

## Low $V_F$ High Current Density Surface Mount Schottky Barrier Rectifiers

### eSMP™ Series



DO-220AA (SMP)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2.0 A
$V_{RRM}$	20 V, 30 V
$I_{FSM}$	50 A
$E_{AS}$	11.25 mJ
$V_F$	0.45 V
$T_J$ max.	150 °C

### TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, dc-to-dc converters, and polarity protection applications.

### FEATURES

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- **Halogen-free according to IEC 61249-2-21 definition**
- Find out more about Vishay's Automotive Grade Product requirements at: [www.vishay.com/applications](http://www.vishay.com/applications)



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

**AUTOMOTIVE**  
GRADE  
Available

### MECHANICAL DATA

**Case:** DO-220AA (SMP)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

Base P/NHM3 - halogen-free and RoHS compliant, automotive grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes the cathode end

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	SS2P2L	SS2P3L	UNIT
Device marking code		22L	23L	
Maximum repetitive peak reverse voltage	$V_{RRM}$	20	30	V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	2.0		A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	50		A
Non-repetitive avalanche energy at $I_{AS} = 1.5\text{ A}$ , $L = 10\text{ mH}$ , $T_J = 25\text{ °C}$	$E_{AS}$	11.25		mJ
Voltage rate of change (rated $V_R$ )	$dV/dt$	10 000		V/us
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150		°C

# SS2P2L & SS2P3L

Vishay General Semiconductor



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Maximum instantaneous forward voltage <sup>(1)</sup>	I <sub>F</sub> = 2 A I <sub>F</sub> = 2 A	T <sub>J</sub> = 25 °C T <sub>J</sub> = 125 °C	V <sub>F</sub>	0.45 0.38	0.50 0.45	V
Maximum reverse current at rated V <sub>R</sub> <sup>(2)</sup>		T <sub>J</sub> = 25 °C T <sub>J</sub> = 125 °C	I <sub>R</sub>	- 9.0	200 20	μA mA
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	130		pF

**Notes:**

<sup>(1)</sup> Pulse test: 300 μs pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	SS2P2L	SS2P3L	UNIT
Typical thermal resistance <sup>(1)</sup>	R <sub>θJA</sub>	115		°C/W
	R <sub>θJL</sub>	15		
	R <sub>θJC</sub>	20		

**Note:**

<sup>(1)</sup> Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. with 5.0 mm x 5.0 mm copper pad areas. R<sub>θJL</sub> is measured at the terminal of cathode band. R<sub>θJC</sub> is measured at the top center of the body

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS2P3L-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SS2P3L-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel
SS2P3LHM3/84A <sup>(1)</sup>	0.024	84A	3000	7" diameter plastic tape and reel
SS2P3LHM3/85A <sup>(1)</sup>	0.024	85A	10 000	13" diameter plastic tape and reel

