

# ALP/T22 SERIES

Board Mounting or Solder Tag Terminations

This range of Long Life grade capacitors features a very high CV per unit volume with low e.s.r. and impedance values and high ripple currents. They are ideally suited for use in industrial and commercial applications such as switch mode power supplies and energy storage circuits.

**Capacitance range** ..... 47 $\mu$ F to 150,000 $\mu$ F

**Capacitance tolerance** .....  $\pm 20\%$

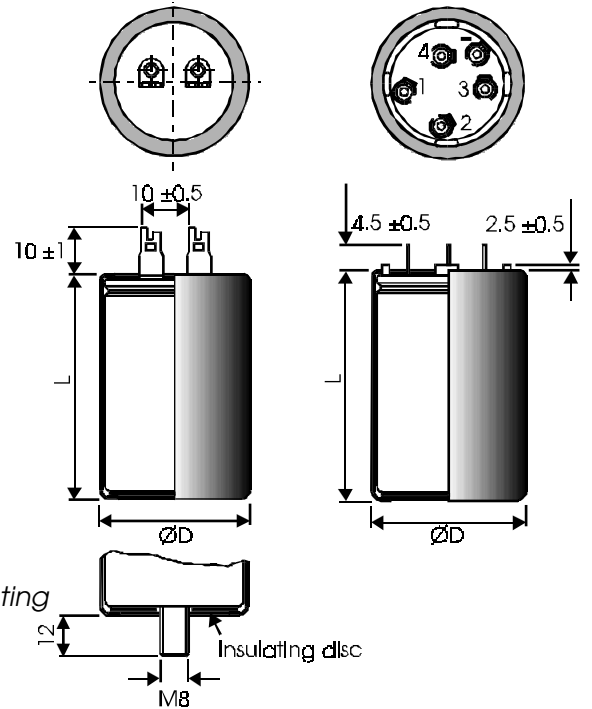
**Voltage range** ..... 10V to 450V d.c.

**Temperature range** ..... -40°C to +85°C

**Case sizes** ..... 25 x 35mm to 40 x 105mm

ALT Tag style

ALP Pin style

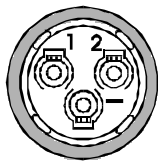


ALT23

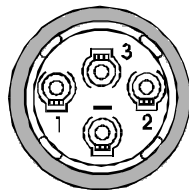
Stud Mounting

ALP Pin configurations

25mm dia can

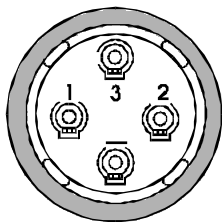


30mm dia can

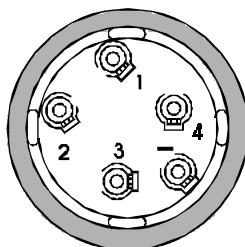


Hole 1 represents +ve

35mm dia can



40mm dia can



DIMENSIONS (sleeved) mm

CASE CODE	D $\pm 1$	L $\pm 2$	MOUNTING CLIP FOR ALT STYLE
AA	25	35	V2/H1
AB	25	45	V2/H1
BB	30	45	-
CB	35	45	V3/H2
CD	35	55	V3/H2
DB	40	45	V9
DD	40	55	V9
DE	40	75	V9
DF	40	105	V9

Max torque: stud M8:4NM

**Terminations and Mounting**

ALT styles are designed for flying lead connection.

ALP styles are designed for printed circuit board mounting to DIN 41238. For details see page 51.

For details of mounting clips and stud mounting kits see page 68/69.

# ALP/T22 SERIES

Board Mounting or Solder Tag Terminations

## TECHNICAL DATA

### Related documents

DIN 41240 & 41238 & 414916-7  
IEC 384-4

### Temperature range

Storage -55°C to +85°C  
Operating -40°C to +85°C  
Environmental classification 40/085/56

### Surge voltage

1000 surges (30 seconds) at 85°C with surge voltage applied. See electrical characteristics.

### Charge/discharge

10<sup>6</sup> cycles at 25°C and rated voltage. One cycle per second with a time constant of 0.1.

### D.C. leakage current

After application of rated d.c. voltage for 5 minutes at 20°C, the d.c. leakage current shall not exceed  $(0.006 C_R U_R + 4) \mu\text{A}$ . Where  $C_R$  is the rated capacitance in  $\mu\text{F}$  and  $U_R$  is the rated d.c. voltage.

### Vibration

10Hz to 500Hz at 0.75mm or 10g for 3x2hrs duration.

### Insulation resistance

$\geq 100\text{M}\Omega$  at 100V d.c., across insulating sleeve.

### Voltage proof

$\geq 2500\text{V}$  d.c., across insulating sleeve.

### Ripple current

The following values are approximate only, to give an indication of the effects of frequency and temperature on ripple current. More accurate data can be obtained by referring to the Application Notes available from BHC Aerovox.

#### FREQUENCY CORRECTION

Capacitors shall withstand the rated r.m.s. ripple current as given in the tables at upper category temperature in circulating air. For frequencies other than those shown the following multipliers should be applied to the 100Hz ripple current.

