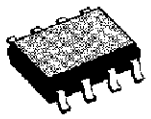
SGS-THOMSON MICROELECTRONICS

ITA6V5B1 / ITA10B1 ITA18B1 / ITA25B1

MONOLITHIC TRANSIL® ARRAY FOR DATA LINE PROTECTION

FEATURES

- HIGH SURGE CAPABILITY TRANSIL ARRAY IPP = 40 A 8/20µs
- 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

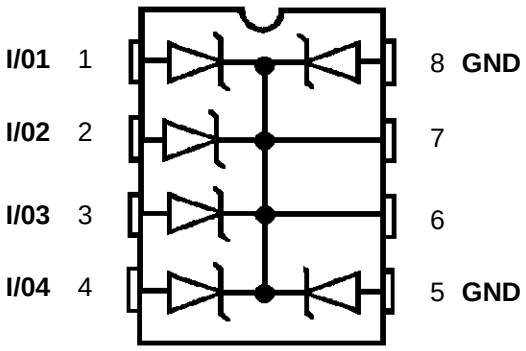


SO8
(Plastic)

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

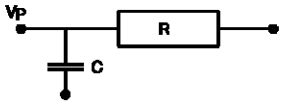
FUNCTIONAL DIAGRAM



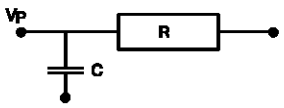
EQUIVALENT TO 4 BIDIRECTIONAL TRANSILS

IN ACCORDANCE WITH :

- ESD standard :
  . IEC 801-2 15kV 5ns / 50ns
  . IEC 801-4 40A 5ns / 50ns
  . IEC 801-5 1kV 1.2 / 50µs
  25A 8 / 20µs
  . MIL STD 883C - Method 3015-2
  V_P = 25kV
  C = 150pF
  R = 150Ω
  5 s duration



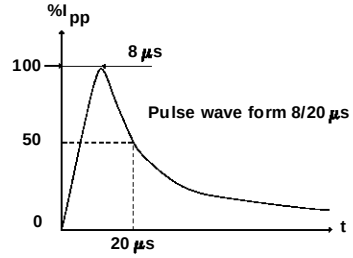
- Human body test :
  V_P = 4kV
  C = 150pF
  R = 150Ω



ABSOLUTE RATINGS (limiting values) (0°C ≤ Tamb ≤ 70°C)

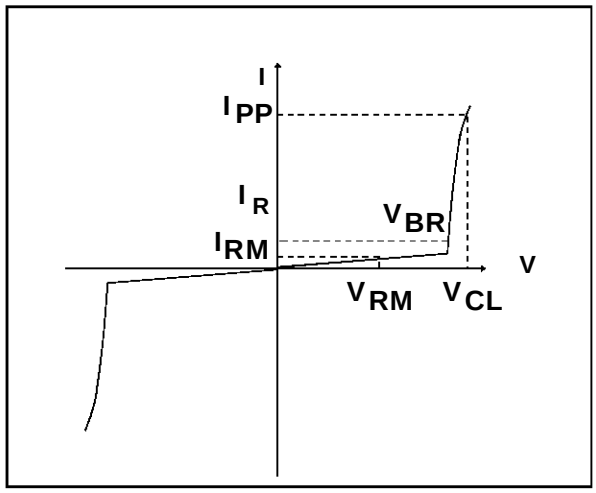
Symbol	Parameter		Value	Unit
I_{PP}	Peak pulse current for 8/20 µsexponential pulse	See note	40	A
I^2t	Wire I^2 t value	See note	0.6	A^2s
T_{stg} T_j	Storage and Junction Temperature Range		- 55 to + 150 125	°C °C

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_{RM}	Leakage Current @ V_{RM}
V_{RM}	Stand-off Voltage
V_{BR}	Breakdown Voltage
V_{CL}	Clamping Voltage
I_{PP}	Surge Current
C	Input Capacitance



Types	I_{RM} @ V_{RM} max		V_{BR} @ I_R min Note 1		V_{CL} @ I_{PP} 8/20µs Note 1		V_{CL} @ I_{PP} max 8/20µs Note 1		C1 max Note 2	C2 max Note 3	αT max
	µA	V	V	mA	V	A	V	A	pF	pF	10^{-4}/°C
ITA6V5B1	50	5	6.5	1	10	10	12	25	750	550	4
ITA10B1	10	8	10	1	15	10	19	25	570	260	8
ITA18B1	4	15	18	1	25	10	28	25	350	180	9
ITA25B1	4	24	25	1	33	10	38	25	300	100	12

All parameters tested at 25ÉC, 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_{RM}.

