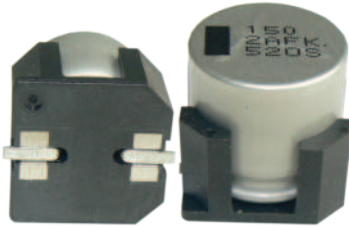


# Type AFK\_V, -55°C to 105°C, High Vibration SMT Aluminum Electrolytic Capacitors - Lowest E.S.R., 105°C

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



Using a ruggedized construction, type AFK\_V withstands a 30 G vibration test and has 40% to 60% lower impedance, 30% to 50% smaller case size and more than twice the life compared to general purpose types. As the main countermeasure to vibration, the metal case is inserted into a molded plastic retaining wall that surrounds the part, keeping it firmly in place. Larger diameter leads provide additional mechanical stability of the internal winding and a larger soldering surface keeps the part firmly affixed to the PCB. Type AFK\_V is an excellent choice for power systems subjected to frequent motion and vibration.

### Highlights

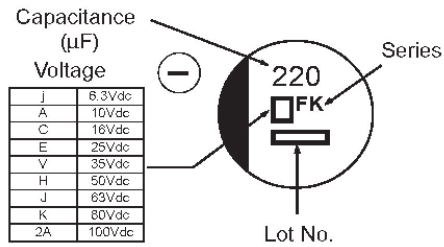
- Withstands 30 G vibration test
- +105 °C, Up to 5000 Hour Load Life
- Capacitance Range: 10 µF to 6800 µF
- Voltage Range: 6.3 Vdc to 100 Vdc
- AEC-Q200 Compliant

### Specifications

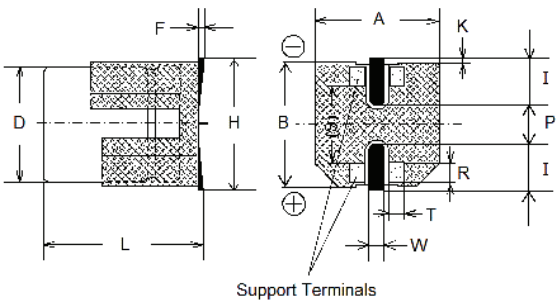
|                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                         |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------|--------|---------|------|------|-------|---------------------|-------------|-------------------------|--------------------|--------|---------|--------------------|------|-------|--------------------|------|------|------|------|-----|------|------|------|
| Capacitance Range                                         | 10 μF to 6800 μF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                         |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Capacitance Tolerance                                     | ±20% @ 120 Hz and +20°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                         |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Rated Voltage                                             | 6.3, 10, 16, 25, 35, 50, 63, 80 & 100 Vdc                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Operating Temperature Range                               | –55°C to +105°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                         |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Leakage Current                                           | 0.01 CV or 3 μA @ +20°C, after two minutes (whichever is greater)                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Ripple Current Multiplier                                 | <table><tr><td>Frequency</td><td>50/60 Hz</td><td>120 Hz</td><td>1 kHz</td><td>10 kHz</td><td>100 kHz</td></tr><tr><td></td><td>0.70</td><td>.075</td><td>0.90</td><td>0.95</td><td>1.00</td></tr></table>                                                                                                                                                                                                                                                                                       |                         |       |        |         |      |      |       | Frequency           | 50/60 Hz    | 120 Hz                  | 1 kHz              | 10 kHz | 100 kHz |                    | 0.70 | .075  | 0.90               | 0.95 | 1.00 |      |      |     |      |      |      |
| Frequency                                                 | 50/60 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 120 Hz                  | 1 kHz | 10 kHz | 100 kHz |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
|                                                           | 0.70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | .075                    | 0.90  | 0.95   | 1.00    |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Dissipation Factor                                        | <table><tr><td>6.3V</td><td>10 V</td><td>16 V</td><td>25 V</td><td>35 V</td><td>50 V</td><td>63 V</td><td>80 V</td><td>100 V</td></tr><tr><td>0.26</td><td>0.19</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.1</td><td>0.08</td><td>0.08</td><td>0.07</td></tr></table> <p>Add 0.02 per 1000 μF for values greater than 1000 μF</p>                                                                                                                                                          |                         |       |        |         |      |      |       | 6.3V                | 10 V        | 16 V                    | 25 V               | 35 V   | 50 V    | 63 V               | 80 V | 100 V | 0.26               | 0.19 | 0.16 | 0.14 | 0.12 | 0.1 | 0.08 | 0.08 | 0.07 |
| 6.3V                                                      | 10 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 16 V                    | 25 V  | 35 V   | 50 V    | 63 V | 80 V | 100 V |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| 0.26                                                      | 0.19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.16                    | 0.14  | 0.12   | 0.1     | 0.08 | 0.08 | 0.07  |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Low Temperature Impedance Ratio Characteristics at 120 Hz | <table><tr><td>Rated Voltage (Vdc)</td><td>6.3, 10, 16</td><td>25, 35, 50, 63, 80, 100</td></tr><tr><td>Z (-25°C)/Z(+20°C)</td><td>2</td><td>2</td></tr><tr><td>Z (-40°C)/Z(+20°C)</td><td>3</td><td>3</td></tr><tr><td>Z (-55°C)/Z(+20°C)</td><td>4</td><td>3</td></tr></table>                                                                                                                                                                                                                 |                         |       |        |         |      |      |       | Rated Voltage (Vdc) | 6.3, 10, 16 | 25, 35, 50, 63, 80, 100 | Z (-25°C)/Z(+20°C) | 2      | 2       | Z (-40°C)/Z(+20°C) | 3    | 3     | Z (-55°C)/Z(+20°C) | 4    | 3    |      |      |     |      |      |      |
| Rated Voltage (Vdc)                                       | 6.3, 10, 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 25, 35, 50, 63, 80, 100 |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Z (-25°C)/Z(+20°C)                                        | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2                       |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Z (-40°C)/Z(+20°C)                                        | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3                       |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Z (-55°C)/Z(+20°C)                                        | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3                       |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Life Test                                                 | 2000 h @ 105°C, 8.0 — 10.0 mm dia.<br>5000 h @ 105°C, 12.5 — 18.0 mm dia.<br>Δ Capacitance ±30%<br>DF: ≤ 200% of limit<br>DCL: ≤ 100% of limit                                                                                                                                                                                                                                                                                                                                                   |                         |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Shelf Test                                                | 1000 h @ 105°C<br>Δ Capacitance ±30%<br>DF: ≤ 200% of limit<br>DCL: ≤ 100% of limit                                                                                                                                                                                                                                                                                                                                                                                                              |                         |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| High Vibration Test                                       | Capacitors with the high vibration base will pass a 30 G acceleration test from 5 Hz to 2000 Hz with a max. amplitude of 5 mm (peak to peak) for 2 hours each in the X,Y and Z directions for a total of 6 hours. During the last 30 minutes of the test, the measured capacitance shall be stable. After the test the capacitor shall meet the following:<br>ΔC at 120 Hz - Capacitance value will be within 5% of the initial value.<br><br>There will be no significant change in appearance. |                         |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |
| Regulatory Information                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                         |       |        |         |      |      |       |                     |             |                         |                    |        |         |                    |      |       |                    |      |      |      |      |     |      |      |      |

