

1N5223B through 1N5258B

Silicon Epitaxial Planar Zener Diodes for Voltage Regulation

HITACHI

ADE-208-137B (Z)

Rev.2
Dec. 2001

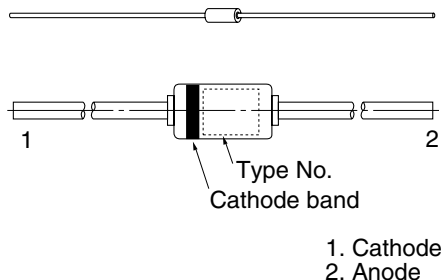
Features

- Glass package DO-35 structure ensures high reliability.
- Wide spectrum from 2.7 V through 36 V of zener voltage provide flexible application.

Ordering Information

Type No.	Cathode band	Mark	Package Code
1N5223B through 1N5258B	Black	Type No.	DO-35

Pin Arrangement



1N5223B through 1N5258B

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Power dissipation	Pd	500	mW
Surge power dissipation	Pd(surge) * ¹	10	W
Lead temperature	T _L * ²	230	°C
Junction temperature	T _J * ³	200	°C
Storage temperature	Tstg	-65 to +200	°C

Notes: 1. Non-recurrent square wave, pw = 8.3 ms, T_J = 55°C, T_J is prior to surge.

2. Less than 1/16" from the case for 10 seconds.

3. By standard printed board, see fig 2.

Electrical Characteristics

(Ta = 25°C)

	V _Z (V)		I _R (μA)		Z _{ZT} (Ω)		Z _{ZK} (Ω)		γ _Z (%/°C) * ¹		V _F * ² (V)
	Test Condition		Test Condition		Test Condition		Test Condition		Test Condition		
	I _Z (mA)	Max	V _R (V)	Max	I _{ZT} (mA)	Max	I _{ZK} (mA)	Max		Max	
1N5223B	2.7 ± 5 (%)	20	75	1.0	30	20	1300	0.25	-0.08		1.1
1N5224B	2.8 ± 5 (%)	20	75	1.0	30	20	1400	0.25	-0.08		1.1
1N5225B	3.0 ± 5 (%)	20	50	1.0	29	20	1600	0.25	-0.075		1.1
1N5226B	3.3 ± 5 (%)	20	25	1.0	28	20	1600	0.25	-0.07		1.1
1N5227B	3.6 ± 5 (%)	20	15	1.0	24	20	1700	0.25	-0.065		1.1
1N5228B	3.9 ± 5 (%)	20	10	1.0	23	20	1900	0.25	-0.06		1.1
1N5229B	4.3 ± 5 (%)	20	5	1.0	22	20	2000	0.25	±0.055		1.1
1N5230B	4.7 ± 5 (%)	20	5	2.0	19	20	1900	0.25	±0.03		1.1
1N5231B	5.1 ± 5 (%)	20	5	2.0	17	20	1600	0.25	±0.03		1.1
1N5232B	5.6 ± 5 (%)	20	5	3.0	11	20	1600	0.25	+0.038		1.1
1N5233B	6.0 ± 5 (%)	20	5	3.5	7	20	1600	0.25	+0.038		1.1
1N5234B	6.2 ± 5 (%)	20	5	4.0	7	20	1000	0.25	+0.045		1.1
1N5235B	6.8 ± 5 (%)	20	3	5.0	5	20	750	0.25	+0.05		1.1
1N5236B	7.5 ± 5 (%)	20	3	6.0	6	20	500	0.25	+0.058		1.1
1N5237B	8.2 ± 5 (%)	20	3	6.5	8	20	500	0.25	+0.062		1.1
1N5238B	8.7 ± 5 (%)	20	3	6.5	8	20	600	0.25	+0.065		1.1

Notes: 1. 1N5223 to 1N5242: I_Z = 7.5 mA, 1N5243 to 1N5258: I_Z = I_Z, Ta = 25°C to 125°C

2. Tested with DC, I_F = 200 mA

Electrical Characteristics (cont)

