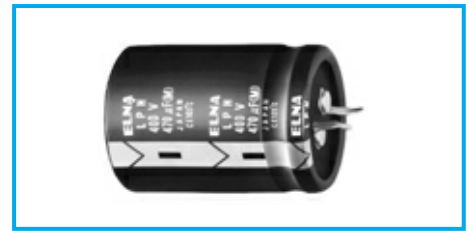
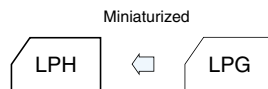


Miniaturized, High-Reliability, High-Ripple Capacitors Series LPH

- High-reliability, high-ripple capacitors.
- Guarantees 2000 hours at 105°C.
- Increase in the applicable voltage range (16 to 100V)



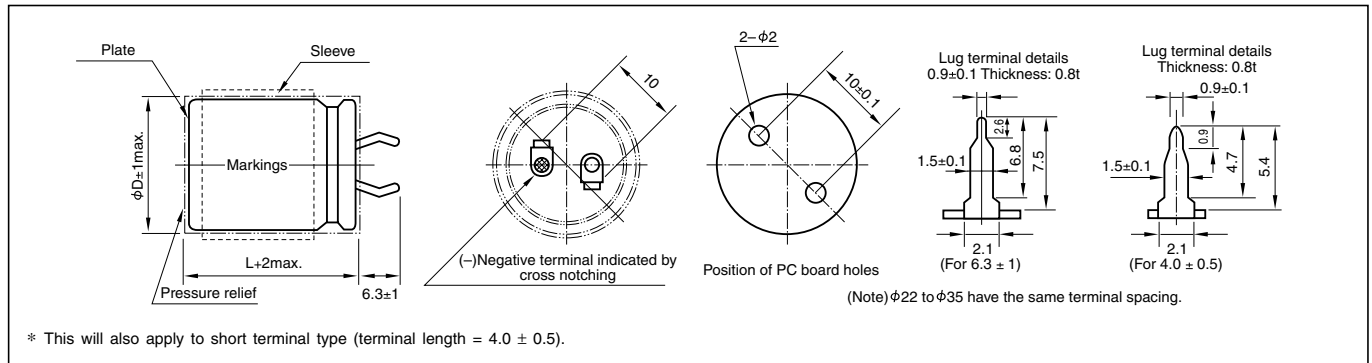
Marking color : White print on a brown sleeve

Specifications

Item	Performance								
Category temperature range (°C)	-40 to +105(-25 to +105 at 160V or more)								
Tolerance at rated capacitance (%)	±20 (20°C,120Hz)								
Leakage current (μA)	Less than 0.02CV or 3mA whichever is smaller(after 5 minutes) C: Rated capacitance(μF); V: Rated voltage(V) (20°C)								
Tangent of loss angle (tanδ)	Rated voltage (V)		16	25	35	50	63 to 100	160 to 250	400 to 450
	tanδ (max.)		0.50	0.40	0.35	0.30	0.20	0.15	0.20
(20°C,120Hz)									
Characteristics at high and low temperature	Rated voltage (V)		16 to 100		160 to 200		250 to 400		
	Impedance ratio (max.)	Z-25°C / Z+20°C	4		4		4		
		Z-40°C / Z+20°C	15		—		—		
(120Hz)									
Endurance (105°C) (Applied ripple current)	Test time		2000 hours						
	Leakage current		The initial specified value or less						
	Percentage of capacitance change		Within ±20% of initial value						
	Tangent of the loss angle		200% or less of the initial specified value						
Shelf life (105°C)	Test time		1000 hours						
	Leakage current		The initial specified value or less						
	Percentage of capacitance change		Within ±15% of initial value						
	Tangent of the loss angle		150% or less of the initial specified value						
Voltage application treatment									
Applicable standards	JIS C5101-1, -4 1998 (IEC 60384-1 1992, -4 1985)								

