



Aluminum Electrolytic Capacitors

+85°C General Purpose, Axial Lead

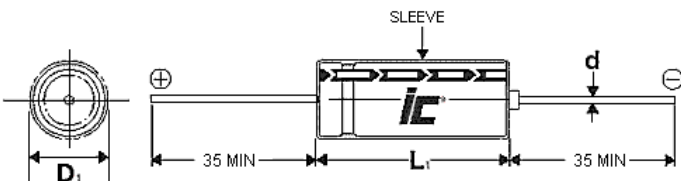
FEATURES

Axial Lead - High Voltage

APPLICATIONS

Filtering - Bypass - Coupling - Blocking

| | | | | | | | | | | | | | | |
|---|-----------------------|--|----------------------------------|------|---------------------------------------|------|------|------------------------|-------------------------|-----|----------------------|-----|-----|--|
| Operating Temperature Range | | -40°C to +85°C (10 to 350 WVDC) -25°C to +85°C (450 WVDC) | | | | | | | | | | | | |
| Capacitance Tolerance | | +20% at 120 Hz, 20°C | | | | | | | | | | | | |
| Surge voltage | WVDC | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 450 | |
| | SVDC | 13 | 20 | 32 | 44 | 63 | 79 | 125 | 200 | 250 | 300 | 400 | 500 | |
| Dissipation Factor | WVDC | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 450 | |
| | Tan δ | .24 | .20 | .16 | .14 | .12 | .1 | .1 | .2 | .2 | .2 | .25 | .25 | |
| Add .02 for every 1000uF above 1000uF | | | | | | | | | | | | | | |
| Leakage current | | 10 to 100 WVDC | | | | | | 160 to 450 WVDC | | | | | | |
| | | 1 Minutes | | | 2 Minutes | | | 1 Minute | | | 1 Minute | | | |
| | | .03CV or 4uA, Whichever is greater | | | .01CV or 3uA, Whichever is greater | | | CV≤1000 .04CV+100uA | | | CV>1000 .1CV+40uA | | | |
| Low temperature stability Impedance ratio (120 Hz) | WVDC | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 450 | |
| | -25°C to +20°C | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | |
| | -40°C to +20°C | 10 | 8 | 5 | 4 | 3 | 3 | 3 | 15 | 15 | 15 | 10 | - | |
| Load Life | | 2000 hours at 85°C with rated WVDC and ripple current applied | | | | | | | | | | | | |
| | | Capacitance change | ≤20% of initial measured value | | | | | | | | | | | |
| | | Dissipation factor | ≤200% of maximum specified value | | | | | | | | | | | |
| | | Leakage current | ≤100% of maximum specified value | | | | | | | | | | | |
| Shelf Life | | 1000 hours at 85°C with no voltage applied | | | | | | | | | | | | |
| | | Capacitance change | ≤20% of initial measured value | | | | | | | | | | | |
| | | Dissipation factor | ≤200% of maximum specified value | | | | | | | | | | | |
| | | Leakage current | ≤100% of maximum specified value | | | | | | | | | | | |
| Ripple Current Multipliers | | Capacitance | Frequency (Hz) | | | | | | Temperature (°C) | | | | | |
| | | uF | 50 | 120 | 400 | 1k | 10k | 50k | +85 | +70 | +60 | +30 | | |
| | | C≤10 | .8 | 1.0 | 1.3 | 1.45 | 1.65 | 1.7 | 1.0 | 1.3 | 1.5 | 1.8 | | |
| | | 10<C≤100 | .8 | 1.0 | 1.23 | 1.36 | 1.48 | 1.53 | 1.0 | 1.3 | 1.5 | 1.8 | | |
| | | 100<C≤1000 | .8 | 1.0 | 1.16 | 1.25 | 1.35 | 1.38 | 1.0 | 1.3 | 1.5 | 1.8 | | |
| C>1000 | .8 | 1.0 | 1.11 | 1.17 | 1.25 | 1.28 | 1.0 | 1.3 | 1.5 | 1.8 | | | | |



| | | | | | | | | | |
|---|-----|-----|-----|-----|------|-----|-----|-----|-----|
| D | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 22 | 25 |
| d | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 |
| B | 0.5 | 0.5 | 0.5 | 0.5 | 0.8 | 0.5 | 0.5 | 1.0 | 1.0 |

D ≤ 10mm, L₁ = L + 1.5mm Max.
D > 10mm, L₁ = L + 2mm Max.
D₁ = D + B Max.

