

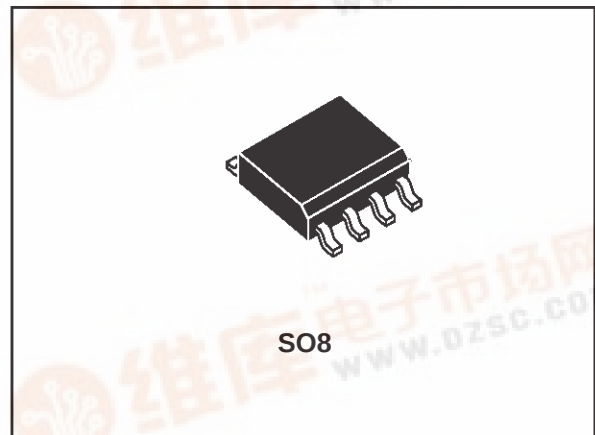


ITA6V5C1 / ITA10C1  
ITA18C1 / ITA25C1

## MONOLITHIC TRANSIL® ARRAY FOR DATA LINE PROTECTION

### FEATURES

- HIGH SURGE CAPABILITY TRANSIL ARRAY  
 $I_{PP} = 40\text{ A}$   $8/20\mu\text{s}$
- UP TO 5 BIDIRECTIONAL TRANSIL FUNCTIONS
- BREAK DOWN VOLTAGE AND MAXIMUM DIFFERENTIAL VOLTAGE BETWEEN TWO INPUT PINS:  
ITA6V5 = 6.5 V  
ITA10 = 10 V  
ITA18 = 18 V  
ITA25 = 25 V
- LOW CLAMPING FACTOR ( $V_{CL} / V_{BR}$ ) AT HIGH CURRENT LEVEL
- LOW LEAKAGE CURRENT
- LOW INPUT CAPACITANCE

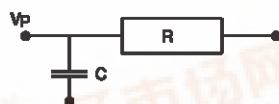


### DESCRIPTION

This is a specific transil array for RS232, RS423 interface protection developed in monolithic chip form in order to provide a high surge capability and a low clamping voltage

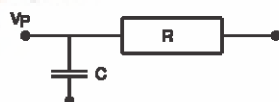
### IN ACCORDANCE WITH :

- ESD standard :
  - IEC 801-2 15kV 5ns / 50ns
  - IEC 801-4 40A 5ns / 50ns
  - IEC 801-5 1kV 1.2 / 50 $\mu\text{s}$
  - 25A 8 / 20 $\mu\text{s}$
- MIL STD 883C - Method 3015-2
  - $V_P = 25\text{kV}$
  - $C = 150\text{pF}$
  - $R = 150\Omega$
  - 5 s duration

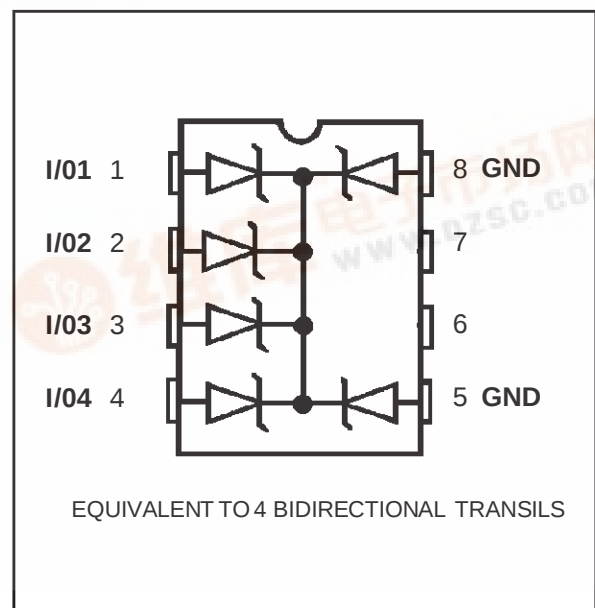


- Human body test :

