



# LHP Snap-In, Low ESR, 105°C



## Features

- Highly reliable capacitors that withstand low ESR & long life.
- Two or three dimensions with same ratings
- Best for switching power supply.

## Specifications

Item	Performance Characteristics										
Operating Temperature Range	-40 to +105°C	-25 to +105°C									
Rated voltage Range	10 to 100 VDC	160 to 450 VDC									
Capacitance Range	560 to 47000 µF	56 to 1500 µF									
Capacitance Tolerance	±20%(120Hz, +20°C)										
Leakage Current (+20°C, max.)	I ≤ 0.02 CV after 5 minutes with rated working voltage applied..										
Dissipation Factor (Tanδ at 120Hz, 20°C)	Less than the value under table (%)										
	Rated Voltage(v)	10	16	25	35	50	63	80	100	160~250	350~400
	D.F.(%)max	55	40	30	25	20	15	15	15	15	20
Low Temperature Characteristics (at 120Hz)	Impedance ratio max										
	Rated Voltage(v)	10~16	25	35	50~63	80~100	160~400				
	Z (-25°C)/Z(+20°C)	4	3	3	2	2	4				
	Z (-40°C)/Z(+20°C)	15	10	8	6	5	-				
Load Life Test	Test conditions										
	Duration time :5000Hrs Ambient temperature:+105°C Applied voltage: Rated DC working voltage After test requirements at+20°C Capacitance change: ±≤25% of the initial measured value Dissipation Factor: ≤250% of the initial specified value Leakage current: ≤The initial specified value										
Shelf Life Test	Test conditions										
	Duration time :1000Hrs Ambient temperature:+105°C Applied voltage: None After test requirements at +20°C: Same limits as Load life. Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.										
Standards	Satisfies Characteristic W of JIS C5141										

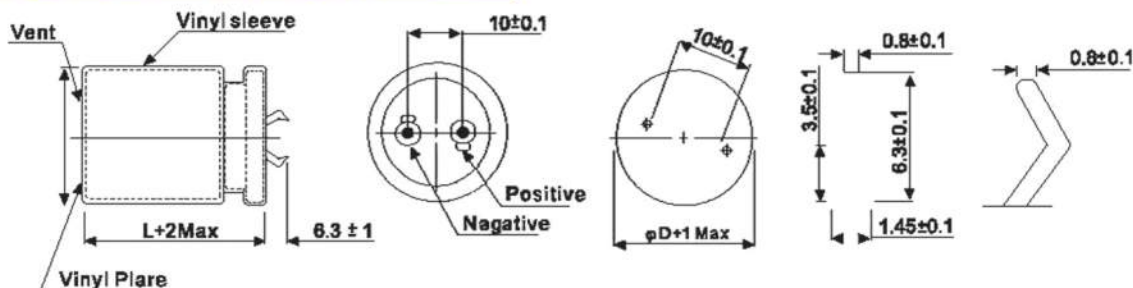
## Multiplier for Ripple Current VS, Frequency

Frequency (Hz)	50	120	300	1K	10K	50K
10 ~ 50 VDC	0.95	1.00	1.03	1.05	1.08	1.08
63 ~ 100 VDC	0.93	1.00	1.07	1.13	1.19	1.20
160 ~ 250 VDC	0.81	1.00	1.17	1.32	1.45	1.50
350 ~ 400VDC	0.77	1.00	1.16	1.30	1.41	1.43

## Multiplier for Ripple Current VS, Temperature

Temperature (°C)	45	60	85	95	105
Multiplier	2.10	1.90	1.40	1.25	1.00

## Diagram of Dimensions: (Unit: mm)





# LHP Snap-In, Low ESR, 105°C

## Case Size

φD x L (mm)

