COMPLIANT

HALOGEN FREE



Vishay General Semiconductor

High Current Density Surface Mount Schottky Barrier Rectifier

eSMP[®] Series

DO-220AA (SMP)

PRIMARY CHARACTERISTICS					
I _{F(AV)}	2.0 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 max.	150 °C				
Package	DO-220AA (SMP)				
Diode variations	Single				

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
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

MECHANICAL DATA

Case: DO-220AA (SMP)

Molding compound meets UL 94 V-0 flammability rating

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

commercial grade

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

automotive grade

Terminals: Matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

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

meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

MAXIMUM RATINGS (T _A = 25 °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 (fig. 1)	I _{F(AV)}	2.0			Α
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	50		А	
Non-repetitive avalanche energy at I_{AS} = 1.5 A, L = 10 mH, T_{J} = 25 °C	E _{AS}	11.25		mJ	
Voltage rate of change (rated V _R)	dV/dt	10 000		V/µs	
Operating junction and storage temperature range	T _J , T _{STG}	- 55 to + 150		°C	



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage	I _F = 2 A	T _J = 25 °C	V _F ⁽¹⁾	0.50	0.55	V
	I _F = 2 A	T _J = 125 °C		0.43	0.50	
Maximum reverse current at rated V _B voltage		T _J = 25 °C	I _R ⁽²⁾	-	150	μA
Iviaximum reverse current at rated v _R voltage		T _J = 125 °C		8	15	mA
Typical junction capacitance	4.0 V, 1 MHz		CJ	110		pF

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	SS2P2	SS2P3	SS2P4	UNIT	
	R _{0JA} (1)		115			
Typical thermal resistance	R ₀ JL (1)		15	°C/W		
	R ₀ JC (1)		20			

Note

(1) Thermal resistance from junction to ambient and junction to lead mounted on PCB with 6.0 mm x 6.0 mm copper pad areas R_{0JL} is measured at the terminal of cathode band. R_{0JC} 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			
SS2P4-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel			
SS2P4-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel			
SS2P4HM3/84A (1)	0.024	84A	3000	7" diameter plastic tape and reel			
SS2P4HM3/85A (1)	0.024	85A	10 000	13" diameter plastic tape and reel			

Note

(1) Automotive grade

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

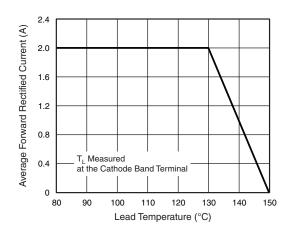


Fig. 1 - Forward Current Derating Curve

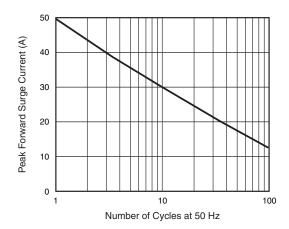


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current



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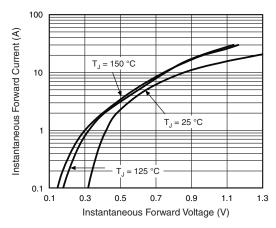


Fig. 3 - Typical Instantaneous Forward Characteristics

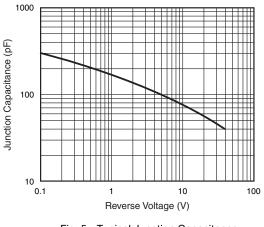


Fig. 5 - Typical Junction Capacitance

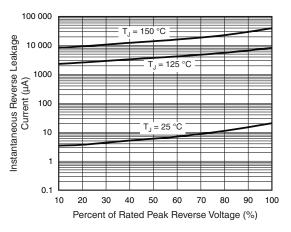


Fig. 4 - Typical Reverse Leakage Characteristics

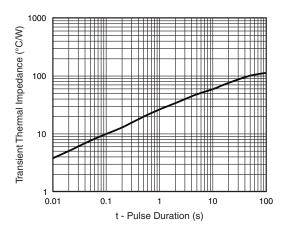
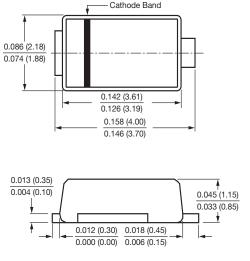
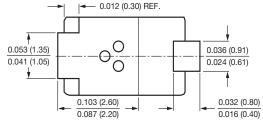


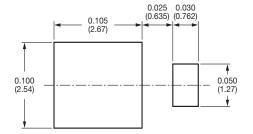
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)









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