

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.



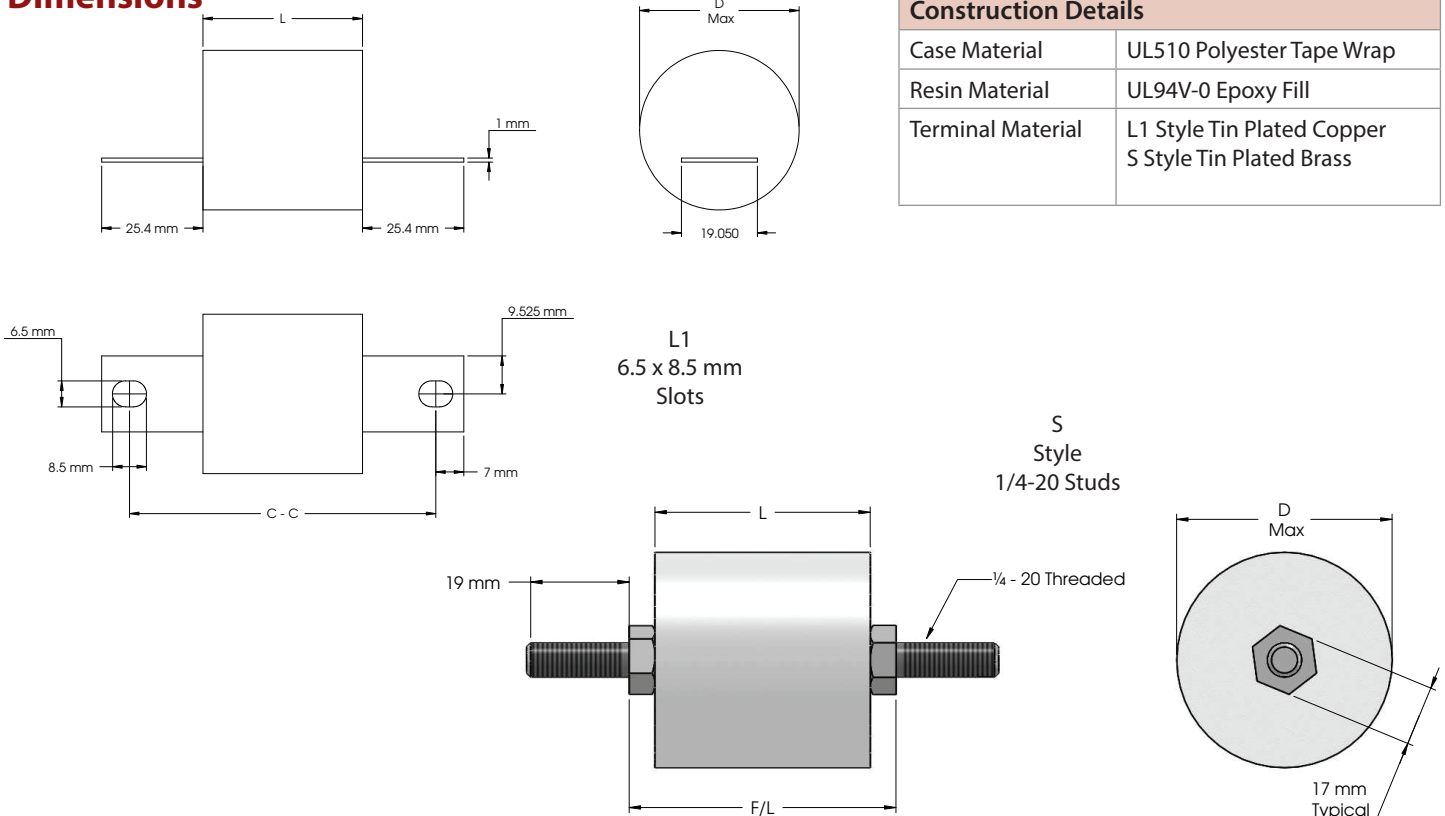
Highlights

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

Specifications

| | |
|---|--|
| Capacitance Range | 5.0 to 250 μ 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 Ω x μ 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 |
| RoHS Compliant | |

