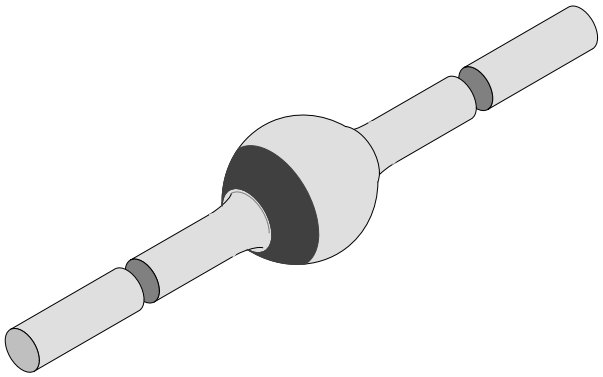
Silicon Z–Diodes

Features

- Glass passivated junction
- Hermetically sealed package
- Clamping sealed package



Applications

Voltage regulators and transient suppression circuits

Absolute Maximum Ratings

T_j = 25°C

Parameter	Test Conditions	Type	Symbol	Value	Unit
Power dissipation	l=10mm, T_L=25˚C		P_V	6.0	W
	T_{amb}=45˚C		P_V	1.85	W
Repetitive peak reverse power dissipation			P_{ZRM}	20	W
Non repetitive peak surge power dissipation	t_p=100µs, T_j=25˚C		P_{ZSM}	1000	W
Junction temperature			T_j	175	˚C
Storage temperature range			T_{stg}	–65...+175	˚C

Maximum Thermal Resistance

T_j = 25°C

Parameter	Test Conditions	Symbol	Value	Unit
Junction ambient	l=25mm, T_L=constant	R_{thJA}	30	K/W
	on PC board with spacing 37.5mm	R_{thJA}	70	K/W

Characteristics

T_j = 25°C

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Forward voltage	I_F=1A		V_F			1.2	V

Characteristics when used as voltage regulator diodes, T_j = 25°C

Type	V_Z ±10%	r_{zj} and TK_{VZ} at I_Z					I_R at V_R	
BZW03D...	V	Ω		%/K		mA	µA	V
	Typ.	Typ.	Max.	Min.	Max.		Max.	
7V5	7.5	0.7	1.5	0	0.07	175	1500	5.3
8V2	8.2	0.8	1.5	0.03	0.08	150	1200	5.8
9V1	9.1	0.9	2.0	0.03	0.08	150	40	6.5
10	10.0	1.0	2.0	0.05	0.09	125	20	7.1
11	11.0	1.1	2.5	0.05	0.10	125	15	7.9
12	12.0	1.1	2.5	0.05	0.10	100	10	8.6
13	13.0	1.2	2.5	0.05	0.10	100	4	9.3
15	15.0	1.2	2.5	0.05	0.10	75	2	10.6
16	16.0	1.3	2.5	0.06	0.11	75	2	11.6
18	18.0	1.3	2.5	0.06	0.11	65	2	12.6
20	20.0	1.5	3.0	0.06	0.11	65	2	14.4
22	22.0	1.6	3.5	0.06	0.11	50	2	15.8
24	24.0	1.8	3.5	0.06	0.11	50	2	17.2
27	27.0	2.5	5.0	0.06	0.11	50	2	19.4
30	30	4	8	0.06	0.11	40	2	21.5
33	33	5	10	0.06	0.11	40	2	23.5
36	36	6	11	0.06	0.11	30	2	25.8
39	39	7	14	0.06	0.11	30	2	28
43	43	10	20	0.07	0.12	30	2	31
47	47	12	25	0.07	0.12	25	2	33.5
51	51	14	27	0.07	0.12	25	2	36.5
56	56	18	35	0.07	0.12	20	2	40
62	62	20	42	0.08	0.13	20	2	44.5
68	68	22	44	0.08	0.13	20	2	49
75	75	25	45	0.08	0.13	20	2	54
82	82	30	65	0.08	0.13	15	2	59
91	91	40	75	0.09	0.13	15	2	65
100	100	45	90	0.09	0.13	12	2	71
110	110	65	125	0.09	0.13	12	2	79
120	120	90	170	0.09	0.13	10	2	86
130	130	100	190	0.09	0.13	10	2	93

Characteristics when used as voltage regulator diodes, T_j = 25°C (cont.)

