

L052AT1006P3

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2-Channel Low Capacitance Uni-Directional TVS For ESD Protection 5.0V

Features

- Package optimized for high-speed lines.
- Ultra-small package. (1.0mmx0.6mmx0.5mm)
- Protects two data, control or power lines.
- Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge.
- Transient protection for high-speed data lines:
IEC 61000-4-2 (ESD) $\pm 25\text{kV}$ (Air), $\pm 20\text{kV}$ (Contact).
IEC 61000-4-4 (EFT) 40A (5/50ns).
Cable discharge event (CDE).
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates halogen-free parts, ex.L052AT1006P3-H.

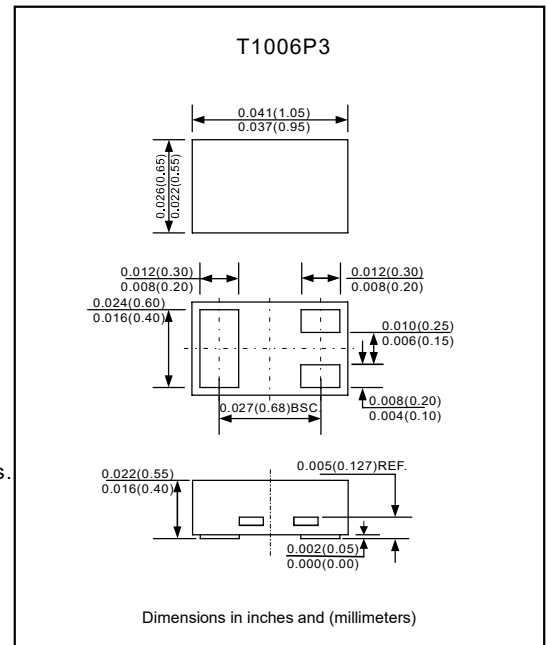
Applications

- Serial ATA, PCI express, desktops, servers, notebooks and cellular phones.
- MDDI ports, USB2.0 power and data line protection.
- Display ports and digital visual interface. (DVI)

Mechanical data

- Epoxy: UL94V-0 rated flame retardant.
- Case : Molded plastic, T1006P3 (DFN-1006-3).

Package outline



Maximum ratings (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Units
Peak pulse current (8/20 μs)	I_{PP}	8	A
ESD per IEC 61000-4-2 (Contact)	V_{ESD}	± 20	KV
ESD per IEC 61000-4-2 (Air)		± 25	
Operating temperature	T_J	+125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

