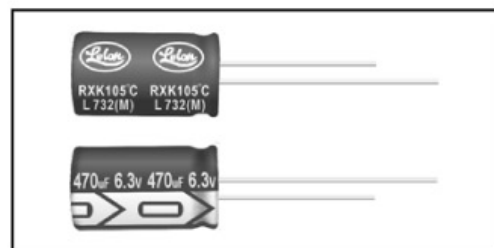


Features

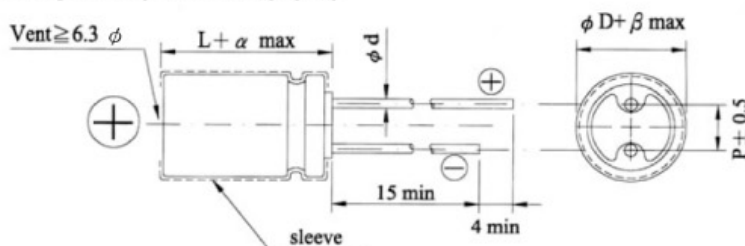
- 105°C, 2,000 ~ 5,000 hours assured
- Low ESR, suitable for switching power supplies
- Smaller size with large permissible ripple current
- RoHS Compliance



SPECIFICATIONS

Items	Performance																																			
Operating Temperature Range	-55℃ ~ +105℃																																			
Capacitance Tolerance	±20% (at 120Hz, 20℃)																																			
Leakage Current (at 20℃)	I = 0.01CV or 3 (μA) whichever is greater (after 2 minutes) Where, C = rated capacitance in μF V = rated DC working voltage in V																																			
Dissipation Factor (Tan δ at 120Hz, 20℃)	<table><tr><td>Rated Voltage</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td></tr><tr><td>Tan δ (max)</td><td>0.22</td><td>0.19</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.09</td></tr></table> When the capacitance exceeds 1,000 μF, 0.02 shall be added every 1,000 μF increase.	Rated Voltage	6.3	10	16	25	35	50	63	Tan δ (max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09																			
Rated Voltage	6.3	10	16	25	35	50	63																													
Tan δ (max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09																													
Low Temperature Characteristics (at 120Hz)	Impedance ratio shall not exceed the values given in the table below. <table><tr><td colspan="2">Rated Voltage</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td></tr><tr><td>Impedance Ratio</td><td>Z(-55℃)/Z(+20℃)</td><td>4</td><td>4</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td></tr></table>	Rated Voltage		6.3	10	16	25	35	50	63	Impedance Ratio	Z(-55℃)/Z(+20℃)	4	4	3	3	3	3	3																	
Rated Voltage		6.3	10	16	25	35	50	63																												
Impedance Ratio	Z(-55℃)/Z(+20℃)	4	4	3	3	3	3	3																												
Load Life Test	<table><tr><td>Test Time</td><td>2,000 hrs for φD ≤ 6.3 mm 3,000 hrs for φD = 8 mm 4,000 hrs for φD = 10 mm 5,000 hrs for φD ≥ 12.5 mm</td></tr><tr><td>Capacitance Change</td><td>Within ±20% of initial value</td></tr><tr><td>Dissipation Factor</td><td>Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td>Within specified value</td></tr></table> * The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied with rated ripple current for 3,000 ~ 5,000 hrs at 105℃.	Test Time	2,000 hrs for φD ≤ 6.3 mm 3,000 hrs for φD = 8 mm 4,000 hrs for φD = 10 mm 5,000 hrs for φD ≥ 12.5 mm	Capacitance Change	Within ±20% of initial value	Dissipation Factor	Less than 200% of specified value	Leakage Current	Within specified value																											
Test Time	2,000 hrs for φD ≤ 6.3 mm 3,000 hrs for φD = 8 mm 4,000 hrs for φD = 10 mm 5,000 hrs for φD ≥ 12.5 mm																																			
Capacitance Change	Within ±20% of initial value																																			
Dissipation Factor	Less than 200% of specified value																																			
Leakage Current	Within specified value																																			
Shelf Life Test	<table><tr><td>Test Time</td><td>1,000 hrs</td></tr><tr><td>Capacitance Change</td><td>Within ±20% of initial value</td></tr><tr><td>Dissipation Factor</td><td>Less than 200% of specified value</td></tr><tr><td>Leakage Current</td><td>Within specified value</td></tr></table> * The above specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hrs at 105℃ without voltage applied.	Test Time	1,000 hrs	Capacitance Change	Within ±20% of initial value	Dissipation Factor	Less than 200% of specified value	Leakage Current	Within specified value																											
Test Time	1,000 hrs																																			
Capacitance Change	Within ±20% of initial value																																			
Dissipation Factor	Less than 200% of specified value																																			
Leakage Current	Within specified value																																			
Ripple Current & Frequency Multipliers	<table><tr><th>Freq.(Hz) Cap.(μF)</th><th>60(50)</th><th>120</th><th>500</th><th>1K</th><th>10K</th><th>100K</th></tr><tr><td>Under 33</td><td>0.40</td><td>0.55</td><td>0.65</td><td>0.80</td><td>0.90</td><td>1.00</td></tr><tr><td>39 ~ 330</td><td>0.60</td><td>0.70</td><td>0.80</td><td>0.90</td><td>0.95</td><td>1.00</td></tr><tr><td>390 ~ 1,000</td><td>0.65</td><td>0.80</td><td>0.85</td><td>0.98</td><td>1.00</td><td>1.00</td></tr><tr><td>1,200 up above</td><td>0.80</td><td>0.90</td><td>0.95</td><td>0.98</td><td>1.00</td><td>1.00</td></tr></table>	Freq.(Hz) Cap.(μF)	60(50)	120	500	1K	10K	100K	Under 33	0.40	0.55	0.65	0.80	0.90	1.00	39 ~ 330	0.60	0.70	0.80	0.90	0.95	1.00	390 ~ 1,000	0.65	0.80	0.85	0.98	1.00	1.00	1,200 up above	0.80	0.90	0.95	0.98	1.00	1.00
Freq.(Hz) Cap.(μF)	60(50)	120	500	1K	10K	100K																														
Under 33	0.40	0.55	0.65	0.80	0.90	1.00																														
39 ~ 330	0.60	0.70	0.80	0.90	0.95	1.00																														
390 ~ 1,000	0.65	0.80	0.85	0.98	1.00	1.00																														
1,200 up above	0.80	0.90	0.95	0.98	1.00	1.00																														

