SGS-THOMSON MICROELECTRONICS

BZW06-5V8, B → 376, B
BZW06P5V8, B → 376, B

UNI-AND BIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSORS

- HIGH SURGE CAPABILITY :
  600 W / 1 ms EXPO
- VERY FAST CLAMPING TIME :
  1 ps FOR UNIDIRECTIONAL TYPES
  5 ns FOR BIDIRECTIONAL TYPES
- LARGE VOLTAGE RANGE :
  5.8 V → 376 V
- ORDER CODE :
  TYPE NUMBER FOR UNIDIRECTIONAL TYPES, TYPE NUMBER + SUFFIX B FOR BIDIRECTIONAL TYPES

F 126
(Plastic)

DESCRIPTION

Transient voltage suppressor diodes especially useful in protecting integrated circuits, MOS, hybrids and other voltage-sensitive semiconductors and components.

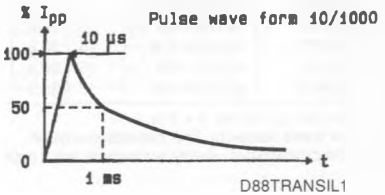
ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
P_p	Peak Pulse Power for 1 ms Exponential Pulse	T_j Initial = 25 °C See note 1	600	W
P	Power Dissipation on Infinite Heatsink	T_{amb} = 50 °C	1.7	W
I_{FSM}	Non Repetitive Surge Peak Forward Current for Unidirectional Types	T_j Initial = 25 °C t = 10 ms	100	A
T_{stg} T_j	Storage and Operating Junction Temperature Range		– 55 to 150 150	°C °C
T_L	Maximum Lead Temperature for Soldering During 10 s at 4 mm from Case		230	°C

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction-leads on Infinite Heatsink for L_{lead} = 10 mm	60	°C/W

Note : 1. For surges upper than the maximum values, the diode will present a short-circuit anode-cathode.



ELECTRICAL CHARACTERISTICS (T_j = 25 °C)

Symbol	Parameter		Value
V_{RM}	Stand-off Voltage		See tables
$V_{(BR)}$	Breakdown Voltage		
$V_{(CL)}$	Clamping Voltage		
I_{pp}	Peak Pulse Current		
α_T	Temperature Coefficient of $V_{(BR)}$		
C	Capacitance		
$t_{clamping}$	Clamping Time (0 volt to $V_{(BR)}$)	Unidirectional Types	1 ps max.
		Bidirectional Types	5 ns max.

