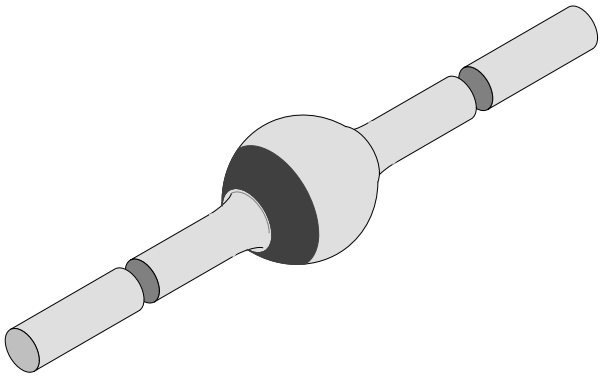
Silicon Z–Diodes

Features

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



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 BZW03C...	V_Z, V			r_{zj} and TK_{VZ} at i_Z					I_R at V_R	
				Ω		%/K		mA	µA	V
	Min.	Typ.	Max.	Typ.	Max.	Min.	Max.		Max.	
7V5	7.0	7.5	7.9	0.7	1.5	0	0.07	175	1500	5.6
8V2	7.0	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

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

Type BZW03C...	V_Z, V			r_{zj} Ω		and TK_{VZ} %/K		at i_Z mA	I_R μA	at V_R V
	Min.	Typ.	Max.	Typ.	Max.	Min.	Max.		Max.	
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

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

Type BZW03C...	I_R [1] μA	at V_R V	$V_{(BR)}$ [2] V	$I_{(BR)S}$ 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

Type BZW03C...	I_R [1] μA	at V_R V	$V_{(BR)}$ [2] V	$I_{(BR)S}$ A
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 μs down to 37%

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

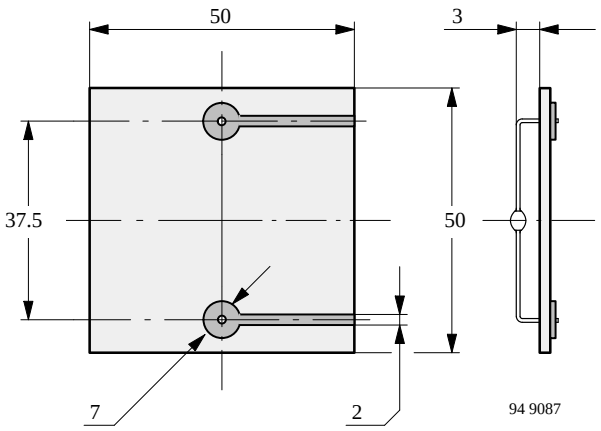


Figure 1 : Epoxy glass hard tissue, board thickness 1.5 mm, $R_{thJA} \leqq 70$ K/W

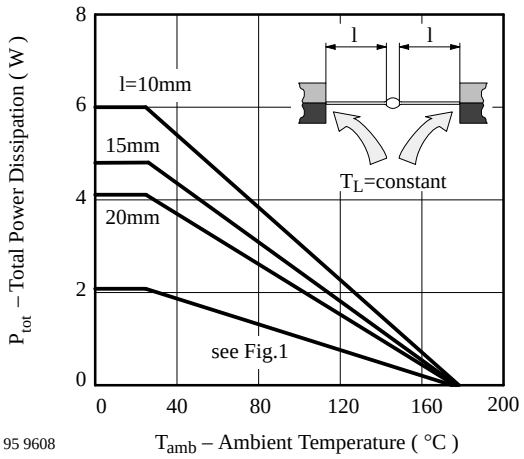


Figure 2 : Total Power Dissipation vs. Ambient Temperature

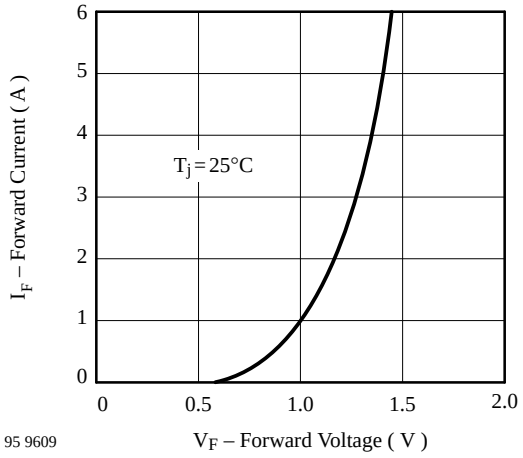


Figure 3 : Forward Current vs. Forward Voltage

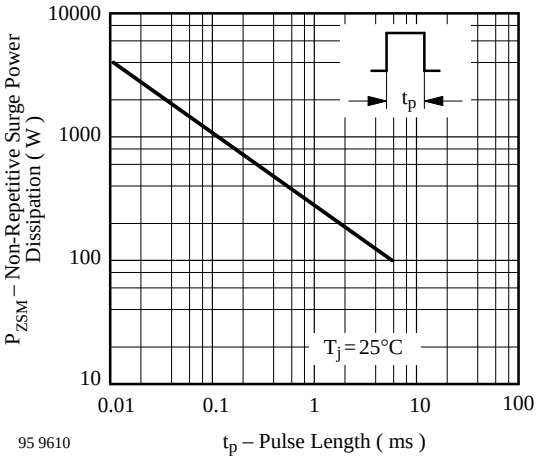
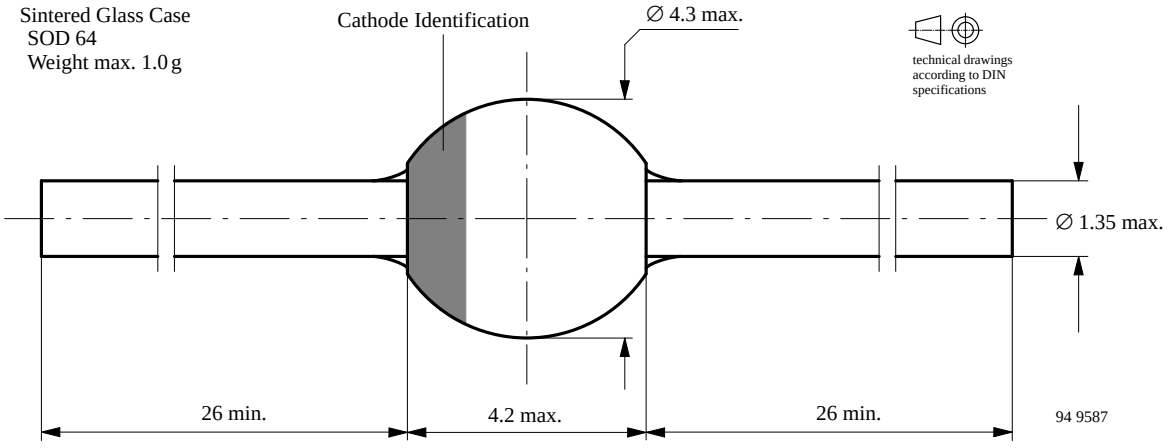


Figure 4 : Non Repetitive Surge Power Dissipation vs. Pulse Length

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.

TEMIC TELEFUNKEN microelectronic GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0)7131 67 2831, Fax Number: 49 (0)7131 67 2423