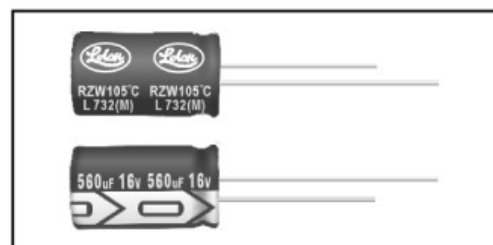


Features

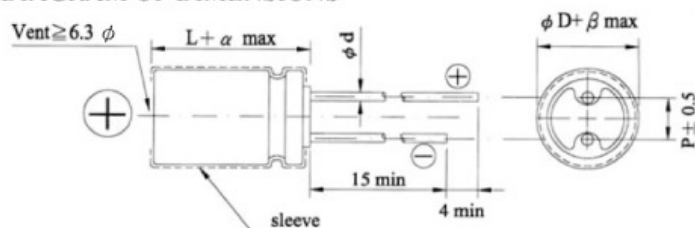
- 105°C, 4,000 ~ 10,000 hours assured
- Low ESR, suitable for switching power supplies
- Smaller size with large permissible ripple current
- RoHs Compliance



SPECIFICATIONS

Items	Performance																																			
Operating Temperature Range	-40℃ ~ +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 120 Hz, 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 1000μF, 0.02 shall be added every 1000μF 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																			
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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>3</td><td>3</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℃)	3	3	3	3	3	3	3																	
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Impedance Ratio	Z(-55℃)/Z(+20℃)	3	3	3	3	3	3	3																												
Load Life Test	<table><tr><td rowspan="2">Time</td><td>6.3 ~ 10V</td><td>4,000 hrs for φD = 5 ~ 6.3 mm; 6,000 hrs for φD = 8 ~ 10 mm; 8,000 hrs for φD ≥ 12.5 mm;</td></tr><tr><td>16 ~ 63V</td><td>5,000 hrs for φD = 5 ~ 6.3 mm; 7,000 hrs for φD = 8 ~ 10 mm; 10,000 hrs for φD ≥ 12.5 mm;</td></tr><tr><td colspan="2">Capacitance Change</td><td>Within ±25% of initial value</td></tr><tr><td colspan="2">Dissipation Factor</td><td>Less than 200% of specified value</td></tr><tr><td colspan="2">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 4,000 ~ 10,000 hrs at 105℃.	Time	6.3 ~ 10V	4,000 hrs for φD = 5 ~ 6.3 mm; 6,000 hrs for φD = 8 ~ 10 mm; 8,000 hrs for φD ≥ 12.5 mm;	16 ~ 63V	5,000 hrs for φD = 5 ~ 6.3 mm; 7,000 hrs for φD = 8 ~ 10 mm; 10,000 hrs for φD ≥ 12.5 mm;	Capacitance Change		Within ±25% of initial value	Dissipation Factor		Less than 200% of specified value	Leakage Current		Within specified value																					
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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 ±25% 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 ±25% of initial value	Dissipation Factor	Less than 200% of specified value	Leakage Current	Within specified value																											
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Ripple Current & Frequency Multipliers	<table><tr><th>Freq.(Hz)</th><th>120</th><th>1K</th><th>10K</th><th>100K up</th></tr><tr><td>Cap.(μF)</td><td></td><td></td><td></td><td></td></tr><tr><td>under ~ 33</td><td>0.42</td><td>0.70</td><td>0.90</td><td>1.0</td></tr><tr><td>39 ~ 270</td><td>0.50</td><td>0.73</td><td>0.92</td><td>1.0</td></tr><tr><td>330 ~ 680</td><td>0.55</td><td>0.77</td><td>0.94</td><td>1.0</td></tr><tr><td>820 ~ 1,800</td><td>0.6</td><td>0.80</td><td>0.96</td><td>1.0</td></tr><tr><td>2,200 ~ 18,000</td><td>0.7</td><td>0.85</td><td>0.98</td><td>1.0</td></tr></table>	Freq.(Hz)	120	1K	10K	100K up	Cap.(μF)					under ~ 33	0.42	0.70	0.90	1.0	39 ~ 270	0.50	0.73	0.92	1.0	330 ~ 680	0.55	0.77	0.94	1.0	820 ~ 1,800	0.6	0.80	0.96	1.0	2,200 ~ 18,000	0.7	0.85	0.98	1.0
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DIAGRAM OF DIMENSIONS



LEAD SPACING AND DIAMETER							Unit: mm
ϕD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
ϕd	0.5		0.6			0.8	
α	1.0			1.5			
β	0.5						

