

**LPH Large Capacitance Aluminum Electrolytic Capacitors**

Series LPH 105°C, Miniaturized, High-Reliability, High-Ripple Capacitors

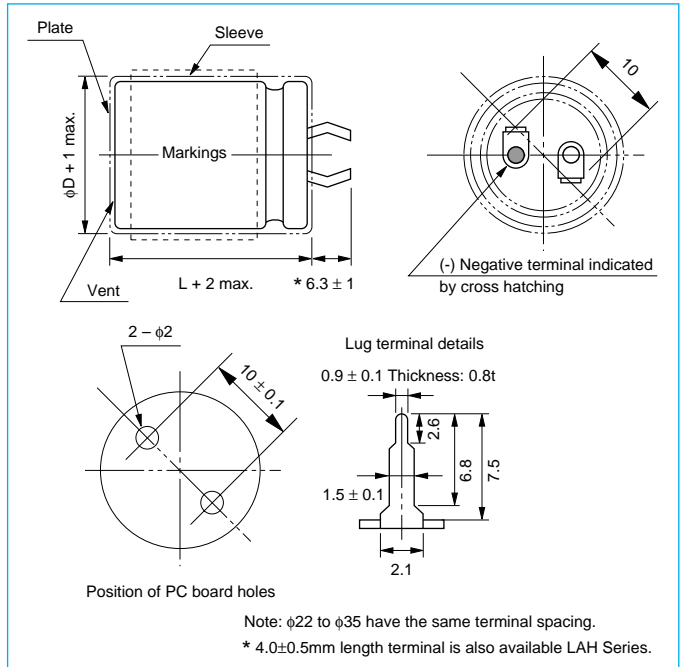
■ **ULTRAMINI, HIGH RELIABILITY TYPE**

- Smaller-sized and higher-ripple than L3J.
- Guaranteed for 2000 hours at 105°C.

**Photo**



**Outline Drawing**



Unit: mm

**Specifications**

No.	Item	Performance																												
1	Temperature range (°C)	-40 to +105 (-25 to +105 at 160v or more)																												
2	Leakage current	Less than 0.02 CV (μA) or 3 mA whichever is smaller (after five minutes), C: Capacitance (μF), V: Voltage (V)																												
3	Capacitance tolerance (%)	±20 (20°C, 120 HZ)																												
4	Tangent of loss angle (tan δ)	<table border="1"> <tr> <th>Rated voltage (V)</th> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> <td>160</td> <td>180</td> <td>200</td> <td>250</td> <td>400</td> <td>450</td> </tr> <tr> <th>tan δ</th> <td>0.50</td> <td>0.40</td> <td>0.35</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>0.20</td> <td>0.20</td> </tr> </table>	Rated voltage (V)	16	25	35	50	63	80	100	160	180	200	250	400	450	tan δ	0.50	0.40	0.35	0.20	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.20	0.20
		Rated voltage (V)	16	25	35	50	63	80	100	160	180	200	250	400	450															
tan δ	0.50	0.40	0.35	0.20	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.20	0.20																	
		(20°C, 120 Hz)																												
5	Stability at low temperature	<table border="1"> <tr> <th>Rated voltage (V)</th> <td>16 to 100</td> <td>160 to 250</td> <td>400 to 450</td> </tr> <tr> <th rowspan="2">Impedance ratio</th> <td>Z-25°C/Z+20°C</td> <td>4</td> <td>4</td> </tr> <tr> <td>Z-40°C/Z+20°C</td> <td>15</td> <td>-</td> </tr> </table>	Rated voltage (V)	16 to 100	160 to 250	400 to 450	Impedance ratio	Z-25°C/Z+20°C	4	4	Z-40°C/Z+20°C	15	-																	
		Rated voltage (V)	16 to 100	160 to 250	400 to 450																									
Impedance ratio	Z-25°C/Z+20°C	4	4																											
	Z-40°C/Z+20°C	15	-																											
		(120 Hz)																												
6	Endurance (105°C) (Applied ripple current)	<table border="1"> <tr> <th>Test time</th> <td>2000 hrs</td> </tr> <tr> <th>Leakage current</th> <td>Initial specified value or less</td> </tr> <tr> <th>Change in capacitance</th> <td>Within ±20% of initial value</td> </tr> <tr> <th>tan δ</th> <td>200% or less of initial specified value or less</td> </tr> </table>	Test time	2000 hrs	Leakage current	Initial specified value or less	Change in capacitance	Within ±20% of initial value	tan δ	200% or less of initial specified value or less																				
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7	Max. storage temp. (105°C)	<table border="1"> <tr> <th>Test time</th> <td>1000 hrs</td> </tr> <tr> <th>Leakage current</th> <td>Initial specified value or less</td> </tr> <tr> <th>Change in capacitance</th> <td>Within ±15% of initial value</td> </tr> <tr> <th>tan δ</th> <td>150% or less of initial specified value</td> </tr> </table>	Test time	1000 hrs	Leakage current	Initial specified value or less	Change in capacitance	Within ±15% of initial value	tan δ	150% or less of initial specified value																				
		Test time	1000 hrs																											
		Leakage current	Initial specified value or less																											
		Change in capacitance	Within ±15% of initial value																											
tan δ	150% or less of initial specified value																													
		Voltage application treatment.																												
8	Applicable Standards	JIS C 5101-1, 5101-4 1998 (IEC 60384-1 1992, 60384-4 1985)																												

