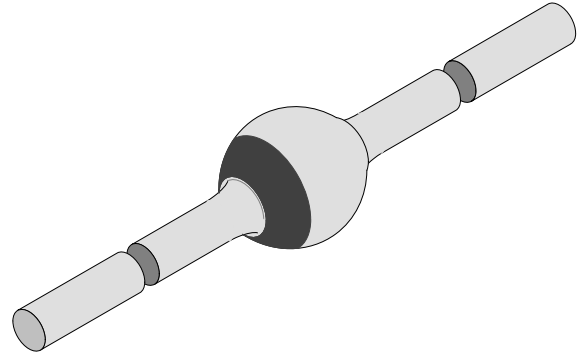


# Silicon Z-Diodes and Transient Voltage Suppressors

## Features

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



94 9588

## Applications

Voltage regulators and transient suppression circuits

## Absolute Maximum Ratings

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

Parameter	Test Conditions	Type	Symbol	Value	Unit
Power dissipation	$l=10\text{mm}, T_L=25^\circ\text{C}$		$P_V$	6.0	W
	$T_{\text{amb}}=45^\circ\text{C}$		$P_V$	1.85	W
Repetitive peak reverse power dissipation			$P_{ZRM}$	20	W
Non repetitive peak surge power dissipation	$t_p=100\mu\text{s}, T_j=25^\circ\text{C}$		$P_{ZSM}$	1000	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	$l=25\text{mm}, T_L=\text{constant}$	$R_{\text{thJA}}$	30	K/W
	on PC board with spacing 37.5mm	$R_{\text{thJA}}$	70	K/W

## Electrical Characteristics

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

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Forward voltage	$I_F=1\text{A}$		$V_F$			1.2	V

# BZW03C...

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				
BZW03C...	Min.	Typ.	Max.	Typ.	Max.	Min.	Max.	mA	μA	V
7V5	7.0	7.5	7.9	0.7	1.5	0	0.07	175	1500	5.6
8V2	7.7	8.2	8.7	0.8	1.5	0.03	0.08	150	1200	6.2
9V1	8.5	9.1	9.6	0.9	2.0	0.03	0.08	150	10	6.8
10	9.4	10.0	10.6	1.0	2.0	0.05	0.09	125	20	7.5
11	10.4	11.0	11.6	1.1	2.5	0.05	0.10	125	15	8.2
12	11.4	12.0	12.7	1.1	2.5	0.05	0.10	100	10	9.1
13	12.4	13.0	14.1	1.2	2.5	0.05	0.10	100	4	10
15	13.8	15.0	15.6	1.2	2.5	0.05	0.10	75	2	11
16	15.3	16.0	17.1	1.3	2.5	0.06	0.11	75	2	12
18	16.8	18.0	19.1	1.3	2.5	0.06	0.11	65	2	13
20	18.8	20.0	21.2	1.5	3.0	0.06	0.11	65	2	15
22	20.8	22.0	23.3	1.6	3.5	0.06	0.11	50	2	16
24	22.8	24.0	25.6	1.8	3.5	0.06	0.11	50	2	18
27	25.1	27.0	28.9	2.5	5.0	0.06	0.11	50	2	20
30	28	30	32	4	8	0.06	0.11	40	2	22
33	31	33	35	5	10	0.06	0.11	40	2	24
36	34	36	38	6	11	0.06	0.11	30	2	27
39	37	39	41	7	14	0.06	0.11	30	2	30
43	40	43	46	10	20	0.07	0.12	30	2	33
47	44	47	50	12	25	0.07	0.12	25	2	36
51	48	51	54	14	27	0.07	0.12	25	2	39
56	52	56	60	18	35	0.07	0.12	20	2	43
62	58	62	66	20	42	0.08	0.13	20	2	47
68	64	68	72	22	44	0.08	0.13	20	2	51
75	70	75	79	25	45	0.08	0.13	20	2	56
82	77	82	87	30	65	0.08	0.13	15	2	62
91	85	91	96	40	75	0.09	0.13	15	2	68
100	94	100	106	45	90	0.09	0.13	12	2	75
110	104	110	116	65	125	0.09	0.13	12	2	82
120	114	120	127	90	170	0.09	0.13	10	2	91
130	124	130	141	100	190	0.09	0.13	10	2	100
150	138	150	156	150	330	0.09	0.13	8	2	110
160	153	160	171	180	350	0.09	0.13	8	2	120
180	168	180	191	210	430	0.09	0.13	5	2	130
200	188	200	212	250	500	0.09	0.13	5	2	150
220	208	220	233	350	700	0.09	0.13	5	2	160
240	228	240	256	450	900	0.09	0.13	5	2	180
270	251	270	289	600	1200	0.09	0.13	5	2	200



