



# ITA6V5B1 / ITA10B1 ITA18B1 / ITA25B1

Application Specific Discretes  
A.S.D.<sup>TM</sup>

## BIDIRECTIONAL TRANSIL<sup>TM</sup> ARRAY FOR DATALINE PROTECTION

### APPLICATIONS

Differential data transmission lines protection :

- RS-232
- RS-423
- RS-422
- RS-485

### FEATURES

- HIGH SURGE CAPABILITY TRANSIL ARRAY  
 $I_{PP} = 40\text{ A}$  (8/20 $\mu\text{s}$ )
- PEAK PULSE POWER : 300 W (8/20 $\mu\text{s}$ )
- UP TO 5 BIDIRECTIONAL TRANSIL FUNCTIONS
- LOW CLAMPING FACTOR ( $V_{CL} / V_{BR}$ ) AT HIGH CURRENT LEVEL
- LOW LEAKAGE CURRENT
- ESD PROTECTION UP TO 15kV

### DESCRIPTION

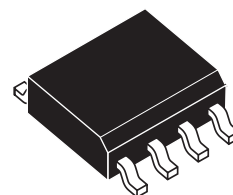
Transil diode arrays provide high overvoltage protection by clamping action. Their instantaneous response to transient overvoltages makes them particularly suited to protect voltage sensitive devices such as MOS Technology and low voltage supplied IC's.

The ITA series allies high surge capability against energetic pulses with high voltage performance against ESD.

### COMPLIES WITH THE FOLLOWING STANDARDS :

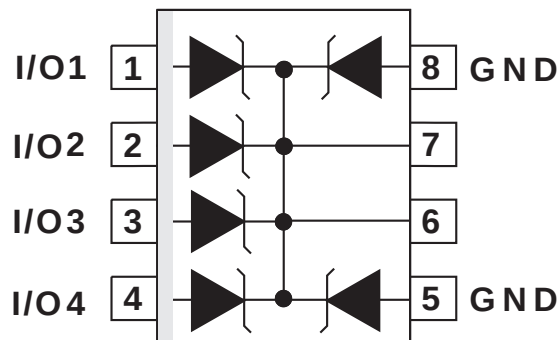
IEC 1000-4-2 : level 4  
IEC 1000-4-4 : level 4  
IEC 1000-4-5 : level 2

MIL STD 883C - Method 3015-6 : class 3  
(human body model)



SO-8

### FUNCTIONAL DIAGRAM

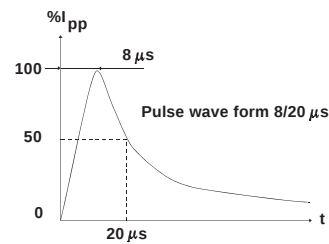


## ITA6V5B1 / ITA10B1 / ITA18B1 / ITA25B1

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

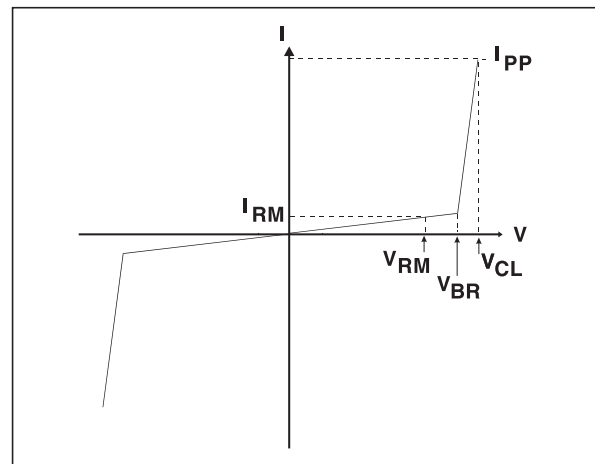
| Symbol             | Parameter                                                           |                                 | Value                | Unit                                     |
|--------------------|---------------------------------------------------------------------|---------------------------------|----------------------|------------------------------------------|
| $P_{PP}$           | Peak pulse power dissipation (8/20 $\mu\text{s}$ ) (see note 1)     | $T_j \text{ initial} = T_{amb}$ | 300                  | W                                        |
| $I_{PP}$           | Peak pulse current (8/20 $\mu\text{s}$ ) (see note 1)               | $T_j \text{ initial} = T_{amb}$ | 40                   | A                                        |
| $I^2t$             | Wire $I^2t$ value (see note 1)                                      |                                 | 0.6                  | $\text{A}^2\text{s}$                     |
| $T_{stg}$<br>$T_j$ | Storage temperature range<br>Maximum operating junction temperature |                                 | - 55 to + 150<br>125 | $^{\circ}\text{C}$<br>$^{\circ}\text{C}$ |
| $T_L$              | Maximum lead temperature for soldering during 10s                   |                                 | 260                  | $^{\circ}\text{C}$                       |

**Note 1 :** For surges greater than the specified maximum value, the I/O will first present a short-circuit and after an open circuit caused by the wire melting.



