

# Type AHD

## SMT Aluminum Electrolytic Capacitors - Long Life, 105 °C

### Long Life Filtering, Bypassing and Power Supply Decoupling



In smaller capacitance values usually rated for 1000 to 2000 hours load life, the Type AHD delivers 5000 hour load life capability. While not a low-impedance type, the Type AHD is the choice for long life in small capacitance, general filtering applications. The vertical cylindrical cases facilitate automatic mounting and reflow soldering and Type AHD offers significant cost savings over tantalum capacitors.

#### Highlights

- ◆ +105 °C, 5000 Hour Load Life
- ◆ Capacitance Range: 0.47  $\mu$ F to 330  $\mu$ F
- ◆ Voltage Range: 10 Vdc to 100 Vdc

### Specifications

|                                   |   |
|-----------------------------------|---|
| <b>Operating Temperature:</b>     | -40 °C to +105 °C   |
| <b>Rated Voltage:</b>             | 10, 16, 25, 35, 50, 63 & 100 Vdc  |
| <b>Capacitance:</b>               | 0.47 $\mu$ F to 330 $\mu$ F   |
| <b>Capacitance Tolerance:</b>     | $\pm$ 20% @ 120 Hz and +20 °C   |
| <b>Leakage Current:</b>           | 0.01 CV or 3 $\mu$ A @ +20 °C, after two minutes (whichever is greater) |
| <b>Ripple Current Multiplier:</b> | <b>Frequency</b>  |

|  |          |        |       |        |         |
|--|----------|--------|-------|--------|---------|
|  | 50/60 Hz | 120 Hz | 1 kHz | 10 kHz | 100 kHz |
|  | 0.7      | 1.0    | 1.3   | 1.7    | 1.7     |

#### Dissipation Factor:

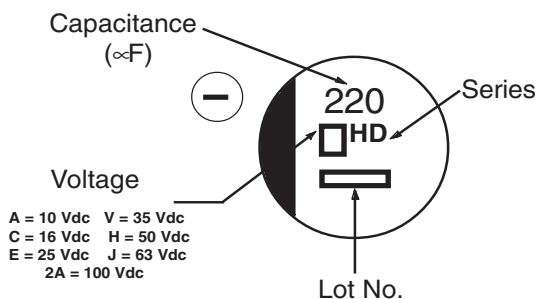
| Voltage     | 10 V | 16 V | 25 V | 35 V | 50 V | 63 V | 100 V |
|-------------|------|------|------|------|------|------|-------|
| 4 to 6.3 mm | —    | 0.2  | 0.16 | 0.13 | 0.12 | —    | —     |
| 8 to 10 mm  | 0.3  | 0.23 | 0.18 | 0.16 | 0.14 | 0.18 | 0.18  |

**Load Life:** 5000 H @ +105 °C  
 $\Delta$  Capacitance:  $\pm$ 30%  
 DF:  $\leq$ 300% of limit  
 DCL:  $\leq$ 100% of limit

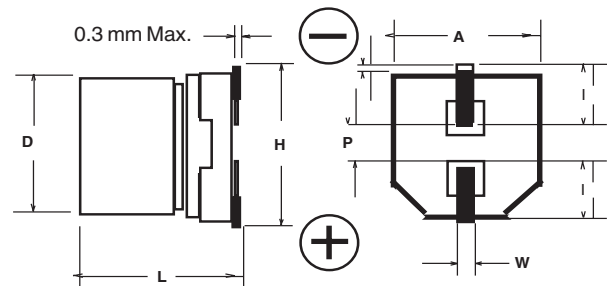
**Shelf Life:** 1000 H @ +105 °C  
 $\Delta$  Capacitance:  $\pm$ 20%  
 DF:  $\leq$ 200% of limit  
 DCL:  $\leq$ 100% of limit

| Low Temperature Stability       | Vdc                | 10 | 16 | 25 | 35 | 50 - 100 |
|---------------------------------|--------------------|----|----|----|----|----------|
| $-22$ ° / $+20$ °C              |                    | 6  | 2  | 2  | 2  | 2        |
| <b>Impedance Ratio @ 120 Hz</b> | $-40$ ° / $+20$ °C | 12 | 5  | 3  | 3  | 3        |

