

ALS42 Series 105°C

RoHS
Compliant

- Case Sizes and Terminals for the Asian Market
- Long Life, 9000 hours at 105°C (Ur, Ir applied)
- High ripple current
- Excellent surge voltage capability
- Optimized designs available on request

APPLICATION

Smoothing, energy storage, or pulse operation in telecommunication demanding power supplies, process control, AC-motor control, traction and welding.

BASIC DESIGN

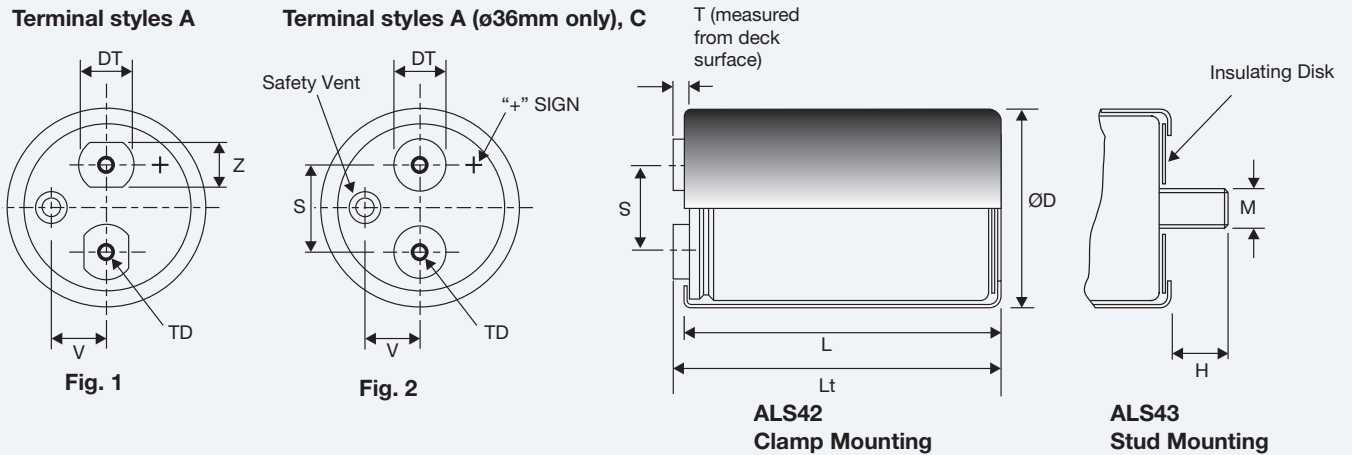
The ALS42/43 series of screw terminal capacitors feature the same high ripple currents and long life characteristics as the ALS32/33 series but can operate at higher temperatures. They are similarly suited for high reliability and long life applications

such as frequency converters, UPS systems and switch mode power supplies, but the extended temperature range allows increased ripple currents at lower temperatures.