$V_P = 4\text{kV}$   
 $C = 150\text{pF}$   
 $R = 150\Omega$



### FUNCTIONAL DIAGRAM



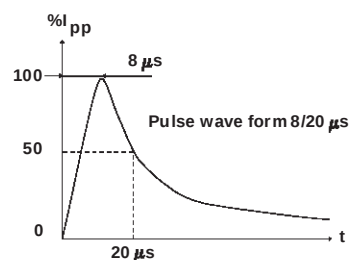
## ITA6V5C1 / ITA10C1 / ITA18C1 / ITA25C1

### ABSOLUTE RATINGS (limiting values) ( $0^{\circ}\text{C} \leq T_{\text{amb}} \leq 70^{\circ}\text{C}$ )

| Symbol                    | Parameter                                                   |          | Value                | Unit                                     |
|---------------------------|-------------------------------------------------------------|----------|----------------------|------------------------------------------|
| $I_{\text{PP}}$           | Peak pulse current for 8/20 $\mu\text{s}$ exponential pulse | See note | 40                   | A                                        |
| $I^2t$                    | Wire $I^2t$ value                                           | See note | 0.6                  | $\text{A}^2\text{s}$                     |
| $T_{\text{stg}}$<br>$T_j$ | Storage and Junction Temperature Range                      |          | - 55 to + 150<br>125 | $^{\circ}\text{C}$<br>$^{\circ}\text{C}$ |

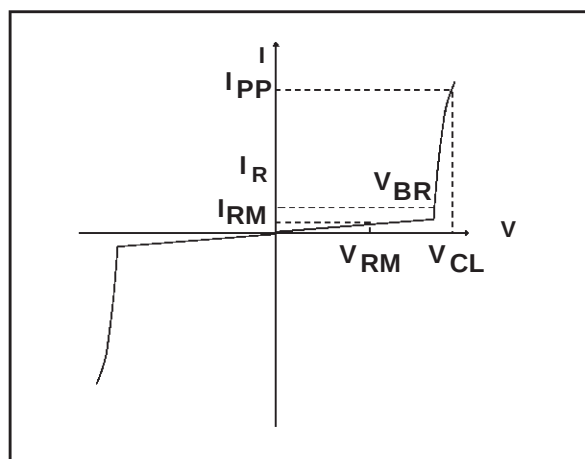
Note :

For surges greater than the maximum value specified, the input/output will present first a short circuit to the common bus line and after an open circuit caused by the wire.



### ELECTRICAL CHARACTERISTICS

| Symbol          | Parameter                         |
|-----------------|-----------------------------------|
| $I_{\text{RM}}$ | Leakage Current @ $V_{\text{RM}}$ |
| $V_{\text{RM}}$ | Stand-off Voltage                 |
| $V_{\text{BR}}$ | Breakdown Voltage                 |
| $V_{\text{CL}}$ | Clamping Voltage                  |
| $I_{\text{PP}}$ | Surge Current                     |
| C               | Input Capacitance                 |



| Types    | $I_{\text{RM}}$ @ $V_{\text{RM}}$ |    | $V_{\text{BR}}$ @ $I_{\text{R}}$ |    | $V_{\text{CL}}$ @ $I_{\text{PP}}$ |    | $V_{\text{CL}}$ $I_{\text{PP}}$ |    | C 1 | C 2 | $\alpha T$                 |
|----------|-----------------------------------|----|----------------------------------|----|-----------------------------------|----|---------------------------------|----|-----|-----|----------------------------|
|          | max                               |    | min                              |    | 8/20 $\mu\text{s}$                |    | max                             |    | max | max | max                        |
|          | $\mu\text{A}$                     | V  | V                                | mA | V                                 | A  | V                               | A  | pF  | pF  | $10^{-4}/^{\circ}\text{C}$ |
| ITA6V5C1 | 10                                | 5  | 6.5                              | 1  | 10                                | 10 | 12                              | 25 | 750 | 550 | 4                          |
| ITA10C1  | 10                                | 8  | 10                               | 1  | 15                                | 10 | 19                              | 25 | 570 | 260 | 8                          |
| ITA18C1  | 4                                 | 15 | 18                               | 1  | 25                                | 10 | 28                              | 25 | 350 | 180 | 9                          |
| ITA25C1  | 4                                 | 24 | 25                               | 1  | 33                                | 10 | 38                              | 25 | 300 | 100 | 12                         |