### AHD Series Marking



### Outline Drawing



### Case Dimensions

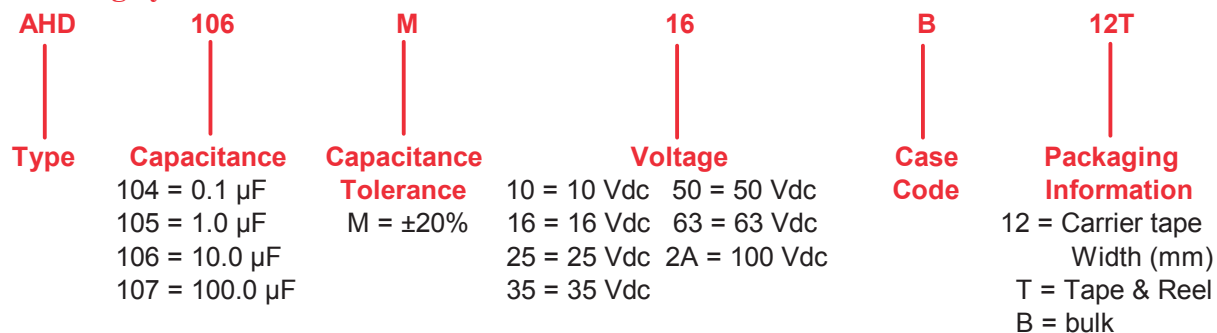
| Case Code | D $\pm$ 0.5 | L            | A $\pm$ 0.2 | H (max) | I (ref) | W              | P (ref) | K                 |
|-----------|-------------|--------------|-------------|---------|---------|----------------|---------|-------------------|
| B         | 4.0         | 5.8 +1, -2   | 4.3         | 5.5     | 1.8     | 0.65 $\pm$ 0.1 | 1.0     | 0.35 + 0.15/-0.20 |
| C         | 5.0         | 5.8 +1, -2   | 5.3         | 6.5     | 2.2     | 0.65 $\pm$ 0.1 | 1.5     | 0.35 + 0.15/-0.20 |
| D         | 6.3         | 5.8 +1, -2   | 6.6         | 7.8     | 2.4     | 0.65 $\pm$ 0.1 | 1.8     | 0.35 + 0.15/-0.20 |
| E         | 8.0         | 6.2 $\pm$ 3  | 8.3         | 9.5     | 3.4     | 0.65 $\pm$ 0.1 | 2.2     | 0.35 + 0.15/-0.20 |
| F         | 8.0         | 10.2 $\pm$ 3 | 8.3         | 10.0    | 3.4     | 0.90 $\pm$ 0.2 | 3.2     | 0.70 $\pm$ 0.20   |
| G         | 10.0        | 10.2 $\pm$ 3 | 10.3        | 13.0    | 3.5     | 0.90 $\pm$ 0.2 | 4.6     | 0.70 $\pm$ 0.20   |

