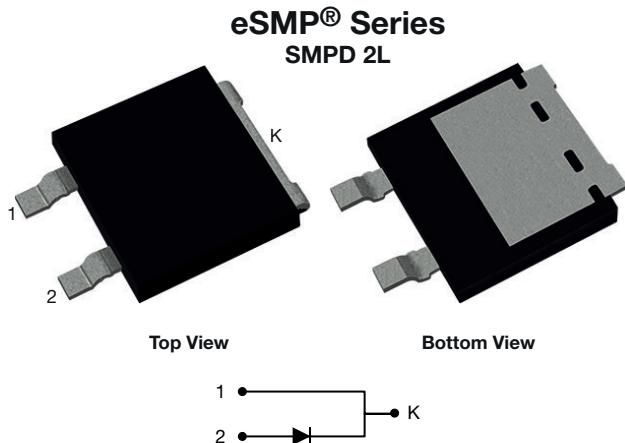


## Surface-Mount Low $V_F$ Standard Rectifiers



### LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
$V_{RRM}$	400 V, 600 V
$I_{FSM}$	150 A
$V_F$ at $I_F = 10$ A ( $T_J = 125$ °C)	0.83 V
$T_J$ 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 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](http://www.vishay.com/doc?99912)



### 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	SE10DTLG	SE10DTLJ	UNIT
Device marking code		SE10DTLG	SE10DTLJ	
Maximum repetitive peak reverse voltage	$V_{RRM}$	400	600	V
Maximum DC forward current	$I_F$ <sup>(1)</sup>	10		A
	$I_F$ <sup>(2)</sup>	3.5		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	150		A
Operating junction and storage temperature range	$T_J, T_{STG}$ <sup>(3)</sup>	-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 junction to ambient  $dP_D/dT_J < R_{thJA}$

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_J = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 5 \text{ A}$	$T_J = 25^\circ\text{C}$	$V_F$ <sup>(1)</sup>	0.87	-	V	
	$I_F = 10 \text{ A}$			0.95	1		
	$I_F = 5 \text{ A}$	$T_J = 125^\circ\text{C}$		0.73	-		
	$I_F = 10 \text{ A}$			0.83	0.9		
Reverse current	Rated $V_R$	$T_J = 25^\circ\text{C}$	$I_R$ <sup>(2)</sup>	-	5	$\mu\text{A}$	
		$T_J = 125^\circ\text{C}$		10	50		
Typical reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		$t_{rr}$	280	-	ns	
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	70	-	pF	

