

Vishay General Semiconductor

Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

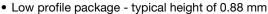


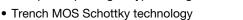
LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	7 A			
V _{RRM}	100 V			
I _{FSM}	120 A			
V _F at I _F = 3.5 A (T _J = 125 °C)	0.45 V			
T _J max.	150 °C			
Package	DFN3820A			
Circuit configuration	Single			

FEATURES





· Low power losses, high efficiency

Low forward voltage drop

 Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C

RoHS COMPLIANT HALOGEN FREE

AUTOMOTIVE GRADE

- AEC-Q101 qualified available
 - Automotive ordering code; base P/NHM3
- Compatible to SMP (DO-220AA) package case outline
- Material categorization: for definitions of compliance please see www.vishav.com/doc?99912

TYPICAL APPLICATIONS

For use in low voltage, high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

MECHANICAL DATA

Case: DFN3820A

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

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 and HM3 suffix meet JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	V7N103	UNIT	
Device marking code		V7G		
Maximum repetitive peak reverse voltage	V _{RRM}	100	V	
Maximum average forward restified current (fig. 1)	I _{F(AV)} (1)	7	А	
Maximum average forward rectified current (fig. 1)	I _{F(AV)} (2)	2.2	А	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	120	А	
Operating junction temperature range	T _J ⁽³⁾	-40 to +150	°C	
Storage temperature range	T _{STG}	-55 to +150	°C	

Notes

- (1) With infinite heatsink
- (2) Free air, mounted on FR4 PCB, 2 oz., standard footprint
- (3) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta,JA}$



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ELECTRICAL CHARACTERISTICS (T _J = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 3.5 A$	T _J = 25 °C	V _F ⁽¹⁾	0.51	-	V
	I _F = 7 A			0.61	0.66	
	I _F = 3.5 A	T _J = 125 °C		0.45	-	
	I _F = 7 A			0.56	0.60	
Reverse current	$V_R = 70 \text{ V}$ $T_J = 25$ $T_J = 12$	T _J = 25 °C	I _R ⁽²⁾	0.006	-	
		T _J = 125 °C		3.5	-	mA
	V _R = 100 V	T _J = 25 °C		-	0.33	
		T _J = 125 °C		9	25	
Typical junction capacitance	4.0 V, 1 MHz		CJ	860	-	pF

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 specified)				
PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Thermal resistance	R ₀ JA (1)(2)	135	169	°C/W
Thermal resistance	R _{0JM} (3)	5	6.3	

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) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz., standard footprint
- (3) Thermal resistance junction-to-mount to follow JEDEC 51-14 transient dual interface test method (TDIM)

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
V7N103-M3/H	0.023	Н	3500	7" diameter plastic tape and reel	
V7N103-M3/I	0.023	I	14 000	13" diameter plastic tape and reel	
V7N103HM3/H (1)	0.023	Н	3500	7" diameter plastic tape and reel	
V7N103HM3/I (1)	0.023	L	14 000	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)

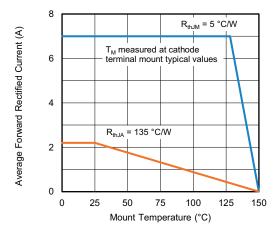


Fig. 1 - Maximum Forward Current Derating Curve

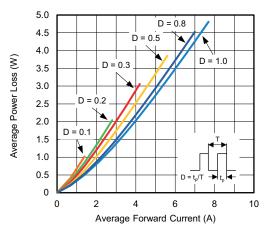


Fig. 2 - Forward Power Loss Characteristics

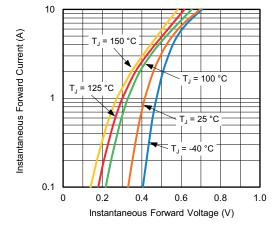


Fig. 3 - Typical Instantaneous Forward Characteristics

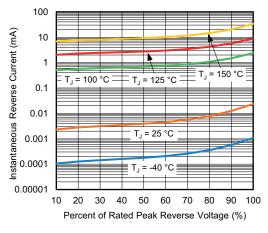


Fig. 4 - Typical Reverse Characteristics

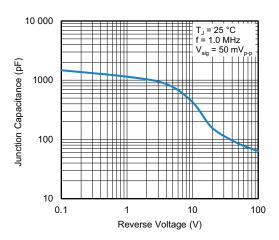


Fig. 5 - Typical Junction Capacitance

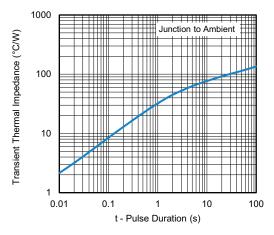
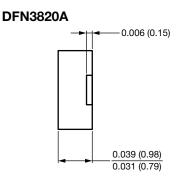


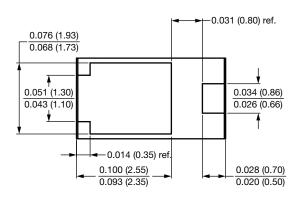
Fig. 6 - Typical Transient Thermal Impedance

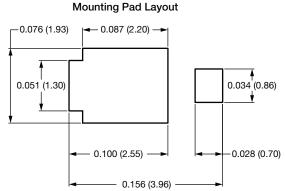


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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)









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