FEATURES Trench MOS Schottky technology

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

Ultra Low $V_F = 0.27$ V at $I_F = 5.0$ A

- Low forward voltage drop, low power losses
- · High efficiency operation
- Solder bath temperature 275 °C maximum, 10 s per JESD 22-B106
- AEC-Q101 gualified available: Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

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

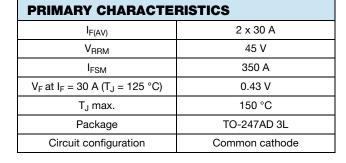
Polarity: as marked

Mounting torque: 10 in-lbs maximum

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)						
PARAMETER		SYMBOL	VX6045PW	UNIT		
Maximum repetitive peak reverse voltage		V _{RRM}	45	V		
Maximum average forward rectified current	per device	I _{F(AV)}	60	^		
(fig. 1)	per diode		30	A		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I _{FSM}	350	A		
Operating junction temperature range		T _J ⁽¹⁾	-40 to +150	°C		
Storage temperature range		T _{STG}	-40 to +150			

Note

⁽¹⁾ The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{BJA}$



TO-247AD 3L PIN 1 O-PIN 2

PIN 3 O-



CASE



VX6045PW

Vishay General Semiconductor



VX6045PW



Vishay General Semiconductor

ELECTRICAL CHARACTERISTICS ($T_J = 25 \text{ °C}$ unless otherwise noted)							
PARAMETER	TEST CO	NDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	I _F = 5 A	T _J = 25 °C	- V _F (1)	0.40	-	V	
	I _F = 15 A			0.45	-		
	I _F = 30 A			0.50	0.55		
	$I_F = 5 A$	T _J = 125 °C		0.27	-		
	I _F = 15 A			0.35	-		
	I _F = 30 A			0.43	0.48		
Reverse current at rated V _R per diode	V _B = 45 V	T _J = 25 °C	I _B ⁽²⁾	-	1.1	mA	
Reverse current at rated v _R per diode	v _R = 45 v	$V_{\rm R} = 43 \text{ V}$ $T_{\rm J} = 125 \text{ °C}$		19.5	60	ШA	
Typical junction capacitance	4.0 V, 1 MHz		CJ	5350	-	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 noted)				
PARAMETER	SYMBOL VX6045PW		UNIT	
Typical thermal resistance per device $R_{\theta JC}^{(1)}$ 0.6		°C/W		

Note

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

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
VX6045PW-M3/P	5.64	Р	25/tube	Tube		
VX6045PWHM3/P ⁽¹⁾	5.64	Р	25/tube	Tube		

Note

(1) AEC-Q101 qualified



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

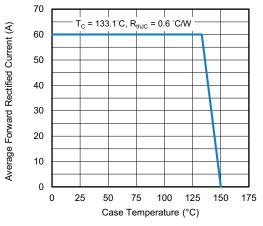


Fig. 1 - Maximum Forward Current Derating Curve

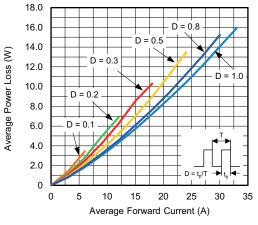


Fig. 2 - Average Power Loss Characteristics

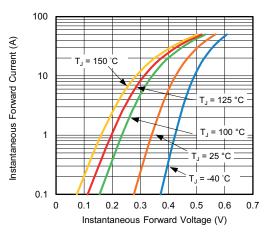


Fig. 3 - Typical Instantaneous Forward Characteristics

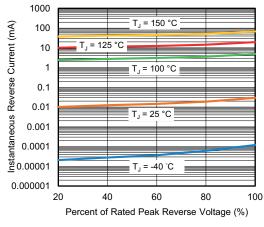


Fig. 4 - Typical Reverse Leakage Characteristics

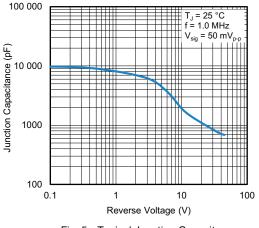


Fig. 5 - Typical Junction Capacitance

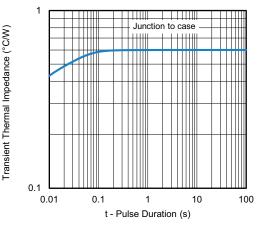


Fig. 6 - Typical Transient Thermal Impedance

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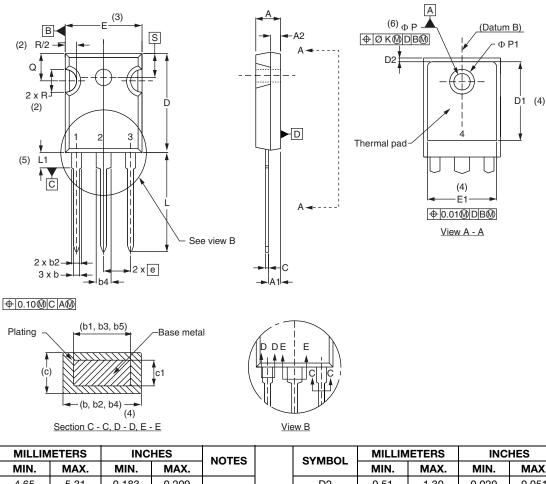
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PACKAGE OUTLINE DIMENSIONS in millimeters (inches) TO-247AD 3L



SYMBOL	MILLIMETERS		INC	NOTES	
	MIN.	MAX.	MIN.	MAX.	NOTES
А	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	
С	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

SYMBOL	MILLIMETERS		INC	NOTES	
STNIBOL	MIN.	MAX.	MIN.	MAX.	NOTES
D2	0.51	1.30	0.020	0.051	
E	15.29	15.87	0.602	0.625	3
E1	13.46	-	0.53	-	
е	5.46	BSC	0.215	0.215 BSC	
ØК	0.254		0.0	0.010	
L	19.81	20.32	0.780	0.800	
L1	3.71	4.29	0.146	0.169	
ØΡ	3.56	3.66	0.14	0.144	
Ø P1	-	6.98	-	0.275	
Q	5.31	5.69	0.209	0.224	
R	4.52	5.49	0.178	0.216	
S	5.51 BSC		0.217 BSC		

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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