RATED VOLTAGE d.c.	FREQUENCY (Hz)				
	50	100	500	1k	$\geq 10\text{k}$
0 - 25	0.89	1.0	1.05	1.06	1.07
40 - 160	0.81	1.0	1.28	1.33	1.39
200 - 450	0.75	1.0	1.54	1.70	1.89

#### TEMPERATURE CORRECTION

For ambient temperatures other than 85°C the following correction factors should be employed.

AMBIENT TEMPERATURE	FACTOR
30°C	2.5
50°C	2.1
70°C	1.6
85°C	1.0

N.B. The sum of the d.c. and a.c. voltage components should not exceed the d.c. voltage rating.

### Life expectancy

At rated temperature with rated voltage and ripple current applied.

CAN DIAMETER (mm)	LIFE EXPECTANCY (hours)
25	12000
30	15000
35	18000
40	26000

### Capacitor marking

The capacitors are marked with items 1 to 6 from the following list as a minimum, and as much of the remaining information as is practical.

1. Rated capacitance in  $\mu\text{F}$
2. Rated voltage d.c.
3. Polarity of terminations
4. Tolerance on rated capacitance
5. Date code/Batch code
6. BHC part number
7. Environmental classification

### Ordering information

For details of ordering see page 70.

# ALP/T22 SERIES

Board Mounting or Solder Tag Terminations

Rated voltage	Cap $\mu$ F	Case Size	ESR $m\Omega$ at 20°C 100Hz	Impedance $m\Omega$ at 20 °C, 10 KHz	Ripple current A at 85°C 100 Hz	Type number (Excluding style ref)
10V d.c. (11.5V surge)	10000	25x35	75	67	2.54	AL-22A103AA010
	15000	25x45	51	45	3.39	AL-22A153AB010
	22000	30x45	43	39	4.13	AL-22A223BB010
	33000	35x45	40	37	4.73	AL-22A333CB010
	47000	35x55	31	29	5.78	AL-22A473CD010
	47000	40x45	39	36	5.22	AL-22A473DB010
	68000	40x55	30	28	6.39	AL-22A683DD010
	100000	40x75	22	20	8.39	AL-22A104DE010
	150000	40x105	15	14	11.67	AL-22A154DF010
16V d.c. (18.5V surge)	6800	25x35	79	69	2.48	AL-22A682AA016
	10000	25x45	54	48	3.30	AL-22A103AB016
	15000	30x45	45	40	4.04	AL-22A153BB016
	22000	35x45	41	37	4.67	AL-22A223CB016
	33000	35x55	32	29	5.69	AL-22A333CD016
	33000	40x45	40	37	5.15	AL-22A333DB016
	47000	40x55	31	29	6.29	AL-22A473DD016
	68000	40x75	22	21	8.39	AL-22A683DE016
	100000	40x105	16	15	11.30	AL-22A104DF016
25V d.c. (28.5V surge)	4700	25x35	82	73	2.43	AL-22A472AA025
	6800	25x45	57	50	3.21	AL-22A682AB025
	10000	30x45	50	45	3.83	AL-22A103BB025
	15000	35x45	48	44	4.31	AL-22A153CB025
	22000	35x55	37	34	5.29	AL-22A223CD025
	22000	40x45	48	44	4.70	AL-22A223DB025
	33000	40x55	37	34	5.75	AL-22A333DD025
	47000	40x75	26	24	7.73	AL-22A473DE025
	68000	40x105	18	17	10.65	AL-22A683DF025
40V d.c. (46V surge)	3300	25x35	82	72	2.43	AL-22A332AA040
	4700	25x45	57	50	3.21	AL-22A472AB040
	6800	30x45	52	46	3.76	AL-22A682BB040
	10000	35x45	50	45	4.23	AL-22A103CB040
	15000	35x55	39	36	5.15	AL-22A153CD040
	15000	40x45	50	45	4.61	AL-22A153DB040
	22000	40x55	39	36	5.60	AL-22A223DD040
	33000	40x75	27	25	7.58	AL-22A333DE040
	47000	40x105	19	17	10.37	AL-22A473DF040
63V d.c. (72.5V surge)	2200	25x35	87	75	2.36	AL-22A222AA063
	3300	25x45	58	51	3.18	AL-22A332AB063
	4700	30x45	55	49	3.65	AL-22A472BB063
	6800	35x45	54	49	4.07	AL-22A682CB063
	10000	35x55	42	38	4.97	AL-22A103CD063
	10000	40x45	54	48	4.43	AL-22A103DB063
	10000	40x55	42	38	5.40	AL-22A103DD063
	15000	40x75	30	27	7.19	AL-22A153DE063
	22000	40x105	20	18	10.11	AL-22A223DF063
100V d.c. (115V surge)	680	25x35	225	185	1.47	AL-22A681AA100
	1000	25x45	153	126	1.96	AL-22A102AB100
	1500	30x45	116	98	2.52	AL-22A152BB100
	2200	35x45	97	84	3.03	AL-22A222CB100
	3300	35x55	72	63	3.79	AL-22A332CD100
	3300	40x45	89	79	3.45	AL-22A332DB100
	4700	40x55	68	61	4.24	AL-22A472DD100
	6800	40x75	47	42	5.75	AL-22A682DE100
	10000	40x105	32	28	7.99	AL-22A103DF100

