

KEMET WET TANTALUM CAPACITORS

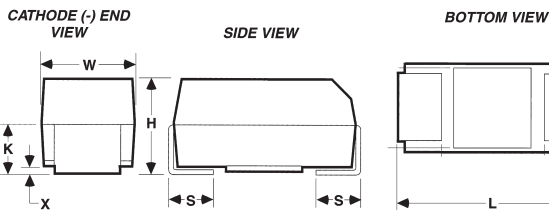
Wet tantalum capacitors are usually applied in circuits where the AC component is small compared to the DC component. Typical uses known to KEMET Electronics include blocking, by-passing, decoupling, and filtering. They are also used in timing circuits. If two of these capacitors are connected "back-to-back" (i.e., negative-to-negative or positive-to-positive), the pair may be used in AC applications (as a non-polar device). Operating temperature: -55°C to +125°C.

APPLICATIONS: Filtering, bypass circuits. Coupling and timing circuits. Low source impedance circuits. High charging current circuits.

DIMENSIONS—MILLIMETERS & (INCHES)

| Case Size | L +0.031 (0.79) | D Max | E ±0.25 (6.35) |
|-----------|-----------------|---------------|----------------|
| A | 0.453 (11.51) | 0.219 (5.56) | 1.50 (38.10) |
| B | 0.641 (16.28) | 0.312 (7.92) | 2.25 (57.15) |
| D | 1.062 (26.97) | 0.406 (10.31) | 2.25 (57.15) |

| Cat. No. | Voltage | Capacitance | Max ESR Ω @ +25°C 120Hz | Max Ripple Current mArms @ 85°C 120Hz | Net Price |
|----------------|---------|-------------|--------------------------------|---------------------------------------|-----------|
| T197A306K006AS | 6 | 30 | 3.98 | 820 | 54.49 |
| T197A566K008AS | 8 | 56 | 3.32 | 900 | 54.49 |
| T197A206K010AS | 10 | 20 | 3.98 | 820 | 54.49 |
| T197A476K010AS | 10 | 47 | 3.67 | 855 | 54.49 |
| T197A156K015AS | 15 | 15 | 4.42 | 780 | 54.49 |
| T198A107K015AS | 15 | 100 | 3.98 | 900 | 61.75 |
| T197A106K025AS | 25 | 10 | 5.31 | 715 | 54.49 |
| T197A226K025AS | 25 | 22 | 4.22 | 800 | 54.49 |
| T198A686K025AS | 25 | 68 | 4.29 | 850 | 61.75 |
| T198B277K025AS | 25 | 270 | 2.7 | 1400 | 79.92 |
| T197A156M030AS | 30 | 15 | 4.42 | 780 | 54.49 |
| T198A566K030AS | 30 | 56 | 5.21 | 800 | 61.75 |
| T197A106K050AS | 50 | 10 | 5.31 | 715 | 54.49 |
| T198A336K050AS | 50 | 33 | 4.95 | 700 | 61.75 |
| T197B476K050AS | 50 | 47 | 3.67 | 1155 | 72.65 |
| T198B127K050AS | 50 | 120 | 2.49 | 1200 | 79.92 |
| T198D337K050AS | 50 | 330 | 1.53 | 1900 | 127.14 |
| T197B396K060AS | 60 | 39 | 4.08 | 1110 | 72.65 |
| T198B107K060AS | 60 | 100 | 2.52 | 1100 | 79.92 |
| T197A685K075AS | 75 | 6.8 | 6.83 | 610 | 54.49 |
| T197B156K075AS | 75 | 15 | 5.31 | 890 | 72.65 |
| T198A226K075AS | 75 | 22 | 5.13 | 600 | 61.75 |
| T197B336K075AS | 75 | 33 | 4.02 | 1000 | 72.65 |
| T198B826K075AS | 75 | 82 | 2.46 | 1000 | 79.92 |
| T197A255K100AS | 100 | 2.5 | 10.62 | 505 | 54.49 |
| T198A106K100AS | 100 | 10 | 5.97 | 800 | 61.75 |
| T197A175K125AS | 125 | 1.7 | 15.61 | 415 | 54.49 |
| T197A365K125AS | 125 | 3.6 | 11.05 | 520 | 54.49 |
| T198B276K125AS | 125 | 27 | 3.54 | 1200 | 79.92 |
| T197D566K125AS | 125 | 56 | 1.54 | 1800 | 112.61 |
| T198D826K125AS | 125 | 82 | 2.82 | 1900 | 127.14 |



KEMET SURFACE MOUNT TANTALUM CHIP CAPACITORS

KEMET's family of solid tantalum chip capacitors is designed and manufactured with the demanding requirements of surface mount technology in mind. These devices extend the advantages of solid tantalum technology to today's surface mount circuit applications.

T491 SERIES—INDUSTRIAL

The leading choice in today's surface mount designs. This product meets or exceeds the requirements of EIA standard 535BAAC.

T494 SERIES—LOW ESR, INDUSTRIAL GRADE

The T494 is a low ESR series that is available in all the same case sizes and CV ratings as the popular T491 series. The T494 offers low ESR performance with the economy of an industrial grade device. This series is targeted for output filtering.

T495 SERIES—LOW ESR, SURGE ROBUST

Designed primarily for output filtering in switch-mode power supplies and DC-to-DC converters, the standard CV T495 values are also an excellent choice for battery-to-ground input filter applications. This series offer several important advantages: very low ESR, high ripple current capability, excellent capacitance stability, plus improved ability to withstand high inrush currents.

The KO-CAP also exhibits a benign failure mode, which eliminates the ignition

failures that can occur in standard MnO₂ Tantalum types. Note also that KO-CAPs may be operated at voltages up to 80% of rated voltage with equivalent or better reliability than standard tantalums operated at 50% of rated voltage. The T520 series captures the best features of multilayer ceramic caps (low ESR and high frequency cap retention), aluminum electrolytics (benign failure mode), and proven solid tantalum technology (volumetric efficiency, surface mount capability, and no wearout mechanism). The KO-CAP can reduce component counts, eliminate through-hole assembly by replacing cumbersome leaded aluminum capacitors, and offer a more cost effective solution to high-cost high-cap ceramic capacitors.

