SGS-THOMSON MICROELECTRONICS

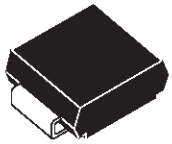
1N5908
SM5908

TRANSIL™

FEATURES

- UNIDIRECTIONAL TRANSIL DIODE
- PEAK PULSE POWER : 1500 W (10/1000µs)
- REVERSE STAND OFF VOLTAGE : 5 V
- LOW CLAMPING FACTOR
- FAST RESPONSE TIME
- UL RECOGNIZED

CB429



SMC

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°C).

Symbol	Parameter		Value	Unit
P_{PP}	Peak pulse power dissipation (see note1)	Tj initial = T_{amb}	1500	W
P	Power dissipation on infinite heatsink	T_{amb} = 75°C	5	W
I_{FSM}	Non repetitive surge peak forward current for unidirectional types	t_p = 10ms T_j initial = T_{amb}	200	A
T_{stg} Tj	Storage temperature range Maximum junction temperature		- 65 to + 175 175	°C °C
T_L	Maximum lead temperature for soldering during 10s (at 5mm from case for CB429)	CB429 SMC	230 260	°C °C

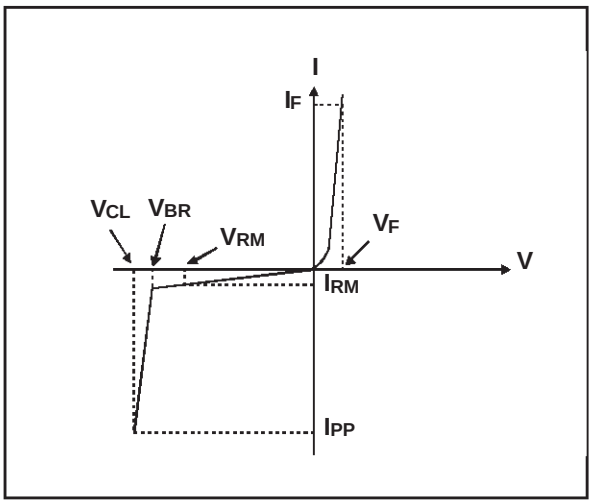
Note 1 : For a surge greater than the maximum values, the diode will fail in short-circuit.

THERMAL RESISTANCES

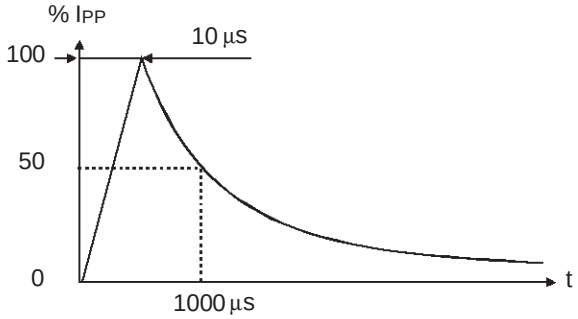
Symbol	Parameter			Value	Unit
$R_{th\ (j-l)}$	Junction to leads			20	°C/W
$R_{th\ (j-a)}$	Junction to ambient on printed circuit.	L lead = 10 mm	CB429	75	°C/W
		On recommended pad layout	SMC	75	°C/W

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



Types	I_{RM} @ V_{RM} max		V_{BR} @ I_R min note2		V_{CL} @ I_{PP} max 10/1000µs		V_{CL} @ I_{PP} max 10/1000µs		V_{CL} @ I_{PP} max 10/1000µs		αT max note3	C typ note4
	µA	V	V	mA	V	A	V	A	V	A	10^{-4}/°C	pF
1N5908 SM5908	300	5	6	1	7.6	30	8	60	8.5	120	5.7	9500



Note 2 : Pulse test : tp < 50ms

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

Note 4 : V_R = 0V, F = 1 MHz

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

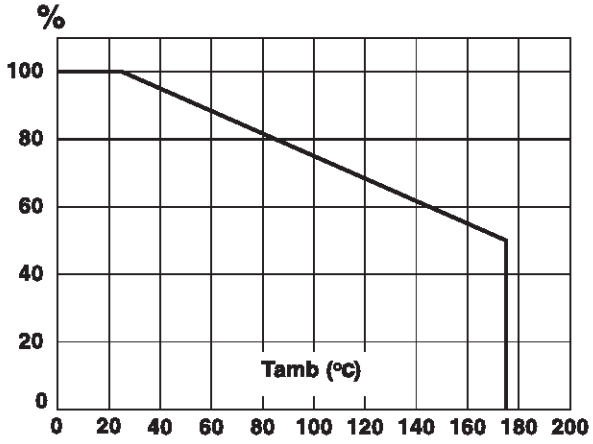


Fig. 2 : Peak pulse power versus exponential pulse duration.

