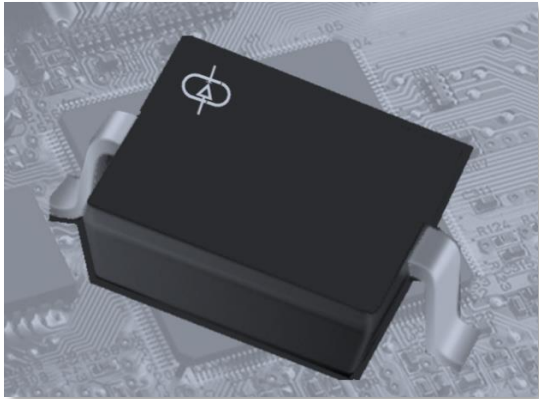


HIGH POWER TVS ARRAY

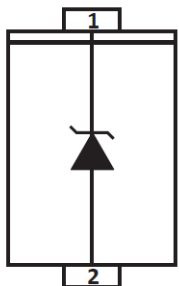
DESCRIPTION:



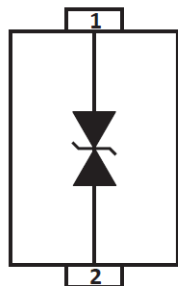
The ALPAMSD23XXA/CA series are transient voltage suppressor arrays designed for ESD protection of automotive applications. This device gives superior clamping voltage and performance compared to other technologies such as MLVs.

The ALPAMSD23XXA&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:

- AEC-Q101 Qualified
- 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- Gnd) & Level 3 (Line-Line)
- Unidirectional: 500 Watts Peak Pulse Power per Line (tp = 8/20µs)
- Bidirectional: 400 Watts Peak Pulse Power per Line (tp = 8/20µs)
- Replacement for MLV (0805)
- Unidirectional & Bidirectional Configurations
- Available in Multiple Voltages
- Protects One Power or I/O Port
- ESD Protection > 25kV
- Low Clamping Voltage
- RoHS Compliant
- REACH Compliant

APPLICATIONS:

- Automotive



beyond boundaries...

ALPAMSD23XXA/CA Series

SOD-323

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ 25°C Unless Otherwise Specified			
PARAMETER	SYMBOL	VALUE	UNITS
Unidirectional: Peak Pulse Power (tp = 8/20μs) - See Figure 1	P _{PP}	500	Watts
Bidirectional: Peak Pulse Power (tp = 8/20μs) - 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) @ IP = 1A V _C VOLTS	MAXIMUM LEAKAGE CURRENT @V _{WM} I _D μA	TYPICAL CAPACITANCE @0V, 1MHz C pF
ALPAMSD2303A	3.3	4.0	6.5	125	500
ALPAMSD2303CA	3.3	4.0	7.0	125	200
ALPAMSD2305CA	5.0	6.0	9.8	10	175
ALPAMSD2308CA	8.0	8.5	13.4	10	150
ALPAMSD2312CA	12.0	13.3	19.0	1	50
ALPAMSD2315A	15.0	16.7	24.0	1	100
ALPAMSD2324CA	24.0	26.7	43.0	1	40
ALPAMSD2336CA	36.0	40.0	60.0	1	35

NOTE
1. Part numbers with "CA" suffix are bidirectional devices, i.e., ALPAMSD2336CA.

