

## Film Chip Capacitor

Type : **ECHU(X)**

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

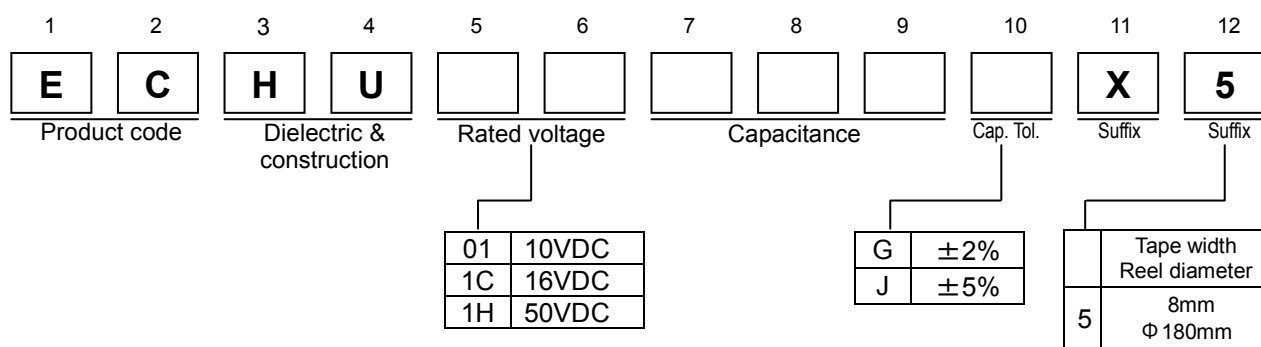
### ■Features

- Small in size (minimum size 1.6mm x 0.8mm)
- 85 degree C , 85%RH , W.V. x 1.0 , 500 hours
- Applicable for reflow soldering

### ■Recommended Applications

- Time-constant
- Filtering
- Oscillation and resonance

### ■Explanation of Numbers



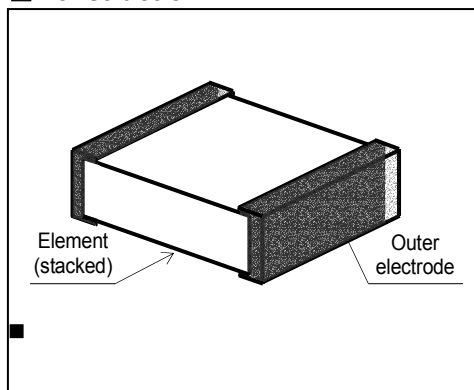
\* Φ 330mm reel is prepared.

### ■Specification

|                       |                                                                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Category temp.range   | -55 to +125 °C                                                                                                                            |
| Rated voltage         | 10VDC , 16VDC , 50VDC                                                                                                                     |
| Capacitance range     | 0.0001μF to 0.033μF (E12)                                                                                                                 |
| Capacitance tolerance | ±2%(G) , ±5%(J)                                                                                                                           |
| Withstand voltage     | Between terminals : Rated volt. (VDC)X150% , 60s                                                                                          |
| Dissipation factor    | 0.6% or less (20°C , 1kHz)                                                                                                                |
| Insulation resistance | 10VDC : 3000MΩ or more (20°C , 10VDC , 60s)<br>16VDC : 3000MΩ or more (20°C , 10VDC , 60s)<br>50VDC : 3000MΩ or more (20°C , 50VDC , 60s) |
| Soldering conditions  | Reflow soldering : 260°C max. and 30s max. at more than 230°C<br>(Temp. at cap. Surface)                                                  |

Note : Flow Soldering Type is available. Please contact the home page (<http://www.maco.panasonic.co.jp>)

### ■Construction



### ■Dimensions in mm (not to scale)

| Size code | L   | W    | H   | e    | g       |
|-----------|-----|------|-----|------|---------|
| k1        | 1.6 | 0.8  | 0.7 | 0.35 | min.0.4 |
| J1        | 2.0 | 1.25 | 0.9 | 0.45 | min.0.6 |
| J2        | 2.0 | 1.25 | 1.1 | 0.45 | min.0.6 |
| H1        | 3.2 | 1.6  | 0.9 | 0.65 | min.1.0 |
| H2        | 3.2 | 1.6  | 1.1 | 0.65 | min.1.0 |
| H3        | 3.2 | 1.6  | 1.5 | 0.65 | min.1.0 |
| G1        | 3.2 | 2.5  | 1.1 | 0.65 | min.1.0 |
| G2        | 3.2 | 2.5  | 1.5 | 0.65 | min.1.0 |
| G3        | 3.2 | 2.5  | 2.1 | 0.65 | min.1.0 |

\* To be applied only for size code J1 & J2  
\*\* To be applied only for size code K1

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

## ■Taping Specification for Automatic Mounting

See page 24 for automatic mounting.

