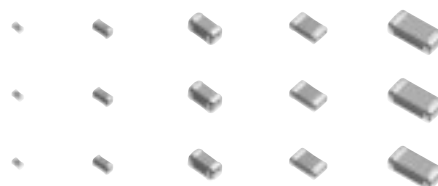


### Multilayer Ceramic Capacitors (For General Electronic Equipment)

Series: **ECJ**



#### ■ Features

- Small size and wide capacitance range
- High humidity resistance and long life
- Excellent solderability and resistance to soldering heat
- Low inductance (ESL) and excellent frequency characteristics
- RoHS compliant

#### ■ Recommended Applications

- **Class 1 (T.C. Type)**  
Tuned circuits, and filter circuitry, where low loss and high stability of capacitance and high insulation resistance is required
- **Class 2 (Hi-K Type)**  
Coupling and By-passing

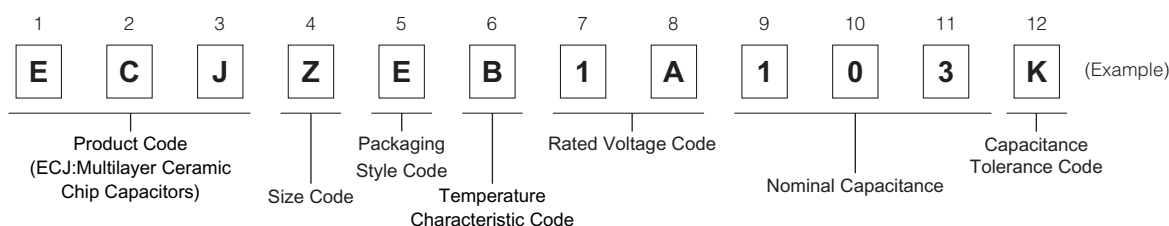
#### ■ Handling Precautions

See Page 48 to 53

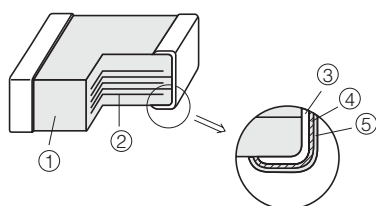
#### ■ Packaging Specifications

See Page 45, 46, 56

#### ■ Explanation of Part Numbers

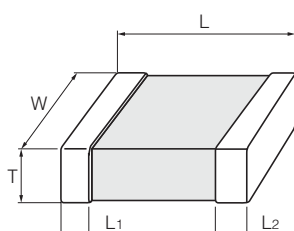


#### ■ Construction



| No | Name               |                        |
|----|--------------------|------------------------|
| ①  | Ceramic dielectric |                        |
| ②  | Internal electrode |                        |
| ③  | Terminal electrode | Substrate electrode    |
| ④  |                    | Intermediate electrode |
| ⑤  |                    | External electrode     |

#### ■ Dimensions in mm (not to scale)



| Size Code | Size (EIA) | L         | W         | T         | L <sub>1</sub> , L <sub>2</sub> |
|-----------|------------|-----------|-----------|-----------|---------------------------------|
| Z         | 0201       | 0.60±0.03 | 0.30±0.03 | 0.30±0.03 | 0.15±0.05                       |
| 0         | 0402       | 1.00±0.05 | 0.50±0.05 | 0.50±0.05 | 0.2±0.1                         |
| 1         | 0603       | 1.6±0.1   | 0.8±0.1   | 0.8±0.1   | 0.3±0.2                         |
| 2         | 0805       | 2.0±0.1   | 1.25±0.10 | 0.6±0.1   | 0.50±0.25                       |
|           |            |           |           | 0.85±0.10 |                                 |
|           |            |           |           | 1.25±0.10 |                                 |
|           |            | 2.00±0.15 | 1.25±0.15 | 1.25±0.15 |                                 |

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.  
Should a safety concern arise regarding this product, please be sure to contact us immediately.

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## ■ Packaging Styles and Standard Packaging Quantities

Quantity (Taping: pcs./reel)

| Packaging Style Code | Size             |                               | 0201   | 0402   | 0603  | 0805  |        |        |
|----------------------|------------------|-------------------------------|--------|--------|-------|-------|--------|--------|
|                      | Packaging Styles | Thickness (mm)                |        |        |       | T=0.6 | T=0.85 | T=1.25 |
| E                    | ø180 reel        | Paper taping (Pitch: 2 mm)    | 15,000 | 10,000 | —     | —     | —      | —      |
| V                    |                  | Paper taping (Pitch: 4 mm)    | —      | —      | 4,000 | 5,000 | 4,000  | —      |
| F                    |                  | Embossed taping (Pitch: 4 mm) | —      | —      | —     | —     | —      | 3,000  |

ø330 reel and bulk case type : Please contact us

## ■ Temperature Characteristics

## ● Class 1

| Temperature Characteristic Code | Temperature Characteristics |           | Temp. Coeff. (ppm/°C) | Rate of Capacitance change at each Temperature (%) |       |       |       |
|---------------------------------|-----------------------------|-----------|-----------------------|----------------------------------------------------|-------|-------|-------|
|                                 |                             |           |                       | -25 °C                                             |       | 85 °C |       |
|                                 |                             |           |                       | max.                                               | min.  | max.  | min.  |
| C                               | CΔ                          | ≥10 pF CG | 0± 30                 | 0.33                                               | -0.14 | 0.20  | -0.20 |
|                                 |                             | ≥4 pF CH  | 0± 60                 | 0.49                                               | -0.27 | 0.39  | -0.39 |
|                                 |                             | 3 pF CJ   | 0±120                 | 0.82                                               | -0.54 | 0.78  | -0.78 |
|                                 |                             | ≤2 pF CK  | 0±250                 | 1.54                                               | -1.13 | 1.63  | -1.63 |
| G                               | SL                          |           | +350 to -1000         | —                                                  | —     | 2.28  | -6.50 |

Temperature coefficient: calculated between 20 °C to 85 °C

For applicable "temperature characteristics", see the lists of standard products on page 13 to 19.

## ● Class 2

| Temperature Characteristic Code | Temperature Characteristics | Capacitance Change | Measurement Temperature Range | Reference Temperature |
|---------------------------------|-----------------------------|--------------------|-------------------------------|-----------------------|
| B                               | B                           | ±10 %              | -25 to 85 °C                  | 20 °C                 |
|                                 | X7R                         | ±15 %              | -55 to 125 °C                 | 25 °C                 |
|                                 | X5R                         | ±15 %              | -55 to 85 °C                  | 25 °C                 |
| F                               | F                           | +30, -80 %         | -25 to 85 °C                  | 20 °C                 |
|                                 | Y5V                         | +22, -82 %         | -30 to 85 °C                  | 25 °C                 |

For applicable "temperature characteristics", see the lists of standard products on page 13 to 19.

## ■ Rated Voltage

| Code          | 1H      | 1E      | 1C      | 1A      | 0J       |
|---------------|---------|---------|---------|---------|----------|
| Rated Voltage | DC 50 V | DC 25 V | DC 16 V | DC 10 V | DC 6.3 V |

## ■ Nominal Capacitance

| Ex                  | 0R5    | 010  | 100   | 104                 |
|---------------------|--------|------|-------|---------------------|
| Nominal Capacitance | 0.5 pF | 1 pF | 10 pF | 100,000 pF (0.1 μF) |

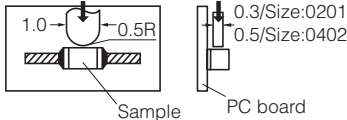
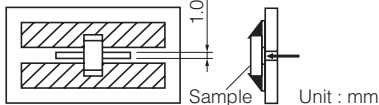
## ■ Capacitance Tolerance

| Class | Temperature Characteristics |                   |          | Tol. Code | Capacitance Tolerance |
|-------|-----------------------------|-------------------|----------|-----------|-----------------------|
| 1     | CΔ, SL                      | Capacitance range | C ≤ 5 pF | C         | ±0.25 pF              |
|       |                             |                   | C ≤10 pF | D         | ±0.5 pF               |
|       |                             |                   | C =10 pF | F         | ±1 pF                 |
|       |                             |                   | C >10 pF | J         | ±5 %                  |
|       |                             |                   |          | K         | ±10 %                 |
| 2     | B, X7R, X5R                 |                   |          | K         | ±10 %                 |
|       |                             |                   |          | M         | ±20 %                 |
|       | F, Y5V                      |                   |          | Z         | +80, −20 %            |

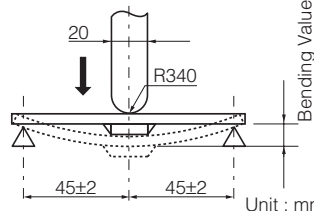
Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.  
Should a safety concern arise regarding this product, please be sure to contact us immediately.

