## S4PB, S4PD, S4PG, S4PJ, S4PK, S4PM

Vishay General Semiconductor

COMPLIANT

HALOGEN FREE

## **High Current Density Surface Mount Glass Passivated Rectifiers**



PRIMARY CHARACTERISTICS						
I <sub>F(AV)</sub>	4.0 A					
$V_{RRM}$	100 V, 200 V, 400 V, 600 V, 800 V, 1000 V					
I <sub>FSM</sub>	100 A					
I <sub>R</sub>	10 μA					
$V_F$ at $I_F = 4$ A	0.860 V					
T <sub>J</sub> max.	150 °C					
Package	TO-277A (SMPC)					
Circuit configuration	Single					

#### **FEATURES**

- Very low profile typical height of 1.1 mm
- · Ideal for automated placement
- · Glass passivated pellet chip junction
- Low forward voltage drop
- High surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishav.com/doc?99912

#### TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes for consumer, automotive, and telecommunication.

#### **MECHANICAL DATA**

Case: TO-277A (SMPC)

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3\_X - halogen-free, RoHS-compliant and AEC-Q101 qualified

("\_X" denotes revision code e.g. A, B,....)

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

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL	S4PB	S4PD	S4PG	S4PJ	S4PK	S4PM	UNIT
Device marking code		S4PB	S4PD	S4PG	S4PJ	S4PK	S4PM	
Max. repetitive peak reverse voltage	$V_{RRM}$	100	200	400	600	800	1000	V
Average forward current	I <sub>F(AV)</sub>	4.0				Α		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	100				А		
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150 °C					°C	



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)									
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT			
Instantaneous forward voltage	I <sub>F</sub> = 2.0 A	T <sub>Δ</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.897	-	V			
	I <sub>F</sub> = 4.0 A			0.958	1.10				
	I <sub>F</sub> = 2.0 A	T <sub>A</sub> = 125 °C		0.783	-				
	I <sub>F</sub> = 4.0 A			0.860	0.95				
Reverse current	Rated V <sub>R</sub>	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	-	10				
neverse current	nated v <sub>R</sub>	T <sub>A</sub> = 125 °C	IR (=)	55	100	μΑ			
Max. reverse recovery time	$I_F = 0.5 A, I_R$ $I_{rr} = 0.25 A$	= 1.0 A,	t <sub>rr</sub>	2.5	-	μs			
Typical junction capacitance	4.0 V, 1 MHz	4.0 V, 1 MHz		30	-	pF			

#### Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise specified)								
PARAMETER	SYMBOL S4PB S4PD S4PG S4PJ S4PK S4PM UNIT						UNIT	
Typical thermal resistance	R <sub>0</sub> JA (1)	60					°C/W	
Typical thermal resistance	$R_{ heta JL}$	4						C/VV

#### Note

<sup>(1)</sup> Units mounted on recommended PCB 1 oz. pad layout

ORDERING INFORMATION (Example)									
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE					
S4PJ-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel					
S4PJ-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel					
S4PJHM3_A/H (1)	0.10	Н	1500	7" diameter plastic tape and reel					
S4PJHM3_A/I <sup>(1)</sup>	0.10	I	6500	13" diameter plastic tape and reel					

#### Note

(1) AEC-Q101 qualified



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### **RATINGS AND CHARACTERISTICS CURVES** (T<sub>A</sub> = 25 °C unless otherwise noted)

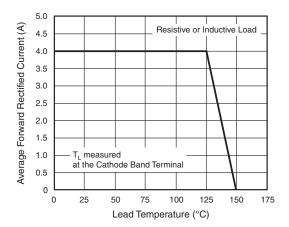


Fig. 1 - Maximum Forward Current Derating Curve

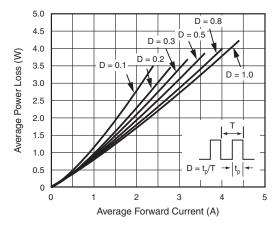


Fig. 2 - Forward Power Loss Characteristics

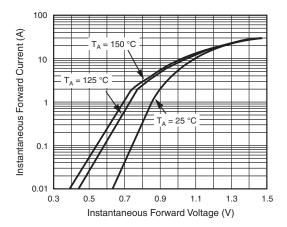


Fig. 3 - Typical Instantaneous Forward Characteristics

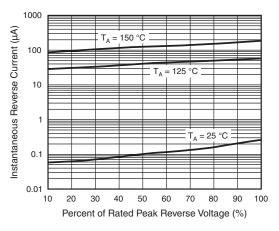


Fig. 4 - Typical Reverse Leakage Characteristics

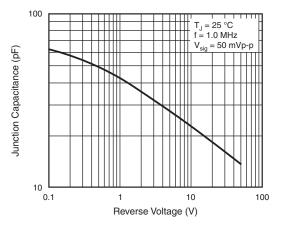


Fig. 5 - Typical Junction Capacitance

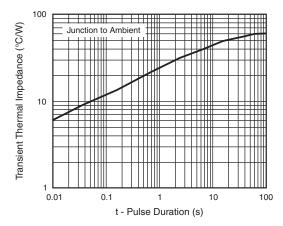
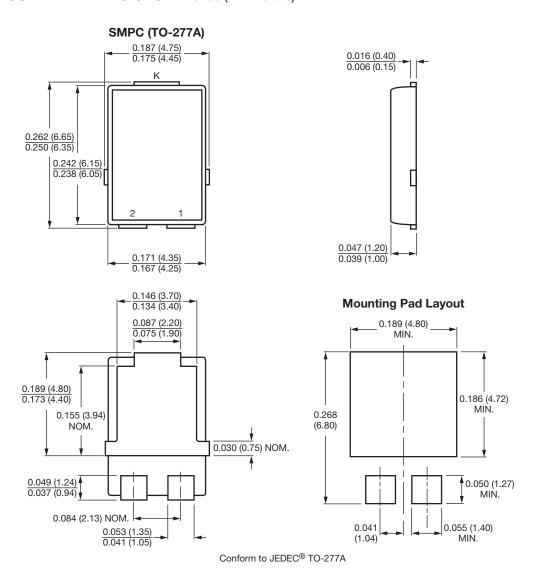


Fig. 6 - Typical Transient Thermal Impedance



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





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