Press-Fit Aluminum Electrolytic Capacitors

ALF70, +85°C

Overview

The KEMET ALF70 Press-Fit capacitors eliminate the need for solder, and therefore, the associated production and quality issues. They are the next evolution of snap-in capacitors, providing reliable electrical contact and the same vibration performance as soldered snap-in terminals. The ALF70 High CV Press-Fit capacitors offer high performance and reliability in a wide range of case sizes and voltage ratings (up to 600 V), featuring high ripple currents and long-life performance. Volumetric efficiency ensures the maximum capacitance capability in a smaller size.

Applications

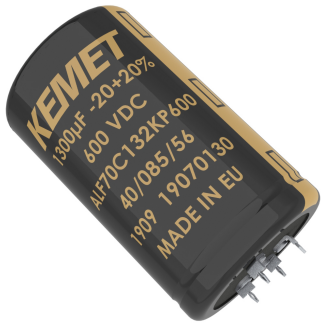
Typical applications for the ALF70 capacitor include inverters, frequency converters, motor drives, motor control, UPS systems, smoothing, energy storage, alternative energy, charging stations, traction, demanding power supplies (SMPS), welding, and HVAC.

Benefits

- Eliminates the manufacturing problems of soldering onto thick PCB copper tracks which act as heat-sinks
- Eliminates fractured solder joints/cold-solder
- Skipping the solder operation allows for easy insertion after the production washing process
- Capability to exchange components in the field

In addition to solving the solder issues, the ALF70 Press-Fit offers:

- Maximum capacitance capability
- 35, 40, 45, and 50 mm diameters with 4 or 5 pin configuration
- Long life, up to 18,000 hours at +85°C (V_R, I_R applied)
- High ripple current
- Excellent surge voltage capability
- PET sleeve and Lexan disc are recognized to UL: QMTR2, UL No. E358957 *(Other options available upon request)*
- Optimized designs available upon request



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Part Number System

ALF70	C	132	KP	600	
Series	Termination	Capacitance Code (µF)	Size Code	Rated Voltage (VDC)	
Press-Fit Type Aluminum Electrolytic	See Termination Table	First two digits represent significant figures. Third digit specifies number of zeros.	See Dimension Table	040 = 40 063 = 63 100 = 100 200 = 200 250 = 250	350 = 350 400 = 400 450 = 450 500 = 500 550 = 550 600 = 600

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Performance Characteristics

Item	Performance Characteristics		
Capacitance Range	150 – 150,000 µF		
Rated Voltage	40 – 600 VDC		
Operating Temperature	–40 to +85°C		
Storage Temperature Range	–55 to +85°C		
Capacitance Tolerance	±20% at 100 Hz/+20°C		
Operational Lifetime	D (mm)	Rated Voltage and Ripple Current at +85°C (hours)	Rated Voltage at +85°C (hours)
	35	15,000	24,000
	40 – 50	18,000	29,000
End of Life Requirement	40 < V_R ≤ 160 VDC Δ C/C < ±20% V_R > 160 VDC Δ C/C < ±15% ESR < 3X ESR Limit, IL < initial specified limit		
Shelf Life	2,000 hours at +85°C or 30,000 hours at +40°C 0 VDC		
Leakage Current	I = 0.006 CV or 6,000 µA (whichever is smaller)		
	C = rated capacitance (µF), V = rated voltage (VDC). Voltage applied for 5 minutes at +20°C.		
Vibration Test Specifications		Procedure	Requirements
	D ≤ 40 mm	0.75 mm displacement amplitude or 10 G maximum acceleration. Vibration applied for three directions 2-hour sessions at 10 –500 Hz. (Capacitor clamped by body)	No leakage of electrolyte or other visible damage. Deviations in capacitance from initial measurements must not exceed Δ C/C ±5%
	D > 40 mm	0.35 mm displacement amplitude or 5 G maximum acceleration. Vibration applied for three directions 0.5-hour sessions at 10 – 55 Hz. (Capacitor clamped by body)	
Standards	IEC 60384–4 long life grade 40/85/56		

Surge Voltage

Test Condition	Voltage (VDC)										
	40	63	100	200	250	350	400	450	500	550	600
≤ 30 second surge followed by a no load period of 330 seconds, 1,000 cycles at +85°C	46	72.5	115	230	288	385	440	495	550	605	660

Test Method & Performance

Endurance Life Test		
Conditions	Performance	
Temperature	+85°C	
Test Duration	2,000 hours	
Ripple Current	Rated ripple current in specified table	
Voltage	The sum of DC voltage and the peak AC voltage must not exceed the rated voltage of the capacitor	
Performance	**The following specifications will be satisfied when the capacitor is tested at +20°C:**	
Capacitance Change	≤ 160 V	Within 15% of the initial value
	> 160 V	Within 10% of the initial value
Equivalent Series Resistance	Does not exceed 150% of the initial value	
Leakage Current	Does not exceed leakage current limit	

