

LH SERIES

- Withstand high temperature for General purposes
- Endurance : 105°C 2000 hours
- RoHS Compliant

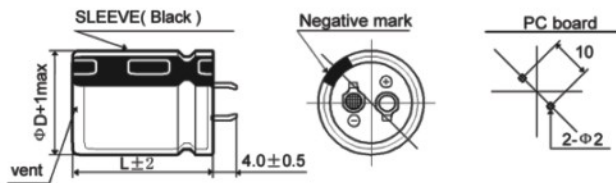


◆ SPECIFICATIONS

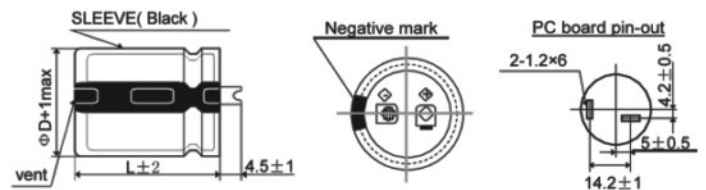
Items	Characteristics											
Category												
Temperature Range	-40~+105°C					-25~+105 °C						
Rated Voltage Range	10~100V.DC					160~450V.DC						
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)											
Leakage Current	$I \leq 3 \sqrt{CV}$ Where, I : Max. leakage current (µA), C : Nominal capacitance (µF), V : Rated voltage (V) (at 20°C after 5 minutes)											
Dissipation Factor (tanδ)	Rated voltage (Vdc)	10V	16V	25V	35V	50V	63V	80V	100V	160 to 250V	315 to 450V	(at 20°C, 120Hz)
	tanδ (Max.)	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.15	
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	10V	16V	25V	35V	50V	63V	80V	100V	160 to 250V	315 to 400V	(at 120Hz)
	Z(-25°C)/Z(+20°C)	4	4	3	3	2	2	2	2	4	8	
	Z(-40°C)/Z(+20°C)	15	15	10	8	6	6	5	5	-	-	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 105°C.											
	Capacitance change	≤± 20% of the initial value										
	D.F. (tanδ)	≤ 200% of the initial specified value										
	Leakage current	≤ The initial specified value										
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied.											
	Capacitance change	≤± 20% of the initial value										
	D.F. (tanδ)	≤ 150% of the initial specified value										
	Leakage current	≤ 200% of The initial specified value										

◆ DIMENSIONS [mm]

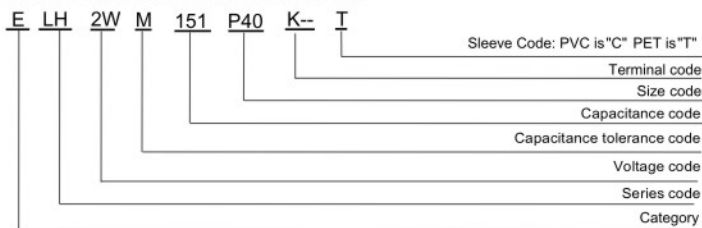
● Terminal Code : K (Φ22 to Φ35) : Standard



● Terminal Code : L (Φ35)



◆ PART NUMBERING SYSTEM



※ Sleeve Code and Terminal Code should follow the part number system

◆ RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current (Hz)

W.V	120	1K	10K	100K
10~50	1.00	1.03	1.05	1.08
63~100	1.00	1.07	1.13	1.19
160~250	1.00	1.32	1.45	1.50
315~450	1.00	1.30	1.41	1.43

The endurance of capacitors is shorted with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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◆ STANDARD RATINGS

