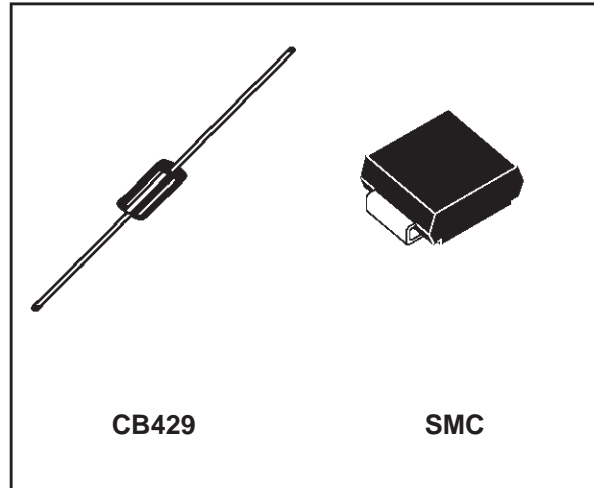


**FEATURES**

- UNIDIRECTIONAL TRANSIL DIODE
- PEAK PULSE POWER : 1500 W (10/100µs)
- REVERSE STAND OFF VOLTAGE : 5 V
- LOW CLAMPING FACTOR
- FAST RESPONSE TIME
- UL RECOGNIZED

**DESCRIPTION**

The 1N5908 and SM5908 are dedicated to the 5 V logic circuit protection (TTL and CMOS technologies). Their low clamping voltage at high current level guarantees excellent protection for sensitive components.



**ABSOLUTE MAXIMUM RATINGS** ( $T_{amb} = 25^{\circ}\text{C}$ ).

Symbol	Parameter		Value	Unit
P <sub>PP</sub>	Peak pulse power dissipation (see note1)	$T_j \text{ initial} = T_{amb}$	1500	W
P	Power dissipation on infinite heatsink	$T_{amb} = 75^{\circ}\text{C}$	5	W
I <sub>FSM</sub>	Non repetitive surge peak forward current for unidirectional types	$t_p = 10\text{ms}$ $T_j \text{ initial} = T_{amb}$	200	A
T <sub>stg</sub> T <sub>j</sub>	Storage temperature range Maximum junction temperature		- 65 to + 175 175	$^{\circ}\text{C}$ $^{\circ}\text{C}$
T <sub>L</sub>	Maximum lead temperature for soldering during 10s (at 5mm from case for CB429)	CB429 SMC	230 260	$^{\circ}\text{C}$ $^{\circ}\text{C}$

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

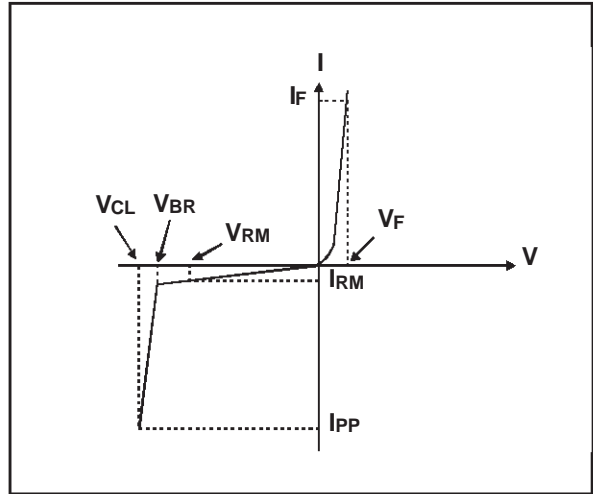
**THERMAL RESISTANCES**

Symbol	Parameter		Value	Unit	
R <sub>th (j-l)</sub>	Junction to leads		20	$^{\circ}\text{C/W}$	
R <sub>th (j-a)</sub>	Junction to ambient on printed circuit.	L lead = 10 mm	CB429	75	$^{\circ}\text{C/W}$
		On recommended pad layout	SMC	75	$^{\circ}\text{C/W}$