**Notes**
<sup>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: Pulse width  $\leq 40 \text{ ms}$ 

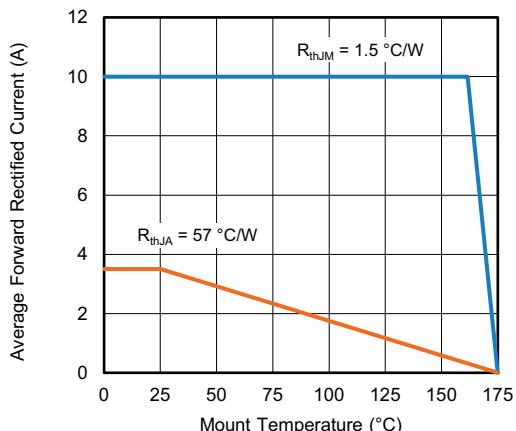
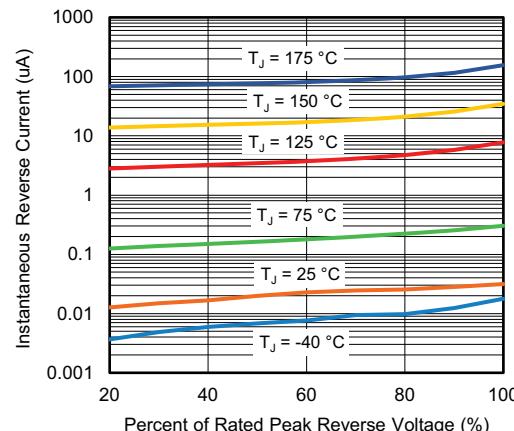
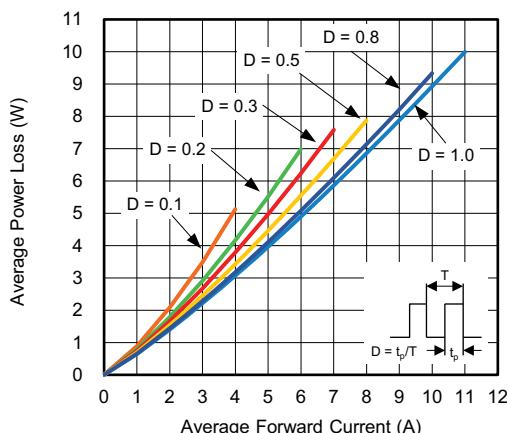
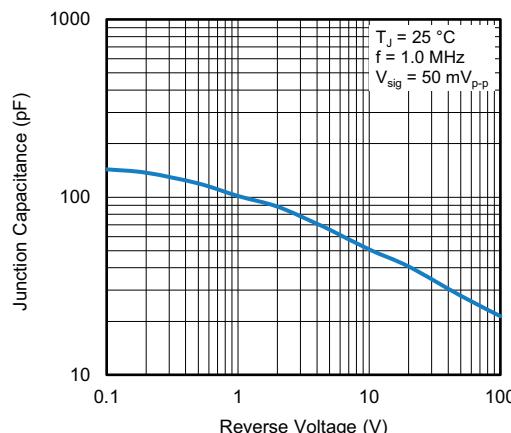
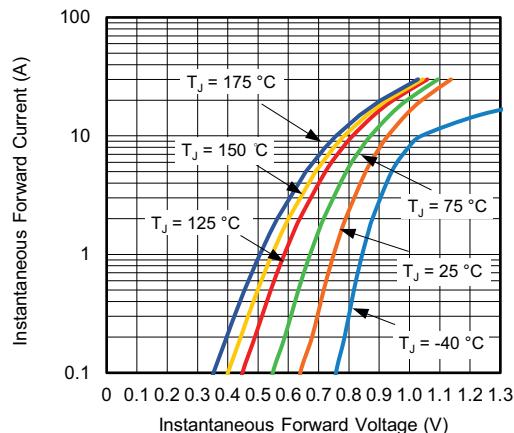
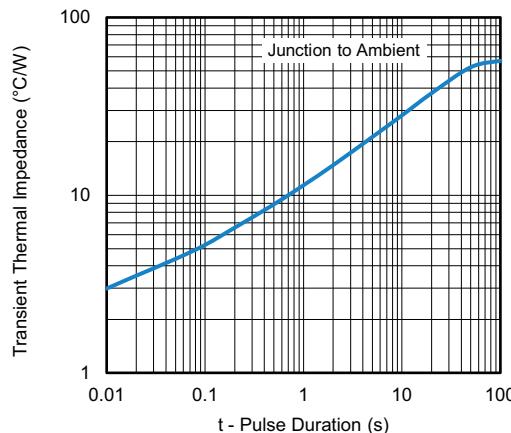
<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	TYP.	MAX.	UNIT	
Typical thermal resistance	$R_{\theta JA}$ <sup>(1)(2)</sup>	57	71	$^\circ\text{C/W}$	
	$R_{\theta JM}$ <sup>(3)</sup>	1.5	1.8		

**Notes**
<sup>(1)</sup> The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ 
<sup>(2)</sup> Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance  $R_{\theta JA}$  - junction to ambient to follow JEDEC® 51-2A

