

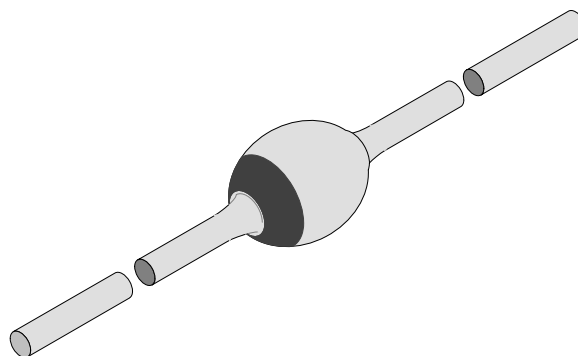
Silicon Z-Diodes and Transient Voltage Suppressors

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 BZT03D...	V_Z V			r_{zj} Ω		and TK_{UZ} %/K		at I_Z mA	I_R μA	at V_R
	Min.	Typ.	Max.	Typ.	Max.	Min.	Max.		Max.	
6V2	5.6	6.2	6.8	1	2	0	0.07	100	1500	4.4
6V8	6.1	6.8	7.5	1	2	0	0.07	100	1000	4.8
7V5	6.75	7.5	8.25	1	2	0	0.07	100	750	5.3
8V2	7.4	8.2	9.0	1	2	0.03	0.08	100	600	5.9
9V1	8.2	9.1	10.0	2	4	0.03	0.08	50	20	6.5
10	9.0	10	11.0	2	4	0.05	0.09	50	10	7.1
11	9.9	11	12.1	4	7	0.05	0.10	50	4	7.9
12	10.8	12	13.2	4	7	0.05	0.10	50	3	8.6
13	11.7	13	14.3	5	10	0.05	0.10	50	2	9.3
15	13.5	15	16.5	5	10	0.05	0.10	50	1	10.6
16	14.4	16	17.6	6	15	0.06	0.11	25	1	11.6
18	16.2	18	19.8	6	15	0.06	0.11	25	1	12.6
20	18.0	20	22.0	6	15	0.06	0.11	25	1	14.4
22	29.8	22	24.2	6	15	0.06	0.11	25	1	15.8
24	21.6	24	26.4	7	15	0.06	0.11	25	1	17.2
27	24.3	27	29.7	7	15	0.06	0.11	25	1	19.4
30	27	30	33	8	15	0.06	0.11	25	1	21.5
33	29.7	33	36.3	8	15	0.06	0.11	25	1	23.5
36	32.4	36	39.6	21	40	0.06	0.11	10	1	25.8
39	35.1	39	42.9	21	40	0.06	0.11	10	1	28
43	38.7	43	47.3	24	45	0.07	0.12	10	1	31
47	42.3	47	51.7	24	45	0.07	0.12	10	1	33.5
51	45.9	51	56.1	25	60	0.07	0.12	10	1	36.5
56	50.4	56	61.6	25	60	0.07	0.12	10	1	40
62	55.8	62	68.2	25	80	0.08	0.13	10	1	44.5
68	61.2	68	74.8	25	80	0.08	0.13	10	1	49
75	67.5	75	82.5	30	100	0.08	0.13	10	1	54
82	73.8	82	90.2	30	100	0.08	0.13	10	1	59
91	81.9	91	100	60	200	0.09	0.13	5	1	65
100	90	100	110	60	200	0.09	0.13	5	1	71
110	99	110	121	80	250	0.09	0.13	5	1	79
120	108	120	132	80	250	0.09	0.13	5	1	86
130	117	130	143	110	300	0.09	0.13	5	1	93
150	135	150	165	130	300	0.09	0.13	5	1	106
160	144	160	176	150	350	0.09	0.13	5	1	116
180	162	180	198	180	400	0.09	0.13	5	1	126
200	180	200	220	200	500	0.09	0.13	5	1	144
220	198	220	242	350	750	0.09	0.13	2	1	158