Dimension: $\phi D \times L(\text{mm})$

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

DIMENSION & PERMISSIBLE RIPPLE CURRENT

$\phi D \times L$	Item	6.3V (0J)				10V (1A)				16V (1C)			
		μF	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C) 100KHz	μF	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C) 100KHz	μF	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C) 100KHz
			20°C	-10°C			20°C	-10°C			20°C	-10°C	
5×11		150	0.58	2.3	210	100	0.58	2.3	210	56	0.58	2.3	210
6.3×11		330	0.22	0.87	340	220	0.22	0.87	340	120	0.22	0.87	340
8×11.5		680	0.13	0.52	640	470	0.13	0.52	640	330	0.13	0.52	640
8×15		1,000	0.087	0.35	840	680	0.087	0.35	840	470	0.087	0.35	840
8×20		1,200	0.069	0.27	1,050	1,000	0.069	0.27	1,050	680	0.069	0.27	1,050
10×12.5		820	0.080	0.32	865	680	0.080	0.32	865	470	0.080	0.32	865
10×16		1,200	0.060	0.24	1,210	1,000	0.060	0.24	1,210	680	0.060	0.24	1,210
10×20		1,500	0.046	0.18	1,400	1,200	0.046	0.18	1,400	1,000	0.046	0.18	1,400
10×25		2,200	0.042	0.17	1,650	1,500	0.042	0.17	1,650	1,200	0.042	0.17	1,650
10×30		2,700	0.031	0.12	1,910	2,200	0.031	0.12	1,910	1,500	0.031	0.12	1,910
12.5×16*		1,800	0.049	0.16	1,450	1,500	0.049	0.16	1,450	1,000	0.049	0.16	1,450
12.5×20		3,300	0.035	0.12	1,900	2,200	0.035	0.12	1,900	1,500	0.035	0.12	1,900
12.5×25		3,900	0.027	0.089	2,230	3,300	0.027	0.089	2,230	2,200	0.027	0.089	2,230
12.5×30		4,700	0.024	0.078	2,650	3,900	0.024	0.078	2,650	2,700	0.024	0.078	2,650
12.5×35		5,600	0.020	0.065	2,880	4,700	0.020	0.065	2,880	3,300	0.020	0.065	2,880
12.5×40		6,800	0.017	0.056	3,350	5,600	0.017	0.056	3,350	3,900	0.017	0.056	3,350
16×16*		2,700	0.042	0.12	1,940	2,200	0.042	0.12	1,940	1,500	0.042	0.12	1,940
16×20*		5,600	0.027	0.078	2,530	3,900	0.027	0.078	2,530	2,700	0.027	0.078	2,530
16×25		6,800	0.021	0.060	2,930	5,600	0.021	0.060	2,930	3,900	0.021	0.060	2,930
16×31.5		8,200	0.017	0.050	3,450	6,800	0.017	0.050	3,450	4,700	0.017	0.050	3,450
16×35.5		10,000	0.015	0.044	3,610	8,200	0.015	0.044	3,610	5,600	0.015	0.044	3,610
16×40		12,000	0.013	0.038	4,080	10,000	0.013	0.038	4,080	6,800	0.013	0.038	4,080
18×16*		3,900	0.043	0.11	2,210	2,700	0.043	0.11	2,210	2,200	0.043	0.11	2,210
18×20*		6,800	0.026	0.067	2,860	5,600	0.026	0.067	2,860	3,900	0.026	0.067	2,860
18×25*		10,000	0.019	0.049	3,140	6,800	0.019	0.049	3,140	4,700	0.019	0.049	3,140
18×31.5		12,000	0.015	0.040	4,170	8,200	0.015	0.040	4,170	5,600	0.015	0.040	4,170
18×35.5		15,000	0.014	0.038	4,220	10,000	0.014	0.038	4,220	8,200	0.014	0.038	4,220
18×40		18,000	0.012	0.032	4,280	12,000	0.012	0.032	4,280	10,000	0.012	0.032	4,280

Remark: Case size in mark of "*" is used flat type rubber bung.

