

## Stacked Metallized PPS Film Chip Capacitor

Type: **ECHU(X)**

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

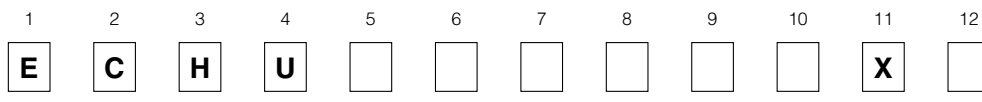
### ■ Features

- Small in size (minimum size 1.6 mm × 0.8 mm)
- 85 °C, 85 %RH, W.V. × 1.0 for 500 hours
- For reflow soldering
- RoHS directive compliant

### ■ Recommended Applications

- Time-constant
- Filtering
- Oscillation and resonance

### ■ Explanation of Part Numbers



Product code      Dielectric & construction      Rated voltage      Capacitance      Cap. Tol.      Suffix      Suffix

|    |        |
|----|--------|
| 01 | 10 VDC |
| 1C | 16 VDC |
| 1H | 50 VDC |

|   |      |
|---|------|
| G | ±2 % |
| J | ±5 % |

|   |               |
|---|---------------|
|   | Tape width    |
|   | Reel diameter |
| 5 | 8 mm          |
|   | size ø180 mm  |
| 9 | 12 mm         |
|   | size ø330 mm  |

\* Tape width 8 mm and diameter ø330 mm reel is prepared.

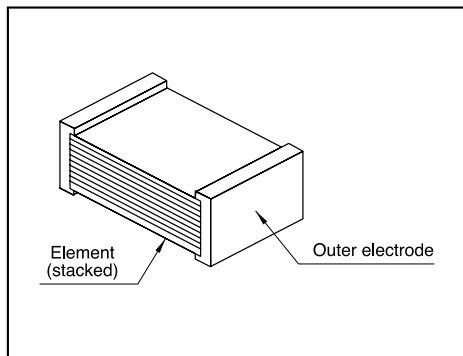
### ■ Specifications

|  |   |
|--|---|
| Category temp. range<br>(Including temperature-rise on unit surface) | -55 °C to +125 °C   |
| Rated voltage  | 10 VDC, 16 VDC, 50 VDC<br>(50 VDC: 0.12 µF or more: Derating or rated voltage by 1.25 % / °C at more than 105 °C)                         |
| Capacitance range  | 0.00010 µF to 0.22 µF (E12)   |
| Capacitance tolerance  | ±2 % (G), ±5 % (J)  |
| Withstand voltage  | Between terminals : Rated volt. (VDC) × 150 % 60 s  |
| Dissipation factor (tan δ)   | tan δ ≤ 0.6 % (20 °C, 1 kHz)  |
| Insulation resistance (IR)   | 10 VDC : IR ≥ 3000 MΩ (20 °C, 10 VDC, 60 s)<br>16 VDC : IR ≥ 3000 MΩ (20 °C, 10 VDC, 60 s)<br>50 VDC : IR ≥ 3000 MΩ (20 °C, 50 VDC, 60 s) |
| Soldering conditions   | Reflow soldering : 260 °C max. and 95 sec max. at more than 220 °C (Temp. at cap. surface)  |

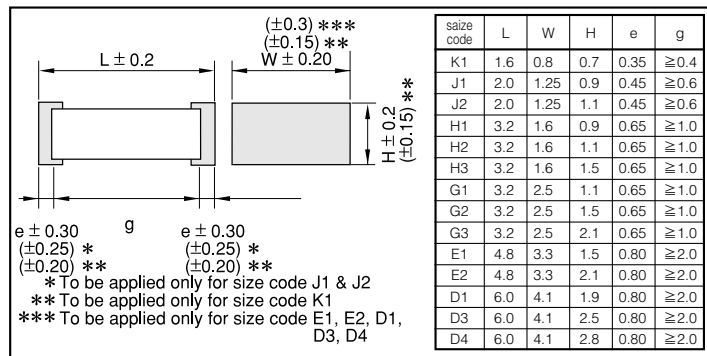
\* Please consult us for flow soldering

\* 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".

### ■ Construction



### ■ Dimensions in mm (not to scale)



Design, Specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use. Whenever a doubt about safety arises from this product, please inform us immediately for technical consultation without fail.

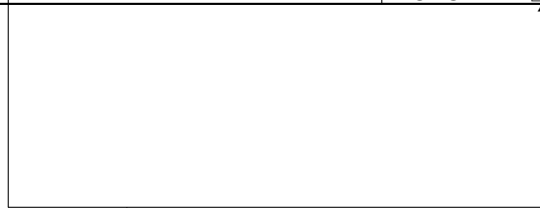
### ■ Taping Specification for Automatic Mounting