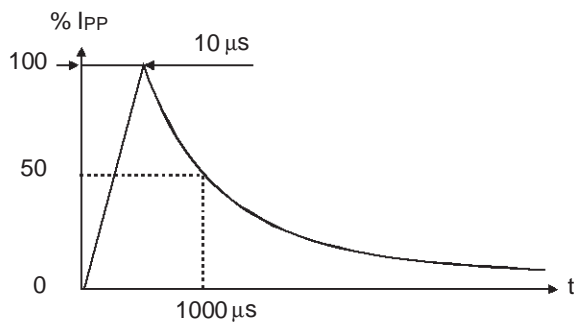
# 1N5908/SM5908

## ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25^{\circ}\text{C}$ )

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
$\alpha T$	Voltage temperature coefficient
$V_F$	Forward voltage



Types	$I_{RM}$ @ $V_{RM}$		$V_{BR}$ @ $I_R$		$V_{CL}$ @ $I_{PP}$		$V_{CL}$ @ $I_{PP}$		$V_{CL}$ @ $I_{PP}$		$\alpha T$	<b>C</b>
	max		min	note2	max	10/1000 $\mu\text{s}$	max	10/1000 $\mu\text{s}$	max	10/1000 $\mu\text{s}$	max	note4
	$\mu\text{A}$	V	V	mA	V	A	V	A	V	A	$10^{-4}/^{\circ}\text{C}$	pF
1N5908 SM5908	300	5	6	1	7.6	30	8	60	8.5	120	5.7	9500



**Note 2:** Pulse test :  $t_p < 50\text{ms}$

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

**Note 4:**  $V_R = 0\text{V}$ ,  $F = 1\text{MHz}$

**Fig. 1:** Peak pulse power dissipation versus initial junction temperature (printed circuit board).

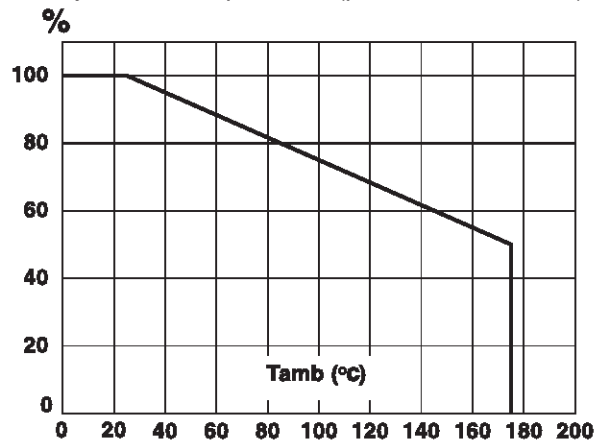


Fig. 2 : Peak pulse power versus exponential pulse duration.

