

WX

5.5mmL Chip Type

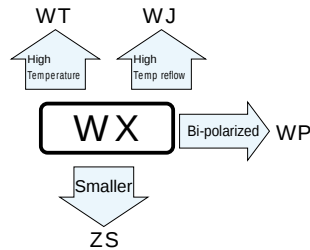
series



For SMD

Anti-Solvent  
Feature

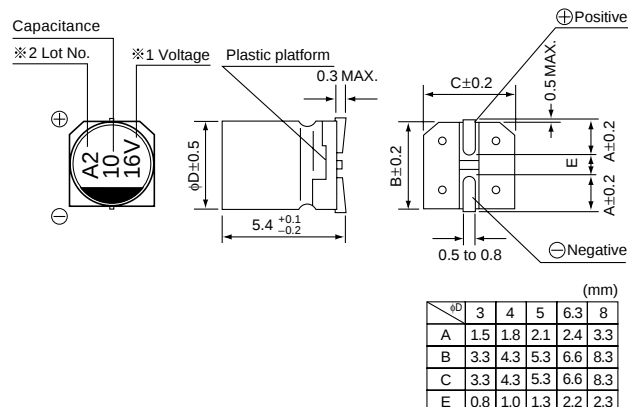
- Chip type with 5.5mm height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Load life of 2000 hours at 85°C.
- Compliant to the RoHS directive (2011/65/EU).



## Specifications

|                                               |                                                                                                                                                                                                                                        |                 |             |             |             |                    |             |                                                                                           |    |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------|-------------|-------------|--------------------|-------------|-------------------------------------------------------------------------------------------|----|
| Item                                          | Performance Characteristics                                                                                                                                                                                                            |                 |             |             |             |                    |             |                                                                                           |    |
| Category Temperature Range                    | -40 to +85°C                                                                                                                                                                                                                           |                 |             |             |             |                    |             |                                                                                           |    |
| Rated Voltage Range                           | 4 to 50V                                                                                                                                                                                                                               |                 |             |             |             |                    |             |                                                                                           |    |
| Rated Capacitance Range                       | 0.1 to 330μF                                                                                                                                                                                                                           |                 |             |             |             |                    |             |                                                                                           |    |
| Capacitance Tolerance                         | ±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.                                                                                                                |                 |             |             |             |                    |             |                                                                                           |    |
| Tangent of loss angle (tan δ)                 | Measurement frequency : 120Hz at 20°C                                                                                                                                                                                                  |                 |             |             |             |                    |             |                                                                                           |    |
|                                               | Rated voltage (V)                                                                                                                                                                                                                      | 4               | 6.3         | 10          | 16          | 25                 | 35          | 50                                                                                        |    |
|                                               | tan δ (MAX.)                                                                                                                                                                                                                           | 0.35 (0.40)     | 0.26 (0.30) | 0.20 (0.24) | 0.16 (0.19) | 0.14 (0.16)        | 0.12 (0.14) | 0.12 (0.14)                                                                               |    |
| Values in ( ) applicable to WR, φ3 case size. |                                                                                                                                                                                                                                        |                 |             |             |             |                    |             |                                                                                           |    |
| Stability at Low Temperature                  | Measurement frequency : 120Hz                                                                                                                                                                                                          |                 |             |             |             |                    |             |                                                                                           |    |
|                                               | 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.)                                                                                                                                                                                                                        | Z-40°C / Z+20°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 2000 hours at 85°C.                                                                                    |                 |             |             |             | Capacitance change |             | Within ±20% of the initial capacitance value (Within ±25% for 4 V and φ3,WR series units) |    |
|                                               |                                                                                                                                                                                                                                        |                 |             |             |             | tan δ              |             | 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 85°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.              |                 |             |             |             | Capacitance change |             | Within ±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                                         |    |
| Marking                                       | Black print on the case top.                                                                                                                                                                                                           |                 |             |             |             |                    |             |                                                                                           |    |

## Chip Type

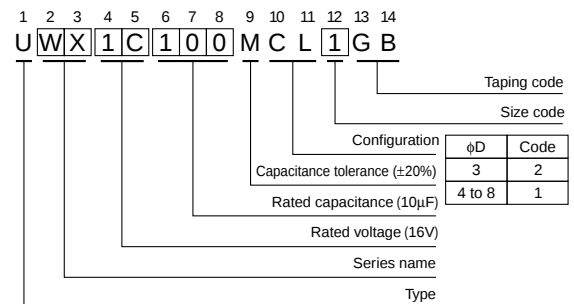


※ 1. Voltage mark for 6.3V is 「6V」.

