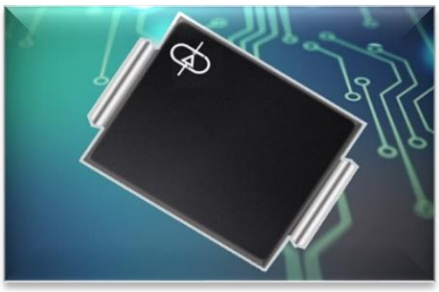
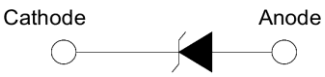
1500-WATT TVS COMPONENT

DESCRIPTION:



Bi-directional



Uni-directional

The 1.5ALPAMDOCBXXA/CA (UNI/BI) Series are multi-line transient voltage suppressor arrays with **AEC-Q101 approved** series that provides board level protection for standard TTL and MOS bus line applications against the damaging effects of ESD, tertiary lightning and switching transients.

The 1.5ALPAMDOCBXXA/CA Series TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

FEATURES:

- **AEC-Q101 Qualified.**
- 1500 Watts Peak Pulse Power per Line (tp = 10/1000µs), repetition rate (duty cycles): 0.01%
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Bidirectional and Unidirectional Configurations
- Excellent Clamping Capability
- Available in Multiple Voltages
- RoHS Compliant
- REACH Compliant

APPLICATIONS:

- Automotive application
- I/O Interfaces
- DC power line bus
- Telecom
- Computer
- Industrial and Consumer electronic applications.

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, DO-214AB(SMC)
- Terminals: Meet MSL level1, per J-STD-020, lead-frame maximum peak of 260°C

ORDERING PART NUMBER

PART NUMBER	ORDERING PART NUMBER
1.5ALPAMDOCBXXA/CA	**1.5ALPAMDOCBXXA/CA - SC**

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS @ T_A=25°C Unless Otherwise Specified			
PARAMETER	**SYMBOL**	**VALUE**	**UNITS**
Peak Pulse Power Dissipation at T_A=25°C by 10/1000µs Waveform (Fig.3)	P_{PPM}	1500	Watts
Power Dissipation on Infinite Heatsink at T_L = 50°C	P_D	6.5	Watts
Peak Forward Surge Current, 8.3ms single half sinewave - (Note 1)	I_{FSM}	200	Amps
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only (Note 2)	V_F	3.5/5	V
Operating Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

NOTES:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.
2. V_F < 3.5V for single die parts and V_F< 5V for stacked-die parts

