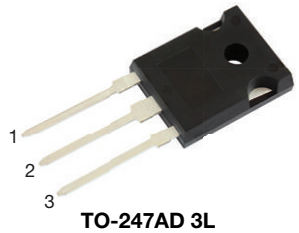
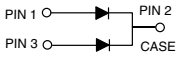
Dual Common Cathode High Voltage Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



TO-247AD 3L



FEATURES

- Power pack
- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- High frequency operation
- Solder dip 275 °C max., 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 15 A
V_{RRM}	90 V, 100 V
I_{FSM}	265 A
V_F	0.67 V
I_R	5.0 µA
T_J max.	175 °C
Package	TO-247AD 3L
Circuit configuration	Common cathode

TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, or polarity protection application.

MECHANICAL DATA

Case: TO-247AD 3L

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - RoHS-compliant, halogen-free, commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER		SYMBOL	MBR30H90PT	MBR30H100PT	UNIT
Maximum repetitive peak reverse voltage		V_{RRM}	90	100	V
Working peak reverse voltage		V_{RWM}	90	100	V
Maximum DC blocking voltage		V_{DC}	90	100	V
Maximum average forward rectified current	total device	$I_{F(AV)}$	30		A
	per diode		15		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I_{FSM}	265		A
Peak repetitive reverse surge current at t_p = 2 µs, 1 kHz per diode		I_{RRM}	1.0		A
Non-repetitve avalanche energy (I_{AS} = 0.5 A, L = 60 mH) per diode		E_{AS}	7.5		mJ
Voltage rate of change (rated V_R)		dV/dt	10 000		V/µs
Operating junction and storage temperature range		T_J, T_{STG}	-65 to +175		°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**		**MBR30H90PT**	**MBR30H100PT**	**UNIT**
Maximum instantaneous forward voltage per diode	V_F (1)	I_F = 15 A	T_J = 25 °C	0.82		V
		I_F = 15 A	T_J = 125 °C	0.67		
		I_F = 30 A	T_J = 25 °C	0.93		
		I_F = 30 A	T_J = 125 °C	0.80		
Maximum instantaneous reverse current at rated DC blocking voltage per diode	I_R (1)		T_J = 25 °C	5.0		µA
			T_J = 125 °C	6.0		mA

Note

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER	**SYMBOL**	**MBR30H90PT**	**MBR30H100PT**	**UNIT**
Thermal resistance, junction to case per diode	$R_{\theta JC}$	1.6		°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-247AD 3L	MBR30H100PT-M3/P	5.83	P	25/tube	Tube