**Coefficients of Frequency for Ripple Current**

Frequency (Hz)	50	120	1 k	10 k	30 k
Rated Voltage (V)					
16 to 100	0.95	1	1.10	1.15	1.15
160 to 250	0.87	1	1.11	1.18	1.20
400 to 450	0.80	1	1.14	1.19	1.20

**Coefficients of Temperature for Ripple Current**

Temperature (°C)	+65	+85	+105
Coefficients	2.29	1.77	1

**LPH Large Capacitance Aluminum Electrolytic Capacitors**

Case size by working voltage & capacitance (in mm)

(mm)

wv(V) Cap.(µF)	16	25	35	50	63	80	100
560							22 x 25
820						22 x 25	22 x 30 / 25 x 25
1000							22 x 35 / 25 x 30
1200					22 x 25	22 x 30 / 25 x 25	22 x 40 / 25 x 35 / 30 x 25
1500						22 x 35 / 25 x 30	22 x 45 / 25 x 40 / 30 x 30 / 35 x 25
1800				22 x 25	22 x 30 / 25 x 25	22 x 40 / 30 x 25	25 x 45 / 30 x 35
2200					22 x 35 / 25 x 30	22 x 45 / 25 x 35 / 30 x 30 / 35 x 25	25 x 50 / 30 x 40 / 35 x 30
2700				22 x 30 / 25 x 25	22 x 40 / 25 x 35 / 30 x 25	25 x 45 / 30 x 35	30 x 45 / 35 x 35
3300			22 x 25	22 x 35 / 25 x 30	22 x 50 / 25 x 40 / 30 x 30 / 35 x 25	25 x 50 / 30 x 40 / 35 x 30	30 x 50 / 35 x 40
3900			22 x 30	22 x 40 / 25 x 35 / 30 x 25	25 x 45 / 30 x 35	30 x 45 / 35 x 35	35 x 45
4700		22 x 25	25 x 25	22 x 45 / 30 x 30 / 35 x 25	25 x 50 / 30 x 40 / 35 x 30	30 x 50 / 35 x 40	35 x 50
5600			22 x 35 / 25 x 30 / 30 x 25	22 x 50 / 25 x 40 / 30 x 35	30 x 45 / 35 x 35	35 x 45	
6800	22 x 25	22 x 30 / 25 x 25	22 x 40 / 25 x 35	25 x 50 / 30 x 40 / 35 x 30	30 x 50 / 35 x 40	35 x 50	
8200		22 x 35 / 25 x 30 / 30 x 25	22 x 50 / 25 x 40 / 30 x 30 / 35 x 25	30 x 45 / 35 x 35	35 x 45		
10000	22 x 30 / 25 x 25	22 x 40 / 25 x 35	25 x 45 / 30 x 35	30 x 50 / 35 x 40	35 x 50		
12000	22 x 35 / 25 x 30 / 30 x 25	22 x 45 / 25 x 40 / 30 x 30 / 35 x 25	25 x 50 / 30 x 40 / 35 x 30	35 x 45			
15000	22 x 40 / 25 x 35	25 x 45 / 30 x 35 / 35 x 30	30 x 45 / 35 x 35				
18000	22 x 45 / 25 x 40 / 30 x 30 / 35 x 25	25 x 50 / 30 x 40	35 x 40				
22000	25 x 45 / 30 x 35	35 x 45 / 35 x 35	35 x 50				
27000	25 x 50 / 30 x 40 / 35 x 30	35 x 45					
33000	30 x 45 / 35 x 35	35 x 50					
39000	30 x 50 / 35 x 40						
47000	35 x 45						