DIAGRAM OF DIMENSIONS



LEAD SPACING AND DIAMETER Unit: mm

φ D	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0		7.5	
φ d	0.5		0.6			0.8	
α	1.0				1.5		
β				0.5			

Remark: 16 × 20 is used flat type rubber bung.

DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension: $\phi D \times L$ (mm)

Ripple Current: mA/rms at 100K Hz, 105°C

V.DC μF	Item	6.3V (0J)					10V (1A)					16V (1C)				
		$\phi D \times L$	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)		$\phi D \times L$	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)	
			20°C	-10°C	120Hz	100KHz		20°C	-10°C	120Hz	100KHz		20°C	-10°C	120Hz	100KHz
56												5×11	0.72	1.8	116	165
68												5×11	0.72	1.8	126	180
82							5×11	0.72	1.8	116	165					
100							5×11	0.72	1.8	126	180					
120		5×11	0.72	1.8	116	165						6.3×11	0.38	0.95	179	255
180							6.3×11	0.38	0.95	179	255	6.3×15	0.27	0.68	231	330
220		6.3×11	0.38	0.95	179	255	6.3×11	0.38	0.95	196	280					
270		6.3×11	0.38	0.95	196	280	6.3×15	0.27	0.68	231	330	8×11.5	0.20	0.50	291	415
330												10×12.5	0.12	0.30	438	625
		6.3×15	0.27	0.68	231	330	8×11.5	0.20	0.50	291	415	8×11.5	0.20	0.50	315	450
390												8×15	0.16	0.40	347	495
												10×12.5	0.12	0.30	540	675
470		8×11.5	0.20	0.50	332	415	8×11.5	0.20	0.50	360	450					
560							10×12.5	0.12	0.30	500	625					
		8×11.5	0.20	0.50	360	450	8×15	0.16	0.40	396	495	8×15	0.16	0.40	472	590
680		10×12.5	0.12	0.30	500	625	10×12.5	0.12	0.30	540	675	8×20	0.11	0.28	512	640
												10×16	0.084	0.21	660	825
820		8×15	0.16	0.40	396	495	8×15	0.16	0.40	472	590	8×20	0.11	0.28	560	700
		10×12.5	0.12	0.30	540	675						10×16	0.084	0.21	728	910
1,000		10×16	0.084	0.21	660	825	8×20	0.11	0.28	512	640	10×20	0.062	0.16	904	1,130
							10×16	0.084	0.21	660	825	10×20	0.062	0.16	832	1,040
1,200		8×15	0.16	0.40	472	590	8×20	0.11	0.28	560	700	10×20	0.062	0.16	904	1,130
		8×20	0.11	0.28	512	640	10×16	0.084	0.21	728	910	10×25	0.052	0.13	1,008	1,260
1,500		10×16	0.084	0.21	728	910										
		8×20	0.11	0.28	560	700	10×20	0.062	0.16	832	1,040	10×25	0.052	0.13	1,112	1,390
1,800		10×20	0.062	0.16	936	1,040	10×20	0.062	0.16	1,017	1,130	10×30	0.044	0.11	1,296	1,440
							10×25	0.052	0.13	1,134	1,260	12.5×20	0.046	0.12	1,206	1,340
2,200		10×20	0.062	0.16	1,017	1,130	10×25	0.052	0.13	1,251	1,390	10×30	0.044	0.11	1,296	1,440
		10×25	0.052	0.13	1,134	1,260	10×30	0.044	0.11	1,296	1,440	12.5×20	0.046	0.12	1,305	1,450
2,700												12.5×25	0.034	0.085	1,521	1,690
		10×25	0.052	0.13	1,251	1,390	10×30	0.044	0.11	1,413	1,570	12.5×25	0.034	0.085	1,629	1,810
3,300							12.5×20	0.046	0.12	1,206	1,340					
		10×30	0.044	0.11	1,296	1,440	12.5×20	0.046	0.12	1,305	1,450	12.5×30	0.030	0.075	1,755	1,950
3,900		12.5×20	0.046	0.12	1,206	1,340	12.5×25	0.034	0.085	1,521	1,690	16×20	0.035	0.087	1,692	1,880
		10×30	0.044	0.11	1,413	1,570	12.5×25	0.034	0.085	1,629	1,810	12.5×30	0.030	0.075	1,917	2,130
4,700		12.5×20	0.046	0.12	1,305	1,450	12.5×30	0.030	0.075	1,755	1,950	12.5×35	0.027	0.068	2,151	2,390
		12.5×25	0.034	0.085	1,521	1,690						16×25	0.028	0.070	1,863	2,070
5,600		12.5×25	0.034	0.085	1,629	1,810	12.5×30	0.030	0.075	1,917	2,130	12.5×35	0.027	0.068	2,151	2,390
												12.5×40	0.024	0.060	2,196	2,440
6,800							12.5×35	0.027	0.068	1,980	2,200	16×25	0.028	0.070	2,025	2,250
		12.5×30	0.030	0.075	1,755	1,950	12.5×35	0.027	0.068	2,196	2,440	16×31.5	0.025	0.063	2,115	2,350
8,200							12.5×40	0.024	0.060	2,358	2,620					
							16×20	0.035	0.087	1,692	1,880					
10,000							16×25	0.028	0.070	1,863	2,070					
		12.5×30	0.030	0.075	1,917	2,130	12.5×40	0.024	0.060	2,358	2,620	16×31.5	0.025	0.055	2,295	2,550
		12.5×35	0.027	0.068	1,980	2,200	16×25	0.028	0.070	2,025	2,250	16×35.5	0.022	0.055	2,295	2,550
		16×20	0.035	0.087	1,440	1,600										
		12.5×35	0.027	0.068	2,151	2,390	16×31.5	0.025	0.063	2,115	2,350	16×35.5	0.022	0.055	2,448	2,720
		12.5×40	0.024	0.060	2,196	2,440						16×40	0.018	0.045	2,610	2,900
		16×25	0.028	0.070	1,863	2,070										
		12.5×40	0.024	0.060	2,358	2,620	16×31.5	0.025	0.063	2,295	2,550	16×40	0.018	0.045	2,844	3,160
		16×25	0.028	0.070	2,025	2,250	16×35.5	0.022	0.055	2,295	2,550	18×35.5	0.021	0.053	2,394	2,660
		16×31.5	0.025	0.063	2,115	2,350										
		16×31.5	0.025	0.063	2,295	2,550	16×35.5	0.022	0.055	2,448	2,720	18×35.5	0.021	0.053	2,601	2,890
		16×35.5	0.022	0.055	2,691	2,990										

