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ITAxxU1

Transil™ array for data line protection

Features

- High surge capability Transil array: I_{PP} = 40 A (8/20 µs)
- Peak pulse power : 300 W (8/20 µs)
- Up to 6 bidirectional Transil functions
- Low clamping factor (V_{CL} / V_{BR}) at high current level
- Low leakage current
- ESD protection up to 15 kV

Complies with the following standards

- IEC 61000-4-2 level 4
  - 15 kV (air discharge)
  - 8 kV (contact discharge)
- MIL STD 883G- Method 3015-7: class 3B
  - 25 kV (human body model)

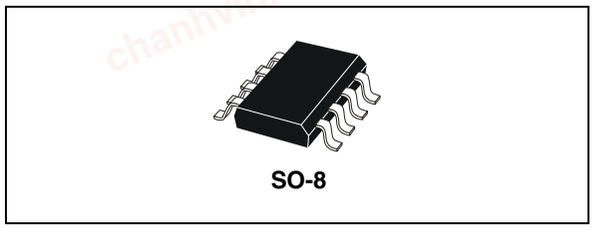
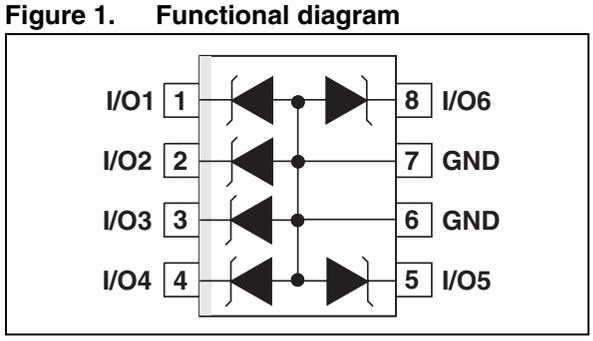


Figure 1. Functional diagram



Applications

Data transmission lines protection, such as:

- Unipolar signal up to 5.5 V
- Bipolar signal in the ± 2.5 V range

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.

TM: Transil is a trademark of STMicroelectronics

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1 Characteristics

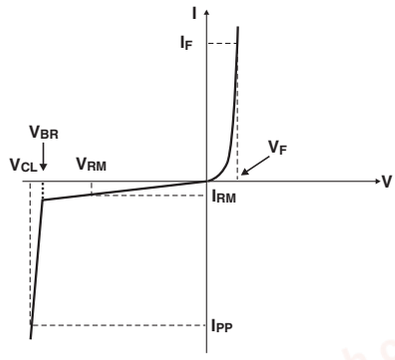
Table 1. Absolute ratings (T_{amb} = 25 °C)

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

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.

Table 2. 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
αT	Voltage temperature coefficient
V_F	Forward voltage drop
C	Capacitance



Order code	V_{BR} @ I_R		I_{RM} @ V_{RM}		V_{CL} @ I_{PP}		V_{CL} @ I_{PP}		αT	C	V_F @ I_F	
	min. (1)		max.		max. (1)	8/20 µs	max. (1)	8/20 µs	max.	max. (2)	max.	
	V	mA	µA	V	V	A	V	A	10^{-4}/ °C	pF	V	A
ITA6V1U1	6.51	1	10	5	10	10	12	25	4	1500	1.3	1

