

25W SURFACE MOUNT TVS BI-DIRECTIONAL FOR ESD PROTECTION-3.3V

DESCRIPTION:



The **ALPLL03BT1006** is 25W Surface Mount TVS Bi-Directional For ESD Protection-3.3V are optimized for high-speed lines, Ideal for Protects one data, control or power line.

FEATURES:

- Package optimized for high-speed lines.
- Ultra-small package (1.0mm x 0.6mm x 0.55mm).
- Protects one data, control, or power line.
- Low capacitance: 0.15pF (Typical).
- Low leakage current: 0.1μA @V_{RWM} (Typical).
- Low clamping voltage.
- Provide transient protection:
 - IEC 61000-4-2 (ESD) ±17KV(Air), ±10KV(Contact).
 - IEC 61000-4-4 (EFT) 40A (5/50ns) Cable discharge event (CDE).
- Each I/O pin can withstand over 1000 ESD Strikes for ±8KV contact discharge.
- We declare that the material of product compliance with RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. ALPLL03BT1006-H

APPLICATIONS:

- Serial ATA.
- PCI Express.
- USB 2.0/3.0/3.1 Power and data line protection.
- HDMI 1.4/2.0.

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 rated flame retardant.
- Package: T1006P2
- RoHS Compliant
- Approximate Weight: 0.73 grams.

TYPICAL DEVICE CHARACTERISTICS

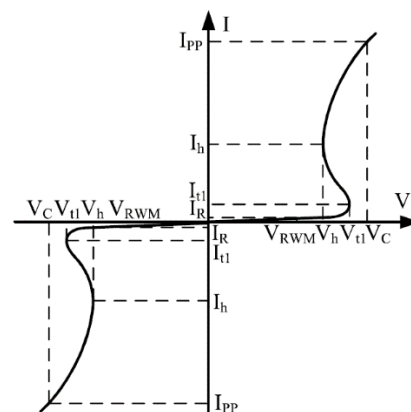
MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUES	UNITS
Peak pulse power ($t_p=8/20\mu\text{s}$)	P_{PP}	25	Watts
Peak pulse current ($t_p=8/20\mu\text{s}$)	I_{PP}	5	Amps
ESD per IEC 61000-4-2 (Contact)	V_{ESD}	± 10	KV
ESD per IEC 61000-4-2 (Air)		± 17	
Operating temperature	T_{OPT}	+125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	Min.	Typ.	Max.	UNIT
Reverse stand-off voltage		V_{RWM}			3.3	V
Reverse leakage current	$V_{RWM} = 3.3\text{V}$	I_R		0.1	0.5	μA
Trigger voltage	$I_{t1} = 10\mu\text{A}$	V_{t1}	6.5		8.5	V
Holding voltage	$I_h = 30\text{mA}$	V_h		2.4		V
Clamping voltage @ I_{PP}	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$	V_C			4.0	V
	$I_{PP} = 5\text{A}$, $t_p = 8/20\mu\text{s}$				5.0	
Junction capacitance	$V_R = 0\text{V}$, $f = 1\text{MHz}$	C_d		0.15	0.19	pF

PARAMETER	SYMBOL
Nominal Reverse Working Voltage	V_{RWM}
Reverse Leakage Current @ V_{RWM}	I_R
Trigger Voltage	V_{t1}
Trigger Current @ V_{t1}	I_{t1}
Holding Voltage	V_h
Holding Current @ V_h	I_h
Clamping Voltage @ I_{PP}	V_C
Maximum Peak Pulse Current	I_{PP}
Diode Capacitance	C_d



