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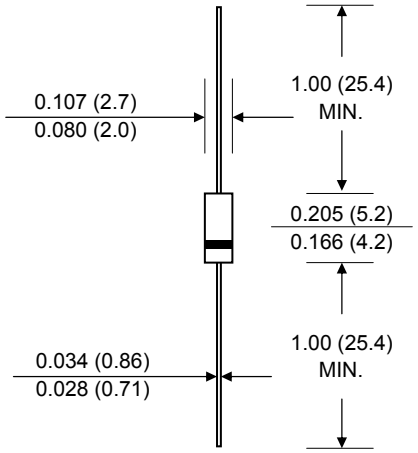
BZT03 Series

VOLTAGE REGULATOR DIODES

DO - 41



Dimensions in inches and (millimeters)

FEATURES :

* High maximum operating temperature
* Low leakage current
* Excellent stability
* Zener working voltage range: 7.5 to 270 V for 38 types
* Transient suppressor stand-off voltage range: 7.5 to 430V for 45 types
* Pb / RoHS Free

MECHANICAL DATA :

* Case : DO-41 Molded plastic
* Epoxy : UL94V-O rate flame retardant
* Lead : Axial lead solderable per MIL-STD-202, Method 208 guaranteed
* Polarity : Color band denotes cathode end
* Mounting position : Any
* Weight : 0.335 gram

MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified

Parameter	Symbol	Condition	Min.	Max.	Unit
Total Power dissipation	P_{tot}	Ttp = 25 °C; lead length 10 mm see Fig. 1	-	3.25	W
		Tamb = 45 °C, see Fig. 1; PCB mounted	-	1.30	W
Non-repetitive peak reverse power dissipation	P_{ZSM}	tp = 100 µs; square pulse; Tj = 25°C prior to surge; see Fig. 2	-	600	W
Non-repetitive peak reverse power dissipation	P_{RSM}	10/1000 µs exponential pulse (see Fig. 4) Tj = 25°C prior to surge	-	300	W
Forward voltage	V_F	I_F = 0.5 A; Tj = 25 °C; see Fig. 3	-	1.2	V
Junction Temperature Range	T_j		-65	+175	°C
Storage Temperature Range	T_{stg}		-65	+175	°C

THERMAL CHARACTERISTICS

Parameter	Symbol	Condition	Value	Unit
Thermal resistance from junction to tie-point	$R_{th\ j\text{-}tp}$	lead length = 10 mm	46	K/W
Thermal resistance from junction to ambient	$R_{th\ j\text{-}a}$	Note 1	100	K/W

Note :

(1) Device mounted on anepoxy-glass printed-circuit board, 1.5 mm thick; thockness of Cu-layer ≥ 40 µm on an must space.

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ELECTRICAL CHARACTERISTICS

Per type when used as voltage regulator diodes

Rating at Tj = 25 °C unless otherwise specified

Type No.	Working Voltage			Differental Resistance		Temperature Coefficient		Test Current	Maximum Reverse Leakage Current	
	V_Z @ I_Z			r_{diff}(Ω) at I_Z		S_Z (%/K) at I_Z		I_Z	I_R @ V_R	
	Min.	Nom.	Max.	Typ.	Max.	Min.	Max.	(mA)	(μA)	(V)
BZT03-C7V5	7.0	7.5	7.9	1	2	0.00	0.07	100	750	5.6
BZT03-C8V2	7.7	8.2	8.7	1	2	0.03	0.08	100	600	6.2
BZT03-C9V1	8.5	9.1	9.6	2	4	0.03	0.08	50	20	6.8
BZT03-C10	9.4	10	10.6	2	4	0.05	0.09	50	7	7.5
BZT03-C11	10.4	11	11.6	4	7	0.05	0.10	50	4	8.2
BZT03-C12	11.4	12	12.7	4	7	0.05	0.10	50	3	9.1
BZT03-C13	12.4	13	14.1	5	10	0.05	0.10	50	2	10
BZT03-C15	13.8	15	15.6	5	10	0.05	0.10	50	1	11
BZT03-C16	15.3	16	17.1	6	15	0.05	0.11	25	1	12
BZT03-C18	16.8	18	19.1	6	15	0.06	0.11	25	1	13
BZT03-C20	18.8	20	21.2	6	15	0.06	0.11	25	1	15
BZT03-C22	20.8	22	23.3	6	15	0.06	0.11	25	1	16
BZT03-C24	22.8	24	25.6	7	15	0.06	0.11	25	1	18
BZT03-C27	25.1	27	28.9	7	15	0.06	0.11	25	1	20
BZT03-C30	28	30	32	8	15	0.06	0.11	25	1	22
BZT03-C33	31	33	35	8	15	0.06	0.11	25	1	24
BZT03-C36	34	36	38	21	40	0.06	0.11	10	1	27
BZT03-C39	37	39	41	21	40	0.06	0.11	10	1	30
BZT03-C43	40	43	46	24	45	0.07	0.12	10	1	33
BZT03-C47	44	47	50	24	45	0.07	0.12	10	1	36
BZT03-C51	48	51	54	25	60	0.07	0.12	10	1	39
BZT03-C56	52	56	60	25	60	0.07	0.12	10	1	43
BZT03-C62	58	62	66	25	80	0.08	0.13	10	1	47
BZT03-C68	64	68	72	25	80	0.08	0.13	10	1	51
BZT03-C75	70	75	79	30	100	0.08	0.13	10	1	56
BZT03-C82	77	82	87	30	100	0.08	0.13	10	1	62
BZT03-C91	85	91	96	60	200	0.09	0.13	5	1	68
BZT03-C100	94	100	106	60	200	0.09	0.13	5	1	75
BZT03-C110	104	110	116	80	250	0.09	0.13	5	1	82
BZT03-C120	114	120	127	80	250	0.09	0.13	5	1	91
BZT03-C130	124	130	141	110	300	0.09	0.13	5	1	100
BZT03-C150	138	150	156	130	300	0.09	0.13	5	1	110
BZT03-C160	153	160	171	150	350	0.09	0.13	5	1	120
BZT03-C180	168	180	191	180	400	0.09	0.13	5	1	130
BZT03-C200	188	200	212	200	500	0.09	0.13	5	1	150
BZT03-C220	208	220	233	350	750	0.09	0.13	2	1	160
BZT03-C240	228	240	256	400	850	0.09	0.13	2	1	180
BZT03-C270	251	270	289	450	1000	0.09	0.13	2	1	200

