MBR20150SC

HIGH-VOLTAGE POWER SCHOTTKY RECTIFIER

Product Summary

V_{RRM} (V)	Io (A)	$V_{F\ (MAX)}$ (V) @ 25°C	$I_{R\ (MAX)}$ (mA) @ 25°C
150	2 × 10	0.9	0.05

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 MBR20150SC is available in TO-220-3 (2), TO220AB (Type WX), TO-220F-3, and ITO220AB (Type WX) packages.

Applications

- Power supplies − output rectification
- Power management
- Instrumentation

Features

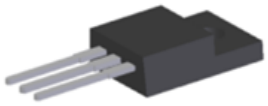
- Low-Forward Voltage: 0.9V @ +25°C
- High Surge Current Capability
- +150°C Operating Junction Temperature
- 20A Total (10A Each Diode Leg)
- Guard-Ring for Stress Protection
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive 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

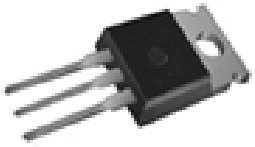
- Package: TO-220-3 (2), TO220AB, TO-220F-3, and ITO220AB
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Below
- Weight:
  TO-220-3 (2), TO220AB – 1.9 Grams (Approximate)
  TO-220F-3, ITO220AB – 1.69 Grams (Approximate)



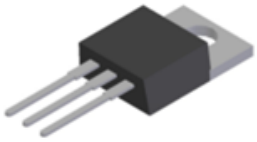
TO-220F-3



ITO220AB (Type WX)



TO-220-3 (2)



TO220AB (Type WX)

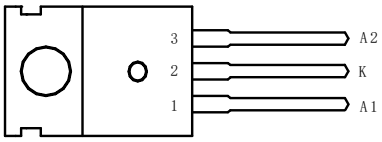
Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3.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

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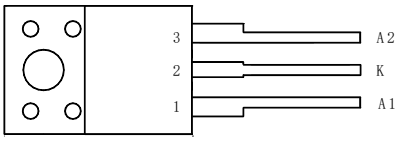
Pin Assignments

(Front View)

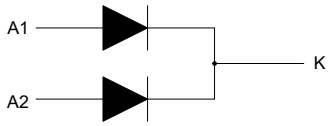


TO-220-3 (2)

(Front View)

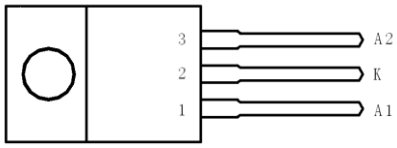


TO-220F-3



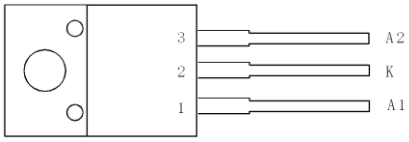
Internal Structure of MBR20150SC

(Front View)



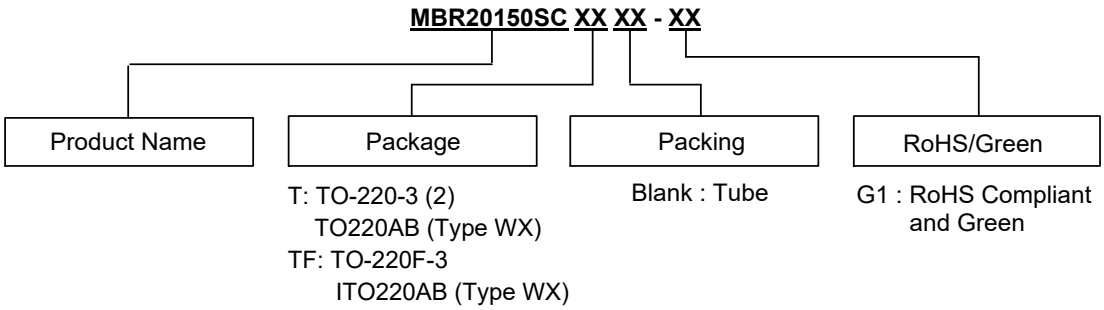
TO220AB (Type WX)

(Front View)



ITO220AB (Type WX)

Ordering Information (Note 4)



