

### Film Chip Capacitor

Type: **ECWU(C)**

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

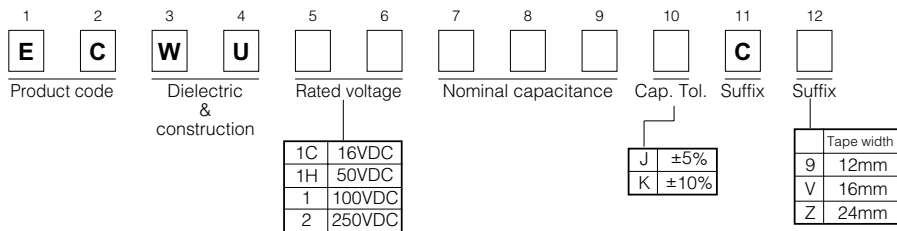
#### ■Features

- ◆ Small in size
- ◆ Applicable for reflow soldering

#### ■Recommended Applications

- ◆ Coupling
- ◆ By - pass
- ◆ General purpose

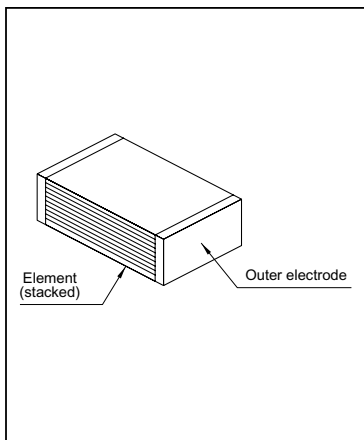
#### ■Explanation of Part Numbers



#### ■Specifications

|                       |                                                                                                                                                                                         |                                                                                                                      |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Category temp.range   | 16VDC, 50VDC: - 55 to + 105℃                                                                                                                                                            |                                                                                                                      |
|                       | 100VDC, 250VDC: - 40 to + 85℃                                                                                                                                                           |                                                                                                                      |
| Rated voltage         | 16VDC, 50VDC, 100VDC, 250VDC                                                                                                                                                            |                                                                                                                      |
| Capacitance range     | 16VDC                                                                                                                                                                                   | 0.12 to 0.47 μF (E12)                                                                                                |
|                       | 50VDC                                                                                                                                                                                   | 0.056 to 0.22 μF (E12)                                                                                               |
|                       | 100VDC                                                                                                                                                                                  | 0.012 to 1.0 μF (E12)                                                                                                |
|                       | 250VDC                                                                                                                                                                                  | 0.001 to 1.0 μF (E12)                                                                                                |
| Capacitance tolerance | 16VDC,50VDC                                                                                                                                                                             | ± 5%(J)                                                                                                              |
|                       | 100VDC,250VDC                                                                                                                                                                           | ± 10%(K) (100VDC, C≤0.15 μF ± 5%(J), ± 10%(K))                                                                       |
| Withstand voltage     | Between terminals<br>16VDC, 50VDC:Rated volt. (VDC)×175% 1 to 5s<br>100VDC, 250VDC:Rated volt. (VDC)×150% 60s                                                                           |                                                                                                                      |
| Dissipation factor    | ≤ 1.0%(20℃,1kHz)                                                                                                                                                                        |                                                                                                                      |
| Insulation resistance | C≤ 0.33 μF                                                                                                                                                                              | 16VDC:≥ 3000MΩ • (20℃,10VDC, 60s)<br>50VDC:≥ 3000MΩ • (20℃,50VDC, 60s)<br>100VDC, 250VDC:≥ 3000MΩ • (20℃,100VDC,60s) |
|                       | C>0.33 μF                                                                                                                                                                               | 16VDC:1000MΩ • μF min. (20℃,10VDC, 60s)<br>100VDC, 250VDC:1000MΩ • μF min. (20℃,100VDC,60s)                          |
| Soldering conditions  | Reflow soldering<br>16VDC, 50VDC:240℃ max. and 30 sec max. at more than 210℃ (Temp. at cap. surface)<br>100VDC, 250VDC:230℃ max. and 30 sec max.at more than 210℃ (Temp.at cap.surface) |                                                                                                                      |

### ■ Construction



### ■ Dimensions in mm (not to scale)

| Size code | L    | Tol.  | W    | Tol.  | H   | Tol.  |
|-----------|------|-------|------|-------|-----|-------|
| E1        | 4.8  |       | 3.3  |       | 1.4 |       |
| E2        | 4.8  |       | 3.3  |       | 2.0 |       |
| E3a       | 4.8  |       | 3.3  |       | 2.4 |       |
| E3        | 4.8  |       | 3.3  |       | 2.8 |       |
| D1        | 6.0  | ± 0.2 | 4.1  | ± 0.3 | 1.8 | ± 0.2 |
| D2        | 6.0  |       | 4.1  |       | 2.0 |       |
| D3        | 6.0  |       | 4.1  |       | 2.4 |       |
| D4        | 6.0  |       | 4.1  |       | 2.8 |       |
| D5        | 6.0  |       | 4.1  |       | 3.2 |       |
| B         | 6.0  |       | 5.0  |       |     |       |
| Z         | 7.1  |       | 5.0  |       |     |       |
| X         | 7.7  | ± 0.4 | 5.5  |       |     |       |
| Y         | 7.1  |       | 6.3  | ± 0.4 | *   | ± 0.3 |
| V         | 9.8  |       | 6.3  |       |     |       |
| U         | 9.8  |       | 8.0  |       |     |       |
| T         | 15.2 | ± 0.5 | 8.0  |       |     |       |
| S         | 15.2 |       | 10.0 |       |     |       |

\*Refer to the column "Rating, Dimensions & Quantity".

### ■ Taping Specification for Automatic Insertion(Mounting)

Refer to the PDF file of taping specifications.

### ■ Rating, Dimensions & Quantity/Reel

● Capacitance tolerance : ± 5 % (J)

| Cap.<br>(μF) | Rated volt. 16VDC |                 |     |     |           |      | Rated volt. 50VDC |                 |     |     |           |      |
|--------------|-------------------|-----------------|-----|-----|-----------|------|-------------------|-----------------|-----|-----|-----------|------|
|              | Part No           | Dimensions (mm) |     |     | Size code | Q'ty | Part No           | Dimensions (mm) |     |     | Size code | Q'ty |
|              |                   | L               | W   | H   |           |      |                   | L               | W   | H   |           |      |
| 0.056        |                   |                 |     |     |           |      | ECWU1H563JC9      | 4.8             | 3.3 | 2.0 | E2        | 3000 |
| 0.068        |                   |                 |     |     |           |      | ECWU1H683JC9      | 4.8             | 3.3 | 2.0 | E2        |      |
| 0.082        |                   |                 |     |     |           |      | ECWU1H823JC9      | 4.8             | 3.3 | 2.4 | E3a       | 2000 |
| 0.1          |                   |                 |     |     |           |      | ECWU1H104JC9      | 4.8             | 3.3 | 2.8 | E3        |      |
| 0.12         | ECWU1C124JC9      | 4.8             | 3.3 | 1.4 | E1        |      | ECWU1H124JC9      | 6.0             | 4.1 | 1.8 | D1        | 3000 |
| 0.15         | ECWU1C154JC9      | 4.8             | 3.3 | 2.0 | E2        | 3000 | ECWU1H154JC9      | 6.0             | 4.1 | 2.0 | D2        |      |
| 0.18         | ECWU1C184JC9      | 4.8             | 3.3 | 2.0 | E2        |      | ECWU1H184JC9      | 6.0             | 4.1 | 2.4 | D3        | 2000 |
| 0.22         | ECWU1C224JC9      | 4.8             | 3.3 | 2.4 | E3a       | 2000 | ECWU1H224JC9      | 6.0             | 4.1 | 2.8 | D4        |      |
| 0.27         | ECWU1C274JC9      | 6.0             | 4.1 | 1.8 | D1        | 3000 |                   |                 |     |     |           |      |
| 0.33         | ECWU1C334JC9      | 6.0             | 4.1 | 2.0 | D2        |      |                   |                 |     |     |           |      |
| 0.39         | ECWU1C394JC9      | 6.0             | 4.1 | 2.4 | D3        |      |                   |                 |     |     |           |      |
| 0.47         | ECWU1C474JC9      | 6.0             | 4.1 | 2.8 | D4        | 2000 |                   |                 |     |     |           |      |