Types		I_{RM} @ V_{RM} max.		$V_{(BR)}$* @ I_R (V)				$V_{(CL)}$ @ I_{pp} max. 1 ms expo		$V_{(CL)}$ @ I_{pp} max. 8-20 µs expo		α_T max.	C** typ. V_R=0 f=1 MHz
Unidirectional	Bidirectional	(µA)	(V)	min.	nom.	max.	(mA)	(V)	(A)	(V)	(A)	(10^{-4}/°C)	(pF)
BZW06P5V8	BZW06P5V8B	1000	5.8	6.45	6.8	7.48	10	10.5	57	13.4	261	5.7	4000
BZW06-5V8	BZW06-5V8B	1000	5.8	6.45	6.8	7.14	10	10.5	57	13.4	261	5.7	4000
BZW06P6V4	BZW06P6V4B	500	6.4	7.13	7.5	8.25	10	11.3	53	14.5	241	6.1	3700
BZW06-6V4	BZW06-6V4B	500	6.4	7.13	7.5	7.88	10	11.3	53	14.5	241	6.1	3700
BZW06P7V0	BZW06P7V0B	200	7.02	7.79	8.2	9.02	10	12.1	50	15.5	226	6.5	3400
BZW06-7V0	BZW06-7V0B	200	7.02	7.79	8.2	8.61	10	12.1	50	15.5	226	6.5	3400
BZW06P7V8	BZW06P7V8B	50	7.78	8.65	9.1	10	1	13.4	45	17.1	205	6.8	3100
BZW06-7V8	BZW06-7V8B	50	7.78	8.65	9.1	9.55	1	13.4	45	17.1	205	6.8	3100
BZW06P8V5	BZW06P8V5B	10	8.55	9.5	10	11	1	14.5	41	18.6	387	7.3	2800
BZW06-8V5	BZW06-8V5B	10	8.55	9.5	10	10.5	1	14.5	41	18.6	387	7.3	2800
BZW06P9V4	BZW06P9V4B	5	9.4	10.5	11	12.1	1	15.6	38	20.3	355	7.5	2500
BZW06-9V4	BZW06-9V4B	5	9.4	10.5	11	11.6	1	15.6	38	20.3	355	7.5	2500
BZW06P10	BZW06P10B	5	10.2	11.4	12	13.2	1	16.7	36	21.7	332	7.8	2300
BZW06-10	BZW06-10B	5	10.2	11.4	12	12.6	1	16.7	36	21.7	332	7.8	2300
BZW06P11	BZW06P11B	5	11.1	12.4	13	14.3	1	18.2	33	23.6	305	8.1	2150
BZW06-11	BZW06-11B	5	11.1	12.4	13	13.7	1	18.2	33	23.6	305	8.1	2150
BZW06P13	BZW06P13B	5	12.8	14.3	15	16.5	1	21.2	28	27.2	265	8.4	1900
BZW06-13	BZW06-13B	5	12.8	14.3	15	15.8	1	21.2	28	27.2	265	8.4	1900
BZW06P14	BZW06P14B	5	13.6	15.2	16	17.6	1	22.5	27	28.9	249	8.6	1800
BZW06-14	BZW06-14B	5	13.6	15.2	16	16.8	1	22.5	27	28.9	249	8.6	1800
BZW06P15	BZW06P15B	5	15.3	17.1	18	19.8	1	25.2	24	32.5	222	8.8	1600
BZW06-15	BZW06-15B	5	15.3	17.1	18	18.9	1	25.2	24	32.5	222	8.8	1600
BZW06P17	BZW06P17B	5	17.1	19	20	22	1	27.7	22	36.1	199	9.0	1500
BZW06-17	BZW06-17B	5	17.1	19	20	21	1	27.7	22	36.1	199	9.0	1500
BZW06P19	BZW06P19B	5	18.8	20.9	22	24.2	1	30.6	20	39.3	183	9.2	1350
BZW 06-19	BZW06-19B	5	18.8	20.9	22	23.1	1	30.6	20	39.3	183	9.2	1350
BZW06P20	BZW06P20B	5	20.5	22.8	24	26.4	1	33.2	18	42.8	168	9.4	1250
BZW06-20	BZW06-20B	5	20.5	22.8	24	25.2	1	33.2	18	42.8	168	9.4	1250
BZW06P23	BZW06P23B	5	23.1	25.7	27	29.7	1	37.5	16	48.3	149	9.6	1150
BZW06-23	BZW06-23B	5	23.1	25.7	27	28.4	1	37.5	16	48.3	149	9.6	1150
BZW06P26	BZW06P26B	5	25.6	28.5	30	33	1	41.4	14.5	53.5	134	9.7	1075
BZW06-26	BZW06-26B	5	25.6	28.5	30	31.5	1	41.4	14.5	53.5	134	9.7	1075
BZW06P28	BZW06P28B	5	28.2	31.4	33	36.3	1	45.7	13.1	59	122	9.8	1000
BZW06-28	BZW06-28B	5	28.2	31.4	33	34.7	1	45.7	13.1	59	122	9.8	1000
BZW06P31	BZW06P31B	5	30.8	34.2	36	39.6	1	49.9	12	64.3	112	9.9	950
BZW06-31	BZW06-31B	5	30.8	34.2	36	37.8	1	49.9	12	64.3	112	9.9	950
BZW06P33	BZW06P33B	5	33.3	37.1	39	42.9	1	53.9	11.1	69.7	103	10.0	900

* Pulse test $t_p \leq 50$ ms $\delta < 2$ %.

** Divide these values by 2 for bidirectional types.

For bidirectional types, electrical characteristics apply in both directions.