Bi-Directional TVS

TYPICAL DEVICE CHARACTERISTICS CURVES

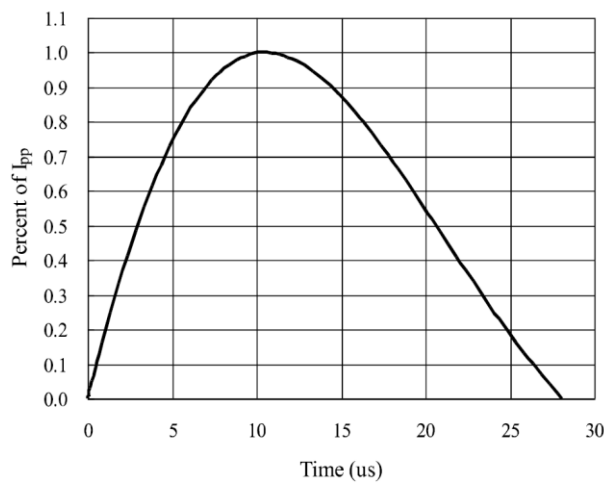


Fig1. 8/20 μ s PULSE WAVEFORM

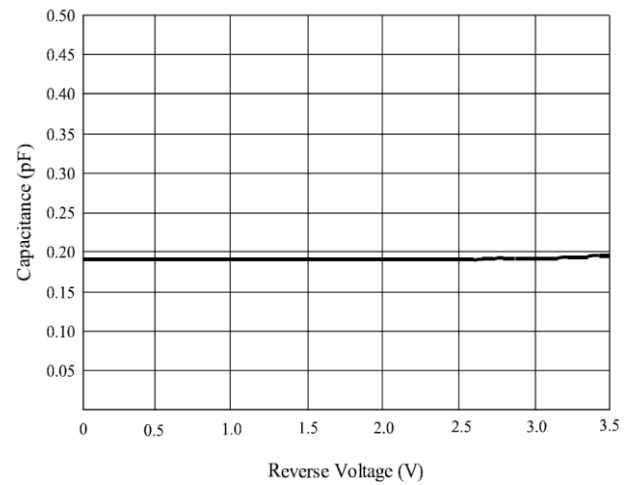
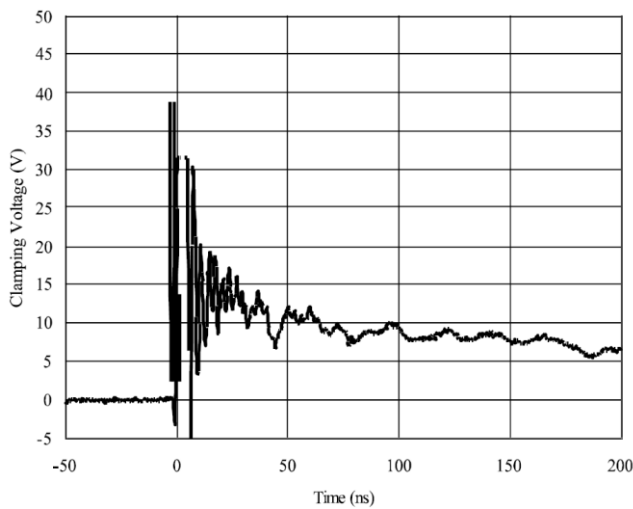
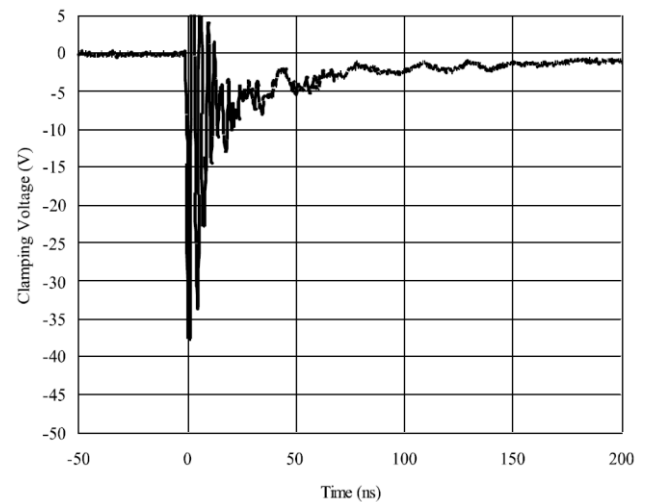


Fig2. CAPACITANCE Vs REVERSE VOLTAGE



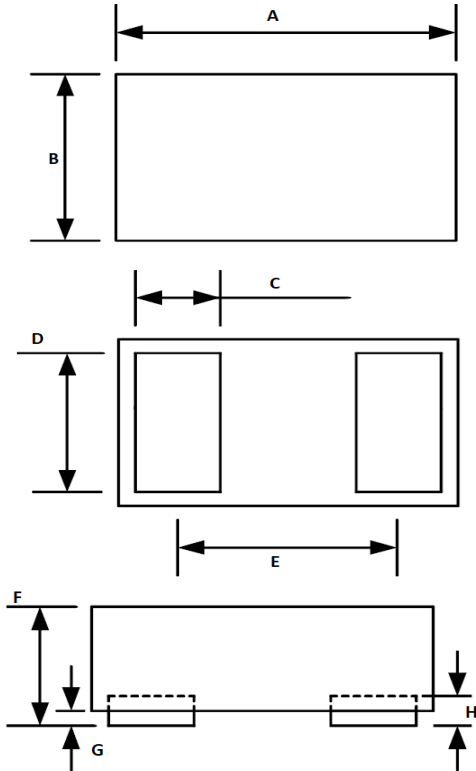
**Fig3. ESD CLAMPING of I/O to GND
(+8kV Contact per IEC 61400-4-2)**



