

Features

- Snap-in terminal type
- 85°C, 2,000 hours assured
- RoHS Compliance



Sleeve & Marking Color: Black & White

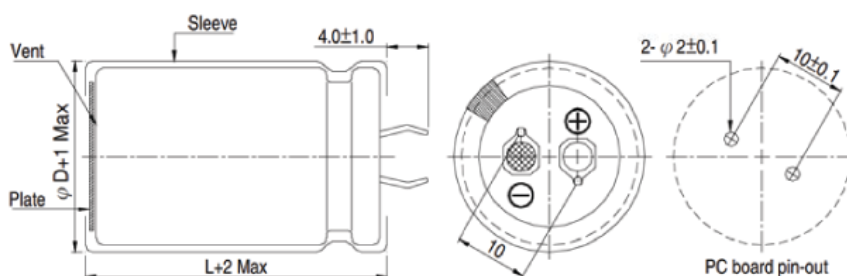
SPECIFICATIONS

Items	Performance																																																												
Category Temperature Range	-40℃ ~ +85℃																																																												
Capacitance Tolerance	±20% (at 120Hz, 20℃)																																																												
Leakage Current (at 20℃)	$I=3\sqrt{CV}$ or 1.5 mA whichever is smaller (after 5 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>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>420</td><td>450</td><td>500</td></tr><tr><td>Tan δ (max)</td><td>0.50</td><td>0.45</td><td>0.40</td><td>0.35</td><td>0.30</td><td>0.20</td><td>0.15</td><td>0.15</td><td>0.15</td><td>0.15</td><td>0.15</td><td>0.15</td><td>0.15</td><td>0.15</td></tr></table>														Rated Voltage	16	25	35	50	63	100	160	200	250	350	400	420	450	500	Tan δ (max)	0.50	0.45	0.40	0.35	0.30	0.20	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15																	
Rated Voltage	16	25	35	50	63	100	160	200	250	350	400	420	450	500																																															
Tan δ (max)	0.50	0.45	0.40	0.35	0.30	0.20	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15																																															
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>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>420</td><td>450</td><td>500</td></tr><tr><td rowspan="2">Impedance Ratio</td><td>Z(-25℃)/Z(+20℃)</td><td>4</td><td>3</td><td>3</td><td>2</td><td>2</td><td>4</td><td>4</td><td>4</td><td>4</td><td>8</td><td>8</td><td>8</td><td>8</td><td>8</td></tr><tr><td>Z(-40℃)/Z(+20℃)</td><td>15</td><td>10</td><td>8</td><td>6</td><td>5</td><td>4</td><td>8</td><td>10</td><td>10</td><td>16</td><td>18</td><td>18</td><td>20</td><td>20</td></tr></table>														Rated Voltage		16	25	35	50	63	100	160	200	250	350	400	420	450	500	Impedance Ratio	Z(-25℃)/Z(+20℃)	4	3	3	2	2	4	4	4	4	8	8	8	8	8	Z(-40℃)/Z(+20℃)	15	10	8	6	5	4	8	10	10	16	18	18	20	20
Rated Voltage		16	25	35	50	63	100	160	200	250	350	400	420	450	500																																														
Impedance Ratio	Z(-25℃)/Z(+20℃)	4	3	3	2	2	4	4	4	4	8	8	8	8	8																																														
	Z(-40℃)/Z(+20℃)	15	10	8	6	5	4	8	10	10	16	18	18	20	20																																														
Endurance	<table><tr><td>Test Time</td><td>2,000 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 the rated voltage applied with rated ripple current for 2,000 hours at 85℃.														Test Time	2,000 Hrs	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																																																												
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 150% 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 hours at 85℃ without voltage applied. The rated voltage shall be applied to the capacitors before the measurements (Refer to JIS C 5101-4 4.1).														Test Time	1,000 Hrs	Capacitance Change	Within ±20% of initial value	Dissipation Factor	Less than 150% of specified value	Leakage Current	Within specified value																																							
Test Time	1,000 Hrs																																																												
Capacitance Change	Within ±20% of initial value																																																												
Dissipation Factor	Less than 150% of specified value																																																												
Leakage Current	Within specified value																																																												
Ripple Current & Frequency Multipliers	<table><tr><td rowspan="2">Case size</td><td colspan="2">Freq.(Hz)</td><td rowspan="2">50 / 60</td><td rowspan="2">100 / 120</td><td rowspan="2">500</td><td rowspan="2">1k</td><td rowspan="2">10k up</td></tr><tr><td>W. V.(V)</td><td></td></tr><tr><td rowspan="3">Length ≤ 55L</td><td colspan="2">Under 100</td><td>0.92</td><td>1.00</td><td>1.13</td><td>1.19</td><td>1.20</td></tr><tr><td colspan="2">160 ~ 250</td><td>0.81</td><td>1.00</td><td>1.32</td><td>1.45</td><td>1.50</td></tr><tr><td colspan="2">350 to up</td><td>0.77</td><td>1.00</td><td>1.30</td><td>1.41</td><td>1.43</td></tr><tr><td>Length ≥ 60L</td><td colspan="2">160 ~ 450</td><td>0.88</td><td>1.00</td><td>1.20</td><td>1.25</td><td>1.40</td></tr></table>														Case size	Freq.(Hz)		50 / 60	100 / 120	500	1k	10k up	W. V.(V)		Length ≤ 55L	Under 100		0.92	1.00	1.13	1.19	1.20	160 ~ 250		0.81	1.00	1.32	1.45	1.50	350 to up		0.77	1.00	1.30	1.41	1.43	Length ≥ 60L	160 ~ 450		0.88	1.00	1.20	1.25	1.40							
Case size	Freq.(Hz)		50 / 60	100 / 120	500	1k	10k up																																																						
	W. V.(V)																																																												
Length ≤ 55L	Under 100		0.92	1.00	1.13	1.19	1.20																																																						
	160 ~ 250		0.81	1.00	1.32	1.45	1.50																																																						
	350 to up		0.77	1.00	1.30	1.41	1.43																																																						
Length ≥ 60L	160 ~ 450		0.88	1.00	1.20	1.25	1.40																																																						