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 ²) | 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 | | | | | | |
| 300 Vrms 50/60Hz 450 Vdc | | | | | | | | | | | | | | | |
| 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 |
| 530 Vrms 50/60Hz 750 Vdc | | | | | | | | | | | | | | | |
| 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 |
| 900 Vrms 50/60Hz 1300 Vdc | | | | | | | | | | | | | | | |
| 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_s: Equivalent series resistance – Ohmic resistances (Ohm)

Dielectric Dissipation Factor: tan δ (Polypropylene: 0.0002)

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

T_a: Ambient temperature

R_{th}: Thermal resistance: °C/Watt, indicates hot spot temperature rise due to power dissipation losses

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

P_R: Power generated by Ohmic losses: $P_R = I^2 \cdot (R_s + (X_c \cdot DF))$ (Watts)

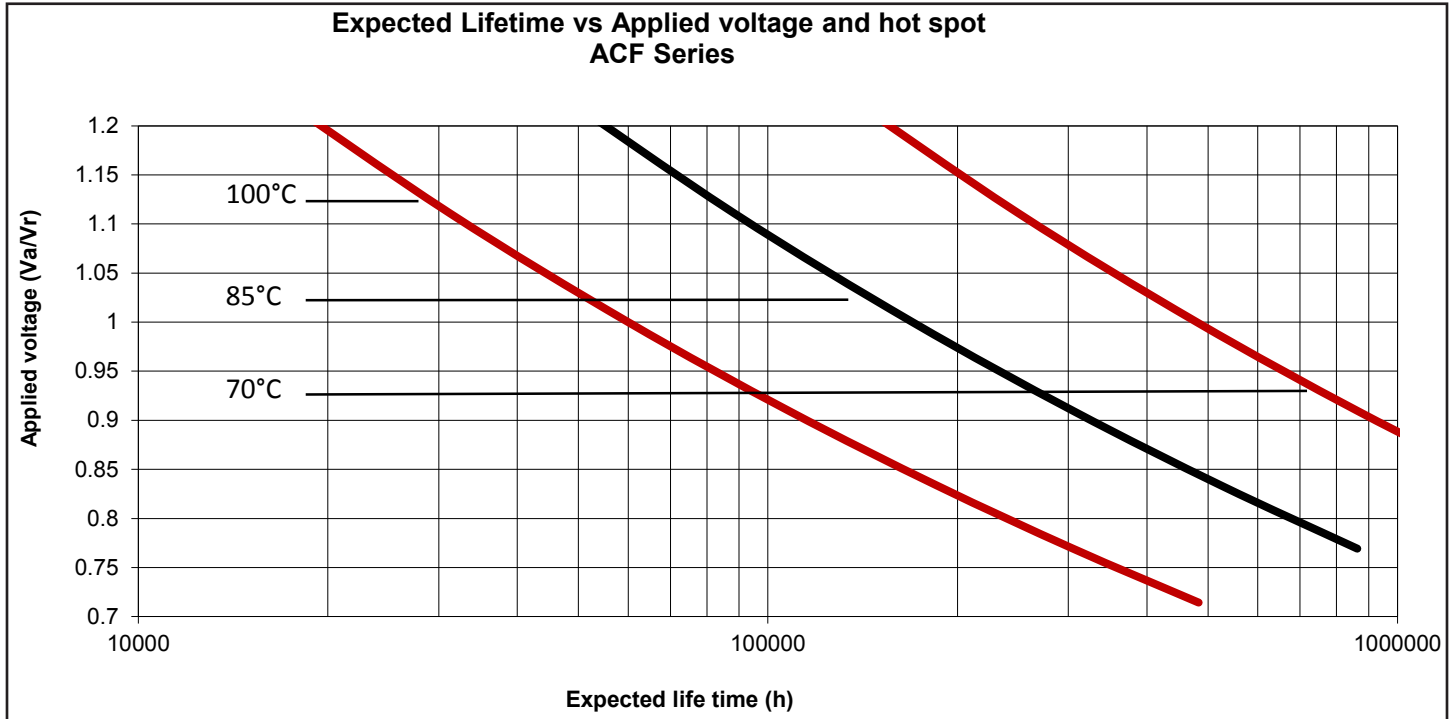
PD: Power generated by Dielectric losses: $P_D = V_{peak}^2 \cdot C \cdot \pi \cdot F \cdot DF$ (Watts)

P_{total}: 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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