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ELECTRICAL CHARACTERISTICS

Per type when used as Transient suppressor diodes

Rating at Tj = 25 °C unless otherwise specified

Type No.	Reverse Breakdown Voltage	Temperature Coefficient		Test Current	Clamping Voltage		Maximum Reverse Leakage Current	
	$V_{(BR)R}$ @ I_{test} (V)	S_Z (%/K) at I_{test}		I_{test}	$V_{(CL)R}$ (V)	at I_{RSM}	I_R @ V_R	
	Min.	Min.	Max.	(mA)	Max.	(A)	(μA)	(V)
BZT03-C7V5	7.0	0.00	0.07	100	11.3	26.5	1500	6.2
BZT03-C8V2	7.7	0.03	0.08	100	12.3	24.4	1200	6.8
BZT03-C9V1	8.5	0.03	0.08	50	13.3	22.7	100	7.5
BZT03-C10	9.4	0.05	0.09	50	14.8	20.3	20	8.2
BZT03-C11	10.4	0.05	0.1	50	15.7	19.1	5	9.1
BZT03-C12	11.4	0.05	0.1	50	17.0	17.7	5	10
BZT03-C13	12.4	0.05	0.1	50	18.9	15.9	5	11
BZT03-C15	13.8	0.05	0.1	50	20.9	14.4	5	12
BZT03-C16	15.3	0.06	0.11	25	22.9	13.1	5	13
BZT03-C18	16.8	0.06	0.11	25	25.6	11.7	5	15
BZT03-C20	18.8	0.06	0.11	25	28.9	10.6	5	16
BZT03-C22	20.8	0.06	0.11	25	31.0	9.7	5	18
BZT03-C24	22.8	0.06	0.11	25	33.8	8.9	5	20
BZT03-C27	25.1	0.06	0.11	25	38.1	7.9	5	22
BZT03-C30	28	0.06	0.11	25	42.2	7.1	5	24
BZT03-C33	31	0.06	0.11	25	46.2	6.5	5	27
BZT03-C36	34	0.06	0.11	10	50.1	6.0	5	30
BZT03-C39	37	0.06	0.11	10	54.1	5.5	5	33
BZT03-C43	40	0.07	0.12	10	60.7	4.9	5	36
BZT03-C47	44	0.07	0.12	10	65.5	4.6	5	39
BZT03-C51	48	0.07	0.12	10	70.8	4.2	5	43
BZT03-C56	52	0.07	0.12	10	78.6	3.8	5	47
BZT03-C62	58	0.08	0.13	10	86.5	3.5	5	51
BZT03-C68	64	0.08	0.13	10	94.4	3.2	5	56
BZT03-C75	70	0.08	0.13	10	103.5	2.9	5	62
BZT03-C82	77	0.08	0.13	10	114.0	2.6	5	68
BZT03-C91	85	0.09	0.13	5	126	2.4	5	75
BZT03-C100	94	0.09	0.13	5	139	2.2	5	82
BZT03-C110	104	0.09	0.13	5	152	2.0	5	91
BZT03-C120	114	0.09	0.13	5	167	1.8	5	100
BZT03-C130	124	0.09	0.13	5	185	1.6	5	110
BZT03-C150	138	0.09	0.13	5	204	1.5	5	120
BZT03-C160	153	0.09	0.13	5	224	1.3	5	130
BZT03-C180	168	0.09	0.13	5	249	1.20	5	150
BZT03-C200	188	0.09	0.13	5	276	1.10	5	160
BZT03-C220	208	0.09	0.13	2	305	1.00	5	180
BZT03-C240	228	0.09	0.13	2	336	0.90	5	200
BZT03-C270	251	0.09	0.13	2	380	0.80	5	220
BZT03-C300	280	0.09	0.13	2	419	0.72	5	240
BZT03-C330	310	0.09	0.13	2	459	0.65	5	270
BZT03-C360	340	0.09	0.13	2	498	0.60	5	300
BZT03-C390	370	0.09	0.13	2	537	0.56	5	330
BZT03-C430	400	0.09	0.13	2	603	0.50	5	360
BZT03-C470	440	0.09	0.13	2	655	0.45	5	390
BZT03-C510	480	0.09	0.13	2	707	0.42	5	430

