

Type AHA

SMT Aluminum Electrolytic Capacitors -55 °C to +105 °C - Long Life

Long Life Filtering, Bypassing, Power Supply Decoupling



Type AHA Capacitors deliver twice the life of many SMT aluminum capacitor types, and they handle high levels of ripple current. The AHA can handle the ripple current of Type AVS at 20 °C higher temperature. The vertical cylindrical cases facilitate automatic mounting and reflow soldering and Type AHA offers a significant cost savings over tantalum capacitors.

Highlights

- +105 °C, Up to 2000 Hour Load Life
- Capacitance Range: 0.1 µF to 1500 µF
- Voltage Range: 6.3 Vdc to 100 Vdc

Specifications

Operating Temperature: -55 °C to +105 °C

Rated Voltage: 6.3, 10, 16, 25, 35, 50, 63 & 100 Vdc

Capacitance: 0.1 µF to 1500 µF

D.F. (@ 20 °C): See Ratings Table

Capacitance Tolerance: 20% @ 120 Hz and +20 °C

Leakage Current: 0.01 CV or 3 µA @ +20°C after two minutes (whichever is greater)

Ripple Current Multipliers: **Frequency**

| 50/60 Hz | 120 Hz | 1 kHz | 10 kHz & up |
|----------|--------|-------|-------------|
| 0.7 | 1 | 1.3 | 1.7 |

Load Life: 1000 h @ +105 °C, 4.0 - 6.3 mm dia.
2000 h @ +105 °C, 8.0 - 10.0 mm dia.

Δ Capacitance ±20%

DF: < 200% of limit

DCL: ≤100% of limit

Shelf Life: 1000 h @ +105 °C

Δ Capacitance ±20%

DF: < 200% of limit

DCL: ≤100% of limit

| Maximum Impedance Ratio at 120 Hz | | | | | | | | |
|-----------------------------------|-----|----|----|----|----|----|----|-----|
| W.V. Vdc | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
| -25 °C / +20 °C | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 3 |
| -40 °C / +20 °C | 8 | 6 | 4 | 4 | 3 | 3 | 4 | 4 |

AHA Series Marking



Outline Drawing



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Case Dimensions

| Case | | | | | | | | |
|------|---------|-------------|---------|---------|---------|------------|---------|-------------------|
| Code | D ± 0.5 | L | A ± 0.2 | H (max) | I (ref) | W | P (ref) | K |
| B | 4 | 5.4 +.1,-.2 | 4.3 | 5.5 | 1.8 | 0.65 ± 0.1 | 1 | 0.35 + 0.15/-0.20 |
| C | 5 | 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 | 2.6 | 0.65 ± 0.1 | 1.8 | 0.35 + 0.15/-0.20 |
| X | 6.3 | 7.7 ±.3 | 6.6 | 7.8 | 2.6 | 0.65 ± 0.1 | 1.8 | 0.35 + 0.15/-0.20 |
| E | 8 | 6.2 ±.3 | 8.3 | 9.5 | 3.4 | 0.65 ± 0.1 | 2.2 | 0.35 + 0.15/-0.20 |
| F | 8 | 10.2 ±.3 | 8.3 | 10 | 3.4 | 0.90 ± 0.2 | 3.1 | 0.70 ± 0.20 |
| G | 10 | 10.2 ±.3 | 10.3 | 12 | 3.5 | 0.90 ± 0.2 | 4.6 | 0.70 ± 0.20 |

