CKH/CKE

Aluminum Electrolytic Capacitors

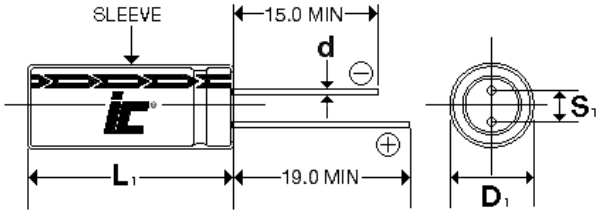
+105°C General Purpose, Radial Lead

FEATURES	Small Size - High Voltage - General Purpose
APPLICATIONS	Bypass – Coupling – Filter – De-coupling

Operating Temperature Range		**-40°C to +105°C (6.3 to 100 WVDC) -25°C to +105°C (160 to 450 WVDC)**													
Capacitance Tolerance		**±20% at 120 Hz, 20°C**													
Surge Voltage	**WVDC**	**6.3**	**10**	**16**	**25**	**35**	**50**	**63**	**100**	**160**	**200**	**250**	**350**	**400**	**450**
	SVDC	7.9	13	20	32	44	63	79	125	200	250	300	400	450	500
Dissipation Factor	**WVDC**	**6.3**	**10**	**16**	**25**	**35**	**50**	**63**	**100**	**160**	**200**	**250**	**350**	**400**	**450**
	Tan δ	.22	.19	.16	.14	.12	.1	.09	.08	.15	.15	.15	.2	.2	.2
		Add .02 for every 1000uF above 1000uF													
Leakage Current		**6.3 to 100 WVDC**								**160 to 450 WVDC**					
		2 Minutes								**2 Minutes**					
		.01CV or 3uA, Whichever is greater								.03CV+40uA					
Low temperature Stability Impedance Ratio (120 Hz)	**WVDC**	**6.3**	**10**	**16**	**25**	**35**	**50**	**63**	**100**	**160**	**200**	**250**	**350**	**400**	**450**
	-25°C to +20°C	4	3	2	2	2	2	2	2	4	4	4	6	6	7
	-40°C to +20°C	8	6	4	3	3	3	3	3	-	-	-	-	-	-

Load Life	**2000 hours at 105°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 105°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		**Frequency (Hz)**						**Temperature (°C)**				
WVDC	**Capacitance (uF)**	**50**	**120**	**300**	**1k**	**10k**	**100k**	**105**	**85**	**70**	**65**	**45**
6.3 to 100V	<47	.75	1.0	1.36	1.57	2.0	2.3	1	1.75	1.9	2	2.23
	68 to 470	.8	1.0	1.23	1.34	1.5	1.65	1	1.75	1.9	2	2.23
	≥560	.85	1.0	1.1.	1.13	1.15	1.4	1	1.75	1.9	2	2.23
160 to 450V	.47 to 4.7	.65	1.0	1.35	1.75	2.3	2.5	1	1.75	1.9	2	2.23
	6.8 to 82	.75	1.0	1.25	1.5	1.75	1.8	1	1.75	1.9	2	2.23
	100 to 1000	.8	1.0	1.15	1.3	1.4	1.5	1	1.75	1.9	2	2.23



D	5	6.3	8	10	12.5	16	18
S	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.6	0.6	0.6	0.8	0.8