### 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 |
| C          | Junction capacitance            |



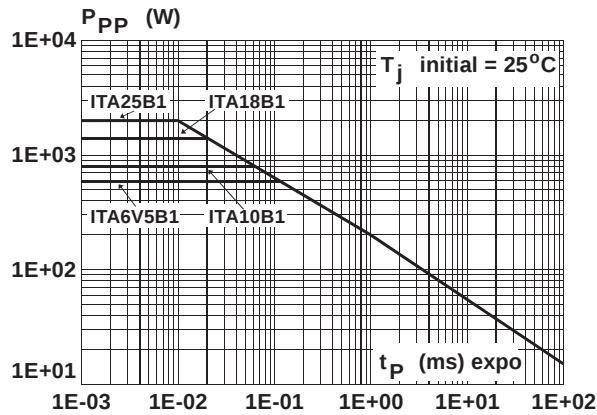
| Types           | $I_{RM}$ @ $V_{RM}$ |           | $V_{BR}$ @ $I_R$ |          | $V_{CL}$ @ $I_{PP}$ |                    | $V_{CL}$ @ $I_{PP}$ |                    | $\alpha T$<br>max.         | C<br>max.<br>note 3 |
|-----------------|---------------------|-----------|------------------|----------|---------------------|--------------------|---------------------|--------------------|----------------------------|---------------------|
|                 | max.                |           | min.             |          | note 2              | 8/20 $\mu\text{s}$ | max.                | 8/20 $\mu\text{s}$ |                            |                     |
|                 | $\mu\text{A}$       | V         | V                | mA       | V                   | A                  | V                   | A                  | $10^{-4}/^{\circ}\text{C}$ | pF                  |
| <b>ITA6V5B1</b> | <b>10</b>           | <b>5</b>  | <b>6.5</b>       | <b>1</b> | <b>10</b>           | <b>10</b>          | <b>12</b>           | <b>25</b>          | <b>4</b>                   | <b>750</b>          |
| ITA10B1         | 4                   | 8         | 10               | 1        | 15                  | 10                 | 19                  | 25                 | 8                          | 570                 |
| ITA18B1         | 4                   | 15        | 18               | 1        | 25                  | 10                 | 28                  | 25                 | 9                          | 350                 |
| <b>ITA25B1</b>  | <b>4</b>            | <b>24</b> | <b>25</b>        | <b>1</b> | <b>33</b>           | <b>10</b>          | <b>38</b>           | <b>25</b>          | <b>12</b>                  | <b>300</b>          |

**Note 2 :** Between I/O pin and ground.

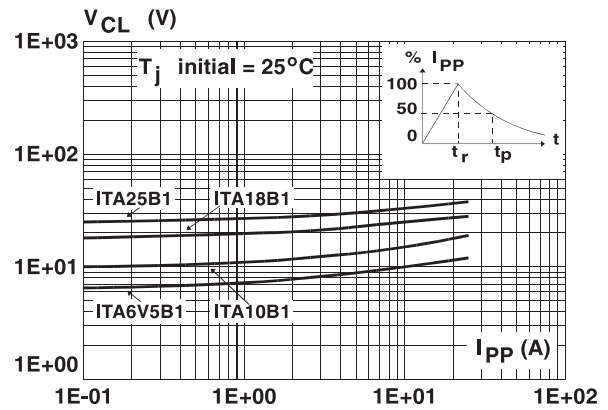
**Note 3 :** Between two input Pins at 0V Bias,  $F = 1 \text{ MHz}$ .

Preferred types in bold

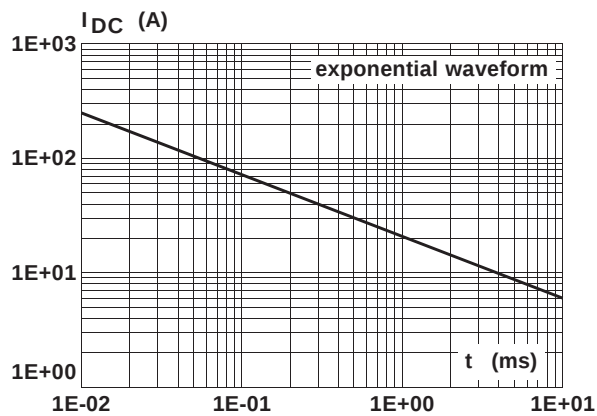
**Fig. 1 :** Typical peak pulse power versus exponential pulse duration.



