

Type AFC -55°C to 105°C

SMT Aluminum Electrolytic Capacitors - Low Impedance, 105°C

Low Impedance and Long-Life for Filtering, Bypassing and Power Supply Decoupling



Type AFC Capacitors are the choice for high-frequency filtering. At 100 kHz, most ratings can handle more than twice the ripple current of type AHA. With solid performance at temperatures down to -55°C , Type AFC has more than 90% capacitance retention at -20°C and 1 kHz. With low impedance to beyond 100 kHz, it is ideal for higher power DC/DC converters. The vertical cylindrical cases make for easy automatic mounting and reflow soldering, and offer big savings and higher capacitance compared to tantalum capacitors.

Highlights

- $+105^{\circ}\text{C}$, Up to 1000 Hour Load Life
- Capacitance Range: $1\ \mu\text{F}$ to $1500\ \mu\text{F}$
- Voltage Range: 6.3 Vdc to 50 Vdc

Specifications

Operating Temperature: -55°C to $+105^{\circ}\text{C}$

Rated Voltage: 6.3, 10, 16, 25 & 50 Vdc

Capacitance: $1.0\ \mu\text{F}$ to $1500\ \mu\text{F}$

Capacitance Tolerance: $\pm 20\%$ @ 120 Hz and $+20^{\circ}\text{C}$

Leakage Current: 0.01 CV or $3\ \mu\text{A}$ @ $+20^{\circ}\text{C}$, after two minutes (whichever is greater)

Dissipation Factor: See ratings table

Ripple Current Multiplier: Frequency

| | | | | |
|----------|--------|-------|--------|---------|
| 50/60 Hz | 120 Hz | 1 kHz | 10 kHz | 100 kHz |
| 0.70 | .0.75 | 0.90 | 0.95 | 1.00 |

Load Life: 1000 h @ $+105^{\circ}\text{C}$

Δ Capacitance $\pm 20\%$

DF: $\leq 200\%$ of limit

DCL: $\leq 100\%$ of limit

Shelf Life: 1000 h @ $+105^{\circ}\text{C}$

Δ Capacitance $\pm 20\%$

DF: $\leq 200\%$ of limit

DCL: $\leq 100\%$ of limit

AFC Series Marking



Outline Drawing



Case Dimensions

| Case Code | Dimensions in (mm) | | | | | | | |
|-----------|--------------------|--------------|-------------|---------|---------|----------------|---------|--------------------|
| | D ± 0.5 | L | A ± 0.2 | H (max) | I (ref) | W | P (ref) | K |
| B | 4.0 | 5.4 $+1,-2$ | 4.3 | 5.5 | 1.8 | 0.65 ± 0.1 | 1.0 | 0.35 $+0.15/-0.20$ |
| C | 5.0 | 5.4 $+1,-2$ | 5.3 | 6.5 | 2.2 | 0.65 ± 0.1 | 1.5 | 0.35 $+0.15/-0.20$ |
| D | 6.3 | 5.4 $+1,-2$ | 6.6 | 7.8 | 2.4 | 0.65 ± 0.1 | 1.8 | 0.35 $+0.15/-0.20$ |
| E | 8.0 | 6.2 ± 3 | 8.3 | 9.5 | 3.4 | 0.65 ± 0.1 | 2.2 | 0.35 $+0.15/-0.20$ |
| F | 8.0 | 10.2 ± 3 | 8.3 | 10.0 | 3.4 | 0.90 ± 0.2 | 3.2 | 0.70 ± 0.20 |
| G | 10.0 | 10.2 ± 3 | 10.3 | 12.0 | 3.5 | 0.90 ± 0.2 | 4.6 | 0.70 ± 0.20 |