wv(V) Cap.(µF)	160	180	200	250	400	450
56						22 x 25
68					22 x 25	22 x 30 / 25 x 25
82					22 x 30 / 25 x 25	22 x 35
100						22 x 40 / 25 x 30 / 30 x 25
120					22 x 35 / 25 x 30 / 30 x 25	22 x 45 / 25 x 35
150					22 x 40 / 25 x 35	22 x 50 / 25 x 40 / 30 x 30 / 35 x 25
180				22 x 25	22 x 50 / 25 x 40 / 30 x 30 / 35 x 25	25 x 45 / 30 x 35
220			22 x 25	22 x 30 / 25 x 25	25 x 45 / 30 x 35	25 x 50 / 30 x 40 / 35 x 30
270		22 x 25		22 x 35	25 x 50 / 30 x 40 / 35 x 30	30 x 45 / 35 x 35
330	22 x 25	22 x 30	22 x 30 / 25 x 25	22 x 40 / 25 x 30 / 30 x 25	30 x 45 / 35 x 35	30 x 50 / 35 x 40
390	22 x 30	25 x 25	22 x 35	22 x 45 / 25 x 35	30 x 50 / 35 x 40	35 x 45
470	22 x 35 / 25 x 25	22 x 35 / 25 x 30	22 x 40 / 25 x 30 / 30 x 25	22 x 50 / 25 x 40 / 30 x 30 / 35 x 25	35 x 45	35 x 50
560	22 x 40 / 25 x 30	22 x 40 / 25 x 35 / 30 x 25	22 x 45 / 25 x 35	25 x 45 / 30 x 35 / 35 x 30	35 x 50	
680	22 x 45 / 25 x 35 / 30 x 25	22 x 50 / 25 x 40 / 30 x 30 / 35 x 25	22 x 50 / 25 x 40 / 30 x 30 / 35 x 25	25 x 50 / 30 x 40		
820	22 x 50 / 25 x 40 / 30 x 30 / 35 x 25	25 x 45 / 30 x 35	25 x 50 / 30 x 35 / 35 x 30	30 x 45 / 35 x 35		
1000	25 x 45 / 30 x 35	25 x 50 / 30 x 40 / 35 x 30	30 x 45 / 35 x 35	30 x 50 / 35 x 40		
1200	25 x 50 / 30 x 40 / 35 x 30	30 x 45 / 35 x 35	30 x 50 / 35 x 40	35 x 45		
1500	30 x 45 / 35 x 35	30 x 50 / 35 x 40	35 x 45			
1800	35 x 45	35 x 45	35 x 50			
2200	35 x 50					

Large Capacitance LPH

## LPH Large Capacitance Aluminum Electrolytic Capacitors

### Standard Ratings

ELNA PART NO. / WV (V)	CAP. (μF)	SIZE (φx L) (mm)	tan δ	ESR (Ω)	Ripple Current (Arms)
<b>16 V</b>					
LPH-16V682MS1	6800	22 x 25	0.50	0.122	1.60
LPH-16V103MS2	10000	22 x 30	0.50	0.083	1.99
LPH-16V103MS1	10000	25 x 25	0.50	0.083	1.99
LPH-16V123MS3	12000	22 x 35	0.50	0.069	2.28
LPH-16V123MS2	12000	25 x 30	0.50	0.069	2.30
LPH-16V123MS1	12000	30 x 25	0.50	0.069	2.38
LPH-16V153MS4	15000	22 x 40	0.50	0.055	2.64
LPH-16V153MS3	15000	25 x 35	0.50	0.055	2.68
LPH-16V183MS5	18000	22 x 45	0.50	0.046	2.98
LPH-16V183MS4	18000	25 x 40	0.50	0.046	3.04
LPH-16V183MS2	18000	30 x 30	0.50	0.046	3.00
LPH-16V183MS1	18000	35 x 25	0.50	0.046	3.10
LPH-16V223MS5	22000	25 x 45	0.50	0.038	3.40
LPH-16V223MS3	22000	30 x 35	0.50	0.038	3.39
LPH-16V273MS6	27000	25 x 50	0.50	0.031	3.81
LPH-16V273MS4	27000	30 x 40	0.50	0.031	3.83
LPH-16V273MS2	27000	35 x 30	0.50	0.031	3.74
LPH-16V333MS5	33000	30 x 45	0.50	0.025	4.30
LPH-16V333MS3	33000	35 x 35	0.50	0.025	4.24
LPH-16V393MS6	39000	30 x 50	0.50	0.021	4.74
LPH-16V393MS4	39000	35 x 40	0.50	0.021	4.72
LPH-16V473MS5	47000	35 x 45	0.50	0.018	5.27
<b>25 V</b>					
LPH-25V472MS1	4700	22 x 25	0.40	0.141	1.55
LPH-25V682MS2	6800	22 x 30	0.40	0.098	1.91
LPH-25V682MS1	6800	25 x 25	0.40	0.098	1.91
LPH-25V822MS3	8200	22 x 35	0.40	0.081	2.14
LPH-25V822MS2	8200	25 x 30	0.40	0.081	2.16
LPH-25V822MS1	8200	30 x 25	0.40	0.081	2.25
LPH-25V103MS4	10000	22 x 40	0.40	0.066	2.40
LPH-25V103MS3	10000	25 x 35	0.40	0.066	2.44
LPH-25V123MS5	12000	22 x 45	0.40	0.055	2.69
LPH-25V123MS4	12000	25 x 40	0.40	0.055	2.74
LPH-25V123MS2	12000	30 x 30	0.40	0.055	2.70
LPH-25V123MS1	12000	35 x 25	0.40	0.055	2.80
LPH-25V153MS5	15000	25 x 45	0.40	0.044	3.15

