

CKR

+ 85°C Standard Radial Lead Aluminum Electrolytic Capacitors

**"NEW
EXPANDED
SELECTION"**

For all 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
($\leq$ 250 WVDC)

SPECIFICATIONS

Capacitance Tolerance		±20% at 120Hz, 20°C													
Operating Temperature Range		-40°C to +85°C								-25°C to +85°C					
Dissipation Factor 120Hz, 20°C	WVDC	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
		.24	.20	.17	.15	.12	.10	.08	.12	.12	.12	.12	.25	.25	.25
		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°C/20°C	4	3	2	2	2	2	2	2	3	3	3	12	12	12
	-40°C/20°C	10	8	6	4	3	3	3	3	-	-	-	-	-	-
Leakage Current	WVDC	≤ 100 WVDC							>100 WVDC ≤ 450						
	Time	1 minute				2 minutes				1 minute					
		.03 CV or 4 µA				.01 CV or 3 µA				CV≤ 1000 0.1 CV + 40µA			CV> 1000 .04 CV + 100µA		
		whichever is greater													
Load Life	2,000 hours at 85°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 85°C with no voltage applied. Units will meet load life specification.													
Ripple Current Multipliers	Frequency (Hz)								Temperature (°C)						
		50	120	400	1K	10K	100K	+85	+70	+60	+45				
	C≤10	0.8	1.0	1.3	1.45	1.65	1.7	1.0	1.3	1.5	1.8				
	10<C≤100	0.8	1.0	1.23	1.36	1.48	1.53	1.0	1.3	1.5	1.8				
	100<C≤1000	0.8	1.0	1.16	1.25	1.35	1.38	1.0	1.3	1.5	1.8				
	C>1000	0.8	1.0	1.11	1.17	1.25	1.28	1.0	1.3	1.5	1.8				

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



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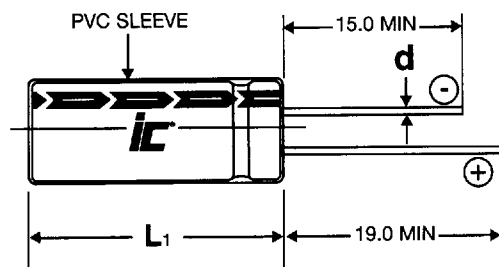
+ 85°C Standard
Radial Lead Aluminum
Electrolytic Capacitors

PHYSICAL DIMENSIONS

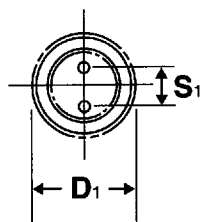
WVDC (SV) μF	6.3 (8)	10 (13)	16 (20)	25 (32)	35 (44)	50 (63)	63 (79)	100 (125)	160 (200)	250 (300)	350 (400)	400 (450)	450 (500)
0.1						5x11							
.15						5x11							
.22						5x11							
.33						5x11							
.47						5x11	→ 5x11						
.68						5x11							
1.0						5x11	→ 5x11	→ 6.3x11				8x11.5	
1.5						5x11							
2.2						5x11	→ 5x11	6.3x11	8x11.5	→ 8x11.5	10x12.5	10x16	10x18
3.3						5x11	→ 5x11	8x11.5	8x11.5	10x12.5	10x12.5	10x16	10x18
4.7						5x11	→ 5x11	8x11.5	10x12.5	10x12.5	10x16	10x18	10x20
6.8						5x11							
10						5x11	5x11	6.3x11	10x16	10x20	10x20	12.5x20	12.5x20
15						5x11	6.3x11	8x11.5					
22						5x11	6.3x11	8x11.5	10x20	12.5x20	10x20	12.5x20	16x25
33		→ 5x11	→ 5x11	→ 5x11	→ 5x11	6.3x11	6.3x11	10x12.5	10x20	12.5x25	12.5x25	16x25	16x31.5
47	→ 5x11	→ 5x11	→ 5x11	→ 5x11	→ 5x11	6.3x11	8x11.5	10x16	12.5x25	16x25	16x25	16x31.5	18x35.5
68						8x11.5	10x12.5	10x16					
100	→ 5x11	→ 5x11	→ 5x11	→ 5x11	→ 5x11	8x11.5	10x12.5	12.5x20	16x25	→ 18x35.5			
150	→ 6.3x11	→ 8x11.5	→ 8x11.5	→ 10x12.5	→ 10x16	10x16	→ 12.5x20						
220	→ 6.3x11	→ 8x11.5	→ 8x11.5	→ 10x12.5	→ 10x16	10x20	16x25						
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													
1,000	→ 10x12.5	→ 10x16	→ 10x20	→ 12.5x20	→ 12.5x25	16x25	16x31.5						
1,500													
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	→ 18x35.5										
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)