μF	W.V. {S.V.}	10{13}											
		22φ			25φ			30φ			35φ		
		Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
5600		22x25	1.10	126	-	-	-	-	-	-	-	-	-
6800		22x25	1.30	115	25x25	1.30	105	-	-	-	-	-	-
8200		22x25	1.56	110	25x25	1.56	95	-	-	-	-	-	-
10000		22x30	1.60	98	25x25	1.60	95	30x25	1.60	85	-	-	-
12000		22x35	1.80	82	25x30	1.80	78	30x25	1.80	78	-	-	-
15000		22x35	2.10	82	25x30	2.10	75	30x25	2.10	75	-	-	-
18000		22x35	2.20	82	25x30	2.20	68	30x30	2.20	65	-	-	-
22000		22x40	2.75	68	25x35	2.75	62	30x30	2.75	60	35x25	2.75	60
27000		-	-	-	25x45	3.05	49	30x40	3.05	48	35x30	3.05	47
33000		-	-	-	25x50	3.40	41	30x40	3.40	37	35x35	3.40	37
39000		-	-	-	-	-	-	30x50	3.60	32	35x40	3.60	31
47000		-	-	-	-	-	-	30x50	4.60	28	35x50	4.60	25

μF	W.V. {S.V.}	16{20}											
		22φ			25φ			30φ			35φ		
		Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
5600		22x25	1.40	126	-	-	-	-	-	-	-	-	-
6800		22x30	1.60	98	25x25	1.60	88	-	-	-	-	-	-
8200		22x35	1.80	82	25x30	1.80	75	-	-	-	-	-	-
10000		22x40	2.10	75	25x30	2.10	75	30x25	2.10	75	-	-	-
12000		22x40	2.40	68	25x35	2.40	68	30x25	2.40	68	-	-	-
15000		22x50	2.70	53	25x40	2.70	52	30x30	2.70	48	-	-	-
18000		-	-	-	25x45	3.05	46	30x35	3.05	45	35x30	3.05	45
22000		-	-	-	25x50	3.40	41	30x40	3.40	40	35x35	3.40	37
27000		-	-	-	-	-	-	30x50	4.02	32	35x40	4.02	31
33000		-	-	-	-	-	-	30x50	4.32	32	35x40	4.32	31
39000		-	-	-	-	-	-	-	-	-	35x50	4.95	25

μF	W.V. {S.V.}	25{32}											
		22φ			25φ			30φ			35φ		
		Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
3900		22x25	1.30	126	-	-	-	-	-	-	-	-	-
4700		22x30	1.50	98	25x25	1.50	88	-	-	-	-	-	-
5600		22x35	1.60	82	25x25	1.60	75	-	-	-	-	-	-
6800		22x40	1.87	68	25x30	1.87	68	30x25	1.87	75	-	-	-
8200		22x45	2.20	62	25x35	2.20	62	30x30	2.20	60	35x25	2.20	60
10000		22x50	2.35	52	25x40	2.35	52	30x35	2.35	52	35x30	2.35	52
12000		-	-	-	25x50	2.70	48	30x35	2.70	47	35x30	2.70	47
15000		-	-	-	-	-	-	30x40	3.15	38	35x35	3.15	37
18000		-	-	-	-	-	-	30x50	3.60	32	35x40	3.60	31
22000		-	-	-	-	-	-	-	-	-	35x45	3.90	29
27000		-	-	-	-	-	-	-	-	-	35x50	4.60	25

μF	W.V. {S.V.}	35{44}											
		22φ			25φ			30φ			35φ		
		Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
2200		22x25	1.10	126	-	-	-	-	-	-	-	-	-
2700		22x25	1.29	126	-	-	-	-	-	-	-	-	-
3300		22x30	1.40	98	25x25	1.40	88	-	-	-	-	-	-
3900		22x35	1.55	82	25x30	1.55	75	-	-	-	-	-	-
4700		22x40	1.75	68	25x30	1.75	68	30x25	1.75	68	-	-	-
5600		22x45	1.95	62	25x35	1.95	62	30x30	1.95	62	35x25	1.95	62
6800		22x50	2.20	53	25x40	2.20	52	30x35	2.20	52	35x30	2.20	52
8200		-	-	-	25x50	2.50	48	30x35	2.50	47	35x30	2.50	47
10000		-	-	-	-	-	-	30x40	2.80	38	35x35	2.80	37
12000		-	-	-	-	-	-	30x50	3.30	32	35x40	3.30	31
15000		-	-	-	-	-	-	-	-	-	35x50	4.25	25

- Ripple Current(A,rms)at105°C 120Hz
- Max Impedance {Z,mΩ} at 20°C 30KHz

SNAP-IN





# LHP Snap-In, Low ESR, 105°C

φD x L (mm)

