# SS5P9, SS5P10

Vishay General Semiconductor

# **High Current Density Surface Mount Schottky Barrier Rectifiers**



к 0- 🗲 Cathode

-O Anode 1

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PRIMARY CHARACTERISTICS						
I <sub>F(AV)</sub>	5.0 A					
V <sub>RRM</sub>	90 V, 100 V					
I <sub>FSM</sub>	150 A					
$V_F$ at $I_F$ = 5.0 A	0.649 V					
I <sub>R</sub>	4.5 µA					
T <sub>J</sub> max.	150 °C					
Package	TO-277A (SMPC)					
Diode variations	Single					

### **FEATURES**

- Very low profile typical height of 1.1 mm
- · Ideal for automated placement
- · Guardring for overvoltage protection
- 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 gualified available Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

### **TYPICAL APPLICATIONS**

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, and polarity protection application.

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

<b>MAXIMUM RATINGS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	SYMBOL	SS5P9	SS5P10	UNIT		
Device marking code		S59	S510			
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	90	100	V		
Maximum average forward rectified current (fig. 1)	I <sub>F(AV)</sub>	5.0		A		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	150		A		
Non-repetitive avalanche energy at $I_{AS}$ = 2.0 A, $T_{J}$ = 25 $^{\circ}\mathrm{C}$	E <sub>AS</sub>	20		mJ		
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150		°C		

Available



COMPLIANT HALOGEN FREE



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<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25$ °C unless otherwise noted)							
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT	
Instantaneous forward voltage	I <sub>F</sub> = 2.5 A	– T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.708	-	v	
	I <sub>F</sub> = 5.0 A			0.832	0.88		
	I <sub>F</sub> = 2.5 A	T <sub>A</sub> = 125 °C		0.571	-		
	I <sub>F</sub> = 5.0 A			0.649	0.68		
Reverse current	Potod V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	4.5	15	μA	
	Raled V <sub>R</sub>	Rated $V_R$ $T_A = 125 °C$		2.7	5	mA	
Typical junction capacitance	4.0 V, 1 MHz	4.0 V, 1 MHz		130	-	pF	

#### Notes

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

<sup>(2)</sup> Pulse test: Pulse width  $\leq$  40 ms

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise specified)						
PARAMETER	SYMBOL	SS5P9 SS5P10		UNIT		
Typical thermal resistance	R <sub>0JA</sub> <sup>(1)</sup>	65		°C/W		
Typical memaresistance	$R_{ extsf{ heta}JL}$	3				

#### 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			
SS5P10-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel			
SS5P10-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel			
SS5P10HM3/86A (1)	0.10	86A	1500	7" diameter plastic tape and reel			
SS5P10HM3/87A (1)	0.10	87A	6500	13" diameter plastic tape and reel			
SS5P10HM3_A/H (1)	0.10	н	1500	7" diameter plastic tape and reel			
SS5P10HM3_A/I <sup>(1)</sup>	0.10	I	6500	13" diameter plastic tape and reel			

Note

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



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### **RATINGS AND CHARACTERISTICS CURVES** (T<sub>A</sub> = 25 °C unless otherwise noted)

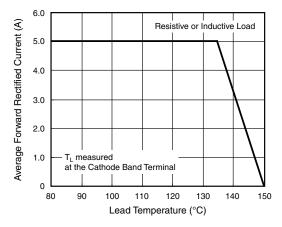


Fig. 1 - Maximum Forward Current Derating Curve

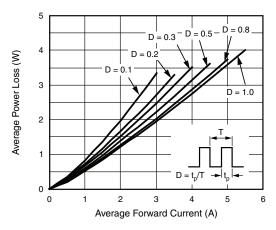


Fig. 2 - Forward Power Loss Characteristics

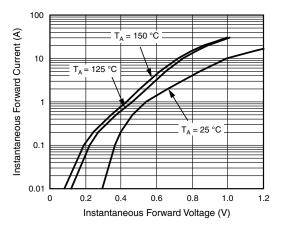


Fig. 3 - Typical Instantaneous Forward Characteristics

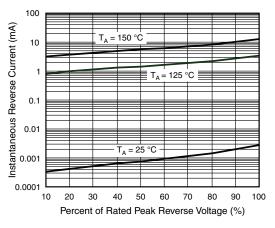


Fig. 4 - Typical Reverse Characteristics

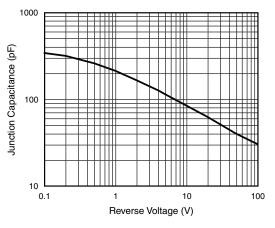


Fig. 5 - Typical Junction Capacitance

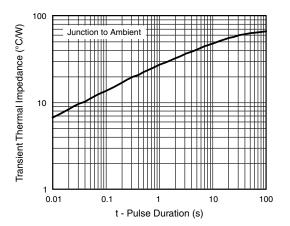


Fig. 6 - Typical Transient Thermal Impedance

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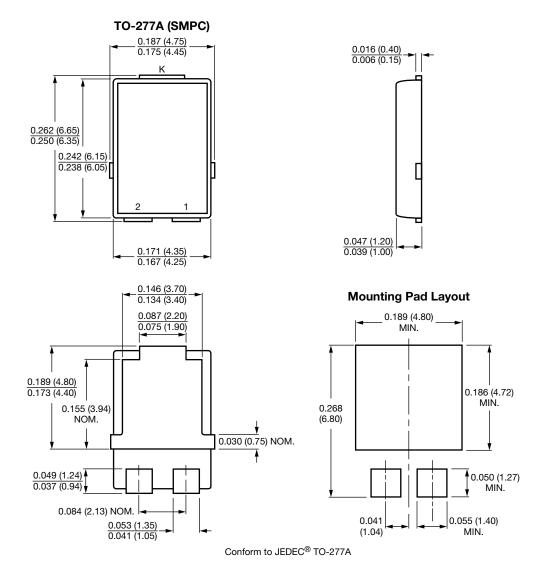
Document Number: 88984

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





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