                                              | I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A |                         | t <sub>rr</sub>               | 3.4  | -    | μs   |
| Typical junction capacitance                                               | 4.0 V, 1 MHz                                                             |                         | C <sub>J</sub>                | 132  | -    | pF   |

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
 (2) Pulse test: Pulse width  $\leq 40\text{ ms}$

| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                          |          |                      |
|--------------------------------------------------------------------------------------|--------------------------|----------|----------------------|
| PARAMETER                                                                            | SYMBOL                   | SE30DT12 | UNIT                 |
| Typical thermal resistance                                                           | $R_{\theta JA}^{(1)(2)}$ | 52       | $^{\circ}\text{C/W}$ |
|                                                                                      | $R_{\theta JM}^{(3)}$    | 1.5      |                      |

**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) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz. standard footprint  
 (3) Thermal resistance 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                      |
| SE30DT12-M3/I                  | 0.52            | I                      | 2000 / reel   | 13" diameter plastic tape and reel |
| SE30DT12HM3/I <sup>(1)</sup>   | 0.52            | I                      | 2000 / reel   | 13" diameter plastic tape and reel |

**Note**

- (1) AEC-Q101 qualified

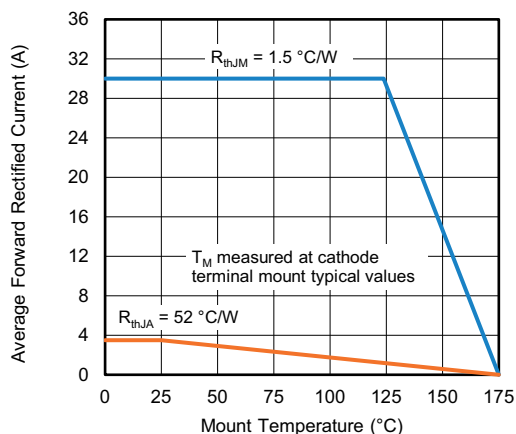
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

