

### Film Chip Capacitor

Type: **ECWU (V16), (V17)**

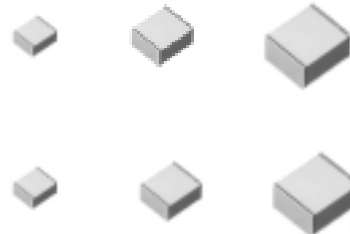
Stacked Metallized PEN film as dielectric with simple mold-less construction

■ **Features**

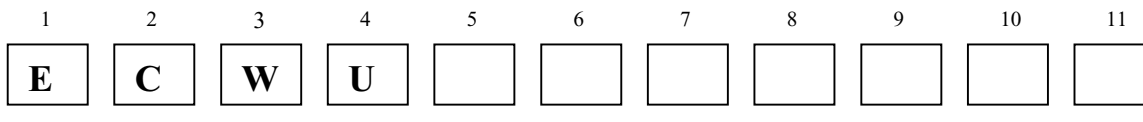
- Small in size
- Applicable for Reflow soldering

■ **Recommended Applications**

- DC Blocking for xDSL
- By-pass
- General purpose



■ **Explanation of Part Numbers**



Product code

Dielectric & construction

Rated Voltage

Capacitance

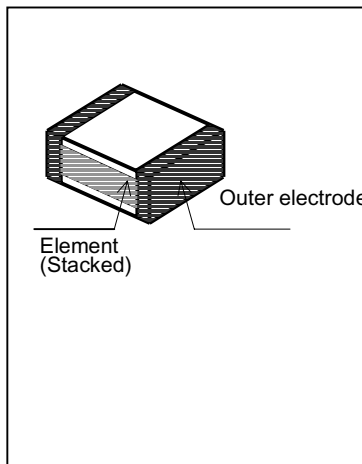
|   |        |
|---|--------|
| 2 | 250VDC |
| 4 | 400VDC |

|                         |                      |
|-------------------------|----------------------|
| Rating (Withstand Volt) |                      |
| V16                     | 250VDC (400VDC 1min) |
| V17                     | 400VDC (600VDC 1min) |

■ **Specification**

|                       |  |
|-----------------------|--|
| Rated Voltage         | 250VDC, 400VDC   |
| Capacitance range     | 250VDC : 0.001 to 0.12uF (E12)<br>400VDC : 0.001 to 0.15uF (E12)                                   |
| Capacitance tolerance | +/-5%(J)   |
| Withstand voltage     | Between terminals<br>250VDC rating : 400VDC for 60s<br>400VDC rating : 600VDC for 60s              |
| Dissipation factor    | 1.0% or less (20 degree C, 1kHz)   |
| Insulation resistance | 250VDC : 3000M ohm or more   |
| Soldering condition   | Reflow soldering : 230 degree C max. 30sec max.<br>210 degree C and above (Temp. at caps. surface) |

■ **Construction**



| Size code | L    | W    | H   |
|-----------|------|------|-----|
| 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  | 4.1  | 1.8 |
| 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  | 5.5  |     |
| Y         | 7.1  | 6.3  |     |
| V         | 9.8  | 6.3  |     |
| U         | 9.8  | 8.0  |     |
| T         | 15.2 | 8.0  |     |
| S         | 15.2 | 10.0 |     |

\*:Refer to the column "Rating, Dimension & Quantity"