Rated Voltage		10(1A)				16(1C)						
UF	ΦD	Φ22	Φ25	Φ30	Φ35	Φ22	Φ25	Φ30	Φ35			
5600												
6800						22×25	1.75					
8200						22×30	2.00					
10000	22×25	1.77				22×30	2.10	25×25	2.05			
12000	22×30	2.10	25×25	1.94		22×35	2.31	25×30	2.30			
15000	22×35	2.23	25×30	2.10		22×40	2.68	25×35	2.58			
18000	22×40	2.41	25×30	2.34	30×25	2.25	22×50	3.20	25×40	3.16		
22000	22×45	2.58	25×35	2.54	30×30	2.50		25×45	3.36	30×35	3.30	
27000	22×50	3.17	25×40	3.07	30×30	2.95		25×50	3.85	30×40	3.80	
33000			25×45	3.39	30×35	3.33	35×30	3.21		30×45	4.30	
39000					30×40	3.70	35×35	3.68		30×50	4.81	
47000					30×45	4.22	35×40	4.16			35×40	4.80
56000							35×45	5.00			35×45	5.53

Rated Voltage		25(1E)				35(1V)						
UF	ΦD	Φ22	Φ25	Φ30	Φ35	Φ22	Φ25	Φ30	Φ35			
2700												
3300						22×25	1.45					
3900						22×30	1.69					
4700	22×25	1.61				22×35	2.02	25×25	1.62			
5600	22×30	1.80				22×35	2.13	25×30	2.00			
6800	22×35	2.09	25×25	1.87		22×40	2.41	25×35	2.31			
8200	22×40	2.31	25×30	2.34	30×25	2.16	22×50	2.85	25×40	2.73		
10000	22×45	2.65	25×35	2.61	30×30	2.61		25×45	3.05	30×35	3.05	
12000	22×50	2.80	25×40	2.81	30×30	2.74		25×50	3.37	30×40	3.23	
15000			25×45	3.27	30×35	3.13	35×30	3.26		30×45	3.72	
18000					30×40	3.56	35×35	3.84			35×40	4.37
22000					30×45	4.04	35×35	3.75			35×45	4.92
27000							35×45	4.74				
33000							35×50	5.50				

Rated Voltage		50(1H)				63(1J)						
UF	ΦD	Φ22	Φ25	Φ30	Φ35	Φ22	Φ25	Φ30	Φ35			
1000												
1200						22×25	1.20					
1500						22×30	1.47					
1800	22×25	1.34				22×30	1.58	25×25	1.52			
2200	22×30	1.60				22×35	1.82	25×30	1.75			
2700	22×30	1.70	25×25	1.70		22×40	2.07	25×35	2.11			
3300	22×35	1.97	25×30	1.88		22×45	2.33	25×35	2.27			
3900	22×40	2.22	25×30	2.20	30×25	1.95		25×40	2.51	30×35	2.55	
4700	22×45	2.43	25×35	2.43	30×30	2.25		25×50	2.97	30×40	2.86	
5600	22×50	2.75	25×40	2.72	30×30	2.64				30×40	3.22	
6800			25×45	3.30	30×35	3.30	35×30	3.25		30×50	3.65	
8200					30×40	3.60	35×35	3.60			35×45	4.04
10000					30×50	4.05	35×40	4.04			35×50	4.48
12000							35×45	4.56				
15000							35×50	4.77				

Rated Voltage		80(1B)				100(1K)						
UF	ΦD	Φ22	Φ25	Φ30	Φ35	Φ22	Φ25	Φ30	Φ35			
560												
680						22×25	1.09					
820						22×30	1.32					
1000	22×25	1.19				22×30	1.47	25×25	1.45			
1200	22×30	1.44				22×35	1.69	25×30	1.68			
1500	22×30	1.59	25×52	1.59		22×40	1.97	25×35	1.98			
1800	22×35	1.79	25×30	1.71		22×45	2.23	25×40	2.20			
2200	22×40	2.03	25×35	1.98	30×25	1.98		25×45	2.53	30×35	2.55	
2700	22×45	2.39	25×40	2.35	30×30	2.35		25×50	2.82	30×40	2.86	
3300			25×45	2.64	30×35	2.61	35×30	2.74		30×45	3.30	
3900			25×50	2.92	30×40	2.82	35×30	2.97		30×50	3.60	
4700					30×45	3.34	35×35	3.38			35×45	3.80
5600					30×50	3.80	35×40	3.80			35×50	4.05
6800							35×45	3.90				
8200							35×50	4.20				