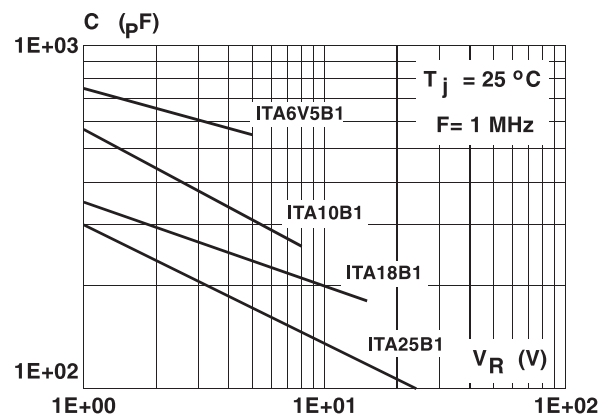
**Fig. 2 :** Clamping voltage versus peak pulse current (exponential waveform 8/20  $\mu$ s).



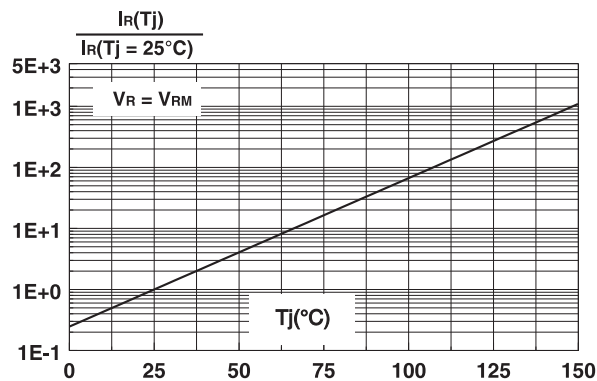
**Fig. 3 :** Peak current  $I_{DC}$  inducing open circuit of the wire for one input/output versus pulse duration (typical values).



