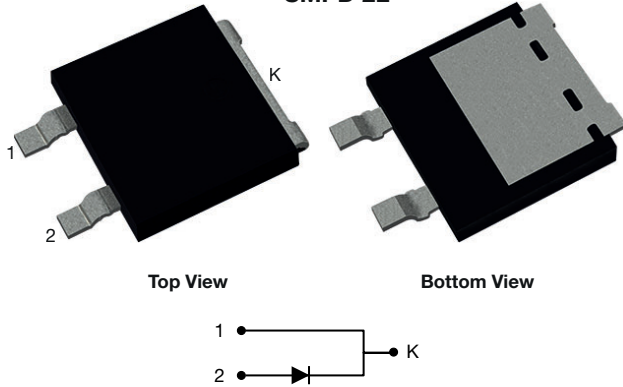


## Surface-Mount Low $V_F$ Standard Rectifiers

### eSMP® Series SMPD 2L



#### LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	20 A
$V_{RRM}$	400 V, 600 V
$I_{FSM}$	200 A
$V_F$ at $I_F = 20$ A ( $T_J = 125$ °C)	0.85 V
$T_J$ 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 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?999912](http://www.vishay.com/doc?999912)



#### 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

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	SE20DTLG	SE20DTLJ	UNIT
Device marking code		SE20DTLG	SE20DTLJ	
Maximum repetitive peak reverse voltage	$V_{RRM}$	400	600	V
Maximum DC forward current	$I_F^{(1)}$	20		A
	$I_F^{(2)}$	3.8		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	200		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  $dP_D/dT_J < R_{thJA}$



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> = 10 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.86	-	V
	I <sub>F</sub> = 20 A			0.95	1	
	I <sub>F</sub> = 10 A	T <sub>J</sub> = 125 °C		0.73	-	
	I <sub>F</sub> = 20 A			0.85	0.9	
Reverse current	Rated V <sub>R</sub>	T <sub>J</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	-	5	μA
		T <sub>J</sub> = 125 °C		13	100	
Typical reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>tr</sub> = 0.25 A		t <sub>rr</sub>	330	-	ns
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	160	-	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	TYP.	MAX.	UNIT
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)(2)</sup>	57	71	°C/W
	R <sub>θJM</sub> <sup>(3)</sup>	1	1.2	

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) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance R<sub>θJA</sub> - junction to ambient to follow JEDEC® 51-2A
- (3) Mounted on infinite heatsink thermal resistance R<sub>θJM</sub> - 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
SE20DTLJ-M3/I	0.52	I	2000/reel	13" diameter plastic tape and reel
SE20DTLJHM3/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)

