5.0VOLT LOW CAPACITANCE TVS

DESCRIPTION:

The ALPES05VLD0603-2 is a 5.0Volt low capacitance TVS is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time.

The ALPES05VLD0603-2 is suited for using in cellular phones, portable devices, digital cameras, power supplies and many other portable applications.

FEATURES:

- IEC 61000-4-2 (ESD)
  - ±8kV Contact Discharge
  - ±15kV Air Discharge
- IEC 61000-4-5(Lightning)
  - 4A (8/20µs)
- IEC 61000-4-4 EFT Protection
  - 40A (5/50nS)
- Halogen free and RoHS compliant
- Protects one directional I/O line
- Transient protection for high-speed data lines
- Low clamping voltage
- Low leakage current

APPLICATIONS:

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants
- Notebooks / Desktops / Servers
- Portable Instrumentation
- Peripherals & Pagers
- Switch Systems
- 10/100/1000 Ethernet
- WAN/LAN Equipment

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, DFN0603-2L
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position: Any.

ABSOLUTE MAXIMUM RATINGS

MAXIMUM RATINGS @ T_A = 25 °C unless otherwise specified			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power (t_p=8/20µs) @25℃	P_{pk}	100	W
Peak pulse current (t_p=8/20µs) @25℃	I_{PP}	4	A
ESD (IEC61000-4-2 air discharge) @25℃	V_{ESD}	±15	kV
ESD (IEC61000-4-2 contact discharge) @25℃	V_{ESD}	±8	kV
Junction Temperature	T_J	+125	°C
Operating Temperature Range	T_{OP}	-40 to +125	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Lead Temperature	T_L	260	°C

ELECTRICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS @ T_A = 25 °C unless otherwise specified						
PARAMETER	**CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Reverse Stand-off Voltage		V_{RWM}			5.0	V
Reverse Breakdown Voltage	I_T = 1mA	V_{BR}	6.0		9.0	V
Reverse Leakage Current	V_{RWM} = 5V	I_R			0.1	µA
Clamping Voltage	I_{PP} = 1A; t_p = 8/20µs	V_C		15.0		V
	I_{PP} = 4A; t_p = 8/20µs			25.0		V
Junction Capacitance	I/O to GND; V_R = 0V; f = 1MHz	C_J		0.35	0.5	pF

