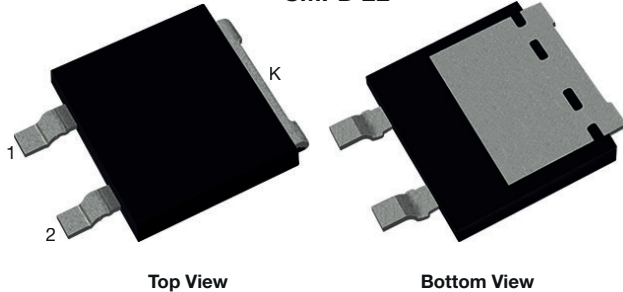


## Surface-Mount High Voltage Rectifier

### 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 3.7 mm typical
- 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 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °c unless otherwise noted)			
PARAMETER	SYMBOL	SE30DT12	UNIT
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)(2)</sup>	52	°C/W
	R <sub>θJM</sub> <sup>(3)</sup>	1.5	

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: dP<sub>D</sub>/dT<sub>J</sub> < 1/R<sub>θJA</sub>
- (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)

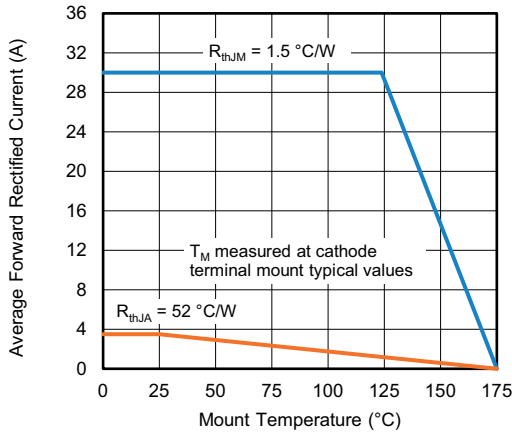


