

## Surface-Mount Standard Rectifier

### eSMP® Series



Top View

Bottom View

### SlimSAW (DO-221AD)

Cathode  Anode

### LINKS TO ADDITIONAL RESOURCES



3D Models

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 A
$V_{RRM}$	200 V to 600 V
$I_{FSM}$	35 A
$V_F$ at $I_F = 2$ A ( $T_J = 125$ °C)	0.86 V
$T_J$ max.	175 °C
Package	SlimSAW (DO-221AD)
Circuit configuration	Single

### FEATURES

- Low-profile package
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHM3
- Compatible to SOD-128 package case outline
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### TYPICAL APPLICATIONS

General purpose, power line polarity protection and rail-to-rail protection in consumer, industrial, and automotive applications.

### MECHANICAL DATA

**Case:** SlimSAW (DO-221AD)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant

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:** color band denotes cathode end

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	SE8D20D	SE8D20G	SE8D20J	UNIT
Device marking code		SD2D	SD2G	SD2J	
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	200	400	600	V
Maximum average forward rectified current (fig.1)	I <sub>F(AV)</sub> <sup>(1)</sup>	2			A
	I <sub>F(AV)</sub> <sup>(2)</sup>	1.4			
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	35			A
Operating junction temperature range	T <sub>J</sub> <sup>(3)</sup>	-55 to +175			°C
Storage temperature range	T <sub>STG</sub>	-55 to +175			

### Notes

(1) Mounted on 30 mm x 30 mm pad areas aluminum PCB

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

(3) The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$



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> = 1 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.91	-	V
	I <sub>F</sub> = 2 A			0.96	1.10	
	I <sub>F</sub> = 1 A	T <sub>J</sub> = 125 °C		0.79	-	
	I <sub>F</sub> = 2 A			0.86	0.98	
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		8	100	
Typical reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 01 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	1200	-	ns
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	12	-	pF

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: pulse width  $\leq 5\text{ ms}$ 

THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)				
PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	120	150	$^{\circ}\text{C/W}$
	$R_{\theta JM}^{(3)}$	12	15	

**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
SE8D20J-M3/H	0.033	H	3500	7" diameter plastic tape and reel
SE8D20J-M3/I	0.033	I	14 000	13" diameter plastic tape and reel
SE8D20JHM3/H <sup>(1)</sup>	0.033	H	3500	7" diameter plastic tape and reel
SE8D20JHM3/I <sup>(1)</sup>	0.033	I	14 000	13" diameter plastic tape and reel