Dimension: $\phi D \times L(mm)$

Ripple Current: mA/rms at 100K Hz, 105°C

DIMENSION & PERMISSIBLE RIPPLE CURRENT

V DC μF	Item	25V (1E)				35V (1V)				50V (1H)						
		φ D×L	Impedance (Ω, Max/100K Hz)		Ripple Current (mA/rms, 105℃)		φ D×L	Impedance (Ω, Max/100K Hz)		Ripple Current (mA/rms, 105℃)		φ D×L	Impedance (Ω, Max/100K Hz)		Ripple Current (mA/rms, 105℃)	
			20℃	-10℃	120Hz	100KHz		20℃	-10℃	120Hz	100KHz		20℃	-10℃	120Hz	100KHz
18												5×11	1.1	3.3	72	130
22												5×11	1.1	3.3	83	150
27						5×11	0.72	1.8	91	165						
33						5×11	0.72	1.8	99	180						
39		5×11	0.72	1.8	116	165						6.3×11	0.56	1.6	154	220
47		5×11	0.72	1.8	126	180						6.3×11	0.56	1.6	161	230
56							6.3×11	0.38	0.95	179	255	6.3×15	0.41	1.2	217	310
68							6.3×11	0.38	0.95	196	280	8×11.5	0.29	0.84	238	340
82		6.3×11	0.38	0.95	179	255	6.3×15	0.27	0.68	231	330	8×11.5	0.29	0.84	249	355
												8×15	0.25	0.75	329	470
												10×12.5	0.16	0.40	336	480
100		6.3×11	0.38	0.95	196	280						10×12.5	0.16	0.40	371	530
120		6.3×15	0.27	0.68	231	330	8×11.5	0.20	0.50	291	415	8×15	0.25	0.75	392	560
							10×12.5	0.12	0.30	438	625	8×20	0.18	0.52	427	610
												10×16	0.12	0.30	529	755
150		8×11.5	0.20	0.50	291	415	8×11.5	0.20	0.50	315	450	10×16	0.12	0.30	588	840
							10×12.5	0.12	0.30	473	675					
180		8×11.5	0.20	0.50	315	450	8×15	0.16	0.40	347	495	8×20	0.18	0.52	525	750
		10×12.5	0.12	0.30	438	625						10×20	0.088	0.22	662	945
220		8×15	0.16	0.40	347	495	8×15	0.16	0.40	413	590	10×20	0.088	0.22	728	1,040
		10×12.5	0.12	0.30	473	675	8×20	0.11	0.28	448	640	10×25	0.068	0.17	805	1,150
							10×16	0.084	0.21	578	825					
270							8×20	0.11	0.28	490	700	10×25	0.068	0.17	896	1,280
							10×16	0.084	0.21	637	910					
330							10×20	0.062	0.16	728	1,040	10×30	0.059	0.15	882	1,260
		8×15	0.16	0.40	413	590						12.5×20	0.059	0.15	833	1190
		8×20	0.11	0.28	448	640										
390		10×16	0.084	0.21	578	825										
		8×20	0.11	0.28	560	700	10×20	0.062	0.16	904	1,130	12.5×20	0.059	0.15	952	1190
		10×16	0.084	0.21	728	910	10×25	0.052	0.13	1,008	1,260					
470		10×20	0.062	0.16	832	1,040	10×25	0.052	0.13	1,112	1,390	10×30	0.059	0.15	1,176	1,470
												12.5×25	0.045	0.11	1,192	1,490
560		10×20	0.062	0.16	904	1,130	10×30	0.044	0.11	1,152	1,440	12.5×25	0.045	0.11	1,304	1,630
		10×25	0.052	0.13	1,008	1,260	12.5×20	0.046	0.12	1,072	1,340	12.5×30	0.039	0.098	1,376	1,720
