

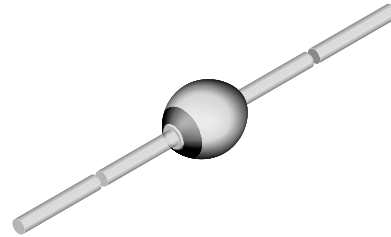
Zener Diodes with Surge Current Specification

Features

- Glass passivated junction
- Hermetically sealed package
- Clamping time in picoseconds
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS
COMPLIANT
HALOGEN
FREE



949539

Applications

- Medium power voltage regulators and medium power transient suppression circuits

Mechanical Data

Case: SOD-57

Weight: approx. 369 mg

Packaging codes/options:

TAP / 5 k ammpack (52 mm tape) / 25 k/box

TR / 5 k 10" reel

Absolute Maximum Ratings

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Power dissipation	$I = 10\text{ mm}, T_L = 25\text{ }^{\circ}\text{C}$	P_V	3.25	W
	$T_{amb} = 25\text{ }^{\circ}\text{C}$	P_V	1.3	W
Repetitive peak reverse power dissipation		P_{ZRM}	10	W
Non repetitive peak surge power dissipation	$t_p = 100\text{ }\mu\text{s}, T_j = 25\text{ }^{\circ}\text{C}$	P_{ZSM}	600	W
Junction temperature		T_j	175	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	- 65 to + 175	$^{\circ}\text{C}$

Thermal Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	$I = 10\text{ mm}, T_L = \text{constant}$	R_{thJA}	46	K/W
	On PC board with spacing 25 mm	R_{thJA}	100	K/W

Electrical Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	$I_F = 0.5\text{ A}$	V_F			1.2	V

BZT03-Series

Vishay Semiconductors



Electrical Characteristics

BZT03C...