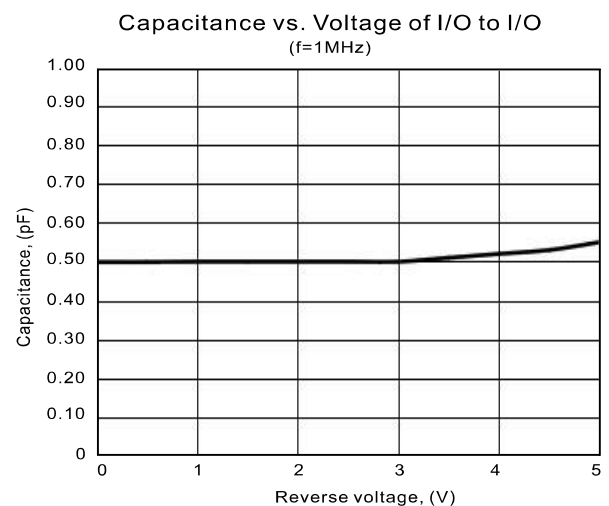
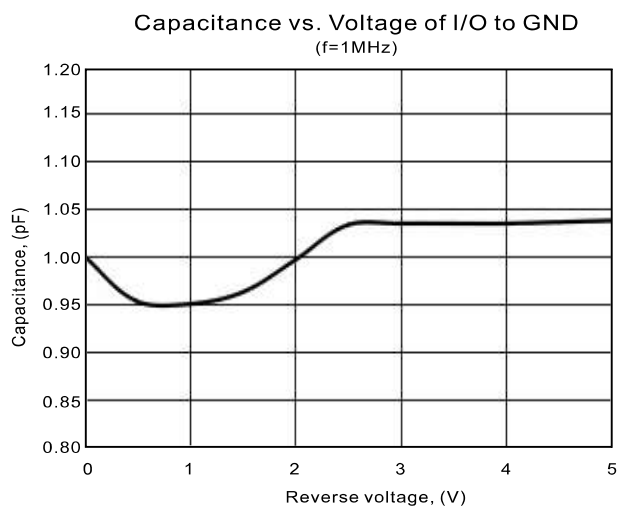
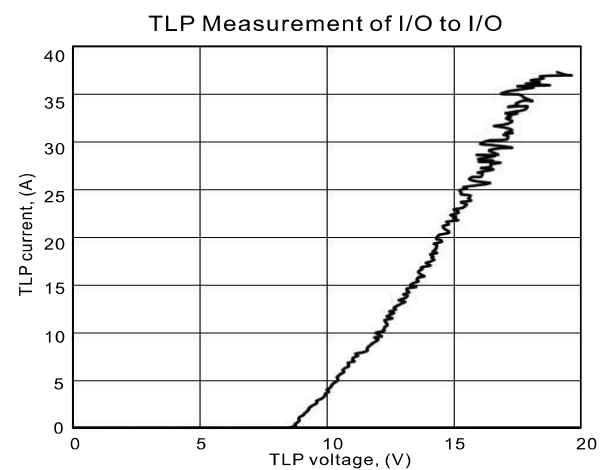
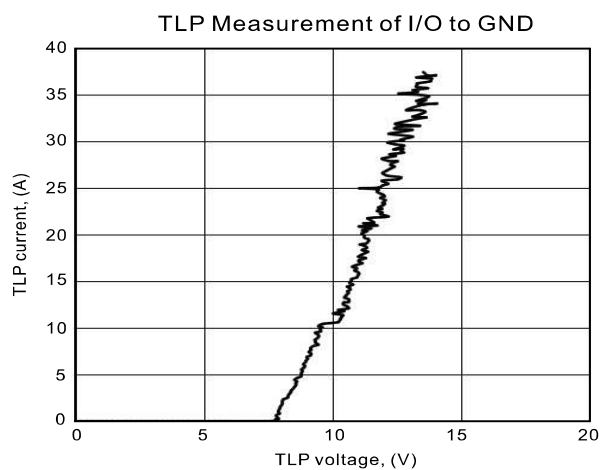
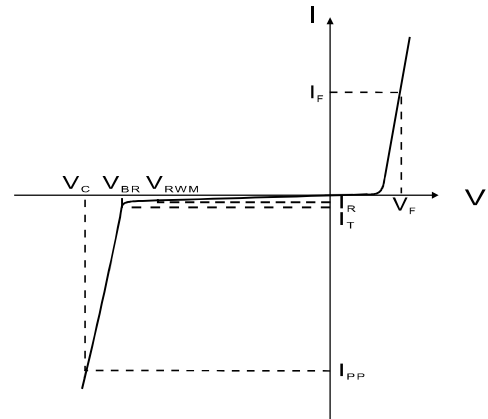
Electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Reverse stand-off voltage		V_{RWM}			5	V
Reverse leakage current	$V_{RWM}=5\text{V}$, $T_A=25^\circ\text{C}$ (Between I/O and GND)	I_R		0.01	0.1	μA
Breakdown voltage	$I_T=1\text{mA}$ (Between I/O and GND)	V_{BR}	6	7.5		V
Clamping voltage	$I_{PP}=1\text{A}$, $t_p=8/20\mu\text{s}$ (Between I/O and GND)	V_C		8.5		V
	$I_{PP}=8\text{A}$, $t_p=8/20\mu\text{s}$ (Between I/O and GND)			11.5		
Parasitic capacitance	$V_R=0\text{V}$, $f=1.0\text{MHz}$ (Between I/O and GND)	C_{ESD}		1		pF
	$V_R=0\text{V}$, $f=1.0\text{MHz}$ (Between I/O and I/O)			0.5		