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER (Notes 1-2)	REVERSE STAND-OFF VOLTAGE V_R (VOLTS)	BREAKDOWN VOLTAGE $V_{(BR)}$ @ I_T VOLTS		TEST CURRENT @ I_T (mA)	MAXIMUM CLAMPING VOLTAGE V_C @ I_{PP} (VOLTS)	MAXIMUM PEAK PULSE CURRENT I_{pp} (AMPS)	MAXIMUM REVERSE LEAKAGE CURRENT I_R@V_R (µA)
		MIN	MAX				
1.5ALPAMDOCB12A/CA	10.20	11.40	12.60	1	16.7	91.0	5
1.5ALPAMDOCB13A/CA	11.10	12.40	13.70	1	18.2	83.5	1
1.5ALPAMDOCB15A/CA	12.80	14.30	15.80	1	21.2	71.7	1
1.5ALPAMDOCB16A/CA	13.60	15.20	16.80	1	22.5	67.6	1
1.5ALPAMDOCB18A/CA	15.30	17.10	18.90	1	25.2	60.3	1
1.5ALPAMDOCB20A/CA	17.10	19.00	21.00	1	27.7	54.9	1
1.5ALPAMDOCB22A/CA	18.80	20.90	23.10	1	30.6	49.7	1
1.5ALPAMDOCB24A/CA	20.50	22.80	25.20	1	33.2	45.8	1
1.5ALPAMDOCB27A/CA	23.10	25.70	28.40	1	37.5	40.5	1
1.5ALPAMDOCB30A/CA	25.60	28.50	31.50	1	41.4	36.7	1
1.5ALPAMDOCB33A/CA	28.20	31.40	34.70	1	45.7	33.3	1
1.5ALPAMDOCB36A/CA	30.80	34.20	37.80	1	49.9	30.5	1
1.5ALPAMDOCB39A/CA	33.30	37.10	41.00	1	53.9	28.2	1
1.5ALPAMDOCB43A/CA	36.80	40.90	45.20	1	59.3	25.6	1
1.5ALPAMDOCB47A/CA	40.20	44.70	49.40	1	64.8	23.5	1
1.5ALPAMDOCB51A/CA	43.60	48.50	53.60	1	70.1	21.7	1
1.5ALPAMDOCB56A/CA	47.80	53.20	58.80	1	77.0	19.7	1
1.5ALPAMDOCB62A/CA	53.00	58.90	65.10	1	85.0	17.9	1
1.5ALPAMDOCB68A/CA	58.10	64.60	71.40	1	92.0	16.5	1
1.5ALPAMDOCB75A/CA	64.10	71.30	78.80	1	103.0	14.8	1
1.5ALPAMDOCB82A/CA	70.10	77.90	86.10	1	113.0	13.5	1
1.5ALPAMDOCB91A/CA	77.80	86.50	95.50	1	125.0	12.2	1
1.5ALPAMDOCB100A/CA	85.50	95.00	105.26	1	137.0	11.1	1
1.5ALPAMDOCB110A/CA	94.50	104.50	115.79	1	152.0	10	1
1.5ALPAMDOCB120A/CA	102.60	114.00	126.32	1	165.0	9.2	1
1.5ALPAMDOCB130A/CA	111.15	123.50	136.84	1	179.0	8.5	1
1.5ALPAMDOCB150A/CA	128.25	142.50	157.89	1	207.0	7.3	1
1.5ALPAMDOCB160A/CA	136.80	152.00	168.42	1	219.0	6.9	1
1.5ALPAMDOCB170A/CA	145.35	161.50	178.95	1	234.0	6.5	1
1.5ALPAMDOCB180A/CA	153.90	171.00	189.47	1	246.0	6.2	1
1.5ALPAMDOCB200A/CA	171.00	190.00	210.53	1	274.0	5.5	1
1.5ALPAMDOCB220A/CA	188.10	209.00	231.58	1	328.0	4.6	1
1.5ALPAMDOCB250A/CA	213.75	237.50	263.16	1	344.0	4.4	1

ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified							
PART NUMBER (Notes 1-2)	REVERSE STAND-OFF VOLTAGE V_R (VOLTS)	BREAKDOWN VOLTAGE $V_{(BR)}$ @ I_T VOLTS		TEST CURRENT @ I_T (mA)	MAXIMUM CLAMPING VOLTAGE V_C @ I_{PP} (VOLTS)	MAXIMUM PEAK PULSE CURRENT I_{pp} (AMPS)	MAXIMUM REVERSE LEAKAGE CURRENT I_R@V_R (µA)
		MIN	MAX				
1.5ALPAMDOCB300A/CA	256.0	285.0	315.0	1	414.0	3.7	1
1.5ALPAMDOCB350A/CA	300.0	332.0	368.0	1	482.0	3.2	1
1.5ALPAMDOCB400A/CA	342.0	380.0	420.0	1	548.0	2.8	1
1.5ALPAMDOCB440A/CA	376.0	418.0	462.0	1	602.0	2.5	1