• 3,000 Hrs specifications are available upon request

DIAGRAM OF DIMENSIONS

Unit: mm



DIMENSION & PERMISSIBLE RIPPLE CURRENT

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

Ripple Current: A/rms at 120 Hz, 85°C

μF	ϕD	250V (2E)								350V (2V)							
		22 ϕ		25 ϕ		30 ϕ		35 ~ 40 ϕ		20 ϕ ~ 22 ϕ		25 ϕ		30 ϕ		35 ϕ	
82										22x25	0.81						
100										22x25	0.90						
120										20x30 22x25 22x30	0.95 0.99 1.05	25x25	1.04				
150	22x25	0.91								20x35 22x30 22x35	1.05 1.14 1.24	25x25 25x30	1.16 1.24	30x25	1.24		
180	22x25	1.01								20x40 22x35 22x40	1.23 1.28 1.38	25x30 25x35	1.30 1.37	30x25	1.37		
220	22x25 22x30	1.18 1.27	25x25	1.24						20x45 22x40 22x45	1.36 1.40 1.49	25x35 25x40	1.46 1.51	30x25 30x30	1.47 1.52		
270	22x30 22x35	1.43 1.52	25x25	1.49						22x45 22x50	1.62 1.69	25x35 25x40	1.65 1.73	30x30 30x35	1.71 1.76	35x25	1.72
330	22x30 22x35	1.58 1.67	25x25 25x30	1.53 1.62	30x25	1.59				22x50	1.94	25x40 25x45	1.88 1.96	30x35 30x40	1.93 1.98	35x25 35x30	1.77 1.96
390	22x35 22x40	1.79 1.89	25x30 25x35	1.79 1.87	30x25 30x30	1.77 1.85						25x45	2.04	30x35 30x40	2.12 2.18	35x30 35x35	2.19 2.24
470	22x40 22x45	2.05 2.14	25x35	2.05	30x25 30x30	1.80 2.03								30x40 30x45	2.41 2.48	35x35 35x40	2.43 2.50
560	22x50	2.43	25x40 25x45	2.32 2.41	30x30 30x35	2.24 2.32	35x25 35x30	2.21 2.30						30x45	2.60	35x35 35x40	2.62 2.69
680			25x45 25x50	2.62 2.70	30x35 30x40	2.58 2.65	35x30 35x35	2.54 2.62								35x40 35x45	2.80 3.08
820					30x40 30x45	2.92 3.00	35x35 35x40	2.90 2.98									
1,000					30x45 30x50	3.11 3.47	35x35 35x40 35x45	3.06 3.39 3.45									
1,200							35x40 35x45 35x50	3.39 3.74 3.81									
1,500							40x40	4.04									
1,800							35x70 40x50	4.60 4.50									
2,200							35x80 40x60	4.90 4.90									
2,700							35x90 40x80	5.40 6.30									
3,300							35x90 40x80	6.10 7.00									
3,900							35x100 40x90	7.47 8.00									
4,700							40x100	8.88									