Type	V_Z ±10%	r_{zj} and TK_{VZ} at I_Z					I_R at V_R	
BZW03D...	V	Ω		%/K		mA	µA	V
	Typ.	Typ.	Max.	Min.	Max.		Max.	
150	150	150	330	0.09	0.13	8	2	106
160	160	180	350	0.09	0.13	8	2	116
180	180	210	430	0.09	0.13	5	2	126
200	200	250	500	0.09	0.13	5	2	144
220	220	350	700	0.09	0.13	5	2	158
240	240	450	900	0.09	0.13	5	2	172
270	270	600	1200	0.09	0.13	5	2	194

Characteristics when used as transient suppressor diodes, T_j = 25°C

Type	I_R [1] at V_R		$V_{(BR)}$ [2]	$I_{(BR)S}$
BZW03D...	µA	V	V	A
7V5	3000	5.8	11.7	44.2
8V2	2400	6.5	12.6	40.6
9V1	100	7.1	13.6	37.6
10	40	7.9	15.2	34.0
11	30	8.6	16.2	31.8
12	20	9.3	17.5	29.4
13	10	10.6	19.1	26.4
15	10	11.6	21.8	23.9
16	10	12.6	23.4	21.8
18	10	14.4	26.3	19.5
20	10	15.8	29.2	17.6
22	10	17.2	32	16.1
24	10	19.4	34.6	14.8
27	10	21.5	39	13.1
30	10	23.5	43.2	11.8
33	10	25.8	47	10.8
36	10	28	51,7	10.0
39	10	31	56	9.2
43	10	33.5	62	8.2

Type	I_R [1] at V_R		$V_{(BR)}$ [2]	$I_{(BR)S}$
BZW03D...	µA	V	V	A
47	10	36.5	66.7	7.6
51	10	40	73	7.0
56	10	44.5	80.2	6.3
62	10	49	88.7	5.8
68	10	54	97.2	5.3
75	10	59	107	4.8
82	10	65	117	4.3
91	10	71	130	3.9
100	10	79	143	3.6
110	10	86	157	3.3
120	10	93	172	3.0
130	10	106	187	2.7
150	10	116	213	2.4
160	10	126	229	2.2
180	10	144	256	2.0
200	10	158	284	1.8
220	10	172	314	1.6
240	10	194	344	1.5
270	10	215	388	1.3

[1] Stand-off reverse voltage = recommended supply voltage

[2] Exp. falling pulse t_p = 500µs down to 37%

Typical Characteristics (T_j = 25°C unless otherwise specified)

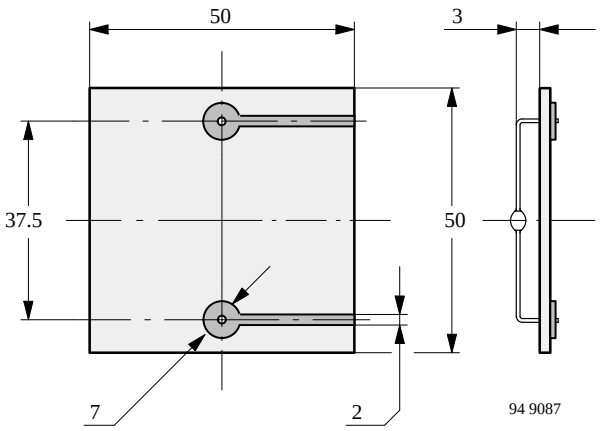


Figure 1 : Epoxy glass hard tissue, board thickness 1.5 mm, $R_{thJA} \leqq 70$ K/W