TYPICAL DEVICE RATING AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

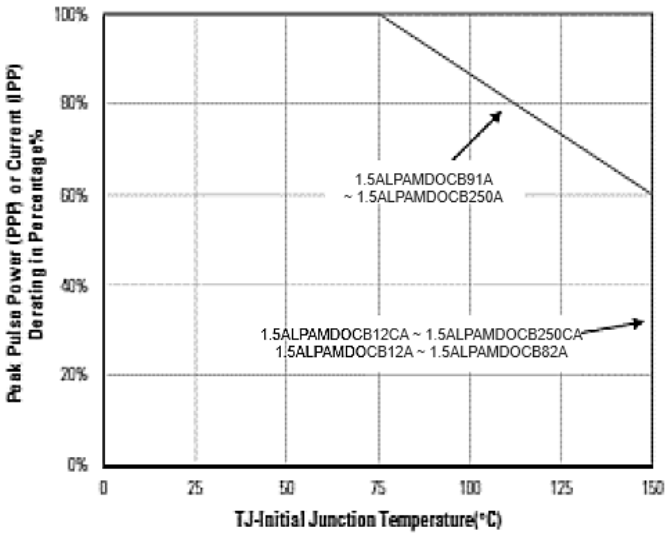


Fig1. PEAK PULSE POWER DERATING CURVE

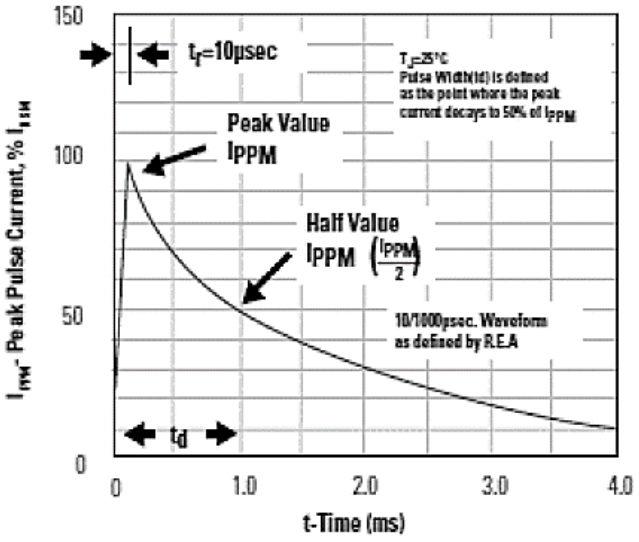


Fig2. PULSE WAVEFORM

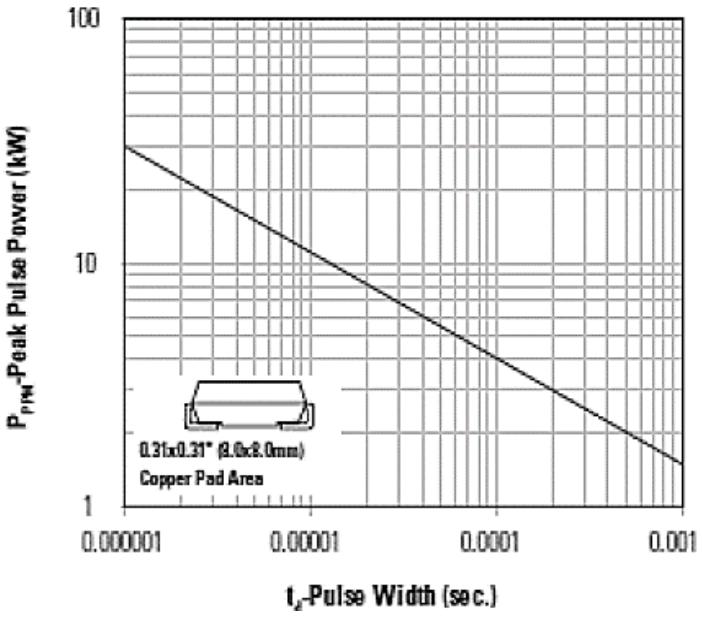


Fig3. PEAK PULSE POWER RATING CURVE

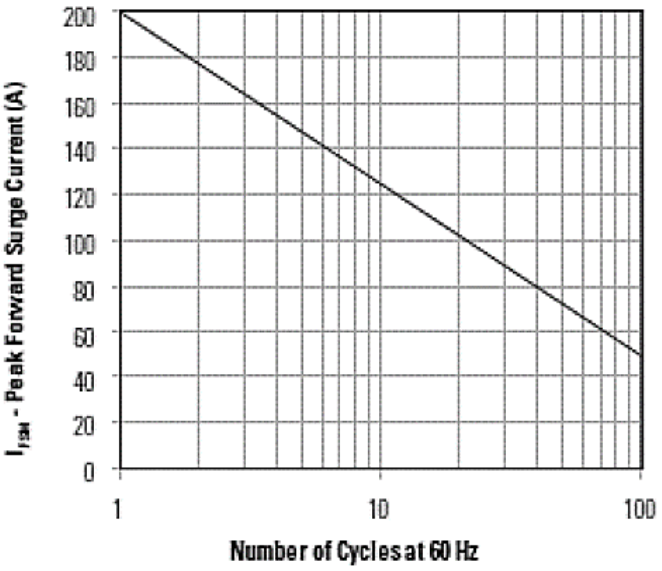
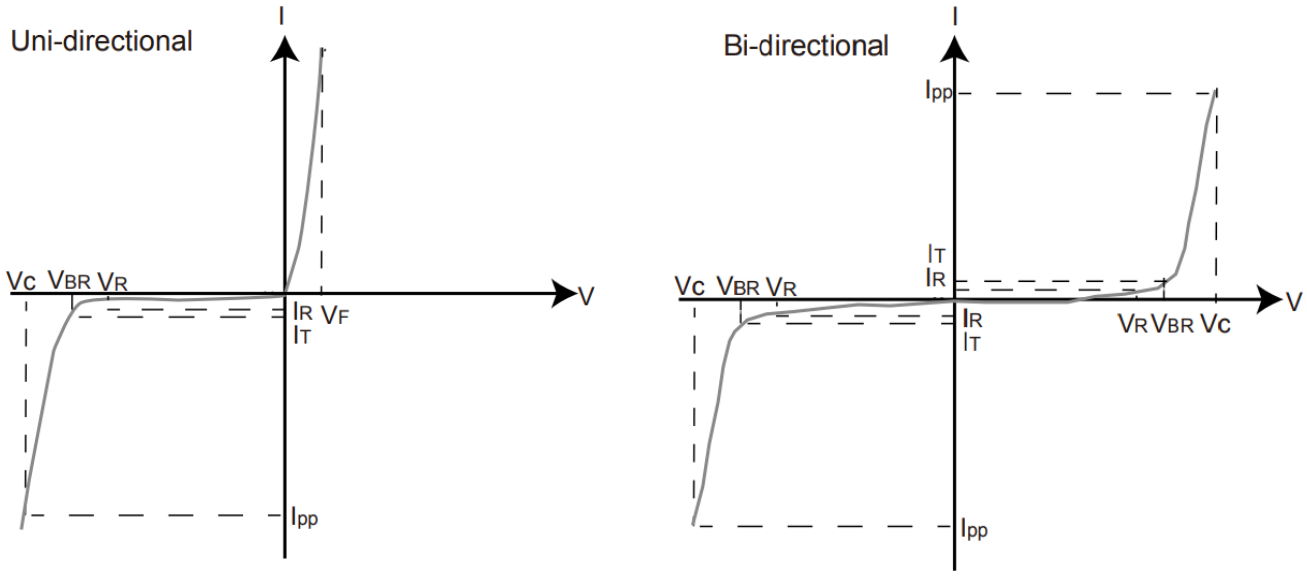


Fig4. MAXIMUM NON-REPETITIVE SURGE CURRENT

I-V CURVE CHARACTERISTICS