■ **Rating, Dimension & Quantity / Reel**  
**Capacitance tolerance: +/-5%(J)**

| Cap.<br>( $\mu$ F) | Rated volt. 250VDC (400VDC for 1min.) |                    |     |     |              | Rated volt. 400VDC (600VDC for 1min.) |             |                    |     |     |              |          |
|--------------------|---------------------------------------|--------------------|-----|-----|--------------|---------------------------------------|-------------|--------------------|-----|-----|--------------|----------|
|                    | Part No.                              | Dimensions<br>(mm) |     |     | Size<br>code | Quantity                              | Part No.    | Dimensions<br>(mm) |     |     | Size<br>code | Quantity |
|                    |                                       | L                  | W   | H   |              |                                       |             | L                  | W   | H   |              |          |
| 0.001              | ECWU2102V16                           | 4.8                | 3.3 | 1.4 | E1           | 3,000                                 | ECWU4102V17 | 4.8                | 3.3 | 1.4 | E1           | 3,000    |
| 0.0012             | ECWU2122V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4122V17 | 4.8                | 3.3 | 1.4 | E1           |          |
| 0.0015             | ECWU2152V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4152V17 | 4.8                | 3.3 | 1.4 | E1           |          |
| 0.0018             | ECWU2182V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4182V17 | 4.8                | 3.3 | 1.4 | E1           |          |
| 0.0022             | ECWU2222V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4222V17 | 4.8                | 3.3 | 1.4 | E1           |          |
| 0.0027             | ECWU2272V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4272V17 | 4.8                | 3.3 | 1.4 | E1           |          |
| 0.0033             | ECWU2332V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4332V17 | 4.8                | 3.3 | 1.4 | E1           |          |
| 0.0039             | ECWU2392V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4392V17 | 4.8                | 3.3 | 1.4 | E1           |          |
| 0.0047             | ECWU2472V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4472V17 | 4.8                | 3.3 | 1.4 | E1           |          |
| 0.0056             | ECWU2562V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4562V17 | 4.8                | 3.3 | 2.0 | E2           |          |
| 0.0068             | ECWU2682V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4682V17 | 4.8                | 3.3 | 2.0 | E2           |          |
| 0.0082             | ECWU2822V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4822V17 | 4.8                | 3.3 | 2.4 | E3a          |          |
| 0.01               | ECWU2103V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4103V17 | 4.8                | 3.3 | 2.8 | E3           |          |
| 0.012              | ECWU2123V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4123V17 | 6.0                | 4.1 | 2.0 | D2           |          |
| 0.015              | ECWU2153V16                           | 4.8                | 3.3 | 1.4 | E1           |                                       | ECWU4153V17 | 6.0                | 4.1 | 2.4 | D3           |          |
| 0.018              | ECWU2183V16                           | 4.8                | 3.3 | 2.0 | E2           |                                       | ECWU4183V17 | 6.0                | 4.1 | 2.8 | D4           |          |
| 0.022              | ECWU2223V16                           | 4.8                | 3.3 | 2.0 | E2           |                                       | ECWU4223V17 | 6.0                | 4.1 | 3.2 | D5           |          |
| 0.027              | ECWU2273V16                           | 4.8                | 3.3 | 2.4 | E3a          |                                       | ECWU4273V17 | 6.0                | 5.0 | 3.0 | B            |          |
| 0.033              | ECWU2333V16                           | 4.8                | 3.3 | 2.8 | E3           | ECWU4333V17                           | 6.0         | 5.0                | 3.6 | B   |              |          |
| 0.039              | ECWU2393V16                           | 6.0                | 4.1 | 2.0 | D2           | ECWU4393V17                           | 7.1         | 5.0                | 3.2 | Z   |              |          |
| 0.047              | ECWU2473V16                           | 6.0                | 4.1 | 2.4 | D3           | ECWU4473V17                           | 7.1         | 5.0                | 3.8 | Z   |              |          |
| 0.056              | ECWU2563V16                           | 6.0                | 4.1 | 2.8 | D4           | ECWU4563V17                           | 7.1         | 6.3                | 3.6 | Y   |              |          |
| 0.068              | ECWU2683V16                           | 6.0                | 4.1 | 3.2 | D5           | ECWU4683V17                           | 7.1         | 6.3                | 4.4 | Y   |              |          |
| 0.082              | ECWU2823V16                           | 6.0                | 5.0 | 3.2 | B            | ECWU4823V17                           | 9.8         | 6.3                | 3.4 | V   |              |          |
| 0.1                | ECWU2104V16                           | 6.0                | 5.0 | 3.8 | B            | ECWU4104V17                           | 9.8         | 6.3                | 4.0 | V   |              |          |
| 0.12               | ECWU2124V16                           | 6.0                | 5.0 | 4.5 | B            | ECWU4124V17                           | 9.8         | 8.0                | 3.8 | U   |              |          |
| 0.15               |                                       |                    |     |     |              | ECWU4154V17                           | 9.8         | 8.0                | 4.6 | U   |              |          |