00 Apr. 2008

### ■ Specifications and Testing Methods

| Item                                   | Specification                                                                                                                     |                                                                                                                                            | Test Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------|-------------|---------------------|--------------|--------------|-------------------|---------------|---------------|---------------------|----------|---------------------|--------------|-------------------|----------------|-------------------|-------|-------|-------|-------|---|-------|--------|-------|-------|---|-------|-------|-------|-------|
|                                        | Class 1                                                                                                                           | Class 2                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Operating Temperature Range            | Temp. Char. CΔ<br>: -55 to 125 °C<br>: -25 to 85 °C<br>Temp. Char. SL<br>: -55 to 125 °C                                          | Temp. Char. B, X7R<br>: -55 to 125 °C<br>Temp. Char. B, X5R<br>: -55 to 85 °C<br>Temp. Char. F, Y5V<br>: -30 to 85 °C                      | _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Dielectric Withstanding Voltage        | No dielectric breakdown and /or damage                                                                                            |                                                                                                                                            | Test voltage:<br>Class 1:Rated voltage ×300 %<br>Class 2:Rated voltage ×250 %<br>Duration:1 to 5 s<br>Charge/discharge current : 50 mA max.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Insulation Resistance (I R)            | 10000 MΩ or 500/C (MΩ) whichever is less.<br>Note:100/C(MΩ)min. for DC 10 V max.<br>C:Nominal Cap. in μF                          |                                                                                                                                            | Measuring voltage:Rated voltage<br>Duration: 60±5 s<br>Charge/discharge current : 50 mA max.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Capacitance                            | Within the specified tolerance.                                                                                                   |                                                                                                                                            | Measuring temperature: 20±2 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Q Factor or Dissipation Factor (tan δ) | Q:<br>C<30 pF: Q≥400+20C<br>30 pF≤C≤1000 pF:Q≥1000<br><br>tan δ:<br>C>1000 pF: tan δ≤0.002<br><br>(C:Nominal Cap. in pF)          | tan δ:<br>Temp. Char. B, X7R, X5R:<br>0.15 max.<br>Temp. Char. F, Y5V:<br>0.2 max.<br>Please see the technical specifications for details. | Class 1: <table><tr><td>Nominal capacitance</td><td>C ≤ 1000 pF</td><td>C &gt; 1000 pF</td></tr><tr><td>Measuring frequency</td><td>1 MHz ± 10 %</td><td>1 kHz ± 10 %</td></tr><tr><td>Measuring voltage</td><td>0.5 to 5 Vrms</td><td>0.5 to 5 Vrms</td></tr></table><br>Class 2:<br>Preconditioning: The capacitors shall be kept in temperature of 150 +0/-10 °C for 1 hour and subjected to standard condition* 48±4 hours before initial measurement. <table><tr><td>Nominal capacitance</td><td>C &lt; 1 μF</td></tr><tr><td>Measuring frequency</td><td>1 kHz ± 10 %</td></tr><tr><td>Measuring voltage</td><td>1.0 ± 0.2 Vrms</td></tr></table> | Nominal capacitance | C ≤ 1000 pF    | C > 1000 pF | Measuring frequency | 1 MHz ± 10 % | 1 kHz ± 10 % | Measuring voltage | 0.5 to 5 Vrms | 0.5 to 5 Vrms | Nominal capacitance | C < 1 μF | Measuring frequency | 1 kHz ± 10 % | Measuring voltage | 1.0 ± 0.2 Vrms |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Nominal capacitance                    | C ≤ 1000 pF                                                                                                                       | C > 1000 pF                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Measuring frequency                    | 1 MHz ± 10 %                                                                                                                      | 1 kHz ± 10 %                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Measuring voltage                      | 0.5 to 5 Vrms                                                                                                                     | 0.5 to 5 Vrms                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Nominal capacitance                    | C < 1 μF                                                                                                                          |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Measuring frequency                    | 1 kHz ± 10 %                                                                                                                      |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Measuring voltage                      | 1.0 ± 0.2 Vrms                                                                                                                    |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Temperature Characteristics            | Temp. Char.<br>CG : 0± 30 ppm/ °C<br>CH : 0± 60 ppm/ °C<br>CJ : 0±120 ppm/ °C<br>CK : 0±250 ppm/ °C<br>SL : +350 to -1000 ppm/ °C | Temp. Char.<br>B : ±10 %<br>X7R : ±15 %<br>X5R : ±15 %<br>F : +30, -80 %<br>Y5V : +22, -82 %                                               | Maximum capacitance change at stage 1 to 5 <table><tr><td>Temp. Char.</td><td>CΔ, SL<br/>B, F</td><td>X7R</td><td>X5R</td><td>Y5V</td></tr><tr><td>1</td><td>20 °C</td><td>25 °C</td><td>25 °C</td><td>25 °C</td></tr><tr><td>2</td><td>-25 °C</td><td>-55 °C</td><td>-55 °C</td><td>-30 °C</td></tr><tr><td>3<br/>(Ref. Temp.)</td><td>20 °C</td><td>25 °C</td><td>25 °C</td><td>25 °C</td></tr><tr><td>4</td><td>85 °C</td><td>125 °C</td><td>85 °C</td><td>85 °C</td></tr><tr><td>5</td><td>20 °C</td><td>25 °C</td><td>25 °C</td><td>25 °C</td></tr></table><br>See the technical specifications for details such as measuring voltage.             | Temp. Char.         | CΔ, SL<br>B, F | X7R         | X5R                 | Y5V          | 1            | 20 °C             | 25 °C         | 25 °C         | 25 °C               | 2        | -25 °C              | -55 °C       | -55 °C            | -30 °C         | 3<br>(Ref. Temp.) | 20 °C | 25 °C | 25 °C | 25 °C | 4 | 85 °C | 125 °C | 85 °C | 85 °C | 5 | 20 °C | 25 °C | 25 °C | 25 °C |
| Temp. Char.                            | CΔ, SL<br>B, F                                                                                                                    | X7R                                                                                                                                        | X5R                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Y5V                 |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| 1                                      | 20 °C                                                                                                                             | 25 °C                                                                                                                                      | 25 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 25 °C               |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| 2                                      | -25 °C                                                                                                                            | -55 °C                                                                                                                                     | -55 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -30 °C              |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| 3<br>(Ref. Temp.)                      | 20 °C                                                                                                                             | 25 °C                                                                                                                                      | 25 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 25 °C               |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| 4                                      | 85 °C                                                                                                                             | 125 °C                                                                                                                                     | 85 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 85 °C               |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| 5                                      | 20 °C                                                                                                                             | 25 °C                                                                                                                                      | 25 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 25 °C               |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |
| Adhesion                               | Terminal electrodes shall be free from peeling or signs of peeling.                                                               |                                                                                                                                            | Applied force:<br>Size: 0201: 2 N<br>Size: 0402 to 0805: 5N<br>Duration: 10 s<br>Size: 0201 to 0402<br><br>Size: 0603 to 0805<br>                                                                                                                                                                                                                                                                                                                                             |                     |                |             |                     |              |              |                   |               |               |                     |          |                     |              |                   |                |                   |       |       |       |       |   |       |        |       |       |   |       |       |       |       |

\*Standard conditions : Temperature 15 to 35 °C, Relative humidity 45 to 75 %

| Item                         | Specification                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                           | Test Method                                                                                                                                                                                                                                                                                                                                                                                                                              |       |            |                |   |           |              |   |            |              |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------|----------------|---|-----------|--------------|---|------------|--------------|
|                              | Class 1                                                                                                                                                                                                                                                                                                                                            | Class 2                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |            |                |   |           |              |   |            |              |
| Bending Strength             | Appearance:<br>No mechanical damage<br>Capacitance change:<br>Within ±5 % or ±0.5 pF<br>whichever is larger.                                                                                                                                                                                                                                       | Appearance:<br>No mechanical damage<br>Capacitance change:<br>Temp. Char.<br>B, X7R, X5R : within ±12.5 %<br>F ,Y5V : within ±30 %                                                                                                                                                                                                                                                        | Bending value:1 mm<br>Bending speed:1 mm/<br>                                                                                                                                                                                                                                                                                                         |       |            |                |   |           |              |   |            |              |
| Vibration Proof              | Appearance: No mechanical damage.<br>Capacitance: within the specified tolerance<br>Q, tan δ: Initial standard value                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                           | Total amplitude : 1.5 mm<br>Vibration frequency : 10 to 55 to 10 Hz<br>for 1 min.<br>3 perpendicular directions for 2 hours<br>each, a total of 6 hours                                                                                                                                                                                                                                                                                  |       |            |                |   |           |              |   |            |              |
| Resistance to Soldering Heat | Appearance:<br>No mechanical damage<br>Capacitance change:<br>Within ±2.5 % or ±0.25 pF<br>whichever is larger.<br>Q.tan δ:Initial standard value<br>IR:Initial standard value<br>Withstand voltage:<br>No dielectric breakdown<br>and/or damage                                                                                                   | Appearance:<br>No mechanical damage<br>Capacitance change:<br>Temp. Char.<br>B, X7R, X5R : within ±7.5 %<br>F, Y5V : within ±20 %<br>tan δ:Initial standard value<br>IR:Initial standard value<br>Withstand voltage:<br>No dielectric breakdown<br>and/or damage                                                                                                                          | Soldering bath method<br>Preconditioning:Heat treatment/Class 2 <sup>(*)</sup><br>Solder temperature:270±5 °C<br>Dipping period:3.0±0.5 s<br>Preheat condition: <table><tr><th>Order</th><th>Temp. (°C)</th><th>Size 0805 max.</th></tr><tr><td>1</td><td>80 to 100</td><td>120 to 180 s</td></tr><tr><td>2</td><td>150 to 200</td><td>120 to 180 s</td></tr></table> Recovery (Standard condition):<br>Class 1:24±2 h<br>Class 2:48±4 h | Order | Temp. (°C) | Size 0805 max. | 1 | 80 to 100 | 120 to 180 s | 2 | 150 to 200 | 120 to 180 s |
| Order                        | Temp. (°C)                                                                                                                                                                                                                                                                                                                                         | Size 0805 max.                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |            |                |   |           |              |   |            |              |
| 1                            | 80 to 100                                                                                                                                                                                                                                                                                                                                          | 120 to 180 s                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |            |                |   |           |              |   |            |              |
| 2                            | 150 to 200                                                                                                                                                                                                                                                                                                                                         | 120 to 180 s                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |            |                |   |           |              |   |            |              |
| Solderability                | More than 95 % of the soldered area of both terminal electrodes should be covered with fresh solder.                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                           | Soldering bath method<br>Solder temperature:230±5 °C<br>Dipping period:4±1 s<br>Solder:H63A (JIS Z 3282)                                                                                                                                                                                                                                                                                                                                 |       |            |                |   |           |              |   |            |              |
| Temperature Cycle            | Appearance:<br>No mechanical damage<br>Capacitance change:<br>Within ±2.5 % or ±0.25 pF<br>whichever is larger.<br>Q.tan δ:Initial standard value<br>IR:Initial standard value<br>Withstand voltage:<br>No dielectric breakdown<br>and/or damage                                                                                                   | Appearance:<br>No mechanical damage<br>Capacitance change:<br>Temp. Char.<br>B, X7R, X5R : within ±7.5 %<br>F, Y5V : within ±20 %<br>tan δ:Initial standard value<br>IR:Initial standard value<br>Withstand voltage:<br>No dielectric breakdown<br>and/or damage                                                                                                                          | Preconditioning:Heat treatment<br>(150 °C, 1h) /Class 2<br>Condition of one cycle<br>Step 1:Minimum operationing temp. 30±3 min<br>Step 2:Room temp. 3 min max.<br>Step 3:Maximum operationing temp. 30±3 min<br>Step 4:Room temp. 3 min max.<br>Number of cycles:5 cycles<br>Recovery (Standard condition)<br>Class 1:24±2 h<br>Class 2:48±4 h                                                                                          |       |            |                |   |           |              |   |            |              |
| Damp Heat (Steady state)     | Appearance:<br>No mechanical damage<br>Capacitance change:<br>Within ±5 % or ±0.5 pF<br>whichever is larger.<br>Q:<br>C<10 pF:Q≥200+10C<br>10 pF≤C<30 pF:Q≥275+5C/2<br>30 pF≤C≤1000 pF:Q≥350<br>tan δ:<br>C>1000 pF:tan δ≤0.004<br>C:Nominal capacitance in pF<br>IR:<br>1000 MΩ or 50/C (MΩ)<br>Whichever is less.<br>C:Nominal capacitance in μF | Appearance:<br>No mechanical damage<br>Capacitance change:<br>Temp. Char.<br>B, X7R, X5R: Within ±20 %<br>F, Y5V: Within ±30 %<br>tan δ:<br>Temp. Char.<br>B, X7R, X5R: 0.25 max.<br>F, Y5V: 0.3 max.<br>IR:<br>1000 MΩ or 50/C (MΩ)<br>Whichever is less.<br>Note:10/C (MΩ) min. for DC 10 V max.<br>C:Nominal capacitance in μF<br>Please see the technical specifications for details. | Preconditioning:Heat treatment/Class 2 <sup>(*)</sup><br>Temperature:40±2 °C<br>Relative humidity:90 to 95 %<br>Test period:500+24/0 h<br>Recovery (Standard condition)<br>Class 1:24±2 h<br>Class 2:48±4 h                                                                                                                                                                                                                              |       |            |                |   |           |              |   |            |              |

