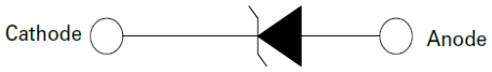
AXIAL LEADED TRANSIENT VOLTAGE SUPPRESSOR

30000W Axial Leaded Transient Voltage Suppressors – 28V ~ 360V

The ALP30KPAXXXA&CA is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Bidirectional

Uni-directional



FEATURES:

- Axial lead type devices for through hole design.
- 30000W peak pulse capability with at 10/1000μs waveform, repetition rate (duty cycles): 0.01%.
- Excellent clamping capability.
- Typical failure mode is a short circuit condition for current events exceeding component rating
- IEC 61000-4-2 (ESD)
  ±30kV Contact Discharge
  ±30kV Air Discharge
- IEC 61000-4-4 EFT Protection
  50A (5/50nS)
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex. ALP30KPA28A-H.

APPLICATIONS:

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.

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, P600.
- Lead: Axial leads, solderable per MIL-STD-202, method 208 guaranteed
- Polarity: Color band denotes cathode end except Bipolar
- Mounting Position: Any.

TYPICAL DEVICE CHARACTERISTICS

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak Pulse Power Dissipation at T_A = 25 °C by 10/1000µs Waveform (Fig.2)	P_{PPM}	30000	W
Power Dissipation on Infinite Heat Sink at T_L=50°C	P_D	8.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1)	I_{FSM}	400	A
Maximum instantaneous forward voltage at 50A for unidirectional types only (Note 2)	V_F	3.5/5.0	V
Operating Junction Temperature range	T_J	-55 to +175	°C
Storage Temperature range	T_{STG}	-55 to 175	°C

Notes:
1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 pulses per minute maximum.
2. 3.5V for single die, 5V for stack die.

TYPICAL ELECTRICAL CHARACTERISTICS - (TABLE 1)

ELECTRICAL CHARACTERISTICS PER LINE @ T_A=25°C Unless Otherwise Specified							
PART NUMBER (Note 1)	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 I_R @V_R (µA)
		MIN	MAX				
ALP30KPA28A / CA	28	31.28	34.41	50	50.0	606.0	5000
ALP30KPA30A / CA	30	33.51	36.86	50	55.2	548.9	5000
ALP30KPA33A / CA	33	36.90	40.59	50	58.5	517.9	5000
ALP30KPA36A / CA	36	40.20	44.22	50	61.8	490.3	5000
ALP30KPA39A / CA	39	43.60	47.96	20	67.2	450.9	2000
ALP30KPA42A / CA	42	46.90	51.59	10	72.0	420.8	1000
ALP30KPA43A / CA	43	48.00	52.80	10	73.0	415.1	1000
ALP30KPA45A / CA	45	50.30	55.33	5	77.4	391.5	250
ALP30KPA48A / CA	48	53.60	58.96	5	81.6	371.3	150
ALP30KPA51A / CA	51	57.00	62.70	5	86.4	350.7	50
ALP30KPA54A / CA	54	60.30	66.33	5	91.4	331.5	20
ALP30KPA58A / CA	58	64.80	71.28	5	92.4	327.9	20
ALP30KPA60A / CA	60	67.00	73.70	5	102.0	297.1	15
ALP30KPA64A / CA	64	71.50	78.65	5	104.0	291.3	10
ALP30KPA66A / CA	66	73.70	81.07	5	107.0	283.2	2
ALP30KPA70A / CA	70	78.20	86.02	5	109.0	278.0	2
ALP30KPA71A / CA	71	79.30	87.23	5	111.5	271.7	2
ALP30KPA72A / CA	72	80.40	88.44	5	114.0	265.8	2
ALP30KPA75A / CA	75	83.80	92.18	5	119.4	253.8	2
ALP30KPA78A / CA	78	87.10	95.81	5	129.0	234.9	2
ALP30KPA84A / CA	84	93.80	103.18	5	139.2	217.7	2
ALP30KPA90A / CA	90	100.50	110.55	5	146.4	207.0	2
ALP30KPA96A / CA	96	107.20	117.92	5	156.0	194.2	2
ALP30KPA102A / CA	102	113.90	125.29	5	165.6	183.0	2
ALP30KPA108A / CA	108	120.60	132.66	5	175.2	172.9	2
ALP30KPA120A / CA	120	134.00	147.40	5	194.4	155.9	2
ALP30KPA132A / CA	132	147.40	162.14	5	213.0	142.3	2
ALP30KPA144A / CA	144	160.80	176.88	5	223.2	135.8	2
ALP30KPA150A / CA	150	167.60	184.36	5	233.4	129.8	2
ALP30KPA156A / CA	156	174.30	191.73	5	245.0	123.7	2
ALP30KPA160A / CA	160	178.70	196.57	5	252.6	120.0	2
ALP30KPA168A / CA	168	187.70	206.47	5	272.4	111.2	2

