



**THE DATASHEET OF  
ECH-U1H223GB5**



## Film Chip Capacitor

Type: **ECHU(B)**

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



### ■ Features

- ◆ Small in size (minimum size 2.0×1.25mm)
- ◆ 85°C, 85%RH, W.V. × 1.0 for 500 hours
- ◆ Applicable for both flow and reflow soldering

### ■ Recommended Applications

- ◆ Time-constant
- ◆ Filtering
- ◆ Oscillation and resonance

### ■ Explanation of Part Numbers



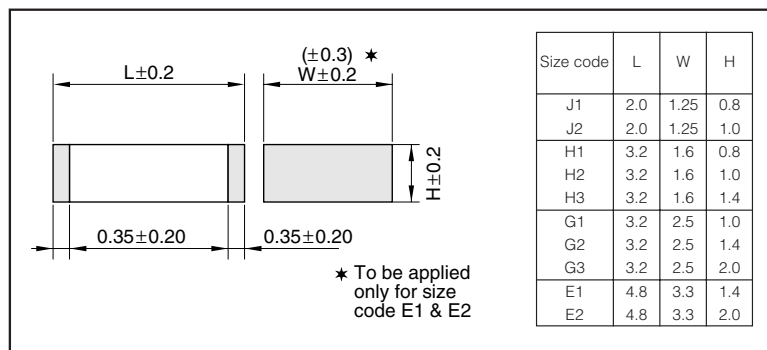
### ■ Specifications

|                       |  |
|-----------------------|--|
| Category temp. range  | -5 to +125°C   |
| Rated voltage         | 16VDC, 50VDC   |
| Capacitance range     | 0.0001 to 0.1 μF (E12)   |
| Capacitance tolerance | ±2%(G), ±5%(J)   |
| Withstand voltage     | Between terminals : Rated volt. (VDC)×175% 1 to 5s   |
| Dissipation factor    | ≤0.6% (20°C, 1kHz)   |
| Insulation resistance | 10VDC : ≥3000MΩ (20°C, 10VDC 60s)<br>50VDC : ≥3000MΩ (20°C, 50VDC 60s)   |
| Soldering conditions  | Flow soldering : 260°C max. 5sec max.<br>Reflow soldering : 260°C max. and 30sec max. at more than 230°C (Temp. at cap. surface) |