SPECIFICATION

Standards	IEC 60384-4 Long Life Grade 40/105/56,											
Capacitance range	1000 – 15000 µF											
Capacitance tolerance	-20 to +20%											
Rated voltage U_R	350 – 450 VDC											
Surge voltage U_s	1.10 x U_R (for $U_R \geq 350$ VDC)	Test Condition: ≤ 30s surge, 1000 cycles @ 105°C										
Surge voltage U_{ss} (Short duration)	<table border="1"> <thead> <tr> <th>U_R</th> <th>U_{ss}</th> </tr> </thead> <tbody> <tr> <td>350</td> <td>500</td> </tr> <tr> <td>400</td> <td>520</td> </tr> <tr> <td>415</td> <td>530</td> </tr> <tr> <td>450</td> <td>550</td> </tr> </tbody> </table>	U_R	U_{ss}	350	500	400	520	415	530	450	550	Test Condition: ≤ 500ms surge, 100 cycles @ 20°C
U_R	U_{ss}											
350	500											
400	520											
415	530											
450	550											
Leakage current I_L	= 0.003 x C_R x U_R (µA) or 6mA whichever is the smaller. Note, C_R is in µF.	Test Condition: U_R , 5mins., 20°C										
Operational life time +105°C, U_R, I_R	<table border="1"> <thead> <tr> <th>Can Diameter</th> <th>Life (hrs)</th> </tr> </thead> <tbody> <tr> <td>36</td> <td>6000</td> </tr> <tr> <td>51</td> <td>7000</td> </tr> <tr> <td>63.5</td> <td>8000</td> </tr> <tr> <td>77, 90</td> <td>9000</td> </tr> </tbody> </table>	Can Diameter	Life (hrs)	36	6000	51	7000	63.5	8000	77, 90	9000	End of Life requirement: $\Delta C/C \leq \pm 10\%$ $ESR \leq 2 \times \text{initial ESR value}$ $I_L \leq \text{initial specified limit}$
Can Diameter	Life (hrs)											
36	6000											
51	7000											
63.5	8000											
77, 90	9000											
+105°C, U_R	<table border="1"> <thead> <tr> <th>Can Diameter</th> <th>Life (hrs)</th> </tr> </thead> <tbody> <tr> <td>36</td> <td>10000</td> </tr> <tr> <td>51</td> <td>11000</td> </tr> <tr> <td>63.5</td> <td>13000</td> </tr> <tr> <td>77, 90</td> <td>15000</td> </tr> </tbody> </table>	Can Diameter	Life (hrs)	36	10000	51	11000	63.5	13000	77, 90	15000	
Can Diameter	Life (hrs)											
36	10000											
51	11000											
63.5	13000											
77, 90	15000											
Shelf Life	2000 hrs at 0V +85°C, or 30000 hrs at 0V +40°C											
Temperature range	-40 to +105°C (Operating) -55°C to +105°C (Storage)											

SPECIFICATION



Terminals options

Terminal Style	Case Diameter Availability	Thread	Height T mm ±0.8	Diameter DT mm ±0.5	Flats Z mm	Thread depth TD mm (min.)	Drawing
A	35 mm only	M5	7.14	8	-	10	Fig.2
A	51, 63.5, 76 & 90 mm	M5	5.5	13	10	10	Fig.1
C	63.5, 76 & 90 mm	M6	5.5	13	-	10	Fig.2

Terminations

Aluminium inserts with M5 threads as standard, max. torque 2NM. Optional M6 threaded inserts have a max. torque 4NM. Max. torque for stud mounting M8:4NM and M12:8NM.

