

## Film Chip Capacitor

Type: **ECWU(C)**

Stacked metallized PEN film as dielectric with simple mold-less construction

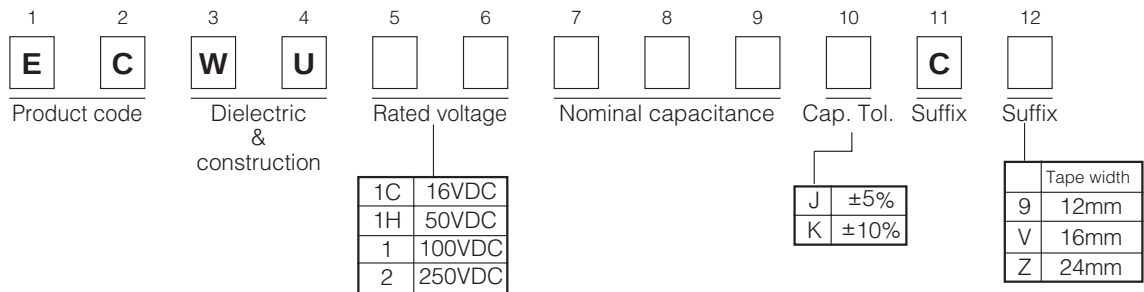
### ■Features

- Small in size
- Applicable for reflow soldering

### ■Recommended Applications

- Coupling
- By-pass
- General purpose

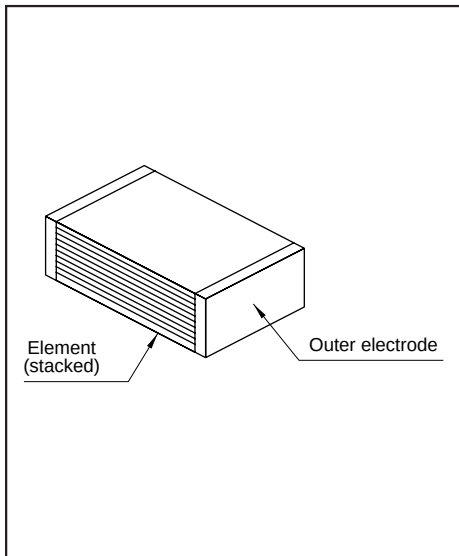
### ■Explanation of Part Numbers



### ■Specifications

|                       |                                                                                                                                                                                                |                                                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Category temp.range   | 16VDC, 50VDC : -55 to +105°C                                                                                                                                                                   |                                                                                                                                                        |
|                       | 100VDC, 250VDC : -40 to +85°C                                                                                                                                                                  |                                                                                                                                                        |
| Rated voltage         | 16VDC, 50VDC, 100VDC, 250VDC                                                                                                                                                                   |                                                                                                                                                        |
| Capacitance range     | 16VDC                                                                                                                                                                                          | 0.12 to 0.47 $\mu$ F (E12)                                                                                                                             |
|                       | 50VDC                                                                                                                                                                                          | 0.056 to 0.22 $\mu$ F (E12)                                                                                                                            |
|                       | 100VDC                                                                                                                                                                                         | 0.012 to 1.0 $\mu$ F (E12)                                                                                                                             |
|                       | 250VDC                                                                                                                                                                                         | 0.001 to 1.0 $\mu$ F (E12)                                                                                                                             |
| Capacitance tolerance | 16VDC,50VDC                                                                                                                                                                                    | ±5%(J)                                                                                                                                                 |
|                       | 100VDC,250VDC                                                                                                                                                                                  | ±10%(K) (100VDC, C≤0.15 $\mu$ F ±5%(J), ±10%(K))                                                                                                       |
| Withstand voltage     | Between terminals<br>16VDC, 50VDC : Rated volt. (VDC)×175% 1 to 5s<br>100VDC, 250VDC : Rated volt. (VDC)×150% 60s                                                                              |                                                                                                                                                        |
| Dissipation factor    | ≤1.0% (20°C, 1kHz)                                                                                                                                                                             |                                                                                                                                                        |
| Insulation resistance | C≤0.33 $\mu$ F                                                                                                                                                                                 | 16VDC : ≥3000M $\Omega$ · (20°C, 10VDC, 60s)<br>50VDC : ≥3000M $\Omega$ · (20°C, 50VDC, 60s)<br>100VDC, 250VDC : ≥3000M $\Omega$ · (20°C, 100VDC, 60s) |
|                       | C>0.33 $\mu$ F                                                                                                                                                                                 | 16VDC : 1000M $\Omega$ · $\mu$ F min. (20°C, 10VDC, 60s)<br>100VDC, 250VDC : 1000M $\Omega$ · $\mu$ F min. (20°C, 100VDC, 60s)                         |
| Soldering conditions  | Reflow soldering<br>16VDC, 50VDC : 240°C max. and 30 s max. at more than 210°C (Temp. at cap. surface)<br>100VDC, 250VDC : 230°C max. and 30 s max. at more than 210°C (Temp. at cap. surface) |                                                                                                                                                        |