Figure1 : Typical Peak pulse power versus exponential pulse duration.

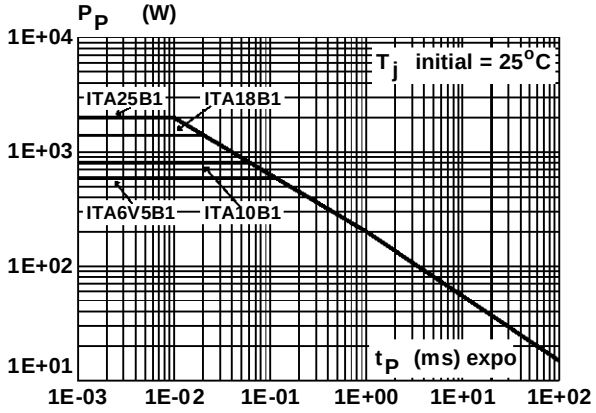


Figure 2 : Clamping voltage versus peak pulse current exponential waveform 8/20 µs.

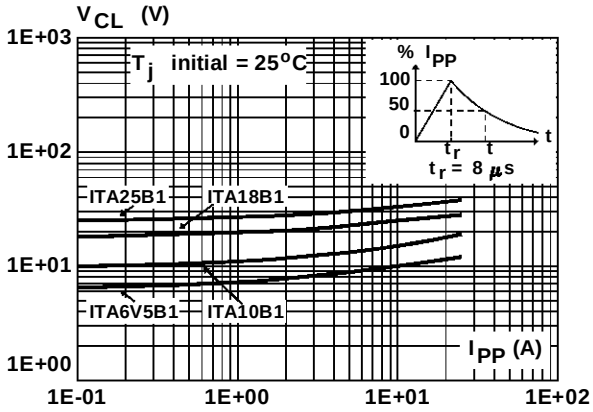


Figure 3 : Peak current I_{DC} inducing open circuit of the wire for one input/output versus pulse duration (typical values).

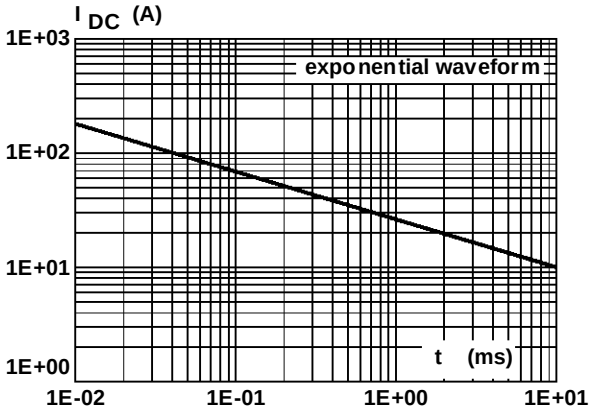
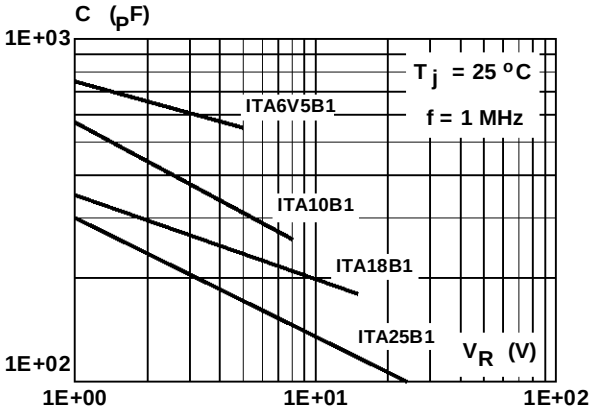


Figure 4 : Junction capacitance versus reverse applied voltage for one input/output (typical values).



