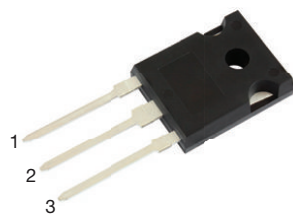


Dual High Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low $V_F = 0.56 \text{ V}$ at $I_F = 25 \text{ A}$



FEATURES

- Trench MOS Schottky technology
- Very low forward voltage drop by TMBS Gen 3 technology
- High efficiency operation
- Solder bath temperature 275 °C maximum, 10 s per JESD 22-B106
- AEC-Q101 qualified available:
- Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE
GRADE
Available



RoHS
COMPLIANT
HALOGEN
FREE

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 50 A
V_{RRM}	100 V
I_{FSM}	550 A
V_F at $I_F = 50 \text{ A}$ ($T_J = 125 \text{ °C}$)	0.68 V
$T_J \text{ max.}$	175 °C
Package	TO-247AD 3L
Circuit configuration	Common cathode

TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection in commercial, industrial, and automotive application.

MECHANICAL DATA

Case: TO-247AD 3L

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant

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 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: as marked

Mounting torque: 10 in-lbs maximum

MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	VX100H103PW	UNIT
Device marking code		VX100H103PW	
Maximum repetitive peak reverse voltage	V_{RRM}	100	V
Maximum average forward rectified current (fig. 1) per device per diode	$I_{F(AV)}$	100 50	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	550	A
Operating junction temperature range	$T_J^{(1)}$	-40 to +175	°C
Storage temperature range	T_{STG}	-55 to +175	

Note

(1) 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 per diode	I _F = 25 A	T _J = 25 °C	V _F ⁽¹⁾	0.64	-	V
	I _F = 50 A			0.77	0.82	
	I _F = 25 A	T _J = 125 °C		0.56	-	
	I _F = 50 A			0.68	0.73	
Reverse current at rated V _R per diode	V _R = 70 V	T _J = 25 °C	I _R ⁽²⁾	0.001	-	mA
		T _J = 125 °C		1.5	-	
	V _R = 100 V	T _J = 25 °C		0.005	0.28	
		T _J = 125 °C		4	20	

Notes(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: Pulse width $\leq 5\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VX100H103PW	UNIT
Typical thermal resistance per device	$R_{\theta JC}^{(1)}$	0.8	$^{\circ}\text{C/W}$

Note

(1) Thermal resistance junction-to-case to follow JEDEC® 51-14 transient dual interface test method (TDIM)

ORDERING INFORMATION TABLE

Device code	VX	100	H	10	3	PW	H	M3
	①	②	③	④	⑤	⑥	⑦	⑧
1	- Vishay TMBS product							
2	- Current rating (100 = 100 A)							
3	- Process type option (H = low I_R)							
4	- Voltage rating (10 = 100 V)							
5	- TMBS generation option (3 = Gen 3)							
6	- Package type (PW = TO-247AD 3L)							
7	- Quality grade (H = AEC-Q101 qualified, - = 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)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
VX100H103PW-M3/P	5.64	P	25/tube	Tube
VX100H103PWHM3/P ⁽¹⁾	5.64	P	25/tube	Tube

Note

(1) AEC-Q101 qualified

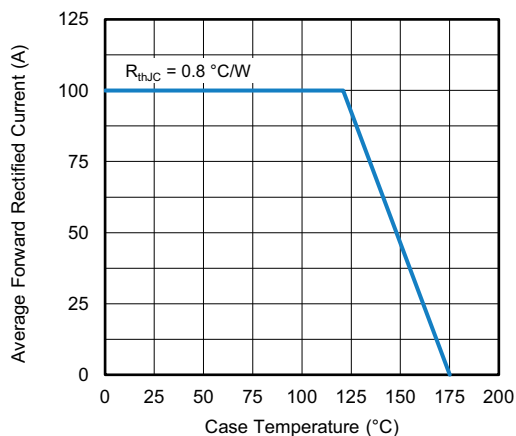
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve Per Device