Dimensions – Millimeters

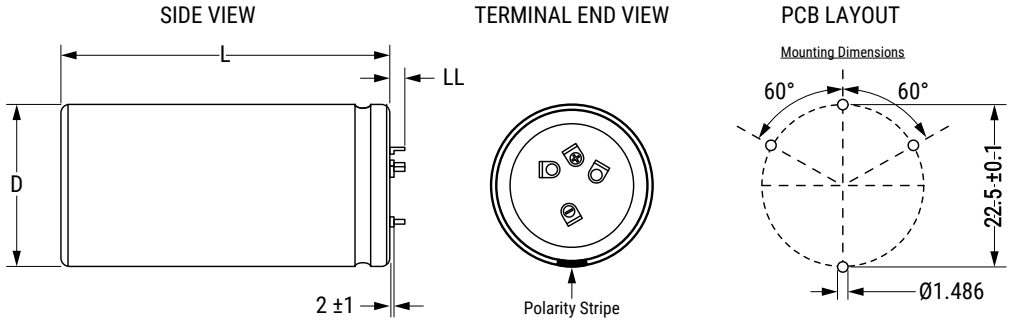
Size Code	Dimensions in mm		Safety Vent Construction	Approximate Weight Grams
	D	L		
	-0/+1	±2		
DB	35	30	Base Vent	50
DC	35	35		60
DD	35	40		65
DE	35	45		75
DF	35	50		80
DG	35	55		85
DH	35	60		90
DL	35	80		115
EB	40	30		55
EC	40	35		65
ED	40	40		85
EE	40	45		100
EF	40	50		105
EG	40	55		115
EH	40	60		125
EJ	40	70		145
EL	40	80		165
EM	40	90		180
EN	40	100		195
Note: Dimensions include sleeving				

Size Code	Dimensions in mm		Safety Vent Construction	Approximate Weight Grams
	D	L		
	-0/+1	±2		
FB	45	30	Side Vent	75
FC	45	35		85
FD	45	40		100
FE	45	45		115
FF	45	50		125
FG	45	55		135
FH	45	60		155
FL	45	80		185
FP	45	105		225
KB	50	30		95
KC	50	35		115
KD	50	40		130
KE	50	45		145
KF	50	50		160
KG	50	55		180
KH	50	60		200
KL	50	80		265
KP	50	105		310
Note: Dimensions include sleeving				

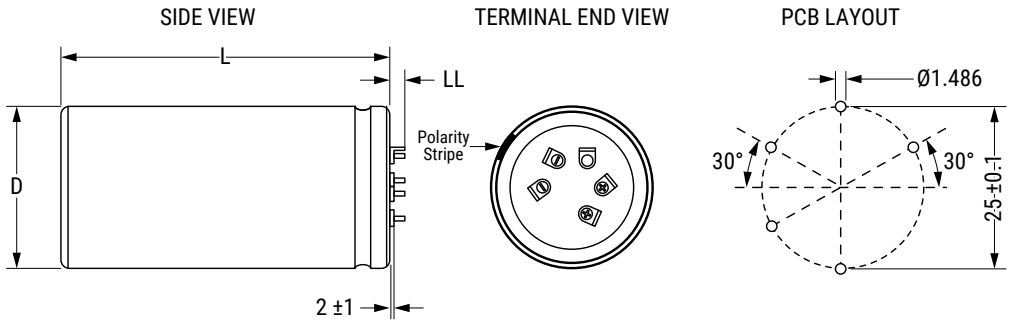
Termination Tables

Termination Code Diameter (mm)	C (4 Pin) LL = 5.5 ±1	G (5 Pin) LL = 5.5 ±1
35	•	
40	•	•
45	•	•
50	•	•
Dimensions in mm		
Mounting: These capacitors are designed to be mounted by their terminations alone and may be used in any position. Dummy pins must be isolated on 4 and 5 pin styles.		

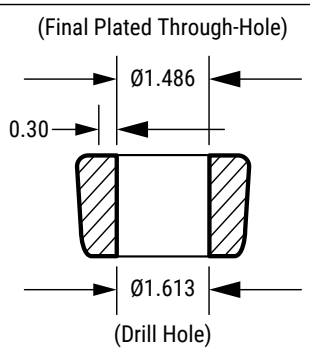
Style C



Style G



PCB Thickness: 1.57 mm Minimum	
DRILL	Ø1.613 ±0.025
COPPER THICKNESS	0.025 minimum
FINAL PLATED THROUGH-HOLE DIAMETER	Ø1.486 ±0.076
Pin Insertion Force: 125 N (28 lbf) maximum Pin Retention Force: 62 N (14 lbf) minimum	



Shelf Life

The capacitance, ESR, and impedance of a capacitor will not change significantly after extended storage periods; however, the leakage current will very slowly increase. KEMET products are particularly stable and allow a shelf life in excess of three years at 40°C. See sectional specification under each product series for specific data.

Re-age (Reforming) Procedure

Apply the rated voltage to the capacitor at room temperature for a period of one hour or until the leakage current has fallen to a steady value below the specified limit. During re-aging, a maximum charging current of twice the specified leakage current or 5 mA (whichever is greater) is suggested.

Reliability

The reliability of a component can be defined as the probability that it will perform satisfactorily under a given set of conditions for a given length of time.

In practice, it is impossible to predict with absolute certainty how any individual component will perform. Therefore, we must utilize probability theory. It is also necessary to clearly define the level of stress involved (e.g., operating voltage, ripple current, temperature, and time.) Finally, the meaning of satisfactory performance must be defined by specifying a set of conditions, which determine the end of life of the component.

KEMET provides an online life calculator that can be used to predict hours of life for a given part number in specific application conditions. This can be found at: https://elc.kemet.com.