(\*) Heat treatment: 1 h of heat treatment at 150  $\pm$ 10 °C followed by 48 $\pm$ 4 h recovery under standard conditions.

| Item                  | Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Test Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | Class 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Class 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Damp Heat Load        | <p>Appearance:<br/>No mechanical damage</p> <p>Capacitance change:<br/>Within <math>\pm 7.5</math> % or <math>\pm 0.75</math> pF whichever is larger.</p> <p>Q:<br/>C&lt;30 pF:Q<math>\geq</math>100+10C/3<br/>30 pF<math>\leq</math>C<math>\leq</math>1000 pF:Q<math>\geq</math>200</p> <p>tan <math>\delta</math>:<br/>C&gt;1000 pF:tan <math>\delta \leq 0.004</math><br/>(C:Nominal capacitance in pF)</p> <p>IR:<br/>500 M<math>\Omega</math> or 25/C (M<math>\Omega</math>)<br/>Whichever is less.<br/>(C:Nominal capacitance in <math>\mu</math>F)</p>                                                                                                                                 | <p>Appearance:<br/>No mechanical damage</p> <p>Capacitance change:<br/>Temp. Char.<br/>B, X7R, X5R: Within <math>\pm 20</math> %<br/>F, Y5V: Within <math>\pm 30</math> %</p> <p>tan <math>\delta</math>:<br/>Temp. Char.<br/>B, X7R, X5R: 0.25 max.<br/>F, Y5V: 0.3 max.</p> <p>IR:<br/>500 M<math>\Omega</math> or 25/C (M<math>\Omega</math>)<br/>Whichever is less.<br/>Note:5/C (M<math>\Omega</math>) min. for DC 10 V max.<br/>C:Nominal capacitance in <math>\mu</math>F<br/>Please see the technical specifications for details.</p>   | <p>Preconditioning:Voltage treatment/Class 2<sup>(*)</sup></p> <p>Temperature:40<math>\pm</math>2 °C</p> <p>Relative humidity:90 to 95 %</p> <p>Applied voltage:Rated voltage</p> <p>Charge/discharge current: 50 mA max.</p> <p>Test period:500+24/0 h</p> <p>Recovery (Standard condition)<br/>Class 1:24<math>\pm</math>2 h<br/>Class 2:48<math>\pm</math>4 h</p>                                                                                                                                         |
| High Temperature Load | <p>Appearance:<br/>No mechanical damage</p> <p>Capacitance change:<br/>Within <math>\pm 3</math> % or <math>\pm 0.3</math> pF whichever is larger.</p> <p>Q:<br/>C&lt;10 pF:Q<math>\geq</math>200+10C<br/>10 pF<math>\leq</math>C<math>\leq</math>30 pF:Q<math>\geq</math>275+5C/2<br/>30 pF<math>\leq</math>C<math>\leq</math>1000 pF:Q<math>\geq</math>350</p> <p>tan <math>\delta</math>:<br/>C&gt;1000 pF:tan <math>\delta \leq 0.004</math><br/>C:Nominal capacitance in pF</p> <p>IR:<br/>1000 M<math>\Omega</math> or 50/C (M<math>\Omega</math>)<br/>Whichever is less.<br/>Note:10/C (M<math>\Omega</math>) min. for DC 10 V max.<br/>C:Nominal capacitance in <math>\mu</math>F</p> | <p>Appearance:<br/>No mechanical damage</p> <p>Capacitance change:<br/>Temp. Char.<br/>B, X7R, X5R: Within <math>\pm 20</math> %<br/>F, Y5V: Within <math>\pm 30</math> %</p> <p>tan <math>\delta</math>:<br/>Temp. Char.<br/>B, X7R, X5R: 0.25 max.<br/>F, Y5V: 0.3 max.</p> <p>IR:<br/>1000 M<math>\Omega</math> or 50/C (M<math>\Omega</math>)<br/>Whichever is less.<br/>Note:10/C (M<math>\Omega</math>) min. for DC 10 V max.<br/>C:Nominal capacitance in <math>\mu</math>F<br/>Please see the technical specifications for details.</p> | <p>Preconditioning:Voltage treatment/Class 2<sup>(*)</sup></p> <p>Temperature:<br/>Maximum operating temp. <math>\pm 3</math> °C</p> <p>Applied voltage:<br/>(1) Rated voltage <math>\times 200</math> %<br/>(2) Rated voltage <math>\times 100</math> %</p> <p>Please see the technical specifications for details.</p> <p>Charge/discharge current: 50 mA max.</p> <p>Test period:1000+48/0 h</p> <p>Recovery (Standard condition)<br/>Class 1:24<math>\pm</math>2 h<br/>Class 2:48<math>\pm</math>4 h</p> |

(\*) Heat treatment:1 h of heat treatment at 150+0/-10 °C followed by 48 $\pm$ 4 h recovery under standard conditions

(\*) Voltage treatment:1 h of voltage treatment under the specified temperature and voltage for testing followed by 48 $\pm$ 4 h of recovery under standard conditions

# ■ Standard Products for EIA “0201”, Taped Version

## ● Class 1

◆ Temperature Characteristic Code : C (Temperature Characteristics : CΔ)

| Rated voltage    |                                   | DC 25 V      |             |             |    |    |    | DC 16 V      |             |             |    |    |    |
|------------------|-----------------------------------|--------------|-------------|-------------|----|----|----|--------------|-------------|-------------|----|----|----|
| Capacitance (pF) | Capacitance Tolerance             | Part No.     | Dim. T (mm) | Temp. Char. |    |    |    | Part No.     | Dim. T (mm) | Temp. Char. |    |    |    |
|                  |                                   |              |             | CK          | CJ | CH | CG |              |             | CK          | CJ | CH | CG |
| 0.5              | ±0.25 pF (C)                      | ECJZEC1E0R5C | 0.3         | ○           | —  | —  | —  |              |             |             |    |    |    |
| 1                | ±0.25 pF (C)<br>or<br>±0.5 pF (D) | ECJZEC1E010□ | 0.3         | ○           | —  | —  | —  |              |             |             |    |    |    |
| 1.5              |                                   | ECJZEC1E1R5□ | 0.3         | ○           | —  | —  | —  |              |             |             |    |    |    |
| 2                |                                   | ECJZEC1E020□ | 0.3         | ○           | —  | —  | —  |              |             |             |    |    |    |
| 3                |                                   | ECJZEC1E030□ | 0.3         | —           | ○  | —  | —  |              |             |             |    |    |    |
| 4                |                                   | ECJZEC1E040□ | 0.3         | —           | —  | ○  | —  |              |             |             |    |    |    |
| 5                | ±0.5 pF (D)                       | ECJZEC1E050□ | 0.3         | —           | —  | ○  | —  |              |             |             |    |    |    |
| 6                |                                   | ECJZEC1E060D | 0.3         | —           | —  | ○  | —  |              |             |             |    |    |    |
| 7                |                                   | ECJZEC1E070D | 0.3         | —           | —  | ○  | —  |              |             |             |    |    |    |
| 8                |                                   | ECJZEC1E080D | 0.3         | —           | —  | ○  | —  |              |             |             |    |    |    |
| 9                |                                   | ECJZEC1E090D | 0.3         | —           | —  | ○  | —  |              |             |             |    |    |    |
| 10               | ±0.5 pF (D)<br>or ±1 pF (F)       | ECJZEC1E100□ | 0.3         | —           | —  | ○  | ○  |              |             |             |    |    |    |
| 12               | ±5 % (J)<br>or<br>±10 % (K)       | ECJZEC1E120□ | 0.3         | —           | —  | ○  | ○  |              |             |             |    |    |    |
| 15               |                                   | ECJZEC1E150□ | 0.3         | —           | —  | ○  | ○  |              |             |             |    |    |    |
| 18               |                                   | ECJZEC1E180□ | 0.3         | —           | —  | ○  | ○  |              |             |             |    |    |    |
| 22               |                                   | ECJZEC1E220□ | 0.3         | —           | —  | ○  | ○  |              |             |             |    |    |    |
| 27               |                                   | ECJZEC1E270□ | 0.3         | —           | —  | ○  | ○  |              |             |             |    |    |    |
| 33               |                                   | ECJZEC1E330□ | 0.3         | —           | —  | ○  | ○  |              |             |             |    |    |    |
| 39               |                                   |              |             |             |    |    |    | ECJZEC1C390□ | 0.3         | —           | —  | ○  | ○  |
| 47               |                                   |              |             |             |    |    |    | ECJZEC1C470□ | 0.3         | —           | —  | ○  | ○  |
| 56               |                                   |              |             |             |    |    |    | ECJZEC1C560□ | 0.3         | —           | —  | ○  | ○  |
| 68               |                                   |              |             |             |    |    |    | ECJZEC1C680□ | 0.3         | —           | —  | ○  | ○  |
| 82               |                                   |              |             |             |    |    |    | ECJZEC1C820□ | 0.3         | —           | —  | ○  | ○  |
| 100              |                                   |              |             |             |    |    |    | ECJZEC1C101□ | 0.3         | —           | —  | ○  | ○  |

□: Capacitance tolerance code.