T520 SERIES—KO-CAP POLYMER TANTALUM

The KO-CAP is a tantalum capacitor, with Ta anode and Ta₂O₅ dielectric. However, a conductive, organic, polymer replaces the MnO₂ as the cathode plate of the capacitor. This results in very low ESR and improved cap retention at high frequency.

T525 SERIES—KO-CAP POLYMER TANTALUM

The T525 has been targeted for power management applications. This series offers all of the same advantages as the T520 KO-CAP including very low ESR, improved capacitance retention at high frequency and a benign failure mode, to go along with 125°C capability.

DIMENSIONS—MILLIMETERS & (INCHES)

| Case Size | L | W | H | X | K | F | S |
|-----------|------------|------------|------------|-------------|------------|------------|------------|
| A | 3.2 (.126) | 1.6 (.063) | 1.6 (.063) | 0.05 (.002) | 0.9 (.035) | 1.2 (.047) | 0.8 (.031) |
| B | 3.5 (.138) | 2.8 (.110) | 1.9 (.075) | 0.05 (.002) | 1.1 (.043) | 2.2 (.087) | 0.8 (.031) |
| C | 6.0 (.236) | 3.2 (.126) | 2.5 (.098) | 0.10 (.004) | 1.4 (.055) | 2.2 (.087) | 1.3 (.051) |
| D | 7.3 (.287) | 4.3 (.169) | 2.8 (.110) | 0.10 (.004) | 1.5 (.059) | 2.4 (.094) | 1.3 (.051) |
| X | 7.3 (.287) | 4.3 (.169) | 4.0 (.157) | 0.10 (.004) | 2.3 (.091) | 2.4 (.094) | 1.3 (.051) |

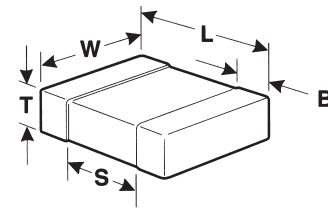
| Cat. No. | WV (DC) | Cap μ F | EIA Case Size | ESR (Ω) @ 25°C 100 kHz Max. | Net Price* |
|----------------|---------|-------------|---------------|--------------------------------------|------------|
| T491A106K006AT | 6.3 | 10 | A | 4.00 | \$121.09 |
| T491A226K006AT | 6.3 | 22 | A | 4.00 | 142.28 |
| T491B226K006AT | 6.3 | 22 | B | 3.50 | 178.60 |
| T491D686K006AT | 6.3 | 68 | D | 0.80 | 392.93 |
| T491B107K006AT | 6.3 | 100 | B | 3.50 | 590.30 |
| T491C107K006AT | 6.3 | 100 | C | 1.20 | 414.42 |
| T491C227K006AT | 6.3 | 220 | C | 1.20 | 1210.87 |
| T491D227K006AT | 6.3 | 220 | D | 0.70 | 606.04 |
| T491A475K010AT | 10 | 4.7 | A | 6.00 | 115.64 |
| T491B475K010AT | 10 | 4.7 | B | 3.50 | 170.43 |
| T491A106K010AT | 10 | 10 | A | 4.00 | 132.29 |
| T491B106K010AT | 10 | 10 | B | 3.50 | 170.43 |
| T491A226K010AT | 10 | 22 | A | 6.00 | 302.72 |
| T491B226K010AT | 10 | 22 | B | 3.00 | 247.02 |
| T491C226K010AT | 10 | 22 | C | 1.80 | 237.94 |
| T491B336K010AT | 10 | 33 | B | 3.50 | 323.61 |
| T491B476K010AT | 10 | 47 | B | 1.00 | 590.30 |
| T491C476K010AT | 10 | 47 | C | 1.20 | 314.52 |
| T491D107K010AT | 10 | 100 | D | 0.70 | 472.85 |
| T491X227K010AT | 10 | 220 | X | 0.50 | 1341.95 |
| T491A105K016AT | 16 | 1.0 | A | 10.00 | 115.64 |
| T491A225K016AT | 16 | 2.2 | A | 6.00 | 115.64 |
| T491A335K016AT | 16 | 3.3 | A | 6.00 | 115.64 |
| T491B335K016AT | 16 | 3.3 | B | 3.50 | 170.43 |
| T491A475K016AT | 16 | 4.7 | A | 6.00 | 121.09 |
| T491B475K016AT | 16 | 4.7 | B | 3.50 | 170.43 |
| T491B685K016AT | 16 | 6.8 | B | 3.50 | 170.43 |
| T491A106K016AT | 16 | 10 | A | 7.00 | 142.28 |
| T491B106K016AT | 16 | 10 | B | 3.50 | 178.60 |
| T491C106K016AT | 16 | 10 | C | 1.80 | 237.94 |
| T491B226K016AT | 16 | 22 | B | 3.00 | 323.61 |
| T491C226K016AT | 16 | 22 | C | 1.60 | 257.92 |
| T491C336K016AT | 16 | 33 | C | 1.20 | 314.52 |
| T491D336K016AT | 16 | 33 | D | 0.80 | 392.93 |
| T491D476K016AT | 16 | 47 | D | 0.80 | 392.93 |
| T491D686K016AT | 16 | 68 | D | 0.70 | 472.85 |
| T491D107K016AT | 16 | 100 | D | 0.70 | 606.04 |
| T491X107K016AT | 16 | 100 | X | 0.70 | 1098.87 |
| T491A105K020AT | 20 | 1.0 | A | 10.00 | 115.64 |
| T491A225K020AT | 20 | 2.2 | A | 7.00 | 115.64 |
| T491B225K020AT | 20 | 2.2 | B | 3.50 | 170.43 |
| T491B335K020AT | 20 | 3.3 | B | 3.50 | 247.02 |
| T491B475K020AT | 20 | 4.7 | B | 3.50 | 170.43 |
| T491B685K020AT | 20 | 6.8 | B | 3.50 | 178.60 |
| T491B106K020AT | 20 | 10 | B | 3.00 | 247.02 |
| T491C106K020AT | 20 | 10 | C | 1.80 | 237.94 |
| T491C226K020AT | 20 | 22 | C | 1.20 | 314.52 |
| T491D226K020AT | 20 | 22 | D | 0.80 | 392.93 |
| T491D336K020AT | 20 | 33 | D | 0.80 | 392.93 |
| T491D476K020AT | 20 | 47 | D | 0.70 | 392.93 |
| T491X686K020AT | 20 | 68 | X | 0.70 | 1098.87 |
| T491X107K020AT | 20 | 100 | X | 0.50 | 115.64 |

*Net Price per 1000.