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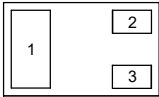
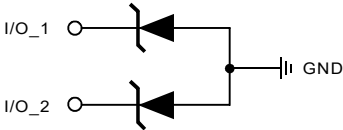
Rating and characteristic curves

Symbol	Parameter
V_{RWM}	Nominal reverse working voltage
I_R	Reverse leakage current@ V_{RWM}
V_{BR}	Reverse breakdown voltage@ I_T
I_T	Test current for reverse breakdown
V_C	Clamping voltage @ I_{PP}
I_{PP}	Maximym peak pulse current
C_{ESD}	Parasitic capacitance
V_R	Reverse voltage
f	Small signal frequency



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Pinning information

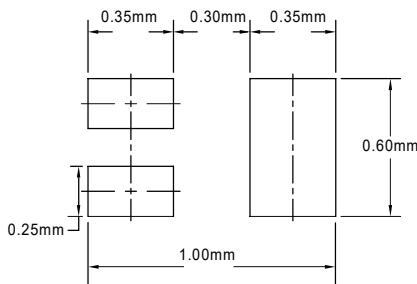
Pin	Simplified outline	Symbol
Pin 1 GND Pin 2 I/O_1 Pin 3 I/O_2	 Top view  Bottom view	

Marking

Type number	Marking code
L052AT1006P3	3X

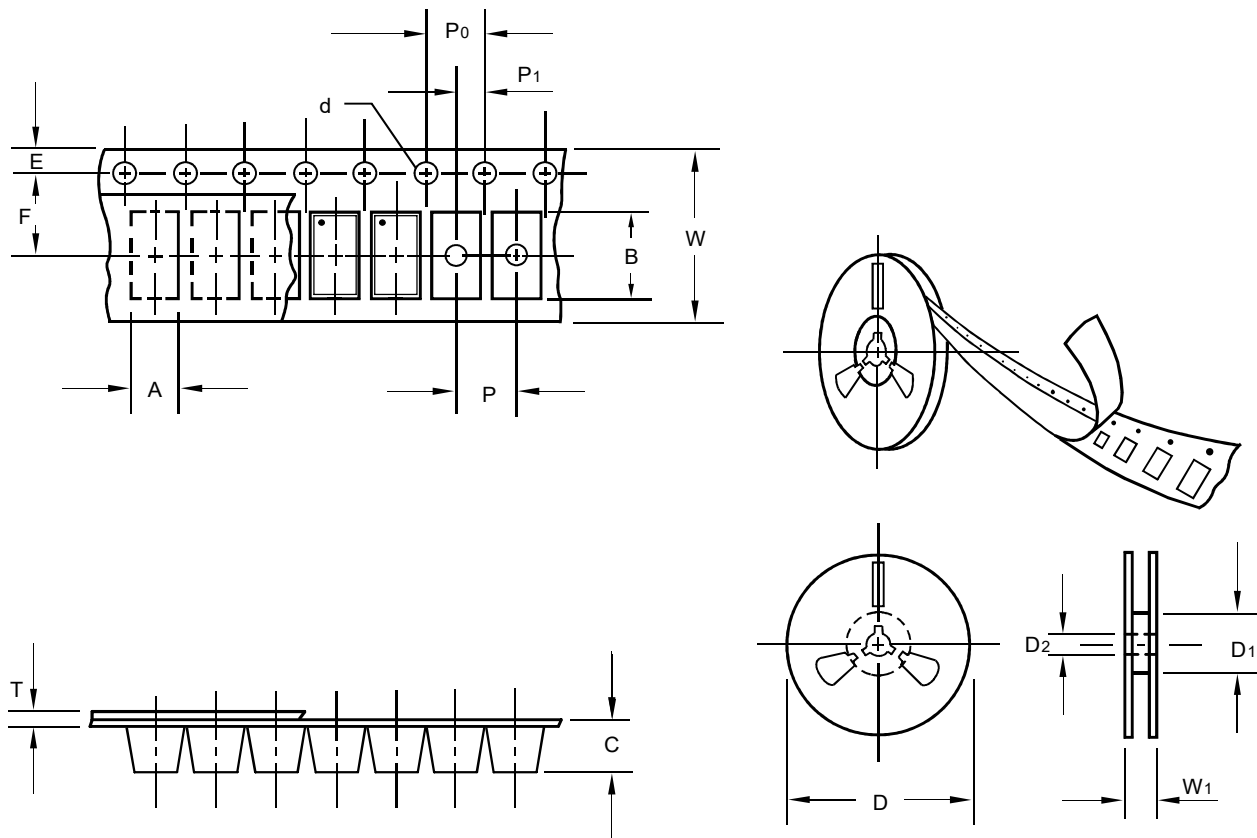
**"3" is part number, fixed.
"X" is the internal code.

