

# Type ACF, Metallized Polypropylene Capacitors for AC Filtering

## High Current, High Capacitance, Low ESR, Low Inductance

Type ACF capacitors offer several robust terminal options for AC Filtering applications. ACF is designed to give high capacitance in a small package for high current and low ESR requirements. The metallized polypropylene construction inherently gives the advantage of low DF and stable performance over the rated temperature range.



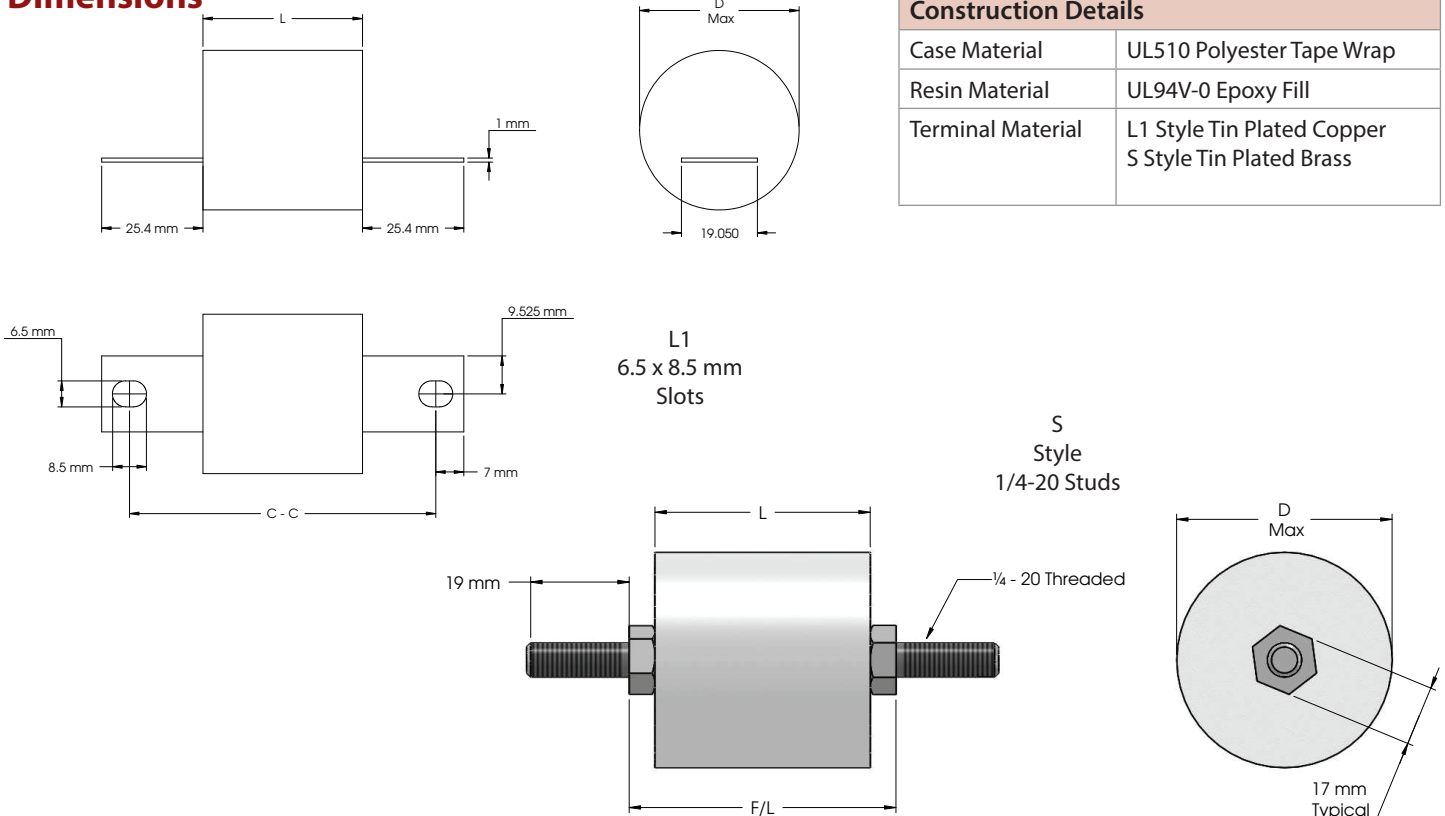
### Highlights

- High capacitance
- High current
- Low ESR
- Low inductance
- Terminal/mounting options
- Self healing