Refer to the page of taping specifications

### ■ Rating, Dimensions & Quantity/Reel

● Capacitance tolerance :  $\pm 2\%$  (G),  $\pm 5\%$  (J)

| Cap. ( $\mu\text{F}$ ) | 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   |           |      |    |
| 0.00010                | ECHU1C101□X5       | 1.6             | 0.8  | 0.7 | K1        | 4000               | ECHU1H101□X5 | 2.0             | 1.25         | 0.9 | J1        | 3000 |    |
| 0.00012                | ECHU1C121□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H121□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.00015                | ECHU1C151□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H151□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.00018                | ECHU1C181□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H181□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.00022                | ECHU1C221□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H221□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.00027                | ECHU1C271□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H271□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.00033                | ECHU1C331□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H331□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.00039                | ECHU1C391□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H391□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.00047                | ECHU1C471□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H471□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.00056                | ECHU1C561□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H561□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.00068                | ECHU1C681□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H681□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.00082                | ECHU1C821□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H821□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.0010                 | ECHU1C102□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H102□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.0012                 | ECHU1C122□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H122□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.0015                 | ECHU1C152□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H152□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.0018                 | ECHU1C182□X5       | 1.6             | 0.8  | 0.7 | K1        |                    | ECHU1H182□X5 | 2.0             | 1.25         | 0.9 | J1        |      |    |
| 0.0022                 | ECHU1C222□X5       | 1.6             | 0.8  | 0.7 | K1        | ECHU1H222□X5       | 2.0          | 1.25            | 0.9          | J1  |           |      |    |
| 0.0027                 | ECHU1C272□X5       | 1.6             | 0.8  | 0.7 | K1        | ECHU1H272□X5       | 2.0          | 1.25            | 0.9          | J1  |           |      |    |
| 0.0033                 | ECHU1C332□X5       | 2.0             | 1.25 | 0.9 | J1        | 3000               | ECHU1H332□X5 | 3.2             | 1.6          | 0.9 | H1        |      |    |
| 0.0039                 | ECHU1C392□X5       | 2.0             | 1.25 | 0.9 | J1        |                    | ECHU1H392□X5 | 3.2             | 1.6          | 0.9 | H1        |      |    |
| 0.0047                 | ECHU1C472□X5       | 2.0             | 1.25 | 0.9 | J1        |                    | ECHU1H472□X5 | 3.2             | 1.6          | 0.9 | H1        |      |    |
| 0.0056                 | ECHU1C562□X5       | 2.0             | 1.25 | 0.9 | J1        |                    | ECHU1H562□X5 | 3.2             | 1.6          | 0.9 | H1        |      |    |
| 0.0068                 | ECHU1C682□X5       | 2.0             | 1.25 | 0.9 | J1        |                    | ECHU1H682□X5 | 3.2             | 1.6          | 0.9 | H1        |      |    |
| 0.0082                 | ECHU1C822□X5       | 2.0             | 1.25 | 1.1 | J2        |                    | ECHU1H822□X5 | 3.2             | 1.6          | 1.1 | H2        |      |    |
| 0.010                  | ECHU1C103□X5       | 2.0             | 1.25 | 1.1 | J2        |                    | 2000         | ECHU1H103□X5    | 3.2          | 1.6 | 1.1       | H2   |    |
| 0.012                  | ECHU1C123□X5       | 3.2             | 1.6  | 0.9 | H1        |                    |              | ECHU1H123□X5    | 3.2          | 2.5 | 1.1       | G1   |    |
| 0.015                  | ECHU1C153□X5       | 3.2             | 1.6  | 0.9 | H1        |                    |              | ECHU1H153□X5    | 3.2          | 2.5 | 1.1       | G1   |    |
| 0.018                  | ECHU1C183□X5       | 3.2             | 1.6  | 0.9 | H1        |                    |              | ECHU1H183□X5    | 3.2          | 2.5 | 1.5       | G2   |    |
| 0.022                  | ECHU1C223□X5       | 3.2             | 1.6  | 0.9 | H1        |                    |              | ECHU1H223□X5    | 3.2          | 2.5 | 1.5       | G2   |    |
| 0.027                  | ECHU1C273□X5       | 3.2             | 1.6  | 1.1 | H2        |                    |              | ECHU1H273□X5    | 3.2          | 2.5 | 1.5       | G2   |    |
| 0.033                  | ECHU1C333□X5       | 3.2             | 1.6  | 1.1 | H2        |                    |              | ECHU1H333□X5    | 3.2          | 2.5 | 2.1       | G3   |    |
| 0.039                  | ECHU1C393□X5       | 3.2             | 1.6  | 1.5 | H3        |                    |              | ECHU1H393□X5    | 3.2          | 2.5 | 2.1       | G3   |    |
| 0.047                  | ECHU1C473□X5       | 3.2             | 1.6  | 1.5 | H3        |                    |              | 2000            | ECHU1H473□X9 | 4.8 | 3.3       | 1.5  | E1 |
| 0.056                  | ECHU1C563□X5       | 3.2             | 2.5  | 1.5 | G2        |                    |              |                 | ECHU1H563□X9 | 4.8 | 3.3       | 1.5  | E1 |
| 0.068                  | ECHU1C683□X5       | 3.2             | 2.5  | 1.5 | G2        | ECHU1H683□X9       |              |                 | 4.8          | 3.3 | 1.5       | E1   |    |
| 0.082                  | ECHU1C823□X5       | 3.2             | 2.5  | 2.1 | G3        | ECHU1H823□X9       |              |                 | 4.8          | 3.3 | 2.1       | E2   |    |
| 0.10                   | ECHU1C104□X5       | 3.2             | 2.5  | 2.1 | G3        | 3000               |              |                 | ECHU1H104□X9 | 4.8 | 3.3       | 2.1  | E2 |
| 0.12                   |                    |                 |      |     |           |                    |              |                 | ECHU1H124□X9 | 6.0 | 4.1       | 1.9  | D1 |
| 0.15                   |                    |                 |      |     |           |                    |              |                 | ECHU1H154□X9 | 6.0 | 4.1       | 1.9  | D1 |
| 0.18                   |                    |                 |      |     |           |                    |              |                 | ECHU1H184□X9 | 6.0 | 4.1       | 2.5  | D3 |
| 0.22                   |                    |                 |      |     |           | 2000               | ECHU1H224□X9 |                 | 6.0          | 4.1 | 2.8       | D4   |    |