# Type AFK\_V, -55°C to 105°C, High Vibration SMT Aluminum Electrolytic Capacitors - Lowest E.S.R., 105°C

## AFK Series Marking



## Outline Drawing



## Case Dimensions

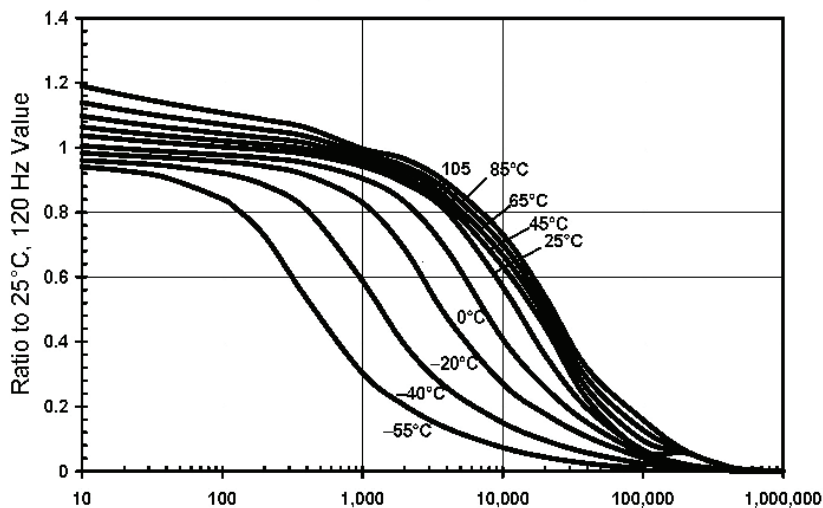
| Size Code | D ± 0.5 | L          | A ± 0.2 | B ± 0.2 | H max. | F             | I   | w         | P   | K         | R ± 0.2 | S ± 0.2 | T ± 0.2 |
|-----------|---------|------------|---------|---------|--------|---------------|-----|-----------|-----|-----------|---------|---------|---------|
| E         | 8       | 6.5 ± 0.3  | 8.3     | 8.3     | 9.5    | 0 to +0.15    | 3.4 | 0.7 ± 0.1 | 2.2 | .35 ± 0.2 | 0.70    | 5.3     | 1.7     |
| F         | 8       | 10.5 ± 0.3 | 8.3     | 8.3     | 10     | 0 to +0.15    | 3.4 | 1.2 ± 0.2 | 3.1 | .70 ± 0.2 | 0.70    | 5.3     | 1.3     |
| G         | 10      | 10.5 ± 0.3 | 10.3    | 10.3    | 12     | 0 to +0.15    | 3.5 | 1.2 ± 0.2 | 4.6 | .70 ± 0.2 | 0.70    | 6.9     | 1.3     |
| H         | 12.5    | 13.8 ± 0.5 | 13.5    | 13.5    | 15     | -0.1 to +0.15 | 4.7 | 1.2 ± 0.3 | 4.4 | .70 ± 0.3 | 2.2     | 7.1     | 2.4     |
| P         | 16      | 16.8 ± 0.5 | 17      | 17      | 19     | -0.1 to +0.15 | 5.5 | 1.4 ± 0.2 | 6.7 | .70 ± 0.3 | 3.0     | 9.0     | 1.9     |
| R         | 18      | 16.8 ± 0.5 | 19      | 19      | 21     | -0.1 to +0.15 | 6.7 | 1.4 ± 0.2 | 6.7 | .70 ± 0.3 | 3.0     | 11.0    | 1.9     |

