ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

CL Chip Type, Low Impedance series

For SMD | Low Impedance | Anti-Solvent Feature

- Chip type, low impedance, temperature range up to +105°C.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

CL — Low Impedance — CD

Smaller (Higher capacitance) — CM

Specifications

Item	Performance Characteristics
Category Temperature Range	– 55 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	10 to 2200µF
Capacitance Tolerance	± 20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (µA), whichever is greater.

Tangent of loss angle (tan δ)

Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.26	0.19	0.16	0.14	0.12	0.10

Stability at Low Temperature

Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z—25°C / Z+20°C	2	2	2	2	2	2
	Z—40°C / Z+20°C	3	3	3	3	3	3
	Z—55°C / Z+20°C	4	4	4	3	3	3

Endurance

The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 105°C.

Capacitance Change	Within ± 30% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life

After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat

The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C .

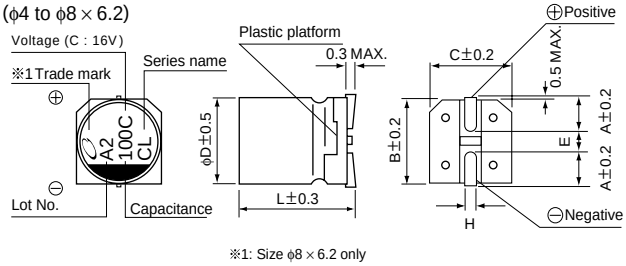
Capacitance Change	Within ± 10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking

Black print on the case top.

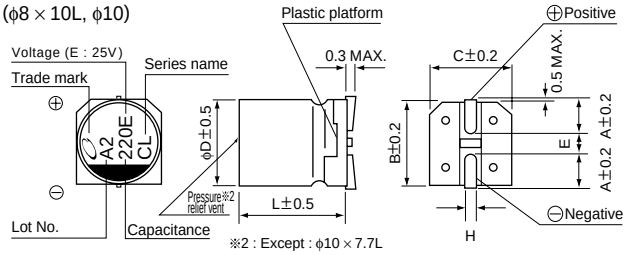
Chip Type

(φ4 to φ8 × 6.2)



※1: Size φ8 × 6.2 only

(φ8 × 10L, φ10)



※2 : Except : φ10 × 7.7L

Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

● Dimension table in next page.

Type numbering system (Example : 16V 100µF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	C	L	1	C	1	0	1	M	C	L	1	G	S

- Taping code
- Size code
- Configuration
- Capacitance tolerance (±20%)
- Rated capacitance (100µF)
- Rated voltage (16V)
- Series name
- Type

φ D	Code
4 to 6.3	CL
8 (6.2L)	CL
10(7.7L)	CL
8(10L) • 10(10L,13.5L)	NL

(mm)

φD × L	4 × 5.8	5 × 5.8	6.3 × 5.8	6.3 × 7.7	8 × 6.2	8 × 10	10 × 7.7	10 × 10	10 × 13.5
A	1.8	2.1	2.4	2.4	3.3	2.9	3.2	3.2	3.2
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	10.3
C	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	10.3
E	1.0	1.3	2.2	2.2	2.3	3.1	4.5	4.5	4.5
L	5.8	5.8	5.8	7.7	6.2	10	7.7	10	13.5
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1	0.8 to 1.1	0.8 to 1.1

CL series

Specifications

Cap. (μF) \ V	Code	6.3			10			16			25			35			50		
		0J			1A			1C			1E			1V			1H		
10	100							4×5.8	0.85	160	4×5.8	0.85	160	●4×5.8	0.85	160			
														5×5.8	0.36	240			
22	220	4×5.8	0.85	160	4×5.8	0.85	160	●4×5.8	0.85	160	5×5.8	0.36	240	5×5.8	0.36	240			
								5×5.8	0.36	240									
33	330				●4×5.8	0.85	160				●5×5.8	0.36	240	6.3×5.8	0.26	300			
					5×5.8	0.36	240				6.3×5.8	0.26	300						
47	470	●4×5.8	0.85	160	6.3×5.8	0.26	300	●5×5.8	0.36	240	6.3×5.8	0.26	300	6.3×5.8	0.26	300			
		5×5.8	0.36	240				6.3×5.8	0.26	300									
68	680							6.3×5.8	0.26	300	6.3×5.8	0.26	300	6.3×7.7	0.16	600			
100	101	●5×5.8	0.36	240	6.3×5.8	0.26	300	6.3×5.8	0.26	300	6.3×7.7	0.16	600	●6.3×7.7	0.16	600	8×10	0.18	670
		6.3×5.8	0.26	300				●6.3×7.7	0.16	600	●8×6.2	0.18	500	8×10	0.08	850			
150	151				6.3×5.8	0.26	300	6.3×7.7	0.16	600	8×10	0.08	850	8×10	0.08	850			
											●10×7.7	0.10	850	●10×7.7	0.10	850			
220	221	6.3×5.8	0.26	300	6.3×7.7	0.16	600	6.3×7.7	0.16	600	8×10	0.08	850	8×10	0.08	850	10×10	0.12	900
					●8×6.2	0.18	500	●8×6.2	0.18	500	●10×7.7	0.10	850	●10×7.7	0.10	850			
330	331	6.3×7.7	0.16	600	8×10	0.08	850	8×10	0.08	850	8×10	0.08	850	10×10	0.06	1190			
		●8×6.2	0.18	500	●10×7.7	0.10	850	●10×7.7	0.10	850									
390	391													10×10	0.08	850			
470	471	8×10	0.08	850	8×10	0.08	850	8×10	0.08	850	10×10	0.06	1190	10×13.5	0.06	1190			
		●10×7.7	0.10	850	●10×7.7	0.10	850	●10×7.7	0.10	850									
560	561										10×10	0.08	850						
680	681				8×10	0.08	850	10×10	0.06	1190	10×13.5	0.06	1190						
820	821							10×10	0.08	850									
1000	102	8×10	0.08	850	10×10	0.06	1190	10×13.5	0.06	1190									
1200	122				10×10	0.08	850												
1500	152	10×10	0.06	1190	10×13.5	0.06	1190												
1800	182	10×10	0.08	850													Case size φD×L (mm)	Impedance	Rated ripple
2200	222	10×13.5	0.06	1190															

Max. Impedance (Ω) at 20°C 100kHz, Rated ripple current (mArms) at 105°C 100kHz

●: In this case, 6 will be put at 12th digit of type numbering system.

- Frequency coefficient of rated ripple current

Frequency	50Hz	120Hz	300Hz	1kHz	10kHz or more
Coefficient	0.35	0.50	0.64	0.83	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by refrow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.