Ratings

| Cap Cap (µF) | Catalog Part Number | Max DCL 2 min. (µA) | Max DF 120 Hz /20 °C | Max ESR 120 Hz /20 °C (Ω) | Max Ripple Current 120 Hz /105 °C (mA) | Case Code | Size D x L (mm) | Quantity per Reel |
|-------------------------------|------------------------|------------------------------|----------------------------|------------------------------------|---|--------------|-----------------------|----------------------|
| 6.3 Vdc (8 Vdc Surge) | | | | | | | | |
| 22.0 | AHA226M06B12T-F | 3.0 | 0.30 | 22.6 | 29 | B | 4 x 5.4 | 2000 |
| 33.0 | AHA336M06B12T-F | 3.0 | 0.35 | 17.6 | 29 | B | 4 x 5.4 | 2000 |
| 47.0 | AHA476M06B12T-F | 3.0 | 0.35 | 12.3 | 36 | B | 4 x 5.4 | 2000 |
| 47.0 | AHA476M06C12T-F | 3.0 | 0.30 | 10.6 | 46 | C | 5 x 5.4 | 1000 |
| 100.0 | AHA107M06C12T-F | 6.3 | 0.35 | 5.8 | 47 | C | 5 x 5.4 | 1000 |
| 100.0 | AHA107M06D16T-F | 6.3 | 0.30 | 5.0 | 71 | D | 6.3 x 5.4 | 1000 |
| 220.0 | AHA227M06D16T-F | 13.9 | 0.35 | 2.6 | 74 | D | 6.3 x 5.4 | 1000 |
| 330.0 | AHA337M06X16T-F | 20.8 | 0.30 | 1.5 | 105 | X | 6.3 x 7.7 | 900 |
| 330.0 | AHA337M06F24T-F | 20.8 | 0.35 | 1.8 | 230 | F | 8 x 10.2 | 500 |
| 470.0 | AHA477M06F24T-F | 29.6 | 0.35 | 1.2 | 300 | F | 8 x 10.2 | 500 |
| 1000.0 | AHA108M06F24T-F | 63.0 | 0.35 | 0.6 | 300 | F | 8 x 10.2 | 500 |
| 1000.0 | AHA108M06G24T-F | 63.0 | 0.35 | 0.6 | 400 | G | 10 x 10.2 | 500 |
| 1500.0 | AHA158M06G24T-F | 94.5 | 0.35 | 0.4 | 480 | G | 10 x 10.2 | 500 |
| 10 Vdc (13 Vdc Surge) | | | | | | | | |
| 22.0 | AHA226M10B12T-F | 3.0 | 0.30 | 22.6 | 28 | B | 4 x 5.4 | 2000 |
| 33.0 | AHA336M10B12T-F | 3.3 | 0.30 | 15.1 | 29 | B | 4 x 5.4 | 2000 |
| 33.0 | AHA336M10C12T-F | 3.3 | 0.22 | 11.1 | 43 | C | 5 x 5.4 | 1000 |
| 47.0 | AHA476M10C12T-F | 4.7 | 0.30 | 10.6 | 43 | C | 5 x 5.4 | 1000 |
| 100.0 | AHA107M10D16T-F | 10.0 | 0.30 | 5.0 | 70 | D | 6.3 x 5.4 | 1000 |
| 100.0 | AHA107M10E16T-F | 10.0 | 0.26 | 4.3 | 110 | E | 8 x 6.2 | 1000 |
| 220.0 | AHA227M10X16T-F | 22.0 | 0.22 | 1.7 | 105 | X | 6.3 x 7.7 | 900 |
| 220.0 | AHA227M10F24T-F | 22.0 | 0.26 | 2.0 | 160 | F | 8 x 10.2 | 500 |
| 470.0 | AHA477M10F24T-F | 47.0 | 0.26 | 0.9 | 200 | F | 8 x 10.2 | 500 |
| 470.0 | AHA477M10G24T-F | 47.0 | 0.26 | 0.9 | 270 | G | 10 x 10.2 | 500 |
| 1000.0 | AHA108M10G24T-F | 100.0 | 0.26 | 0.4 | 580 | G | 10 x 10.2 | 500 |
