

## LP Series Snap-in Type 85°C

### Features

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



### Specifications

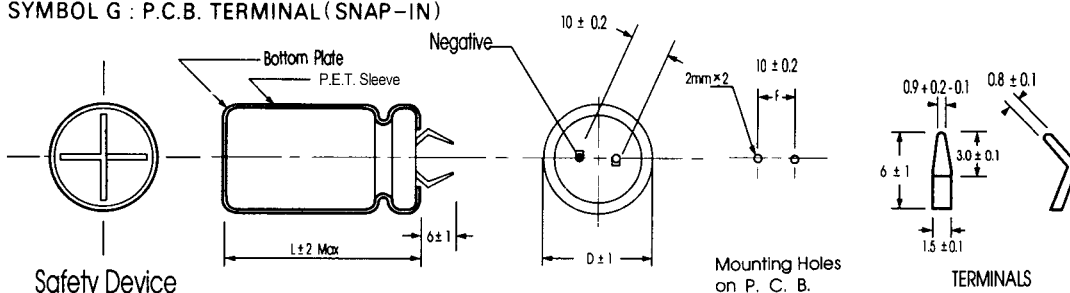
Item	Performance Characteristics										
Operating Temperature Range	-40 to +85°C	-25 to +85°C									
Rated Voltage Range	10 to 100 VDC	160 to 450 VDC									
Capacitance Range	470 to 68000 µF	47 to 2700 µF									
Capacitance Tolerance	±20% (120Hz, +20°C)										
Leakage Current (+20°C, max.)	I ≤ 0.02CV After 5 minutes with rated working voltage applied.										
Dissipation Factor (tan δ, at 20°C, 120Hz)	Less than the value under table (%)										
	µF \ 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	—	—	—				
Low Temperature Characteristics (at 120Hz)	Impedance ratio max.										
	Rated voltage(V)	10	16	25	35	50	63	100	160	200~250	400~450
	Z - 25°C / Z+20°C	5	5	4	4	4	4	4	4	4	8
Load Life	Test conditions										
	Duration time	:2000 Hrs									
	Ambient temperature	:+85°C									
	Applied voltage	:Rated DC working voltage									
	After test requirement at +20°C	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	:1000 Hrs									
	Ambient temperature	:+85°C									
	Applied voltage	:None									
	After test requirement at +20°C	: 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) \ Frequency(Hz)	50(60)	120	1K	10K	50K-100K
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 Dimensions:(unit:mm)

SYMBOL G : P.C.B. TERMINAL (SNAP-IN)



## Case Size

WV Cap (μF) φ D		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	22x21	2.40								22x21	2.40						
6800	22x26	2.84								22x26	2.84						
8200	22x26	2.90								22x26	2.90						
10000	22x31	3.06	25x26	3.06						22x31	3.06	25x26	3.06				
12000	22x31	3.43	25x26	3.43						22x31	3.43	25x26	3.43				
15000	22x36	3.94	25x31	3.94						22x36	3.94	25x31	3.94				
18000	22x41	4.34	25x31	4.34						22x41	4.34	25x31	4.34				
22000	22x46	4.80	25x36	4.80	30x31	4.80				22x46	4.80	25x36	4.80	30x31	4.80		
27000			25x46	7.57	30x36	7.57						25x46	7.57	30x36	7.57		
33000			25x51	8.20	30x41	8.20	35x32	8.20				25x51	8.20	30x41	8.20	35x32	8.20
39000					30x46	8.33	35x37	8.33						30x46	8.33	35x37	8.33
47000					30x51	8.96	35x42	8.93						30x51	8.96	35x42	8.96
56000							35x47	10.5						30x56	10.5	35x52	10.8
68000							35x52	10.8									

WV Cap (μF) φ D		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										22x21	2.00						
										22x26	2.18						
3300										22x26	2.46						
										22x26	2.50						
3900										22x31	2.64						
										22x31	2.68	25x26	2.68				
4700	22x26	2.64								22x31	2.72	25x26	2.72				
	22x26	2.72								22x31	2.72	25x26	2.72				
	22x31	2.78															
6800	22x31	2.93	25x26	2.93						22x36	3.06	25x31	3.06				
8200	22x31	3.05	25x26	3.05						22x41	3.29	25x36	3.34				
10000	22x36	3.43	25x31	3.43	30x26	3.43				22x46	3.60	25x41	3.60	30x31	3.60		
12000	22x41	3.84	25x36	3.84	30x31	3.84				22x51	3.80	25x46	3.80	30x36	3.80	35x32	3.80
15000	22x51	4.39	25x41	4.39	30x31	4.39						25x51	3.92	30x41	3.92	35x32	3.92
18000			25x46	4.80	30x36	4.80								30x46	4.70	35x37	4.70
22000			25x51	5.40	30x41	5.40								30x51	5.45	35x42	5.45
27000					30x46	5.97	35x37	5.97								35x47	5.78
33000					30x51	6.24	35x42	6.24								35x52	6.36
39000							35x47	7.10									
47000							35x52	7.60									