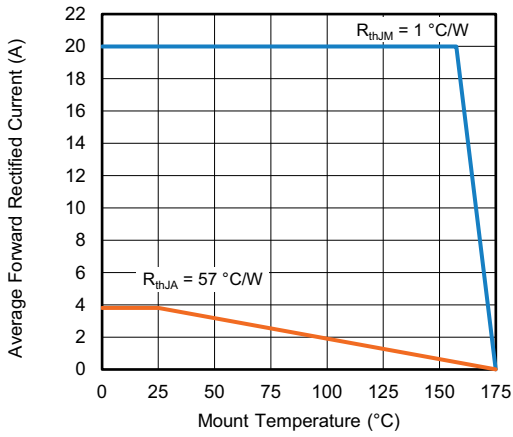


Fig. 1 - Forward Current Derating Curve

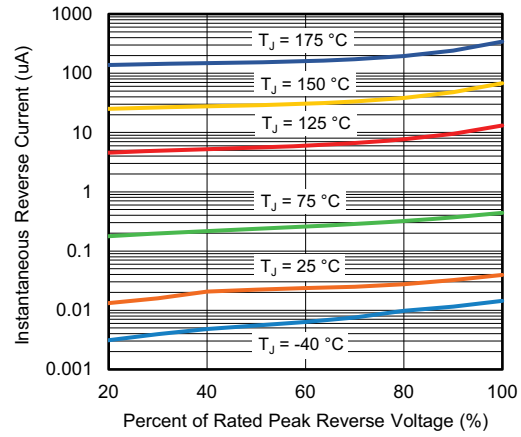


Fig. 4 - Typical Reverse Leakage Characteristics

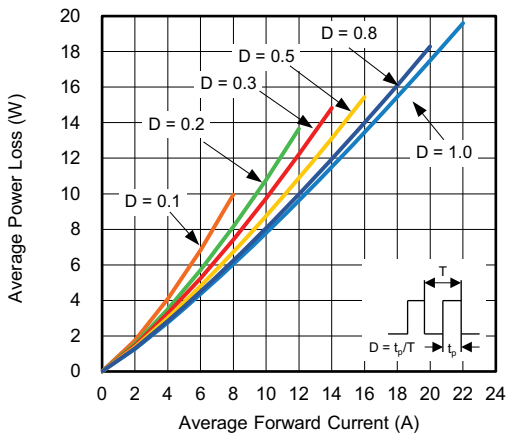


Fig. 2 - Forward Power Loss Characteristics

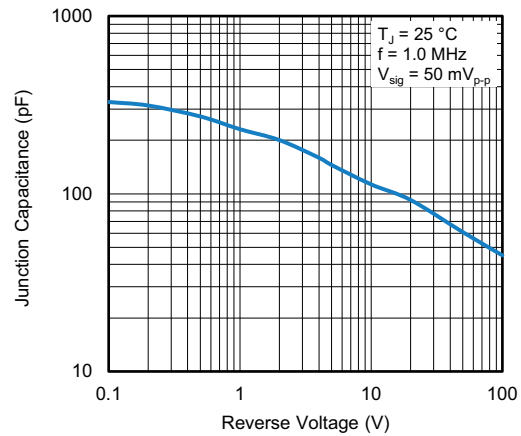


Fig. 5 - Typical Junction Capacitance

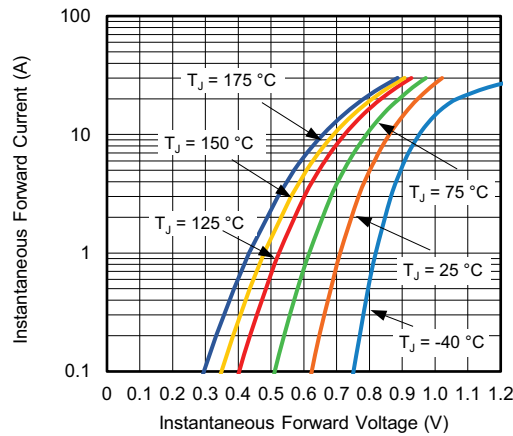


Fig. 3 - Typical Instantaneous Forward Characteristics