Fig. 1 - Forward Current Derating Curve

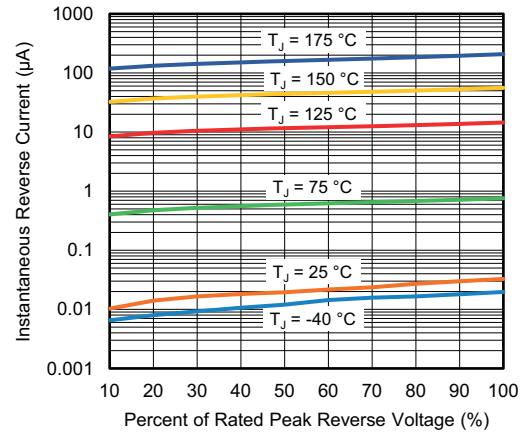


Fig. 4 - Typical Reverse Leakage Characteristics

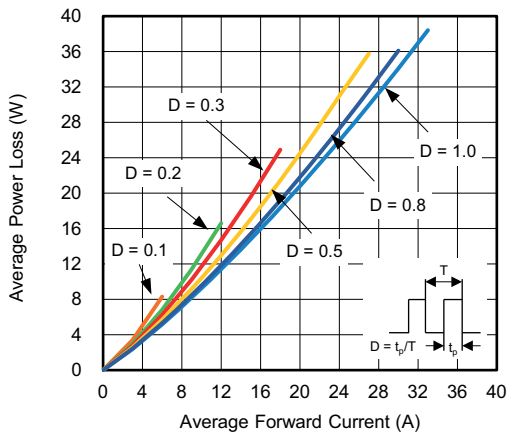


Fig. 2 - Forward Power Loss Characteristics

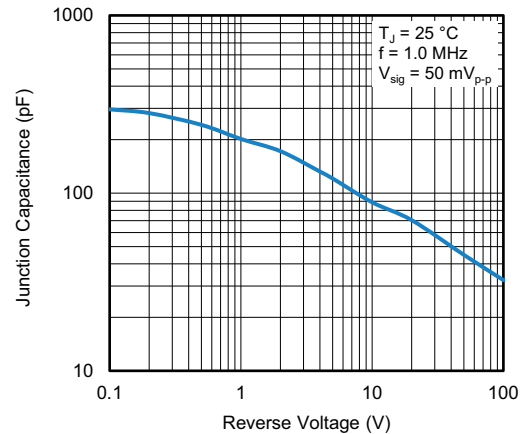


Fig. 5 - Typical Junction Capacitance

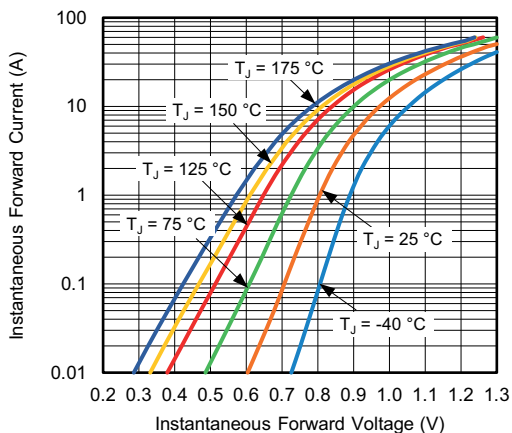


Fig. 3 - Typical Instantaneous Forward Characteristics

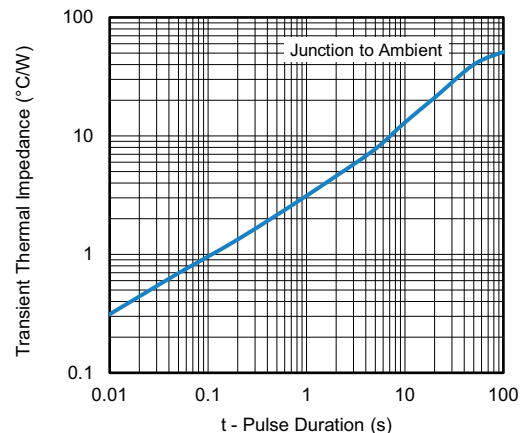
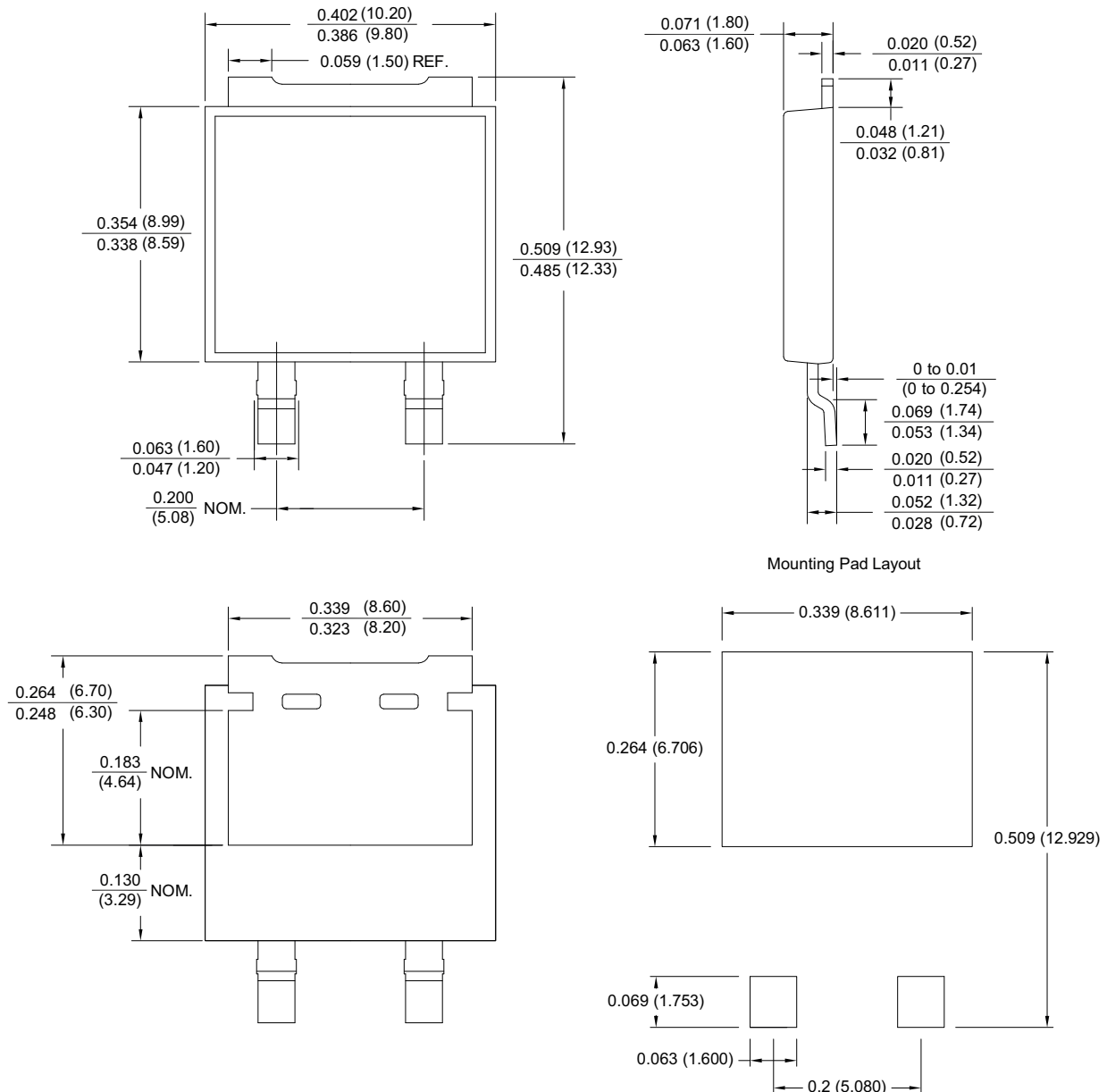


Fig. 6 - Typical Transient Thermal Impedance

**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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