		10×25	0.052	0.13	1,112	1,390	10×30	0.044	0.11	1,256	1,570	12.5×30	0.039	0.098	1,520	1,900
680							12.5×20	0.046	0.12	1,160	1,450	12.5×35	0.033	0.083	1,512	1,890
							12.5×25	0.034	0.085	1,352	1,690	16×20	0.048	0.120	1,248	1,560
		10×30	0.044	0.11	1,152	1,440	12.5×25	0.034	0.085	1,448	1,810	12.5×35	0.033	0.083	1,656	2,070
820		12.5×20	0.046	0.12	1,072	1,340						12.5×40	0.029	0.073	1,624	2,030
												16×25	0.033	0.083	1,504	1,880
		10×30	0.044	0.11	1,256	1,570	12.5×30	0.030	0.075	1,560	1,950	12.5×40	0.029	0.073	1,800	2,250
1,000		12.5×20	0.046	0.12	1,160	1,450	16×20	0.035	0.087	1,376	1,720	16×25	0.033	0.083	1,664	2,080
		12.5×25	0.034	0.085	1,352	1,690						16×31.5	0.029	0.073	1,720	2,150
		12.5×25	0.034	0.085	1,629	1,810	12.5×30	0.030	0.075	1,917	2,130	16×31.5	0.029	0.073	2,088	2,320
1,200							12.5×35	0.027	0.068	1,980	2,200	16×35.5	0.025	0.063	2,115	2,350
							16×25	0.028	0.070	1,863	2,070					
		12.5×30	0.030	0.075	1,755	1,950	12.5×35	0.027	0.068	2,151	2,390	16×35.5	0.025	0.063	2,286	2,540
1,500		16×20	0.035	0.087	1,539	1,710	12.5×40	0.024	0.060	2,196	2,440	16×40	0.021	0.063	2,336	2,595
							16×25	0.028	0.070	2,025	2,250					
		12.5×30	0.030	0.075	1,917	2,130	12.5×40	0.024	0.060	2,358	2,620	16×40	0.021	0.063	2,466	2,740
1,800		12.5×35	0.027	0.068	1,980	2,200	16×31.5	0.025	0.063	2,115	2,350	18×35.5	0.023	0.058	2,160	2,400
		16×25	0.028	0.070	1,863	2,070										
		12.5×35	0.027	0.068	2,151	2,390	16×31.5	0.025	0.063	2,295	2,550	18×35.5	0.023	0.058	2,349	2,610
2,200		12.5×40	0.024	0.060	2,196	2,440	16×35.5	0.022	0.055	2,295	2,550	18×40	0.020	0.050	2,385	2,650
		16×25	0.028	0.070	2,025	2,250										
		16×31.5	0.025	0.063	2,115	2,350	16×35.5	0.022	0.055	2,448	2,720					
2,700							16×40	0.018	0.045	2,610	2,900					
							18×35.5	0.021	0.053	2,394	2,660					
		16×31.5	0.025	0.063	2,295	2,550	18×35.5	0.021	0.053	2,601	2,890					
3,300		16×35.5	0.022	0.055	2,295	2,550	18×40	0.017	0.043	2,709	3,010					
		16×35.5	0.022	0.055	2,448	2,720	18×40	0.017	0.043	2,934	3,260					
		16×40	0.018	0.045	2,610	2,900										
3,900		18×35.5	0.021	0.053	2,394	2,660										
		18×35.5	0.021	0.053	2,601	2,890										
		18×40	0.017	0.043	2,709	3,010										
4,700		18×40	0.017	0.043	2,934	3,260										
5,600		18×40	0.017	0.043	2,934	3,260										

