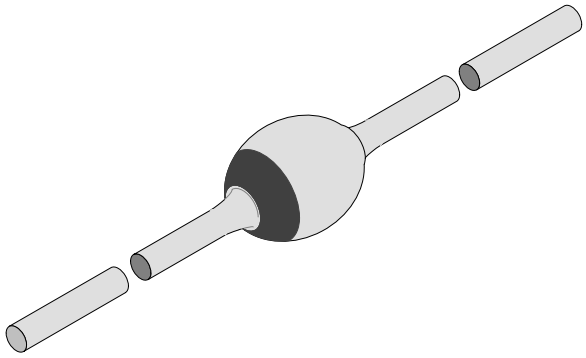
Silicon Z–Diodes

Features

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



Applications

Medium power voltage regulators and medium power 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	3.25	W
	T_{amb}=25˚C		P_V	1.3	W
Repetitive peak reverse power dissipation			P_{ZRM}	10	W
Non repetitive peak surge power dissipation	t_p=100µs, T_j=25˚C		P_{ZSM}	600	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=10mm, T_L=constant	R_{thJA}	46	K/W
	on PC board with spacing 25mm	R_{thJA}	100	K/W

Characteristics

T_j = 25°C

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Forward voltage	I_F=0.5A		V_F			1.2	V

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

Type	V_Z			r_{zj} and		TK_{VZ} at		I_Z	I_R at	V_R
BZT03C...	V			Ω		%/K		mA	µA	
	Min.	Typ.	Max.	Typ.	Max.	Min.	Max.		Max.	
6V2	5.8	6.2	6.6	1	2	0	0.07	100	1500	4.7
6V8	6.4	6.8	7.2	1	2	0	0.07	100	1000	5.1
7V5	7.0	7.5	7.9	1	2	0	0.07	100	750	5.6
8V2	7.7	8.2	8.7	1	2	0.03	0.08	100	600	6.2
9V1	8.5	9.1	9.6	2	4	0.03	0.08	50	20	6.8
10	9.4	10	10.6	2	4	0.05	0.09	50	10	7.5
11	10.4	10	11.6	4	7	0.05	0.10	50	4	8.2
12	11.4	12	12.7	4	7	0.05	0.10	50	3	9.1
13	12.4	13	14.1	5	10	0.05	0.10	50	2	10
15	13.8	15	15.6	5	10	0.05	0.10	50	1	11
16	15.3	16	17.1	6	15	0.06	0.11	25	1	12
18	16.8	18	19.1	6	15	0.06	0.11	25	1	13
20	18.8	20	21.2	6	15	0.06	0.11	25	1	15
22	20.8	22	23.3	6	15	0.06	0.11	25	1	16
24	22.8	24	25.6	7	15	0.06	0.11	25	1	18
27	25.1	27	28.9	7	15	0.06	0.11	25	1	20
30	28	30	32	8	15	0.06	0.11	25	1	22
33	31	33	35	8	15	0.06	0.11	25	1	24
36	34	36	38	21	40	0.06	0.11	10	1	27
39	37	39	41	21	40	0.06	0.11	10	1	30
43	40	43	46	24	45	0.07	0.12	10	1	33
47	44	47	50	24	45	0.07	0.12	10	1	36
51	48	51	54	25	60	0.07	0.12	10	1	39
56	52	56	60	25	60	0.07	0.12	10	1	43
62	58	62	66	25	80	0.08	0.13	10	1	47
68	64	68	72	25	80	0.08	0.13	10	1	51
75	70	75	79	30	100	0.08	0.13	10	1	56
82	77	82	87	30	100	0.08	0.13	10	1	62
91	85	91	96	60	200	0.09	0.13	5	1	68
100	94	100	106	60	200	0.09	0.13	5	1	75
110	104	110	116	80	250	0.09	0.13	5	1	82
120	114	120	127	80	250	0.09	0.13	5	1	91
130	124	130	141	110	300	0.09	0.13	5	1	100
150	138	150	156	130	300	0.09	0.13	5	1	110

