



## LDP24A

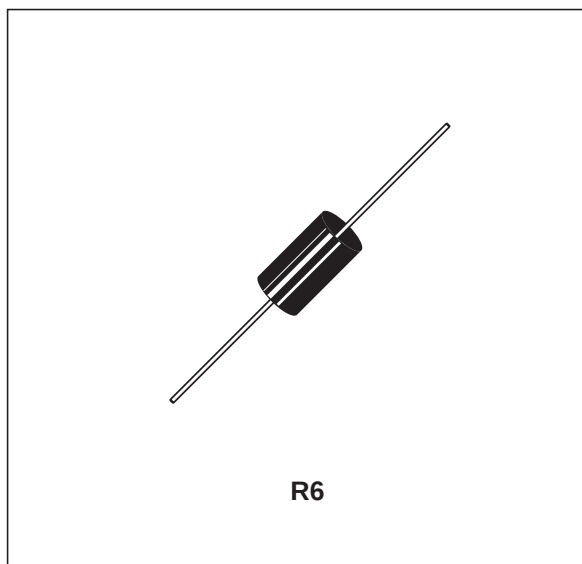
### TRANSIENT PROTECTION LOAD DUMP

#### FEATURES

- TRANSIENT VOLTAGE SUPPRESSOR DIODE ESPECIALLY DESIGNED FOR LOAD DUMP PROTECTION
- COMPLIANT WITH MAIN STANDARDS SUCH AS:  
ISO / DTR 7637

#### DESCRIPTION

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



#### ABSOLUTE RATINGS (limiting values)

| Symbol           | Parameter                                                                  |                                                         | Value         | Unit |
|------------------|----------------------------------------------------------------------------|---------------------------------------------------------|---------------|------|
| V <sub>PP</sub>  | Peak pulse load dump overvoltage<br>See note 1                             | T <sub>amb</sub> = 85°C                                 | 100           | V    |
| P                | Power dissipation on infinite heatsink                                     | T <sub>amb</sub> = 100°C                                | 5             | W    |
| I <sub>FSM</sub> | Non repetitive surge peak forward current.                                 | T <sub>j</sub> initial = 25°C<br>t <sub>p</sub> = 10 ms | 500           | A    |
| T <sub>stg</sub> | Storage temperature range.                                                 |                                                         | - 65 to + 175 | °C   |
| T <sub>j</sub>   | Maximum operating temperature                                              |                                                         | 175           | °C   |
| T <sub>L</sub>   | Maximum lead temperature for soldering<br>during 10 sec at 4 mm from case. |                                                         | 230           | °C   |

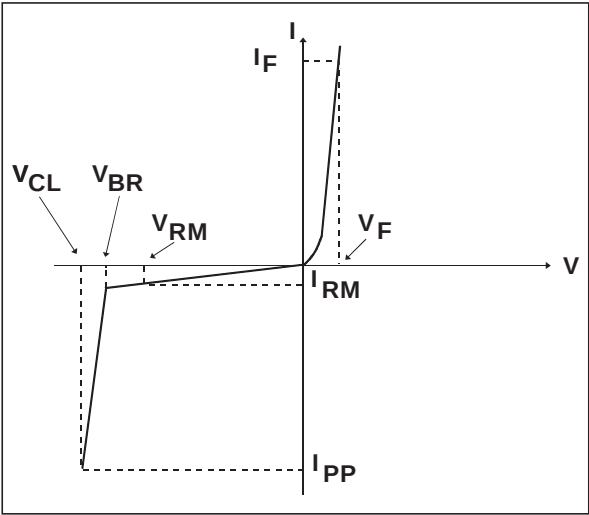
#### THERMAL RESISTANCES

| Symbol                | Parameter                                                                             | Value | Unit |
|-----------------------|---------------------------------------------------------------------------------------|-------|------|
| R <sub>th</sub> (j-a) | Junction ambient thermal resistance on infinite heatsink<br>L <sub>lead</sub> = 10 mm | 15    | °C/W |

