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# High-Voltage Surface Mount Schottky Barrier Rectifiers

High Barrier Technology for Improved High Temperature Performance

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



## TYPICAL APPLICATIONS

For use in high frequency inverters, freewheeling, 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-002 and JESD22-B102

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

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2.0 A
$V_{RRM}$	90 V, 100 V
$I_{FSM}$	50 A
$E_{AS}$	11.25 mJ
$V_F$ at $I_F = 1.0$ A	0.62 V
$I_R$ max.	1.0 $\mu$ A
$T_J$ max.	175 °C

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	SS2PH9	SS2PH10	UNIT
Device marking code		29	210	
Maximum repetitive peak reverse voltage	$V_{RRM}$	90	100	V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	2.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	50		A
Non-repetitive avalanche energy at $T_J = 25$ °C, $I_{AS} = 1.5$ A, $L = 10$ mH	$E_{AS}$	11.25		mJ
Voltage rate of change (rated $V_R$ )	dV/dt	10000		V/ $\mu$ s
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 175		°C

ELECTRICAL CHARACTERISTICS ( $T_A = 25$ °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	$I_F = 2.0$ A, $I_F = 2.0$ A,	$T_J = 25$ °C $T_J = 125$ °C	$V_F$	0.77 0.62	0.80 0.66	V
Maximum DC reverse current	rated $V_R$ <sup>(1)</sup>	$T_J = 25$ °C $T_J = 125$ °C	$I_R$	0.1 60	1.0 500	$\mu$ A
Typical junction capacitance	at 4.0 V, 1 MHz		$C_J$	65	-	pF

**Note:**

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

# SS2PH9 & SS2PH10



Vishay General Semiconductor

THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	SS2PH9	SS2PH10	UNIT
Typical thermal resistance <sup>(1)</sup>	$R_{\theta JA}$		110	$^\circ\text{C/W}$
	$R_{\theta JL}$		15	
	$R_{\theta JC}$		25	

**Note:**

(1) Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. with 15 x 15 mm copper pad areas.  $R_{\theta JL}$  is measured at the terminal of cathode band.  $R_{\theta JC}$  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
SS2PH9-E3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SS2PH9-E3/85A	0.024	85A	10000	13" diameter plastic tape and reel
SS2PH9HE3/84A <sup>(1)</sup>	0.024	84A	3000	7" diameter plastic tape and reel
SS2PH9HE3/85A <sup>(1)</sup>	0.024	85A	10000	13" diameter plastic tape and reel