| 16 Vdc (20 Vdc Surge) | | | | | | | | |
| 10.0 | AHA106M16B12T-F | 3.0 | 0.16 | 26.5 | 28 | B | 4 x 5.4 | 2000 |
| 22.0 | AHA226M16B12T-F | 3.5 | 0.26 | 19.6 | 28 | B | 4 x 5.4 | 2000 |
| 22.0 | AHA226M16C12T-F | 3.5 | 0.16 | 12.1 | 39 | C | 5 x 5.4 | 1000 |
| 33.0 | AHA336M16C12T-F | 5.3 | 0.26 | 13.1 | 35 | C | 5 x 5.4 | 1000 |
| 47.0 | AHA476M16C12T-F | 7.5 | 0.26 | 9.2 | 39 | C | 5 x 5.4 | 1000 |
| 47.0 | AHA476M16D16T-F | 7.5 | 0.16 | 5.6 | 70 | D | 6.3 x 5.4 | 1000 |
| 100.0 | AHA107M16D16T-F | 16.0 | 0.26 | 4.3 | 70 | D | 6.3 x 5.4 | 1000 |
| 220.0 | AHA227M16X16T-F | 35.2 | 0.16 | 1.2 | 105 | X | 6.3 x 7.7 | 900 |
| 220.0 | AHA227M16F24T-F | 35.2 | 0.20 | 1.5 | 150 | F | 8 x 10.2 | 500 |
| 220.0 | AHA227M16G24T-F | 35.2 | 0.20 | 1.5 | 210 | G | 10 x 10.2 | 500 |
| 330.0 | AHA337M16F24T-F | 52.8 | 0.20 | 1.0 | 170 | F | 8 x 10.2 | 500 |
| 330.0 | AHA337M16G24T-F | 52.8 | 0.20 | 1.0 | 230 | G | 10 x 10.2 | 500 |
| 470.0 | AHA477M16F24T-F | 75.2 | 0.20 | 0.7 | 190 | F | 8 x 10.2 | 500 |
| 470.0 | AHA477M16G24T-F | 75.2 | 0.20 | 0.7 | 340 | G | 10 x 10.2 | 500 |
| 25 Vdc (31 Vdc Surge) | | | | | | | | |
| 4.7 | AHA475M25B12T-F | 3.0 | 0.14 | 49.4 | 22 | B | 4 x 5.4 | 2000 |
| 10.0 | AHA106M25B12T-F | 3.0 | 0.20 | 33.2 | 22 | B | 4 x 5.4 | 2000 |
| 10.0 | AHA106M25C12T-F | 3.0 | 0.14 | 23.2 | 28 | C | 5 x 5.4 | 1000 |
| 22.0 | AHA226M25C12T-F | 5.5 | 0.20 | 15.1 | 35 | C | 5 x 5.4 | 1000 |
| 22.0 | AHA226M25D16T-F | 5.5 | 0.14 | 10.6 | 55 | D | 6.3 x 5.4 | 1000 |
| 33.0 | AHA336M25C12T-F | 8.3 | 0.20 | 10.0 | 42 | C | 5 x 5.4 | 1000 |
| 33.0 | AHA336M25D16T-F | 8.3 | 0.14 | 7.0 | 65 | D | 6.3 x 5.4 | 1000 |
| 47.0 | AHA476M25D16T-F | 11.8 | 0.20 | 7.1 | 70 | D | 6.3 x 5.4 | 1000 |
| 47.0 | AHA476M25E16T-F | 11.8 | 0.16 | 5.6 | 91 | E | 8 x 6.2 | 1000 |
| 100.0 | AHA107M25E16T-F | 25.0 | 0.16 | 2.7 | 91 | E | 8 x 6.2 | 1000 |
| 100.0 | AHA107M25F24T-F | 25.0 | 0.16 | 2.7 | 130 | F | 8 x 10.2 | 500 |
| 220.0 | AHA227M25F24T-F | 55.0 | 0.16 | 1.2 | 160 | F | 8 x 10.2 | 500 |
| 220.0 | AHA227M25G24T-F | 55.0 | 0.16 | 1.2 | 190 | G | 10 x 10.2 | 500 |
| 330.0 | AHA337M25F24T-F | 82.5 | 0.16 | 0.8 | 180 | F | 8 x 10.2 | 500 |
| 330.0 | AHA337M25G24T-F | 82.5 | 0.16 | 0.8 | 340 | G | 10 x 10.2 | 500 |
| 470.0 | AHA477M25G24T-F | 117.5 | 0.16 | 0.6 | 360 | G | 10 x 10.2 | 500 |

