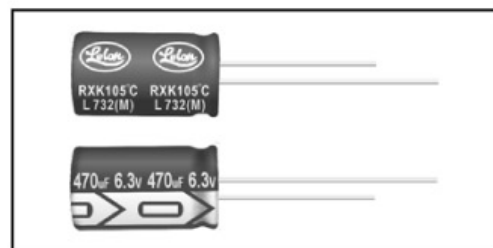


Features

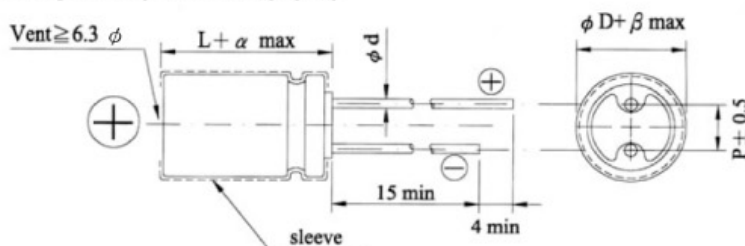
- 105°C, 2,000 ~ 5,000 hours assured
- Low ESR, suitable for switching power supplies
- Smaller size with large permissible ripple current
- RoHS Compliance



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 Item μF	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
											8×15	0.16	0.40	347	495
390											10×12.5	0.12	0.30	540	675
	8×11.5	0.20	0.50	332	415	8×11.5	0.20	0.50	360	450					
470						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
	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
560											10×16	0.084	0.21	660	825
	8×15	0.16	0.40	396	495	8×15	0.16	0.40	472	590	8×20	0.11	0.28	560	700
680	10×12.5	0.12	0.30	540	675						10×16	0.084	0.21	728	910
	10×16	0.084	0.21	660	825	8×20	0.11	0.28	512	640	10×20	0.062	0.16	832	1,040
820						10×16	0.084	0.21	660	825					
	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
1,000	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
1,200	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
1,500	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	1,413	1,570
	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
											12.5×25	0.034	0.085	1,521	1,690
1,800	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
						12.5×20	0.046	0.12	1,206	1,340					
2,200	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
	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	1,485	1,650
	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
2,700	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	1,980	2,200
	12.5×25	0.034	0.085	1,521	1,690						16×25	0.028	0.070	1,863	2,070
	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
3,300											12.5×40	0.024	0.060	2,196	2,440
						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	12.5×40	0.024	0.060	2,151	2,390	16×31.5	0.025	0.063	2,115	2,350
3,900						16×20	0.035	0.087	1,692	1,880					
						16×25	0.028	0.070	1,863	2,070					
4,700	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										
5,600	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										
6,800	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										
8,200	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
10,000	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 μ F	Item	25V (1E)				35V (1V)				50V (1H)						
		ϕ D×L	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)		ϕ D×L	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)		ϕ D×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
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	8×15	0.16	0.40	413	590	10×20	0.062	0.16	728	1,040	10×30	0.059	0.15	882	1,260	
	8×20	0.11	0.28	448	640						12.5×20	0.059	0.15	833	1190	
	10×16	0.084	0.21	578	825											
390	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											
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
470	12.5×30	0.068	0.170	1,120	1,400
	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