**Note:**

(1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

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

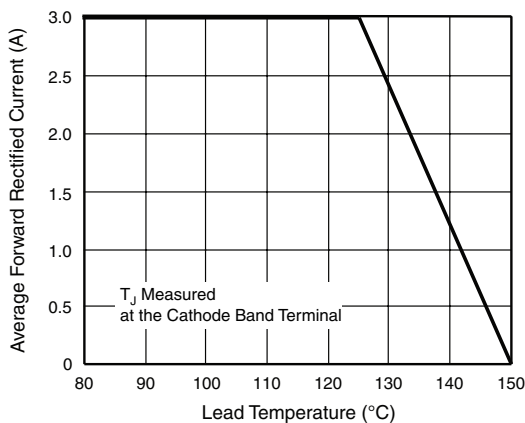


Figure 1. Forward Current Derating Curve

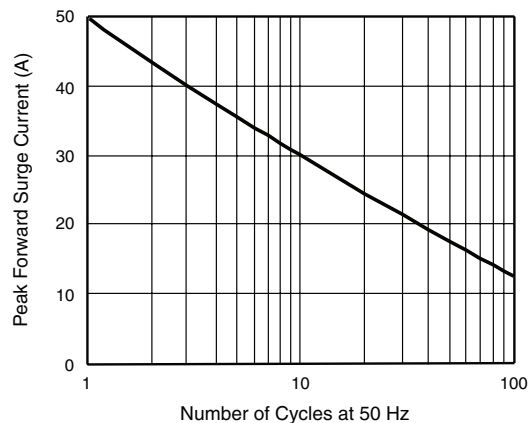


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

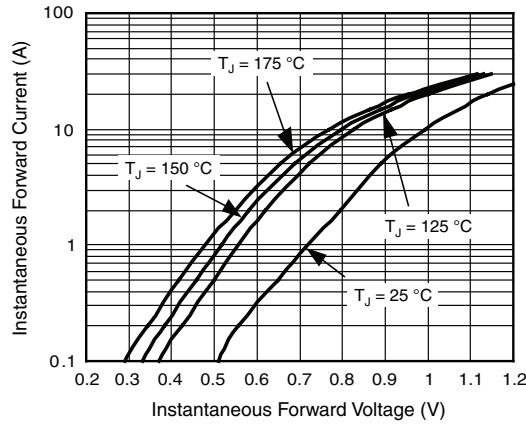


Figure 3. Typical Instantaneous Forward Characteristics

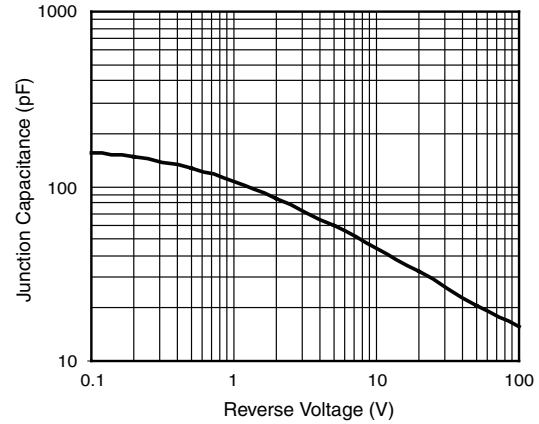


Figure 5. Typical Junction Capacitance

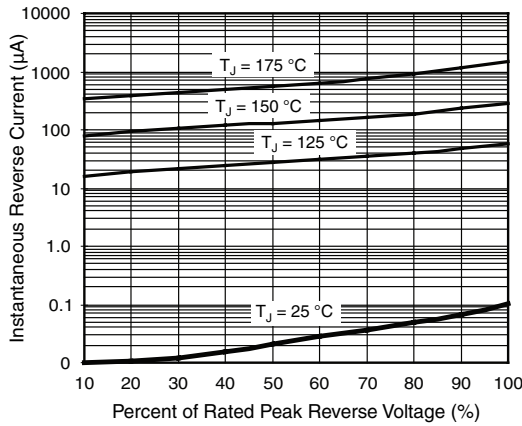


Figure 4. Typical Reverse Leakage Characteristics

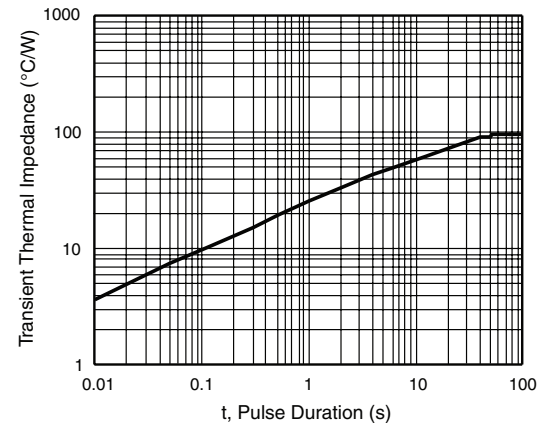
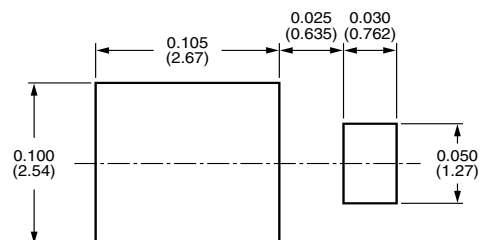
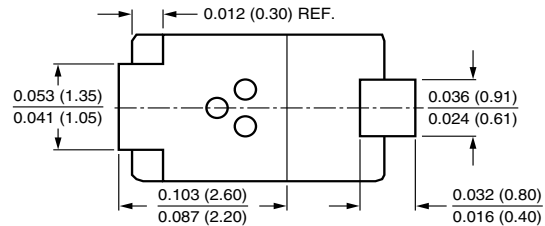
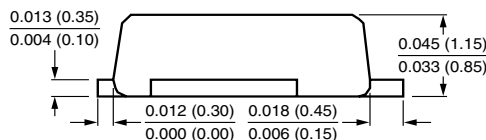
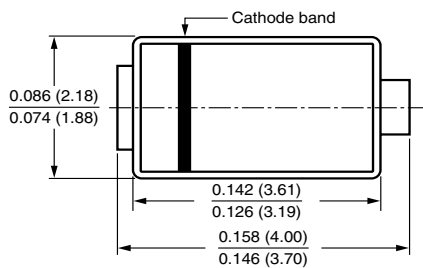


Figure 6. Typical Transient Thermal Impedance

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

**DO-220AA (SMP)**





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