**Note 1:** For surges greater than the maximum values, the diode will present a short-circuit Anode - Cathode.

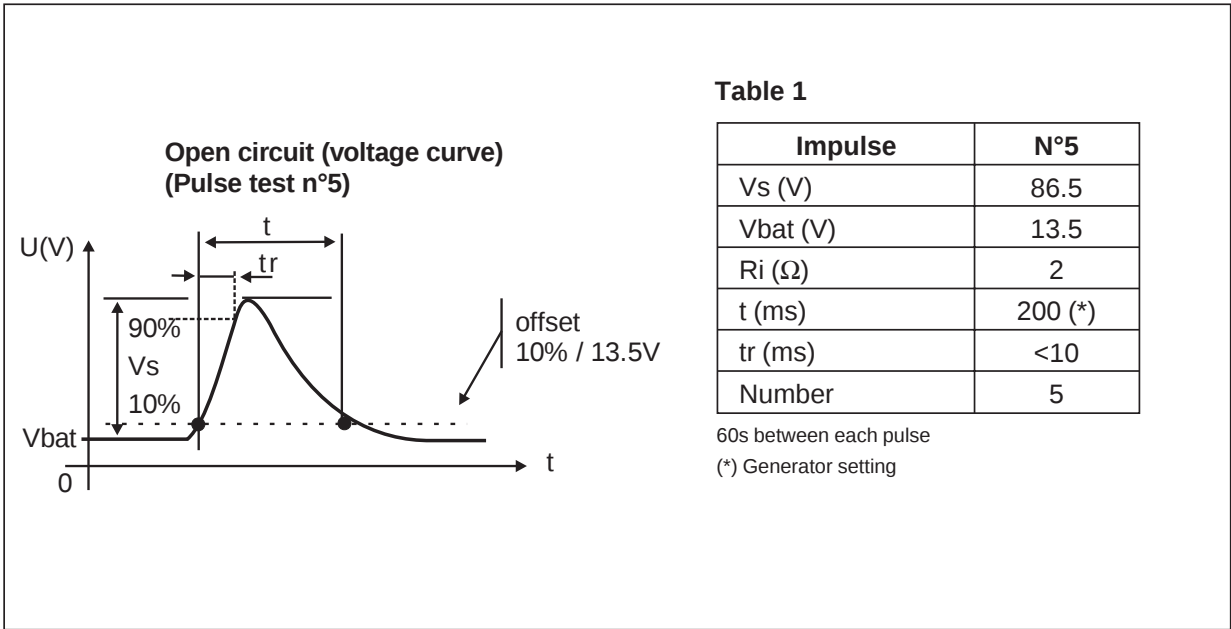
ELECTRICAL CHARACTERISTICS

| Symbol     | Parameter                             |
|------------|---------------------------------------|
| $V_{RM}$   | Stand-off voltage.                    |
| $V_{BR}$   | Breakdown voltage.                    |
| $V_{CL}$   | Clamping voltage.                     |
| $I_{PP}$   | Peak pulse current.                   |
| $\alpha T$ | Temperature coefficient of $V_{BR}$ . |
| C          | Capacitance                           |
| $I_{RM}$   | Leakage current at $V_{RM}$           |
| $V_F$      | Peak forward voltage drop             |

