

## Stacked Metallized PEN Film Chip Capacitor

Type: **ECWU(C)**

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

## ■Features

- Small in size
- For reflow soldering
- RoHS directive compliant



## ■Recommended Applications

- General purpose (Coupling, By-pass)

## ■Explanation of Part Numbers

|              |              |                              |              |                                                                                                                                                                         |             |                     |             |             |                                                                                |              |                                                                                                                             |
|--------------|--------------|------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------|-------------|-------------|--------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------|
| 1            | 2            | 3                            | 4            | 5                                                                                                                                                                       | 6           | 7                   | 8           | 9           | 10                                                                             | 11           | 12                                                                                                                          |
| <div>E</div> | <div>C</div> | <div>W</div>                 | <div>U</div> | <div></div>                                                                                                                                                             | <div></div> | <div></div>         | <div></div> | <div></div> | <div></div>                                                                    | <div>C</div> | <div></div>                                                                                                                 |
| Product code |              | Dielectric &<br>construction |              | Rated voltage                                                                                                                                                           |             | Nominal capacitance |             |             | Cap. Tol.                                                                      | Suffix       | Suffix                                                                                                                      |
|              |              |                              |              | <div><div>1C</div><div>16 VDC</div></div> <div><div>1H</div><div>50 VDC</div></div> <div><div>1</div><div>100 VDC</div></div> <div><div>2</div><div>250 VDC</div></div> |             |                     |             |             | <div><div>J</div><div>±5 %</div></div> <div><div>K</div><div>±10 %</div></div> |              | <div><div></div><div>Tape width</div></div> <div><div>9</div><div>12 mm</div></div> <div><div>V</div><div>16 mm</div></div> |

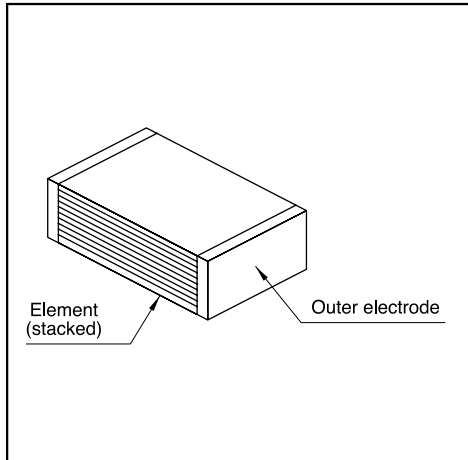
## ■Specifications

|                                                                     |                                                                                                                                                 |                                                                                                                                                            |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Category temp.range<br>(Including temperature-rise on unit surface) | 16 VDC, 50 VDC : -55 °C to +105 °C                                                                                                              |                                                                                                                                                            |
|                                                                     | 100 VDC, 250 VDC : -55 °C to +125 °C                                                                                                            |                                                                                                                                                            |
| Rated voltage                                                       | 16 VDC, 50 VDC, 100 VDC, 250 VDC<br>(100 VDC, 250 VDC : Derating of rated voltage by 1.25 %/°C more than 85 °C)                                 |                                                                                                                                                            |
| Capacitance range                                                   | 16 VDC                                                                                                                                          | 0.12 μF to 0.47 μF (E12)                                                                                                                                   |
|                                                                     | 50 VDC                                                                                                                                          | 0.056 μF to 0.22 μF (E12)                                                                                                                                  |
|                                                                     | 100 VDC                                                                                                                                         | 0.012 μF to 1.0 μF (E12)                                                                                                                                   |
|                                                                     | 250 VDC                                                                                                                                         | 0.0010 μF to 0.12 μF (E12)                                                                                                                                 |
| Capacitance tolerance                                               | 16 VDC, 50 VDC                                                                                                                                  | ±5 %(J)                                                                                                                                                    |
|                                                                     | 100 VDC                                                                                                                                         | ±5 %(J), ±10 %(K) (C≥0.18 μF : ±10 %(K) only)                                                                                                              |
|                                                                     | 250 VDC                                                                                                                                         | ±5 %(J), ±10 %(K)                                                                                                                                          |
| Withstand voltage                                                   | Between terminals: Rated volt. (VDC)×150 % 60 s                                                                                                 |                                                                                                                                                            |
| Dissipation factor (tanδ)                                           | tanδ ≤ 1.0 %(20 °C, 1 kHz)                                                                                                                      |                                                                                                                                                            |
| Insulation resistance (IR)                                          | C ≤ 0.33 μF                                                                                                                                     | 16 VDC : IR ≥ 3000 MΩ · (20 °C, 10 VDC, 60 s)<br>50 VDC : IR ≥ 3000 MΩ · (20 °C, 50 VDC, 60 s)<br>100 VDC, 250 VDC : IR ≥ 3000 MΩ · (20 °C, 100 VDC, 60 s) |
|                                                                     | C > 0.33 μF                                                                                                                                     | 16 VDC : IR ≥ 1000 MΩ · μF (20 °C, 10 VDC, 60 s)<br>100 VDC : IR ≥ 1000 MΩ · μF (20 °C, 100 VDC, 60 s)                                                     |
| Soldering conditions                                                | Reflow soldering : 240 °C max. and 60 s max. at more than 220 °C (Temp. at cap. surface)<br>(Please consult us for Reflow 250 °C max. product.) |                                                                                                                                                            |