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| Cap Cap (µF) | Catalog Part Number | Max DCL 2 min. (µA) | Max DF 120 Hz /20 °C | Max ESR 120 Hz /20 °C (Ω) | Max Ripple Current 120 Hz /105 °C (mA) | Case Code | Size D x L (mm) | Quantity per Reel |
|--------------------------------|------------------------|------------------------------|----------------------------|------------------------------------|---|--------------|-----------------------|----------------------|
| 35 Vdc (44 Vdc Surge) | | | | | | | | |
| 4.7 | AHA475M35B12T-F | 3.0 | 0.12 | 42.3 | 22 | B | 4 x 5.4 | 2000 |
| 10.0 | AHA106M35B12T-F | 3.6 | 0.16 | 26.5 | 22 | B | 4 x 5.4 | 2000 |
| 10.0 | AHA106M35C12T-F | 3.6 | 0.12 | 19.9 | 30 | C | 5 x 5.4 | 1000 |
| 22.0 | AHA226M35C12T-F | 7.7 | 0.16 | 12.1 | 35 | C | 5 x 5.4 | 1000 |
| 22.0 | AHA226M35D16T-F | 7.7 | 0.12 | 9.0 | 60 | D | 6.3 x 5.4 | 1000 |
| 33.0 | AHA336M35D16T-F | 11.6 | 0.16 | 8.0 | 42 | D | 6.3 x 5.4 | 1000 |
| 33.0 | AHA336M35E16T-F | 11.6 | 0.14 | 7.0 | 84 | E | 8 x 6.2 | 1000 |
| 47.0 | AHA476M35E16T-F | 16.5 | 0.14 | 4.9 | 84 | E | 8 x 6.2 | 1000 |
| 47.0 | AHA476M35F24T-F | 16.5 | 0.14 | 4.9 | 98 | F | 8 x 10.2 | 500 |
| 100.0 | AHA107M35X16T-F | 35.0 | 0.12 | 2.0 | 84 | X | 6.3 x 7.7 | 900 |
| 100.0 | AHA107M35F24T-F | 35.0 | 0.14 | 2.3 | 120 | F | 8 x 10.2 | 500 |
| 100.0 | AHA107M35G24T-F | 35.0 | 0.14 | 2.3 | 160 | G | 10 x 10.2 | 500 |
| 220.0 | AHA227M35F24T-F | 77.0 | 0.14 | 1.1 | 170 | F | 8 x 10.2 | 500 |
| 220.0 | AHA227M35G24T-F | 77.0 | 0.14 | 1.1 | 210 | G | 10 x 10.2 | 500 |
| 330.0 | AHA337M35G24T-F | 115.5 | 0.14 | 0.7 | 250 | G | 10 x 10.2 | 500 |
| 50 Vdc (63 Vdc Surge) | | | | | | | | |
| 0.10 | AHA104M50B12T-F | 3.0 | 0.12 | 1990.0 | 1 | B | 4 x 5.4 | 2000 |
| 0.22 | AHA224M50B12T-F | 3.0 | 0.12 | 905.0 | 2 | B | 4 x 5.4 | 2000 |
| 0.33 | AHA334M50B12T-F | 3.0 | 0.12 | 603.0 | 3 | B | 4 x 5.4 | 2000 |
| 0.47 | AHA474M50B12T-F | 3.0 | 0.12 | 424.0 | 5 | B | 4 x 5.4 | 2000 |
| 1.0 | AHA105M50B12T-F | 3.0 | 0.12 | 199.0 | 10 | B | 4 x 5.4 | 2000 |
| 2.2 | AHA225M50B12T-F | 3.0 | 0.12 | 90.5 | 16 | B | 4 x 5.4 | 2000 |
| 3.3 | AHA335M50B12T-F | 3.0 | 0.12 | 60.3 | 16 | B | 4 x 5.4 | 2000 |
| 4.7 | AHA475M50C12T-F | 3.0 | 0.12 | 42.4 | 23 | C | 5 x 5.4 | 1000 |
| 10.0 | AHA106M50D16T-F | 5.0 | 0.12 | 19.9 | 35 | D | 6.3 x 5.4 | 1000 |
| 22.0 | AHA226M50E16T-F | 11.0 | 0.12 | 9.0 | 70 | E | 8 x 6.2 | 1000 |
| 33.0 | AHA336M50X16T-F | 16.5 | 0.12 | 6.0 | 60 | X | 6.3 x 7.7 | 900 |
| 33.0 | AHA336M50E16T-F | 16.5 | 0.12 | 6.0 | 70 | E | 8 x 6.2 | 1000 |
| 33.0 | AHA336M50F24T-F | 16.5 | 0.12 | 6.0 | 91 | F | 8 x 10.2 | 500 |
| 47.0 | AHA476M50X16T-F | 23.5 | 0.12 | 4.2 | 63 | X | 6.3 x 7.7 | 900 |
| 47.0 | AHA476M50F24T-F | 23.5 | 0.12 | 4.2 | 95 | F | 8 x 10.2 | 500 |
| 47.0 | AHA476M50G24T-F | 23.5 | 0.12 | 4.2 | 100 | G | 10 x 10.2 | 500 |
| 100.0 | AHA107M50F24T-F | 50.0 | 0.12 | 2.0 | 110 | F | 8 x 10.2 | 500 |
| 100.0 | AHA107M50G24T-F | 50.0 | 0.12 | 2.0 | 120 | G | 10 x 10.2 | 500 |
| 220.0 | AHA227M50G24T-F | 110.0 | 0.12 | 0.9 | 150 | G | 10 x 10.2 | 500 |
| 63 Vdc (75 Vdc Surge) | | | | | | | | |
| 10.0 | AHA106M63E16T-F | 6.3 | 0.18 | 29.9 | 25 | E | 8 x 6.2 | 1000 |
| 22.0 | AHA226M63E16T-F | 13.9 | 0.18 | 13.6 | 30 | E | 8 x 6.2 | 1000 |
| 22.0 | AHA226M63F24T-F | 13.9 | 0.18 | 13.6 | 30 | F | 8 x 10.2 | 500 |
| 33.0 | AHA336M63G24T-F | 20.8 | 0.18 | 9.0 | 45 | G | 10 x 10.2 | 500 |
| 47.0 | AHA476M63F24T-F | 29.6 | 0.18 | 6.3 | 50 | F | 8 x 10.2 | 500 |
| 47.0 | AHA476M63G24T-F | 29.6 | 0.18 | 6.3 | 50 | G | 10 x 10.2 | 500 |
| 100 Vdc (125 Vdc Surge) | | | | | | | | |
| 3.3 | AHA335M2AE16T-F | 3.3 | 0.18 | 90.5 | 30 | E | 8 x 6.2 | 1000 |
| 4.7 | AHA475M2AE16T-F | 4.7 | 0.18 | 63.5 | 30 | E | 8 x 6.2 | 1000 |
| 4.7 | AHA475M2AF24T-F | 4.7 | 0.18 | 63.5 | 50 | F | 8 x 10.2 | 500 |
| 10.0 | AHA106M2AF24T-F | 10.0 | 0.18 | 29.8 | 55 | F | 8 x 10.2 | 500 |
| 22.0 | AHA226M2AF24T-F | 22.0 | 0.18 | 13.6 | 55 | F | 8 x 10.2 | 500 |
| 22.0 | AHA226M2AG24T-F | 22.0 | 0.18 | 13.6 | 60 | G | 10 x 10.2 | 500 |
| 33.0 | AHA336M2AG24T-F | 33.0 | 0.18 | 9.0 | 65 | G | 10 x 10.2 | 500 |

