



ITA6V5B1 / ITA10B1 ITA18B1 / ITA25B1

Application Specific Discretes
A.S.D.TM

BIDIRECTIONAL TRANSILTM 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 μs)
- PEAK PULSE POWER : 300 W (8/20 μs)
- 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

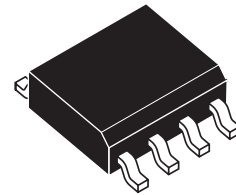
Transil diode arrays provide high overvoltage protection by clamping action. Their instantaneous response to transient overvoltages makes them particularly suited to protect voltage sensitive devices such as MOS Technology and low voltage supplied IC's.

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

COMPLIES WITH THE FOLLOWING STANDARDS :

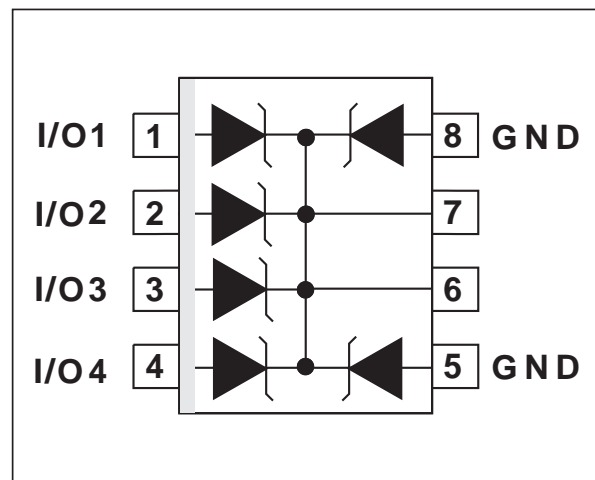
IEC 1000-4-2 : level 4
IEC 1000-4-4 : level 4
IEC 1000-4-5 : level 2

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



SO-8

FUNCTIONAL DIAGRAM

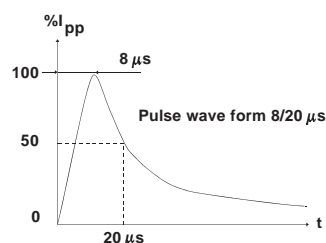


ITA6V5B1 / ITA10B1 / ITA18B1 / ITA25B1

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

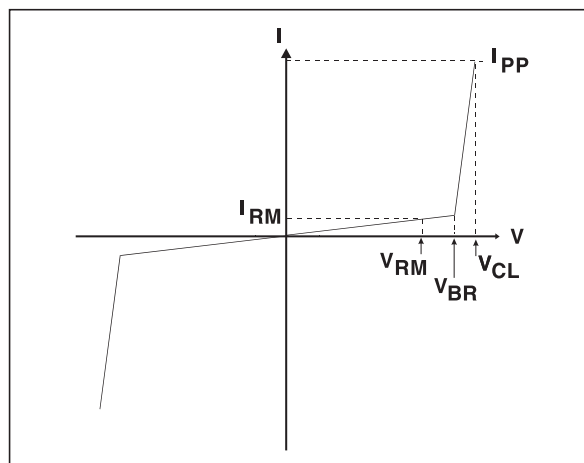
Symbol	Parameter		Value	Unit
P_{PP}	Peak pulse power dissipation (8/20 μs) (see note 1)	$T_j \text{ initial} = T_{amb}$	300	W
I_{PP}	Peak pulse current (8/20 μs) (see note 1)	$T_j \text{ initial} = T_{amb}$	40	A
I^2t	Wire I^2t value (see note 1)		0.6	A^2s
T_{stg} T_j	Storage temperature range Maximum operating junction temperature		- 55 to + 150 125	$^{\circ}\text{C}$ $^{\circ}\text{C}$
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
αT	Voltage temperature coefficient
C	Junction capacitance



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

Note 2 : Between I/O pin and ground.

Note 3 : Between two input Pins at 0V Bias, F = 1 MHz.

