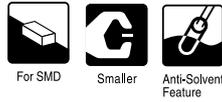
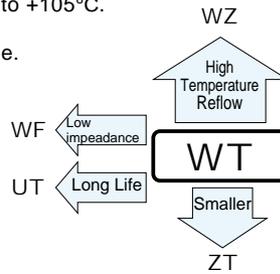


WT series Chip Type, Wide Temperature Range



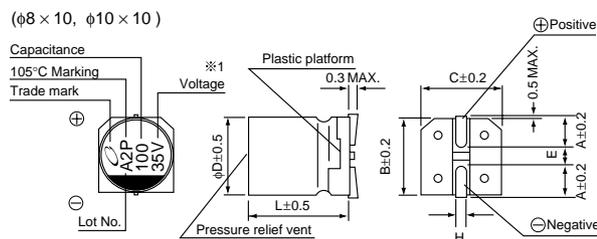
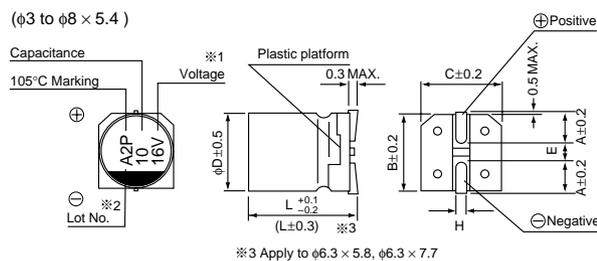
- Chip type operating over wide temperature range of to -55 to $+105^{\circ}\text{C}$.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine using carrier tape.
- Adapted to the RoHS directive (2002/95/EC).



Specifications

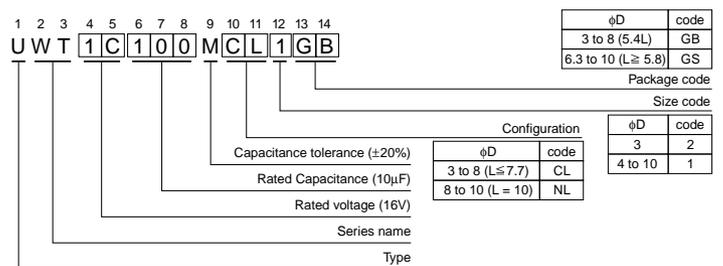
Item	Performance Characteristics																									
Category Temperature Range	-55 to $+105^{\circ}\text{C}$																									
Rated Voltage Range	4 to 50V																									
Rated Capacitance Range	0.1 to 1500 μF																									
Capacitance Tolerance	$\pm 20\%$ at 120Hz, 20°C																									
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 (μA), whichever is greater.																									
tan δ	Measurement frequency : 120Hz, Temperature : 20°C																									
	<table border="1"> <tr> <td>Rated voltage (V)</td> <td>4</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <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> </table>	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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tan δ (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> <td colspan="2">Rated voltage (V)</td> <td>4</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td rowspan="2">Impedance ratio</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>ZT / Z20 (MAX.)</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°C / Z+ 20°C	7	4	3	2	2	2	2	ZT / Z20 (MAX.)	15	8	8	4	4	3
Rated voltage (V)		4	6.3	10	16	25	35	50																		
Impedance ratio	Z- 25°C / Z+ 20°C	7	4	3	2	2	2	2																		
	ZT / Z20 (MAX.)	15	8	8	4	4	3	3																		
Endurance	<p>After 1000 hours' application of rated voltage at 105°C, capacitors meet the characteristic requirements listed at right.</p> <table border="1"> <tr> <td>Capacitance change</td> <td>Within $\pm 25\%$ of initial value for capacitors of $\phi 3\text{mm}$ unit, and 16V or less. Within $\pm 20\%$ of initial value for capacitors of 25V or more.</td> </tr> <tr> <td>tan δ</td> <td>200% or less of initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> </table>	Capacitance change	Within $\pm 25\%$ of initial value for capacitors of $\phi 3\text{mm}$ unit, and 16V or less. Within $\pm 20\%$ of initial value for capacitors of 25V or more.	tan δ	200% or less of initial specified value	Leakage current	Initial specified value or less																			
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tan δ	200% or less of initial specified value																									
Leakage current	Initial specified value or less																									
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours, and after performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C , they will meet the specified value for endurance characteristics listed above.																									
Resistance to soldering heat	<p>The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature, they meet the characteristic requirements listed at right.</p> <table border="1"> <tr> <td>Capacitance change</td> <td>Within $\pm 10\%$ of initial value</td> </tr> <tr> <td>tan δ</td> <td>Initial specified value or less</td> </tr> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> </table>	Capacitance change	Within $\pm 10\%$ of initial value	tan δ	Initial specified value or less	Leakage current	Initial specified value or less																			
Capacitance change	Within $\pm 10\%$ of initial value																									
tan δ	Initial specified value or less																									
Leakage current	Initial specified value or less																									
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 μF)



$\phi D \times L$	(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	0.8 to 1.1	0.8 to 1.1						

■ Dimensions

Cap. (μF)	V Code	4		6.3		10		16		25		35		50		
		OG		OJ		1A		1C		1E		1V		1H		
0.1	0R1														4 × 5.4 (3)	1.0
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															
10	100															
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			
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)			
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			
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			
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			
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			
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									
1500	152	10 × 10	310	10 × 10	310											

Rated Ripple (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 UX(p.90), UJ(p.92) series if high C/V products are required.
- Please refer to page 3 for the minimum order quantity.