Part Numbering System

| | | | | | | |
|---------------|--------------------|--------------------|--------------------------|-------------|--------------------|------------------|
| AHA | 106 | M | 16 | B | 12T | - F |
| | | | | | | |
| Series | Capacitance | Capacitance | Voltage | Case | Packaging | RoHS |
| | 104 = 0.1 µF | Tolerance | 06 = 6.3 Vdc 35 = 35 Vdc | Code | Information | Compliant |
| | 105 = 1.0 µF | M = ±20% | 10 = 10 Vdc 50 = 50 Vdc | B = B | 12 = Carrier Tape | |
| | 106 = 10.0 µF | | 16 = 16 Vdc 63 = 63 Vdc | | Width (mm) | |
| | 107 = 100.0 µF | | 25 = 25 Vdc 2A = 100 Vdc | | T = Tape & Reel | |
| | 108 = 1000.0 µF | | | | B = Bulk | |

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Typical Performance Curves

Capacitance vs. Temperature & Frequency
1500 μ F @ 6.3 Vdc (10 X 10.2 mm)



Capacitance vs. Temperature & Frequency
470 μ F @ 16 Vdc (10 X 10.2 mm)



ESR vs. Temperature and Frequency
1500 μ F @ 6.3 Vdc (10 X 10.2 mm)



ESR vs. Temperature and Frequency
470 μ F @ 16 Vdc (10 X 10.2 mm)



Impedance vs. Temperature and Frequency
1500 μ F @ 6.3 Vdc (10 X 10.2 mm)



Impedance vs. Temperature and Frequency
470 μ F @ 16 Vdc (10 X 10.2 mm)



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



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



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



Capacitance Change vs Time



Reflow Soldering Temperature Profile for Part Numbers Ending in -F



| Case Code | Peak Temperature (°C) | Max. Time at or above 200°C (sec.) | Number of Reflow Processes |
|------------|-----------------------|------------------------------------|----------------------------|
| B, C, D, X | 250 | 60 | 1 |
| E, F, G | 235 | 60 | 1 |

See SMT application guide for land pattern, tape and reel specifications, and cleaning information.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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