▲ Case Size (ΦD×L)

▲ Ripple current(Arms/105°C,120Hz)

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◆ STANDARD RATINGS

Rated Voltage uF	ΦD	160(2C)				180(2L)				
		φ22	φ25	φ30	φ35	φ22	φ25	φ30	φ35	
220	22×25	0.92								
270						22×25	0.97			
330	22×25	1.03				22×30	1.13			
390	22×30	1.17				22×30	1.32	25×25	1.33	
470	22×30	1.28	25×25	1.29		22×35	1.39	25×30	1.43	
560	22×35	1.45	25×30	1.49		22×40	1.56	25×30	1.53	
680	22×40	1.64	25×35	1.70	30×25	1.63		30×25	1.56	
820	22×45	1.85	25×40	1.92	30×30	1.91		22×45	1.76	
1000			25×45	2.17	30×35	2.19		25×35	1.76	
1200			25×50	2.43	30×40	2.48	35×30	2.25	25×40	1.99
1500					30×45	2.82	35×35	2.62	30×30	1.93
1800					30×50	3.13	35×40	2.97	30×35	2.24
2200							35×45	3.34	30×40	2.24
									30×35	2.24
									35×30	2.20
									35×35	2.54
									30×50	3.03
									35×40	2.91
									35×45	3.25
									35×50	3.62

Rated Voltage uF	ΦD	200(2D)				220(2N)				
		φ22	φ25	φ30	φ35	φ22	φ25	φ30	φ35	
180										
220						22×25	0.94			
270	22×25	0.99				22×30	1.09			
330	22×30	1.20	25×25	1.20		22×35	1.24	25×25	1.14	
390	22×35	1.30	25×30	1.34		22×35	1.30	25×25	1.26	
470	22×40	1.44	25×30	1.44	30×25	1.48	22×40	1.41	25×30	1.39
560	22×45	1.60	25×35	1.60	30×30	1.60	22×45	1.60	25×30	1.39
680	22×50	1.75	25×40	1.76	30×30	1.74		25×40	1.75	
820			25×45	2.10	30×35	2.11	35×30	2.10	25×45	1.97
1000			25×50	2.36	30×40	2.40	35×35	2.30	30×40	2.06
1200					30×45	2.69	35×35	2.53	30×40	2.06
1500							35×40	2.97	30×45	2.44
1800							35×50	3.45	35×35	2.20
									35×40	2.37
									30×45	2.64

Rated Voltage uF	ΦD	250(2E)				315(2F)				
		φ22	φ25	φ30	φ35	φ22	φ25	φ30	φ35	
82										
100										
120						22×25	0.56			
150						22×30	0.66	25×25	0.65	
180	22×25	0.84				22×35	0.78	25×30	0.71	
220	22×30	0.97	25×25	0.99		22×40	0.89	25×30	0.85	
270	22×35	1.11	25×30	1.15		22×45	1.01	25×35	0.98	
330	22×40	1.26	25×30	1.26	30×25	1.31	22×50	1.14	25×40	1.12
390	22×45	1.41	25×35	1.42	30×30	1.50		25×45	1.31	
470	22×50	1.58	25×40	1.61	30×30	1.61			25×45	1.31
560			25×45	1.80	30×35	1.84			30×35	1.30
680			25×50	2.03	30×40	2.09	35×30	1.96	30×35	1.30
820					30×45	2.35	35×35	2.26	30×40	1.53
1000					30×50	2.64	35×40	2.57	30×45	1.65
1200							35×45	2.88	35×40	1.66
									35×45	1.96
									35×50	2.19

