AUTOMOTIVE GRADE

COMPLIANT

HALOGEN FREE



3-0

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# Vishay General Semiconductor

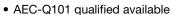
# High Current Density Surface-Mount Schottky Barrier Rectifiers



**LINKS TO ADDITIONAL RESOURCES** 

### **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



- Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see <a href="https://www.vishay.com/doc?99912">www.vishay.com/doc?99912</a>



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 gualified

("\_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

PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	5.0 A			
$V_{RRM}$	50 V, 60 V			
I <sub>FSM</sub>	150 A			
E <sub>AS</sub>	20 mJ			
$V_{F}$ at $I_{F} = 5.0 A$	0.560 V			
T <sub>J</sub> max.	150 °C			
Package	SMPC (TO-277A)			
Circuit configuration	Single			

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	SS5P5	SS5P6	UNIT	
Device marking code		S55	S56		
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	50	60	V	
Maximum average forward rectified current (fig. 1)	I <sub>F(AV)</sub>	5.0		Α	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	150		А	
Non-repetitive avalanche energy at $I_{AS} = 2.0 \text{ A}$ , $T_{J} = 25  ^{\circ}\text{C}$	E <sub>AS</sub>	20		mJ	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150		°C	



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Maximum instantaneous forward voltage	I <sub>F</sub> = 2.5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.518	-	V
	I <sub>F</sub> = 5.0 A			0.631	0.69	
	I <sub>F</sub> = 2.5 A	- T <sub>A</sub> = 125 °C		0.451	-	
	I <sub>F</sub> = 5.0 A			0.560	0.62	
Maximum reverse current	Pated V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	8.4	150	μΑ
	Rated V <sub>R</sub>	T <sub>A</sub> = 125 °C		3.4	15	mA
Typical junction capacitance	4.0 V, 1 MHz		CJ	200	-	pF

#### Notes

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

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

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

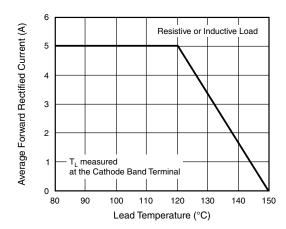


Fig. 1 - Maximum Forward Current Derating Curve

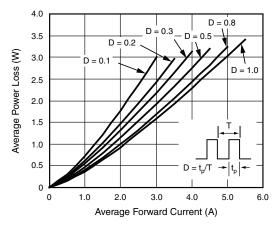


Fig. 2 - Forward Power Loss Characteristics

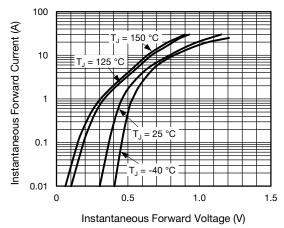


Fig. 3 - Typical Instantaneous Forward Characteristics

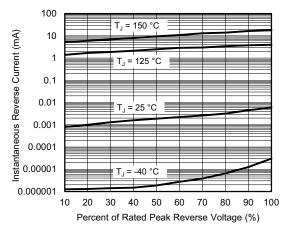


Fig. 4 - Typical Reverse Characteristics

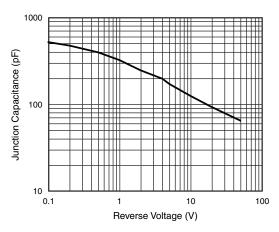


Fig. 5 - Typical Junction Capacitance

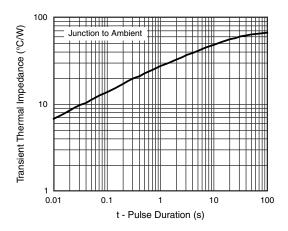
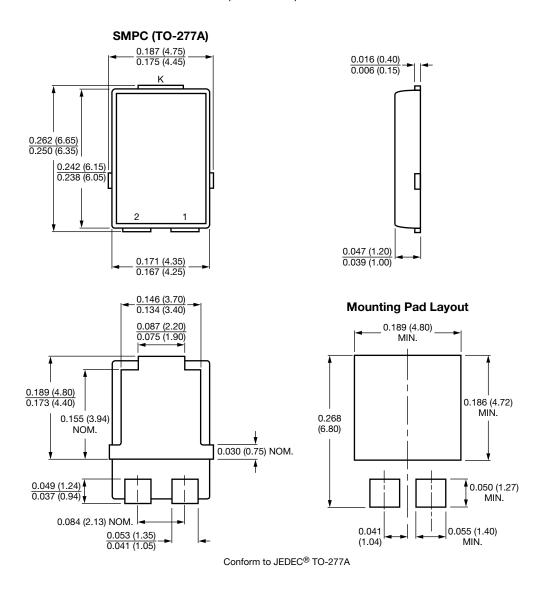


Fig. 6 - Typical Transient Thermal Impedance



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







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