**Fig4. ESD CLAMPING of I/O to GND
(-8kV Contact per IEC 61400-4-2)**

PACKAGE INFORMATION

T1006P2

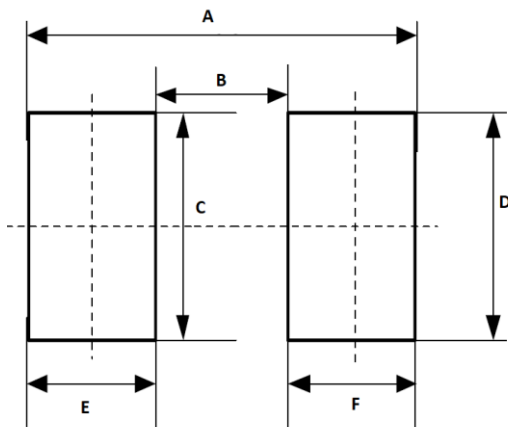


OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.95	1.05	0.037	0.041
B	0.55	0.65	0.022	0.026
C	0.20	0.30	0.008	0.012
D	0.45	0.55	0.018	0.022
E	0.65 BSC.		0.026 BSC.	
F	0.40	0.55	0.016	0.022
G	0.00	0.05	0.00	0.002
H	0.125 REF.		0.005 REF.	

NOTES

1. Dimensions are exclusive of mold flash and metal burrs.

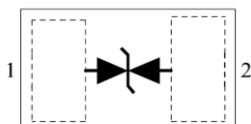


PAD LAYOUT DIMENSIONS

DIM	MILLIMETERS
	Typ.
A	1.00
B	0.30
C	0.60
D	0.60
E	0.35
F	0.35

PINNING INFORMATION

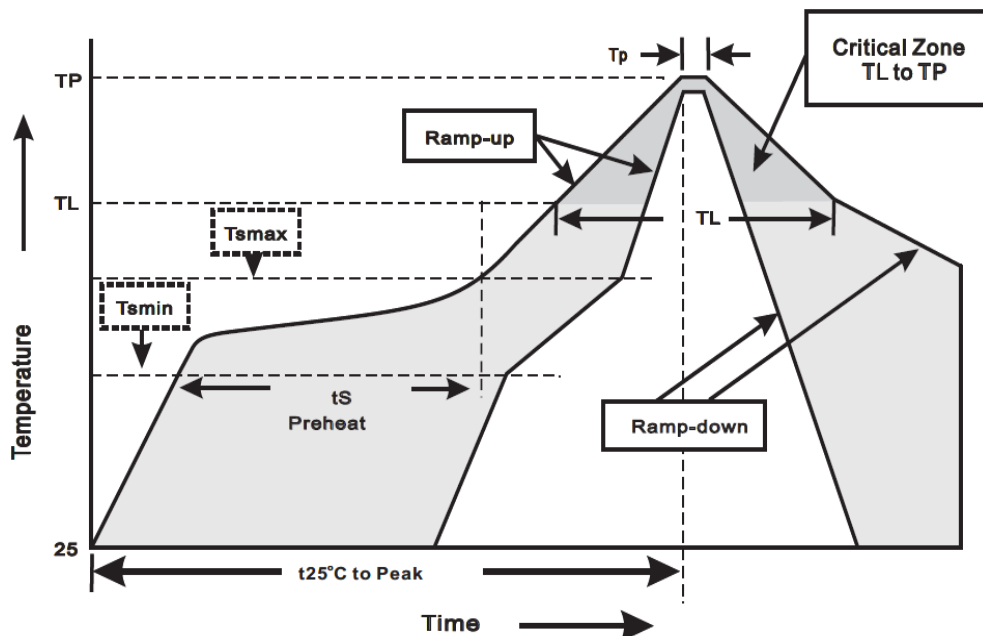
SYMBOL



SOLDERING PARAMETERS

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 ~ 120 sec
T_{smax} to T_L - Ramp-upRate	<3 °C/sec
Time maintained above: - Temperature (T_L) - Time(t_L)	217 °C 60 ~ 260 sec
Peak Temperature (T_P)	255 °C-0/+5 °C
Time within 5 °C of actual Peak Temperature(t_P)	10 ~ 30 sec
Ramp-down Rate	<6 °C/sec
Time 25 °C to Peak Temperature	<6 minutes



beyond boundaries...

ALPLL03BT1006

T1006P2

CUSTOMER NOTE:

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2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).



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