S4PB, S4PD, S4PG, S4PJ, S4PK, S4PM

Vishay General Semiconductor

COMPLIANT

HALOGEN FREE

High Current Density Surface-Mount Glass Passivated Rectifiers



DESIGN SUPPORT TOOLS AVAILABLE



PRIMARY CHARACTERISTICS						
I _{F(AV)}	4.0 A					
V _{RRM}	100 V, 200 V, 400 V, 600 V, 800 V, 1000 V					
I _{FSM}	100 A					
I _R	10 μΑ					
V _F at I _F = 4 A	0.860 V					
T _J max.	150 °C					
Package	SMPC (TO-277A)					
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 <u>www.vishav.com/doc?99912</u>

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMPC (TO-277A)

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 _A = 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 _{F(AV)}	4.0 A					Α	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	100 A				А		
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150 °C					°C	



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)								
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT		
Instantaneous forward voltage	$I_F = 2.0 \text{ A}$	$T_{\Lambda} = 25 ^{\circ}\text{C}$	V _F ⁽¹⁾	0.897	-	V		
	$I_F = 4.0 \text{ A}$			0.958	1.10			
	$I_F = 2.0 \text{ A}$	T _A = 125 °C		0.783	-			
	$I_F = 4.0 \text{ A}$			0.860	0.95			
Reverse current	Rated V _R	T _A = 25 °C	I _R ⁽²⁾	-	10	μΑ		
	nated v _R	T _A = 125 °C	'R '-'	55	100			
Max. reverse recovery time	$I_F = 0.5 A, I_R$ $I_{rr} = 0.25 A$	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A},$ $I_{rr} = 0.25 \text{ A}$		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 $\leq 40 \text{ ms}$

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

Note

⁽¹⁾ 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_B/H (1)	0.10	Н	1500	7" diameter plastic tape and reel					
S4PJHM3_B/I (1)	0.10	I	6500	13" diameter plastic tape and reel					

Note

(1) AEC-Q101 qualified

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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

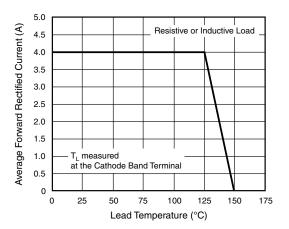


Fig. 1 - Maximum Forward Current Derating Curve

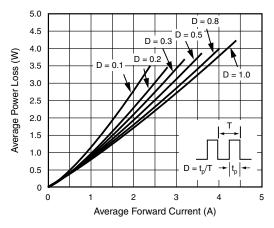


Fig. 2 - Forward Power Loss Characteristics

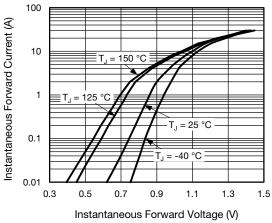


Fig. 3 - Typical Instantaneous Forward Characteristics

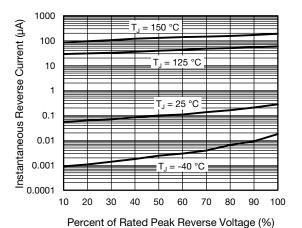


Fig. 4 - Typical Reverse Leakage Characteristics

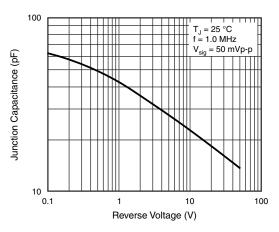


Fig. 5 - Typical Junction Capacitance

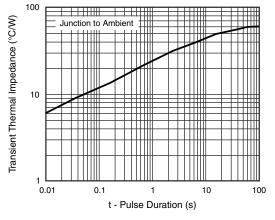
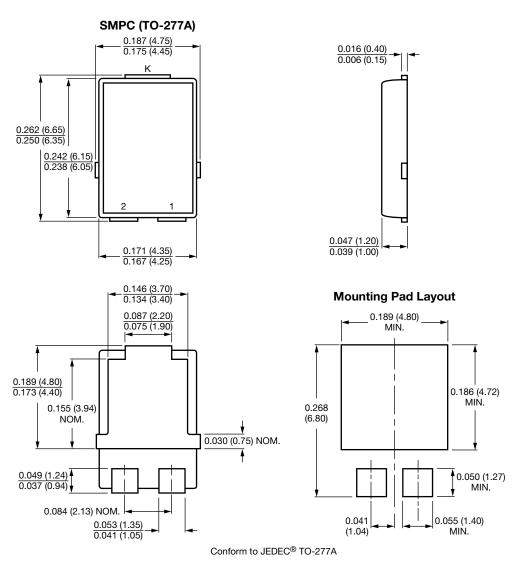


Fig. 6 - Typical Transient Thermal Impedance



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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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