Preferred types in bold

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

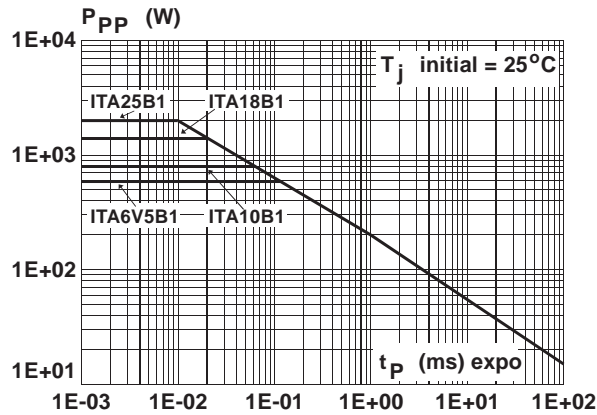


Fig. 2 : Clamping voltage versus peak pulse current (exponential waveform 8/20 μ s).

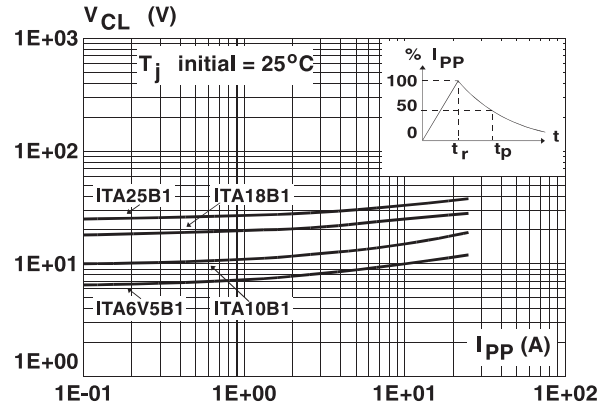


Fig. 3 : Peak current I_{DC} inducing open circuit of the wire for one input/output versus pulse duration (typical values).

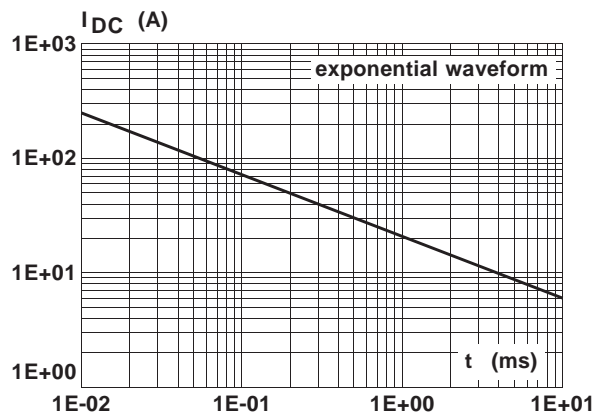


Fig. 4 : Junction capacitance versus reverse applied voltage for one input/output (typical values).

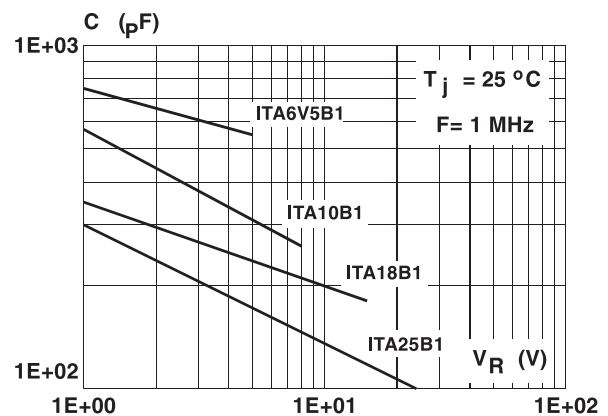
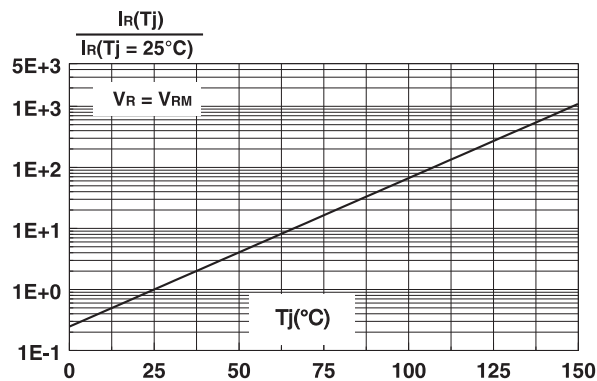