Part number	Zener voltage range			Dynamic resistance		Test current	Temperature coefficient of Zener voltage		Reverse leakage current		Clamping		Stand-off	
	V_Z at I_{ZT}			r_{Zj} and TK_{VZ} at I_Z		I_{ZT}	TC_{VZ} at I_{ZT}		I_R at V_R		$V_{(CL)R}^{1)}$ at I_{RMS}		I_R at $V_R^{2)}$	
	V			Ω		mA	% / K		μA	V	V	A	μA	V
	min.	typ.	max.	typ.	max.		min.	max.	max.		max.		max.	
BZT03C6V2	5.8	6.2	6.6	1	2	100	0	0.07	1500	4.7	9.3	34	3000	5.1
BZT03C6V8	6.4	6.8	7.2	1	2	100	0	0.07	1000	5.1	10.2	31	2000	5.6
BZT03C7V5	7	7.5	7.9	1	2	100	0	0.07	750	5.6	11.3	26.5	1500	6.2
BZT03C8V2	7.7	8.2	8.7	1	2	100	0.03	0.08	600	6.2	12.3	24.4	1200	6.8
BZT03C9V1	8.5	9.1	9.6	2	4	50	0.03	0.08	20	6.8	13.3	22.7	50	7.5
BZT03C10	9.4	10	10.6	2	4	50	0.05	0.09	10	7.5	14.8	20.3	20	8.2
BZT03C11	10.4	11	11.6	4	7	50	0.05	0.1	4	8.2	15.7	19.1	5	9.1
BZT03C12	11.4	12	12.7	4	7	50	0.05	0.1	3	9.1	17	17.7	5	10
BZT03C13	12.4	13	14.1	5	10	50	0.05	0.1	2	10	18.9	15.9	5	11
BZT03C15	13.8	15	15.6	5	10	50	0.05	0.1	1	11	20.9	14.4	5	12
BZT03C16	15.3	16	17.1	6	15	25	0.06	0.11	1	12	22.9	13.1	5	13
BZT03C18	16.8	18	19.1	6	15	25	0.06	0.11	1	13	25.6	11.7	5	15
BZT03C20	18.8	20	21.2	6	15	25	0.06	0.11	1	15	28.4	10.6	5	16
BZT03C22	20.8	22	23.3	6	15	25	0.06	0.11	1	16	31	9.7	5	18
BZT03C24	22.8	24	25.6	7	15	25	0.06	0.11	1	18	33.8	8.9	5	20
BZT03C27	25.1	27	28.9	7	15	25	0.06	0.11	1	20	38.1	7.9	5	22
BZT03C30	28	30	32	8	15	25	0.06	0.11	1	22	42.2	7.1	5	24
BZT03C33	31	33	35	8	15	25	0.06	0.11	1	24	46.2	6.5	5	27
BZT03C36	34	36	38	21	40	10	0.06	0.11	1	27	50.1	6	5	30
BZT03C39	37	39	41	21	40	10	0.06	0.11	1	30	54.1	5.5	5	33
BZT03C43	40	43	46	24	45	10	0.07	0.12	1	33	60.7	4.9	5	36
BZT03C47	44	47	50	24	45	10	0.07	0.12	1	36	65.5	4.6	5	39
BZT03C51	48	51	54	25	60	10	0.07	0.12	1	39	70.8	4.2	5	43
BZT03C56	52	56	60	25	60	10	0.07	0.12	1	43	78.6	3.8	5	47
BZT03C62	58	62	66	25	80	10	0.08	0.13	1	47	86.5	3.5	5	51
BZT03C68	64	68	72	25	80	10	0.08	0.13	1	51	94.4	3.2	5	56
BZT03C75	70	75	79	30	100	10	0.08	0.13	1	56	103.5	2.9	5	62
BZT03C82	77	82	87	30	100	10	0.08	0.13	1	62	114	2.6	5	68
BZT03C91	85	91	96	60	200	5	0.09	0.13	1	68	126	2.4	5	75
BZT03C100	94	100	106	60	200	5	0.09	0.13	1	75	139	2.2	5	82
BZT03C110	104	110	116	80	250	5	0.09	0.13	1	82	152	2	5	91
BZT03C120	114	120	127	80	250	5	0.09	0.13	1	91	167	1.8	5	100
BZT03C130	124	130	141	110	300	5	0.09	0.13	1	100	185	1.6	5	110
BZT03C150	138	150	156	130	300	5	0.09	0.13	1	110	204	1.5	5	120
BZT03C160	153	160	171	150	350	5	0.09	0.13	1	120	224	1.3	5	130
BZT03C180	168	180	191	180	400	5	0.09	0.13	1	130	249	1.2	5	150
BZT03C200	188	200	212	200	500	5	0.09	0.13	1	150	276	1.1	5	160
BZT03C220	208	220	233	350	750	2	0.09	0.13	1	160	305	1	5	180
BZT03C240	228	240	256	400	850	2	0.09	0.13	1	180	336	0.9	5	200
BZT03C270	251	270	289	450	1000	2	0.09	0.13	1	200	380	0.8	5	220
BZT03C300	280	300	320	450	1000	2	0.09	0.13	1	220	419	0.72	5	240

¹⁾ 10/1000 exp. falling pulse $t_p = 1000 \mu s$ down to 50 %

²⁾ Stand-off voltage = recommended supply voltage

Electrical Characteristics

BZT03D...