### ■ Example for Land Dimensions (mm)

| Size code      | Land dimensions  |      |     |
|----------------|------------------|------|-----|
|                | Reflow soldering |      |     |
|                | A                | B    | C   |
| E1,E2,E3a,E3   | 2.6              | 6.6  | 3.0 |
| D1,D2,D3,D4,D5 | 3.8              | 7.8  | 3.8 |
| B              | 3.8              | 7.8  | 4.6 |
| Z              | 4.5              | 9.0  | 4.6 |
| X              | 5.1              | 9.7  | 5.0 |
| Y              | 4.5              | 9.0  | 5.7 |
| V              | 7.2              | 11.9 | 5.7 |
| U              | 7.2              | 11.9 | 7.2 |
| T              | 12.6             | 17.3 | 7.2 |
| S              | 12.6             | 17.3 | 9.0 |

■ Rating, Dimensions & Quantity/Reel

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

| Cap.<br>( $\mu$ F) | Rated volt. 100VDC               |                 |     |     |           |             | Rated volt. 250VDC |                 |      |     |           |      |
|--------------------|----------------------------------|-----------------|-----|-----|-----------|-------------|--------------------|-----------------|------|-----|-----------|------|
|                    | Part No                          | Dimensions (mm) |     |     | Size code | Q'ty        | Part No            | Dimensions (mm) |      |     | Size code | Q'ty |
|                    |                                  | L               | W   | H   |           |             |                    | L               | W    | H   |           |      |
| 0.001              | Please use 100VDC rating ECWU(X) |                 |     |     |           |             | ECWU2102KC9        | 4.8             | 3.3  | 1.4 | E1        | 3000 |
| 0.0012             |                                  |                 |     |     |           |             | ECWU2122KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.0015             |                                  |                 |     |     |           |             | ECWU2152KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.0018             |                                  |                 |     |     |           |             | ECWU2182KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.0022             |                                  |                 |     |     |           |             | ECWU2222KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.0027             |                                  |                 |     |     |           |             | ECWU2272KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.0033             |                                  |                 |     |     |           |             | ECWU2332KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.0039             |                                  |                 |     |     |           |             | ECWU2392KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.0047             |                                  |                 |     |     |           |             | ECWU2472KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.0056             |                                  |                 |     |     |           |             | ECWU2562KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.0068             |                                  |                 |     |     |           |             | ECWU2682KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.0082             |                                  |                 |     |     |           |             | ECWU2822KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.01               |                                  |                 |     |     |           |             | ECWU2103KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.012              | ECWU1123 C9                      | 4.8             | 3.3 | 1.4 | E1        | 3000        | ECWU2123KC9        | 4.8             | 3.3  | 1.4 | E1        | 2000 |
| 0.015              | ECWU1153 C9                      | 4.8             | 3.3 | 1.4 | E1        |             | ECWU2153KC9        | 4.8             | 3.3  | 1.4 | E1        |      |
| 0.018              | ECWU1183 C9                      | 4.8             | 3.3 | 1.4 | E1        |             | ECWU2183KC9        | 4.8             | 3.3  | 2.0 | E2        |      |
| 0.022              | ECWU1223 C9                      | 4.8             | 3.3 | 1.4 | E1        |             | ECWU2223KC9        | 4.8             | 3.3  | 2.0 | E2        |      |
| 0.027              | ECWU1273 C9                      | 4.8             | 3.3 | 1.4 | E1        |             | ECWU2273KC9        | 4.8             | 3.3  | 2.4 | E3a       |      |
| 0.033              | ECWU1333 C9                      | 4.8             | 3.3 | 1.4 | E1        |             | ECWU2333KC9        | 4.8             | 3.3  | 2.8 | E3        |      |
| 0.039              | ECWU1393 C9                      | 4.8             | 3.3 | 1.4 | E1        |             | ECWU2393KC9        | 6.0             | 4.1  | 2.0 | D2        |      |
| 0.047              | ECWU1473 C9                      | 4.8             | 3.3 | 2.0 | E2        |             | ECWU2473KC9        | 6.0             | 4.1  | 2.4 | D3        |      |
| 0.056              | ECWU1563 C9                      | 4.8             | 3.3 | 2.0 | E2        |             | ECWU2563KC9        | 6.0             | 4.1  | 2.8 | D4        |      |
| 0.068              | ECWU1683 C9                      | 4.8             | 3.3 | 2.4 | E3a       |             | 2000               | ECWU2683KC9     | 6.0  | 4.1 | 3.2       |      |
| 0.082              | ECWU1823 C9                      | 4.8             | 3.3 | 2.8 | E3        | ECWU2823KC9 |                    | 6.0             | 5.0  | 3.2 | B         |      |
| 0.1                | ECWU1104 C9                      | 6.0             | 4.1 | 1.8 | D1        | 3000        | ECWU2104KC9        | 6.0             | 5.0  | 3.8 | B         | 1500 |
| 0.12               | ECWU1124 C9                      | 6.0             | 4.1 | 2.4 | D3        | 2000        | ECWU2124KCV        | 7.1             | 6.3  | 2.8 | Y         |      |
| 0.15               | ECWU1154 C9                      | 6.0             | 4.1 | 2.8 | D4        |             | ECWU2154KCV        | 7.1             | 6.3  | 3.5 | Y         | 1000 |
| 0.18               | ECWU1184KC9                      | 7.1             | 5.0 | 2.0 | Z         | 1500        | ECWU2184KCV        | 7.1             | 6.3  | 4.1 | Y         |      |
| 0.22               | ECWU1224KC9                      | 7.1             | 5.0 | 2.4 | Z         |             | ECWU2224KCV        | 7.1             | 6.3  | 5.1 | Y         |      |
| 0.27               | ECWU1274KC9                      | 7.1             | 5.0 | 2.9 | Z         |             | ECWU2274KCV        | 9.8             | 6.3  | 3.9 | V         |      |
| 0.33               | ECWU1334KC9                      | 7.1             | 5.0 | 3.5 | Z         | 1000        | ECWU2334KCV        | 9.8             | 6.3  | 4.8 | V         |      |
| 0.39               | ECWU1394KCV                      | 7.7             | 5.5 | 3.4 | X         |             | ECWU2394KCV        | 9.8             | 8.0  | 4.4 | U         |      |
| 0.47               | ECWU1474KCV                      | 7.7             | 5.5 | 4.0 | X         |             | ECWU2474KCV        | 9.8             | 8.0  | 5.3 | U         |      |
| 0.56               | ECWU1564KCV                      | 9.8             | 6.3 | 3.0 | V         |             | ECWU2564KCZ        | 15.2            | 8.0  | 3.7 | T         |      |
| 0.68               | ECWU1684KCV                      | 9.8             | 6.3 | 3.6 | V         |             | ECWU2684KCZ        | 15.2            | 8.0  | 4.4 | T         |      |
| 0.82               | ECWU1824KCV                      | 9.8             | 6.3 | 4.3 | V         |             | ECWU2824KCZ        | 15.2            | 10.0 | 4.2 | S         |      |
| 1.0                | ECWU1105KCV                      | 9.8             | 6.3 | 5.1 | V         |             | ECWU2105KCZ        | 15.2            | 10.0 | 5.1 | S         | 750  |

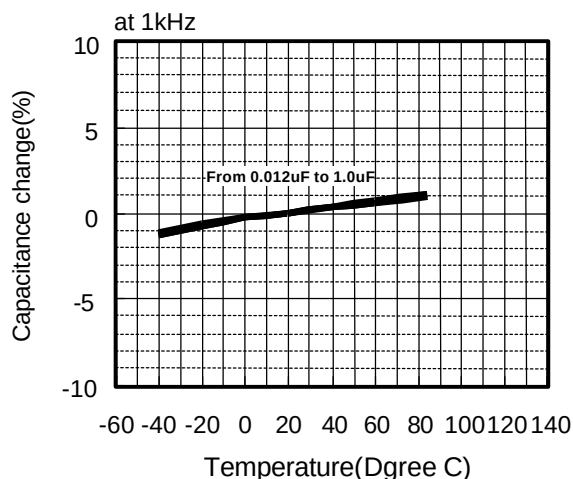
Capacitance tolerance code

※ Please consult us for capacitance tolerance  $\pm 5\%$  (J).