(Ta = 25°C)

	V_z (V)	I_R (μA)		Z_{ZT} (Ω)		Z_{ZK} (Ω)		γ_z (%/°C) * ¹	V_F * ² (V)
		Test Condition		Test Condition		Test Condition		Test Condition	
		I_z (mA)	Max	V_R (V)	Max	I_{ZT} (mA)	Max	I_{ZK} (mA)	Max
1N5239B	9.1 ± 5 (%)	20	3	7.5	10	20	600	0.25	+0.068
1N5240B	10 ± 5 (%)	20	3	8.0	17	20	600	0.25	+0.075
1N5241B	11 ± 5 (%)	20	2	8.4	22	20	600	0.25	+0.076
1N5242B	12 ± 5 (%)	20	1	9.1	30	20	600	0.25	+0.077
1N5243B	13 ± 5 (%)	9.5	0.5	9.9	13	9.5	600	0.25	+0.079
1N5244B	14 ± 5 (%)	9.0	0.1	10	15	9.0	600	0.25	+0.082
1N5245B	15 ± 5 (%)	8.5	0.1	11	16	8.5	600	0.25	+0.082
1N5246B	16 ± 5 (%)	7.8	0.1	12	17	7.8	600	0.25	+0.083
1N5247B	17 ± 5 (%)	7.4	0.1	13	19	7.4	600	0.25	+0.084
1N5248B	18 ± 5 (%)	7.0	0.1	14	21	7.0	600	0.25	+0.085
1N5249B	19 ± 5 (%)	6.6	0.1	14	23	6.6	600	0.25	+0.086
1N5250B	20 ± 5 (%)	6.2	0.1	15	25	6.2	600	0.25	+0.086
1N5251B	22 ± 5 (%)	5.6	0.1	17	29	5.6	600	0.25	+0.087
1N5252B	24 ± 5 (%)	5.2	0.1	18	33	5.2	600	0.25	+0.088
1N5253B	25 ± 5 (%)	5.0	0.1	19	35	5.0	600	0.25	+0.089
1N5254B	27 ± 5 (%)	4.6	0.1	21	41	4.6	600	0.25	+0.090
1N5255B	28 ± 5 (%)	4.5	0.1	21	44	4.5	600	0.25	+0.091
1N5256B	30 ± 5 (%)	4.2	0.1	23	49	4.2	600	0.25	+0.091
1N5257B	33 ± 5 (%)	3.8	0.1	25	58	3.8	700	0.25	+0.092
1N5258B	36 ± 5 (%)	3.4	0.1	27	70	3.4	700	0.25	+0.093

Notes: 1. 1N5223 to 1N5242: $I_z = 7.5$ mA, 1N5243 to 1N5258: $I_z = I_z$, Ta = 25°C to 125°C2. Tested with DC, $I_F = 200$ mA

