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Vishay General Semiconductor

High Current Density Surface Mount Schottky Barrier Rectifiers



DESIGN SUPPORT TOOLS

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PRIMARY CHARACTERISTICS					
I _{F(AV)}	5.0 A				
V _{RRM}	50 V, 60 V				
I _{FSM}	150 A				
E _{AS}	20 mJ				
V _F at I _F = 5.0 A	0.560 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
- · 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 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 low voltage high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

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

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	SS5P5	SS5P6	UNIT	
Device marking code		S55	S56		
Maximum repetitive peak reverse voltage	V_{RRM}	50	60	V	
Maximum average forward rectified current (fig. 1)	I _{F(AV)}	5.0		Α	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	150		А	
Non-repetitive avalanche energy at $I_{AS} = 2.0 \text{ A}$, $T_J = 25 ^{\circ}\text{C}$	E _{AS}	20		mJ	
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		TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage	I _F = 2.5 A	T _A = 25 °C	V _F ⁽¹⁾	0.518	-	V		
	I _F = 5.0 A			0.631	0.69			
	I _F = 2.5 A	T _A = 125 °C		0.451	-			
	I _F = 5.0 A			0.560	0.62			
Maximum reverse current	Rated V _R	T _A = 25 °C	$T_A = 25 ^{\circ}\text{C}$ $T_A = 125 ^{\circ}\text{C}$ $I_R^{(2)}$	8.4	150	μΑ		
	nated v _R	T _A = 125 °C		3.4	15	mA		
Typical junction capacitance	4.0 V, 1 MHz		CJ	200	ı	pF		

Notes

 $^{(1)}\,$ Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width \leq 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise specified)						
PARAMETER	SYMBOL	SS5P5 SS5P6		UNIT		
Typical thermal resistance	R ₀ JA ⁽¹⁾	65		°C/W		
Typical trieffial resistance	$R_{ heta JL}$	3				

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			
SS5P5-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel			
SS5P5-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel			
SS5P5HM3_A/H (1)	0.10	Н	1500	7" diameter plastic tape and reel			
SS5P5HM3_A/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 specified)

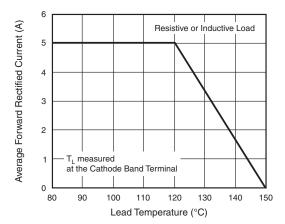


Fig. 1 - Maximum Forward Current Derating Curve

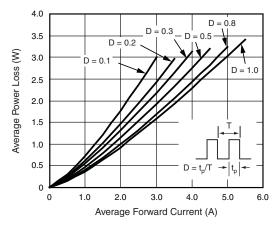


Fig. 2 - Forward Power Loss Characteristics

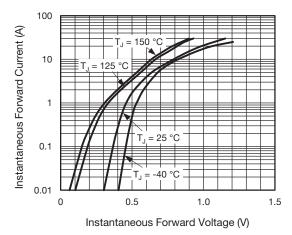


Fig. 3 - Typical Instantaneous Forward Characteristics

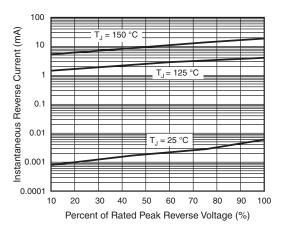


Fig. 4 - Typical Reverse Characteristics

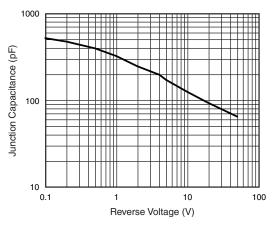


Fig. 5 - Typical Junction Capacitance

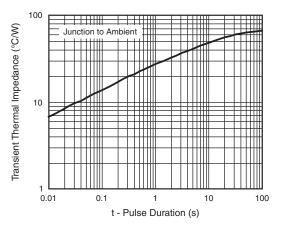
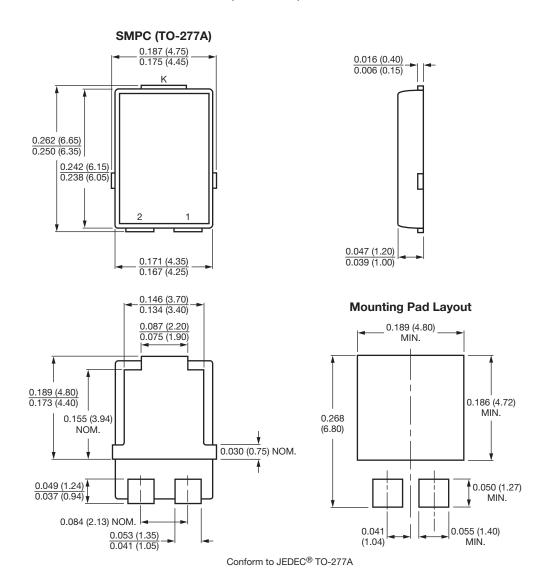


Fig. 6 - Typical Transient Thermal Impedance



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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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