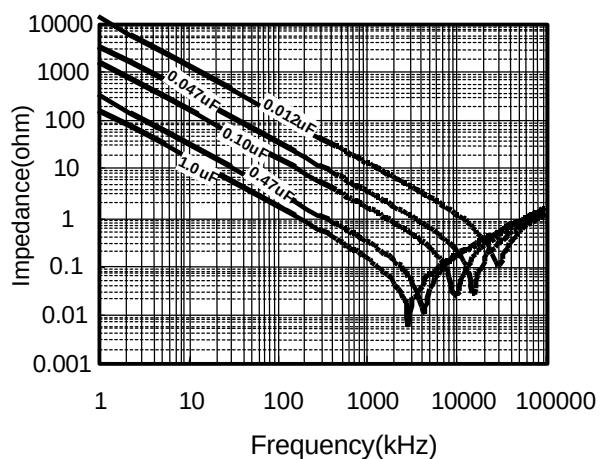
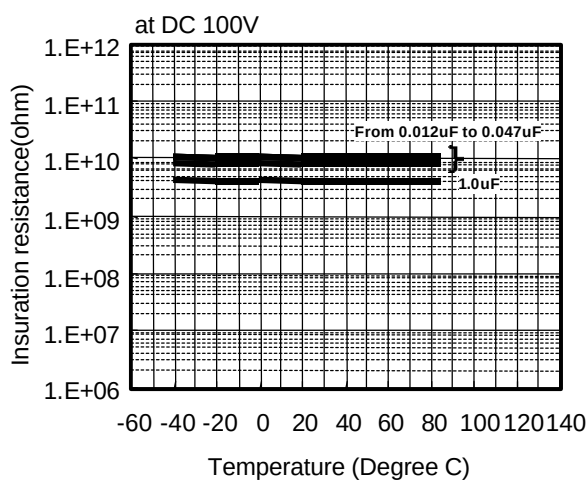
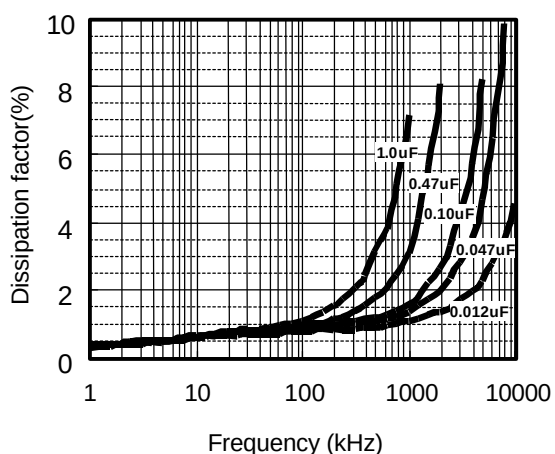
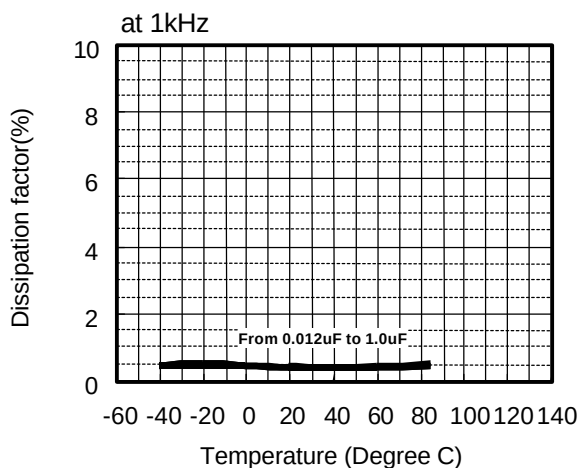
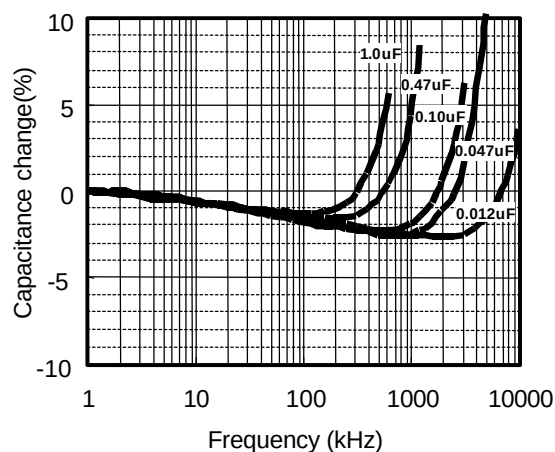
## ECWU (C) Type DC100V series (Stacked Metallized Film)

### Electrical Characteristics < Typical Data >

Temperature Characteristics



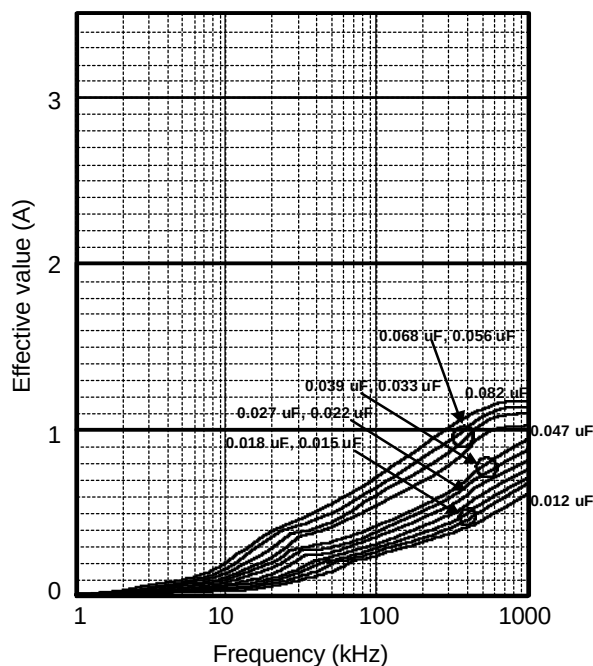
Frequency Characteristics



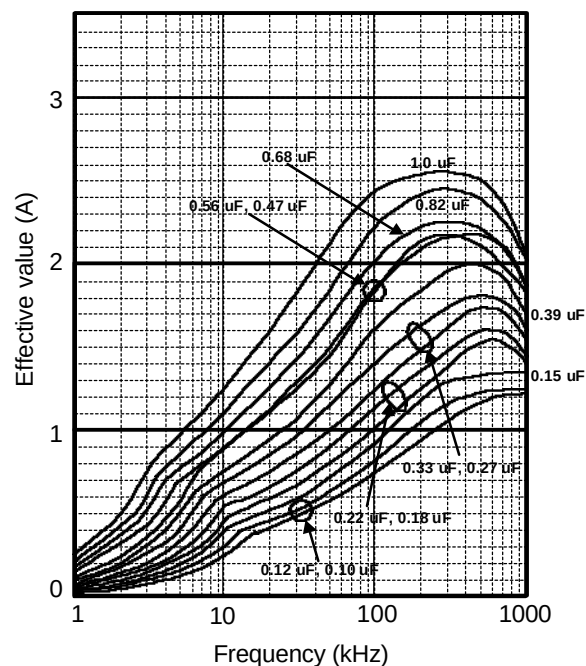
## ECWU (C) Type DC100V series (Stacked Metallized Film)