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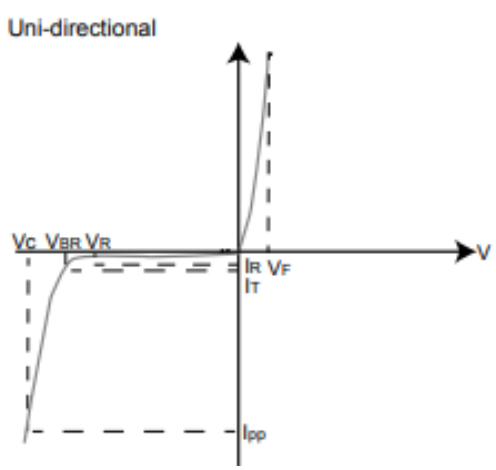
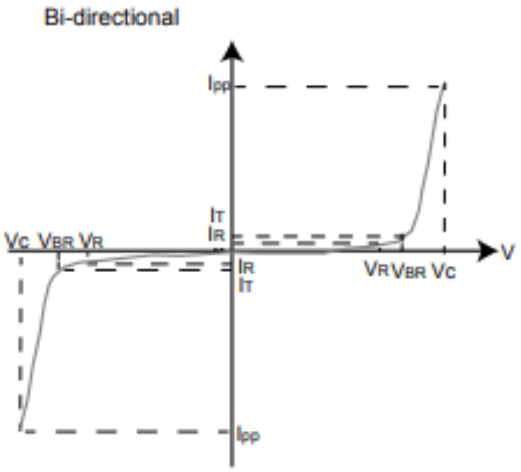
		MIN	MAX				
ALP30KPA170A / CA	170	189.90	208.89	5	275.0	110.2	2
ALP30KPA180A / CA	180	201.10	221.21	5	290.4	104.3	2
ALP30KPA198A / CA	198	221.20	243.32	5	319.8	94.7	2
ALP30KPA216A / CA	216	241.30	265.43	5	348.6	86.9	2
ALP30KPA240A / CA	240	268.10	294.91	5	387.0	78.3	2
ALP30KPA258A / CA	258	288.20	317.02	5	416.4	72.8	2
ALP30KPA260A / CA	260	290.40	319.44	5	416.0	72.8	2
ALP30KPA270A / CA	270	301.60	331.76	5	436.2	69.5	2
ALP30KPA280A / CA	280	312.80	344.08	5	464.0	65.3	2
ALP30KPA288A / CA	288	321.70	353.87	5	469.9	64.5	2
ALP30KPA300A / CA	300	334.00	367.40	5	484.0	62.0	2
ALP30KPA320A / CA	320	357.40	391.40	5	530.0	57.2	2
ALP30KPA345A / CA	345	380.00	411.00	5	560.0	53.6	2
ALP30KPA350A / CA	350	391.00	428.10	5	567.0	53.4	2
ALP30KPA360A / CA	360	402.10	440.30	5	640.0	47.3	2

NOTE

1. Suffix 'C' denotes bi-directional devices. Suffix 'A' denotes 5% tolerance devices, no suffix denotes 10% tolerance devices.
2. Part numbers with "CA" suffix are bidirectional devices, i.e., ALP30KPA360CA
3. All term and symbols are consistent with ANS/IEEE C62.35