Standard packaging quantity of Packaging Style Code “E” (T = 0.3 mm): 15,000 pcs./reel

Recommend soldering method: Reflow soldering.

## ● Class 2 Capacitors

◆ Temperature Characteristic Code : B (Temperature Characteristics : B, X7R, X5R)

| Rated voltage    |                              | DC 50 V      |             |             |     |     |              | DC 25 V     |             |     |     |              |             | DC 16 V     |     |     |              |             |             | DC 10 V |     |              |             |             |     | DC 6.3 V |  |  |  |  |  |
|------------------|------------------------------|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|---------|-----|--------------|-------------|-------------|-----|----------|--|--|--|--|--|
| Capacitance (pF) | Capacitance Tolerance        | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |         |     | Part No.     | Dim. T (mm) | Temp. Char. |     |          |  |  |  |  |  |
|                  |                              |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |              |             | B           | X7R     | X5R |              |             | B           | X7R | X5R      |  |  |  |  |  |
| 150              | ±10 % (K)<br>or<br>±20 % (M) | ECJZEB1H151□ | 0.3         | ○           | ○   | —   | ECJZEB1E151□ | 0.3         | ○           | ○   | —   |              |             |             |     |     |              |             |             |         |     |              |             |             |     |          |  |  |  |  |  |
| 220              |                              | ECJZEB1H221□ | 0.3         | ○           | ○   | —   | ECJZEB1E221□ | 0.3         | ○           | ○   | —   |              |             |             |     |     |              |             |             |         |     |              |             |             |     |          |  |  |  |  |  |
| 330              |                              | ECJZEB1H331□ | 0.3         | ○           | ○   | —   | ECJZEB1E331□ | 0.3         | ○           | ○   | —   |              |             |             |     |     |              |             |             |         |     |              |             |             |     |          |  |  |  |  |  |
| 470              |                              | ECJZEB1H471□ | 0.3         | ○           | ○   | —   | ECJZEB1E471□ | 0.3         | ○           | ○   | —   |              |             |             |     |     |              |             |             |         |     |              |             |             |     |          |  |  |  |  |  |
| 680              |                              | ECJZEB1H681□ | 0.3         | ○           | ○   | —   | ECJZEB1E681□ | 0.3         | ○           | ○   | —   |              |             |             |     |     |              |             |             |         |     |              |             |             |     |          |  |  |  |  |  |
| 1000             |                              | ECJZEB1H102□ | 0.3         | ○           | ○   | —   | ECJZEB1E102□ | 0.3         | ○           | ○   | —   |              |             |             |     |     |              |             |             |         |     |              |             |             |     |          |  |  |  |  |  |
| 1500             |                              |              |             |             |     |     | ECJZEB1E152□ | 0.3         | ○           | ○   | —   | ECJZEB1C152□ | 0.3         | ○           | ○   | —   |              |             |             |         |     |              |             |             |     |          |  |  |  |  |  |
| 2200             |                              |              |             |             |     |     | ECJZEB1E222□ | 0.3         | ○           | ○   | —   | ECJZEB1C222□ | 0.3         | ○           | ○   | —   |              |             |             |         |     |              |             |             |     |          |  |  |  |  |  |
| 3300             |                              |              |             |             |     |     |              |             |             |     |     | ECJZEB1C332□ | 0.3         | ○           | —   | ○   | ECJZEB1A332□ | 0.3         | ○           | —       | ○   |              |             |             |     |          |  |  |  |  |  |
| 4700             |                              |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     | ECJZEB1A472□ | 0.3         | —           | —       | ○   | ECJZEB0J472□ | 0.3         | —           | —   | ○        |  |  |  |  |  |
| 6800             |                              |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     | ECJZEB1A682□ | 0.3         | —           | —       | ○   | ECJZEB0J682□ | 0.3         | —           | —   | ○        |  |  |  |  |  |
| 10000            |                              |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     | ECJZEB1A103□ | 0.3         | —           | —       | ○   | ECJZEB0J103□ | 0.3         | —           | —   | ○        |  |  |  |  |  |
| 15000            |                              |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     | ECJZEB1A153□ | 0.3         | —           | —       | ○   | ECJZEB0J153□ | 0.3         | —           | —   | ○        |  |  |  |  |  |
| 22000            |                              |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     | ECJZEB1A223□ | 0.3         | —           | —       | ○   | ECJZEB0J223□ | 0.3         | —           | —   | ○        |  |  |  |  |  |
| 33000            |                              |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     | ECJZEB1A333□ | 0.3         | —           | —       | ○   | ECJZEB0J333□ | 0.3         | —           | —   | ○        |  |  |  |  |  |
| 47000            |                              |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     | ECJZEB1A473□ | 0.3         | —           | —       | ○   | ECJZEB0J473□ | 0.3         | —           | —   | ○        |  |  |  |  |  |
| 68000            |                              |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     | ECJZEB1A683□ | 0.3         | —           | —       | ○   | ECJZEB0J683□ | 0.3         | —           | —   | ○        |  |  |  |  |  |
| 100000           |                              |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     | ECJZEB1A104□ | 0.3         | —           | —       | ○   | ECJZEB0J104□ | 0.3         | —           | —   | ○        |  |  |  |  |  |
| 220000           |                              |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |         |     | ECJZEB0J224M | 0.3         | —           | —   | ○        |  |  |  |  |  |

□: Capacitance tolerance code : “□” for “K” or “M”

Standard packaging quantity of Packaging Style Code “E” (T = 0.3 mm): 15,000 pcs./reel

Recommend soldering method: Reflow soldering.

### ■ Standard Products for EIA “0402”, Taped Version

#### ● Class 1

◆ Temperature Characteristic Code : C (Temp. Char. :  $\Delta$ )

| Rated voltage    |                                       | DC 50 V      |             |             |    |    |    |
|------------------|---------------------------------------|--------------|-------------|-------------|----|----|----|
| Capacitance (pF) | Capacitance Tolerance                 | Part No.     | Dim. T (mm) | Temp. Char. |    |    |    |
|                  |                                       |              |             | CK          | CJ | CH | CG |
| 0.5              | $\pm 0.25$ pF (C)                     | ECJ0EC1H0R5C | 0.5         | ○           | —  | —  | —  |
| 1                | $\pm 0.25$ pF (C)                     | ECJ0EC1H010□ | 0.5         | ○           | —  | —  | —  |
| 1.5              |                                       | ECJ0EC1H1R5□ | 0.5         | ○           | —  | —  | —  |
| 2                |                                       | ECJ0EC1H020□ | 0.5         | ○           | —  | —  | —  |
| 3                | $\pm 0.5$ pF (D)                      | ECJ0EC1H030□ | 0.5         | —           | ○  | —  | —  |
| 4                |                                       | ECJ0EC1H040□ | 0.5         | —           | —  | ○  | —  |
| 5                |                                       | ECJ0EC1H050□ | 0.5         | —           | —  | ○  | —  |
| 6                | $\pm 0.5$ pF(D)                       | ECJ0EC1H060D | 0.5         | —           | —  | ○  | —  |
| 7                |                                       | ECJ0EC1H070D | 0.5         | —           | —  | ○  | —  |
| 8                |                                       | ECJ0EC1H080D | 0.5         | —           | —  | ○  | —  |
| 9                |                                       | ECJ0EC1H090D | 0.5         | —           | —  | ○  | —  |
| 10               | $\pm 0.5$ pF (D)<br>or $\pm 1$ pF (F) | ECJ0EC1H100□ | 0.5         | —           | —  | ○  | ○  |
| 12               | $\pm 5$ % (J)<br>or<br>$\pm 10$ % (K) | ECJ0EC1H120□ | 0.5         | —           | —  | ○  | ○  |
| 15               |                                       | ECJ0EC1H150□ | 0.5         | —           | —  | ○  | ○  |
| 18               |                                       | ECJ0EC1H180□ | 0.5         | —           | —  | ○  | ○  |
| 22               |                                       | ECJ0EC1H220□ | 0.5         | —           | —  | ○  | ○  |
| 27               |                                       | ECJ0EC1H270□ | 0.5         | —           | —  | ○  | ○  |
| 33               |                                       | ECJ0EC1H330□ | 0.5         | —           | —  | ○  | ○  |
| 39               |                                       | ECJ0EC1H390□ | 0.5         | —           | —  | ○  | ○  |
| 47               |                                       | ECJ0EC1H470□ | 0.5         | —           | —  | ○  | ○  |
| 56               |                                       | ECJ0EC1H560□ | 0.5         | —           | —  | ○  | ○  |
| 68               |                                       | ECJ0EC1H680□ | 0.5         | —           | —  | ○  | ○  |
| 82               |                                       | ECJ0EC1H820□ | 0.5         | —           | —  | ○  | ○  |
| 100              |                                       | ECJ0EC1H101□ | 0.5         | —           | —  | ○  | ○  |
| 120              |                                       | ECJ0EC1H121□ | 0.5         | —           | —  | ○  | ○  |
| 150              |                                       | ECJ0EC1H151□ | 0.5         | —           | —  | ○  | ○  |
| 180              |                                       | ECJ0EC1H181□ | 0.5         | —           | —  | ○  | ○  |
| 220              |                                       | ECJ0EC1H221□ | 0.5         | —           | —  | ○  | ○  |

□: Capacitance tolerance code.