Type BZT03D...	V _Z V			r _{zj} Ω		and TK _{UZ} %/K		at I _Z mA	I _R μA	at V _R
	Min.	Typ.	Max.	Typ.	Max.	Min.	Max.		Max.	
240	216	240	264	400	850	0.09	0.13	2	1	172
270	243	270	297	450	1000	0.09	0.13	2	1	194

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

Type BZT03D...	Clamping		Stand-off	
	V _{(CL)R} ¹⁾ V	at I _{RSM} A	I _R μA	at V _R ²⁾ V
	Max.		Max.	
6V2	9.5	34.0	3000	4.8
6V8	10.5	31.0	2000	5.3
7V5	11.6	26.5	1500	5.9
8V2	12.6	24.4	1200	6.5
9V1	13.7	22.7	50	7.1
10	15.2	20.3	20	7.9
11	16.2	19.1	5	8.6
12	17.5	17.7	5	9.3
13	19.1	15.9	5	10.6
15	21.8	14.4	5	11.6
16	23.4	13.1	5	12.6
18	26.3	11.7	5	14.4
20	29.2	10.6	5	15.8
22	31.9	9.7	5	17.2
24	34.6	8.9	5	19.4
27	39	7.9	5	21.5
30	43.5	7.1	5	23.5
33	47.5	6.5	5	25.8
36	51.5	6.0	5	28
39	56	5.5	5	31
43	62	4.9	5	33.5
47	67.5	4.6	5	36.5
51	73	4.2	5	40
56	81	3.8	5	44.5
62	89	3.5	5	49
68	97	3.2	5	54
75	107	2.9	5	59
82	117	2.6	5	65
91	130	2.4	5	71
100	143	2.2	5	79
110	157	2.0	5	86
120	172	1.8	5	93

Type BZT03D...	Clamping		Stand-off	
	$V_{(CL)R}^{1)}$ V	at I_{RSM} A	I_R μA	at $V_R^{2)}$ V
	Max.		Max.	
130	187	1.6	5	106
150	213	1.5	5	116
160	229	1.3	5	126
180	256	1.2	5	144
200	284	1.1	5	158
220	314	1.0	5	172
240	364	0.9	5	194
270	388	0.8	5	215

¹⁾10/1000 exp. falling pulse $t_p = 1000 \mu s$ down to 50%

²⁾Stand-off voltage = recommended supply voltage

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

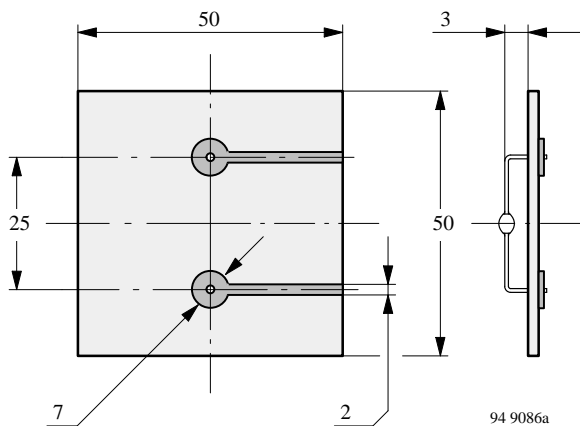


Figure 1. Epoxy glass hard tissue, board thickness 1.5 mm,
 $R_{thJA} \leq 100 K/W$