ELNA PART NO. / WV (V)	CAP. (μF)	SIZE (φx L) (mm)	tan δ	ESR (Ω)	Ripple Current (Arms)
LPH-25V153MS3	15000	30 x 35	0.40	0.044	3.13
LPH-25V153MS2	15000	35 x 30	0.40	0.044	3.22
LPH-25V183MS6	18000	25 x 50	0.40	0.037	3.54
LPH-25V183MS4	18000	30 x 40	0.40	0.037	3.54
LPH-25V223MS5	22000	30 x 45	0.40	0.030	4.24
LPH-25V223MS3	22000	35 x 35	0.40	0.030	3.96
LPH-25V273MS5	27000	35 x 45	0.40	0.025	4.75
LPH-25V333MS6	33000	35 x 50	0.40	0.020	5.39
<b>35 V</b>					
LPH-35V332MS1	3300	22 x 25	0.35	0.176	1.43
LPH-35V392MS2	3900	22 x 30	0.35	0.149	1.65
LPH-35V472MS1	4700	25 x 25	0.35	0.124	1.78
LPH-35V562MS3	5600	22 x 35	0.35	0.104	2.02
LPH-35V562MS2	5600	25 x 30	0.35	0.104	2.04
LPH-35V562MS1	5600	30 x 25	0.35	0.104	2.12
LPH-35V682MS4	6800	22 x 40	0.35	0.085	2.28
LPH-35V682MS3	6800	25 x 35	0.35	0.085	2.31
LPH-35V822MS6	8200	22 x 50	0.35	0.071	2.67
LPH-35V822MS4	8200	25 x 40	0.35	0.071	2.60
LPH-35V822MS2	8200	30 x 30	0.35	0.071	2.56
LPH-35V822MS1	8200	35 x 25	0.35	0.071	2.78
LPH-35V103MS5	10000	25 x 45	0.35	0.058	2.92
LPH-35V103MS3	10000	30 x 35	0.35	0.058	2.92
LPH-35V123MS6	12000	25 x 50	0.35	0.048	3.26
LPH-35V123MS4	12000	30 x 40	0.35	0.048	3.28
LPH-35V123MS2	12000	35 x 30	0.35	0.048	3.20
LPH-35V153MS5	15000	30 x 45	0.35	0.039	3.74
LPH-35V153MS3	15000	35 x 35	0.35	0.039	3.69
LPH-35V183MS4	18000	35 x 40	0.35	0.032	4.16
LPH-35V223MS6	22000	35 x 50	0.35	0.026	4.92
<b>50 V</b>					
LPH-50V182MS1	1800	22 x 25	0.20	0.184	1.31
LPH-50V272MS2	2700	22 x 30	0.20	0.123	1.70
LPH-50V272MS1	2700	25 x 25	0.20	0.123	1.70
LPH-50V332MS3	3300	22 x 35	0.20	0.101	1.98
LPH-50V332MS2	3300	25 x 30	0.20	0.101	2.00
LPH-50V392MS4	3900	22 x 40	0.20	0.085	2.25

