AUTOMOTIVE

COMPLIANT

FREE

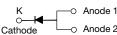


Vishay General Semiconductor

High Current Density Surface Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low $V_F = 0.43 \text{ V}$ at $I_F = 5 \text{ A}$





ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	12 A			
V_{RRM}	100 V			
I _{FSM}	200 A			
E _{AS}	100 mJ			
V_F at $I_F = 12 A$	0.58 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 automatic placement
- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- 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

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 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	V12P10	UNIT	
Device marking code		V1210		
Maximum repetitive peak reverse voltage	V_{RRM}	100	V	
Maximum average forward rectified current (fig. 1)	I _{F(AV)}	12	А	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	200	А	
Non-repetitive avalanche energy at I _{AS} = 2.0 A, T _J = 25 °C	E _{AS}	100	mJ	
Peak repetitive reverse current at t_p = 2 μ s, 1 kHz, T_J = 38 °C \pm 2 °C	I _{RRM}	1.0	А	
Operating junction and storage temperature range	T _J , T _{STG}	-40 to +150	°C	



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I _R = 1.0 mA	T _A = 25 °C	V_{BR}	100 (minimum)	-	V
Instantaneous forward voltage	I _F = 5 A	T 05 °C	V _F (1)	0.50	-	
	I _F = 12 A	$T_A = 25 ^{\circ}C$		0.65	0.70	
	I _F = 5 A	T 105 °C		0.43	-	
	I _F = 12 A	$T_A = 125 ^{\circ}C$		0.58	0.64	
Reverse current	V 70 V	T _A = 25 °C	I _R (2)	7.0	-	μA
	V _R = 70 V	T _A = 125 °C		4.4	-	mA
	V _R = 100 V	T _A = 25 °C		21.3	250	μΑ
		T _A = 125 °C		11.8	20	mA

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	V12P10	UNIT	
Typical thormal registance	R _{θJA} ⁽¹⁾	60	°C/W	
Typical thermal resistance	$R_{\theta JL}$	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		
V12P10-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel		
V12P10-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel		
V12P10HM3_A/H (1)	0.10	Н	1500	7" diameter plastic tape and reel		
V12P10HM3_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 noted)

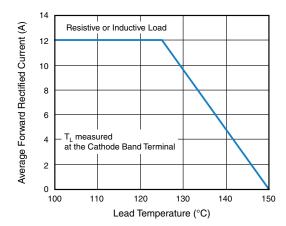


Fig. 1 - Maximum Forward Current Derating Curve

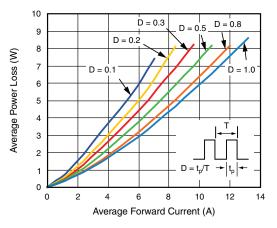


Fig. 2 - Forward Power Loss Characteristics

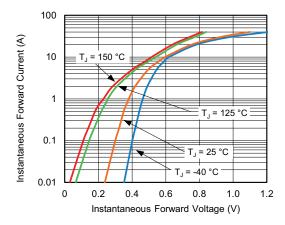


Fig. 3 - Typical Instantaneous Forward Characteristics

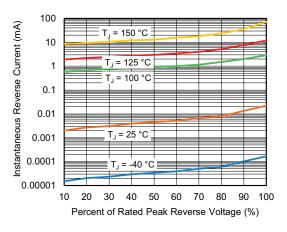


Fig. 4 - Typical Reverse Leakage Characteristics

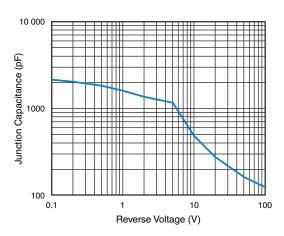


Fig. 5 - Typical Junction Capacitance

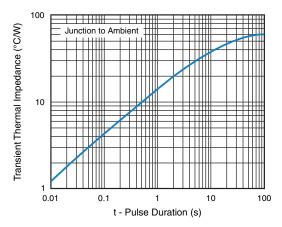
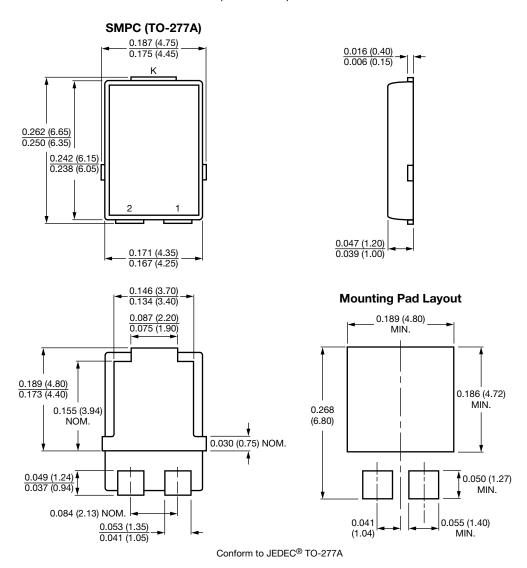


Fig. 6 - Typical Transient Thermal Impedance



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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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