Partnumber	Zener voltage range			Dynamic resistance		Test current	Temperature coefficient of Zener voltage		Reverse leakage current		Clamping		Stand-off	
	V_Z at I_{ZT}			r_{zj} and TK_{VZ} at I_Z		I_{ZT}	TC_{VZ} at I_{ZT}		I_R at V_R		$V_{(CL)R}^{1)}$ at I_{RMS}		I_R at $V_R^{2)}$	
	V			Ω		mA	% / K		μA	V	V	A	μA	V
	min.	typ.	max.	typ.	max.		min.	max.	max.		max.		max.	
BZT03D6V2	5.6	6.2	6.8	1	2	100	0	0.07	1500	4.4	9.5	34	3000	4.8
BZT03D6V8	6.1	6.8	7.5	1	2	100	0	0.07	1000	4.8	10.5	31	2000	5.3
BZT03D7V5	6.75	7.5	8.25	1	2	100	0	0.07	750	5.3	11.6	26.5	1500	5.9
BZT03D8V2	7.4	8.2	9	1	2	100	0.03	0.08	600	5.9	12.6	24.4	1200	6.5
BZT03D9V1	8.2	9.1	10	2	4	50	0.03	0.08	20	6.5	13.7	22.7	50	7.1
BZT03D10	9	10	11	2	4	50	0.05	0.09	10	7.1	15.2	20.3	20	7.9
BZT03D11	9.9	11	12.1	4	7	50	0.05	0.1	4	7.9	16.2	19.1	5	8.6
BZT03D12	10.8	12	13.2	4	7	50	0.05	0.1	3	8.6	17.5	17.7	5	9.3
BZT03D13	11.7	13	14.3	5	10	50	0.05	0.1	2	9.3	19.1	15.9	5	10.6
BZT03D15	13.5	15	16.5	5	10	50	0.05	0.1	1	10.6	21.8	14.4	5	11.6
BZT03D16	14.4	16	17.6	6	15	25	0.06	0.11	1	11.6	23.4	13.1	5	12.6
BZT03D18	16.2	18	19.8	6	15	25	0.06	0.11	1	12.6	26.3	11.7	5	14.4
BZT03D20	18	20	22	6	15	25	0.06	0.11	1	14.4	29.2	10.6	5	15.8
BZT03D22	29.8	22	24.2	6	15	25	0.06	0.11	1	15.8	31.9	9.7	5	17.2
BZT03D24	21.6	24	26.4	7	15	25	0.06	0.11	1	17.2	34.6	8.9	5	19.4
BZT03D27	24.3	27	29.7	7	15	25	0.06	0.11	1	19.4	39	7.9	5	21.5
BZT03D30	27	30	33	8	15	25	0.06	0.11	1	21.5	43.5	7.1	5	23.5
BZT03D33	29.7	33	36.3	8	15	25	0.06	0.11	1	23.5	47.5	6.5	5	25.8
BZT03D36	32.4	36	39.6	21	40	10	0.06	0.11	1	25.8	51.5	6	5	28
BZT03D39	35.1	39	42.9	21	40	10	0.06	0.11	1	28	56	5.5	5	31
BZT03D43	38.7	43	47.3	24	45	10	0.07	0.12	1	31	62	4.9	5	33.5
BZT03D47	42.3	47	51.7	24	45	10	0.07	0.12	1	33.5	67.5	4.6	5	36.5
BZT03D51	45.9	51	56.1	25	60	10	0.07	0.12	1	36.5	73	4.2	5	40
BZT03D56	50.4	56	61.6	25	60	10	0.07	0.12	1	40	81	3.8	5	44.5
BZT03D62	55.8	62	68.2	25	80	10	0.08	0.13	1	44.5	89	3.5	5	49
BZT03D68	61.2	68	74.8	25	80	10	0.08	0.13	1	49	97	3.2	5	54
BZT03D75	67.5	75	82.5	30	100	10	0.08	0.13	1	54	107	2.9	5	59
BZT03D82	73.8	82	90.2	30	100	10	0.08	0.13	1	59	117	2.6	5	65
BZT03D91	81.9	91	100	60	200	5	0.09	0.13	1	65	130	2.4	5	71
BZT03D100	90	100	110	60	200	5	0.09	0.13	1	71	143	2.2	5	79
BZT03D110	99	110	121	80	250	5	0.09	0.13	1	79	157	2	5	86
BZT03D120	108	120	132	80	250	5	0.09	0.13	1	86	172	1.8	5	93
BZT03D130	117	130	143	110	300	5	0.09	0.13	1	93	187	1.6	5	106
BZT03D150	135	150	165	130	300	5	0.09	0.13	1	106	213	1.5	5	116
BZT03D160	144	160	176	150	350	5	0.09	0.13	1	116	229	1.3	5	126
BZT03D180	162	180	198	180	400	5	0.09	0.13	1	126	256	1.2	5	144
BZT03D200	180	200	220	200	500	5	0.09	0.13	1	144	284	1.1	5	158
BZT03D220	198	220	242	350	750	2	0.09	0.13	1	158	314	1	5	172
BZT03D240	216	240	264	400	850	2	0.09	0.13	1	172	364	0.9	5	194
BZT03D270	243	270	297	450	1000	2	0.09	0.13	1	194	388	0.8	5	215