## SMT Aluminum Electrolytic Capacitors - Long Life, 105 °C

### Ratings

| Cap<br>( $\mu$ F)              | Catalog<br>Part Number | Max.<br>DCL<br>( $\mu$ A/2<br>min) | Max.<br>Dissipation<br>Factor @<br>120 Hz<br>20 °C | Max.<br>ESR @<br>120 Hz<br>20 °C<br>( $\Omega$ ) | Impedance<br>@ 100 kHz<br>20 °C<br>( $\Omega$ ) | Max.<br>Ripple Current<br>@ 105°C<br>120 Hz<br>(mA) | Case<br>Code | Size (mm)<br>D x L | Quantity<br>per Reel |
|--------------------------------|------------------------|------------------------------------|--|--|---|---|--------------|--------------------|----------------------|
|                                |                        |                                    |  |  |   |   |              |                    |                      |
| 100                            | AHD107M10E16T          | 10.00                              | 0.30   | 5.0  | 2.0   | 62  | E            | 8 x 6.2            | 1000                 |
| 220                            | AHD227M10F24T          | 22.00                              | 0.30   | 2.3  | 1.5   | 93  | F            | 8 x 10.2           | 500                  |
| 330                            | AHD337M10G24T          | 33.00                              | 0.30   | 1.5  | 0.8   | 118   | G            | 10 x 10.2          | 500                  |
| <b>16 Vdc (20 Vdc Surge)</b>   |                        |                                    |  |  |   |   |              |                    |                      |
| 10                             | AHD106M16B12T          | 3.00                               | 0.20   | 33.2   | 12.0  | 20  | B            | 4 x 5.8            | 2000                 |
| 22                             | AHD226M16C12T          | 3.50                               | 0.20   | 15.1   | 7.2   | 33  | C            | 5 x 5.8            | 1000                 |
| 47                             | AHD476M16D16T          | 7.50                               | 0.20   | 7.1  | 4.0   | 55  | D            | 6.3 x 5.8          | 1000                 |
| 100                            | AHD107M16F24T          | 16.00                              | 0.23   | 3.8  | 1.5   | 89  | F            | 8 x 10.2           | 500                  |
| 220                            | AHD227M16G24T          | 35.20                              | 0.23   | 1.7  | 0.8   | 113   | G            | 10 x 10.2          | 500                  |
| <b>25 Vdc (31 Vdc Surge)</b>   |                        |                                    |  |  |   |   |              |                    |                      |
| 4.7                            | AHD475M25B12T          | 3.00                               | 0.16   | 56.4   | 12.0  | 15  | B            | 4 x 5.8            | 2000                 |
| 10                             | AHD106M25C12T          | 3.00                               | 0.16   | 26.5   | 7.2   | 26  | C            | 5 x 5.8            | 1000                 |
| 22                             | AHD226M25D16T          | 5.50                               | 0.16   | 12.1   | 4.0   | 42  | D            | 6.3 x 5.8          | 1000                 |
| 33                             | AHD336M25D16T          | 8.30                               | 0.16   | 8.0  | 2.0   | 52  | D            | 6.3 x 5.8          | 1000                 |
| 47                             | AHD476M25E16T          | 11.80                              | 0.18   | 6.3  | 1.5   | 56  | E            | 8 x 6.2            | 1000                 |
| 100                            | AHD107M25F24T          | 25.00                              | 0.18   | 3.0  | 0.8   | 84  | F            | 8 x 10.2           | 500                  |
| <b>35 Vdc (44 Vdc Surge)</b>   |                        |                                    |  |  |   |   |              |                    |                      |
| 4.7                            | AHD475M35B12T          | 3.00                               | 0.13   | 45.9   | 12.0  | 17  | B            | 4 x 5.8            | 2000                 |
| 10                             | AHD106M35C12T          | 3.50                               | 0.13   | 21.6   | 7.2   | 28  | C            | 5 x 5.8            | 1000                 |