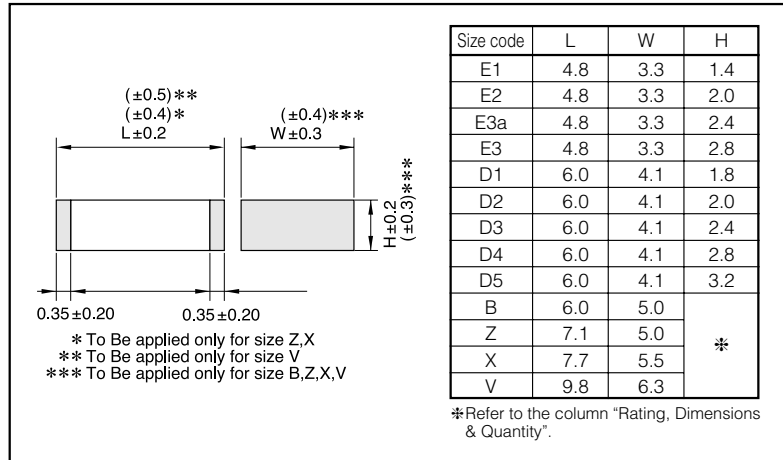
\* In case of applying voltage in alternating current (50 Hz or 60 Hz sine wave) to a capacitor with DC rated voltage, please refer to the page of "Permissible voltage (R.M.S) in alternating current corresponding to DC rated voltage".

\* Please consult us for capacitance range between 0.15 μF and 1.0 μF for 250 VDC type.

### ■ Construction



### ■ Dimensions in mm (not to scale)



### ■ Taping Specification for Automatic Mounting

Refer to the page of taping specifications.

### ■ Rating, Dimensions & Quantity/Reel

#### ● Capacitance tolerance : $\pm 5\%$ (J)

| Cap.<br>( $\mu$ F) | Rated volt. 16 VDC                  |                 |     |     |           |      | Rated volt. 50 VDC |                                                               |     |     |           |      |  |
|--------------------|-------------------------------------|-----------------|-----|-----|-----------|------|--------------------|---------------------------------------------------------------|-----|-----|-----------|------|--|
|                    | Part No                             | Dimensions (mm) |     |     | Size code | Q'ty | Part No            | Dimensions (mm)                                               |     |     | Size code | Q'ty |  |
|                    |                                     | L               | W   | H   |           |      |                    | L                                                             | W   | H   |           |      |  |
| 0.056              | Please use 16 VDC rating of ECHU(X) |                 |     |     |           |      | ECWU1H563JC9       | 4.8                                                           | 3.3 | 2.0 | E2        | 3000 |  |
| 0.068              |                                     |                 |     |     |           |      | ECWU1H683JC9       | 4.8                                                           | 3.3 | 2.0 | E2        |      |  |
| 0.082              |                                     |                 |     |     |           |      | ECWU1H823JC9       | 4.8                                                           | 3.3 | 2.4 | E3a       | 2000 |  |
| 0.10               |                                     |                 |     |     |           |      | ECWU1H104JC9       | 4.8                                                           | 3.3 | 2.8 | E3        |      |  |
| 0.12               | ECWU1C124JC9                        | 4.8             | 3.3 | 1.4 | E1        | 3000 | ECWU1H124JC9       | 6.0                                                           | 4.1 | 1.8 | D1        | 3000 |  |
| 0.15               | ECWU1C154JC9                        | 4.8             | 3.3 | 2.0 | E2        |      | ECWU1H154JC9       | 6.0                                                           | 4.1 | 2.0 | D2        |      |  |
| 0.18               | ECWU1C184JC9                        | 4.8             | 3.3 | 2.0 | E2        | 2000 | ECWU1H184JC9       | 6.0                                                           | 4.1 | 2.4 | D3        | 2000 |  |
| 0.22               | ECWU1C224JC9                        | 4.8             | 3.3 | 2.4 | E3a       |      | ECWU1H224JC9       | 6.0                                                           | 4.1 | 2.8 | D4        |      |  |
| 0.27               | ECWU1C274JC9                        | 6.0             | 4.1 | 1.8 | D1        |      | 3000               | Cap. $\leq 0.047 \mu$ F : Please use 50 VDC rating of ECHU(X) |     |     |           |      |  |
| 0.33               | ECWU1C334JC9                        | 6.0             | 4.1 | 2.0 | D2        |      |                    |                                                               |     |     |           |      |  |
| 0.39               | ECWU1C394JC9                        | 6.0             | 4.1 | 2.4 | D3        | 2000 |                    |                                                               |     |     |           |      |  |
| 0.47               | ECWU1C474JC9                        | 6.0             | 4.1 | 2.8 | D4        |      |                    |                                                               |     |     |           |      |  |

