

HIGH POWER TVS ARRAY

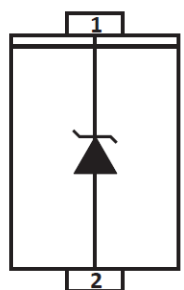
DESCRIPTION:



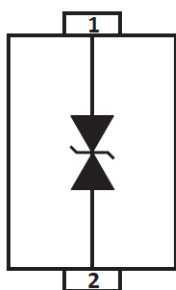
The ALPPSDXXA/CA series are transient voltage suppressor arrays designed for ESD protection of SMART phones, laptop computers and other portable electronics. This device gives superior clamping voltage and performance compared to other technologies such as MLVs.

The ALPPSDXXA/CA series can be utilized as a single line protector in a unidirectional or bidirectional configuration. The SOD-323 small package configuration offers designers the flexibility of placement on the printed circuit board for each I/O port or voltage bus.

This device series meets the IEC 61000-4-2 (ESD), 61000-4-4 (EFT) and 61000-4-5 requirements.



UNIDIRECTIONAL



BIDIRECTIONAL

FEATURES:

- Compatible with IEC 61000-4-2 (ESD): Air $\pm 15\text{kV}$, Contact $\pm 8\text{kV}$
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 24A, 8/20 μs Level 2 (Line- Gnd) & Level 3 (Line-Line)
- Unidirectional: 500 Watts Peak Pulse Power per Line ($t_p = 8/20\mu\text{s}$)
- Bidirectional: 400 Watts Peak Pulse Power per Line ($t_p = 8/20\mu\text{s}$)
- Replacement for MLV (0805)
- Unidirectional & Bidirectional Configurations
- Available in Multiple Voltages Ranging From 3V to 36V
- Protects One Power or I/O Port
- ESD Protection > 25kV
- Low Clamping Voltage
- RoHS Compliant
- REACH Compliant

APPLICATIONS:

- Laptop Computers
- SMART Phones
- Portable Electronics

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Unidirectional: Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1	P_{PP}	500	Watts
Bidirectional: Peak Pulse Power ($t_p = 8/20\mu s$) - See Figure 1	P_{PP}	400	Watts
Operating Temperature	T_L	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified					
PART NUMBER (Note 1)	RATED STAND-OFF VOLTAGE V_{WM} VOLTS	MINIMUM BREAKDOWN VOLTAGE @ 1mA $V_{(BR)}$ VOLTS	MAXIMUM CLAMPING VOLTAGE (Fig. 2) @ $I_P = 1A$ V_C VOLTS	MAXIMUM LEAKAGE CURRENT @ V_{WM} I_D μA	TYPICAL CAPACITANCE @ 0V, 1MHz C pF
ALPPSD03A	3.3	4.0	6.5	125	500
ALPPSD03CA	3.3	4.0	7.0	125	200
ALPPSD05A	5.0	6.0	9.8	10	350
ALPPSD05CA	5.0	6.0	9.8	10	175
ALPPSD08A	8.0	8.5	13.4	10	250
ALPPSD08CA	8.0	8.5	13.4	10	150
ALPPSD12A	12.0	13.3	19.0	1	150
ALPPSD12CA	12.0	13.3	19.0	1	50
ALPPSD15A	15.0	16.7	24.0	1	100
ALPPSD15CA	15.0	16.7	24.0	1	40
ALPPSD18A	18.0	20.0	29.0	1	90
ALPPSD18CA	18.0	20.0	29.0	1	40
ALPPSD24A	24.0	26.7	43.0	1	88
ALPPSD24CA	24.0	26.7	43.0	1	40
ALPPSD36A	36.0	40.0	60.0	1	75
ALPPSD36CA	36.0	40.0	60.0	1	35
NOTE					
1. Part numbers with "CA" suffix are bidirectional devices, i.e., ALPPSD36CA .					