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| Cat. No. | WV (DC) | Cap μ F | EIA Case Size | ESR (Ω) @ 25°C 100 kHz Max. | Net Price* |
|--------------------|---------|-------------|---------------|--------------------------------------|------------|
| T491A474K025AT | 25 | 0.47 | A | 14.00 | \$115.64 |
| T491A474K025AT | 25 | 1.0 | A | 8.00 | 115.64 |
| T491B155K025AT | 25 | 1.5 | B | 5.00 | 170.43 |
| T491B225K025AT | 25 | 2.2 | B | 4.50 | 178.60 |
| T491C475K025AT | 25 | 4.7 | C | 2.40 | 237.94 |
| T491C685K025AT | 25 | 6.8 | C | 1.90 | 237.94 |
| T491C106K025AT | 25 | 10 | C | 1.50 | 257.92 |
| T491D106K025AT | 25 | 10 | D | 1.00 | 392.93 |
| T491D226K025AT | 25 | 22 | D | 0.80 | 392.93 |
| T491X476K025AT | 25 | 47 | X | 0.70 | 1341.95 |
| T491A104K035AT | 35 | 0.10 | A | 20.00 | 115.64 |
| T491A224K035AT | 35 | 0.22 | A | 18.00 | 115.64 |
| T491A334K035AT | 35 | 0.33 | A | 15.00 | 115.64 |
| T491A474K035AT | 35 | 0.47 | A | 14.00 | 121.09 |
| T491B474K035AT | 35 | 0.47 | B | 8.00 | 170.43 |
| T491B105K035AT | 35 | 1.0 | B | 5.00 | 170.43 |
| T491B225K035AT | 35 | 2.2 | B | 4.00 | 247.02 |
| T491C225K035AT | 35 | 2.2 | C | 3.50 | 237.94 |
| T491C335K035AT | 35 | 3.3 | C | 2.50 | 237.94 |
| T491C475K035AT | 35 | 4.7 | C | 2.50 | 257.92 |
| T491D475K035AT | 35 | 4.7 | D | 1.50 | 392.93 |
| T491D685K035AT | 35 | 6.8 | D | 1.30 | 392.93 |
| T491D106K035AT | 35 | 10 | D | 1.00 | 392.93 |
| T491X226K035AT | 35 | 22 | X | 0.70 | 1098.87 |
| T491X476K035AT | 35 | 47 | X | 0.60 | 1588.36 |
| T491C105K050AT | 50 | 1.0 | C | 5.50 | 294.54 |
| T491D225K050AT | 50 | 2.2 | D | 2.50 | 482.84 |
| T491D335K050AT | 50 | 3.3 | D | 2.00 | 628.44 |
| T491D475K050AT | 50 | 4.7 | D | 1.50 | 482.84 |
| T491X106K050AT | 50 | 10 | X | 0.70 | 1678.27 |
| T494A106K010AT | 10 | 10 | A | 2.00 | 132.29 |
| T494B106K010AT | 10 | 10 | B | 0.80 | 499.48 |
| T494B335K016AT | 16 | 3.3 | B | 2.00 | 499.48 |
| T494B106K016AT | 16 | 10 | B | 0.80 | 544.89 |
| T494C106K016AT | 16 | 10 | C | 0.60 | 728.04 |
| T494B226K016AT | 16 | 22 | B | 1.00 | 817.34 |
| T494D336K016AT | 16 | 33 | D | 0.25 | 1318.34 |
| T494B225K020AT | 20 | 2.2 | B | 1.50 | 499.48 |
| T494B475K020AT | 20 | 4.7 | B | 1.00 | 499.48 |
| T494C106K020AT | 20 | 10 | C | 0.50 | 728.04 |
| T494D226K020AT | 20 | 22 | D | 0.30 | 1318.34 |
| T494X107K020AT | 20 | 100 | X | 0.15 | 5312.70 |
| T494A105K025AT | 25 | 1 | A | 4.00 | 393.53 |
| T494B225K025AT | 25 | 2.2 | B | 1.20 | 544.89 |
| T494C475K025AT | 25 | 4.7 | C | 0.60 | 728.04 |
| T494C106K025AT | 25 | 10 | C | 0.60 | 865.77 |
| T494X476K025AT | 25 | 47 | X | 0.30 | 5312.70 |
| T494B105K035AT | 35 | 1 | B | 2.00 | 499.48 |
| T494C335K035AT | 35 | 3.3 | C | 0.80 | 728.04 |
| T494D475K035AT | 35 | 4.7 | D | 0.70 | 1318.34 |
| T494D106K035AT | 35 | 10 | D | 0.40 | 1318.34 |
| T494D475K035AT | 50 | 4.7 | D | 0.60 | 1318.34 |
| T495D107K010ATE100 | 10 | 100 | D | 0.100 | 2105.40 |
| T495X107K010ATE100 | 10 | 100 | X | 0.100 | 1399.77 |
| T495X227K010ATE100 | 10 | 220 | X | 0.100 | 1755.76 |
| T495D107K016ATE125 | 16 | 100 | D | 0.125 | 905.73 |
| T495X107K016ATE100 | 16 | 100 | X | 0.100 | 1654.05 |
| T495D476K020ATE150 | 20 | 47 | D | 0.175 | 847.61 |
| T495X476K020ATE150 | 20 | 47 | X | 0.150 | 2194.70 |
| T495X686K025ATE200 | 25 | 68 | X | 0.150 | 1513.59 |
| T495D336K025ATE300 | 25 | 33 | D | 0.300 | 847.61 |
| T495X336K025ATE175 | 25 | 33 | X | 0.175 | 1271.42 |
| T495D106K035ATE300 | 35 | 10 | D | 0.300 | 1695.22 |
| T495X106K035ATE250 | 35 | 10 | X | 0.250 | 3874.79 |
| T495D226K035ATE300 | 35 | 22 | D | 0.300 | 847.61 |
| T495X226K035ATE275 | 35 | 22 | X | 0.275 | 1654.05 |
| T520D477M004ATE018 | 4 | 470 | D | 0.018 | 1743.66 |
| T520B476M006ATE040 | 6 | 47 | B | 0.04 | 944.48 |
| T520B107M006ATE040 | 6 | 100 | B | 0.04 | 1017.13 |
| T520D227M006ATE009 | 6 | 220 | D | 0.009 | 1888.96 |
| T520D337M006ATE015 | 6 | 330 | D | 0.015 | 1707.33 |
| T520D107M010ATE055 | 10 | 100 | D | 0.055 | 1525.70 |
| T520D227M010ATE018 | 10 | 220 | D | 0.018 | 1743.66 |
| T520D476M016ATE070 | 10 | 47 | D | 0.07 | 2361.20 |
| T525D227M010ATE025 | 6 | 220 | D | 0.025 | 3796.08 |
| T525D107M010ATE025 | 10 | 100 | D | 0.025 | 3796.08 |
| T525D476M016ATE035 | 16 | 47 | D | 0.035 | 3796.08 |

*Net Price per 1000.