### Applicable Specifications

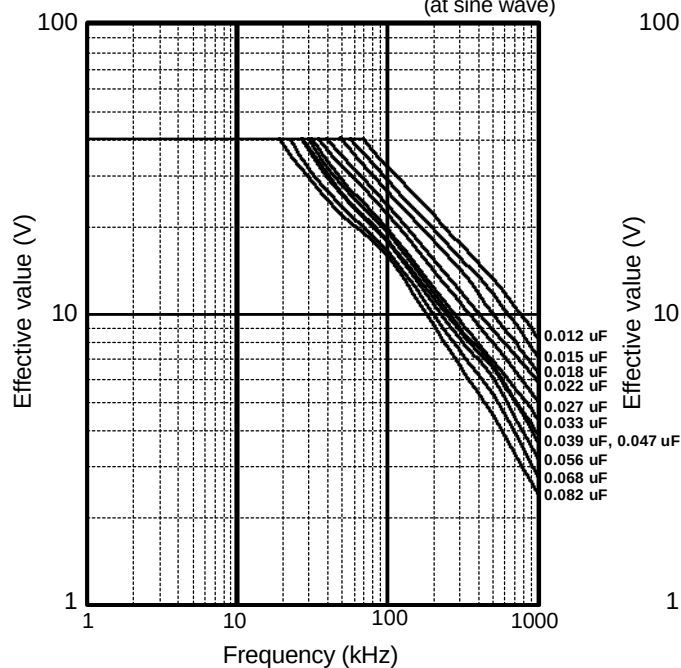
Permissible current



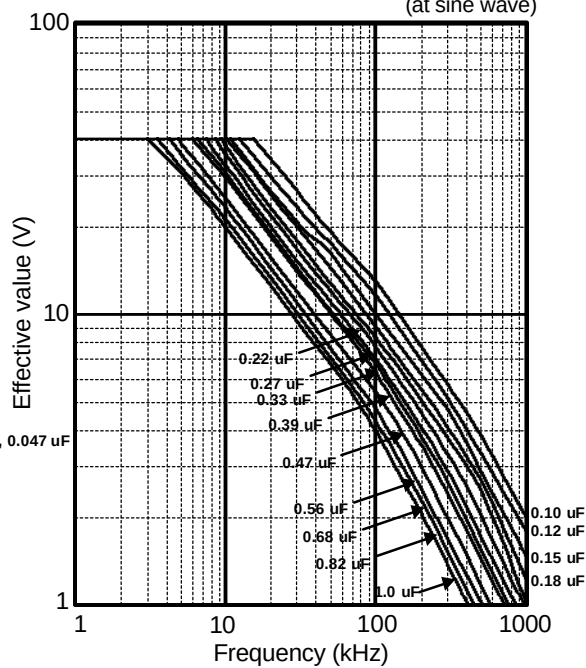
Permissible current



Permissible voltage  
(at sine wave)



Permissible voltage  
(at sine wave)



\* Please consult Panasonic if your condition exceeds the above spec.

\*Permissible voltage graph is the case of sine waveform. When you use this product, peak voltage must not exceed DC rated voltage.

\*The current value (Aop) is calculated using "nominal capacitance." In fact, it changes by the tolerance of a capacitance value, capacitance change, etc.



## ECWU (C) Type DC100V series (Stacked Metallized Film)

### Applicable Specifications

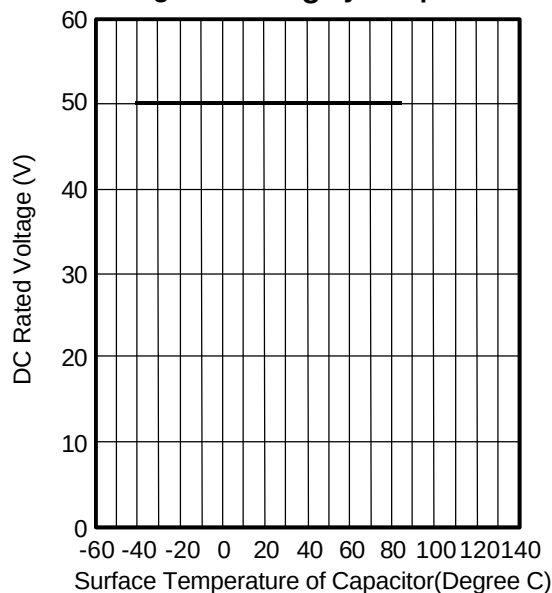
Pulse Handling Capability (dv/dt)  
(Max 10000cycles)

| Rating Voltage | Capacitance Value(uF) | Code | dv/dt(V/us) | Current <sub>(o.p.)</sub> (A) |
|----------------|-----------------------|------|-------------|-------------------------------|
| DC 100V        | 0.012                 | 123  | 320         | 3.8                           |
|                | 0.015                 | 123  |             | 4.8                           |
|                | 0.018                 | 183  |             | 5.8                           |
|                | 0.022                 | 223  |             | 7.0                           |
|                | 0.027                 | 273  |             | 8.6                           |
|                | 0.033                 | 333  |             | 10.6                          |
|                | 0.039                 | 393  |             | 12.5                          |
|                | 0.047                 | 473  |             | 15.0                          |
|                | 0.056                 | 563  |             | 17.9                          |
|                | 0.68                  | 683  |             | 21.8                          |
|                | 0.82                  | 823  |             | 26.2                          |

Pulse Handling Capability (dv/dt)  
(Max 10000cycles)

| Rating Voltage | Capacitance Value(uF) | Code | dv/dt(V/us) | Current <sub>(o.p.)</sub> (A) |
|----------------|-----------------------|------|-------------|-------------------------------|
| DC 100V        | 0.10                  | 104  | 210         | 21.0                          |
|                | 0.12                  | 124  |             | 25.2                          |
|                | 0.15                  | 154  |             | 31.5                          |
|                | 0.18                  | 184  | 120         | 21.6                          |
|                | 0.22                  | 224  |             | 26.4                          |
|                | 0.27                  | 274  |             | 32.4                          |
|                | 0.33                  | 334  |             | 39.6                          |
|                | 0.39                  | 394  | 100         | 39.0                          |
|                | 0.47                  | 474  |             | 47.0                          |
|                | 0.56                  | 564  |             | 39.2                          |
|                | 0.68                  | 684  | 70          | 47.6                          |
|                | 0.82                  | 824  |             | 57.4                          |
|                | 1.0                   | 105  |             | 70.0                          |

Voltage Derating by Temperature



\* Please consult Panasonic if your condition exceeds the above spec.

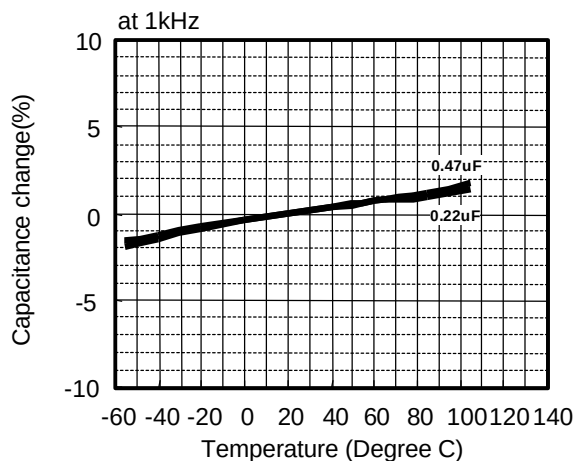
\*Permissible voltage graph is the case of sine waveform. When you use this product, peak voltage must not exceed DC rated voltage.

\*The current<sub>(o.p.)</sub> value is calculated using nominal capacitance.

