

CKH

+ 105°C Standard Radial Lead Aluminum Electrolytic Capacitors

For all long life general purpose applications

FEATURES

- Standard size
- Wide capacitance range: 0.1 μ F to 15000 μ F
- Wide voltage range: 6.3 WVDC to 450 WVDC
- Solvent tolerant end seals standard ($\leq$ 250WVDC)

SPECIFICATIONS

Capacitance Tolerance		±20% at 120Hz, 25°C														
Operating Temperature Range		-55°C to +105°C									-40°C to +105°C			-25°C to +105°C		
Dissipation Factor 120Hz, 25°C	WVDC	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	
	tan δ	.24	.20	.17	.15	.12	.10	.10	.08	.12	.12	.12	.25	.25	.20	
		Note: For above D.F. specifications, add .02 for every 1,000 μF above 1,000 μF														
Impedance Ratio (Max.) @120Hz	WVDC	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	
	-25/25°C	4	3	2	2	2	2	2	2	3	3	3	12	12	6	
	-40/25°C	8	6	4	3	3	3	3	3	4	4	6	—	—	—	
Leakage Current	WVDC	≤ 100 WVDC						100 < WVDC ≤ 400					450 WVDC			
	Time	1 minute			2 minutes			1 minute					1 minute			
		.03 CV or 4 μA			.01 CV or 3 μA			CV≤ 1000 0.1 CV +40μA		CV> 1000 0.4 CV +100μA			.04 CV + 100 μA			
		whichever is greater														
Load Life		1,000 hours at 105°C with rated WVDC														
		Capacitance change Dissipation factor Leakage current						< 20% of initial measured value <200% of initial specified value <Initial specified value								
Shelf Life		1000 hours at 105°C with no voltage applied. Units will meet load life specification.														

SPECIAL ORDER OPTIONS

- Special tolerances: $\pm 10\%$ (K), $-10\% + 30\%$ (Q) • Tape and Reel/Ammo Pack • Cut, Formed, Cut and Formed, and Snap In Leads
- Epoxy end seal • Polyester sleeve



ILLINOIS CAPACITOR, INC.

3757 W. Touhy Ave., Lincolnwood, Illinois 60645 • (847) 675-1760 • Fax (847) 673-2850

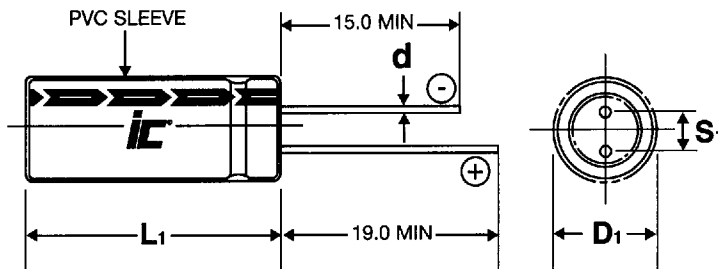
+ 105°C Standard
Radial Lead Aluminum
Electrolytic Capacitors

PHYSICAL DIMENSIONS

WVDC (SV) μF	6.3 (8)	10 (13)	16 (20)	25 (32)	35 (44)	50 (63)	63 (79)	100 (125)	160 (200)	200 (250)	250 (300)	350 (400)	400 (450)	450 (500)
0.1						5x11								
.15						5x11								
.22						5x11								
.33						5x11								
.47						5x11	→ 5x11	→ 5x11	→ 6.3x11					
.68						5x11								
1.0						5x11	→ 5x11	→ 5x11	→ 6.3x11	→ 8x11.5	10x12.5			
1.5						5x11								
2.2						5x11	→ 5x11	→ 5x11	→ 6.3x11	8x11.5	10x12.5	10x20		
3.3						5x11	→ 5x11	6.3x11	6.3x11	8x11.5	10x12.5	10x12.5	12.5x20	
4.7						5x11	→ 5x11	6.3x11	8x11.5	10x12.5	10x12.5	10x16	12.5x20	
6.8						5x11	5x11	6.3x11	→ 10x16	10x16				
10						5x11	5x11	6.3x11	10x12.5	10x12.5	10x16	10x20	12.5x20	16x25
15						5x11	6.3x11	8x11.5	10x16	→ 10x20				
22						5x11	6.3x11	8x11.5	10x16	10x20	12.5x20	12.5x25	16x31.5	
33					5x11	6.3x11	6.3x11	10x12.5	10x20	12.5x20	12.5x20	16x25	16x31.5	18x35.5
47				5x11	→ 5x11	6.3x11	8x11.5	10x16	12.5x20	12.5x20	16x25	16x35.5	18x35.5	
68			5x11	6.3x11	→ 5x11	8x11.5	10x12.5	10x16	16x25	16x25	16x31.5			
100		5x11	→ 6.3x11	→ 6.3x11	→ 8x11.5	10x12.5	10x16	12.5x20	16x25	16x25	16x31.5			
150		6.3x11	→ 8x11.5	10x12.5	10x16	10x20	12.5x20	16x31.5	16x35.5					
220		6.3x11	→ 8x11.5	10x12.5	10x16	10x20	16x25	16x35.5						
330	6.3x11	→ 8x11.5	10x12.5	10x16	10x20	12.5x20	16x25							
470	→ 8x11.5	10x12.5	10x16	10x20	12.5x20	12.5x25	16x31.5							
680	10x12.5	→ 10x16	→ 12.5x20	12.5x25	16x25									
1,000	10x12.5	10x16	10x20	12.5x20	12.5x25	16x25	16x31.5							
1,500	10x20	→ 12.5x20	12.5x25	16x25	18x31.5									
2,200	→ 12.5x20	12.5x25	16x25	16x31.5	18x35.5									
3,300	12.5x20	12.5x25	16x25	16x31.5	18x35.5									
4,700	→ 16x25	16x31.5	18x31.5											
6,800	16x25	16x31.5	18x35.5											
10,000	16x31.5	18x35.5												
15,000	18x35.5													