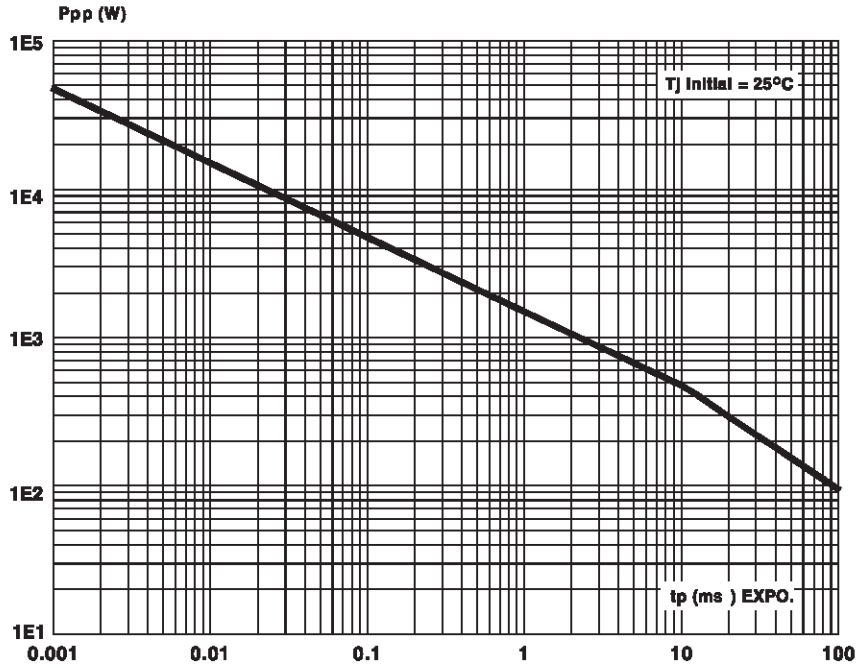
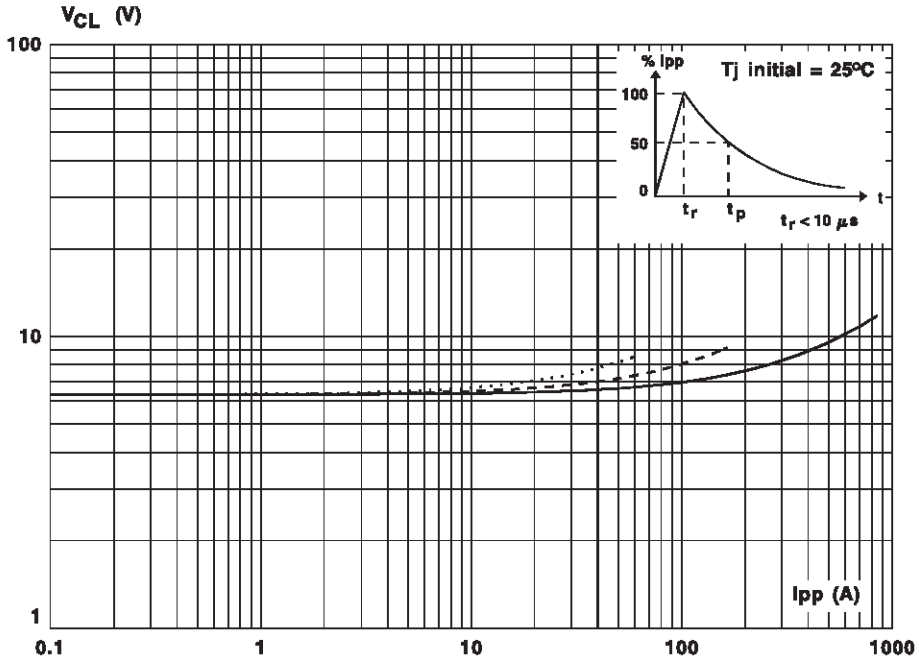


Fig. 3 : Clamping voltage versus peak pulse current.
Exponential waveform t_p = 10 ms.....
t_p = 1 ms----------
t_p = 20 µs_____



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).

