SGS-THOMSON MICROELECTRONICS

BZW04-5V8/376
BZW04-5V8B/376B

TRANSIL™

FEATURES

- PEAK PULSE POWER : 400 W (10/1000µs)
- STAND-OFF VOLTAGE RANGE : From 5.8V to 376 V
- UNI AND BIDIRECTIONAL TYPES
- LOW CLAMPING FACTOR
- FAST RESPONSE TIME
- UL RECOGNIZED

F126

DESCRIPTION

Transil diodes provide high overvoltage protection by clamping action. Their instantaneous response to transient overvoltages 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_{PP}	Peak pulse power dissipation (see note 1)	Tj initial = Tamb	400	W
P	Power dissipation on infinite heatsink	T_{amb} = 75°C	1.7	W
I_{FSM}	Non repetitive surge peak forward current for unidirectional types	tp = 10ms Tj initial = T_{amb}	30	A
T_{stg} T_j	Storage temperature range Maximum junction temperature		- 65 to + 175 175	°C °C
T_L	Maximum lead temperature for soldering during 10s a 5mm from case.		230	°C

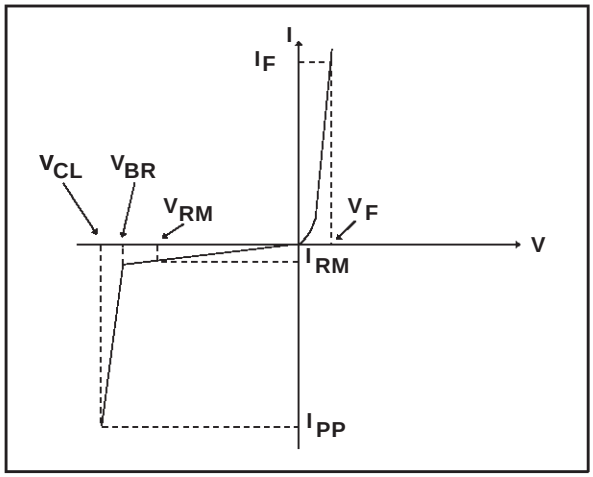
Note 1 : For a surge greater than the maximum values, the diode will fail in short-circuit.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-l)}$	Junction to leads	60	°C/W
$R_{th\ (j-a)}$	Junction to ambient on printed circuit. L_{lead} = 10 mm	100	°C/W

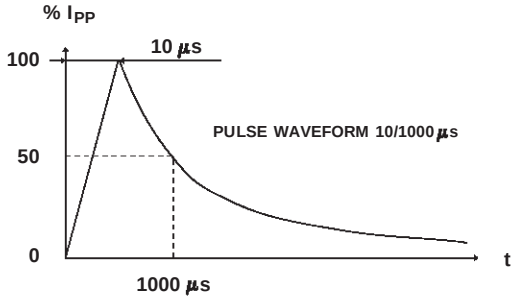
ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C)

