

Aluminum Electrolytic Capacitors

LR Series – Low Impedance and Low ESR 105°C



Specifications

Item	Performance																																																										
Operating Temperature Range	-40 to+105º c							-25 to+105º c																																																			
Rated Working Voltage Range	6.3 - 100v.DC							160 - 450v.DC																																																			
Nominal Capacitance Range	0.47 - 15000µ F							0.47 - 470µ F																																																			
Capacitance Tolerance	± 20% (at+20º c ,120Hz)																																																										
Leakage Current	I ≤ 0.01CV or 3(µ A) max, Whichever is greater after 3 minutes							I ≤ 0.03CV + 20(µ A) max Whichever is greater after 3 minutes																																																			
Dissipation Factor (tan δ) (120Hz\+20º c)	<table><tr><td>Working Vol.</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td><td>160</td><td>200</td><td>250</td><td>350</td><td>400</td><td>450</td></tr><tr><td>tan δ max</td><td>0.18</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.09</td><td>0.08</td><td>0.08</td><td>0.12</td><td>0.12</td><td>0.12</td><td>0.15</td><td>0.15</td><td>0.17</td></tr></table> Add 0.02 per 1000 µ F for more than 1000µ F.														Working Vol.	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	tan δ max	0.18	0.16	0.14	0.12	0.10	0.09	0.08	0.08	0.12	0.12	0.12	0.15	0.15	0.17															
Working Vol.	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450																																													
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Characteristics at low temperature (stability at 120 Hz)	<table><tr><td>Work Volt</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td><td>160</td><td>200</td><td>250</td><td>350</td><td>400</td><td>450</td></tr><tr><td>-25º/+25º c</td><td>4</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td><td>3</td><td>5</td><td>5</td><td>6</td></tr><tr><td>-40c/+20º c</td><td>8</td><td>6</td><td>4</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>6</td><td>6</td><td>6</td><td>6</td><td>-</td></tr></table> For capacitance value >1000 µ F, Add 0.5 per another 1000 µ F for -25º c/+20º c. Add 1.0 per another 1000µ F for -40º c/+20º c.														Work Volt	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	-25º/+25º c	4	3	3	3	3	3	2	2	2	2	3	5	5	6	-40c/+20º c	8	6	4	3	3	3	3	3	3	6	6	6	6	-
Work Volt	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450																																													
-25º/+25º c	4	3	3	3	3	3	2	2	2	2	3	5	5	6																																													
-40c/+20º c	8	6	4	3	3	3	3	3	3	6	6	6	6	-																																													
Load life	After 2000hrs. application of DC rated working voltage at +105º c, The capacitor shall meet the following limits: Post test requirements at +20º c. Load life: 2000hrs - 5000hrs <table><tr><td>Leakage current</td><td>the initial specified value</td></tr><tr><td>Capacitance change</td><td>±20% of initial measured value</td></tr><tr><td>Dissipation Factor(tan δ)</td><td>200% of initial specified value</td></tr></table>														Leakage current	the initial specified value	Capacitance change	±20% of initial measured value	Dissipation Factor(tan δ)	200% of initial specified value																																							
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Shelf Life	After storage for 1000hrs. at +105º c with no voltage applied. Post test requirements at +20º c, same limits as high temperature loading.																																																										

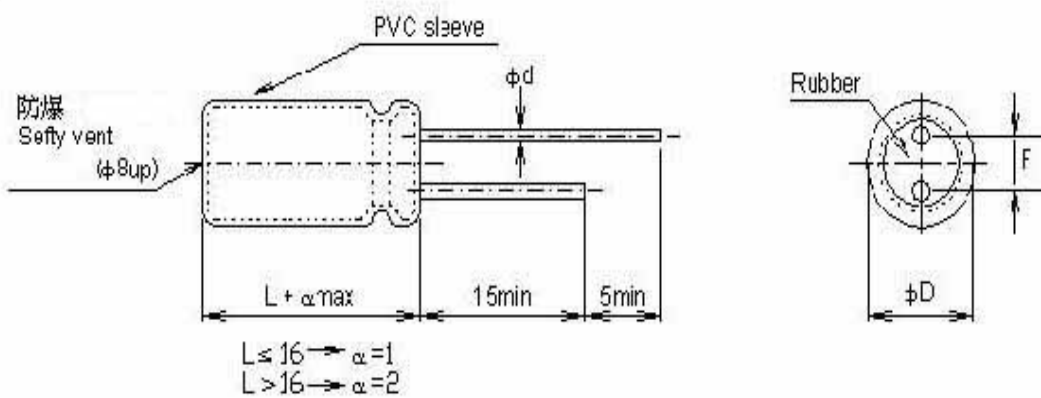
Aluminum Electrolytic Capacitors

LR Series – Low Impedance and Low ESR 105°C

CINETECH
SYMBOL OF QUALITY

Diagram of Dimensions

Unit (mm)



