

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 μ 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/ μ 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 ⁽¹⁾	$I_F = 2.0$ 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 ⁽¹⁾	$T_J = 25$ °C $T_J = 125$ °C	I_R	0.1 60	1.0 500	μ A
Typical junction capacitance	at 4.0 V, 1 MHz		C_J	65	-	pF

Note:

(1) Pulse test: 300 μ 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 ⁽¹⁾	$R_{\theta JA}$		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 ⁽¹⁾	0.024	84A	3000	7" diameter plastic tape and reel
SS2PH9HE3/85A ⁽¹⁾	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)

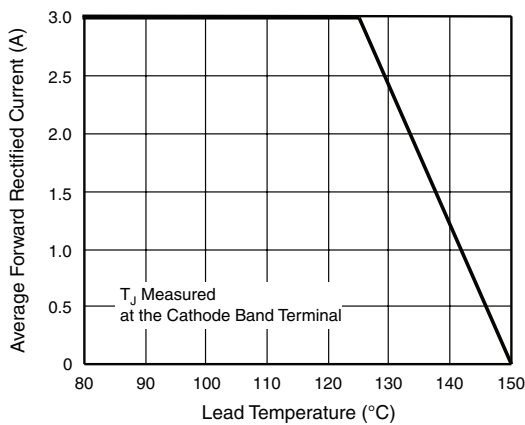


Figure 1. Forward Current Derating Curve

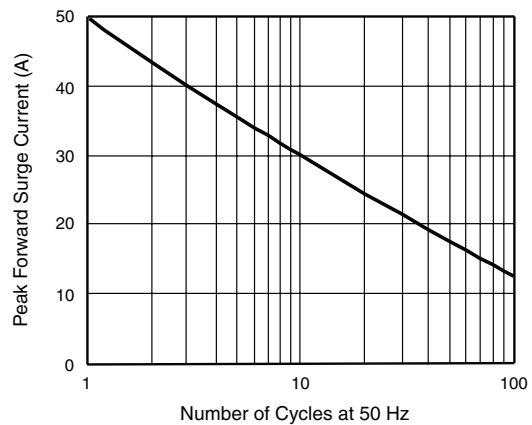


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

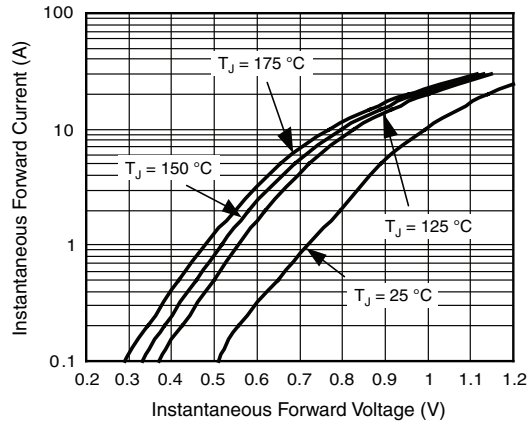


Figure 3. Typical Instantaneous Forward Characteristics

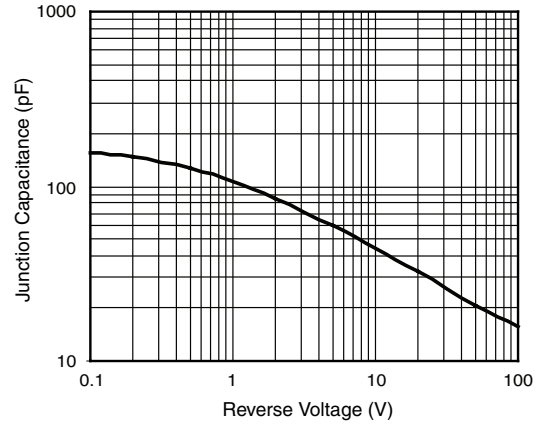


Figure 5. Typical Junction Capacitance

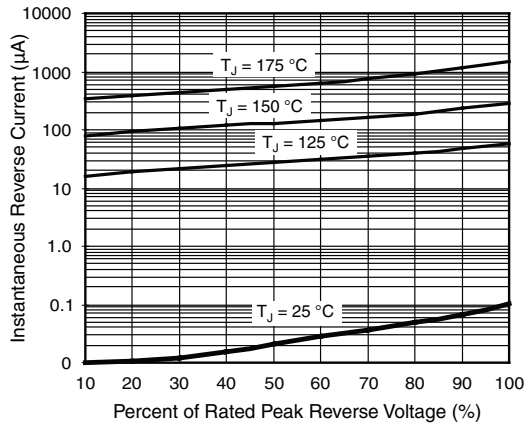


Figure 4. Typical Reverse Leakage Characteristics

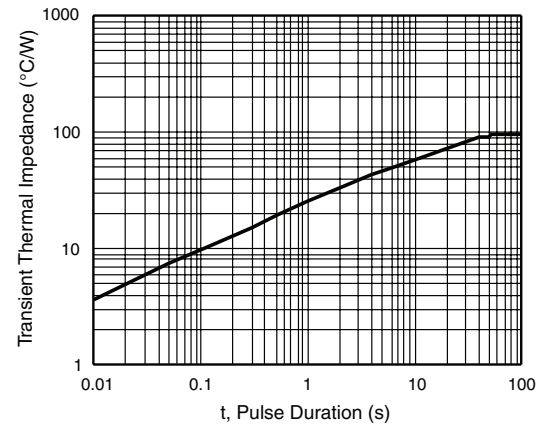
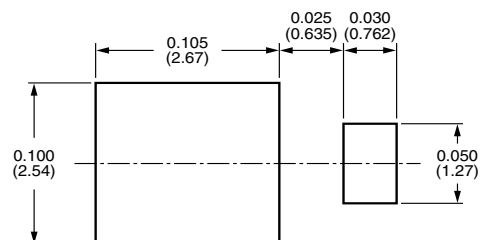
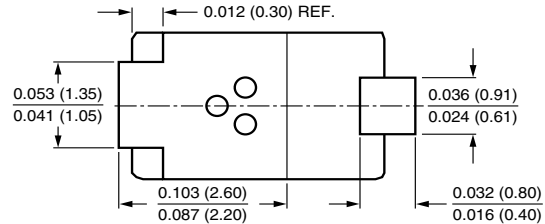
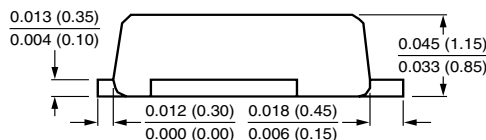
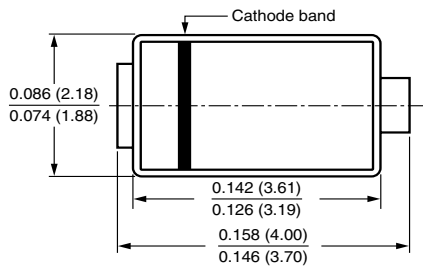


Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)





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