

# Type AVE $-40^{\circ}\text{C}$ to $85^{\circ}\text{C}$ General Purpose SMT Capacitors

## Aluminum Electrolytic Capacitors for Filtering and Bypass



Type AVE capacitors are a great value for filter and bypass applications not requiring wide temperature performance or high ripple current. Their vertical cylindrical cases facilitate automatic mounting and reflow soldering and offer a significant savings over tantalum capacitors.

### Highlights

- $+85^{\circ}\text{C}$ , Up to 2000 Hour Load Life
- Low Impedance
- Voltage Range: 4 Vdc to 100 Vdc

### Specifications

**Operating Temperature:**  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$

**Rated Voltage:** 4, 6.3, 10, 16, 25, 35, 50, 63 & 100 Vdc

**Capacitance:**  $0.1\ \mu\text{F}$  to  $1500\ \mu\text{F}$

**Capacitance Tolerance:**  $\pm 20\%$  @ 120 Hz and  $+20^{\circ}\text{C}$

**Leakage Current:**  $0.01\ \text{CV}$  or  $3\ \mu\text{A}$  @  $+20^{\circ}\text{C}$ , after two minutes (whichever is greater)

**Dissipation Factor:**

| 4V   | 6.3V | 10 V | 16 V | 25 V | 35 V | 50 V | 63 V | 100 V |
|------|------|------|------|------|------|------|------|-------|
| 0.42 | 0.28 | 0.24 | 0.20 | 0.14 | 0.12 | 0.10 | 0.10 | 0.10  |

**Low Temperature  
Characteristics @ 120 Hz:**

| Rated Voltage (Vdc) |                                                 | 4  | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
|---------------------|-------------------------------------------------|----|-----|----|----|----|----|----|----|-----|
| Impedance           | $Z(-25^{\circ}\text{C})/Z(+20^{\circ}\text{C})$ | 7  | 4   | 3  | 2  | 2  | 2  | 2  | 2  | 2   |
| Ratio               | $Z(-40^{\circ}\text{C})/Z(+20^{\circ}\text{C})$ | 15 | 8   | 5  | 4  | 3  | 3  | 3  | 3  | 3   |

**Ripple Current Multipliers:**



Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

| Frequency | 50 Hz      | 120 Hz | 1 kHz | 10 kHz up |
|-----------|------------|--------|-------|-----------|
| Vdc (V)   | Multiplier |        |       |           |
| $\leq 16$ | 0.80       | 1.00   | 1.15  | 1.25      |
| 25 - 35   | 0.80       | 1.00   | 1.25  | 1.40      |
| 50 - 63   | 0.80       | 1.00   | 1.35  | 1.50      |
| 100       | 0.70       | 1.00   | 1.35  | 1.50      |

**Life Test:** 2000 h @  $85^{\circ}\text{C}$

$\Delta$  Capacitance  $\pm 20\%$  (4 WV:  $\pm 30\%$ )

DF:  $\leq 200\%$  of limit (4 WV:  $\pm 30\%$ )

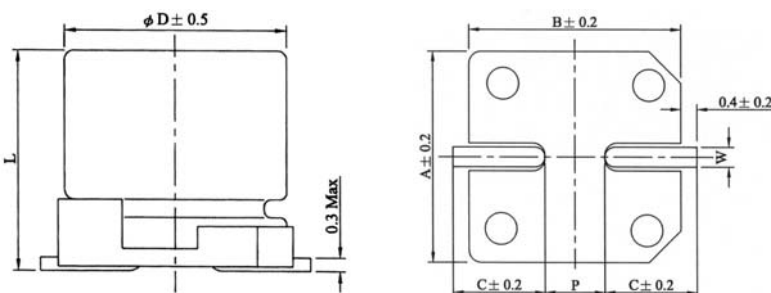
DCL:  $\leq 100\%$  of limit

**Shelf Test:** 1000 h @  $85^{\circ}\text{C}$

$\Delta$  Capacitance  $\pm 20\%$  (4 WV:  $\pm 30\%$ )