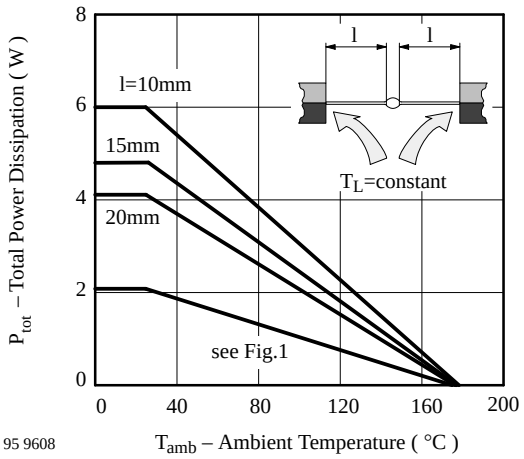


Figure 2 : Total Power Dissipation vs. Ambient Temperature

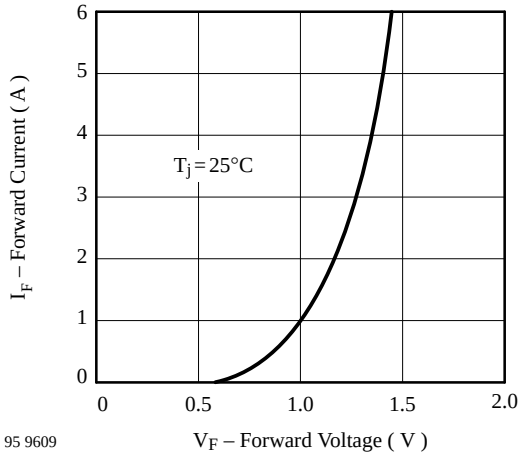


Figure 3 : Forward Current vs. Forward Voltage

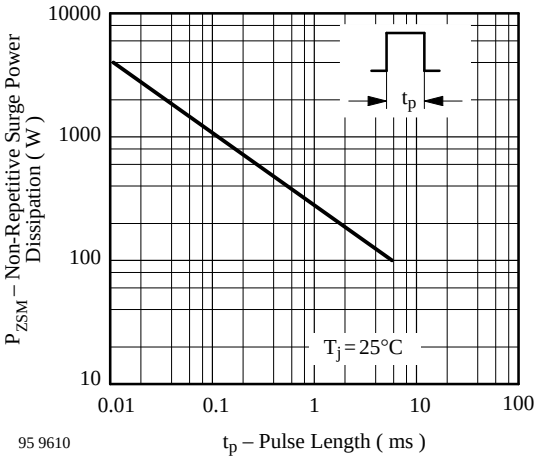
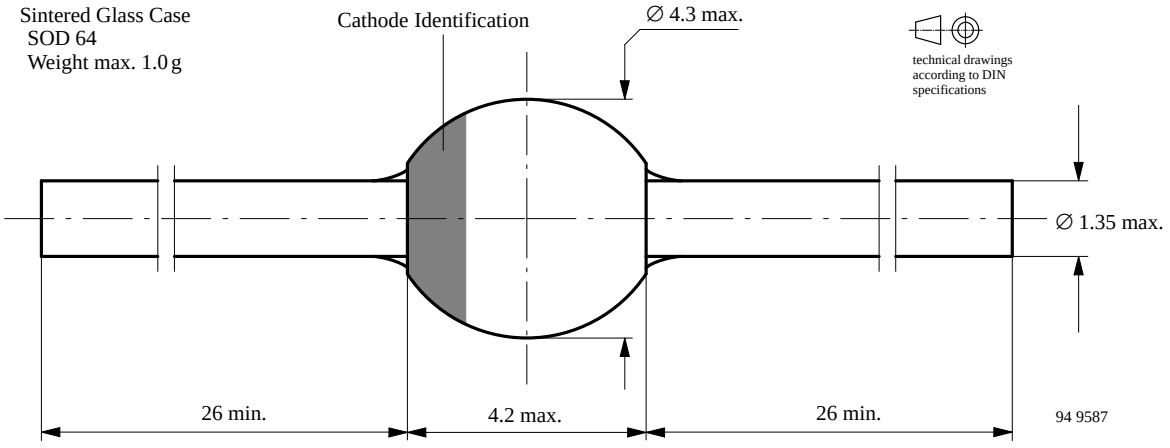


Figure 4 : Non Repetitive Surge Power Dissipation vs. Pulse Length

Dimensions in mm



OZONE DEPLETING SUBSTANCES POLICY STATEMENT

It is the policy of **TEMIC TELEFUNKEN microelectronic GmbH** to

1. Meet all present and future national and international statutory requirements and

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.

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

The Montreal Protocol (1987) and its London Amendments (1990) will soon 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.

TEMIC TELEFUNKEN microelectronic GmbH semiconductor division has been able to use its policy of continuous improvements to eliminate the use of any 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 and

3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

TEMIC can certify that our semiconductors are not manufactured with and do not contain ozone depleting substances.

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