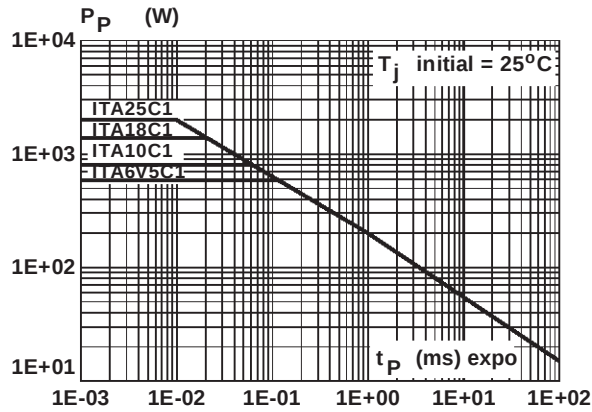
All parameters tested at  $25^{\circ}\text{C}$ , except where indicated.

**Note 1:** Between I/O pin and ground.

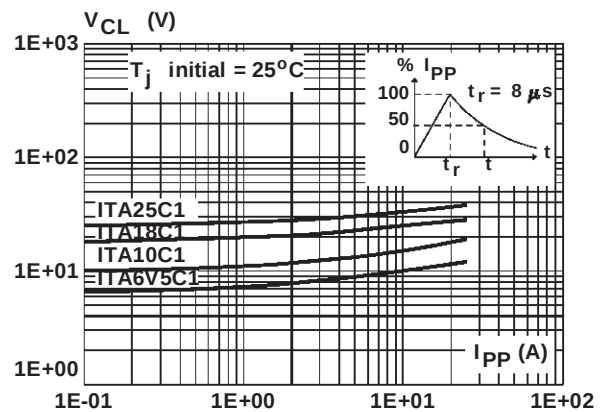
**Note 2:** Between two input Pins at 0 V Bias.

**Note 3:** Between two input Pins at  $V_{\text{RM}}$ .

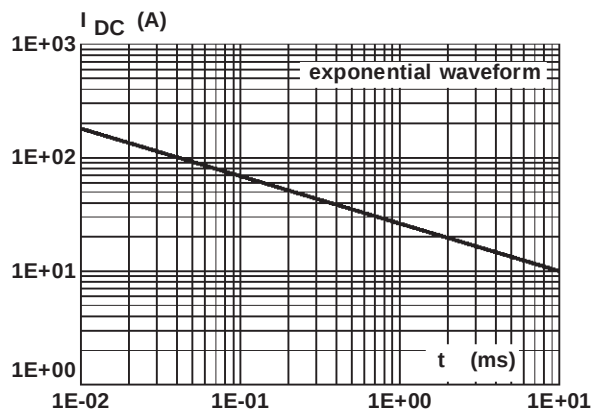
**Fig.1 :** Typical Peak pulse power versus exponential pulse duration.



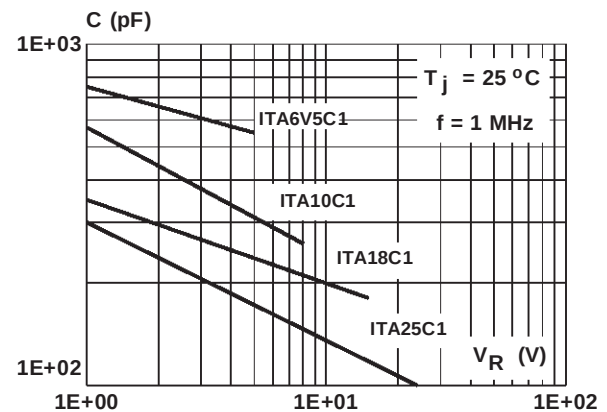
**Fig.2 :** Clamping voltage versus peak pulse current exponential waveform 8/20  $\mu$ s.



**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).



Note :

The curve of the figure 2 is specified for a junction temperature of 25°C before surge.