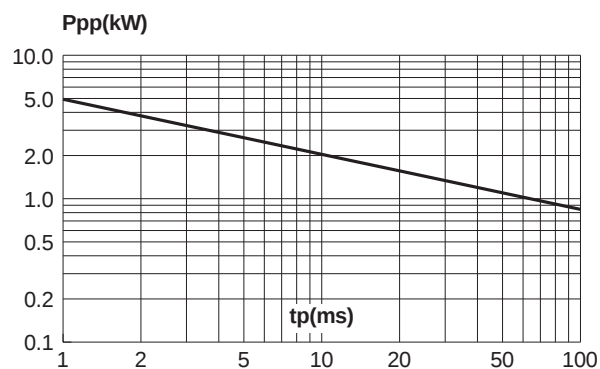


| Symbol     | Test Conditions                                          |                                                  | Min. | Typ. | Max.      | Unit                           |
|------------|----------------------------------------------------------|--------------------------------------------------|------|------|-----------|--------------------------------|
| $I_{PP}$   | Pulse duration: 40ms                                     |                                                  | 30   |      |           | A                              |
| $I_{RM}$   | $T_j = 25^{\circ}\text{C}$<br>$T_j = 85^{\circ}\text{C}$ | $V_{RM} = 24\text{ V}$<br>$V_{RM} = 24\text{ V}$ |      |      | 50<br>300 | $\mu\text{A}$<br>$\mu\text{A}$ |
| $V_{BR}$   | $T_j = 25^{\circ}\text{C}$                               | $I_R = 1\text{mA}$                               | 25   |      | 32        | V                              |
| $V_{CL}$   | $T_j = 85^{\circ}\text{C}$                               | see table1                                       |      |      | 40        | V                              |
| $\alpha T$ |                                                          |                                                  |      |      | 10        | $10^{-4}/^{\circ}\text{C}$     |
| C          | F = 1MHz                                                 | $V_R = 0\text{V}$                                |      | 8000 |           | pF                             |
| $V_F$      | $I_{FM} = 10\text{A}$                                    |                                                  |      | 0.9  |           | V                              |

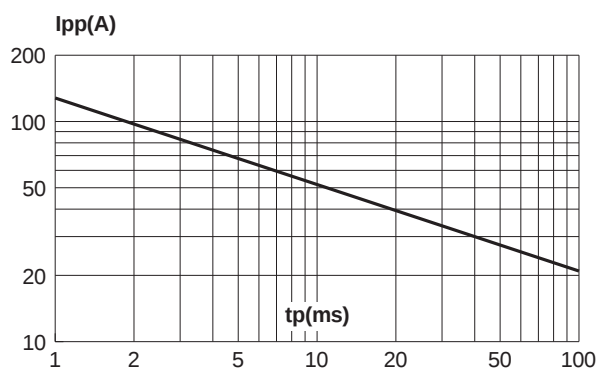
LOAD DUMP TEST GENERATOR CIRCUIT (SCHAFFNER NSG 506 C). Issued from ISO / DTR 7637.



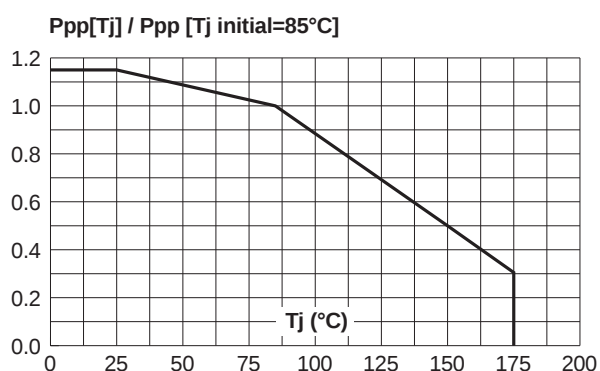
**Fig. 1:** Peak pulse power versus exponential pulse duration ( $T_J$  initial=85°C).



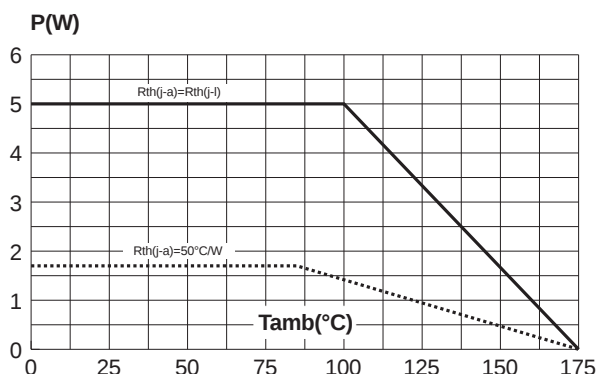
**Fig. 2 :** Peak pulse current versus exponential pulse duration ( $T_J$  initial=85°C).



