



REGULATOR DIODES

Glass passivated diodes in hermetically sealed axial-leaded glass envelopes. They are intended for use as voltage regulator and transient suppressor diode in medium power regulation and transient suppression circuits.

The series consists of BZT03-C7V5 to BZT03-C510 in the normalized E24 range.

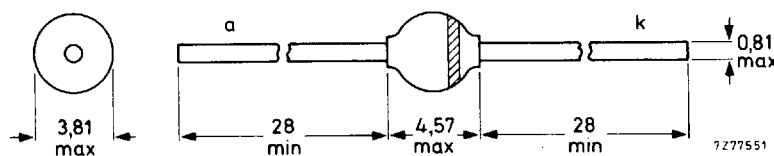
QUICK REFERENCE DATA

			voltage regulator	transient suppressor
Working voltage range	V_Z	nom.	7.5 to 270	V
Stand-off voltage	V_R			6.2 to 430 V
Total power dissipation	P_{tot}	max.	3.25	W
Non-repetitive peak reverse power dissipation $T_j = 25\text{ }^{\circ}\text{C}; t_p = 100\text{ }\mu\text{s}$	P_{RSM}	max.		600 W

MECHANICAL DATA

Dimensions in mm

Fig.1 SOD-57.



The marking band indicates the cathode.

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Total power dissipation

$T_{tp} = 25\text{ }^{\circ}\text{C}$; lead length 10 mm

$T_{amb} = 45\text{ }^{\circ}\text{C}$; p.c.b. mounting (Fig. 2)

Repetitive peak reverse power dissipation

Non-repetitive peak reverse power dissipation;

$t_p = 100\text{ }\mu\text{s}$, square pulse; $T_j = 25\text{ }^{\circ}\text{C}$ (prior to surge)
waveform 10/1000 exponential pulse (Fig. 3);

$T_j = 25\text{ }^{\circ}\text{C}$ (prior to surge)

Storage temperature

Junction temperature

P_{tot} max. 3,25 W

P_{tot} max. 1,3 W

P_{ZRM} max. 10 W

P_{RSM} max. 600 W

P_{RSM} max. 300 W

T_{stg} -65 to $+175\text{ }^{\circ}\text{C}$

T_j max. $175\text{ }^{\circ}\text{C}$

THERMAL RESISTANCE

Influence of mounting method

1. Thermal resistance from junction to tie-point at a lead length of 10 mm
2. Thermal resistance from junction to ambient when mounted on a 1,5 mm thick epoxy-glass printed-circuit board; Cu-thickness $\geq 40\text{ }\mu\text{m}$; Fig. 2
(see "Thermal model")

$R_{th\ j-tp} = 46\text{ K/W}$

$R_{th\ j-a} = 100\text{ K/W}$

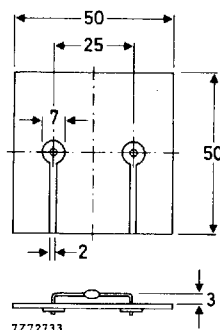


Fig. 2 Mounted on a printed-circuit board.

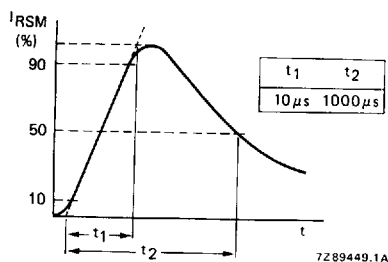


Fig. 3 Current pulse according to IEC 60-2, Section 6.

CHARACTERISTICS

Forward voltage

$I_F = 0,5\text{ A}$; $T_j = 25\text{ }^{\circ}\text{C}$

$V_F < 1,2\text{ V}$

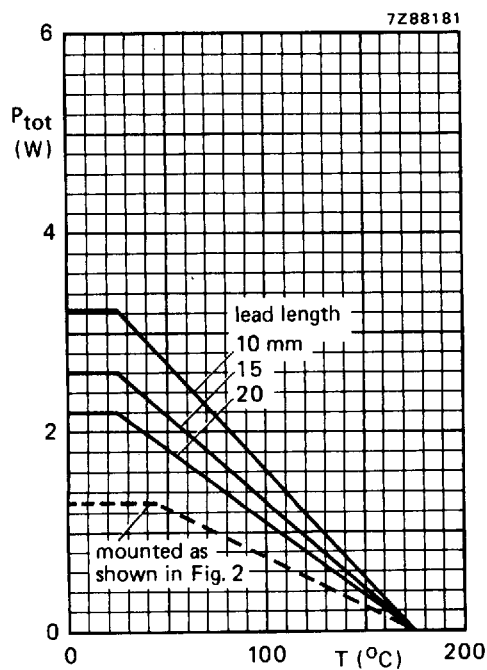


Fig. 4 Maximum total power dissipation as a function of temperature.

