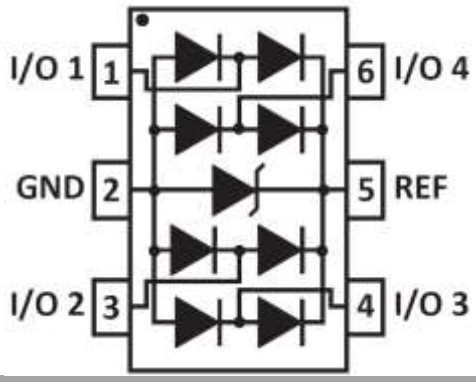
ULTRA LOW CAPACITANCE STEERING DIODE/TVS ARRAY

DESCRIPTION:



The ALPSRV05-4 is a dual USB port protection array that features ultra low capacitance. This device can be used in applications such as video cards, SMART phones, Gigabit Ethernet and other computer interfaces. Designed for ESD protection, the ALPSRV05-4 can clamp the effects of electrical fast transients on the power bus.

The ALPSRV05-4 combines 8 low capacitance steering diodes for up to four individual data or transmission lines and one TVS diode for power bus protection. This device is available in the space-saving SOT-23-6 package configuration, which minimizes lead inductance to prevent overshoot voltages during high ESD current events.

The ALPSRV05-4 meets the IEC 61000-4-2, 61000-4-2 and 61000-4-5 requirements.

FEATURES:

- Compatible with IEC 61000-4-2 (ESD): Air ±15kV, Contact ±8kV
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 24A, 8/20µs - Level 2(Line-Ground) & Level 3 (Line-Line)
- 500 Watts Peak Pulse Power per Line (tp = 8/20µs)
- ESD Protection > 25 kilovolts
- Low Clamping Voltage
- Protection for 4 Lines
- Ultra Low Capacitance: 3.5pF Typical (IO to GND)
- RoHS Compliant
- REACH Compliant

APPLICATIONS:

- Gigabit Ethernet
- SMART Phones
- Portable Electronics
- Video Card Interfaces
- USB 2.0 Interfaces
- DVI Interfaces

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	**SYMBOL**	**VALUE**	**UNITS**
Peak Pulse Power (tp = 8/20µs) - See Figure 1	P_{PP}	500	Watts
Operating Temperature	T_L	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Forward Surge Rating (5ms @ 25°C, I_F = 10mA)	V_F	0.5 Min. – 1.2 Max.	Volts
Peak Pulse Current (tp = 8/20µs) - Note 1	I_{PP}	30	Amps
NOTES 1. Across TVS only - pin 2 to pin 5.			

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified									
PART NUMBER	**RATED STAND-OFF VOLTAGE (Note 1)** V_{WM} **VOLTS**	**MINIMUM BREAKDOWN VOLTAGE (Note 1)** @ 1mA $V_{(BR)}$ **VOLTS**	**MAXIMUM CLAMPING VOLTAGE (Fig. 2) (Note 1)**		**MAXIMUM LEAKAGE CURRENT (Note 1)**	**TYPICAL CAPACITANCE I/O to GND**	**MAXIMUM CAPACITANCE I/O to GND**	**TYPICAL CAPACITANCE I/O to I/O**	**MAXIMUM CAPACITANCE I/O to I/O**
			@ I_P = 1A V_C **VOLTS**	@ I_P = 5A V_C **VOLTS**	@V_{WM} I_D **µA**	@0V, 1MHz $C_{J(SD)}$ **pF**	@0V, 1MHz $C_{J(SD)}$ **pF**	@0V, 1MHz $C_{J(SD)}$ **pF**	@0V, 1MHz $C_{J(SD)}$ **pF**
ALPSRV05-4	5.0	6.0	12.0	15.0	5	3.5	5.0	2.5	4.0