DF:  $\leq 200\%$  of limit (4 WV:  $\pm 30\%$ )

### Outline Drawing



| Case<br>Code | Dimensions in millimeters (mm) |               |      |      |     |            |             |
|--------------|--------------------------------|---------------|------|------|-----|------------|-------------|
|              | $\phi D$                       | L             | A    | B    | C   | W          | P $\pm 0.2$ |
| A            | 3                              | $5.3 \pm 0.2$ | 3.3  | 3.3  | 1.5 | .45 ~ 0.75 | 0.8         |
| B            | 4                              | $5.3 \pm 0.2$ | 4.3  | 4.3  | 2.0 | 0.5 to 0.8 | 1.0         |
| C            | 5                              | $5.3 \pm 0.2$ | 5.3  | 5.3  | 2.3 | 0.5 to 0.8 | 1.5         |
| D            | 6.3                            | $5.3 \pm 0.2$ | 6.6  | 6.6  | 2.7 | 0.5 to 0.8 | 2.0         |
| X            | 6.3                            | $7.7 \pm 0.3$ | 6.6  | 6.6  | 2.7 | 0.5 to 0.8 | 2.0         |
| E            | 8                              | $6.5 \pm 0.3$ | 8.4  | 8.4  | 3.4 | 0.5 to 0.8 | 2.3         |
| F            | 8                              | $10 \pm 0.5$  | 8.4  | 8.4  | 3.0 | 0.7 to 1.1 | 3.1         |
| G            | 10                             | $10 \pm 0.5$  | 10.4 | 10.4 | 3.3 | 0.7 to 1.1 | 4.7         |

# Type AVE -40 °C to 85 °C General Purpose SMT Capacitors

## Aluminum Electrolytic Capacitors for Filtering and Bypass

### Part Numbering System

| AVE  | 106                    | M                | 16                  | B                   | 12T          | - F                      |
|------|------------------------|------------------|---------------------|---------------------|--------------|--------------------------|
| Type | Capacitance            | Capacitance      | Voltage             | Case                | Packaging    | RoHS                     |
|      | <b>104</b> = 0.1 µF    | <b>Tolerance</b> | <b>04</b> = 4 Vdc   | <b>06</b> = 6.3 Vdc | <b>Code</b>  | <b>Information</b>       |
|      | <b>105</b> = 1.0 µF    | <b>M</b> = ±20%  | <b>10</b> = 10 Vdc  | <b>16</b> = 16 Vdc  | <b>B</b> = B | <b>12</b> = Carrier Tape |
|      | <b>106</b> = 10.0 µF   |                  | <b>25</b> = 25 Vdc  | <b>35</b> = 35 Vdc  |              | Width (mm)               |
|      | <b>107</b> = 100.0 µF  |                  | <b>50</b> = 50 Vdc  | <b>63</b> = 63 Vdc  |              | <b>T</b> = Tape & Reel   |
|      | <b>108</b> = 1000.0 µF |                  | <b>2A</b> = 100 Vdc |                     |              |                          |