Main Characteristic

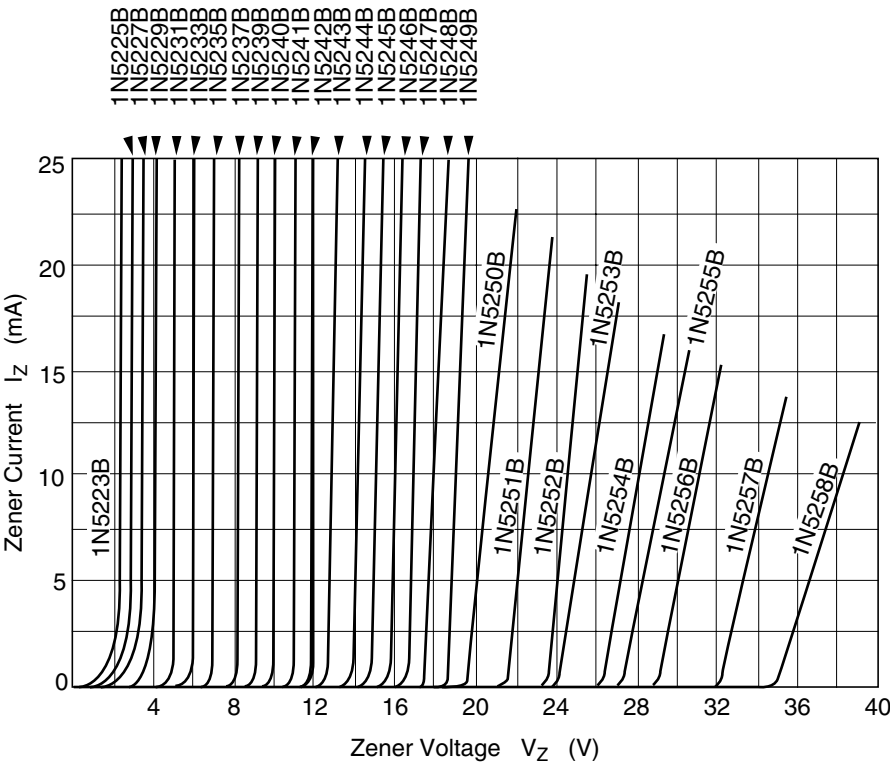


Fig.1 Zener current vs. Zener voltage

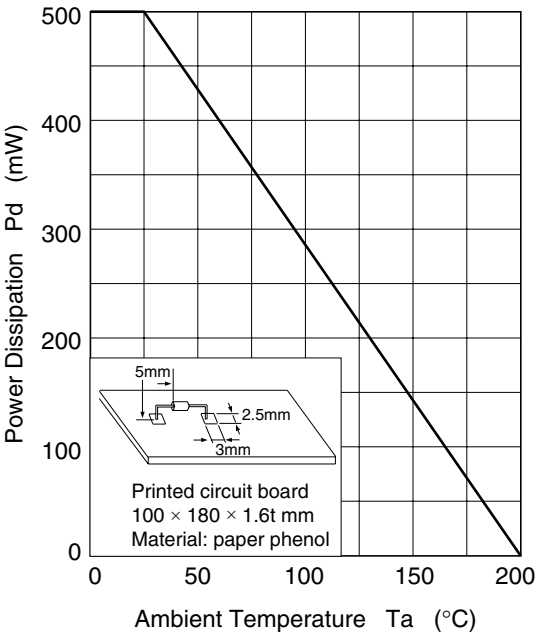