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

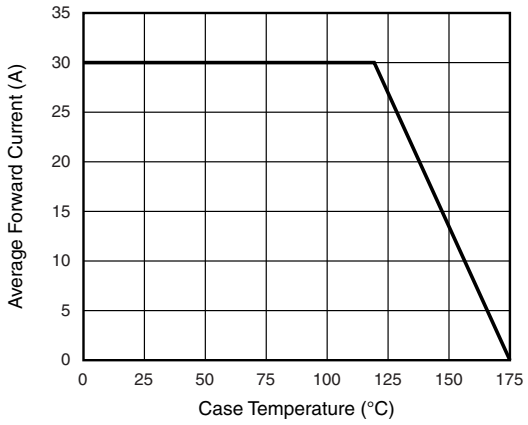


Fig. 1 - Forward Derating Curve

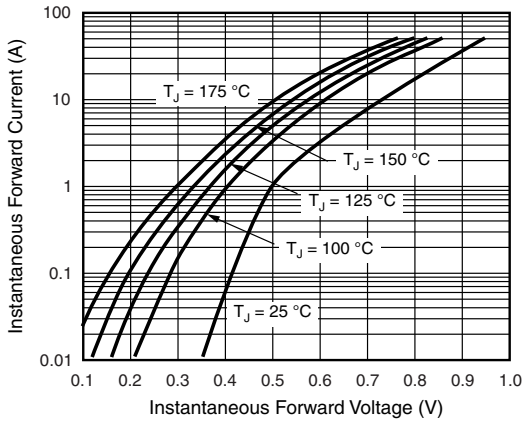


Fig. 2 - Typical Instantaneous Forward Characteristics Per Diode

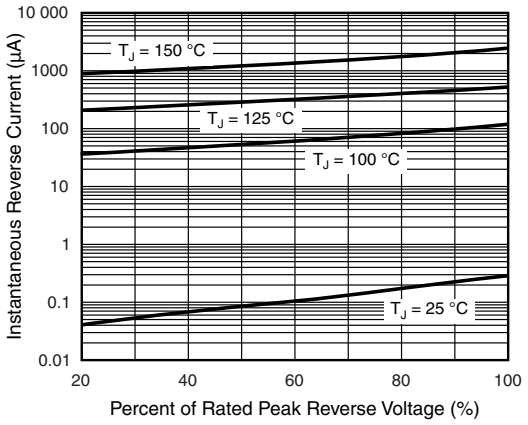


Fig. 3 - Typical Reverse Characteristics Per Diode

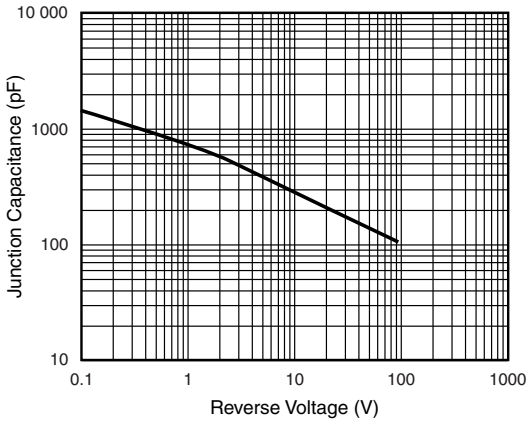
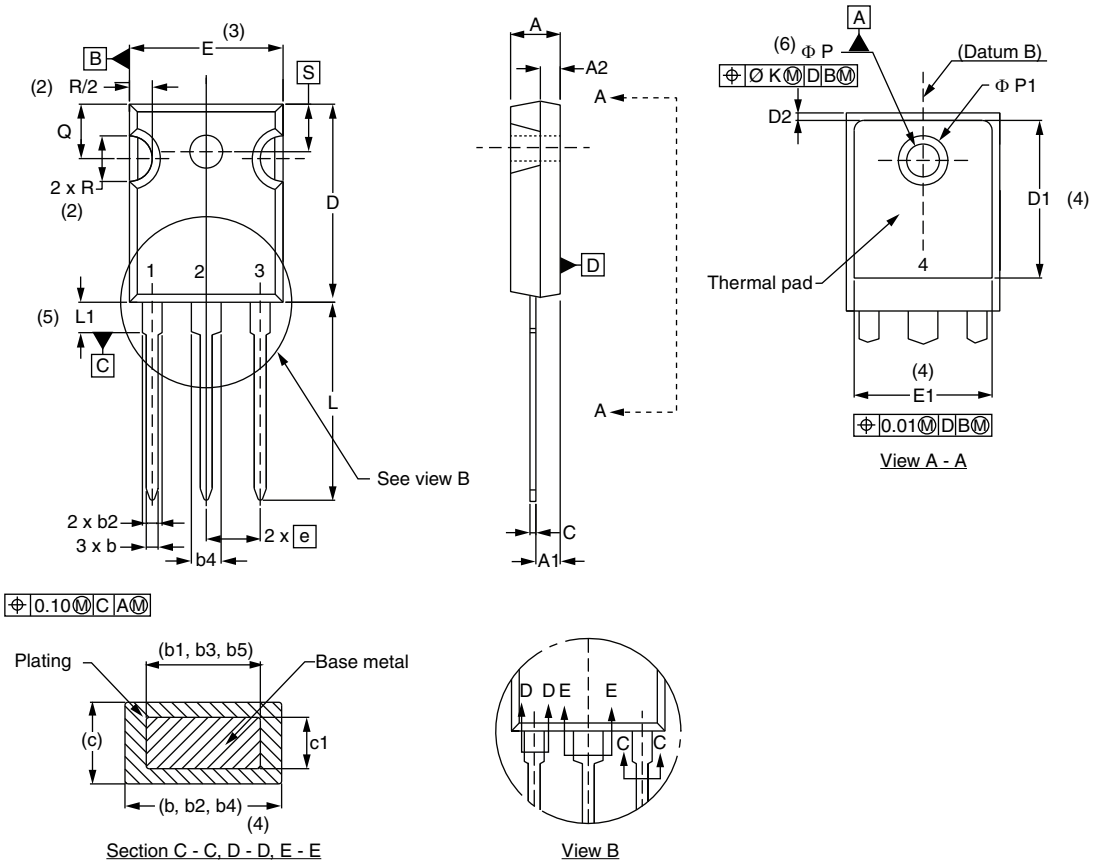


Fig. 4 - Typical Junction Capacitance Per Diode

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

SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
D2	0.51	1.30	0.020	0.051	
E	15.29	15.87	0.602	0.625	3
E1	13.46	-	0.53	-	
e	5.46 BSC		0.215 BSC		
Ø K	0.254		0.010		
L	19.81	20.32	0.780	0.800	
L1	3.71	4.29	0.146	0.169	
Ø P	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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