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

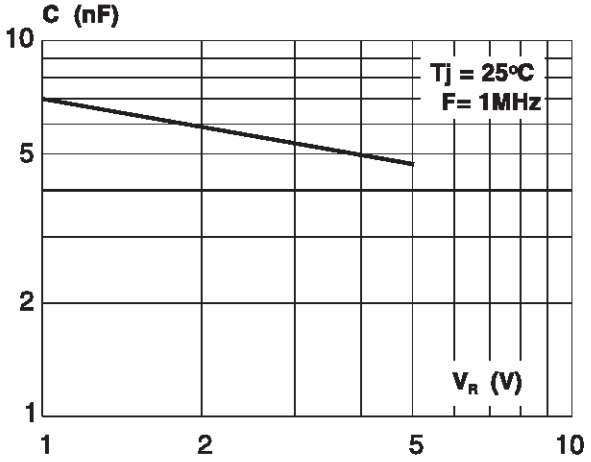


Fig. 5 : Peak forward voltage drop versus peak forward current.

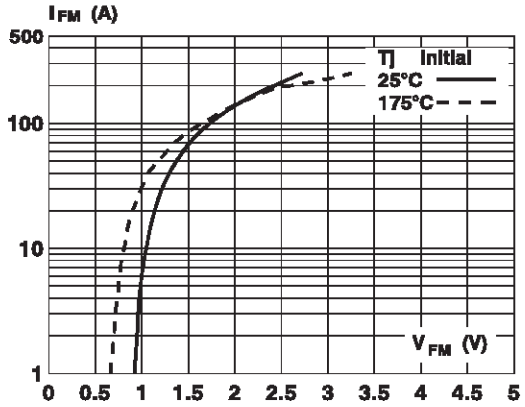


Fig. 6a/6b : Transient thermal impedance junction-ambient versus pulse duration.

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

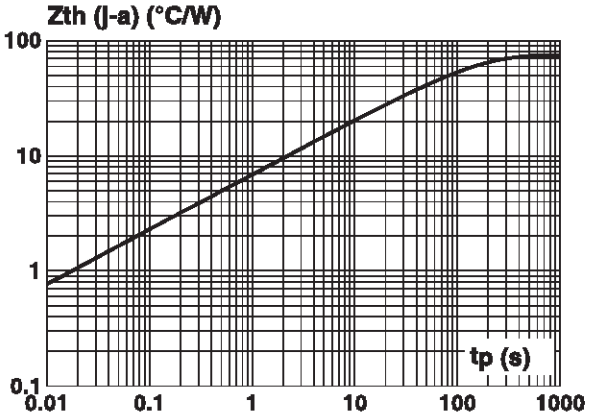


Fig. 6b : SMC Package.
Mounting on FR4 PC Board with recommended pad layout.

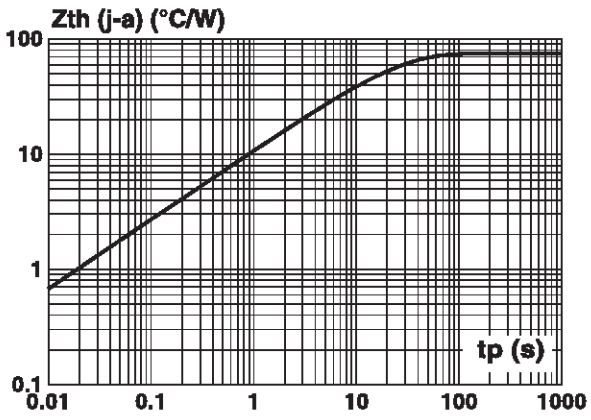
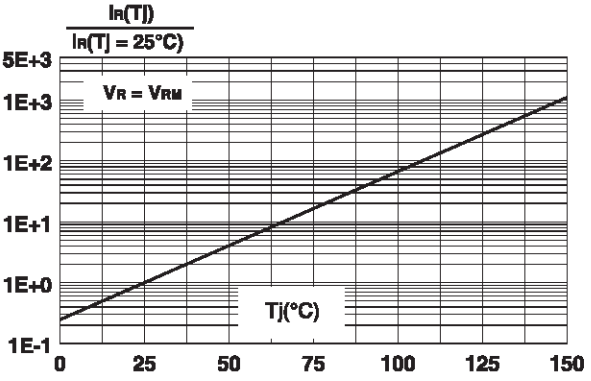
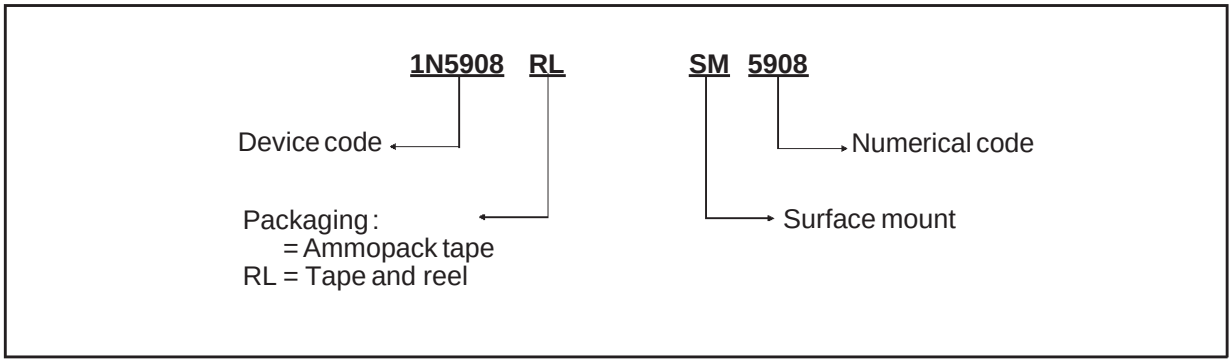