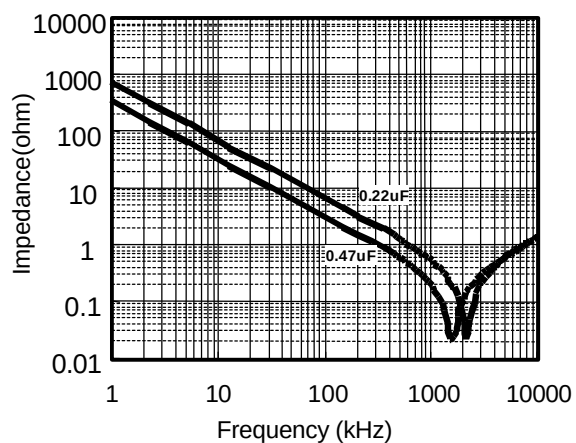
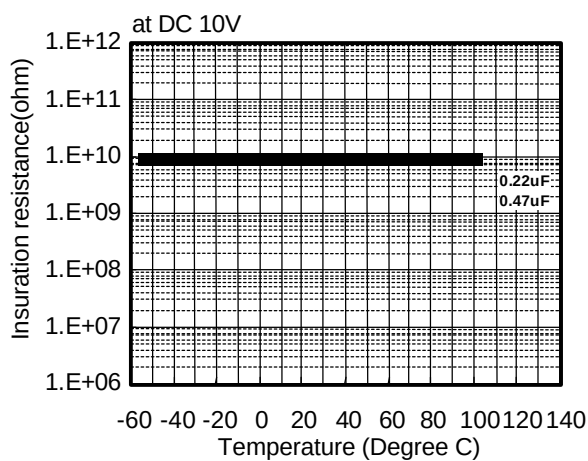
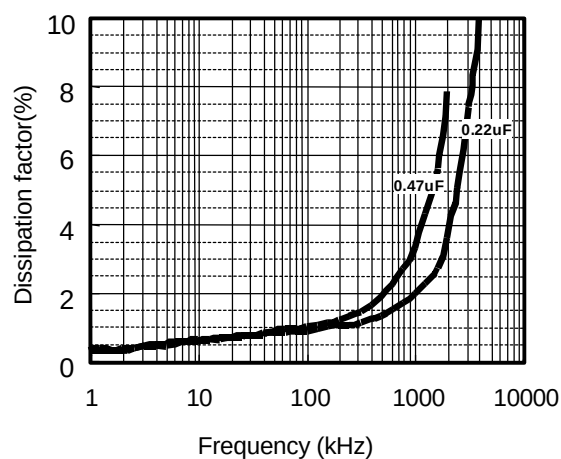
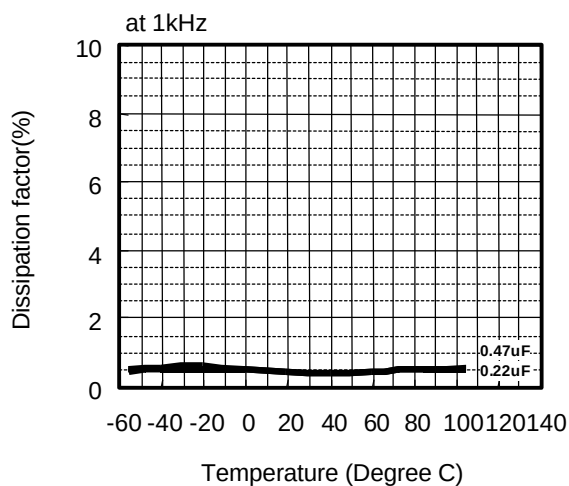
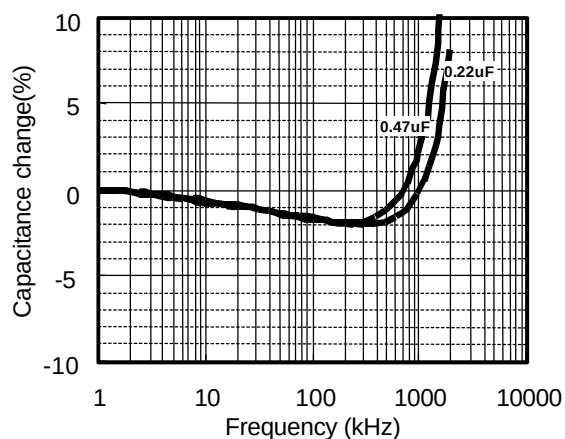
## ECWU (C) Type DC16V series (Stacked Metallized Film)

### Electrical Characteristics < Typical Data >

**Temperature Characteristics**

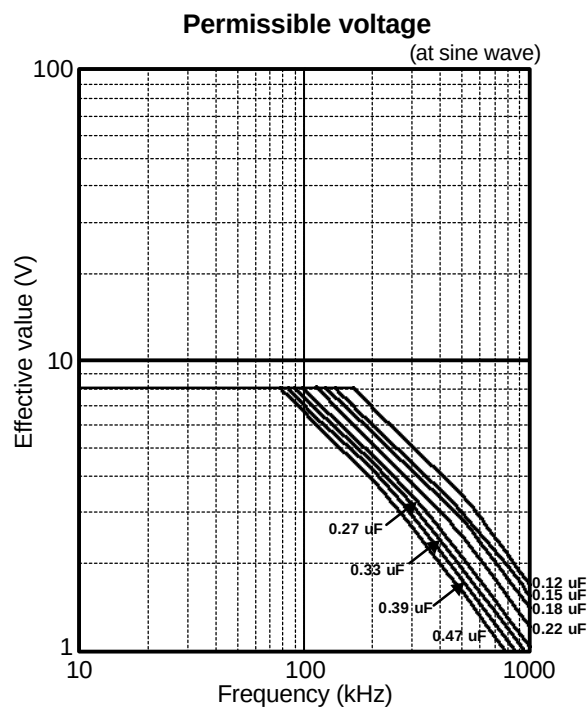
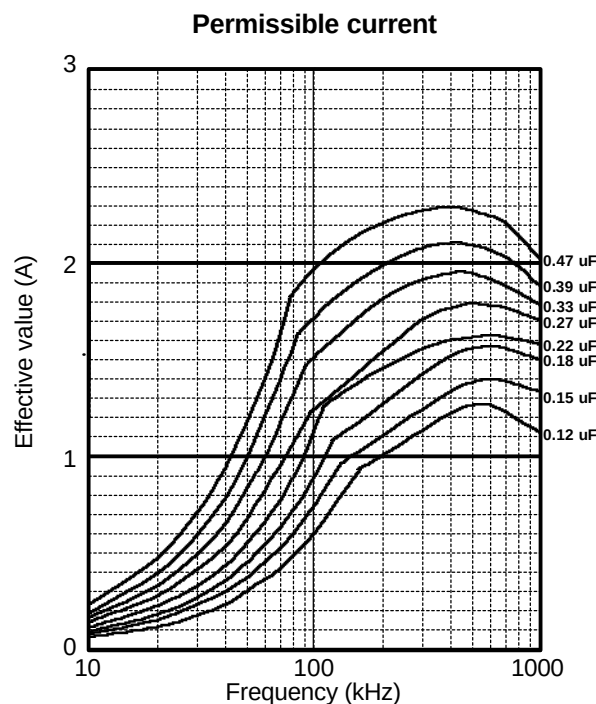


**Frequency Characteristics**



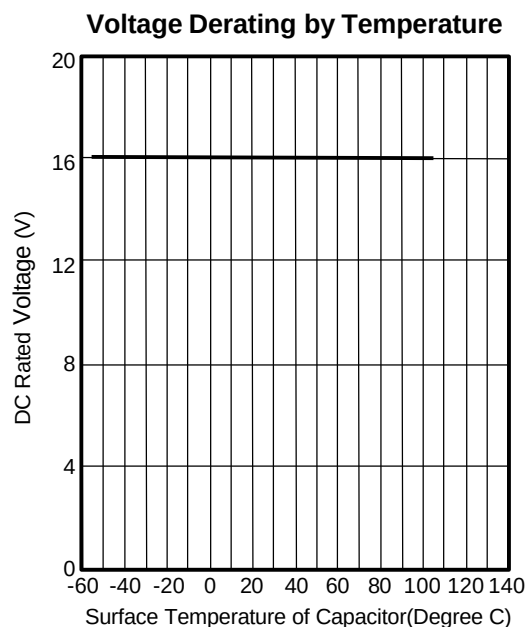
## ECWU (C) Type DC16V series (Stacked Metallized Film)

### Applicable Specifications



### Pulse Handling Capability (dv/dt) (Max 10000cycles)

| Rating Voltage | Capacitance Value( $\mu$ F) | Code | dv/dt(V/ $\mu$ s) | Current( $I_{OP}$ ) (A) |
|----------------|-----------------------------|------|-------------------|-------------------------|
| DC 16V         | 0.12                        | 124  | 60                | 7.2                     |
|                | 0.15                        | 154  |                   | 9.0                     |
|                | 0.18                        | 184  |                   | 10.8                    |
|                | 0.22                        | 224  |                   | 13.2                    |
|                | 0.27                        | 274  | 40                | 10.8                    |
|                | 0.33                        | 334  |                   | 13.2                    |
|                | 0.39                        | 394  |                   | 15.6                    |
|                | 0.47                        | 474  |                   | 18.8                    |



\* Please consult Panasonic if your condition exceeds the above spec.

\*Permissible voltage graph is the case of sine waveform. When you use this product, peak voltage must not exceed DC rated voltage.

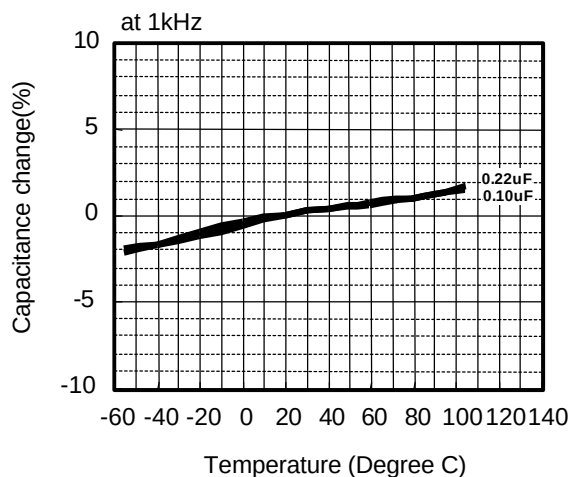
\*The current( $I_{OP}$ ) value is calculated using nominal capacitance.