End of Life Definition

Catastrophic failure: short circuit, open circuit or safety vent operation

Parametric Failure:
- Change in capacitance > ±15%
- Leakage current > initial specified limit
- ESR > 3X ESR Limit

Table 1 – Ratings & Part Number Reference

Rated Voltage	Rated Capacitance	Size Code	Case Size	Ripple Current		ESR Maximum	Impedance Maximum	Part Number
(VDC)	100 Hz 20°C (µF)		D x L (mm)	100 Hz 85°C (A)	10 kHz 85°C (A)	100 Hz 20°C (mΩ)	10 kHz 20°C (mΩ)	() Represents Part Number Options
40	16,000	DC	35 x 35	6.49	8.05	49	41	ALF70C163DC040
40	18,000	EB	40 x 30	6.19	7.21	51	44	ALF70(1)183EB040
40	20,000	DD	35 x 40	7.36	9.03	40	33	ALF70C203DD040
40	22,000	DE	35 x 45	8.00	9.86	36	30	ALF70C223DE040
40	27,000	DF	35 x 50	8.80	10.66	30	25	ALF70C273DF040
40	33,000	DH	35 x 60	9.90	11.88	25	21	ALF70C333DH040
40	36,000	EF	40 x 50	9.69	11.18	26	22	ALF70(1)363EF040
40	39,000	EF	40 x 50	9.75	11.12	25	22	ALF70(1)393EF040
40	47,000	EH	40 x 60	11.02	12.52	21	18	ALF70(1)473EH040
40	56,000	EJ	40 x 70	12.04	13.56	18	16	ALF70(1)563EJ040
40	68,000	EL	40 x 80	12.93	14.36	16	14	ALF70(1)683EL040
40	82,000	EN	40 x 100	13.87	15.24	14	13	ALF70(1)823EN040
40	100,000	FP	45 x 105	17.42	19.53	11	9	ALF70(1)104FP040
40	110,000	FP	45 x 105	17.87	19.84	10	9	ALF70(1)114FP040
40	120,000	FP	45 x 105	18.24	20.07	10	9	ALF70(1)124FP040
40	150,000	KP	50 x 105	19.32	20.82	9	8	ALF70(1)154KP040
63	8,200	DC	35 x 35	5.79	7.50	53	41	ALF70C822DC063
63	9,100	EB	40 x 30	5.46	6.53	57	47	ALF70(1)912EB063
63	10,000	DD	35 x 40	6.55	8.44	44	34	ALF70C103DD063
63	12,000	DE	35 x 45	7.28	9.27	37	29	ALF70C123DE063
63	13,000	DF	35 x 50	7.82	10.03	34	26	ALF70C133DF063
63	15,000	DG	35 x 55	8.43	10.69	30	23	ALF70C153DG063
63	18,000	EF	40 x 50	8.67	10.35	29	24	ALF70(1)183EF063
63	22,000	EH	40 x 60	9.85	11.70	24	20	ALF70(1)223EH063
63	24,000	EH	40 x 60	9.94	11.62	23	19	ALF70(1)243EH063
63	27,000	EJ	40 x 70	10.87	12.72	21	17	ALF70(1)273EJ063
63	33,000	EL	40 x 80	11.75	13.51	18	15	ALF70(1)333EL063
63	39,000	EN	40 x 100	12.68	14.45	16	13	ALF70(1)393EN063
63	39,000	EM	40 x 90	12.46	14.11	16	14	ALF70(1)393EM063
63	47,000	FP	45 x 105	15.83	18.61	12	10	ALF70(1)473FP063
63	56,000	FP	45 x 105	16.62	19.04	11	9	ALF70(1)563FP063
63	68,000	KP	50 x 105	17.60	19.64	10	9	ALF70(1)683KP063
63	75,000	KP	50 x 105	17.87	19.71	10	9	ALF70(1)753KP063
100	3,300	DC	35 x 35	4.89	6.47	84	67	ALF70C332DC100
100	3,600	EB	40 x 30	4.68	5.73	89	73	ALF70(1)362EB100
100	4,300	DD	35 x 40	5.63	7.30	66	53	ALF70C432DD100
100	4,700	DE	35 x 45	6.15	8.07	60	47	ALF70C472DE100
100	5,600	DF	35 x 50	6.77	8.76	51	41	ALF70C562DF100
100	6,800	DG	35 x 55	7.42	9.40	43	35	ALF70C682DG100
100	8,200	EF	40 x 50	7.59	9.04	42	35	ALF70(1)822EF100
100	10,000	EH	40 x 60	8.70	10.35	34	29	ALF70(1)103EH100
100	12,000	EJ	40 x 70	9.66	11.40	29	24	ALF70(1)123EJ100
100	15,000	EL	40 x 80	10.57	12.21	25	21	ALF70(1)153EL100
100	18,000	EN	40 x 100	11.65	13.37	21	18	ALF70(1)183EN100
100	22,000	FP	45 x 105	14.68	17.40	16	13	ALF70(1)223FP100
100	24,000	FP	45 x 105	15.03	17.57	15	13	ALF70(1)243FP100
100	27,000	KP	50 x 105	15.74	18.07	14	12	ALF70(1)273KP100
(VDC)	100 Hz 20°C (µF)		D x L (mm)	100 Hz 85°C (A)	10 kHz 85°C (A)	100 Hz 20°C (mΩ)	10 kHz 20°C (mΩ)	() Represents Part Number Options
Rated Voltage	Rated Capacitance	Size Code	Case Size	Ripple Current		ESR	Impedance	Part Number

(1) Termination Code: See table for available options.

Table 1 – Ratings & Part Number Reference cont.