TYPICAL DEVICE CHARACTERISTICS CURVES

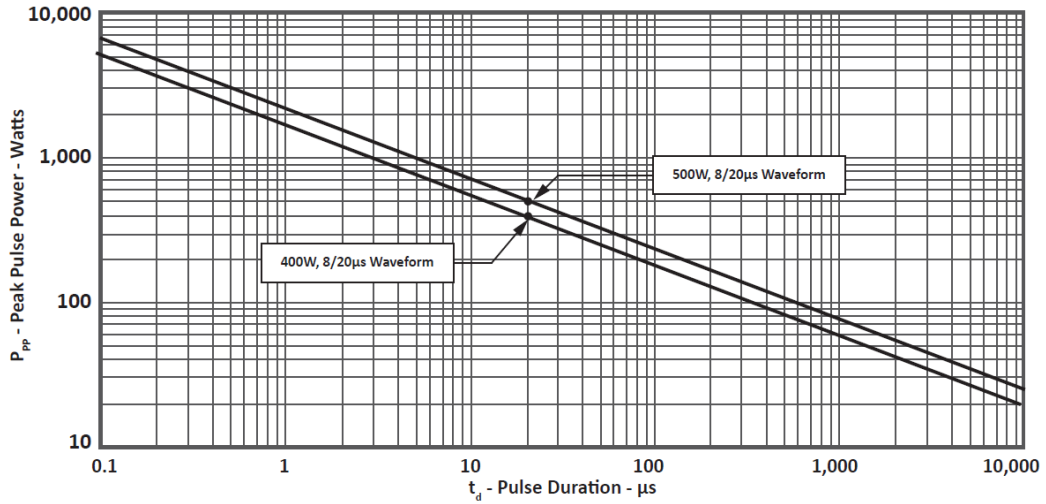


Fig1. PEAK PULSE POWER VS PULSE TIME

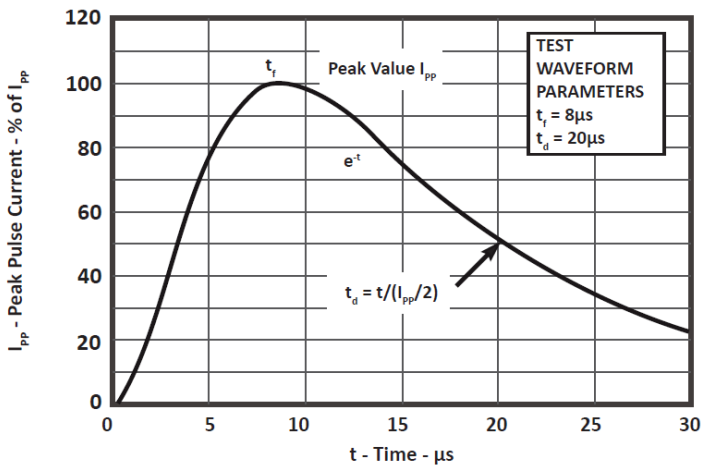


Fig2. PULSE WAVE FORM

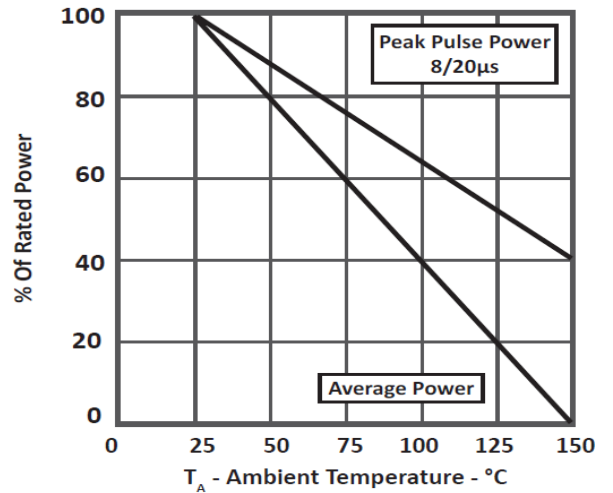


Fig3. POWER DERATING CURVE

TYPICAL DEVICE CHARACTERISTICS CURVES

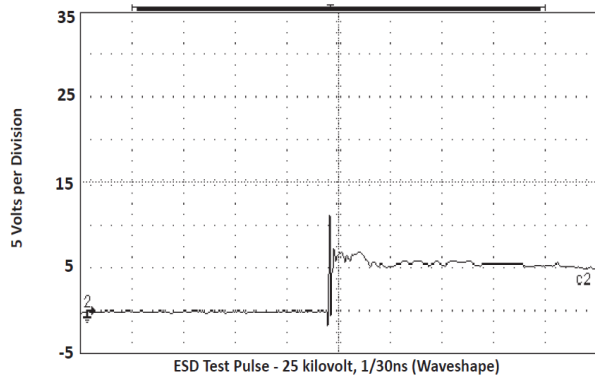


Fig4. OVERSHOOT & CLAMPING VOLTAGE FOR ALPAMSD2303A

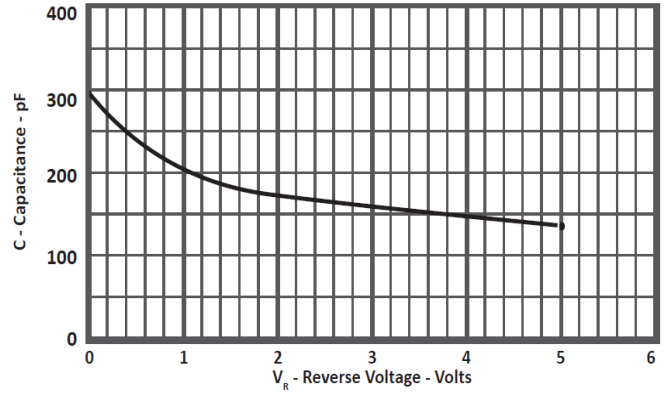


Fig.5 CAPACITANCE VS REVERSE VOLTAGE

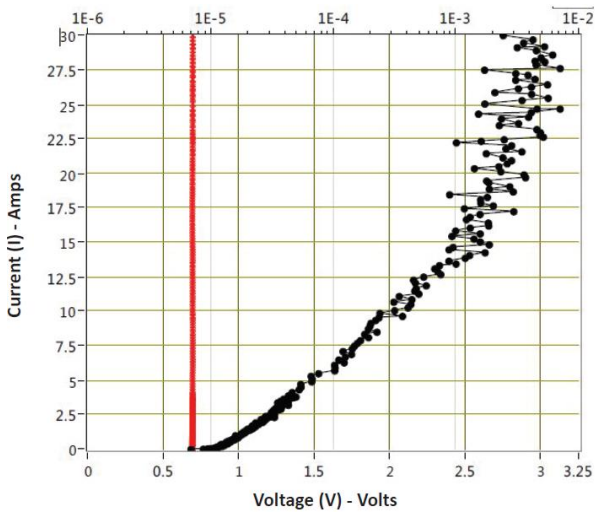


Fig.6 ALPAMSD2303A FORWARD TLP Leakage Current @ Pulse (I) - μA Leakage Test Voltage = 0.5V