Convert to inches, divide by 25.4.

DxL(mm)



D	5.0	6.3	8.0	10.0	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
B	0.5	0.5	0.5	0.5	0.8	0.5	0.5

L≤16, L₁=L+1.5mm Max.
L≥20, L₁=L+2.0mm Max.
D₁=D+B Max.
S₁=S±0.5mm



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CKH**+ 105°C Standard
Radial Lead Aluminum
Electrolytic Capacitors****STANDARD PART LISTING**

Capacitance μF	WVDC	IC PART NUMBER	Maximum ESR Ω 120Hz, +25°C	Maximum Leakage Current (μA) @1min, +25°C	Maximum RMS Ripple Current (mA) 120Hz, +105°C
0.1	50	104CKH050M	1657.0	4.0	4
0.15	50	154CKH050M	1105.0	4.0	5
0.22	50	224CKH050M	753.5	4.0	6
0.33	50	334CKH050M	502.3	4.0	7
0.47	50	474CKH050M	352.7	4.0	8
0.47	100	474CKH100M	282.1	4.0	9
0.47	250	474CKH250M	423.2	51.8	11
0.68	50	684CKH050M	243.8	4.0	10
1	50	105CKH050M	165.7	4.0	12
1	100	105CKH100M	132.6	4.0	15
1	250	105CKH250M	198.9	65.0	17
1	400	105CKH400M	414.4	80.0	13
1	450	105CKH450M	331.5	113.5	17
1.5	50	155CKH050M	110.5	4.0	15
2.2	50	225CKH050M	75.35	4.0	19
2.2	100	225CKH100M	60.28	6.6	22
2.2	250	225CKH250M	90.42	95.0	24
2.2	350	225CKH350M	188.3	117.0	20
2.2	400	225CKH400M	188.3	128.0	23
2.2	450	225CKH450M	150.7	129.7	29
3.3	50	335CKH050M	50.23	5.0	25
3.3	100	335CKH100M	40.19	9.9	30
3.3	160	335CKH160M	60.28	92.8	30
3.3	200	335CKH200M	60.28	106.0	31
3.3	250	335CKH250M	60.28	122.5	36
3.3	350	335CKH350M	125.2	146.2	28
3.3	400	335CKH400M	125.2	152.8	28
3.3	450	335CKH450M	100.4	144.6	41
4.7	50	475CKH050M	35.27	7.1	30
4.7	100	475CKH100M	28.21	14.1	36
4.7	160	475CKH160M	42.32	115.2	36
4.7	200	475CKH200M	42.32	134.0	43
4.7	250	475CKH250M	42.32	147.0	46
4.7	350	475CKH350M	88.18	165.8	34
4.7	400	475CKH400M	88.18	175.2	38
4.7	450	475CKH450M	70.54	163.5	41
6.8	50	685CKH050M	24.38	10.2	40
6.8	63	685CKH063M	24.38	12.9	42

