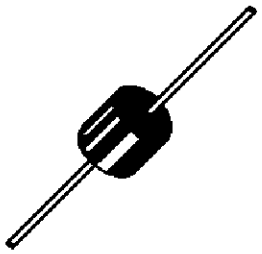
SGS-THOMSON MICROELECTRONICS

BZW50-10,B/180,B

TRANSIL™

FEATURES

- PEAK PULSE POWER= 5000 W @ 1ms
- STAND-OFF VOLTAGE RANGE : From 10V to 180V
- UNI AND BIDIRECTIONAL TYPES
- LOW CLAMPING FACTOR
- FAST RESPONSE TIME
- UL RECOGNIZED



AG
(Plastic)

DESCRIPTION

Transil diodes provide high overvoltage protection by clamping action. Their instantaneous response to transients makes them particularly suited to protect voltage sensitive devices such as MOS Technology and low voltage supplied IC's.

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25°C)

Symbol	Parameter		Value	Unit
P_p	Peak pulse power dissipation		5000	W
P	Power dissipation on infinite heatsink	T_{lead} = 75°C	6.5	W
T_{stg} T_j	Storage temperature range Maximum junction temperature		- 65 to + 175 175	°C °C
T_L	Maximum lead temperature for soldering during 10 s.		230	°C

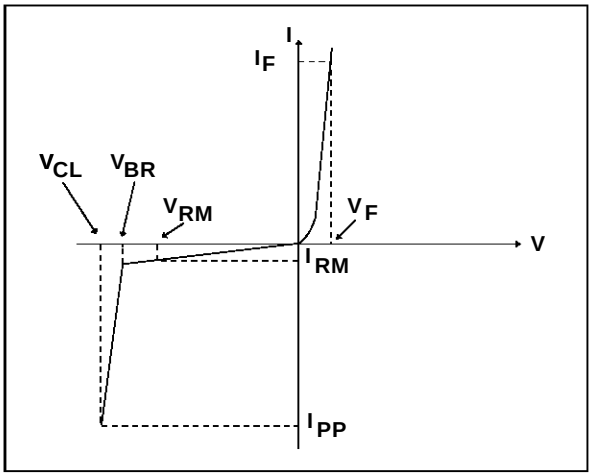
THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th\ (j-l)}$	Junction to leads on infinite heatsink		15	°C/W
$R_{th\ (j-a)}$	Junction to ambiant on printed circuit.	L_{lead} = 10 mm	65	°C/W

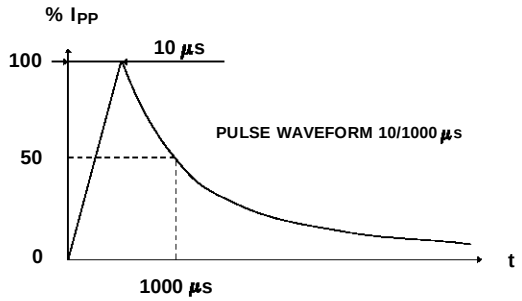
ELECTRICAL CHARACTERISTICS

(T_{amb} = 25°C)

Symbol	Parameter
V_{RM}	Stand-off voltage
V_{BR}	Breakdown voltage
V_{CL}	Clamping voltage
I_{RM}	Leakage current @ VRM
I_{PP}	Peak pulse current
αT	Voltage temperature coefficient