■ **Example for Land Dimension (mm)**

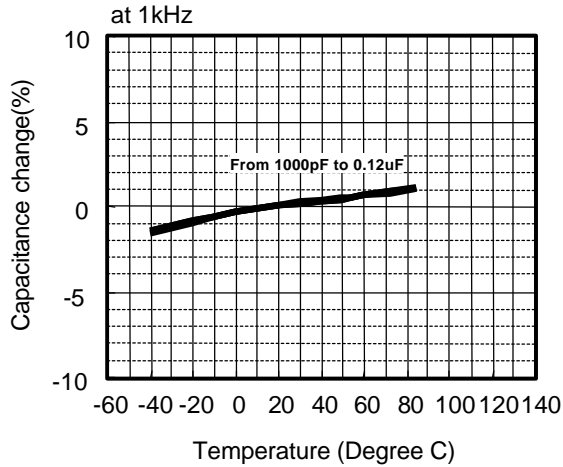
**Very Important!!**

| Size code    | Pad Layout for<br>Reflow soldering |      |     |
|--------------|------------------------------------|------|-----|
|              | A                                  | B    | C   |
| E1,E2,E3a,E3 | 2.6                                | 6.6  | 3   |
| D2,D3,D4,D5  | 3.8                                | 7.8  | 3.8 |
| B            | 3.8                                | 7.8  | 4.6 |
| Z            | 4.5                                | 9    | 4.6 |
| X            | 5.1                                | 9.7  | 5   |
| Y            | 4.5                                | 9    | 5.7 |
| V            | 7.2                                | 11.9 | 5.7 |

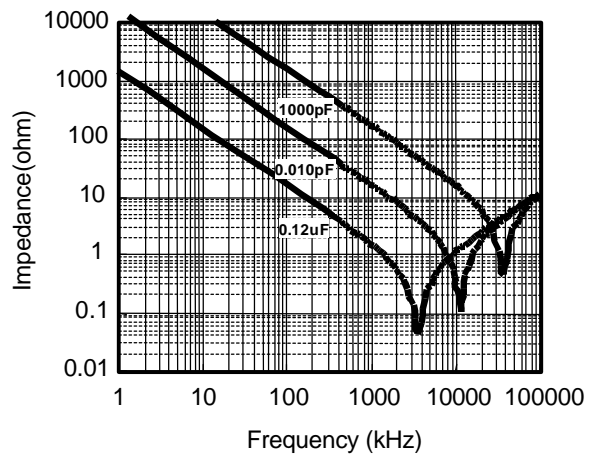
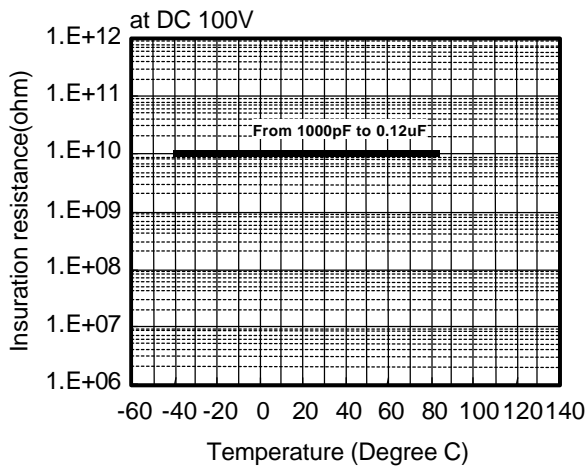
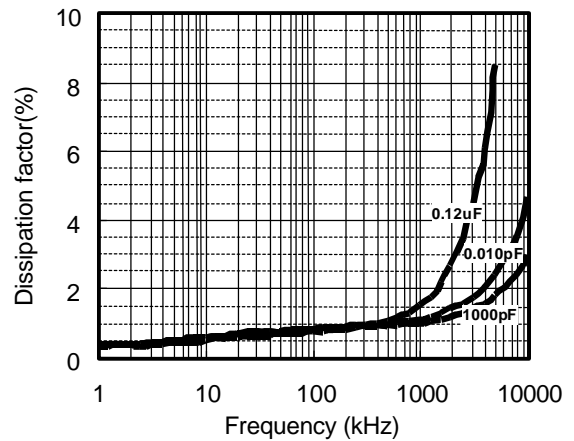
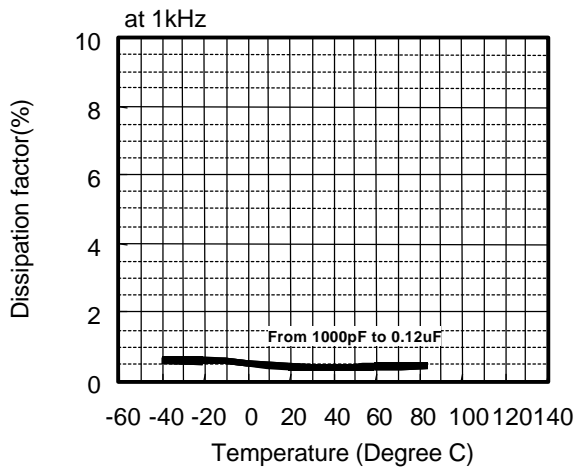
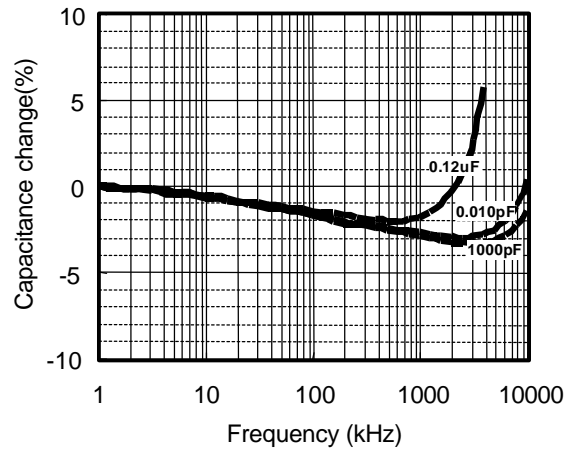
**ECWU (V16) Type (for xDSL) DC250V series (Stacked Metallized Film)**

