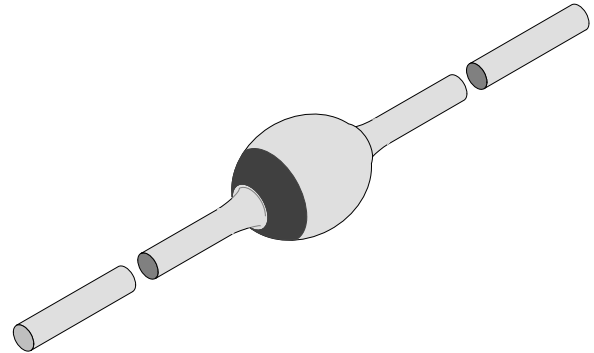


# Silicon Z-Diodes and Transient Voltage Suppressors

## Features

- Glass passivated junction
- Hermetically sealed package
- Clamping time in picoseconds



94 9539

## Applications

Medium power voltage regulators and medium power transient suppression circuits

## Absolute Maximum Ratings

$T_j = 25^\circ\text{C}$

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

## Maximum Thermal Resistance

$T_j = 25^\circ\text{C}$

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

## Electrical Characteristics

$T_j = 25^\circ\text{C}$

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

# BZT03D...

Vishay Telefunken



Type	V <sub>Z</sub>			r <sub>zi</sub> and		TK <sub>VZ</sub> at		I <sub>Z</sub>	I <sub>R</sub> at V <sub>R</sub>	
	V			Ω		%K			mA	μA
BZT03D...	Min.	Typ.	Max.	Typ.	Max.	Min.	Max.		Max.	
6V2	5.6	6.2	6.8	1	2	0	0.07	100	1500	4.4
6V8	6.1	6.8	7.5	1	2	0	0.07	100	1000	4.8
7V5	6.75	7.5	8.25	1	2	0	0.07	100	750	5.3
8V2	7.4	8.2	9.0	1	2	0.03	0.08	100	600	5.9
9V1	8.2	9.1	10.0	2	4	0.03	0.08	50	20	6.5
10	9.0	10	11.0	2	4	0.05	0.09	50	10	7.1
11	9.9	11	12.1	4	7	0.05	0.10	50	4	7.9
12	10.8	12	13.2	4	7	0.05	0.10	50	3	8.6
13	11.7	13	14.3	5	10	0.05	0.10	50	2	9.3
15	13.5	15	16.5	5	10	0.05	0.10	50	1	10.6
16	14.4	16	17.6	6	15	0.06	0.11	25	1	11.6
18	16.2	18	19.8	6	15	0.06	0.11	25	1	12.6
20	18.0	20	22.0	6	15	0.06	0.11	25	1	14.4
22	29.8	22	24.2	6	15	0.06	0.11	25	1	15.8
24	21.6	24	26.4	7	15	0.06	0.11	25	1	17.2
27	24.3	27	29.7	7	15	0.06	0.11	25	1	19.4
30	27	30	33	8	15	0.06	0.11	25	1	21.5
33	29.7	33	36.3	8	15	0.06	0.11	25	1	23.5
36	32.4	36	39.6	21	40	0.06	0.11	10	1	25.8
39	35.1	39	42.9	21	40	0.06	0.11	10	1	28
43	38.7	43	47.3	24	45	0.07	0.12	10	1	31
47	42.3	47	51.7	24	45	0.07	0.12	10	1	33.5
51	45.9	51	56.1	25	60	0.07	0.12	10	1	36.5
56	50.4	56	61.6	25	60	0.07	0.12	10	1	40
62	55.8	62	68.2	25	80	0.08	0.13	10	1	44.5
68	61.2	68	74.8	25	80	0.08	0.13	10	1	49
75	67.5	75	82.5	30	100	0.08	0.13	10	1	54
82	73.8	82	90.2	30	100	0.08	0.13	10	1	59
91	81.9	91	100	60	200	0.09	0.13	5	1	65
100	90	100	110	60	200	0.09	0.13	5	1	71
110	99	110	121	80	250	0.09	0.13	5	1	79
120	108	120	132	80	250	0.09	0.13	5	1	86
130	117	130	143	110	300	0.09	0.13	5	1	93
150	135	150	165	130	300	0.09	0.13	5	1	106
160	144	160	176	150	350	0.09	0.13	5	1	116
180	162	180	198	180	400	0.09	0.13	5	1	126
200	180	200	220	200	500	0.09	0.13	5	1	144
220	198	220	242	350	750	0.09	0.13	2	1	158
240	216	240	264	400	850	0.09	0.13	2	1	172
270	243	270	297	450	1000	0.09	0.13	2	1	194