### ■ Construction



### ■ Dimensions in mm (not to scale)

| Size code | L    | Tol. | W    | Tol. | H   | Tol. |
|-----------|------|------|------|------|-----|------|
| E1        | 4.8  |      | 3.3  |      | 1.4 |      |
| E2        | 4.8  |      | 3.3  |      | 2.0 |      |
| E3a       | 4.8  |      | 3.3  |      | 2.4 |      |
| E3        | 4.8  |      | 3.3  |      | 2.8 |      |
| D1        | 6.0  | ±0.2 | 4.1  | ±0.3 | 1.8 | ±0.2 |
| D2        | 6.0  |      | 4.1  |      | 2.0 |      |
| D3        | 6.0  |      | 4.1  |      | 2.4 |      |
| D4        | 6.0  |      | 4.1  |      | 2.8 |      |
| D5        | 6.0  |      | 4.1  |      | 3.2 |      |
| B         | 6.0  |      | 5.0  |      |     |      |
| Z         | 7.1  |      | 5.0  |      |     |      |
| X         | 7.7  | ±0.4 | 5.5  |      |     |      |
| Y         | 7.1  |      | 6.3  | ±0.4 | ※   | ±0.3 |
| V         | 9.8  |      | 6.3  |      |     |      |
| U         | 9.8  | ±0.5 | 8.0  |      |     |      |
| T         | 15.2 |      | 8.0  |      |     |      |
| S         | 15.2 |      | 10.0 |      |     |      |

※Refer to the column "Rating, Dimensions & Quantity".

### ■ Taping Specification for Automatic Mounting

See page 24 for automatic mounting.

### ■ Rating, Dimensions & Quantity/Reel

● Capacitance tolerance : ±5% (J), ±10% (K)

| Cap.<br>(μF) | Rated volt. 16VDC |                 |     |     |           |      | Rated volt. 50VDC            |                 |     |     |           |      |
|--------------|-------------------|-----------------|-----|-----|-----------|------|------------------------------|-----------------|-----|-----|-----------|------|
|              | Part No           | Dimensions (mm) |     |     | Size code | Q'ty | Part No                      | Dimensions (mm) |     |     | Size code | Q'ty |
|              |                   | L               | W   | H   |           |      |                              | L               | W   | H   |           |      |
| 0.056        |                   |                 |     |     |           |      | ECWU1H563□C9                 | 4.8             | 3.3 | 2.0 | E2        | 3000 |
| 0.068        |                   |                 |     |     |           |      | ECWU1H683□C9                 | 4.8             | 3.3 | 2.0 | E2        |      |
| 0.082        |                   |                 |     |     |           |      | ECWU1H823□C9                 | 4.8             | 3.3 | 2.4 | E3a       | 2000 |
| 0.1          |                   |                 |     |     |           |      | ECWU1H104□C9                 | 4.8             | 3.3 | 2.8 | E3        |      |
| 0.12         | ECWU1C124□C9      | 4.8             | 3.3 | 1.4 | E1        | 3000 | ECWU1H124□C9                 | 6.0             | 4.1 | 1.8 | D1        | 3000 |
| 0.15         | ECWU1C154□C9      | 4.8             | 3.3 | 2.0 | E2        |      | ECWU1H154□C9                 | 6.0             | 4.1 | 2.0 | D2        |      |
| 0.18         | ECWU1C184□C9      | 4.8             | 3.3 | 2.0 | E2        | 2000 | ECWU1H184□C9                 | 6.0             | 4.1 | 2.4 | D3        | 2000 |
| 0.22         | ECWU1C224□C9      | 4.8             | 3.3 | 2.4 | E3a       |      | ECWU1H224□C9                 | 6.0             | 4.1 | 2.8 | D4        |      |
| 0.27         | ECWU1C274□C9      | 6.0             | 4.1 | 1.8 | D1        | 3000 | ↑ Capacitance tolerance code |                 |     |     |           |      |
| 0.33         | ECWU1C334□C9      | 6.0             | 4.1 | 2.0 | D2        |      |                              |                 |     |     |           |      |
| 0.39         | ECWU1C394□C9      | 6.0             | 4.1 | 2.4 | D3        | 2000 | ↑ Capacitance tolerance code |                 |     |     |           |      |
| 0.47         | ECWU1C474□C9      | 6.0             | 4.1 | 2.8 | D4        |      |                              |                 |     |     |           |      |