Types		I_{RM} @ V_{RM} max		V_{BR} @ I_R min	nom	max		V_{CL} @ I_{PP} max		V_{CL} @ I_{PP} max		αT max	C typ
				note2				10/1000µs		8/20µs		note3	note4
Unidirectional	Bidirectional	µA	V	V	V	V	mA	V	A	V	A	10^{-4}/°C	pF
BZW50-10	BZW50-10B	5	10	11.1	12.4	13.6	1	18.8	266	23.4	2564	7.8	24000
BZW50-12	BZW50-12B	5	12	13.3	14.8	16.3	1	22	227	28	2143	8.4	18500
BZW50-15	BZW50-15B	5	15	16.6	18.5	20.4	1	26.9	186	35	1714	8.8	13500
BZW50-18	BZW50-18B	5	18	20	22.2	24.4	1	32.2	155	41.5	1446	9.2	11500
BZW50-22	BZW50-22B	5	22	24.4	27.1	29.8	1	39.4	127	51	1177	9.6	8500
BZW50-27	BZW50-27B	5	27	30	33.3	36.6	1	48.3	103	62	968	9.8	7000
BZW50-33	BZW50-33B	5	33	26.6	40.7	44.7	1	59	85	76	789	10	5750
BZW50-39	BZW50-39B	5	39	43.3	48.1	53	1	69.4	72	90	667	10.1	4800
BZW50-47	BZW50-47B	5	47	52	57.8	63.6	1	83.2	60.1	108	556	10.3	4100
BZW50-56	BZW50-56B	5	56	62.2	69.1	76	1	99.6	50	129	465	10.4	3400
BZW50-68	BZW50-68B	5	68	45.6	84	92.4	1	121	41	157	382	10.5	3000
BZW50-82	BZW50-82B	5	82	91	101.2	111	1	145	34	189	317	10.6	2600
BZW50-100	BZW50-100B	5	100	111	123.5	136	1	179	28	228	263	10.7	2300
BZW50-120	BZW50-120B	5	120	133	148.1	163	1	215	23	274	219	10.8	1900
BZW50-150	BZW50-150B	5	150	166	185.2	204	1	269	19	343	175	10.8	1700
BZW50-180	BZW50-180B	5	180	200	222	244	1	322	16	410	146	10.8	1500



Note 1 : For surges greater than the maximum values, the diode will present a short-circuit Anode - Cathode

Note 2 : Pulse test: $t_p < 50$ ms.

Note 3 : $\Delta V_{BR} = \alpha T * (T_{amb} - 25) * V_{BR}(25°C)$

Note 4 : $V_R = 0$ V, F = 1 MHz. For bidirectional types, capacitance value is divided by 2.

Fig. 1: Power dissipation derating versus ambient temperature

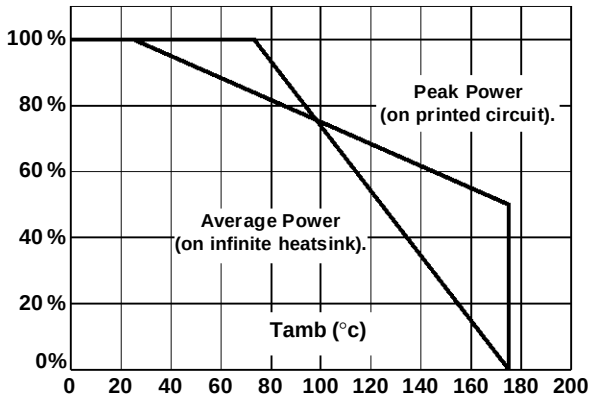


Fig. 2 : Peak pulse power versus exponential pulse duration.