— = T_{tp} ; - - - = T_{amb} ; Fig. 2.

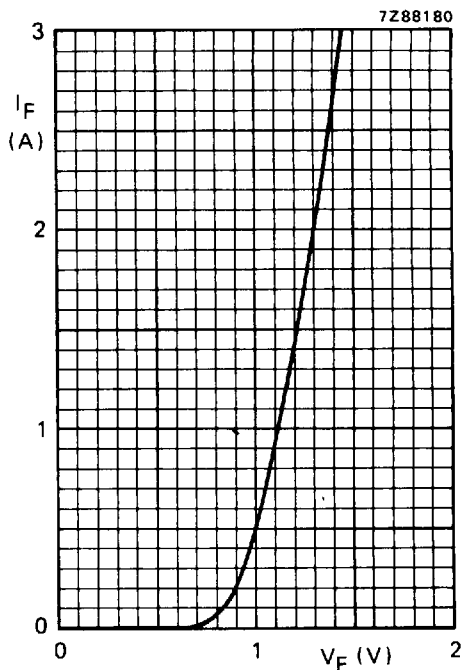


Fig. 5 Typical forward voltage drop $T_j = 25^{\circ}\text{C}$.

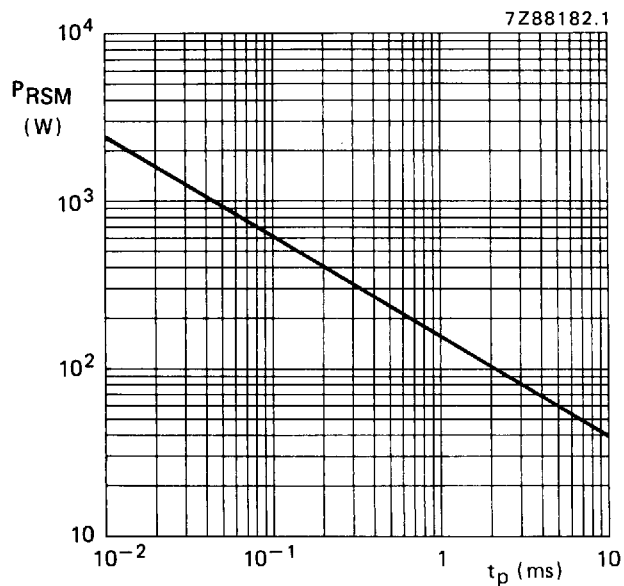


Fig. 6 Maximum non-repetitive peak reverse power dissipation; square current pulse; $T_j = 25^{\circ}\text{C}$ prior to surge.