TTA

+85°C, Standard, general purpose 2000 hours

| Capacitance (µF) | WVDC | IC PART NUMBER | Maximum ESR (Ω) 120 Hz, +20°C | Maximum RMS Ripple Current (mA) 120 Hz, +85°C | Dims DxDL (mm) |
|------------------|------|----------------|-------------------------------|---|----------------|
| 0.47 | 100 | 474TTA100M | 352.737 | 10 | 5x13 |
| 1 | 50 | 105TTA050M | 165.786 | 10 | 5x13 |
| 1 | 100 | 105TTA100M | 331.573 | 18 | 5x13 |
| 1 | 160 | 105TTA160M | 331.573 | 14 | 6.3x13 |
| 1 | 350 | 105TTA350M | 331.573 | 20 | 6.3x16 |
| 1 | 450 | 105TTA450M | 414.466 | 19 | 8x16 |
| 2.2 | 50 | 225TTA050M | 90.4289 | 23 | 5x13 |
| 2.2 | 100 | 225TTA100M | 75.3575 | 27 | 5x13 |
| 2.2 | 160 | 225TTA160M | 150.715 | 23 | 6.3x16 |
| 2.2 | 250 | 225TTA250M | 150.715 | 30 | 8x16 |
| 2.2 | 350 | 225TTA350M | 150.715 | 33 | 8x16 |
| 2.2 | 450 | 225TTA450M | 188.394 | 31 | 10x21 |
| 3.3 | 100 | 335TTA100M | 50.2383 | 34 | 5x13 |
| 3.3 | 160 | 335TTA160M | 100.477 | 33 | 8x16 |
| 3.3 | 250 | 335TTA250M | 100.477 | 40 | 8x16 |
| 3.3 | 450 | 335TTA450M | 125.596 | 38 | 8x20 |
| 4.7 | 50 | 475TTA050M | 42.3284 | 36 | 5x13 |
| 4.7 | 100 | 475TTA100M | 50.3284 | 40 | 5x13 |
| 4.7 | 160 | 475TTA160M | 70.5474 | 50 | 8x16 |
| 4.7 | 350 | 475TTA350M | 70.5474 | 55 | 8x20 |
| 4.7 | 450 | 475TTA450M | 88.184 | 50 | 10x26 |
| 10 | 35 | 106TTA035M | 23.2101 | 41 | 5x13 |
| 10 | 50 | 106TTA050M | 19.8944 | 50 | 5x13 |
| 10 | 63 | 106TTA063M | 16.579 | 55 | 5x13 |
| 10 | 100 | 106TTA100M | 16.579 | 65 | 6.3x13 |
| 10 | 160 | 106TTA160M | 33.157 | 80 | 8x20 |
| 10 | 250 | 106TTA250M | 33.157 | 90 | 10x21 |
| 10 | 350 | 106TTA350M | 33.157 | 100 | 13x26 |
| 10 | 450 | 106TTA450M | 41.4466 | 90 | 12.5x25 |
| 15 | 50 | 156TTA050M | 13.2629 | 70 | 5x13 |
| 22 | 35 | 226TTA035M | 10.55 | 70 | 5x13 |
| 22 | 50 | 226TTA050M | 9.0429 | 85 | 6.3x13 |
| 22 | 100 | 226TTA100M | 7.536 | 120 | 8x16 |
| 22 | 160 | 226TTA160M | 15.072 | 130 | 10x26 |
| 22 | 250 | 226TTA250M | 15.072 | 160 | 13x26 |
| 22 | 350 | 226TTA350M | 15.072 | 150 | 13x31 |
| 22 | 450 | 226TTA450M | 18.8394 | 160 | 16x31 |
| 22 | 500 | 226TTA500AQW | 18.8394 | 115 | 16x32 |
| 33 | 25 | 336TTA025M | 8.0381 | 80 | 5x13 |
| 33 | 50 | 336TTA050M | 6.0286 | 115 | 6.3x16 |
| 33 | 100 | 336TTA100M | 5.0238 | 145 | 8x16 |
| 33 | 160 | 336TTA160M | 10.048 | 170 | 13x26 |
| 33 | 250 | 336TTA250M | 10.048 | 190 | 13x31 |
| 33 | 350 | 336TTA350M | 10.048 | 210 | 16x31.5 |
| 33 | 450 | 336TTA450M | 12.5596 | 230 | 16x41 |
| 47 | 16 | 476TTA016M | 7.0547 | 90 | 5x13 |
| 47 | 25 | 476TTA025M | 5.6438 | 105 | 6.3x13 |
| 47 | 50 | 476TTA050M | 4.2328 | 140 | 6.3x16 |
| 47 | 63 | 476TTA063M | 3.527 | 165 | 8x16 |
| 47 | 100 | 476TTA100M | 3.527 | 190 | 8x20 |
| 47 | 160 | 476TTA160M | 7.055 | 225 | 13x31 |
| 47 | 250 | 476TTA250M | 7.055 | 255 | 16x31 |
| 47 | 350 | 476TTA350M | 7.055 | 290 | 16x41 |
| 47 | 450 | 476TTA450MRZ | 8.8184 | 300 | 18x41 |
| 47 | 500 | 476TTA500ARZ | 8.8184 | 290 | 18x40 |
| 68 | 16 | 686TTA016M | 4.8761 | 150 | 6.3x16 |
| 68 | 35 | 686TTA035M | 3.4132 | 200 | 8x16 |
| 68 | 63 | 686TTA063M | 2.438 | 250 | 8x20 |