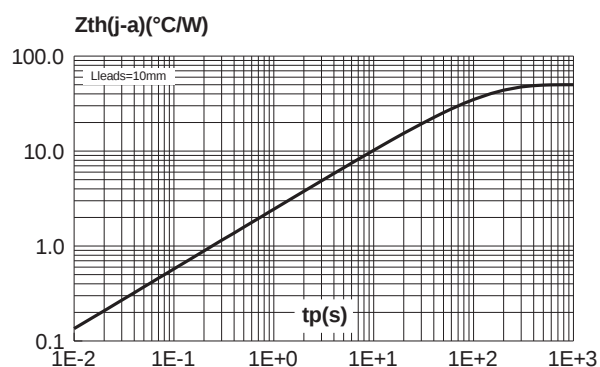
**Fig. 3:** Relative variation of peak pulse power versus junction temperature.



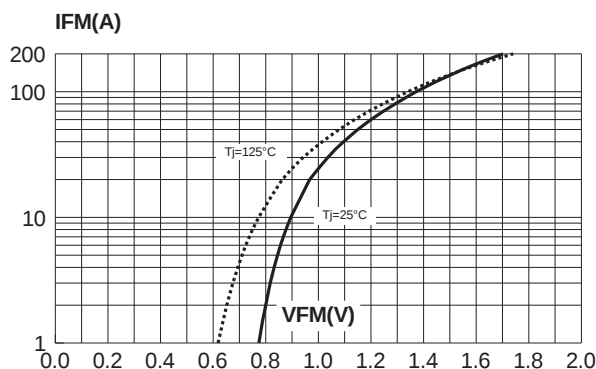
**Fig. 4:** Continuous power dissipation versus ambient temperature.



**Fig. 5:** Variation of thermal impedance junction to ambient versus pulse duration (printed circuit board FR4,  $e(\text{Cu})=35\mu\text{m}$ ,  $\text{SCu}=1\text{cm}^2$ ).