mm

L_1=L+1.5mm Max.
D_1=D+0.5mm Max.
S_1=S+0.5 mm

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CKH_CKE

+105°C, Extended Life, 2000 Hour

WVDC	Capacitance (µF)	IC PART NUMBER	Maximum ESR (Ω) 120 Hz, +20°C	Maximum RMS Ripple Current (mA) 120 Hz, +105°C	Dims DxL (mm)
6.3	680	687CKH6R3M	0.0585	375	10x12.5
6.3	1000	108CKE6R3M	0.3979	445	8x11.5
6.3	1500	158CKH6R3M	0.2874	585	10x20
6.3	2200	228CKE6R3M	0.211	740	10x16
6.3	3300	338CKE6R3M	0.1507	1030	10x20
6.3	6800	688CKE6R3M	0.08777	1555	12.5x25
6.3	10000	109CKE6R3M	0.06963	1900	16x25
6.3	10000	109CKH6R3M	0.06963	1730	16x30
6.3	15000	159CKE6R3MQW	0.05747	1820	16x30
6.3	15000	159CKE6R3M	0.05747	2140	16x35
6.3	22000	229CKE6R3MRY	0.04979	2400	18x35
10	220	227CKE010M	1.6579	170	5x11
10	330	337CKE010M	1.1052	240	6.3x11
10	470	477CKE010M	0.776	285	6.3x11
10	1000	108CKE010M	0.3647	570	10x12.5
10	2200	228CKE010MLQ	0.1959	705	10x16
10	2200	228CKE010M	0.1959	900	10x20
10	3300	338CKE010M	0.1407	1205	12.5x20
10	4700	478CKE010M	0.1058	1490	12.5x25
10	4700	478CKH010M	0.1058	1350	16x25
10	6800	688CKE010M	0.0756	1825	16x25
10	10000	109CKE010MQW	0.0663	1980	16x30
10	10000	109CKH010M	0.0663	2030	18x35
10	15000	159CKE010MQY	0.0553	2050	16x35
10	15000	159CKE010M	0.0553	2370	18x35
10	22000	229CKE010M	0.0482	2410	18x40
16	220	227CKE016M	1.2057	215	6.3x11
16	330	337CKE016MGM	0.8038	225	6.3x11
16	470	477CKE016M	0.5644	365	8x11.5
16	470	477CKH016M	0.5644	440	10x12.5
16	680	687CKH016M	0.3901	490	10x16
16	1000	108CKE016MLN	0.2653	500	10x12.5
16	1000	108CKE016M	0.2653	680	10x16
16	1000	108CKH016M	0.2653	720	10x20
16	1500	158CKH016M	0.1989	800	12.5x20
16	2200	228CKE016MLU	0.1507	710	10x20
16	2200	228CKE016M	0.1507	1110	12.5x20
16	2200	228CKH016M	0.1507	1250	12.5x25
16	3300	338CKE016M	0.1105	1390	12.5x25
16	4700	478CKE016M	0.0847	1740	16x25
16	4700	478CKH016M	0.0847	1560	16x30
16	6800	688CKE016MQV	0.0707	1600	16x25
16	6800	688CKE016M	0.0707	2080	16x30
16	10000	109CKE016M	0.0564	2380	16x35
16	15000	159CKE016M	0.0486	2210	18x40
25	47	476CKH025M	4.9383	100	5x11
25	100	107CKE025MEM	2.321	125	5x11
25	220	227CKE025MGM	1.055	200	6.3x11
25	330	337CKE025M	0.4938	340	8x11.5
25	470	477CKE025M	0.4938	470	10x12.5
25	1000	108CKE025MLQ	0.2321	610	10x16
25	1000	108CKE025M	0.2321	820	10x20
25	1500	158CKH025M	0.1768	905	12.5x25
25	2200	228CKE025M	0.1356	1175	12.5x25
25	2200	228CKH025M	0.1356	1210	16x25
25	3300	338CKE025M	0.1005	1645	16x25
25	3300	338CKH025M	0.1005	1800	16x30
25	4700	478CKE025MQV	0.0776	1570	16x25

