

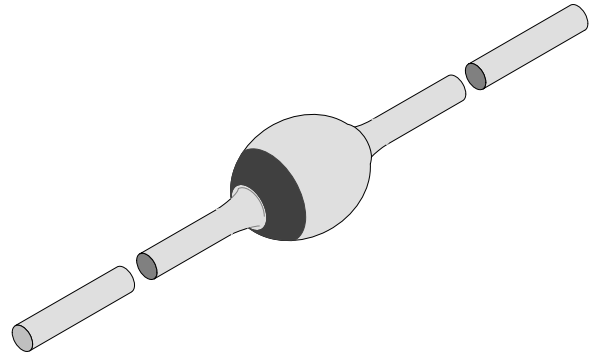
Silicon Z-Diodes and Transient Voltage Suppressors

Features

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

Applications

Medium power voltage regulators and medium power transient suppression circuits



94 9539

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
Power dissipation	$T_{\text{amb}}=25^\circ\text{C}$		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_{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_{thJA}	46	K/W
Junction ambient	on PC board with spacing 25mm	R_{thJA}	100	K/W

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

Characteristics when used as voltage regulator diodes, $T_j = 25^\circ\text{C}$

Type BZT03C...	V_Z V			r_{zj} Ω		and TK_{V_Z} %/K		at I_Z mA	I_R μA	at V_R Max.
	Min.	Typ.	Max.	Typ.	Max.	Min.	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
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

Type BZT03C...	V _Z V			r _{zj} Ω		and TK _{VZ} %/K		I _Z mA	I _R μA	at V _R
	Min.	Typ.	Max.	Typ.	Max.	Min.	Max.		Max.	
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 BZT03C...	Clamping		Stand-off	
	V _{(CL)R} ¹⁾ V	at I _{RSM} A	I _R μA	at V _R ²⁾ 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

Type BZT03C...	Clamping		Stand-off	
	$V_{(CL)R}^{1)}$ V	at I_{RSM} A	I_R μA	at $V_R^{2)}$ V
	Max.		Max.	
130	185	1.6	5	110
150	204	1.5	5	120
160	224	1.3	5	130
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 $t_p = 1000 \mu s$ down to 50%

Typical Characteristics ($T_j = 25^\circ C$ unless otherwise specified)

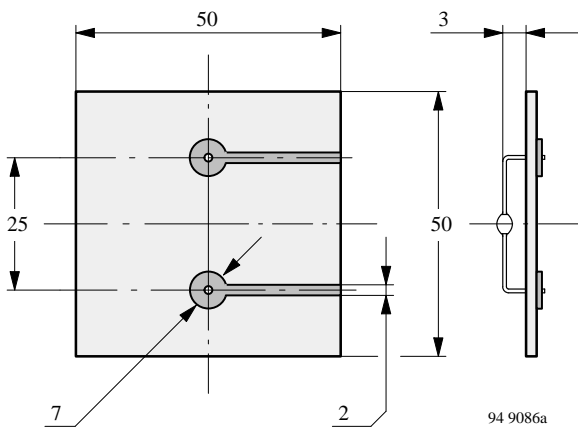


Figure 1. Epoxy glass hard tissue, board thickness 1.5 mm,
 $R_{thJA} \leq 100 K/W$

