HIGH-VOLTAGE POWER SCHOTTKY RECTIFIER

Product Summary

V_{RRM} (V)	I_O (A)	$V_{F\ (MAX)}$ (V) @ 25°C	$I_{R\ (MAX)}$ (mA) @ 25°C
100	2 x 15	0.85	0.1

Description

High-voltage dual Schottky rectifier suited for switch-mode power supplies and other power converters. This device is intended for use in medium voltage operation, and particularly, in high-frequency circuits where low switching losses and low noise are required.

The MBR30100C is available in TO-220-3 (2) , TO220AB (Type WX), TO-220F-3, and ITO220AB (Type WX) packages.

Applications

- Power-supply output rectification
- Power management
- Instrumentation

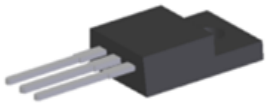
Features

- Low-Forward Voltage: 0.85V @ +25°C
- High Surge Current Capacity
- +150°C Operating Junction Temperature
- 30A Total (15A Per Diode Leg)
- Guard-Ring for Stress Protection
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

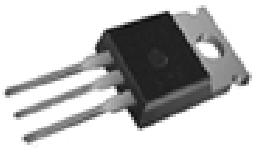
Mechanical Data

- Package: TO-220-3 (2), TO220AB, TO-220F-3, and ITO220AB
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Below
- Weight:
  - TO-220-3 (2), TO220AB – 1.95 grams (Approximate)
  - TO-220F-3, ITO220AB – 1.69 grams (Approximate)

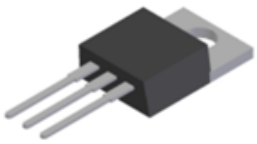
TO-220F-3



ITO220AB (Type WX)



TO-220-3 (2)

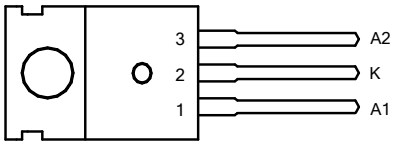


TO220AB (Type WX)

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

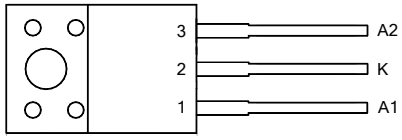
Pin Assignments

(Front View)

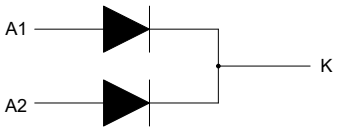


TO-220-3 (2)

(Front View)

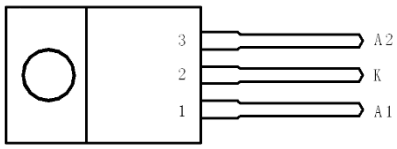


TO-220F-3



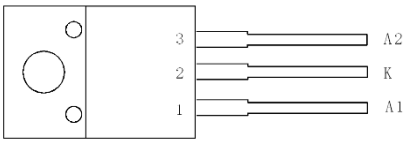
Internal Structure of MBR30100C

(Front View)



TO220AB (Type WX)

(Front View)



ITO220AB (Type WX)

Ordering Information (Note 4)

MBR30100C xx xx - xx

Product Name	Package	Packing	RoHS/Green
	T: TO-220-3 (2) TO220AB (Type WX) TF: TO-220F-3 ITO220AB (Type WX)	Blank : Tube	G1 : RoHS Compliant and Green

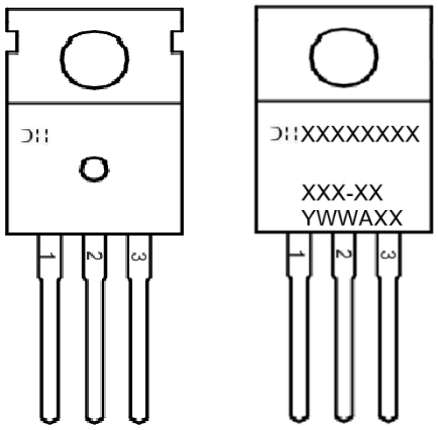
Orderable Part Number	Package	Marking ID	Packing	
			Qty.	Carrier
MBR30100CT-G1	TO-220-3 (2) TO220AB (Type WX)	MBR30100CT-G1	50 Pieces	Tube
MBR30100CTF-G1	TO-220F-3 ITO220AB (Type WX)	MBR30100CTF-G1	50 Pieces	Tube

Note: 4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information

(1) TO-220-3 (2), TO220AB (Type WX)