Types		I_{RM} @ V_{RM} max.		$V_{(BR)}$* @ I_R (V)				$V_{(CL)}$ @ I_{pp} max. 1 ms expo		$V_{(CL)}$ @ I_{pp} max. 8-20 µs expo		α_T max.	C** typ. V_R=0 f=1 MHz
Unidirectional	Bidirectional	(µA)	(V)	min.	nom.	max.	(mA)	(V)	(A)	(V)	(A)	(10^{-4}/°C)	(pF)
BZW06-33	BZW06-33B	5	33.3	37.1	39	41	1	53.9	11.1	69.7	103	10.0	900
BZW06P37	BZW06P37B	5	36.8	40.9	43	47.3	1	59.3	10.1	76.8	94	10.1	850
BZW06-37	BZW06-37B	5	36.8	40.9	43	45.2	1	59.3	10.1	76.8	94	10.1	850
BZW06P40	BZW06P40B	5	40.2	44.7	47	51.7	1	64.8	9.3	84	86	10.1	800
BZW06-40	BZW06-40B	5	40.2	44.7	47	49.4	1	64.8	9.3	84	86	10.1	800
BZW06P44	BZW06P44B	5	43.6	48.5	51	56.1	1	70.1	8.6	91	79	10.2	750
BZW06-44	BZW06-44B	5	43.6	48.5	51	53.6	1	70.1	8.6	91	79	10.2	750
BZW06P48	BZW06P48B	5	47.8	53.2	56	61.6	1	77	7.8	100	72	10.3	700
BZW06-48	BZW06-48B	5	47.8	53.2	56	58.8	1	77	7.8	100	72	10.3	700
BZW06P53	BZW06P53B	5	53	58.9	62	68.2	1	85	7.1	111	65	10.4	650
BZW06-53	BZW06-53B	5	53	58.9	62	65.1	1	85	7.1	111	65	10.4	650
BZW06P58	BZW06P58B	5	58.1	64.6	68	74.8	1	92	6.5	121	59.5	10.4	625
BZW06-58	BZW06-58B	5	58.1	64.6	68	71.4	1	92	6.5	121	59.5	10.4	625
BZW06P64	BZW06P64B	5	64.1	71.3	75	82.5	1	103	5.8	134	53.5	10.5	575
BZW06-64	BZW06-64B	5	64.1	71.3	75	78.8	1	103	5.8	134	53.5	10.5	575
BZW06P70	BZW06P70B	5	70.1	77.9	82	90.2	1	113	5.3	146	49	10.5	550
BZW06-70	BZW06-70B	5	70.1	77.9	82	86.1	1	113	5.3	146	49	10.5	550
BZW06P78	BZW06P78B	5	77.8	86.5	91	100	1	125	4.8	162	44.5	10.6	525
BZW06-78	BZW06-78B	5	77.8	86.5	91	95.5	1	125	4.8	162	44.5	10.6	525
BZW06P85	BZW06P85B	5	85.5	95	100	110	1	137	4.4	178	40.5	10.6	500
BZW06-85	BZW06-85B	5	85.5	95	100	105	1	137	4.4	178	40.5	10.6	500
BZW06P94	BZW06P94B	5	94	105	110	121	1	152	3.9	195	37	10.7	470
BZW06-94	BZW06-94B	5	94	105	110	116	1	152	3.9	195	37	10.7	470
BZW06P102	BZW06P102B	5	102	114	120	132	1	165	3.6	212	34	10.7	450
BZW06-102	BZW06-102B	5	102	114	120	126	1	165	3.6	212	34	10.7	450
BZW06P111	BZW06P111B	5	111	124	130	143	1	179	3.4	230	31.5	10.7	420
BZW06-111	BZW06-111B	5	111	124	130	137	1	179	3.4	230	31.5	10.7	420
BZW06P128	BZW06P128B	5	128	143	150	165	1	207	2.9	265	27.2	10.8	400
BZW06-128	BZW06-128B	5	128	143	150	158	1	207	2.9	265	27.2	10.8	400
BZW06P136	BZW06P136B	5	136	152	160	176	1	219	2.7	282	25.5	10.8	380
BZW06-136	BZW06-136B	5	136	152	160	168	1	219	2.7	282	25.5	10.8	380
BZW06P145	BZW06P145B	5	145	161	170	187	1	234	2.6	301	24	10.8	370
BZW06-145	BZW06-145B	5	145	161	170	179	1	234	2.6	301	24	10.8	370
BZW06P154	BZW06P154B	5	154	171	180	198	1	246	2.4	317	22.7	10.8	360
BZW06-154	BZW06-154B	5	154	171	180	189	1	246	2.4	317	22.7	10.8	360
BZW06P171	BZW06P171B	5	171	190	200	220	1	274	2.2	353	20.4	10.8	350
BZW06-171	BZW06-171B	5	171	190	200	210	1	274	2.2	353	20.4	10.8	350
BZW06P188	BZW06P188B	5	188	209	220	242	1	301	2	388	18.6	10.8	330
BZW06-188	BZW06-188B	5	188	209	220	231	1	301	2	388	18.6	10.8	330
BZW06P213	BZW06P213B	5	213	237	250	275	1	344	2	442	19	11	310
BZW06-213	BZW06-213B	5	213	237	250	263	1	344	2	442	19	11	310
BZW06P239	BZW06P239B	5	239	266	280	308	1	384	2	494	18	11	300
BZW06-239	BZW06-239B	5	239	266	280	294	1	384	2	494	18	11	300
BZW06P256	BZW06P256B	5	256	285	300	330	1	414	1.6	529	14	11	290
BZW06-256	BZW06-256B	5	256	285	300	315	1	414	1.6	529	14	11	290
BZW06P273	BZW06P273B	5	273	304	320	352	1	438	1.6	564	14	11	280
BZW06-273	BZW06-273B	5	273	304	320	336	1	438	1.6	564	14	11	280
BZW06P299	BZW06P299B	5	299	332	350	385	1	482	1.6	618	14	11	270
BZW06-299	BZW06-299B	5	299	332	350	368	1	482	1.6	618	14	11	270
BZW06P342	BZW06P342B	5	342	380	400	440	1	548	1.3	706	11	11	360
BZW06-342	BZW06-342B	5	342	380	400	420	1	548	1.3	706	11	11	360
BZW06P376	BZW06P376B	5	376	418	440	484	1	603	1.3	776	11	11	350
BZW06-376	BZW06-376B	5	376	418	440	462	1	603	1.3	776	11	11	350