Type BZT03C...	V_Z V			r_{zj} and TK_{VZ} at I_Z Ω / %/K / mA					I_R at V_R µA	
	Min.	Typ.	Max.	Typ.	Max.	Min.	Max.		Max.	
160	153	160	171	150	350	0.09	0.13	5	1	120
180	168	180	191	180	400	0.09	0.13	5	1	130
200	188	200	212	200	500	0.09	0.13	5	1	150
220	208	220	233	350	750	0.09	0.13	2	1	160
240	228	240	256	400	850	0.09	0.13	2	1	180
270	251	270	289	450	1000	0.09	0.13	2	1	200

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

Type	Clamping		Stand-off	
	$V_{(CL)R}$ [1] at	I_{RSM}	I_R at	V_R [2]
BZT03C...	V	A	µA	V
	Max.		Max.	
6V2	9.3	34.0	3000	5.1
6V8	10.2	31.0	2000	5.6
7V5	11.3	26.5	1500	6.2
8V2	12.3	24.4	1200	6.8
9V1	13.3	22.7	50	7.5
10	14.8	20.3	20	8.2
11	15.7	19.1	5	9.1
12	17.0	17.7	5	10
13	18.9	15.9	5	11
15	20.9	14.4	5	12
16	22.9	13.1	5	13
18	25.6	11.7	5	15
20	28.4	10.6	5	16
22	31.0	9.7	5	18
24	33.8	8.9	5	20
27	38.1	7.9	5	22
30	42.2	7.1	5	24
33	46.2	6.5	5	27
36	50.1	6.0	5	30
39	54.1	5.5	5	33
43	60.7	4.9	5	36
47	65.5	4.6	5	39
51	70.8	4.2	5	43
56	78.6	3.8	5	47
62	86.5	3.5	5	51
68	94.4	3.2	5	56
75	103.5	2.9	5	62
82	114	2.6	5	68
91	126	2.4	5	75
100	139	2.2	5	82
110	152	2.0	5	91
120	167	1.8	5	100
130	185	1.6	5	110
150	204	1.5	5	120
160	224	1.3	5	130

Type	Clamping		Stand-off	
	$V_{(CL)R}$ [1] at	I_{RSM}	I_R at	V_R [2]
BZT03C...	V	A	µA	V
	Max.		Max.	
180	249	1.2	5	150
200	276	1.1	5	160
220	305	1.0	5	180
240	336	0.9	5	200
270	380	0.8	5	220

[1] 10/1000 exp. falling pulse t_p = 1000 µs down to 50% [2] Stand-off voltage = recommended supply voltage

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

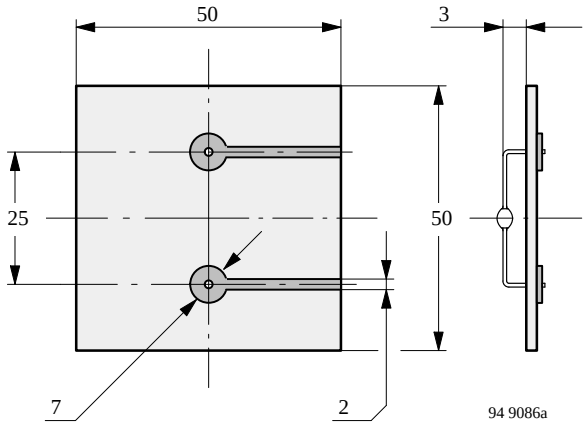


Figure 1 : Epoxy glass hard tissue, board thickness 1.5 mm, $R_{thJA} \leqq$ 100 K/W