μF	ϕD	400V (2G)								450V (2W)							
		20 ϕ ~ 22 ϕ		25 ϕ		30 ϕ		35 ϕ		20 ϕ ~ 22 ϕ		25 ϕ		30 ϕ		35 ϕ	
56										20x25 22x25	0.57 0.68						
68	20x25 22x25	0.66 0.72								20x25 22x25 22x30	0.62 0.72 0.80						
82	20x25 22x25	0.72 0.80								20x30 22x30	0.74 0.87	25x25	0.85				
100	22x25 22x30	0.81 0.94	25x25	0.97						20x35 22x30 22x35	0.87 0.87 1.00	25x25	0.98				
120	22x30 22x35	1.04 1.12	25x25 25x30	1.08 1.16						20x40 22x35 22x40	0.96 1.05 1.15	25x30 25x35	1.09 1.12	30x25	1.10		
150	20x35 22x35 22x40	1.00 1.18 1.25	25x30	1.21	30x25	1.24				20x45 22x35 22x40	1.13 1.20 1.25	25x30 25x35 25x40	1.16 1.27 1.35	30x25 30x30	1.16 1.32		
180	20x40 22x40 22x45	1.17 1.34 1.40	25x30 25x35	1.23 1.37	30x25 30x30	1.45 1.52	35x25	1.54		20x50 22x45 22x50	1.29 1.36 1.51	25x35 25x40 25x45	1.31 1.45 1.50	30x30 30x35	1.43 1.49	35x25 35x30	1.35 1.49
220	20x50 22x50 22x55	1.43 1.56 1.56	25x35 25x40	1.56 1.62	30x30 30x35	1.58 1.64	35x25	1.60				25x40 25x45 25x50	1.47 1.65 1.73	30x30 30x35 30x40	1.45 1.63 1.72	35x25 35x30	1.43 1.61
270	22x50	1.74	25x40 25x45	1.70 1.76	30x30 30x35 30x40	1.56 1.73 1.79	35x25 35x30	1.53 1.75				25x45 25x50	1.59 1.72	30x35 30x40 30x45	1.65 1.83 1.95	35x30 35x35	1.71 1.86



Aluminum Electrolytic Capacitors

LS

DIMENSION & PERMISSIBLE RIPPLE CURRENT

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

Ripple Current: A/rms at 120 Hz, 85°C

μF	ϕD	63V (1J)								100V (2A)							
		22 ϕ		25 ϕ		30 ϕ		35 ϕ		22 ϕ		25 ϕ		30 ϕ		35 ϕ	
1,200										22x30	2.12	25x25	2.10				
1,500										22x35	2.45	25x30	2.43	30x25	2.46		
1,800	22x25	1.90								22x40	2.77	25x35	2.77	30x25	2.65		
2,200	22x30	2.35	25x25	2.30						22x45	3.12	25x40	3.20	30x30	3.10	35x25	3.14
2,700	22x35	2.50	25x25	2.34								25x45	3.61	30x35	3.60	35x30	3.71
			25x30	2.52													
3,300	22x35	2.62	25x30	2.69	30x25	2.78						25x50	4.06	30x40	4.05	35x35	4.07
3,900	22x40	2.90	25x35	3.09	30x30	3.09								30x45	4.60	35x35	4.50
	22x45	3.10															
4,700	22x50	3.49	25x40	3.37	30x30	3.37	35x25	3.36						30x50	5.13	35x40	5.12
5,600			25x45	3.77	30x35	3.75	35x30	3.88								35x45	5.75
6,800			25x50	4.41	30x40	4.41	35x30	4.04								35x50	6.01
							35x35	4.33									
8,200					30x45	4.90	35x35	4.80									
10,000					30x50	5.49	35x40	5.47									
12,000							35x45	5.97									
							35x50	6.30									