| Capacitance (µF) | WVDC | IC PART NUMBER | Maximum ESR (Ω) 120 Hz, +20°C | Maximum RMS Ripple Current (mA) 120 Hz, +85°C | Dims DxDL (mm) |
|------------------|------|----------------|-------------------------------|---|----------------|
| 100 | 10 | 107TTA010M | 3.9789 | 130 | 6.3x13 |
| 100 | 25 | 107TTA025M | 2.6526 | 170 | 6.3x13 |
| 100 | 35 | 107TTA035M | 2.231 | 200 | 8x16 |
| 100 | 50 | 107TTA050M | 1.9894 | 220 | 8x16 |
| 100 | 63 | 107TTA063M | 1.658 | 260 | 8x20 |
| 100 | 100 | 107TTA100M | 1.658 | 310 | 10x26 |
| 100 | 160 | 107TTA160M | 3.316 | 400 | 16x31 |
| 100 | 250 | 107TTA250M | 3.316 | 450 | 16x41 |
| 100 | 350 | 107TTA350M | 3.316 | 460 | 18x41 |
| 100 | 450 | 107TTA450M | 4.145 | 370 | 22x51 |
| 150 | 25 | 157TTA025M | 1.7684 | 260 | 8x16 |
| 150 | 35 | 157TTA035M | 1.5473 | 270 | 8x20 |
| 150 | 50 | 157TTA050M | 1.3263 | 285 | 10x16 |
| 150 | 63 | 157TTA063M | 1.052 | 310 | 10x21 |
| 150 | 100 | 157TTA100M | 1.1052 | 515 | 13x26 |
| 220 | 16 | 227TTA016M | 1.5071 | 260 | 8x16 |
| 220 | 25 | 227TTA025M | 1.2057 | 280 | 8x16 |
| 220 | 35 | 227TTA035M | 1.055 | 340 | 8x20 |
| 220 | 50 | 227TTA050M | 0.9043 | 440 | 10x21 |
| 220 | 63 | 227TTA063M | 0.754 | 490 | 10x25 |
| 220 | 100 | 227TTA100M | 0.754 | 560 | 13x26 |
| 220 | 160 | 227TTA160M | 1.507 | 660 | 22x41 |
| 220 | 250 | 227TTA250M | 1.507 | 764 | 22x41 |
| 330 | 16 | 337TTA016M | 1.0048 | 320 | 8x16 |
| 330 | 25 | 337TTA025M | 0.8038 | 385 | 8x20 |
| 330 | 50 | 337TTA050M | 0.6029 | 565 | 10x26 |
| 330 | 63 | 337TTA063M | 0.502 | 650 | 13x26 |
| 330 | 100 | 337TTA100M | 0.5024 | 730 | 13x31 |
| 470 | 10 | 477TTA010M | 0.8466 | 350 | 8x16 |
| 470 | 16 | 477TTA016M | 0.7055 | 450 | 8x20 |
| 470 | 25 | 477TTA025M | 0.5644 | 560 | 10x21 |
| 470 | 35 | 477TTA035M | 0.4938 | 640 | 10x26 |
| 470 | 50 | 477TTA050M | 0.4233 | 740 | 13x26 |
| 470 | 63 | 477TTA063M | 0.353 | 845 | 13x31 |
| 470 | 100 | 477TTA100M | 0.353 | 960 | 16x31 |
| 1000 | 10 | 108TTA010M | 0.3979 | 570 | 10x21 |
| 1000 | 16 | 108TTA016M | 0.3316 | 700 | 10x26 |
| 1000 | 25 | 108TTA025M | 0.2653 | 830 | 13x26 |
| 1000 | 35 | 108TTA035M | 0.2321 | 980 | 13x26 |
| 1000 | 50 | 108TTA050M | 0.1989 | 1130 | 16x30 |
| 1000 | 63 | 108TTA063M | 0.1658 | 1330 | 16x31 |
| 1000 | 80 | 108TTA080M | 0.1658 | 1500 | 16x41 |
| 1000 | 100 | 108TTA100M | 0.1658 | 1640 | 18x41 |
| 1500 | 25 | 158TTA025M | 0.1989 | 1150 | 13x26 |
| 1500 | 35 | 158TTA035M | 0.1768 | 1280 | 16x31 |
| 1500 | 50 | 158TTA050M | 0.1547 | 1480 | 16x41 |
| 2200 | 10 | 228TTA010M | 0.211 | 1100 | 13x26 |
| 2200 | 16 | 228TTA016M | 0.1809 | 1190 | 13x31 |
| 2200 | 25 | 228TTA025M | 0.1507 | 1480 | 16x31 |
| 2200 | 35 | 228TTA035M | 0.1356 | 1580 | 16x31 |
| 2200 | 50 | 228TTA050M | 0.1206 | 1930 | 16x41 |
| 2200 | 63 | 228TTA063M | 0.1055 | 2158 | 18x40 |
| 2200 | 80 | 228TTA080M | 0.106 | 2260 | 22x51 |
| 2200 | 100 | 228TTA100M | 0.1055 | 2560 | 25x51 |
| 3300 | 10 | 338TTA010M | 0.131 | 1435 | 13x31 |
| 3300 | 16 | 338TTA016M | 0.1306 | 1610 | 16x31 |
| 3300 | 25 | 338TTA025M | 0.1105 | 1700 | 16x31 |
| 3300 | 35 | 338TTA035M | 0.0904 | 1810 | 16x41 |