### Ratings

| Cap<br>(µF)                    | Catalog<br>Part Number | Max. DCL<br>2 min.<br>(µA) | Max. DF<br>@120Hz/20°C<br>(%) | Max. E.S.R.<br>@120Hz/20°C<br>(Ω) | Max.<br>Ripple Current<br>@120Hz/85°C<br>(mA) | Case<br>Code | Size<br>D x L<br>(mm) | Qty.<br>Per Reel<br>(Each) |
|--------------------------------|------------------------|----------------------------|-------------------------------|-----------------------------------|-----------------------------------------------|--------------|-----------------------|----------------------------|
| <b>4 Vdc ( 5 Vdc Surge )</b>   |                        |                            |                               |                                   |                                               |              |                       |                            |
| 22                             | AVE226M04A12T-F        | 3                          | 0.42                          | 31.65                             | 14                                            | A            | 3x5.3                 | 2000                       |
| 33                             | AVE336M04B12T-F        | 3                          | 0.42                          | 21.10                             | 31                                            | B            | 4x5.3                 | 2000                       |
| 47                             | AVE476M04B12T-F        | 3                          | 0.42                          | 14.81                             | 37                                            | B            | 4x5.3                 | 2000                       |
| 68                             | AVE686M04C12T-F        | 3                          | 0.42                          | 10.24                             | 63                                            | C            | 5x5.3                 | 1000                       |
| 100                            | AVE107M04D16T-F        | 4                          | 0.42                          | 6.96                              | 110                                           | D            | 6.3x5.3               | 1000                       |
| <b>6.3 Vdc ( 8 Vdc Surge )</b> |                        |                            |                               |                                   |                                               |              |                       |                            |
| 22                             | AVE226M06B12T-F        | 3                          | 0.28                          | 21.10                             | 23                                            | B            | 4x5.3                 | 2000                       |
| 33                             | AVE336M06B12T-F        | 3                          | 0.28                          | 14.07                             | 31                                            | B            | 4x5.3                 | 2000                       |
| 47                             | AVE476M06C12T-F        | 3                          | 0.28                          | 9.88                              | 52                                            | C            | 5x5.3                 | 1000                       |
| 68                             | AVE686M06D16T-F        | 4.3                        | 0.28                          | 6.83                              | 89                                            | D            | 6.3x5.3               | 1000                       |
| 100                            | AVE107M06D16T-F        | 6.3                        | 0.28                          | 4.64                              | 120                                           | D            | 6.3x5.3               | 1000                       |
| 220                            | AVE227M06X16T-F        | 13.9                       | 0.28                          | 2.11                              | 123                                           | X            | 6.3x7.7               | 1000                       |
| 220                            | AVE227M06E16T-F        | 13.9                       | 0.28                          | 2.11                              | 155                                           | E            | 8x6.5                 | 1000                       |
| 330                            | AVE337M06X16T-F        | 20.8                       | 0.28                          | 1.41                              | 139                                           | X            | 6.3x7.7               | 1000                       |
| 330                            | AVE337M06E16T-F        | 20.8                       | 0.28                          | 1.41                              | 155                                           | E            | 8x6.5                 | 1000                       |
| 470                            | AVE477M06F24T-F        | 29.6                       | 0.28                          | 0.99                              | 252                                           | F            | 8x10                  | 500                        |
| 1000                           | AVE108M06G24T-F        | 63.0                       | 0.28                          | 0.46                              | 458                                           | G            | 10x10                 | 500                        |
| 1500                           | AVE158M06G24T-F        | 94.5                       | 0.28                          | 0.31                              | 458                                           | G            | 10x10                 | 500                        |
| <b>10 Vdc ( 13 Vdc Surge )</b> |                        |                            |                               |                                   |                                               |              |                       |                            |
| 10                             | AVE106M10B12T-F        | 3                          | 0.24                          | 39.79                             | 23                                            | B            | 4x5.3                 | 2000                       |
| 22                             | AVE226M10C12T-F        | 3                          | 0.24                          | 18.09                             | 39                                            | C            | 5x5.3                 | 1000                       |
| 33                             | AVE336M10C12T-F        | 3.3                        | 0.24                          | 12.06                             | 48                                            | C            | 5x5.3                 | 1000                       |
| 47                             | AVE476M10D16T-F        | 4.7                        | 0.24                          | 8.47                              | 67                                            | D            | 6.3x5.3               | 1000                       |
| 68                             | AVE686M10D16T-F        | 6.8                        | 0.24                          | 5.85                              | 98                                            | D            | 6.3x5.3               | 1000                       |
| 100                            | AVE107M10X16T-F        | 10                         | 0.24                          | 3.98                              | 108                                           | X            | 6.3x7.7               | 1000                       |
| 100                            | AVE107M10E16T-F        | 10                         | 0.24                          | 3.98                              | 155                                           | E            | 8x6.5                 | 1000                       |
| 220                            | AVE227M10X16T-F        | 22                         | 0.24                          | 1.81                              | 130                                           | X            | 6.3x7.7               | 1000                       |
| 220                            | AVE227M10E16T-F        | 22                         | 0.24                          | 1.81                              | 155                                           | E            | 8x6.5                 | 1000                       |
| 330                            | AVE337M10F24T-F        | 33                         | 0.24                          | 1.21                              | 252                                           | F            | 8x10                  | 500                        |
| 470                            | AVE477M10G24T-F        | 47                         | 0.24                          | 0.85                              | 458                                           | G            | 10x10                 | 500                        |
| 1000                           | AVE108M10G24T-F        | 100                        | 0.24                          | 0.40                              | 458                                           | G            | 10x10                 | 500                        |