Fig. 5 : Relative variation of leakage current versus junction temperature

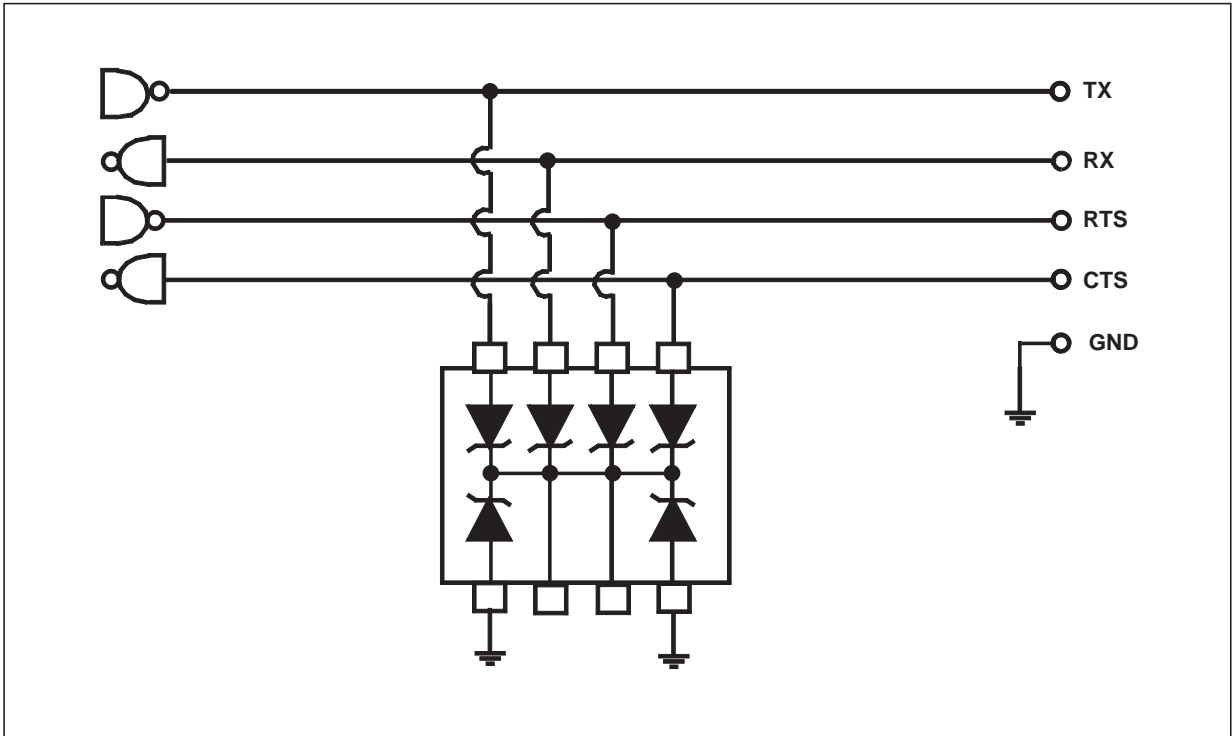


APPLICATION INFORMATION

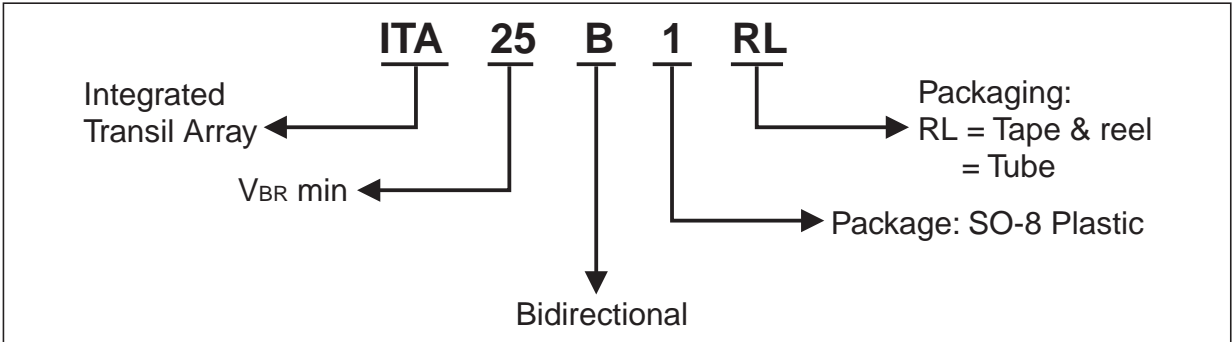
Types	Maximum differential voltage between two input pins at 25°C
ITA6V5B1	+ / - 3.5 V
ITA10B1	+ / - 5.0 V
ITA18B1	+ / - 9.0 V
ITA25B1	+ / - 12.5 V

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)					

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 2001 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia

Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>