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 10μF)



- In the case of size φ3 in ( ), parentheses, use WX in the 2nd and 3rd digit and put a 2 in the 12th digit of type numbering system.

## ■Dimensions

| V         |      | 4   |     | 6.3   |          | 10    |          | 16    |         | 25    |         | 35    |         | 50    |           |
|-----------|------|-----|-----|-------|----------|-------|----------|-------|---------|-------|---------|-------|---------|-------|-----------|
| Cap. (μF) | Code | 0G  | 0J  | 1A    | 1C       | 1E    | 1V       | 1H    |         |       |         |       |         |       |           |
| 0.1       | 0R1  |     |     |       |          |       |          |       |         |       |         |       |         | 4 (3) | 1.0       |
| 0.22      | R22  |     |     |       |          |       |          |       |         |       |         |       |         | 4 (3) | 2.0       |
| 0.33      | R33  |     |     |       |          |       |          |       |         |       |         |       |         | 4 (3) | 2.8       |
| 0.47      | R47  |     |     |       |          |       |          |       |         |       |         |       |         | 4 (3) | 4.0       |
| 1         | 010  |     |     |       |          |       |          |       |         |       |         |       |         | 4 (3) | 8.4 (8.0) |
| 2.2       | 2R2  |     |     |       |          |       |          |       |         |       |         | 3     | 8.4     | 4 (3) | 13 (10)   |
| 3.3       | 3R3  |     |     |       |          |       |          |       |         |       |         | 3     | 10      | 4     | 17        |
| 4.7       | 4R7  |     |     |       |          |       |          |       |         | 4 (3) | 16 (12) | 4     | 18      | • 5   | 20 (18)   |
| 10        | 100  |     |     |       |          |       |          | 4 (3) | 23 (18) | • 5   | 27 (24) | • 5   | 29 (24) | ○ 6.3 | 33 (30)   |
| 22        | 220  | 3   | 19  | 4 (3) | 28 (21)  | • 5   | 33 (30)  | • 5   | 37 (30) | ○ 6.3 | 42 (38) | ○ 6.3 | 46 (39) | □ 8   | 52 (43)   |
| 33        | 330  | 4   | 28  | • 5   | 37 (34)  | • 5   | 41 (34)  | ○ 6.3 | 49 (44) | ○ 6.3 | 52 (46) | □ 8   | 62 (53) | 8     | 71        |
| 47        | 470  | 4   | 33  | • 5   | 45 (40)  | ○ 6.3 | 52 (47)  | ○ 6.3 | 58 (52) | □ 8   | 70 (60) | 8     | 80      |       |           |
| 56        | 560  | 5   | 42  | ○ 6.3 | 52 (46)  | ○ 6.3 | 57 (50)  | ○ 6.3 | 63 (57) | □ 8   | 76 (65) |       |         |       |           |
| 100       | 101  | 5   | 56  | ○ 6.3 | 70 (47)  | ○ 6.3 | 76 (54)  | 6.3   | 86      | 8     | 110     |       |         |       |           |
| 150       | 151  | 6.3 | 79  | 6.3   | 71       | □ 8   | 111 (76) |       |         |       |         |       |         |       |           |
| 220       | 221  | 6.3 | 96  | □ 8   | 110 (74) | 8     | 135      |       |         |       |         |       |         |       |           |
| 330       | 331  | 8   | 145 | 8     | 170      |       |          |       |         |       |         |       |         |       |           |

( ) is also available with φ3mm upon request.

Rated ripple current (mA<sub>rms</sub>) at 85°C 120Hz

• In the case of size φ3 in ( ), parentheses, use WX at 2nd and 3rd digit and put [2] at the 12th digit of type numbering system. ( ) = φ3 units and WR Series

Size φ4 is available for capacitors marked. " • "

Size φ5 is available for capacitors marked. " ○ "

Size φ6.3 is available for capacitors marked. " □ "

In such a case, [WR] will be put at 2nd and 3rd 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 UR(p.154), UG(p.162) series if high C/V products are required.
- Please refer to page 3 for the minimum order quantity.