**Fig. 4 :** Junction capacitance versus reverse applied voltage for one input/output (typical values).



**Fig. 5 :** Relative variation of leakage current versus junction temperature

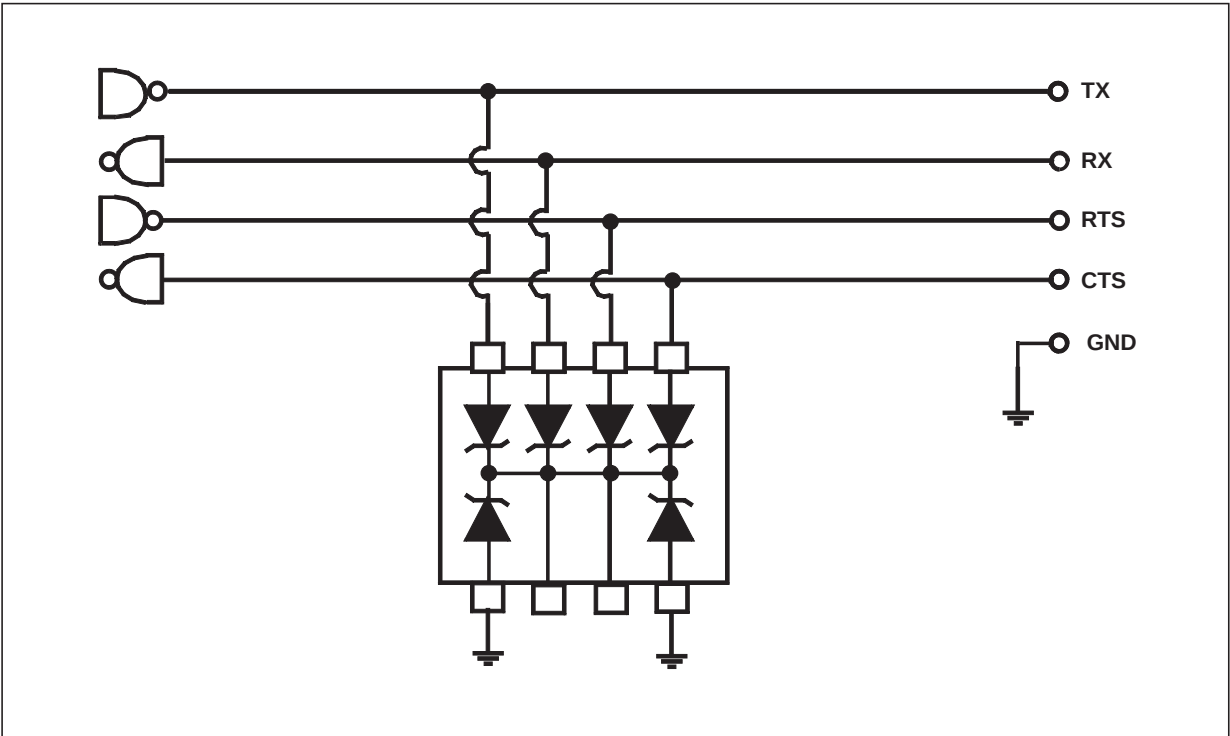


APPLICATION INFORMATION

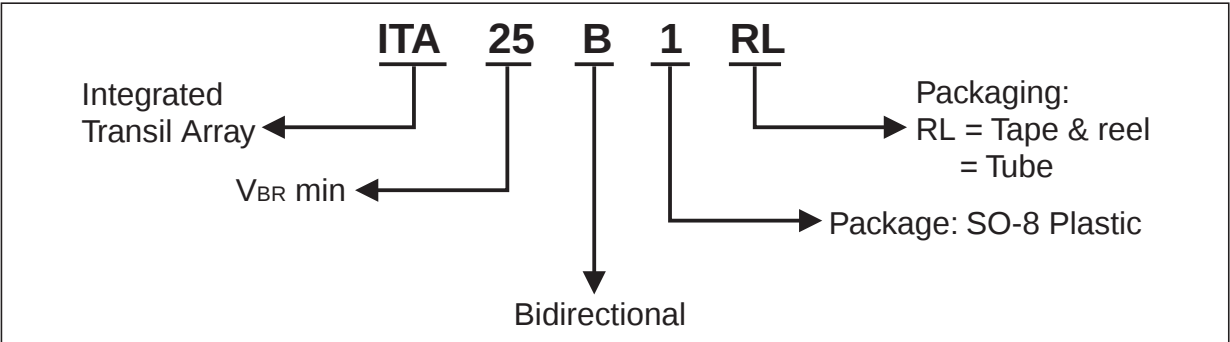
| Types    | Maximum differential voltage<br>between two input pins at 25°C |
|----------|----------------------------------------------------------------|
| ITA6V5B1 | + / - 3.5 V                                                    |
| ITA10B1  | + / - 5.0 V                                                    |
| ITA18B1  | + / - 9.0 V                                                    |
| ITA25B1  | + / - 12.5 V                                                   |

This monolithic Transil Array is based on 6 unidirectional Transils with a common cathode and can be configured to offer up to 5 bidirectional functions. This imposes a maximum differential voltage between 2 input pins (see opposite table).

Typical application : RS232 junction.



ORDER CODE



## MARKING

| TYPE     | MARKING |
|----------|---------|
| ITA6V5B1 | 6V5B1   |
| ITA10B1  | 10B1    |
| ITA18B1  | 18B1    |
| ITA25B1  | 25B1    |

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

**Weight :** 0.08g.

## PACKAGE MECHANICAL DATA

SO-8 (Plastic)

| REF. | DIMENSIONS  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimetres |      |      | Inches |       |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    |             |      | 1.75 |        |       | 0.069 |
| a1   | 0.1         |      | 0.25 | 0.004  |       | 0.010 |
| a2   |             |      | 1.65 |        |       | 0.065 |
| b    | 0.35        |      | 0.48 | 0.014  |       | 0.019 |
| b1   | 0.19        |      | 0.25 | 0.007  |       | 0.010 |
| C    |             | 0.50 |      |        | 0.020 |       |
| c1   | 45° (typ)   |      |      |        |       |       |
| D    | 4.8         |      | 5.0  | 0.189  |       | 0.197 |
| E    | 5.8         |      | 6.2  | 0.228  |       | 0.244 |
| e    |             | 1.27 |      |        | 0.050 |       |
| e3   |             | 3.81 |      |        | 0.150 |       |
| F    | 3.8         |      | 4.0  | 0.15   |       | 0.157 |
| L    | 0.4         |      | 1.27 | 0.016  |       | 0.050 |
| M    |             |      | 0.6  |        |       | 0.024 |
| S    | 8° (max)    |      |      |        |       |       |

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