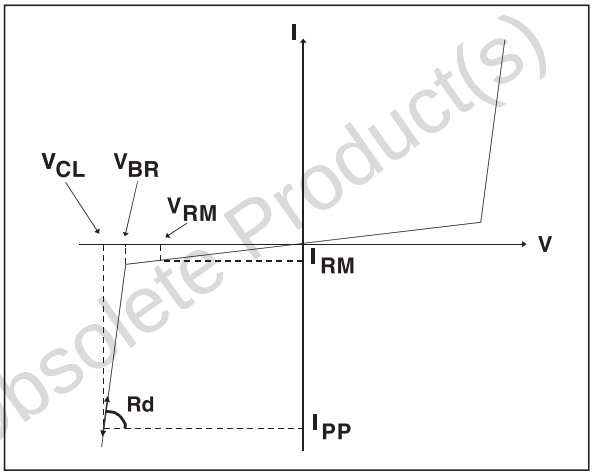
**ABSOLUTE MAXIMUM RATINGS** ($T_{amb}$ = 25°C)

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{PP}$ | Electrostatic discharge<br>MIL STD 883C - Method 3015-6 | 25 | kV |
| $P_{PP}$ | Peak pulse power (8/20µs) | 500 | W |
| $T_{stg}$<br>$T_j$ | Storage temperature range<br>Maximum junction temperature | - 55 to + 150<br>125 | °C<br>°C |
| $T_L$ | Maximum lead temperature for soldering during 10s | 260 | °C |

**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 |
| $I_{PP}$ | Peak pulse current |
| $\alpha T$ | Voltage temperature coefficient |
| C | Capacitance |




| Types | $V_{BR}$ @ $I_R$ | | | $I_{RM}$ @ $V_{RM}$ | | Rd | αT | C |
|---|---|---|---|---|---|---|---|---|
| | min.<br>note1 | max. | | max.<br>note1 | | typ.<br>note 2 | max.<br>note 3 | typ.<br>0V bias |
| | V | V | mA | µA | V | Ω | $10^{-4}$/°C | pF |
| ESDA25DB3 | 25 | 30 | 1 | 2 | 24 | 0.5 | 9.7 | 50 |

**note 1** : Betwenn any I/O pin Groung
**note 2** : Square pulse, Ipp = 25A, tp=2.5µs.
**note 3** : $\Delta V_{BR} = \alpha T^* (Tamb -25°C) * V_{BR} (25°C)$

## CALCULATION OF THE CLAMPING VOLTAGE

### USE OF THE DYNAMIC RESISTANCE

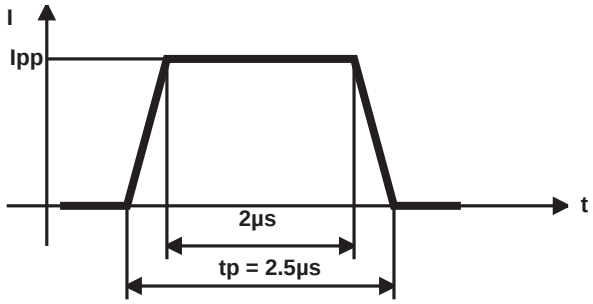
The ESDA family has been designed to clamp fast spikes like ESD. Generally the PCB designers need to calculate easily the clamping voltage $V_{CL}$. This is why we give the dynamic resistance in addition to the classical parameters. The voltage across the protection cell can be calculated with the following formula:

$$V_{CL} = V_{BR} + Rd\ I_{PP}$$

Where Ipp is the peak current through the ESDA cell.

### DYNAMIC RESISTANCE MEASUREMENT

The short duration of the ESD has led us to prefer a more adapted test wave, as below defined, to the classical 8/20µs and 10/1000µs surges.




2.5µs duration measurement wave.

As the value of the dynamic resistance remains stable for a surge duration lower than 20µs, the 2.5µs rectangular surge is well adapted. In addition both rise and fall times are optimized to avoid any parasitic phenomenon during the measurement of Rd.

**Fig. 1 :** Peak power dissipation versus initial junction tempearature.

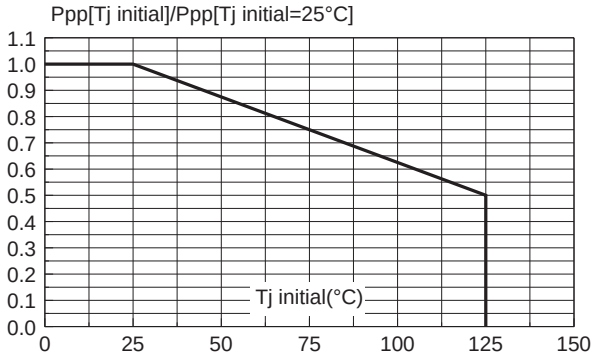



**Fig. 2 :** Peak pulse power versus exponential pulse duration (Tj initial = 25 °C).

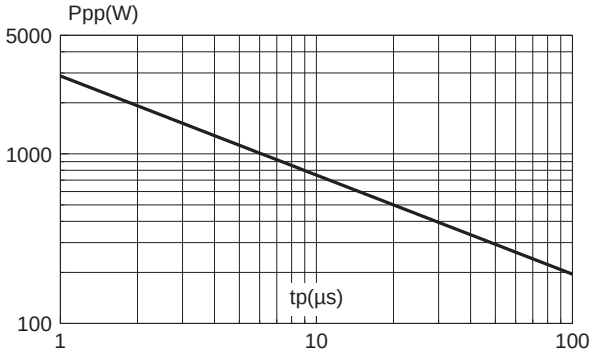



**Fig. 3 :** Clamping voltage versus peak pulse current (Tj initial = 25 °C).

Rectangular waveform tp = 2.5 µs.

