

# ALUMINUM ELECTROLYTIC CAPACITORS

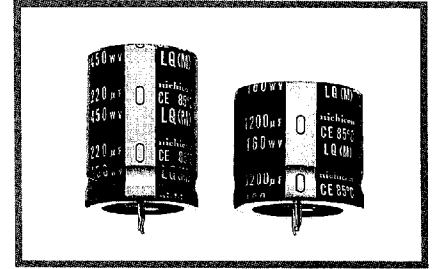
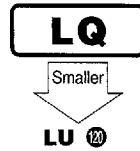
A05-1103  
nichicon

**LQ** Snap-in Terminal Type, Standard series



Approved by Reliability Center for Electronic Component, Japan-Certification No. RCJ-03-25C

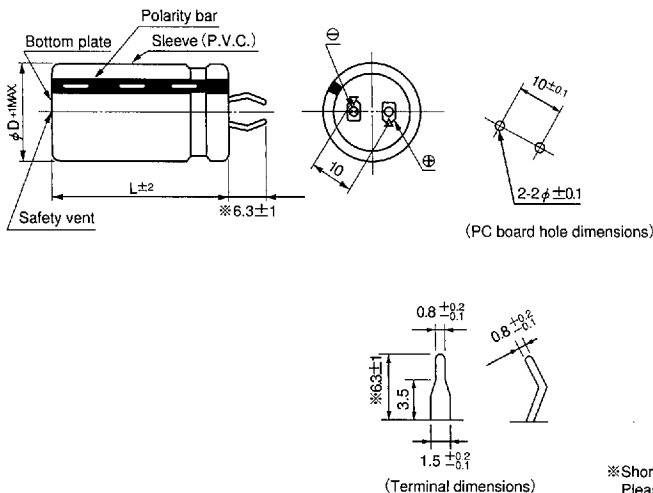
- Rated capacitances available based on the numerical values in E-12 series. (Size :  $\phi 22 \sim \phi 35$ )



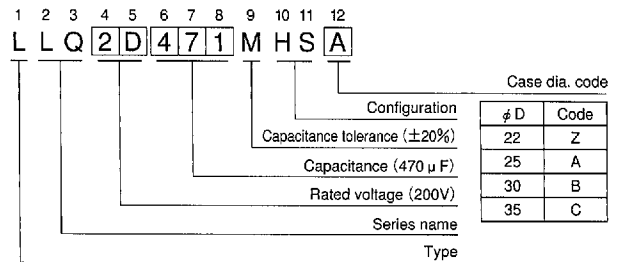
## Specifications

Item	Performance Characteristics																											
Operating Temperature Range	-40~+85°C (16~250V), -25~+85°C (400~450V)																											
Voltage Range	16~450V																											
Capacitance Range	56~56000 $\mu$ F																											
Capacitance Tolerance	$\pm 20\%$ (120Hz, 20°C)																											
Leakage Current	$I \leq 3\sqrt{CV}$ ( $\mu$ A) (After 5 minutes' application of rated voltage) [C: Capacitance ( $\mu$ F), V: Voltage (V)]																											
tan $\delta$	Measurement frequency : 120Hz, Temperature : 20°C																											
	<table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>80</th> <th>100</th> <th>160</th> <th>180</th> <th>200</th> <th>250</th> <th>400</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>tan <math>\delta</math> (MAX.)</td> <td>0.50</td> <td>0.40</td> <td>0.35</td> <td>0.30</td> <td>0.25</td> <td>0.20</td> <td>0.20</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> </tbody> </table>	Rated voltage (V)	16	25	35	50	63	80	100	160	180	200	250	400	450	tan $\delta$ (MAX.)	0.50	0.40	0.35	0.30	0.25	0.20	0.20	0.15	0.15	0.15	0.15	0.20
Rated voltage (V)	16	25	35	50	63	80	100	160	180	200	250	400	450															
tan $\delta$ (MAX.)	0.50	0.40	0.35	0.30	0.25	0.20	0.20	0.15	0.15	0.15	0.15	0.20	0.20															
Stability at Low Temperature	Measurement frequency : 120Hz																											
	<table border="1"> <thead> <tr> <th rowspan="2">Impedance ratio ZT/Z20 (MAX.)</th> <th colspan="2">Rated voltage (V)</th> <th>16~100</th> <th>160~250</th> <th>400~450</th> </tr> <tr> <th>Z-25°C / Z+20°C</th> <th>Z-40°C / Z+20°C</th> <td>4</td> <td>3</td> <td>8</td> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>15</td> <td>12</td> <td>—</td> </tr> </tbody> </table>	Impedance ratio ZT/Z20 (MAX.)	Rated voltage (V)		16~100	160~250	400~450	Z-25°C / Z+20°C	Z-40°C / Z+20°C	4	3	8				15	12	—										
Impedance ratio ZT/Z20 (MAX.)	Rated voltage (V)		16~100	160~250	400~450																							
	Z-25°C / Z+20°C	Z-40°C / Z+20°C	4	3	8																							
			15	12	—																							
Load Life	After an application of DC voltage (in the range of rated DC voltage even after over-lapping the specified ripple current) for 2000 hours at 85°C, capacitors shall meet the characteristics requirements indicated at right.																											
	Capacitance change	Within $\pm 20\%$ of initial value																										
	tan $\delta$	200% or less of initial specified value																										
Shelf Life	After leaving capacitors under no load at 85°C for 1000 hours, they meet the requirements listed at right.																											
	Capacitance change	Within $\pm 15\%$ of initial value																										
	tan $\delta$	150% or less of initial specified value																										
Leakage current	Initial specified value or less																											
Marking	Printed with white color letter on black sleeve.																											
Applicable Standards	JIS C-5141 and JIS C-5102.																											