**Electrical Characteristics < Typical Data >**

**Temperature Characteristics**

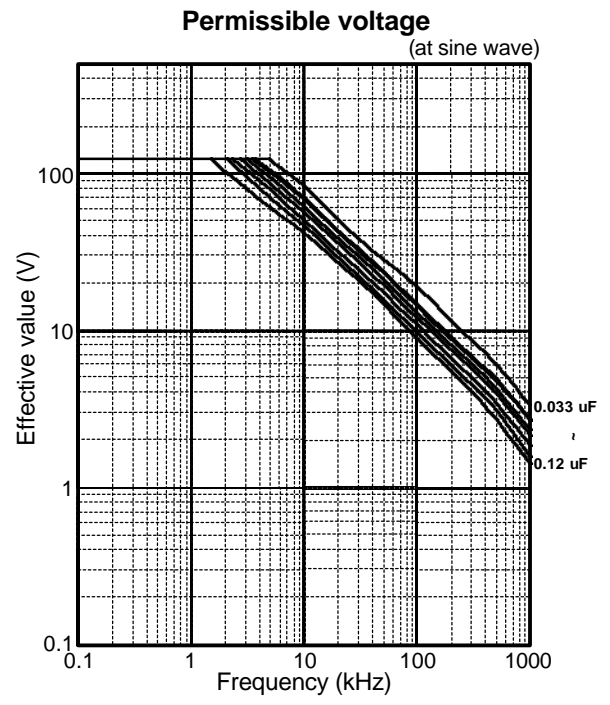
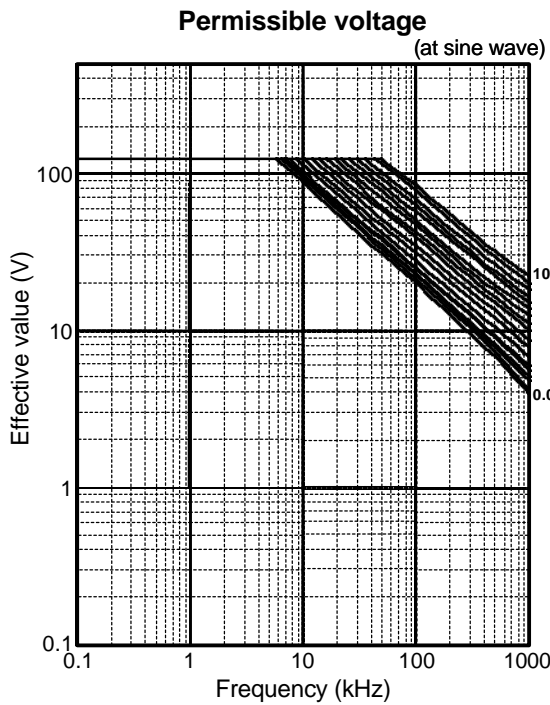
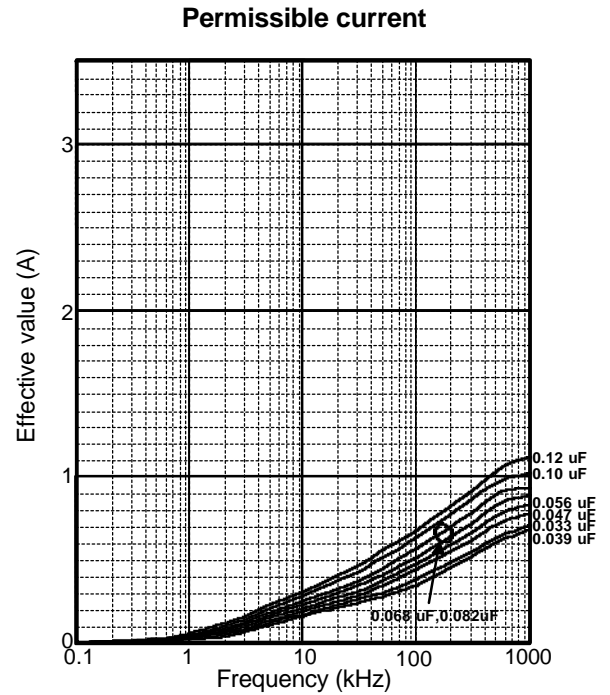
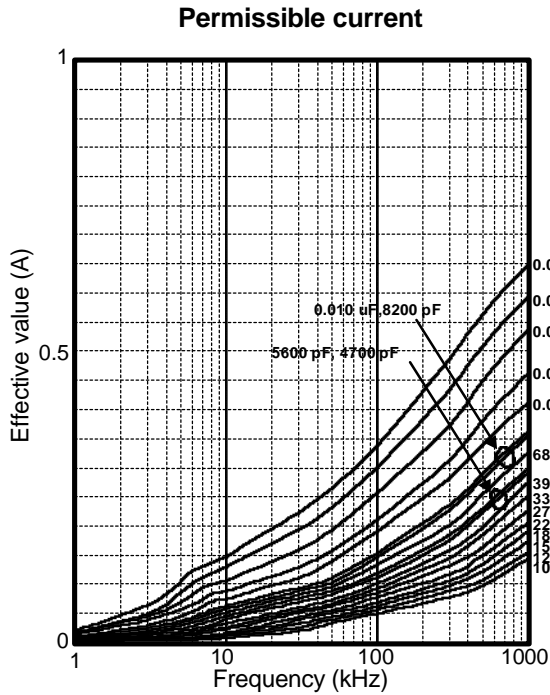


**Frequency Characteristics**



**ECWU (V16) 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.



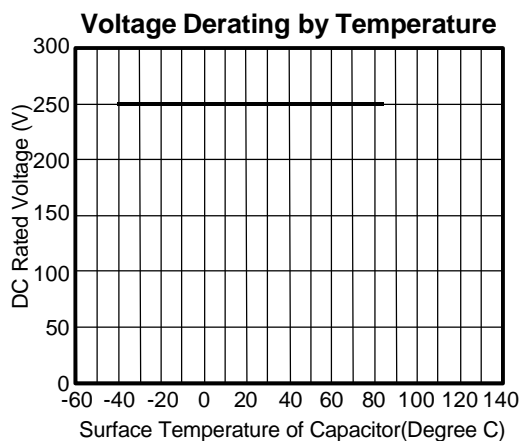
## ECWU (V16) Type DC250V series (Stacked Metallized Film)

### Applicable Specifications

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

| Rating Voltage | Capacitance Value(uF) | Code | dv/dt(V/us) | Current <sub>(o,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 <sub>(o,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                        |