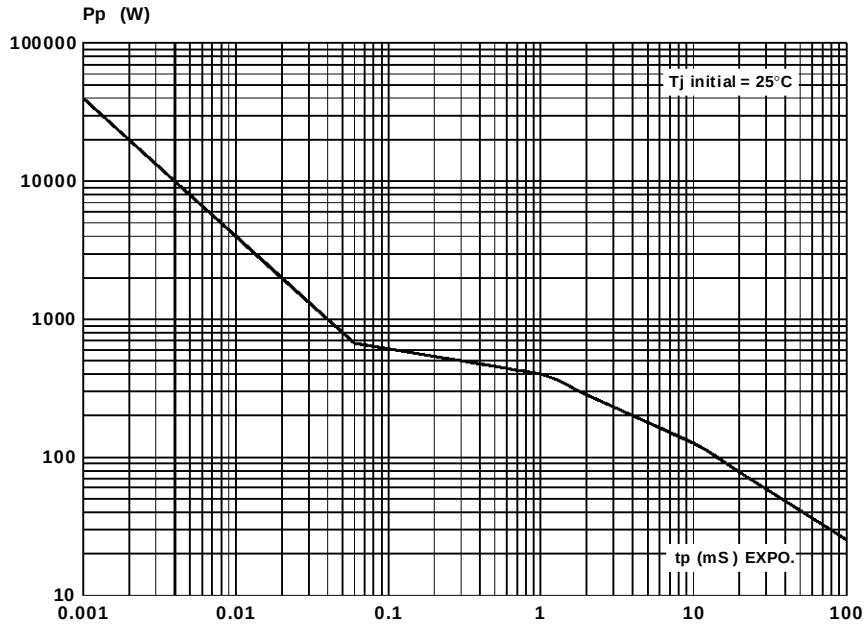
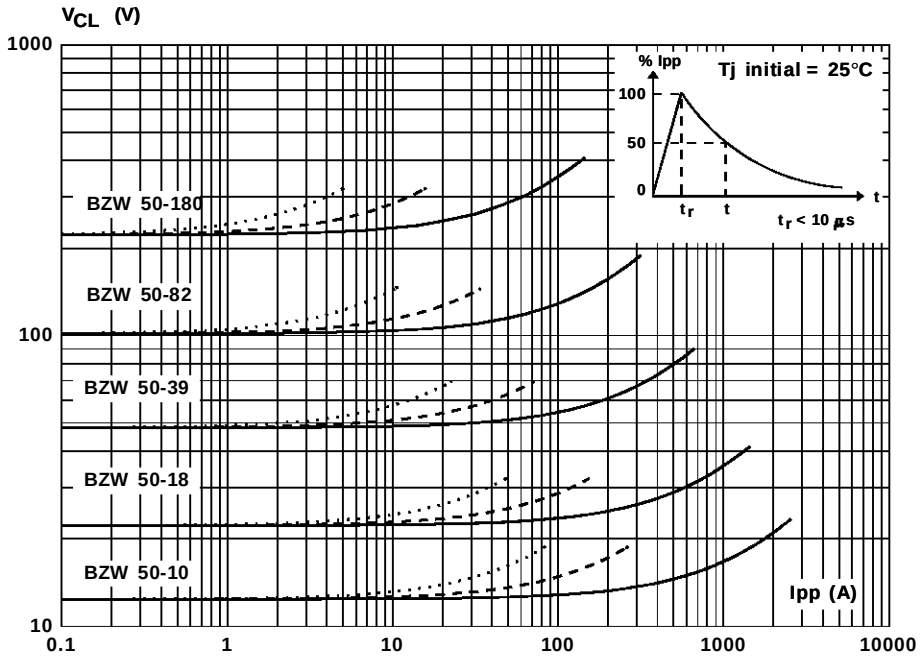


Fig. 3 : Clamping voltage versus peak pulse current.
Exponential waveform t_p = 20 µs_____
t_p = 1 ms----------
t_p = 10 ms.....



Note : The curves of the figure 3 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 :
$\Delta V_{BR} = \alpha T * (T_{amb} - 25) * V_{BR}$ (25°C).
For intermediate voltages, extrapolate the given results.

Fig. 4a : Capacitance versus reverse applied voltage for unidirectional types (typical values).

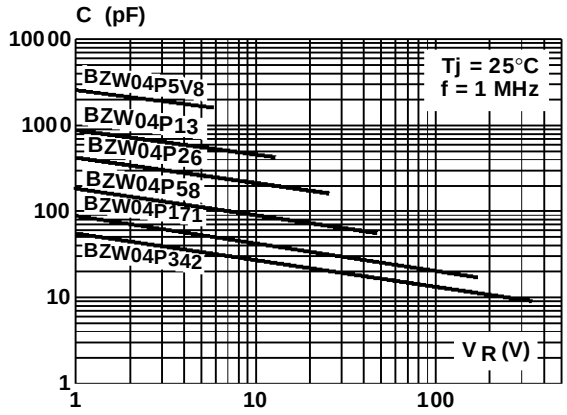


Fig. 4b : Capacitance versus reverse applied voltage for bidirectional types (typical values).

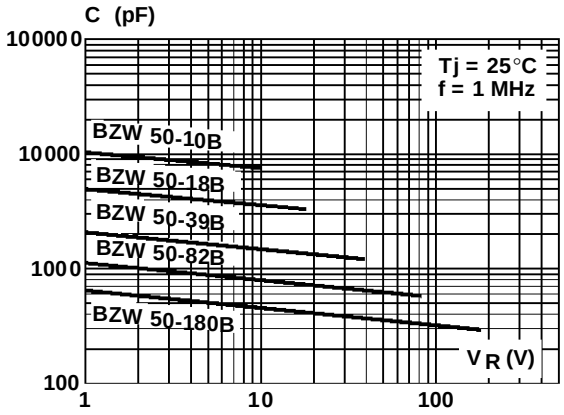


Fig. 5 : Peak forward voltage drop versus peak forward current (typical values for unidirectional types).

