

## KEMET WET TANTALUM CAPACITORS

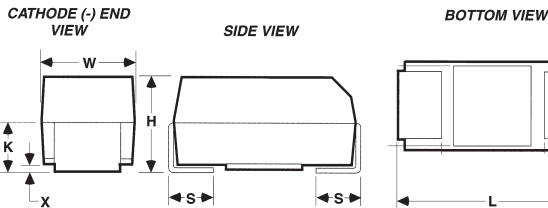
Wet tantalum capacitors are usually applied in circuits where the AC component is small compared to the DC component. Typical uses known to KEMET Electronics include blocking, by-passing, decoupling, and filtering. They are also used in timing circuits. If two of these capacitors are connected "back-to-back" (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 $\Omega$ @ +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 MnO<sub>2</sub> 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 Ta<sub>2</sub>O<sub>5</sub> dielectric. However, a conductive, organic, polymer replaces the MnO<sub>2</sub> 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)

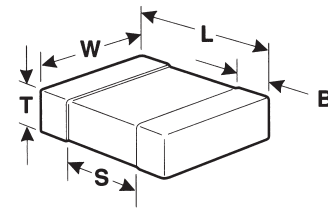
Cat. No.	WV (DC)	Cap $\mu$ F	EIA Case Size	ESR ( $\Omega$ ) @ 25°C 100 kHz Max.	Net Price*
T491A106K006AT	6.3	10	A	4.00	\$121.09
T491A226K006AT	6.3	22	A	4.00	142.28
T491B226K006AT	6.3	22	B	3.50	178.60
T491D686K006AT	6.3	68	D	0.80	392.93
T491B107K006AT	6.3	100	B	3.50	590.30
T491C107K006AT	6.3	100	C	1.20	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 $\mu$ F	EIA Case Size	ESR ( $\Omega$ ) @ 25°C 100kHz 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 ( $\mu$ 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 $\mu$ F	+/-10%	30.27
C0402C103K3RACTU	X7R	25V	.01 $\mu$ F	+/-10%	30.27
C0402C104K8PACTU	X7R	10V	0.1 $\mu$ F	+/-10%	45.41
C0402C104K4RACTU	X7R	16V	0.1 $\mu$ F	+/-10%	45.41
C0402C105K9PACTU	X5R	6.3V	1.0 $\mu$ F	+/-10%	112.01

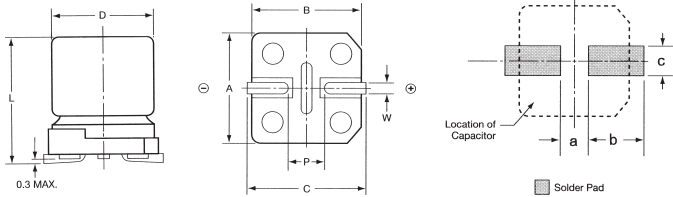
\*Net Price per 1000.

### 0603 CASE SIZE

Cat. No.	Type	WV (DC)	Cap ( $\mu$ 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 $\mu$ F	+/-10%	23.01
C0603C223K5RACTU	X7R	50V	0.02 $\mu$ F	+/-10%	175.58
C0603C473K3RACTU	X7R	25V	0.047 $\mu$ F	+/-10%	59.33
C0603C104K4RACTU	X7R	16V	0.1 $\mu$ F	+/-10%	30.27
C0603C104K3RACTU	X7R	25V	0.1 $\mu$ F	+/-10%	64.78
C0603C224K4RACTU	X7R	16V	0.22 $\mu$ F	+/-10%	254.28
C0603C474K8PACTU	X5R	10V	0.47 $\mu$ F	+/-10%	142.88
C0603C105K8PACTU	X5R	10V	1.0 $\mu$ F	+/-10%	108.98
C0603C225K8PACTU	X5R	6.3V	2.2 $\mu$ F	+/-10%	181.62
C0603C475K9PACTU	X5R	6.3V	4.7 $\mu$ F	+/-10%	332.99
C0603C105K4PACTU	X5R	16V	1.0 $\mu$ F	+/-10%	124.12
C0603C475K9PACTU	Y5V	25V	0.1 $\mu$ F	+/-20%	332.99
C0603C224M3PACTU	Y5V	25V	0.22 $\mu$ 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.