Rated Voltage	Rated Capacitance	Size Code	Case Size	Ripple Current		ESR Maximum	Impedance Maximum	Part Number
(VDC)	100 Hz 20°C (µF)		D x L (mm)	100 Hz 85°C (A)	10 kHz 85°C (A)	100 Hz 20°C (mΩ)	10 kHz 20°C (mΩ)	() Represents Part Number Options
100	30,000	KP	50 x 105	16.07	18.16	14	12	ALF70(1)303KP100
200	1,000	DC	35 x 35	2.76	5.29	234	141	ALF70C102DC200
200	1,100	DC	35 x 35	2.96	5.42	206	130	ALF70C112DC200
200	1,100	EB	40 x 30	2.96	5.07	216	139	ALF70(1)112EB200
200	1,200	EB	40 x 30	2.99	5.07	210	131	ALF70(1)122EB200
200	1,300	DD	35 x 40	3.32	6.11	174	110	ALF70C132DD200
200	1,500	DE	35 x 45	3.58	6.71	157	96	ALF70C152DE200
200	1,800	DF	35 x 50	4.11	7.42	127	81	ALF70C182DF200
200	2,200	EF	40 x 50	4.62	8.04	113	70	ALF70(1)222EF200
200	2,400	EF	40 x 50	4.90	8.13	101	66	ALF70(1)242EF200
200	2,700	EH	40 x 60	5.29	9.15	92	57	ALF70(1)272EH200
200	3,000	EH	40 x 60	5.67	9.30	81	53	ALF70(1)302EH200
200	3,300	EH	40 x 60	5.76	9.37	78	50	ALF70(1)332EH200
200	3,900	EJ	40 x 70	6.44	10.36	67	43	ALF70(1)392EJ200
200	4,300	EL	40 x 80	7.04	11.13	58	39	ALF70(1)432EL200
200	4,700	EL	40 x 80	7.16	11.24	57	37	ALF70(1)472EL200
200	5,600	EN	40 x 100	7.94	12.31	48	31	ALF70(1)562EN200
200	6,800	FP	45 x 105	9.47	15.53	38	24	ALF70(1)682FP200
200	7,500	FP	45 x 105	10.20	15.97	34	22	ALF70(1)752FP200
200	8,200	KP	50 x 105	10.63	16.54	33	21	ALF70(1)822KP200
200	9,100	KP	50 x 105	11.39	16.89	29	20	ALF70(1)912KP200
200	10,000	KP	50 x 105	11.63	17.10	29	19	ALF70(1)103KP200
250	820	DC	35 x 35	2.71	5.39	228	134	ALF70C821DC250
250	820	EB	40 x 30	2.73	5.05	239	143	ALF70(1)821EB250
250	1,000	DD	35 x 40	3.09	6.12	188	111	ALF70C102DD250
250	1,200	DE	35 x 45	3.48	6.81	157	89	ALF70C122DE250
250	1,300	DF	35 x 50	3.71	7.33	145	85	ALF70C132DF250
250	1,500	DG	35 x 55	4.06	7.92	126	71	ALF70C152DG250
250	1,800	EF	40 x 50	4.53	8.11	111	67	ALF70(1)182EF250
250	2,200	EH	40 x 60	5.20	9.26	91	53	ALF70(1)222EH250
250	2,400	EH	40 x 60	5.40	9.33	85	52	ALF70(1)242EH250
250	2,700	EJ	40 x 70	5.90	10.26	75	44	ALF70(1)272EJ250
250	3,300	EL	40 x 80	6.61	11.13	63	39	ALF70(1)332EL250
250	3,900	EN	40 x 100	7.29	12.13	53	32	ALF70(1)392EN250
250	4,700	FP	45 x 105	8.59	15.19	43	25	ALF70(1)472FP250
250	5,600	FP	45 x 105	9.46	15.90	37	23	ALF70(1)562FP250
250	6,800	KP	50 x 105	10.63	16.84	32	20	ALF70(1)682KP250
350	470	DC	35 x 35	2.25	5.26	302	158	ALF70C471DC350
350	470	EB	40 x 30	2.29	5.00	312	166	ALF70(1)471EB350
350	560	DD	35 x 40	2.53	5.93	253	133	ALF70C561DD350
350	680	DE	35 x 45	2.87	6.63	209	100	ALF70C681DE350
350	750	DF	35 x 50	3.09	7.15	190	100	ALF70C751DF350
350	820	DF	35 x 50	3.23	7.31	175	84	ALF70C821DF350
350	1,000	EF	40 x 50	3.76	8.00	148	73	ALF70(1)102EF350
350	1,100	EF	40 x 50	3.93	8.09	136	74	ALF70(1)112EF350
350	1,200	EH	40 x 60	4.27	9.07	123	61	ALF70(1)122EH350
350	1,300	EH	40 x 60	4.44	9.20	115	62	ALF70(1)132EH350
(VDC)	100 Hz 20°C (µF)		D x L (mm)	100 Hz 85°C (A)	10 kHz 85°C (A)	100 Hz 20°C (mΩ)	10 kHz 20°C (mΩ)	() Represents Part Number Options
Rated Voltage	Rated Capacitance	Size Code	Case Size	Ripple Current		ESR	Impedance	Part Number

(1) Termination Code: See table for available options.

Table 1 – Ratings & Part Number Reference cont.

