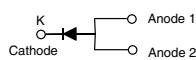


## High Current Density Surface Mount Glass Passivated Rectifiers

**eSMP® Series**

**TO-277A (SMPC)**

**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.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS  
COMPLIANT  
HALOGEN  
FREE**
**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 - halogen-free, RoHS-compliant and AEC-Q101 qualified  
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

**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 $\mu$ A
$V_F$ at $I_F = 4$ A	0.860 V
$T_J$ max.	150 °C
Package	TO-277A (SMPC)
Diode variations	Single die

**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
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$				100			A
Operating junction and storage temperature range	$T_J, T_{STG}$				-55 to +150			°C

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 2.0 \text{ A}$	$T_A = 25^\circ\text{C}$	$V_F^{(1)}$	0.897	-	V	
	$I_F = 4.0 \text{ A}$			0.958	1.10		
	$I_F = 2.0 \text{ A}$	$T_A = 125^\circ\text{C}$		0.783	-		
	$I_F = 4.0 \text{ A}$			0.860	0.95		
Reverse current	Rated $V_R$	$T_A = 25^\circ\text{C}$	$I_R^{(2)}$	-	10	$\mu\text{A}$	
		$T_A = 125^\circ\text{C}$		55	100		
Max. reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		$t_{rr}$	2.5	-	$\mu\text{s}$	
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	30	-	pF	

**Notes**

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

(2) Pulse test: Pulse width  $\leq 40 \text{ ms}$ 

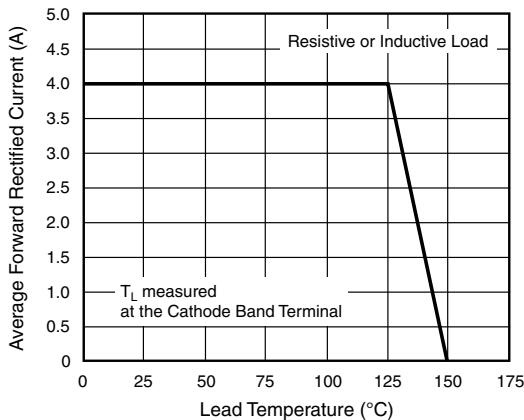
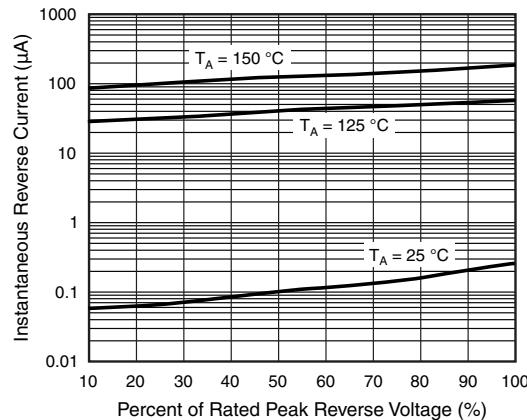
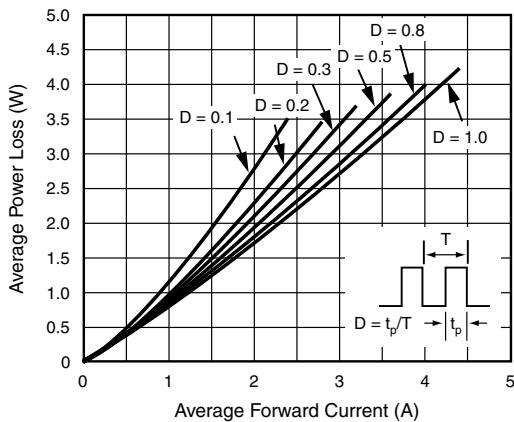
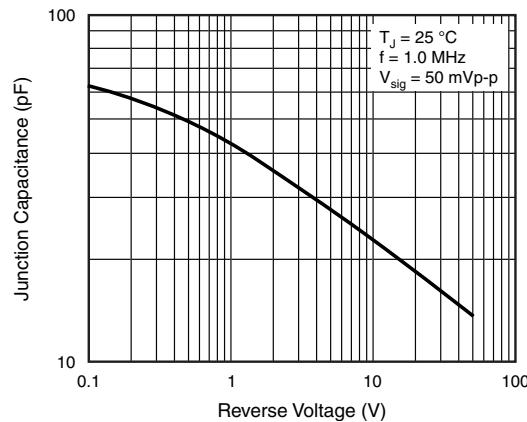
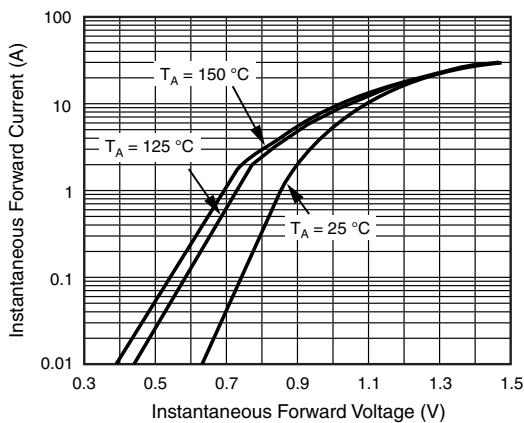
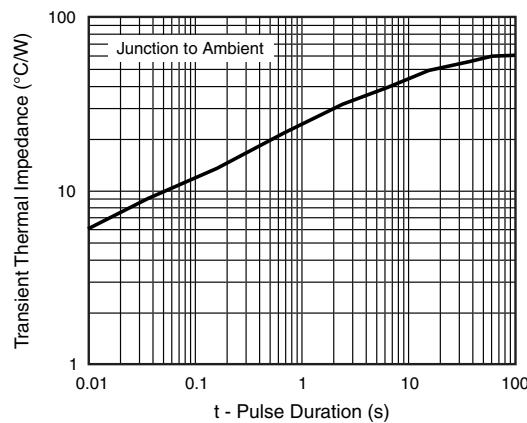
THERMAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)									
PARAMETER	SYMBOL	S4PB	S4PD	S4PG	S4PJ	S4PK	S4PM	UNIT	
Typical thermal resistance	$R_{\theta,JA}^{(1)}$	60			4			$^\circ\text{C}/\text{W}$	
	$R_{\theta,JL}$								