Outline Drawing

Unit: mm



Part numbering system (example: 200V470μF)					
Standard terminal type	LPH	—	200	V	471 M S2
	Series code		Rated voltage symbol		Rated capacitance symbol Capacitance tolerance symbol Casing symbol
Short terminal type	LAH	—	200	V	471 M S2
	Series code		Rated voltage symbol		Rated capacitance symbol Capacitance tolerance symbol Casing symbol

Coefficient of Frequency for Rated Ripple Current

Frequency (Hz)	50	120	1k	10k	30k
Rated voltage (V)					
100 or less	0.95	1	1.10	1.15	1.15
160 to 250	0.87	1	1.11	1.18	1.20
315 or more	0.80	1	1.14	1.19	1.20

• The electric characteristics are described on page 101.

• The standard ratings are described on the next page.

* There are overseas factory product only on this page.

NOTE

Design, Specifications are subject to change without notice.
Ask factory for technical specifications before purchase and/or use.

Standard Ratings

Rated voltage(V)		16			25			35			50		
Case φ DxL(mm)	Casing symbol	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current
		μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms
22x25	S1	6800	0.122	1.60	4700	0.141	1.55	3300	0.176	1.43	1800	0.184	1.31
22x30	S2	10000	0.083	1.99	6800	0.098	1.91	3900	0.149	1.65	2700	0.123	1.70
22x35	S3	12000	0.069	2.28	8200	0.081	2.14	5600	0.104	2.02	3300	0.101	1.98
22x40	S4	15000	0.055	2.64	10000	0.066	2.40	6800	0.085	2.28	3900	0.085	2.25
22x45	S5	18000	0.046	2.98	12000	0.055	2.69	—	—	—	4700	0.071	2.56
22x50	S6	—	—	—	—	—	—	8200	0.071	2.67	5600	0.059	2.89
25x25	S1	10000	0.083	1.99	6800	0.098	1.91	4700	0.124	1.78	2700	0.123	1.70
25x30	S2	12000	0.069	2.30	8200	0.081	2.16	5600	0.104	2.04	3300	0.101	2.00
25x35	S3	15000	0.055	2.68	10000	0.066	2.44	6800	0.085	2.31	3900	0.085	2.28
25x40	S4	18000	0.046	3.04	12000	0.055	2.74	8200	0.071	2.60	5600	0.059	2.81
25x45	S5	22000	0.038	3.40	15000	0.044	3.15	10000	0.058	2.92	—	—	—
25x50	S6	27000	0.031	3.81	18000	0.037	3.54	12000	0.048	3.26	6800	0.049	3.37
30x25	S1	12000	0.069	2.38	8200	0.081	2.25	5600	0.104	2.12	3900	0.085	2.22
30x30	S2	18000	0.046	3.00	12000	0.055	2.70	8200	0.071	2.56	4700	0.071	2.58
30x35	S3	22000	0.038	3.39	15000	0.044	3.13	10000	0.058	2.92	5600	0.059	2.95
30x40	S4	27000	0.031	3.83	18000	0.037	3.54	12000	0.048	3.28	6800	0.049	3.39
30x45	S5	33000	0.025	4.30	22000	0.030	4.24	15000	0.039	3.74	8200	0.040	3.71
30x50	S6	39000	0.021	4.74	—	—	—	—	—	—	10000	0.033	4.09
35x25	S1	18000	0.046	3.10	12000	0.055	2.80	8200	0.071	2.78	4700	0.071	2.67
35x30	S2	27000	0.031	3.74	15000	0.044	3.22	12000	0.048	3.20	6800	0.049	3.31
35x35	S3	33000	0.025	4.24	22000	0.030	3.96	15000	0.039	3.69	8200	0.040	3.66
35x40	S4	39000	0.021	4.72	—	—	—	18000	0.032	4.16	10000	0.033	4.07
35x45	S5	47000	0.018	5.27	27000	0.025	4.75	—	—	—	12000	0.028	4.50
35x50	S6	—	—	—	33000	0.020	5.39	22000	0.026	4.92	—	—	—