### Specifications

Capacitance Range	5.0 to 250 $\mu$ F
Capacitance Tolerance	$\pm$ 10% (K) standard, $\pm$ 5% (J) optional
Rated Voltage	300 to 900 Vac, 50/60 Hz
Operating Temperature Range	-55 $^{\circ}$ C to 85 $^{\circ}$ C
Climate Category	55/85/56. IEC60068-1, 40 $^{\circ}$ C/93% RH/56 days
Maximum rms Current	Check tables for values
Insulation Resistance	25,000 M $\Omega$ x $\mu$ F @ 25 $^{\circ}$ C, after 5 minutes of charge
Test Voltage between Terminals @ 25 $^{\circ}$ C	130% rated DC voltage for 60 s
Test Voltage between Terminals & Case @ 25 $^{\circ}$ C	3 kVac 50/60Hz for 60 s
Life Expectancy	60,000 h with 94% survival rate
<b>RoHS Compliant</b>	

### Dimensions



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## Part Numbering System

ACF	550	K	301	L1/S	-F
Type	Capacitance	Tolerance	Voltage	Terminals	RoHS
ACF	505 = 5 μF 106 = 10 μF 107 = 100 μF	K = ±10 % J = ±5 %	301 = 300 Vac 531 = 530 Vac 901 = 900 Vac	L1 = Lugs S = Studs	Compliant

## Ratings

Other ratings available upon request, as well as other terminations

Catalog Number	Cap (μF)	Diameter (mm) Max	Length (mm) ±2.5	F/L or C-C Dimension (mm) ±1.5	Surface Area (in <sup>2</sup> )	Max Power (W)				Typical ESR (mΩ)	Typical ESL (nH)	Rth (°C/W)	fr (kHz)	Ipk (A)	dV/dt (V/μs)
						25 °C	45 °C	65 °C	85 °C						
<b>300 Vrms 50/60Hz 450 Vdc</b>															
ACF506K301L1-F	50	63	50	86.5	25.0	5.7	4.1	2.6	1.0	1.4	40	12.45	112	2571	52
ACF756K301L1-F	75	62	68	104	29.9	6.7	4.9	2.9	1.0	1.8	59	10.51	75	2465	33
ACF107K301L1-F	100	71	68	104	35.8	7.8	5.6	3.3	1.2	1.5	59	8.75	65	3286	33
ACF157K301L1-F	150	73	88	124	44.3	9.3	6.7	3.8	1.0	1.8	79	7.05	46	3490	23
ACF207K301L1-F	200	72	112	149	51.9	10.2	6.9	3.7	0.4	2.2	105	5.94	34	3409	17
ACF257K301L1-F	250	82	112	149	61.1	10.7	8.0	4.0	0.2	1.9	105	5.03	31	5261	17
<b>530 Vrms 50/60Hz 750 Vdc</b>															
ACF505K531S-F	5	38	63	82.5	15.2	3.5	2.6	1.6	0.6	3.6	54	21.16	306	822	164
ACF106K531S-F	10	51	63	82.5	22.0	5.0	3.7	2.3	0.9	2.1	54	14.19	216	1643	164
ACF206K531S-F	20	71	63	82.5	34.1	7.9	5.7	3.5	1.4	1.4	54	9.18	153	3286	164
ACF306K531S-F	30	68.5	87	106.5	40.4	9.3	6.6	4.2	1.6	1.9	79	7.72	103	3036	89
ACF406K531S-F	40	73.5	96	115.5	47.5	11.0	8.0	4.9	1.8	1.9	88	6.54	84	3542	89
ACF506K531S-F	50	81.3	96	115.5	54.1	8.9	6.5	4.5	2.3	1.5	88	5.69	75	3629	73
ACF606K531S-F	60	81.5	112	130.5	60.6	10.3	7.9	5.3	2.7	1.7	110	4.93	62	3811	64
ACF756K531S-F	75	82.5	137	130.5	71.6	15.9	11.1	6.7	2.1	2.2	130	4.35	50	4231	56
ACF107K531S-F	100	93.5	137	130.5	83.7	18.0	12.7	7.6	2.2	1.8	130	3.69	44	5642	56
<b>900 Vrms 50/60Hz 1300 Vdc</b>															
ACF505K901S-F	5	34.5	137	156.5	25.9	5.9	4.1	2.6	1.0	10.2	130	12.28	197	661	132
ACF106K901S-F	10	46.5	137	156.5	36.3	8.4	6.0	3.7	1.4	5.5	130	8.63	139	1322	132
ACF206K901S-F	20	64	137	156.5	52.7	11.9	8.7	5.2	1.9	3.1	130	5.90	98	2644	132
ACF306K901S-F	30	79.5	137	156.5	68.4	15.5	11.3	6.7	2.4	2.3	130	4.51	80	3966	132
ACF406K901S-F	40	90.5	137	156.5	80.3	18.2	13.1	7.8	2.6	1.9	130	3.83	70	5288	132
ACF506K901S-F	50	100	137	156.5	91.1	17.0	15.0	9.1	2.9	1.7	130	3.36	62	6610	132