KEMET MULTILAYER CERAMIC CHIP CAPACITORS

KEMET multilayer ceramic chip capacitors are produced in plants designed specifically for chip capacitor manufacture. The process features a high degree of mechanization as well as precise controls over raw materials and process conditions. Manufacturing is supplemented by extensive technology, Engineering and Quality Assurance programs. KEMET ceramic chip capacitors are offered in the five most popular temperature characteristics. Standard end terminations use a nickel barrier layer and a tin overplate to provide excellent solderability for the customer. **APPLICATION NOTE:** Higher voltage capacitor can be used in a lower voltage application. Better tolerance capacitor can be used. Standard tolerances: C0G=5%, X7R=10%. Z5U=20%.

DIMENSIONS—MILLIMETERS & (INCHES)

| Size Code | L Length | W Width | T Thickness Max. | B Bandwidth | S Min. Separation |
|-----------|------------|-------------|------------------|--------------|-------------------|
| 0603 | 1.6 (.063) | 0.8 (.032) | 0.9 (.035) | 0.35 (.014) | 0.7 (.028) |
| 0805 | 2.0 (.078) | 1.25 (.049) | 1.4 (.055) | 0.508 (.020) | 0.61 (.024) |
| 1206 | 3.2 (.126) | 1.6 (.063) | 1.5 (.059) | 0.508 (.020) | — |
| 1210 | 3.2 (.126) | 2.5 (.098) | 1.7 (.067) | 0.508 (.020) | — |

0402 CASE SIZE

| Cat. No. | Type | WV (DC) | Cap (μ F) | Tol. | Net Price* |
|------------------|------|---------|----------------|--------|------------|
| C0402C100J5GACTU | NPO | 50V | 10pF | +/-5% | \$27.25 |
| C0402C220J5GACTU | NPO | 50V | 22pF | +/-5% | 29.06 |
| C0402C330J5GACTU | NPO | 50V | 33pF | +/-5% | 29.06 |
| C0402C470J5GACTU | NPO | 50V | 47pF | +/-5% | 29.06 |
| C0402C101J3GACTU | NPO | 25V | 100pF | +/-5% | 29.06 |
| C0402C102K5RACTU | X7R | 50V | 1000pF | +/-10% | 30.27 |
| C0402C103K4RACTU | X7R | 16V | .01 μ F | +/-10% | 30.27 |
| C0402C103K3RACTU | X7R | 25V | .01 μ F | +/-10% | 30.27 |
| C0402C104K8RACTU | X7R | 10V | 0.1 μ F | +/-10% | 45.41 |
| C0402C104K4RACTU | X7R | 16V | 0.1 μ F | +/-10% | 45.41 |
| C0402C105K9PACTU | X5R | 6.3V | 1.0 μ F | +/-10% | 112.01 |

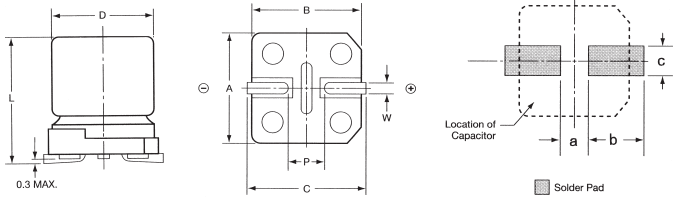
*Net Price per 1000.

0603 CASE SIZE

| Cat. No. | Type | WV (DC) | Cap (μ F) | Tol. | Net Price* |
|------------------|------|---------|----------------|--------|------------|
| C0603C100J5GACTU | NPO | 50V | 10pF | +/-5% | \$39.35 |
| C0603C150J5GACTU | NPO | 50V | 15pF | +/-5% | 39.35 |
| C0603C220J5GACTU | NPO | 50V | 22pF | +/-5% | 39.35 |
| C0603C330J5GACTU | NPO | 50V | 33pF | +/-5% | 127.14 |
| C0603C470J5GACTU | NPO | 50V | 47pF | +/-5% | 39.35 |
| C0603C101J3GACTU | NPO | 50V | 100pF | +/-5% | 39.35 |
| C0603C221J5GACTU | NPO | 50V | 220pF | +/-5% | 53.28 |
| C0603C471J5GACTU | NPO | 50V | 470pF | +/-5% | 53.28 |
| C0603C102K5RACTU | X7R | 50V | 1000pF | +/-10% | 29.06 |
| C0603C222K5RACTU | X7R | 50V | 2200pF | +/-10% | 35.12 |
| C0603C472K5RACTU | X7R | 50V | 4700pF | +/-10% | 157.41 |
| C0603C103K5RACTU | X7R | 50V | 0.01 μ F | +/-10% | 23.01 |
| C0603C223K5RACTU | X7R | 50V | 0.02 μ F | +/-10% | 175.58 |
| C0603C473K3RACTU | X7R | 25V | 0.047 μ F | +/-10% | 59.33 |
| C0603C104K4RACTU | X7R | 16V | 0.1 μ F | +/-10% | 30.27 |
| C0603C104K3RACTU | X7R | 25V | 0.1 μ F | +/-10% | 64.78 |
| C0603C224K4RACTU | X7R | 16V | 0.22 μ F | +/-10% | 254.28 |
| C0603C474K8PACTU | X5R | 10V | 0.47 μ F | +/-10% | 142.88 |
| C0603C105K8PACTU | X5R | 10V | 1.0 μ F | +/-10% | 108.98 |
| C0603C225K8PACTU | X5R | 6.3V | 2.2 μ F | +/-10% | 181.62 |
| C0603C475K9PACTU | X5R | 6.3V | 4.7 μ F | +/-10% | 332.99 |
| C0603C105K4PACTU | X5R | 16V | 1.0 μ F | +/-10% | 124.12 |
| C0603C475K9PACTU | Y5V | 25V | 0.1 μ F | +/-20% | 332.99 |
| C0603C224M3PACTU | Y5V | 25V | 0.22 μ F | +/-20% | 172.55 |

*Net Price per 1000.