WV Cap (μF) φ D		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										22x21	1.50						
										22x26	1.58						
1500	22x26	1.44								22x26	1.68						
2200	22x26	2.04								22x31	2.52	25x26	2.52				
2700	22x31	2.30								22x36	2.82	25x31	2.82				
3300	22x31	2.64	25x26	2.64						22x41	3.12	25x31	3.12	30x26	3.12		
3900	22x31	2.72	25x26	2.72						22x46	3.21	25x36	3.21	30x31	3.21		
4700	22x36	2.88	25x31	2.88	30x26	2.88				22x51	3.28	25x41	3.28			35x27	3.28
5600	22x41	3.06	25x36	3.06	30x31	3.06						25x46	3.86	30x36	3.86	35x32	3.86
6800	22x51	3.24	25x41	3.24	30x31	3.24						25x51	4.32	30x41	4.32	35x32	4.32
8200			25x46	3.48	30x36	3.48								30x46	4.44	35x37	4.44
10000			25x51	3.96	30x41	3.96	35x32	3.96								35x47	4.77
12000					30x46	4.10	35x37	4.10									
15000					30x51	4.70	35x42	4.70								35x63	5.04
18000							35x47	5.31									
22000							35x52	5.85									

Ripple Current ( A, rms ) at 85°C 120Hz

φ DxL(mm)

Cap (μF)	φ D	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										22x21	1.34						
680		22x21	1.25														
		22x26	1.34							22x26	1.53						
1000		22x26	1.62							22x31	1.62	25x26	1.62				
1200		22x31	1.65							22x31	1.65	25x31	1.74				
										22x36	1.74						
1500		22x31	1.76	25x26	1.76					22x36	1.72	25x36	1.85	30x31	1.85		
										22x41	1.85						
1800		22x36	1.82	25x31	1.82					22x41	2.05	25x41	2.20	30x31	2.20		
										22x46	2.20						
2200		22x41	2.52	25x31	2.52	30x26	2.52			22x46	2.52	25x41	2.64	30x31	2.64		
										22x51	2.64						
2700		22x46	2.76	25x36	2.76	30x31	2.76			22x51	3.08	25x46	3.16	30x36	3.16		
3300		22x51	3.24	25x41	3.24	30x31	3.24					25x51	3.42	30x41	3.42		
3900				25x46	3.40	30x36	3.40							30x46	3.58	35x37	3.58
4700				25x51	3.60	30x41	3.60							30x51	3.72	35x42	3.72
5600						30x46	3.78	35x37	3.78							35x47	3.78
6800						30x51	4.60	35x42	4.60							35x52	4.1
8200								35x52	4.92								
10000								35x63	5.04								

Cap (μF)	φ D	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										22x21	0.96						
180		22x21	1.12							22x21	0.98						
										22x26	1.00						
220		22x21	1.16							22x26	1.36						
		22x26	1.20														
270		22x26	1.35							22x26	1.46						
										22x31	1.50						
330		22x36	1.39							22x31	1.89	25x26	1.89				
		22x31	1.44														
390		22x31	1.66	25x26	1.66					22x31	1.92	25x31	1.92				
470		22x31	1.70	25x31	1.76					22x36	2.23	25x31	2.23	30x26	2.23		
		22x36	1.76														
560		22x36	2.03	25x31	2.03	30x26	2.03			22x41	2.57	25x41	2.57	30x26	2.57		
680		22x41	2.36	25x36	2.36	30x31	2.36			22x46	2.98	25x36	2.98	30x31	2.98		
820		22x46	2.72	25x41	2.72	30x31	2.57			22x51	3.26	25x46	3.26	30x36	3.26	35x27	3.26
						30x36	2.72										
1000				25x46	3.13	30x41	3.13	35x32	3.13			25x51	3.92	30x41	3.92	35x32	3.92
				25x51	3.44	30x36	3.44	35x32	3.25					30x46	4.25	35x37	4.25
1200								35x37	3.44								
1500						30x46	3.96	35x37	3.96					30x51	4.99	35x42	4.99
1800						30x51	4.47	35x42	4.47							35x47	5.84
2200								35x47	4.65							35x52	6.07
2700								35x52	4.76								

