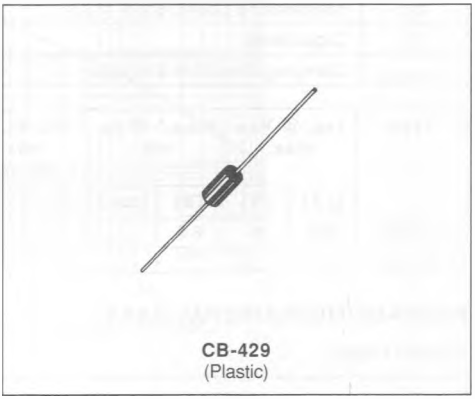
SGS-THOMSON MICROELECTRONICS

1N5908

UNIDIRECTIONAL TRANSIENT VOLTAGE SUPPRESSOR

- HIGH SURGE CAPABILITY : 1.5 kW/1 ms EXPO
- VERY FAST CLAMPING TIME : 1 ps



CB-429
(Plastic)

DESCRIPTION

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

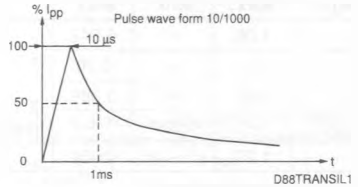
ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
P_p	Peak Pulse Power for 1 ms Exponential Pulse	T_j Initial = 25 °C See note 1	1500	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	250	A
T_{stg} T_j	Storage and Junction Temperature Range		– 65 to 175 175	°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	20	°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)

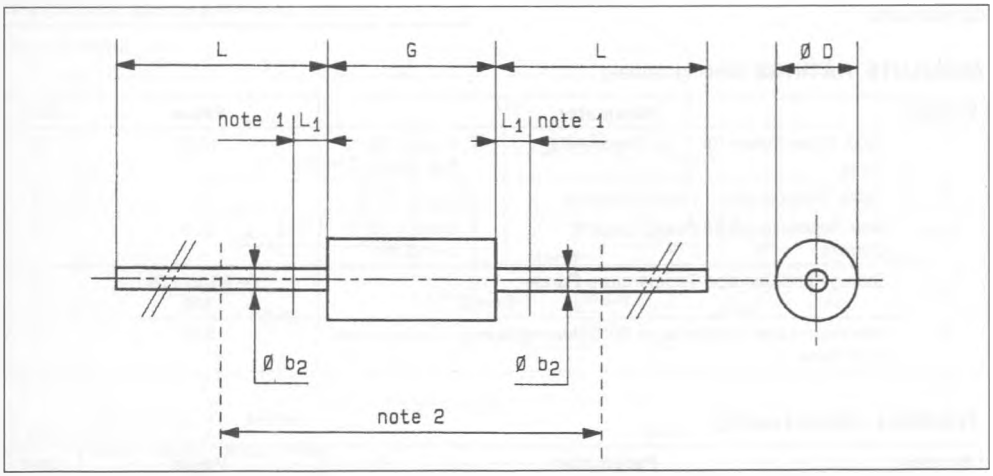
Symbol	Parameter	Value
V_{RM}	Stand-off Voltage	See table
$V_{(BR)}$	Breakdown Voltage	
$V_{(CL)}$	Clamping Voltage	
I_{pp}	Peak Pulse Current	
α_T	Temperature Coefficient of $V_{(BR)}$	
C	Capacitance	
$t_{clamping}$	Clamping Time (0 volt to $V_{(BR)}$)	1 ps max.

Type	I_{RM} @ V_{RM} max.		$V_{(BR)}$* @ I_R min.		V_{CL} @ I_{pp} max. 1 ms expo.		V_{CL} @ I_{pp} max. 1 ms expo.		V_{CL} @ I_{pp} max. 1 ms expo.		α_T max.	C typ. V_R = 0 f = 1 MHz
	(µA)	(V)	(V)	(mA)	(V)	(A)	(V)	(A)	(V)	(A)	(10^{-4}/°C)	(pF)
1N 5908	300	5	6.0	1	7.6	30	8.0	60	8.5	120	5.7	10000

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

PACKAGE MECHANICHAL DATA

CB-429 Plastic



Ref.	Millimeters		Inches		Notes
	Min.	Max.	Min.	Max.	
Ø b_2	–	1.06	–	0.042	1 - The lead diameter Ø b_2 is not controlled over zone L_1.
Ø D	–	5.1	–	0.20	
G	–	9.8	–	0.386	2 - The minimum axial lengh within which the device may be placed with its leads bent at right angles is 0.70" (18 mm).
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 : 0.9 g

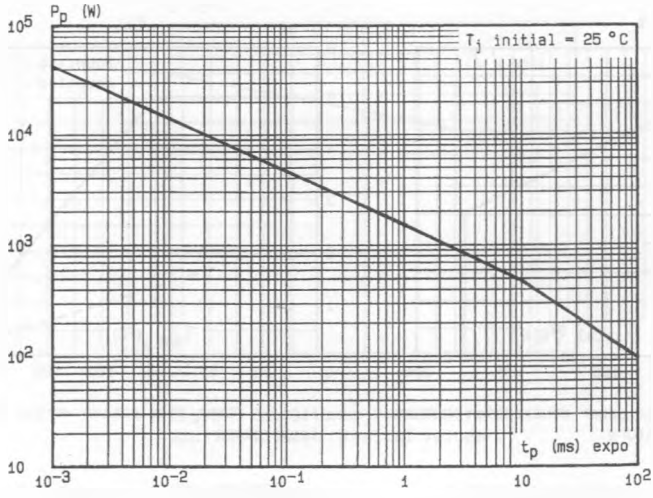


Fig.1 - Peak pulse power versus exponential pulse duration.