### ■ Recommended for Land Dimensions (mm)

| Size code      | Land dimensions for reflow soldering |      |     |
|----------------|--------------------------------------|------|-----|
|                | A                                    | B    | C   |
| E1,E2,E3a,E3   | 2.6                                  | 6.6  | 3.0 |
| D1,D2,D3,D4,D5 | 3.8                                  | 7.8  | 3.8 |
| B              | 3.8                                  | 7.8  | 4.6 |
| Z              | 4.5                                  | 9.0  | 4.6 |
| X              | 5.1                                  | 9.7  | 5.0 |
| Y              | 4.5                                  | 9.0  | 5.7 |
| V              | 7.2                                  | 11.9 | 5.7 |
| U              | 7.2                                  | 11.9 | 7.2 |
| T              | 12.6                                 | 17.3 | 7.2 |
| S              | 12.6                                 | 17.3 | 9.0 |

## ■ Rating, Dimensions &amp; Quantity/Reel

● Capacitance tolerance :  $\pm 5\%$ (J),  $\pm 10\%$ (K)

| Cap.<br>( $\mu$ F) | Rated volt. 100VDC               |     |                 |     |     |              | Rated volt. 250VDC |      |      |                 |     |     |              |          |
|--------------------|----------------------------------|-----|-----------------|-----|-----|--------------|--------------------|------|------|-----------------|-----|-----|--------------|----------|
|                    | Part                             | No  | Dimensions (mm) |     |     | Size<br>code | Q'ty               | Part | No   | Dimensions (mm) |     |     | Size<br>code | Q'ty     |
|                    |                                  |     | L               | W   | H   |              |                    |      |      | L               | W   | H   |              |          |
| 0.001              | Please use 100VDC rating ECWU(X) |     |                 |     |     |              | ECWU2102           | C9   | 4.8  | 3.3             | 1.4 | E1  | 3000         |          |
| 0.0012             |                                  |     |                 |     |     |              | ECWU2122           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.0015             |                                  |     |                 |     |     |              | ECWU2152           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.0018             |                                  |     |                 |     |     |              | ECWU2182           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.0022             |                                  |     |                 |     |     |              | ECWU2222           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.0027             |                                  |     |                 |     |     |              | ECWU2272           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.0033             |                                  |     |                 |     |     |              | ECWU2332           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.0039             |                                  |     |                 |     |     |              | ECWU2392           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.0047             |                                  |     |                 |     |     |              | ECWU2472           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.0056             |                                  |     |                 |     |     |              | ECWU2562           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.0068             |                                  |     |                 |     |     |              | ECWU2682           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.0082             |                                  |     |                 |     |     |              | ECWU2822           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.01               |                                  |     |                 |     |     |              | ECWU2103           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.012              |                                  |     |                 |     |     |              | ECWU1123           | C9   | 4.8  | 3.3             | 1.4 | E1  |              | ECWU2123 |
| 0.015              | ECWU1153                         | C9  | 4.8             | 3.3 | 1.4 | E1           | ECWU2153           | C9   | 4.8  | 3.3             | 1.4 | E1  |              |          |