Suggested solder pad layout



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Packing information



unit:mm

Item	Symbol	Tolerance	T1006P3
Carrier width	A	0.1	0.70
Carrier length	B	0.1	1.15
Carrier depth	C	0.1	0.55
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	55.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	2.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.20
Tape width	W	0.3	8.00

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

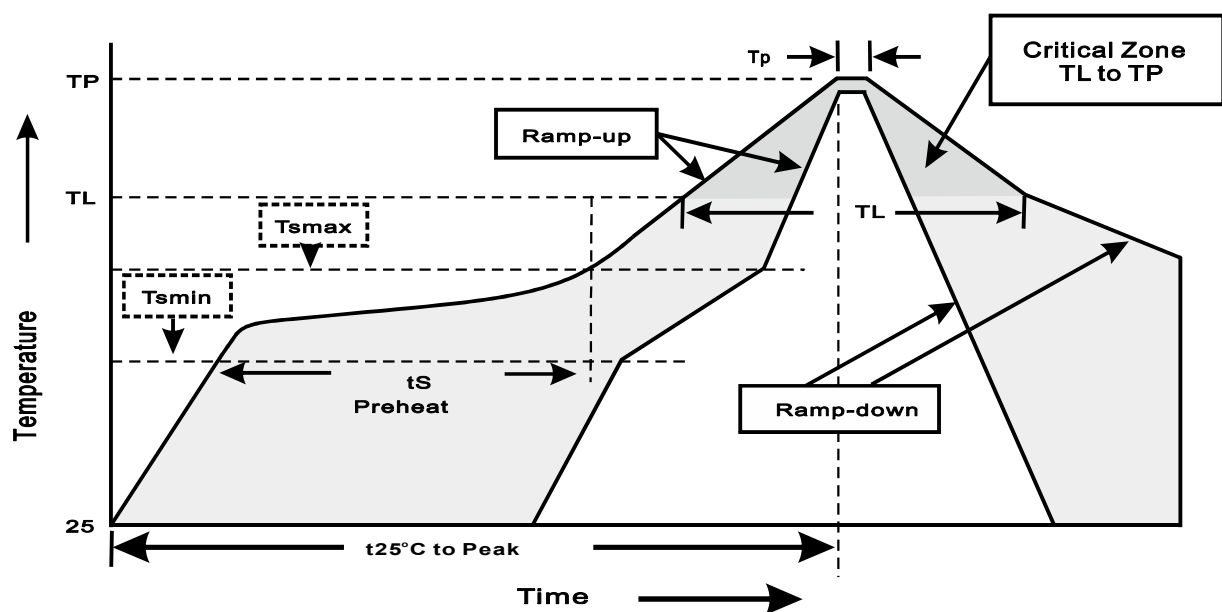
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)
T1006P3	7"	10,000	4.0	100,000	183*123*183	178	382*257*387	800,000

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{Smin}) -Temperature Max(T _{Smax}) -Time(min to max)(t _S)	150°C 200°C 60~120sec
T _{Smax} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes