



LP series

Features

- ◆ Directly mountable on printed circuit board, without holders.
- ◆ Aluminum case daigned explosion –proof vent.
- ◆ For detail specifications, please refer to Engineering Bulletin No.E106
- ◆ HoHS Compliant



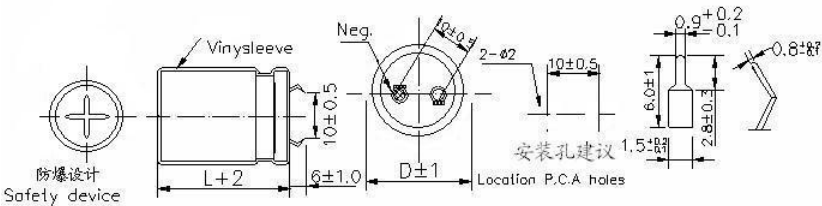
Specifications

Item	Performance Characteristics											
Operating Temperature Range	-40~+85℃							-25~+85℃				
Rate Voltage Range	10~100VDC							160~450VDC				
Capacitance Range	470~68000μF							47~27000μF				
Capacitance Tolerance	±20%（120Hz， +20℃）											
Leakage current（+20℃,max.）	1 ≤0.02CVAfter 5 minutes with rated working voltage applied.											
Dissipation factor（tgδ）	Less than the value under table (%)											
	Uf\VDC	10-16		25-35		50-63		80-100		160-250		315-450
	47~390	-		-		-		-		15		20
	470~3900	25		20		20		20		15		20
	4700~8200	35		30		30		25		-		-
	10000~22000	40		35		30		-		-		-
	27000~47000	45		40		35		-		-		-
	56000~68000	50		45		-		-		-		-
Low Temperature Characteristics（120Hz）	Impedance ratio max.											
	Rated voltage (V)	10	16	25	35	50	63	100	160	200-250	400-450	
	Z-25℃/ Z+20℃	5	5	4	4	4	4	4	4	4	8	
	Z-40℃/ Z+20℃	15	15	15	12	12	12	12	-	-	-	
Load Life	Test conditions											
	Duration time		: 2000Hrs									
	Ambient temperature		: +85℃									
	Applied voltage		: Rated DC working voltage									
	After test requirement at +20℃											
	Capacitance change		: ≤±20% of the initial measured value									
	Dissipation factor		: ≤200% of the initial specified value									
Leakage current		: ≤The initial specified value										
Shelf Life	Test conditions											
	Duration time		: 1000Hrs									
	Ambient temperature		: +85℃									
	Applied voltage		: None									
	After test requirement at +20℃ : The same limits as Load life.											
	Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes											

Multiplier for Ripple Current vs. Frequency

CAP(μF)	50(60)	120	1k	10k	50k-100k
Frequency (Hz)					
10<CAP≤ 100	0.8	1	1.36	1.48	1.53
100<CAP≤1000	0.8	1	1.25	1.35	1.38
1000 < CAP	0.8	1	1.17	1.25	1.28

Diagram of Dimension



LP series

Case Size

wv ΦD Cap (uF)		10								16							
		22		25		30		35		22		25		30		35	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
4700		22×21	2.40							22×21	2.40						
6800		22×26	2.84							22×26	2.84						
8200		22×26	2.90							22×26	2.90						
10000		22×31	3.06	25×26	3.06					22×31	3.06	25×26	3.06				
12000		22×31	3.43	25×26	3.43					22×31	3.43	25×26	3.43				
15000		22×36	3.94	25×31	3.94					22×36	3.94	25×31	3.94				
18000		22×41	4.34	25×31	4.34					22×41	4.34	25×31	4.34				
22000		22×46	4.80	25×36	4.80	30×31	4.80			22×46	4.80	25×36	4.80	30×31	4.80		
27000				25×46	7.57	30×36	7.57					25×46	7.57	30×36	7.57		
33000				25×51	8.20	30×41	8.20	35×32	8.20			25×51	8.20	30×41	8.20	35×32	8.20
39000						30×46	8.33	35×37	8.33					30×46	8.33	35×37	8.33
47000						30×51	8.96	35×42	8.93					30×51	8.96	35×42	8.96
56000								35×47	10.5					30×56	10.5	35×52	10.8
68000								35×52	10.8								

