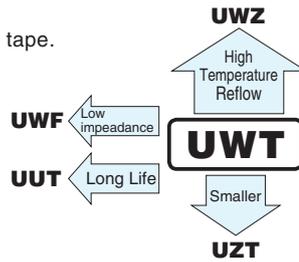


UWT Chip Type, Wide Temperature Range



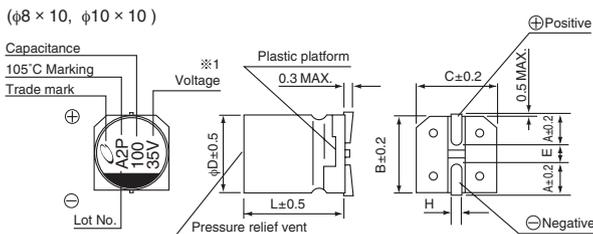
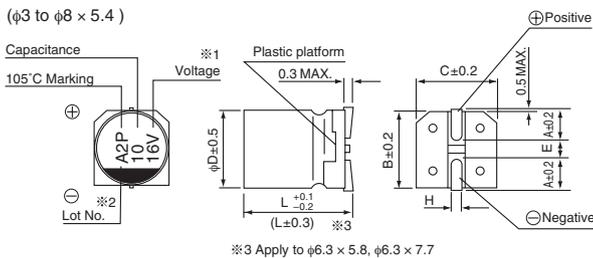
- Chip type operating over wide temperature range of to -55 to $+105^{\circ}\text{C}$.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).



Specifications

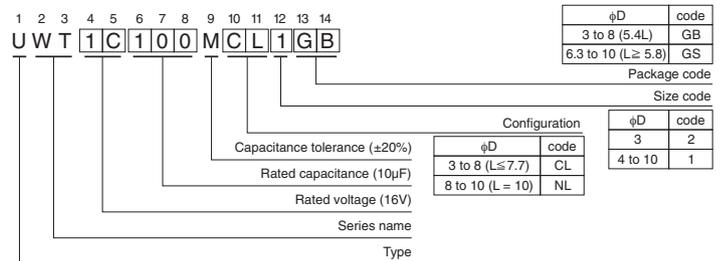
Item	Performance Characteristics																									
Category Temperature Range	-55 to $+105^{\circ}\text{C}$																									
Rated Voltage Range	4 to 50V																									
Rated Capacitance Range	1 to $1500\mu\text{F}$																									
Capacitance Tolerance	$\pm 20\%$ at 120Hz, 20°C																									
Leakage Current	After 2 minutes' application of rated voltage at 20°C , leakage current is not more than 0.01CV or $3(\mu\text{A})$, whichever is greater.																									
Tangent of loss angle (tan δ)	<table border="1"> <thead> <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> </tr> </thead> <tbody> <tr> <td>tan δ (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> </tr> </tbody> </table> <p>Measurement frequency : 120Hz at 20°C</p>		Rated voltage (V)	4	6.3	10	16	25	35	50	tan δ (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>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>Impedance ratio $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$</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_{T} / Z_{20} (MAX.) $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$</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> <p>Measurement frequency : 120Hz</p>		Rated voltage (V)	4	6.3	10	16	25	35	50	Impedance ratio $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$	7	4	3	2	2	2	2	Z_{T} / Z_{20} (MAX.) $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$	15	8	8	4	4	3	3
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Z_{T} / Z_{20} (MAX.) $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$	15	8	8	4	4	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 1000 hours at 105°C .	<table border="1"> <tbody> <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 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> </tbody> </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 δ	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"> <tbody> <tr> <td>Capacitance change</td> <td>Within $\pm 10\%$ 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> </tbody> </table>	Capacitance change	Within $\pm 10\%$ 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	Black print on the case top.																									

Chip Type



※1. Voltage mark for 6.3V is 「6V」. In case of marking for φ3 units, "V" for rated voltage is omitted.
※2. In case of marking for φ3 units. Lot No is expressed by a digit (month code).

Type numbering system (Example : 16V 10 μF)



φD x L	3 x 5.4	4 x 5.4	5 x 5.4	6.3 x 5.4	6.3 x 5.8	6.3 x 7.7	8 x 5.4	8 x 10	10 x 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	0.8 to 1.1	0.8 to 1.1						

(mm)

● Dimension table in next page.



■ Dimensions

Cap. (μF)	V Code	4		6.3		10		16		25		35		50		
		0G		0J		1A		1C		1E		1V		1H		
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 (mArms) 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 UUX(p.156), UUU(p.162) series if high C/V products are required.
- Please refer to page 3 for the minimum order quantity.

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