$D\phi (+0.5 \max)$	5	6.3	8	10	13	16	18	22
$F (\pm 0.5)$	2	2.5	3.5	5	5	7.5	7.5	10
$d\phi (\pm 0.02)$	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8

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Case Size

Max ripple current: mA rms at 105°C. 120Hz, Max. Impedance at 20°C 100Khz

W.V	6.3			10			16		
μ F	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
10							5x11	74	4.7
22				5x11	98	2.7	5x11	100	2.6
33				5x11	100	2.6	5x11	114	2
47				5x11	150	1.34	5x11	155	1.1
56				5x11	160	1.23	5x11	180	0.82
68				5x11	170	1.05	5x11	195	0.69
100	5x11	170	1	5x11	210	0.8	6.3x11	265	0.5
120	5x11	175	0.92	6.3x11	250	0.75	6.3x11	270	0.47
150	6.3x11	220	0.81	6.3x11	290	0.61	6.3x11	290	0.41
180	6.3x11	240	0.76	6.3x11	320	0.46	8x11.5	370	0.34
220	6.3x11	310	0.65	6.3x11	340	0.35	8x11.5	480	0.25
330	8x11.5	390	0.42	8x11.5	460	0.27	8x11.5	590	0.156
470	8x11.5	450	0.25	8x11.5	580	0.25	10x12.5	750	0.124
680	8x11.5	550	0.21	10x12.5	765	0.11	10x16	1100	0.092
820	8x16	620	0.2	10x16	890	0.1	10x16	1180	0.078
1000	10x12.5	770	0.17	10x16	1040	0.076	10x20	1350	0.065
1500	10x16	1100	0.14	10x20	1400	0.062	10x30	1600	0.065
2200	10x20	1380	0.09	13x20	1750	0.041	13x25	2000	0.038
3300	13x20	1650	0.036	13x25	2000	0.031	16x25	2790	0.03
4700	13x30	2100	0.036	16x25	2100	0.03	16x31.5	2880	0.026
6800	16x25	2350	0.032	16x31.5	2650	0.026	18x35.5	3200	0.024
8200	16x31.5	2550	0.027	16x35.5	2770	0.026	18x35.5	3320	0.024
10000	16x35.5	2700	0.024	18x35.5	2850	0.024	18x41	3550	0.024
15000	18x35.5	2950	0.023	---	---	---	---	---	---

Aluminum Electrolytic Capacitors

LR Series – Low Impedance and Low ESR 105°C



Max ripple current: mA rms at 105°C. 120Hz, Max. Impedance at 20°C 100Khz

W.V μ F	25			35			50		
	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
1							5x11	40	4
2.2				5x11	98	2.7	5x11	55	2.8
3.3				5x11	100	2.6	5x11	60	2.2
4.7				5x11	150	1.34	5x11	90	2
6.8				5x11	160	1.23	5x11	110	1.89
10				5x11	170	1.05	5x11	120	1.82
22	5x11	170	1.00	5x11	210	0.8	6.3x11	150	1.25
33	5x11	175	0.92	6.3x11	250	0.75	6.3x11	250	0.80
47	6.3x11	220	0.81	6.3x11	290	0.61	6.3x11	290	0.65
68	6.3x11	240	0.76	6.3x11	320	0.46	8x11.5	375	0.33
100	6.3x11	310	0.65	6.3x11	340	0.35	10x12.5	480	0.17
120	8x11.5	390	0.42	8x11.5	460	0.27	10x12.5	530	0.156
150	8x11.5	450	0.25	8x11.5	580	0.25	10x12.5	590	0.132
180	8x11.5	550	0.21	10x12.5	765	0.11	10x16	860	0.114
220	8x16	620	0.20	10x16	890	0.10	10x16	930	0.096
330	10x12.5	770	0.17	10x16	1040	0.076	10x25	1150	0.065
470	10x16	1100	0.14	10x20	1400	0.062	13x20	1590	0.055
680	10x20	1380	0.09	13x20	1750	0.041	13x25	1930	0.044
1000	13x20	1650	0.036	13x25	2000	0.031	16x25	2300	0.036
1500	13x30	2100	0.036	16x25	2100	0.030	16x35.5	2750	0.034
2200	16x25	2350	0.032	16x31.5	2650	0.026	18x35.5	3040	0.032
3300	16x31.5	2550	0.027	16x35.5	2770	0.026	18x41	3100	0.025
4700	16x35.5	2700	0.024	18x35.5	2850	0.024	---	---	---
6800	18x35.5	2950	0.023	---	---	---	---	---	---

