AUTOMOTIVE GRADE

Available

COMPLIANT

HALOGEN FREE



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Vishay General Semiconductor

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

Ultra Low $V_F = 0.44 \text{ V}$ at $I_F = 5 \text{ A}$



ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	10 A			
V _{RRM}	80 V			
I _{FSM}	180 A			
V _F at I _F = 10 A (T _A = 125 °C)	0.56 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
- 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 <u>www.vishay.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	V10P8	UNIT	
Device marking code		V108		
Maximum repetitive peak reverse voltage	V _{RRM}	80	V	
Maximum avarage forward rectified current (fig. 1)	I _F ⁽¹⁾	10	А	
Maximum average forward rectified current (fig. 1)	I _F ⁽²⁾	3.9	A	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	180	А	
Voltage rate of change (rated V _R)	dV/dt	10 000	V/µs	
Operating junction and storage temperature range	T _J , T _{STG}	-40 to +150	°C	

Notes

- (1) Mounted on 30 mm x 30 mm pad areas aluminum PCB
- (2) Free air, mounted on recommended copper pad area



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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 = 5.0 A	T _A = 25 °C	V _F ⁽¹⁾	0.50	-	V
	I _F = 10 A			0.60	0.68	
	I _F = 5.0 A	T _A = 125 °C		0.44	-	
	I _F = 10 A			0.56	0.64	
Reverse current	V _R = 80 V	T _A = 25 °C		-	0.8	- mA
	$V_R = 60 \text{ V}$ $T_A = 12$	T _A = 125 °C		9.0	22	

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	V10P8	UNIT	
Typical thormal registance	R ₀ JA (1)(2)	75	°C/W	
Typical thermal resistance	R _{θJM} ⁽³⁾	4		

Notes

- $^{(1)}$ The heat generated must be less than the thermal conductivity from junction to ambient: $dP_D/dT_J < 1/R_{\theta JA}$
- $^{(2)}$ Free air mounted on recommended copper pad area; thermal resistance $R_{\theta JA}$ junction-to-ambient
- $^{(3)}$ Mounted on 30 mm x 30 mm aluminum PCB; thermal resistance $R_{\theta JM}$ junction-to-mount

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
V10P8-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel	
V10P8-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel	
V10P8HM3_A/H (1)	0.10	Н	1500	7" diameter plastic tape and reel	
V10P8HM3_A/I (1)	0.10	I	6500	13" diameter plastic tape and reel	

Note

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

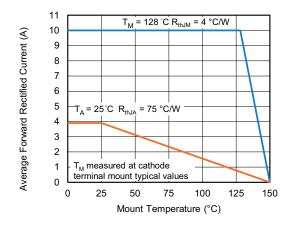


Fig. 1 - Forward Current Derating Curve

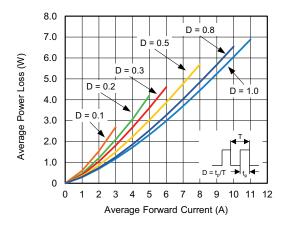


Fig. 2 - Forward Power Loss Characteristics

⁽¹⁾ AEC-Q101 qualified



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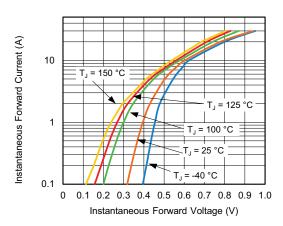


Fig. 3 - Typical Instantaneous Forward Characteristics

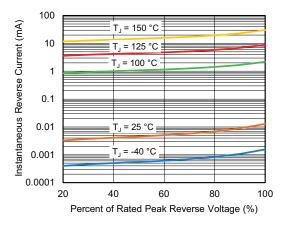


Fig. 4 - Typical Reverse Leakage Characteristics

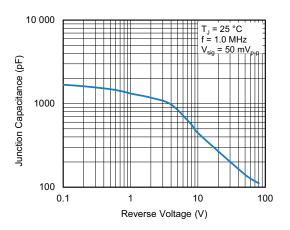


Fig. 5 - Typical Junction Capacitance

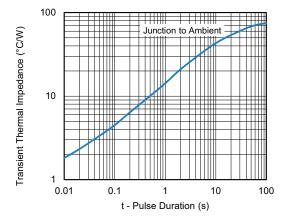
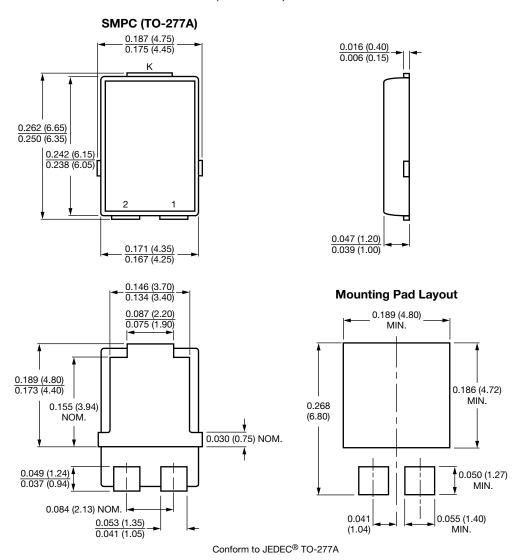


Fig. 6 - Typical Transient Thermal Impedance



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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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