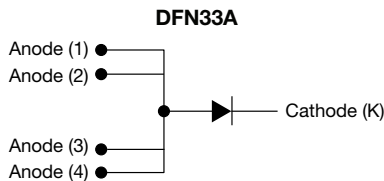
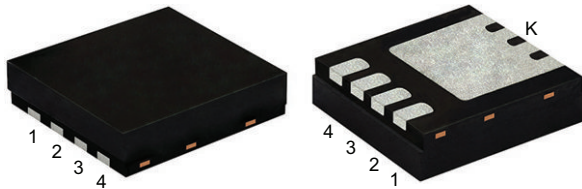


Surface-Mount TMBS[®] (Trench MOS Barrier Schottky) Rectifier



FEATURES

- Low profile package - typical height of 0.88 mm
- Leadless DFN package with side-wettable flanks suitable for customer AOI (Automatic Optical Inspection)
- Very low forward voltage drop by TMBS Gen3 technology
- Low power losses, high efficiency
- 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

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	5 A
V_{RRM}	100 V
I_{FSM}	100 A
V_F at $I_F = 2.5$ A ($T_J = 125$ °C)	0.43 V
T_J max.	150 °C
Package	DFN33A
Circuit configuration	Single

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: DFN33A

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

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	V5N3103	UNIT
Device marking code		5103	
Maximum repetitive peak reverse voltage	V_{RRM}	100	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}^{(1)}$	5	A
	$I_{F(AV)}^{(2)}$	2.3	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	100	A
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: $dP_D/dT_J < 1/R_{\theta JA}$



ELECTRICAL CHARACTERISTICS (T _J = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 2.5 A	T _J = 25 °C	V _F ⁽¹⁾	0.50	-	V
	I _F = 5 A			0.58	0.64	
	I _F = 2.5 A	T _J = 125 °C		0.43	-	
	I _F = 5 A			0.54	0.59	
Reverse current	V _R = 70 V	T _J = 25 °C	I _R ⁽²⁾	0.005	-	mA
		T _J = 125 °C		2.9	-	
	V _R = 100 V	T _J = 25 °C		-	0.28	
		T _J = 125 °C		7	20	
Typical junction capacitance	4.0 V, 1 MHz		C _J	730	-	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 _{θJA} ⁽¹⁾⁽²⁾	118	148	°C/W
	R _{θJA} ⁽³⁾	-	65	
	R _{θJM} ⁽⁴⁾	3.2	4	

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: dP_D/dT_J < 1/R_{θJA}
- (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-ambient, free air with device mounted on FR4 PCB, 2 oz., 20 mm x 20 mm pad area
- (4) Thermal resistance junction-to-mount to follow JEDEC 51-14 transient dual interface test method (TDIM)

ORDERING INFORMATION TABLE

Device code

V	5	N3	10	3	H	M3
①	②	③	④	⑤	⑥	⑦

- 1** - Vishay TMBS product
- 2** - Current rating (5 = 5 A)
- 3** - Package type (N3 = DFN33A)
- 4** - Voltage rating (10 = 100 V)
- 5** - TMBS generation option (3 = Gen3)
- 6** - Quality grade (H = AEC-Q101 qualified, otherwise = industry grade)
- 7** - Material / environmental 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
V5N3103-M3/I	0.031	I	6000	13" diameter plastic tape and reel
V5N3103HM3/I ⁽¹⁾	0.031	I	6000	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