Rated voltage(V)		63			80			100		
Case φ DxL(mm)	Casing symbol	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current
		μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms
22x25	S1	1200	0.207	1.25	820	0.303	1.11	560	0.444	1.07
22x30	S2	1800	0.138	1.52	1200	0.207	1.39	820	0.303	1.35
22x35	S3	2200	0.113	1.73	1500	0.166	1.61	1000	0.249	1.54
22x40	S4	2700	0.092	1.97	1800	0.138	1.83	1200	0.207	1.74
22x45	S5	—	—	—	2200	0.113	2.09	1500	0.166	1.99
22x50	S6	3300	0.075	2.32	—	—	—	—	—	—
25x25	S1	1800	0.138	1.52	1200	0.207	1.39	820	0.303	1.35
25x30	S2	2200	0.113	1.75	1500	0.166	1.62	1000	0.249	1.56
25x35	S3	2700	0.092	1.99	2200	0.113	2.01	1200	0.207	1.76
25x40	S4	3300	0.075	2.27	—	—	—	1500	0.166	2.03
25x45	S5	3900	0.064	2.54	2700	0.092	2.43	1800	0.138	2.28
25x50	S6	4700	0.053	2.88	3300	0.075	2.76	2200	0.113	2.57
30x25	S1	2700	0.092	1.93	1800	0.138	1.81	1200	0.207	1.71
30x30	S2	3300	0.075	2.24	2200	0.113	2.10	1500	0.166	2.00
30x35	S3	3900	0.064	2.55	2700	0.092	2.43	1800	0.138	2.27
30x40	S4	4700	0.053	2.90	3300	0.075	2.78	2200	0.113	2.59
30x45	S5	5600	0.044	3.28	3900	0.064	3.12	2700	0.092	2.94
30x50	S6	6800	0.037	3.73	4700	0.053	3.56	3300	0.075	3.32
35x25	S1	3300	0.075	2.41	2200	0.113	2.17	1500	0.166	2.07
35x30	S2	4700	0.053	2.83	3300	0.075	2.71	2200	0.113	2.52
35x35	S3	5600	0.044	3.24	3900	0.064	3.07	2700	0.092	2.90
35x40	S4	6800	0.037	3.71	4700	0.053	3.50	3300	0.075	3.31
35x45	S5	8200	0.030	4.16	5600	0.044	3.87	3900	0.064	3.69
35x50	S6	10000	0.025	4.69	6800	0.037	4.19	4700	0.053	4.14

(Note) ESR : 20°C, 120Hz ; Rated ripple current : 105°C, 120Hz

* There are overseas factory product only on this page.