| 22                             | AHD226M35D16T          | 7.70                               | 0.13   | 9.8  | 4.0   | 47  | D            | 6.3 x 5.8          | 1000                 |
| 33                             | AHD336M35E16T          | 11.60                              | 0.16   | 8.0  | 2.0   | 53  | E            | 8 x 6.2            | 1000                 |
| 47                             | AHD476M35F24T          | 16.50                              | 0.16   | 5.6  | 1.5   | 79  | F            | 8 x 10.2           | 500                  |
| 100                            | AHD107M35G24T          | 35.00                              | 0.16   | 2.7  | 0.8   | 101   | G            | 10 x 10.2          | 500                  |
| <b>50 Vdc (63 Vdc Surge)</b>   |                        |                                    |  |  |   |   |              |                    |                      |
| 0.47                           | AHD474M50B12T          | 3.00                               | 0.12   | 424.0  | 12.0  | 5   | B            | 4 x 5.8            | 2000                 |
| 1                              | AHD105M50B12T          | 3.00                               | 0.12   | 199.0  | 12.0  | 7   | B            | 4 x 5.8            | 2000                 |
| 2.2                            | AHD225M50B12T          | 3.00                               | 0.12   | 90.4   | 12.0  | 12  | B            | 4 x 5.8            | 2000                 |
| 3.3                            | AHD335M50B12T          | 3.00                               | 0.12   | 60.3   | 12.0  | 16  | B            | 4 x 5.8            | 2000                 |
| 4.7                            | AHD475M50C12T          | 3.00                               | 0.12   | 42.3   | 7.2   | 21  | C            | 5 x 5.8            | 1000                 |
| 10                             | AHD106M50D16T          | 5.00                               | 0.12   | 19.9   | 4.0   | 33  | D            | 6.3 x 5.8          | 1000                 |
| 22                             | AHD226M50E16T          | 11.00                              | 0.14   | 10.6   | 2.0   | 50  | E            | 8 x 6.2            | 1000                 |
| 33                             | AHD336M50F24T          | 16.50                              | 0.14   | 7.0  | 1.5   | 74  | F            | 8 x 10.2           | 500                  |
| 47                             | AHD476M50G24T          | 23.50                              | 0.14   | 4.9  | 0.8   | 94  | G            | 10 x 10.2          | 500                  |
| <b>63 Vdc (75 Vdc Surge)</b>   |                        |                                    |  |  |   |   |              |                    |                      |
| 10                             | AHD106M63E16T          | 6.30                               | 0.18   | 29.8   | 2.0   | 45  | E            | 8 x 6.2            | 1000                 |
| 22                             | AHD226M63F24T          | 13.86                              | 0.18   | 13.6   | 1.5   | 65  | F            | 8 x 10.2           | 500                  |
| 33                             | AHD336M63G24T          | 20.79                              | 0.18   | 9.0  | 0.8   | 80  | G            | 10 x 10.2          | 500                  |
| <b>100 Vdc (125 Vdc Surge)</b> |                        |                                    |  |  |   |   |              |                    |                      |
| 3.3                            | AHD335M2AE16T          | 3.30                               | 0.18   | 90.4   | 2.0   | 30  | E            | 8 x 6.2            | 1000                 |
| 4.7                            | AHD475M2AF24T          | 4.70                               | 0.18   | 63.5   | 1.5   | 50  | F            | 8 x 10.2           | 500                  |
| 10                             | AHD106M2AF24T          | 10.00                              | 0.18   | 29.8   | 1.5   | 55  | F            | 8 x 10.2           | 500                  |
| 22                             | AHD226M2AG24T          | 22.00                              | 0.18   | 13.6   | 0.8   | 70  | G            | 10 x 10.2          | 500                  |