TYPICAL DEVICE CHARACTERISTICS CURVES

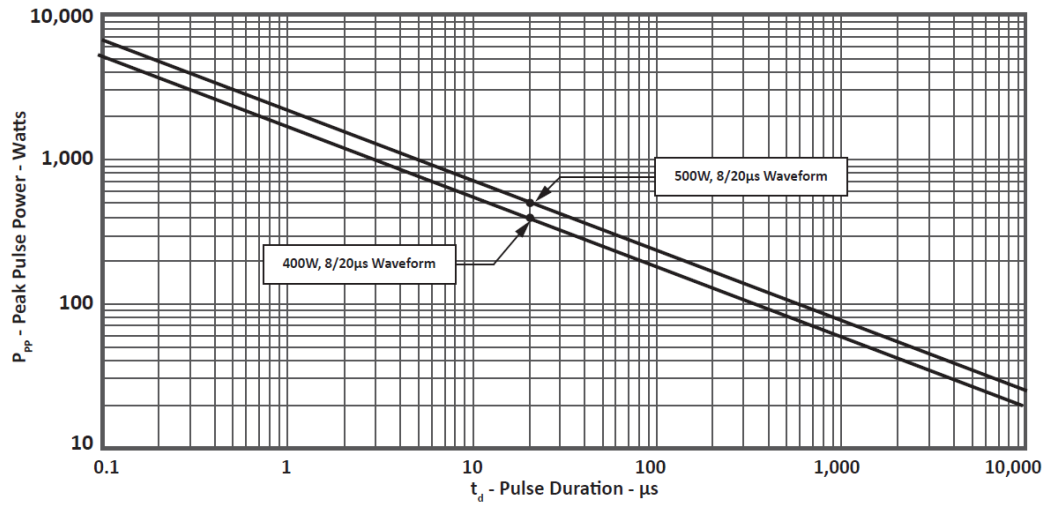


Fig1. PEAK PULSE POWER VS PULSE TIME

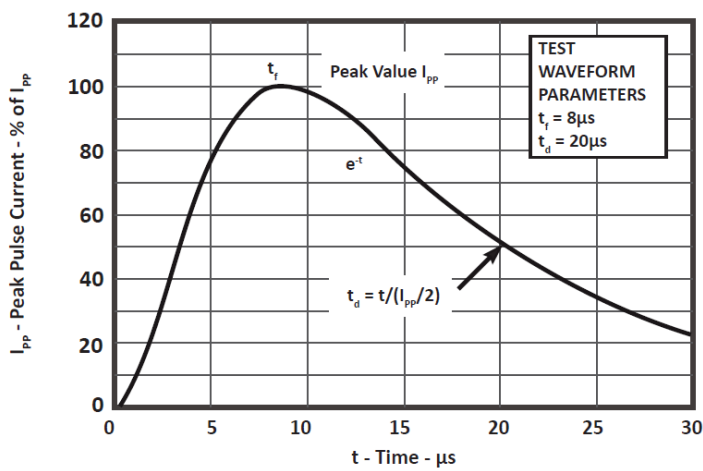


Fig2. PULSE WAVE FORM

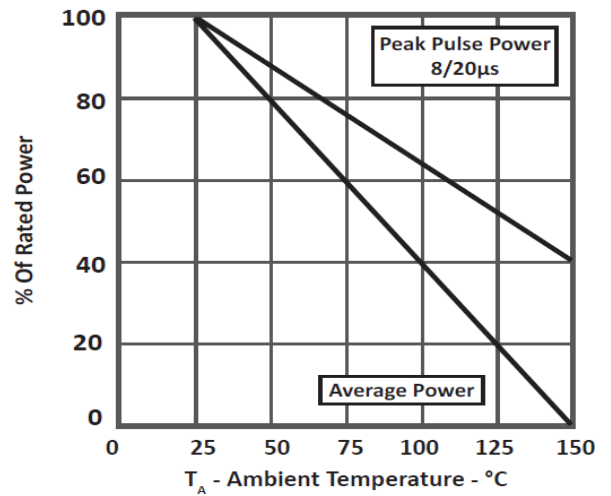


Fig3. POWER DERATING CURVE

TYPICAL DEVICE CHARACTERISTICS CURVES

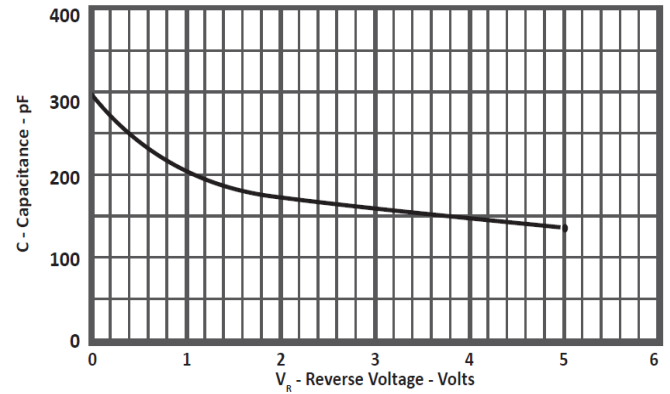
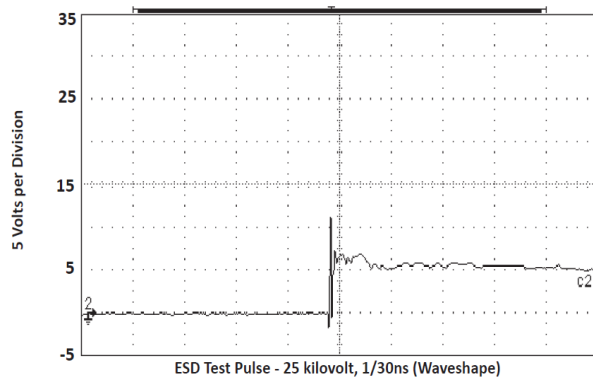


Fig4. OVERSHOOT & CLAMPING VOLTAGE FOR ALPSD03A

