

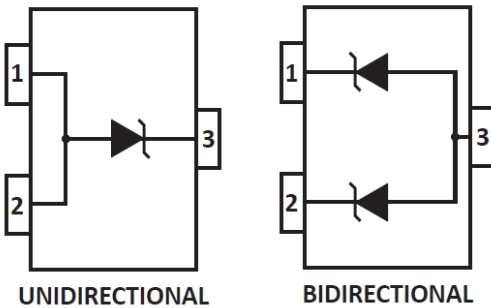
500 WATT TVS ARRAY

DESCRIPTION:



The ALPAMST23XXA/CA (UNI/BI) Series are multi-line transient voltage suppressor arrays with **AEC-Q101 approved** series that provides board level protection for power or data line applications against the damaging effects of ESD, tertiary lightning and switching transients.

The ALPAMST23XXA/CA Series has a peak pulse power rating of 500 Watts for an 8/20µs waveshape and is available in either a bidirectional or unidirectional configuration. This device series meets the IEC 61000-4-2, IEC 61000-4-4 and IEC 61000-4-5 requirements.



FEATURES:

- **AEC-Q101 Qualified.**
- Compatible with IEC 61000-4-2 (ESD): Level 4 - 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)
- Low Clamping Voltage
- Bidirectional and Unidirectional Configurations
- Available in Multiple Voltages Ranging from 3V to 36V
- RoHS Compliant
- REACH Compliant

APPLICATIONS:

- Automotive application



beyond boundaries...

ALPAMST23XXA/CA Series

SOT-23

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 Voltage @ 100mA, 300μs, Square Wave - See Note 1	V _F	1.5	Volts
NOTE 1. Applies to unidirectional pins only.			

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 CLAMPING VOLTAGE (Fig. 2) @ 8/20μs V _c @ I _{pp}	MAXIMUM LEAKAGE CURRENT @V _{WM} I _D μA	TYPICAL CAPACITANCE @0V, 1MHz C pF
ALPAMST2303A	3.3	4.0	6.5	10.9V @ 43.0A	125	500
ALPAMST2303CA	3.3	4.0	7.0	10.9V @ 43.0A	125	300
ALPAMST2305A	5.0	6.0	9.8	13.5V @ 42.0A	20	350
ALPAMST2305CA	5.0	6.0	9.8	13.5V @ 42.0A	20	210
ALPAMST2308A	8.0	8.5	13.4	16.9V @ 34.0A	10	250
ALPAMST2308CA	8.0	8.5	13.4	16.9V @ 34.0A	10	150
ALPAMST2312A	12.0	13.3	19.0	25.9V @ 21.0A	2	150
ALPAMST2312CA	12.0	13.3	19.0	25.9V @ 21.0A	2	90
ALPAMST2315A	15.0	16.7	24.0	30.0V @ 17.0A	1	100
ALPAMST2315CA	15.0	16.7	24.0	30.0V @ 17.0A	1	60
ALPAMST2324A	24.0	26.7	43.0	49.0V @ 12.0A	1	88
ALPAMST2324CA	24.0	26.7	43.0	49.0V @ 12.0A	1	63
ALPAMST2336A	36.0	40.0	51.0	76.8V @ 9.0A	1	80
ALPAMST2336CA	36.0	40.0	51.0	76.8V @ 9.0A	1	60
NOTES 1. Part Numbers with "CA" suffix are bidirectional devices, i.e., ALPAMST2336CA.						