## Performance Notes

**I max:** Maximum rms current value for continuous operation (A)

**I peak:** Maximum current amplitude for continuous operation (A)

**R<sub>s</sub>:** Equivalent series resistance – Ohmic resistances (Ohm)

**Dielectric Dissipation Factor:** tan δ (Polypropylene: 0.0002)

**T<sub>hs</sub>:** Hot spot temperature within the capacitor:  $T_{hs} = T_a + (P_{total} \cdot 298 / SA)$

**T<sub>a</sub>:** Ambient temperature

**R<sub>th</sub>:** Thermal resistance: °C/Watt, indicates hot spot temperature rise due to power dissipation losses

**P<sub>max</sub>:** Maximum power dissipation:  $P_{max} = (T_{hs} - T_a) / R_{th}$  (Watts)  $T_{hs} < 100^\circ\text{C}$

**P<sub>R</sub>:** Power generated by Ohmic losses:  $P_R = I^2 \cdot (R_s + (X_c \cdot DF))$  (Watts)

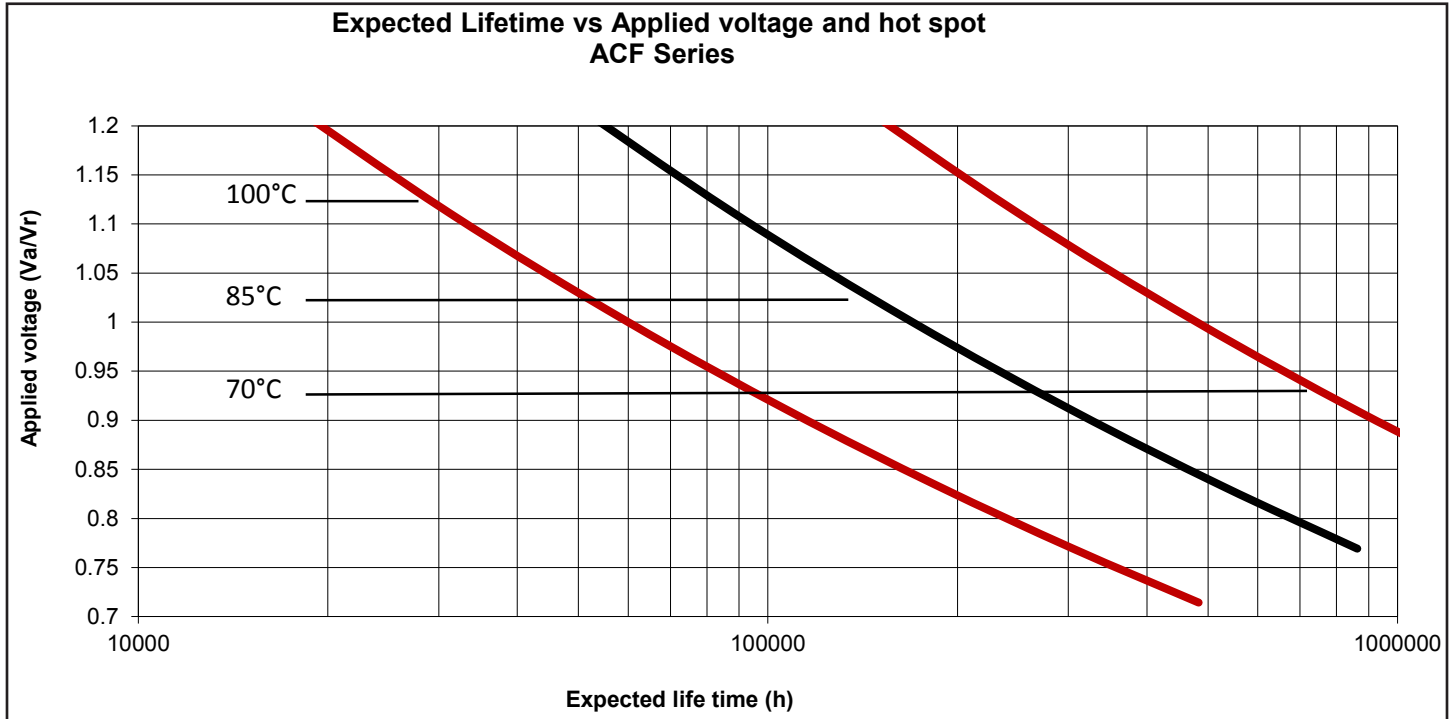
**PD:** Power generated by Dielectric losses:  $P_D = V_{peak}^2 \cdot C \cdot \pi \cdot F \cdot DF$  (Watts)

**P<sub>total</sub>:** Total power generated:  $P_{total} = P_{Fund} + P_{Harm1} + P_{Harm2} + \dots + P_{harm \infty}$

**Design life:** 60,000 hours 94% survival  $T_{hs}$ : 100 °C

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