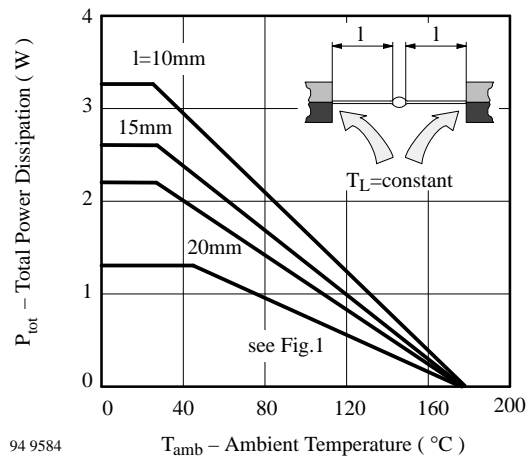


Figure 2. Total Power Dissipation vs. Ambient Temperature

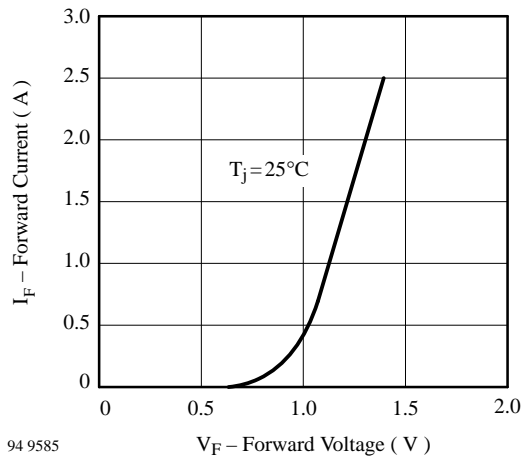


Figure 3. Forward Current vs. Forward Voltage

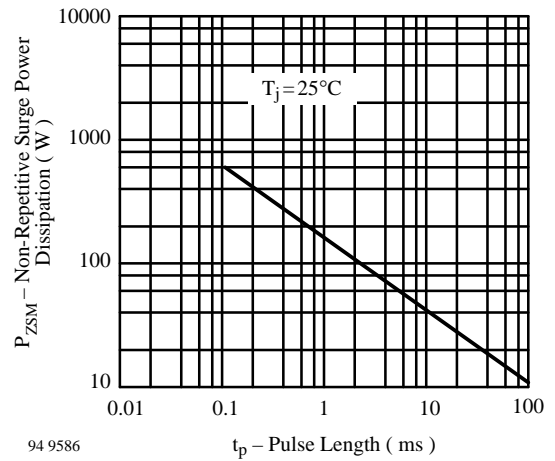
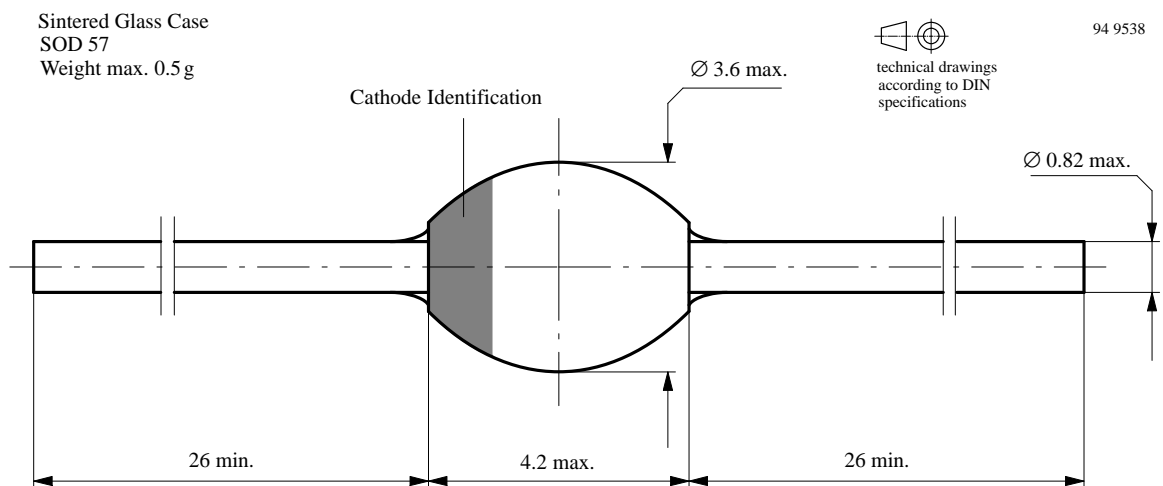


Figure 4. Non Repetitive Surge Power Dissipation vs. Pulse Length

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.
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.

TEMIC TELEFUNKEN microelectronic GmbH semiconductor division 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.

TEMIC 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 TEMIC products for any unintended or unauthorized application, the buyer shall indemnify TEMIC 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.

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