

## High Current Density Surface Mount Schottky Barrier Rectifiers

eSMP™ Series



DO-220AA (SMP)

### 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-020C, LF max peak of 260 °C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

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

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

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

### MAJOR RATINGS AND CHARACTERISTICS

$I_{F(AV)}$	2 A
$V_{RRM}$	20 V, 30 V, 40 V
$I_{FSM}$	50 A
$E_{AS}$	11.25 mJ
$V_F$	0.50 V
$T_j \text{ max.}$	150 °C

### MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	SS2P2	SS2P3	SS2P4	UNIT
Device marking code		22	23	24	
Maximum repetitive peak reverse voltage	$V_{RRM}$	20	30	40	V
Maximum average forward rectified current (see 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 $V_R$ )	$dv/dt$	10000			V/us
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150			°C

### ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	TYP	MAX.	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	at $I_F = 2\text{ A}$ , $T_j = 25\text{ °C}$ at $I_F = 2\text{ A}$ , $T_j = 125\text{ °C}$	$V_F$	0.50 0.43	0.55 0.50	V
Maximum reverse current at rated $V_R$ <sup>(1)</sup>	$T_j = 25\text{ °C}$ $T_j = 125\text{ °C}$	$I_R$	- 8	150 15	$\mu\text{A}$ mA
Typical junction capacitance	at 4.0 V, 1 MHz	$C_J$	110		pF

**Note:**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle



THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	SS2P2	SS2P3	SS2P4	UNIT
Typical thermal resistance <sup>(1)</sup>	$R_{\theta JA}$		115		$^\circ\text{C/W}$
	$R_{\theta JL}$		15		
	$R_{\theta JC}$		20		

**Note:**

(1) Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. with 5.0 x 5.0 mm copper pad areas.  $R_{\theta JL}$  is measured at the terminal of cathode band.  $R_{\theta JC}$  is measured at the top centre of the body

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SS2P4-E3/84A	0.024	84A	3000	7" Diameter Plastic Tape & Reel
SS2P4-E3/85A	0.024	85A	10000	13" Diameter Plastic Tape & Reel
SS2P4HE3/84A <sup>(1)</sup>	0.024	84A	3000	7" Diameter Plastic Tape & Reel
SS2P4HE3/85A <sup>(1)</sup>	0.024	85A	10000	13" Diameter Plastic Tape & Reel