## Drawing



Type numbering system (Example : 200V 470  $\mu$ F)



※ Shorter terminal (4.0 $\pm$ 0.5) is also available upon request.  
Please refer to page 120 (LU series) for schematic of dimensions.

## Frequency coefficient of allowable ripple current

Frequency (Hz)	50	60	120	1 k	10k~
16 ~ 100V	0.88	0.90	1.00	1.15	1.15
160 ~ 250V	0.85	0.88	1.00	1.15	1.20
400 ~ 450V	0.88	0.90	1.00	1.10	1.15

Dimension table in next pages.

## LQ series

### ■ Dimensions

D×L (mm)

Cap. (μF)	V (Code) Code	φD	16 (1C)				25 (1E)				35 (1V)				50 (1H)						
			22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35			
3300	332																22×30	25×25			
																	2.35	2.35			
3900	392													22×25			22×35	25×30			
														2.16			2.66	2.68			
4700	472													22×30	25×25		22×40	25×35	30×25	35×25	
														2.42	2.42		3.02	3.07	2.98	3.30	
5600	562					22×25								22×35			22×45	25×40	30×30		
						2.11								2.66			3.40	3.47	3.42		
6800	682					22×30	25×25							22×40	25×30	30×25	22×50	25×40	30×35		
						2.47	2.47							2.97	2.82	2.93	3.84	3.74	3.93		
8200	822	22×25				22×35								22×45	25×35		25×50	30×40	35×30		
		2.55				2.86								3.29	3.17		4.44	4.47	4.36		
10000	103	22×30				22×40	25×30	30×25						22×50	25×40	30×30				30×45	35×35
		2.89				3.31	3.15	3.27						3.75	3.65	3.60				5.08	5.01
12000	123	22×30	25×25			22×45	25×35	30×30						25×45	30×35	35×30				30×50	35×40
		3.01	3.01			3.77	3.63	3.80						4.15	4.14	4.27				5.72	5.69
15000	153	22×35	25×30	30×25		22×50	25×40										30×40	35×35			35×45
		3.45	3.48	3.61		4.21	4.10										4.77	4.95			6.56
18000	183	22×40	25×35				25×45	30×35	35×30								30×45	35×40			35×50
		3.84	3.91				4.53	4.52	4.66								5.30	5.52			7.14
22000	223	22×50	25×40	30×30				30×45	35×35												35×45
		4.52	4.40	4.34				5.33	5.26												6.20
27000	273		25×45	30×35				30×50	35×40												35×50
			4.96	4.95				5.96	5.93												6.89
33000	333			30×40	35×30				35×45												
				5.60	5.46				6.65												
39000	393			30×45	35×35				35×50												
				6.21	6.12				7.31												
47000	473			30×50	35×40																
				6.93	6.89																
56000	563				35×45																
					7.69																