## Part Numbering System

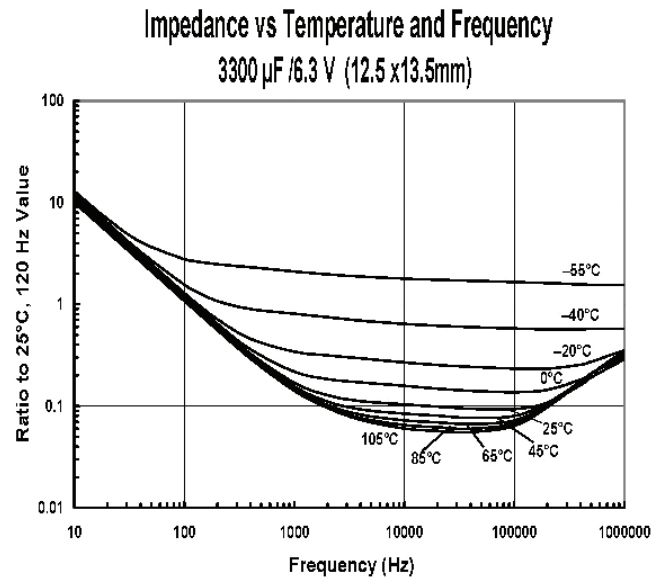
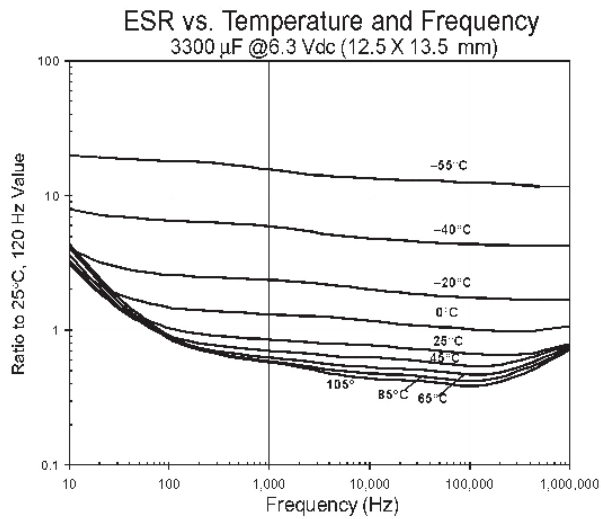
| AFK  | 106             | M                     | 80           | E         | 16VT               | -F             |
|------|-----------------|-----------------------|--------------|-----------|--------------------|----------------|
| Type | Capacitance     | Capacitance           | Voltage Code | Case Code | Packaging Code     | RoHS Compliant |
|      | 106 = 10.0 µF   | Tolerance<br>M = ±20% | 06 = 6.3 Vdc | Code      | 16 = Carrier tape  |                |
|      | 107 = 100.0 µF  |                       | 10 = 10 Vdc  |           | Width (mm)         |                |
|      | 108 = 1000.0 µF |                       | 16 = 16 Vdc  |           | T = Tape & Reel    |                |
|      |                 |                       | 25 = 25 Vdc  |           | V = High Vibration |                |
|      |                 |                       | 80 = 80 Vdc  |           |                    |                |
|      |                 |                       | 2A = 100 Vdc |           |                    |                |

## Typical Performance Curves

Capacitance vs. Temperature and Frequency  
3300µF/6.3Vdc (12.5 x 13.5 mm)