### ■ Rating, Dimensions & Quantity/Reel

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

| Cap.<br>( $\mu$ F)         | Rated volt. 100 VDC               |                 |     |     |           |                            | Rated volt. 250 VDC |                 |     |     |           |      |
|----------------------------|-----------------------------------|-----------------|-----|-----|-----------|----------------------------|---------------------|-----------------|-----|-----|-----------|------|
|                            | Part No                           | Dimensions (mm) |     |     | Size code | Q'ty                       | Part No             | Dimensions (mm) |     |     | Size code | Q'ty |
|                            |                                   | L               | W   | H   |           |                            |                     | L               | W   | H   |           |      |
| 0.0010                     | Please use 100 VDC 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        |      |
| 0.010                      |                                   |                 |     |     |           |                            | ECWU2103□C9         | 4.8             | 3.3 | 1.4 | E1        |      |
| 0.012                      | ECWU1123□C9                       | 4.8             | 3.3 | 1.4 | E1        | ECWU2123□C9                | 4.8                 | 3.3             | 1.4 | E1  | 2000      |      |
| 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  | 3000      |      |
| 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  | 2000      |      |
| 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   | 1500      |      |
| 0.10                       | 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        | <div>↑Cap. tol. code</div> |                     |                 |     |     |           |      |
| 0.18                       | ECWU1184KC9                       | 7.1             | 5.0 | 2.0 | Z         |                            |                     |                 |     |     |           |      |
| 0.22                       | ECWU1224KC9                       | 7.1             | 5.0 | 2.4 | Z         |                            |                     |                 |     |     |           |      |
| 0.27                       | ECWU1274KC9                       | 7.1             | 5.0 | 2.9 | Z         |                            |                     |                 |     |     |           |      |
| 0.33                       | ECWU1334KC9                       | 7.1             | 5.0 | 3.5 | Z         |                            |                     |                 |     |     |           |      |
| 0.39                       | ECWU1394KCV                       | 7.7             | 5.5 | 3.4 | X         |                            |                     |                 |     |     |           |      |
| 0.47                       | ECWU1474KCV                       | 7.7             | 5.5 | 4.0 | X         |                            |                     |                 |     |     |           |      |
| 0.56                       | ECWU1564KCV                       | 9.8             | 6.3 | 3.0 | V         |                            |                     |                 |     |     |           |      |
| 0.68                       | ECWU1684KCV                       | 9.8             | 6.3 | 3.6 | V         |                            |                     |                 |     |     |           |      |
| 0.82                       | ECWU1824KCV                       | 9.8             | 6.3 | 4.3 | V         |                            |                     |                 |     |     |           |      |
| 1.0                        | ECWU1105KCV                       | 9.8             | 6.3 | 5.1 | V         |                            |                     |                 |     |     |           |      |
| <div>↑Cap. tol. code</div> |                                   |                 |     |     |           |                            |                     |                 |     |     |           |      |

### ■ Recommended for Land Dimensions (mm)

The diagram illustrates the dimensions for a capacitor's soldering lands. It shows two rectangular electrodes, each labeled 'Electrode', separated by a gap labeled 'Land'. The dimensions are defined as follows:

- A**: The width of the land between the electrodes.
- B**: The total width of the capacitor, including the electrodes and the land.
- C**: The height of the land.

| 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 |
| V              | 7.2                                  | 11.9 | 5.7 |

✱ It is not warrantable that you can mount the capacitor without trouble under all the mounting condition when "Recommender for Land dimensions" is adopted.