Cap. (μF)	V (Code) Code	φD	63 (1J)				80 (1K)				100 (2A)									
			22	25	30	35	22	25	30	35	22	25	30	35						
1200	122						22×25					22×30	25×25							
							1.66					2.11	2.11							
1500	152						22×30					22×35	25×30	30×25						
							1.96					2.45	2.47	2.56						
1800	182	22×25					22×30	25×25				22×40	25×35							
		1.82					2.11	2.11				2.77	2.81							
2200	222	22×30	25×25				22×35	25×30	30×25			22×45	25×40	30×30						
		2.14	2.14				2.44	2.46	2.56			3.15	3.21	3.17						
2700	272	22×35	25×30				22×40	25×35					25×45	30×35	35×30					
		2.49	2.52				2.82	2.86					3.66	3.65	3.77					
3300	332	22×35	25×30	30×25			22×45	25×40	30×30				25×50	30×40						
		2.72	2.74	2.84			3.23	3.29	3.25				4.15	4.18						
3900	392	22×40	25×35				22×50	25×45	30×35					30×45	35×35					
		3.09	3.13				3.62	3.71	3.70					4.67	4.61					
4700	472	22×50	25×40	30×30	35×25		25×50	30×40	35×30					30×50	35×40					
		3.69	3.59	3.54	3.25		4.20	4.23	4.12					5.26	5.23					
5600	562		25×45	30×35				30×45	35×35						35×45					
			4.01	4.00				4.70	4.64						5.88					
6800	682		25×50	30×40	35×30			30×50	35×40											
			4.52	4.55	4.44			5.27	5.24											
8200	822			30×45	35×35				35×45											
				5.12	5.05				5.89											
10000	103			30×50	35×40				35×50											
				5.78	5.75				6.63											
12000	123				35×45															
					6.47															

Allowable Ripple (A rms) at 85°C 120Hz

## LQ series

### Dimensions

DXL (mm)

Cap. (μF)	V(Code) Code	φD	160 (2C)				180 (2Z)				200 (2D)				250 (2E)			
			22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
220	221													22×25				
														1.15				
270	271									22×25				22×30	25×25			
										1.25				1.25	1.25			
330	331					22×25				22×30				22×35	25×30			
						1.35				1.40				1.45	1.45			
390	391	22×25				22×30				22×30	25×25			22×40	25×30	30×25		
		1.55				1.55				1.60	1.60			1.70	1.70	1.70		
470	471	22×30	25×25			22×35	25×25			22×35	25×30			22×45	25×35	30×30		
		1.75	1.75			1.75	1.75			1.80	1.80			1.90	1.90	1.90		
560	561	22×35	25×30			22×40	25×30			22×40	25×35	30×25		22×50	25×40	30×30	35×25	
		1.90	1.90			2.00	2.00			2.00	2.00	2.00		2.15	2.15	2.15	2.15	
680	681	22×40	25×30	30×25		22×45	25×35	30×25		22×45	25×40	30×30		25×45	30×35	35×30		
		2.15	2.15	2.15		2.25	2.25	2.25		2.30	2.25	2.30		2.35	2.35	2.35		
820	821	22×45	25×35	30×30		22×50	25×40	30×30	35×25	22×50	25×45	30×35	35×30			30×40	35×35	
		2.45	2.45	2.45		2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50			2.75	2.75	
1000	102	22×50	25×40	30×30	35×25		25×45	30×35	35×30				30×40	35×30		30×45	35×40	
		2.80	2.80	2.80	2.80		2.85	2.85	2.85				2.95	2.95		3.00	3.00	
1200	122		25×45	30×35	35×30		25×50	30×40	35×30				30×45	35×35				35×45
			3.25	3.25	3.25		3.30	3.30	3.30				3.40	3.40				3.50
1500	152			30×40	35×35			30×45	35×35				30×50	35×40				35×50
				3.75	3.75			3.75	3.75				3.80	3.80				4.00
1800	182			30×50	35×40				35×45					35×45				
				4.00	4.00				4.05					4.15				
2200	222				35×45				35×50					35×50				
					4.50				4.60					4.70				
2700	272				35×50													
					5.15													

Cap. (μF)	V(Code) Code	φD	400 (2G)				450 (2W)						
			22	25	30	35	22	25	30	35			
56	560					22×25							
						0.59							
68	680					22×30							
						0.63							
82	820	22×25				22×30	25×25						
		0.72				0.78	0.78						
100	101	22×30				22×35	25×30						
		0.77				0.92	0.92						
120	121	22×30	25×25			22×40	25×35	30×25					
		0.94	0.94			1.06	1.08	1.05					
150	151	22×35	25×30			22×50	25×40	30×30					
		1.13	0.92			1.28	1.25	1.23					
180	181	22×40	25×35	30×25			25×45	30×40					
		1.27	1.06	1.26			1.41	1.48					
220	221	22×45	25×40	30×30	35×25		25×50	30×40	35×30				
		1.45	1.22	1.46	1.50		1.59	1.60	1.57				
270	271		25×45	30×35	35×30			30×45	35×35				
			1.69	1.68	1.46			1.83	1.80				
330	331		25×50	30×40	35×30			30×50	35×40				
			1.92	1.93	1.88			2.08	2.06				
390	391			30×45	35×35				35×45				
				2.16	2.13				2.31				
470	471			30×50	35×40				35×50				
				2.43	2.42				2.47				
560	561				35×45								
					2.72								
680	681				35×50								
					3.08								

Allowable Ripple (A rms) at 85°C 120Hz