Orderable Part Number	Marking ID	Package	Packing	
			Qty.	Carrier
MBR20150SCT-G1	MBR20150SCT-G1	TO-220-3 (2)	50 Pieces	Tube
MBR20150SCT-G1	MBR20150SCT-G1	TO220AB (Type WX)	50 Pieces	Tube
MBR20150SCTF-G1	MBR20150SCTF-G1	TO-220F-3	50 Pieces	Tube
MBR20150SCTF-G1	MBR20150SCTF-G1	ITO220AB (Type WX)	50 Pieces	Tube

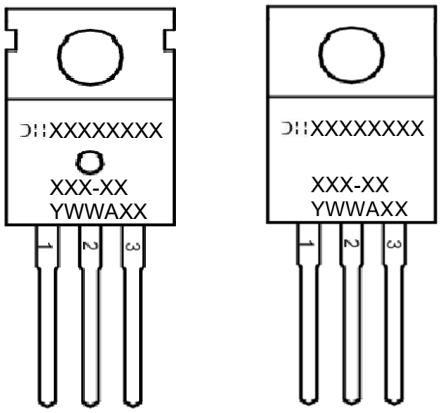
Note: 4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

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Marking Information

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

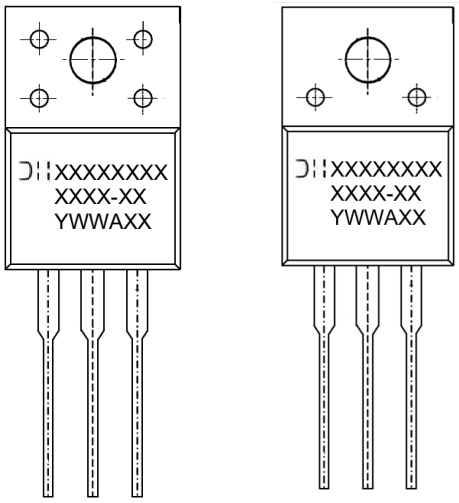
(Front View)



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

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

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Maximum Ratings (Each Diode Leg)

Characteristic	Symbol	Rating	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	150	V
Average Rectified Forward Current (Rated V_R) T_C = 134°C	$I_{F(AV)}$	10	A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20kHz) T_C = 133°C	I_{FRM}	20	A
Non Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Half Wave, Single Phase, 60Hz)	I_{FSM}	150	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	Rating		Unit
Maximum Thermal Resistance (Junction to Case) (Note 6)	$R_{\theta JC}$	TO-220-3 (2) TO220AB (Type WX)	2.0	°C/W
		TO-220F-3 ITO220AB (Type WX)	3.0	
Maximum Thermal Resistance (Junction to Ambient) (Note 6)	$R_{\theta JA}$	TO-220-3 (2) TO220AB (Type WX)	60	
		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	Rating	Unit	Test Condition
Maximum Instantaneous Forward Voltage Drop (Note 7)	V_F	0.9	V	I_F = 10A, T_C = 25°C
		0.75		I_F = 10A, T_C = 125°C
Maximum Instantaneous Reverse Current (Note 7)	I_R	20	mA	Rated DC Voltage, T_C = 125°C
		0.05		Rated DC Voltage, T_C = 25°C

Note: 7. Short duration pulse test used to minimize self-heating effect, Pulse Test Width = 300µs, Duty Cycle < 2.0%.

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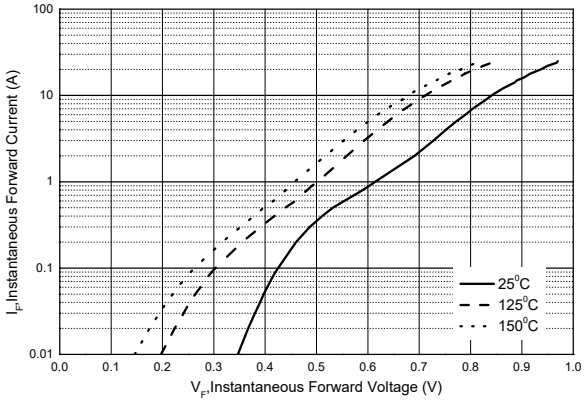