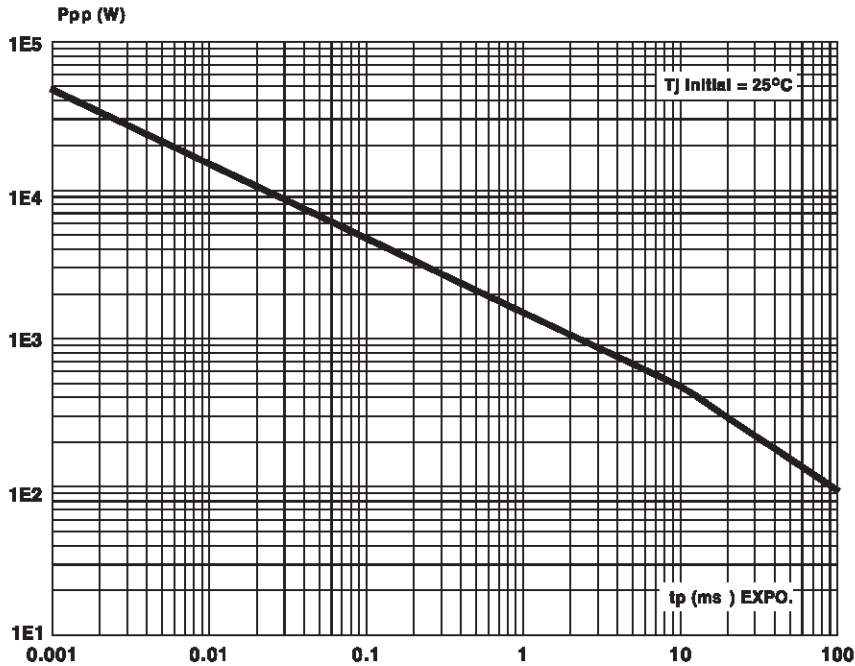
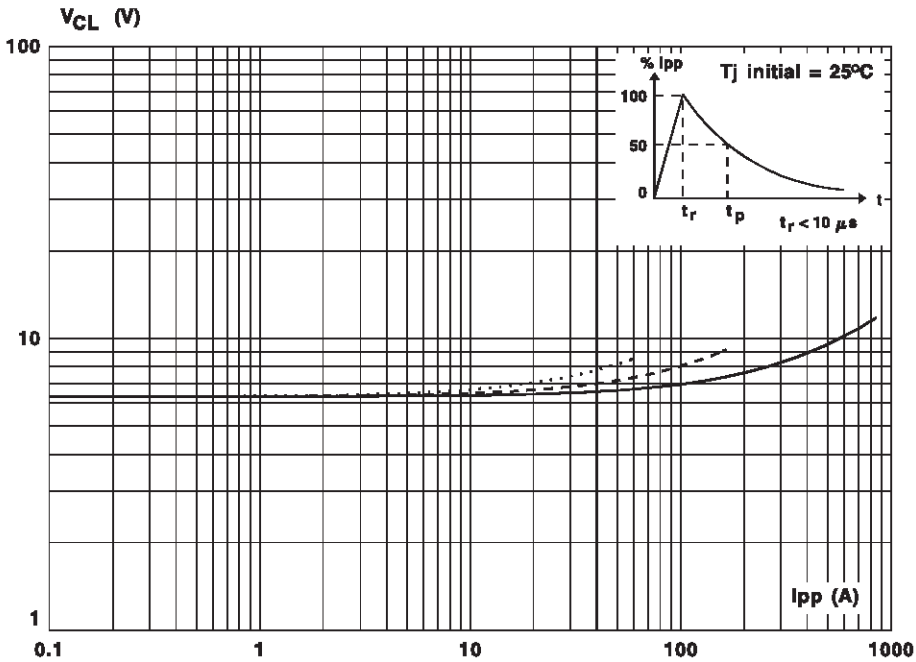


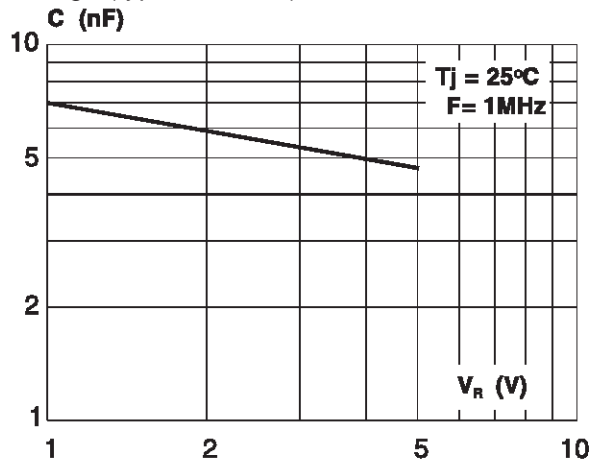
Fig. 3 : Clamping voltage versus peak pulse current.  
 Exponential waveform  $t_p = 10\text{ ms}$ .....  
 $t_p = 1\text{ ms}$ -----  
 $t_p = 20\ \mu\text{s}$ .....



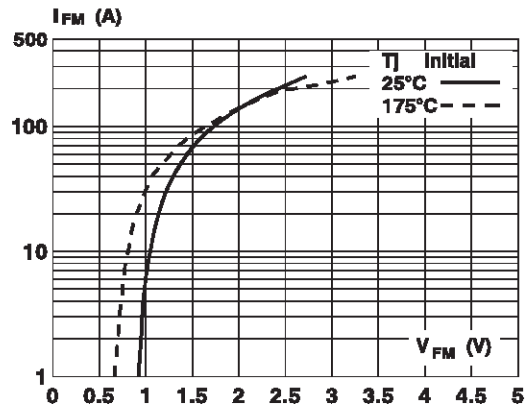
**Note :** The curves of the figure 3 are specified for a junction temperature of 25 °C before surge.  
 The given results may be extrapolated for other junction temperatures by using the following formula :  
 $\Delta V_{BR} = \alpha T (T_{amb} - 25) * V_{BR} (25^\circ\text{C})$ .