Capacitance μF	WVDC	IC PART NUMBER	Maximum ESR Ω 120Hz, +25°C	Maximum Leakage Current (μA) @1min, +25°C	Maximum RMS Ripple Current (mA) 120Hz, +105°C
6.8	100	685CKH100M	19.5	20.4	52
6.8	200	685CKH200M	29.5	154.4	55
6.8	250	685CKH250M	29.5	168.0	65
10	50	106CKH050M	16.57	15.0	49
10	63	106CKH063M	16.57	18.9	51
10	100	106CKH100M	13.26	30.0	60
10	160	106CKH160M	19.89	164.0	68
10	200	106CKH200M	19.89	180.0	70
10	250	106CKH250M	19.89	200.0	80
10	350	106CKH350M	41.44	240.0	61
10	400	106CKH400M	41.44	260.0	69
10	450	106CKH450M	33.15	235.0	70
15	50	156CKH050M	11.05	22.5	58
15	63	156CKH063M	11.05	28.4	65
15	100	156CKH100M	8.84	45.0	80
15	160	156CKH160M	13.26	196.0	80
15	250	156CKH250M	13.26	250.0	90
22	50	226CKH050M	7.535	33.0	74
22	63	226CKH063M	7.535	41.6	85
22	100	226CKH100M	6.028	66.0	110
22	160	226CKH160M	9.042	240.8	115
22	200	226CKH200M	9.042	276.0	125
22	250	226CKH250M	9.042	320.0	145
22	350	226CKH350M	18.83	408.0	110
22	400	226CKH400M	18.83	452.0	113
22	450	226CKH450M	15.07	397.0	114
33	35	336CKH035M	6.028	34.7	84
33	50	336CKH050M	5.023	49.5	103
33	63	336CKH063M	5.023	62.4	106
33	100	336CKH100M	4.019	99.0	155
33	160	336CKH160M	6.028	311.2	163
33	200	336CKH200M	6.028	364.0	170
33	250	336CKH250M	6.028	430.0	185
33	350	336CKH350M	12.55	562.0	132
33	400	336CKH400M	12.55	628.0	140
33	450	336CKH450M	10.04	545.5	145
47	25	476CKH025M	5.291	35.3	89
47	50	476CKH050M	3.527	70.5	122

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STANDARD PART LISTING

Capacitance μF	WVDC	IC PART NUMBER	Maximum ESR Ω 120Hz, +25°C	Maximum Leakage Current(μA) @1min, +25°C	Maximum RMS Ripple Current (mA) 120Hz, +105°C
47	63	476CKH063M	3.527	88.9	145
47	100	476CKH100M	2.821	141.0	205
47	160	476CKH160M	4.232	400.8	212
47	200	476CKH200M	4.232	476.0	210
47	250	476CKH250M	4.232	570.0	220
47	350	476CKH350M	8.818	758.0	185
47	400	476CKH400M	8.818	852.0	185
68	16	686CKH016M	4.144	32.5	95
68	25	686CKH025M	3.657	51.0	105
68	50	686CKH050M	2.438	102.0	165
68	63	686CKH063M	2.438	128.5	190
68	100	686CKH100M	1.950	204.0	255
68	160	686CKH160M	2.925	535.2	220
68	200	686CKH200M	2.925	644.0	235
68	250	686CKH250M	2.925	780.0	255
100	10	107CKH010M	3.315	30.0	105
100	25	107CKH025M	2.486	75.0	142
100	50	107CKH050M	1.657	150.0	240
100	63	107CKH063M	1.657	189.0	250
100	100	107CKH100M	1.326	300.0	360
100	160	107CKH160M	1.989	740.0	310
100	200	107CKH200M	1.989	900.0	320
100	250	107CKH250M	1.989	1100	350
150	10	157CKH010M	2.210	45.0	125
150	25	157CKH025M	1.657	112.5	180
150	35	157CKH035M	1.326	157.5	230
150	50	157CKH050M	1.105	225.0	260
150	63	157CKH063M	1.105	283.5	315
150	100	157CKH100M	0.884	450.0	410
150	160	157CKH160M	1.326	1060	330
150	200	157CKH200M	1.326	1300	350
220	10	227CKH010M	1.507	66.0	178
220	25	227CKH025M	1.130	165.0	245
220	35	227CKH035M	0.904	231.0	325
220	50	227CKH050M	0.753	330.0	385
220	63	227CKH063M	0.753	415.8	455
220	100	227CKH100M	0.602	660.0	580
220	160	227CKH160M	0.904	1508	475