μF	ϕD	160V (2C)								200V (2D)							
		20 ϕ ~ 22 ϕ		25 ϕ		30 ϕ		35 ϕ ~ 40 ϕ		22 ϕ		25 ϕ		30 ϕ		35 ϕ ~ 40 ϕ	
150	22x25	0.95								22x25	0.95						
180	22x25	1.04								22x25	1.04						
220	22x25	1.15								22x25	1.15						
270	20x25	1.12								22x25	1.30						
	22x25	1.27															
330	20x30	1.28								22x30	1.44	25x25	1.43				
	22x25	1.40								22x30	1.65	25x25	1.63				
390	22x30	1.62								22x35	1.76	25x30	1.74				
470	22x30	1.77	25x25	1.77						22x35	1.88	25x30	1.86	30x25	1.85		
										22x40	1.97						
560	22x30	1.92	25x25	1.92						22x40	2.08	25x30	2.05	30x25	2.05		
	22x35	2.05	25x30	2.05	30x25	2.02				22x45	2.18	25x35	2.16	30x30	2.15		
680	22x35	2.12	25x30	2.22	30x25	2.22				22x45	2.36	25x35	2.36	30x30	2.36	35x25	2.10
	22x40	2.24	25x35	2.31						22x50	2.47	25x40	2.43	30x35	2.43		
820	22x40	2.32	25x30	2.32	30x25	2.31	35x25	2.50		22x50	2.68	25x40	2.66	30x30	2.62	35x30	2.72
	22x45	2.55	25x35	2.52	30x30	2.51						25x45	2.79	30x35	2.77	35x25	2.39
1,000	22x50	2.88	25x40	2.86	30x30	2.82	35x25	2.79				25x45	2.96	30x35	3.00	35x30	2.96
			25x45	2.98	30x35	2.94	35x30	2.92				25x50	3.12	30x40	3.10	35x35	3.09
1,200			25x45	3.27	30x35	3.25	35x30	3.24				25x50	3.44	30x40	3.44	35x35	3.40
			25x50	3.43	30x40	3.42	35x35	3.40						30x45	3.53	35x40	3.50
1,500					30x40	3.77	35x35	3.75								35x40	3.87
					30x45	3.92	35x40	3.90						30x50	3.93	35x45	3.95
1,800					30x45	4.10	35x35	4.08								35x45	4.37
					30x50	4.32	35x40	4.30								35x50	4.45
2,200							35x45	4.72								35x50	5.00
							35x50	4.88								40x40	4.92
2,700																35x70	5.40
																40x50	5.00
3,300							35x70	5.00								35x80	5.90
							40x60	5.00								40x60	5.90
3,900							35x80	5.40								35x80	6.30
							40x70	5.60								40x80	6.40
4,700							40x80	6.60								35x90	7.10
																40x80	7.38
5,600																35x100	8.90
																40x90	8.00
6,800																40x100	8.65



Aluminum Electrolytic Capacitors

LS

DIMENSION & PERMISSIBLE RIPPLE CURRENT

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

Ripple Current: A/rms at 120 Hz, 85°C

μF	ϕD	16V (1C)								25V (1E)							
		22 ϕ		25 ϕ		30 ϕ		35 ϕ		22 ϕ		25 ϕ		30 ϕ		35 ϕ	
5,600										22x25	2.31						
6,800										22x25	2.38						
										22x30	2.56	25x25	2.78				
8,200	22x25	2.56								22x25	2.43						
										22x35	2.81	25x25	2.85				
10,000	22x25	2.60	25x25	2.81						22x30	2.97	25x25	2.93	30x25	3.21		
	22x30	2.81	25x30	3.03						22x35	3.18	25x30	3.16				
12,000	22x25	2.88	25x25	2.96						22x35	3.33	25x30	3.26	30x25	3.59	35x25	3.58
	22x30	3.13								22x40	3.53	25x35	3.48	30x30	3.86		
15,000	22x30	3.45	25x25	3.38	30x25	3.73				22x40	3.68	25x35	3.77	30x25	3.60	35x25	3.96
	22x35	3.69	25x30	3.64						22x50	4.08	25x40	4.00	30x35	4.12		
18,000	22x30	3.47	25x25	3.47						22x50	4.54	25x40	4.42	30x30	4.40	35x25	4.34
	22x40	3.98	25x35	3.98								25x45	4.68	30x35	4.66	35x30	4.68
22,000	22x35	3.84	25x30	3.93	30x25	4.08	35x25	4.15				25x45	4.71	30x35	4.70	35x25	4.60
	22x50	4.52	25x40	4.44	30x30	4.38								30x45	5.26	35x35	5.20
27,000	22x50	4.84															
33,000	22x50	5.20															

