V3NM63



Vishay General Semiconductor

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



Anode O Cathode

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS						
I _{F(AV)} 3 A						
V _{RRM}	60 V					
I _{FSM}	80 A					
V _F at I _F = 1.5 A (T _J = 125 °C)	0.42 V					
T _J max.	175 °C					
Package	DFN3820A					
Circuit configuration	Single					

FEATURES

- Low profile package typical height of 0.88 mm
 Available
- Leadless DFN package with side-wettable flanks suitable for customer AOI (Automatic Optical Inspection)
- Trench MOS Schottky technology
- Low power losses, high efficiency
- Low forward voltage drop
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- 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 <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: 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	V3NM63	UNIT				
Device marking code		3MF					
Maximum repetitive peak reverse voltage	V _{RRM}	60	V				
Maximum average forward rectified current (fig. 1)	I _{F(AV)} ⁽¹⁾	3	А				
Maximum average forward rectined current (ng. 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}	80	A				
Operating junction temperature range	T _J ⁽³⁾	-40 to +175	°C				
Storage temperature range	T _{STG}	-55 to +175	°C				

Notes

⁽¹⁾ Mounted on 10 mm x 10 mm copper pad area PCB

(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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RoHS

COMPLIANT HALOGEN

FREE





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ELECTRICAL CHARACTERISTICS (T _J = 25 °C unless otherwise noted)								
PARAMETER	TEST CO	ONDITIONS	SYMBOL	TYP.	MAX.	UNIT		
Instantaneous forward voltage	I _F = 1.5 A	T _J = 25 °C		0.51	-			
	$I_{F} = 3.0 \text{ A}$	$I_{\rm F} = 3.0 \rm{A}$		0.58	0.63	v		
	I _F = 1.5 A	T _J = 125 °C	V _F ⁽¹⁾	0.42	-	v		
	I _F = 3.0 A	1j=125 C		0.50	0.56			
Reverse current	V _B = 60 V	T _J = 25 °C T _{.1} = 125 °C	I _R ⁽²⁾	-	0.01	mA		
	$v_{\rm R} = 00 v$	T _J = 125 °C		0.4	1.5	IIIA		
Typical junction capacitance	4.0 V, 1 MH	4.0 V, 1 MHz		560	-	pF		

Notes

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

⁽²⁾ Pulse test: pulse width \leq 5 ms

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise specified)							
PARAMETER	SYMBOL	TYP.	MAX.	UNIT			
Thermal resistance	R _{0JA} (1)(2)	135	169	°C/W			
	R _{θJM} ⁽³⁾	5	6.3	0/10			

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 TABLE

Device code	v	3	Ν	м	6	3	н	М3	
	1	2	3	4	5	6	7	8	
	1 -	Visl	nay TME	3S prod	uct				
	2 -	Cur	rent rati	ng (3 =	3 A)				
	3 -	- Package type (N = DFN3820A)							
	4 -	- Process type option (M = Iow I _R)							
	5 -	Vol	Voltage rating (6 = 60 V)						
	6 -	ТМ	TMBS generation option (3 = Gen3)						
	7 -	Qua	Quality grade (H = AEC-Q101 qualified, otherwise = industry grade)						
	8 -				ient cate nd termi			-	ee,

ORDERING INFORMATION (Example)								
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE				
V3NM63-M3/H	0.023	Н	3500	7" diameter plastic tape and reel				
V3NM63-M3/I	0.023	l	14 000	13" diameter plastic tape and reel				
V3NM63HM3/H ⁽¹⁾	0.023	н	3500	7" diameter plastic tape and reel				
V3NM63HM3/I ⁽¹⁾	0.023	I	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)

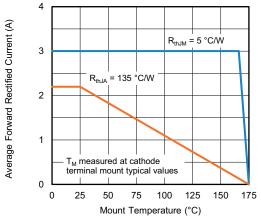


Fig. 1 - Maximum Forward Current Derating Curve

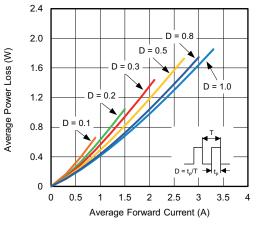


Fig. 2 - Forward Power Loss Characteristics

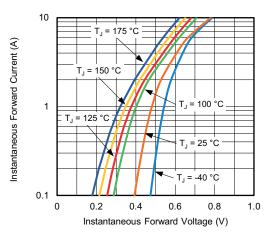


Fig. 3 - Typical Instantaneous Forward Characteristics

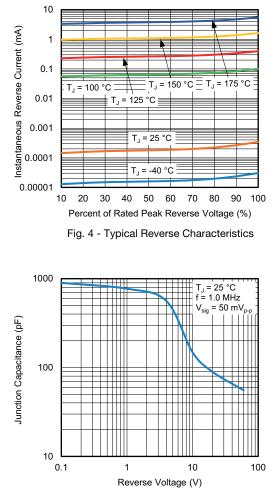


Fig. 5 - Typical Junction Capacitance

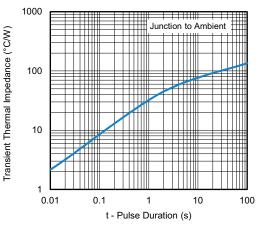


Fig. 6 - Typical Transient Thermal Impedance

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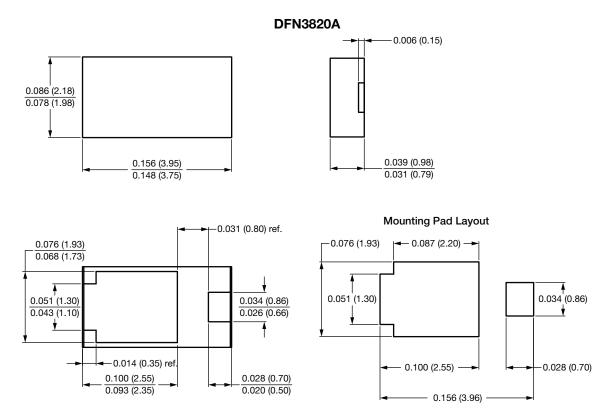
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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