Standard packaging quantity of Packaging Style Code “E” (T = 0.5 mm): 10,000 pcs./reel.

Recommend soldering method: Reflow soldering.

◆ Temperature Characteristic Code : G (Temp. Char. : SL)

| Rated voltage    |                                       | DC 50 V      |             |             |  |
|------------------|---------------------------------------|--------------|-------------|-------------|--|
| Capacitance (pF) | Capacitance Tolerance                 | Part No.     | Dim. T (mm) | Temp. Char. |  |
|                  |                                       |              |             | SL          |  |
| 0.5              | $\pm 0.25$ pF (C)                     | ECJ0EG1H0R5C | 0.5         | ○           |  |
| 1                | $\pm 0.25$ pF (C)                     | ECJ0EG1H010□ | 0.5         | ○           |  |
| 1.5              |                                       | ECJ0EG1H1R5□ | 0.5         | ○           |  |
| 2                |                                       | ECJ0EG1H020□ | 0.5         | ○           |  |
| 3                | $\pm 0.5$ pF (D)                      | ECJ0EG1H030□ | 0.5         | ○           |  |
| 4                |                                       | ECJ0EG1H040□ | 0.5         | ○           |  |
| 5                |                                       | ECJ0EG1H050□ | 0.5         | ○           |  |
| 6                | $\pm 0.5$ pF(D)                       | ECJ0EG1H060D | 0.5         | ○           |  |
| 7                |                                       | ECJ0EG1H070D | 0.5         | ○           |  |
| 8                |                                       | ECJ0EG1H080D | 0.5         | ○           |  |
| 9                |                                       | ECJ0EG1H090D | 0.5         | ○           |  |
| 10               | $\pm 0.5$ pF (D)<br>or $\pm 1$ pF (F) | ECJ0EG1H100□ | 0.5         | ○           |  |
| 12               | $\pm 5$ % (J)<br>or<br>$\pm 10$ % (K) | ECJ0EG1H120□ | 0.5         | ○           |  |
| 15               |                                       | ECJ0EG1H150□ | 0.5         | ○           |  |
| 18               |                                       | ECJ0EG1H180□ | 0.5         | ○           |  |
| 22               |                                       | ECJ0EG1H220□ | 0.5         | ○           |  |
| 27               |                                       | ECJ0EG1H270□ | 0.5         | ○           |  |
| 33               |                                       | ECJ0EG1H330□ | 0.5         | ○           |  |
| 39               |                                       | ECJ0EG1H390□ | 0.5         | ○           |  |
| 47               |                                       | ECJ0EG1H470□ | 0.5         | ○           |  |
| 56               |                                       | ECJ0EG1H560□ | 0.5         | ○           |  |
| 68               |                                       | ECJ0EG1H680□ | 0.5         | ○           |  |
| 82               |                                       | ECJ0EG1H820□ | 0.5         | ○           |  |
| 100              |                                       | ECJ0EG1H101□ | 0.5         | ○           |  |
| 120              |                                       | ECJ0EG1H121□ | 0.5         | ○           |  |
| 150              |                                       | ECJ0EG1H151□ | 0.5         | ○           |  |
| 180              |                                       | ECJ0EG1H181□ | 0.5         | ○           |  |
| 220              |                                       | ECJ0EG1H221□ | 0.5         | ○           |  |

■ Standard Products for EIA “0402”, Taped Version

● Class 2

◆ Temperature Characteristic Code : B (Temperature Characteristics : B, X7R, X5R)

| Rated voltage    |                       | DC 50 V      |             |             |     |     | DC 25 V      |             |             |     |     | DC 16 V      |             |             |     |     | DC 10 V      |             |             |     |     | DC 6.3 V     |             |             |     |     |
|------------------|-----------------------|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|
| Capacitance (pF) | Capacitance Tolerance | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     |
|                  |                       |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |
| 100              |                       | ECJ0EB1H101□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 120              |                       | ECJ0EB1H121K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 150              |                       | ECJ0EB1H151□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 180              |                       | ECJ0EB1H181K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 220              |                       | ECJ0EB1H221□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 270              |                       | ECJ0EB1H271K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 330              |                       | ECJ0EB1H331□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 390              |                       | ECJ0EB1H391K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 470              |                       | ECJ0EB1H471□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 560              |                       | ECJ0EB1H561K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 680              |                       | ECJ0EB1H681□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 820              |                       | ECJ0EB1H821K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 1000             |                       | ECJ0EB1H102□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 1200             |                       | ECJ0EB1H122K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 1500             |                       | ECJ0EB1H152□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 1800             |                       | ECJ0EB1H182K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 2200             |                       | ECJ0EB1H222□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 2700             |                       | ECJ0EB1H272K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 3300             | ±10 % (K)             | ECJ0EB1H332□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 3900             | or                    | ECJ0EB1H392K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 4700             | ±20 % (M)             | ECJ0EB1H472□ | 0.5         | ○           | ○   | —   | ECJ0EB1E472□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 5600             |                       | ECJ0EB1H562K | 0.5         | ○           | ○   | —   | ECJ0EB1E562K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 6800             |                       | ECJ0EB1H682□ | 0.5         | ○           | ○   | —   | ECJ0EB1E682□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 8200             |                       | ECJ0EB1H822K | 0.5         | ○           | ○   | —   | ECJ0EB1E822K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 10000            |                       | ECJ0EB1H103□ | 0.5         | ○           | ○   | —   | ECJ0EB1E103□ | 0.5         | ○           | ○   | —   | ECJ0EB1C103□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 12000            |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C123K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 15000            |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C153□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 18000            |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C183K | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 22000            |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C223□ | 0.5         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 27000            |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C273K | 0.5         | —           | —   | ○   | ECJ0EB1A273K | 0.5         | ○           | —   | ○   |              |             |             |     |     |
| 33000            |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C333□ | 0.5         | —           | —   | ○   | ECJ0EB1A333□ | 0.5         | ○           | —   | ○   |              |             |             |     |     |
| 39000            |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C393K | 0.5         | —           | —   | ○   | ECJ0EB1A393K | 0.5         | ○           | —   | ○   |              |             |             |     |     |
| 47000            |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C473□ | 0.5         | —           | —   | ○   | ECJ0EB1A473□ | 0.5         | ○           | —   | ○   |              |             |             |     |     |
| 56000            |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C563K | 0.5         | —           | —   | ○   | ECJ0EB1A563K | 0.5         | ○           | —   | ○   |              |             |             |     |     |
| 68000            |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C683□ | 0.5         | —           | —   | ○   | ECJ0EB1A683□ | 0.5         | ○           | —   | ○   |              |             |             |     |     |
| 82000            |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C823K | 0.5         | —           | —   | ○   | ECJ0EB1A823K | 0.5         | ○           | —   | ○   |              |             |             |     |     |
| 100000           |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C104□ | 0.5         | —           | —   | ○   | ECJ0EB1A104□ | 0.5         | ○           | —   | ○   |              |             |             |     |     |
| 220000           |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C224□ | 0.5         | —           | —   | ○   | ECJ0EB1A224□ | 0.5         | —           | —   | ○   | ECJ0EB0J224□ | 0.5         | —           | —   | ○   |
| 470000           |                       |              |             |             |     |     |              |             |             |     |     | ECJ0EB1C474□ | 0.5         | —           | —   | ○   | ECJ0EB1A474□ | 0.5         | —           | —   | ○   | ECJ0EB0J474□ | 0.5         | —           | —   | ○   |

□: Capacitance tolerance code : “□” for “K” or “M”

Standard packaging quantity of Packaging Style Code “E” (T = 0.5 mm): 10,000 pcs./reel.

Recommend soldering method: Reflow soldering.

For capacitance 1 μF or more, see page 6 and 7 for High Capacitance.

◆ Temperature Characteristic Code : F (Temperature Characteristics : F, Y5V)

| Rated voltage    |                       | DC 50 V      |             |             |     |              | DC 25 V     |             |     |              |             | DC 16 V     |     |              |             |             | DC 10 V |  |  |  |  |
|------------------|-----------------------|--------------|-------------|-------------|-----|--------------|-------------|-------------|-----|--------------|-------------|-------------|-----|--------------|-------------|-------------|---------|--|--|--|--|
| Capacitance (pF) | Capacitance Tolerance | Part No.     | Dim. T (mm) | Temp. Char. |     | Part No.     | Dim. T (mm) | Temp. Char. |     | Part No.     | Dim. T (mm) | Temp. Char. |     | Part No.     | Dim. T (mm) | Temp. Char. |         |  |  |  |  |
|                  |                       |              |             | F           | Y5V |              |             | F           | Y5V |              |             | F           | Y5V |              |             | F           | Y5V     |  |  |  |  |
| 1000             | +80, -20% (Z)         | ECJ0EF1H102Z | 0.5         | ○           | ○   | ECJ0EF1E102Z | 0.5         | ○           | ○   |              |             |             |     |              |             |             |         |  |  |  |  |
| 2200             |                       | ECJ0EF1H222Z | 0.5         | ○           | ○   | ECJ0EF1E222Z | 0.5         | ○           | ○   |              |             |             |     |              |             |             |         |  |  |  |  |
| 4700             |                       | ECJ0EF1H472Z | 0.5         | ○           | ○   | ECJ0EF1E472Z | 0.5         | ○           | ○   |              |             |             |     |              |             |             |         |  |  |  |  |
| 10000            |                       | ECJ0EF1H103Z | 0.5         | ○           | ○   | ECJ0EF1E103Z | 0.5         | ○           | ○   |              |             |             |     |              |             |             |         |  |  |  |  |
| 22000            |                       |              |             |             |     | ECJ0EF1E223Z | 0.5         | ○           | ○   | ECJ0EF1C223Z | 0.5         | ○           | ○   |              |             |             |         |  |  |  |  |
| 47000            |                       |              |             |             |     |              |             |             |     | ECJ0EF1C473Z | 0.5         | ○           | ○   |              |             |             |         |  |  |  |  |
| 100000           |                       |              |             |             |     |              |             |             |     | ECJ0EF1C104Z | 0.5         | ○           | ○   |              |             |             |         |  |  |  |  |
| 220000           |                       |              |             |             |     |              |             |             |     |              |             |             |     | ECJ0EF1A224Z | 0.5         | ○           | ○       |  |  |  |  |

Standard packaging quantity of Packaging Style Code “E” (T = 0.5 mm): 10,000 pcs./reel.

