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Vishay General Semiconductor

High Current Density Surface-Mount Schottky Barrier Rectifiers



FEATURES

• Very low profile - typical height of 1.1 mm



- 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 qualified available
 - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS					
I _{F(AV)}	10 A				
V_{RRM}	30 V, 40 V				
I _{FSM}	280 A				
E _{AS}	20 mJ				
V_F at $I_F = 10 A$	0.41 V				
T _J max.	150 °C				
Package	SMPC (TO-277A)				
Circuit configuration	Single				

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	SS10P3	SS10P4	UNIT	
Device marking code		S103	S104		
Maximum repetitive peak reverse voltage	V_{RRM}	30	40	V	
Maximum average forward rectified current (fig. 1)	I _{F(AV)}	10		А	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	280		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		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	I _F = 5 A	T _A = 25 °C	V _F ⁽¹⁾	0.41	-	V	
	I _F = 10 A			0.48	0.56		
	I _F = 5 A	T _A = 125 °C		0.31	-		
	I _F = 10 A			0.41	0.49		
Reverse current	Detect	T _A = 25 °C	I _R ⁽²⁾	100	800	μΑ	
	Rated V _R	T _A = 125 °C		50	100	mA	
Typical junction capacitance	4.0 V, 1 MHz		CJ	750	-	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 specified)						
PARAMETER	SYMBOL	SS10P3 SS10P4		UNIT		
Typical thermal resistance	R _{θJA} (1)	60		°C/W		
Typical thermal 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		
SS10P4-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel		
SS10P4-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel		
SS10P4HM3_A/H (1)	0.10	Н	1500	7" diameter plastic tape and reel		
SS10P4HM3_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)

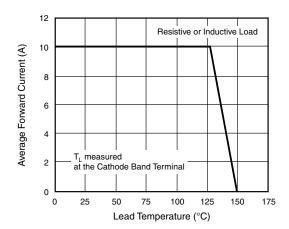


Fig. 1 - Maximum Forward Current Derating Curve

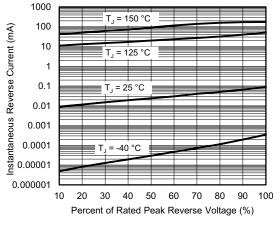


Fig. 4 - Typical Reverse Leakage Characteristics

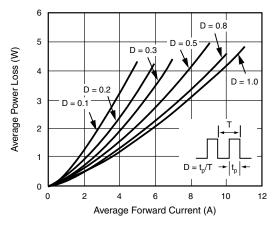


Fig. 2 - Forward Power Loss Characteristics

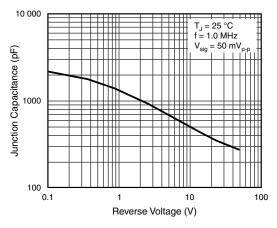


Fig. 5 - Typical Junction Capacitance

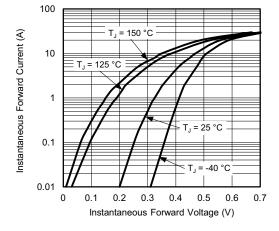


Fig. 3 - Typical Instantaneous Forward Characteristics

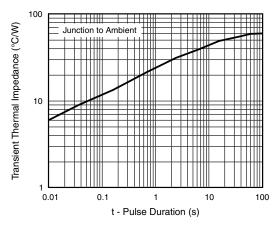
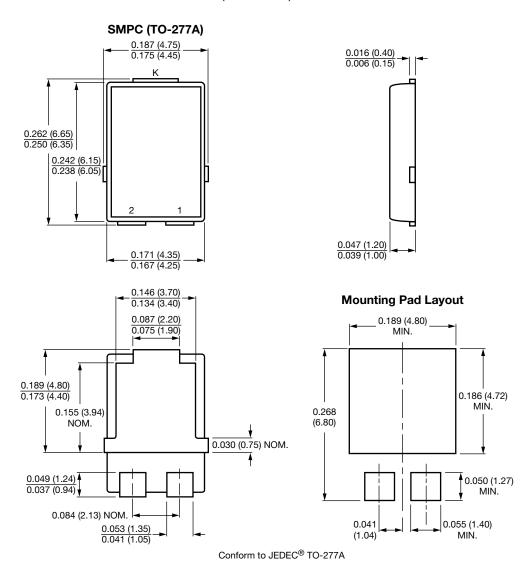


Fig. 6 - Typical Transient Thermal Impedance



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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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