# Type AVE -40 °C to 85 °C General Purpose SMT Capacitors

## Aluminum Electrolytic Capacitors for Filtering and Bypass

### Ratings

| Cap                            | Catalog         | Max. DCL | Max. DF     | Max. E.S.R. | Max. Ripple Current | Case | Size    | Qty.     |
|--------------------------------|-----------------|----------|-------------|-------------|---------------------|------|---------|----------|
| (µF)                           | Part Number     | 2 min.   | @120Hz/20°C | @120Hz/20°C | @120Hz/85°C         | Code | D x L   | Per Reel |
|                                |                 | (µA)     | (%)         | (Ω)         | (mA)                |      | (mm)    | (Each)   |
| <b>16 Vdc ( 20 Vdc Surge )</b> |                 |          |             |             |                     |      |         |          |
| 10                             | AVE106M16A12T-F | 3.0      | 0.2         | 33.16       | 14                  | A    | 3x5.3   | 2000     |
| 10                             | AVE106M16B12T-F | 3.0      | 0.2         | 33.16       | 26                  | B    | 4x5.3   | 2000     |
| 22                             | AVE226M16C12T-F | 3.5      | 0.2         | 15.07       | 44                  | C    | 5x5.3   | 1000     |
| 33                             | AVE336M16D16T-F | 5.3      | 0.2         | 10.05       | 63                  | D    | 6.3x5.3 | 1000     |
| 47                             | AVE476M16D16T-F | 7.5      | 0.2         | 7.05        | 75                  | D    | 6.3x5.3 | 1000     |
| 68                             | AVE686M16D16T-F | 10.9     | 0.2         | 4.88        | 103                 | D    | 6.3x5.3 | 1000     |
| 100                            | AVE107M16X16T-F | 16.0     | 0.2         | 3.32        | 108                 | X    | 6.3x7.7 | 1000     |
| 100                            | AVE107M16E16T-F | 16.0     | 0.2         | 3.32        | 155                 | E    | 8x6.5   | 1000     |
| 220                            | AVE227M16X16T-F | 35.2     | 0.2         | 1.51        | 124                 | X    | 6.3x7.7 | 1000     |
| 220                            | AVE227M16F24T-F | 35.2     | 0.2         | 1.51        | 252                 | F    | 8x10    | 500      |
| 330                            | AVE337M16F24T-F | 52.8     | 0.2         | 1.00        | 252                 | F    | 8x10    | 500      |
| 470                            | AVE477M16G24T-F | 75.2     | 0.2         | 0.71        | 458                 | G    | 10x10   | 500      |
| <b>25 Vdc ( 31 Vdc Surge )</b> |                 |          |             |             |                     |      |         |          |
| 4.7                            | AVE475M25B12T-F | 3.0      | 0.14        | 49.38       | 19                  | B    | 4x5.3   | 2000     |
| 10                             | AVE106M25C12T-F | 3.0      | 0.14        | 23.21       | 32                  | C    | 5x5.3   | 1000     |
| 22                             | AVE226M25D16T-F | 5.5      | 0.14        | 10.55       | 55                  | D    | 6.3x5.3 | 1000     |