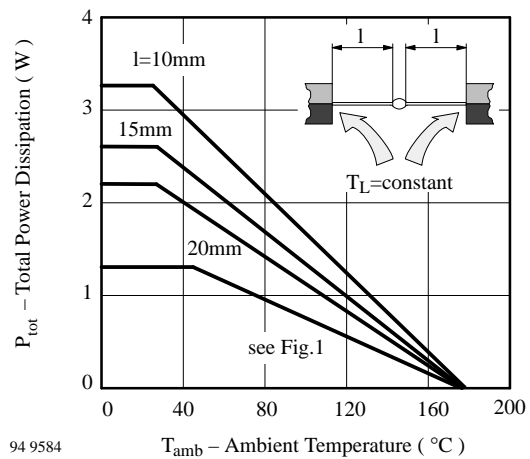


Figure 2. Total Power Dissipation vs. Ambient Temperature

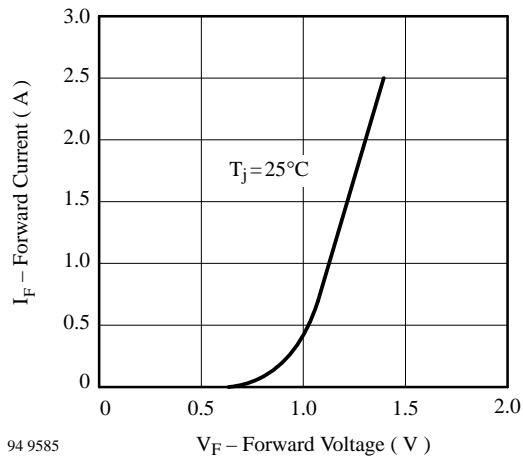


Figure 3. Forward Current vs. Forward Voltage

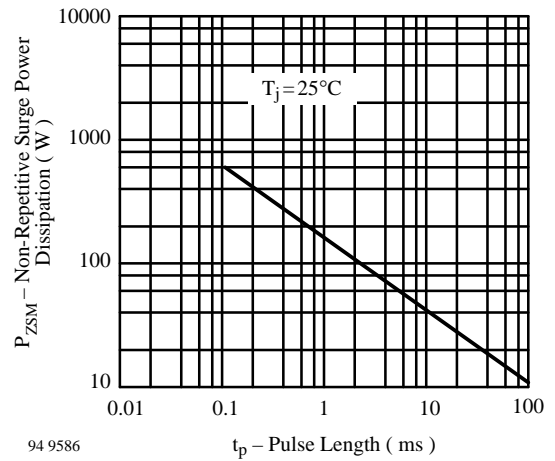
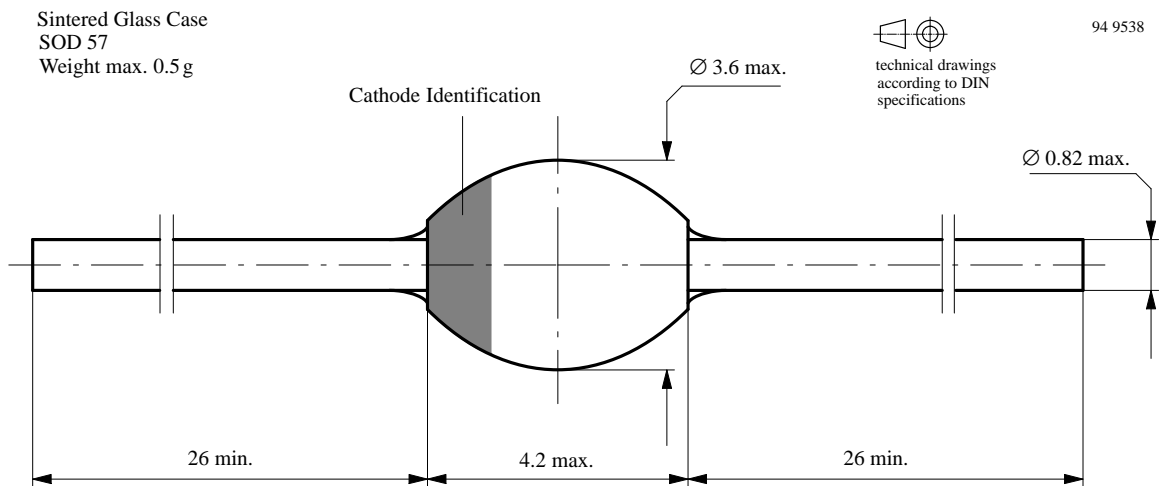


Figure 4. Non Repetitive Surge Power Dissipation vs. Pulse Length

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.

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