**Note**

(1) AEC-Q101 qualified



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

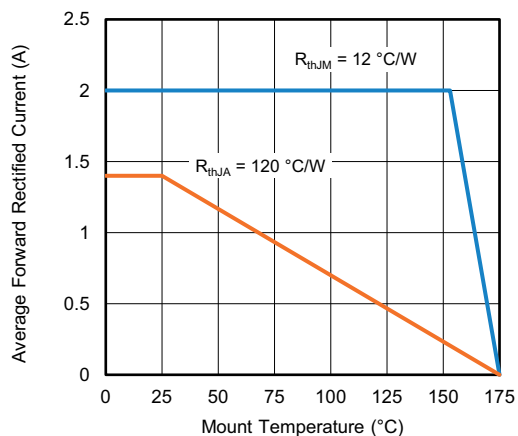


Fig. 1 - Maximum Forward Current Derating Curve

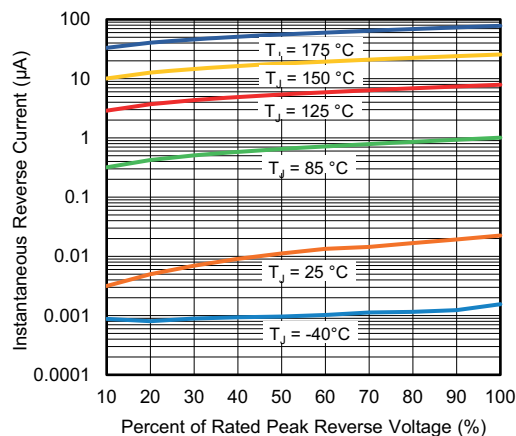


Fig. 4 - Typical Reverse Leakage Characteristics

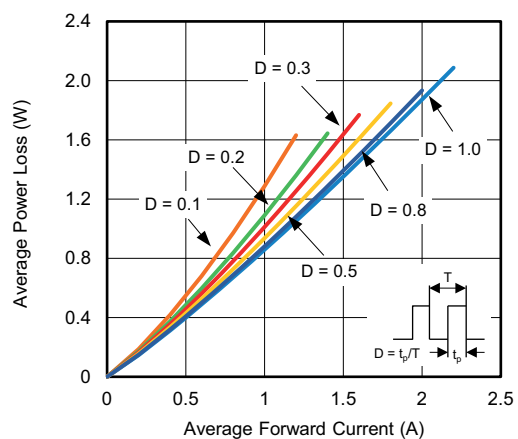


Fig. 2 - Forward Power Loss Characteristics

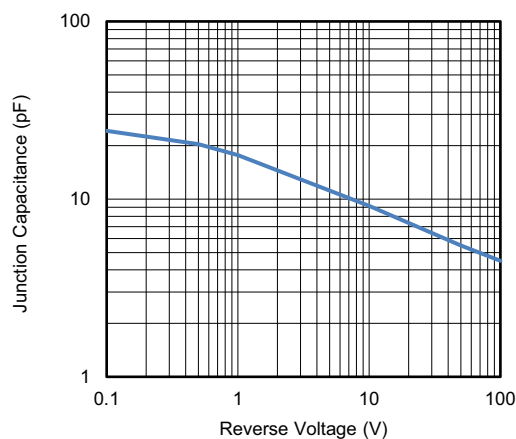


Fig. 5 - Typical Junction Capacitance

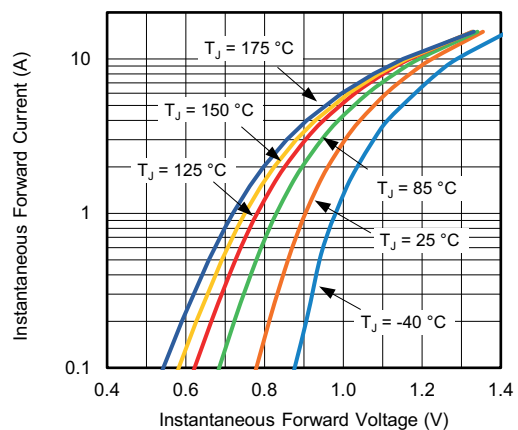


Fig. 3 - Typical Instantaneous Forward Characteristics

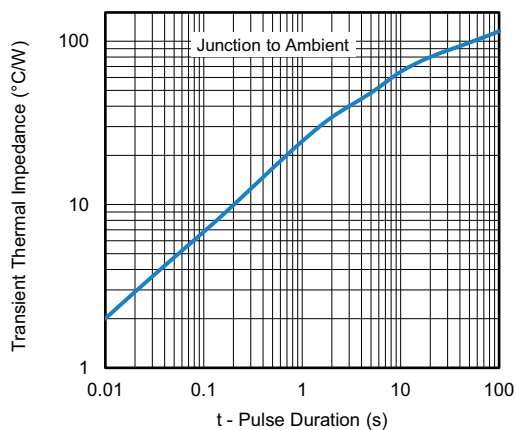
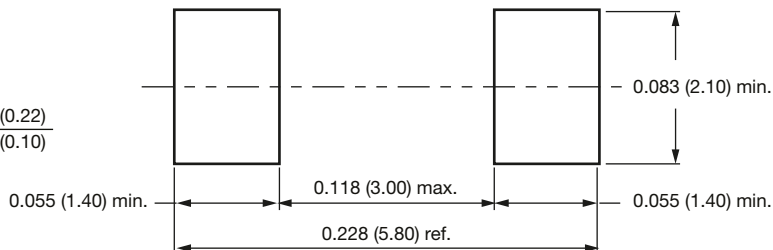
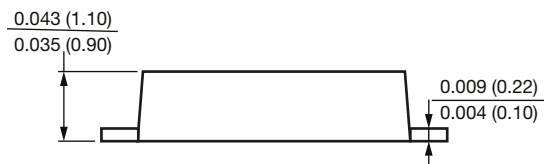
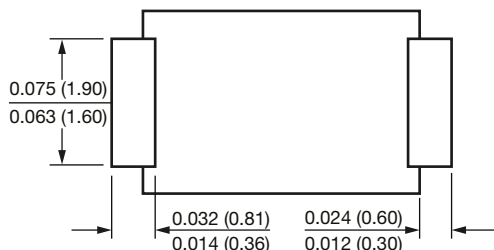
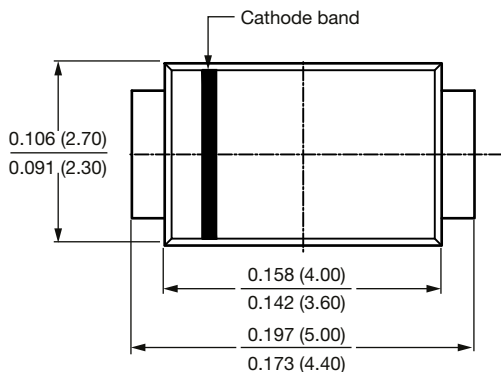


Fig. 6 - Typical Transient Thermal Impedance



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

**SlimSMAW (DO-221AD)**



**Mounting pad layout**



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