Type	Clamping at		Stand-off at	
	$V_{(CL)R}^{1)}$	$I_{RSM}$	$I_R$	$V_R^{2)}$
BZT03D...	V	A	$\mu A$	V
	Max.		Max.	
6V2	9.5	34.0	3000	4.8
6V8	10.5	31.0	2000	5.3
7V5	11.6	26.5	1500	5.9
8V2	12.6	24.4	1200	6.5
9V1	13.7	22.7	50	7.1
10	15.2	20.3	20	7.9
11	16.2	19.1	5	8.6
12	17.5	17.7	5	9.3
13	19.1	15.9	5	10.6
15	21.8	14.4	5	11.6
16	23.4	13.1	5	12.6
18	26.3	11.7	5	14.4
20	29.2	10.6	5	15.8
22	31.9	9.7	5	17.2
24	34.6	8.9	5	19.4
27	39	7.9	5	21.5
30	43.5	7.1	5	23.5
33	47.5	6.5	5	25.8
36	51.5	6.0	5	28
39	56	5.5	5	31
43	62	4.9	5	33.5
47	67.5	4.6	5	36.5
51	73	4.2	5	40
56	81	3.8	5	44.5
62	89	3.5	5	49
68	97	3.2	5	54
75	107	2.9	5	59
82	117	2.6	5	65
91	130	2.4	5	71
100	143	2.2	5	79
110	157	2.0	5	86
120	172	1.8	5	93
130	187	1.6	5	106
150	213	1.5	5	116
160	229	1.3	5	126
180	256	1.2	5	144
200	284	1.1	5	158
220	314	1.0	5	172
240	364	0.9	5	194
270	388	0.8	5	215

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

**Characteristics ( $T_j = 25^\circ\text{C}$  unless otherwise specified)**

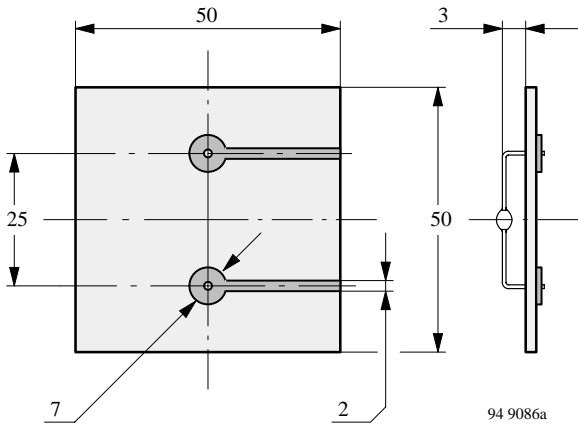


Figure 1. Epoxy glass hard tissue, board thickness 1.5 mm,  $R_{thJA} \cong 100 \text{ K/W}$