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

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

DIMENSION & PERMISSIBLE RIPPLE CURRENT

$\phi D \times L$	Item	25V (1E)				35V (1V)				50V (1H)			
		μF	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C) 100KHz	μF	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C) 100KHz	μF	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C) 100KHz
			20°C	-10°C			20°C	-10°C			20°C	-10°C	
5×11										0.47	5.5	22.0	17
5×11										1.0	4.0	16.0	30
5×11										2.2	2.5	10.0	43
5×11										3.3	2.2	8.8	53
5×11										4.7	1.9	7.6	88
5×11										10	1.5	6.0	100
5×11	47	0.58	2.3	210		33	0.58	2.3	210	22	0.70	2.8	180
6.3×11	100	0.22	0.87	340		56	0.22	0.87	340	56	0.30	1.2	295
8×11.5	220	0.13	0.52	640		150	0.13	0.52	640	100	0.17	0.68	555
8×15	330	0.087	0.35	840		220	0.087	0.35	840	120	0.12	0.48	730
8×20	470	0.069	0.27	1,050		270	0.069	0.27	1,050	180	0.091	0.36	910
10×12.5	330	0.080	0.32	865		220	0.080	0.32	865	150	0.12	0.48	760
10×16	470	0.060	0.24	1,210		330	0.060	0.24	1,210	220	0.084	0.34	1,050
10×20	680	0.046	0.18	1,400		470	0.046	0.18	1,400	270	0.060	0.24	1,220
10×25	820	0.042	0.17	1,650		560	0.042	0.17	1,650	330	0.055	0.22	1,440
10×30	1,000	0.031	0.12	1,910		680	0.031	0.12	1,910	470	0.043	0.17	1,690
12.5×16*	680	0.049	0.16	1,450		470	0.049	0.16	1,450	270	0.061	0.20	1,260
12.5×20	1,000	0.035	0.12	1,900		680	0.035	0.12	1,900	470	0.045	0.15	1,660
12.5×25	1,500	0.027	0.089	2,230		1,000	0.027	0.089	2,230	560	0.034	0.11	1,950
12.5×30	1,800	0.024	0.078	2,650		1,200	0.024	0.078	2,650	680	0.030	0.10	2,310
12.5×35	2,200	0.020	0.065	2,880		1,500	0.020	0.065	2,880	820	0.025	0.083	2,510
12.5×40	2,700	0.017	0.056	3,350		1,800	0.017	0.056	3,350	1,000	0.021	0.069	2,920
16×16*	1,000	0.042	0.12	1,940		680	0.042	0.12	1,940	470	0.055	0.17	1,690
16×20*	1,800	0.027	0.078	2,530		1,200	0.027	0.078	2,530	820	0.034	0.10	2,210
16×25	2,700	0.021	0.060	2,930		1,800	0.021	0.060	2,930	1,000	0.025	0.075	2,555
16×31.5	3,300	0.017	0.050	3,450		2,200	0.017	0.050	3,450	1,200	0.022	0.066	3,010
16×35.5	3,900	0.015	0.044	3,610		2,700	0.015	0.044	3,610	1,500	0.019	0.057	3,150
16×40	4,700	0.013	0.038	4,080		3,300	0.013	0.038	4,080	1,800	0.016	0.048	3,710
18×16*	1,200	0.043	0.11	2,210		1,000	0.043	0.11	2,210	560	0.054	0.15	1,930
18×20*	2,200	0.026	0.067	2,860		1,800	0.026	0.067	2,860	1,000	0.036	0.097	2,490
18×25*	3,300	0.019	0.049	3,140		2,200	0.019	0.049	3,140	1,200	0.026	0.070	2,740
18×31.5	3,900	0.015	0.040	4,170		2,700	0.015	0.040	4,170	1,800	0.021	0.057	3,635
18×35.5	4,700	0.014	0.038	4,220		3,300	0.014	0.038	4,220	2,200	0.017	0.046	3,680
18×40	5,600	0.012	0.032	4,280		3,900	0.012	0.032	4,280	2,700	0.014	0.038	3,800

Remark: Case size in mark of "*" is used flat type rubber bung.

Dimension: $\phi D \times L(\text{mm})$

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

DIMENSION & PERMISSIBLE RIPPLE CURRENT

V. DC		63V (1J)			
ϕ D×L	Item	μ F	Impedance (Ω , Max/100K Hz)		Ripple Current (mA/rms, 105°C)
			20°C	-10°C	100KHz
5×11	15	0.88	3.5	165	
6.3×11	33	0.35	1.4	265	
8×11.5	56	0.22	0.88	500	
8×15	82	0.16	0.64	665	
8×20	120	0.12	0.48	820	
10×12.5	82	0.11	0.44	690	
10×16	120	0.076	0.31	950	
10×20	180	0.056	0.23	1,150	
10×25	220	0.046	0.19	1,350	
12.5×16*	180	0.072	0.29	1,150	
12.5×20	270	0.041	0.13	1,500	
12.5×25	390	0.031	0.093	1,900	
12.5×30	470	0.028	0.084	2,300	
12.5×35	560	0.024	0.072	2,500	
12.5×40	680	0.021	0.063	2,800	
16×20*	470	0.032	0.096	2,000	
16×25	680	0.025	0.075	2,600	
16×31.5	820	0.021	0.063	2,850	
16×35.5	1,000	0.019	0.057	2,900	
16×40	1,200	0.018	0.054	3,400	
18×20*	680	0.030	0.090	2,500	
18×25*	820	0.024	0.072	2,800	
18×31.5	1,200	0.020	0.060	3,300	
18×35.5	1,500	0.018	0.054	3,400	
18×40	1,800	0.017	0.051	3,500	

Remark: Case size in mark of "40" is used flat type rubber bung.