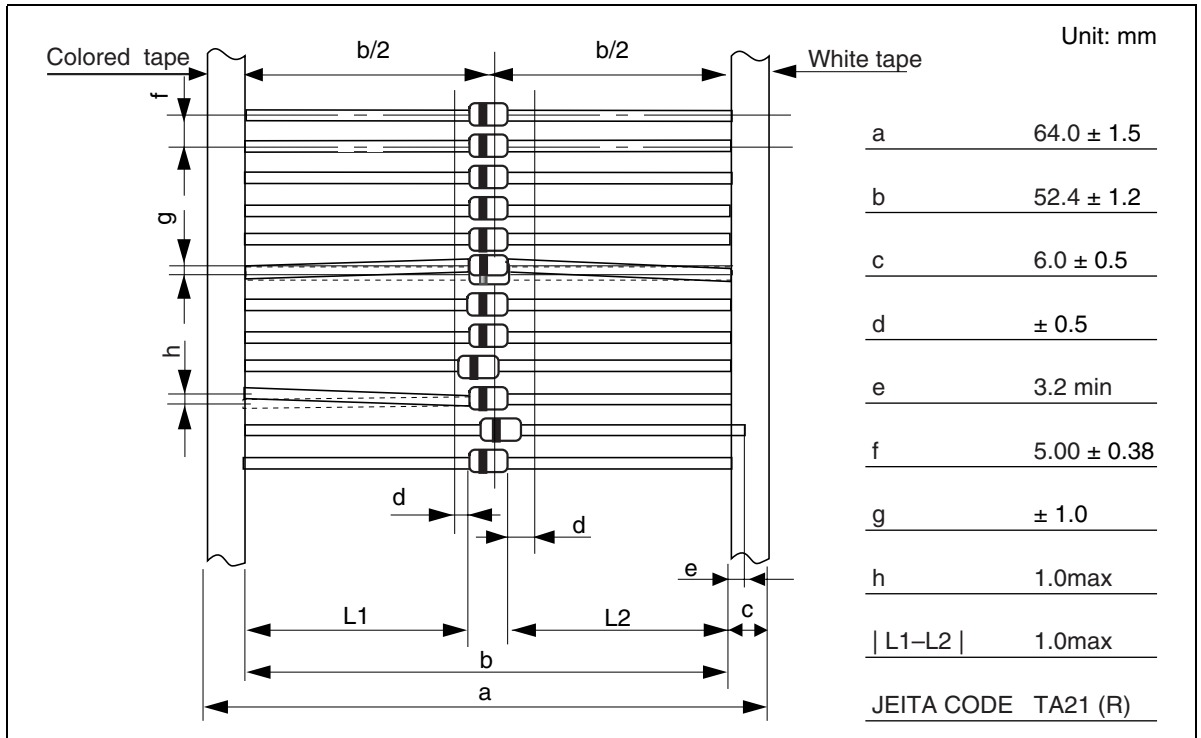
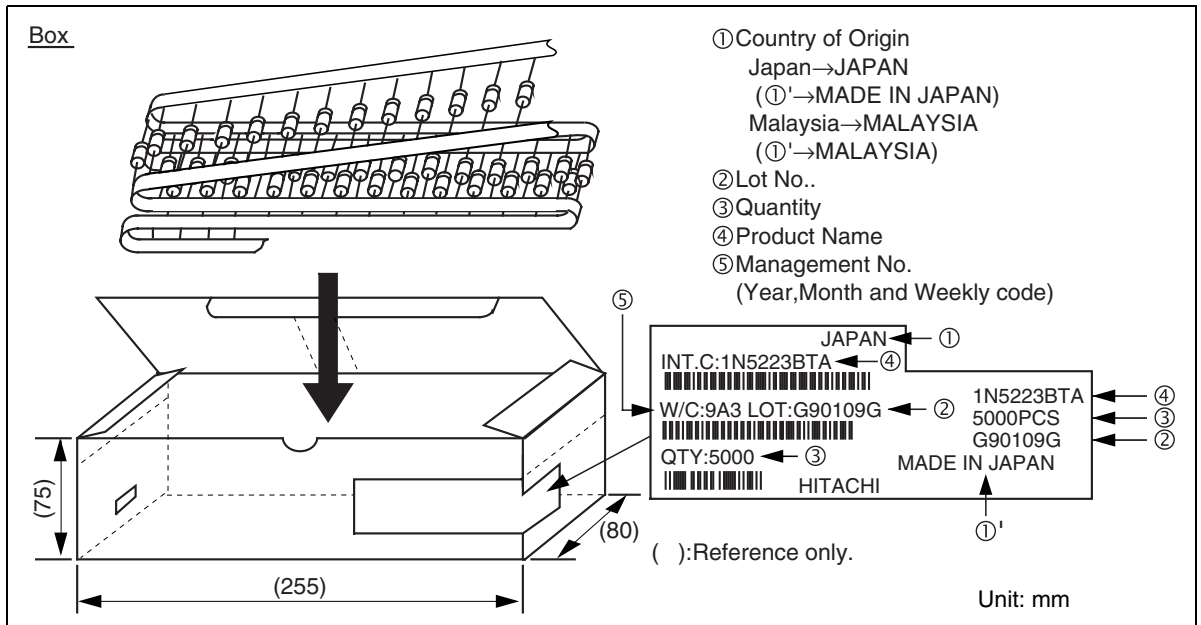


Fig.2 Power Dissipation vs. Ambient Temperature

Ammo Pack Taping (TA TYPE)