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



Types		I_{RM} @ V_{RM} max		V_{BR} @ I_R min note2		V_{CL} @ I_{PP} max 10/1000µs		V_{CL} @ I_{PP} max 8/20µs		αT max note3	C typ note4
Unidirectional	Bidirectional	µA	V	V	mA	V	A	V	A	10^{-4}/°C	pF
BZW04-5V8	BZW04-5V8B	1000	5.8	6.45	10	10.5	38.0	13.4	174	5.7	3500
BZW04-6V4	BZW04-6V4B	500	6.4	7.13	10	11.3	35.4	14.5	160	6.1	3100
BZW04-8V5	BZW04-8V5B	10	8.5	9.5	1	14.5	27.6	18.6	124	7.3	2000
BZW04-10	BZW04-10B	5	10.2	11.4	1	16.7	24.0	21.7	106	7.8	1550
BZW04-13	BZW04-13B	5	12.8	14.3	1	21.2	19.0	27.2	85	8.4	1200
BZW04-15	BZW04-15B	1	15.3	17.1	1	25.2	16.0	32.5	71	8.8	975
BZW04-19	BZW04-19B	1	18.8	20.9	1	30.6	13.0	39.3	59	9.2	800
BZW04-20	BZW04-20B	1	20.5	22.8	1	33.2	12.0	42.8	54	9.4	725
BZW04-23	BZW04-23B	1	23.1	25.7	1	37.5	10.7	48.3	48	9.6	625
BZW04-26	BZW04-26B	1	25.6	28.5	1	41.5	9.6	53.5	43	9.7	575
BZW04-28	BZW04-28B	1	28.2	31.4	1	45.7	8.8	59.0	39	9.8	510
BZW04-31	BZW04-31B	1	30.8	34.2	1	49.9	8.0	64.3	36	9.6	480
BZW04-33	BZW04-33B	1	33.3	37.1	1	53.9	7.4	69.7	33	**10.0**	450
BZW04-40	BZW04-40B	1	40.2	44.7	1	64.8	6.2	84	27	10.1	370
BZW04-48	BZW04-48B	1	47.8	53.2	1	77.0	5.2	100	23	10.3	320
BZW04-58	BZW04-58B	1	58.1	64.6	1	92.0	4.3	121	19	10.4	270
BZW04-70	BZW04-70B	1	70.1	77.9	1	113	3.5	146	16.0	10.5	230
BZW04-85	BZW04-85B	1	85.5	95.0	1	137	2.9	178	13.0	10.6	200
BZW04-102	BZW04-102B	1	102	114	1	165	2.4	212	11.0	10.7	170
BZW04-128	BZW04-128B	1	128	143	1	207	2.0	265	9.0	10.8	145
BZW04-154	BZW04-154B	1	154	171	1	246	1.6	317	7.0	10.8	125
BZW04-171	BZW04-171B	1	171	190	1	274	1.5	353	6.5	10.8	120
BZW04-188	BZW04-188B	1	188	209	1	328	1.4	388	6.0	10.8	110
BZW04-213	BZW04-213B	1	231	237	1	344	1.5	442	5.2	11.0	100
BZW04-256	BZW04-256B	1	256	285	1	414	1.2	529	4.3	11.0	90

Types		I_{RM} @ V_{RM}		V_{BR} @ I_R min note2		V_{CL} @ I_{PP} max 10/1000µs		V_{CL} @ I_{PP} max 8/20µs		αT max note3	C typ note4
Unidirectional	Bidirectional	µA	V	V	mA	V	A	V	A	10^{-4}/°C	pF
BZW04-273	BZW04-273B	1	273	304	1	438	1.2	564	4.0	11.0	85
BZW04-299	BZW04-299B	1	299	332	1	482	0.9	618	3.7	11.0	80
BZW04-342	BZW04-342B	1	342	380	1	548	0.9	706	3.2	11.0	75
BZW04-376	BZW04-376B	1	376	418	1	603	0.8	776	3.0	11.0	70



Note 2 : Pulse test: tp < 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: Peak pulse power dissipation versus initial junction temperature (printed circuit board).

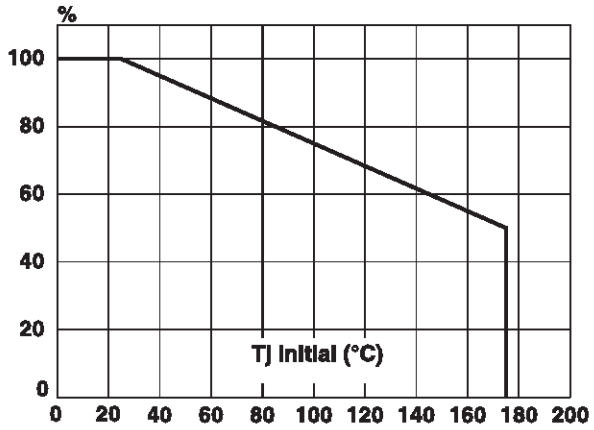


Fig. 2 : Peak pulse power versus exponential pulse duration.