1. Between I/O pin and ground.
2. Between two input pins at 0 V Bias, F = 1 MHz.

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Figure 2. Pulse waveform

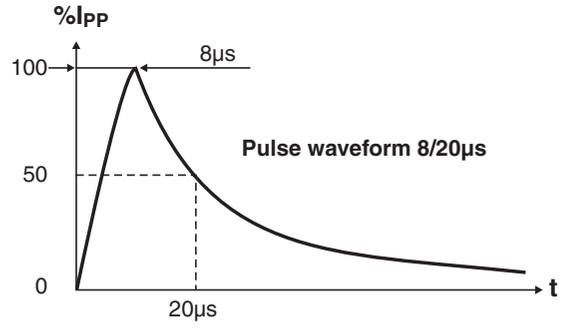


Figure 3. Typical peak pulse power versus exponential pulse duration

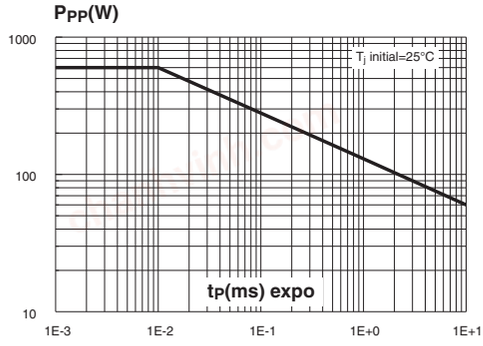


Figure 4. Clamping voltage versus peak pulse current (exponential waveform 8/20 µs)

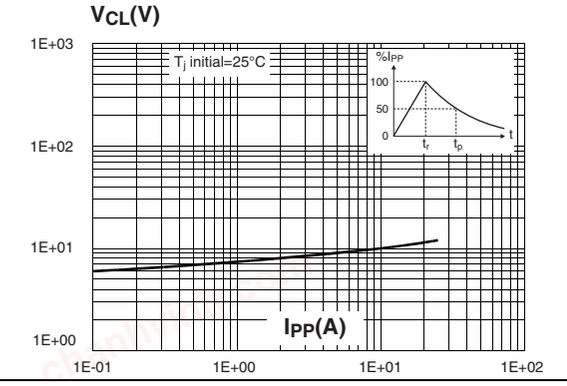


Figure 5. Peak current I_{DC} inducing open circuit of the wire for one input/output versus pulse duration (typical values)

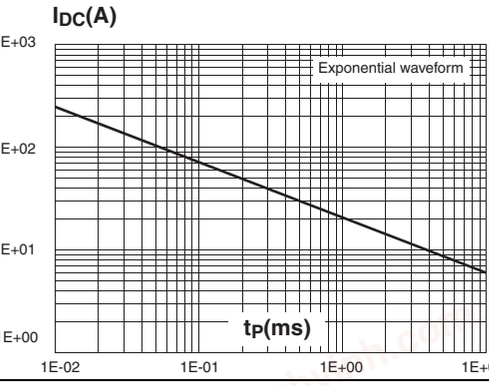


Figure 6. Junction capacitance versus reverse applied voltage for one input/output (typical values)

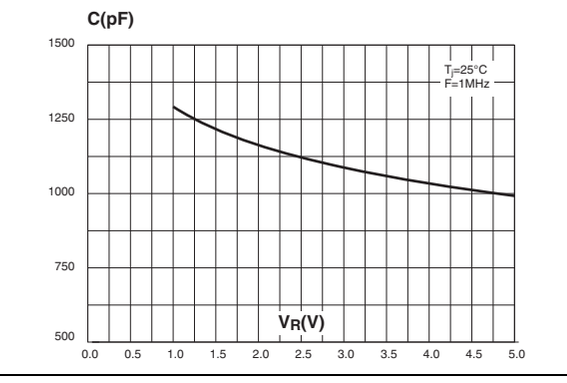
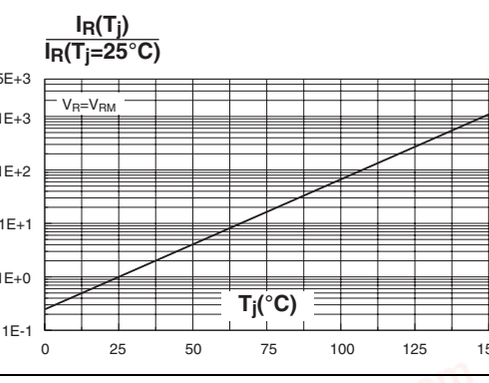