¹⁾ 10/1000 exp. falling pulse $t_p = 1000 \mu s$ down to 50 %

²⁾ Stand-off voltage = recommended supply voltage

Typical Characteristics

$T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified

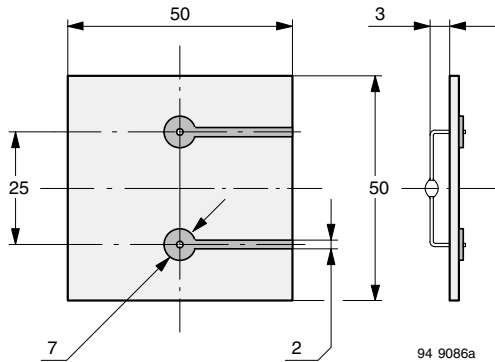


Figure 1. Epoxy Glass Hard Tissue, Board Thickness 1.5 mm,
 $R_{thJA} \leq 100 \text{ K/W}$

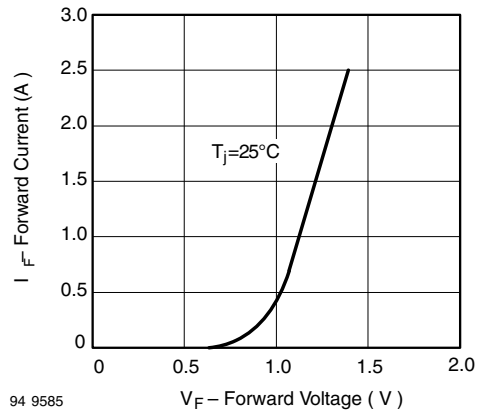


Figure 3. Forward Current vs. Forward Voltage

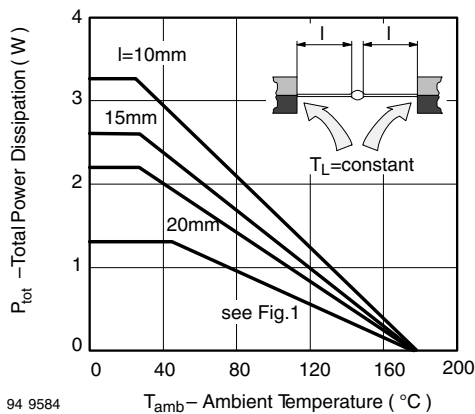


Figure 2. Total Power Dissipation vs. Ambient Temperature

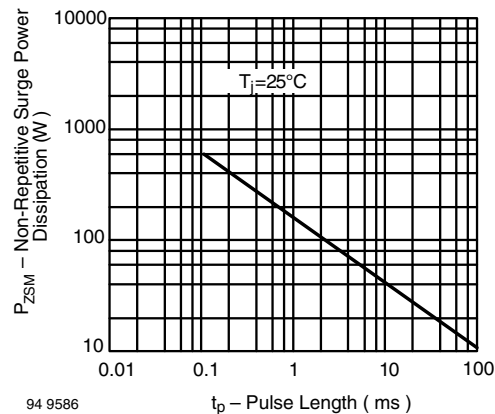
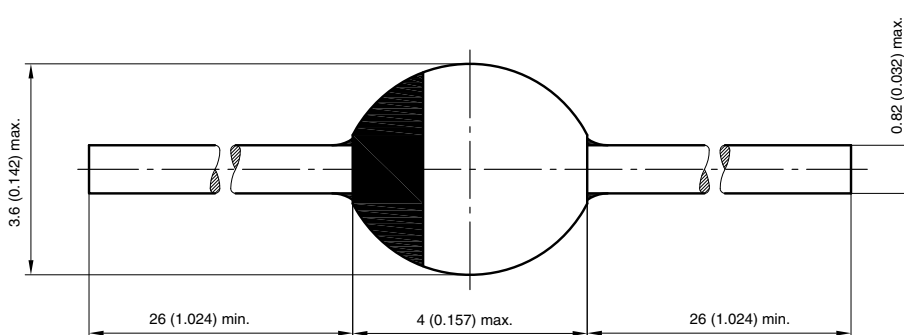


Figure 4. Non Repetitive Surge Power Dissipation vs. Pulse Length

Package Dimensions in millimeters (inches): SOD-57



20543
Rev. 3 - Date: 09.February 2005
Document no.: 6.563-5006.3-4



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.