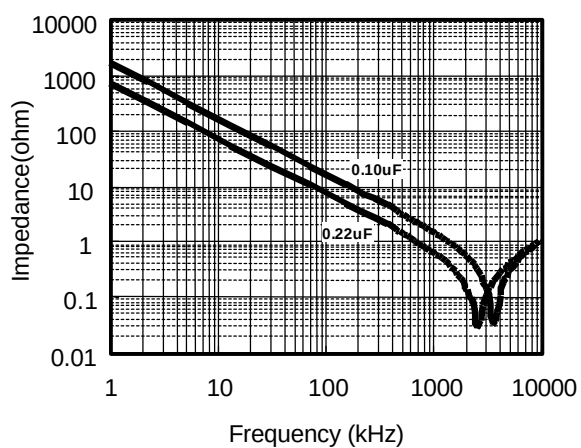
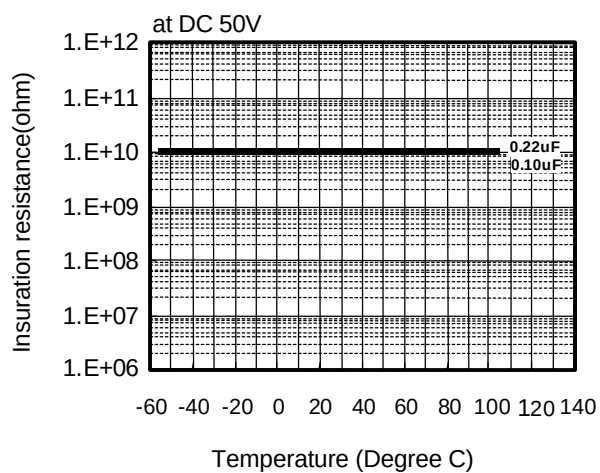
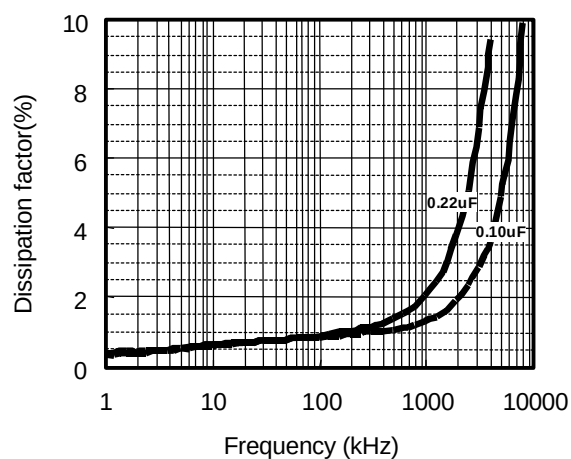
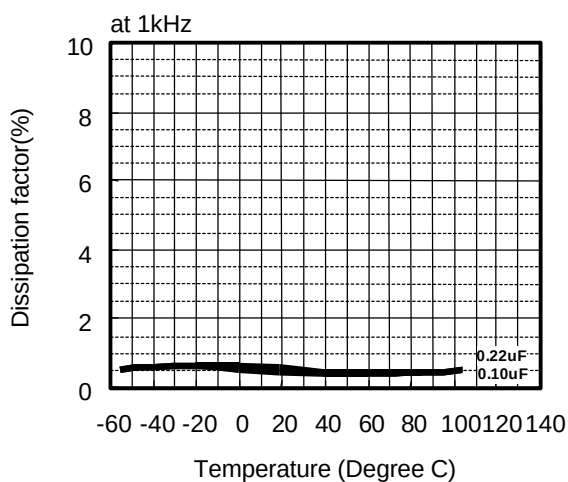
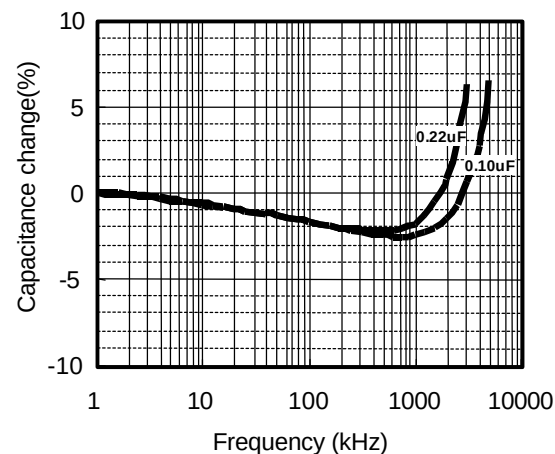
## ECWU (C) Type DC50V series (Stacked Metallized Film)

### Electrical Characteristics < Typical Data >

**Temperature Characteristics**

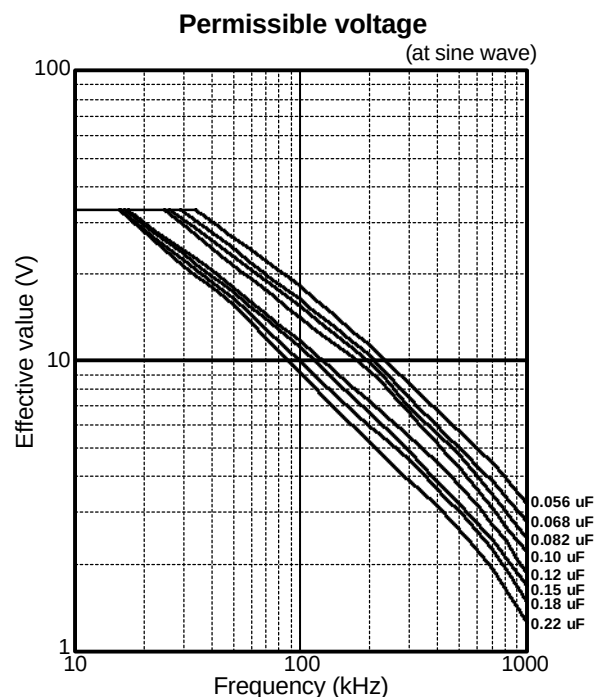
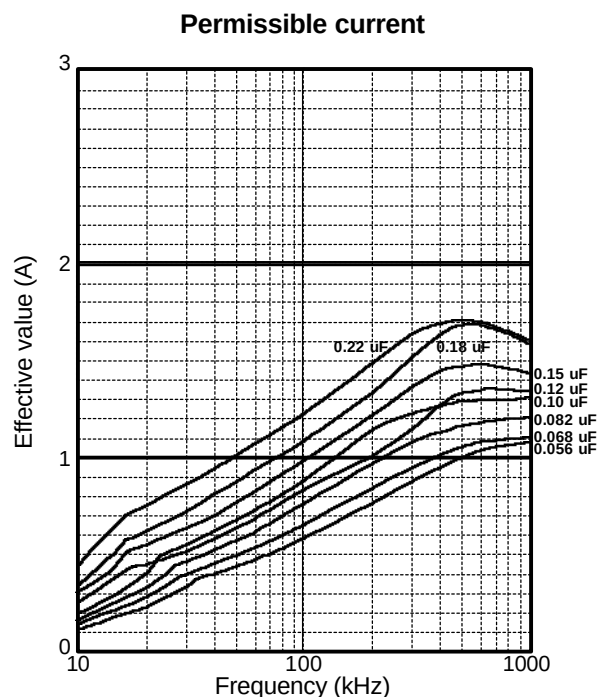


**Frequency Characteristics**



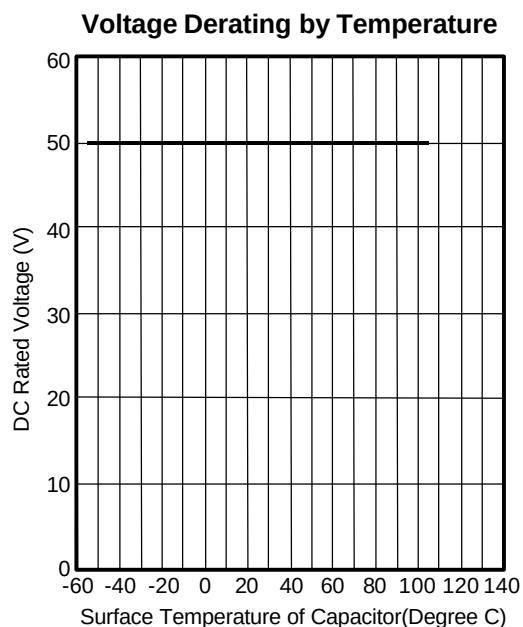
## ECWU (C) Type DC50V series (Stacked Metallized Film)