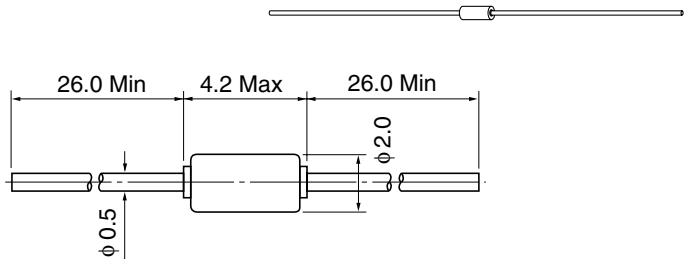


Taping appearance



Package Dimensions

As of July, 2001
Unit: mm



Hitachi Code	DO-35
JEDEC	Conforms
JEITA	Conforms
Mass (reference value)	0.13 g

Disclaimer

1. Hitachi neither warrants nor grants licenses of any rights of Hitachi's or any third party's patent, copyright, trademark, or other intellectual property rights for information contained in this document. Hitachi bears no responsibility for problems that may arise with third party's rights, including intellectual property rights, in connection with use of the information contained in this document.
2. Products and product specifications may be subject to change without notice. Confirm that you have received the latest product standards or specifications before final design, purchase or use.
3. Hitachi makes every attempt to ensure that its products are of high quality and reliability. However, contact Hitachi's sales office before using the product in an application that demands especially high quality and reliability or where its failure or malfunction may directly threaten human life or cause risk of bodily injury, such as aerospace, aeronautics, nuclear power, combustion control, transportation, traffic, safety equipment or medical equipment for life support.
4. Design your application so that the product is used within the ranges guaranteed by Hitachi particularly for maximum rating, operating supply voltage range, heat radiation characteristics, installation conditions and other characteristics. Hitachi bears no responsibility for failure or damage when used beyond the guaranteed ranges. Even within the guaranteed ranges, consider normally foreseeable failure rates or failure modes in semiconductor devices and employ systemic measures such as fail-safes, so that the equipment incorporating Hitachi product does not cause bodily injury, fire or other consequential damage due to operation of the Hitachi product.
5. This product is not designed to be radiation resistant.
6. No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without written approval from Hitachi.
7. Contact Hitachi's sales office for any questions regarding this document or Hitachi semiconductor products.

Sales Offices

HITACHI

Hitachi, Ltd.

Semiconductor & Integrated Circuits
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel: (03) 3270-2111 Fax: (03) 3270-5109

URL <http://www.hitachisemiconductor.com/>

For further information write to:

Hitachi Semiconductor (America) Inc.
179 East Tasman Drive
San Jose, CA 95134
Tel: <1> (408) 433-1990
Fax: <1> (408) 433-0223

Hitachi Europe Ltd.
Electronic Components Group
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA, United Kingdom
Tel: <44> (1628) 585000
Fax: <44> (1628) 585200

Hitachi Europe GmbH
Electronic Components Group
Dornacher Straße 3
D-85622 Feldkirchen
Postfach 201, D-85619 Feldkirchen
Germany
Tel: <49> (89) 9 9180-0
Fax: <49> (89) 9 29 30 00

Hitachi Asia Ltd.
Hitachi Tower
16 Collyer Quay #20-00
Singapore 049318
Tel: <65>-538-6533/538-8577
Fax: <65>-538-6933/538-3877
URL: <http://semiconductor.hitachi.com.sg>

Hitachi Asia Ltd.
(Taipei Branch Office)
4/F, No. 167, Tun Hwa North Road
Hung-Kuo Building
Taipei (105), Taiwan
Tel: <886>-(2)-2718-3666
Fax: <886>-(2)-2718-8180
Telex: 23222 HAS-TP
URL: <http://www.hitachi.com.tw>

Hitachi Asia (Hong Kong) Ltd.
Group III (Electronic Components)
7/F., North Tower
World Finance Centre,
Harbour City, Canton Road
Tsim Sha Tsui, Kowloon Hong Kong
Tel: <852>-(2)-735-9218
Fax: <852>-(2)-730-0281
URL: <http://semiconductor.hitachi.com.hk>

Copyright © Hitachi, Ltd., 2001. All rights reserved. Printed in Japan.
Colophon 5.0

This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.