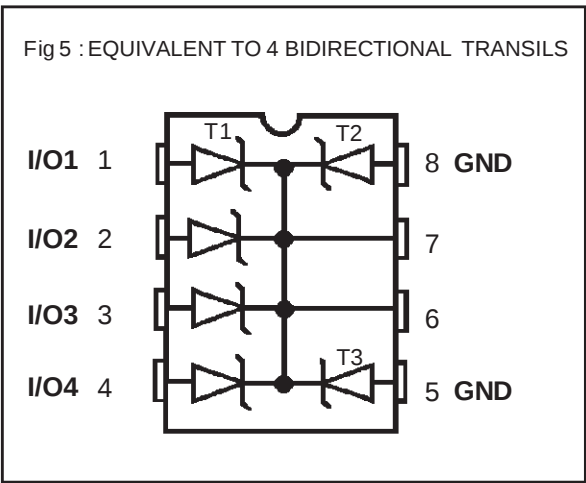
ITA6V5C1/ITA10C1 / ITA18C1 / ITA25C1

APPLICATION NOTICE

| Types    | Maximum differential voltage between two input pins at 25°C |
|----------|-------------------------------------------------------------|
|          | V                                                           |
| ITA6V5C1 | 6.5                                                         |
| ITA10C1  | 10                                                          |
| ITA18C1  | 18                                                          |
| ITA25C1  | 25                                                          |

INSTRUCTION GUIDE

This monolithic Transil Array is based on 6 Unidirectional Transils with a common cathode and can be configured to offer 4 or 5 bidirectional functions, according to the following customer application.

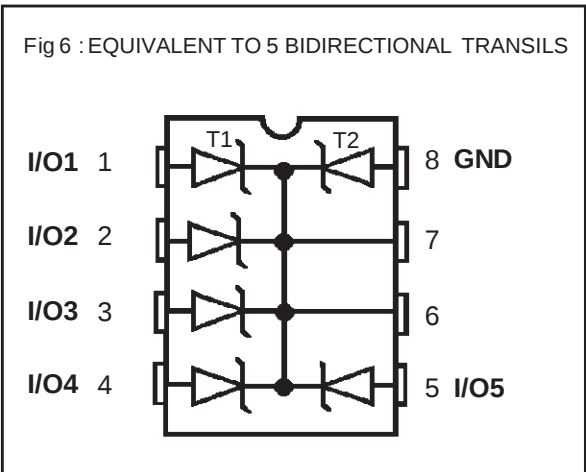


UTILIZATION AS A BIDIRECTIONAL TRANSIL ARRAY WITH 4 I/Os.

The main application of this device is to be configured as a 4, bidirectional Transil Array as per the Pin-out of Fig 5.

Pins 5 and 8 are connected to ground.  
INPUTS/OUTPUTS are from Pin 1 to Pin 4.

Note : The bidirectional function is made with 2 unidirectional Transils. One (T1) is connected to the INPUT/OUTPUT, the other one (T2) is connected to the ground (see Fig 5).  
Ground is connected via 2 diodes T2 and T3 .  
This allows to withstand 2 specified surges on 2 different lines at the same time.



UTILIZATION AS A BIDIRECTIONAL TRANSIL ARRAY WITH 5 I/Os.

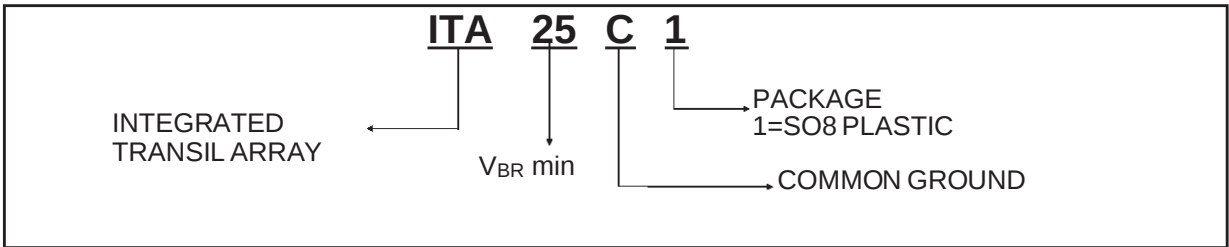
The ITAxxC1 can be used as a 5 bidirectional Transil Array.

