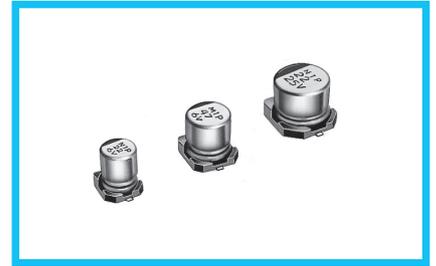
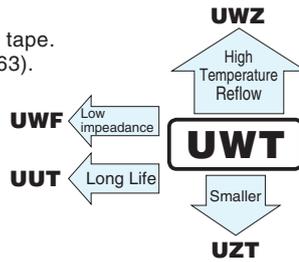


## UWT

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, (EU)2015/863).
- AEC-Q200 compliant. Please contact us for details.

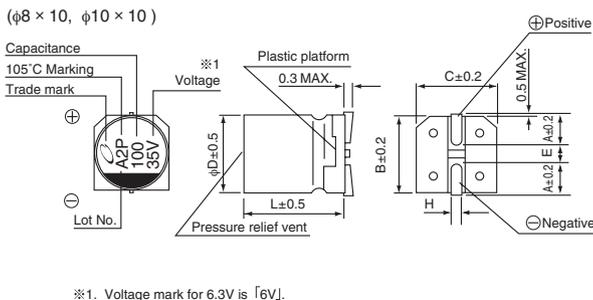
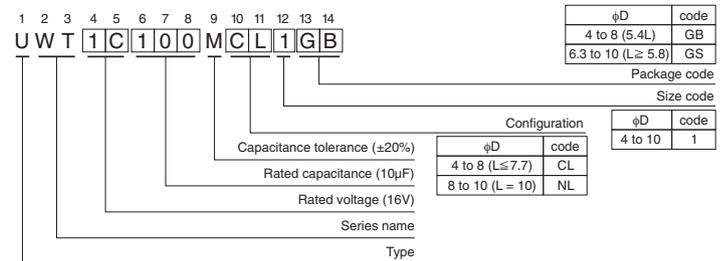
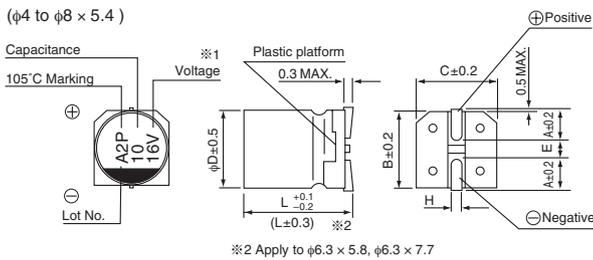


### Specifications

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, $20^{\circ}\text{C}$																												
Leakage Current	After 2 minutes' application of rated voltage at $20^{\circ}\text{C}$ , leakage current is not more than $0.01\text{CV}$ or $3(\mu\text{A})$ , whichever is greater.																												
Tangent of loss angle (tan $\delta$ )	Measurement frequency : 120Hz at $20^{\circ}\text{C}$ <table border="1"> <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> <tr> <td>tan <math>\delta</math> (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> </table>		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											
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																						
Stability at Low Temperature	Measurement frequency : 120Hz <table border="1"> <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> <tr> <td>Impedance ratio</td> <td>Z<math>-25^{\circ}\text{C}</math> / Z<math>+20^{\circ}\text{C}</math></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>ZT / Z20 (MAX.)</td> <td>Z<math>-40^{\circ}\text{C}</math> / Z<math>+20^{\circ}\text{C}</math></td> <td>15</td> <td>8</td> <td>8</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> </table>		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	ZT / Z20 (MAX.)	Z $-40^{\circ}\text{C}$ / Z $+20^{\circ}\text{C}$	15	8	8	4	4	3	3
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																					
ZT / Z20 (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 $20^{\circ}\text{C}$ after the rated voltage is applied for 1000 hours at $105^{\circ}\text{C}$ .	<table border="1"> <tr> <td>Capacitance change</td> <td>Within <math>\pm 25\%</math> of the initial capacitance value for capacitors of 16V or less. Within <math>\pm 20\%</math> of the initial capacitance value for capacitors of 25V or more.</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 $\pm 25\%$ of the initial capacitance value for capacitors of 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																					
Capacitance change	Within $\pm 25\%$ of the initial capacitance value for capacitors of 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																												
Shelf Life	After storing the capacitors under no load at $105^{\circ}\text{C}$ for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at $20^{\circ}\text{C}$ , 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 $250^{\circ}\text{C}$ . The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to $20^{\circ}\text{C}$ .	<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																					
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																												
Marking	Black print on the case top.																												

### Chip Type

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



$\phi D \times L$	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	1.8	2.1	2.4	2.4	2.4	3.3	2.9	3.2
B	4.3	5.3	6.6	6.6	6.6	8.3	8.3	10.3
C	4.3	5.3	6.6	6.6	6.6	8.3	8.3	10.3
E	1.0	1.3	2.2	2.2	2.2	2.3	3.1	4.5
L	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					

● 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	6.3
2.2	2R2													4 × 5.4	11
3.3	3R3													4 × 5.4	14
4.7	4R7									4 × 5.4	13	4 × 5.4	15	5 × 5.4	19
10	100							4 × 5.4	18	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										

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.

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

## ● 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.170), UUJ(p.176) series if high C/V products are required.
- Please refer to page 3 for the minimum order quantity.

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