**Note:**

(1) Automotive grade AEC Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**

( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

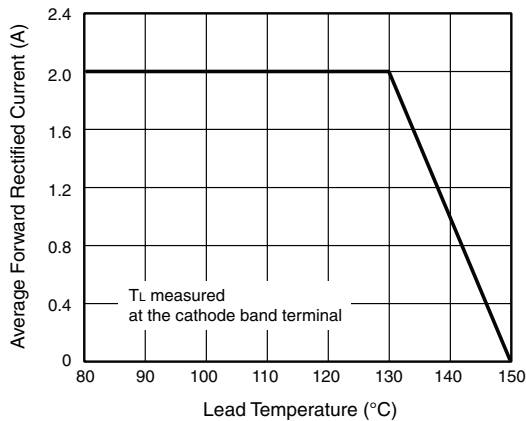


Figure 1. Forward Current Derating Curve

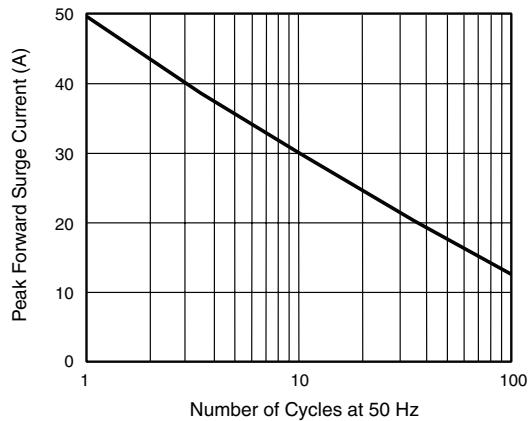


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

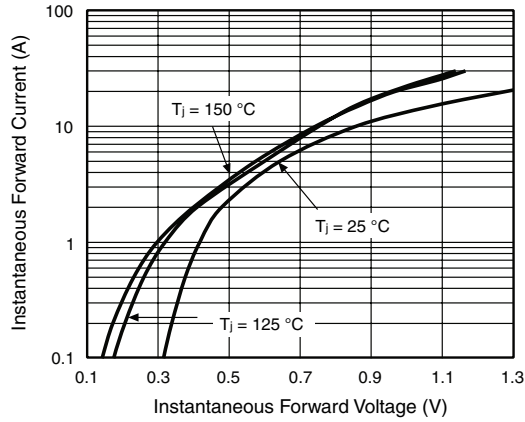


Figure 3. Typical Instantaneous Forward Characteristics

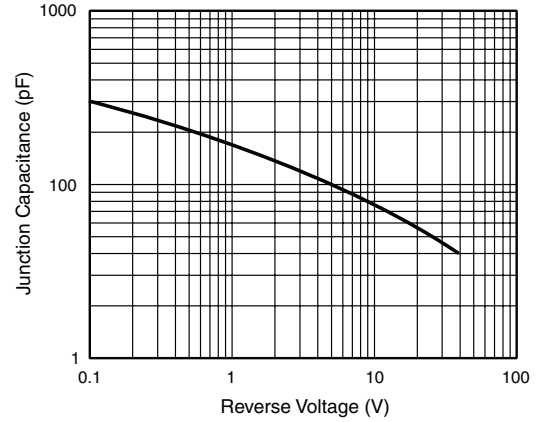


Figure 5. Typical Junction Capacitance

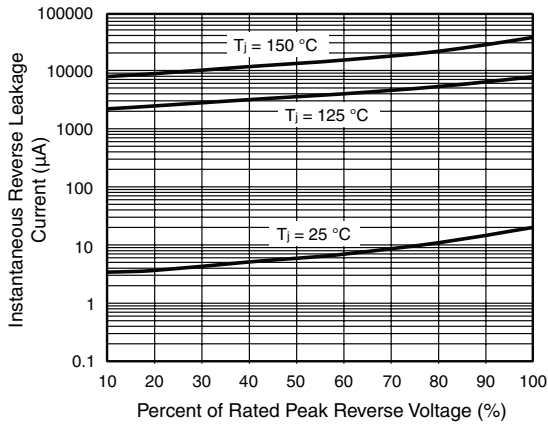


Figure 4. Typical Reverse Leakage Characteristics

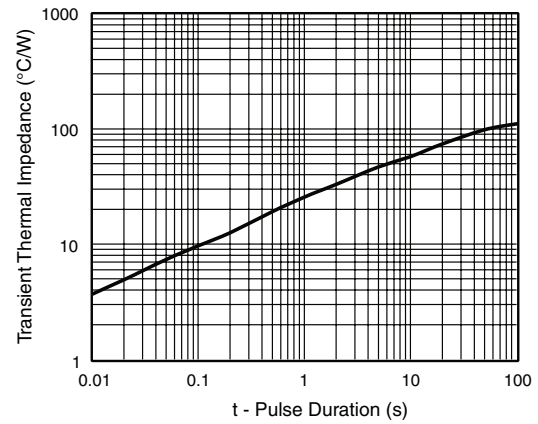
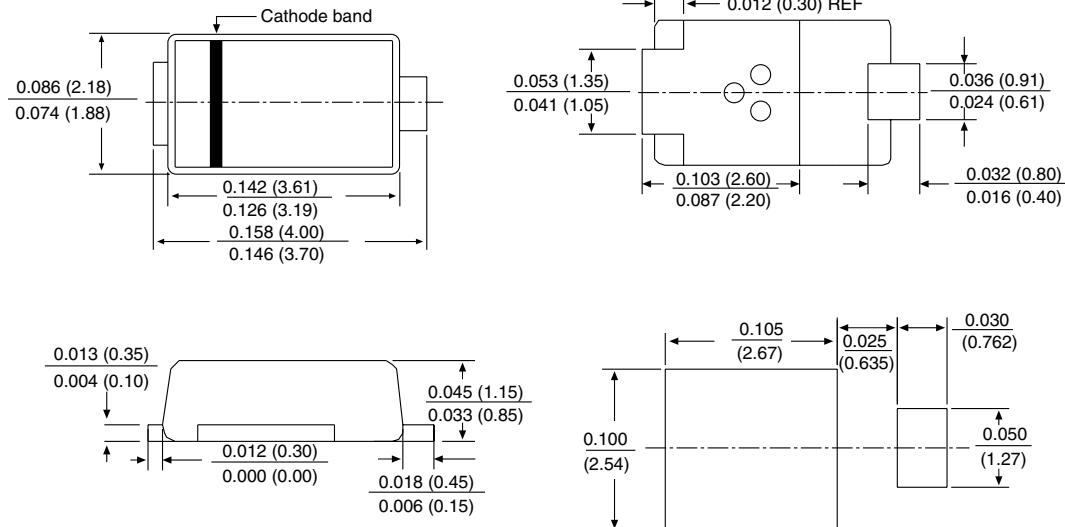


Figure 6. Typical Transient Thermal impedance

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

**DO-220AA (SMP)**





## Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.