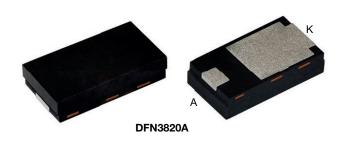


Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier



LINKS TO ADDITIONAL RESOURCES





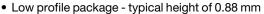






PRIMARY CHARACTERISTICS					
I _{F(AV)}	2.0 A				
V_{RRM}	60 V				
I _{FSM}	50 A				
V_F at $I_F = 1.0$ A $(T_J = 125 ^{\circ}C)$	0.42 V				
T _J max.	175 °C				
Package	DFN3820A				
Circuit configuration	Single				

FEATURES





 Leadless DFN package with side-wettable flanks suitable for customer AOI (Automatic Optical Inspection)



COMPLIANT HALOGEN

FREE

- 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.vishav.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	V2NM63	UNIT	
Device marking code		2MF		
Maximum repetitive peak reverse voltage	V _{RRM}	60	V	
Maximum avarage forward rectified current (fig. 1)	I _{F(AV)} (1)	2	А	
Maximum average forward rectified current (fig. 1)	I _{F(AV)} (2)	1.9	Α	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	50	А	
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: $dP_D/dT_J < 1/R_{\theta JA}$



ELECTRICAL CHARACTERISTICS (T _J = 25 °C unless otherwise noted)							
PARAMETER	TEST CO	ONDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	I _F = 1.0 A	- T _J = 25 °C	V _E (1)	0.51	-	V	
	I _F = 2.0 A			0.58	0.63		
	I _F = 1.0 A	T _J = 125 °C		V _F (··)	0.42	-	V
	I _F = 2.0 A			0.51	0.56		
Reverse current	V - 60 V	$V_R = 60 \text{ V}$ $T_J = 25 \text{ °C}$ $T_J = 125 \text{ °C}$	I _R ⁽²⁾	-	0.01	mΛ	
	v _R = 60 v			0.2	1.0	- mA	
Typical junction capacitance	4.0 V, 1 MF	4.0 V, 1 MHz		350	-	pF	

Notes

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

(2) Pulse test: pulse width ≤ 5 ms

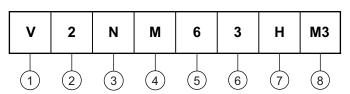
THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise specified)				
PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Thermal resistance	R _{0JA} (1)(2)	140	175	°C/W
mermai resistance	R _{0JM} (3)	6	7.5	

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



- 1 Vishay TMBS product
- Current rating (2 = 2 A)
- 3 Package type (N = DFN3820A)
- Process type option (M = low I_R)
- 5 Voltage rating (6 = 60 V)
- TMBS generation option (3 = Gen3)
- 7 Quality grade (H = AEC-Q101 qualified, otherwise = industry grade)
- 8 Material / Environment category (M3 = halogen-free, RoHS-compliant, and termination lead (Pb)-free)

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
V2NM63-M3/H	0.023	Н	3500	7" diameter plastic tape and reel	
V2NM63-M3/I	0.023	I	14 000	13" diameter plastic tape and reel	
V2NM63HM3/H (1)	0.023	Н	3500	7" diameter plastic tape and reel	
V2NM63HM3/I (1)	0.023	I	14 000	13" diameter plastic tape and reel	

Note

(1) AEC-Q101 qualified

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

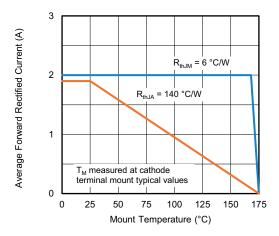


Fig. 1 - Maximum Forward Current Derating Curve

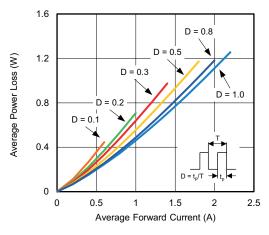


Fig. 2 - Forward Power Loss Characteristics

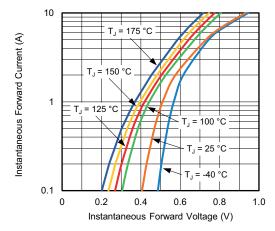


Fig. 3 - Typical Instantaneous Forward Characteristics

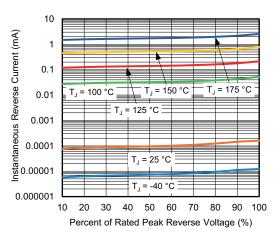


Fig. 4 - Typical Reverse Characteristics

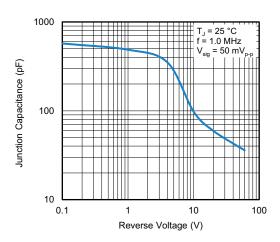


Fig. 5 - Typical Junction Capacitance

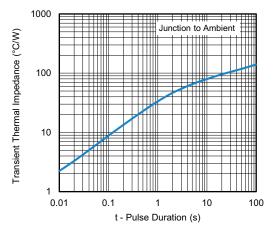
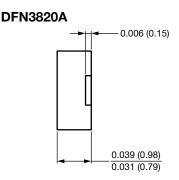
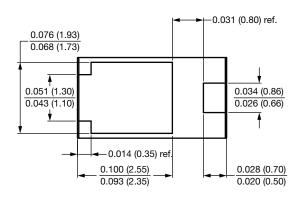


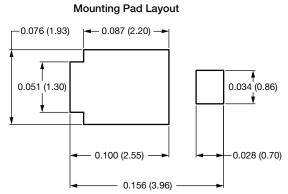
Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)









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