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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# ALUMINUM ELECTROLYTIC CAPACITORS

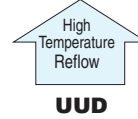
# UWD

Chip Type, Low Impedance  
High Temperature (260°C) Reflow



- Corresponding with 260°C peak reflow soldering  
Recommended reflow condition : 260°C peak 5 sec. 230°C over 60 sec. 2 times ( $\phi 10 \times 10$  : 1 time)
- 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).

## UWD

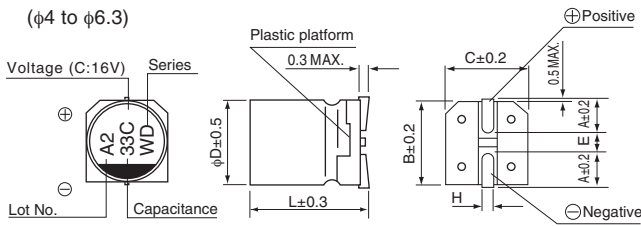


## Specifications

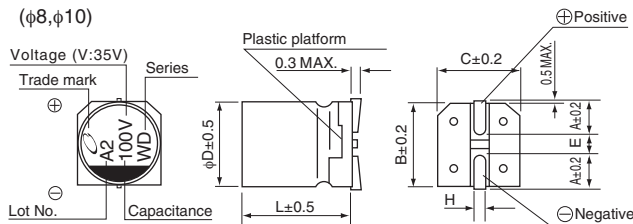
Item	Performance Characteristics																															
Category Temperature Range	-55 to +105°C																															
Rated Voltage Range	6.3 to 50V																															
Rated Capacitance Range	1 to 1500 $\mu$ F																															
Capacitance Tolerance	$\pm 20\%$ at 120Hz, 20°C																															
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 ( $\mu$ A), whichever is greater.																															
Tangent of loss angle (tan $\delta$ )	<table border="1"> <tr> <td colspan="7">Measurement frequency : 120Hz at 20°C</td> </tr> <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> </tr> <tr> <td>tan <math>\delta</math> (MAX.)</td> <td>0.26 (0.28)</td> <td>0.20 (0.24)</td> <td>0.16 (0.20)</td> <td>0.14 (0.16)</td> <td>0.12 (0.14)</td> <td>0.12 (0.14)</td> </tr> </table> ( ) is $\phi 8$ over	Measurement frequency : 120Hz at 20°C							Rated voltage (V)	6.3	10	16	25	35	50	tan $\delta$ (MAX.)	0.26 (0.28)	0.20 (0.24)	0.16 (0.20)	0.14 (0.16)	0.12 (0.14)	0.12 (0.14)										
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Stability at Low Temperature	<table border="1"> <tr> <td colspan="7">Measurement frequency : 120Hz</td> </tr> <tr> <td colspan="2">Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>Impedance ratio</td> <td>Z-25°C / Z+20°C</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>ZT / Z20 (MAX.)</td> <td>Z-55°C / Z+20°C</td> <td>5</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>	Measurement frequency : 120Hz							Rated voltage (V)		6.3	10	16	25	35	50	Impedance ratio	Z-25°C / Z+20°C	3	2	2	2	2	2	ZT / Z20 (MAX.)	Z-55°C / Z+20°C	5	4	4	3	3	3
Measurement frequency : 120Hz																																
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ZT / Z20 (MAX.)	Z-55°C / Z+20°C	5	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 5000 hours (2000 hours for $\phi D = 4, 5$ and 6.3) at 105°C. <table border="1"> <tr> <td>Capacitance change</td> <td>Within <math>\pm 30\%</math> of the initial capacitance value</td> </tr> <tr> <td>tan <math>\delta</math></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 $\pm 30\%$ of the initial capacitance value	tan $\delta$	200% or less than 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																															
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. <table border="1"> <tr> <td>Capacitance change</td> <td>Within <math>\pm 10\%</math> of the initial capacitance value</td> </tr> <tr> <td>tan <math>\delta</math></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 $\pm 10\%$ of the initial capacitance value	tan $\delta$	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

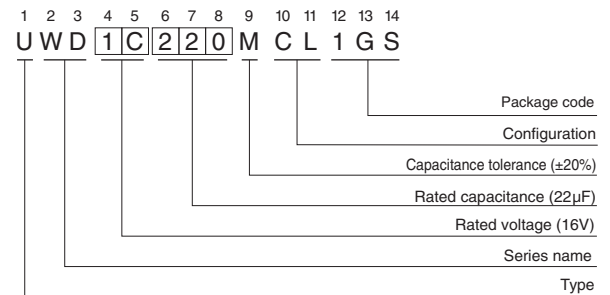
( $\phi 4$  to  $\phi 6.3$ )



( $\phi 8, \phi 10$ )



## Type numbering system (Example : 16V 22 $\mu$ F)



$\phi D \times L$	(mm)					
	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)	V 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	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	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	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 × 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 × 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	0.34	280	8 × 10	0.34	300
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	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	0.17	450	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	0.17	450	10 × 10	0.18	670
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	0.09	670	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	10 × 10	0.09	670	10 × 10	0.09	670			
330	331	6.3 × 7.7	0.34	280	8 × 10	0.17	450	8 × 10	0.17	450	10 × 10	0.09	670	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	10 × 10	0.09	670	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.