Aluminum Electrolytic Capacitors

LR Series – Low Impedance and Low ESR 105°C



Max ripple current: mA rms at 105°C. 120Hz, Max. Impedance at 20°C 100Khz

W.V μ F	63			100			160		
	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
1	5x11	33	4	5x11	30	4.4	6.3x11	45	7.85
2.2	5x11	45	2.8	5x11	42	3.3	6.3x11	55	5.21
3.3	5x11	58	2.2	5x11	55	2.8	8x11.5	70	4.31
4.7	5x11	65	2	5x11	72	2.6	8x11.5	80	4.16
6.8	5x11	100	1.82	6.3x11	115	1.95	10x16	100	3.12
10	5x11	110	1.75	6.3x11	130	1.77	10x16	140	2.69
22	6.3x11	180	0.80	8x11.5	220	0.85	10x16	205	1.30
33	8x11.5	270	0.61	10x12.5	320	0.69	10x20	260	1.1
47	8x11.5	300	0.56	10x12.5	370	0.58	13x20	320	0.91
68	10x12.5	480	0.21	10x16	470	0.35	13x25	450	0.56
100	10x16	610	0.14	10x25	560	0.30	16x25	540	0.47
120	10x16	620	0.13	10x25	660	0.22	16x25	560	0.35
150	10x16	700	0.11	13x20	780	0.174	16x31.5	710	0.26
180	10x20	800	0.10	13x20	820	0.142	16x35.5	760	0.22
220	10x20	920	0.08	13x25	950	0.13	16x35.5	820	0.19
330	13x20	1250	0.055	16x25	1440	0.10	18x41	1180	0.16
470	13x25	1620	0.053	16x31.5	1650	0.09	---	---	---
680	13x30	1950	0.043	18x35.5	1790	0.08	---	---	---
1000	16x31.5	2350	0.034	18x41	1930	0.066	---	---	---
1500	18x35.5	2710	0.031	---	---	---	---	---	---
1800	18x41	3000	0.027	---	---	---	---	---	---

Aluminum Electrolytic Capacitors

LR Series – Low Impedance and Low ESR 105°C



Max ripple current: mA rms at 105°C. 120Hz, Max. Impedance at 20°C 100Khz

W.V μ F	200			250			350		
	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
1	6.3x11	45	7.76	6.3x11	50	6.54	6.3x11.5	50	7.90
2.2	6.3x11	55	5.18	8x11.5	72	4.12	8x11.5	75	5.30
3.3	8x11.5	71	4.25	8x11.5	75	3.85	10x12.5	90	3.80
4.7	8x11.5	78	5.00	8x11.5	85	3.50	10x16	118	3.13
6.8	10x16	140	2.71	8x16	124	2.50	10x16	148	2.43
10	10x16	150	2.02	8x16	141	1.80	10x16	165	1.64
22	10x16	186	1.80	10x20	210	1.30	13x20	220	1.22
33	10x20	280	1.00	10x25	248	1.25	13x20	263	1.02
47	13x20	360	0.65	13x20	375	0.60	16x25	389	0.76
68	13x25	480	0.42	16x25	490	0.38	16x31.5	475	0.57
100	16x25	780	0.30	16x31.5	675	0.27	16x35.5	481	0.56
120	16x25	740	0.28	16x31.5	692	0.26	18x35.5	525	0.54
150	16x31.5	840	0.25	16x35.5	750	0.24	18x41	590	0.50
180	18x31.5	920	0.20	18x35.5	830	0.21	---	---	---
220	18x41	1090	0.16	18x31.5	850	0.20	---	---	---

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LR Series – Low Impedance and Low ESR 105°C



Max ripple current: mA rms at 105°C. 120Hz, Max. Impedance at 20°C 100Khz

W.V μ F	400			420			450		
	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
1	8x11.5	36	16.50	8x11.5	38	17.00	8x11.5	45	17.35
2.2	10x12.5	76	13.00	10x12.5	58	12.10	10x16	65	10.25
3.3	8x11.5	86	12.00	10x12.5	87	11.00	10x16	89	10.00
4.7	10x12.5	105	10.00	10x16	102	8.50	10x20	105	5.00
6.8	10x16	160	7.50	10x16	160	6.00	10x20	135	4.05
10	10x20	235	3.60	10x20	180	3.70	10x25	180	3.75
22	13x20	295	2.65	13x25	330	2.70	13x25	320	2.80
33	13x25	440	1.60	16x25	480	1.80	16x25	460	2.20
47	16x25	580	1.40	16x31.5	620	1.10	16x35.5	650	1.05
68	16x31.5	800	0.80	18x31.5	750	0.80	18x35.5	760	0.75
100	18x35.5	900	0.61	18x35.5	820	0.70	18x41	880	0.74