Ground can be connected to any pin (except 6 and 7).  
The other pins are used as INPUTS and OUTPUTS.

The bidirectional function is made with 2 unidirectional Transils T1 and T2. One example with ground on Pin 8 is shown in Fig 6.  
This configuration allows to withstand only one specified surge at the same time.

ITA6V5C1 / ITA10C1 / ITA18C1 / ITA25C1

ORDER CODE

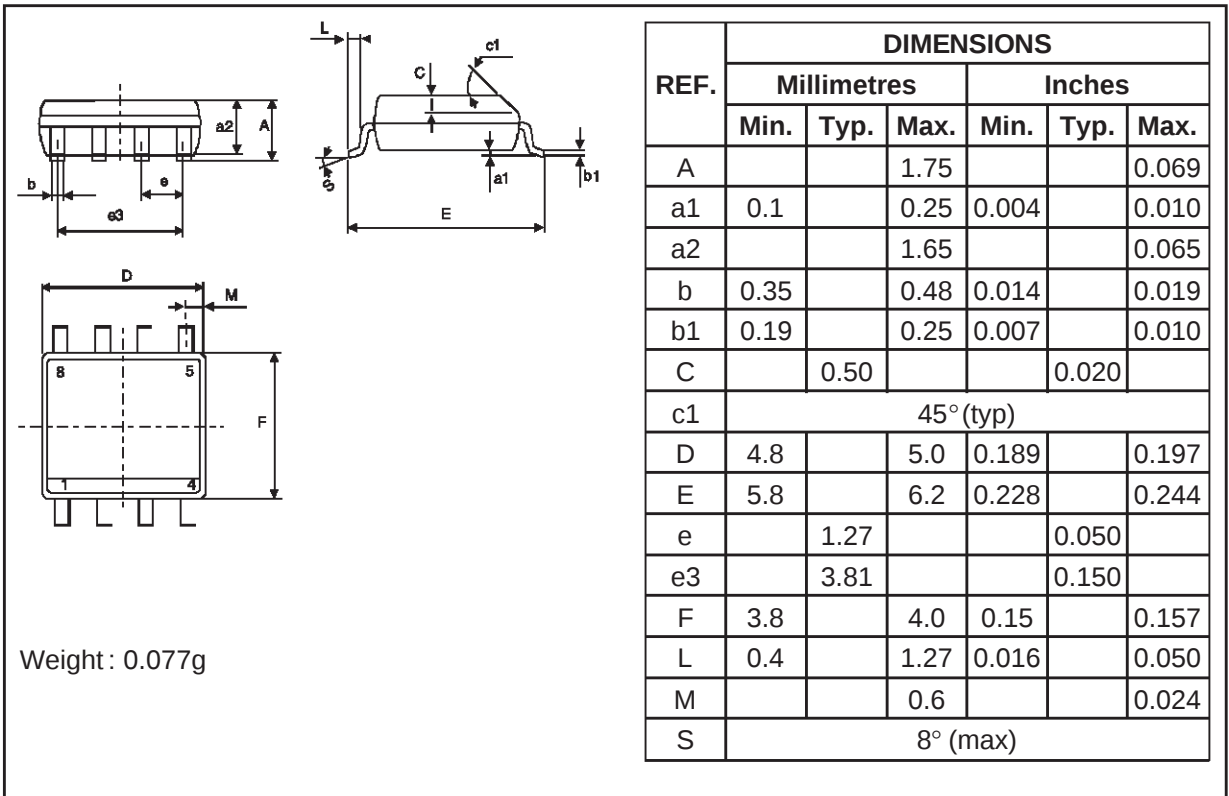


MARKING

| TYPE    | ITA6V5C1 | ITA10C1 | ITA18C1 | ITA25C1 |
|---------|----------|---------|---------|---------|
| MARKING | 6V5C1    | 10C1    | 18C1    | 25C1    |

PACKAGE MECHANICAL DATA

SO8



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