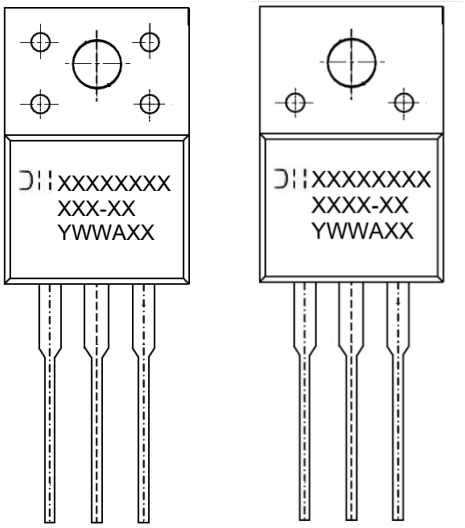
(Front View)



First and Second Lines: Logo and Marking ID
(See Ordering Information)
Third Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code (Optional)
XX: 7th and 8th Digits of Batch Number

(2) TO-220F-3, ITO220AB (Type WX)

(Front View)



First and Second Lines: Logo and Marking ID
(See Ordering Information)
Third Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code (Optional)
XX: 7th and 8th Digits of Batch Number

Maximum Ratings (Per Diode Leg)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	100	V
Average Rectified Forward Current (Rated V_R) T_C = 107°C	$I_{F(AV)}$	15	A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20kHz) T_C = 98°C	I_{FRM}	30	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions, Half Wave, Single Phase, 60Hz)	I_{FSM}	200	A
Operating Junction Temperature Range (Note 5)	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10000	V/µs
ESD (Machine Model = C)	—	> 400	V
ESD (Human Body Model = 3B)	—	> 8000	V

Note: 5. The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/\theta_{JA}$.

Thermal Characteristics

Characteristic	Symbol	Value		Unit
Maximum Thermal Resistance (Junction to Case) (Note 6)	$R_{\theta JC}$	TO-220-3 (2) TO220AB (Type WX)	2.5	°C/W
		TO-220F-3 ITO220AB (Type WX)	4.5	
Maximum Thermal Resistance (Junction to Ambient) (Note 6)	$R_{\theta JA}$	TO-220-3 (2) TO220AB (Type WX)	60	°C/W
		TO-220F-3 ITO220AB (Type WX)	60	

Note: 6. Device mounted on heat sink, with minimum recommended pad layout per http://www.diodes.com/package-outlines.html.

Electrical Characteristics

Characteristic	Symbol	Value	Unit	Test Condition
Maximum Instantaneous Forward Voltage Drop (Note 7)	V_F	0.85	V	I_F = 15A, T_C = 25°C
		0.75		I_F = 15A, T_C = 125°C
		0.95		I_F = 30A, T_C = 25°C
		0.85		I_F = 30A, T_C = 125°C
Maximum Instantaneous Reverse Current (Note 7)	I_R	6.0	mA	Rated DC Voltage, T_C = 125°C
		0.1		Rated DC Voltage, T_C = 25°C

Note: 7. Short duration pulse test used to minimize self-heating effect. Pulse test: Pulse width = 300µs, duty cycle ≤ 2.0%.