Dimensions table ALS42 (sleeved) mm

CASE CODE	D unsleeved ±0.8	D sleeved ±0.8	L unsleeved ±1.6	L sleeved ±1.6	LT sleeved ±1	S ±0.5	T ±0.8	V	M THREAD	H ±1	MOUNTING CLIP	WEIGHT grams
D2C	34.9	35.3	54.0	55.1	61.5	12.8	7.14	8	M8	12	V3/H2/UTE2736	80
D2L	34.9	35.3	66.7	67.8	74.5	12.8	7.14	8	M8	12	V3/H2/UTE2736	95
D3C	34.9	35.3	79.4	80.5	87.5	12.8	7.14	8	M8	12	V3/H2/UTE2736	115
D3L	34.9	35.3	92.1	93.2	100.5	12.8	7.14	8	M8	12	V3/H2/UTE2736	130
D4C	34.9	35.3	104.8	105.9	112.5	12.8	7.14	8	M8	12	V3/H2/UTE2736	150
D4L	34.9	35.3	117.5	118.6	125.5	12.8	7.14	8	M8	12	V3/H2/UTE2736	165
D5C	34.9	35.3	130.2	131.3	138.5	12.8	7.14	8	M8	12	V3/H2/UTE2736	185
D5L	34.9	35.3	142.9	144.0	151.5	12.8	7.14	8	M8	12	V3/H2/UTE2736	205
K2C	50.8	51.2	54.0	55.1	60.0	22.2	5.5	13.7	M12	16	V4/UTE2737	165
K2L	50.8	51.2	66.7	67.8	73.0	22.2	5.5	13.7	M12	16	V4/UTE2737	200
K3C	50.8	51.2	79.4	80.5	86.0	22.2	5.5	13.7	M12	16	V4/UTE2737	240
K3L	50.8	51.2	92.1	93.2	98.0	22.2	5.5	13.7	M12	16	V4/UTE2737	275
K4C	50.8	51.2	104.8	105.9	111.0	22.2	5.5	13.7	M12	16	V4/UTE2737	315
KJA	50.8	51.2	114.3	115.4	119.0	22.2	5.5	13.7	M12	16	V4/UTE2737	340
K4L	50.8	51.2	117.5	118.6	124.0	22.2	5.5	13.7	M12	16	V4/UTE2737	350
K5C	50.8	51.2	130.2	131.3	136.0	22.2	5.5	13.7	M12	16	V4/UTE2737	385
K5L	50.8	51.2	142.9	144.0	149.0	22.2	5.5	13.7	M12	16	V4/UTE2737	425
L3C	63.5	63.9	79.4	80.5	84.0	28.5	5.5	15.8	M12	16	V8	370
L3L	63.5	63.9	92.1	93.2	97.0	28.5	5.5	15.8	M12	16	V8	430
L4C	63.5	63.9	104.8	105.9	110.0	28.5	5.5	15.8	M12	16	V8	485
LJA	63.5	63.9	114.3	115.4	119.0	28.5	5.5	15.8	M12	16	V8	535
L4L	63.5	63.9	117.5	118.6	123.0	28.5	5.5	15.8	M12	16	V8	545
L5C	63.5	63.9	130.2	131.3	135.0	28.5	5.5	15.8	M12	16	V8	600
L5L	63.5	63.9	142.9	144.0	148.0	28.5	5.5	15.8	M12	16	V8	660
L5R	63.5	63.9	149.2	150.4	154.0	28.5	5.5	15.8	M12	16	V8	690
L7L	63.5	63.9	193.7	194.8	198.0	28.5	5.5	15.8	M12	16	V8	890
N3L	76.2	76.6	92.1	93.2	97.0	31.8	5.5	19	M12	16	V11	615
N4C	76.2	76.6	104.8	105.9	110.0	31.8	5.5	19	M12	16	V11	700
NJA	76.2	76.6	114.3	115.4	119.0	31.8	5.5	19	M12	16	V11	770
N4L	76.2	76.6	117.5	118.6	123.0	31.8	5.5	19	M12	16	V11	780
N5C	76.2	76.6	130.2	131.3	135.0	31.8	5.5	19	M12	16	V11	865
N5L	76.2	76.6	142.9	144.0	148.0	31.8	5.5	19	M12	16	V11	950
N5R	76.2	76.6	149.2	150.4	154.0	31.8	5.5	19	M12	16	V11	990
N6L	76.2	76.6	168.3	169.4	173.0	31.8	5.5	19	M12	16	V11	1115
N7L	76.2	76.6	193.7	194.8	198.0	31.8	5.5	19	M12	16	V11	1280
N8L	76.2	76.6	219.1	220.2	224.0	31.8	5.5	19	M12	16	V11	1450
Q5R	88.9	90	149.2	150.4	154.0	31.8	5.5	25	M12	16	V90	1360
Q6L	88.9	90	168.3	169.4	173.0	31.8	5.5	25	M12	16	V90	1520
Q7L	88.9	90	193.7	194.8	198.0	31.8	5.5	25	M12	16	V90	1870
Q8L	88.9	90	219.1	220.2	224.0	31.8	5.5	25	M12	16	V90	2000