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

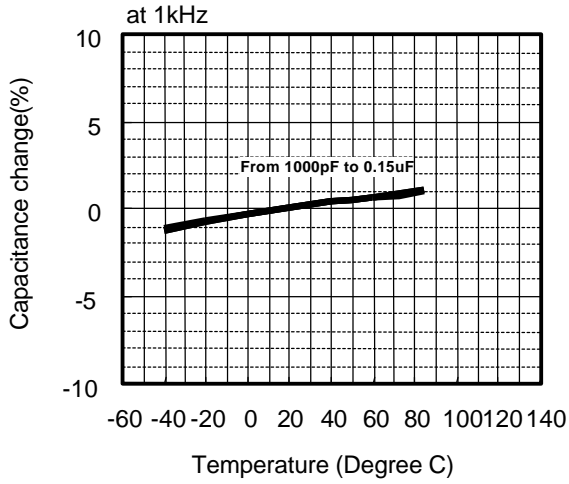
\*Permissible voltage graph is the case of sine waveform. When you use this product, peak voltage must not exceed DC rated voltage.

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

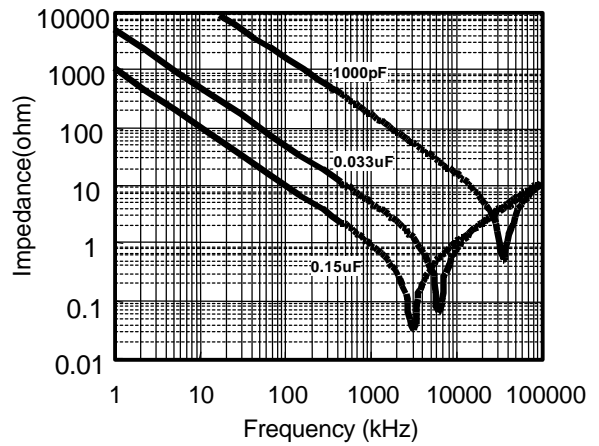
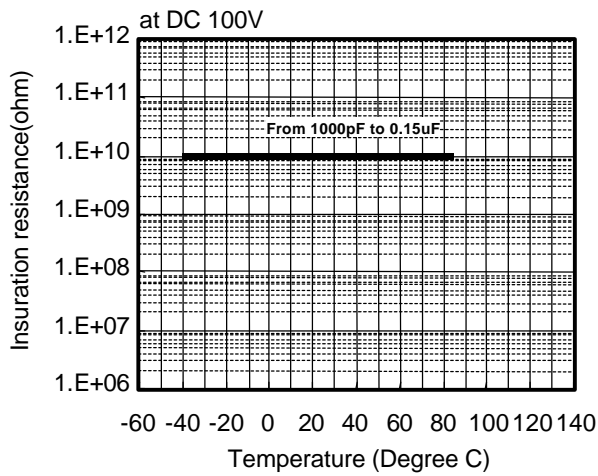
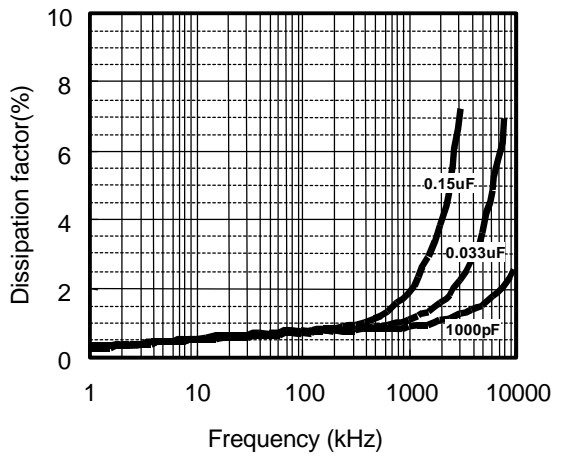
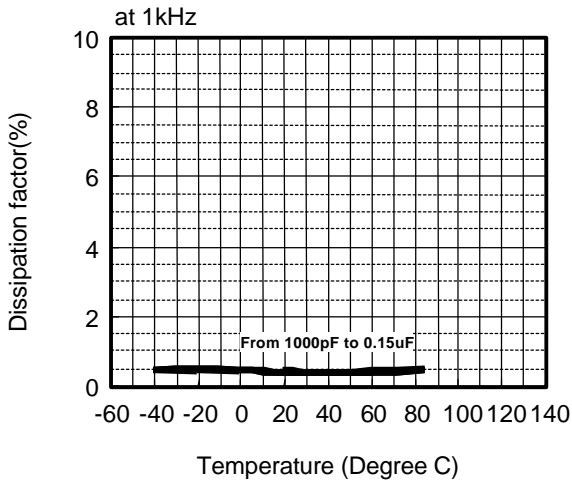
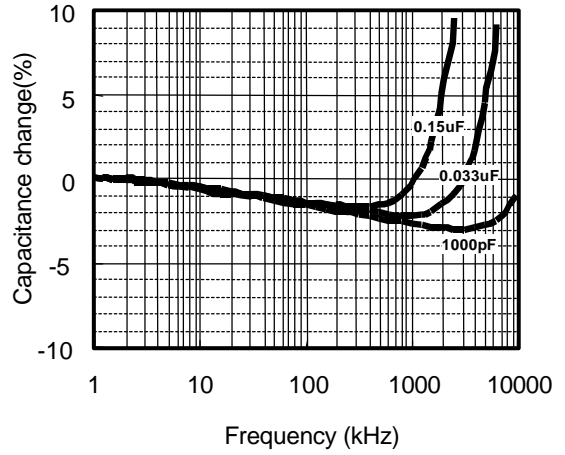
**ECWU (V17) Type(for xDSL) DC400V series (Stacked Metallized Film)**