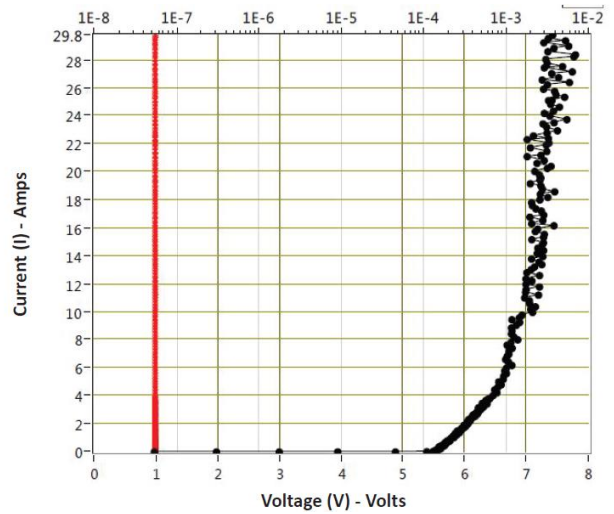
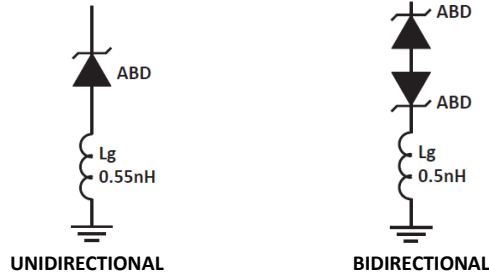


Fig.7 ALPAMSD2303A REVERSE TLP Leakage Current @ Pulse (I) - μA Leakage Test Voltage = 0.5V

Note: Indicative TLP performance- for reference only

SPICE MODEL

FIGURE 1
SPICE MODEL FOR

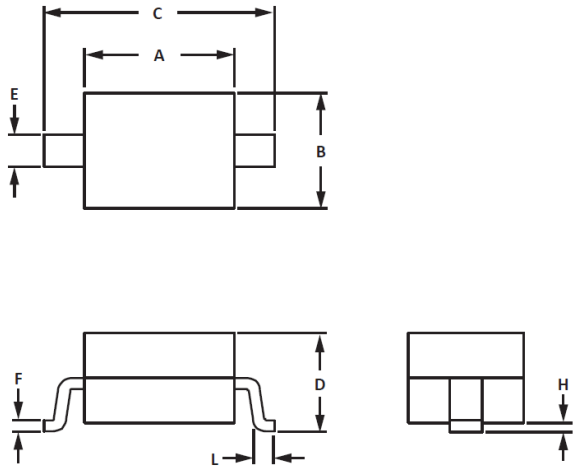


ABD - Avalanche Breakdown Diode (TVS)
Lg - Lead Inductance

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

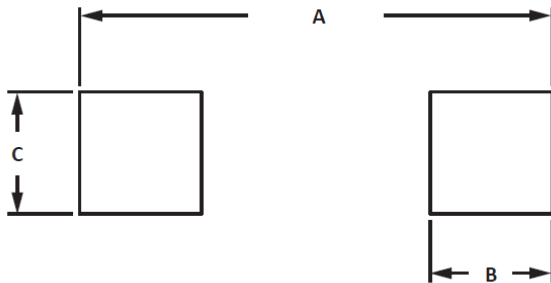
TABLE 2 - ABD SPECIFIC SPICE PARAMETERS				
PART NUMBER	B _v (VOLTS)	C _{jo} (pF)	I _s (AMPS)	R _s (OHMS)
ALPAMSD2303A	4.0	438	1E-11	0.21
ALPAMSD2315A	16.7	102	1E-13	0.52
ALPAMSD2303CA	4.5	219	1E-11	0.21
ALPAMSD2305CA	6.0	142	1E-11	0.14
ALPAMSD2308CA	8.5	73	1E-11	0.28
ALPAMSD2312CA	13.3	62	1E-13	0.40
ALPAMSD2315CA	16.7	51	1E-13	0.52
ALPAMSD2324CA	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...

ALPAMSD23XXA/CA Series

SOD-323

CUSTOMER NOTE:

DISCLAIMER

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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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