

## 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 °C, Up to 1000 Hour Load Life
- Capacitance Range: 1 µF to 1500 µF
- Voltage Range: 6.3 Vdc to 50 Vdc
- AEC-Q200 Compliant

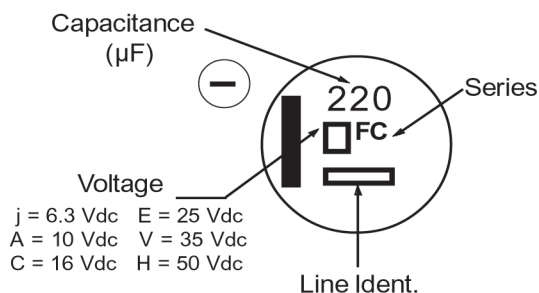
#### Specifications

|                                        |                                                                                                                                                                                 |          |        |         |        |         |      |      |      |      |      |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------|---------|--------|---------|------|------|------|------|------|
| Capacitance Range                      | 1.0 μF to 1500 μF                                                                                                                                                               |          |        |         |        |         |      |      |      |      |      |
| Capacitance Tolerance                  | ±20% @ 120 Hz and +20 °C                                                                                                                                                        |          |        |         |        |         |      |      |      |      |      |
| Rated Voltage                          | 6.3, 10, 16, 25, 50 Vdc                                                                                                                                                         |          |        |         |        |         |      |      |      |      |      |
| Operating Temperature Range            | –55 °C to +105 °C                                                                                                                                                               |          |        |         |        |         |      |      |      |      |      |
| Leakage Current                        | I = 0.01 CV or 3 (μA) whichever is greater after 2 minutes                                                                                                                      |          |        |         |        |         |      |      |      |      |      |
| Dissipation Factor                     | See ratings table                                                                                                                                                               |          |        |         |        |         |      |      |      |      |      |
| Ripple Current Multipliers (Frequency) | <table><tr><td>50/60 Hz</td><td>120 Hz</td><td>1 kHz</td><td>10 kHz</td><td>100 kHz</td></tr><tr><td>0.70</td><td>.075</td><td>0.90</td><td>0.95</td><td>1.00</td></tr></table> | 50/60 Hz | 120 Hz | 1 kHz   | 10 kHz | 100 kHz | 0.70 | .075 | 0.90 | 0.95 | 1.00 |
| 50/60 Hz                               | 120 Hz                                                                                                                                                                          | 1 kHz    | 10 kHz | 100 kHz |        |         |      |      |      |      |      |
| 0.70                                   | .075                                                                                                                                                                            | 0.90     | 0.95   | 1.00    |        |         |      |      |      |      |      |
| Load Life                              | 1000 h @ +105 °C<br>Δ Capacitance ±20%<br>DF: ≤200% of limit<br>DCL: ≤100% of limit                                                                                             |          |        |         |        |         |      |      |      |      |      |
| Shelf Life                             | 1000 h @ +105 °C<br>Δ Capacitance ±20%<br>DF: ≤200% of limit<br>DCL: ≤100% of limit                                                                                             |          |        |         |        |         |      |      |      |      |      |

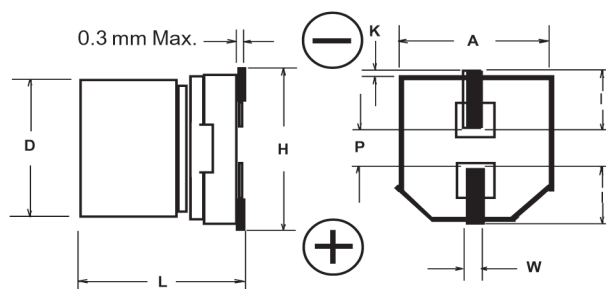
RoHS Compliant

RoHS Compliant

#### AFC Series Marking



#### Outline Drawing



#### Case Dimensions

| Case | Dimensions in (mm) |           |         |         |         |            |         |                   |
|------|--------------------|-----------|---------|---------|---------|------------|---------|-------------------|
| Code | 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       |