Note: ESR 120 Hz at 20°C. Allowable Ripple Current 120 Hz at 105°C

## LPH Large Capacitance Aluminum Electrolytic Capacitors

### Standard Ratings

ELNA PART NO. / WV (V)	CAP. (μF)	SIZE (φx L) (mm)	tan δ	ESR (Ω)	Ripple Current (Arms)
LPH-50V392MS3	3900	25 x 35	0.20	0.085	2.28
LPH-50V392MS1	3900	30 x 25	0.20	0.085	2.22
LPH-50V472MS5	4700	22 x 45	0.20	0.071	2.56
LPH-50V472MS2	4700	30 x 30	0.20	0.071	2.58
LPH-50V472MS1	4700	35 x 25	0.20	0.071	2.67
LPH-50V562MS6	5600	22 x 50	0.20	0.059	2.89
LPH-50V562MS4	5600	25 x 40	0.20	0.059	2.81
LPH-50V562MS3	5600	30 x 35	0.20	0.059	2.95
LPH-50V682MS6	6800	25 x 50	0.20	0.049	3.37
LPH-50V682MS4	6800	30 x 40	0.20	0.049	3.39
LPH-50V682MS2	6800	35 x 30	0.20	0.049	3.31
LPH-50V822MS5	8200	30 x 45	0.20	0.040	3.71
LPH-50V822MS3	8200	35 x 35	0.20	0.040	3.66
LPH-50V103MS6	10000	30 x 50	0.20	0.033	4.09
LPH-50V103MS4	10000	35 x 40	0.20	0.033	4.07
LPH-50V123MS5	12000	35 x 45	0.20	0.028	4.50
<b>63 V</b>					
LPH-63V122MS1	1200	22 x 25	0.15	0.207	1.25
LPH-63V182MS2	1800	22 x 30	0.15	0.138	1.52
LPH-63V182MS1	1800	25 x 25	0.15	0.138	1.52
LPH-63V222MS3	2200	22 x 35	0.15	0.113	1.73
LPH-63V222MS2	2200	25 x 30	0.15	0.113	1.75
LPH-63V272MS4	2700	22 x 40	0.15	0.092	1.97
LPH-63V272MS3	2700	25 x 35	0.15	0.092	1.99
LPH-63V272MS1	2700	30 x 25	0.15	0.092	1.93
LPH-63V332MS6	3300	22 x 50	0.15	0.075	2.32
LPH-63V332MS4	3300	25 x 40	0.15	0.075	2.27
LPH-63V332MS2	3300	30 x 30	0.15	0.075	2.24
LPH-63V332MS1	3300	35 x 25	0.15	0.075	2.41
LPH-63V392MS5	3900	25 x 45	0.15	0.064	2.54
LPH-63V392MS3	3900	30 x 35	0.15	0.064	2.55
LPH-63V472MS6	4700	25 x 50	0.15	0.053	2.88
LPH-63V472MS4	4700	30 x 40	0.15	0.053	2.90
LPH-63V472MS2	4700	35 x 30	0.15	0.053	2.83
LPH-63V562MS5	5600	30 x 45	0.15	0.044	3.28
LPH-63V562MS3	5600	35 x 35	0.15	0.044	3.24
LPH-63V682MS6	6800	30 x 50	0.15	0.037	3.73

ELNA PART NO. / WV (V)	CAP. (μF)	SIZE (φx L) (mm)	tan δ	ESR (Ω)	Ripple Current (Arms)
LPH-63V682MS4	6800	35 x 40	0.15	0.037	3.71
LPH-63V822MS5	8200	35 x 45	0.15	0.030	4.16
LPH-63V103MS6	10000	35 x 50	0.15	0.025	4.69
<b>80 V</b>					
LPH-80V821MS1	820	22 x 25	0.15	0.303	1.11
LPH-80V122MS2	1200	22 x 30	0.15	0.207	1.39
LPH-80V122MS1	1200	25 x 25	0.15	0.207	1.39
LPH-80V152MS3	1500	22 x 35	0.15	0.166	1.61
LPH-80V152MS2	1500	25 x 30	0.15	0.166	1.62
LPH-80V182MS4	1800	22 x 40	0.15	0.138	1.83
LPH-80V182MS1	1800	30 x 25	0.15	0.138	1.81
LPH-80V222MS5	2200	22 x 45	0.15	0.113	2.09
LPH-80V222MS3	2200	25 x 35	0.15	0.113	2.01
LPH-80V222MS2	2200	30 x 30	0.15	0.113	2.10
LPH-80V222MS1	2200	35 x 25	0.15	0.113	2.17
LPH-80V272MS5	2700	25 x 45	0.15	0.092	2.43
LPH-80V272MS3	2700	30 x 35	0.15	0.092	2.43
LPH-80V332MS6	3300	25 x 50	0.15	0.075	2.76
LPH-80V332MS4	3300	30 x 40	0.15	0.075	2.78
LPH-80V332MS2	3300	35 x 30	0.15	0.075	2.71
LPH-80V392MS5	3900	30 x 45	0.15	0.064	3.12
LPH-80V392MS3	3900	35 x 35	0.15	0.064	3.07
LPH-80V472MS6	4700	30 x 50	0.15	0.053	3.56
LPH-80V472MS4	4700	35 x 40	0.15	0.053	3.50
LPH-80V562MS5	5600	35 x 45	0.15	0.044	3.87
LPH-80V682MS6	6800	35 x 50	0.15	0.037	4.19
<b>100 V</b>					
LPH-100V561MS1	560	22 x 25	0.15	0.444	1.07
LPH-100V821MS2	820	22 x 30	0.15	0.303	1.35
LPH-100V821MS1	820	25 x 25	0.15	0.303	1.35
LPH-100V102MS3	1000	22 x 35	0.15	0.249	1.54
LPH-100V102MS2	1000	25 x 30	0.15	0.249	1.56
LPH-100V122MS4	1200	22 x 40	0.15	0.207	1.74
LPH-100V122MS3	1200	25 x 35	0.15	0.207	1.76
LPH-100V122MS1	1200	30 x 25	0.15	0.207	1.71
LPH-100V152MS5	1500	22 x 45	0.15	0.166	1.99
LPH-100V152MS4	1500	25 x 40	0.15	0.166	2.03

