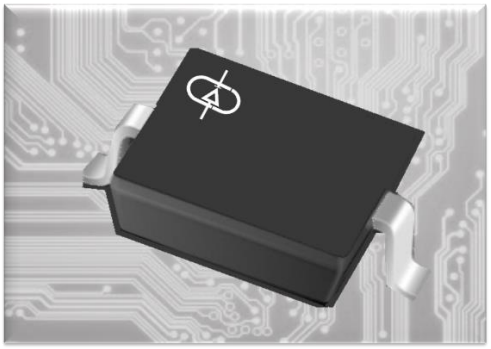
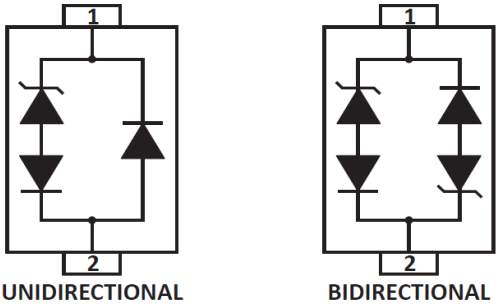
ULTRA LOW CAPACITANCE TVS ARRAY

DESCRIPTION:





The ALPAMLC23XXA/CA (UNI/BI) Series are ultralow capacitance transient voltage suppressor array with AEC-Q101 approved series provides both EFT and ESD protection to the application where it is designed in. This series is available in both unidirectional and bidirectional configurations and is rated at 350 Watts for an 8/20µs waveshape.

The ALPAMLC23XXA/CA Series meets IEC 61000-4-2 (ESD) and IEC 61000-4-4 (EFT) requirements. At higher operating frequencies or faster edge rates, insertion loss and signal integrity are a major concern. This series offers a ultralow capacitance of 3pfd max and low leakage current of 1uA in a miniature SOD-323 package.

FEATURES:

- **AEC-Q101 approved.**
- Compatible with IEC 61000-4-2 (ESD): Air ±15kV, Contact ±8kV
  - Exceeds Level 4: Handles 20kV Contact & 25kV Air Discharge
- Compatible with IEC 61000-4-4 (EFT): 40A - 5/50ns
- Compatible with IEC 61000-4-5 (Surge)
- Compatible with ISO 10605 (ESD): 330pF/2kΩ, ±20kV Contact
- 350 Watts Peak Pulse Power per Line (tp = 8/20µs)
- Replacement for MLV (0805)
- Unidirectional & Bidirectional Configuration
- Protects One Power or I/O Port
- ESD Protection > 25kV
- Low Clamping Voltage
- Available in Multiple Voltages Ranging From 3V to 24V
- Ultra Low Capacitance: 3pF (Typical)
- RoHS Compliant
- REACH Compliant

APPLICATIONS:

- Automotive application

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}	350	Watts
Operating Temperature	T_A	-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 -2)	**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**
ALPAMLC2303A	3.3	4.0	7.0	1	3
ALPAMLC2303CA	3.3	4.0	7.0	1	3
ALPAMLC2305A	5.0	6.0	9.8	1	3
ALPAMLC2305CA	5.0	6.0	9.8	1	3
ALPAMLC2308A	8.0	8.5	13.4	1	3
ALPAMLC2308CA	8.0	8.5	13.4	1	3
ALPAMLC2312A	12.0	13.3	19.0	1	3
ALPAMLC2312CA	12.0	13.3	19.0	1	3
ALPAMLC2315A	15.0	16.7	24.0	1	3
ALPAMLC2315CA	15.0	16.7	24.0	1	3
ALPAMLC2318A	18.0	20.0	29.0	1	3
ALPAMLC2318CA	18.0	20.0	29.0	1	3
ALPAMLC2324A	24.0	26.7	43.0	1	3
ALPAMLC2324CA	24.0	26.7	43.0	1	3

NOTES
1. Part numbers with "CA" suffix are bidirectional devices, i.e., ALPAMLC2324**CA**.
2. Unidirectional Only: Positive potential is applied from pin 1 to 2.

