



1N5908 SM5908

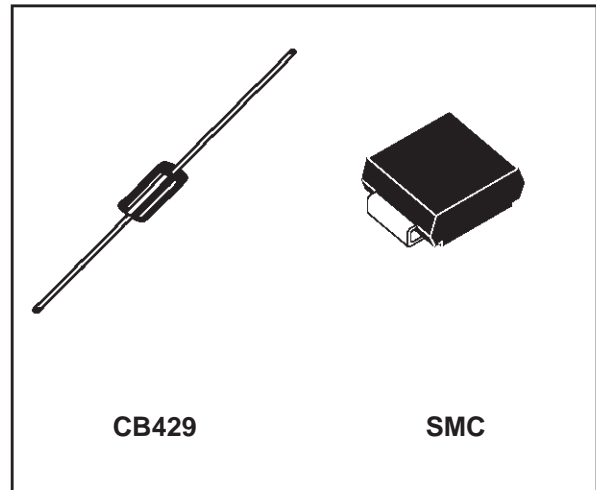
TRANSIL™

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 _{PP} | 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 _{FSM} | Non repetitive surge peak forward current for unidirectional types | $t_p = 10\text{ms}$ $T_j \text{ initial} = T_{amb}$ | 200 | A |
| T _{stg} T _j | Storage temperature range Maximum junction temperature | | - 65 to + 175 175 | $^{\circ}\text{C}$ $^{\circ}\text{C}$ |
| T _L | Maximum lead temperature for soldering during 10s (at 5mm from case for CB429) | CB429 SMC | 230 260 | $^{\circ}\text{C}$ $^{\circ}\text{C}$ |

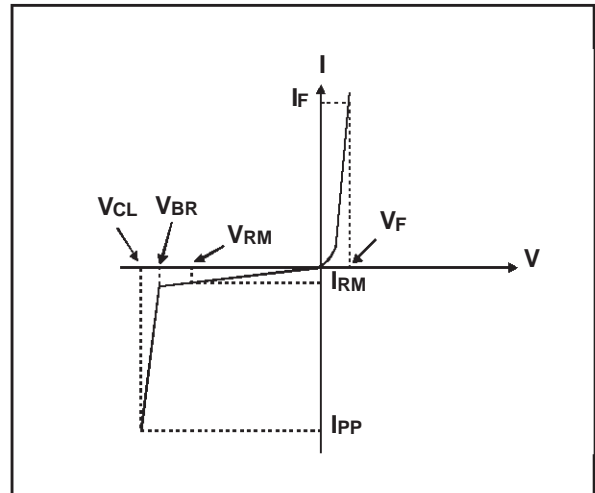
Note 1 : For a surge greater than the maximum values, the diode will fail in short-circuit.

THERMAL RESISTANCES

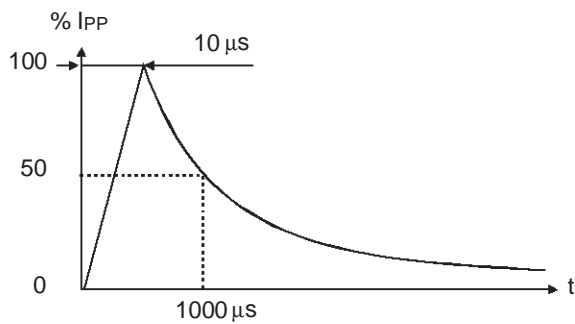
| Symbol | Parameter | | Value | Unit | |
|----------------------|---|---------------------------|-------|----------------------|----------------------|
| R _{th(j-l)} | Junction to leads | | 20 | $^{\circ}\text{C/W}$ | |
| R _{th(j-a)} | Junction to ambient on printed circuit. | L lead = 10 mm | CB429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

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 |
| αT | 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} | | αT | C |
|------------------|---------------------|---|------------------|-------|---------------------|-----------------------|---------------------|-----------------------|---------------------|-----------------------|----------------------------|----------|
| | max | | min | note2 | max | 10/1000 μs | max | 10/1000 μs | max | 10/1000 μs | max | note4 |
| | μA | 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).

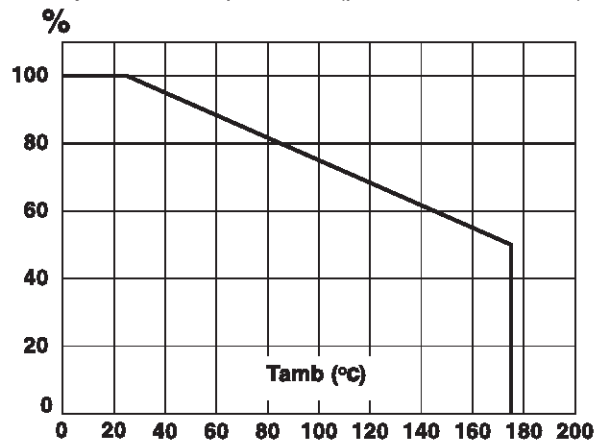


Fig. 2 : Peak pulse power versus exponential pulse duration.