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

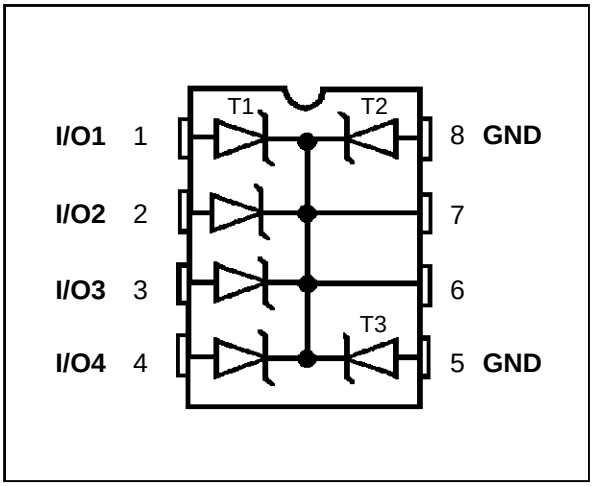
APPLICATION NOTICE

Types	Maximum differential voltage between two input pins at 25°C
	V
ITA6V5B1	6.5
ITA10B1	10
ITA18B1	18
ITA25B1	25

INSTRUCTION GUIDE

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

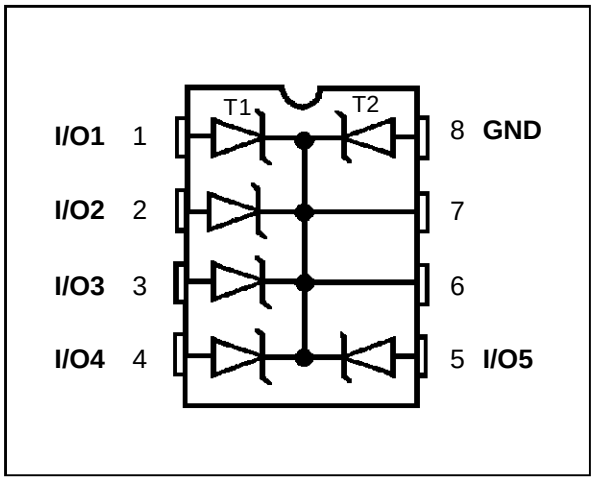
Figure 5 : Equivalent to 4 Bidirectional Transils



UTILIZATION AS A BIDIRECTIONAL TRANSIL ARRAY WITH 4 I/Os.
The main application of this device is to be configurated 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.

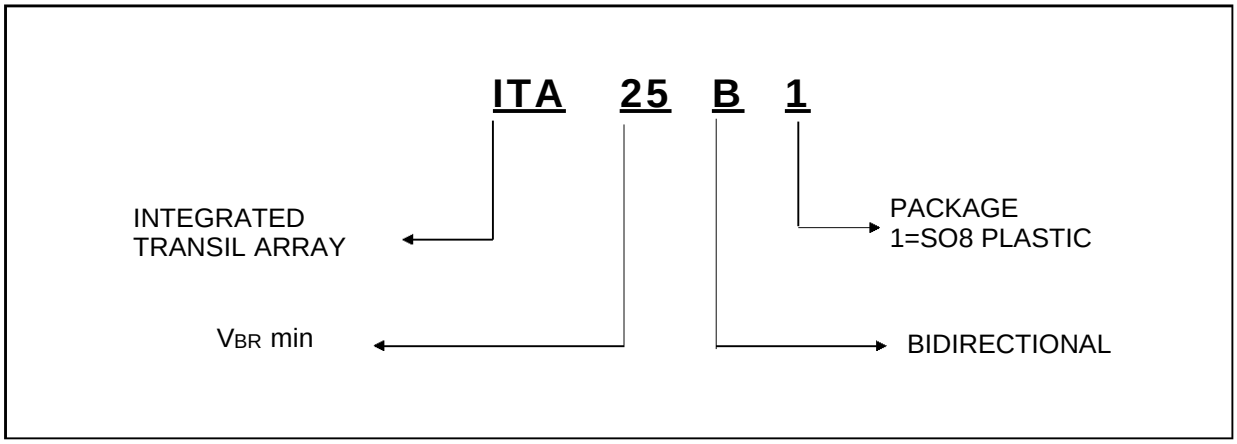
Note : The bidirectional function is made with 2 unidirectional Transils. One (T1) is connected to the INPUT/OUTPUT, the other one (T2) is connected to the ground (see Fig 5).
Ground is connected via 2 diodes T2 and T3 .
This allows to withstand 2 specified surges on 2 different lines at the same time.