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EMV AND EMVK SERIES SURFACE MOUNT ALUMINUM CAPACITORS

Operating temperature range for **Series EMV**: -40°C to +85°C. Rated lifetime for **Series EMV**: 1000 to 2000 hours at +85°C depending on case size. Operating temperature range for **Series EMVK**: -40°C to +105°C. Rated lifetime for **Series EMVK**: 1000 to 2000 hours at +105°C depending on case size. Capacitance tolerance: ±20% (+20°C, 120 Hz). Leakage current: I = 0.01CV or 3µA, whichever is greater, after 2 minutes at +20°C.

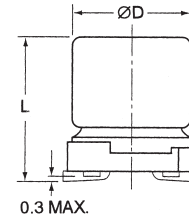
CASE AND SOLDER PAD DIMENSIONS

| Case Code | ØD ±0.5 | L | A ±0.2 | B ±0.2 | C ±0.2 | W | P | a | b | c |
|-----------|---------|---------|--------|--------|--------|-----------|-----|-----|-----|-----|
| B55 | Ø3 | 5.2±0.3 | 3.3 | 3.3 | 3.7 | 0.45-0.75 | 0.8 | 0.8 | 2.2 | 1.6 |
| D55 | Ø4 | 5.2±0.3 | 4.3 | 4.3 | 5.1 | 0.5-0.8 | 1 | 1 | 2.6 | 1.6 |
| E55 | Ø5 | 5.2±0.3 | 5.3 | 5.3 | 5.9 | 0.5-0.8 | 1.4 | 1.4 | 3 | 1.6 |
| F55 | Ø6.3 | 5.2±0.3 | 6.6 | 6.6 | 7.2 | 0.5-0.8 | 1.9 | 1.9 | 3.5 | 1.6 |
| F60 | Ø6.3 | 5.7±0.3 | 6.6 | 6.6 | 7.2 | 0.5-0.8 | 1.9 | 1.9 | 3.5 | 1.6 |
| H63 | Ø8 | 6.3±0.5 | 8.3 | 8.3 | 9 | 0.5-0.8 | 2.3 | 2.3 | 4.5 | 1.6 |
| HA0 | Ø8 | 10±0.5 | 8.3 | 8.3 | 9 | 0.7-1.1 | 3.1 | 3.1 | 4.2 | 2.2 |
| JA0 | Ø10 | 10±0.5 | 10.3 | 10.3 | 11 | 0.7-1.1 | 4.5 | 4.5 | 4.4 | 2.2 |

| Cat. No. | WV (DC) | Cap (µF) | D mm | L mm | Max ESR Ohms 120Hz +20°C | *Max Ripple mA 120Hz 85°C | Net Price |
|---------------------|---------|----------|------|------|--------------------------|---------------------------|--------------|
| EMVK6R3ADA220MD55G† | 6.3 | 22 | 4 | 5.2 | 22.602 | 21 | \$.14 |
| EMVK6R3DA470ME55G† | 6.3 | 47 | 5 | 5.2 | 10.58 | 36 | \$.19 |
| EMVK6R3ADA101MF55G | 6.3 | 100 | 6.3 | 5.2 | 4.973 | 56 | \$.20 |
| EMV-6R3ADA471MHA0G | 6.3 | 470 | 8 | 10 | 1.411 | 265 | \$.36 |
| EMVK6R3ADA102MJA0G | 6.3 | 1000 | 10 | 10 | 0.663 | 410 | \$.55 |
| EMVK100ADA330ME55G | 10 | 33 | 5 | 5.2 | 12.055 | 34 | \$.19 |
| EMV-100ADA101MF60G | 10 | 100 | 6.3 | 5.7 | 3.315 | 70 | \$.15 |
| EMVK160ADA100MD55G† | 16 | 10 | 4 | 5.2 | 33.15 | 16 | \$.14 |
| EMVK160ADA220ME55G† | 16 | 22 | 5 | 5.2 | 15.068 | 30 | \$.19 |
| EMVK160ADA470MF55G† | 16 | 47 | 6.3 | 5.2 | 7.053 | 48 | \$.20 |
| EMV-160ADA101MF55G | 16 | 100 | 6.3 | 5.2 | 4.31 | 58 | \$.19 |
| EMV-160ADA221MHA0G | 16 | 220 | 8 | 10 | 1.959 | 215 | \$.36 |
| EMV-160ADA331MHA0G | 16 | 330 | 8 | 10 | 1.005 | 270 | \$.36 |
| EMV-160ADA471MJA0G | 16 | 470 | 10 | 10 | 0.917 | 330 | \$.48 |
| EMVK250ADA330MF55G† | 25 | 33 | 6.3 | 5.2 | 8.036 | 45 | \$.20 |
| EMV-250ADA470MF60G | 25 | 47 | 6.3 | 5.7 | 4.937 | 65 | \$.48 |
| EMVK250ADA101MHA0G | 25 | 100 | 8 | 10 | 2.652 | 180 | \$.37 |
| EMV-250ADA101MH63G | 25 | 100 | 8 | 6.3 | 2.652 | 145 | \$.22 |
| EMV-350ADA100ME55G | 35 | 10 | 5 | 5.2 | 19.89 | 25 | \$.18 |
| EMVK350ADA100ME55G | 35 | 10 | 5 | 5.2 | 23.205 | 25 | \$.19 |
| EMVK350ADA220MF55G | 35 | 22 | 6.3 | 5.2 | 10.548 | 40 | \$.20 |
| EMVK350ADA330MH63G | 35 | 33 | 8 | 6.3 | 7.032 | 80 | \$.23 |
| EMV-350ADA330MF60G | 35 | 33 | 6.3 | 5.7 | 6.027 | 55 | \$.19 |
| EMV-350ADA470MH63G | 35 | 47 | 8 | 6.3 | 4.937 | 105 | \$.28 |
| EMV-350ADA101MHA0G | 35 | 100 | 8 | 10 | 2.321 | 175 | \$.36 |
| EMVK350ADA221MJA0G | 35 | 220 | 10 | 10 | 1.055 | 375 | \$.55 |
| EMV-500ADA1R0MB55G | 50 | 1 | 3 | 5.2 | 198.9 | 5.6 | \$.18 |
| EMVK500ADA1R0MD55G | 50 | 1 | 4 | 5.2 | 198.9 | 5.6 | \$.14 |
| EMVK500ADA2R2MD55G | 50 | 2.2 | 4 | 5.2 | 90.409 | 10 | \$.14 |
| EMVK500ADA4R7ME55G | 50 | 4.7 | 5 | 5.2 | 42.319 | 19 | \$.19 |
| EMVK500ADA100MF55G† | 50 | 10 | 6.3 | 5.2 | 19.89 | 29 | \$.20 |
| EMVK500ADA470MHA0G | 50 | 47 | 8 | 10 | 4.232 | 170 | \$.37 |
| EMV-500ADA101MJA0G | 50 | 100 | 10 | 10 | 1.989 | 195 | \$.48 |
| EMVK500ADA101MJA0G | 50 | 100 | 10 | 10 | 1.989 | 310 | \$.55 |