Note: ESR 120 Hz at 20°C. Allowable Ripple Current 120 Hz at 105°C

## LPH Large Capacitance Aluminum Electrolytic Capacitors

### Standard Ratings

ELNA PART NO. / WV (V)	CAP. (μF)	SIZE (φx L) (mm)	tan δ	ESR (Ω)	Ripple Current (Arms)
LPH-100V152MS2	1500	30 x 30	0.15	0.166	2.00
LPH-100V152MS1	1500	35 x 25	0.15	0.166	2.07
LPH-100V182MS5	1800	25 x 45	0.15	0.138	2.28
LPH-100V182MS3	1800	30 x 35	0.15	0.138	2.27
LPH-100V222MS6	2200	25 x 50	0.15	0.113	2.57
LPH-100V222MS4	2200	30 x 40	0.15	0.113	2.59
LPH-100V222MS2	2200	35 x 30	0.15	0.113	2.52
LPH-100V272MS5	2700	30 x 45	0.15	0.092	2.94
LPH-100V272MS3	2700	35 x 35	0.15	0.092	2.90
LPH-100V332MS6	3300	30 x 50	0.15	0.075	3.32
LPH-100V332MS4	3300	35 x 40	0.15	0.075	3.31
LPH-100V392MS5	3900	35 x 45	0.15	0.064	3.69
LPH-100V472MS6	4700	35 x 50	0.15	0.053	4.14
<b>160 V</b>					
LPH-160V331MS1	330	22 x 25	0.15	0.754	1.16
LPH-160V391MS2	390	22 x 30	0.15	0.638	1.43
LPH-160V471MS3	470	22 x 35	0.15	0.529	1.52
LPH-160V471MS1	470	25 x 25	0.15	0.529	1.55
LPH-160V561MS4	560	22 x 40	0.15	0.444	1.62
LPH-160V561MS2	560	25 x 30	0.15	0.444	1.73
LPH-160V681MS5	680	22 x 45	0.15	0.366	1.70
LPH-160V681MS3	680	25 x 35	0.15	0.366	1.81
LPH-160V681MS1	680	30 x 25	0.15	0.366	1.82
LPH-160V821MS6	820	22 x 50	0.15	0.303	1.81
LPH-160V821MS4	820	25 x 40	0.15	0.303	1.98
LPH-160V821MS2	820	30 x 30	0.15	0.303	1.98
LPH-160V821MS1	820	35 x 25	0.15	0.303	1.93
LPH-160V102MS5	1000	25 x 45	0.15	0.249	2.04
LPH-160V102MS3	1000	30 x 35	0.15	0.249	2.14
LPH-160V122MS6	1200	25 x 50	0.15	0.207	2.12
LPH-160V122MS4	1200	30 x 40	0.15	0.207	2.22
LPH-160V122MS2	1200	35 x 30	0.15	0.249	2.40
LPH-160V152MS5	1500	30 x 45	0.15	0.166	2.46
LPH-160V152MS3	1500	35 x 35	0.15	0.166	2.53
LPH-160V182MS5	1800	35 x 45	0.15	0.138	2.98
LPH-160V222MS6	2200	35 x 50	0.15	0.113	3.10
<b>180 V</b>					