Note : For units with V_{BR} > 200 V V_F is twice than shown.

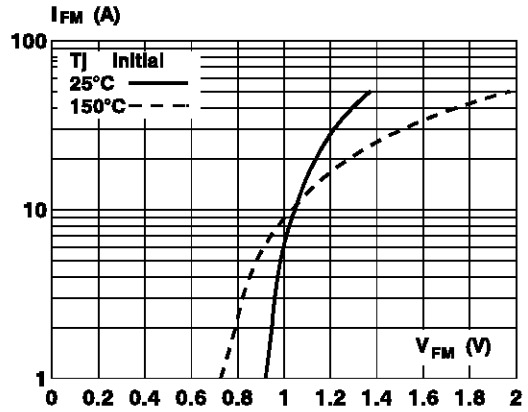
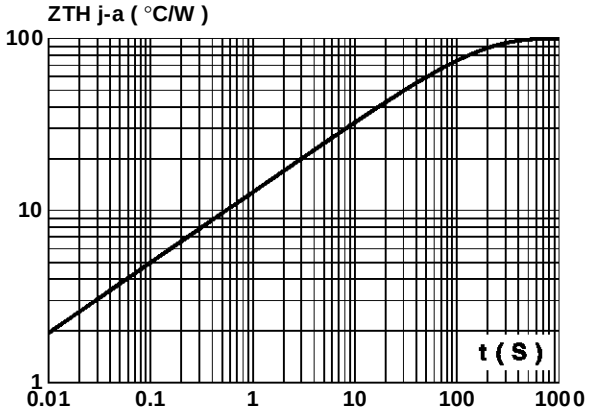
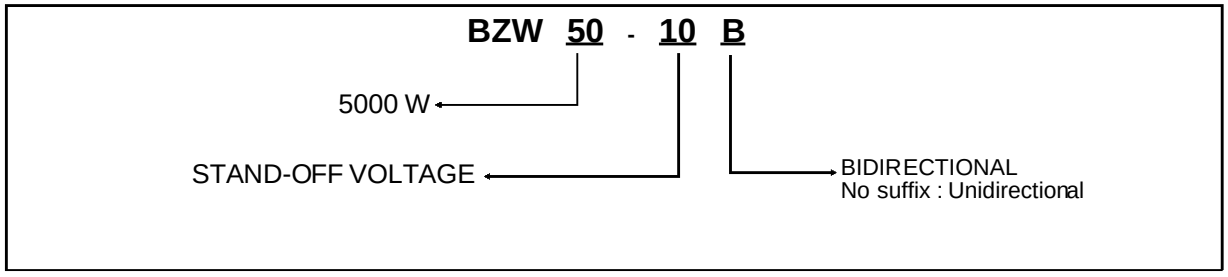


Fig. 6 : Transient thermal impedance junction-ambient versus pulse duration. For a mounting on PC Board with L_{lead} = 10mm.



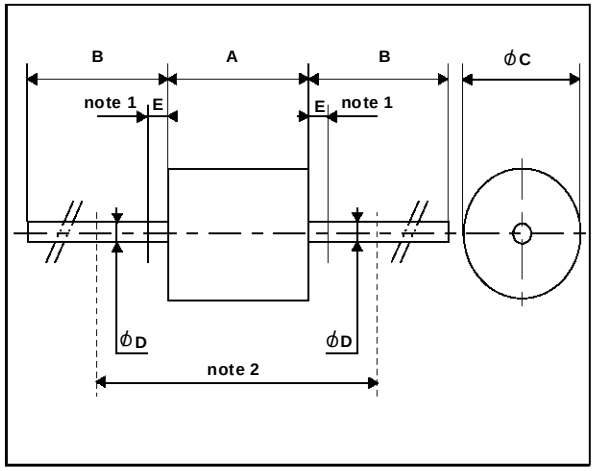
ORDER CODE



MARKING : Logo, Date Code, Type Code, Cathode Band (for unidirectional types only).

PACKAGE MECHANICAL DATA

AG (Plastic)



Weight = 1.6 g.

Packaging : standard packaging is in bulk.

REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9		0.354	1- The lead diameter ∅ D is not controlled over zone E. 2- The minimum axial lengh within which the device may be placed bent at right angles is 0.79" (20 mm).
B	20		0.787		
∅ C		8		0.315	
∅ D	1.35	1.45	0.053	0.057	
E		1.27		0.050	