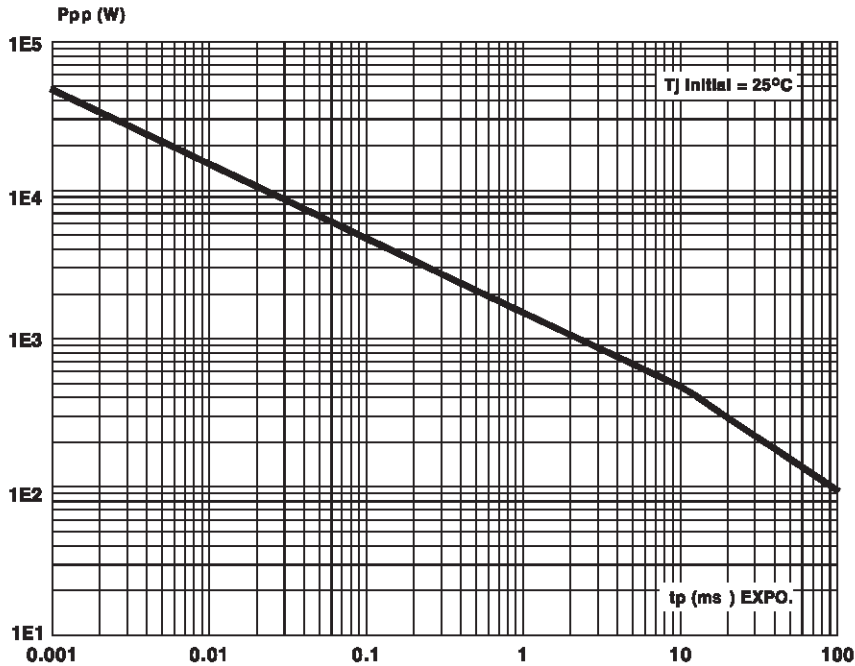
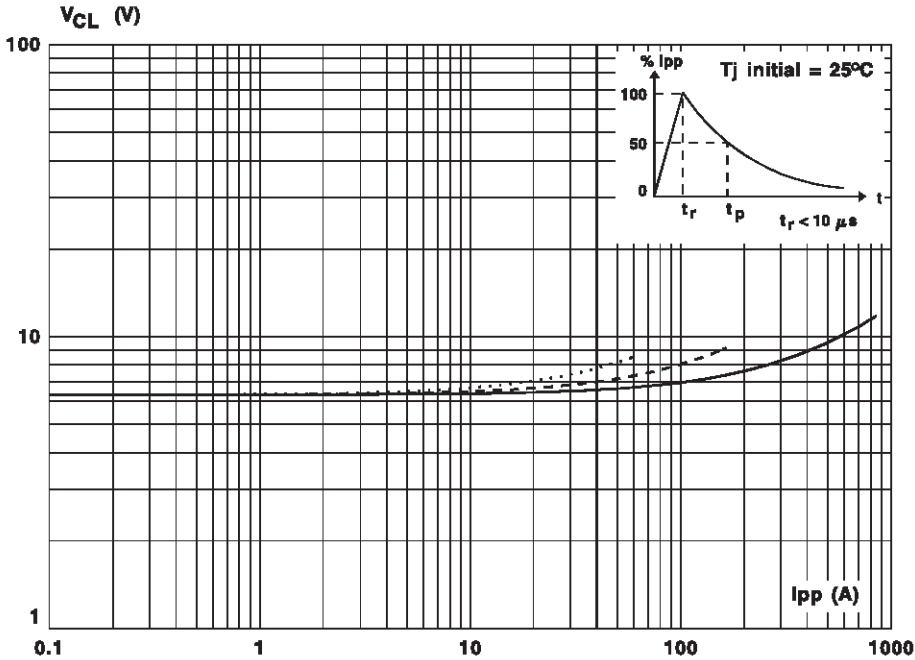


Fig. 3 : Clamping voltage versus peak pulse current.
 Exponential waveform $t_p = 10\text{ ms}$
 $t_p = 1\text{ ms}$ -----
 $t_p = 20\ \mu\text{s}$



