

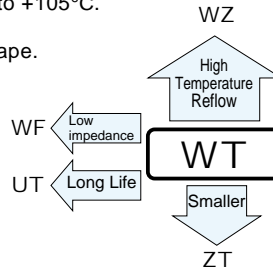
# ALUMINUM ELECTROLYTIC CAPACITORS



**WT** series Chip Type, Wide Temperature Range



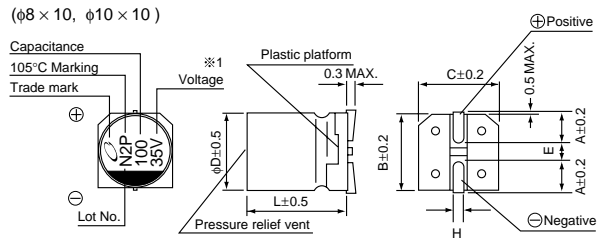
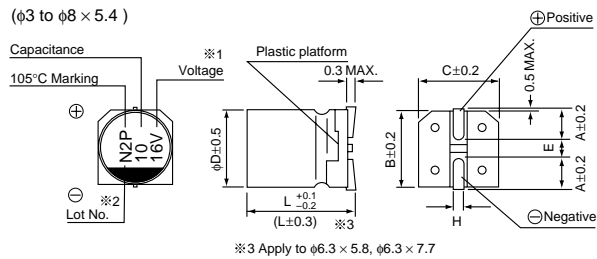
- Chip type operating over wide temperature range of to  $-55$  to  $+105^{\circ}\text{C}$ .
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2002/95/EC).



## Specifications

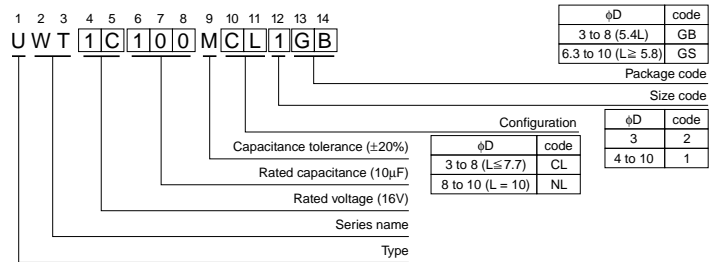
Item	Performance Characteristics								
Category Temperature Range	$-55$ to $+105^{\circ}\text{C}$								
Rated Voltage Range	4 to 50V								
Rated Capacitance Range	0.1 to $1500\mu\text{F}$								
Capacitance Tolerance	$\pm 20\%$ at 120Hz, $20^{\circ}\text{C}$								
Leakage Current	After 2 minutes' 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 $\delta$ )	Measurement frequency : 120Hz, Temperature : $20^{\circ}\text{C}$								
	Rated voltage (V)	4	6.3	10	16	25	35	50	
Stability at Low Temperature	Measurement frequency : 120Hz								
	Impedance ratio	Z- $25^{\circ}\text{C}$ / Z+ $20^{\circ}\text{C}$		7	4	3	2	2	2
	ZT / Z20 (MAX.)	Z- $40^{\circ}\text{C}$ / Z+ $20^{\circ}\text{C}$		15	8	8	4	4	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 $105^{\circ}\text{C}$ .		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					
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 $20^{\circ}\text{C}$ .		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



※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 $\mu\text{F}$ )



$\phi\text{D} \times \text{L}$	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

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									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								
1500	152	10 × 10	310	10 × 10	310									Case size φ D × L (mm)	Rated ripple

Rated ripple current (mA<sub>rms</sub>) 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.98), UJ(p.102) series if high C/V products are required.
- Please refer to page 3 for the minimum order quantity.