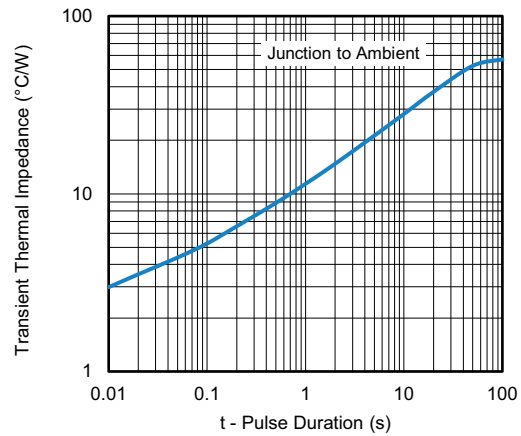
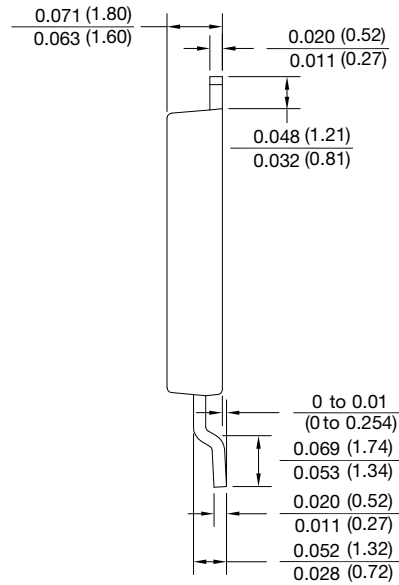
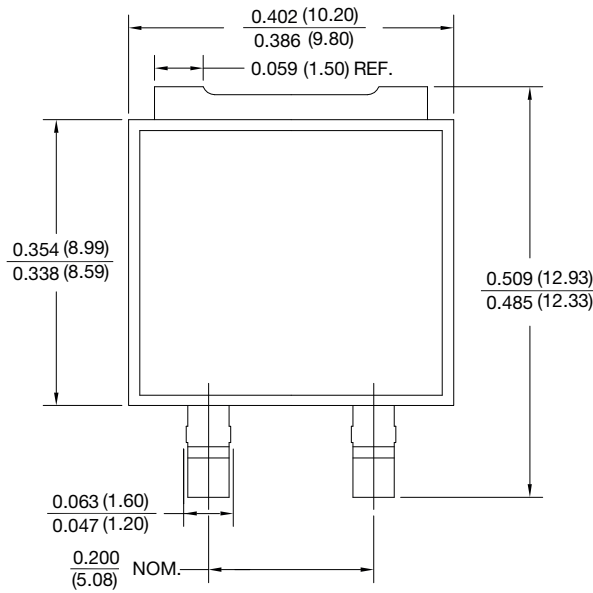


Fig. 6 - Typical Transient Thermal Impedance

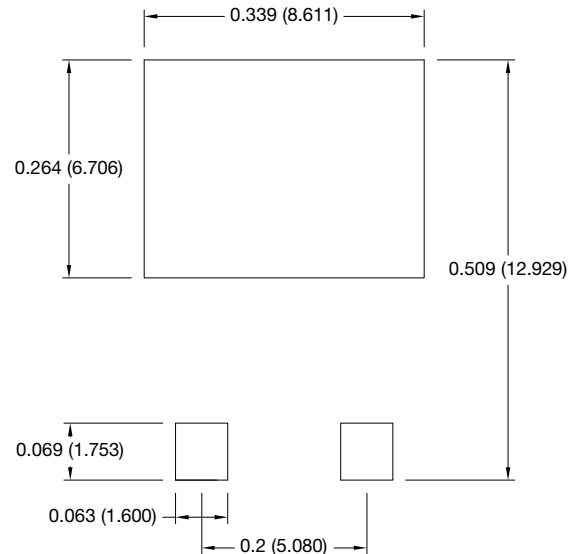
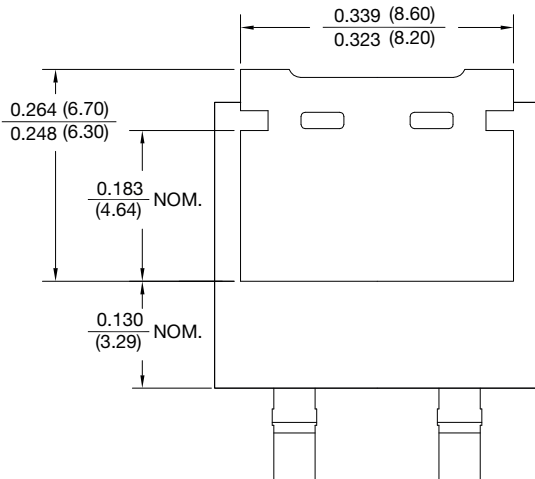


### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

#### SMPD 2L



#### 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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