| 33                             | AVE336M25D16T-F | 8.3      | 0.14        | 7.03        | 67                  | D    | 6.3x5.3 | 1000     |
| 47                             | AVE476M25X16T-F | 11.8     | 0.14        | 4.94        | 98                  | X    | 6.3x7.7 | 1000     |
| 47                             | AVE476M25E16T-F | 11.8     | 0.14        | 4.94        | 155                 | E    | 8x6.5   | 1000     |
| 68                             | AVE686M25X16T-F | 17.0     | 0.14        | 3.41        | 109                 | X    | 6.3x7.7 | 1000     |
| 68                             | AVE686M25E16T-F | 17.0     | 0.14        | 3.41        | 155                 | E    | 8x6.5   | 1000     |
| 100                            | AVE107M25X16T-F | 25.0     | 0.14        | 2.32        | 124                 | X    | 6.3x7.7 | 1000     |
| 100                            | AVE107M25E16T-F | 25.0     | 0.14        | 2.32        | 155                 | E    | 8x6.5   | 1000     |
| 220                            | AVE227M25F24T-F | 55.0     | 0.14        | 1.06        | 252                 | F    | 8x10    | 500      |
| 330                            | AVE337M25G24T-F | 82.5     | 0.14        | 0.70        | 458                 | G    | 10x10   | 500      |
| <b>35 Vdc ( 44 Vdc Surge )</b> |                 |          |             |             |                     |      |         |          |
| 3.3                            | AVE335M35A12T-F | 3.0      | 0.12        | 60.28       | 8                   | A    | 3x5.3   | 2000     |
| 4.7                            | AVE475M35B12T-F | 3.0      | 0.12        | 42.33       | 20                  | B    | 4x5.3   | 2000     |
| 10                             | AVE106M35C12T-F | 3.5      | 0.12        | 19.89       | 34                  | C    | 5x5.3   | 1000     |
| 22                             | AVE226M35D16T-F | 7.7      | 0.12        | 9.04        | 59                  | D    | 6.3x5.3 | 1000     |
| 33                             | AVE336M35X16T-F | 11.6     | 0.12        | 6.03        | 85                  | X    | 6.3x7.7 | 1000     |
| 33                             | AVE336M35E16T-F | 11.6     | 0.12        | 6.03        | 155                 | E    | 8x6.5   | 1000     |
| 47                             | AVE476M35X16T-F | 16.5     | 0.12        | 4.23        | 98                  | X    | 6.3x7.7 | 1000     |
| 47                             | AVE476M35E16T-F | 16.5     | 0.12        | 4.23        | 155                 | E    | 8x6.5   | 1000     |
| 68                             | AVE686M35X16T-F | 23.8     | 0.12        | 2.93        | 109                 | X    | 6.3x7.7 | 1000     |
| 68                             | AVE686M35E16T-F | 23.8     | 0.12        | 2.93        | 155                 | E    | 8x6.5   | 1000     |
| 100                            | AVE107M35F24T-F | 35.0     | 0.12        | 1.99        | 252                 | F    | 8x10    | 500      |
| 220                            | AVE227M35G24T-F | 77.0     | 0.12        | 0.90        | 458                 | G    | 10x10   | 500      |