Dimension: $\phi D \times L(mm)$

Ripple Current: mA/rms at 100K Hz, 105°C

DIMENSION & PERMISSIBLE RIPPLE CURRENT

V. DC Item μF	$\phi D \times L$	63V(1J)			
		Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)	
		20°C	-10°C	120Hz	100KHz
12	5×11	1.90	4.78	55	100
27	6.3×11	1.10	2.78	88	160
33	6.3×11	1.10	2.75	96	175
39	6.3×15	0.62	1.55	161	230
47	8×11.5	0.49	1.23	193	275
56	8×11.5	0.49	1.23	203	290
	10×12.5	0.27	0.675	294	420
68	8×15	0.34	0.850	252	360
	10×12.5	0.27	0.675	354	505
	10×16	0.21	0.525	366	523
82	8×20	0.21	0.525	350	500
100	8×15	0.34	0.850	308	440
120	10×16	0.210	0.525	455	650
	10×20	0.160	0.400	490	700
150	8×20	0.210	0.525	476	680
	10×25	0.130	0.325	546	780
180	10×20	0.160	0.400	553	790
	10×30	0.100	0.250	672	960
220	10×25	0.130	0.325	648	925
	12.5×20	0.110	0.275	609	870
270	10×30	0.100	0.250	812	1,160
	12.5×25	0.074	0.185	805	1,150
330	12.5×20	0.110	0.275	746	1,065
390	12.5×25	0.074	0.185	1,088	1,360
	12.5×30	0.068	0.170	1,024	1,280
	12.5×30	0.068	0.170	1,120	1,400
470	12.5×35	0.063	0.158	1,112	1,390
	16×20	0.059	0.148	1,080	1,350
	16×25	0.055	0.138	1,184	1,480
560	12.5×40	0.051	0.128	1,224	1,530
	16×25	0.055	0.138	1,296	1,620
680	12.5×35	0.063	0.158	1,336	1,670
	16×31.5	0.046	0.115	1,376	1,720
820	12.5×40	0.051	0.128	1,480	1,850
	16×31.5	0.046	0.115	1,512	1,890
	16×35.5	0.040	0.100	1,528	1,910
1,000	16×35.5	0.040	0.100	1,688	2,110
	18×35.5	0.040	0.100	1,576	1,970
1,500	18×35.5	0.040	0.100	2,169	2,410