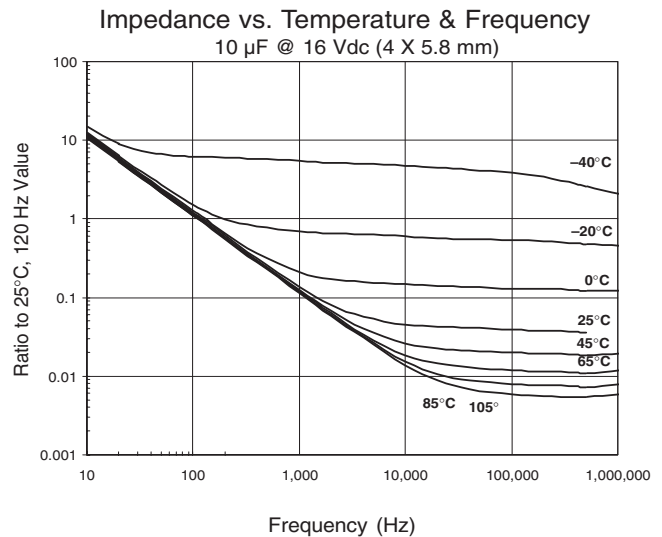
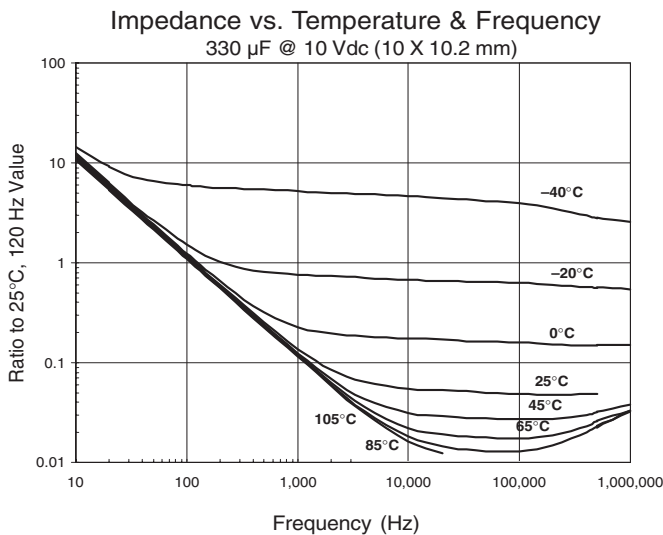
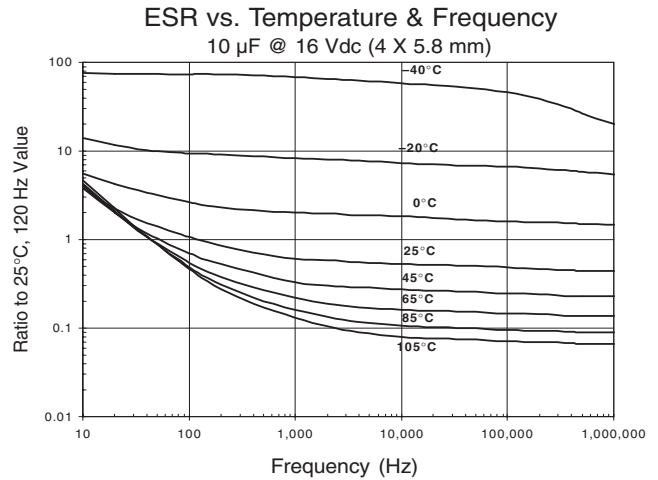
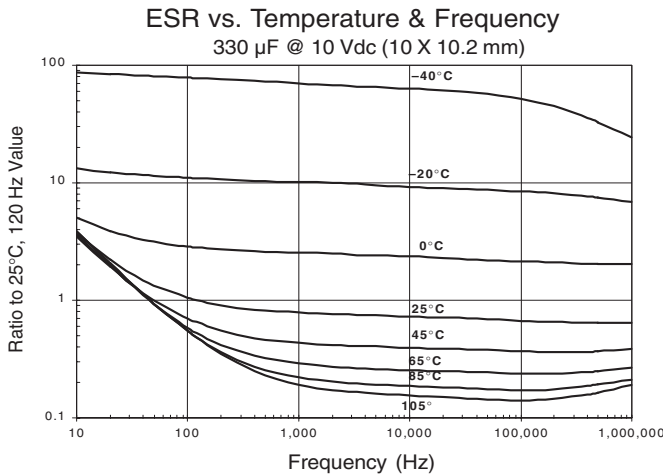
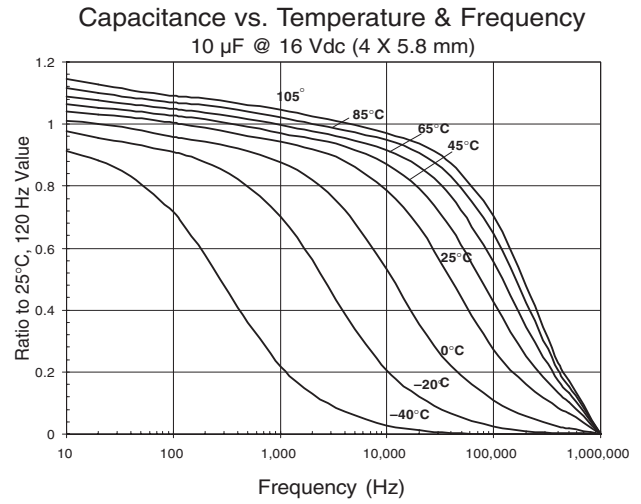
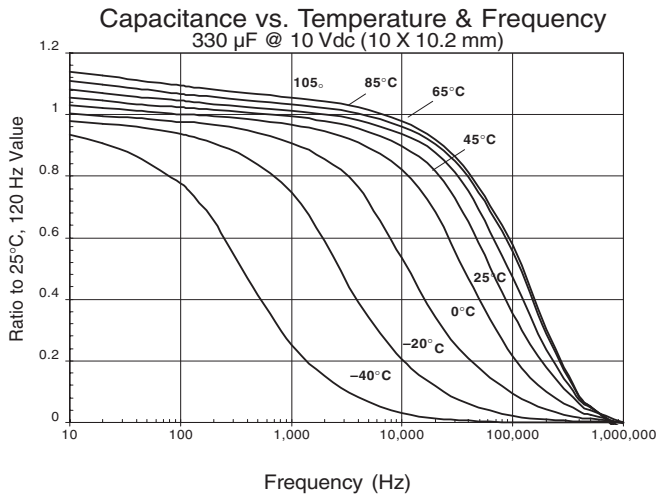
### Part Numbering System