NOTE: Case Vent is standard on all diameter ≥ 8.0 mm



D	5.0	6.3	8.0	10.0	12.5	16.0	18.0
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

$L \leq 16$ mm $L_1 = L + 1.0$ mm Max.
 $L > 16$ mm $L_1 = L + 2.0$ mm Max.
 $D = D + B$ Max.
 $S_1 = S \pm 0.5$ mm

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, +85°C
0.1	50	104CKR050M	1657.9	4	4
0.15	50	154CKR050M	1105.2	4	5
0.22	50	224CKR050M	753.6	4	6
0.33	50	334CKR050M	502.4	4	7
0.47	50	474CKR050M	352.7	4	8
0.47	100	474CKR100M	282.2	4	9
0.68	50	684CKR050M	243.8	4	9
1.0	50	105CKR050M	165.8	4	16
1.0	100	105CKR100M	132.6	4	20
1.0	250	105CKR250M	198.9	65	22
1.0	450	105CKR450M	414.5	85	19
1.5	50	155CKR050M	110.5	4	18
2.2	50	225CKR050M	75.4	4	22
2.2	100	225CKR100M	60.3	7	32
2.2	160	225CKR160M	90.4	75	34
2.2	250	225CKR250M	90.4	95	36
2.2	400	225CKR400M	188.4	128	33
2.2	450	225CKR450M	188.4	139	31
3.3	50	335CKR050M	50.2	5	34
3.3	100	335CKR100M	40.2	10	40
3.3	160	335CKR160M	60.3	93	45
3.3	250	335CKR250M	60.3	123	47
3.3	350	335CKR350M	125.6	146	43
3.3	400	335CKR400M	125.6	153	45
3.3	450	335CKR450M	125.6	159	41
4.7	50	475CKR050M	35.3	7	39
4.7	100	475CKR100M	28.2	14	46
4.7	160	475CKR160M	42.3	115	55
4.7	250	475CKR250M	42.3	147	56
4.7	350	475CKR350M	88.2	166	50
4.7	400	475CKR400M	88.2	175	60
4.7	450	475CKR450M	88.2	185	50
6.8	63	685CKR063M	24.4	13	51
10	50	106CKR050M	16.6	15	61
10	63	106CKR063M	16.6	19	70
10	100	106CKR100M	13.3	30	80
10	160	106CKR160M	19.9	164	84
10	250	106CKR250M	19.9	200	90

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, +85°C
10	350	106CKR350M	41.4	240	95
10	400	106CKR400M	41.4	260	110
10	450	106CKR450M	41.4	280	85
15	50	156CKR050M	11.1	23	78
15	63	156CKR063M	11.1	28	83
15	100	156CKR100M	8.8	45	98
22	50	226CKR050M	7.5	33	100
22	63	226CKR063M	7.5	42	104
22	100	226CKR100M	6.0	66	131
22	160	226CKR160M	9.0	241	140
22	250	226CKR250M	9.0	320	148
22	350	226CKR350M	18.8	408	150
22	400	226CKR400M	18.8	452	170
22	450	226CKR450M	18.8	496	140
33	16	336CKR016M	8.0	16	100
33	35	336CKR035M	6.03	35	120
33	50	336CKR050M	5.0	50	132
33	63	336CKR063M	5.0	62	140
33	100	336CKR100M	4.0	99	166
33	160	336CKR160M	6.0	311	175
33	250	336CKR250M	6.0	430	188
33	350	336CKR350M	12.6	562	200
33	400	336CKR400M	12.6	628	200
33	450	336CKR450M	12.6	694	190
47	10	476CKR010M	7.1	14	85
47	25	476CKR025M	4.9	35	140
47	50	476CKR050M	3.5	71	158
47	63	476CKR063M	3.5	89	190
47	100	476CKR100M	2.8	141	222
47	160	476CKR160M	4.2	401	235
47	250	476CKR250M	4.2	570	260
47	350	476CKR350M	8.8	758	230
47	400	476CKR400M	8.8	852	270
47	450	476CKR450M	8.8	946	250
68	25	686CKR025M	3.4	51	170
68	50	686CKR050M	2.4	102	200
68	63	686CKR063M	2.4	129	215
68	100	686CKR100M	2.0	204	282