Figure 7. Relative variation of leakage current versus junction temperature



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2 Application information

Figure 8. µP I/O lines

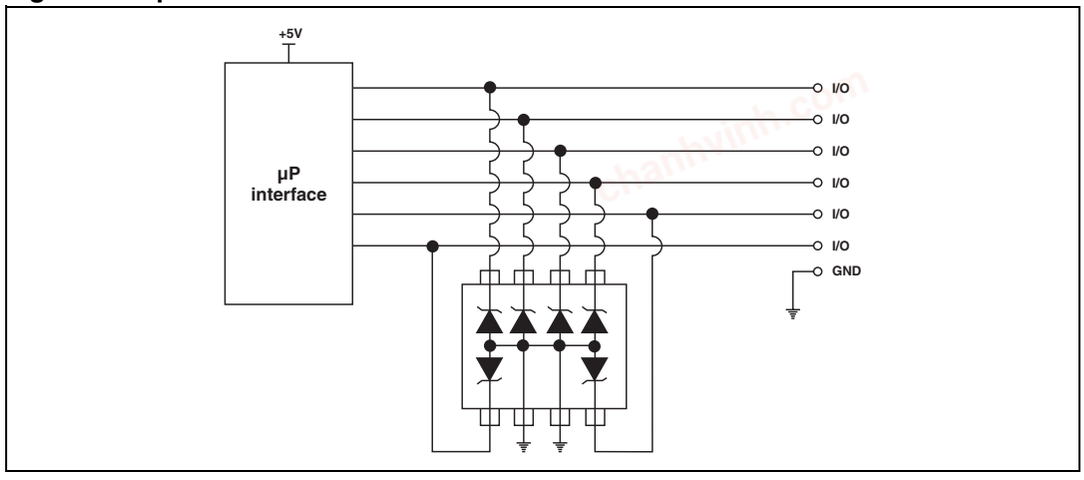
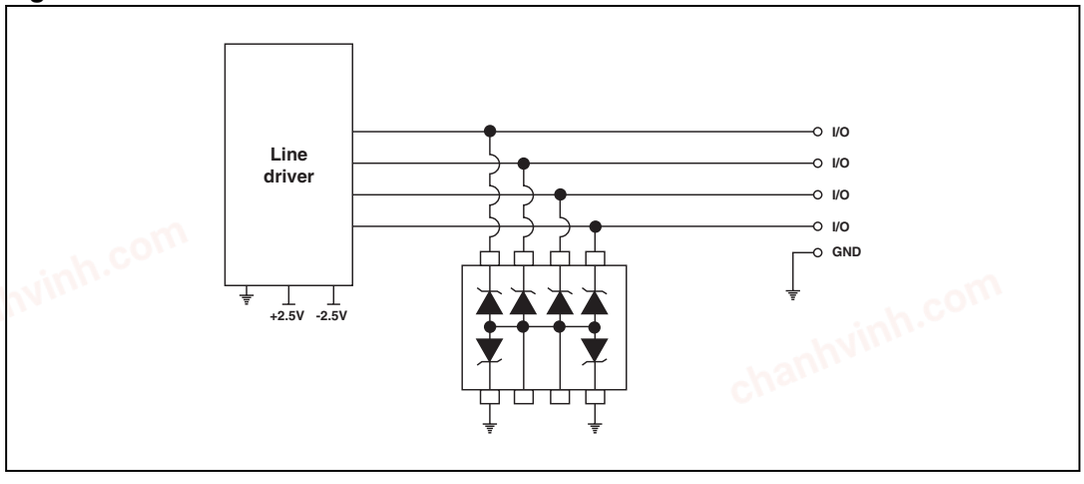