Type	I <sub>Rat</sub>	V <sub>R</sub>	V <sub>(BR)</sub> <sup>2)</sup>	I <sub>(BR)S</sub>
BZW03C...	μA	V	V	A
7V5	3000	6.2	11.3	44.2
8V2	2400	6.8	12.3	40.6
9V1	100	7.5	13.3	37.6
10	40	8.2	14.8	34.0
11	30	9.1	15.7	31.8
12	20	10	17.0	29.4
13	10	11	18.9	26.4
15	10	12	20.9	23.9
16	10	13	22.9	21.8
18	10	15	25.6	19.5
20	10	16	28.4	17.6
22	10	18	31.0	16.1
24	10	20	33.8	14.8
27	10	22	38.1	13.1
30	10	24	42.2	11.8
33	10	27	46.2	10.8
36	10	30	50.1	10.0
39	10	33	54.1	9.2
43	10	36	60.7	8.2
47	10	39	65.5	7.6
51	10	43	70.8	7.0
56	10	47	78.6	6.3
62	10	51	86.5	5.8
68	10	56	94.4	5.3
75	10	62	103.5	4.8
82	10	68	114	4.3
91	10	75	126	3.9
100	10	82	139	3.6
110	10	91	152	3.3
120	10	100	167	3.0
130	10	110	185	2.7
150	10	120	204	2.4
160	10	130	224	2.2
180	10	150	249	2.0
200	10	160	276	1.8
220	10	180	305	1.6
240	10	200	336	1.5
270	10	220	380	1.3

1) Stand-off reverse voltage = recommended supply voltage

2) Exp. falling pulse,  $t_p = 500 \mu\text{s}$  down to 37%

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

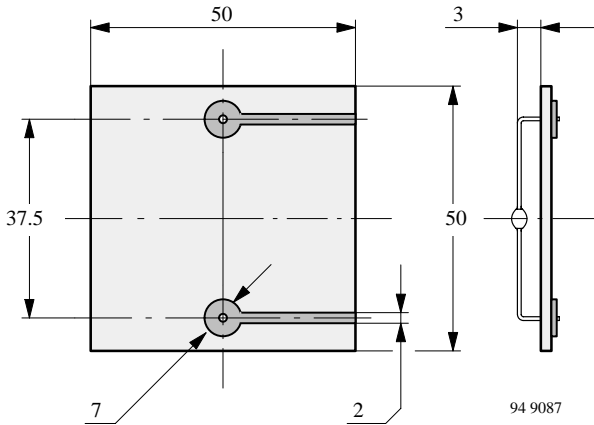


Figure 1. Epoxy glass hard tissue, board thickness 1.5 mm,  $R_{thJA} \cong 70 \text{ K/W}$