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, +85°C
100	10	107CKR010M	3.3	30	150
100	25	107CKR025M	2.3	75	202
100	50	107CKR050M	1.7	150	264
100	63	107CKR063M	1.7	189	296
100	100	107CKR100M	1.3	300	380
100	160	107CKR160M	2.0	740	400
100	250	107CKR250M	2.0	1100	440
100	350	107CKR350M	4.1	1500	420
150	10	157CKR010M	2.2	45	188
150	25	157CKR025M	1.5	113	258
150	35	157CKR035M	1.3	158	291
150	50	157CKR050M	1.1	225	330
150	100	157CKR100M	0.9	450	425
220	10	227CKR010M	1.5	66	248
220	16	227CKR016M	1.2	106	328
220	25	227CKR025M	1.1	165	340
220	35	227CKR035M	0.9	231	375
220	50	227CKR050M	0.8	330	432
220	63	227CKR063M	0.8	416	480
220	100	227CKR100M	0.6	660	600
330	6.3	337CKR063M	1.2	62	310
330	16	337CKR016M	0.8	158	400
330	25	337CKR025M	0.7	248	435
330	35	337CKR035M	0.6	347	477
330	50	337CKR050M	0.5	495	557
330	63	337CKR063M	0.5	624	685
330	100	337CKR100M	0.4	990	725
470	10	477CKR010M	0.7	141	410
470	16	477CKR016M	0.6	226	494
470	25	477CKR025M	0.5	353	520
470	35	477CKR035M	0.4	494	608
470	50	477CKR050M	0.4	705	732
470	63	477CKR063M	0.4	888	830
470	100	477CKR100M	0.3	1410	905

NOTE 1: WVDC: MAXIMUM RATED DC WORKING VOLTAGE AT + 85°C.
NOTE 2: SVDC: MAXIMUM RATED DC SURGE VOLTAGE AT + 85°C.
NOTE 3: DISSIPATION FACTOR (TAN δ) MAXIMUM; 120 Hz, + 25°C.
NOTE 4: ESR: MAXIMUM EQUIVALENT SERIES RESISTANCE; 120 Hz, + 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, +85°C
680	16	687CKR016M	0.4	326	596
680	35	687CKR035M	0.3	714	770
680	50	687CKR050M	0.2	1020	810
1,000	6.3	108CKR063M	0.4	189	580
1,000	10	108CKR010M	0.3	300	646
1,000	16	108CKR016M	0.3	480	755
1,000	25	108CKR025M	0.2	750	912
1,000	35	108CKR035M	0.2	1050	1020
1,000	50	108CKR050M	0.2	1500	1110
1,000	63	108CKR063M	0.2	1890	1255
1,500	16	158CKR016M	0.2	720	860
1,500	25	158CKR025M	0.2	1125	996
1,500	35	158CKR035M	0.2	1575	1110
1,500	50	158CKR050M	0.1	2250	1240
2,200	10	228CKR010M	0.2	660	1062
2,200	16	228CKR016M	0.2	1056	1142
2,200	25	228CKR025M	0.1	1650	1405
2,200	35	228CKR035M	0.1	2310	1440
2,200	50	228CKR050M	0.1	3300	1614
3,300	6.3	338CKR063M	0.2	624	1086
3,300	10	338CKR010M	0.1	990	1240
3,300	16	338CKR016M	0.1	1584	1415
3,300	25	338CKR025M	0.1	2475	1680
3,300	35	338CKR035M	0.1	3465	1715
4,700	10	478CKR010M	0.1	1410	1465
4,700	16	478CKR016M	0.1	2256	1634
4,700	25	478CKR025M	0.1	3525	2135
6,800	6.3	688CKR063M	0.1	1285	1560
6,800	10	688CKR010M	0.1	2040	1705
6,800	16	688CKR016M	0.1	3264	1910
10,000	6.3	109CKR063M	0.1	1890	1740
10,000	10	109CKR010M	0.1	3000	1910
15,000	6.3	159CKR063M	0.1	2835	2010

NOTE 5: MAXIMUM LEAKAGE CURRENT; RATED WVDC, 1 MINUTE, + 25°C.
NOTE 6: RMS RIPPLE CURRENT; 120 Hz, + 85°C.
NOTE 7: CAPACITANCE TOLERANCE IS MEASURED AT 120 Hz, + 25°C.
NOTE 8: ALL MEASUREMENTS ARE PERFORMED USING THE BRIDGE METHOD.