## Typical Performance Curves



## Ratings Table

| Capacitance<br>( $\mu$ F) | Catalog<br>Part Number | Max.<br>DCL<br>2 min.<br>( $\mu$ A) | Max.<br>Dissipation<br>Factor<br>@120 Hz/20°C | Max. ESR<br>@100<br>kHz/20°C<br>( $\Omega$ ) | Impedance<br>@100 kHz/20°C<br>( $\Omega$ ) | Max.<br>Ripple Current<br>@100<br>kHz/105°C<br>(mA) | Case<br>Code | Size<br>D x L<br>(mm) | Quantity<br>per Reel |
|---------------------------|------------------------|-------------------------------------|-----------------------------------------------|----------------------------------------------|--------------------------------------------|-----------------------------------------------------|--------------|-----------------------|----------------------|
| 6.3 Vdc (8 Vdc Surge)     |                        |                                     |                                               |                                              |                                            |                                                     |              |                       |                      |
| 330                       | AFK337M06E16VT-F       | 20.8                                | 0.26                                          | 0.26                                         | 0.26                                       | 300                                                 | E            | 8 x 6.5               | 1000                 |
| 470                       | AFK477M06F24VT-F       | 29.6                                | 0.26                                          | 0.16                                         | 0.16                                       | 600                                                 | F            | 8 x 10.5              | 500                  |
| 1000                      | AFK108M06F24VT-F       | 63                                  | 0.26                                          | 0.16                                         | 0.16                                       | 600                                                 | F            | 8 x 10.5              | 500                  |
| 1500                      | AFK158M06G24VT-F       | 94.8                                | 0.26                                          | 0.08                                         | 0.08                                       | 850                                                 | G            | 10 x 10.5             | 500                  |
| 3300                      | AFK338M06H32VT-F       | 207.9                               | 0.30                                          | 0.06                                         | 0.06                                       | 1100                                                | H            | 12.5 x 13.8           | 200                  |
| 6800                      | AFK688M06P44VT-F       | 428.4                               | 0.36                                          | 0.035                                        | 0.035                                      | 1800                                                | P            | 16 x 16.8             | 125                  |
| 10 Vdc (13 Vdc Surge)     |                        |                                     |                                               |                                              |                                            |                                                     |              |                       |                      |
| 220                       | AFK227M10E16VT-F       | 22                                  | 0.19                                          | 0.26                                         | 0.26                                       | 300                                                 | E            | 8 x 6.5               | 1000                 |
| 330                       | AFK337M10F24VT-F       | 33                                  | 0.19                                          | 0.16                                         | 0.16                                       | 600                                                 | F            | 8 x 10.5              | 500                  |
| 470                       | AFK477M10F24VT-F       | 47                                  | 0.19                                          | 0.16                                         | 0.16                                       | 600                                                 | F            | 8 x 10.5              | 500                  |
| 680                       | AFK687M10F24VT-F       | 68                                  | 0.19                                          | 0.16                                         | 0.16                                       | 600                                                 | F            | 8 x 10.5              | 500                  |
| 1000                      | AFK108M10G24VT-F       | 100                                 | 0.19                                          | 0.08                                         | 0.08                                       | 850                                                 | G            | 10 x 10.5             | 500                  |
| 2200                      | AFK228M10H32VT-F       | 220                                 | 0.21                                          | 0.06                                         | 0.06                                       | 1100                                                | H            | 12.5 x 13.8           | 200                  |
| 4700                      | AFK478M10P44VT-F       | 470                                 | 0.25                                          | 0.035                                        | 0.035                                      | 1800                                                | P            | 16 x 16.8             | 125                  |
| 6800                      | AFK688M10R44VT-F       | 680                                 | 0.29                                          | 0.033                                        | 0.033                                      | 2060                                                | R            | 18 x 16.8             | 125                  |
| 16 Vdc (20 Vdc Surge)     |                        |                                     |                                               |                                              |                                            |                                                     |              |                       |                      |
| 220                       | AFK227M16E16VT-F       | 35.2                                | 0.16                                          | 0.26                                         | 0.26                                       | 300                                                 | E            | 8 x 6.5               | 1000                 |
| 330                       | AFK337M16F24VT-F       | 52.8                                | 0.16                                          | 0.16                                         | 0.16                                       | 600                                                 | F            | 8 x 10.5              | 500                  |
| 470                       | AFK477M16F24VT-F       | 75.2                                | 0.16                                          | 0.16                                         | 0.16                                       | 600                                                 | F            | 8 x 10.5              | 500                  |
| 680                       | AFK687M16G24VT-F       | 108.8                               | 0.16                                          | 0.08                                         | 0.08                                       | 850                                                 | G            | 10 x 10.5             | 500                  |
| 1500                      | AFK158M16H32VT-F       | 240                                 | 0.16                                          | 0.06                                         | 0.06                                       | 1100                                                | H            | 12.5x 13.8            | 200                  |
| 3300                      | AFK338M16P44VT-F       | 528                                 | 0.2                                           | 0.035                                        | 0.035                                      | 1800                                                | P            | 16 x 16.8             | 125                  |
| 4700                      | AFK478M16R44VT-F       | 752                                 | 0.22                                          | 0.033                                        | 0.033                                      | 2060                                                | R            | 18 x 16.8             | 125                  |