# Type AFC –55 °C to 105 °C SMT Aluminum Electrolytic Capacitors - Low Impedance, 105 °C

## Ratings Table

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

## Part Numbering System

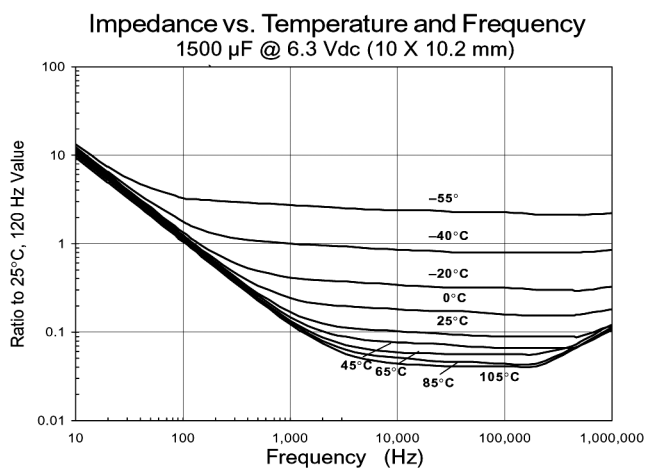
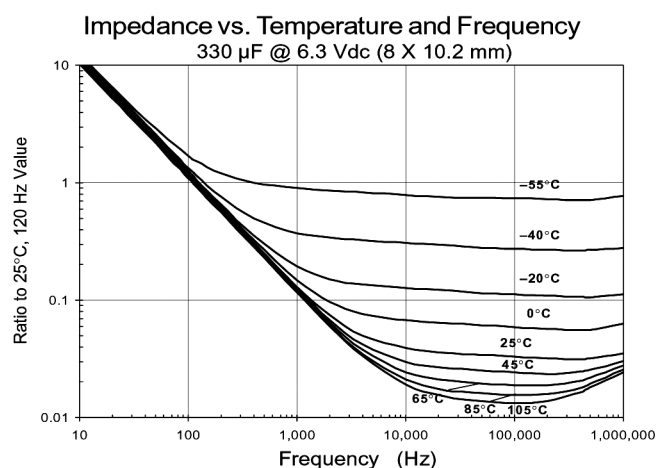
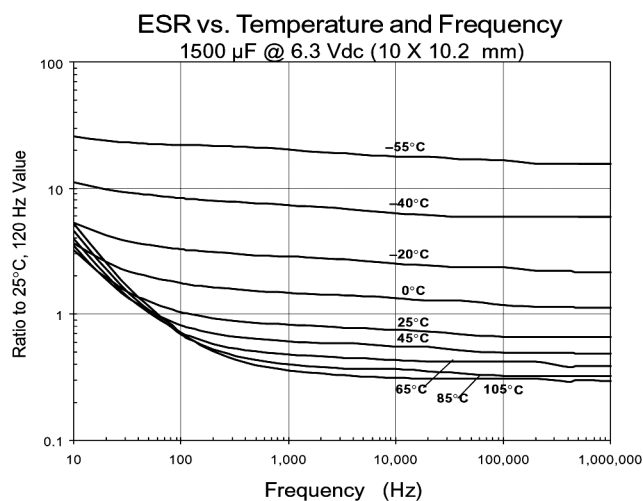
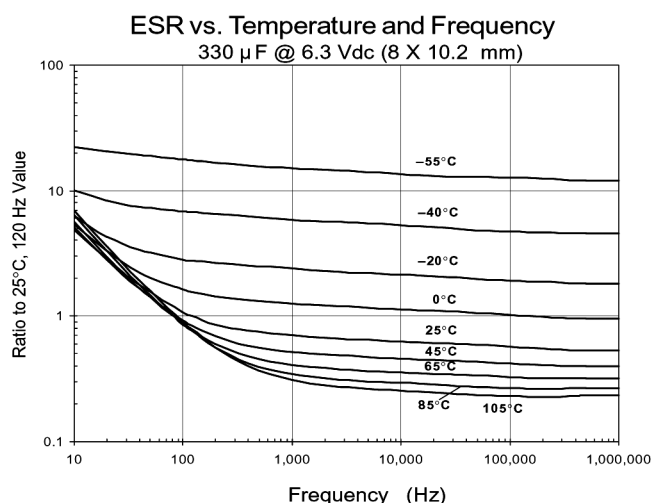
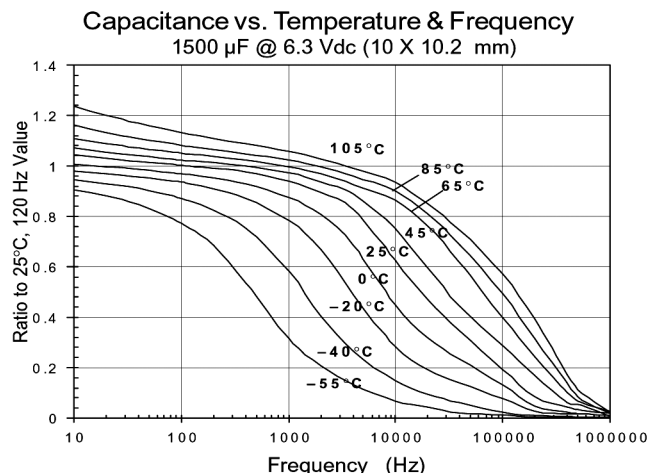
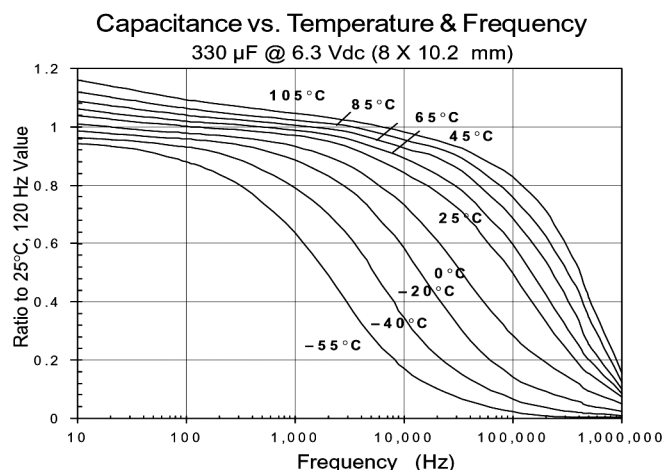