TYPICAL DEVICE CHARACTERISTICS CURVES

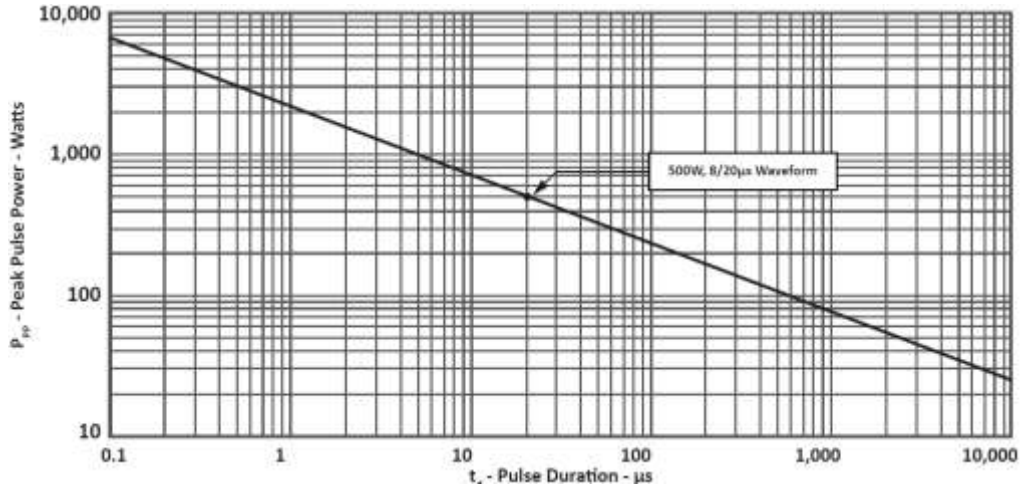


Fig1. PEAK PULSE POWER VS PULSE TIME

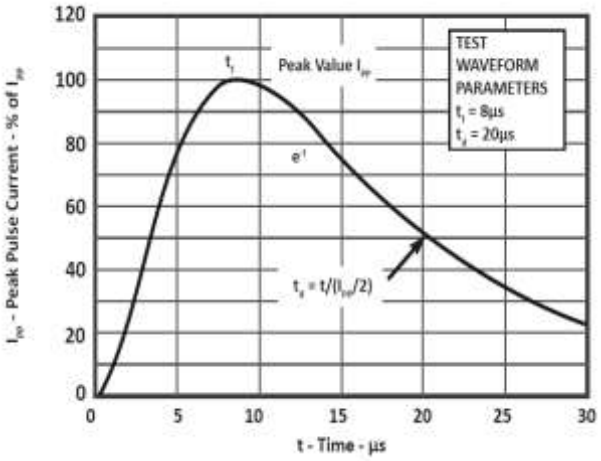


Fig2. PULSE WAVE FORM

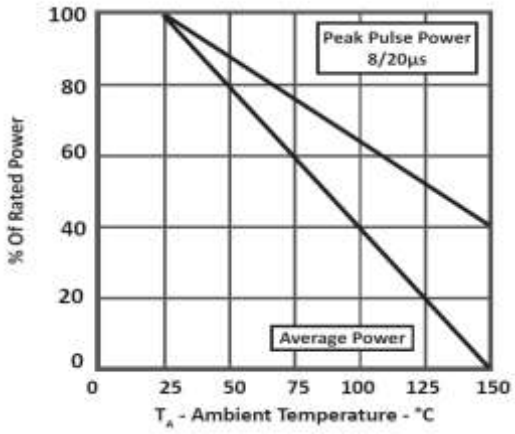


Fig3. POWER DERATING CURVE

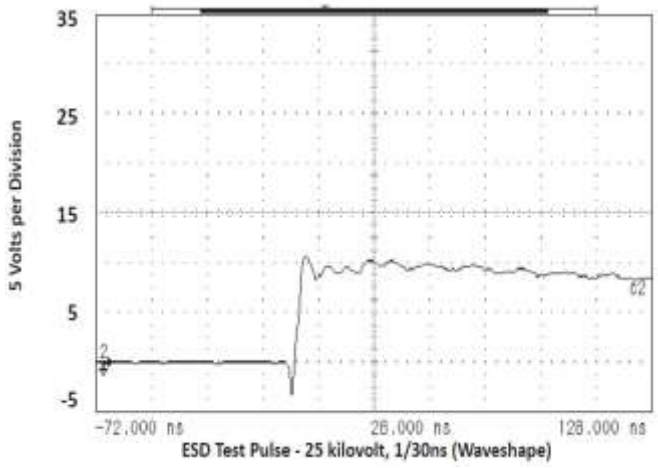


Fig4. OVERSHOOT & CLAMPING VOLTAGE

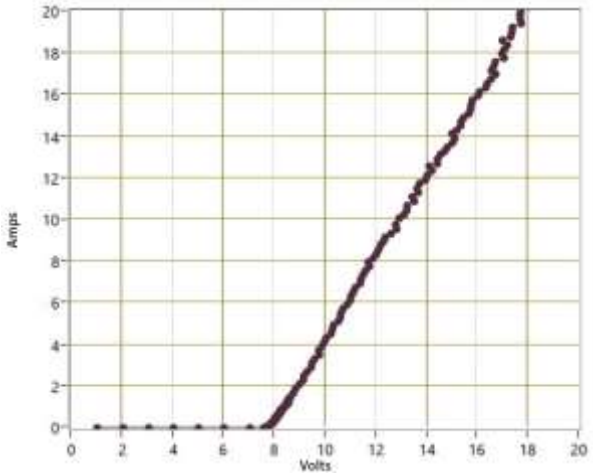
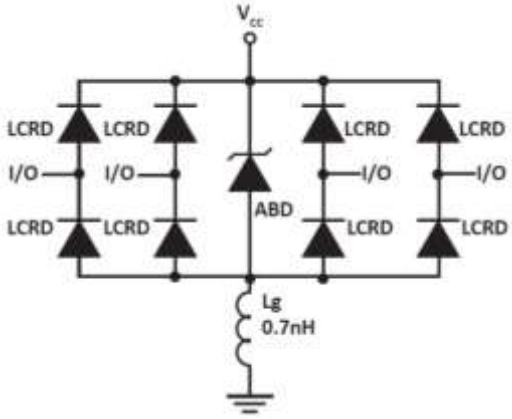


Fig5. TLP CURVE

SPICE MODEL

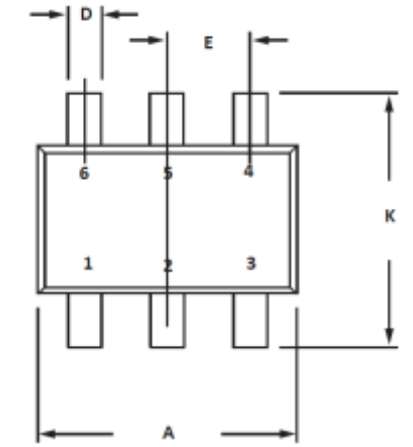


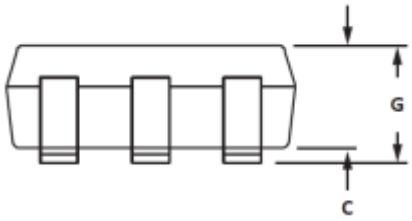
LCABD - Low Capacitance Avalanche Breakdown Diode (TVS)
LCRD: Low Capacitance Rectifier Diode
Lg - Lead Inductance

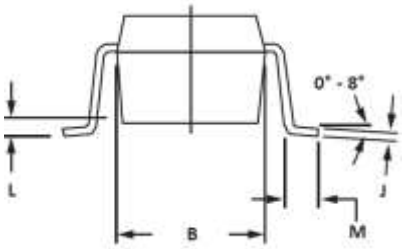
TABLE 1 – SPICE PARAMETERS

PARAMETER	UNIT	ABD(TVS)	ABD(TVS)
BV	V	6.0	200
IBV	µA	1	0.01
C_{jo}	pF	230	3
I_S	A	1E-11	1E-13
Vj	V	0.6	0.6
M	-	0.33	0.33