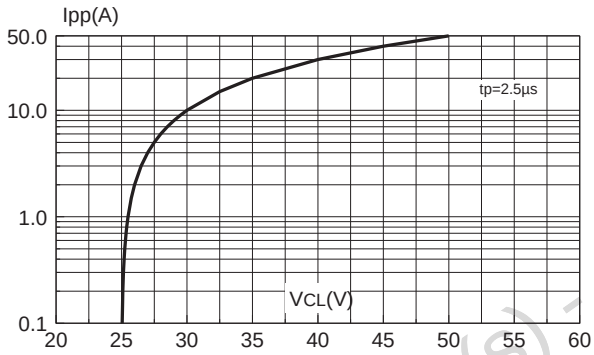



**Fig. 4 :** Capacitance versus reverse applied voltage (typical values).

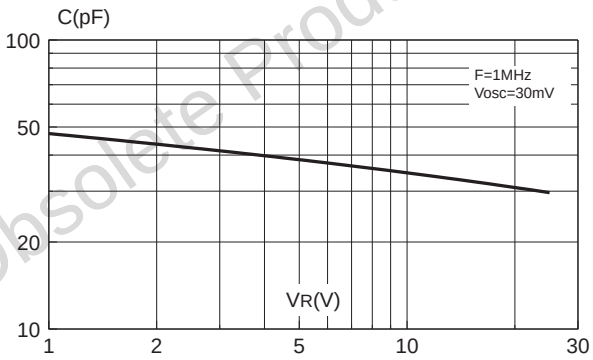
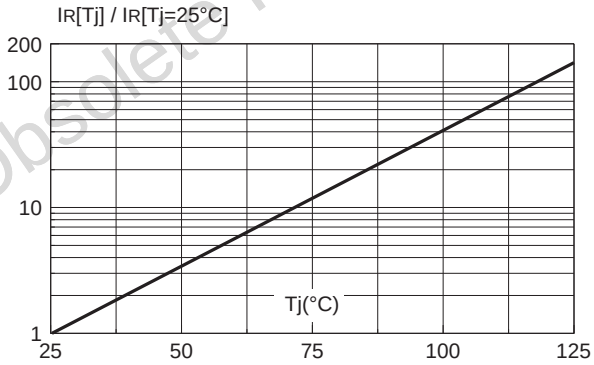
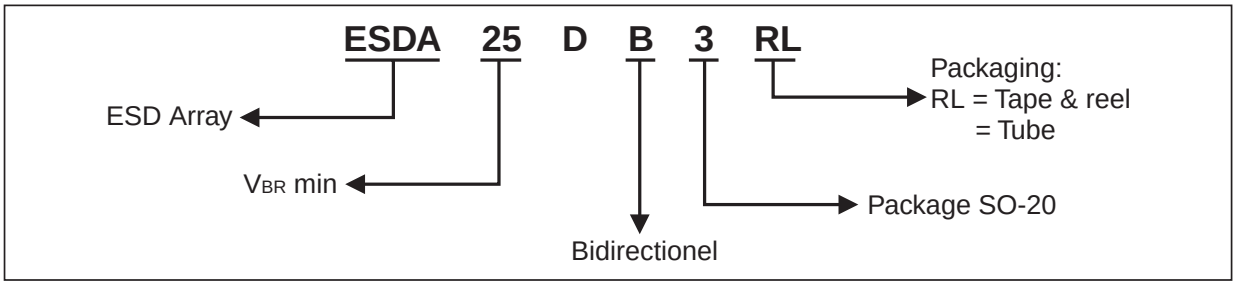



**Fig. 5** : Relative variation of leakage current versus junction temperature (typical values).

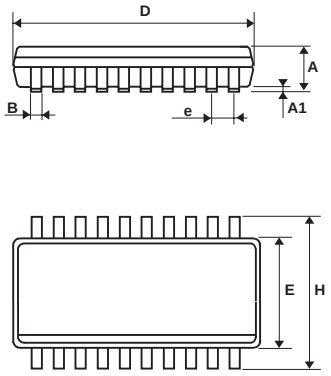


## ORDER CODE




## PACKAGE MECHANICAL DATA

SO-20 Plastic




| REF. | DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|
| | Millimetres | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | | | 2.65 | | | 0.104 |
| A1 | 0.10 | | 0.20 | 0.004 | | 0.008 |
| B | 0.33 | | 0.51 | 0.013 | | 0.020 |
| C | 0.23 | | 0.32 | 0.009 | | 0.013 |
| D | 12.6 | | 13.0 | 0.484 | | 0.512 |
| E | 7.40 | | 7.60 | 0.291 | | 0.299 |
| e | | 1.27 | | | 0.050 | |
| H | 10.0 | | 10.65 | 0.394 | | 0.419 |
| h | | 0.50 | | | 0.020 | |
| L | 0.50 | | 1.27 | 0.020 | | 0.050 |
| K | 8° (max) | | | | | |

**Marking:** Logo, Date Code, E25DB3

**Packaging**: Preferred packaging is tape and reel.

**Weight:** 0.55g.

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ESDA25DB3