Cap. tol. code

### Rating, Dimensions & Quantity/Reel

● Capacitance tolerance :  $\pm 2\%$  (G),  $\pm 5\%$  (J)

| Cap. ( $\mu\text{F}$ ) | Rated volt. 10 VDC |                 |      |     |           |      |
|------------------------|--------------------|-----------------|------|-----|-----------|------|
|                        | Part No.           | Dimensions (mm) |      |     | Size Code | Q'ty |
|                        |                    | L               | W    | H   |           |      |
| 0.00010                |                    |                 |      |     |           |      |
| 0.00012                |                    |                 |      |     |           |      |
| 0.00015                |                    |                 |      |     |           |      |
| 0.00018                |                    |                 |      |     |           |      |
| 0.00022                |                    |                 |      |     |           |      |
| 0.00027                |                    |                 |      |     |           |      |
| 0.00033                |                    |                 |      |     |           |      |
| 0.00039                |                    |                 |      |     |           |      |
| 0.00047                |                    |                 |      |     |           |      |
| 0.00056                |                    |                 |      |     |           |      |
| 0.00068                |                    |                 |      |     |           |      |
| 0.00082                |                    |                 |      |     |           |      |
| 0.0010                 |                    |                 |      |     |           |      |
| 0.0012                 |                    |                 |      |     |           |      |
| 0.0015                 |                    |                 |      |     |           |      |
| 0.0018                 |                    |                 |      |     |           |      |
| 0.0022                 |                    |                 |      |     |           |      |
| 0.0027                 |                    |                 |      |     |           |      |
| 0.0033                 | ECHU01332 X5       | 1.6             | 0.8  | 0.7 | K1        | 4000 |
| 0.0039                 | ECHU01392 X5       | 1.6             | 0.8  | 0.7 | K1        |      |
| 0.0047                 | ECHU01472 X5       | 1.6             | 0.8  | 0.7 | K1        |      |
| 0.0056                 | ECHU01562 X5       | 1.6             | 0.8  | 0.7 | K1        | 3000 |
| 0.0068                 | ECHU01682 X5       | 2.0             | 1.25 | 0.9 | J1        |      |
| 0.0082                 | ECHU01822 X5       | 2.0             | 1.25 | 0.9 | J1        |      |
| 0.010                  | ECHU01103 X5       | 2.0             | 1.25 | 0.9 | J1        |      |
| 0.012                  | ECHU01123 X5       | 2.0             | 1.25 | 0.9 | J1        |      |
| 0.015                  | ECHU01153 X5       | 2.0             | 1.25 | 0.9 | J1        |      |
| 0.018                  | ECHU01183 X5       | 2.0             | 1.25 | 0.9 | J1        |      |
| 0.022                  | ECHU01223 X5       | 2.0             | 1.25 | 1.1 | J2        |      |
| 0.027                  | ECHU01273 X5       | 2.0             | 1.25 | 1.1 | J2        |      |
| 0.033                  |                    |                 |      |     |           |      |
| 0.039                  |                    |                 |      |     |           |      |
| 0.047                  |                    |                 |      |     |           |      |
| 0.056                  |                    |                 |      |     |           |      |
| 0.068                  |                    |                 |      |     |           |      |
| 0.082                  |                    |                 |      |     |           |      |
| 0.10                   |                    |                 |      |     |           |      |

Please use 16 VDC rating of ECHU(X)

Please use 16 VDC rating of ECHU(X)

Cap. tol. code

### Recommended for Land Dimensions (mm)

| Size Code | Land dimensions  |     |     |
|-----------|------------------|-----|-----|
|           | Reflow soldering |     |     |
|           | A                | B   | C   |
| K1        | 0.6              | 2.0 | 0.7 |
| J1,J2     | 0.8              | 2.4 | 1.1 |
| H1,H2,H3  | 1.8              | 3.6 | 1.4 |
| G1,G2,G3  | 1.8              | 3.6 | 2.3 |
| E1,E2     | 3.0              | 5.6 | 3.0 |
| D1,D3,D4  | 4.0              | 7.0 | 3.8 |

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

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