Standard Ratings

Case ø DxL(mm)	Casing symbol	Item	Rated voltage(V)			160			180			200		
			Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current
			μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms
22x25	S1		330	0.754	1.16	270	0.922	1.08	220	1.131	1.08			
22x30	S2		390	0.638	1.43	330	0.754	1.30	330	0.754	1.30			
22x35	S3		470	0.529	1.52	470	0.529	1.50	390	0.638	1.41			
22x40	S4		560	0.444	1.62	560	0.444	1.62	470	0.529	1.50			
22x45	S5		680	0.366	1.70	—	—	—	560	0.444	1.58			
22x50	S6		820	0.303	1.81	680	0.366	1.76	680	0.366	1.68			
25x25	S1		470	0.529	1.55	390	0.638	1.35	330	0.754	1.35			
25x30	S2		560	0.444	1.73	470	0.529	1.62	470	0.529	1.47			
25x35	S3		680	0.366	1.81	560	0.444	1.69	560	0.444	1.65			
25x40	S4		820	0.303	1.98	680	0.366	1.72	680	0.366	1.80			
25x45	S5		1000	0.249	2.04	820	0.303	1.78	—	—	—			
25x50	S6		1200	0.207	2.12	1000	0.249	1.91	820	0.303	1.87			
30x25	S1		680	0.366	1.82	560	0.444	1.67	470	0.529	1.56			
30x30	S2		820	0.303	1.98	680	0.366	1.74	680	0.366	1.82			
30x35	S3		1000	0.249	2.14	820	0.303	1.85	820	0.303	1.99			
30x40	S4		1200	0.207	2.22	1000	0.249	2.01	—	—	—			
30x45	S5		1500	0.166	2.46	1200	0.207	2.19	1000	0.249	2.17			
30x50	S6		—	—	—	1500	0.166	2.36	1200	0.207	2.22			
35x25	S1		820	0.303	1.93	680	0.366	1.92	680	0.366	1.96			
35x30	S2		1200	0.249	2.40	1000	0.249	2.16	820	0.303	2.07			
35x35	S3		1500	0.166	2.53	1200	0.207	2.34	1000	0.249	2.22			
35x40	S4		—	—	—	1500	0.166	2.56	1200	0.207	2.42			
35x45	S5		1800	0.138	2.98	1800	0.138	2.67	1500	0.166	2.59			
35x50	S6		2200	0.113	3.10	—	—	—	1800	0.138	2.70			

Case ø DxL(mm)	Casing symbol	Item	Rated voltage(V)			250			400			450		
			Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current	Rated capacitance	ESR	Rated ripple current
			μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms	μF	Ω	Arms
22x25	S1		180	1.382	0.94	68	4.879	0.47	56	5.924	0.47			
22x30	S2		220	1.131	1.10	82	4.046	0.56	68	4.879	0.56			
22x35	S3		270	0.922	1.13	120	2.765	0.64	82	4.046	0.64			
22x40	S4		330	0.754	1.20	150	2.212	0.70	100	3.317	0.70			
22x45	S5		390	0.638	1.26	—	—	—	120	2.765	0.73			
22x50	S6		470	0.529	1.37	180	1.843	0.78	150	2.212	0.78			
25x25	S1		220	1.131	1.15	82	4.046	0.65	68	4.879	0.65			
25x30	S2		330	0.754	1.30	120	2.765	0.70	100	3.317	0.70			
25x35	S3		390	0.638	1.41	150	2.212	0.73	120	2.765	0.73			
25x40	S4		470	0.529	1.52	180	1.843	0.82	150	2.212	0.82			
25x45	S5		560	0.444	1.59	220	1.508	0.87	180	1.843	0.87			
25x50	S6		680	0.366	1.66	270	1.229	0.94	220	1.508	0.94			
30x25	S1		330	0.754	1.30	120	2.765	0.78	100	3.317	0.78			
30x30	S2		470	0.529	1.36	180	1.843	0.83	150	2.212	0.83			
30x35	S3		560	0.444	1.57	220	1.508	0.86	180	1.843	0.83			
30x40	S4		680	0.366	1.76	270	1.229	0.95	220	1.508	0.95			
30x45	S5		820	0.303	1.83	330	1.005	1.11	270	1.229	1.11			
30x50	S6		1000	0.249	1.87	390	0.851	1.15	330	1.005	1.15			
35x25	S1		470	0.529	1.40	180	1.843	0.86	150	2.212	0.86			
35x30	S2		560	0.444	1.56	270	1.229	0.91	220	1.508	0.91			
35x35	S3		820	0.303	1.82	330	1.005	1.13	270	1.229	1.13			
35x40	S4		1000	0.249	1.99	390	0.851	1.26	330	1.005	1.26			
35x45	S5		1200	0.207	2.10	470	0.706	1.31	390	0.851	1.31			
35x50	S6		—	—	—	560	0.592	1.50	470	0.706	1.50			

(Note) ESR : 20°C, 120Hz ; Rated ripple current : 105°C, 120Hz

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NOTE

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