### ■ Construction



### ■ Dimensions in mm (not to scale)



## ■Taping Specification for Automatic Insertion(Mounting)

Refer to the PDF file of taping specifications

## ■Rating, Dimensions & Quantity/Reel

| Cap. (μF) | Rated volt. 16VDC                  |                 |     |      |      |      | Rated volt. 50VDC |                 |     |      |      |      |      |           |    |     |     |     |    |      |
|-----------|------------------------------------|-----------------|-----|------|------|------|-------------------|-----------------|-----|------|------|------|------|-----------|----|-----|-----|-----|----|------|
|           | Part No.                           | Dimensions (mm) |     |      | Code | Q'ty | Part No.          | Dimensions (mm) |     |      | Code | Q'ty |      |           |    |     |     |     |    |      |
|           |                                    | L               | W   | H    |      |      |                   | L               | W   | H    |      |      |      |           |    |     |     |     |    |      |
| 0.0001    | Please use 50VDC rating of ECHU(B) |                 |     |      |      |      | ECHU1H101         | B5              | 2.0 | 1.25 | 0.8  | J1   | 3000 |           |    |     |     |     |    |      |
| 0.00012   |                                    |                 |     |      |      |      | ECHU1H121         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.00015   |                                    |                 |     |      |      |      | ECHU1H151         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.00018   |                                    |                 |     |      |      |      | ECHU1H181         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.00022   |                                    |                 |     |      |      |      | ECHU1H221         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.00027   |                                    |                 |     |      |      |      | ECHU1H271         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.00033   |                                    |                 |     |      |      |      | ECHU1H331         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.00039   |                                    |                 |     |      |      |      | ECHU1H391         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.00047   |                                    |                 |     |      |      |      | ECHU1H471         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.00056   |                                    |                 |     |      |      |      | ECHU1H561         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.00068   |                                    |                 |     |      |      |      | ECHU1H681         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.00082   |                                    |                 |     |      |      |      | ECHU1H821         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.001     |                                    |                 |     |      |      |      | ECHU1H102         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.0012    |                                    |                 |     |      |      |      | ECHU1H122         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.0015    |                                    |                 |     |      |      |      | ECHU1H152         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.0018    |                                    |                 |     |      |      |      | ECHU1H182         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.0022    |                                    |                 |     |      |      |      | ECHU1H222         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.0027    |                                    |                 |     |      |      |      | ECHU1H272         | B5              | 2.0 | 1.25 | 0.8  | J1   |      |           |    |     |     |     |    |      |
| 0.0033    |                                    |                 |     |      |      |      | ECHU1C332         | B5              | 2.0 | 1.25 | 0.8  | J1   |      | ECHU1H332 | B5 | 3.2 | 1.6 | 0.8 | H1 | 2000 |
| 0.0039    |                                    |                 |     |      |      |      | ECHU1C392         | B5              | 2.0 | 1.25 | 0.8  | J1   |      | ECHU1H392 | B5 | 3.2 | 1.6 | 0.8 | H1 |      |
| 0.0047    | ECHU1C472                          | B5              | 2.0 | 1.25 | 0.8  | J1   | ECHU1H472         | B5              | 3.2 | 1.6  | 0.8  | H1   |      |           |    |     |     |     |    |      |
| 0.0056    | ECHU1C562                          | B5              | 2.0 | 1.25 | 0.8  | J1   | ECHU1H562         | B5              | 3.2 | 1.6  | 0.8  | H1   |      |           |    |     |     |     |    |      |
| 0.0068    | ECHU1C682                          | B5              | 2.0 | 1.25 | 0.8  | J1   | ECHU1H682         | B5              | 3.2 | 1.6  | 0.8  | H1   |      |           |    |     |     |     |    |      |
| 0.0082    | ECHU1C822                          | B5              | 2.0 | 1.25 | 1.0  | J2   | ECHU1H822         | B5              | 3.2 | 1.6  | 1.0  | H2   |      |           |    |     |     |     |    |      |
| 0.01      | ECHU1C103                          | B5              | 2.0 | 1.25 | 1.0  | J2   | ECHU1H103         | B5              | 3.2 | 1.6  | 1.0  | H2   |      |           |    |     |     |     |    |      |
| 0.012     | ECHU1C123                          | B5              | 3.2 | 1.6  | 0.8  | H1   | ECHU1H123         | B5              | 3.2 | 2.5  | 1.0  | G1   |      |           |    |     |     |     |    |      |
| 0.015     | ECHU1C153                          | B5              | 3.2 | 1.6  | 0.8  | H1   | ECHU1H153         | B5              | 3.2 | 2.5  | 1.0  | G1   |      |           |    |     |     |     |    |      |
| 0.018     | ECHU1C183                          | B5              | 3.2 | 1.6  | 0.8  | H1   | ECHU1H183         | B5              | 3.2 | 2.5  | 1.4  | G2   |      |           |    |     |     |     |    |      |
| 0.022     | ECHU1C223                          | B5              | 3.2 | 1.6  | 0.8  | H1   | ECHU1H223         | B5              | 3.2 | 2.5  | 1.4  | G2   |      |           |    |     |     |     |    |      |
| 0.027     | ECHU1C273                          | B5              | 3.2 | 1.6  | 1.0  | H2   | ECHU1H273         | B5              | 3.2 | 2.5  | 1.4  | G2   |      |           |    |     |     |     |    |      |
| 0.033     | ECHU1C333                          | B5              | 3.2 | 1.6  | 1.0  | H2   | ECHU1H333         | B5              | 3.2 | 2.5  | 2.0  | G3   |      |           |    |     |     |     |    |      |
| 0.039     | ECHU1C393                          | B5              | 3.2 | 1.6  | 1.4  | H3   | ECHU1H393         | B5              | 3.2 | 2.5  | 2.0  | G3   |      |           |    |     |     |     |    |      |
| 0.047     | ECHU1C473                          | B5              | 3.2 | 1.6  | 1.4  | H3   | ECHU1H473         | B9              | 4.8 | 3.3  | 1.4  | E1   |      |           |    |     |     |     |    |      |
| 0.056     | ECHU1C563                          | B5              | 3.2 | 2.5  | 1.4  | G2   | ECHU1H563         | B9              | 4.8 | 3.3  | 1.4  | E1   |      |           |    |     |     |     |    |      |
| 0.068     | ECHU1C683                          | B5              | 3.2 | 2.5  | 1.4  | G2   | ECHU1H683         | B9              | 4.8 | 3.3  | 1.4  | E1   |      |           |    |     |     |     |    |      |
| 0.082     | ECHU1C823                          | B5              | 3.2 | 2.5  | 2.0  | G3   | ECHU1H823         | B9              | 4.8 | 3.3  | 2.0  | E2   |      |           |    |     |     |     |    |      |
| 0.1       | ECHU1C104                          | B5              | 3.2 | 2.5  | 2.0  | G3   | ECHU1H104         | B9              | 4.8 | 3.3  | 2.0  | E2   |      |           |    |     |     |     |    |      |

Capacitance tolerance code G, J

## ■Example for Land Dimensions (mm)

Electrode

| Code | Land dimensions |     |     |                  |     |     |
|------|-----------------|-----|-----|------------------|-----|-----|
|      | Flow soldering  |     |     | Reflow soldering |     |     |
|      | A               | B   | C   | A                | B   | C   |
| J1   | 1.0             | 2.7 | 1.1 | 1.0              | 2.7 | 1.1 |
| J2   | 1.0             | 2.7 | 1.1 | 1.0              | 2.7 | 1.1 |
| H1   | 2.2             | 3.8 | 1.4 | 2.2              | 3.8 | 1.4 |
| H2   | 2.2             | 3.8 | 1.4 | 2.2              | 3.8 | 1.4 |
| H3   | 2.2             | 3.8 | 1.4 | 2.2              | 3.8 | 1.4 |
| G1   | 2.2             | 3.8 | 2.3 | 2.2              | 3.8 | 2.3 |
| G2   | 2.2             | 3.8 | 2.3 | 2.2              | 3.8 | 2.3 |
| G3   | 2.2             | 3.8 | 2.3 | 2.2              | 3.8 | 2.3 |
| E1   | 2.6             | 6.6 | 3.0 | 2.6              | 6.6 | 3.0 |
| E2   | 2.6             | 6.6 | 3.0 | 2.6              | 6.6 | 3.0 |

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