SGS-THOMSON MICROELECTRONICS

BZW 100-20
BZW 100-24

UNIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSORS

- HIGH SURGE CAPABILITY : 1.8 kW / 15 ms EXPO
- VERY FAST CLAMPING TIME : 1 ps

AG
(Plastic)

DESCRIPTION

Transient voltage suppressor diodes especially designed for load dump effect protection.

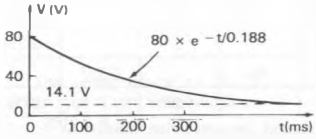
ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
P_p	Peak Pulse Power for 15 ms Exponential Pulse	T_j Initial = 25 °C See note 1	1800	W
P	Power Dissipation on Infinite Heatsink	T_{amb} = 75 °C	5	W
I_{FSM}	Non Repetitive Surge Peak Forward Current	T_j Initial = 25 °C t = 10 ms	200	A
T_{stg} T_j	Storage and Operating Junction Temperature Range		– 65 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	15	°C/W

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



LOAD DUMP TRANSIENT (standard SAE J1113A)

D88TRANSIL2

ELECTRICAL CHARACTERISTICS (T_j = 25°C)

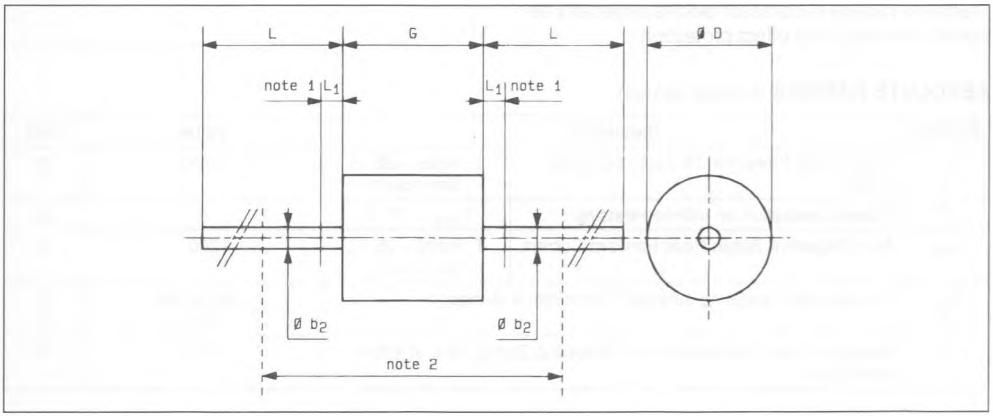
Symbol	Parameter	Value
V_{RM}	Stand-off Voltage	See table
$V_{(BR)}$	Breakdown Voltage	
$V_{(CL)}$	Clamping Voltage	
I_{pp}	Peak Pulse Current	
α_T	Temperature Coefficient of $V_{(BR)}$	
C	Capacitance	
$t_{clamping}$	Clamping Time (0 volt to $V_{(BR)}$)	1 ps max.
V_F	Peak Forward Voltage Drop (I_{FM} = 10 A)	1.9 V max.

Unidirectional Types	I_{RM} @ V_{RM} max.		$V_{(BR)}$* @ I_R (V)		V_{CL} @ I_{pp} max. 15 ms expo.		α_T max.	C typ. V_R = 0 f = 1 MHz
	(µA)	(V)	min.	(mA)	(V)	(A)	(10^{-4}/°C)	(pF)
BZW100-20	50	20	24	1	36	50	9.6	4250
BZW100-24	50	24	29	1	40	45	9.8	3500

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

PACKAGE MECHANICAL DATA

AG Plastic



Ref.	Millimeters		Inches		Notes
	Min.	Max.	Min.	Max.	
Ø b_2	1.35	1.45	0.053	0.057	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 0.79" (20 mm).
Ø D	–	8	–	0.315	
G	–	9	–	0.354	
L	20	–	0.787	–	
L_1	–	1.27	–	0.050	

Cooling method : by convection (method A).
Marking : type number ; white band indicates cathode.
Weight : 1 g.

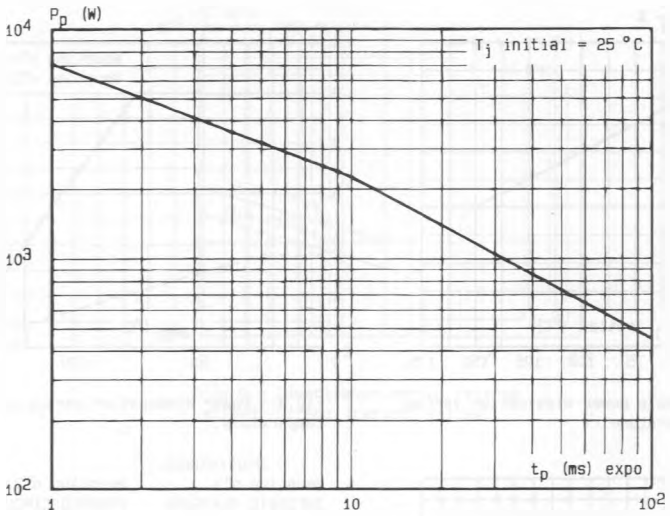


Fig.1 - Peak pulse power versus exponential pulse duration.

