

# Zener Diodes

## 1N5221B - 1N5252B

### ABSOLUTE MAXIMUM RATINGS (Note 1)

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$P_D$	Power Dissipation	500	mW
	Derate above $50^\circ\text{C}$	4.0	mW/ $^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-65 to +200	$^\circ\text{C}$
$T_J$	Operating Junction Temperature Range	-65 to +200	$^\circ\text{C}$
	Lead Temperature (1/16 inch from case for 10s)	+230	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

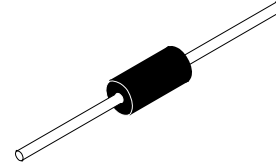
1. These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Non-recurrent square wave Pulse Width = 8.3 ms,  $T_A = 50^\circ\text{C}$ .



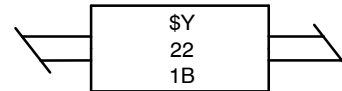
**ON Semiconductor**<sup>®</sup>

[www.onsemi.com](http://www.onsemi.com)



**AXIAL LEAD  
CASE 017AG**

### MARKING DIAGRAM



\$Y  
221B

= Logo  
= Specific Device Code

### ORDERING INFORMATION

See detailed ordering and shipping information on page 3 of this data sheet.

# 1N5221B - 1N5252B

**ELECTRICAL CHARACTERISTICS** Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Device	$V_Z$ (V) @ $I_Z$ (Note 2)			$Z_Z$ ( $\Omega$ ) @ $I_Z$ (mA)		$Z_{ZK}$ ( $\Omega$ ) @ $I_{ZK}$ (mA)		$I_R$ ( $\mu\text{A}$ ) @ $V_R$ (V)		$T_C$ (%/°C)
	Min.	Typ.	Max.							
1N5221B	2.280	2.4	2.52	30	20	1,200	0.25	100	1.0	-0.085
1N5222B	2.375	2.5	2.625	30	20	1,250	0.25	100	1.0	-0.085
1N5223B	2.565	2.7	2.835	30	20	1,300	0.25	75	1.0	-0.080
1N5225B	2.850	3.0	3.150	29	20	1,600	0.25	50	1.0	-0.075
1N5226B	3.135	3.3	3.465	28	20	1,600	0.25	25	1.0	-0.070
1N5227B	3.420	3.6	3.780	24	20	1,700	0.25	15	1.0	-0.065
1N5228B	3.705	3.9	4.095	23	20	1,900	0.25	10	1.0	-0.060
1N5229B	4.085	4.3	4.515	22	20	2,000	0.25	5.0	1.0	$\pm 0.055$
1N5230B	4.465	4.7	4.935	19	20	1,900	0.25	5.0	2.0	$\pm 0.030$
1N5231B	4.845	5.1	5.355	17	20	1,600	0.25	5.0	2.0	$\pm 0.030$
1N5232B	5.320	5.6	5.880	11	20	1,600	0.25	5.0	3.0	0.038
1N5233B	5.700	6.0	6.300	7	20	1,600	0.25	5.0	3.5	0.038
1N5234B	5.890	6.2	6.510	7	20	1,000	0.25	5.0	4.0	0.045
1N5235B	6.460	6.8	7.140	5	20	750	0.25	3.0	5.0	0.050
1N5236B	7.125	7.5	7.875	6	20	500	0.25	3.0	6.0	0.058
1N5237B	7.790	8.2	8.610	8	20	500	0.25	3.0	6.5	0.062
1N5238B	8.265	8.7	9.135	8	20	600	0.25	3.0	6.5	0.065
1N5239B	8.645	9.1	9.555	10	20	600	0.25	3.0	7.0	0.068
1N5240B	9.500	10.0	10.500	17	20	600	0.25	3.0	8.0	0.075
1N5241B	10.450	11.0	11.550	22	20	600	0.25	2.0	8.4	0.076
1N5242B	11.400	12.0	12.600	30	20	600	0.25	1.0	9.1	0.077
1N5243B	12.350	13.0	13.650	13	9.5	600	0.25	0.5	9.9	0.079
1N5244B	13.300	14.0	14.700	15	9.0	600	0.25	0.1	10.0	0.080
1N5245B	14.250	15.0	15.750	16	8.5	600	0.25	0.1	11.0	0.082
1N5246B	15.200	16.0	16.800	17	7.8	600	0.25	0.1	12.0	0.083
1N5247B	16.150	17.0	17.850	19	7.4	600	0.25	0.1	13.0	0.084
1N5248B	17.100	18.0	18.900	21	7.0	600	0.25	0.1	14.0	0.085
1N5249B	18.050	19.0	19.950	23	6.6	600	0.25	0.1	14.0	0.085
1N5250B	19.000	20.0	21.000	25	6.2	600	0.25	0.1	15.0	0.086
1N5251B	20.900	22.0	23.100	29	5.6	600	0.25	0.1	17.0	0.087
1N5252B	22.800	24.0	25.200	33	5.2	600	0.25	0.1	18.0	0.088

**$V_F$  Forward Voltage = 1.2 V Max. @  $I_F = 200$  mA**

2. Zener Voltage ( $V_Z$ ). The zener voltage is measured with the device junction in the thermal equilibrium at the lead temperature ( $T_L$ ) at  $30^\circ\text{C} \pm 1^\circ\text{C}$  and 3/8" lead length.

