

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**

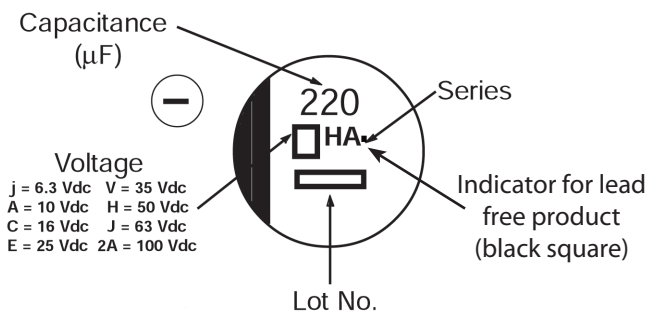
| 50/60 Hz | 120 Hz | 1 kHz | 10 kHz & up |
|----------|--------|-------|-------------|
| 0.7 | 1 | 1.3 | 1.7 |

- 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

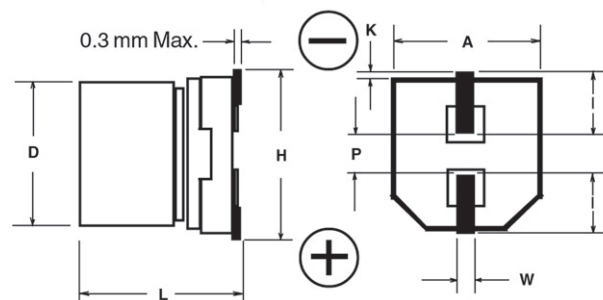
- Shelf Life:** 1000 h @ +105 °C
 Δ Capacitance ±20%
 DF: < 200% of limit
 DCL: ≤100% of limit

| 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)



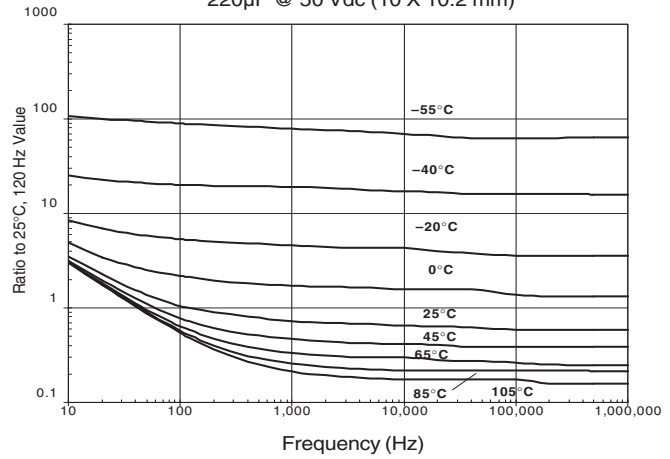
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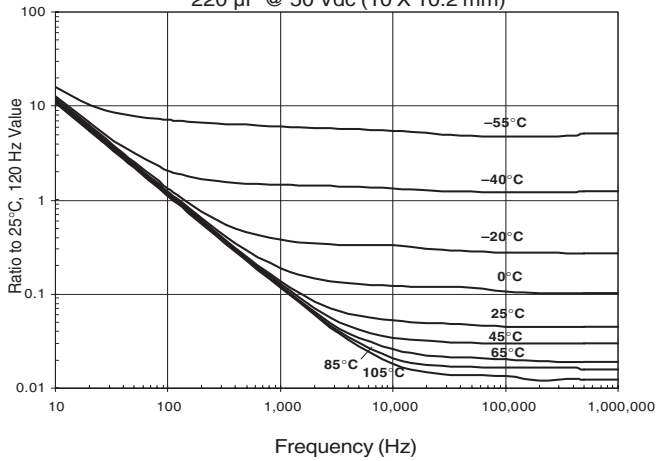
Capacitance vs. Temperature & Frequency
220 μF @ 50 Vdc (10 X 10.2 mm)



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.

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

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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