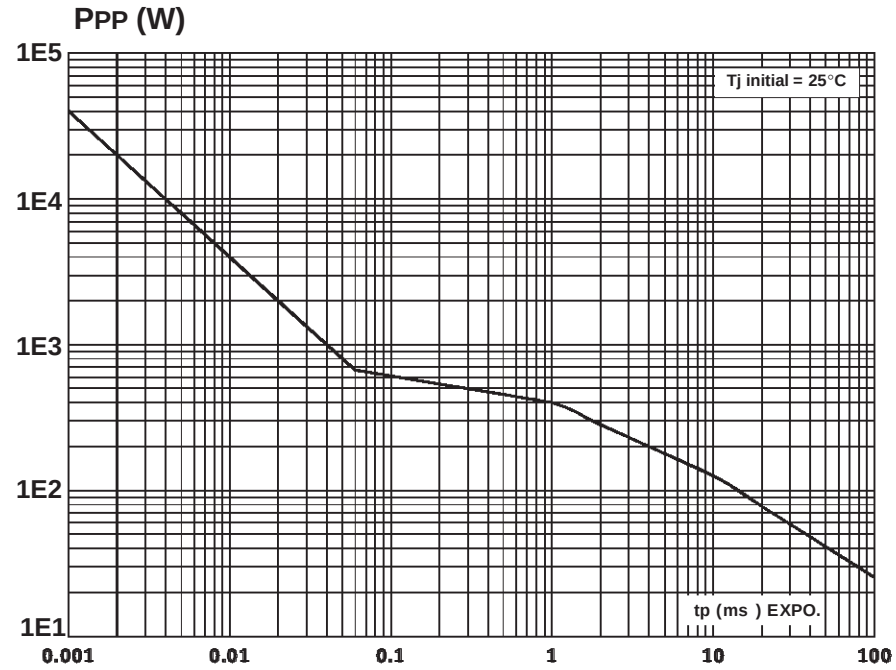
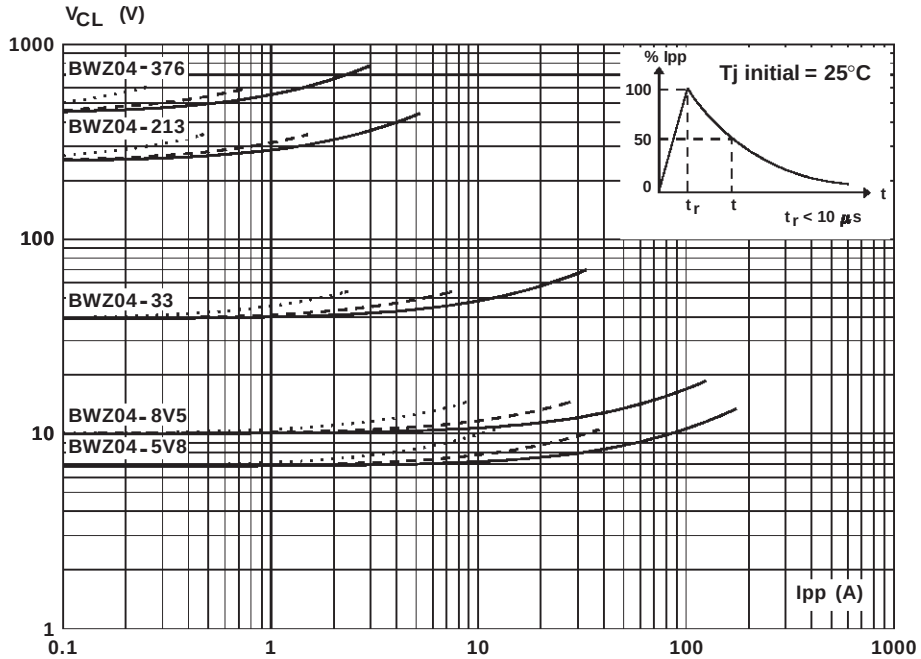


Fig. 3 : Clamping voltage versus peak pulse current.
Exponential waveform t_p = 20 µs_____
t_p = 1 ms----------
t_p = 10 ms.....