**Type AFK\_V, -55°C to 105°C, High Vibration SMT**  
**Aluminum Electrolytic Capacitors - Lowest E.S.R., 105°C**

| Capacitance<br>(μF)          | Catalog<br>Part Number | Max.<br>DCL<br>2 min.<br>(μA) | Max.<br>Dissipation<br>Factor<br>@120<br>Hz/20°C | Max. ESR<br>@100 kHz/20°C<br>(Ω) | Impedance<br>@100 kHz/20°C<br>(Ω) | Max.<br>Ripple Current<br>@100 kHz/105°C<br>(mA) | Case<br>Code | Size<br>D x L<br>(mm) | Quantity<br>per Reel |
|------------------------------|------------------------|-------------------------------|--------------------------------------------------|----------------------------------|-----------------------------------|--------------------------------------------------|--------------|-----------------------|----------------------|
| <b>25 Vdc (31 Vdc Surge)</b> |                        |                               |                                                  |                                  |                                   |                                                  |              |                       |                      |
| 100                          | AFK107M25E16VT-F       | 25                            | 0.14                                             | 0.26                             | 0.26                              | 300                                              | E            | 8 x 6.5               | 1000                 |
| 150                          | AFK157M25F24VT-F       | 37.5                          | 0.14                                             | 0.16                             | 0.16                              | 600                                              | F            | 8 x 10.5              | 500                  |
| 220                          | AFK227M25F24VT-F       | 55                            | 0.14                                             | 0.16                             | 0.16                              | 600                                              | F            | 8 x 10.5              | 500                  |
| 330                          | AFK337M25F24VT-F       | 82.5                          | 0.14                                             | 0.16                             | 0.16                              | 600                                              | F            | 8 x 10.5              | 500                  |
| 470                          | AFK477M25G24VT-F       | 117.5                         | 0.14                                             | 0.08                             | 0.08                              | 850                                              | G            | 10 x 10.5             | 500                  |
| 1000                         | AFK108M25H32VT-F       | 250                           | 0.14                                             | 0.06                             | 0.06                              | 1100                                             | H            | 12.5 x 13.8           | 200                  |
| 1500                         | AFK158M25P44VT-F       | 375                           | 0.14                                             | 0.035                            | 0.035                             | 1800                                             | P            | 16 x 16.8             | 125                  |
| 2200                         | AFK228M25P44VT-F       | 550                           | 0.16                                             | 0.035                            | 0.035                             | 1800                                             | P            | 16 x 16.8             | 125                  |
| 3300                         | AFK338M25R44VT-F       | 825                           | 0.18                                             | 0.033                            | 0.033                             | 2060                                             | R            | 18 x 16.8             | 125                  |
| <b>35 Vdc (44 Vdc Surge)</b> |                        |                               |                                                  |                                  |                                   |                                                  |              |                       |                      |
| 100                          | AFK107M35F24VT-F       | 35                            | 0.12                                             | 0.16                             | 0.16                              | 600                                              | F            | 8 x 10.5              | 500                  |
| 150                          | AFK157M35F24VT-F       | 52.5                          | 0.12                                             | 0.16                             | 0.16                              | 600                                              | F            | 8 x 10.5              | 500                  |
| 220                          | AFK227M35F24VT-F       | 77                            | 0.12                                             | 0.16                             | 0.16                              | 600                                              | F            | 8 x 10.5              | 500                  |
| 330                          | AFK337M35G24VT-F       | 115.5                         | 0.12                                             | 0.08                             | 0.08                              | 850                                              | G            | 10 x 10.5             | 500                  |
| 470                          | AFK477M35H32VT-F       | 164.5                         | 0.12                                             | 0.06                             | 0.06                              | 1100                                             | H            | 12.5 x 13.8           | 200                  |
| 680                          | AFK687M35H32VT-F       | 238                           | 0.12                                             | 0.06                             | 0.06                              | 1100                                             | H            | 12.5 x 13.8           | 200                  |
| 1000                         | AFK108M35P44VT-F       | 350                           | 0.12                                             | 0.035                            | 0.035                             | 1800                                             | P            | 16 x 16.8             | 125                  |
| 1500                         | AFK158M35P44VT-F       | 525                           | 0.12                                             | 0.035                            | 0.035                             | 1800                                             | P            | 16 x 16.8             | 125                  |
| <b>50 Vdc (63 Vdc Surge)</b> |                        |                               |                                                  |                                  |                                   |                                                  |              |                       |                      |
| 33                           | AFK336M50E16VT-F       | 16.5                          | 0.1                                              | 0.68                             | 0.68                              | 195                                              | E            | 8 x 6.5               | 1000                 |
| 47                           | AFK476M50E16VT-F       | 23.5                          | 0.1                                              | 0.68                             | 0.68                              | 195                                              | E            | 8 x 6.5               | 1000                 |
| 100                          | AFK107M50F24VT-F       | 50                            | 0.1                                              | 0.34                             | 0.34                              | 350                                              | F            | 8 x 10.5              | 500                  |
| 150                          | AFK157M50G24VT-F       | 75                            | 0.1                                              | 0.18                             | 0.18                              | 670                                              | G            | 10 x 10.5             | 500                  |
| 220                          | AFK227M50G24VT-F       | 110                           | 0.1                                              | 0.18                             | 0.18                              | 670                                              | G            | 10 x 10.5             | 500                  |
| 330                          | AFK337M50H32VT-F       | 165                           | 0.1                                              | 0.12                             | 0.12                              | 900                                              | H            | 12.5 x 13.8           | 200                  |
| 390                          | AFK397M50H32VT-F       | 195                           | 0.1                                              | 0.12                             | 0.12                              | 900                                              | H            | 12.5 x 13.8           | 200                  |
| 470                          | AFK477M50P44VT-F       | 235                           | 0.1                                              | 0.073                            | 0.073                             | 1610                                             | P            | 16 x 16.8             | 125                  |
| 560                          | AFK567M50P44VT-F       | 280                           | 0.1                                              | 0.073                            | 0.073                             | 1610                                             | P            | 16 x 16.8             | 125                  |
| 680                          | AFK687M50P44VT-F       | 340                           | 0.1                                              | 0.073                            | 0.073                             | 1610                                             | P            | 16 x 16.8             | 125                  |
| 1000                         | AFK108M50P44VT-F       | 500                           | 0.1                                              | 0.073                            | 0.073                             | 1610                                             | P            | 16 x 16.8             | 125                  |
| <b>63 Vdc (75 Vdc Surge)</b> |                        |                               |                                                  |                                  |                                   |                                                  |              |                       |                      |
| 22                           | AFK226M63E16VT-F       | 13.9                          | 0.08                                             | 1.2                              | 1.2                               | 120                                              | E            | 8 x 6.5               | 1000                 |
| 33                           | AFK336M63F24VT-F       | 20.8                          | 0.08                                             | 0.65                             | 0.65                              | 250                                              | F            | 8 x 10.5              | 500                  |
| 47                           | AFK476M63F24VT-F       | 29.6                          | 0.08                                             | 0.65                             | 0.65                              | 250                                              | F            | 8 x 10.5              | 500                  |
| 68                           | AFK686M63G24VT-F       | 42.8                          | 0.08                                             | 0.35                             | 0.35                              | 400                                              | G            | 10 x 10.5             | 500                  |
| 100                          | AFK107M63G24VT-F       | 63                            | 0.08                                             | 0.35                             | 0.35                              | 400                                              | G            | 10 x 10.5             | 500                  |
| 150                          | AFK157M63H32VT-F       | 94.5                          | 0.08                                             | 0.16                             | 0.16                              | 800                                              | H            | 12.5 x 13.8           | 200                  |
| 220                          | AFK227M63H32VT-F       | 138.6                         | 0.08                                             | 0.16                             | 0.16                              | 800                                              | H            | 12.5 x 13.8           | 200                  |
| 470                          | AFK477M63P44VT-F       | 296.1                         | 0.08                                             | 0.082                            | 0.082                             | 1410                                             | P            | 16 x 16.8             | 125                  |
| 680                          | AFK687M63R44VT-F       | 428.4                         | 0.08                                             | 0.08                             | 0.08                              | 1690                                             | R            | 18 x 16.8             | 125                  |

