COMPLIANT

HALOGEN

FREE



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Vishay General Semiconductor

SMD Photovoltaic Solar Cell Protection Rectifier



FEATURES

- Very low profile typical height of 1.1 mm
- · Ideal for automated placement
- · Glass passivated pellet chip junction
- · Low forward voltage drop
- · High forward surge capability
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in solar cell panel blocking diode for protection, using DC forward current without reverse bias.

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

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	5.0 A			
V_{RRM}	1000 V			
I _{FSM}	100 A			
I _R	10 μΑ			
V_F at $I_F = 5.0$ A	0.90 V			
T _J max.	150 °C			
Package SMPC (TO-277A)				
Circuit configuration	Single			

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	S5PMS	UNIT	
Device marking code		5PMS			
Max. repetitive peak reverse voltage		V_{RRM}	1000	V	
May DC familiard accuract (fig. 1)	T _M = 130 °C	I _F	5.0 ⁽¹⁾	А	
Max. DC forward current (fig. 1)	T _A = 25 °C		1.8 ⁽²⁾		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load		I _{FSM} 100		А	
Operating junction and storage temperature range		T _{OP} , T _{STG}	-55 to +150	°C	
Junction temperature in DC forward current without reverse bias, t \leq 1 h $^{(3)}$		TJ	≤ 200	°C	

Notes

- (1) Mounted on 30 mm x 30 mm Al PCB
- (2) Free air, mounted on recommended copper pad area
- (3) Meets the requirements of IEC 61215 Ed. 2 bypass diode thermal test



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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 = 2.5 A	T _A = 25 °C	V _F ⁽¹⁾	0.94	-	V
	$I_F = 5.0 A$			0.99	1.15	
	$I_F = 2.5 A$	T _A = 125 °C		0.82	-	
	I _F = 5.0 A			0.90	1.00	
Reverse current	Rated V _R	T _A = 25 °C		İ	10	μΑ
	nated V _R	T _A = 125 °C		55	100	
Max. reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	2.5	-	μs
Typical junction capacitance	4.0 V, 1 MHz		CJ	30	-	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	S5PMS	UNIT	
Typical thermal registence	R _{0JA} (1)	90	°C/W	
Typical thermal resistance	R _{0JM} (2)	3		

Notes

 $^{(1)}$ Free air, mounted on recommended copper pad area. Thermal resistance $R_{\theta JA}$ - junction to ambient

 $^{(2)}$ Mounted on 30 mm x 30 mm Al PCB. Thermal resistance $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)					
PREFERRED P/N UNIT WEIGHT (g) PREFERRED PACKAGE CODE BASE QUANTITY DELIVERY MODE					
S5PMS-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel	
S5PMS-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel	

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

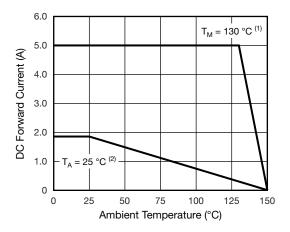


Fig. 1 - Forward Current Derating Curve

Notes

- (1) Mounted on 30 mm x 30 mm Al PCB T_M measured at the terminal ($R_{\theta JM} = 3.0 \, ^{\circ}\text{C/W}$)
- (2) Free air, mounted on recommended copper pad area ($R_{\theta JA} = 90 \, ^{\circ}\text{C/W}$)

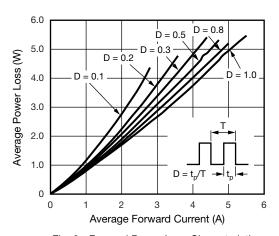


Fig. 2 - Forward Power Loss Characteristics

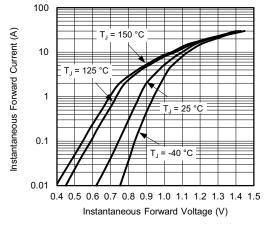


Fig. 3 - Typical Instantaneous Forward Characteristics

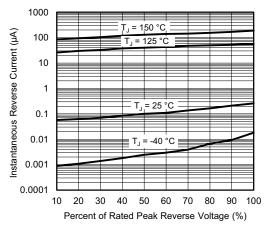


Fig. 4 - Typical Reverse Leakage Characteristics

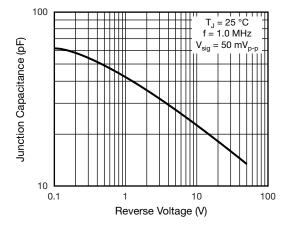
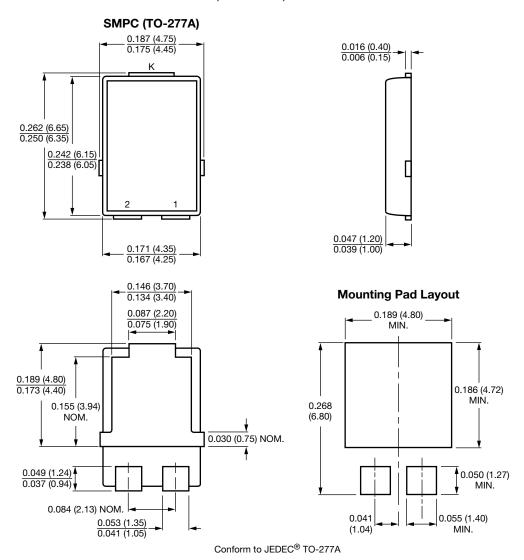


Fig. 5 - Typical Junction Capacitance



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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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