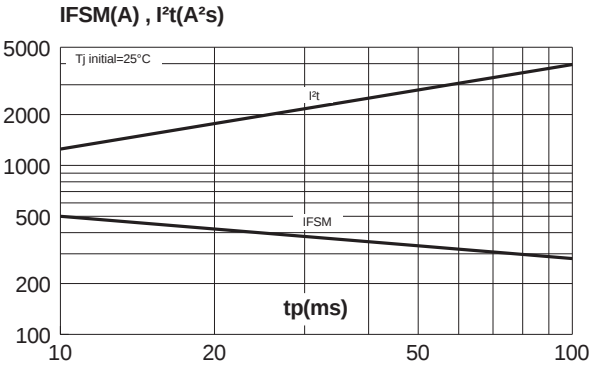


**Fig. 6 :** Peak forward voltage drop versus peak forward current (typical values).

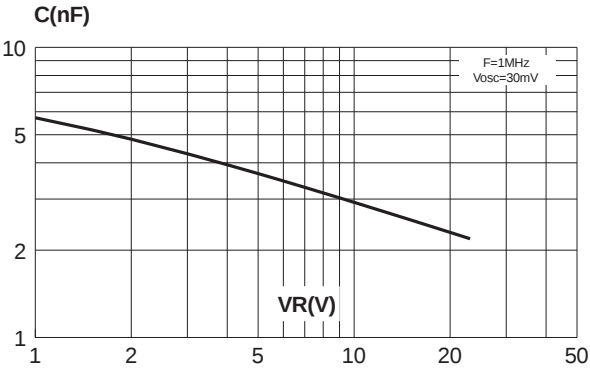


**LDP24A**

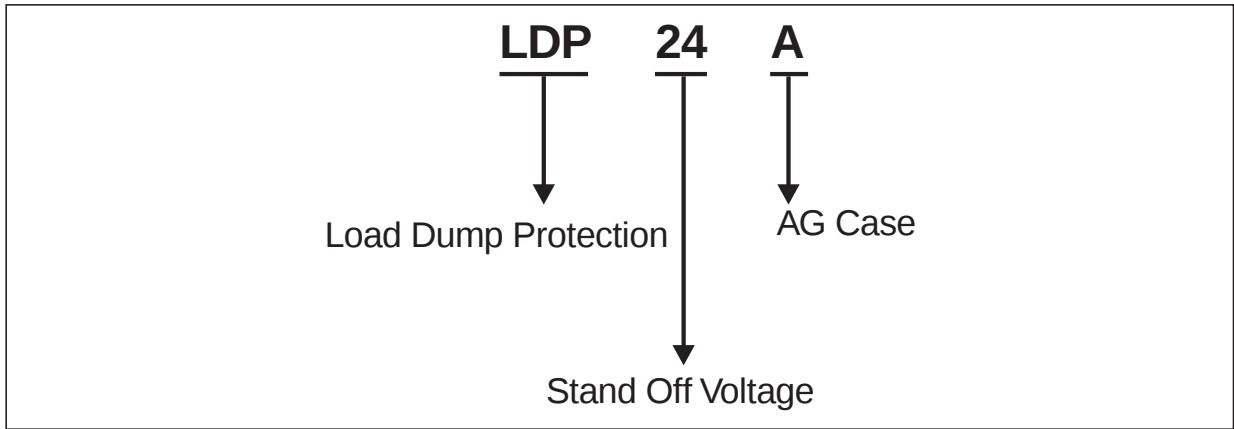
**Fig. 7:** Non repetitive surge peak forward current versus sinusoidal pulse duration and corresponding value of  $I^2t$ .



**Fig. 8:** Junction capacitance versus reverse applied voltage.

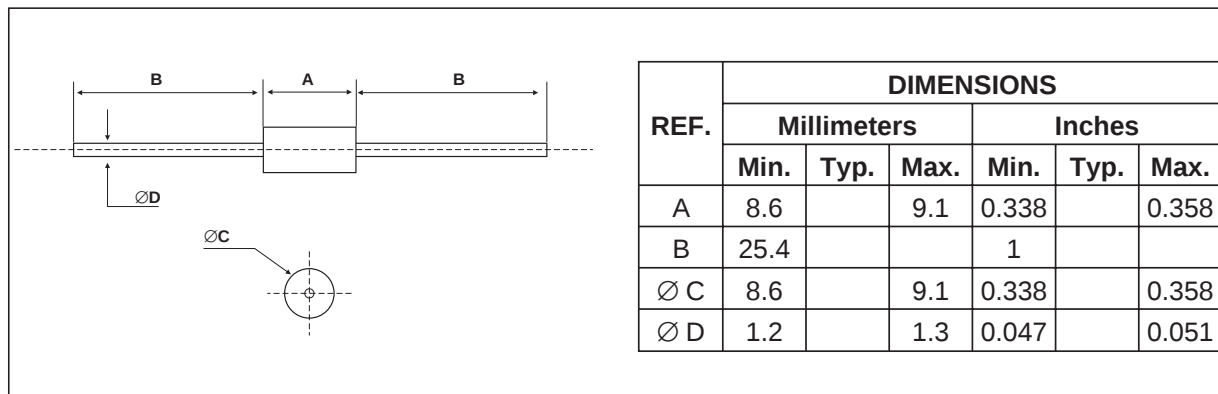


**ORDER CODE**



**PACKAGE MECHANICAL DATA**

R6 (Plastic)



| Type     | Marking | Package | Weight  | Base qty | Delivery mode |
|----------|---------|---------|---------|----------|---------------|
| LDP24A   | LDP24A  | R6      | 2.048 g | 100      | Ammopack      |
| LDP24ARL | LDP24A  | R6      | 2.048 g | 1000     | Tape & Reel   |

- Resin meets UL94-V0

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