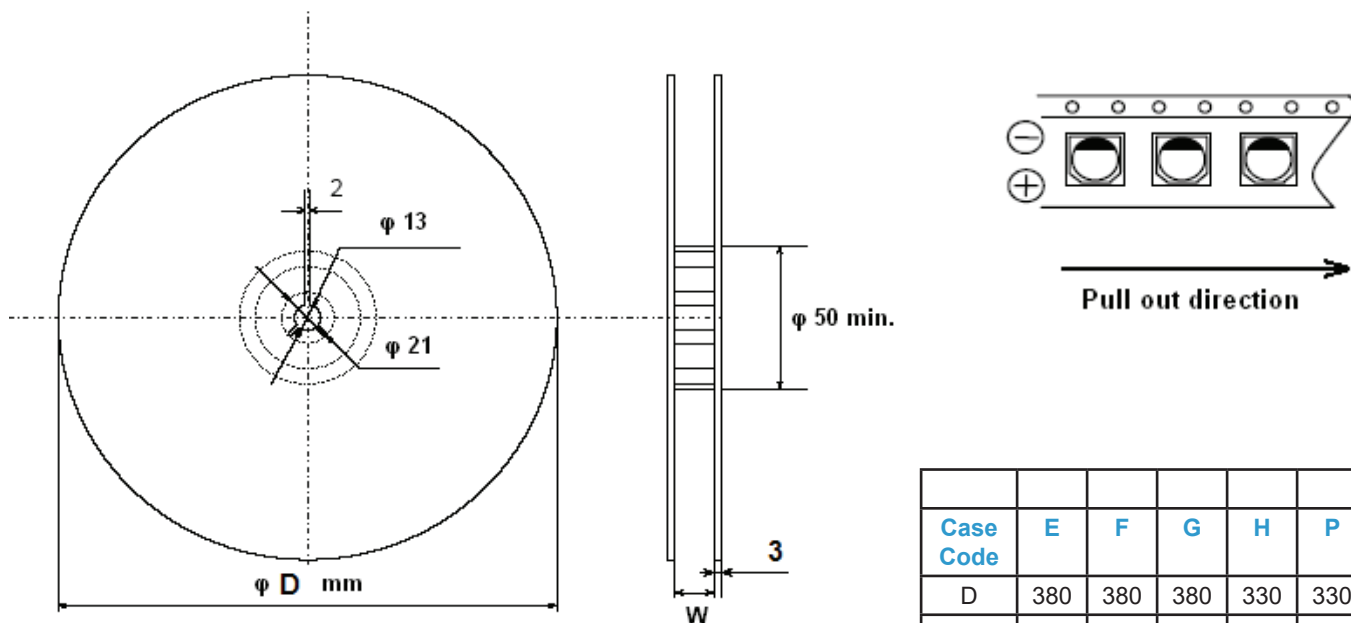
Note: ≥50V, 8 and 10 mm Dia.; 235°C peak solder temperature