TYPICAL DEVICE CHARACTERISTICS CURVES

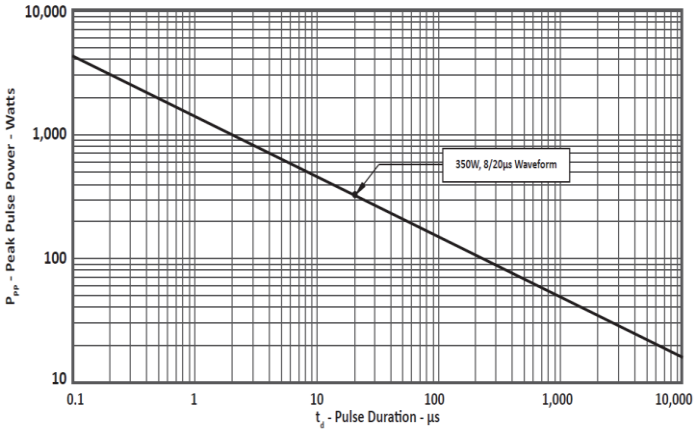


Fig1. PEAK PULSE POWER VS PULSE TIME

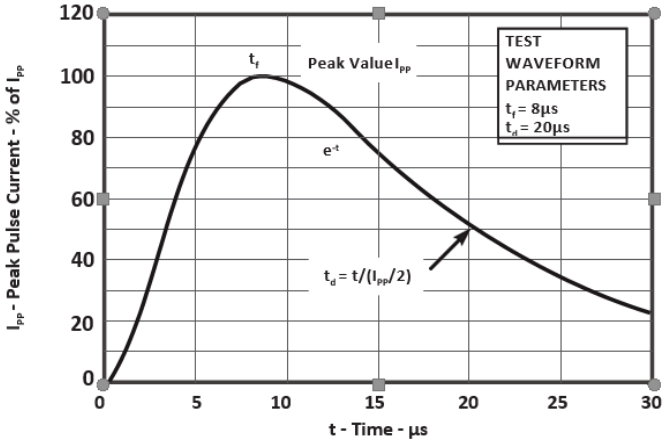


Fig2. PULSE WAVEFORM

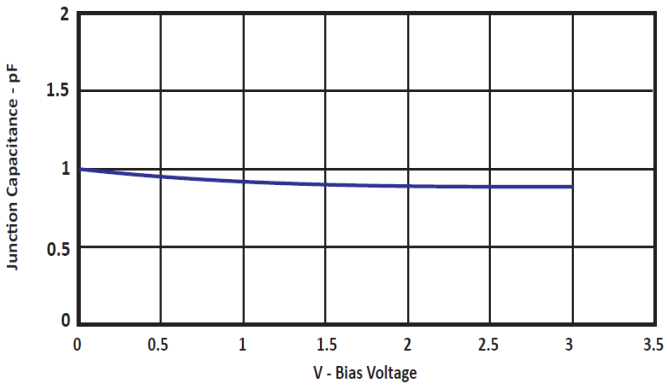
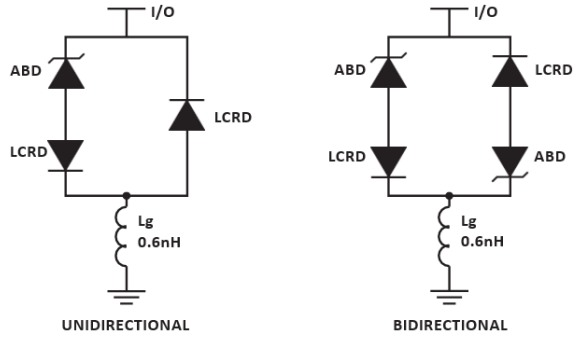


Fig3. TYPICAL JUNCTION CAPACITANCE - BIAS VOLTAGE

SPICE MODEL

FIGURE 1
SPICE MODEL



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

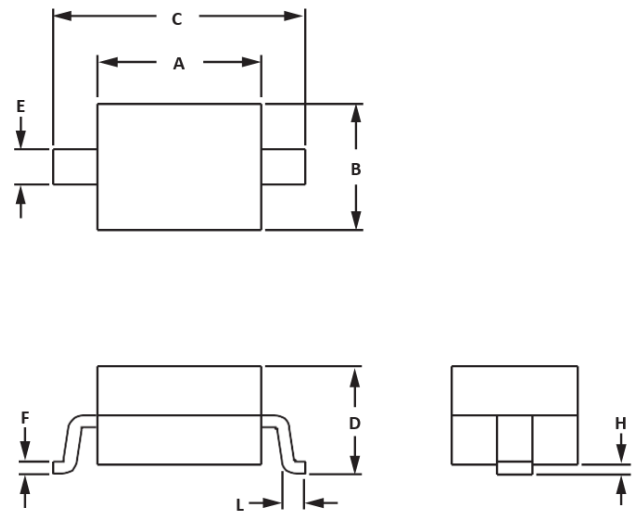
TABLE 1 - SPICE PARAMETERS

PARAMETER	UNIT	ABD(TVS)	LCRD
BV	V	See Table 2	200
IBV	µA	1	0.01
C_{jo}	pF	See Table 2	2
I_S	A	See Table 2	1E-11
Vj	V	0.6	0.6
M	-	0.33	0.33
N	-	1	1
R_S	Ohms	See Table 2	0.75
TT	s	1E-8	1E-9
EG	eV	1.11	1.11

TABLE 2 - ABD SPECIFIC SPICE PARAMETERS

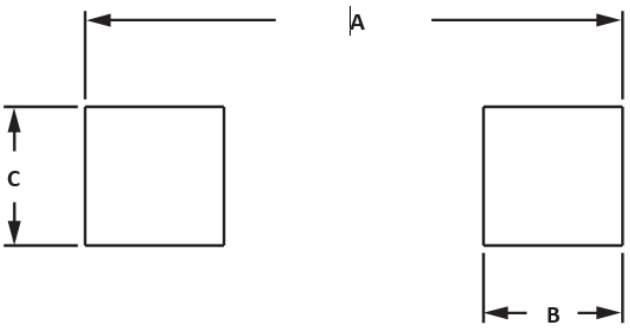
PART NUMBER	B_V(VOLTS)	C_{jo}(pF)	I_S(AMPS)	Rs(OHMS)
ALPAMLC2303A & ALPAMLC2303CA	4.0	438	1E-11	0.21
ALPAMLC2305A & ALPAMLC2305CA	6.0	284	1E-11	0.14
ALPAMLC2308A & ALPAMLC2308CA	8.5	146	1E-11	0.28
ALPAMLC2312A & ALPAMLC2312CA	13.3	123	1E-13	0.40
ALPAMLC2315A & ALPAMLC2315CA	16.7	102	1E-13	0.52
ALPAMLC2318A & ALPAMLC2318CA	20.0	80	1E-13	0.80
ALPAMLC2324A & ALPAMLC2324CA	26.7	61	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.

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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