N	-	1	1
R_S	Ohms	0.014	0.31
TT	S	1E-9	1E-9
EG	eV	1.11	1.11

PACKAGE INFORMATION

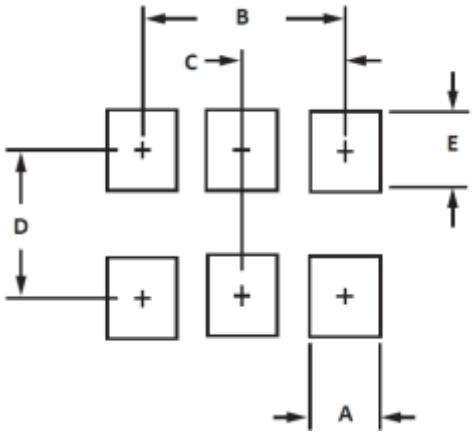






OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.05	0.110	0.120
B	1.50	1.75	0.059	0.070
C	0.90	1.30	0.036	0.051
D	0.30	0.40	0.012	0.016
E	0.85	1.05	0.033	0.040
G	0.90	1.45	0.036	0.057
J	0.09	0.20	0.003	0.008
K	2.60	3.00	0.102	0.118
L	0.0	0.15	0.0	0.006
M	0.30	0.60	0.012	0.024

NOTES
1. Controlling dimension: inches.
2. Dimensioning and tolerances per ANSI Y14.5M, 1985.
3. Dimensions are exclusive of mold flash and metal burrs.



PAD LAYOUT DIMENSIONS		
DIM	MILLIMETERS	INCHES
	NOMINAL	NOMINAL
A	0.70	0.028
B	1.90	0.074
C	0.95	0.037
D	2.40	0.094
E	1.00	0.039

NOTES
1. Controlling dimension: inches.

CUSTOMER NOTE:

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sales@alpinesemi.com
www.alpinesemi.com