μF	ϕD	35V (1V)								50V (1H)							
		22 ϕ		25 ϕ		30 ϕ		35 ϕ		22 ϕ		25 ϕ		30 ϕ		35 ϕ	
2,200										22x25	1.93						
2,700										22x25	2.05						
										22x30	2.21						
3,300										22x30	2.41	25x25	2.38				
3,900										22x30	2.51	25x25	2.46				
										22x35	2.72	25x30	2.68				
4,700	22x25	2.21	25x25	2.42						22x35	2.83	25x30	3.03	30x25	3.01		
	22x30	2.41								22x40	3.01						
5,600	22x30	2.69	25x25	2.69						22x40	3.21	25x35	3.37	30x25	3.17	35x25	3.47
	22x35	2.79								22x45	3.43			30x30	3.43		
6,800	22x35	2.70	25x25	2.67	30x25	2.99				22x45	3.73	25x35	3.59	30x30	3.56	35x25	3.64
	22x40	2.89	25x30	2.89						22x50	3.94	25x40	3.87	30x35	3.87		
8,200	22x35	3.09	25x30	3.12	30x25	3.04						25x40	4.10	30x30	4.12	35x25	4.07
	22x45	3.47	25x35	3.33	30x30	3.29						25x45	4.37	30x35	4.42	35x30	4.41
10,000	22x40	3.22	25x35	3.37	30x25	3.36	35x25	3.32				25x50	4.91	30x35	4.68	35x30	4.59
	22x50	3.59	25x40	3.59	30x30	3.61								30x40	5.02	35x35	4.92
12,000	22x45	3.71	25x40	3.79	30x30	3.74	35x25	3.75						30x40	5.10	35x35	5.30
			25x45	4.01	30x35	4.01	35x30	4.02						30x50	5.60	35x40	5.60
15,000			25x45	4.55	30x35	4.54	35x25	4.37								35x40	6.03
					30x40	4.80	35x35	5.01								35x45	6.44
18,000			25x50	4.84	30x40	4.87	35x30	5.03									
					30x45	5.18	35x40	5.71									
22,000					30x45	5.79	35x35	5.71									
							35x45	6.38									

DIMENSION & PERMISSIBLE RIPPLE CURRENT

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

Ripple Current: A/rms at 120 Hz, 85°C

μF ϕD	400V (2G)						450V (2W)					
	20 ϕ ~ 22 ϕ		25 ϕ		30 ϕ		35 ~ 40 ϕ		20 ϕ ~ 22 ϕ		25 ϕ	
330			25x45 25x50	1.76 1.90	30x35 30x40 30x45	1.76 1.97 2.02	35x30 35x35	1.95 2.02			25x50	1.76
390			25x50	1.95	30x40 30x45	2.15 2.22	35x30 35x35 35x40	1.97 2.17 2.24			30x40 30x45 30x50	1.93 2.10 2.19
470					30x45 30x50	2.23 2.40	35x35 35x40 35x45	2.20 2.42 2.48			30x50	2.03 2.24
560					30x50	2.44	35x40 35x45 35x50	2.49 2.71 2.78				
680							35x45 35x50 35x60 40x50	2.88 2.95 3.70 3.70				
820							35x60 40x50	4.10 4.00				
1,000							35x70 40x60	4.80 4.80				
1,200							35x100 40x70	6.10 5.50				
1,500							35x100 40x80	6.80 6.50				
1,800							40x100	7.80				

μF ϕD	420V (2P)				500V (2H)			
	35 ϕ		40 ϕ		22 ϕ		35 ϕ	
56					22x25	0.70		
68					22x30	0.82		
82					22x35	0.96	25x30	0.97
100					22x40	1.14	25x35	1.15
120					22x45	1.30	25x35	1.25
150					22x50	1.52	25x40	1.48
180							25x50	1.65
220							30x40	1.60
270							30x45	1.90
330								35x30
680	35x60	3.70	40x50	3.70				35x40
820	35x70	4.40	40x60	4.30				35x45
1,000	35x80	5.10	40x60	4.80				35x50
1,200			40x70	5.50				
1,500			40x100	7.20				
1,800			40x100	7.80				

↑ ↑
Ripple current: A/rms
Case size: $\phi D \times L(\text{mm})$

Part numbering system

LS series	100 μF	$\pm 20\%$	400V	4.0 $\pm 0.5\text{mm}$	22 ϕ x30L	Pb-free Terminal + PVC Sleeve
LS-	101	M	2G	--	A	2230
Series name	Capacitance	Capacitance tolerance	Rated voltage	Terminal type	Terminal length	Case size
Example:	Example:	Example:	Example:	Example:	Example:	Example:
Cap. Symbol	Cap. Symbol	WV Symbol	Type Symbol	Type Symbol	“--”	$\phi D \times L$ Code
56 560	220 221	M = $\pm 20\%$ K = $\pm 10\%$	400 2G 450 2W	2 pins -- 5 pins L5	6.3 ± 1.0 mm	22x30 2230 25x25 2525 30x40 3040
470 471						

Note: For more details, please refer to “Product Code Guide– Snap-in Type” on page 15.