Capacitance μF	WVDC	IC PART NUMBER	Maximum ESR Ω 120Hz, +25°C	Maximum Leakage Current(μA) @1min, +25°C	Maximum RMS Ripple Current (mA) 120Hz, +105°C
330	6.3	337CKH6R3M	1.205	62.4	196
330	16	337CKH016M	0.854	158.4	280
330	25	337CKH025M	0.753	247.5	345
330	35	337CKH035M	0.602	346.5	430
330	50	337CKH050M	0.502	495.0	520
330	63	337CKH063M	0.502	623.7	620
330	100	337CKH100M	0.401	990.0	710
470	10	477CKH010M	0.705	141.0	297
470	16	477CKH016M	0.599	226.0	392
470	25	477CKH025M	0.529	353.0	460
470	35	477CKH035M	0.423	494.0	565
470	50	477CKH050M	0.352	705.0	700
470	63	477CKH063M	0.352	888.0	775
470	100	477CKH100M	0.282	1410	865
680	6.3	687CKH6R3M	0.585	129.0	375
680	16	687CKH016M	0.414	326.0	490
680	35	687CKH035M	0.292	714.0	695
680	50	687CKH050M	0.243	1020	825
680	63	687CKH063M	0.243	1285	925
1,000	6.3	108CKH6R3M	0.397	189.0	465
1,000	10	108CKH010M	0.331	300.0	565
1,000	16	108CKH016M	0.281	480.0	675
1,000	25	108CKH025M	0.248	750.0	835
1,000	35	108CKH035M	0.198	1050	980
1,000	50	108CKH050M	0.165	1500	1100
1,000	63	108CKH063M	0.165	1890	1190
1,500	6.3	158CKH6R3M	0.265	284.0	585
1,500	16	158CKH016M	0.187	720.0	800
1,500	25	158CKH025M	0.165	1125	905
1,500	35	158CKH035M	0.132	1575	1140
1,500	50	158CKH050M	0.110	2250	1250
2,200	10	228CKH010M	0.165	660.0	975
2,200	16	228CKH016M	0.143	1056	1140
2,200	25	228CKH025M	0.128	1650	1200
2,200	35	228CKH035M	0.105	2310	1425
2,200	50	228CKH050M	0.090	3300	1530
3,300	6.3	338CKH6R3M	0.140	624.0	1075
3,300	10	338CKH010M	0.120	990.0	1210



STANDARD PART LISTING

Capacitance μF	WVDC	ic PART NUMBER	Maximum ESR Ω 120Hz, +25°C	Maximum Leakage Current(μA) @1min, +25°C	Maximum RMS Ripple Current (mA) 120Hz, +105°C
3,300	16	338CKH016M	0.105	1584	1325
3,300	25	338CKH025M	0.095	2475	1450
3,300	35	338CKH035M	0.080	3465	1650
4,700	10	478CKH010M	0.091	1410	1410
4,700	16	478CKH016M	0.081	2256	1580
4,700	25	478CKH025M	0.074	3525	1700

NOTE 1: WVDC: MAXIMUM RATED DC WORKING VOLTAGE AT + 105°C.

NOTE 2: SVDC: MAXIMUM RATED DC SURGE VOLTAGE AT + 105°C.

NOTE 3: DISSIPATION FACTOR (TAN δ) MAXIMUM; 120Hz, + 25°C.NOTE 4: ESR: MAXIMUM EQUIVALENT SERIES RESISTANCE; 120Hz, + 25°C
MINIMUM CAPACITANCE, MAXIMUM DISSIPATION FACTOR.

Capacitance μF	WVDC	ic PART NUMBER	Maximum ESR Ω 120Hz, +25°C	Maximum Leakage Current(μA) @1min, +25°C	Maximum RMS Ripple Current (mA) 120Hz, +105°C
6,800	6.3	688CKH6R3M	0.082	1285	1500
6,800	10	688CKH010M	0.073	2040	1660
6,800	16	688CKH016M	0.065	3284	1775
10,000	6.3	109CKH6R3M	0.069	1890	1790
10,000	10	109CKH010M	0.062	3000	1965
15,000	6.3	159CKH6R3M	0.057	2835	2150

NOTE 5: MAXIMUM LEAKAGE CURRENT; RATED WVDC, 1MINUTE, + 25°C.

NOTE 6: RMS RIPPLE CURRENT; 120Hz, + 105°C.

NOTE 7: CAPACITANCE TOLERANCE IS MEASURED AT 120Hz, + 25°C.

NOTE 8: ALL MEASUREMENTS ARE PERFORMED USING THE BRIDGE
METHOD.

Ripple Current Multipliers

Capacitance (μF)	Frequency(Hz)						Temperature(°C)		
	50	120	400	1K	10K	50-100K	+105	+85	+70°C
$C \leq 10$	0.8	1.0	1.3	1.45	1.65	1.7	1.00	1.4	1.65
$10 < C \leq 100$	0.8	1.0	1.23	1.36	1.48	1.53	1.00	1.4	1.65
$100 < C \leq 1000$	0.8	1.0	1.16	1.25	1.35	1.38	1.00	1.4	1.65
$C > 1000$	0.8	1.0	1.11	1.17	1.25	1.28	1.00	1.4	1.65