## ■Rating , Dimensions & quantity / Reel

■Rated voltage : 16VDC , 50VDC      Capacitance tolerance :  $\pm 2\%$ (G) ,  $\pm 5\%$ (J)

| 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   |           |      |
| 0.0001       | 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        |      |
| 0.001        | 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        | 2000 |
| 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        |      |
| 0.01         | ECHU1C103( )X5    | 2.0             | 1.25 | 1.1 | J2        |                | 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        |                | Please use 50VDC rating of ECHU(C) |                 |      |     |           |      |
| 0.056        | ECHU1C563( )X5    | 3.2             | 2.5  | 1.5 | G2        |                |                                    |                 |      |     |           |      |
| 0.068        | ECHU1C683( )X5    | 3.2             | 2.5  | 1.5 | G2        |                |                                    |                 |      |     |           |      |
| 0.082        | ECHU1C823( )X5    | 3.2             | 2.5  | 2.1 | G3        |                |                                    |                 |      |     |           |      |
| 0.1          | ECHU1C104( )X5    | 3.2             | 2.5  | 2.1 | G3        | 2000           |                                    |                 |      |     |           |      |

Capacitance tolerance code

## ■ Rating , Dimensions & quantity / Reel

■ Rated voltage : 10VDC      Capacitance tolerance :  $\pm 2\%$ (G) ,  $\pm 5\%$ (J)

| Cap.<br>(μF) | Rated volt. 10VDC                  |                 |      |     |           |      |
|--------------|------------------------------------|-----------------|------|-----|-----------|------|
|              | Part No.                           | Dimensions (mm) |      |     | Size code | Q'ty |
|              |                                    | L               | W    | H   |           |      |
| 0.0001       | Please use 16VDC rating of ECHU(X) |                 |      |     |           |      |
| 0.00012      |                                    |                 |      |     |           |      |
| 0.00015      |                                    |                 |      |     |           |      |
| 0.00018      |                                    |                 |      |     |           |      |
| 0.00022      |                                    |                 |      |     |           |      |
| 0.00027      |                                    |                 |      |     |           |      |
| 0.00033      |                                    |                 |      |     |           |      |
| 0.00039      |                                    |                 |      |     |           |      |
| 0.00047      |                                    |                 |      |     |           |      |
| 0.00056      |                                    |                 |      |     |           |      |
| 0.00068      |                                    |                 |      |     |           |      |
| 0.00082      |                                    |                 |      |     |           |      |
| 0.001        |                                    |                 |      |     |           |      |
| 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        |      |
| 0.0068       | ECHU01682( )X5                     | 2.0             | 1.25 | 0.9 | J1        | 3000 |
| 0.0082       | ECHU01822( )X5                     | 2.0             | 1.25 | 0.9 | J1        |      |
| 0.01         | 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        | New! |
| 0.027        | ECHU01273( )X5                     | 2.0             | 1.25 | 1.1 | J2        |      |
| 0.033        | Please use 16VDC rating of ECHU(X) |                 |      |     |           |      |
| 0.039        |                                    |                 |      |     |           |      |
| 0.047        |                                    |                 |      |     |           |      |
| 0.056        |                                    |                 |      |     |           |      |
| 0.068        |                                    |                 |      |     |           |      |
| 0.082        |                                    |                 |      |     |           |      |
| 0.1          |                                    |                 |      |     |           |      |

Capacitance tolerance code

## ► Example for Land Dimensions (mm)

| Size code | Land dimensions<br>Reflow soldering |     |     |
|-----------|-------------------------------------|-----|-----|
|           | A                                   | B   | C   |
| K1        | 0.6                                 | 2.0 | 0.7 |
| J1J2      | 0.8                                 | 2.4 | 1.1 |
| H1,H2,H3  | 1.8                                 | 3.6 | 1.4 |
| G1,G2,G3  | 1.8                                 | 3.6 | 2.3 |