Recommend soldering method: Reflow soldering.

For capacitance 1 μF or more, see page 6 and 7 for High Capacitance.



### ■ Standard Products for EIA “0603”, Taped Version

#### ● Class 1

◆ Temperature Characteristic Code : C (Temp. Char. :  $\Delta$ )

| Rated voltage    |                                       | DC 50 V      |             |             |    |    |    |
|------------------|---------------------------------------|--------------|-------------|-------------|----|----|----|
| Capacitance (pF) | Capacitance Tolerance                 | Part No.     | Dim. T (mm) | Temp. Char. |    |    |    |
|                  |                                       |              |             | CK          | CJ | CH | CG |
| 0.5              | $\pm 0.25$ pF (C)                     | ECJ1VC1H0R5C | 0.8         | ○           | —  | —  | —  |
| 1                |                                       | ECJ1VC1H010□ | 0.8         | ○           | —  | —  | —  |
| 1.5              |                                       | ECJ1VC1H1R5□ | 0.8         | ○           | —  | —  | —  |
| 2                | $\pm 0.25$ pF (C)                     | ECJ1VC1H020□ | 0.8         | ○           | —  | —  | —  |
| 3                | or                                    | ECJ1VC1H030□ | 0.8         | —           | ○  | —  | —  |
| 4                | $\pm 0.5$ pF (D)                      | ECJ1VC1H040□ | 0.8         | —           | —  | ○  | —  |
| 5                |                                       | ECJ1VC1H050□ | 0.8         | —           | —  | ○  | —  |
| 6                |                                       | ECJ1VC1H060D | 0.8         | —           | —  | ○  | —  |
| 7                |                                       | ECJ1VC1H070D | 0.8         | —           | —  | ○  | —  |
| 8                | $\pm 0.5$ pF (D)                      | ECJ1VC1H080D | 0.8         | —           | —  | ○  | —  |
| 9                |                                       | ECJ1VC1H090D | 0.8         | —           | —  | ○  | —  |
| 10               | $\pm 0.5$ pF (D)<br>or $\pm 1$ pF (F) | ECJ1VC1H100□ | 0.8         | —           | —  | ○  | ○  |
| 12               |                                       | ECJ1VC1H120□ | 0.8         | —           | —  | ○  | ○  |
| 15               |                                       | ECJ1VC1H150□ | 0.8         | —           | —  | ○  | ○  |
| 18               |                                       | ECJ1VC1H180□ | 0.8         | —           | —  | ○  | ○  |
| 22               |                                       | ECJ1VC1H220□ | 0.8         | —           | —  | ○  | ○  |
| 27               |                                       | ECJ1VC1H270□ | 0.8         | —           | —  | ○  | ○  |
| 33               |                                       | ECJ1VC1H330□ | 0.8         | —           | —  | ○  | ○  |
| 39               |                                       | ECJ1VC1H390□ | 0.8         | —           | —  | ○  | ○  |
| 47               |                                       | ECJ1VC1H470□ | 0.8         | —           | —  | ○  | ○  |
| 56               |                                       | ECJ1VC1H560□ | 0.8         | —           | —  | ○  | ○  |
| 68               |                                       | ECJ1VC1H680□ | 0.8         | —           | —  | ○  | ○  |
| 82               |                                       | ECJ1VC1H820□ | 0.8         | —           | —  | ○  | ○  |
| 100              | $\pm 5$ % (J)<br>or                   | ECJ1VC1H101□ | 0.8         | —           | —  | ○  | ○  |
| 120              | $\pm 10$ % (K)                        | ECJ1VC1H121□ | 0.8         | —           | —  | ○  | ○  |
| 150              |                                       | ECJ1VC1H151□ | 0.8         | —           | —  | ○  | ○  |
| 180              |                                       | ECJ1VC1H181□ | 0.8         | —           | —  | ○  | ○  |
| 220              |                                       | ECJ1VC1H221□ | 0.8         | —           | —  | ○  | ○  |
| 270              |                                       | ECJ1VC1H271□ | 0.8         | —           | —  | ○  | ○  |
| 330              |                                       | ECJ1VC1H331□ | 0.8         | —           | —  | ○  | ○  |
| 390              |                                       | ECJ1VC1H391□ | 0.8         | —           | —  | ○  | ○  |
| 470              |                                       | ECJ1VC1H471□ | 0.8         | —           | —  | ○  | ○  |
| 560              |                                       | ECJ1VC1H561□ | 0.8         | —           | —  | ○  | ○  |
| 680              |                                       | ECJ1VC1H681□ | 0.8         | —           | —  | ○  | ○  |
| 820              |                                       | ECJ1VC1H821□ | 0.8         | —           | —  | ○  | ○  |
| 1000             |                                       | ECJ1VC1H102□ | 0.8         | —           | —  | ○  | ○  |

□: Capacitance tolerance code.

Standard packaging quantity of Packaging Style Code “V” (T = 0.8 mm): 4,000 pcs./reel

Recommend soldering method: Reflow soldering.

◆ Temperature Characteristic Code : G (Temp. Char. : SL)

| Rated voltage    |                                       | DC 50 V      |             |             |    |
|------------------|---------------------------------------|--------------|-------------|-------------|----|
| Capacitance (pF) | Capacitance Tolerance                 | Part No.     | Dim. T (mm) | Temp. Char. |    |
|                  |                                       |              |             |             | SL |
| 0.5              | $\pm 0.25$ pF (C)                     | ECJ1VG1H0R5C | 0.8         | ○           |    |
| 1                |                                       | ECJ1VG1H010□ | 0.8         | ○           |    |
| 1.5              |                                       | ECJ1VG1H1R5□ | 0.8         | ○           |    |
| 2                | $\pm 0.25$ pF (C)                     | ECJ1VG1H020□ | 0.8         | ○           |    |
| 3                | or                                    | ECJ1VG1H030□ | 0.8         | ○           |    |
| 4                | $\pm 0.5$ pF (D)                      | ECJ1VG1H040□ | 0.8         | ○           |    |
| 5                |                                       | ECJ1VG1H050□ | 0.8         | ○           |    |
| 6                |                                       | ECJ1VG1H060D | 0.8         | ○           |    |
| 7                |                                       | ECJ1VG1H070D | 0.8         | ○           |    |
| 8                | $\pm 0.5$ pF (D)                      | ECJ1VG1H080D | 0.8         | ○           |    |
| 9                |                                       | ECJ1VG1H090D | 0.8         | ○           |    |
| 10               | $\pm 0.5$ pF (D)<br>or $\pm 1$ pF (F) | ECJ1VG1H100□ | 0.8         | ○           |    |
| 12               |                                       | ECJ1VG1H120□ | 0.8         | ○           |    |
| 15               |                                       | ECJ1VG1H150□ | 0.8         | ○           |    |
| 18               |                                       | ECJ1VG1H180□ | 0.8         | ○           |    |
| 22               |                                       | ECJ1VG1H220□ | 0.8         | ○           |    |
| 27               |                                       | ECJ1VG1H270□ | 0.8         | ○           |    |
| 33               |                                       | ECJ1VG1H330□ | 0.8         | ○           |    |
| 39               |                                       | ECJ1VG1H390□ | 0.8         | ○           |    |
| 47               |                                       | ECJ1VG1H470□ | 0.8         | ○           |    |
| 56               |                                       | ECJ1VG1H560□ | 0.8         | ○           |    |
| 68               |                                       | ECJ1VG1H680□ | 0.8         | ○           |    |
| 82               |                                       | ECJ1VG1H820□ | 0.8         | ○           |    |
| 100              | $\pm 5$ % (J)<br>or                   | ECJ1VG1H101□ | 0.8         | ○           |    |
| 120              | $\pm 10$ % (K)                        | ECJ1VG1H121□ | 0.8         | ○           |    |
| 150              |                                       | ECJ1VG1H151□ | 0.8         | ○           |    |
| 180              |                                       | ECJ1VG1H181□ | 0.8         | ○           |    |
| 220              |                                       | ECJ1VG1H221□ | 0.8         | ○           |    |
| 270              |                                       | ECJ1VG1H271□ | 0.8         | ○           |    |
| 330              |                                       | ECJ1VG1H331□ | 0.8         | ○           |    |
| 390              |                                       | ECJ1VG1H391□ | 0.8         | ○           |    |
| 470              |                                       | ECJ1VG1H471□ | 0.8         | ○           |    |
| 560              |                                       | ECJ1VG1H561□ | 0.8         | ○           |    |
| 680              |                                       | ECJ1VG1H681□ | 0.8         | ○           |    |
| 820              |                                       | ECJ1VG1H821□ | 0.8         | ○           |    |
| 1000             |                                       | ECJ1VG1H102□ | 0.8         | ○           |    |