Rated Voltage	Rated Capacitance	Size Code	Case Size	Ripple Current		ESR Maximum	Impedance Maximum	Part Number
(VDC)	100 Hz 20°C (µF)		D x L (mm)	100 Hz 85°C (A)	10 kHz 85°C (A)	100 Hz 20°C (mΩ)	10 kHz 20°C (mΩ)	() Represents Part Number Options
350	1,500	EJ	40 x 70	4.90	10.09	100	50	ALF70(1)152EJ350
350	1,800	EL	40 x 80	5.46	10.94	84	42	ALF70(1)182EL350
350	2,000	EL	40 x 80	5.77	11.15	77	43	ALF70(1)202EL350
350	2,200	EN	40 x 100	6.13	11.94	70	36	ALF70(1)222EN350
350	2,700	KP	45 x 105	7.22	14.88	55	28	ALF70(1)272FP350
350	3,300	FP	45 x 105	8.14	15.80	47	26	ALF70(1)332FP350
350	3,900	KP	50 x 105	9.11	16.74	41	23	ALF70(1)392KP350
400	390	DC	35 x 35	2.08	4.96	354	187	ALF70C391DC400
400	430	EB	40 x 30	2.22	4.83	334	180	ALF70(1)431EB400
400	510	DD	35 x 40	2.46	5.74	272	145	ALF70C511DD400
400	560	DE	35 x 45	2.65	6.25	247	118	ALF70C561DE400
400	680	DF	35 x 50	2.99	6.92	205	109	ALF70C681DF400
400	820	EF	40 x 50	3.47	7.62	175	93	ALF70(1)821EF400
400	910	EF	40 x 50	3.65	7.76	159	86	ALF70(1)911EF400
400	1,000	EH	40x 60	3.97	8.66	143	76	ALF70(1)102EH400
400	1,200	EH	40 x 60	4.35	8.97	122	67	ALF70(1)122EH400
400	1,500	EJ	40 x 70	5.01	10.01	99	50	ALF70(1)152EJ400
400	1,600	EL	40 x 80	5.27	10.65	92	51	ALF70(1)162EL400
400	1,800	EL	40 x 80	5.60	10.89	84	43	ALF70(1)182EL400
400	2,200	EN	40 x 100	6.32	12.01	69	36	ALF70(1)222EN400
400	2,700	FP	45 x 105	7.49	15.09	55	30	ALF70(1)272FP400
400	3,300	KP	50 x 105	8.57	16.23	47	24	ALF70(1)332KP400
400	3,600	KP	50 x 105	8.98	16.52	43	25	ALF70(1)362KP400
450	330	DC	35 x 35	1.97	4.64	427	241	ALF70C331DC450
450	360	EB	40 x 30	2.10	4.56	405	231	ALF70(1)361EB450
450	390	DD	35 x 40	2.21	5.22	361	203	ALF70C391DD450
450	470	DF	35 x 50	2.54	6.07	299	167	ALF70C471DF450
450	560	DF	35 x 50	2.80	6.45	253	143	ALF70C561DF450
450	680	DH	35 x 60	3.20	7.34	209	109	ALF70C681DH450
450	750	EF	40 x 50	3.42	7.33	195	112	ALF70(1)751EF450
450	820	EH	40 x 60	3.71	8.14	177	100	ALF70(1)821EH450
450	1,000	EH	40 x 60	4.11	8.53	148	85	ALF70(1)102EH450
450	1,200	EL	40 x 80	4.69	9.87	123	66	ALF70(1)122EL450
450	1,300	EL	40 x 80	4.91	10.09	114	66	ALF70(1)132EL450
450	1,500	EN	40 x 100	5.34	10.88	99	54	ALF70(1)152EN450
450	1,800	EN	40 x 100	5.94	11.49	85	46	ALF70(1)182EN450
450	2,000	FP	45 x 105	6.97	14.41	68	39	ALF70(1)202FP450
450	2,200	KP	50 x 105	7.52	15.23	63	33	ALF70(1)222KP450
450	2,700	KP	50 x 105	8.45	15.99	53	31	ALF70(1)272KP450
500	240	DC	35 x 35	1.71	3.61	841	597	ALF70C241DC500
500	270	EB	40 x 30	1.86	3.74	765	545	ALF70(1)271EB500
500	300	DD	35 x 40	1.97	4.15	674	478	ALF70C301DD500
500	330	DE	35 x 45	2.12	4.49	612	423	ALF70C331DE500
500	390	DF	35 x 50	2.37	4.97	519	359	ALF70C391DF500
500	430	DF	35 x 50	2.50	5.19	472	335	ALF70C431DF500
500	470	DG	35 x 55	2.66	5.53	431	299	ALF70C471DG500
500	560	EF	40 x 50	3.02	6.04	370	264	ALF70(1)561EF500
(VDC)	100 Hz 20°C (µF)		D x L (mm)	100 Hz 85°C (A)	10 kHz 85°C (A)	100 Hz 20°C (mΩ)	10 kHz 20°C (mΩ)	() Represents Part Number Options
Rated Voltage	Rated Capacitance	Size Code	Case Size	Ripple Current		ESR	Impedance	Part Number

(1) Termination Code: See table for available options.

Table 1 – Ratings & Part Number Reference cont.