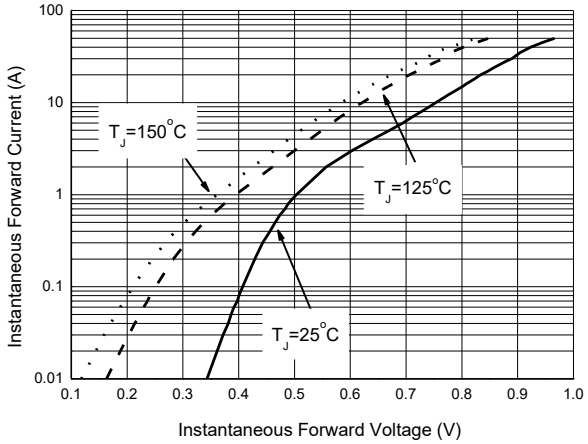


Figure 1. Typical Forward Voltage Per Diode

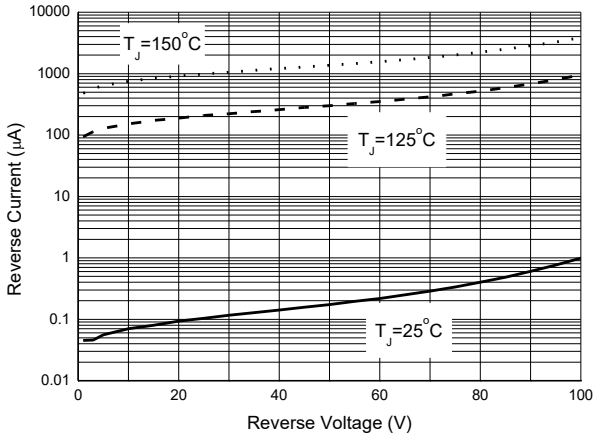


Figure 2. Typical Reverse Current Per Diode

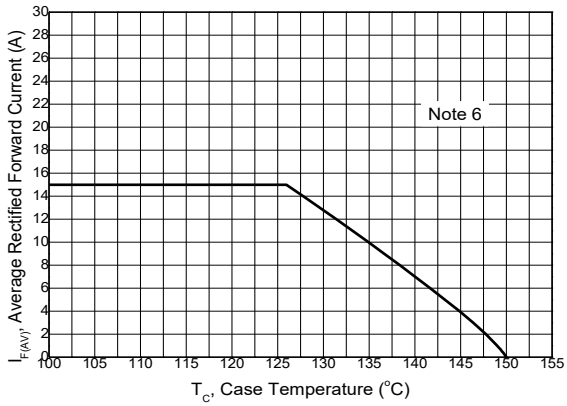
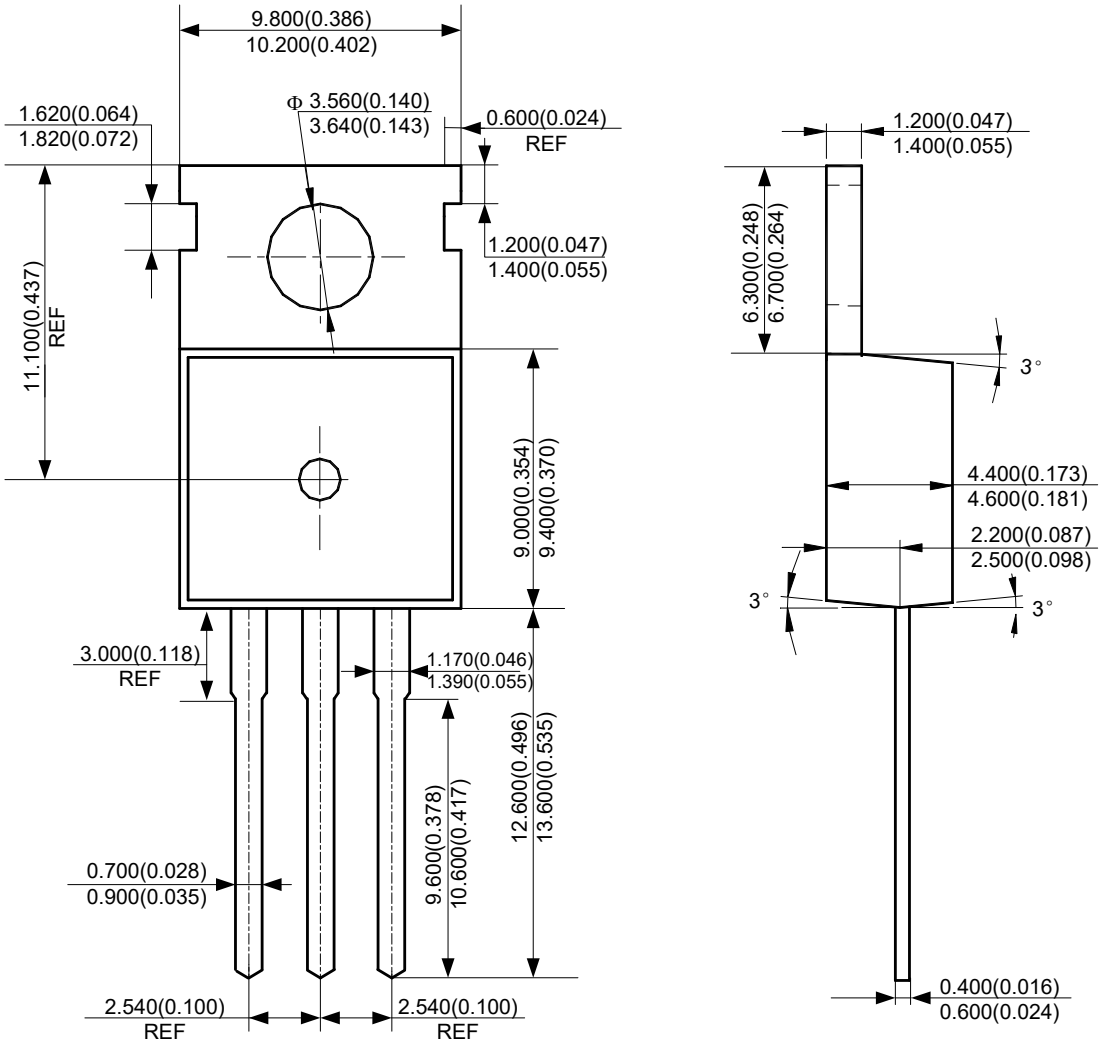


Figure 3. Average Rectified Forward Current vs. Case Temperature (Square, Per Diode)

Package Outline Dimensions (All dimensions in mm(inch))

Please see http://www.diodes.com/package-outlines.html for the latest version.