| AFC<br>I | 106<br>I       | M<br>I      | 16<br>I      | B<br>I       | 12T<br>I                 | -F<br>I           |
|----------|----------------|-------------|--------------|--------------|--------------------------|-------------------|
| Type     | Capacitance    | Capacitance | Voltage      | Case<br>Code | Packaging<br>Information | RoHS<br>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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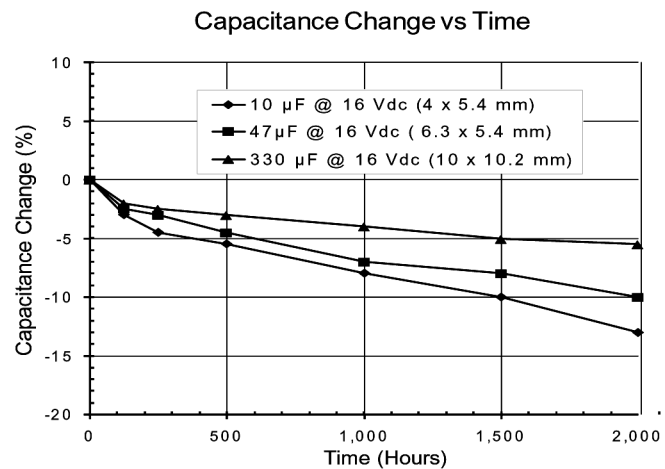