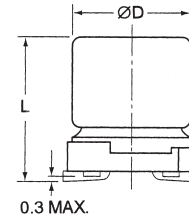
#### CASE AND SOLDER PAD DIMENSIONS

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	<b>\$.14</b>
EMVK6R3DA470ME55G†	6.3	47	5	5.2	10.58	36	<b>\$.19</b>
EMVK6R3ADA101MF55G	6.3	100	6.3	5.2	4.973	56	<b>\$.20</b>
EMV-6R3ADA471MHA0G	6.3	470	8	10	1.411	265	<b>\$.36</b>
EMVK6R3ADA102MJA0G	6.3	1000	10	10	0.663	410	<b>\$.55</b>
EMVK100ADA330ME55G	10	33	5	5.2	12.055	34	<b>\$.19</b>
EMV-100ADA101MF60G	10	100	6.3	5.7	3.315	70	<b>\$.15</b>
EMVK160ADA100MD55G†	16	10	4	5.2	33.15	16	<b>\$.14</b>
EMVK160ADA220ME55G†	16	22	5	5.2	15.068	30	<b>\$.19</b>
EMVK160ADA470MF55G†	16	47	6.3	5.2	7.053	48	<b>\$.20</b>
EMV-160ADA101MF55G	16	100	6.3	5.2	4.31	58	<b>\$.19</b>
EMV-160ADA221MHA0G	16	220	8	10	1.959	215	<b>\$.36</b>
EMV-160ADA331MHA0G	16	330	8	10	1.005	270	<b>\$.36</b>
EMV-160ADA471MJA0G	16	470	10	10	0.917	330	<b>\$.48</b>
EMVK250ADA330MF55G†	25	33	6.3	5.2	8.036	45	<b>\$.20</b>
EMV-250ADA470MF60G	25	47	6.3	5.7	4.937	65	<b>\$.48</b>
EMVK250ADA101MHA0G	25	100	8	10	2.652	180	<b>\$.37</b>
EMV-250ADA101MH63G	25	100	8	6.3	2.652	145	<b>\$.22</b>
EMV-350ADA100ME55G	35	10	5	5.2	19.89	25	<b>\$.18</b>
EMVK350ADA100ME55G	35	10	5	5.2	23.205	25	<b>\$.19</b>
EMVK350ADA220MF55G	35	22	6.3	5.2	10.548	40	<b>\$.20</b>
EMVK350ADA330MH63G	35	33	8	6.3	7.032	80	<b>\$.23</b>
EMV-350ADA330MF60G	35	33	6.3	5.7	6.027	55	<b>\$.19</b>
EMV-350ADA470MH63G	35	47	8	6.3	4.937	105	<b>\$.28</b>
EMV-350ADA101MHA0G	35	100	8	10	2.321	175	<b>\$.36</b>
EMVK350ADA221MJA0G	35	220	10	10	1.055	375	<b>\$.55</b>
EMV-500ADA1R0MB55G	50	1	3	5.2	198.9	5.6	<b>\$.18</b>
EMVK500ADA1R0MD55G	50	1	4	5.2	198.9	5.6	<b>\$.14</b>
EMVK500ADA2R2MD55G	50	2.2	4	5.2	90.409	10	<b>\$.14</b>
EMVK500ADA4R7ME55G	50	4.7	5	5.2	42.319	19	<b>\$.19</b>
EMVK500ADA100MF55G†	50	10	6.3	5.2	19.89	29	<b>\$.20</b>
EMVK500ADA470MHA0G	50	47	8	10	4.232	170	<b>\$.37</b>
EMV-500ADA101MJA0G	50	100	10	10	1.989	195	<b>\$.48</b>
EMVK500ADA101MJA0G	50	100	10	10	1.989	310	<b>\$.55</b>

\*Ripple rating for EMVK is at 105°C.

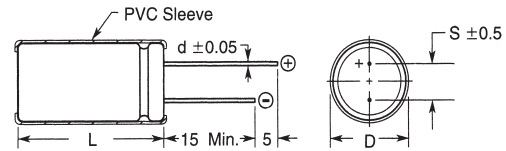
†Same EMVK Series offered as replacement for EMV Series.