Cap (μF)	φ D	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										22x21	0.85						
150										22x21	0.90						
		22x21	0.75							22x26	0.98						
180		22x21	0.87							22x26	1.05						
		22x26	0.95							22x31	1.12						
220		22x26	1.10							22x31	1.36	25x26	1.36				
		22x26	1.22							22x31	1.60	25x31	1.72				
270		22x31	1.30	25x26	1.30												
330		22x31	1.55	25x26	1.55					22x36	1.87	25x31	1.87	30x26	1.87		
		22x31	1.57							22x41	2.04	25x36	2.04	30x31	2.04		
390		22x36	1.65	25x31	1.65												
		22x36	1.75							22x46	2.38	25x41	2.38	30x31	2.38		
470		22x41	1.85	25x36	1.85	30x26	1.85										
		22x41	2.10	25x36	2.10					22x51	2.74	25x46	2.81	30x36	2.81	35x27	2.81
560		22x46	2.20	25x41	2.20	30x31	2.20	35x27	2.20								
		22x46	2.25	25x41	2.25							25x51	3.11	30x41	3.11	35x32	3.11
680		22x51	2.30	25x46	2.30	30x36	2.30	35x27	2.30								
				25x46	2.54												
820		22x51	2.54	25x51	2.60	30x41	2.60	35x32	2.60					30x46	3.55	35x37	3.55
				25x51	3.07												
1000				25x56	3.20	30x46	3.20	35x37	3.20					30x51	4.00	35x42	4.00
						30x51	3.70	35x42	3.70								
1200						30x56	3.85	35x47	3.85								
1500								35x52	4.00								
1800								35x57	4.20								
2200																	

φ D x L (mm)

Cap (μF)	φ D	WV																				
		350										400										
		22		25		30		35		40		22		25		30		35		40		
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	
47												22x21	0.42									
56																						
68												22x31	0.51									
82												22x26	0.83									
100		22x26	0.76									22x31	1.03	25x26	1.03							
120		22x31	0.89	25x26	0.89							22x31	1.07	25x26	1.07							
150		22x31	1.02	25x26	1.02							22x36	1.26	25x31	1.26	30x26	1.26					
		22x36	1.08	25x31	1.08																	
180		22x41	1.15	25x36	1.15	30x26	1.15					22x41	1.46	25x36	1.46	30x31	1.46					
220		22x46	1.40	25x41	1.40	30x31	1.40	35x27	1.40			22x51	1.75	25x41	1.75	30x36	1.75					
270				25x46	1.63	30x36	1.63	35x27	1.75					25x46	1.96	30x36	1.96	35x32	1.96			
330				25x51	1.88	30x41	1.88	35x32	1.88					25x51	2.26	30x41	2.26	35x37	2.26			
390						30x46	2.12	35x37	2.12							30x46	2.50	35x42	2.50			
470						30x51	2.41	35x42	2.41									35x47	2.80	40x37	2.80	
560								35x47	2.90									35x52	3.16	40x46	3.20	
680								35x52	3.20											40x52	3.69	
820																						
1000																						
1200																						
1500																						
1800																						

Cap (μF)	φ D	WV																				
		420										450										
		22		25		30		35		40		22		25		30		35		40		
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	
47		22x21	0.38									22x26	0.36									
56		22x26	0.42																			
68		22x31	0.49									22x31	0.50									
82		22x31	0.85	25x26	0.85							22x31	0.89	25x26	0.89							
100		22x36	1.03	25x26	1.03							22x36	1.03	25x31	1.03							
120		22x36	1.12	25x31	1.12							22x41	1.19	25x36	1.19							
150		22x41	1.32	25x36	1.32	30x31	1.32					22x51	1.39	25x41	1.39	30x31	1.39					
180				25x41	1.48	30x36	1.48					22x51	1.52	25x46	1.52	30x36	1.52					
220				25x46	1.75	30x41	1.75	35x32	1.75					25x51	1.76	30x41	1.76	35x37	1.76			
270				25x51	1.98	30x46	1.98	35x37	1.98							30x46	2.00	35x37	2.00			
330								35x42	2.27							30x46	2.29	35x37	2.29			
390								35x47	2.52	40x32	2.52							35x42	2.54	40x37	2.54	
470										40x37	2.91							35x47	2.89	40x42	2.89	
560										40x42	2.95									40x52	3.26	
680										40x52	3.30											

Ripple Current ( A, rms ) at 85°C 120Hz