Figure 1. Typical Forward Voltage Per Diode

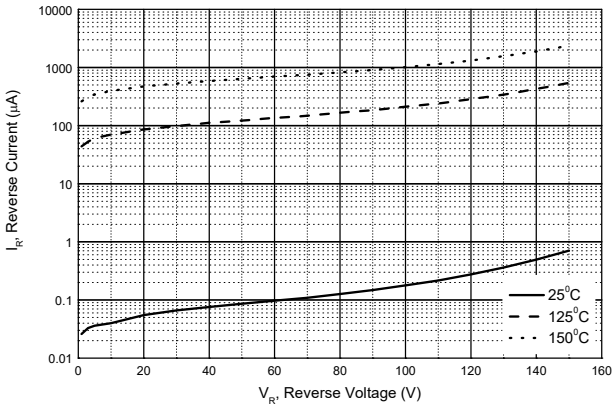


Figure 2. Typical Reverse Current Per Diode

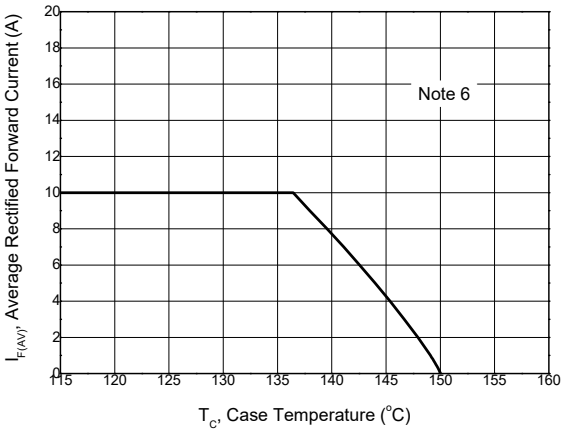


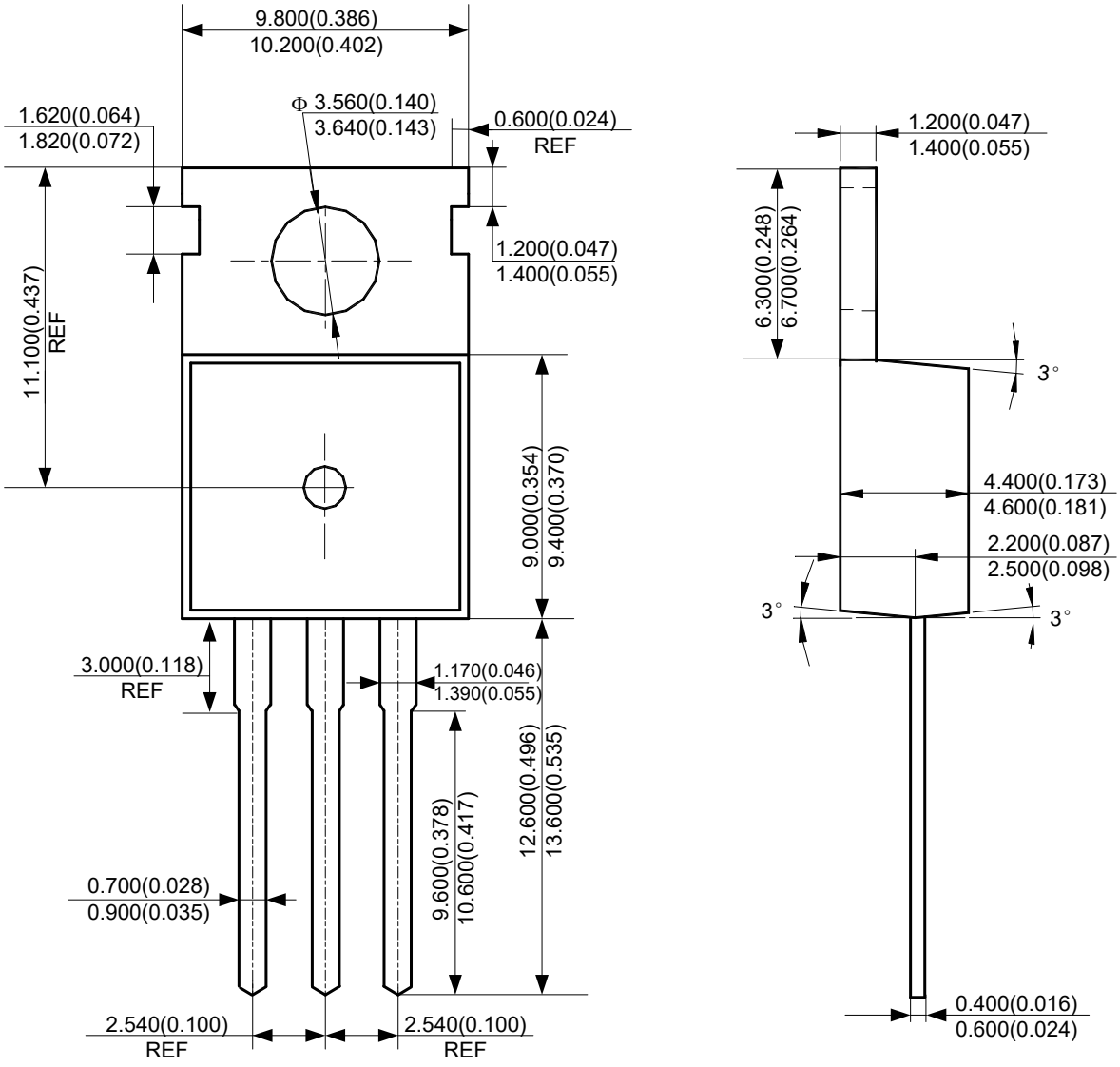
Figure 3. Average Rectified Forward Current
vs. Case Temperature (Per Diode)