Fig.5 CAPACITANCE VS REVERSE VOLTAGE

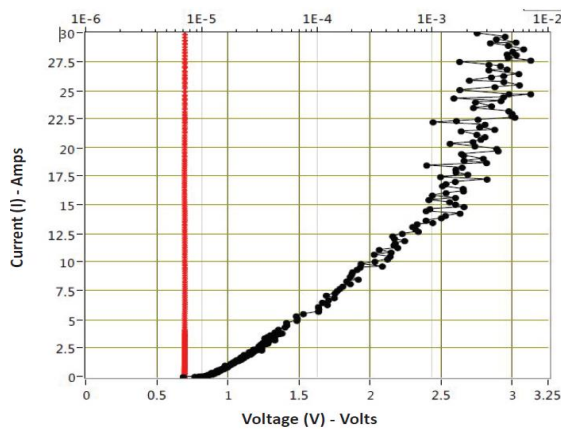


Fig.6 ALPSD03A FORWARD TLP
Leakage Current @ Pulse (I) - μ A
Leakage Test Voltage = 0.5V

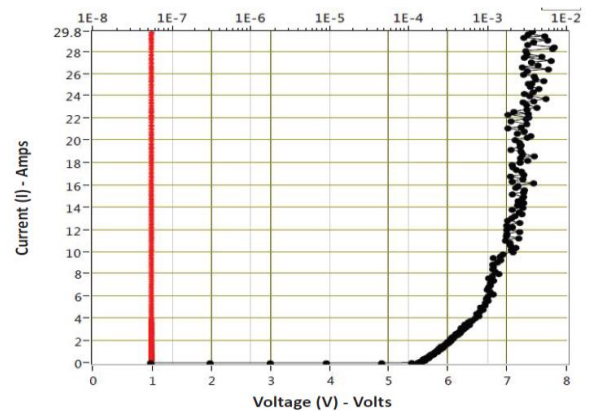


Fig.7 ALPSD03A REVERSE TLP
Leakage Current @ Pulse (I) - μ A
Leakage Test Voltage = 0.5V

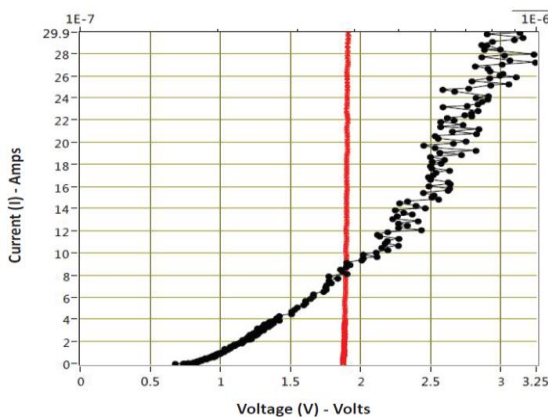


Fig.8 ALPPSD36A FORWARD TLP
Leakage Current @ Pulse (I) - μ A
Leakage Test Voltage = 0.5V