* Pulse test $t_p \leq 50$ ms $\delta < 2$ %.

** Divide these values by 2 for bidirectional types.

For bidirectional types, electrical characteristics apply in both directions.

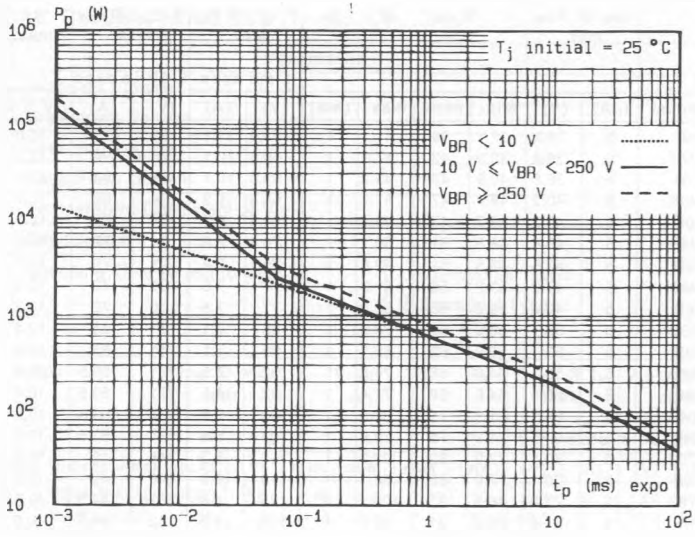


Fig.1 - Peak pulse power versus exponential pulse duration.