TTA

+85°C, Standard, general purpose 2000 hours

| Capacitance (µF) | WVDC | IC PART NUMBER | Maximum ESR (Ω) 120 Hz, +20°C | Maximum RMS Ripple Current (mA) 120 Hz, +85°C | Dims DxL (mm) |
|------------------|------|-------------------|-------------------------------|---|---------------|
| 3300 | 50 | 338TTA050M | 0.0804 | 2350 | 22x41 |
| 3300 | 63 | 338TTA063M | 0.0804 | 2370 | 22x51 |
| 4700 | 10 | 478TTA010M | 0.1129 | 1730 | 16x31 |
| 4700 | 16 | 478TTA016M | 0.0988 | 1840 | 16x31.5 |
| 4700 | 25 | 478TTA025M | 0.0847 | 2190 | 16x41 |
| 4700 | 35 | 478TTA035M | 0.0705 | 2470 | 22x41 |
| 4700 | 50 | 478TTA050M | 0.705 | 2510 | 22x51 |
| 4700 | 63 | 478TTA063M | 0.0635 | 3080 | 25x60 |
| 6800 | 16 | 688TTA016M | 0.078 | 2310 | 16x41 |

| Capacitance (µF) | WVDC | IC PART NUMBER | Maximum ESR (Ω) 120 Hz, +20°C | Maximum RMS Ripple Current (mA) 120 Hz, +85°C | Dims DxL (mm) |
|------------------|------|-------------------|-------------------------------|---|---------------|
| 6800 | 25 | 688TTA025M | 0.0683 | 2480 | 18x41 |
| 6800 | 35 | 688TTA035M | 0.0634 | 2760 | 22x51 |
| 10000 | 10 | 109TTA010M | 0.063 | 2350 | 18x41 |
| 10000 | 16 | 109TTA016M | 0.063 | 2520 | 18x41 |
| 10000 | 25 | 109TTA025M | 0.063 | 3240 | 22x51 |
| 10000 | 35 | 109TTA035M | 0.0531 | 3500 | 25x51 |
| 15000 | 16 | 159TTA016M | 0.0531 | 3310 | 22x51 |
| 15000 | 25 | 159TTA025M | 0.0486 | 3700 | 22x50 |
| 22000 | 16 | 229TTA016M | 0.0467 | 3600 | 22x51 |