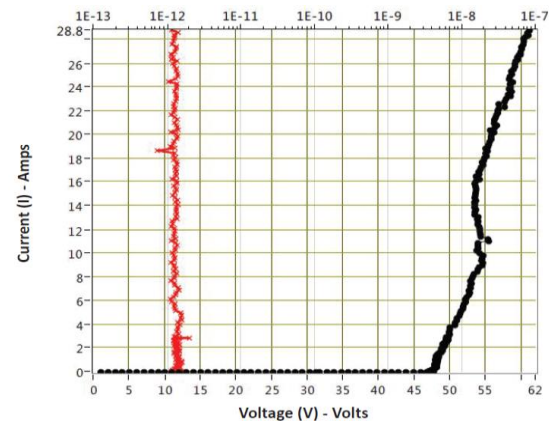
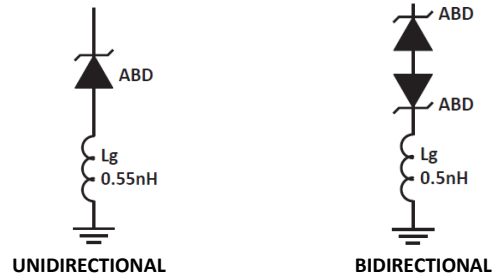


Fig.9 ALPPSD36A REVERSE TLP
Leakage Current @ Pulse (I) - μ A
Leakage Test Voltage = 0.5V

Note: Indicative TLP performance- for reference only

SPICE MODEL

FIGURE 1
SPICE MODEL FOR



ABD - Avalanche Breakdown Diode (TVS)
Lg - Lead Inductance

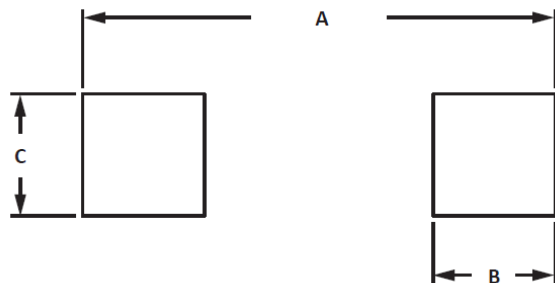
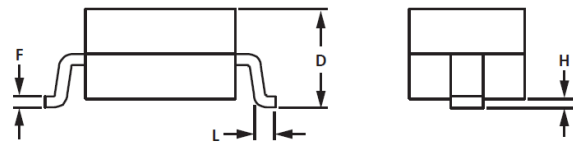
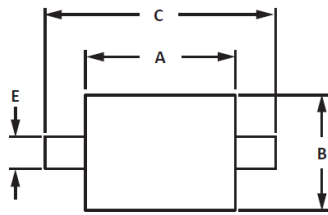
TABLE 1 - SPICE PARAMETERS

PARAMETER	UNIT	ABD(TVS)
BV	V	See Table 2
IBV	μA	1
C_{jo}	pF	See Table 2
I_s	A	See Table 2
V_j	V	0.6
M	-	0.33
N	-	1
R_s	Ohms	See Table 2
TT	s	1E-8
EG	eV	1.11

TABLE 2 - ABD SPECIFIC SPICE PARAMETERS

PART NUMBER	B _V (VOLTS)	C _{jo} (pF)	I _s (AMPS)	R _s (OHMS)
ALPPSD03A	4.0	438	1E-11	0.21
ALPPSD05A	6.0	284	1E-11	0.14
ALPPSD08A	8.5	146	1E-11	0.28
ALPPSD12A	13.3	123	1E-13	0.40
ALPPSD15A	16.7	102	1E-13	0.52
ALPPSD24A	26.7	61	1E-13	1.54
ALPPSD03CA	4.5	219	1E-11	0.21
ALPPSD05CA	6.0	142	1E-11	0.14
ALPPSD08CA	8.5	73	1E-11	0.28
ALPPSD12CA	13.3	62	1E-13	0.40
ALPPSD15CA	16.7	51	1E-13	0.52
ALPPSD24CA	26.7	30	1E-13	1.54

PACKAGE INFORMATION



OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.60	1.90	0.063	0.075
B	1.15	1.45	0.045	0.057
C	2.39	2.70	0.094	0.106
D	0.80	1.10	0.031	0.043
E	0.25	0.40	0.010	0.016
F	0.10	0.20	0.004	0.008
H	-	0.10	-	0.004
L	0.20	-	0.008	-

NOTES

1. Controlling dimension: millimeters.
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	
	MIN	MAX	MIN	MAX
A	2.87	3.12	0.113	0.123
B	0.66	0.91	0.026	0.036
C	0.66	0.91	0.026	0.036

NOTES

1. Controlling dimension: millimeters.



beyond boundaries...

ALPPSDXXA/CA Series

SOD-323

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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