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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)

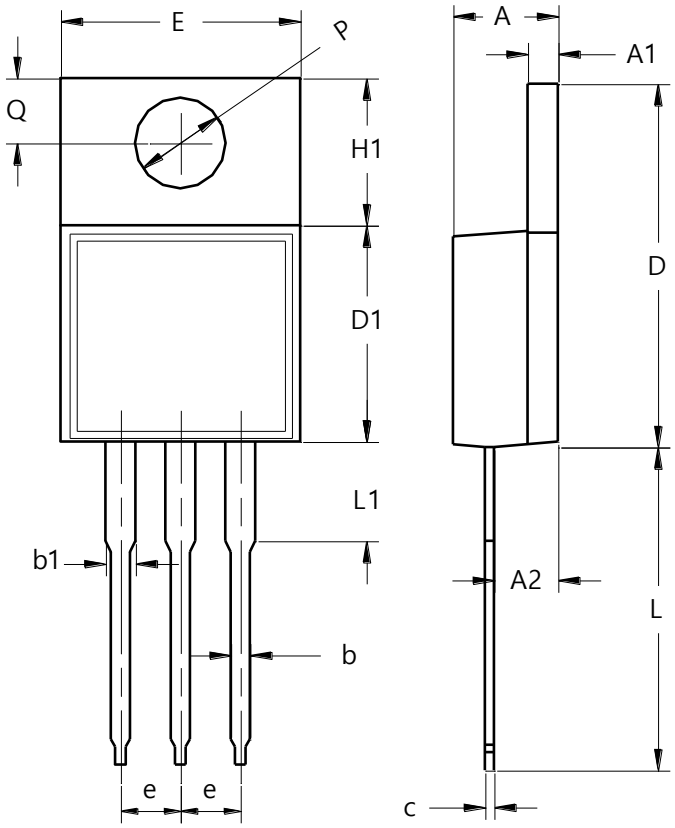


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Package Outline Dimensions (continued)

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(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		