wv ΦD Cap (uF)		25								35							
		22		25		30		35		22		25		30		35	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
2200										22×21	2.00						
										22×26	2.18						
3300										22×26	2.46						
3900										22×26	2.50						
										22×31	2.64						
4700		22×26	2.64							22×31	2.68	25×26	2.68				
5600		22×26	2.72							22×31	2.72	25×26	2.72				
		22×31	2.78														
6800		22×31	2.93	25×26	2.93					22×36	3.06	25×31	3.06				
8200		22×31	3.05	25×26	3.05					22×41	3.29	25×36	3.34				
10000		22×36	3.43	25×31	3.43	30×26	3.43			22×46	3.60	25×41	3.60	30×31	3.60		
12000		22×41	3.84	25×36	3.84	30×31	3.84			22×51	3.80	25×46	3.80	30×36	3.80	35×32	3.80
15000		22×51	4.39	25×41	4.39	30×31	4.39					25×51	3.92	30×41	3.92	35×32	3.92
18000				25×46	4.80	30×36	4.80							30×46	4.70	35×37	4.70
22000				25×51	5.40	30×41	5.40							30×51	5.45	35×42	5.45
27000						30×46	5.97	35×37	5.97							35×47	5.78
33000						30×51	6.24	35×42	6.24							35×52	6.36
39000								35×47	7.10								
47000								35×52	7.60								

Ripple Current (A,ms) at 85°C 120Hz

LP series

Case Size

 $\Phi \text{ D} \times \text{L}$

wV $\Phi \text{ D}$ Cap (uF)	50								63							
	22		25		30		35		22		25		30		35	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1000									22×21	1.50						
									22×26	1.58						
1500	22×26	1.44							22×26	1.68						
2200	22×26	2.04							22×31	2.52	25×26	2.52				
2700	22×31	2.30							22×36	2.82	25×31	2.82				
3300	22×31	2.64	25×26	2.64					22×41	3.12	25×31	3.12	30×26	3.12		
3900	22×31	2.72	25×26	2.72					22×46	3.21	25×36	3.21	30×31	3.21		
4700	22×36	2.88	25×31	2.88	30×26	2.88			22×51	3.28	25×41	3.28			35×27	3.28
5600	22×41	3.06	25×36	3.06	30×31	3.06					25×46	3.86	30×36	3.86	35×32	3.86
6800	22×51	3.24	25×41	3.24	30×31	3.24					25×51	4.32	30×41	4.32	35×32	4.32
8200			25×46	3.48	30×36	3.48							30×46	4.44	35×37	4.44
10000			25×51	3.96	30×41	3.96	35×32	3.96							35×47	4.77
12000					30×46	4.10	35×37	4.10								
15000					30×51	4.70	35×42	4.70							35×63	5.04
18000							35×47	5.31								
22000							35×52	5.85								

wV $\Phi \text{ D}$ Cap (uF)	80								100							
	22		25		30		35		22		25		30		35	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
470									22×21	1.34						
680	22×21	1.25														
	22×26	1.34							22×26	1.53						
1000	22×26	1.62							22×31	1.62	25×26	1.62				
1200	22×31	1.65							22×31	1.65	25×31	1.74				
									22×36	1.74						
1500	22×31	1.76	25×26	1.76					22×36	1.72	25×36	1.85	30×31	1.85		
									22×41	1.85						
1800	22×36	1.82	25×31	1.82					22×41	2.05	25×41	2.20	30×31	2.20		
									22×46	2.20						
2200	22×41	2.52	25×31	2.52	30×26	2.52			22×46	2.52	25×41	2.64	30×31	2.64		
									22×51	2.64						
2700	22×46	2.76	25×36	2.76	30×31	2.76			22×51	3.08	25×46	3.16	30×36	3.16		
3300	22×51	3.24	25×41	3.24	30×31	3.24					25×51	3.42	30×41	3.42		
3900			25×46	3.40	30×36	3.40							30×46	3.58	35×37	3.58
4700			25×51	3.60	30×41	3.60							30×51	3.72	35×42	3.72
5600					30×46	3.78	35×37	3.78							35×47	3.78
6800					30×51	4.60	35×42	4.60							35×52	4.1
8200							35×52	4.92								
10000							35×63	5.04								