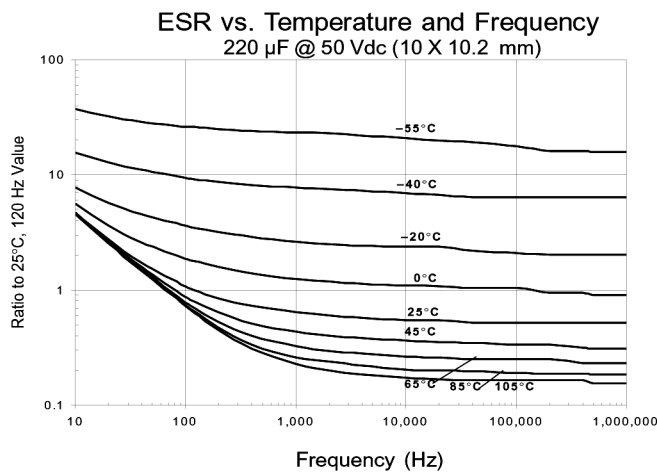
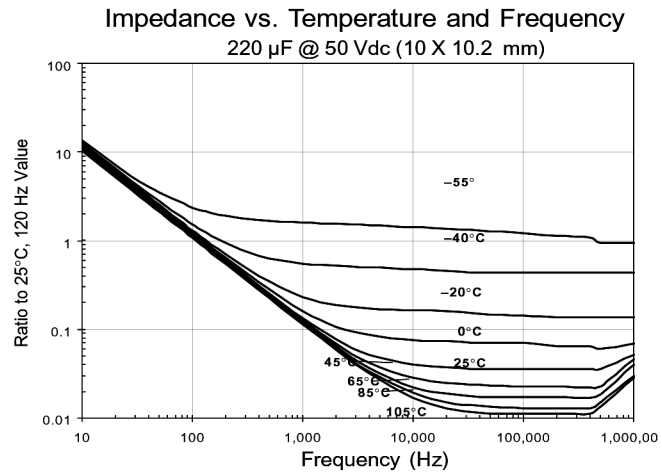
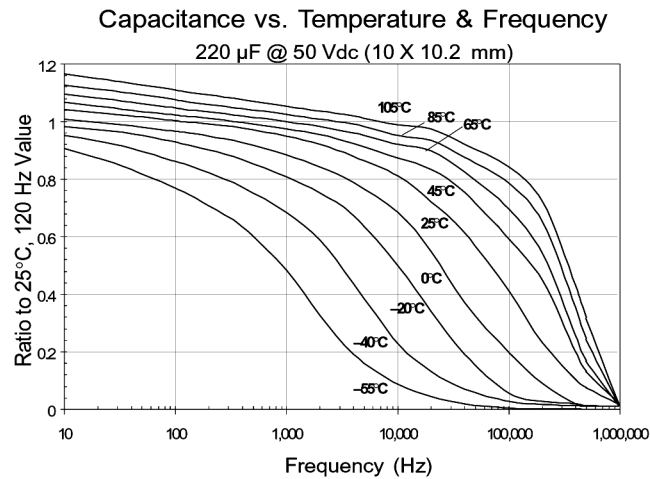
# Type AFC $-55^{\circ}\text{C}$ to $105^{\circ}\text{C}$

## SMT Aluminum Electrolytic Capacitors - Low Impedance, $105^{\circ}\text{C}$

### Typical Performance Curves



# Type AFC $-55^{\circ}\text{C}$ to $105^{\circ}\text{C}$ SMT Aluminum Electrolytic Capacitors - Low Impedance, $105^{\circ}\text{C}$



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