W.V. {S.V.}	50{63}											
	22φ			25φ			30φ			35φ		
	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
1500	22x25	1.00	126	-	-	-	-	-	-	-	-	-
1800	22x30	1.10	98	25x25	1.10	88	-	-	-	-	-	-
2200	22x35	1.30	82	25x25	1.30	82	-	-	-	-	-	-
2700	22x40	1.45	68	25x30	1.45	68	30x25	1.45	68	-	-	-
3300	22x40	1.70	62	25x35	1.70	62	30x30	1.70	62	-	-	-
3900	22x50	1.90	53	25x40	1.90	52	30x35	1.90	50	-	-	-
4700	-	-	-	25x40	2.10	50	30x35	2.10	49	35x30	2.10	47
5600	-	-	-	25x50	2.36	41	30x40	2.36	38	35x35	2.36	37
6800	-	-	-	-	-	-	30x50	2.70	32	35x40	2.70	31
8200	-	-	-	-	-	-	30x50	3.16	29	35x40	3.16	28
10000	-	-	-	-	-	-	-	-	-	35x50	3.50	25

W.V. {S.V.}	63{79}											
	22φ			25φ			30φ			35φ		
	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
1000	22x25	1.00	126	-	-	-	-	-	-	-	-	-
1200	22x25	1.15	126	25x25	1.15	88	-	-	-	-	-	-
1500	22x35	1.30	82	25x30	1.30	75	-	-	-	-	-	-
1800	22x40	1.45	75	25x30	1.45	73	30x25	1.45	73	-	-	-
2200	22x45	1.65	62	25x35	1.65	62	30x30	1.65	62	35x25	1.65	62
2700	22x50	1.90	53	25x40	1.90	52	30x35	1.90	52	35x30	1.90	52
3300	-	-	-	25x50	2.15	47	30x35	2.15	47	35x30	2.15	47
3900	-	-	-	-	-	-	30x40	2.40	38	35x35	2.40	37
4700	-	-	-	-	-	-	30x50	2.70	32	35x40	2.70	31
5600	-	-	-	-	-	-	30x50	3.10	32	35x40	3.10	31
6800	-	-	-	-	-	-	-	-	-	35x50	3.50	25

W.V. {S.V.}	100{125}											
	22φ			25φ			30φ			35φ		
	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
560	22x30	0.95	118	25x25	0.95	115	-	-	-	-	-	-
680	22x35	1.10	98	25x30	1.10	80	-	-	-	-	-	-
820	22x40	1.25	85	25x30	1.25	80	30x25	1.25	80	-	-	-
1000	22x45	1.40	75	25x35	1.40	70	30x30	1.40	68	35x25	1.40	68
1200	22x50	1.60	66	25x40	1.60	62	30x35	1.60	62	35x30	1.60	62
1500	-	-	-	25x50	1.85	49	30x40	1.85	48	35x30	1.85	48
1800	-	-	-	-	-	-	30x45	2.05	43	35x35	2.05	42
2200	-	-	-	-	-	-	30x50	2.40	28	35x40	2.40	28
2700	-	-	-	-	-	-	-	-	-	35x50	2.80	22

W.V. {S.V.}	160{200}											
	22φ			25φ			30φ			35φ		
	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
270	22x30	0.60	565	-	-	-	-	-	-	-	-	-
330	22x35	0.80	530	25x25	0.80	525	-	-	-	-	-	-
390	22x35	0.85	455	25x30	0.85	415	-	-	-	-	-	-
470	22x45	1.10	380	25x35	1.10	365	30x30	1.10	345	-	-	-
560	22x45	1.16	380	25x35	1.16	330	30x30	1.16	315	-	-	-
680	-	-	-	25x45	1.30	315	30x35	1.30	315	-	-	-
820	-	-	-	25x45	1.43	280	30x40	1.43	280	35x30	1.43	255
1000	-	-	-	-	-	-	30x45	1.69	262	35x35	1.69	240
1200	-	-	-	-	-	-	-	-	-	35x45	1.95	205
1500	-	-	-	-	-	-	-	-	-	35x50	2.40	158

- Ripple Current(A<sub>rms</sub>)at105°C 120Hz
- Max Impedance {Z<sub>mΩ</sub>} at 20°C 30KHz

SNAP-IN





# LHP Snap-In, Low ESR, 105°C

φD x L (mm)