Rated Voltage	Rated Capacitance	Size Code	Case Size	Ripple Current		ESR Maximum	Impedance Maximum	Part Number
(VDC)	100 Hz 20°C (µF)		D x L (mm)	100 Hz 85°C (A)	10 kHz 85°C (A)	100 Hz 20°C (mΩ)	10 kHz 20°C (mΩ)	() Represents Part Number Options
500	680	EH	40 x 60	3.46	6.89	305	212	ALF70(1)681EH500
500	750	EH	40 x 60	3.65	7.13	278	199	ALF70(1)751EH500
500	820	EJ	40 x 70	3.91	7.70	254	177	ALF70(1)821EJ500
500	1,000	EL	40 x 80	4.42	8.53	209	150	ALF70(1)102EL500
500	1,200	EN	40 x 100	4.93	9.38	175	123	ALF70(1)122EN500
500	1,500	FP	45 x 105	5.85	10.93	153	112	ALF70(1)152FP500
500	1,600	FP	45 x 105	6.09	11.29	144	107	ALF70(1)162FP500
500	1,800	KP	50 x 105	6.68	12.15	130	96	ALF70(1)182KP500
500	2,200	KP	50 x 105	7.53	13.20	108	81	ALF70(1)222KP500
550	220	DC	35 x 35	1.49	2.33	1958	1703	ALF70C221DC550
550	240	EB	40 x 30	1.60	2.46	1825	1588	ALF70(1)241EB550
550	270	DD	35 x 40	1.70	2.66	1596	1388	ALF70C271DD550
550	330	DE	35 x 45	1.94	3.03	1309	1133	ALF70C331DE550
550	360	DF	35 x 50	2.08	3.24	1198	1042	ALF70C361DF550
550	390	DF	35 x 50	2.16	3.38	1109	959	ALF70C391DF550
550	470	DH	35 x 60	2.46	3.85	920	800	ALF70C471DH550
550	470	EF	40 x 50	2.52	3.90	933	808	ALF70(1)471EF550
550	510	EF	40 x 50	2.64	4.05	860	749	ALF70(1)511EF550
550	560	EH	40 x 60	2.85	4.41	783	678	ALF70(1)561EH550
550	620	EH	40 x 60	3.03	4.64	708	616	ALF70(1)621EH550
550	680	EH	40 x 60	3.17	4.85	648	561	ALF70(1)681EH550
550	820	EJ	40 x 70	3.59	5.47	538	466	ALF70(1)821EJ550
550	910	EL	40 x 80	3.87	5.88	484	421	ALF70(1)911EL550
550	1,000	EN	40 x 100	4.08	6.22	441	382	ALF70(1)102EN550
550	1,200	EN	40 x 100	4.57	6.88	369	320	ALF70(1)122EN550
550	1,300	FP	45 x 105	5.12	7.94	316	273	ALF70(1)132FP550
550	1,500	KP	50 x 105	5.72	8.79	278	239	ALF70(1)152KP550
550	1,800	KP	50 x 105	6.40	9.70	233	201	ALF70(1)182KP550
600	150	DC	35 x 35	1.60	3.46	853	589	ALF70C151DC600
600	160	EB	40 x 30	1.69	3.53	817	566	ALF70(1)161EB600
600	180	DD	35 x 40	1.81	3.91	711	491	ALF70C181DD600
600	220	DE	35 x 45	2.06	4.43	582	376	ALF70C221DE600
600	240	DF	35 x 50	2.20	4.74	534	369	ALF70C241DF600
600	270	DG	35 x 55	2.38	5.12	475	306	ALF70C271DG600
600	330	EF	40 x 50	2.75	5.69	397	275	ALF70(1)331EF600
600	390	EH	40 x 60	3.10	6.42	336	218	ALF70(1)391EH600
600	430	EH	40 x 60	3.27	6.67	306	212	ALF70(1)431EH600
600	470	EJ	40 x 70	3.50	7.19	279	182	ALF70(1)471EJ600
600	560	EL	40 x 80	3.91	7.91	235	153	ALF70(1)561EL600
600	620	EL	40 x 80	4.15	8.24	214	149	ALF70(1)621EL600
600	680	EN	40 x 100	4.38	8.75	195	127	ALF70(1)681EN600
600	820	EN	40 x 100	4.92	9.48	163	107	ALF70(1)821EN600
600	1,000	FP	45 x 105	5.75	11.48	132	92	ALF70(1)102FP600
600	1,200	KP	50 x 105	6.57	12.70	113	74	ALF70(1)122KP600
600	1,300	KP	50 x 105	6.89	13.12	105	73	ALF70(1)132KP600
(VDC)	100 Hz 20°C (µF)		D x L (mm)	100 Hz 85°C (A)	10 kHz 85°C (A)	100 Hz 20°C (mΩ)	10 kHz 20°C (mΩ)	() Represents Part Number Options
Rated Voltage	Rated Capacitance	Size Code	Case Size	Ripple Current		ESR	Impedance	Part Number

(1) Termination Code: See table for available options.

Environmental Compliance



All Part Numbers in this datasheet are Reach and RoHS compliant and Halogen-Free.

As an environmentally conscious company, KEMET is working continuously with improvements concerning the environmental effects of both our capacitors and their production.

In Europe (RoHS Directive) and in some other geographical areas such as China, legislation has been put in place to prevent the use of some hazardous materials, such as lead (Pb), in electronic equipment. All products in this catalog are produced to help our customers' obligations to guarantee their products and fulfill these legislative requirements. The only material of concern in our products has been lead (Pb), which has been removed from all designs to fulfill the requirement of containing less than 0.1% of lead in any homogeneous material. KEMET will closely follow any changes in legislation worldwide and make any necessary changes in its products, whenever needed.

Some customer segments such as medical, military and automotive electronics may still require the use of lead in electrode coatings. To clarify the situation and distinguish products from each other, a special symbol is used on the packaging labels for RoHS compatible capacitors.