Figure 6 : Equivalent to 5 Bidirectional Transils



UTILIZATION AS A BIDIRECTIONAL TRANSIL ARRAY WITH 5 I/Os.
The ITAxxB1 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.

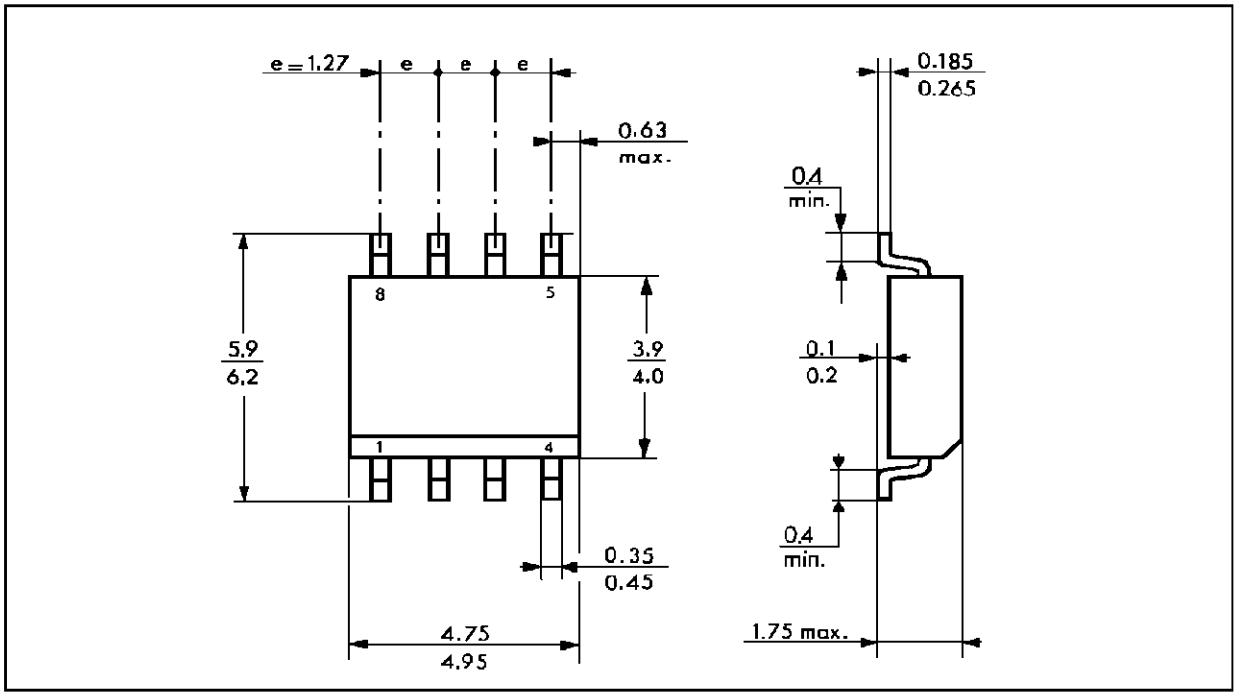
ORDER CODE



MARKING

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

PACKAGE MECHANICAL DATA (in millimeters)
SO8 Plastic



Packaging : Products supplied in antistatic tubes.