*Ripple rating for EMVK is at 105°C.

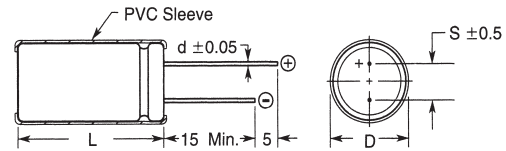
†Same EMVK Series offered as replacement for EMV Series.



APXC SERIES ULTRA LOW ESR SURFACE MOUNT SOLID POLYMER ALUMINUM CAPACITOR

Lead-free construction, ultra low ESR. Tolerance: ±20%. Temperature range: -55°C to 105°C. Rated lifetime: 2000 hours at 105°C. Leakage current I=0.2CV max after 2 minutes at +20°C.

| Cat. No. | WV (DC) | Cap (µF) | D mm | L mm | Case Code | Max ESR Ohms 120Hz +20°C | Max Ripple mA 120Hz 85°C | Net Price |
|--------------------|---------|----------|------|------|-----------|--------------------------|--------------------------|--------------|
| APXC2R5ARA181ME60G | 2.5 | 180 | 5.0 | 5.7 | E60 | 0.030 | 2000 | \$.67 |
| APXC2R5ARA271MF60G | 2.5 | 270 | 6.3 | 5.7 | F60 | 0.020 | 2700 | \$.97 |
| APXC2R5ARA471MH70G | 2.5 | 470 | 8.0 | 6.7 | H70 | 0.017 | 3420 | 1.50 |
| APXC4R0ARA151ME60G | 4.0 | 150 | 5.0 | 5.7 | E60 | 0.030 | 2000 | \$.82 |
| APXC4R0ARA221MF60G | 4.0 | 220 | 6.3 | 5.7 | F60 | 0.021 | 2640 | \$.97 |
| APXC4R0ARA331MH70G | 4.0 | 330 | 8.0 | 6.7 | H70 | 0.018 | 3300 | 1.50 |
| APXC6R3ARA101ME60G | 6.3 | 100 | 5.0 | 5.7 | E60 | 0.035 | 1780 | \$.82 |
| APXC6R3ARA181MF60G | 6.3 | 180 | 6.3 | 5.7 | F60 | 0.022 | 2580 | \$.97 |
| APXC6R3ARA221MH70G | 6.3 | 220 | 8.0 | 6.7 | H70 | 0.018 | 3300 | 1.50 |
| APXC100ARA560ME60G | 10 | 56 | 5.0 | 5.7 | E60 | 0.040 | 1660 | \$.82 |
| APXC100ARA820MF60G | 10 | 82 | 6.3 | 5.7 | F60 | 0.023 | 2400 | \$.97 |
| APXC100ARA151MH70G | 10 | 150 | 8.0 | 6.7 | H70 | 0.020 | 3160 | 1.50 |
| APXC160ARA390MF60G | 16 | 39 | 5.0 | 5.7 | F60 | 0.045 | 1570 | \$.97 |
| APXC160ARA820MH70G | 16 | 82 | 6.3 | 5.7 | H70 | 0.025 | 2300 | 1.50 |
| APXC160ARA270ME60G | 16 | 27 | 8.0 | 6.7 | E60 | 0.025 | 2830 | \$.82 |



ESME AND EKME SERIES MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

The ESME and EKME series capacitors are standard general purpose capacitors. This series, except for those rated at 350-450 volts, were developed to withstand HCFC cleaning agents for five minutes by ultrasonic, vapour, or immersion. Operating temperature range for **Series ESME**: -40°C to +85°C for 6.3 to 400V and -25°C to +85°C for 450V. Capacitance tolerance for **Series ESME**: ±20% (+20°C, 120Hz). Rated lifetime for **Series ESME**: 2000 hours at +85°C. Operating temperature range for **Series EKME**: -55°C to +105°C for 6.3 to 100V and -40°C to +105°C for 160 to 400V. Capacitance tolerance for **Series EKME**: ±20% (+20°C, 120Hz). Rated lifetime for **Series EKME**: 1000 hours at +105°C.