Due to customer requirements, there may appear additional markings such as lead-free (LF), or lead-free wires (LFW) on the label.

Mechanical Data

Polarity and Reversed Voltage
Aluminium Electrolytic capacitors manufactured for use in DC applications contain an anode foil and a cathode foil. As such, they are polarized devices and must be connected with the +ve to the anode foil and the -ve to the cathode foil. If this were to be reversed then the electrolytic process that took place in forming the oxide layer on the anode would be recreated in trying to form an oxide layer on the cathode. In forming the cathode foil in this way, heat would be generated and gas given off within the capacitor, usually leading to catastrophic failure.

The cathode foil already possesses a thin stabilized oxide layer. This thin oxide layer is equivalent to a forming voltage of approximately 2 V. As a result, the capacitor can withstand a voltage reversal of up to 2 V for short periods. Above this voltage, the formation process will commence. Aluminium Electrolytic capacitors can also be manufactured for use in intermittent AC applications by using two anode foils in place of one anode and one cathode.

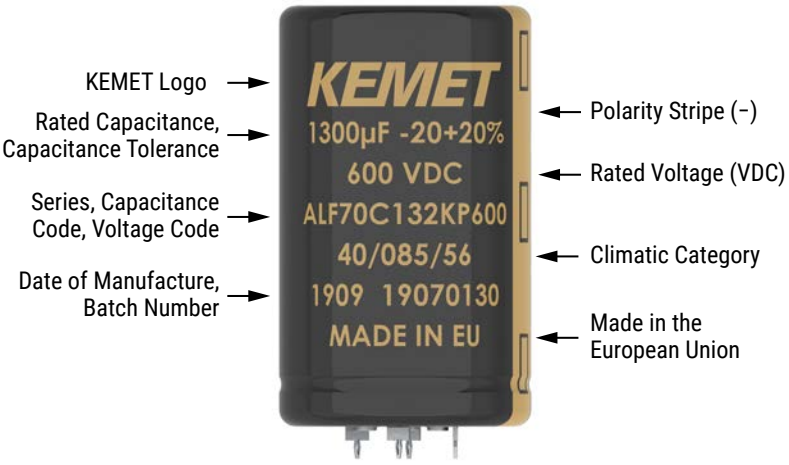
Mounting Position
The capacitor can be mounted upright or inclined to a horizontal position. Special attention for the safety vent coverage, which this ensures that internal gas generated can escape when the pressure reaches a certain value due to overstress or catastrophic failure. All mounting positions must allow the safety vent to work properly.

Insulating Resistance
≥ 100 MΩ at 100 VDC across insulating sleeve.

Voltage Proof
≥ 3,500 VDC across insulating sleeve.
≥ 2,500 VAC across insulating sleeve.

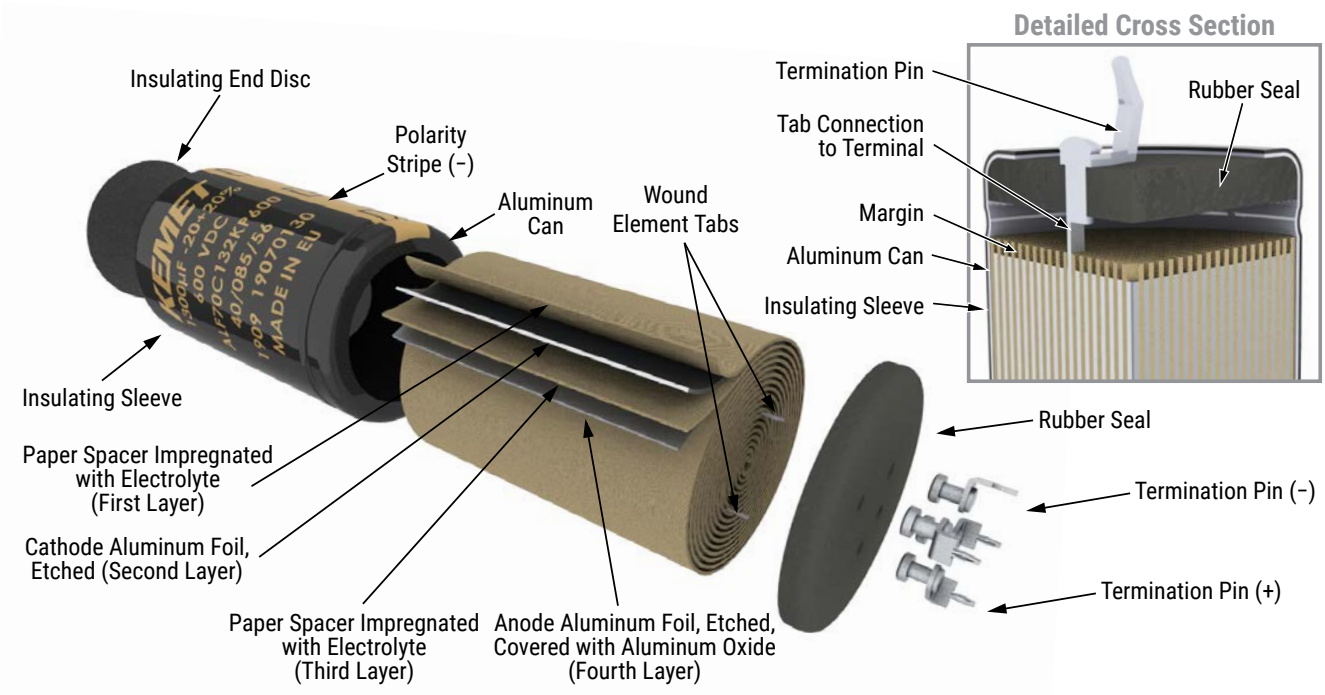
Safety Vent
For diameters up to 40 mm, the safety vent for overpressure is featured on the base (opposing end to the terminals), and for diameters 45 mm or higher, the safety vent is featured in the side of the can. This is a weakened area in the bottom of the can that is designed to relieve build-up of internal pressure due to overstress or catastrophic failure.