TYPICAL DEVICE RATING AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

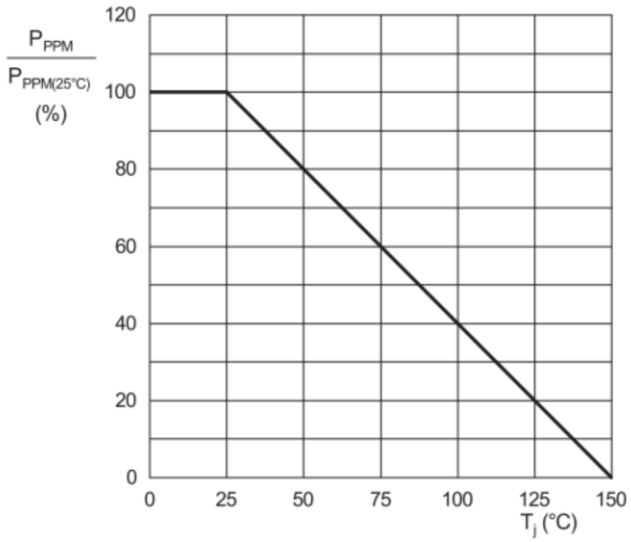


Fig.1 PEAK PULSE POWER DERATING CURVE

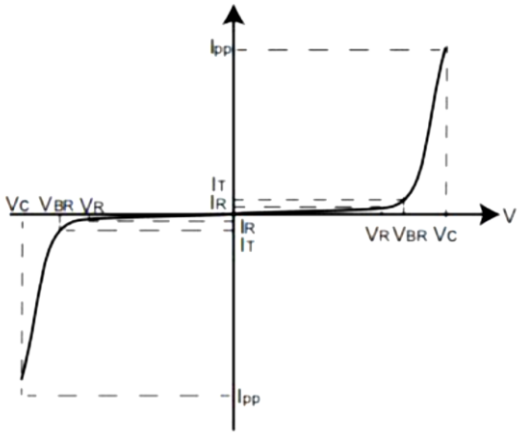


Fig.2 PARAMETER DEFINITION

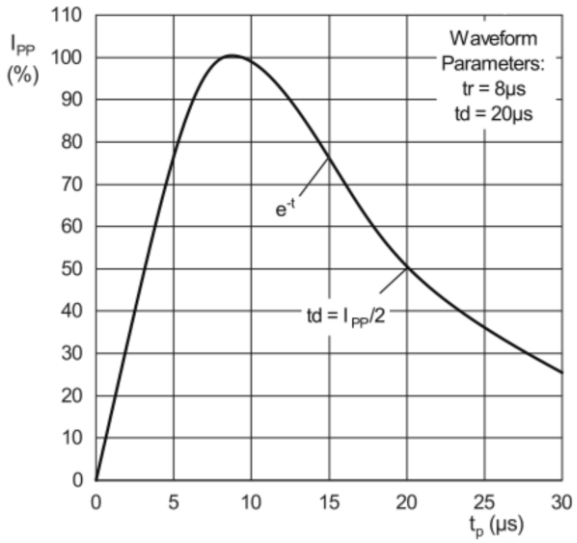
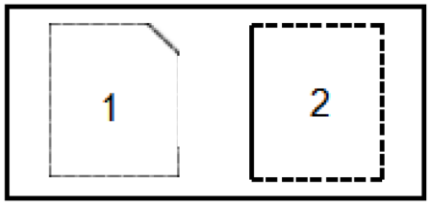
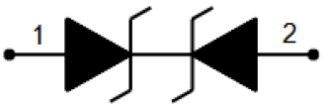


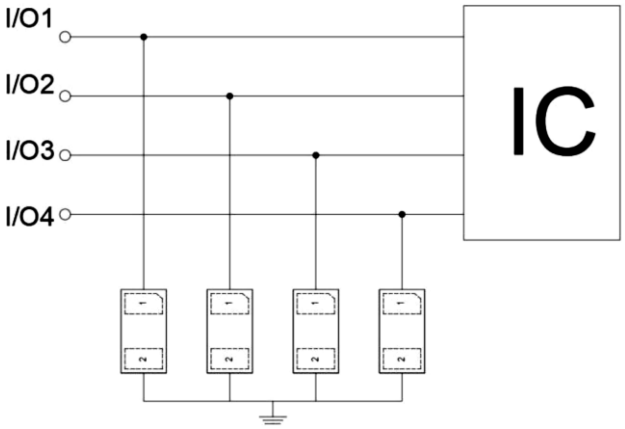
Fig.3 PULSE WAVEFORM

PINNING INFORMATION

PIN	NAME	DESCRIPTION	SIMPLIFIED OUTLINE	CIRCUIT DIAGRAM
1	IO1	Connect to IO		
2	IO2	Connect to IO		