| 0.018              | ECWU1183                         | C9  | 4.8             | 3.3 | 1.4 | E1           | ECWU2183           | C9   | 4.8  | 3.3             | 2.0 | E2  |              |          |
| 0.022              | ECWU1223                         | C9  | 4.8             | 3.3 | 1.4 | E1           | ECWU2223           | C9   | 4.8  | 3.3             | 2.0 | E2  |              |          |
| 0.027              | ECWU1273                         | C9  | 4.8             | 3.3 | 1.4 | E1           | ECWU2273           | C9   | 4.8  | 3.3             | 2.4 | E3a |              |          |
| 0.033              | ECWU1333                         | C9  | 4.8             | 3.3 | 1.4 | E1           | ECWU2333           | C9   | 4.8  | 3.3             | 2.8 | E3  |              |          |
| 0.039              | ECWU1393                         | C9  | 4.8             | 3.3 | 1.4 | E1           | ECWU2393           | C9   | 6.0  | 4.1             | 2.0 | D2  |              |          |
| 0.047              | ECWU1473                         | C9  | 4.8             | 3.3 | 2.0 | E2           | ECWU2473           | C9   | 6.0  | 4.1             | 2.4 | D3  |              |          |
| 0.056              | ECWU1563                         | C9  | 4.8             | 3.3 | 2.0 | E2           | ECWU2563           | C9   | 6.0  | 4.1             | 2.8 | D4  |              |          |
| 0.068              | ECWU1683                         | C9  | 4.8             | 3.3 | 2.4 | E3a          | ECWU2683           | C9   | 6.0  | 4.1             | 3.2 | D5  |              |          |
| 0.082              | ECWU1823                         | C9  | 4.8             | 3.3 | 2.8 | E3           | ECWU2823           | C9   | 6.0  | 5.0             | 3.2 | B   |              |          |
| 0.1                | ECWU1104                         | C9  | 6.0             | 4.1 | 1.8 | D1           | ECWU2104           | C9   | 6.0  | 5.0             | 3.8 | B   |              |          |
| 0.12               | ECWU1124                         | C9  | 6.0             | 4.1 | 2.4 | D3           | ECWU2124           | C9   | 6.0  | 5.0             | 4.5 | B   |              |          |
| 0.15               | ECWU1154                         | C9  | 6.0             | 4.1 | 2.8 | D4           | ECWU2154KCV        | 7.1  | 6.3  | 3.5             | Y   |     |              |          |
| 0.18               | ECWU1184KCV                      | 7.1 | 5.0             | 2.0 | Z   | 1500         | ECWU2184KCV        | 7.1  | 6.3  | 4.1             | Y   |     |              |          |
| 0.22               | ECWU1224KCV                      | 7.1 | 5.0             | 2.4 | Z   |              | ECWU2224KCV        | 7.1  | 6.3  | 5.1             | Y   |     |              |          |
| 0.27               | ECWU1274KCV                      | 7.1 | 5.0             | 2.9 | Z   |              | ECWU2274KCV        | 9.8  | 6.3  | 3.9             | V   |     |              |          |
| 0.33               | ECWU1334KCV                      | 7.1 | 5.0             | 3.5 | Z   |              | ECWU2334KCV        | 9.8  | 6.3  | 4.8             | V   |     |              |          |
| 0.39               | ECWU1394KCV                      | 7.7 | 5.5             | 3.4 | X   | 1000         | ECWU2394KCV        | 9.8  | 8.0  | 4.4             | U   |     |              |          |
| 0.47               | ECWU1474KCV                      | 7.7 | 5.5             | 4.0 | X   |              | ECWU2474KCV        | 9.8  | 8.0  | 5.3             | U   |     |              |          |
| 0.56               | ECWU1564KCV                      | 9.8 | 6.3             | 3.0 | V   |              | ECWU2564KCZ        | 15.2 | 8.0  | 3.7             | T   |     |              |          |
| 0.68               | ECWU1684KCV                      | 9.8 | 6.3             | 3.6 | V   |              | ECWU2684KCZ        | 15.2 | 8.0  | 4.4             | T   |     |              |          |
| 0.82               | ECWU1824KCV                      | 9.8 | 6.3             | 4.3 | V   | 750          | ECWU2824KCZ        | 15.2 | 10.0 | 4.2             | S   |     |              |          |
| 1.0                | ECWU1105KCV                      | 9.8 | 6.3             | 5.1 | V   |              | ECWU2105KCZ        | 15.2 | 10.0 | 5.1             | S   |     |              |          |

↑ Capacitance tolerance code

\* Please consult us capacitance tolerance  $\pm 5\%$ (J).