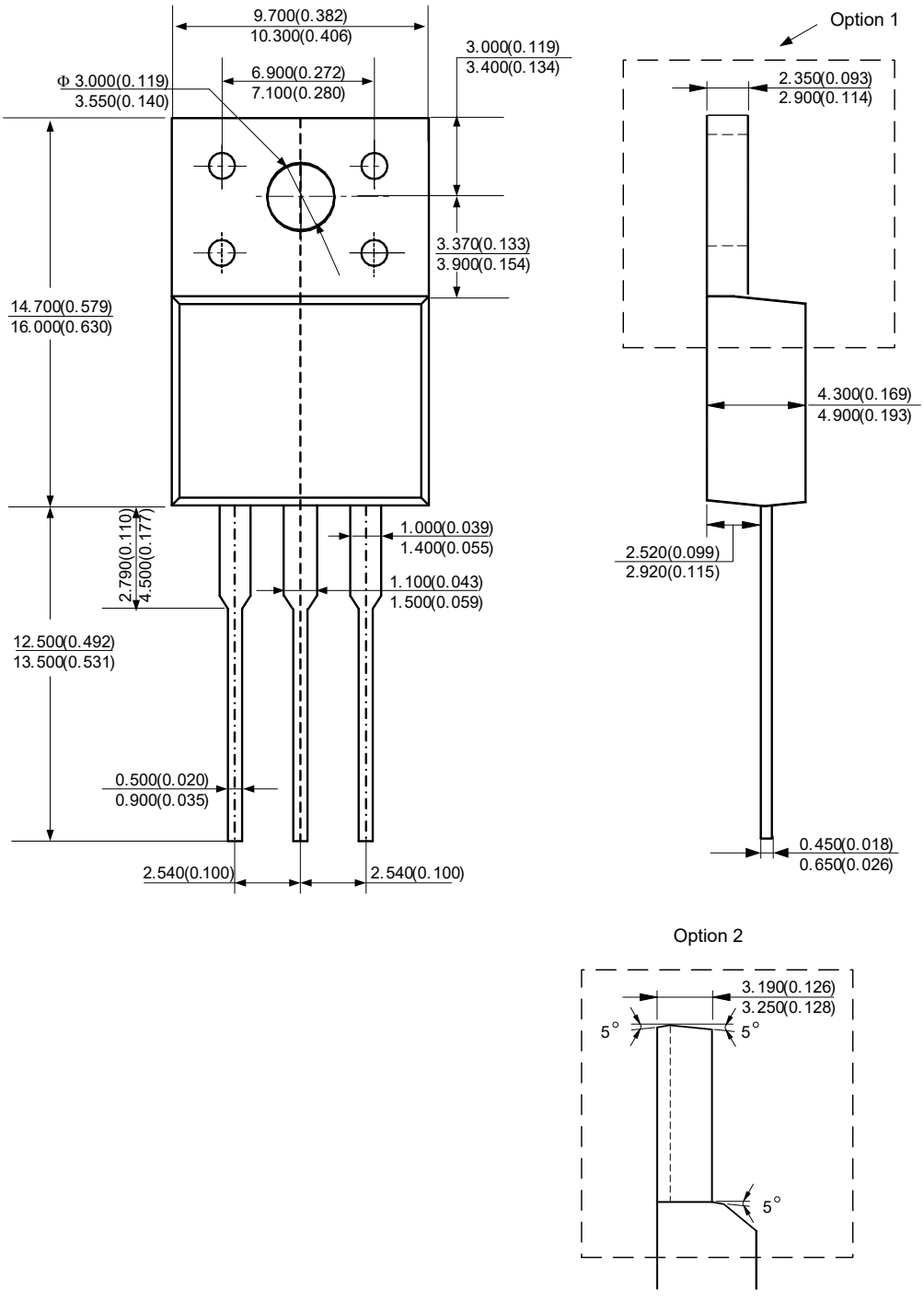
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Package Outline Dimensions (continued) (All dimensions in mm(inch).)

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

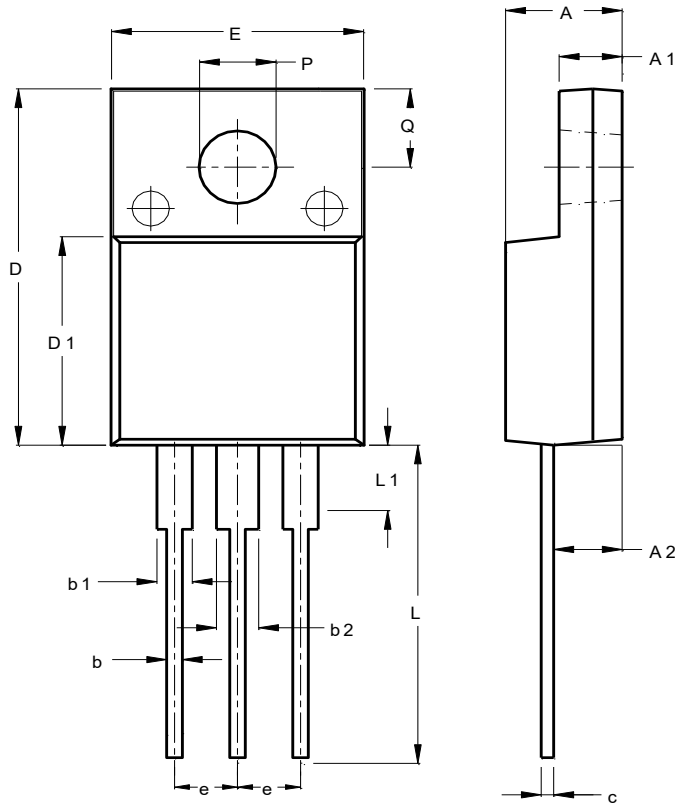


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Package Outline Dimensions (continued)

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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