■ Standard Products for EIA “0603”, Taped Version

● Class 2

◆ Temperature Characteristic Code : B (Temperature Characteristics : B, X7R, X5R)

| Rated voltage    |                       | DC 50 V      |             |             |     |     | DC 25 V      |             |             |     |     | DC 16 V      |             |             |     |     | DC 10 V      |             |             |     |     | DC 6.3 V     |             |             |     |     |
|------------------|-----------------------|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|
| Capacitance (pF) | Capacitance Tolerance | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     |
|                  |                       |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |
| 1000             |                       | ECJ1VB1H102□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 1200             |                       | ECJ1VB1H122K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 1500             |                       | ECJ1VB1H152□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 1800             |                       | ECJ1VB1H182K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 2200             |                       | ECJ1VB1H222□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 2700             |                       | ECJ1VB1H272K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 3300             |                       | ECJ1VB1H332□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 3900             |                       | ECJ1VB1H392K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 4700             |                       | ECJ1VB1H472□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 5600             |                       | ECJ1VB1H562K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 6800             |                       | ECJ1VB1H682□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 8200             |                       | ECJ1VB1H822K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |
| 10000            |                       | ECJ1VB1H103□ | 0.8         | ○           | ○   | —   | ECJ1VB1E103□ | 0.8         | ○           | ○   | —   | ECJ1VB1C103□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 12000            |                       | ECJ1VB1H123K | 0.8         | ○           | ○   | —   | ECJ1VB1E123K | 0.8         | ○           | ○   | —   | ECJ1VB1C123K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 15000            | ±10 % (K)             | ECJ1VB1H153□ | 0.8         | ○           | ○   | —   | ECJ1VB1E153□ | 0.8         | ○           | ○   | —   | ECJ1VB1C153□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 18000            | or                    | ECJ1VB1H183K | 0.8         | ○           | ○   | —   | ECJ1VB1E183K | 0.8         | ○           | ○   | —   | ECJ1VB1C183K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 22000            | ±20 % (M)             | ECJ1VB1H223□ | 0.8         | ○           | ○   | —   | ECJ1VB1E223□ | 0.8         | ○           | ○   | —   | ECJ1VB1C223□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 27000            |                       | ECJ1VB1H273K | 0.8         | ○           | ○   | —   | ECJ1VB1E273K | 0.8         | ○           | ○   | —   | ECJ1VB1C273K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 33000            |                       | ECJ1VB1H333□ | 0.8         | ○           | ○   | —   | ECJ1VB1E333□ | 0.8         | ○           | ○   | —   | ECJ1VB1C333□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 39000            |                       | ECJ1VB1H393K | 0.8         | ○           | ○   | —   | ECJ1VB1E393K | 0.8         | ○           | ○   | —   | ECJ1VB1C393K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 47000            |                       | ECJ1VB1H473□ | 0.8         | ○           | ○   | —   | ECJ1VB1E473□ | 0.8         | ○           | ○   | —   | ECJ1VB1C473□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 56000            |                       | ECJ1VB1H563K | 0.8         | ○           | ○   | —   | ECJ1VB1E563K | 0.8         | ○           | ○   | —   | ECJ1VB1C563K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 68000            |                       | ECJ1VB1H683□ | 0.8         | ○           | ○   | —   | ECJ1VB1E683□ | 0.8         | ○           | ○   | —   | ECJ1VB1C683□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 82000            |                       | ECJ1VB1H823K | 0.8         | ○           | ○   | —   | ECJ1VB1E823K | 0.8         | ○           | ○   | —   | ECJ1VB1C823K | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 100000           |                       | ECJ1VB1H104□ | 0.8         | ○           | ○   | —   | ECJ1VB1E104□ | 0.8         | ○           | ○   | —   | ECJ1VB1C104□ | 0.8         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |
| 150000           |                       |              |             |             |     |     | ECJ1VB1E154□ | 0.8         | —           | —   | ○   | ECJ1VB1C154□ | 0.8         | —           | —   | ○   | ECJ1VB1A154□ | 0.8         | ○           | —   | ○   |              |             |             |     |     |
| 220000           |                       |              |             |             |     |     | ECJ1VB1E224□ | 0.8         | —           | —   | ○   | ECJ1VB1C224□ | 0.8         | —           | —   | ○   | ECJ1VB1A224□ | 0.8         | ○           | —   | ○   |              |             |             |     |     |
| 330000           |                       |              |             |             |     |     | ECJ1VB1E334□ | 0.8         | —           | —   | ○   | ECJ1VB1C334□ | 0.8         | —           | —   | ○   | ECJ1VB1A334□ | 0.8         | ○           | —   | ○   |              |             |             |     |     |
| 470000           |                       |              |             |             |     |     | ECJ1VB1E474□ | 0.8         | —           | —   | ○   | ECJ1VB1C474□ | 0.8         | —           | —   | ○   | ECJ1VB1A474□ | 0.8         | ○           | —   | ○   | ECJ1VB0J474□ | 0.8         | ○           | —   | ○   |
| 680000           |                       |              |             |             |     |     | ECJ1VB1E684□ | 0.8         | —           | —   | ○   | ECJ1VB1C684□ | 0.8         | —           | —   | ○   | ECJ1VB1A684□ | 0.8         | ○           | —   | ○   | ECJ1VB0J684□ | 0.8         | ○           | —   | ○   |

□: Capacitance tolerance code : “□” for “K” or “M”

Standard packaging quantity of Packaging Style Code “V” (T = 0.8 mm): 4,000 pcs./reel

Recommend soldering method: Reflow soldering.

For capacitance 1 μF or more, see page 6 and 7 for High Capacitance.

◆ Temperature Characteristics Code : F (Temperature Characteristics : F, Y5V)

| Rated voltage    |                       | DC 50 V      |             |             |     |  | DC 25 V      |             |             |     |  | DC 16 V      |             |             |     |  |
|------------------|-----------------------|--------------|-------------|-------------|-----|--|--------------|-------------|-------------|-----|--|--------------|-------------|-------------|-----|--|
| Capacitance (pF) | Capacitance Tolerance | Part No.     | Dim. T (mm) | Temp. Char. |     |  | Part No.     | Dim. T (mm) | Temp. Char. |     |  | Part No.     | Dim. T (mm) | Temp. Char. |     |  |
|                  |                       |              |             | F           | Y5V |  |              |             | F           | Y5V |  |              |             | F           | Y5V |  |
| 10000            |                       | ECJ1VF1H103Z | 0.8         | ○           | ○   |  |              |             |             |     |  |              |             |             |     |  |
| 22000            |                       | ECJ1VF1H223Z | 0.8         | ○           | ○   |  |              |             |             |     |  |              |             |             |     |  |
| 47000            |                       | ECJ1VF1H473Z | 0.8         | ○           | ○   |  |              |             |             |     |  |              |             |             |     |  |
| 100000           | +80, -20 % (Z)        | ECJ1VF1H104Z | 0.8         | ○           | ○   |  | ECJ1VF1E104Z | 0.8         | ○           | ○   |  | ECJ1VF1C104Z | 0.8         | ○           | ○   |  |
| 220000           |                       |              |             |             |     |  |              |             |             |     |  | ECJ1VF1C224Z | 0.8         | ○           | ○   |  |
| 470000           |                       |              |             |             |     |  |              |             |             |     |  | ECJ1VF1C474Z | 0.8         | ○           | ○   |  |

Standard packaging quantity of Packaging Style Code “V” (T = 0.8 mm): 4,000 pcs./reel

Recommend soldering method: Reflow soldering.

For capacitance 1 μF or more, see page 6 and 7 for High Capacitance.

### ■ Standard Products for EIA “0805”, Taped Version

#### ● Class 1

◆ Temperature Characteristic Code : C (Temp. Char. : CΔ)

| Rated voltage    |                       | DC 50 V      |             |             |    |
|------------------|-----------------------|--------------|-------------|-------------|----|
| Capacitance (pF) | Capacitance Tolerance | Part No.     | Dim. T (mm) | Temp. Char. |    |
|                  |                       |              |             | CH          | CG |
| 27               |                       | ECJ2VC1H270□ | 0.6         | ○           | ○  |
| 33               |                       | ECJ2VC1H330□ | 0.6         | ○           | ○  |
| 39               |                       | ECJ2VC1H390□ | 0.6         | ○           | ○  |
| 47               |                       | ECJ2VC1H470□ | 0.6         | ○           | ○  |
| 56               |                       | ECJ2VC1H560□ | 0.6         | ○           | ○  |
| 68               |                       | ECJ2VC1H680□ | 0.6         | ○           | ○  |
| 82               |                       | ECJ2VC1H820□ | 0.6         | ○           | ○  |
| 100              |                       | ECJ2VC1H101□ | 0.6         | ○           | ○  |
| 120              |                       | ECJ2VC1H121□ | 0.6         | ○           | ○  |
| 150              |                       | ECJ2VC1H151□ | 0.6         | ○           | ○  |
| 180              |                       | ECJ2VC1H181□ | 0.6         | ○           | ○  |
| 220              | ±5 % (J)              | ECJ2VC1H221□ | 0.6         | ○           | ○  |
| 270              | or                    | ECJ2VC1H271□ | 0.6         | ○           | ○  |
| 330              | ±10 % (K)             | ECJ2VC1H331□ | 0.6         | ○           | ○  |
| 390              |                       | ECJ2VC1H391□ | 0.6         | ○           | ○  |
| 470              |                       | ECJ2VC1H471□ | 0.6         | ○           | ○  |
| 560              |                       | ECJ2VC1H561□ | 0.6         | ○           | ○  |
| 680              |                       | ECJ2VC1H681□ | 0.6         | ○           | ○  |
| 820              |                       | ECJ2VC1H821□ | 0.6         | ○           | ○  |
| 1000             |                       | ECJ2VC1H102□ | 0.6         | ○           | ○  |
| 1200             |                       | ECJ2VC1H122□ | 0.6         | ○           | —  |
| 1500             |                       | ECJ2VC1H152□ | 0.6         | ○           | —  |
| 1800             |                       | ECJ2VC1H182□ | 0.6         | ○           | —  |
| 2200             |                       | ECJ2VC1H222□ | 0.6         | ○           | —  |
| 2700             |                       | ECJ2VC1H272□ | 0.85        | ○           | —  |