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

BZT03-XXXX	working voltage V_Z			differential resistance r_{diff}		temperature coefficient S_Z		test current I_Z	reverse current I_R	reverse voltage V_R
	V			Ω		%/K		mA	μA	V
	min.	typ.	max.	typ.	max.	min.	max.		max.	
C7V5	7,0	7,5	7,9	1	2	0	0,07	100	750	5,6
C8V2	7,7	8,2	8,7	1	2	0,03	0,08	100	600	6,2
C9V1	8,5	9,1	9,6	2	4	0,03	0,08	50	20	6,8
C10	9,4	10,0	10,6	2	4	0,05	0,09	50	10	7,5
C11	10,4	11,0	11,6	4	7	0,05	0,10	50	4	8,2
C12	11,4	12,0	12,7	4	7	0,05	0,10	50	3	9,1
C13	12,4	13,0	14,1	5	10	0,05	0,10	50	2	10
C15	13,8	15,0	15,6	5	10	0,05	0,10	50	1	11
C16	15,3	16,0	17,1	6	15	0,06	0,11	25	1	12
C18	16,8	18,0	19,1	6	15	0,06	0,11	25	1	13
C20	18,8	20,0	21,2	6	15	0,06	0,11	25	1	15
C22	20,8	22,0	23,3	6	15	0,06	0,11	25	1	16
C24	22,8	24,0	25,6	7	15	0,06	0,11	25	1	18
C27	25,1	27,0	28,9	7	15	0,06	0,11	25	1	20
C30	28	30	32	8	15	0,06	0,11	25	1	22
C33	31	33	35	8	15	0,06	0,11	25	1	24
C36	34	36	38	21	40	0,06	0,11	10	1	27
C39	37	39	41	21	40	0,06	0,11	10	1	30
C43	40	43	46	24	45	0,07	0,12	10	1	33
C47	44	47	50	24	45	0,07	0,12	10	1	36
C51	48	51	54	25	60	0,07	0,12	10	1	39
C56	52	56	60	25	60	0,07	0,12	10	1	43
C62	58	62	66	25	80	0,08	0,13	10	1	47
C68	64	68	72	25	80	0,08	0,13	10	1	51
C75	70	75	79	30	100	0,08	0,13	10	1	56
C82	77	82	87	30	100	0,08	0,13	10	1	62
C91	85	91	96	60	200	0,09	0,13	5	1	68
C100	94	100	106	60	200	0,09	0,13	5	1	75
C110	104	110	116	80	250	0,09	0,13	5	1	82
C120	114	120	127	80	250	0,09	0,13	5	1	91
C130	124	130	141	110	300	0,09	0,13	5	1	100
C150	138	150	156	130	300	0,09	0,13	5	1	110
C160	153	160	171	150	350	0,09	0,13	5	1	120
C180	168	180	191	180	400	0,09	0,13	5	1	130
C200	188	200	212	200	500	0,09	0,13	5	1	150
C220	208	220	233	350	750	0,09	0,13	2	1	160
C240	228	240	256	400	850	0,09	0,13	2	1	180
C270	251	270	289	450	1000	0,09	0,13	2	1	200

CHARACTERISTICS when used as transient suppressor diodes; $T_j = 25^\circ\text{C}$

	breakdown voltage at test current	clamping voltage at (10/1000 pulse)	non-repetitive peak reverse current	reverse current at recommended stand-off voltage	
	$V_{(BR)R}$ V	$V_{(CL)R}$ V	I_{RSM} A	I_R μA	V_R V
BZT03-	min.	max.		max.	
C7V5	7.0	100	11.3	26.5	1500 6.2
C8V2	7.7	100	12.3	24.4	1200 6.8
C9V1	8.5	50	13.3	22.7	50 7.5
C10	9.4	50	14.8	20.3	20 8.2
C11	10.4	50	15.7	19.1	5 9.1
C12	11.4	50	17.0	17.7	5 10
C13	12.4	50	18.9	15.9	5 11
C15	13.8	50	20.9	14.4	5 12
C16	15.3	25	22.9	13.1	5 13
C18	16.8	25	25.6	11.7	5 15
C20	18.8	25	28.4	10.6	5 16
C22	20.8	25	31.0	9.7	5 18
C24	22.8	25	33.8	8.9	5 20
C27	25.1	25	38.1	7.9	5 22
C30	28	25	42.2	7.1	5 24
C33	31	25	46.2	6.5	5 27
C36	34	10	50.1	6.0	5 30
C39	37	10	54.1	5.5	5 33
C43	40	10	60.7	4.9	5 36
C47	44	10	65.5	4.6	5 39
C51	48	10	70.8	4.2	5 43
C56	52	10	78.6	3.8	5 47
C62	58	10	86.5	3.5	5 51
C68	64	10	94.4	3.2	5 56
C75	70	10	103.5	2.9	5 62
C82	77	10	114.0	2.6	5 68
C91	85	5	126	2.4	5 75
C100	94	5	139	2.2	5 82
C110	104	5	152	2.0	5 91
C120	114	5	167	1.8	5 100
C130	124	5	185	1.6	5 110
C150	138	5	204	1.5	5 120
C160	153	5	224	1.3	5 130
C180	168	5	249	1.2	5 150
C200	188	5	276	1.1	5 160
C220	208	2	305	1.0	5 180
C240	228	2	336	0.9	5 200
C270	251	2	380	0.8	5 220
C300	280	2	419	0.72	5 240
C330	310	2	459	0.65	5 270
C360	340	1	498	0.60	5 300
C390	370	1	537	0.56	5 330
C430	400	1	603	0.50	5 360
C470	440	1	655	0.45	5 390
C510	480	1	707	0.42	5 430