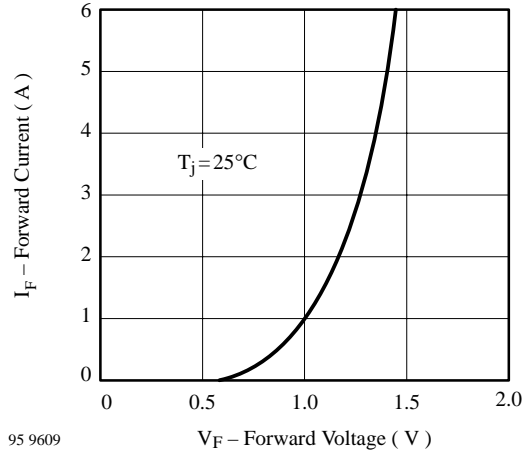


Figure 3. Forward Current vs. Forward Voltage

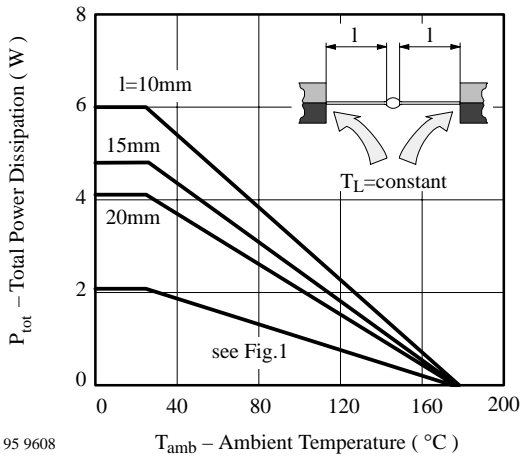


Figure 2. Total Power Dissipation vs. Ambient Temperature

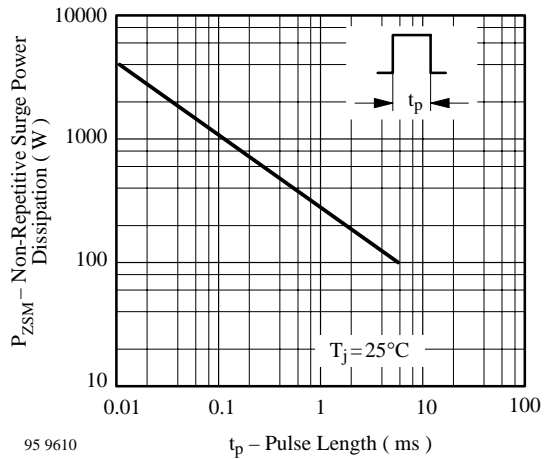
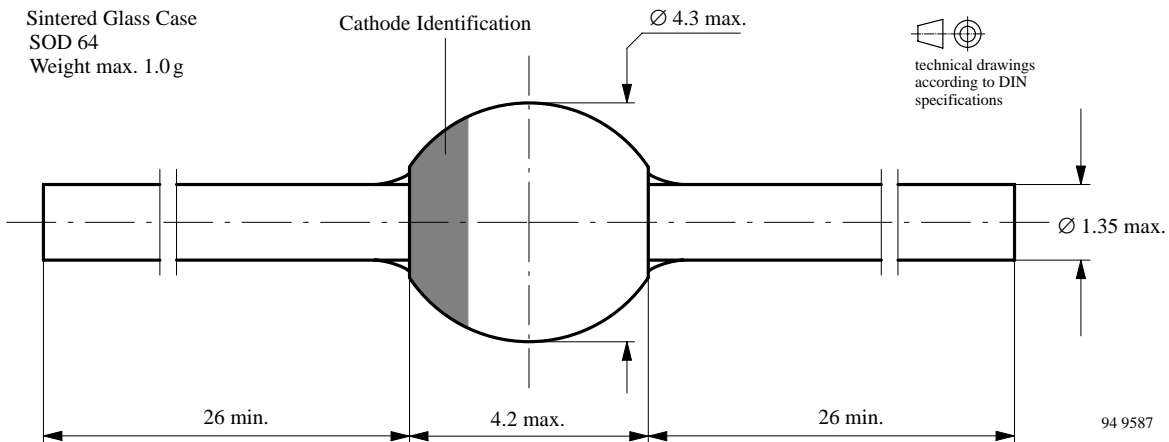


Figure 4. Non Repetitive Surge Power Dissipation vs. Pulse Length

**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.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany  
Telephone: 49 (0)7131 67 2831, Fax number: 49 (0)7131 67 2423