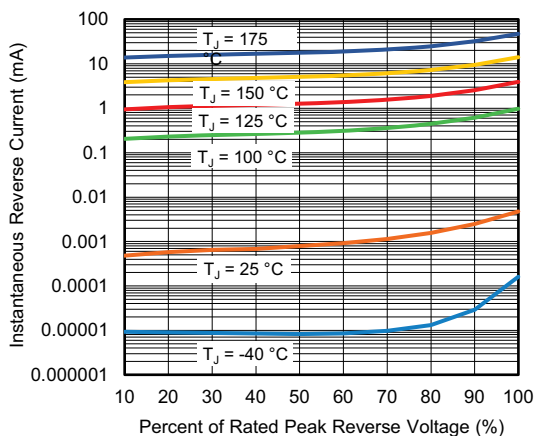


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

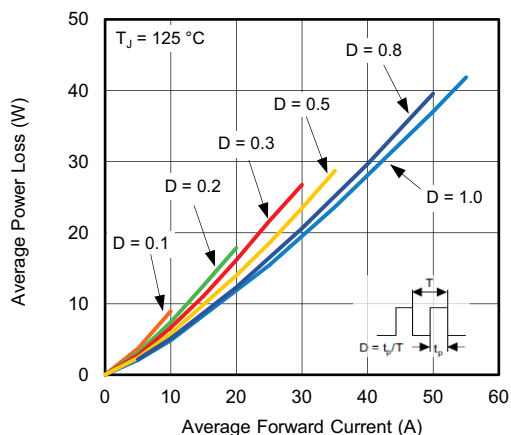


Fig. 2 - Average Power Loss Characteristics Per Diode

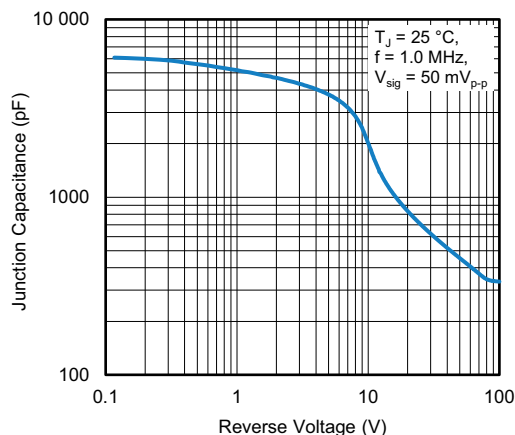


Fig. 5 - Typical Junction Capacitance Per Diode

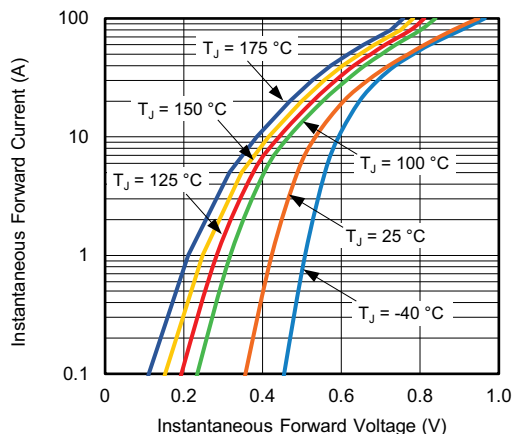


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

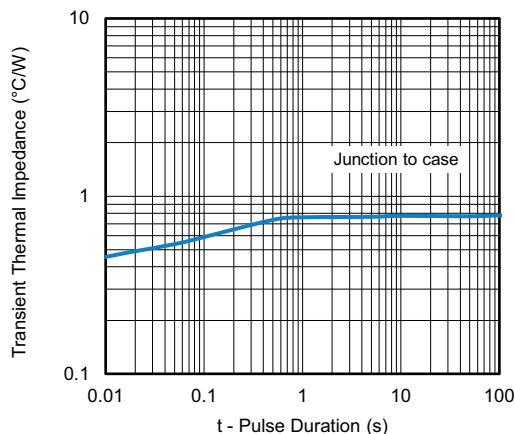
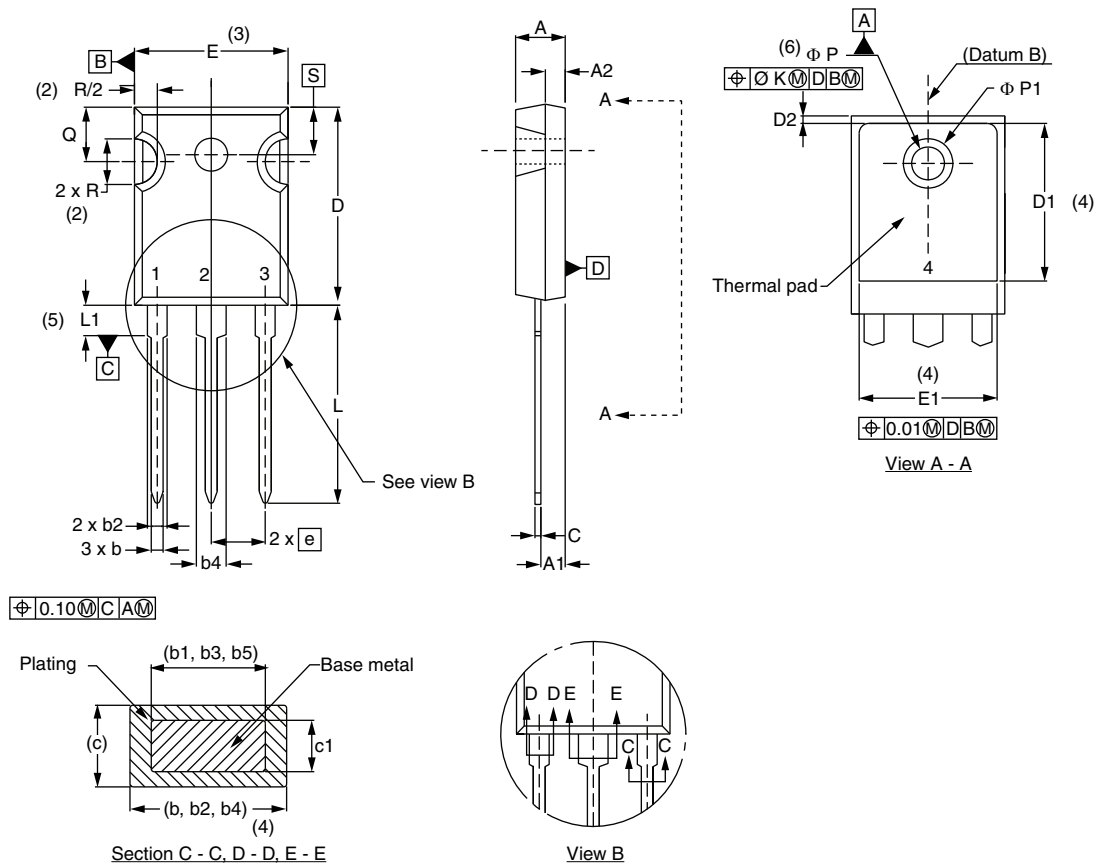


Fig. 6 - Typical Transient Thermal Impedance Per Device

PACKAGE OUTLINE DIMENSIONS in millimeters (inches) **TO-247AD 3L**



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	4.65	5.31	0.183	0.209	
A1	2.21	2.59	0.087	0.102	
A2	1.50	2.49	0.059	0.098	
b	0.99	1.40	0.039	0.055	
b1	0.99	1.35	0.039	0.053	
b2	1.65	2.39	0.065	0.094	
b3	1.65	2.34	0.065	0.092	
b4	2.59	3.43	0.102	0.135	
b5	2.59	3.38	0.102	0.133	
c	0.38	0.89	0.015	0.035	
c1	0.38	0.84	0.015	0.033	
D	19.71	20.70	0.776	0.815	3
D1	13.08	-	0.515	-	4

Notes

- (1) Dimensioning and tolerancing per ASME Y14.5M-1994
- (2) Contour of slot optional
- (3) Dimension D and E do not include mold flash. These dimensions are measured at the outermost extremes of the plastic body
- (4) Thermal pad contour optional with dimensions D1 and E1
- (5) Lead finish uncontrolled in L1
- (6) Ø P to have a maximum draft angle of 1.5 to the top of the part with a maximum hole diameter of 3.91 mm (0.154")
- (7) Outline conforms to JEDEC® outline TO-247 with exception of dimension A min., D, E min., Q min., S, and note 4



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