Marking



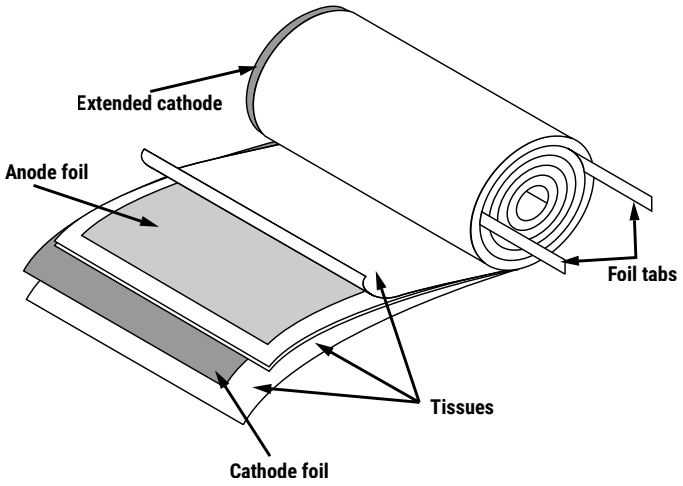
**Print shown is representative of the data included on the sleeve. Actual appearance can be continuous print style.*

Construction



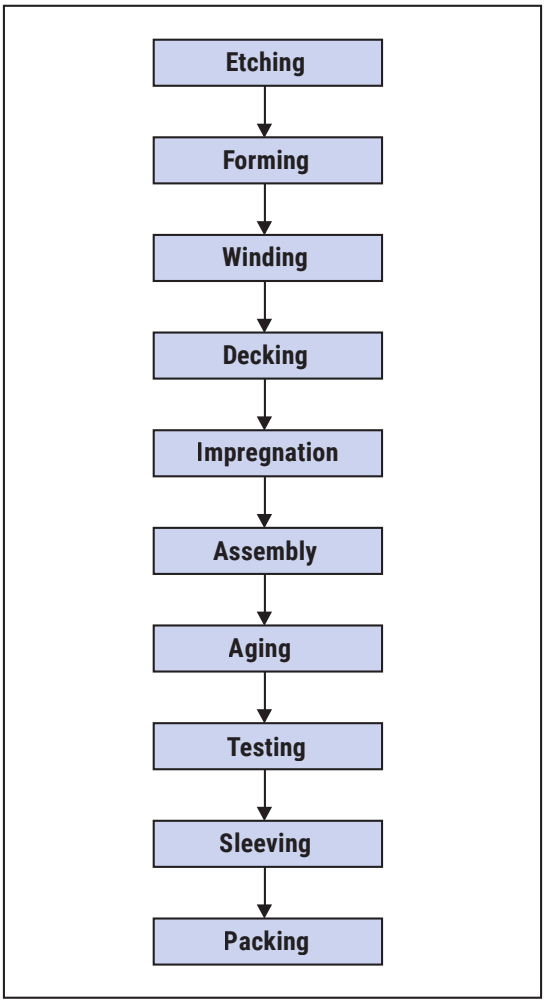
Construction Data

The manufacturing process begins with the anode foil being electrochemically etched to increase the surface area and then "formed" to produce the aluminum oxide layer. Both the anode and cathode foils are then interleaved with absorbent paper and wound into a cylinder. During the winding process, aluminum tabs are attached to each foil to provide the electrical contact.



The deck, complete with terminals, is attached to the tabs and then folded down to rest on top of the winding. The complete winding is impregnated with electrolyte before being housed in a suitable container, usually an aluminum can, and sealed. Throughout the process, all materials inside the housing must be maintained at the highest purity and be compatible with the electrolyte.

Each capacitor is aged and tested before being sleeved and packed. The purpose of aging is to repair any damage in the oxide layer and thus reduce the leakage current to a very low level. Aging is normally carried out at the rated temperature of the capacitor and is accomplished by applying voltage to the device while carefully controlling the supply current. The process may take several hours to complete.



Damage to the oxide layer can occur due to variety of reasons:

- Slitting of the anode foil after forming
- Attaching the tabs to the anode foil
- Minor mechanical damage caused during winding

A sample from each batch is taken by the quality department after completion of the production process. This sample size is controlled by the use of recognized sampling tables defined in BS 6001.

The following tests are applied and may be varied at the request of the customer. In this case the batch, or special procedure, will determine the course of action.

Electrical:

- Leakage current
- Capacitance
- ESR
- Impedance
- Tan Delta

Mechanical/Visual:

- Overall dimensions
- Torque test of mounting stud
- Print detail
- Box labels
- Packaging, including packed quantity

KEMET Electronics Corporation Sales Offices

For a complete list of our global sales offices, please visit www.kemet.com/sales.

Disclaimer

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Although KEMET designs and manufactures its products to the most stringent quality and safety standards, given the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage.

Although all product–related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicted or that other measures may not be required.

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