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Ratings Table

| Cap (µF) | Catalog Part Number | Max. DCL 2 min (mA) | Max. Dissipation Factor @ 120 Hz 20 °C | Max. ESR @ 120 Hz20 °C (Ω) | Impedance @ 100 kHz 20 °C (Ω) | Max. Ripple Current @ 105 °C 100 kHz (mA) | Case Code | Size (mm) D x L | Quantity per Reel |
|------------------------------|------------------------|------------------------------|--|-------------------------------------|--|---|--------------|--------------------|----------------------|
| 6.3 Vdc (8 Vdc Surge) | | | | | | | | | |
| 22.0 | AFC226M06B12T | 3.0 | 0.26 | 19.60 | 3.00 | 60 | B | 4 x 5.4 | 2000 |
| 47.0 | AFC476M06C12T | 3.0 | 0.26 | 9.20 | 1.80 | 95 | C | 5 x 5.4 | 1000 |
| 100.0 | AFC107M06D16T | 6.3 | 0.26 | 4.30 | 1.00 | 140 | D | 6.3 x 5.4 | 1000 |
| 220.0 | AFC227M06E16T | 13.9 | 0.26 | 2.00 | 0.40 | 230 | E | 8 x 6.2 | 1000 |
| 330.0 | AFC337M06F24T | 20.8 | 0.26 | 1.30 | 0.30 | 450 | F | 8 x 10.2 | 500 |
| 1000.0 | AFC108M06G24T | 63.0 | 0.26 | 0.43 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 1500.0 | AFC158M06G24T | 94.5 | 0.26 | 0.29 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 10 Vdc (13 Vdc Surge) | | | | | | | | | |
| 33.0 | AFC336M10C12T | 3.3 | 0.19 | 9.60 | 1.80 | 95 | C | 5 x 5.4 | 1000 |
| 100.0 | AFC107M10E16T | 10.0 | 0.19 | 3.20 | 0.40 | 230 | E | 8 x 6.2 | 1000 |
| 150.0 | AFC157M10E16T | 15.0 | 0.19 | 2.10 | 0.40 | 230 | E | 8 x 6.2 | 1000 |
| 220.0 | AFC227M10F24T | 22.0 | 0.19 | 1.40 | 0.30 | 450 | F | 8 x 10.2 | 500 |
| 470.0 | AFC477M10G24T | 47.0 | 0.19 | 0.67 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 1000.0 | AFC108M10G24T | 100.0 | 0.22 | 0.36 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 16 Vdc (20 Vdc Surge) | | | | | | | | | |
| 10.0 | AFC106M16B12T | 3.0 | 0.16 | 26.50 | 3.00 | 60 | B | 4 x 5.4 | 2000 |
| 22.0 | AFC226M16C12T | 3.5 | 0.16 | 12.10 | 1.80 | 95 | C | 5 x 5.4 | 1000 |
| 47.0 | AFC476M16D16T | 7.5 | 0.16 | 5.70 | 1.00 | 140 | D | 6.3 x 5.4 | 1000 |
| 68.0 | AFC686M16E16T | 10.9 | 0.16 | 3.90 | 0.40 | 230 | E | 8 x 6.2 | 1000 |
| 100.0 | AFC107M16E16T | 16.0 | 0.16 | 2.70 | 0.40 | 230 | E | 8 x 6.2 | 1000 |
| 220.0 | AFC227M16G24T | 35.2 | 0.16 | 1.20 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 330.0 | AFC337M16G24T | 52.8 | 0.16 | 0.80 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 470.0 | AFC477M16G24T | 75.2 | 0.16 | 0.60 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 680.0 | AFC687M16G24T | 108.8 | 0.16 | 0.40 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 25 Vdc (31 Vdc Surge) | | | | | | | | | |
| 6.8 | AFC685M25B12T | 3.0 | 0.14 | 34.10 | 3.00 | 60 | B | 4 x 5.4 | 2000 |
| 22.0 | AFC226M25D16T | 5.5 | 0.14 | 10.60 | 1.00 | 140 | D | 6.3 x 5.4 | 1000 |
| 33.0 | AFC336M25D16T | 8.3 | 0.14 | 7.00 | 1.00 | 140 | D | 6.3 x 5.4 | 1000 |
| 47.0 | AFC476M25E16T | 11.8 | 0.14 | 4.90 | 0.40 | 230 | E | 8 x 6.2 | 1000 |
| 68.0 | AFC686M25F24T | 17.0 | 0.14 | 3.40 | 0.30 | 450 | F | 8 x 10.2 | 500 |
| 100.0 | AFC107M25F24T | 25.0 | 0.14 | 2.30 | 0.30 | 450 | F | 8 x 10.2 | 500 |
| 220.0 | AFC227M25G24T | 55.0 | 0.14 | 1.10 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 330.0 | AFC337M25G24T | 82.5 | 0.14 | 0.70 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 470.0 | AFC477M25G24T | 117.5 | 0.14 | 0.50 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 35 Vdc (44 Vdc Surge) | | | | | | | | | |
| 1.0 | AFC105M35B12T | 3.0 | 0.12 | 199.00 | 3.00 | 60 | B | 4 x 5.4 | 2000 |
| 2.2 | AFC225M35B12T | 3.0 | 0.12 | 90.40 | 3.00 | 60 | B | 4 x 5.4 | 2000 |
| 3.3 | AFC335M35B12T | 3.0 | 0.12 | 60.30 | 3.00 | 60 | B | 4 x 5.4 | 2000 |
| 4.7 | AFC475M35B12T | 3.0 | 0.12 | 42.40 | 3.00 | 60 | B | 4 x 5.4 | 2000 |
| 6.8 | AFC685M35C12T | 3.0 | 0.12 | 29.30 | 1.80 | 95 | C | 5 x 5.4 | 1000 |
| 10.0 | AFC106M35C12T | 3.5 | 0.12 | 19.90 | 1.80 | 95 | C | 5 x 5.4 | 1000 |
| 22.0 | AFC226M35D16T | 7.7 | 0.12 | 9.10 | 1.00 | 140 | D | 6.3 x 5.4 | 1000 |
| 33.0 | AFC336M35E16T | 11.6 | 0.12 | 6.00 | 0.40 | 230 | E | 8 x 6.2 | 1000 |
| 47.0 | AFC476M35E16T | 16.5 | 0.12 | 4.20 | 0.40 | 230 | E | 8 x 6.2 | 1000 |
| 100.0 | AFC107M35G24T | 35.0 | 0.12 | 2.00 | 0.20 | 670 | G | 10 x 10.2 | 500 |
| 220.0 | AFC227M35G24T | 77.0 | 0.12 | 0.90 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 330.0 | AFC337M35G24T | 115.5 | 0.12 | 0.60 | 0.15 | 670 | G | 10 x 10.2 | 500 |
| 50 Vdc (63 Vdc Surge) | | | | | | | | | |
| 1.0 | AFC105M50B12T | 3.0 | 0.12 | 199.00 | 5.00 | 30 | B | 4 x 5.4 | 2000 |
| 2.2 | AFC225M50B12T | 3.0 | 0.12 | 90.50 | 5.00 | 30 | B | 4 x 5.4 | 2000 |
| 3.3 | AFC335M50B12T | 3.0 | 0.12 | 60.30 | 5.00 | 30 | B | 4 x 5.4 | 2000 |
| 4.7 | AFC475M50C12T | 3.0 | 0.12 | 42.40 | 3.00 | 50 | C | 5 x 5.4 | 1000 |
| 10.0 | AFC106M50D16T | 5.0 | 0.12 | 19.90 | 2.00 | 70 | D | 6.3 x 5.4 | 1000 |
| 22.0 | AFC226M50E16T | 11.0 | 0.12 | 9.10 | 0.70 | 120 | E | 8 x 6.2 | 1000 |
| 33.0 | AFC336M50F24T | 16.5 | 0.12 | 6.00 | 0.60 | 300 | F | 8 x 10.2 | 500 |
| 47.0 | AFC476M50G24T | 23.5 | 0.12 | 4.20 | 0.30 | 500 | G | 10 x 10.2 | 500 |
| 100.0 | AFC107M50G24T | 50.0 | 0.12 | 2.00 | 0.30 | 500 | G | 10 x 10.2 | 500 |
| 220.0 | AFC227M50G24T | 110.0 | 0.12 | 0.90 | 0.30 | 500 | G | 10 x 10.2 | 500 |