Rated Voltage uF	ΦD	350(2V)				385(2P)				
		φ22	φ25	φ30	φ35	φ22	φ25	φ30	φ35	
56										
68						22×25	0.45			
82						22×30	0.52			
100	22×25	0.53				22×30	0.58	25×25	0.57	
120	22×30	0.61	25×25	0.62		22×35	0.68	25×30	0.68	
150	22×35	0.73	25×30	0.73		22×40	0.79	25×30	0.78	
180	22×40	0.83	25×30	0.80	30×25	0.81	22×45	0.89	25×35	0.86
220	22×45	0.94	25×35	0.92	30×30	0.98	22×50	1.01	25×40	1.00
270	22×50	1.07	25×40	1.05	30×30	1.03		25×45	1.13	
330			25×45	1.24	30×35	1.24	35×30	1.18	30×40	1.14
390			25×50	1.38	30×40	1.39	35×35	1.39	30×45	1.31
470					30×45	1.57	35×35	1.50	30×50	1.48
560					30×50	1.75	35×40	1.69	35×40	1.48
680							35×45	1.96	35×45	1.76
									35×50	1.95

▲ Case Size (ΦD×L)

▲ Ripple current(Arms/105°C,120Hz)

LH SERIES

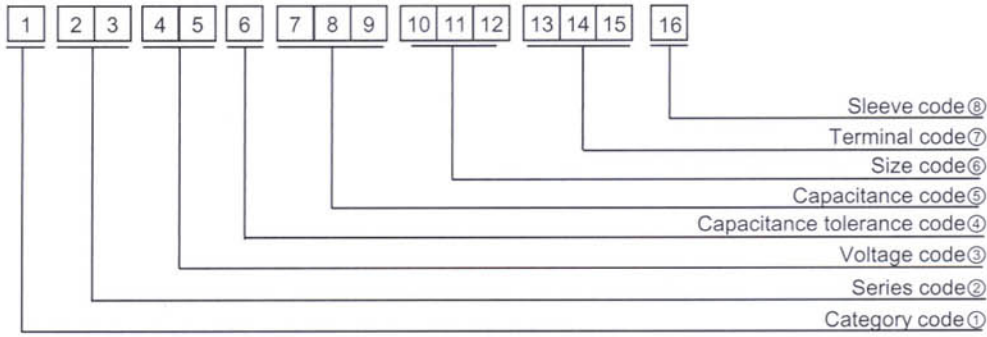
◆ STANDARD RATINGS

Rated Voltage		400(2G)								420(2T)							
UF	ΦD	Φ22		Φ25		Φ30		Φ35		Φ22		Φ25		Φ30		Φ35	
		56															
68	22×25	0.49								22×25	0.50						
82	22×30	0.56								22×30	0.56	25×25	0.56				
100	22×30	0.62	25×25	0.61						22×30	0.63	25×25	0.63				
120	22×35	0.73	25×30	0.73						22×35	0.73	25×30	0.72	30×25	0.75		
150	22×40	0.85	25×35	0.85	30×25	0.79				22×45	0.86	25×35	0.83	30×25	0.83		
180	22×45	0.95	25×35	0.92	30×30	0.95				22×50	1.02	25×40	0.94	30×30	0.95	35×25	0.90
220	22×50	1.08	25×40	1.05	30×35	1.24						25×45	1.13	30×35	1.09	35×30	1.05
270			25×50	1.29	30×40	1.30	35×30	1.18			25×50	1.37	30×40	1.25	35×35	1.25	
330					30×45	1.47	35×35	1.14					30×45	1.49	35×35	1.42	
390					30×50	1.64	35×40	1.59					30×50	1.67	35×40	1.61	
470							35×45	1.87							35×45	1.86	
560							35×50	2.09									