**Note**

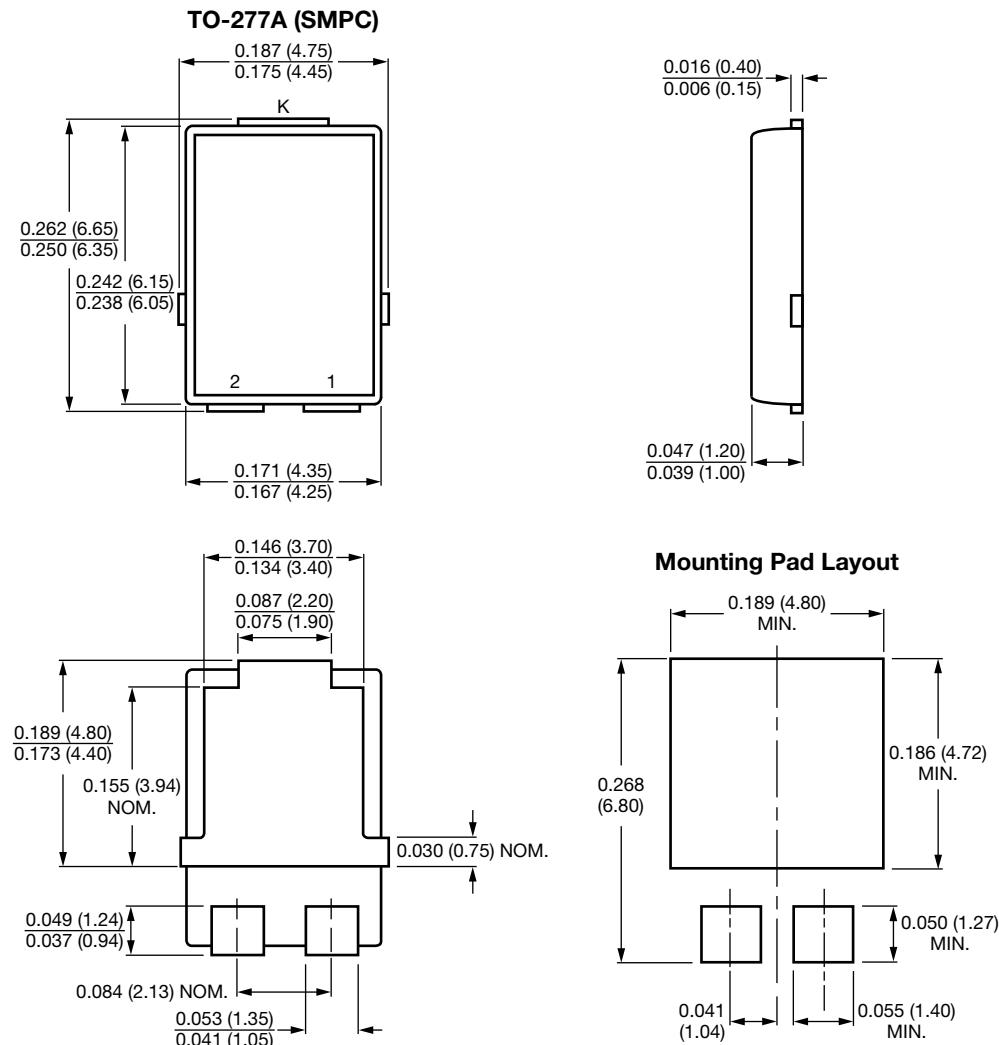
(1) Units mounted on recommended PCB 1 oz. pad layout

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	
S4PJHM3/86A <sup>(1)</sup>	0.10	86A	1500	7" diameter plastic tape and reel	
S4PJHM3/87A <sup>(1)</sup>	0.10	87A	6500	13" diameter plastic tape and reel	
S4PJHM3_A/H <sup>(1)</sup>	0.10	H	1500	7" diameter plastic tape and reel	
S4PJHM3_A/I <sup>(1)</sup>	0.10	I	6500	13" diameter plastic tape and reel	

**Note**
<sup>(1)</sup> AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig. 1 - Maximum Forward Current Derating Curve**

**Fig. 4 - Typical Reverse Leakage Characteristics**

**Fig. 2 - Forward Power Loss Characteristics**

**Fig. 5 - Typical Junction Capacitance**

**Fig. 3 - Typical Instantaneous Forward Characteristics**

**Fig. 6 - Typical Transient Thermal Impedance**

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



Conform to JEDEC® TO-277A

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