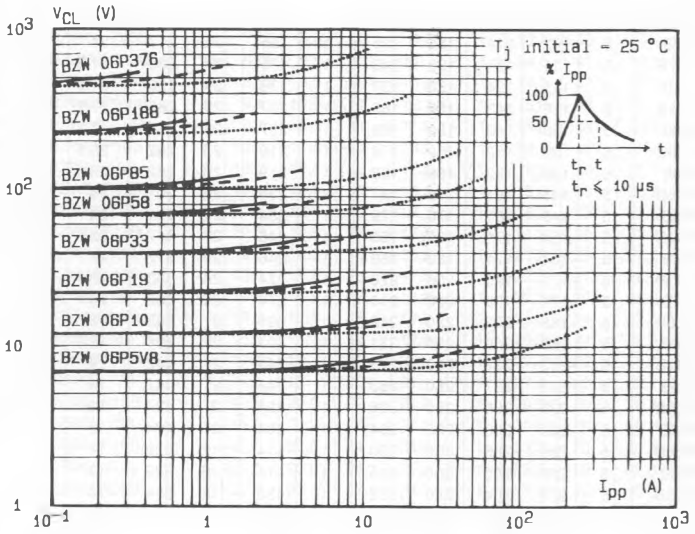


Fig.2 - Clamping voltage versus peak pulse current.
exponential waveform t = 20 µs ·····
t = 1 ms – – –
t = 10 ms ——

Note : The curves of the figure 2 are specified for a junction temperature of 25 °C before surge. The given results may be extrapolated for other junction temperatures by using the following formula : $\Delta V_{(BR)} = \alpha_{T(V(BR))} \times [T_j - 25] \times V_{(BR)}$
For intermediate voltages, extrapolate the given results.

D88BZW06P4

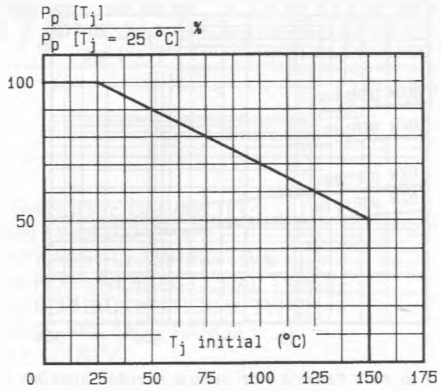


Fig.3 - Allowable power dissipation versus junction temperature.

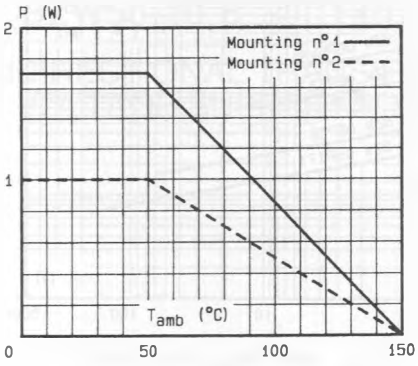


Fig.4 - Power dissipation versus ambient temperature.

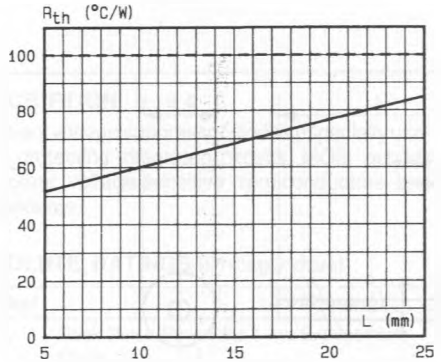
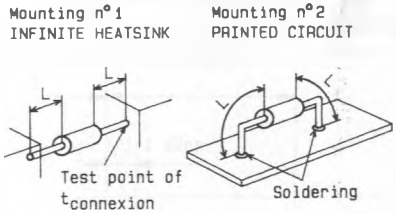


Fig.5 - Thermal resistance versus lead length.