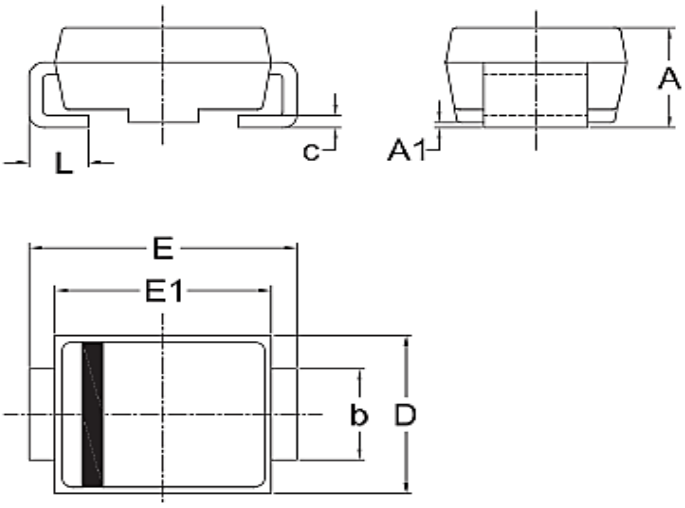
P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation
V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation
V_{BR} Breakdown Voltage -- Maximum voltage that flows though the TVS at a specified test current (I_T)
V_C Clamping Voltage -- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)
I_R Reverse Leakage Current -- Current measured at V_R
V_F Forward Voltage Drop for Uni-directional