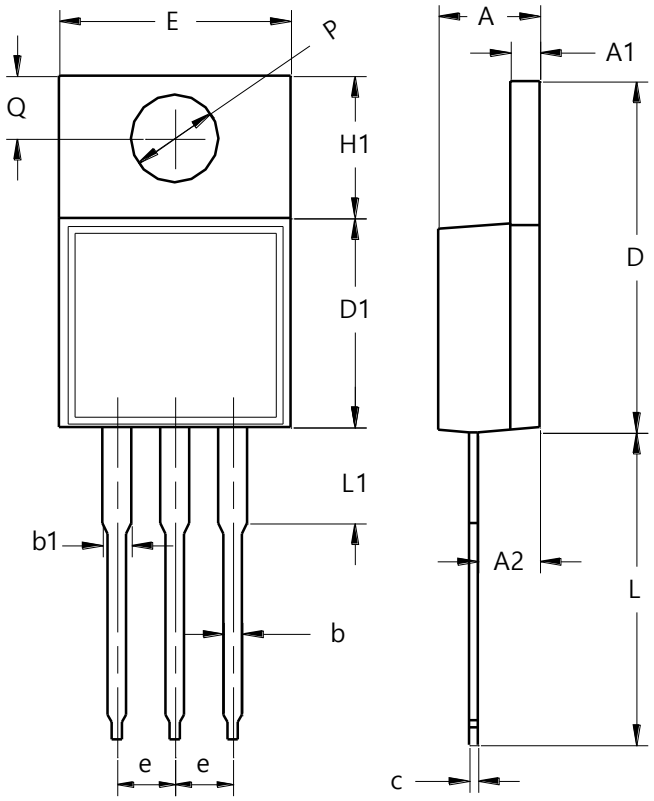
(1) Package Type: TO-220-3 (2)



Package Outline Dimensions (continued)

Please see http://www.diodes.com/package-outlines.html for the latest version.

(2) Package Type: TO220AB (Type WX)