# Type AVE -40 °C to 85 °C General Purpose SMT Capacitors

## Aluminum Electrolytic Capacitors for Filtering and Bypass

### Ratings

| Cap                              | Catalog         | Max. DCL | Max. DF     | Max. E.S.R. | Max. Ripple Current | Case | Size    | Qty.     |
|----------------------------------|-----------------|----------|-------------|-------------|---------------------|------|---------|----------|
| (µF)                             | Part Number     | 2 min.   | @120Hz/20°C | @120Hz/20°C | @120Hz/85°C         | Code | D x L   | Per Reel |
|                                  |                 | (µA)     | (%)         | (Ω)         | (mA)                |      | (mm)    | (Each)   |
| <b>50 Vdc ( 63 Vdc Surge )</b>   |                 |          |             |             |                     |      |         |          |
| .10                              | AVE104M50B12T-F | 3.0      | 0.1         | 1657.83     | 3                   | B    | 4x5.3   | 2000     |
| .22                              | AVE224M50B12T-F | 3.0      | 0.1         | 753.56      | 5                   | B    | 4x5.3   | 2000     |
| .33                              | AVE334M50B12T-F | 3.0      | 0.1         | 502.37      | 6                   | B    | 4x5.3   | 2000     |
| .47                              | AVE474M50B12T-F | 3.0      | 0.1         | 352.73      | 7                   | B    | 4x5.3   | 2000     |
| 1                                | AVE105M50B12T-F | 3.0      | 0.1         | 165.78      | 10                  | B    | 4x5.3   | 2000     |
| 2.2                              | AVE225M50B12T-F | 3.0      | 0.1         | 75.36       | 15                  | B    | 4x5.3   | 2000     |
| 3.3                              | AVE335M50B12T-F | 3.0      | 0.1         | 50.24       | 19                  | B    | 4x5.3   | 2000     |
| 4.7                              | AVE475M50C12T-F | 3.0      | 0.1         | 35.27       | 26                  | C    | 5x5.3   | 1000     |
| 10                               | AVE106M50D16T-F | 5.0      | 0.1         | 16.58       | 44                  | D    | 6.3x5.3 | 1000     |
| 22                               | AVE226M50X16T-F | 11.0     | 0.1         | 7.54        | 65                  | X    | 6.3x7.7 | 1000     |
| 22                               | AVE226M50E16T-F | 11.0     | 0.1         | 7.54        | 155                 | E    | 8x6.5   | 1000     |
| 33                               | AVE336M50X16T-F | 16.5     | 0.1         | 5.02        | 82                  | X    | 6.3x7.7 | 1000     |
| 33                               | AVE336M50E16T-F | 16.5     | 0.1         | 5.02        | 155                 | E    | 8x6.5   | 1000     |
| 47                               | AVE476M50X16T-F | 23.5     | 0.1         | 3.53        | 98                  | X    | 6.3x7.7 | 1000     |
| 47                               | AVE476M50F24T-F | 23.5     | 0.1         | 3.53        | 252                 | F    | 8x10    | 500      |
| 68                               | AVE686M50F24T-F | 34.0     | 0.1         | 2.44        | 252                 | F    | 8x10    | 500      |
| 100                              | AVE107M50F24T-F | 50.0     | 0.1         | 1.66        | 252                 | F    | 8x10    | 500      |
| 220                              | AVE227M50G24T-F | 110.0    | 0.1         | 0.75        | 458                 | G    | 10x10   | 500      |
| <b>63 Vdc ( 75 Vdc Surge )</b>   |                 |          |             |             |                     |      |         |          |
| 10                               | AVE106M63E16T-F | 6.3      | 0.1         | 16.58       | 75                  | E    | 8x6.5   | 1000     |
| 22                               | AVE226M63F24T-F | 13.9     | 0.1         | 7.54        | 139                 | F    | 8x10    | 500      |
| 33                               | AVE336M63F24T-F | 20.8     | 0.1         | 5.02        | 139                 | F    | 8x10    | 500      |
| 47                               | AVE476M63G24T-F | 29.6     | 0.1         | 3.53        | 226                 | G    | 10x10   | 500      |
| 68                               | AVE686M63G24T-F | 42.8     | 0.1         | 2.44        | 226                 | G    | 10x10   | 500      |
| 100                              | AVE107M63G24T-F | 63.0     | 0.1         | 1.66        | 226                 | G    | 10x10   | 500      |
| <b>100 Vdc ( 125 Vdc Surge )</b> |                 |          |             |             |                     |      |         |          |
| 10                               | AVE106M2AF24T-F | 10       | 0.1         | 16.58       | 94                  | F    | 8x10    | 500      |
| 22                               | AVE226M2AG24T-F | 22       | 0.1         | 7.54        | 189                 | G    | 10x10   | 500      |
| 33                               | AVE336M2AG24T-F | 33       | 0.1         | 5.02        | 189                 | G    | 10x10   | 500      |



**Стандарт  
Электрон  
Связь**

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

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