# Type AFK\_V, -55°C to 105°C, High Vibration SMT Aluminum Electrolytic Capacitors - Lowest E.S.R., 105°C

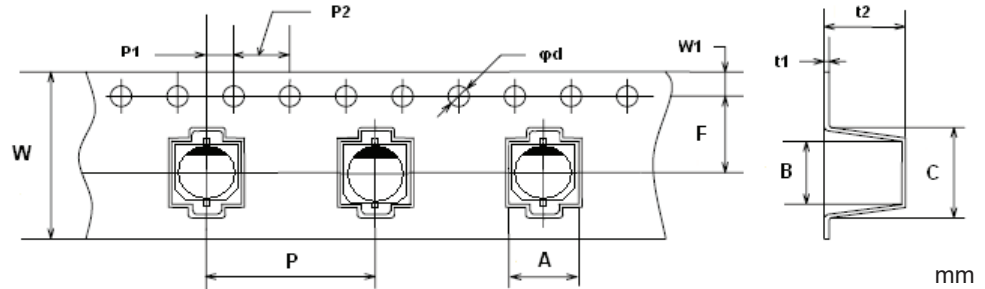
| Capacitance<br>( $\mu$ F) | Catalog<br>Part Number | Max.<br>DCL<br>2 min.<br>( $\mu$ A) | Max.<br>Dissipation<br>Factor<br>@120 Hz/20°C | Max. ESR<br>@100<br>kHz/20°C<br>( $\Omega$ ) | Impedance<br>@100 kHz/20°C<br>( $\Omega$ ) | Max.<br>Ripple Current<br>@100 kHz/105°C<br>(mA) | Case<br>Code | Size<br>D x L<br>(mm) | Quantity<br>per Reel |
|---------------------------|------------------------|-------------------------------------|-----------------------------------------------|----------------------------------------------|--------------------------------------------|--------------------------------------------------|--------------|-----------------------|----------------------|
| 80 Vdc (100 Vdc Surge)    |                        |                                     |                                               |                                              |                                            |                                                  |              |                       |                      |
| 10                        | AFK106M80E16VT-F       | 8                                   | 0.08                                          | 2.4                                          | 2.4                                        | 60                                               | E            | 8 x 6.5               | 1000                 |
| 22                        | AFK226M80F24VT-F       | 17.6                                | 0.08                                          | 1.3                                          | 1.3                                        | 130                                              | F            | 8 x 10.5              | 500                  |
| 33                        | AFK336M80F24VT-F       | 26.4                                | 0.08                                          | 1.3                                          | 1.3                                        | 130                                              | F            | 8 x 10.5              | 500                  |
| 47                        | AFK476M80G24VT-F       | 37.6                                | 0.08                                          | 0.7                                          | 0.7                                        | 200                                              | G            | 10 x 10.5             | 500                  |
| 68                        | AFK686M80H32VT-F       | 54.4                                | 0.08                                          | 0.32                                         | 0.32                                       | 500                                              | H            | 12.5 x 13.8           | 200                  |
| 100                       | AFK107M80H32VT-F       | 80                                  | 0.08                                          | 0.32                                         | 0.32                                       | 500                                              | H            | 12.5 x 13.8           | 200                  |
| 150                       | AFK157M80H32VT-F       | 120                                 | 0.08                                          | 0.32                                         | 0.32                                       | 500                                              | H            | 12.5 x 13.8           | 200                  |
| 330                       | AFK337M80P44VT-F       | 264                                 | 0.08                                          | 0.17                                         | 0.17                                       | 793                                              | P            | 16 x 16.8             | 125                  |
| 470                       | AFK477M80R44VT-F       | 376                                 | 0.08                                          | 0.15                                         | 0.15                                       | 917                                              | R            | 18 x 16.8             | 125                  |
| 100 Vdc (125 Vdc Surge)   |                        |                                     |                                               |                                              |                                            |                                                  |              |                       |                      |
| 22                        | AFK226M2AF24VT-F       | 22                                  | 0.07                                          | 1.3                                          | 1.3                                        | 130                                              | F            | 8 x 10.5              | 500                  |
| 33                        | AFK336M2AG24VT-F       | 33                                  | 0.07                                          | 0.7                                          | 0.7                                        | 200                                              | G            | 10 x 10.5             | 500                  |
| 47                        | AFK476M2AH32VT-F       | 47                                  | 0.07                                          | 0.32                                         | 0.32                                       | 500                                              | H            | 12.5 x 13.8           | 200                  |
| 68                        | AFK686M2AH32VT-F       | 68                                  | 0.07                                          | 0.32                                         | 0.32                                       | 500                                              | H            | 12.5 x 13.8           | 200                  |
| 100                       | AFK107M2AP44VT-F       | 100                                 | 0.07                                          | 0.17                                         | 0.17                                       | 793                                              | P            | 16 x 16.8             | 125                  |
| 150                       | AFK157M2AP44VT-F       | 150                                 | 0.07                                          | 0.17                                         | 0.17                                       | 793                                              | P            | 16 x 16.8             | 125                  |
| 220                       | AFK227M2AR44VT-F       | 220                                 | 0.07                                          | 0.15                                         | 0.15                                       | 917                                              | R            | 18 x 16.8             | 125                  |
| 330                       | AFK337M2AR44VT-F       | 330                                 | 0.07                                          | 0.15                                         | 0.15                                       | 917                                              | R            | 18 x 16.8             | 125                  |

Note:  $\geq 50$ V, 8 and 10 mm Dia.; 235°C peak solder temperature

## Reel Dimensions

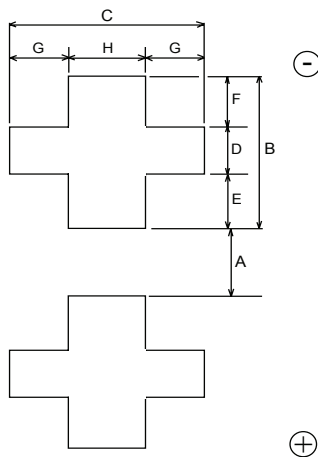


## Case Code E, F and G Tape Dimensions



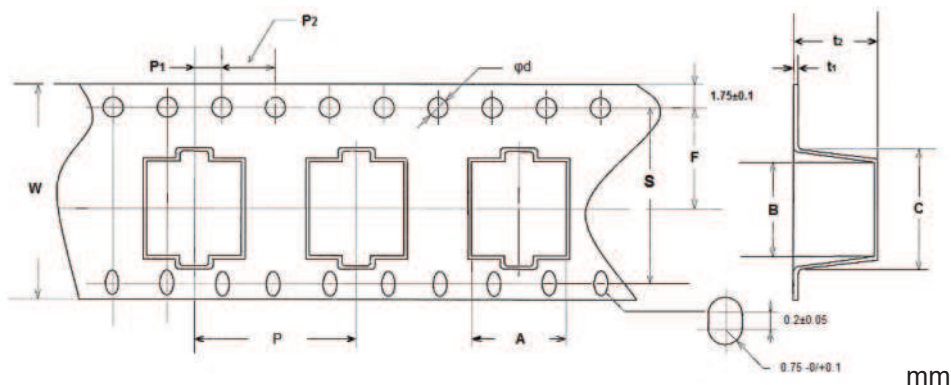
| Case Size | Case Code | W ± 0.3 | A ± 0.2 | B +0.3/-0.2 | C ± 0.2 | F ± 0.1 | P ± 0.1 | t1  | t2 ± 0.2 | φd +0.1/-0 | P1 ± 0.1 | P2 ± 0.1 | W1 ± 0.1 |
|-----------|-----------|---------|---------|-------------|---------|---------|---------|-----|----------|------------|----------|----------|----------|
| 8 x 6.2   | E         | 16      | 8.7     | 8.7         | 11.4    | 7.5     | 12      | 0.4 | 6.8      | 1.5        | 2        | 4        | 1.75     |
| 8 x 10.2  | F         | 24      | 8.7     | 8.7         | 12.5    | 11.5    | 16      |     | 11       |            |          |          |          |
| 10 x 10.2 | G         |         | 10.7    | 10.7        | 14.5    |         |         |     |          |            |          |          |          |