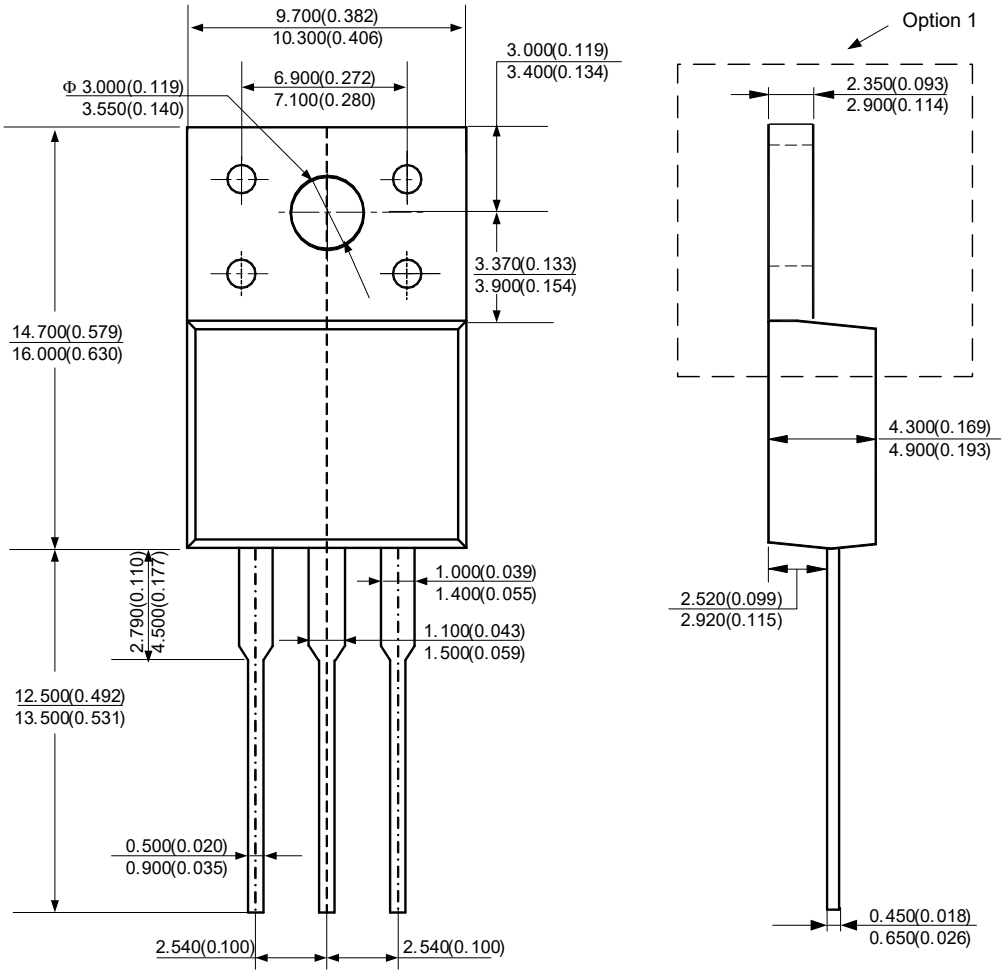


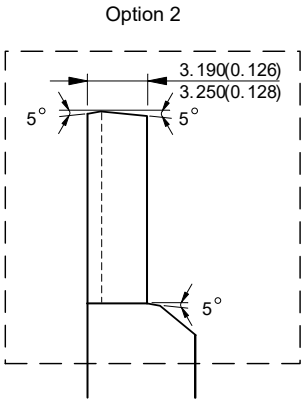
TO220AB (Type WX)		
Dim	**Min**	**Max**
A	3.56	4.83
A1	1.14	1.40
A2	2.03	2.92
b	0.51	1.14
b1	1.14	1.70
c	0.30	0.64
D	14.40	15.20
D1	8.26	9.28
E	9.65	10.67
e	2.29	2.79
H1	5.84	6.86
L	12.70	14.73
L1	--	4.20
PØ	3.53	4.09
Q	2.54	3.43
All Dimensions in mm		

Package Outline Dimensions (continued) (All dimensions in mm(inch))

Please see http://www.diodes.com/package-outlines.html for the latest version.

(3) Package Type: TO-220F-3

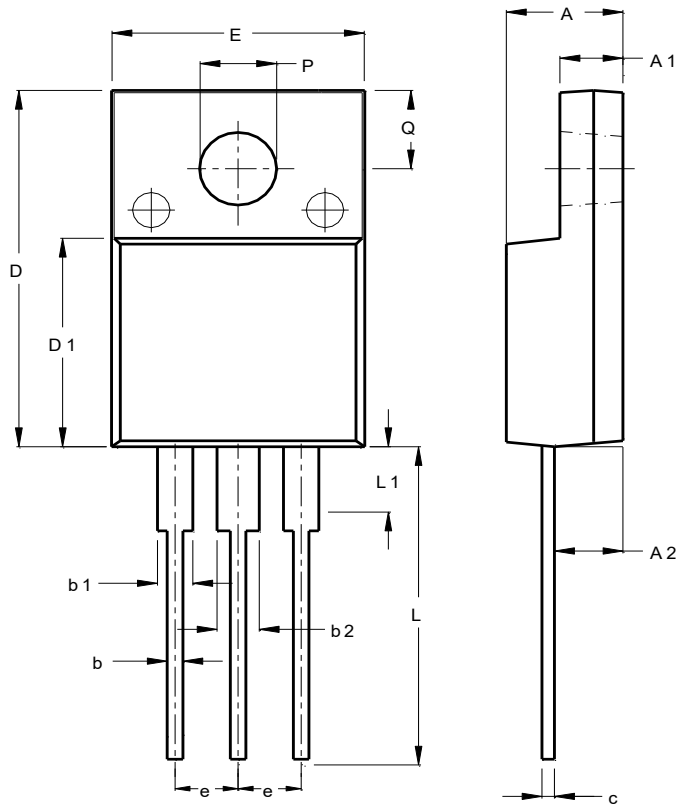




Package Outline Dimensions (continued)

Please see http://www.diodes.com/package-outlines.html for the latest version.

(4) Package Type: ITO220AB (Type WX)



ITO220AB (Type WX)		
Dim	**Min**	**Max**
A	4.46	4.87
A1	2.48	2.80
A2	2.50	2.80
b	0.50	0.80
b1	1.15	1.70
b2	1.50	1.90
c	0.45	0.70
D	14.95	15.95
D1	8.50	8.80
E	10.00	10.40
e	2.40	2.70
L	13.00	13.70
L1	3.30	3.90
Q	2.76	3.36
P	3.00	3.30
All Dimensions in mm		

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