Note: Values of E.S.R. and Impedance quoted above are maximum

# ALP/T22 SERIES

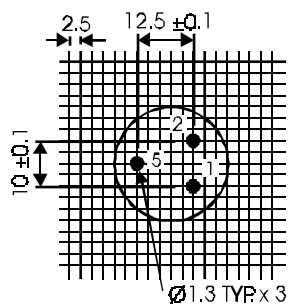
Board Mounting or Solder Tag Terminations

Rated voltage	Cap $\mu\text{F}$	Case Size	ESR $\text{m}\Omega$ at 20°C 100Hz	Impedance $\text{m}\Omega$ at 20 °C, 10 KHz	Ripple current A at 85°C 100 Hz	Type number (Excluding style ref)
200V d.c. (230 surge)	150	25x35	424	321	1.07	AL-22A151AA200
	220	25x45	289	219	1.43	AL-22A221AB200
	330	30x45	208	161	1.88	AL-22A331BB200
	470	35x45	165	132	2.84	AL-22A471CB200
	680	35x55	121	97	3.58	AL-22A681CD200
	680	40x45	140	116	3.34	AL-22A681DB200
	1000	40x55	104	87	4.19	AL-22A102DD200
	1500	40x75	71	59	5.71	AL-22A152DE200
2200	40x105	48	40	7.95	AL-22A222DF200	
250V d.c. (287V surge)	100	25x35	859	661	0.75	AL-22A101AA250
	150	25x45	573	441	1.01	AL-22A151AB250
	220	30x45	405	315	1.35	AL-22A221BB250
	330	35x45	290	230	2.14	AL-22A331CB250
	470	35x55	209	167	2.72	AL-22A471CD250
	470	40x45	229	186	2.62	AL-22A471DB250
	680	40x55	166	137	3.32	AL-22A681DD250
	1000	40x75	113	93	4.53	AL-22A102DE250
1500	40x105	76	62	6.32	AL-22A152DF250	
385V d.c. (425V surge)	68	25x35	1914	1417	0.50	AL-22A680AA385
	100	25x45	1301	964	0.67	AL-22A101AB385
	150	30x45	884	659	0.91	AL-22A151BB385
	220	35x45	625	471	1.46	AL-22A221CB385
	330	35x55	426	324	1.90	AL-22A331CD385
	330	40x45	450	347	1.88	AL-22A331DB385
	470	40x55	324	252	2.37	AL-22A471DD385
	680	40x75	223	173	3.22	AL-22A681DE385
1000	40x105	151	117	4.49	AL-22A102DF385	
450V d.c. (495V surge)	47	25x35	4180	3020	0.34	ALP22A470AA450
	68	25x45	2890	2085	0.45	ALP22A680AB450
	100	30x45	1980	1430	0.61	ALP22A101BB450
	150	35x45	1330	970	1.00	ALP22A151CB450
	220	35x55	910	665	1.31	ALP22A221CD450
	220	40x45	940	686	1.31	ALP22A221DB450
	330	40x55	630	466	1.70	ALP22A331DD450
	470	40x75	440	322	2.29	ALP22A471DE450
680	40x105	300	222	3.18	ALP22A681DF450	

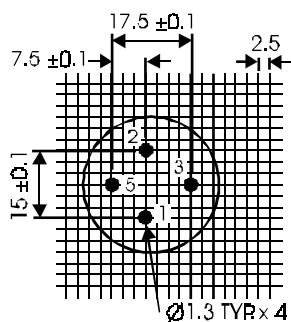
Note: Values of E.S.R. and Impedance quoted above are maximum

### ALP Mounting (DIN 41238)

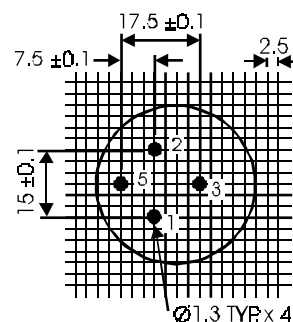
25mm dia can



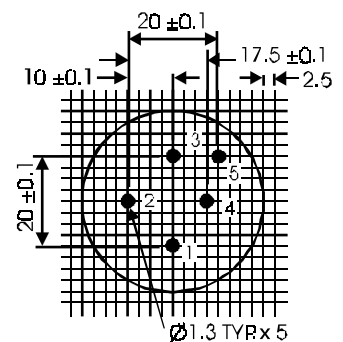
30mm dia can



35mm dia can



40mm dia can



Additional dummy pins are provided for stability. Note that the case and dummy pins may be at negative terminal potential.

(Printed circuit board hole positions). Viewed from component side.

**Connections** Hole 1 represents +ve  
Hole 5 represents -ve

Terminals 2,3 and 4 may be at negative terminal potential due to the presence of electrolyte. They are intended for mechanical connections only. It is recommended that they are soldered to the printed circuit board.