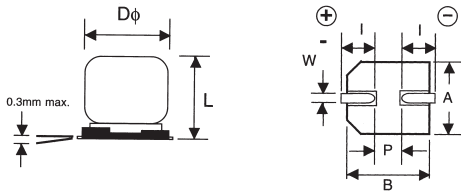
SME LEAKAGE CURRENT RATINGS

| DC Rated Voltage | Test Time | Leakage Current (µA) |
|------------------|-----------------|--|
| 6.3-100V | After 1 minute | I = 0.03CV or 4µA, whichever is greater |
| | After 2 minutes | I = 0.01CV or 3µA, whichever is greater |
| 160-450V | After 1 minute | CV ≤ 1000: I = 0.1CV + 40, CV > 1000: I = 0.04CV + 100 |
| | After 5 minutes | CV ≤ 1000: I = 0.03CV + 15, CV > 1000: I = 0.02CV + 25 |

KME LEAKAGE CURRENT RATINGS

| DC Rated Voltage | Test Time | Leakage Current (µA) |
|------------------|-----------------|--|
| 6.3-100V | After 2 minutes | I = 0.002CV or 2µA, whichever is greater |
| 160-450V | After 1 minute | CV ≤ 1000: I = 0.1CV + 40, CV > 1000: I = 0.04CV + 100 |
| | After 5 minutes | CV ≤ 1000: I = 0.03CV + 15, CV > 1000: I = 0.02CV + 25 |

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NIC COMPONENTS SURFACE MOUNT ALUMINUM CAPACITORS

NIC Components surface mount capacitors are cylindrical leadless type designed for automatic mounting and reflow soldering. They come in a wide range of CV values. For other additional capacitance values and features, please refer to the Electro Sonic Web-site www.e-sonic.com or contact your sales representative.

NACE SERIES: Low cost general purpose surface mount capacitors. **SPECIFICATIONS:** Load life at rated temperature: 2000 hours. Operating temperature range: -40°C to +85°C. Cap. Tolerance: ±20%. Max leakage current after 2 minutes @ 20°C: 0.01CV or 3mA, whichever is greater. Voltage range: 4.0 to 100VDC. Capacitance range: 0.1 to 6800µF.

NACEW SERIES: Wide temperature range to 105°C and wide CV range. **SPECIFICATIONS:** Load life at rated temperature: 1000 hours (4 to 6.3mm dia. & 10 × 8mm), 2000 hours (8 to 16mm dia.). Operating temperature range: -55°C to +105°C. Cap. Tolerance: ±20%. Max leakage current after 2 minutes @ 20°C: 0.01CV or 3mA, whichever is greater. Voltage range: 6.3 to 100VDC. Capacitance range: 0.1 to 6800µF.

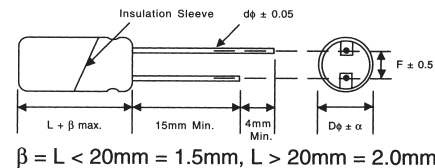
NACZ SERIES: Very low impedance and high ripple current at 100KHz. Suitable for DC/DC converter applications. **SPECIFICATIONS:** Load life at rated temperature: 1000 hours (4 to 6.3mm dia.), 2000 hours (8 to 12.5mm dia.). Operating temperature range: -55°C to +105°C. Cap. Tolerance: ±20%. Max leakage current after 2 minutes @ 20°C: 0.01CV or 3mA, whichever is greater. Voltage range: 6.3 to 50VDC. Capacitance range: 4.7 to 3300µF.

DIMENSIONS—MILLIMETERS

| Case Size | D | L | A | B | I | P | W |
|-----------|------|------|------|------|-----|-----|---------|
| 4x5.5 | 4.0 | 5.5 | 4.3 | 4.3 | 1.8 | 1.0 | 0.5~0.8 |
| 4x6.3 | 4.0 | 6.3 | 4.3 | 4.3 | 2.0 | 1.0 | 0.5~0.8 |
| 5x5.5 | 5.0 | 5.5 | 5.3 | 5.3 | 2.1 | 1.4 | 0.5~0.8 |
| 5x6.3 | 5.0 | 6.3 | 5.3 | 5.3 | 2.3 | 1.4 | 0.5~0.8 |
| 6.3x5.5 | 6.3 | 5.5 | 6.6 | 6.6 | 2.5 | 2.2 | 0.5~0.8 |
| 6.3x6.3 | 6.3 | 6.3 | 6.6 | 6.6 | 2.5 | 2.2 | 0.5~0.8 |
| 6.3x8 | 6.3 | 8.0 | 6.6 | 6.6 | 2.5 | 2.2 | 0.5~0.8 |
| 8x10.5 | 8.0 | 10.5 | 8.3 | 8.3 | 2.9 | 3.2 | 0.7~1.0 |
| 10x10.5 | 10.0 | 10.5 | 10.3 | 10.3 | 3.2 | 4.6 | 1.1~1.4 |

| Cat. No. | Cap (µF) | Case Size | Max Ripple mA | Max ESR Ohms | Net Price |
|-------------------------|----------|-----------|---------------|--------------|-----------|
| 16 VDC | | | | | |
| NACE100M16V4X5.5TR13F | 10 | 4x5.5 | 25 | 26.5 | \$.11 |
| NACE330M16V6.3X5.5TR13F | 33 | 6.3x5.5 | 57 | 8.04 | .16 |
| NACE470M16V6.3X5.5TR13F | 47 | 6.3x5.5 | 68 | 5.65 | .16 |
| NACE101M16V6.3X5.5TR13F | 100 | 6.3x5.5 | 86 | 2.66 | .16 |
| NACE221M16V6.3X8TR13F | 220 | 6.3x8 | 150 | 1.21 | .34 |
| NACE471M16V8X10.5TR13F | 470 | 8x10.5 | 330 | 0.71 | .45 |
| 25 VDC | | | | | |
| NACE330M25V6.3X5.5TR13F | 33 | 6.3x5.5 | 63 | 7.04 | .16 |
| NACE331M25V8X10.5TR13F | 330 | 8x10.5 | 310 | 0.81 | .45 |
| NACE471M25V10X10.5TR13F | 470 | 10x10.5 | 430 | 0.57 | .65 |
| 35 VDC | | | | | |
| NACE100M35V5X5.5TR13F | 10 | 5x5.5 | 30 | 19.9 | .14 |
| NACE220M35V6.3X5.5TR13F | 22 | 6.3x5.5 | 54 | 9.05 | .16 |
| NACE330M35V6.3X6.3TR13F | 33 | 6.3x6.3 | 60 | 6.04 | .26 |
| NACE101M35V6.3X8TR13F | 100 | 6.3x8 | 130 | 1.99 | .34 |
| NACE221M35V8X10.5TR13F | 220 | 8x10.5 | 270 | 1.06 | .45 |
| NACE331M35V10X10.5TR13F | 330 | 10x10.5 | 340 | 0.71 | .65 |