PINNING INFORMATION

PIN	SIMPLIFIED OUTLINE	SYMBOL
Uni-Directional Pin1 Cathode Pin2 Anode		
Bi-Directional		

PACKAGE INFORMATION

DO-214AB(SMC)



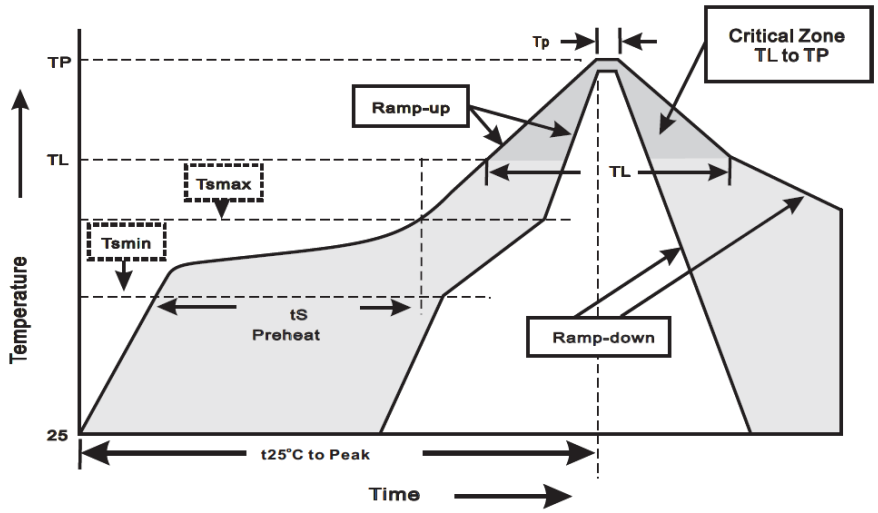
OUTLINE DIMENSIONS				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.33	2.83	0.092	0.111
A1	0.00	0.30	0.000	0.012
b	2.80	3.10	0.110	0.122
c	0.15	0.25	0.006	0.010
D	5.85	6.15	0.230	0.242
E	7.65	8.15	0.301	0.321
E1	6.75	7.05	0.266	0.278
L	0.90	1.60	0.035	0.063

Note:
1. Controlling dimension: in millimeters.
2. General tolerance: ±0.05mm

SOLDERING PARAMETERS

SUGGESTED THERMAL PROFILES FOR SOLDERING PROCESSES

1. Storage environment: Temperature=5 °C~40 °C Humidity=55% ±25%
2. Reflow soldering of surface-mount devices



3. Reflow soldering

PROFILE FEATURE	SOLDERING CONDITION
Average ramp-up rate (T_L to T_P)	<3 °C/sec
Preheat - Temperature Min (T_{smin}) - Temperature Max (T_{smax}) - Time (min to max) (t_s)	 150 °C 200 °C 60 ~ 120 sec
T_{smax} to T_L - Ramp-upRate	 <3 °C/sec
Time maintained above: - Temperature (T_L) - Time(tL)	 217 °C 60 ~ 260 sec
Peak Temperature (T_P)	255 °C-0/+5 °C
Time within 5 °C of actual Peak Temperature(tP)	10 ~ 30 sec
Ramp-down Rate	<6 °C/sec
Time 25 °C to Peak Temperature	<8 minutes
Do not exceed	260 °C

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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sales@alpinesemi.com
www.alpinesemi.com