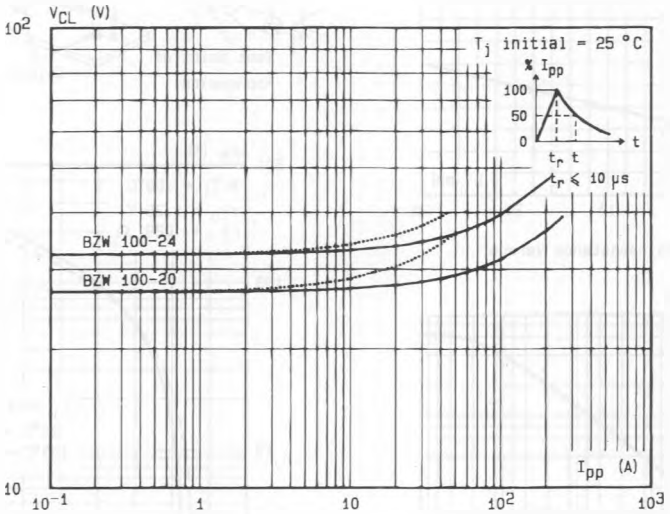


Fig.2 - Clamping voltage versus peak pulse current
exponential waveform t = 15 ms ·····
t = 1 ms ——

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.

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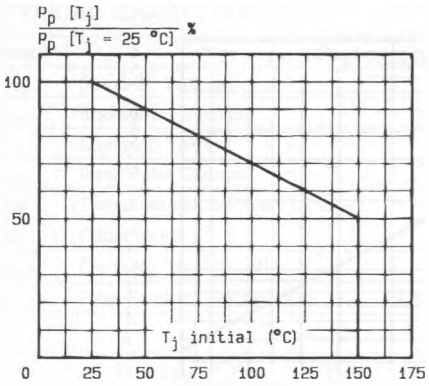


Fig.3 - Allowable power dissipation versus junction temperature.

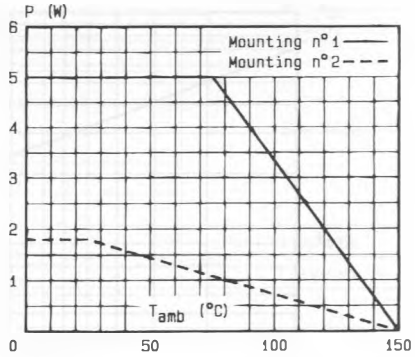


Fig.4 - Power dissipation versus ambient temperature.

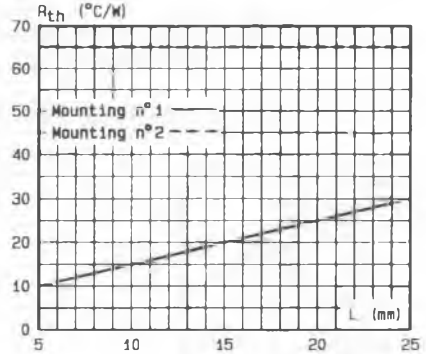
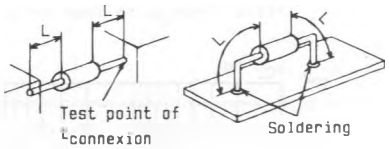


Fig.5 - Thermal resistance versus lead length.



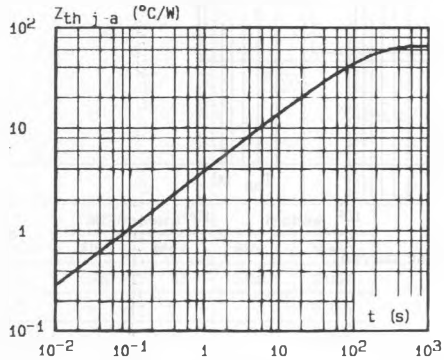


Fig.6 - Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

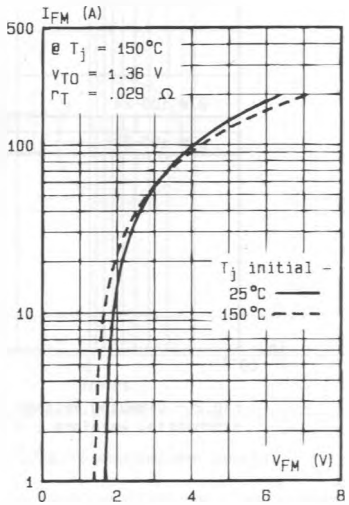


Fig.7 - Peak forward current versus peak forward voltage drop (maximum values).

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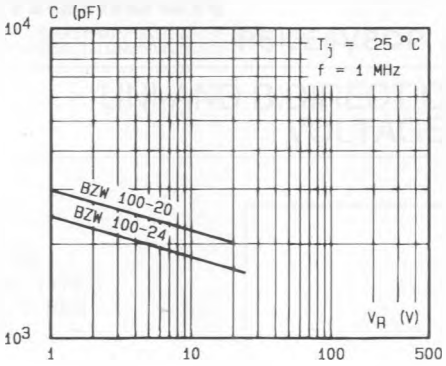

Fig.8 - Capacitance versus reverse applied voltage (typical values).

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