

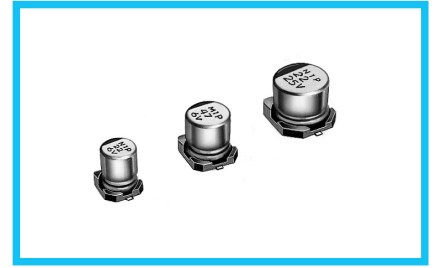
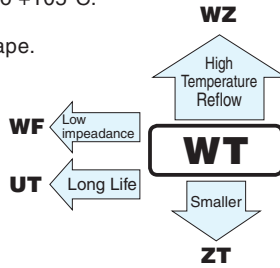
ALUMINUM ELECTROLYTIC CAPACITORS

WT series

Chip Type, Wide Temperature Range



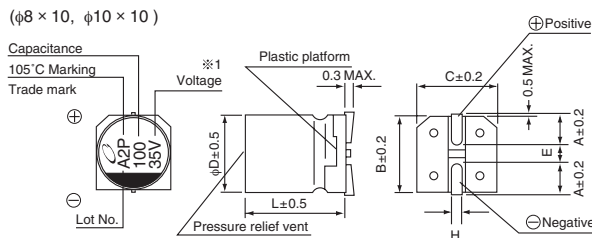
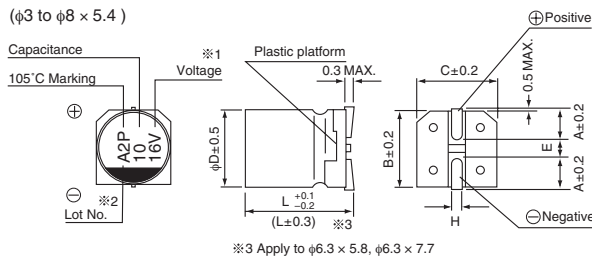
- Chip type operating over wide temperature range of -55 to $+105^{\circ}\text{C}$.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).



Specifications

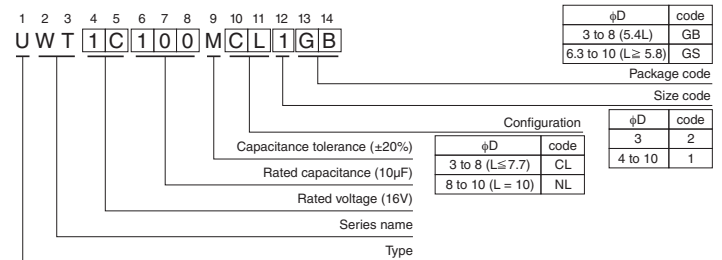
Item	Performance Characteristics																																				
Category Temperature Range	-55 to $+105^{\circ}\text{C}$																																				
Rated Voltage Range	4 to 50V																																				
Rated Capacitance Range	0.1 to $1500\mu\text{F}$																																				
Capacitance Tolerance	$\pm 20\%$ at 120Hz, 20°C																																				
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or $3(\mu\text{A})$, whichever is greater.																																				
Tangent of loss angle ($\tan \delta$)	<table border="1"> <thead> <tr> <th colspan="9">Measurement frequency : 120Hz at 20°C</th> </tr> <tr> <th>Rated voltage (V)</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th></th> </tr> </thead> <tbody> <tr> <td>$\tan \delta$ (MAX.)</td> <td>0.40</td> <td>0.30</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.14</td> <td></td> </tr> </tbody> </table>		Measurement frequency : 120Hz at 20°C									Rated voltage (V)	4	6.3	10	16	25	35	50		$\tan \delta$ (MAX.)	0.40	0.30	0.24	0.20	0.16	0.14	0.14									
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Stability at Low Temperature	<table border="1"> <thead> <tr> <th colspan="9">Measurement frequency : 120Hz</th> </tr> <tr> <th colspan="2">Rated voltage (V)</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Impedance ratio ZT / Z20 (MAX.)</td> <td>Z-25°C / Z+20°C</td> <td>7</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>15</td> <td>8</td> <td>8</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> </tbody> </table>		Measurement frequency : 120Hz									Rated voltage (V)		4	6.3	10	16	25	35	50	Impedance ratio ZT / Z20 (MAX.)	Z- 25°C / Z+ 20°C	7	4	3	2	2	2	2	Z- 40°C / Z+ 20°C	15	8	8	4	4	3	3
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Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C .	<table border="1"> <tr> <td>Capacitance change</td> <td>Within $\pm 25\%$ of the initial capacitance value for capacitors of $\phi 3\text{mm}$ unit, and 16V or less. Within $\pm 20\%$ of the initial capacitance value for capacitors of 25V or more.</td> </tr> <tr> <td>$\tan \delta$</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 $\pm 25\%$ of the initial capacitance value for capacitors of $\phi 3\text{mm}$ unit, and 16V or less. Within $\pm 20\%$ of the initial capacitance value for capacitors of 25V or more.	$\tan \delta$	200% or less than the initial specified value	Leakage current	Less than or equal to the initial specified value																													
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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 $\pm 10\%$ of the initial capacitance value</td> </tr> <tr> <td>$\tan \delta$</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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Marking	Black print on the case top.																																				