**1N5908/SM5908**

**Fig. 4 :** Capacitance versus reverse applied voltage (typical values).

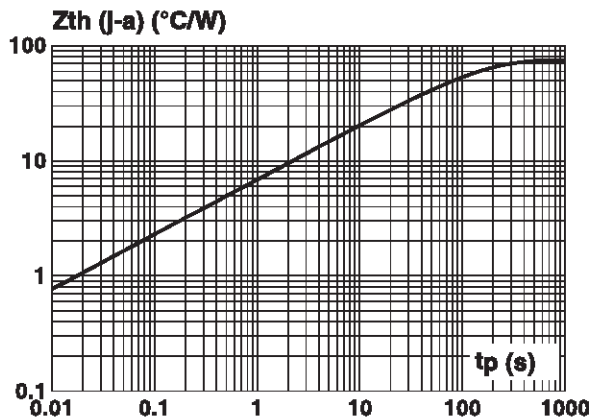


**Fig. 5 :** Peak forward voltage drop versus peak forward current.

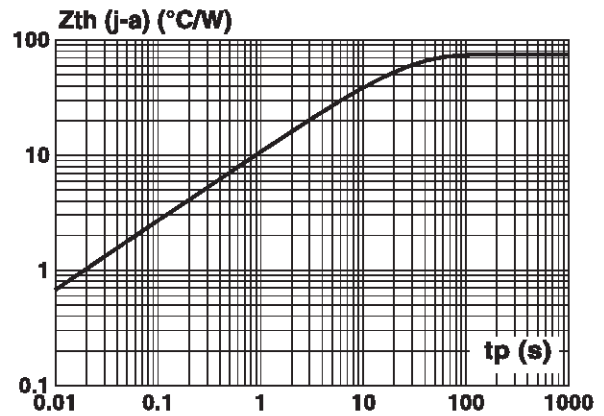


**Fig. 6a/6b :** Transient thermal impedance junction-ambient versus pulse duration.

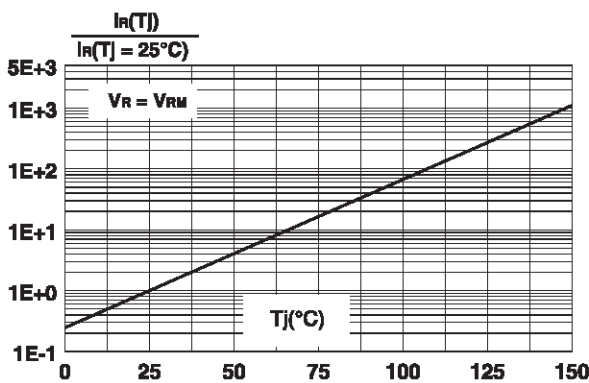
**Fig. 6a :** CB429 Package.  
(For FR4 PC Board with  $L_{lead} = 10$  mm)



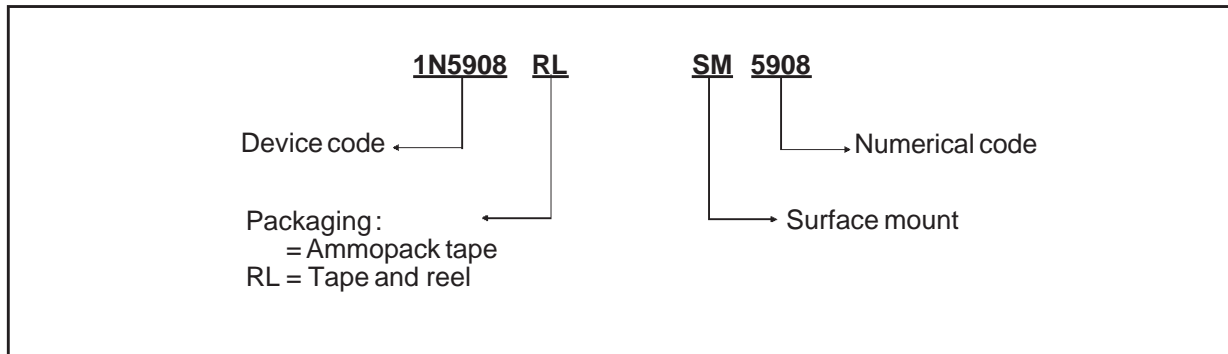
**Fig. 6b :** SMC Package.  
Mounting on FR4 PC Board with recommended pad layout.