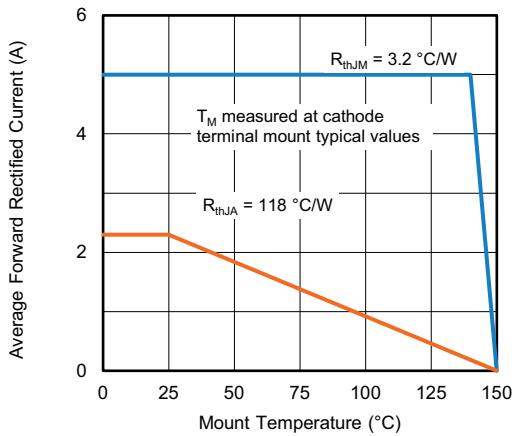


Fig. 1 - Maximum Forward Current Derating Curve

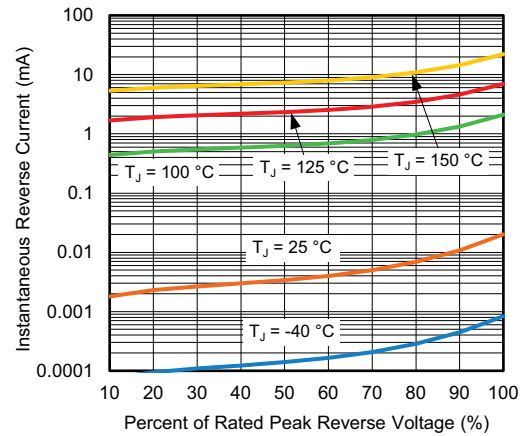


Fig. 4 - Typical Reverse Characteristics

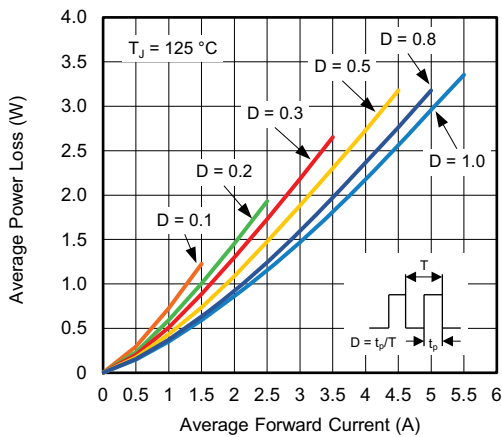


Fig. 2 - Forward Power Loss Characteristics

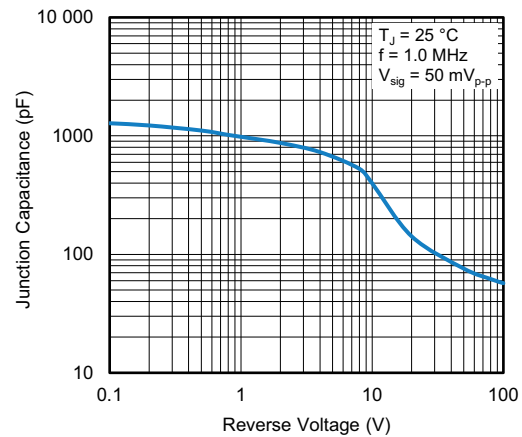


Fig. 5 - Typical Junction Capacitance

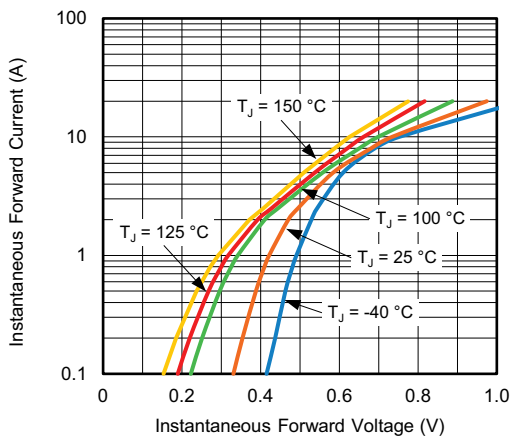