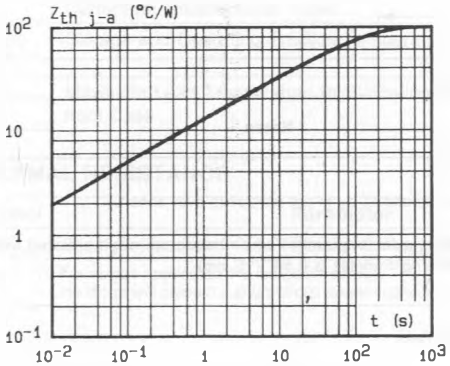


Fig.6 - Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

D88BZW06P5

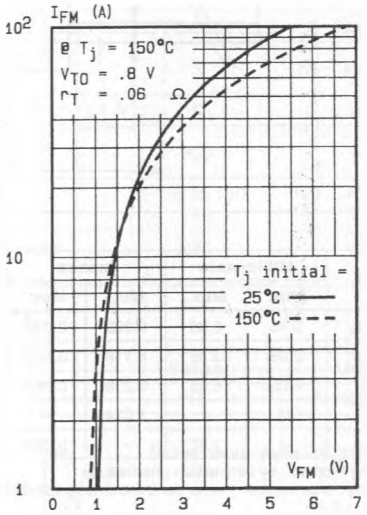


Fig.7 - Peak forward current versus peak forward voltage drop (typical values for unidirectional types).

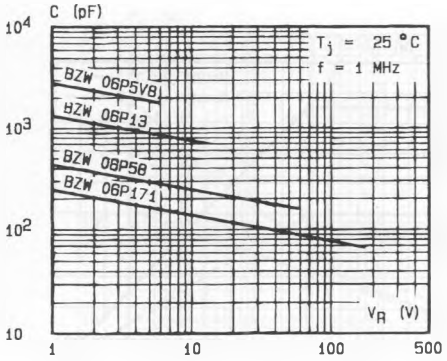


Fig.8a - Capacitance versus reverse applied voltage for unidirectional types (typical values).

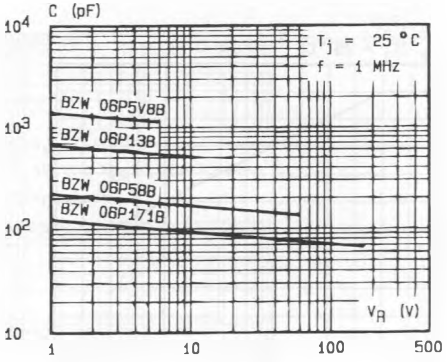
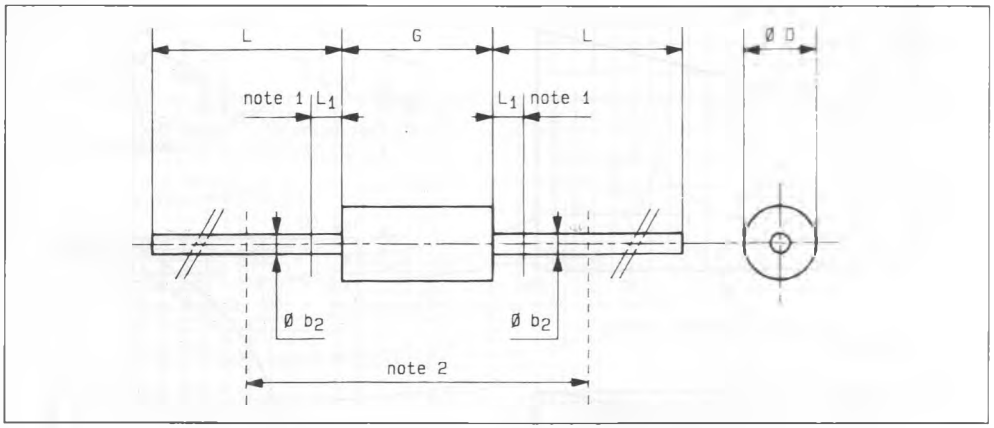


Fig.8b - Capacitance versus reverse applied voltage for bidirectional types (typical values).

D88BZW06P6

PACKAGE MECHANICAL DATA

F 126 Plastic



Ref.	Millimeters		Inches		Notes
	Min.	Max.	Min.	Max.	
Ø b_2	0.76	0.86	0.029	0.034	1 - The lead diameter Ø b_2 is not controlled over zone L_1. 2 - The minimum axial lengh within which the device may be placed with its leads bent at right angles is 0.59" (15 mm).
Ø D	2.95	3.05	0.116	0.120	
G	6.05	6.35	0.238	0.250	
L	26	–	1.024	–	
L_1	–	1.27	–	0.050	

Cooling method : by convection (method A).
Marking : type number ; white band indicates cathode for unidirectional types.
Weight : 0.4 g.