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

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

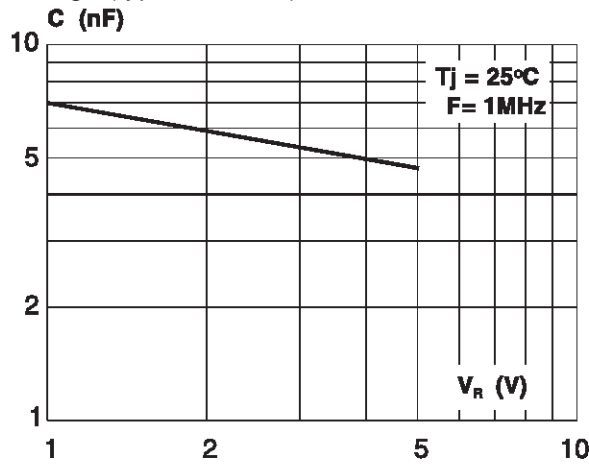


Fig. 5 : Peak forward voltage drop versus peak forward current.

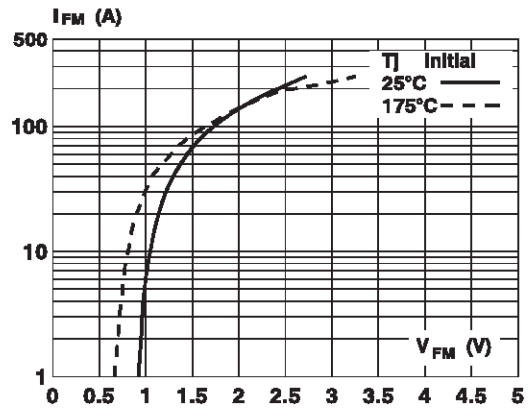


Fig. 6a/6b : Transient thermal impedance junction-ambient versus pulse duration.

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

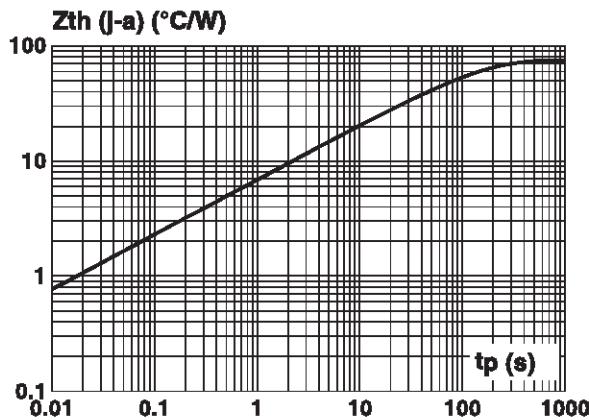


Fig. 6b : SMC Package.
Mounting on FR4 PC Board with recommended pad layout.

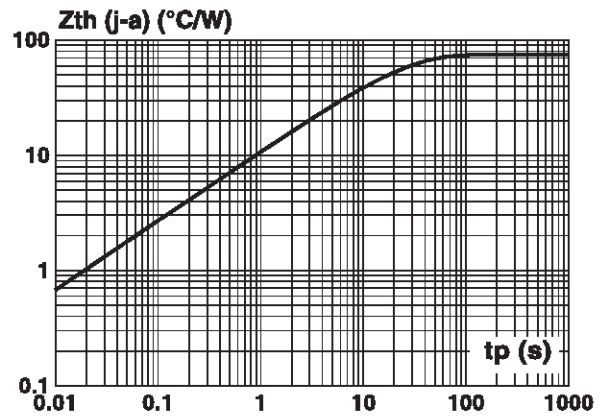
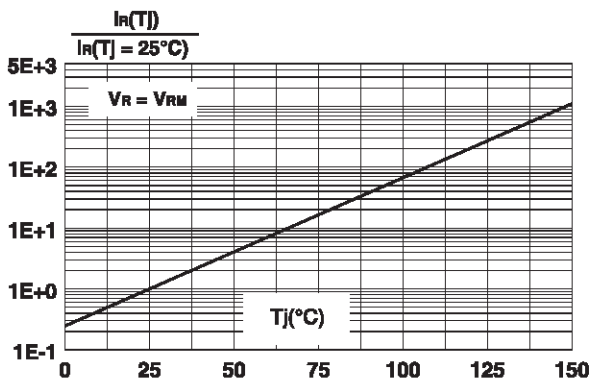
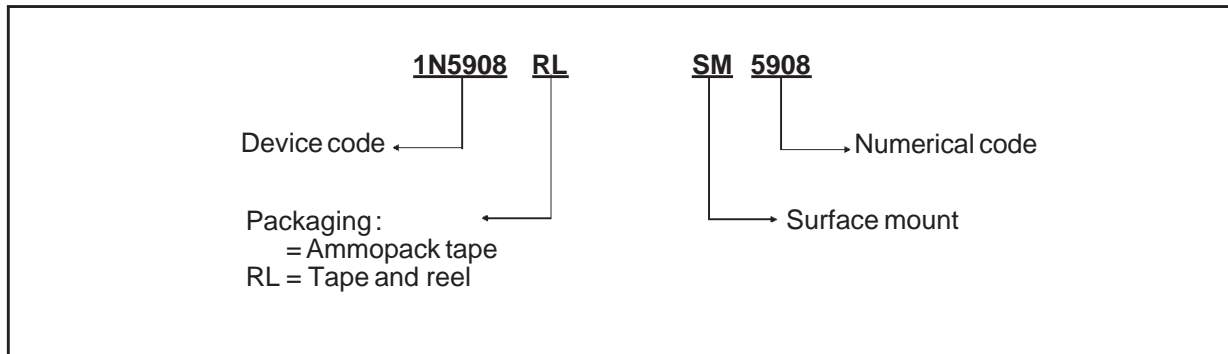