WVDC	Capacitance (µF)	IC PART NUMBER	Maximum ESR (Ω) 120 Hz, +20°C	Maximum RMS Ripple Current (mA) 120 Hz, +105°C	Dims DxL (mm)
25	4700	478CKE025M	0.0776	2010	16x30
25	6800	688CKE025MQY	0.0634	2308	16x35
25	6800	688CKE025M	0.0634	2170	18x35
25	10000	109CKE025MLAD	0.0547	2500	18x35
25	10000	109CKE025M	0.0531	2000	18x40
35	47	476CKE035M	4.233	92	5x11
35	100	107CKE035M	1.989	170	6.3x11
35	220	227CKE035M	0.904	295	8x11.5
35	330	337CKE035M	0.603	420	10x12.5
35	470	477CKE035M	0.423	545	10x16
35	680	687CKE035MGJG	0.2926	680	10x20
35	1000	108CKH035M	0.199	1025	12.5x20
35	1500	158CKE035MTJD	0.1326	1125	12.5x25
35	1500	158CKH035M	0.1547	1140	16x25
35	2200	228CKE035M	0.1206	1500	16x25
35	2200	228CKH035M	0.121	1730	16x30
35	3300	338CKE035MQW	0.0905	1810	16x30
35	3300	338CKE035M	0.0905	1820	16x35
35	4700	478CKE035MQY	0.0706	1780	16x35
35	4700	478CKE035M	0.0706	2335	18x35
35	6800	688CKE035M	0.0585	2400	18x40
50	1	105CKH050M	165.79	13	5x11
50	2.2	225CKH050M	75.358	20	5x11
50	3.3	335CKE050M	50.238	35	5x11
50	6.8	685CKH050M	24.381	40	5x11
50	10	106CKH050M	16.579	55	5x11
50	15	156CKH050M	11.052	58	5x11
50	22	226CKH050M	7.536	80	5x11
50	33	336CKE050M	5.024	100	5x11
50	47	476CKE050M	3.527	135	6.3x11
50	68	686CKH050M	2.438	165	8x11.5
50	100	107CKH050M	1.658	230	8x11.5
50	220	227CKE050M	0.754	350	10x12.5
50	220	227CKH050M	0.7536	510	10x16
50	330	337CKE050M	0.502	410	10x16
50	330	337CKH050M	0.502	490	10x20
50	470	477CKE050M	0.353	705	10x20
50	470	477CKH050M	0.353	630	12.5x20
50	680	687CKE050MTJG	0.2438	925	12.5x20
50	1000	108CKE050M	0.166	1285	12.5x25
50	1000	108CKH050M	0.166	1010	16x25
50	1500	158CKH050M	0.1326	1250	18x30
50	2200	228CKE050MQW	0.1055	1410	16x30
50	2200	228CKE050M	0.1055	1885	16x35
50	2200	228CKH050M	0.106	1700	18x35
50	3300	338CKE050M	0.0804	2165	18x35
63	10	106CKE063M	16.579	60	5x11
63	22	226CKE063M	7.536	80	5x11
63	22	226CKH063M	7.536	90	6.3x11
63	33	336CKE063M	5.024	120	6.3x11
63	47	476CKE063M	3.527	145	6.3x11
63	47	476CKH063M	3.527	155	8x11.5
63	68	686CKH063M	2.438	190	10x12.5
63	100	107CKH063M	1.658	260	10x12.5
63	220	227CKE063M	0.754	390	10x16
63	220	227CKH063M	0.7536	505	10x20
63	330	337CKH063M	0.502	690	12.5x20
63	470	477CKE063M	0.353	810	12.5x20

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+105°C, Extended Life, 2000 Hour

WVDC	Capacitance (µF)	IC PART NUMBER	Maximum ESR (Ω) 120 Hz, +20°C	Maximum RMS Ripple Current (mA) 120 Hz, +105°C	Dims DxL (mm)
63	470	477CKH063M	0.353	690	12.5x25
63	680	687CKH063M	0.244	925	16x25
63	1000	108CKE063M	0.166	1450	16x25
100	0.47	474CKH100M	282.19	12	5x11
100	1	105CKE100M	165.79	15	5x11
100	2.2	225CKE100M	753.575	35	5x11
100	3.3	335CKE100M	40.19	35	5x11
100	4.7	475CKE100M	35.274	40	5x11
100	10	106CKH100M	16.579	85	6.3x11
100	22	226CKE100M	7.536	95	6.3x11
100	22	226CKH100M	7.536	150	8x11.5
100	33	336CKE100M	5.024	145	8x11.5
100	33	336CKH100M	5.0238	260	10x12.5
100	47	476CKE100M	3.527	280	10x12.5
100	47	476CKH100M	3.527	280	10x16
100	68	686CKH100M	2.438	300	10x16
100	100	107CKE100MLQ	1.658	240	10x16
100	150	157CKH100M	1.105	410	12.5x20
100	220	227CKE100MNU	0.754	390	12.5x20
100	220	227CKE100M	0.754	660	12.5x25
100	220	227CKH100M	0.7536	960	16x25
100	330	337CKE100M	0.502	800	12.5x25
100	330	337CKH100M	0.502	1000	16x25
100	470	477CKE100M	0.353	1050	16x25
100	1000	108CKE100MRY	0.166	1000	18x35
100	1000	108CKE100M	0.166	2020	18x40
160	4.7	475CKE160M	52.911	51	6.3x11
160	10	106CKE160M	24.868	91	8x11.5
160	22	226CKE160MLN	11.304	150	10x12.5
160	33	336CKE160MLQ	7.536	205	10x16
160	47	476CKE160MLU	5.291	270	10x20
160	68	686CKE160MTJG	4.8761	350	12.5x20
160	100	107CKE160M	2.487	470	12.5x25
160	150	157CKE160MKJD	1.65786	515	16x25
160	220	227CKE160MQW	1.13	860	16x30
160	330	337CKE160MKCG	1.0048	1200	16x40
200	3.3	335CKE200M	75.358	35	6.3x11
200	4.7	475CKE200M	52.911	53	6.3x11
200	10	106CKE200MJM	24.868	91	8x11.5
200	10	106CKE200M	24.868	75	10x12.5
200	22	226CKE200MLQ	11.304	165	10x16
200	33	336CKE200MLU	7.536	225	10x20
200	47	476CKE200M	5.291	210	12.5x20
200	68	686CKE200MTJD	4.8761	380	12.5x25
200	150	157CKE200MKJD	1.65786	660	16x25
200	220	227CKE200M	1.13	920	16x35
200	330	337CKE200M	0.754	675	18x40
250	1	105CKE250M	248.68	16	6.3x11
250	2.2	225CKH250M	113.036	29	6.3x11
250	3.3	335CKE250MGM	75.358	37	6.3x11
250	3.3	335CKE250M	75.358	44	8x11.5
250	4.7	475CKE250M	52.911	53	8x11.5
250	4.7	475CKH250M	52.911	60	10x12.5