ARTICLE TABLE ALS42 (105°C)

Cap (μ F)	Nominal Case Size mm D x L	ESR ($m\Omega$) at 25°C		Ripple current (A) at 105°C		Type number
		120 Hz	20 kHz	120 Hz	20 kHz	
350 VDC (U_R)						
1000	51 x 80	121	78	5.0	9.9	ALS42A102K3C350
1200	51 x 80	103	67	5.3	10.1	ALS42A122K3C350
1500	51 x 93	81	53	6.2	11.3	ALS42A152K3L350
1800	51 x 93	70	46	6.6	11.2	ALS42A182K3L350
2200	51 x 131	58	38	8.3	14.8	ALS42A222K5C350
2700	63.5 x 93	48	32	9.6	16.5	ALS42A272L3L350
3300	63.5 x 115	39	26	11.2	18.9	ALS42A332LJA350
3900	63.5 x 131	36	25	12.5	19.7	ALS42A392L5C350
4700	63.5 x 150	31	22	13.5	20.8	ALS42A472L5R350
4700	77 x 115	30	21	13.5	20.0	ALS42A472NJA350
5600	63.5 x 194	24	17	14.9	23.4	ALS42A562L7L350
5600	77 x 131	28	21	15.0	20.8	ALS42A562N5C350
6800	77 x 150	24	18	16.5	22.5	ALS42A682N5R350
8200	90 x 150	18	13	20.9	29.5	ALS42A822Q5R350
10000	90 x 150	16	12	21.5	28.4	ALS42A103Q5R350
12000	90 x 194	14	10	26.5	35.9	ALS42A123Q7L350
15000	90 x 220	12	9	31.8	41.3	ALS42A153Q8L350
400 VDC (U_R)						
1000	51 x 80	103	65	5.2	10.1	ALS42A102K3C400
1200	51 x 93	87	55	5.9	11.2	ALS42A122K3L400
1500	51 x 115	70	44	7.1	13.4	ALS42A152KJA400
1800	51 x 131	59	37	8.0	14.8	ALS42A182K5C400
2200	63.5 x 93	49	31	9.3	16.4	ALS42A222L3L400
2700	63.5 x 115	40	26	10.8	18.9	ALS42A272LJA400
3300	63.5 x 131	33	22	12.3	20.0	ALS42A332L5C400
3900	63.5 x 150	31	21	13.1	20.7	ALS42A392L5R400
3900	77 x 115	31	21	13.1	19.9	ALS42A392NJA400
4700	63.5 x 194	25	17	14.4	23.1	ALS42A472L7L400
4700	77 x 131	29	20	14.6	20.6	ALS42A472N5C400
5600	63.5 x 194	22	15	15.2	23.0	ALS42A562L7L400
5600	77 x 150	24	17	16.1	22.3	ALS42A562N5R400
6800	90 x 150	18	12	20.4	29.3	ALS42A682Q5R400
8200	90 x 150	16	12	20.9	28.1	ALS42A822Q5R400
10000	90 x 194	14	10	25.9	35.8	ALS42A103Q7L400
12000	90 x 220	12	9	30.9	41.2	ALS42A123Q8L400
415 VDC (U_R)						
1000	51 x 80	98	61	5.3	10.1	ALS42A102K3C415
1200	51 x 93	87	57	6.0	10.9	ALS42A122K3L415
1500	51 x 115	66	42	7.2	13.5	ALS42A152KJA415
1800	51 x 131	56	35	8.2	14.8	ALS42A182K5C415
2200	63.5 x 93	49	32	9.4	16.1	ALS42A222L3L415
2700	63.5 x 115	40	27	11.0	18.6	ALS42A272LJA415
3900	63.5 x 150	29	19	13.7	22.1	ALS42A392L5R415
3900	77 x 115	31	21	13.2	19.5	ALS42A392NJA415
4700	77 x 131	29	20	14.6	20.6	ALS42A472N5C415
4700	63.5 x 194	24	16	14.7	23.1	ALS42A472L7L415
5600	63.5 x 194	21	15	15.4	22.9	ALS42A562L7L415
5600	77 x 150	24	17	16.1	22.3	ALS42A562N5R415
6800	90 x 150	18	12	20.4	29.3	ALS42A682Q5R415
8200	90 x 150	16	12	20.9	28.1	ALS42A822Q5R415
10000	90 x 194	14	10	25.9	35.8	ALS42A103Q7L415
12000	90 x 220	12	9	30.9	41.2	ALS42A123Q8L415