TYPICAL DEVICE CHARACTERISTICS CURVES

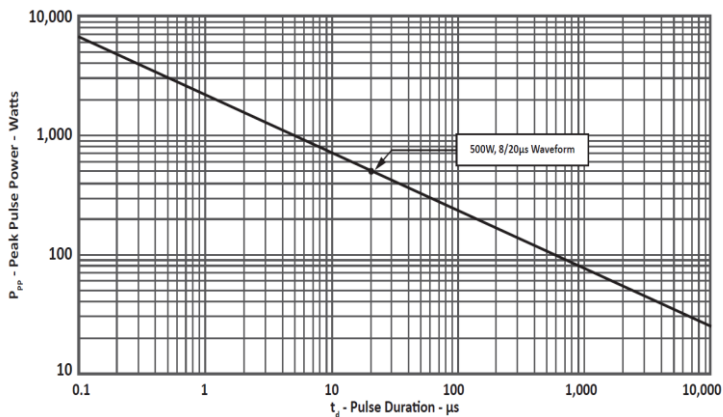


Fig1. PEAK PULSE POWER VS PULSE TIME

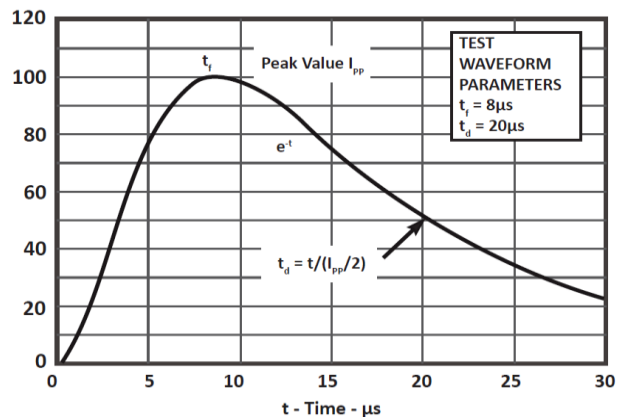


Fig2. PULSE WAVEFORM

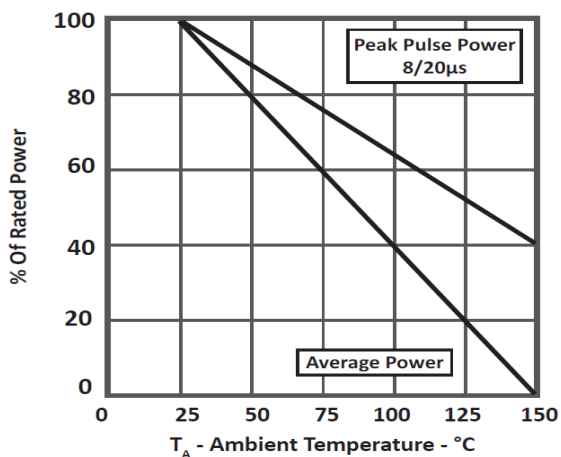


Fig3. POWER DERATING CURVE

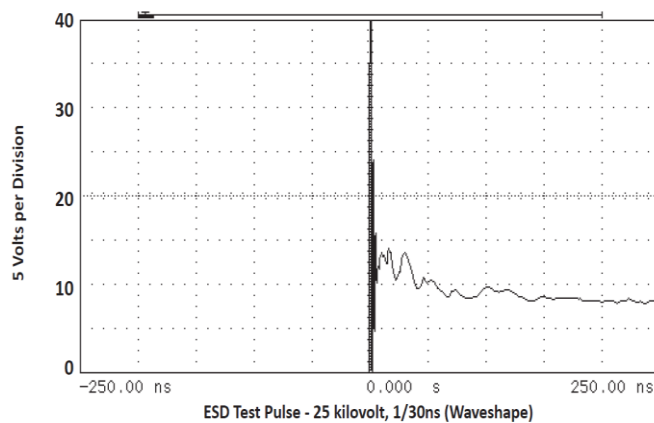
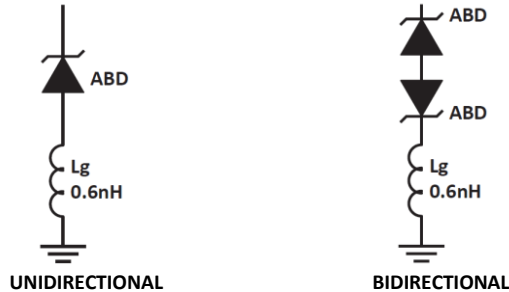