Fig. 7 : Relative variation of leakage current versus junction temperature.



ORDER CODE

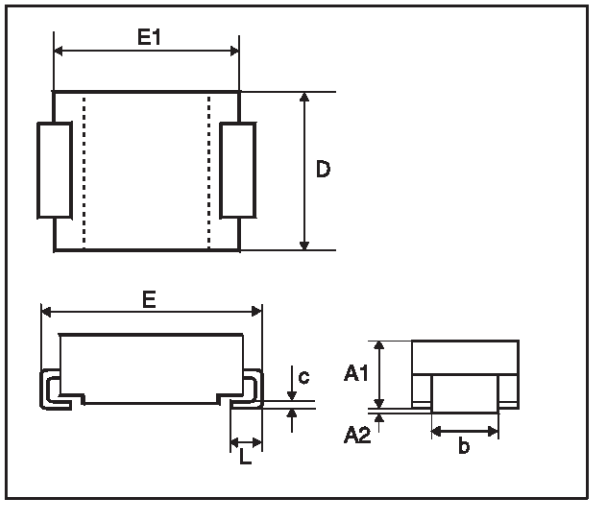


MARKING : Logo, type code and cathode band

Package	Type	Marking
SMC	SM5908	MDC
CB429	1N5908	1N5908
A white band indicates the cathode		

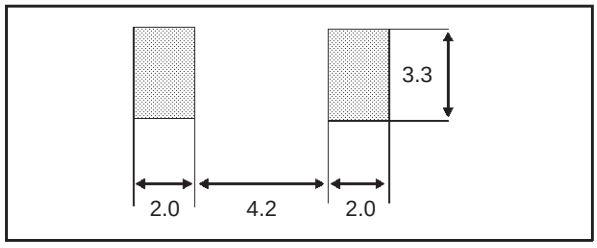
PACKAGE MECHANICAL DATA

SMC (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A1	2.40	2.70	3.00	0.094	0106	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)

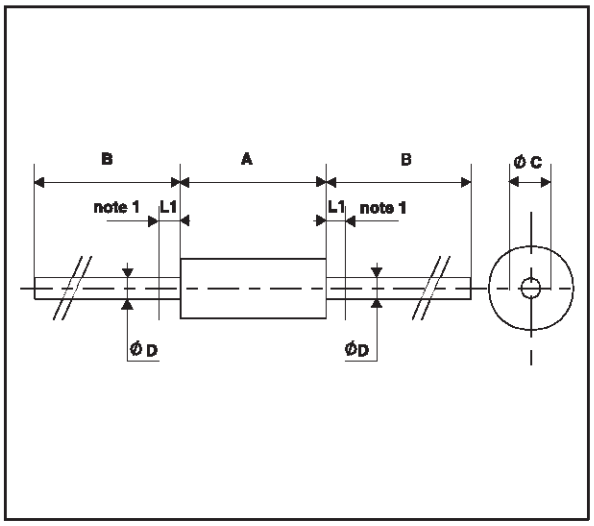


Packaging : Standard packaging is in tape and reel.

Weight = 0.25 g.

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		
∅ C	4.90	5.00	5.10	0.193	0.197	0.201
∅ 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_1						

Packaging : Standard packaging is in tape and reel.

Weight = 0.85 g.