Fig. 3 - Typical Instantaneous Forward Characteristics

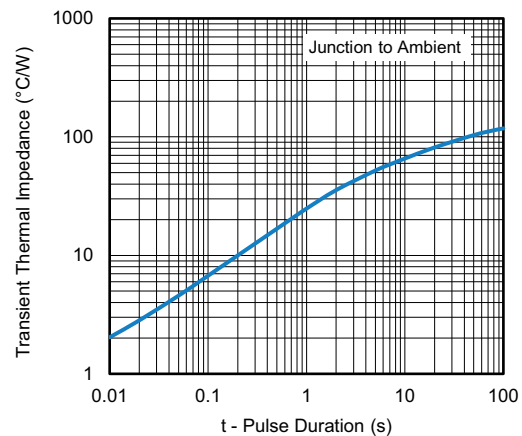


Fig. 6 - Typical Transient Thermal Impedance

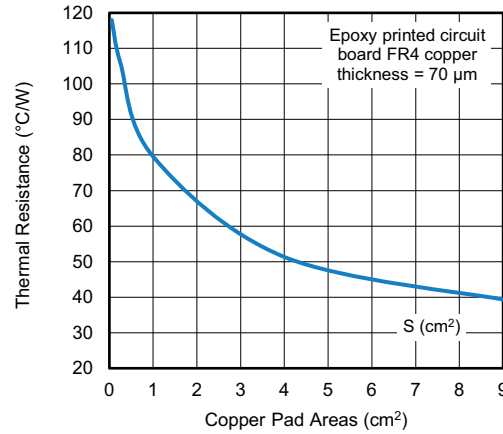
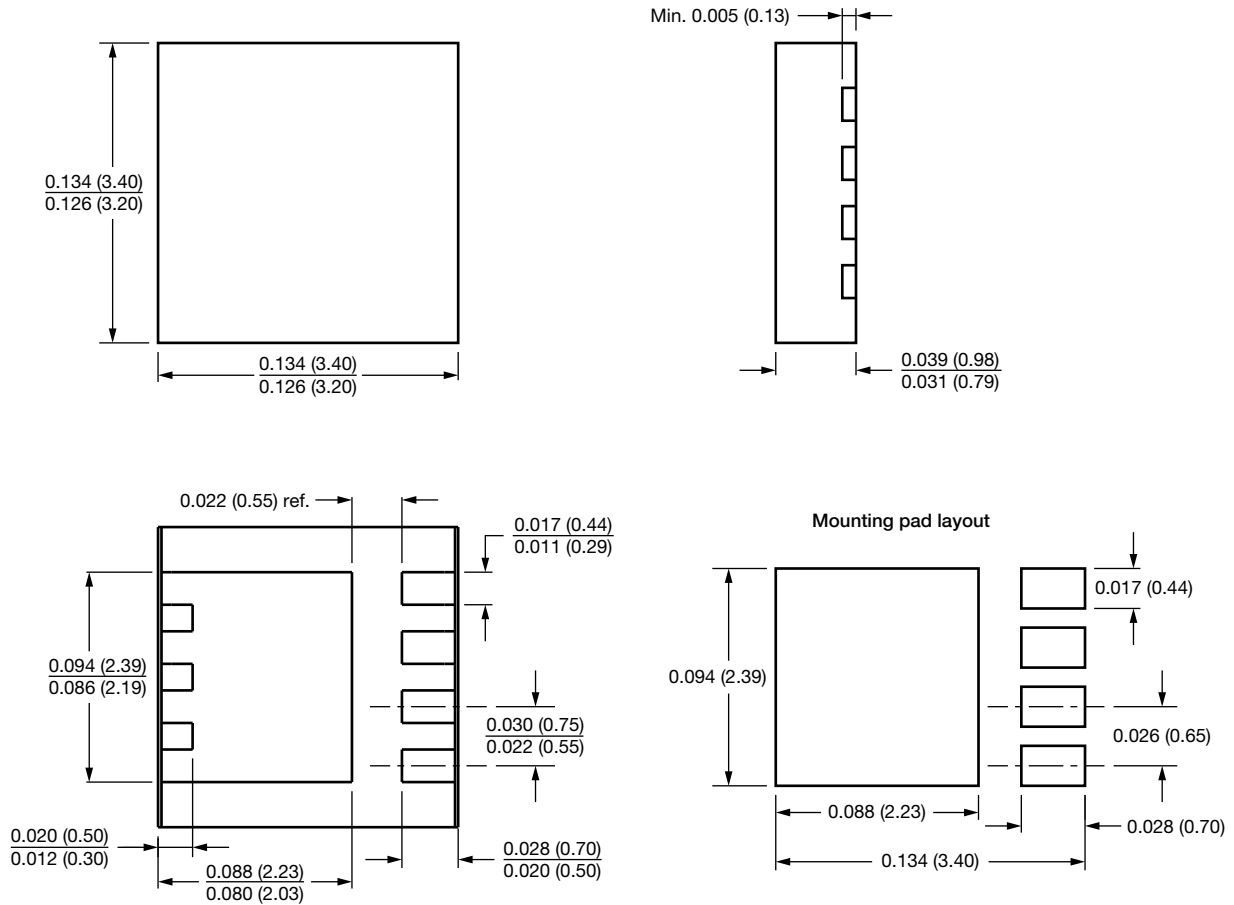


Fig. 7 - Thermal Resistance Junction-to-Ambient vs. Copper Pad Areas

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DFN33A





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