

# ALUMINUM ELECTROLYTIC CAPACITORS



**CD** series Chip Type, Low Impedance



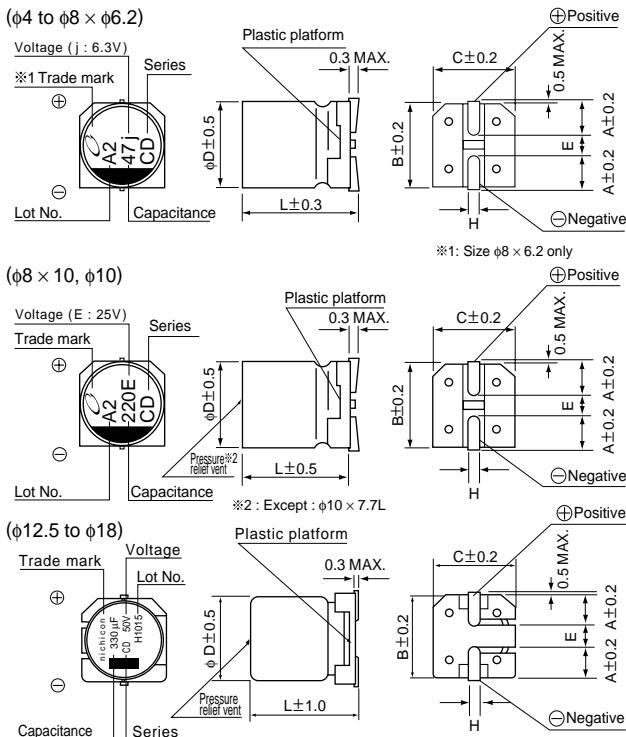
- Chip type, low impedance temperature range up to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).



## Specifications

Item	Performance Characteristics																																						
Category Temperature Range	- 55 to +105°C																																						
Rated Voltage Range	6.3 to 100V																																						
Rated Capacitance Range	1 to 3300μF																																						
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																																						
	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>tan δ (MAX.)</td> <td>0.26</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> <td>0.08</td> <td>0.07</td> </tr> </table> <p>For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.</p>	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	tan δ (MAX.)	0.26	0.19	0.16	0.14	0.12	0.10	0.08	0.08	0.07																		
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Stability at Low Temperature	Measurement frequency : 120Hz																																						
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	Z-55°C / Z+20°C	4	4	4	3	3	3	3	3																														
Endurance	<p>The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours (2000 hours for L &lt; 10 mm: 50V or less, and for L ≤ 10mm: 63V or more) at 105°C.</p> <table border="1"> <tr> <td>Capacitance Change</td> <td>Within ± 30% of the initial capacitance value</td> </tr> <tr> <td>tan δ</td> <td>200% or less than the initial specified value 300% or less than the initial specified value for 63V or more</td> </tr> <tr> <td>Leakage current</td> <td>Less than or equal to the initial specified value</td> </tr> </table>	Capacitance Change	Within ± 30% of the initial capacitance value	tan δ	200% or less than the initial specified value 300% or less than the initial specified value for 63V or more	Leakage current	Less than or equal to the initial specified value																																
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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	<p>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.</p> <table border="1"> <tr> <td>Capacitance Change</td> <td>Within ± 10% of the initial capacitance value</td> </tr> <tr> <td>tan δ</td> <td>Less than or equal to the initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Less than or equal to the initial specified value</td> </tr> </table>	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																																
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Leakage current	Less than or equal to the initial specified value																																						
Marking	Black print on the case top.																																						

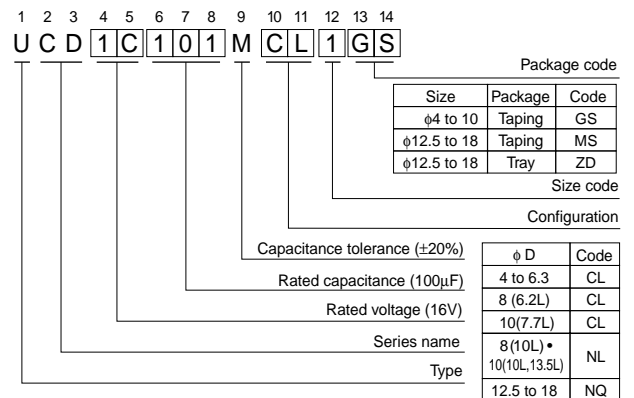
## Chip Type



※φ8 × 10L, φ10 × 10L, φ12.5 × 13.5L, φ16 × 16.5L, φ18 × 16.5L :  
The vibration structure-resistant product is also available upon request, please ask for details.

• Dimension table in next page.