### Applicable Specifications



**Pulse Handling Capability (dv/dt)**  
(Max 10000cycles)

| Rating Voltage | Capacitance Value( $\mu$ F) | Code | dv/dt(V/ $\mu$ s) | Current( $I_{0-P}$ ) (A) |
|----------------|-----------------------------|------|-------------------|--------------------------|
| DC 50V         | 0.056                       | 563  | 190               | 10.6                     |
|                | 0.068                       | 683  |                   | 12.9                     |
|                | 0.082                       | 823  |                   | 15.6                     |
|                | 0.10                        | 104  |                   | 19.0                     |
|                | 0.12                        | 124  | 130               | 15.6                     |
|                | 0.15                        | 154  |                   | 19.5                     |
|                | 0.18                        | 184  |                   | 23.4                     |
|                | 0.22                        | 224  |                   | 28.6                     |



\* Please consult Panasonic if your condition exceeds the above spec.

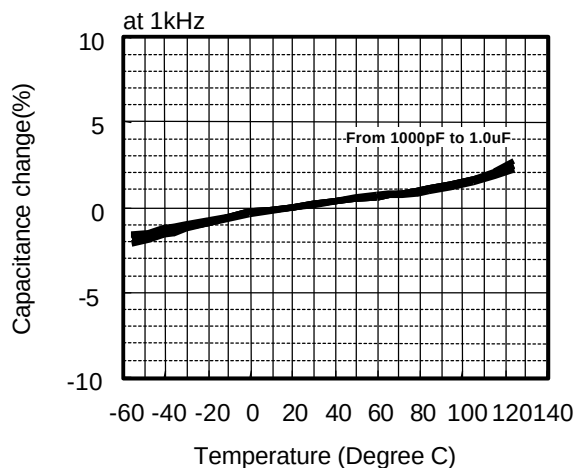
\*Permissible voltage graph is the case of sine waveform. When you use this product, peak voltage must not exceed DC rated voltage.

\*The current( $I_{0-P}$ ) value is calculated using nominal capacitance.

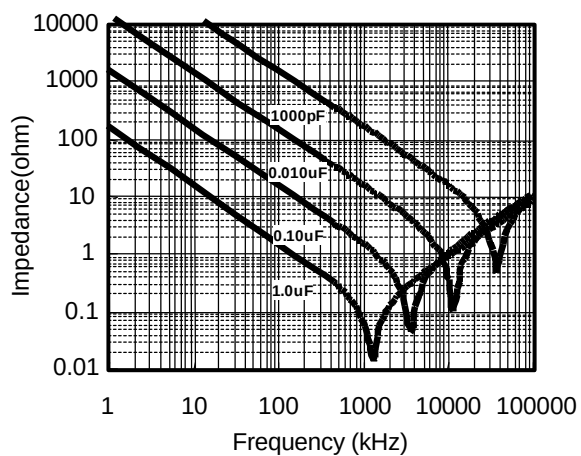
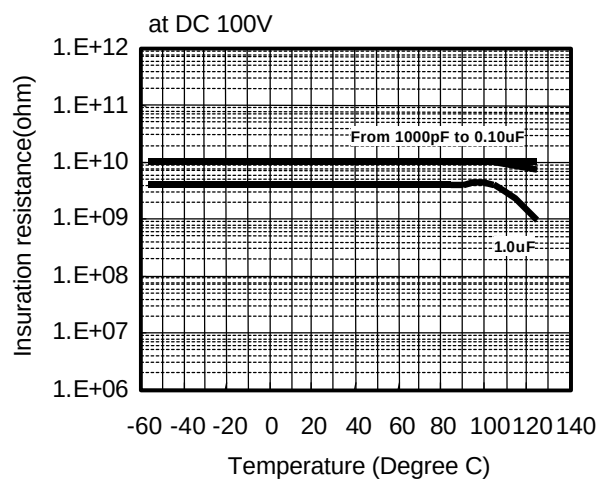
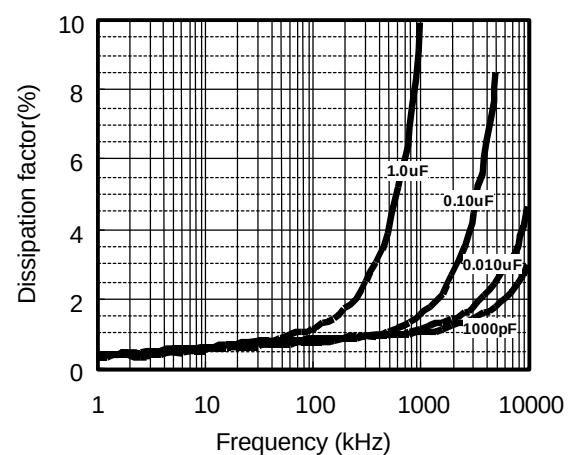
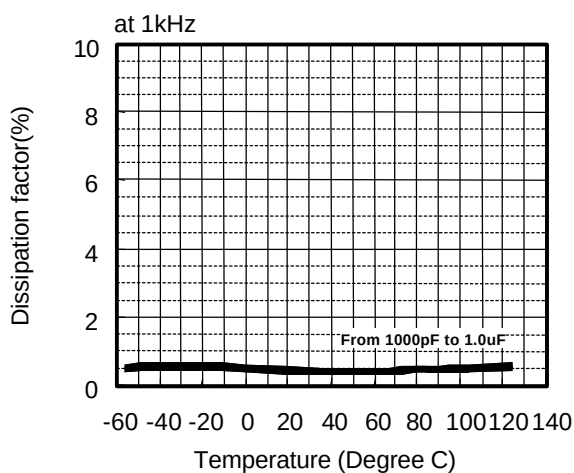
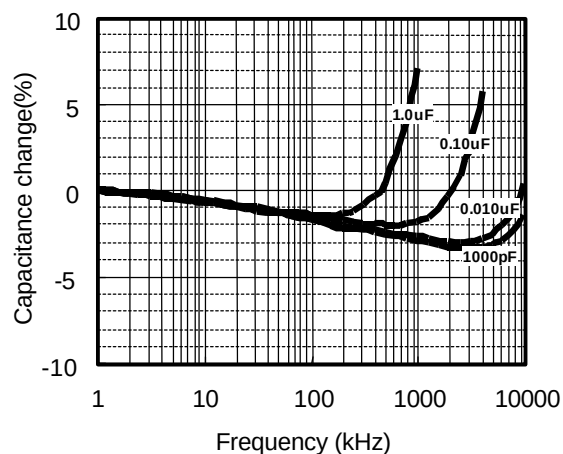
## ECWU (C) Type DC250V series (Stacked Metallized Film)