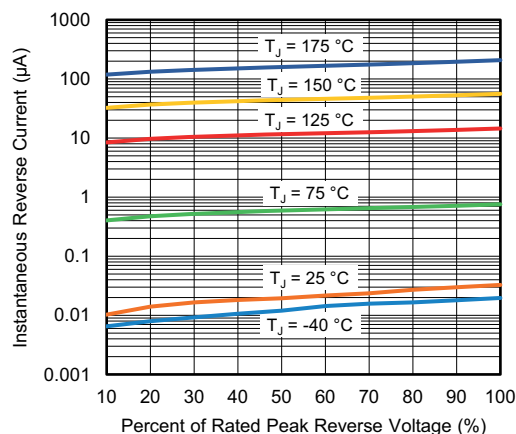


Fig. 4 - Typical Reverse Leakage Characteristics

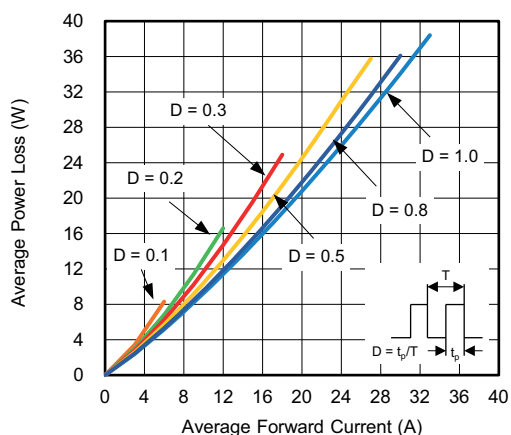


Fig. 2 - Forward Power Loss Characteristics

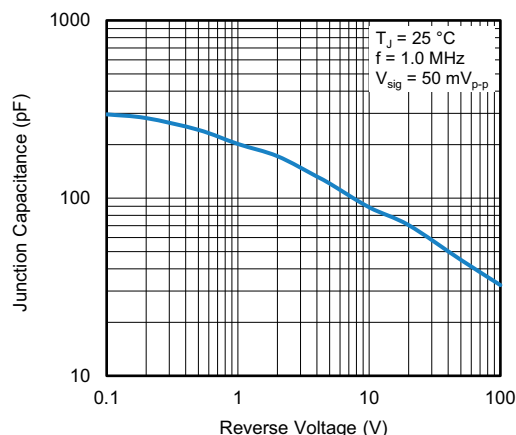


Fig. 5 - Typical Junction Capacitance

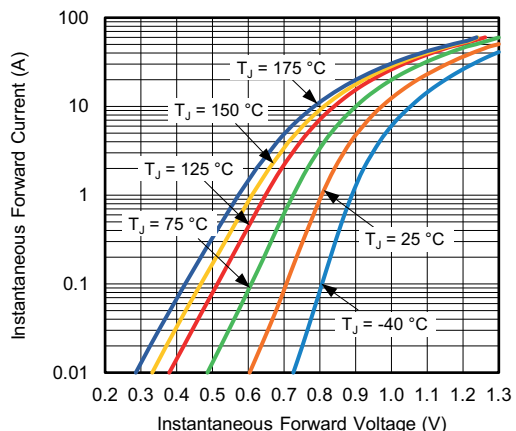


Fig. 3 - Typical Instantaneous Forward Characteristics

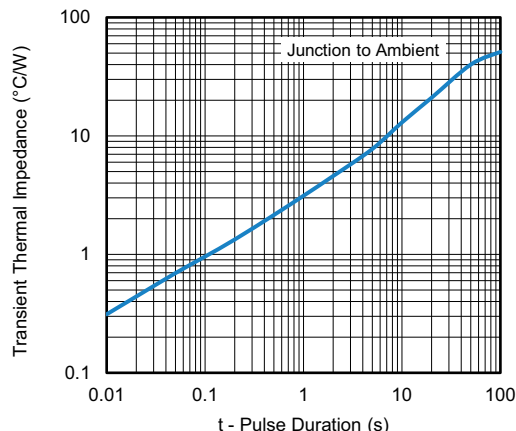
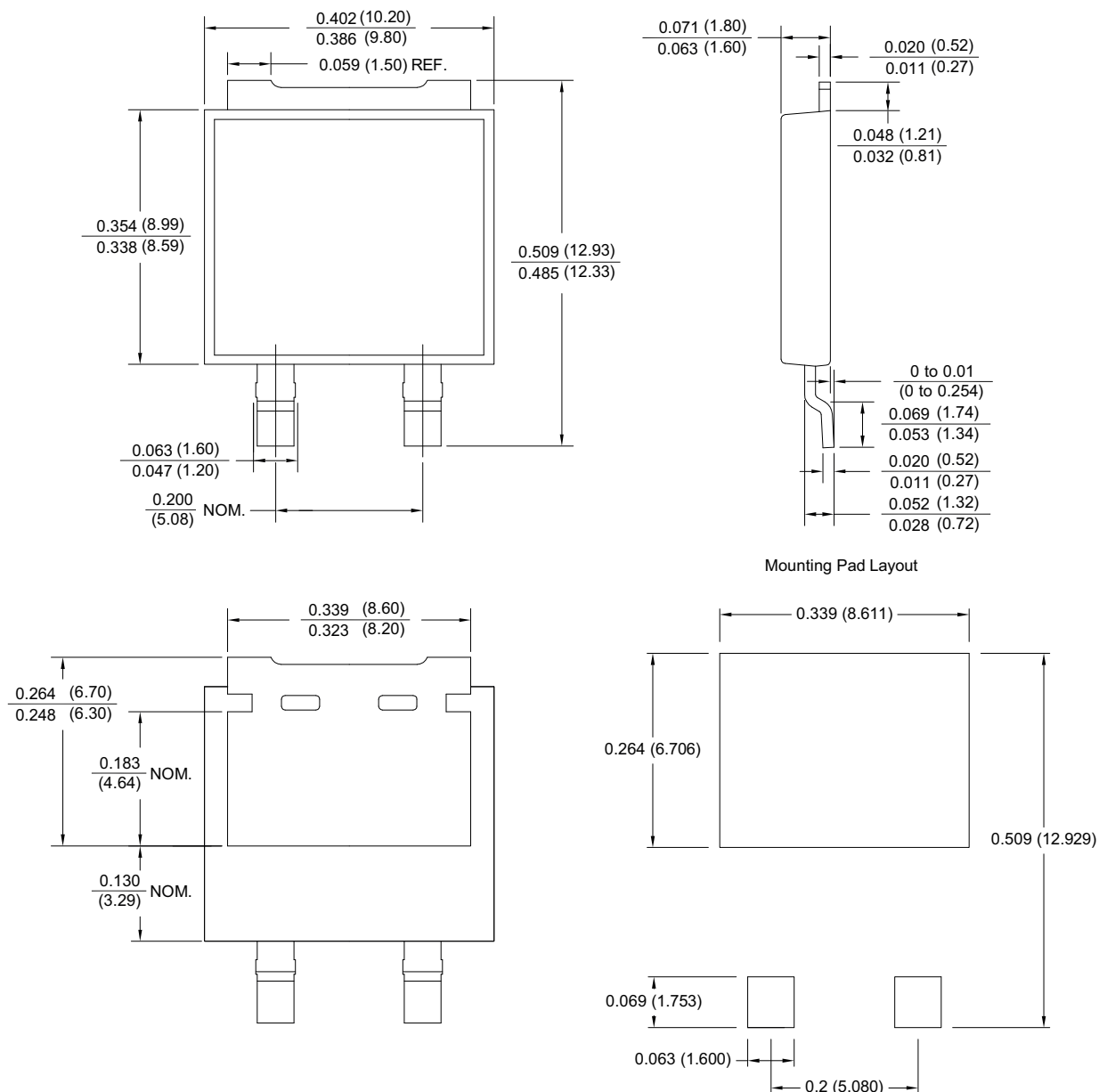


Fig. 6 - Typical Transient Thermal Impedance



**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

SMPD 2L



**Note**

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



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