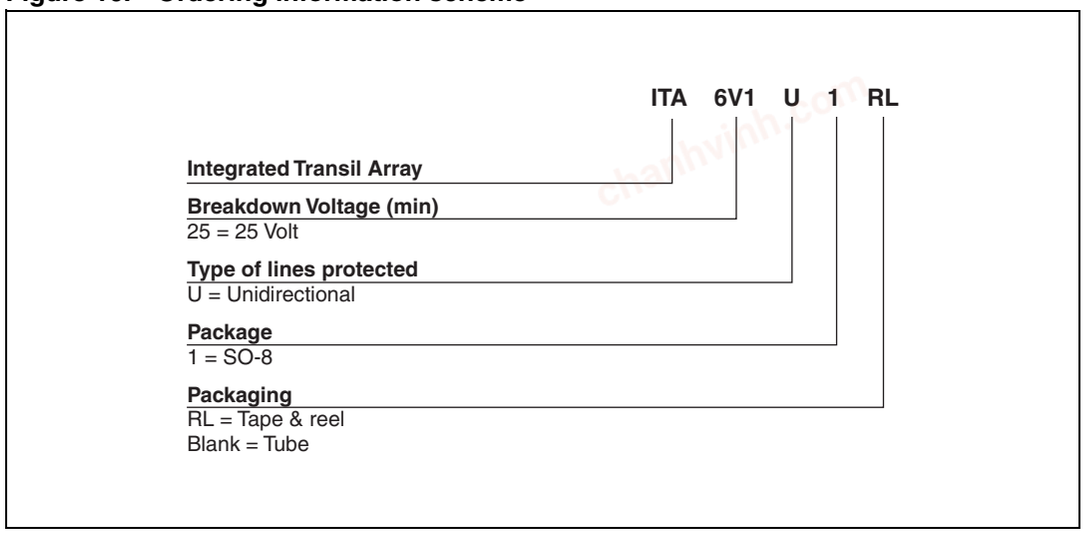
Figure 9. ± 2.5 V datalines



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3 Ordering information scheme

Figure 10. Ordering information scheme



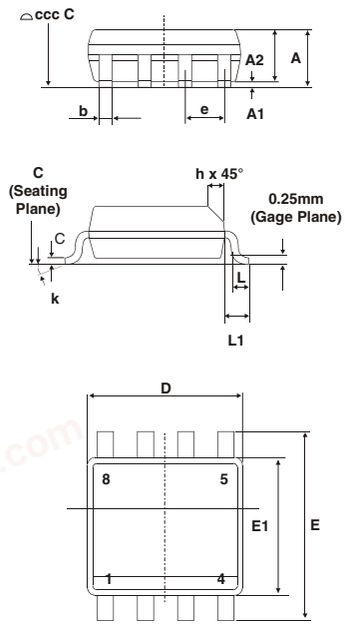
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4 Package information

- Epoxy meets UL94, V0

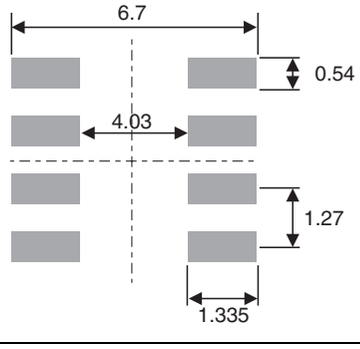
In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

Table 3. SO-8 dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
A1	0.1		0.25	0.004		0.010
A2	1.25			0.049		
b	0.28		0.48	0.011		0.019
C	0.17		0.23	0.007		0.009
D	4.80	4.90	5.00	0.189	0.193	0.197
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e		1.27			0.050	
h	0.25		0.50	0.010		0.020
L	0.40		1.27	0.016		0.050
L1		1.04			0.041	
k°	0		8	0		8
ccc			0.10			0.004

Figure 11. SO-8 footprint (dimensions in mm)



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5 Ordering Information

Table 4. ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
ITA6V1U1	6V1U1	SO-8	0.08 g	2000	Tube
ITA6V1U1RL	6V1U1			2500	Tape and reel

6 Revision history

Table 5. Document revision history

Date	Revision	Changes
13-Dec-2004	1	Initial release.
07-Nov-2007	2	Reformatted to current standards. SO-8 package dimensions update.

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