## Recommended Land Dimensions



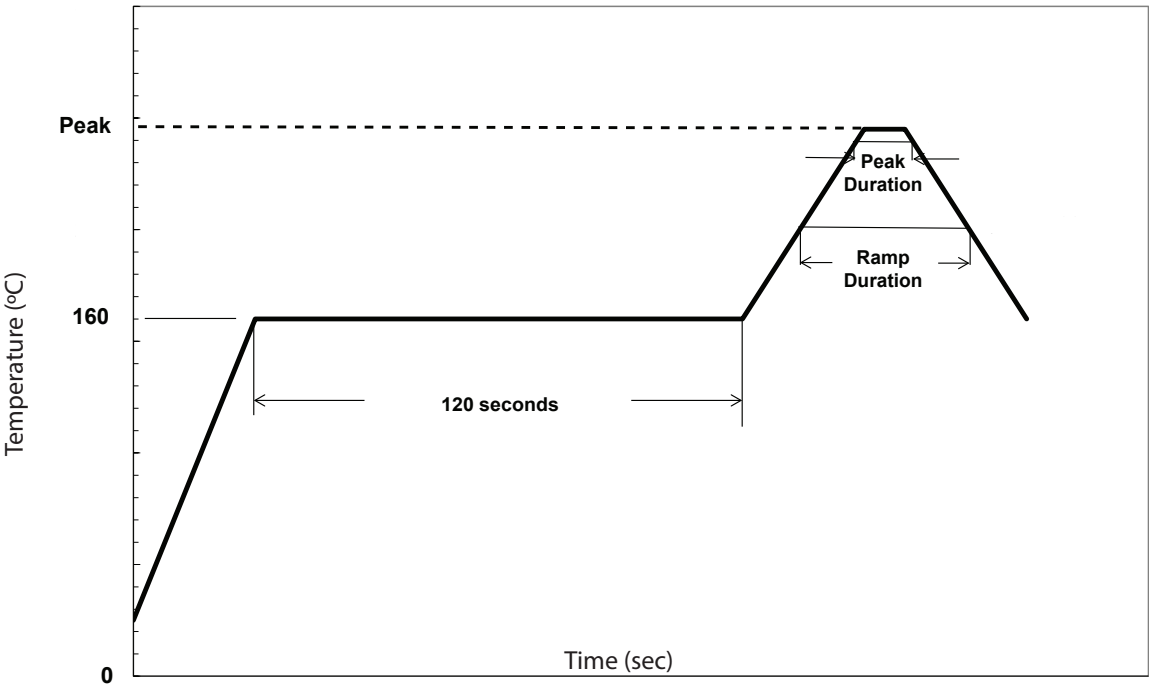
| Case Code | Case Dia. | A   | B   | C   | D   | E   | F   | G   | H   |
|-----------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|
| E         | 8         | 1.8 | 4.1 | 5.0 | 1.3 | 1.5 | 1.4 | 1.5 | 2.0 |
| F         | 8         | 2.7 | 4.0 | 4.7 | 1.3 | 1.0 | 1.7 | 1.1 | 2.5 |
| G         | 10        | 3.9 | 4.4 | 4.7 | 1.3 | 1.2 | 1.9 | 1.1 | 2.5 |
| H         | 12.5      | 3.9 | 6.2 | 6.9 | 2.8 | 1.3 | 2.1 | 2.2 | 2.5 |
| P         | 16        | 5.8 | 7.0 | 6.2 | 3.6 | 1.3 | 2.1 | 1.7 | 2.8 |
| R         | 18        | 5.8 | 8.0 | 6.2 | 3.6 | 2.3 | 2.1 | 1.7 | 2.8 |

## Case Code H, P and R Tape Dimensions



| Case Size   | Case Code | W ± 0.3 | A ± 0.5 | B ± 0.5 | C ± 0.5 | F ± 0.1 | S ± 0.1 | P ± 0.1 | t1  | t2 ± 0.2 | φd +0.1/-0 | P1 ± 0.1 | P2 ± 0.1 |
|-------------|-----------|---------|---------|---------|---------|---------|---------|---------|-----|----------|------------|----------|----------|
| 12.5 x 13.5 | H         | 32      | 14.0    | 14.0    | 18.0    | 14.2    | 28.4    | 24      |     | 14.5     |            |          |          |
| 16 x 16.5   | P         | 44      | 17.5    | 17.5    | 23.00   | 20.2    | 40.4    | 28      | 0.5 | 17.5     | 1.5        | 2        | 4        |
| 18 x 16.5   | R         |         | 19.5    | 19.5    | 26.00   |         |         | 32      |     |          |            |          |          |

Recommended Reflow Soldering



| Case Code | Diameter (mm) | Voltage (Vdc) | Peak Temp | Peak Temp Duration | Ramp Temp Duration             | Number of Reflows |
|-----------|---------------|---------------|-----------|--------------------|--------------------------------|-------------------|
| E, F, G   | 8 - 10        | 6.3 - 35      | 260°C     | ≥ 250°C, 5 s       | ≥ 230°C, 30 s<br>≥ 200°C, 70 s | 1                 |
|           |               | 50 - 100      | 235°C     | 5 s                | ≥ 200°C, 60 s                  | 1                 |
| H, P, R   | 12.5 - 18     | 6.3 - 35      | 245°C     | ≥ 240°C, 30 s      | ≥ 217°C, 90 s                  | 2                 |
|           |               | 50 - 63       | 245°C     | ≥ 240°C, 5 s       | ≥ 217°C, 30 s                  | 2                 |
|           |               | 80 - 100      | 245°C     | ≥ 240°C, 5 s       | ≥ 217°C, 30 s                  | 1                 |

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