W.V. {S.V.}	200{250}											
	22φ			25φ			30φ			35φ		
	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
180	22x25	0.57	645	-	-	-	-	-	-	-	-	-
220	22x30	0.65	565	-	-	-	-	-	-	-	-	-
270	22x35	0.78	455	25x25	0.78	525	-	-	-	-	-	-
330	22x40	0.90	435	25x30	0.90	415	-	-	-	-	-	-
390	22x40	0.98	405	25x35	0.98	405	30x25	0.98	405	-	-	-
470	22x40	1.15	385	25x35	1.15	385	30x25	1.15	385	-	-	-
560	22x45	1.30	365	25x35	1.30	365	30x25	1.30	365	-	-	-
680	22x50	1.45	315	25x40	1.45	315	30x30	1.45	315	35x30	1.45	310
820	-	-	-	25x40	1.60	300	30x35	1.60	300	35x35	1.60	285
1000	-	-	-	25x50	1.90	270	30x45	1.90	265	35x35	1.90	255
1200	-	-	-	-	-	-	30x50	2.10	180	35x40	2.10	175

W.V. {S.V.}	250{300}											
	22φ			25φ			30φ			35φ		
	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
150	22x25	0.52	645	-	-	-	-	-	-	-	-	-
180	22x30	0.64	565	25x25	0.64	525	-	-	-	-	-	-
220	22x35	0.75	455	25x30	0.75	430	-	-	-	-	-	-
270	22x40	0.85	420	25x30	0.85	415	30x25	0.85	405	-	-	-
330	22x45	1.00	380	25x35	1.00	365	30x30	1.00	345	35x25	1.00	345
390	22x50	1.10	315	25x40	1.10	315	30x35	1.10	315	-	-	-
470	-	-	-	25x50	1.20	280	30x35	1.20	280	35x30	1.20	255
560	-	-	-	-	-	-	30x40	1.35	262	35x35	1.35	240
680	-	-	-	-	-	-	30x50	1.55	230	35x40	1.55	210
820	-	-	-	-	-	-	30x50	1.70	173	-	-	-
1000	-	-	-	-	-	-	-	-	-	35x50	2.00	145

W.V. {S.V.}	350{400}											
	22φ			25φ			30φ			35φ		
	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
68	22x25	0.34	795	-	-	-	-	-	-	-	-	-
82	22x30	0.40	705	-	-	-	-	-	-	-	-	-
100	22x35	0.50	655	25x25	0.50	655	-	-	-	-	-	-
120	22x40	0.56	530	25x30	0.56	525	30x25	0.56	495	-	-	-
150	22x45	0.63	460	25x35	0.63	435	30x30	0.63	395	-	-	-
180	22x50	0.70	385	25x40	0.70	375	30x30	0.70	365	-	-	-
220	-	-	-	25x50	0.82	325	30x35	0.82	325	35x30	0.82	310
270	-	-	-	-	-	-	30x40	0.90	285	35x35	0.90	250
330	-	-	-	-	-	-	30x50	1.10	230	35x40	1.10	225
390	-	-	-	-	-	-	-	-	-	35x45	1.20	210
470	-	-	-	-	-	-	-	-	-	35x50	1.30	175

W.V. {S.V.}	400{450}											
	22φ			25φ			30φ			35φ		
	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
56	22x25	0.32	795	-	-	-	-	-	-	-	-	-
68	22x30	0.40	705	25x25	0.40	656	-	-	-	-	-	-
82	22x35	0.45	565	25x30	0.45	525	-	-	-	-	-	-
100	22x40	0.50	530	25x30	0.50	525	30x25	0.50	495	-	-	-
120	22x40	0.55	460	25x35	0.55	435	30x30	0.55	395	-	-	-
150	22x50	0.65	385	25x40	0.65	385	30x35	0.65	385	-	-	-
180	-	-	-	25x45	0.75	350	30x35	0.75	325	35x30	0.75	310
220	-	-	-	25x50	0.85	305	30x40	0.85	295	35x35	0.85	260
270	-	-	-	-	-	-	30x50	1.05	230	35x40	1.05	225
330	-	-	-	-	-	-	-	-	-	35x45	1.10	210
390	-	-	-	-	-	-	-	-	-	35x50	1.20	175

- Ripple Current(A,rms)at105°C 120Hz
- Max Impedance {Z,mΩ} at 20°C 30KHz

SNAP-IN