Chip Type



※1. Voltage mark for 6.3V is 「6V」. In case of marking for $\phi 3$ units, "V" for rated voltage is omitted.
 ※2. In case of marking for $\phi 3$ units. Lot No is expressed by a digit (month code).

Type numbering system (Example : 16V $10\mu\text{F}$)



$\phi D \times L$	(mm)								
	3×5.4	4×5.4	5×5.4	6.3×5.4	6.3×5.8	6.3×7.7	8×5.4	8×10	10×10
A	1.5	1.8	2.1	2.4	2.4	2.4	3.3	2.9	3.2
B	3.3	4.3	5.3	6.6	6.6	6.6	8.3	8.3	10.3
C	3.3	4.3	5.3	6.6	6.6	6.6	8.3	8.3	10.3
E	0.8	1.0	1.3	2.2	2.2	2.2	2.3	3.1	4.5
L	5.4	5.4	5.4	5.4	5.8	7.7	5.4	10	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	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

● Dimension table in next page.



■ Dimensions

		4		6.3		10		16		25		35		50	
Cap. (μF)	Code	0G		0J		1A		1C		1E		1V		1H	
		0.1	0R1												
0.22	R22													4 × 5.4 (3)	2.6
0.33	R33													4 × 5.4 (3)	3.2
0.47	R47													4 × 5.4 (3)	3.8
1	010													4 × 5.4 (3)	6.3(5.9)
2.2	2R2											3 × 5.4	7.5	4 × 5.4 (3)	11 (9)
3.3	3R3											3 × 5.4	9	4 × 5.4	14
4.7	4R7									4 × 5.4 (3)	13 (10)	4 × 5.4	15	5 × 5.4	19
10	100							4 × 5.4 (3)	18 (14)	5 × 5.4	23	5 × 5.4	25	6.3 × 5.4	30
22	220	4 × 5.4	22	4 × 5.4	22	5 × 5.4	27	5 × 5.4	30	6.3 × 5.4	38	6.3 × 5.4	42	• 8 × 5.4	51 (45)
33	330	5 × 5.4	30	5 × 5.4	30	5 × 5.4	35	6.3 × 5.4	40	6.3 × 5.4	48	• 8 × 5.4	59 (52)	6.3 × 7.7	60
47	470	5 × 5.4	36	5 × 5.4	36	6.3 × 5.4	46	6.3 × 5.4	50	• 8 × 5.4	66 (59)	6.3 × 5.8	63	6.3 × 7.7	63
100	101	6.3 × 5.4	60	6.3 × 5.4	60	6.3 × 5.4	60	6.3 × 5.4	60	6.3 × 7.7	91	6.3 × 7.7	84	8 × 10	140
150	151	6.3 × 5.8	86	6.3 × 5.8	86	6.3 × 5.8	86	6.3 × 7.7	95	8 × 10	140	8 × 10	155	10 × 10	180
220	221	• 8 × 5.4	102 (91)	• 8 × 5.4	102 (91)	6.3 × 7.7	105	6.3 × 7.7	105	8 × 10	155	8 × 10	190	10 × 10	220
330	331	6.3 × 7.7	105	6.3 × 7.7	105	8 × 10	195	8 × 10	195	8 × 10	190	10 × 10	300		
470	471	8 × 10	210	8 × 10	210	8 × 10	210	8 × 10	230	10 × 10	300				
680	681	8 × 10	210	8 × 10	210	10 × 10	310	10 × 10	310						
1000	102	8 × 10	230	8 × 10	230	10 × 10	310							Case size φ D × L (mm)	Rated ripple
1500	152	10 × 10	310	10 × 10	310										

Rated ripple current (mA rms) at 105°C 120Hz

() is also available with φ3mm upon request. In such a case, [2] will be put at 12th digit of type numbering system.

Size φ6.3 × 5.8 is available for capacitors marked. " • " In such a case, [6] will be put at 12th digit of type numbering system.

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UX(p.154), UJ(p.160) series if high C/V products are required.
- Please refer to page 3 for the minimum order quantity.