Fig4. OVERSHOOT & CLAMPING VOLTAGE FOR ALPAMST2305CA

SPICE MODEL

FIGURE 1
SPICE MODEL FOR

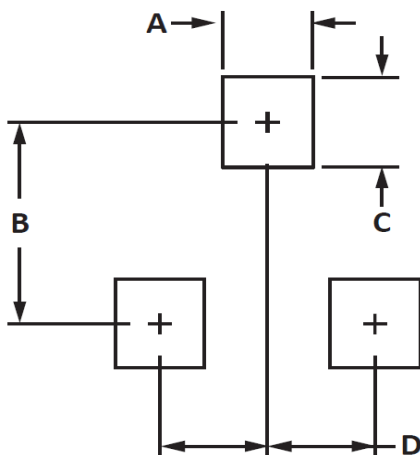
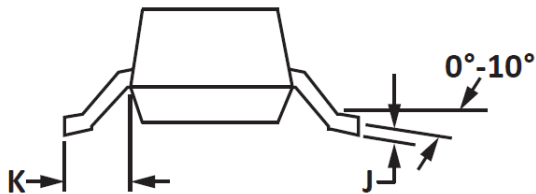
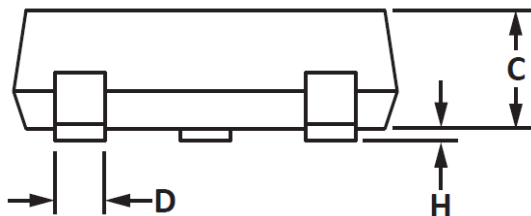
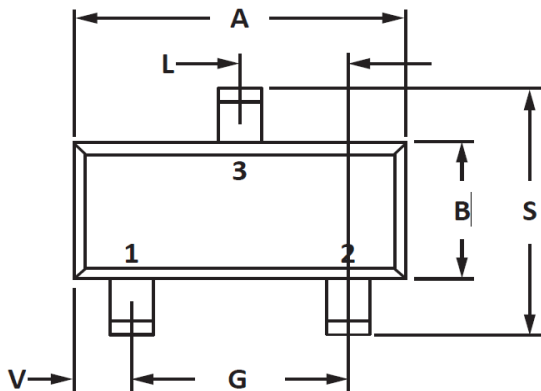


ABD - Avalanche Breakdown Diode (TVS)
Lg - Lead Inductance

TABLE 1 - SPICE PARAMETERS		
PARAMETER	UNIT	ABD(TVS)
BV	V	See Table 2
IBV	μ A	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)
ALPAMST2303A	4.5	438	1E-13	0.21
ALPAMST2305A	6.0	284	1E-13	0.21
ALPAMST2308A	8.5	146	1E-13	0.21
ALPAMST2312A	13.3	123	1E-13	0.21
ALPAMST2315A	16.7	102	1E-13	0.21
ALPAMST2324A	26.7	61	1E-13	0.21
ALPAMST2336A	40.0	40	1E-13	0.21
ALPAMST2303CA	4.5	219	1E-13	0.28
ALPAMST2305CA	6.0	142	1E-13	0.28
ALPAMST2308CA	8.5	73	1E-13	0.28
ALPAMST2312CA	13.3	62	1E-13	0.28
ALPAMST2315CA	16.7	51	1E-13	0.28
ALPAMST2324CA	26.7	30	1E-13	0.28
ALPAMST2336CA	40.0	20	1E-13	0.28

PACKAGE INFORMATION



OUTLINE DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.89	1.11	0.035	0.044
D	0.37	0.50	0.015	0.020
G	1.78	2.04	0.070	0.081
H	0.013	0.100	0.001	0.004
J	0.085	0.177	0.003	0.007
K	0.45	0.60	0.018	0.024
L	0.89	1.02	0.035	0.040
S	2.10	2.50	0.083	0.098
V	0.45	0.60	0.018	0.024

NOTES

1. Controlling dimension: inches.
2. Dimensioning and tolerances per ANSI Y14.5M, 1985.
3. Pin 3 is the cathode (Unidirectional Only)
4. Dimensions are exclusive of mold flash and metal burrs.

PAD LAYOUT DIMENSIONS

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

NOTES

1. Controlling dimension: inches.



beyond boundaries...

ALPAMST23XXA/CA Series

SOT-23

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.

Please check the website www.alpinesemi.com for continues updates and revision of datasheets.

DESIGN CHANGES: ALPINESEMI™ strives for continuous improvement and reserves the right to change the specifications of its products without prior notice. ALPINESEMI™ reserves the right to discontinue product lines without prior notice. Any product selection is a recommendation based on best understanding of such product(s) by our engineers. However, buyers are advised to rely on their own judgment for such selection of the products.

ALPINESEMI™ makes no warranty, representation or guarantee regarding the suitability of its products for any particular applications. Neither does ALPINESEMI™ assume any liability arising out of the applications nor the use of such products. ALPINESEMI™ specifically disclaims all liabilities either consequential or incidental.

All rights of the product and datasheet are reserved to ALPINESEMI™.

All logos and information provided in the datasheets are for reference only. Any registered and/or trademark/logos belonging to respective companies be the property of those companies. ALPINESEMI™ extends the courtesy to them, if any of the information found in its datasheet.

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).



sales@alpinesemi.com
www.alpinesemi.com