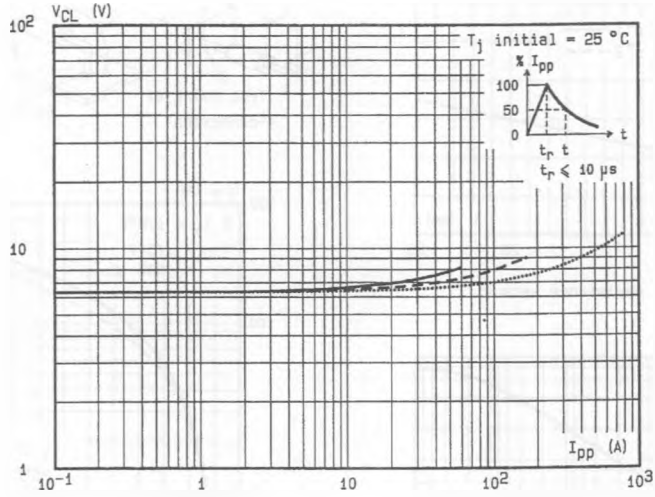


Fig.2 - Clamping voltage versus peak pulse current.
exponential waveform t = 20 µs ——·
t = 1 ms — — —
t = 10 ms ———

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.

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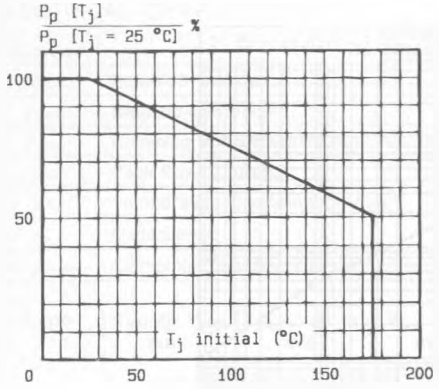


Fig.3 - Allowable power dissipation versus junction temperature.

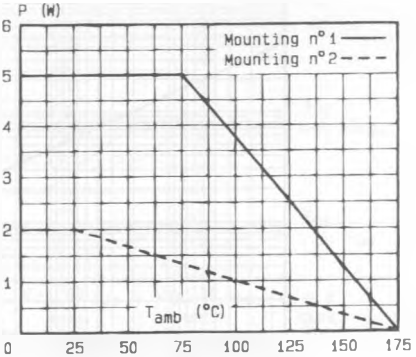


Fig.4 - Power dissipation versus ambient temperature.

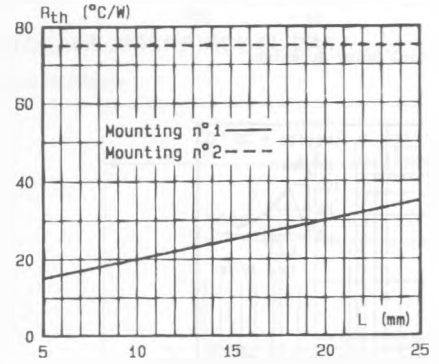
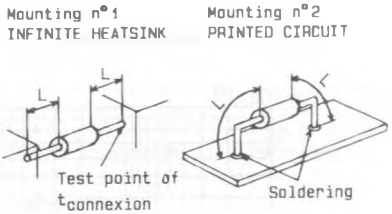


Fig.5 - Thermal resistance versus lead length.



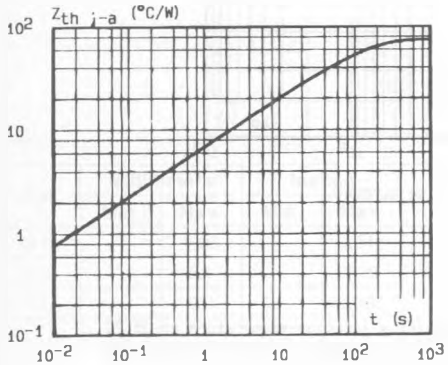


Fig.6 - Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

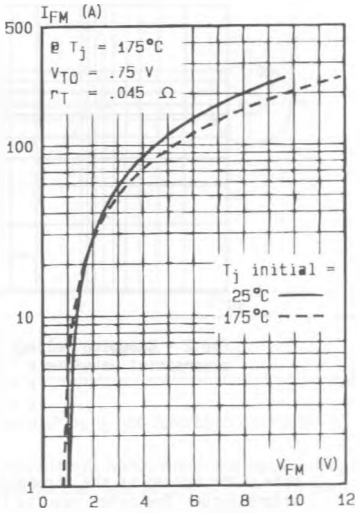


Fig.7 - Peak forward current versus peak forward voltage drop (typical values for unidirectional types).

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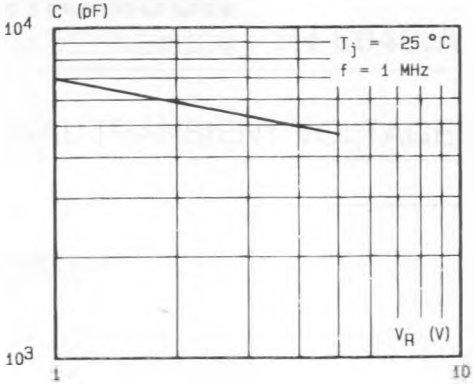

Fig.8 - Capacitance versus reverse applied voltage (typical values).

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