Part Numbering System

| | | | | | | |
|-------------|--------------------|--------------------|----------------|-------------|--------------------|------------------|
| AFC | 106 | M | 16 | B | 12T | -F |
| | | | | | | |
| Type | Capacitance | Capacitance | Voltage | Case | Packaging | RoHS |
| | | | | Code | Information | Compliant |
| | 105 = 1.0 µF | Tolerance | 06 = 6.3 Vdc | 25 = 25 Vdc | | |
| | 106 = 10.0 µF | M = ±20% | 10 = 10 Vdc | 35 = 35 Vdc | 12 = Carrier tape | |
| | 107 = 100.0 µF | | 16 = 16 Vdc | 50 = 50 Vdc | Width (mm) | |
| | 108 = 1000 µF | | | | T = Tape & Reel | |
| | | | | | B = bulk | |

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Typical Performance Curves



Type AFC $-55\text{ }^{\circ}\text{C}$ to $105\text{ }^{\circ}\text{C}$

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Capacitance vs. Temperature & Frequency
220 μF @ 50 Vdc (10 X 10.2 mm)



Impedance vs. Temperature and Frequency
220 μF @ 50 Vdc (10 X 10.2 mm)



ESR vs. Temperature and Frequency
220 μF @ 50 Vdc (10 X 10.2 mm)



Capacitance Change vs Time



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Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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