ELNA PART NO. / WV (V)	CAP. (μF)	SIZE (φx L) (mm)	tan δ	ESR (Ω)	Ripple Current (Arms)
LPH-180V271MS1	270	22 x 25	0.15	0.922	1.08
LPH-180V331MS2	330	22 x 30	0.15	0.754	1.30
LPH-180V391MS1	390	25 x 25	0.15	0.638	1.35
LPH-180V471MS3	470	22 x 35	0.15	0.529	1.50
LPH-180V471MS2	470	25 x 30	0.15	0.529	1.62
LPH-180V561MS4	560	22 x 40	0.15	0.444	1.62
LPH-180V561MS3	560	25 x 35	0.15	0.444	1.69
LPH-180V561MS1	560	30 x 25	0.15	0.444	1.67
LPH-180V681MS6	680	22 x 50	0.15	0.366	1.76
LPH-180V681MS4	680	25 x 40	0.15	0.366	1.72
LPH-180V681MS2	680	30 x 30	0.15	0.366	1.74
LPH-180V681MS1	680	35 x 25	0.15	0.366	1.92
LPH-180V821MS5	820	25 x 45	0.15	0.303	1.78
LPH-180V821MS3	820	30 x 35	0.15	0.303	1.85
LPH-180V102MS6	1000	25 x 50	0.15	0.249	1.91
LPH-180V102MS4	1000	30 x 40	0.15	0.249	2.01
LPH-180V102MS2	1000	35 x 30	0.15	0.249	2.16
LPH-180V122MS5	1200	30 x 45	0.15	0.207	2.19
LPH-180V122MS3	1200	35 x 35	0.15	0.207	2.34
LPH-180V152MS6	1500	30 x 50	0.15	0.166	2.36
LPH-180V152MS4	1500	35 x 40	0.15	0.166	2.56
LPH-180V182MS5	1800	35 x 45	0.15	0.138	2.67
<b>200 V</b>					
LPH-200V221MS1	220	22 x 25	0.15	1.131	1.08
LPH-200V331MS2	330	22 x 30	0.15	0.754	1.30
LPH-200V331MS1	330	25 x 25	0.15	0.754	1.35
LPH-200V391MS3	390	22 x 35	0.15	0.638	1.41
LPH-200V471MS4	470	22 x 40	0.15	0.529	1.50
LPH-200V471MS2	470	25 x 30	0.15	0.529	1.47
LPH-200V471MS1	470	30 x 25	0.15	0.529	1.56
LPH-200V561MS5	560	22 x 45	0.15	0.444	1.58
LPH-200V561MS3	560	25 x 35	0.15	0.444	1.65
LPH-200V681MS6	680	22 x 50	0.15	0.366	1.68
LPH-200V681MS4	680	25 x 40	0.15	0.366	1.80
LPH-200V681MS2	680	30 x 30	0.15	0.366	1.82
LPH-200V681MS1	680	35 x 25	0.15	0.303	1.96
LPH-200V821MS6	820	25 x 50	0.15	0.303	1.87

Note: ESR 120 Hz at 20°C. Allowable Ripple Current 120 Hz at 105°C

## LPH Large Capacitance Aluminum Electrolytic Capacitors

### Standard Ratings

ELNA PART NO. / WV (V)	CAP. (μF)	SIZE (φx L) (mm)	tan δ	ESR (Ω)	Ripple Current (Arms)
LPH-200V821MS3	820	30 x 35	0.15	0.303	1.99
LPH-200V821MS2	820	35 x 30	0.15	0.303	2.07
LPH-200V102MS5	1000	30 x 45	0.15	0.249	2.17
LPH-200V102MS3	1000	35 x 35	0.15	0.249	2.22
LPH-200V122MS6	1200	30 x 50	0.15	0.207	2.22
LPH-200V122MS4	1200	35 x 40	0.15	0.207	2.42
LPH-200V152MS5	1500	35 x 45	0.15	0.166	2.59
LPH-200V182MS6	1800	35 x 50	0.15	0.138	2.70
<b>250 V</b>					
LPH-250V181MS1	180	22 x 25	0.15	1.382	0.94
LPH-250V221MS2	220	22 x 30	0.15	1.131	1.10
LPH-250V221MS1	220	25 x 25	0.15	1.131	1.15
LPH-250V271MS3	270	22 x 35	0.15	0.922	1.13
LPH-250V331MS4	330	22 x 40	0.15	0.754	1.20
LPH-250V331MS2	330	25 x 30	0.15	0.754	1.30
LPH-250V331MS1	330	30 x 25	0.15	0.754	1.30
LPH-250V391MS5	390	22 x 45	0.15	0.638	1.26
LPH-250V391MS3	390	25 x 35	0.15	0.638	1.41
LPH-250V471MS6	470	22 x 50	0.15	0.529	1.37
LPH-250V471MS4	470	25 x 40	0.15	0.529	1.52
LPH-250V471MS2	470	30 x 30	0.15	0.529	1.36
LPH-250V471MS1	470	35 x 25	0.15	0.529	1.40
LPH-250V561MS5	560	25 x 45	0.15	0.444	1.59
LPH-250V561MS3	560	30 x 35	0.15	0.444	1.57
LPH-250V561MS2	560	35 x 30	0.15	0.444	1.56
LPH-250V681MS6	680	25 x 50	0.15	0.366	1.66
LPH-250V681MS4	680	30 x 40	0.15	0.366	1.76
LPH-250V821MS5	820	30 x 45	0.15	0.303	1.83
LPH-250V821MS3	820	35 x 35	0.15	0.303	1.82
LPH-250V102MS6	1000	30 x 50	0.15	0.249	1.87
LPH-250V102MS4	1000	35 x 40	0.15	0.249	1.99
LPH-250V122MS5	1200	35 x 45	0.15	0.207	2.10
<b>400 V</b>					
LPH-400V680MS1	68	22 x 25	0.20	4.879	0.47
LPH-400V820MS2	82	22 x 30	0.20	4.046	0.56
LPH-400V820MS1	82	25 x 25	0.20	4.046	0.65
LPH-400V121MS3	120	22 x 35	0.20	2.765	0.64