| Cat. No. | Cap (µF) | Case Size | Max Ripple mA | Max ESR Ohms | Net Price |
|--------------------------|----------|-----------|---------------|--------------|-----------|
| 50 VDC | | | | | |
| NACE1R0M50V4X5.5TR13F | 1 | 4x5.5 | 10 | 166 | \$.11 |
| NACE100M50V6.3X5.5TR13F | 10 | 6.3x5.5 | 34 | 16.6 | .16 |
| NACE220M50V6.3X6.3TR13F | 22 | 6.3x6.3 | 58 | 7.54 | .26 |
| NACE330M50V6.3X8TR13F | 33 | 6.3x8 | 65 | 5.03 | .34 |
| NACE470M50V6.3X8TR13F | 47 | 6.3x8 | 90 | 3.53 | .34 |
| NACE101M50V8X10.5TR13F | 100 | 8x10.5 | 200 | 1.99 | .45 |
| NACE221M50V10X10.5TR13F | 220 | 10x10.5 | 320 | 0.91 | .65 |
| 16 VDC | | | | | |
| NACEW100M16V4X5.5TR13F | 10 | 4x5.5 | 18 | 26.5 | .16 |
| NACEW470M16V6.3X5.5TR13F | 47 | 6.3x5.5 | 48 | 5.65 | .20 |
| NACEW101M16V6.3X5.5TR13F | 100 | 6.3x5.5 | 60 | 2.66 | .20 |
| 35 VDC | | | | | |
| NACEW47R7M35V4X5.5TR13F | 4.7 | 4x5.5 | 14 | 42.3 | .16 |
| NACEW220M35V6.3X5.5TR13F | 22 | 6.3x5.5 | 38 | 9.05 | .20 |
| NACEW101M35V6.3X8TR13F | 100 | 6.3x8 | 84 | 2.32 | .37 |
| NACEW221M35V8X10.5TR13F | 220 | 8x10.5 | 190 | 1.06 | .55 |
| 50 VDC | | | | | |
| NACEW1R0M50V4X5.5TR13F | 1 | 4x5.5 | 7 | 166 | .16 |
| NACEW100M50V6.3X5.5TR13F | 10 | 6.3x5.5 | 24 | 16.6 | .20 |
| NACEW101M50V8X10.5TR13F | 100 | 8x10.5 | 140 | 1.99 | .55 |
| 16 VDC | | | | | |
| NACZ101M16V6.3X6.3TR13F | 100 | 6.3x6.3 | 230 | 0.44 | .30 |
| NACZ221M16V6.3X8TR13F | 220 | 6.3x5.5 | 280 | 0.34 | .42 |
| NACZ471M16V8X10.5TR13F | 470 | 8x10.5 | 450 | 0.17 | .60 |
| 25 VDC | | | | | |
| NACZ100M25V4X6.3TR13F | 10 | 4x6.3 | 80 | 1.8 | .22 |
| NACZ331M25V8X10.5TR13F | 330 | 8x10.5 | 450 | 0.17 | .60 |
| NACZ471M25V10X10.5TR13F | 470 | 10x10.5 | 670 | 0.09 | .70 |
| 35 VDC | | | | | |
| NACZ100M35V5X6.3TR13F | 10 | 5x6.3 | 150 | 0.76 | .28 |
| NACZ330M35V6.3X6.3TR13F | 33 | 6.3x6.3 | 230 | 0.44 | .30 |
| NACZ331M35V10X10.5TR13F | 330 | 10x10.5 | 670 | 0.09 | .70 |
| 50 VDC | | | | | |
| NACZ100M50V6.3X6.3TR13F | 10 | 6.3x6.3 | 165 | 0.88 | .30 |
| NACZ330M50V6.3X8TR13F | 33 | 6.3x8 | 185 | 0.75 | .42 |
| NACZ101M50V8X10.5TR13F | 100 | 8x10.5 | 300 | 0.4 | .60 |
| NACZ221M50V10X10.5TR13F | 220 | 10x10.5 | 670 | 0.22 | .70 |



NIC COMPONENTS RADIAL LEADED ALUMINUM CAPACITORS

NIC Components offers a wide range of radial mount aluminum capacitors. To search for additional capacitance values or other features, please refer to the Electro Sonic Web-site www.e-sonic.com or contact your sales representative.

NRSA SERIES: Low cost general purpose radial leaded aluminum capacitors. **SPECIFICATIONS:** Load life at rated temperature: 2000 hours. Operating temperature range: -40°C to +85°C. Cap tolerance: ±20%. Max leakage current after 2 minutes @ 20°C: 0.01CV or 3mA, whichever is greater. Voltage range: 6.3 to 100VDC. Capacitance range: 0.47 to 10000µF.

NRSZ SERIES: Low impedance at high frequency suitable for switching power supplies and converters. **SPECIFICATIONS:** Load life at rated temperature: 5000 hours (12.5mm dia.), 3000 hours (8~10mm dia.), 2000 hours (5~6.3mm dia.). Operating temperature range: -55°C to +105°C. Cap tolerance: ±20%. Max leakage current after 2 minutes @ 20°C: 0.01CV or 3mA, whichever is greater. Voltage range: 6.3 to 100VDC. Capacitance range: 0.47 to 10,000µF.

| Cat. No. | Cap (µF) | D x L x F mm | Max. Ripple | Max ESR Ohms | Net Price |
|---------------------|----------|--------------|-------------|--------------|-----------|
| 16 VDC | | | | | |
| NRSA330M16V5X11F | 33 | 5x11x2.0 | 80 | 8.05 | \$.04 |
| NRSA470M16V5X11F | 47 | 5x11x2.0 | 95 | 5.65 | .04 |
| NRSA101M16V6.3X11F | 100 | 6.3x11x2.5 | 160 | 2.66 | .06 |
| NRSA221M16V8X11.5F | 220 | 8x11.5x3.5 | 260 | 1.21 | .11 |
| NRSA331M16V8X11.5F | 330 | 8x11.5x3.5 | 330 | 0.805 | .11 |
| NRSA471M16V10X12.5F | 470 | 10x12.5x5.0 | 440 | 0.565 | .14 |
| NRSA102M16V10X20F | 1000 | 10x20x5.0 | 760 | 0.266 | .24 |
| NRSA222M16V12.5X25F | 2200 | 12.5x25x5.0 | 1200 | 0.136 | .51 |
| NRSA332M16V16X25F | 3300 | 16x25x7.5 | 1400 | 0.101 | .78 |

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