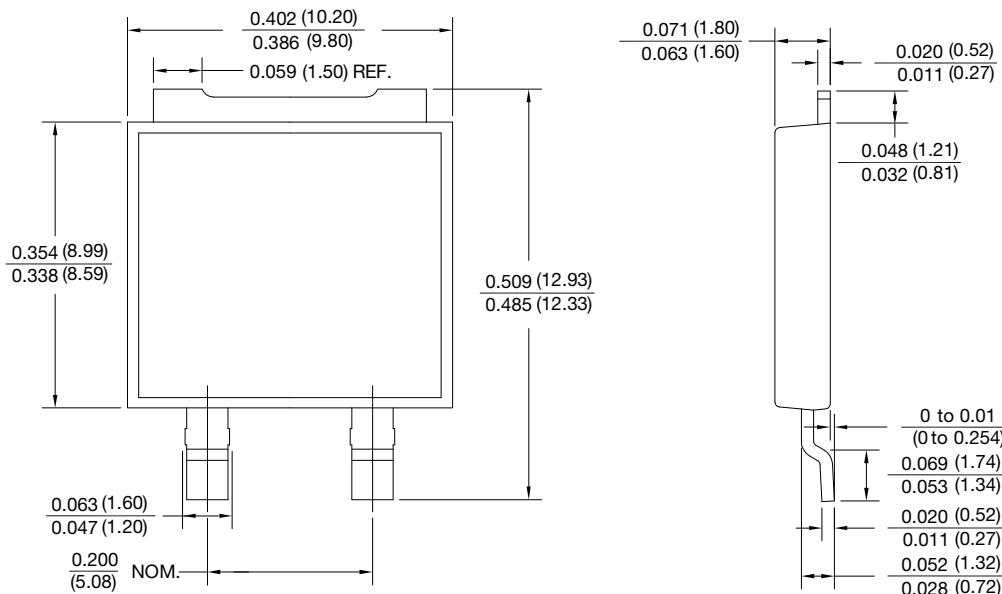
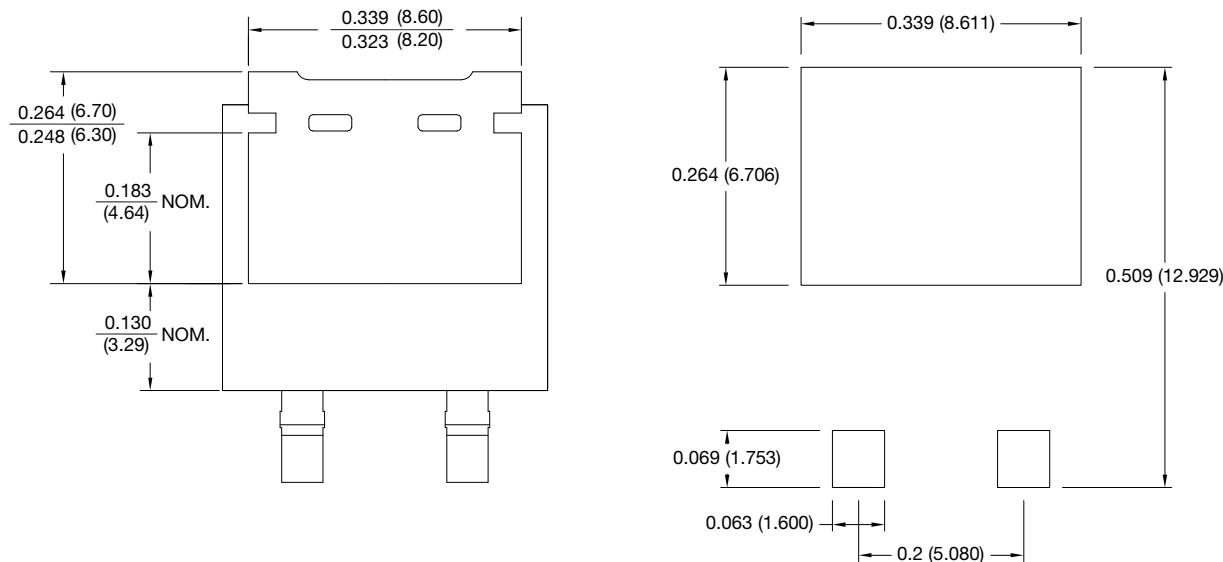
<sup>(3)</sup> Mounted on infinite heatsink thermal resistance  $R_{\theta JM}$  - junction to mount to follow JEDEC® 51-14 transient dual interface test method (TDIM)

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SE10DTLJ-M3/I	0.51	I	2000/reel	13" diameter plastic tape and reel
SE10DTLJHM3/I <sup>(1)</sup>	0.51	I	2000/reel	13" diameter plastic tape and reel

**Note**
<sup>(1)</sup> AEC-Q101 qualified

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