### Electrical Characteristics < Typical Data >

**Temperature Characteristics**

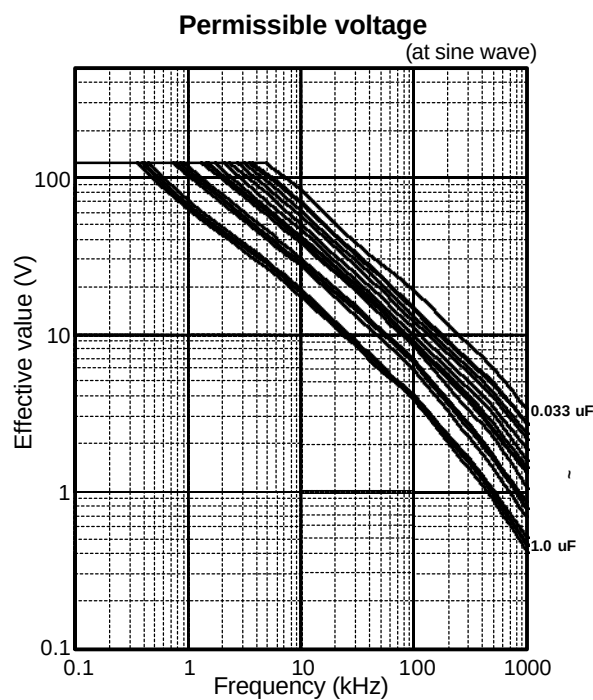
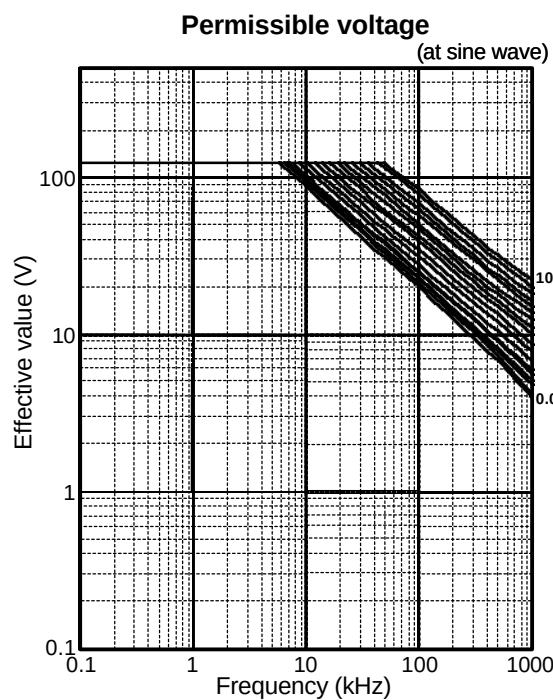
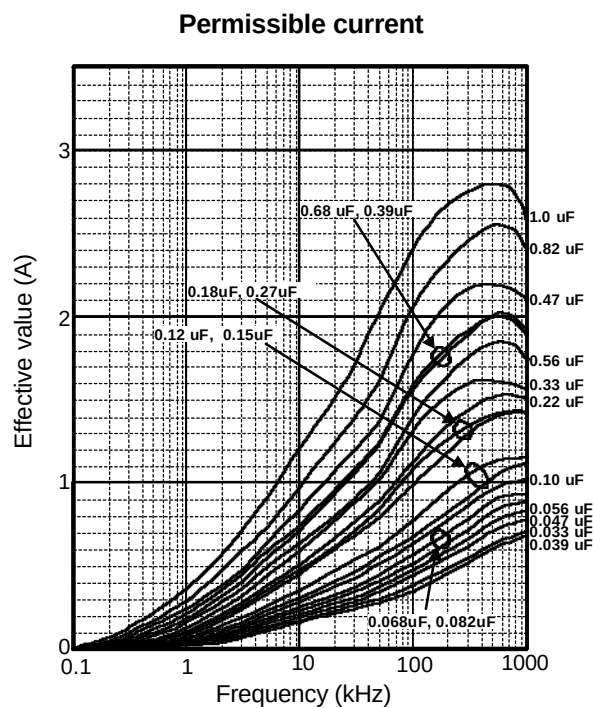
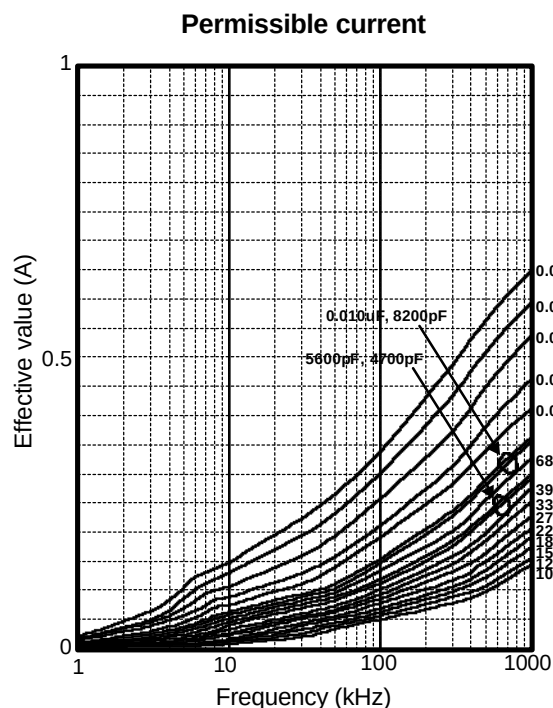


**Frequency Characteristics**



## ECWU (C) Type DC250V series (Stacked Metallized Film)

### Applicable Specifications



\* Please consult Panasonic if your condition exceeds the above spec.

\*Permissible voltage graph is the case of sine waveform. When you use this product, peak voltage must not exceed DC rated voltage.

\*The current<sub>(0-P)</sub> value is calculated using nominal capacitance.



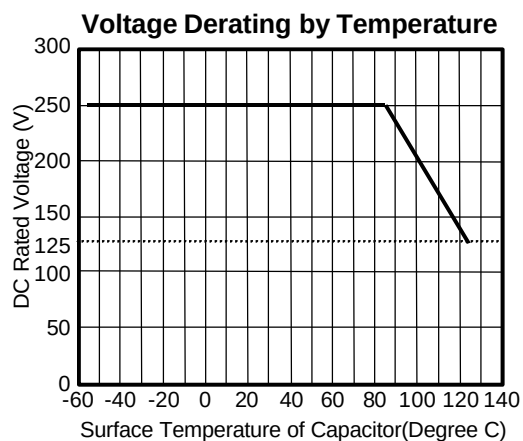
## ECWU (C) Type DC250V series (Stacked Metallized Film)

### Applicable Specifications

#### Pulse Handling Capability (dv/dt) (Max 10000cycles)

| Rating Voltage | Capacitance Value(uF) | Code | dv/dt(V/us) | Current(I <sub>0-P</sub> ) (A) |
|----------------|-----------------------|------|-------------|--------------------------------|
| DC 250V        | 0.0010                | 102  | 615         | 0.62                           |
|                | 0.0012                | 122  |             | 0.74                           |
|                | 0.0015                | 152  |             | 0.92                           |
|                | 0.0018                | 182  |             | 1.11                           |
|                | 0.0022                | 222  |             | 1.35                           |
|                | 0.0027                | 272  |             | 1.66                           |
|                | 0.0033                | 332  |             | 2.03                           |
|                | 0.0039                | 392  |             | 2.40                           |
|                | 0.0047                | 472  | 360         | 1.69                           |
|                | 0.0056                | 562  |             | 2.02                           |
|                | 0.0068                | 682  |             | 2.45                           |
|                | 0.0082                | 822  |             | 2.95                           |
|                | 0.010                 | 103  |             | 3.60                           |
|                | 0.012                 | 123  |             | 4.32                           |
|                | 0.015                 | 153  |             | 5.40                           |
|                | 0.018                 | 183  |             | 6.48                           |
|                | 0.022                 | 223  |             | 7.92                           |
|                | 0.027                 | 273  |             | 9.72                           |
|                | 0.033                 | 333  |             | 11.88                          |

| Rating Voltage | Capacitance Value(uF) | Code | dv/dt(V/us) | Current(I <sub>0-P</sub> ) (A) |
|----------------|-----------------------|------|-------------|--------------------------------|
| DC 250V        | 0.039                 | 393  | 240         | 9.36                           |
|                | 0.047                 | 473  |             | 11.28                          |
|                | 0.056                 | 563  |             | 13.44                          |
|                | 0.068                 | 683  |             | 16.32                          |
|                | 0.082                 | 823  |             | 19.68                          |
|                | 0.10                  | 104  |             | 24.00                          |
|                | 0.12                  | 124  |             | 28.80                          |
|                | 0.15                  | 154  | 190         | 28.50                          |
|                | 0.18                  | 184  |             | 34.20                          |
|                | 0.22                  | 224  |             | 41.80                          |
|                | 0.27                  | 274  | 115         | 31.05                          |
|                | 0.33                  | 334  |             | 37.95                          |
|                | 0.39                  | 394  |             | 44.85                          |
|                | 0.47                  | 474  |             | 54.05                          |
|                | 0.56                  | 564  | 65          | 36.40                          |
|                | 0.68                  | 684  |             | 44.20                          |
|                | 0.82                  | 824  |             | 53.30                          |
|                | 1.0                   | 105  |             | 65.00                          |



\* Please consult Panasonic if your condition exceeds the above spec.

\*Permissible voltage graph is the case of sine waveform. When you use this product, peak voltage must not exceed DC rated voltage.

\*The current(I<sub>0-P</sub>) value is calculated using nominal capacitance.