

ALUMINUM ELECTROLYTIC CAPACITORS

CD series Chip Type, Low Impedance



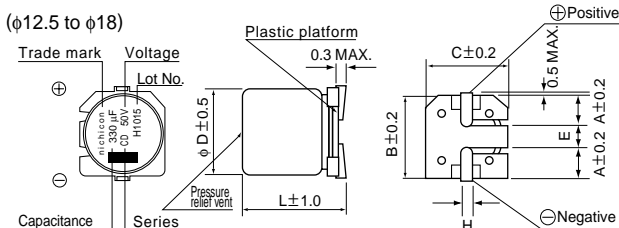
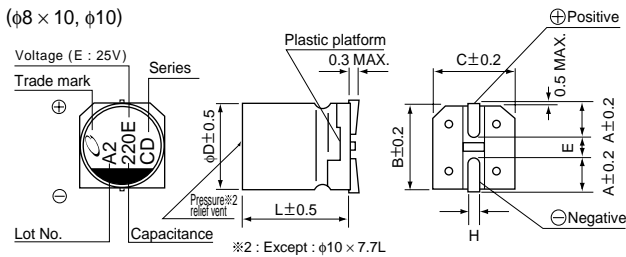
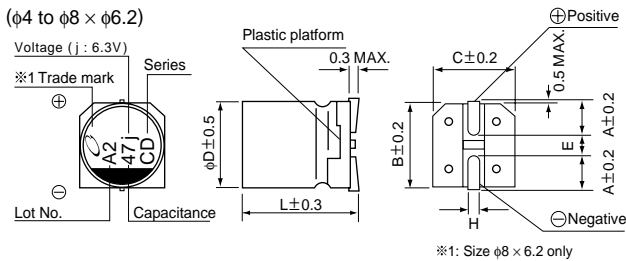
- Chip type, low impedance temperature range up to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2002/95/EC).



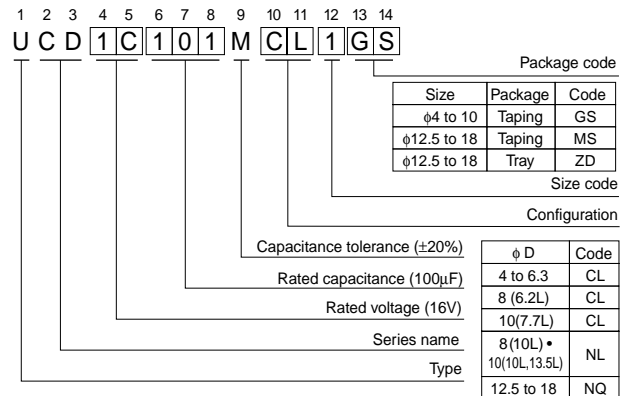
Specifications

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, Temperature : 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 < 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	<p>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.</p>																																						
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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Marking																																							

Chip Type



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

• Dimension table in next page.

CD series

■ Dimensions

Cap. (μF)	V 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					
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				
																	5 × 5.8	0.70	160	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	
									5 × 5.8	0.70	160	5 × 5.8	0.70	160										
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	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	
						5 × 5.8	0.70	160				6.3 × 5.8	0.36	240							● 8 × 6.2	0.63	200	
47	470		● 4 × 5.8	1.35	90	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	
			5 × 5.8	0.70	160				6.3 × 5.8	0.36	240										● 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 × 7.7	0.32	290	● 6.3 × 7.7	0.32	290	8 × 10	0.32	350	8 × 10	0.32	350	
			6.3 × 5.8	0.36	240							● 8 × 6.2	0.26	300	8 × 10	0.16	600	● 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	10 × 10	0.16	700	
									● 10 × 7.7	0.18	600	● 10 × 7.7	0.18	600	● 10 × 7.7	0.18	600							
220	221		6.3 × 5.8	0.36	240	6.3 × 7.7	0.32	290	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	
						● 8 × 6.2	0.26	300	● 8 × 6.2	0.26	300	● 10 × 7.7	0.18	600	● 10 × 7.7	0.18	600							
330	331		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	0.08	850	● 10 × 13.5	0.14	800	
			● 8 × 6.2	0.26	300	● 10 × 7.7	0.18	600	● 10 × 7.7	0.18	600										12.5 × 13.5	0.12	900	
390	391																				12.5 × 13.5	0.12	900	
470	471		8 × 10	0.16	600	8 × 10	0.16	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	
			● 10 × 7.7	0.18	600	● 10 × 7.7	0.18	600	● 10 × 7.7	0.18	600													
680	681		8 × 10	0.16	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				
			● 10 × 7.7	0.18	600																			
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				16 × 16.5	0.035	1800							Case size	Impedance	Rated ripple	
3300	332		12.5 × 13.5	0.08	1100																φD × L (mm)			

Cap. (μF)	V 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 × 10	1.30	130	8 × 10	1.30	130
			● 8 × 6.2	1.20	120						
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	Impedance	Rated ripple
680	681		18 × 16.5	0.08	1690				φD × L (mm)		

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.