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).

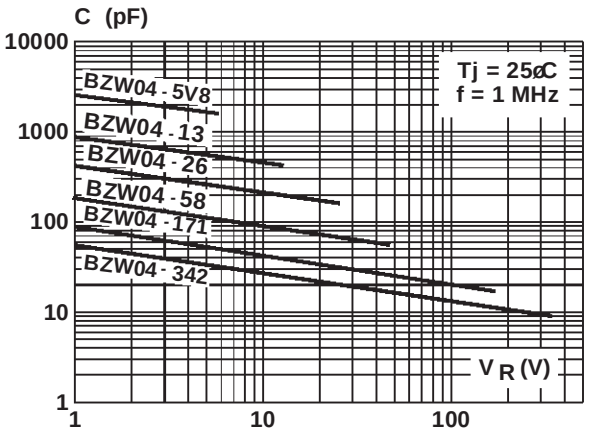


Fig. 4b : Capacitance versus reverse applied voltage for bidirectional types (typical values).

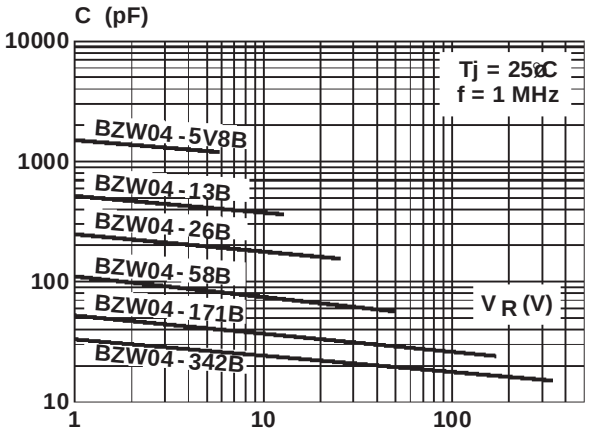


Fig. 5 : Peak forward voltage drop versus peak forward current (typical values for unidirectional types).

Note : Multiply by 2 for units with V_{BR} > 220V.

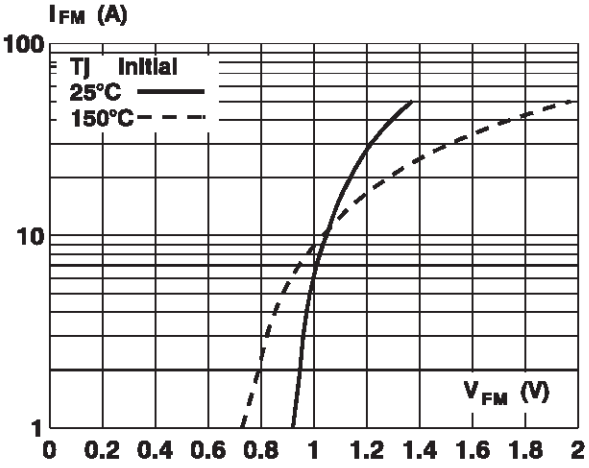


Fig. 6 : Transient thermal impedance junction ambient versus pulse duration (For FR4 PC Board with L lead = 10mm).