Rated Voltage		450(2W)							
UF	ΦD	Φ22		Φ25		Φ30		Φ35	
		47							
56	22×25	0.42							
68	22×30	0.50	25×25	0.50					
82	22×35	0.56	25×30	0.57					
100	22×40	0.64	25×30	0.63	30×25	0.67			
120	22×45	0.72	25×35	0.71	30×30	0.77			
150	22×50	0.80	25×40	0.82	30×30	0.85			
180			25×45	0.93	30×35	0.97			
220			25×50	1.05	30×40	1.10	35×30	1.01	
270					30×45	1.25	35×35	1.26	
330					30×50	1.42	35×40	1.44	
390							35×45	1.61	
470							35×50	1.80	

▲ Case Size (ΦD×L) ▲ Ripple current(Arms/105°C,120Hz)

● Part Number System



① Category

Type	Code	
	1th	
Electrolytic Capacitor	E	

② Series code

Series name	Code	
	2 th	3 th
WH	W	H
CD11GE	G	E

③ Voltage code

WV (V)	Code	
	4th	5th
4	0	G
6.3	0	J
10	1	A
16	1	C
25	1	E
35	1	V
40	1	G
50	1	H
63	1	J
80	1	B
100	1	K
160	2	C
180	2	L
200	2	D
220	2	N
250	2	E
315	2	F
350	2	V
380	2	P
400	2	G
420	2	T
450	2	W
500	2	H

④ Capacitance Tolerance

Tol. (%)	Code	
	6th	
-10 ~ +10	K	
-20 ~ +20	M	
-10 ~ +30	Q	
-10 ~ +50	T	
-10 ~ +20	V	
-0 ~ +20	A	
-0 ~ +30		
-5 ~ +20	C	
-10 ~ -20	B	
-5 ~ +5	D	
-0 ~ +10	E	
-5 ~ +20	F	
-15 ~ +5	N	

⑤ Capacitance code

Cap (μF)	Code		
	7th	8th	9th
0.10	0	R	1
0.22	R	2	2
0.33	R	3	3
0.47	R	4	7
0.68	R	6	8
1	0	1	0
2.2	2	R	2
3.3	3	R	3
4.7	4	R	7
6.8	6	R	8
10	1	0	0
22	2	2	0
33	3	3	0
47	4	7	0
68	6	8	0
100	1	0	1
220	2	2	1
330	3	3	1
470	4	7	1
680	6	8	1
1000	1	0	2
2200	2	2	2
3300	3	3	2
4700	4	7	2
6800	6	8	2
10000	1	0	3
22000	2	2	3
33000	3	3	3
68000	6	8	3

⑥ Size code

ΦD	Code	
	10th	
4	C	
5	D	
6.3	E	
8	F	
10	G	
11	H	
12	J	
12.5	W	
13	K	
14	X	
16	L	
18	M	
19	Z	
20	N	
22	O	
25	P	
30	Q	
35	R	
40	Y	
51	S	
63.5	T	
76	U	
89	V	

L	Code	
	11th	12th
5	0	5
7	0	7
11	1	1
12	1	2
16	1	6
20	2	0
25	2	5
30	3	0
35	3	5
40	4	0
46	4	6
50	5	0
60	6	0
80	8	0
100	A	0
115	B	5
120	C	0
130	D	0
140	E	0
160	G	0
200	K	0

⑦ Terminal Code

Specification	Code		
	13th	14th	15th
Bulk packing	O	-	-
Taping F=5.0mm	P	5	0
Lead Cut L=3.5mm	C	3	5
Lead Cut L=11.0mm	C	B	0
Lead Forming & cut L=4.5mm	F	4	5
Kink & cut L=4.5mm	J	4	5
Snap-in type Terminal 4.0mm in Length	K	4	0
Horizontal mounting Terminal	M	-	-
Screw Terminal	S	-	-
Lug Terminal	L	-	-
Three terminals	T	-	-
Four terminals	Q	-	-
Five terminals	Y	-	-

⑧ Sleeve Code

Sleeve	Code	
	16th	
PVC	C	
PET	T	