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

RATING AND CHARACTERISTIC CURVES

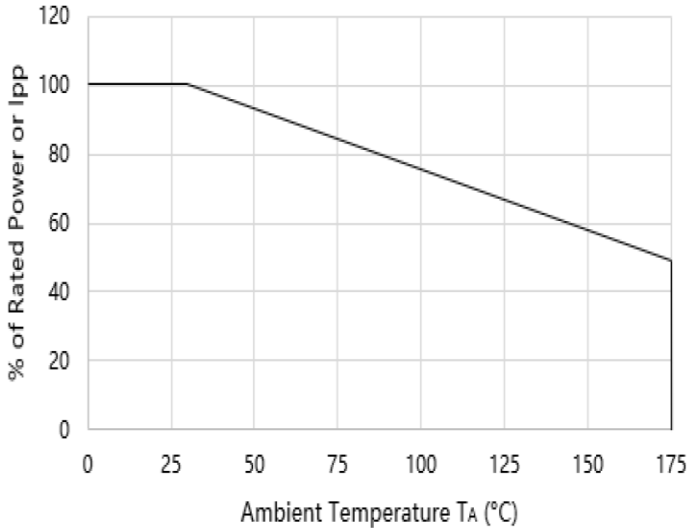


Fig1. PEAK PULSE POWER DERATING CURVE

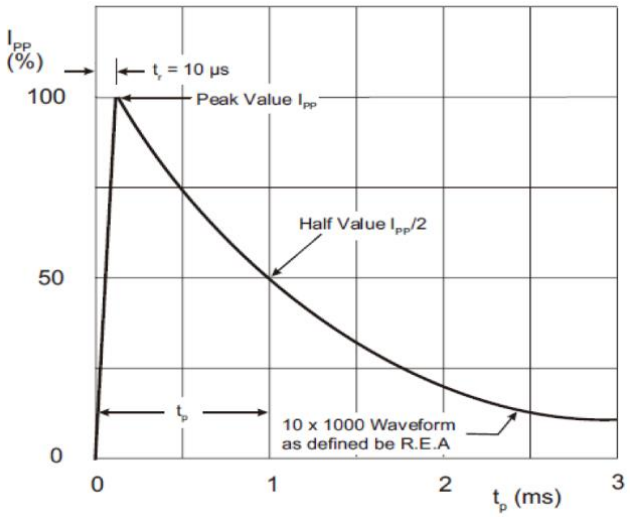


Fig2. PULSE WAVEFORM

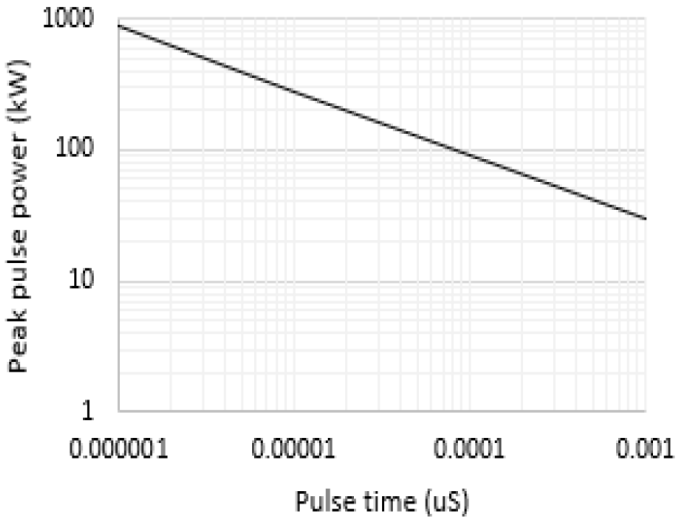


Fig3. PEAK PULSE POWER RATING CURVE

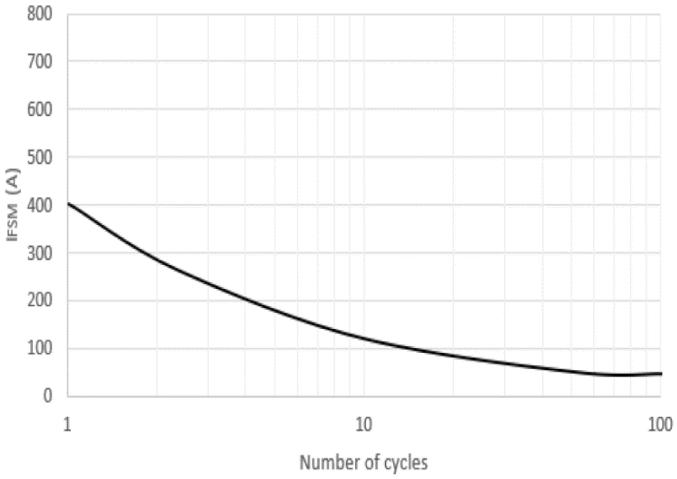


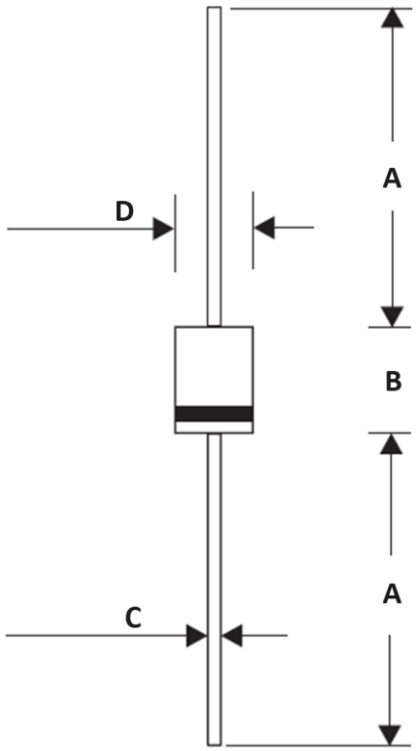
Fig4. MAXIMUM NON-REPETITIVE SURGE CURRENT

PINNING INFORMATION

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

PACKAGE INFORMATION

P600



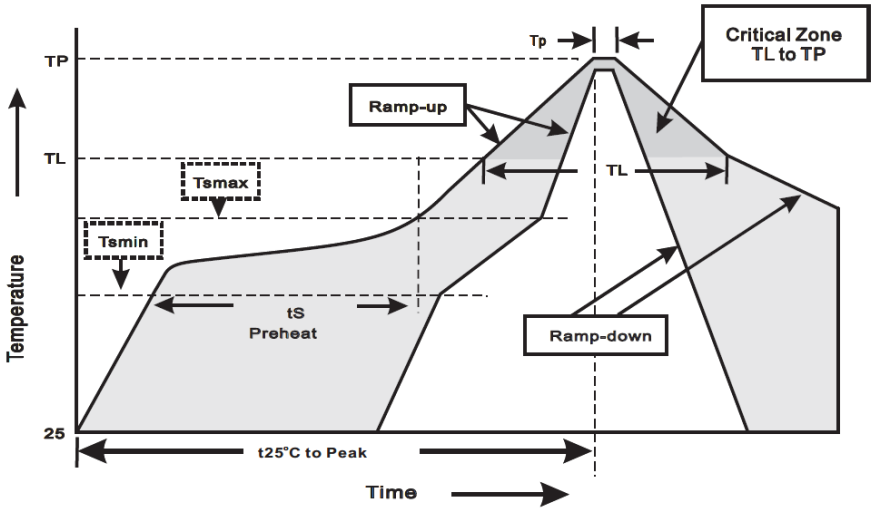
OUTLINE DIMENSIONS				
SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	25.40	-	1.000	-
B	8.60	9.10	0.339	0.358
C	1.22	1.36	0.048	0.054
D	8.60	9.10	0.339	0.358

Note:
1. Cathode band for unidirectional only.
2. Controlling dimension: in millimeters.
3. 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)	260 °C-0/+5 °C
Time within 5 °C of actual Peak Temperature(tP)	20 ~ 40 sec
Ramp-down Rate	<6 °C/sec
Time 25 °C to Peak Temperature	<6 minutes
Do not exceed	260 °C

CUSTOMER NOTE:

DISCLAIMER

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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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