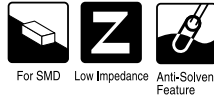
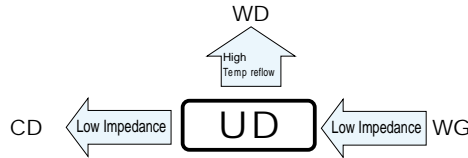


# ALUMINUM ELECTROLYTIC CAPACITORS

**UD** 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).

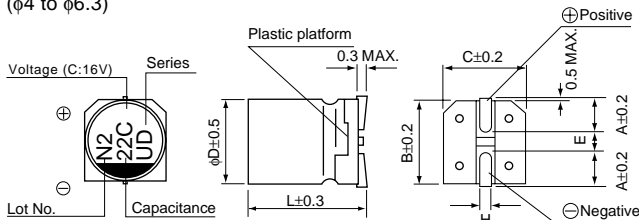


## Specifications

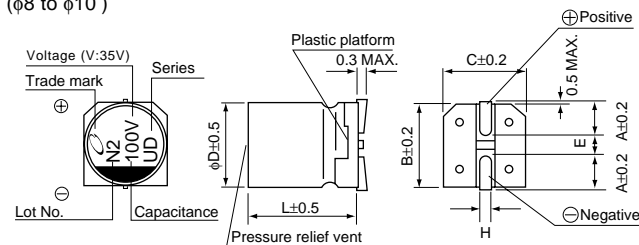
Item	Performance Characteristics													
Category Temperature Range	-55 to +105°C													
Rated Voltage Range	6.3 to 50V													
Rated Capacitance Range	1 to 1500μF													
Capacitance Tolerance	±20% at 120Hz, 20°C													
Leakage Current	After 2 minutes' application of rated 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							( ) is φ8 over						
	Rated voltage (V)	6.3	10	16	25	35	50							
Stability at Low Temperature	Measurement frequency : 120Hz													
	Impedance ratio	Z-25°C / Z+20°C	3	2	2	2	2		2					
Endurance	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 φD = 4, 5 and 6.3) at 105°C.							<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</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	Leakage current	Less than or equal to the initial specified value
	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.							<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
	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													
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.							<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
	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

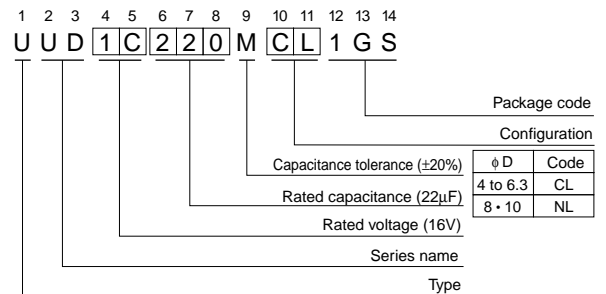
(φ4 to φ6.3)



(φ8 to φ10)



## Type numbering system (Example : 16V 22μF)



φD × L	4 × 5.8	5 × 5.8	6.3 × 5.8	6.3 × 7.7	8 × 10	10 × 10
A	1.8	2.1	2.4	2.4	2.9	3.2
B	4.3	5.3	6.6	6.6	8.3	10.3
C	4.3	5.3	6.6	6.6	8.3	10.3
E	1.0	1.3	2.2	2.2	3.1	4.5
L	5.8	5.8	5.8	7.7	10	10
H	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

## Voltage

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

● Dimension table in next page.

### ■ Dimensions

Cap. ( $\mu$ F)	Code	6.3			10			16			25			35			50		
		0J			1A			1C			1E			1V			1H		
1	010																4×5.8	5.00	30
2.2	2R2																4×5.8	5.00	30
3.3	3R3																4×5.8	5.00	30
4.7	4R7													4×5.8	1.80	80	5×5.8	1.52	85
10	100									4×5.8	1.80	80	5×5.8	0.76	150	6.3×5.8	0.88	165	
15	150							4×5.8	1.80	80	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.88	165
22	220				4×5.8	1.80	80	5×5.8	0.76	150	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.88	165
27	270	4×5.8	1.80	80	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.68	185
33	330	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.68	185
47	470	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.68	185
56	560	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.34	300
68	680	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.34	300
100	101	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.17	450	8×10	0.34	300
150	151	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.17	450	8×10	0.17	450	10×10	0.18	670
220	221	6.3×5.8	0.44	230	6.3×7.7	0.34	280	6.3×7.7	0.34	280	8×10	0.17	450	8×10	0.17	450	10×10	0.18	670
330	331	6.3×7.7	0.34	280	8×10	0.17	450	8×10	0.17	450	8×10	0.17	450	10×10	0.09	670			
470	471	8×10	0.17	450	8×10	0.17	450	8×10	0.17	450	10×10	0.09	670						
680	681	8×10	0.17	450	10×10	0.09	670	10×10	0.09	670									
1000	102	8×10	0.17	450	10×10	0.09	670												
1500	152	10×10	0.09	670															

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

### ● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz 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.