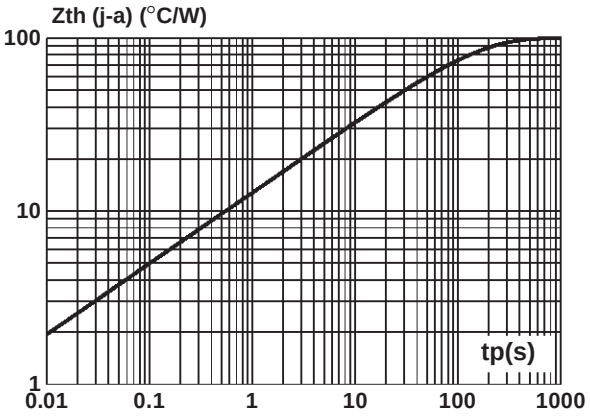
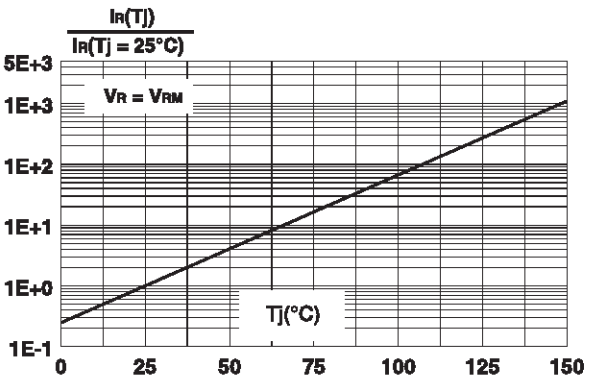
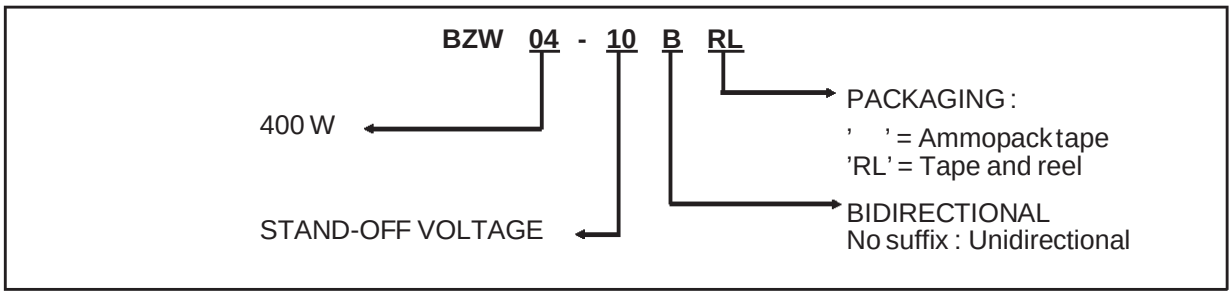


Fig. 7 : Relative variation of leakage current versus junction temperature.

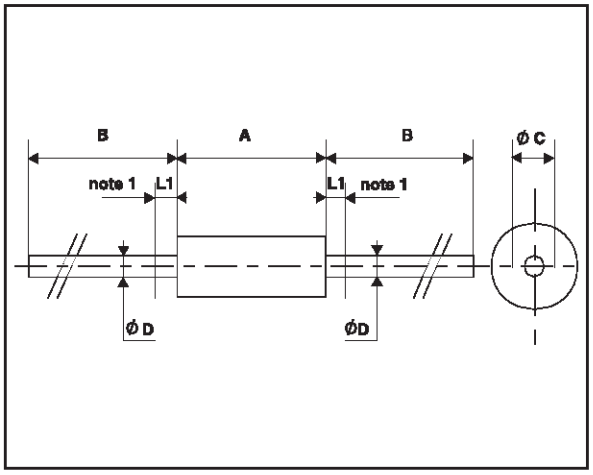


ORDER CODE



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

PACKAGE MECHANICAL DATA
F126 (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.05	6.20	6.35	0.238	0.244	0.250
B	26		31	1.024		1.220
∅ C	2.95	3.00	3.05	0.116	0.118	0.120
∅ D	0.76	0.81	0.86	0.030	0.032	0.034
L1			1.27			0.050
Note 1 : The lead is not controlled within zone L_1						

Packaging: standard packaging is in tape and reel.

Weight = 0.40 g.