**Electrical Characteristics < Typical Data >**

**Temperature Characteristics**

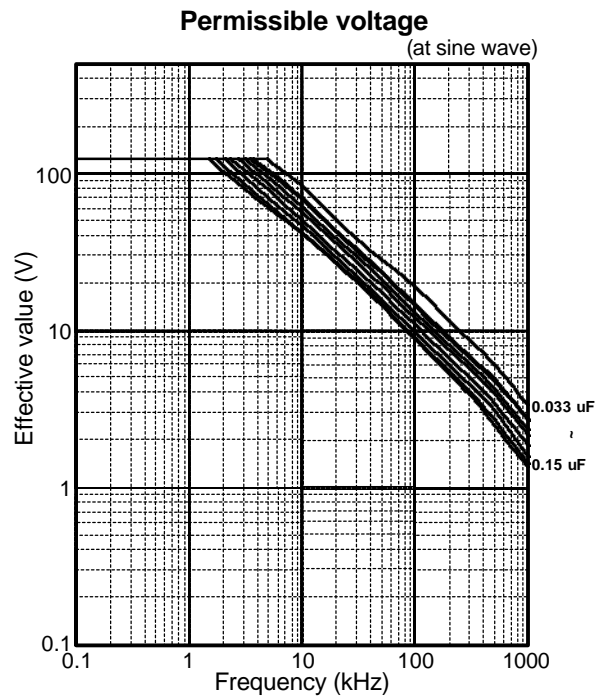
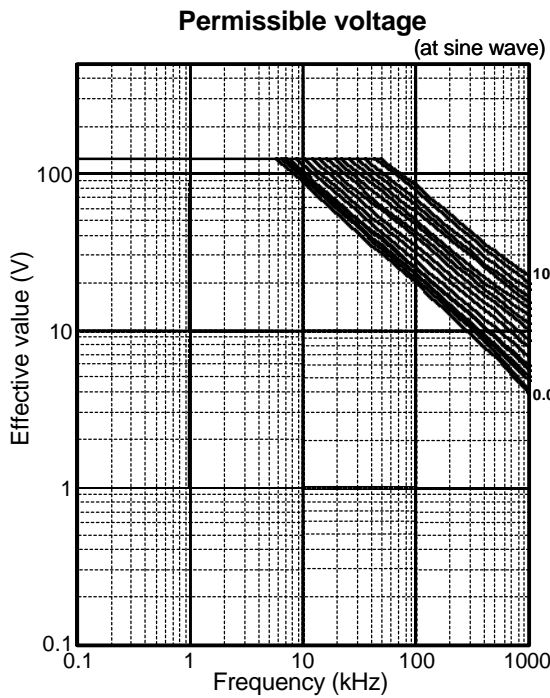
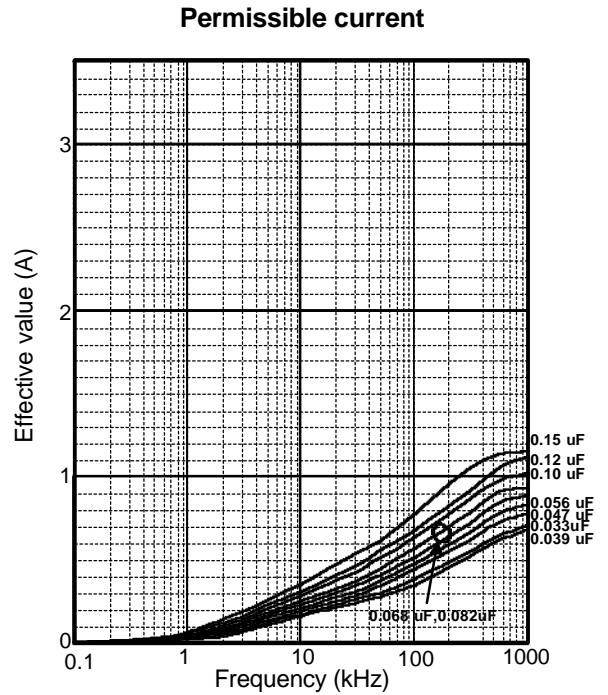
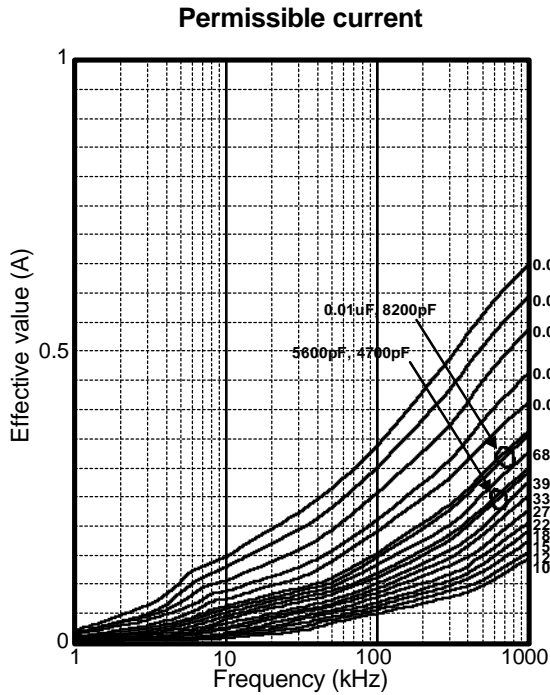