# 1N5221B – 1N5252B

## TOP MARKING AND ORDERING INFORMATION

Device	Top Marking			Package	Shipping <sup>†</sup>	
	Line 1	Line 2	Line 3			
1N5221B	LOGO	22	1B	Axial Lead (Pb – Free / Halide Free)	5000 / Bulk Bag	
1N5222B			2B		5000 / Bulk Bag	
1N5223B			3B		5000 / Bulk Bag	
1N5225B			5B		5000 / Bulk Bag	
1N5226B			6B		5000 / Bulk Bag	
1N5226BTR					5000 / Tape and Reel	
1N5227B			7B		5000 / Bulk Bag	
1N5227BTR					5000 / Tape and Reel	
1N5228B			8B		5000 / Bulk Bag	
1N5228BTR					5000 / Tape and Reel	
1N5229B			9B		5000 / Bulk Bag	
1N5229BTR					5000 / Tape and Reel	
1N5230B			23		0B	5000 / Bulk Bag
1N5230BTR						5000 / Tape and Reel
1N5231B	1B	5000 / Bulk Bag				
1N5231BTR		5000 / Tape and Reel				
1N5232B	2B	5000 / Bulk Bag				
1N5232BTR		5000 / Tape and Reel				
1N5233B	3B	5000 / Bulk Bag				
1N5233BTR		5000 / Tape and Reel				
1N5234B	4B	5000 / Bulk Bag				
1N5234BTR		5000 / Tape and Reel				
1N5235B	5B	5000 / Bulk Bag				
1N5235BTR		5000 / Tape and Reel				
1N5236B	6B	5000 / Bulk Bag				
1N5236BTR		5000 / Tape and Reel				
1N5237B	7B	5000 / Bulk Bag				
1N5237BTR		5000 / Tape and Reel				
1N5238B	8B	5000 / Bulk Bag				
1N5239B	9B	5000 / Bulk Bag				
1N5239BTR		5000 / Tape and Reel				
1N5240B	24	0B	5000 / Bulk Bag			
1N5240BTR			5000 / Tape and Reel			
1N5241B		1B	5000 / Bulk Bag			
1N5241BTR			5000 / Tape and Reel			
1N5242B		2B	5000 / Bulk Bag			
1N5242BTR			5000 / Tape and Reel			
1N5243B	3B	5000 / Bulk Bag				
1N5243BTR		5000 / Tape and Reel				

# 1N5221B – 1N5252B

## TOP MARKING AND ORDERING INFORMATION (continued)

Device	Top Marking			Package	Shipping†
	Line 1	Line 2	Line 3		
1N5244B	LOGO	24	4B	Axial Lead (Pb – Free / Halide Free)	5000 / Bulk Bag
1N5244BTR			5000 / Tape and Reel		
1N5245B			5B		5000 / Bulk Bag
1N5245BTR			5000 / Tape and Reel		
1N5246B			6B		5000 / Bulk Bag
1N5246BTR			5000 / Tape and Reel		
1N5247B			7B		5000 / Bulk Bag
1N5247BTR			5000 / Tape and Reel		
1N5248B		8B	5000 / Bulk Bag		
1N5248BTR		5000 / Tape and Reel			
1N5249BTR		9B	5000 / Tape and Reel		
1N5250B		25	0B		5000 / Bulk Bag
1N5250BTR					5000 / Tape and Reel
1N5251B					1B
1N5251BTR	5000 / Tape and Reel				
1N5252B	2B			5000 / Bulk Bag	
1N5252BTR	5000 / Tape and Reel				

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.


**AXIAL LEAD**  
**CASE 017AG**  
**ISSUE 0**

DATE 31 AUG 2016



- NOTES: UNLESS OTHERWISE SPECIFIED
- A) PACKAGE STANDARD REFERENCE: JEDEC DO-204, VARIATION AH.
  - B) HERMETICALLY SEALED GLASS PACKAGE.
  - C) PACKAGE WEIGHT IS 0.137 GRAM.
  - D) ALL DIMENSIONS ARE IN MILLIMETERS.

<b>DOCUMENT NUMBER:</b>	<b>98AON13443G</b>	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
<b>DESCRIPTION:</b>	<b>AXIAL LEAD</b>	<b>PAGE 1 OF 1</b>

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Email Requests to: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**onsemi Website:** [www.onsemi.com](http://www.onsemi.com)

### TECHNICAL SUPPORT

**North American Technical Support:**

Voice Mail: 1 800-282-9855 Toll Free USA/Canada

Phone: 011 421 33 790 2910

**Europe, Middle East and Africa Technical Support:**

Phone: 00421 33 790 2910

For additional information, please contact your local Sales Representative