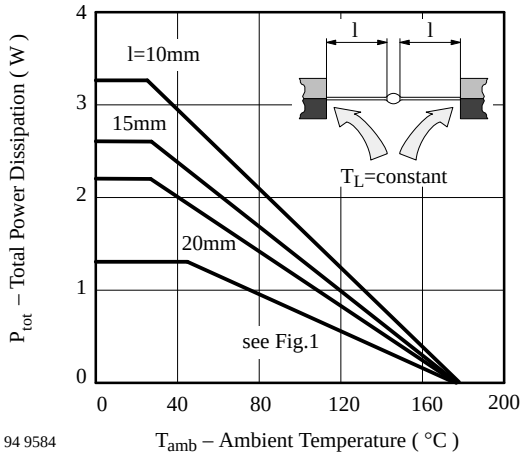


Figure 2 : Total Power Dissipation vs. Ambient Temperature

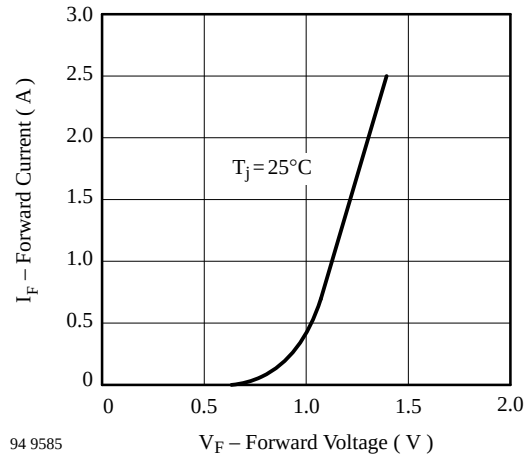


Figure 3 : Forward Current vs. Forward Voltage

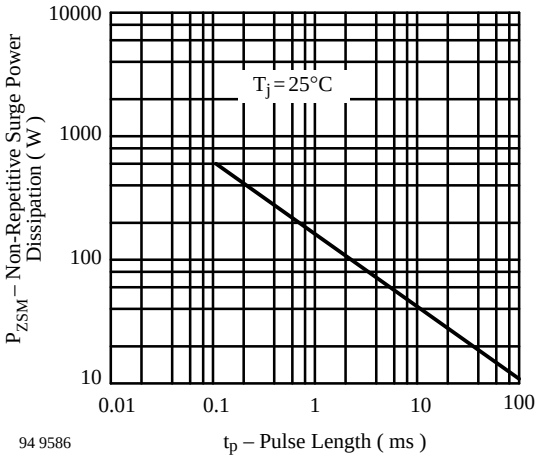
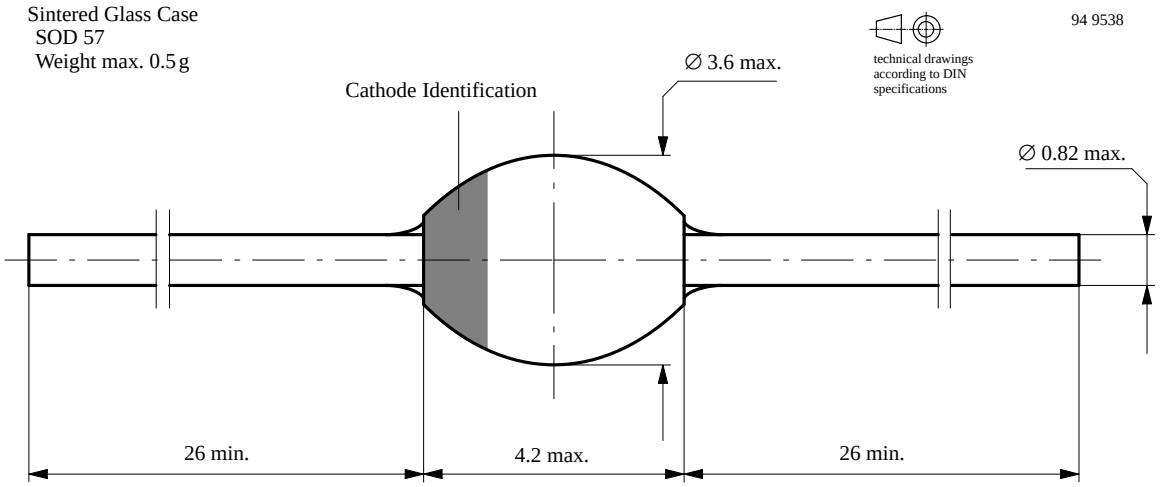


Figure 4 : Non Repetitive Surge Power Dissipation vs. Pulse Length

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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