◆ Temperature Characteristic Code : G (Temp. Char. : SL)

| Rated voltage    |                       | DC 50 V      |             |             |    |
|------------------|-----------------------|--------------|-------------|-------------|----|
| Capacitance (pF) | Capacitance Tolerance | Part No.     | Dim. T (mm) | Temp. Char. |    |
|                  |                       |              |             |             | SL |
| 27               |                       | ECJ2VG1H270□ | 0.6         | ○           |    |
| 33               |                       | ECJ2VG1H330□ | 0.6         | ○           |    |
| 39               |                       | ECJ2VG1H390□ | 0.6         | ○           |    |
| 47               |                       | ECJ2VG1H470□ | 0.6         | ○           |    |
| 56               |                       | ECJ2VG1H560□ | 0.6         | ○           |    |
| 68               |                       | ECJ2VG1H680□ | 0.6         | ○           |    |
| 82               |                       | ECJ2VG1H820□ | 0.6         | ○           |    |
| 100              |                       | ECJ2VG1H101□ | 0.6         | ○           |    |
| 120              |                       | ECJ2VG1H121□ | 0.6         | ○           |    |
| 150              |                       | ECJ2VG1H151□ | 0.6         | ○           |    |
| 180              |                       | ECJ2VG1H181□ | 0.6         | ○           |    |
| 220              | ±5 % (J)              | ECJ2VG1H221□ | 0.6         | ○           |    |
| 270              | or                    | ECJ2VG1H271□ | 0.6         | ○           |    |
| 330              | ±10 % (K)             | ECJ2VG1H331□ | 0.6         | ○           |    |
| 390              |                       | ECJ2VG1H391□ | 0.6         | ○           |    |
| 470              |                       | ECJ2VG1H471□ | 0.6         | ○           |    |
| 560              |                       | ECJ2VG1H561□ | 0.6         | ○           |    |
| 680              |                       | ECJ2VG1H681□ | 0.6         | ○           |    |
| 820              |                       | ECJ2VG1H821□ | 0.6         | ○           |    |
| 1000             |                       | ECJ2VG1H102□ | 0.6         | ○           |    |
| 1200             |                       | ECJ2VG1H122□ | 0.6         | ○           |    |
| 1500             |                       | ECJ2VG1H152□ | 0.6         | ○           |    |
| 1800             |                       | ECJ2VG1H182□ | 0.6         | ○           |    |
| 2200             |                       | ECJ2VG1H222□ | 0.6         | ○           |    |
| 2700             |                       | ECJ2VG1H272□ | 0.6         | ○           |    |

□: Capacitance tolerance code.

Dimensional tolerance of L, W, T: ± 0.1 mm

Standard packaging quantity of Packaging Style Code “V” (T = 0.6 mm): 5,000 pcs./reel, “V” (T = 0.85 mm): 4,000 pcs./reel

Recommend soldering method: Reflow soldering.

■ Standard Products for EIA “0805”, Taped Version

● Class 2

◆ Temperature Characteristic Code : B (Temperature Characteristics : B, X7R, X5R)

| Rated voltage    |                              | DC 50 V      |             |             |     |     | DC 25 V      |             |             |     |     | DC 16 V      |             |             |     |     | DC 10 V      |             |             |     |     |  |  |  |
|------------------|------------------------------|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|--------------|-------------|-------------|-----|-----|--|--|--|
| Capacitance (pF) | Capacitance Tolerance        | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     | Part No.     | Dim. T (mm) | Temp. Char. |     |     |  |  |  |
|                  |                              |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |              |             | B           | X7R | X5R |  |  |  |
| 1000             | ±10 % (K)<br>or<br>±20 % (M) | ECJ2VB1H102□ | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 1200             |                              | ECJ2VB1H122K | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 1500             |                              | ECJ2VB1H152□ | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 1800             |                              | ECJ2VB1H182K | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 2200             |                              | ECJ2VB1H222□ | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 2700             |                              | ECJ2VB1H272K | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 3300             |                              | ECJ2VB1H332□ | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 3900             |                              | ECJ2VB1H392K | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 4700             |                              | ECJ2VB1H472□ | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 5600             |                              | ECJ2VB1H562K | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 6800             |                              | ECJ2VB1H682□ | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 8200             |                              | ECJ2VB1H822K | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 10000            |                              | ECJ2VB1H103□ | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 12000            |                              | ECJ2VB1H123K | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 15000            |                              | ECJ2VB1H153□ | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 18000            |                              | ECJ2VB1H183K | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 22000            |                              | ECJ2VB1H223□ | 0.6         | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 27000            |                              | ECJ2VB1H273K | 0.85        | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 33000            |                              | ECJ2VB1H333□ | 0.85        | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 39000            |                              | ECJ2VB1H393K | 0.85        | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 47000            |                              | ECJ2FB1H473□ | 1.25        | ○           | ○   | —   | ECJ2VB1E473□ | 0.85        | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 56000            |                              | ECJ2FB1H563K | 1.25        | ○           | ○   | —   | ECJ2VB1E563K | 0.85        | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 68000            |                              | ECJ2FB1H683□ | 1.25        | ○           | ○   | —   | ECJ2VB1E683□ | 0.85        | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 82000            |                              | ECJ2FB1H823K | 1.25        | ○           | ○   | —   | ECJ2VB1E823K | 0.85        | ○           | ○   | —   |              |             |             |     |     |              |             |             |     |     |  |  |  |
| 100000           |                              | ECJ2FB1H104□ | 1.25        | ○           | ○   | —   | ECJ2VB1E104□ | 0.85        | ○           | ○   | —   | ECJ2VB1C104□ | 0.85        | ○           | ○   | —   |              |             |             |     |     |  |  |  |
| 150000           |                              | ECJ2FB1H154□ | 1.25        | ○           | ○   | —   | ECJ2FB1E154□ | 1.25        | ○           | ○   | —   | ECJ2VB1C154□ | 0.85        | ○           | ○   | —   |              |             |             |     |     |  |  |  |
| 220000           |                              | ECJ2FB1H224□ | 1.25        | ○           | ○   | —   | ECJ2FB1E224□ | 1.25        | ○           | ○   | —   | ECJ2VB1C224□ | 0.85        | ○           | ○   | —   |              |             |             |     |     |  |  |  |
| 330000           |                              |              |             |             |     |     | ECJ2FB1E334□ | 1.25        | ○           | ○   | —   | ECJ2FB1C334□ | 1.25        | ○           | ○   | —   |              |             |             |     |     |  |  |  |
| 470000           |                              |              |             |             |     |     | ECJ2FB1E474□ | 1.25        | ○           | ○   | —   | ECJ2FB1C474□ | 1.25        | ○           | ○   | —   |              |             |             |     |     |  |  |  |
| 680000           |                              |              |             |             |     |     | ECJ2FB1E684□ | 1.25*       | —           | —   | ○   | ECJ2FB1C684□ | 1.25*       | —           | —   | ○   | ECJ2FB1A684□ | 1.25        | —           | —   | ○   |  |  |  |

□: Capacitance tolerance code : “□” for “K” or “M”

Dimensional tolerance of L, W, T: ± 0.1 mm for no mark, ± 0.15 mm for “\*” mark

Standard packaging quantity of Packaging Style Code “V” (T = 0.6 mm): 5,000 pcs./reel, “V” (T = 0.85 mm): 4,000 pcs./reel, “F” (T = 1.25 mm): 3,000 pcs./reel

Soldering method of dimension T>1 mm: Avoid flow soldering.

For capacitance 1 μF or more, see page 6 and 7 for High Capacitance.

◆ Temperature Characteristic Code : F (Temperature Characteristics : F, Y5V)

| Rated voltage    |                       | DC 50 V      |             |             |     |              | DC 25 V     |             |     |              |             | DC 16 V     |     |  |  |  |
|------------------|-----------------------|--------------|-------------|-------------|-----|--------------|-------------|-------------|-----|--------------|-------------|-------------|-----|--|--|--|
| Capacitance (pF) | Capacitance Tolerance | Part No.     | Dim. T (mm) | Temp. Char. |     | Part No.     | Dim. T (mm) | Temp. Char. |     | Part No.     | Dim. T (mm) | Temp. Char. |     |  |  |  |
|                  |                       |              |             | F           | Y5V |              |             | F           | Y5V |              |             | F           | Y5V |  |  |  |
| 10000            | +80, -20 % (Z)        | ECJ2VF1H103Z | 0.6         | ○           | ○   |              |             |             |     |              |             |             |     |  |  |  |
| 22000            |                       | ECJ2VF1H223Z | 0.6         | ○           | ○   |              |             |             |     |              |             |             |     |  |  |  |
| 47000            |                       | ECJ2VF1H473Z | 0.6         | ○           | ○   |              |             |             |     |              |             |             |     |  |  |  |
| 100000           |                       | ECJ2VF1H104Z | 0.85        | ○           | ○   | ECJ2VF1E104Z | 0.6         | ○           | ○   | ECJ2VF1C104Z | 0.6         | ○           | ○   |  |  |  |
| 220000           |                       | ECJ2VF1H224Z | 0.85        | ○           | ○   | ECJ2VF1E224Z | 0.85        | ○           | ○   | ECJ2VF1C224Z | 0.6         | ○           | ○   |  |  |  |
| 470000           |                       |              |             |             |     | ECJ2FF1E474Z | 1.25        | ○           | ○   | ECJ2VF1C474Z | 0.85        | ○           | ○   |  |  |  |

Dimensional tolerance of L, W, T: ± 0.1 mm

Standard packaging quantity of Packaging Style Code “V” (T = 0.6 mm): 5,000 pcs./reel, “V” (T = 0.85 mm): 4,000 pcs./reel, “F” (T = 1.25 mm): 3,000 pcs./reel

Soldering method of dimension T>1 mm: Avoid flow soldering.

For capacitance 1 μF or more, see page 6 and 7 for High Capacitance.