**Frequency Characteristics**



**ECWU (V17) Type DC400V 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.



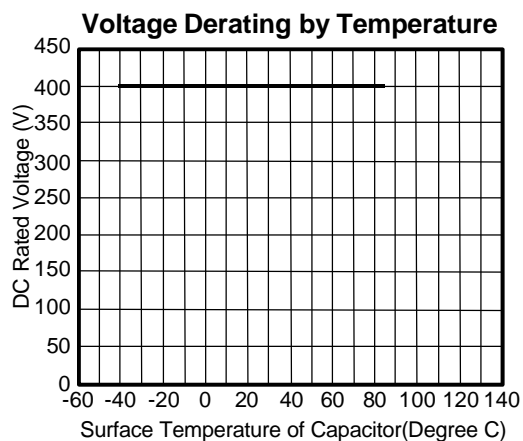
## ECWU (V17) Type DC400V series (Stacked Metallized Film)

### 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 400V        | 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  | 240         | 3.60                         |
|                | 0.012                 | 123  |             | 2.88                         |
|                | 0.015                 | 153  |             | 3.60                         |
|                | 0.018                 | 183  |             | 4.32                         |
|                | 0.022                 | 223  |             | 5.28                         |
|                | 0.027                 | 273  |             | 6.48                         |
|                | 0.033                 | 333  |             | 7.92                         |

| Rating Voltage | Capacitance Value(uF) | Code | dv/dt(V/us) | Current <sub>(o,p)</sub> (A) |
|----------------|-----------------------|------|-------------|------------------------------|
| DC 400V        | 0.039                 | 393  | 190         | 7.41                         |
|                | 0.047                 | 473  |             | 8.93                         |
|                | 0.056                 | 563  |             | 10.64                        |
|                | 0.068                 | 683  |             | 12.92                        |
|                | 0.082                 | 823  | 115         | 9.43                         |
|                | 0.10                  | 104  |             | 11.50                        |
|                | 0.12                  | 124  |             | 13.80                        |
|                | 0.15                  | 154  |             | 17.25                        |



\* 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.