### 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	<b>\$.67</b>
APXC2R5ARA271MF60G	2.5	270	6.3	5.7	F60	0.020	2700	<b>\$.97</b>
APXC2R5ARA471MH70G	2.5	470	8.0	6.7	H70	0.017	3420	<b>1.50</b>
APXC4R0ARA151ME60G	4.0	150	5.0	5.7	E60	0.030	2000	<b>\$.82</b>
APXC4R0ARA221MF60G	4.0	220	6.3	5.7	F60	0.021	2640	<b>\$.97</b>
APXC4R0ARA331MH70G	4.0	330	8.0	6.7	H70	0.018	3300	<b>1.50</b>
APXC6R3ARA101ME60G	6.3	100	5.0	5.7	E60	0.035	1780	<b>\$.82</b>
APXC6R3ARA181MF60G	6.3	180	6.3	5.7	F60	0.022	2580	<b>\$.97</b>
APXC6R3ARA221MH70G	6.3	220	8.0	6.7	H70	0.018	3300	<b>1.50</b>
APXC100ARA560ME60G	10	56	5.0	5.7	E60	0.040	1660	<b>\$.82</b>
APXC100ARA820MF60G	10	82	6.3	5.7	F60	0.023	2400	<b>\$.97</b>
APXC100ARA151MH70G	10	150	8.0	6.7	H70	0.020	3160	<b>1.50</b>
APXC160ARA390MF60G	16	39	5.0	5.7	F60	0.045	1570	<b>\$.97</b>
APXC160ARA820MH70G	16	82	6.3	5.7	H70	0.025	2300	<b>1.50</b>
APXC160ARA270ME60G	16	27	8.0	6.7	E60	0.025	2830	<b>\$.82</b>



### 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.

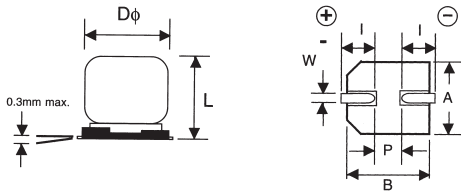
#### SME LEAKAGE CURRENT RATINGS

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](http://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.

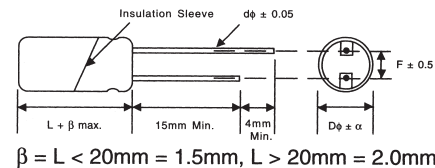
**NACZ SERIES:** Very low impedance and high ripple current at 100KHz. Suitable for DC/DC converter applications. **SPECIFICATIONS:** Load life at rated temperature: 1000 hours (4 to 6.3mm dia.), 2000 hours (8 to 12.5mm dia.). Operating temperature range: -55°C to +105°C. Cap. Tolerance: ±20%. Max leakage 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
<b>16 VDC</b>					
NACE100M16V4X5.5TR13F	10	4x5.5	25	26.5	<b>\$.11</b>
NACE330M16V6.3X5.5TR13F	33	6.3x5.5	57	8.04	<b>.16</b>
NACE470M16V6.3X5.5TR13F	47	6.3x5.5	68	5.65	<b>.16</b>
NACE101M16V6.3X5.5TR13F	100	6.3x5.5	86	2.66	<b>.16</b>
NACE221M16V6.3X8TR13F	220	6.3x8	150	1.21	<b>.34</b>
NACE471M16V8X10.5TR13F	470	8x10.5	330	0.71	<b>.45</b>
<b>25 VDC</b>					
NACE330M25V6.3X5.5TR13F	33	6.3x5.5	63	7.04	<b>.16</b>
NACE331M25V8X10.5TR13F	330	8x10.5	310	0.81	<b>.45</b>
NACE471M25V10X10.5TR13F	470	10x10.5	430	0.57	<b>.65</b>
<b>35 VDC</b>					
NACE100M35V5X5.5TR13F	10	5x5.5	30	19.9	<b>.14</b>
NACE220M35V6.3X5.5TR13F	22	6.3x5.5	54	9.05	<b>.16</b>
NACE330M35V6.3X6.3TR13F	33	6.3x6.3	60	6.04	<b>.26</b>
NACE101M35V6.3X8TR13F	100	6.3x8	130	1.99	<b>.34</b>
NACE221M35V8X10.5TR13F	220	8x10.5	270	1.06	<b>.45</b>
NACE331M35V10X10.5TR13F	330	10x10.5	340	0.71	<b>.65</b>

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



## 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](http://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
<b>16 VDC</b>					
NRSA330M16V5X11F	33	5x11x2.0	80	8.05	<b>\$.04</b>
NRSA470M16V5X11F	47	5x11x2.0	95	5.65	<b>.04</b>
NRSA101M16V6.3X11F	100	6.3x11x2.5	160	2.66	<b>.06</b>
NRSA221M16V8X11.5F	220	8x11.5x3.5	260	1.21	<b>.11</b>
NRSA331M16V8X11.5F	330	8x11.5x3.5	330	0.805	<b>.11</b>
NRSA471M16V10X12.5F	470	10x12.5x5.0	440	0.565	<b>.14</b>
NRSA102M16V10X20F	1000	10x20x5.0	760	0.266	<b>.24</b>
NRSA222M16V12.5X25F	2200	12.5x25x5.0	1200	0.136	<b>.51</b>
NRSA332M16V16X25F	3300	16x25x7.5	1400	0.101	<b>.78</b>

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