Ripple Current (A,ms) at 85°C 120Hz

LP series

Case Size

 $\Phi \times D \times L$

WV $\Phi \times D$ Cap (uF)	160								200							
	22		25		30		35		22		25		30		35	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
150									22×21	0.96						
180	22×21	1.12							22×21	0.98						
									22×26	1.00						
220	22×21	1.16							22×26	1.36						
	22×26	1.2														
270	22×26	1.35							22×26	1.46						
									22×31	1.50						
330	22×36	1.39							22×31	1.89	25×26	1.89				
	22×31	1.44														
390	22×31	1.66	25×26	1.66					22×31	1.92	25×31	1.92				
470	22×31	1.70	25×31	1.76					22×36	2.23	25×31	2.23	30×26	2.23		
	22×36	1.76														
560	22×36	2.03	25×31	2.03	30×26	2.03			22×41	2.57	25×41	2.57	30×26	2.57		
680	22×41	2.36	25×36	2.36	30×31	2.36			22×46	2.98	25×36	2.98	30×31	2.98		
820	22×46	2.72	25×41	2.72	30×31	2.57			22×51	3.26	25×46	3.26	30×36	3.26	35×27	3.26
					30×36	2.72										
1000			25×46	3.13	30×41	3.13	35×32	3.13			25×51	3.92	30×41	3.92	35×32	3.92
1200			25×51	3.44	30×36	3.44	35×32	3.25					30×46	4.25	35×37	4.25
							35×37	3.44								
1500					30×46	3.96	35×37	3.96					30×51	4.99	35×42	4.99
1800					30×51	4.47	35×42	4.47							35×47	5.84
2200							35×47	4.65							35×52	6.07
2700							35×52	4.76								

WV $\Phi \times D$ Cap (uF)	220								250							
	22		25		30		35		22		25		30		35	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
120									22×21	0.85						
150									22×21	0.90						
	22×21	0.75							22×26	0.98						
180	22×21	0.87							22×26	1.05						
	22×26	0.95							22×31	1.12						
220	22×26	1.10							22×31	1.36	25×26	1.36				
	22×26	1.22							22×31	1.60	25×31	1.72				
270	22×31	1.30	25×26	1.30												
	22×31	1.55	25×26	1.55					22×36	1.87	25×31	1.87	30×26	1.87		
330	22×31	1.57							22×41	2.04	25×36	2.04	30×31	2.04		
	22×36	1.65	25×31	1.65												
470	22×36	1.75							22×46	2.38	25×41	2.38	30×1	2.38		
	22×41	1.85	25×36	1.85	30×26	1.85										
560	22×41	2.10	25×36	2.10					22×51	2.74	25×46	2.81	30×36	2.81	35×27	2.81
	22×46	2.20	25×41	2.20	30×1	2.20	35×7	2.20								
680	22×46	2.25	25×41	2.25							25×51	3.11	30×41	3.11	35×32	3.11
	22×51	2.30	25×46	2.30	30×36	2.30	35×27	2.30								
820	22×51	2.54	25×46	2.54	30×41								30×46	3.55	35×37	3.55
			25×51	2.60												
1000			25×51	3.07									30×51	4.00	35×42	4.00
			25×56	3.20	30×46	3.20	35×37	3.20								
1200					30×51	3.70	35×42	3.70							35×47	4.55
1500					30×56	3.85	35×47	3.85							35×52	5.34
1800							35×52	4.00								
2200							35×57	4.20								

Ripple Current (A,ms) at 85°C 120Hz

LP series

Case Size

WV ΦD Cap (uF)		350								400										Φ D×L
		22		25		30		35		22		25		30		35		40		
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	
47										22×21	0.42									
56																				
68										22×31	0.51									
82										22×26	0.83									
100		22×26	0.76							22×31	1.03	25×26	1.03							
120		22×31	0.89	25×26	0.89					22×31	1.07	25×26	1.07							
150		22×31	1.02	25×26	1.02					22×36	1.26	25×31	1.26	30×26	1.26					
		22×36	1.08	25×31	1.08															
180		22×41	1.15	25×36	1.15	30×26	1.15			22×41	1.46	25×36	1.46	30×31	1.46					
220		22×46	1.40	25×41	1.40	30×31	1.40	35×27	1.40	22×51	1.75	25×41	1.75	30×36	1.75					
270				25×46	1.63	30×36	1.63	35×27	1.75			25×46	1.96	30×36	1.96	35×32	1.96			
330				25×51	1.88	30×41	1.88	35×32	1.88			25×51	2.26	30×41	2.26	35×37	2.26			
390						30×46	2.12	35×37	2.12					30×46	2.50	35×42	2.50			
470						30×51	2.41	35×42	2.41							35×47	2.80	40×37	2.80	
560								35×47	2.90							35×52	3.16	40×46	3.20	
680								35×52	3.20									40×52	3.69	

WV ΦD Cap (uF)		450									
		22		25		30		35		40	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
47		22×26	0.36								
56											
68		22×31	0.50								
82		22×31	0.89	25×26	0.89						
100		22×36	1.03	25×31	1.03						
120		22×41	1.19	25×36	1.19						
150		22×51	1.39	25×41	1.39	30×31	1.39				
180		22×51	1.52	25×46	1.52	30×36	1.52				
220				25×51	1.76	30×41	1.76	35×37	1.76		
270						30×46	2.00	35×37	2.00		
330						30×46	2.29	35×37	2.29		
390								35×42	2.54	40×37	2.54
470								35×47	2.89	40×42	2.89
560										40×52	3.26

Ripple Current (A,ms) at 85℃ 120Hz