WVDC	Capacitance (µF)	IC PART NUMBER	Maximum ESR (Ω) 120 Hz, +20°C	Maximum RMS Ripple Current (mA) 120 Hz, +105°C	Dims DxL (mm)
250	10	106CKH250M	24.868	90	10x16
250	15	156CKE250MGBW	22.1049	112	10x16
250	22	226CKE250MLU	11.304	180	10x20
250	33	336CKE250M	7.536	190	12.5x20
250	47	476CKE250MNU	5.291	190	12.5x21
250	47	476CKE250M	5.291	320	12.5x25
250	68	686CKE250MKJG	4.8761	400	16x20
250	100	107CKE250MQV	2.487	530	16x25
250	150	157CKE250MKAD	1.65786	750	16x35
250	220	227CKE250M	1.13	485	18x35
250	220	227CKE250MLCG	1.5071	1010	18x40
350	2.2	225CKE350M	150.71	30	6.3x11
350	3.3	335CKE350MJM	100.477	30	8x11.5
350	4.7	475CKE350M	70.547	47	10x12.5
350	10	106CKE350MLQ	33.157	64	10x16
350	10	106CKE350M	24.868	85	10x20
350	22	226CKE350MNU	15.072	105	12.5x20
350	33	336CKE350MNV	10.048	270	12.5x25
350	47	476CKE350M	7.055	190	16x25
350	100	107CKE350MKCG	3.3157	510	16x40
350	100	107CKE350M	3.316	410	18x40
400	1	105CKE400M	331.57	21	8x11.5
400	2.2	225CKE400M	150.71	26	8x11.5
400	3.3	335CKE400MJM	100.477	42	8x11.5
400	3.3	335CKE400M	100.477	41	10x12.5
400	4.7	475CKE400MFH	70.5474	56	8x11.5
400	4.7	475CKE400M	70.547	55	10x16
400	10	106CKE400MLQ	33.157	64	10x16
400	10	106CKE400M	33.157	73	10x20
400	15	156CKE400MGJG	22.1049	150	10x20
400	33	336CKE400M	10.048	160	16x25
400	47	476CKE400MQV	7.055	360	16x25
400	47	476CKE400M	7.055	210	16x30
400	68	686CKE400MKAG	4.8761	475	16x30
400	100	107CKE400M	3.316	310	18x35
450	1	105CKE450MEBB	331.573	18	6.3x11
450	1	105CKE450M	331.57	22	10x12.5
450	2.2	225CKE450MJM	150.71	30	8x11.5
450	2.2	225CKE450M	150.71	31	10x12.5
450	3.3	335CKE450MFH	100.477	40	8x11.5
450	3.3	335CKE450MGJG	100.477	44	10x20
450	4.7	475CKE450MLN	70.547	32	10x12.5
450	4.7	475CKE450M	70.547	43	10x20
450	6.8	685CKE450MGBW	48.7607	90	10x16
450	10	106CKE450MLU	33.157	120	10x20
450	10	106CKE450M	33.157	75	12.5x20
450	15	156CKE450MTJG	22.1049	112	12.5x20
450	22	226CKE450MNV	15.0715	215	12.5x25
450	33	336CKE450MQV	10.048	120	16x25
450	47	476CKE450MQW	7.055	395	16x30
450	68	686CKE450MKAD	4.8761	510	16x35
450	150	157CKE450MLCD	2.2105	880	18x45

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