# Type AHD

## SMT Aluminum Electrolytic Capacitors - Long Life, 105 °C

### Typical Performance Curves

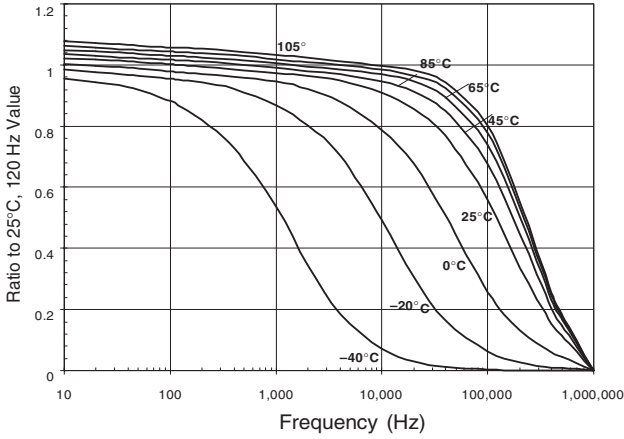


# Type AHD

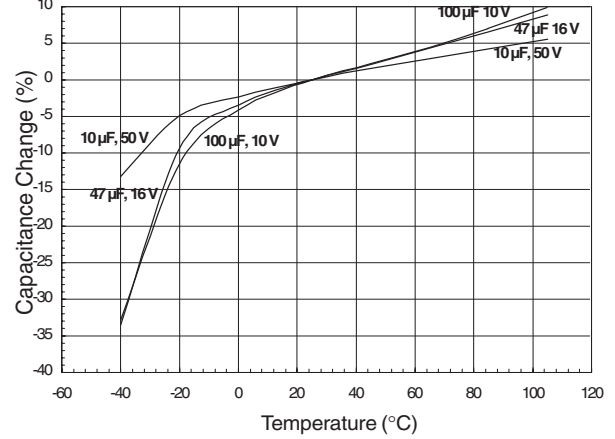
## SMT Aluminum Electrolytic Capacitors - Long Life, 105 °C

### Typical Performance Curves

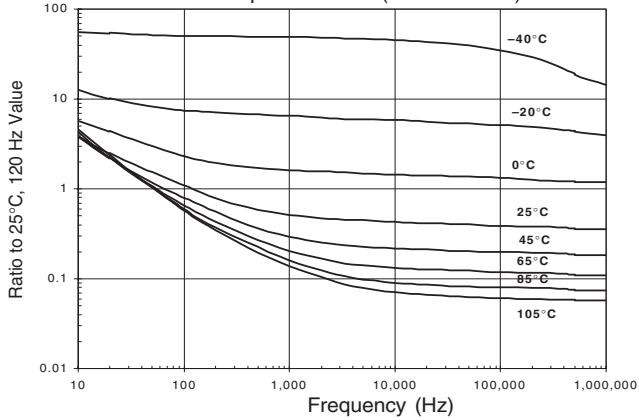
Capacitance vs. Temperature & Frequency  
10  $\mu$ F @ 50 Vdc (6.3 X 5.8 mm)



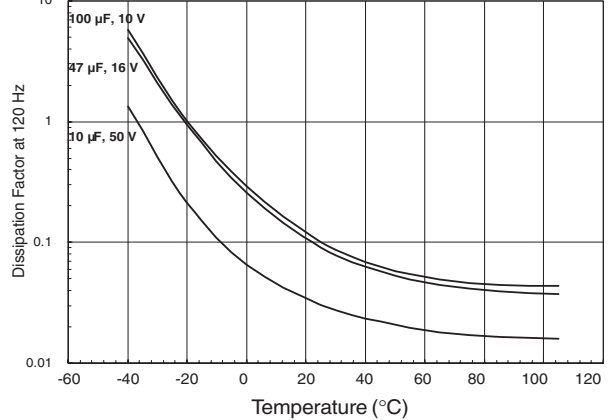
Capacitance Change vs. Temperature  
(Typical Performance AHD Series @ 120 Hz)



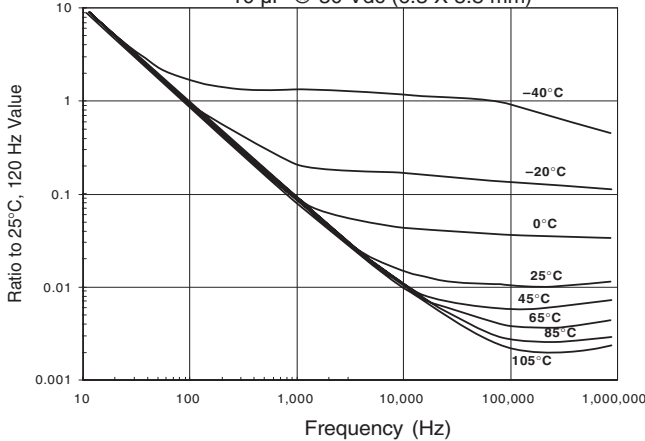
ESR vs. Temperature & Frequency  
10  $\mu$ F @ 50 Vdc (6.3 X 5.8 mm)



Dissipation Factor vs. Temperature  
(Typical Performance AHD Series @ 120 Hz)



Impedance vs. Temperature & Frequency  
10  $\mu$ F @ 50 Vdc (6.3 X 5.8 mm)



Impedance vs. Temperature & Frequency  
100  $\mu$ F @ 35 Vdc (10 X 10.2 mm)