## Type numbering system (Example : 16V 100μF)



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	(mm)
A	1.8	2.1	2.4	2.4	3.3	2.9	3.2	3.2	
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	
C	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	
E	1.0	1.3	2.2	2.2	2.3	3.1	4.5	4.5	
L	5.8	5.8	5.8	7.7	6.2	10	7.7	10	
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	

φD × L	10 × 13.5	12.5 × 13.5	16 × 16.5	18 × 16.5
A	3.2	4.8	5.4	6.4
B	10.3	13.6	17.1	19.1
C	10.3	13.6	17.1	19.1
E	4.5	4.0	6.3	6.3
L	13.5	13.5	16.5	16.5
H	0.8 to 1.1	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4

## Voltage

V	6.3	10	16	25	35	50	63	80	100
Code	j	A	C	E	V	H	J	K	2A

## CD series

### ■ Dimensions

Cap. (μF)	Code	6.3			10			16			25			35			50												
		0J			1A			1C			1E			1V			1H												
1	010																	4 × 5.8	2.70	60									
2.2	2R2																	4 × 5.8	2.70	60									
3.3	3R3																	4 × 5.8	2.70	60									
4.7	4R7																4 × 5.8	1.35	90	4 × 5.8	2.70	60							
10	100								4 × 5.8	1.35	90	4 × 5.8	1.35	90	● 4 × 5.8	1.35	90	● 5 × 5.8	1.50	90	6.3 × 5.8	0.86	170						
15	150								4 × 5.8	1.35	90	5 × 5.8	0.70	160															
22	220	4 × 5.8	1.35	90	4 × 5.8	1.35	90	● 4 × 5.8	1.35	90	5 × 5.8	0.70	160	5 × 5.8	0.70	160	5 × 5.8	0.70	160	6.3 × 5.8	0.86	170							
27	270	4 × 5.8	1.35	90	5 × 5.8	0.70	160	5 × 5.8	0.70	160	6.3 × 5.8	0.36	240																
33	330	5 × 5.8	0.70	160	● 4 × 5.8	1.35	90	5 × 5.8	0.70	160	6.3 × 5.8	0.36	240	● 5 × 5.8	0.70	160	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 7.7	0.66	195	● 8 × 6.2	0.63	200	
47	470	● 4 × 5.8	1.35	90	5 × 5.8	0.70	160	6.3 × 5.8	0.36	240	● 5 × 5.8	0.70	160	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 7.7	0.66	195	● 8 × 6.2	0.63	200	
56	560	5 × 5.8	0.70	160	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240													
68	680	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 7.7	0.32	290										
100	101	● 5 × 5.8	0.70	160	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 7.7	0.32	290	● 6.3 × 7.7	0.32	290	8 × 10	0.32	350	● 10 × 7.7	0.36	330				
150	151	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 7.7	0.32	290	8 × 10	0.16	600	8 × 10	0.16	600	8 × 10	0.16	600	8 × 10	0.16	600	10 × 10	0.16	700				
220	221	6.3 × 5.8	0.36	240	6.3 × 7.7	0.32	290	● 8 × 6.2	0.26	300	6.3 × 7.7	0.32	290	8 × 10	0.16	600	8 × 10	0.16	600	8 × 10	0.16	600	10 × 10	0.16	700				
330	331	6.3 × 7.7	0.32	290	8 × 10	0.16	600	● 10 × 7.7	0.18	600	8 × 10	0.16	600	8 × 10	0.16	600	8 × 10	0.16	600	10 × 10	0.08	850	● 10 × 13.5	0.14	800	12.5 × 13.5	0.12	900	
390	391																												
470	471	8 × 10	0.16	600	● 10 × 7.7	0.18	600	8 × 10	0.16	600	10 × 10	0.08	850	● 10 × 13.5	0.08	950	12.5 × 13.5	0.08	1100	16 × 16.5	0.073	1610							
680	681	8 × 10	0.16	600	● 10 × 7.7	0.18	600	10 × 10	0.08	850	10 × 10	0.08	850	10 × 13.5	0.08	950	12.5 × 13.5	0.08	1100	16 × 16.5	0.073	1610							
1000	102	8 × 10	0.16	600	10 × 10	0.08	850	10 × 13.5	0.08	950	12.5 × 13.5	0.08	1100	16 × 16.5	0.035	1800													
1500	152	10 × 10	0.08	850	10 × 13.5	0.08	950	12.5 × 13.5	0.08	1100																			
2200	222	10 × 13.5	0.08	950	12.5 × 13.5	0.08	1100																						
3300	332	12.5 × 13.5	0.08	1100																									

Cap. (μF)	Code	63			80			100					
		1J			1K			2A					
3.3	3R3				5 × 5.8	5.00	25						
4.7	4R7	5 × 5.8	3.00	50	6.3 × 5.8	3.00	40						
10	100	6.3 × 5.8	1.50	80	6.3 × 7.7	2.40	60	● 8 × 6.2	2.40	60			
22	220	6.3 × 7.7	1.20	120	● 8 × 6.2	1.20	120	8 × 10	1.30	130	8 × 10	1.30	130
33	330	8 × 10	0.65	250	8 × 10	1.30	130	10 × 10	0.70	200			
47	470	8 × 10	0.65	250	10 × 10	0.70	200	12.5 × 13.5	0.32	500			
68	680	10 × 10	0.35	400	12.5 × 13.5	0.32	500	12.5 × 13.5	0.32	500			
100	101	10 × 10	0.35	400	12.5 × 13.5	0.32	500	16 × 16.5	0.17	793			
150	151	12.5 × 13.5	0.16	800	12.5 × 13.5	0.32	500	16 × 16.5	0.17	793			
220	221	12.5 × 13.5	0.16	800				18 × 16.5	0.15	917			
330	331				16 × 16.5	0.17	793	18 × 16.5	0.15	917			
470	471	16 × 16.5	0.082	1410	18 × 16.5	0.15	917	Case size φD × L (mm)	Impedance	Rated ripple			
680	681	18 × 16.5	0.08	1690									

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

●: In this case, [ ] 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 reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

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