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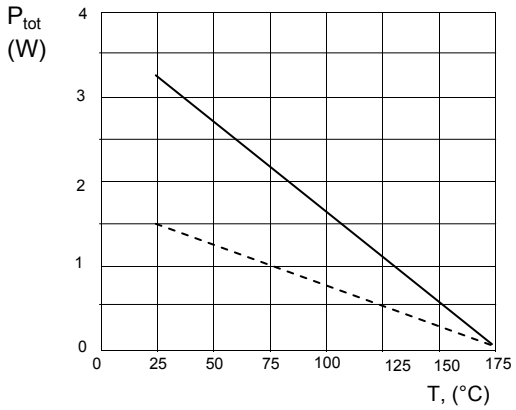
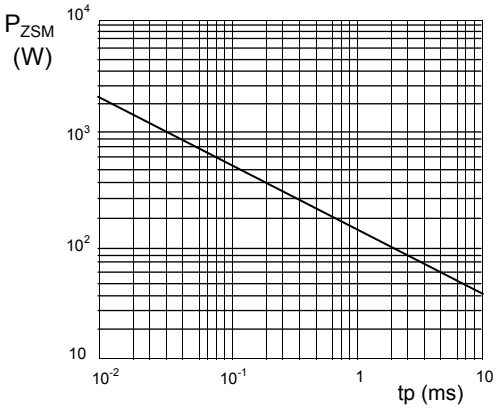
RATING AND CHARACTERISTIC CURVES (BZT03 Series)

FIG.1 - Maximum total power dissipation as a function of temperature.



Solid line: tie-point temperature; lead length = 10 mm
Dotted line: ambient temperature; PCB mounted

FIG.2 - Maximum non-repetitive peak reverse power dissipation as a function of pulse duration (square pulse).



Tj= 25 °C prior to surge.

FIG. 3 - Forward current as a function of forward voltage; typical values.

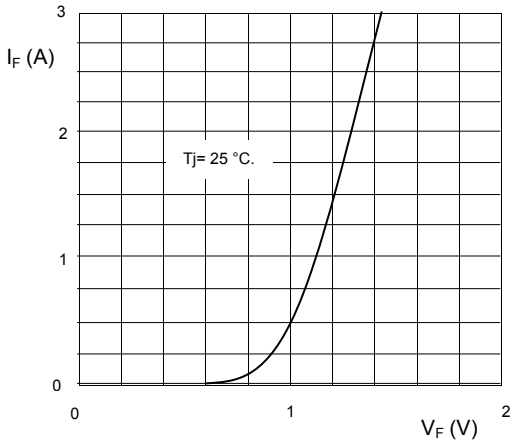
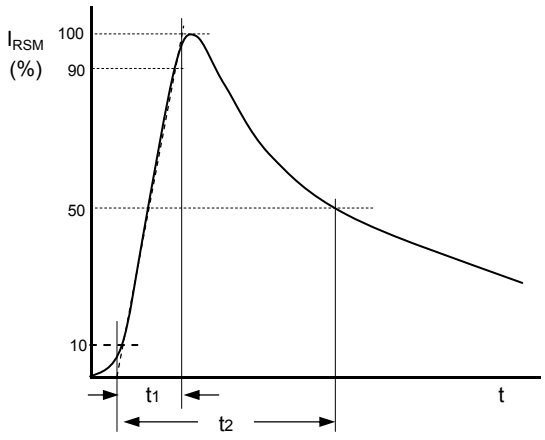


FIG.4 - Non-Repetitive peak reverse current pulse definition



t_1 = 10 µs
t_2 = 1000 µs

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