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



**ORDER CODE**



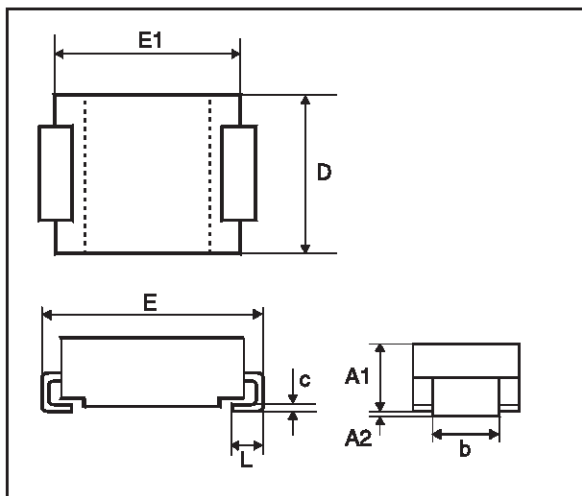
**MARKING** : Logo, type code and cathode band

Package	Type	Marking
SMC	SM5908	MDC
CB429	1N5908	1N5908

A white band indicates the cathode

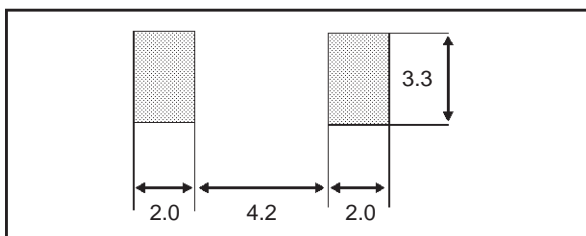
**PACKAGE MECHANICAL DATA**

**SMC** (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A1	2.40	2.70	3.00	0.094	0.106	0.118
A2	0.05		0.20	0.002		0.008
b	2.90		3.10	0.114		0.122
c	0.29		0.32	0.011		0.013
E1	6.30	6.40	6.60	0.248	0.252	0.260
D	4.80	5.00	5.20	0.189	0.197	0.205
E	7.60	7.80	8.00	0.299	0.307	0.315
L	1.30		1.70	0.051		0.067

**FOOT PRINT** (in millimeters)



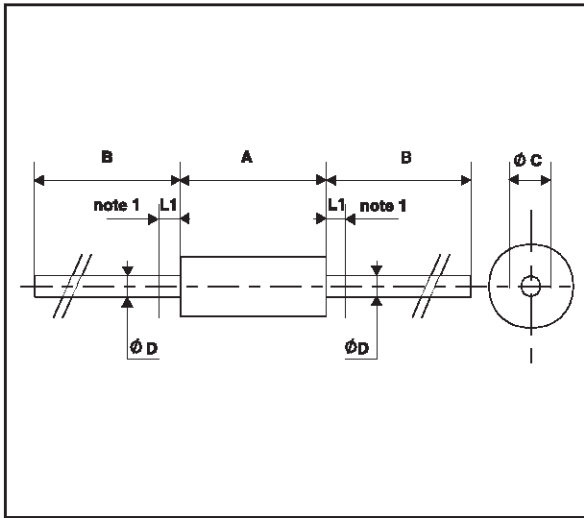
**Packaging** : Standard packaging is in tape and reel.

**Weight** = 0.25 g.

# 1N5908/SM5908

## PACKAGE MECHANICAL DATA

CB429 (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.45	9.50	9.80	0.372	0.374	0.386
B	26			1.024		
Ø C	4.90	5.00	5.10	0.193	0.197	0.201
Ø D	0.94	1.00	1.06	0.037	0.039	0.042
L1			1.27			0.050
Note : The lead is not controlled within zone L <sub>1</sub>						

**Packaging :** Standard packaging is in tape and reel.

**Weight = 0.85 g.**

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