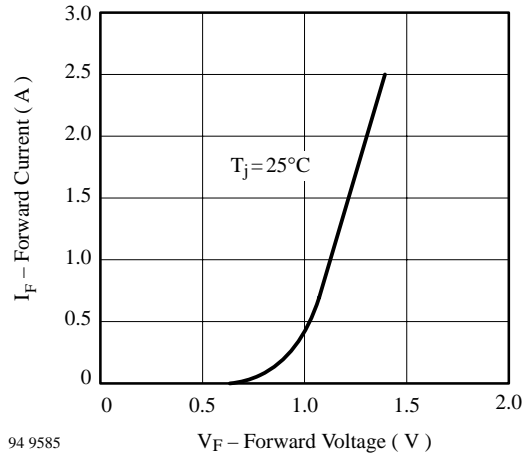


Figure 3. Forward Current vs. Forward Voltage

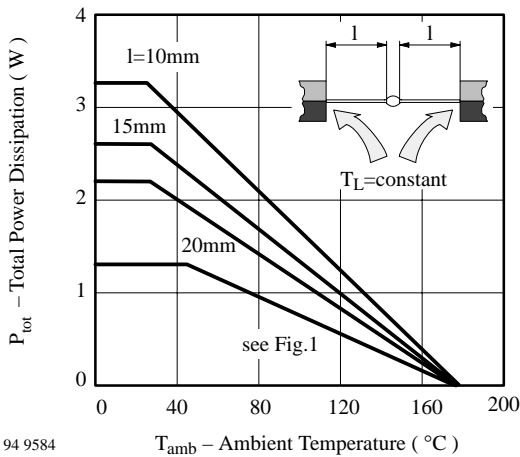


Figure 2. Total Power Dissipation vs. Ambient Temperature

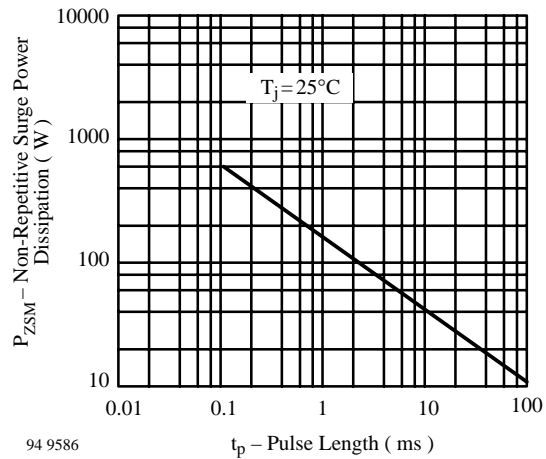
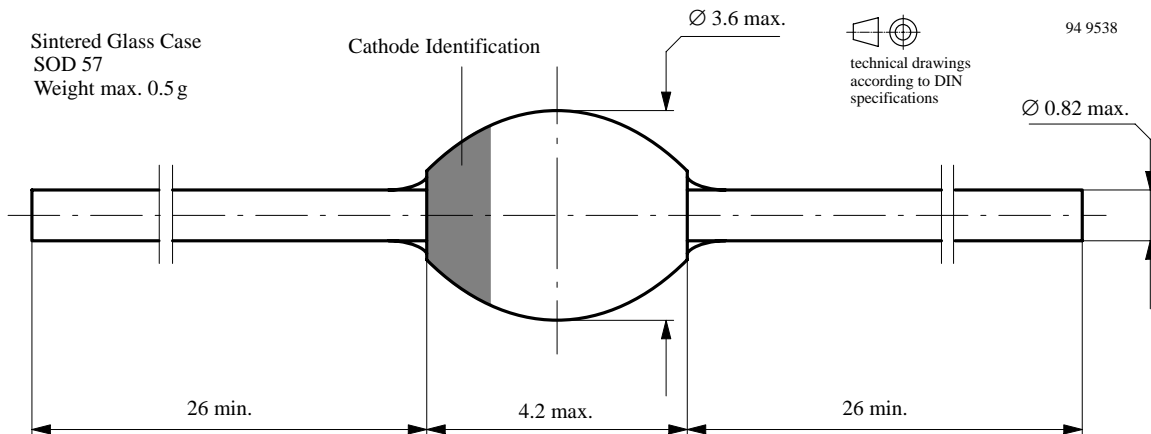


Figure 4. Non Repetitive Surge Power Dissipation vs. Pulse Length

**Dimensions in mm**





## **Ozone Depleting Substances Policy Statement**

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

**Vishay Semiconductor GmbH** has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

**Vishay Semiconductor GmbH** can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

**We reserve the right to make changes to improve technical design and may do so without further notice.**

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay-Telefunken products for any unintended or unauthorized application, the buyer shall indemnify Vishay-Telefunken against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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