Mounting Style 2=plain or 3=stud
Termination Style A,C



ARTICLE TABLE ALS42 (105°C)

Cap (μ F)	Nominal Case Size mm D x L	ESR ($m\Omega$) at 25°C		Ripple current (A) at 105°C		Type number
		120 Hz	20 kHz	120 Hz	20 kHz	
450 VDC (U_R)						
1000	51 x 93	89	54	5.8	11.2	ALS42A102K3L450
1200	51 x 115	73	44	6.8	13.4	ALS42A122KJA450
1500	51 x 131	60	37	7.8	14.8	ALS42A152K5C450
1800	63.5 x 93	51	31	9.0	16.4	ALS42A182L3L450
2200	63.5 x 115	42	26	10.5	18.9	ALS42A222LJA450
2700	63.5 x 131	34	21	12.2	21.5	ALS42A272L5C450
2700	77 x 115	36	23	12.3	20.3	ALS42A272NJA450
3300	63.5 x 150	30	20	13.2	22.1	ALS42A332L5R450
3300	77 x 131	31	20	14.0	21.4	ALS42A332N5C450
3900	63.5 x 194	25	16	14.2	23.3	ALS42A392L7L450
4700	77 x 150	25	17	15.8	22.2	ALS42A472N5R450
5600	77 x 194	19	13	19.5	28.3	ALS42A562N7L450
5600	90 x 150	20	14	19.8	28.8	ALS42A562Q5R450
6800	90 x 194	16	11	24.3	36.2	ALS42A682Q7L450
8200	90 x 194	14	10	25.4	35.7	ALS42A822Q7L450
10000	90 x 220	12	9	30.4	41.2	ALS42A103Q8L450

Mounting Style 2=plain or 3=stud 
Termination Style A,C

OPERATIONAL DATA

Operational Lifetime

Please see separate BHC application notes TD003 for calculating operational life expectancy under customer specific conditions.

RELIABILITY

The failure rate is derived from our periodic test results. The failure rate (λ_R) is therefore only given at test temperature for life tests. An estimation is also given at 40°C. The expected failure rate for this capacitor range is based on our periodic test results for capacitors with structural similarity. Failure rate is frequently quoted in FIT (Failures In Time) where 1 FIT = 1×10^{-9} failures per hour. Failure rates include both catastrophic and parametric failures

T_a	Failure rate per hour
85°C	220 FIT
40°C	10 FIT

MECHANICAL DATA

Mounting position

The capacitor can be mounted in any position so long as the safety vent can operate. It is possible for some electrolyte to be expelled. As this is a conducting liquid, suitable precautions should be instigated by the system designer to avoid secondary short circuits.

The capacitors are designed to be mounted in free air and are not suitable for submersion in liquid.

Vibration

10Hz to 55Hz at 0.75mm or 10g for 3x2hrs duration. Except 220mm long cans 10Hz to 55Hz at 0.35mm or 5g for 3x0.5hrs duration.

Insulating resistance

≥ 100 Mohms at 100V d.c., across insulating sleeve.

Voltage proof

≥ 2500 V d.c., across insulating sleeve.

Safety vent

A safety vent for over pressure is featured on terminal deck. This is in the form of a rubber plug designed to relieve build up of internal pressure due to over stress or catastrophic failure.