ELNA PART NO. / WV (V)	CAP. (μF)	SIZE (φx L) (mm)	tan δ	ESR (Ω)	Ripple Current (Arms)
LPH-400V121MS2	120	25 x 30	0.20	2.765	0.70
LPH-400V121MS1	120	30 x 25	0.20	2.765	0.78
LPH-400V151MS4	150	22 x 40	0.20	2.212	0.70
LPH-400V151MS3	150	25 x 35	0.20	2.212	0.73
LPH-400V181MS6	180	22 x 50	0.20	1.843	0.78
LPH-400V181MS4	180	25 x 40	0.20	1.843	0.82
LPH-400V181MS2	180	30 x 30	0.20	1.843	0.83
LPH-400V181MS1	180	35 x 25	0.20	1.843	0.86
LPH-400V221MS5	220	25 x 45	0.20	1.508	0.87
LPH-400V221MS3	220	30 x 35	0.20	1.508	0.86
LPH-400V271MS6	270	25 x 50	0.20	1.229	0.94
LPH-400V271MS4	270	30 x 40	0.20	1.229	0.95
LPH-400V271MS2	270	35 x 30	0.20	1.229	0.91
LPH-400V331MS5	330	30 x 45	0.20	1.005	1.11
LPH-400V331MS3	330	35 x 35	0.20	1.005	1.13
LPH-400V391MS6	390	30 x 50	0.20	0.851	1.15
LPH-400V391MS4	390	35 x 40	0.20	0.851	1.26
LPH-400V471MS5	470	35 x 45	0.20	0.706	1.31
LPH-400V561MS6	560	35 x 50	0.20	0.592	1.50
<b>450 V</b>					
LPH-450V560MS1	56	22 x 25	0.20	5.924	0.47
LPH-450V680MS2	68	22 x 30	0.20	4.879	0.56
LPH-450V680MS1	68	25 x 25	0.20	4.879	0.65
LPH-450V820MS3	82	22 x 35	0.20	4.046	0.64
LPH-450V101MS4	100	22 x 40	0.20	3.317	0.70
LPH-450V101MS2	100	25 x 30	0.20	3.317	0.70
LPH-450V101MS1	100	30 x 25	0.20	3.317	0.78
LPH-450V121MS5	120	22 x 45	0.20	2.765	0.73
LPH-450V121MS3	120	25 x 35	0.20	2.765	0.73
LPH-450V151MS6	150	22 x 50	0.20	2.212	0.78
LPH-450V151MS4	150	25 x 40	0.20	2.212	0.82
LPH-450V151MS2	150	30 x 30	0.20	2.212	0.83
LPH-450V151MS1	150	35 x 25	0.20	2.212	0.86
LPH-450V181MS5	180	25 x 45	0.20	1.843	0.87
LPH-450V181MS3	180	30 x 35	0.20	1.843	0.86
LPH-450V221MS6	220	25 x 50	0.20	1.508	0.94
LPH-450V221MS4	220	30 x 40	0.20	1.508	0.95

Note: ESR 120 Hz at 20°C. Allowable Ripple Current 120 Hz at 105°C

**LPH Large Capacitance Aluminum Electrolytic Capacitors****Standard Ratings**

ELNA PART NO. / WV (V)	CAP. (μF)	SIZE (φ x L) (mm)	tan δ	ESR (Ω)	Ripple Current (Arms)
LPH-450V221MS2	220	35 x 30	0.20	1.508	0.91
LPH-450V271MS5	270	30 x 45	0.20	1.229	1.11
LPH-450V271MS3	270	35 x 35	0.20	1.229	1.13
LPH-450V331MS6	330	30 x 50	0.20	1.005	1.15
LPH-450V331MS4	330	35 x 40	0.20	1.005	1.26
LPH-450V391MS5	390	35 x 45	0.20	0.851	1.31
LPH-450V471MS6	470	35 x 50	0.20	0.706	1.50

Note: ESR 120 Hz at 20°C. Allowable Ripple Current 120 Hz at 105°C