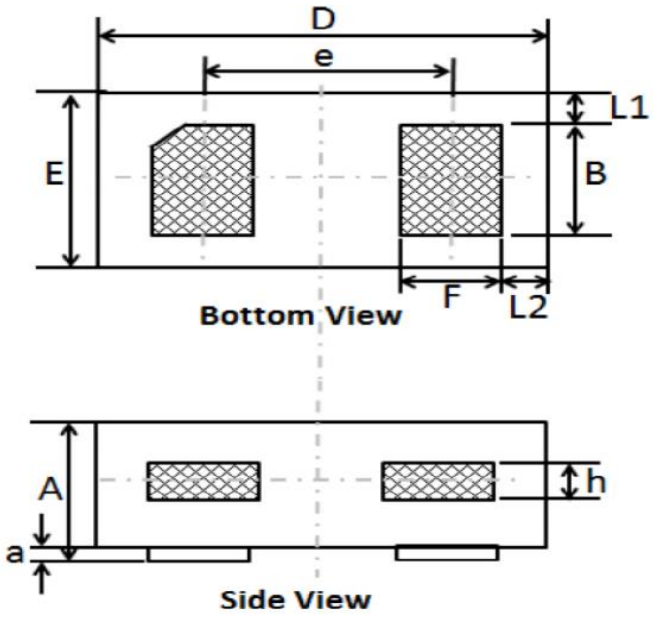
APPLICATIONS INFORMATION

Typical Interface Application



PACKAGE INFORMATION

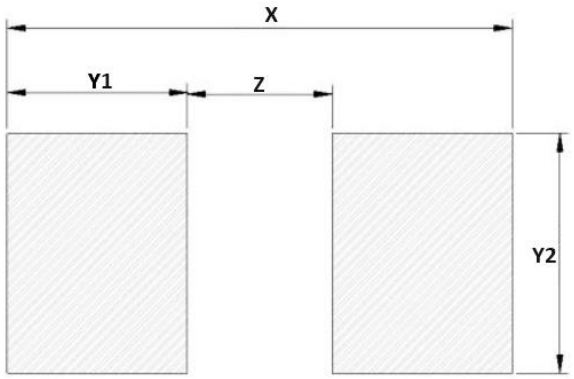
DFN0603-2L



OUTLINE DIMENSIONS				
SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.260	0.350	0.010	0.014
B	0.200	0.300	0.008	0.012
D	0.550	0.650	0.022	0.026
E	0.250	0.350	0.010	0.014
F	0.130	0.230	0.005	0.009
L1	0.025 BSC		0.001 BSC	
L2	0.035 BSC		0.001 BSC	
a	0.000	0.050	0.000	0.002
e	0.350 BSC		0.014 BSC	
h	0.050 BSC		0.002 BSC	

Note:
1. Controlling dimension: in millimeters.
2. General tolerance: ±0.05mm

SUGGESTED SOLDER PAD LAYOUT



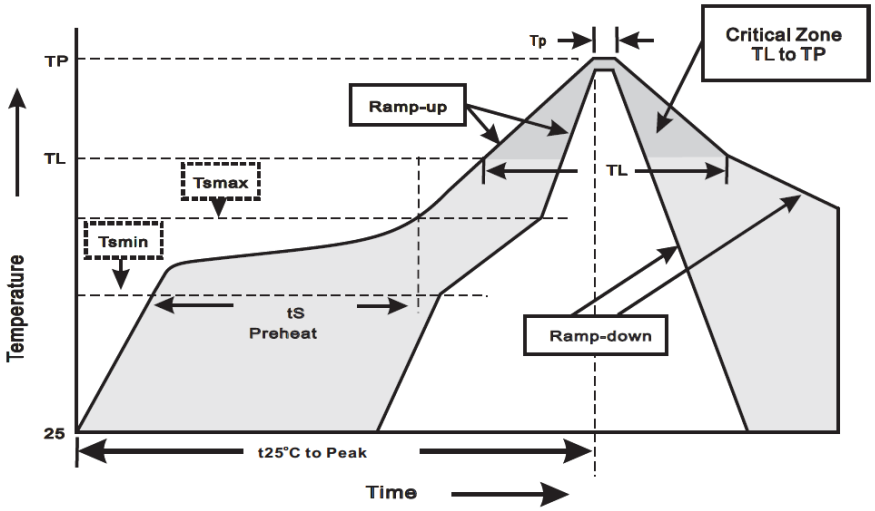
OUTLINE DIMENSIONS		
SYMBOL	MILLIMETERS	INCHES
X	0.380	0.015
Y1	0.230	0.009
Y2	0.300	0.012
Z	0.150	0.006

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(tL)	 217 °C 60 ~ 260 sec
Peak Temperature (T_P)	255 °C-0/+5 °C
Time within 5 °C of actual Peak Temperature(tP)	10 ~ 30 sec
Ramp-down Rate	<6 °C/sec
Time 25 °C to Peak Temperature	<6 minutes

CUSTOMER NOTE:

DISCLAIMER

The product information and the selection guide facilitates the selection of the ALPINESEMI™'s Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review the Data sheet(s) so as to confirm that the Device(s) meets functionality parameters for your application. The information furnished on the Data Sheet and the ALPINESEMI™'s Web Site is believed to be accurate and reliable at the time of preparation of this document. ALPINESEMI™ however, does not assume any inaccuracies that may arise when the components are mounted and removed. Furthermore, ALPINESEMI™ does not assume liability whatsoever, arising out of the application or the use of any of ALPINESEMI™'s product(s). Neither, does it convey any license under its patent rights nor the rights of others. These products are not guaranteed for use in life saving/support appliances or systems. ALPINESEMI™'s customers using these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and ALPINESEMI™ will not be responsible in any way(s) for any damage(s) resulting from such use.

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Component Disposal Instructions

1. ALPINESEMI™ Semiconductor Devices are RoHS compliant and hence customers are requested to dispose as per the prevailing Environmental Legislation put forth in their specific country.

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

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sales@alpinesemi.com
www.alpinesemi.com