**Note:**

<sup>(1)</sup> Automotive grade

## RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub> = 25 °C unless otherwise noted)

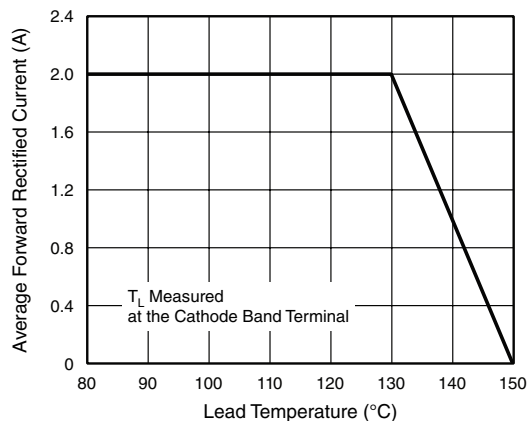


Figure 1. Forward Current Derating Curve

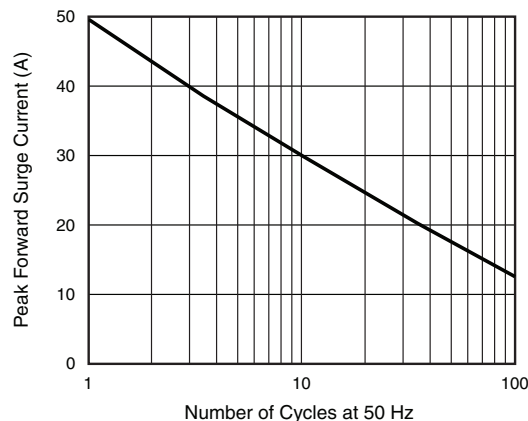


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

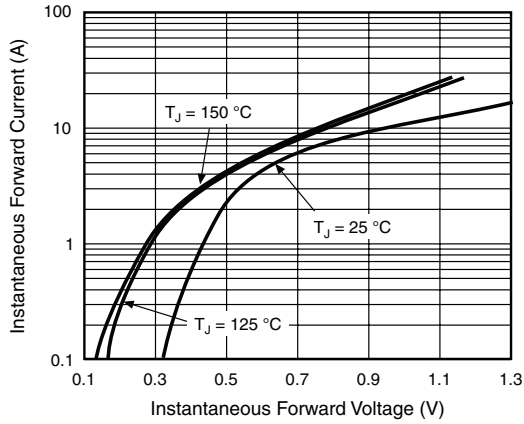


Figure 3. Typical Instantaneous Forward Characteristics

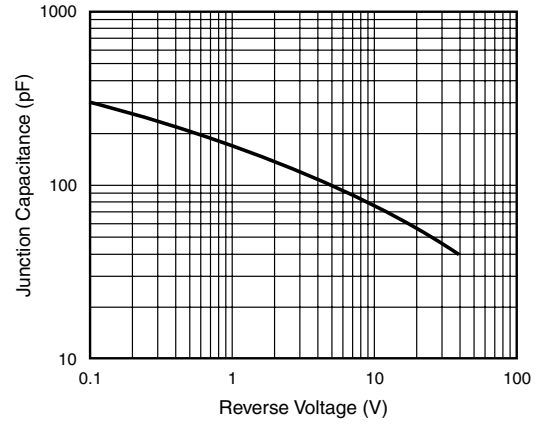


Figure 5. Typical Junction Capacitance

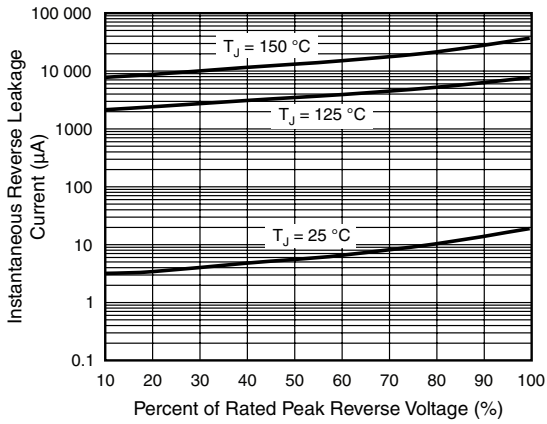


Figure 4. Typical Reverse Leakage Characteristics

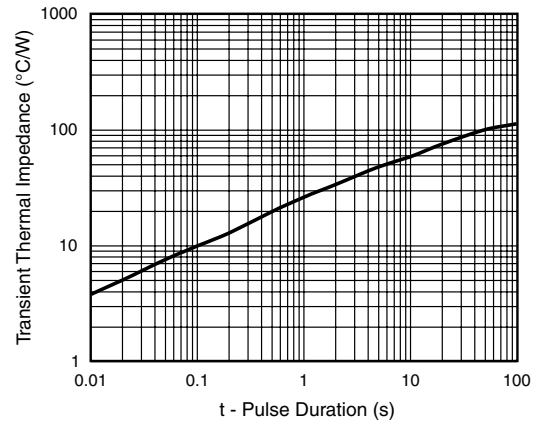
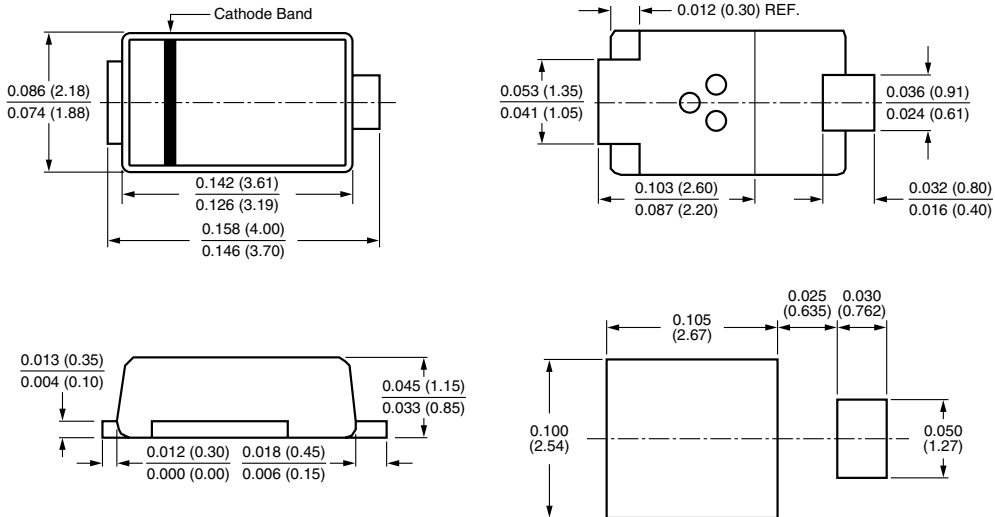


Figure 6. Typical Transient Thermal Impedance

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

**DO-220AA (SMP)**





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