Fig. 7 : Relative variation of leakage current versus junction temperature.



ORDER CODE



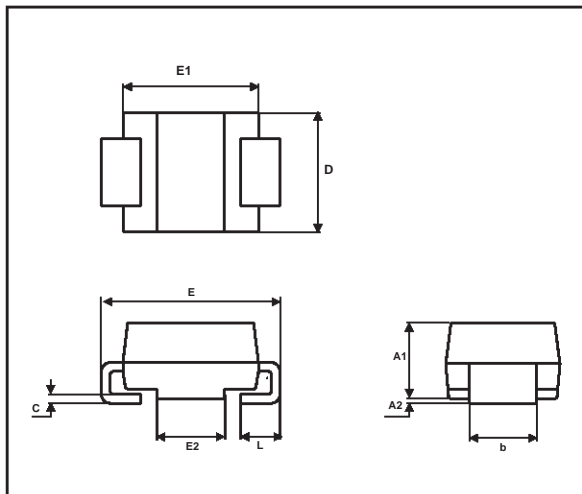
MARKING : Logo, type code and cathode band

| Package | Type | Marking |
|---------|--------|---------|
| SMC | SM5908 | MDC |
| CB429 | 1N5908 | 1N5908 |

A white band indicates the cathode

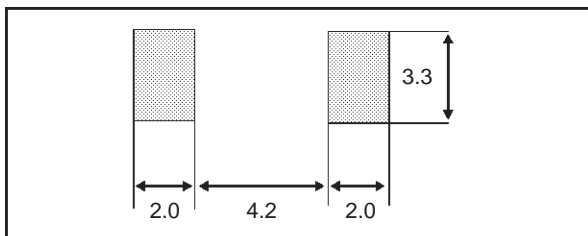
PACKAGE MECHANICAL DATA

SMC (Plastic)



| REF. | DIMENSIONS | | | |
|------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A1 | 1.90 | 2.45 | 0.075 | 0.096 |
| A2 | 0.05 | 0.20 | 0.002 | 0.008 |
| b | 2.90 | 3.2 | 0.114 | 0.126 |
| c | 0.15 | 0.41 | 0.006 | 0.016 |
| E | 7.75 | 8.15 | 0.305 | 0.321 |
| E1 | 6.60 | 7.15 | 0.260 | 0.281 |
| E2 | 4.40 | 4.70 | 0.173 | 0.185 |
| D | 5.55 | 6.25 | 0.218 | 0.246 |
| L | 0.75 | 1.60 | 0.030 | 0.063 |

FOOT PRINT (in millimeters)



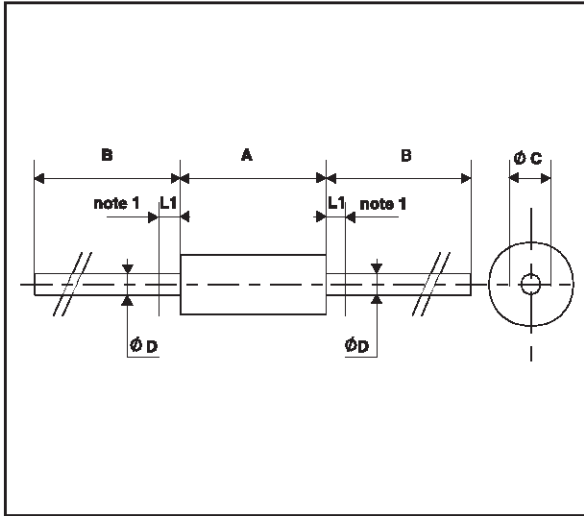
Packaging : Standard packaging is in tape and reel.

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 ₁ | | | | | | |

Packaging : Standard packaging is in tape and reel.

Weight = 0.85 g.

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