

## Stacked Metallized PEN Film Chip Capacitor

Type: **ECWU(X)**

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

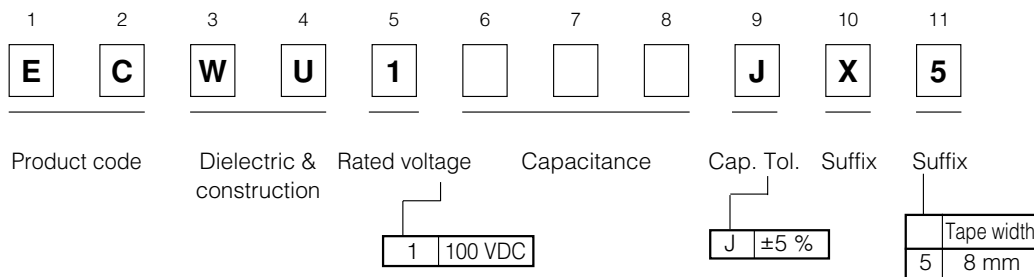
### ■Features

- Small in size (minimum size 3.2 mm × 1.6 mm)
- 85 °C, 85 %RH, W.V. × 1.0 for 500 hours
- For reflow soldering
- RoHS directive compliant

### ■Recommended Applications

- General purpose (Coupling, By-pass)

### ■Explanation of Part Numbers

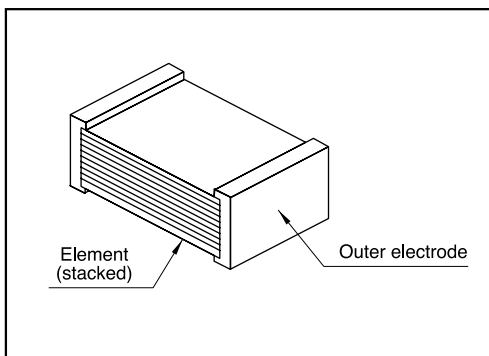


### ■Specifications

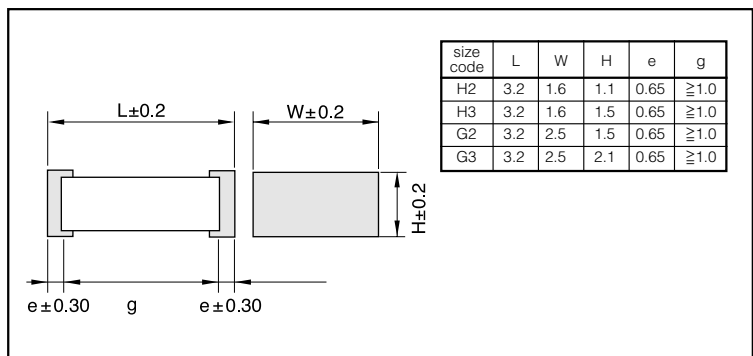
Category temp. range (Including temperature-rise on unit surface)	-55 °C to +105 °C
Rated voltage	100 VDC
Capacitance range	0.0010 μF to 0.010 μF (E12)
Capacitance tolerance	±5 % (J)
Withstand voltage	Between terminals : Rated volt. (VDC)×150 % 60 s
Dissipation factor (tanδ)	tanδ ≤ 1.0 % (20 °C, 1 kHz)
Insulation resistance (IR)	IR ≥ 3000 MΩ (20 °C, 100 VDC, 60 s)
Soldering conditions	Reflow soldering : 240 °C max. and 60 s max. at more than 220 °C (Temp. at cap. surface) (Please consult us for Reflow 250 °C max product.)

\* In case of applying voltage in alternating current (50 Hz or 60 Hz sine wave) to a capacitor with DC rated voltage, please refer to the page of "Permissible voltage (R.M.S) in alternating current corresponding to DC rated voltage".

### ■Construction



### ■Dimensions in mm (not to scale)



### ■ Taping Specification for Automatic Mounting

Refer to the page of taping specifications.

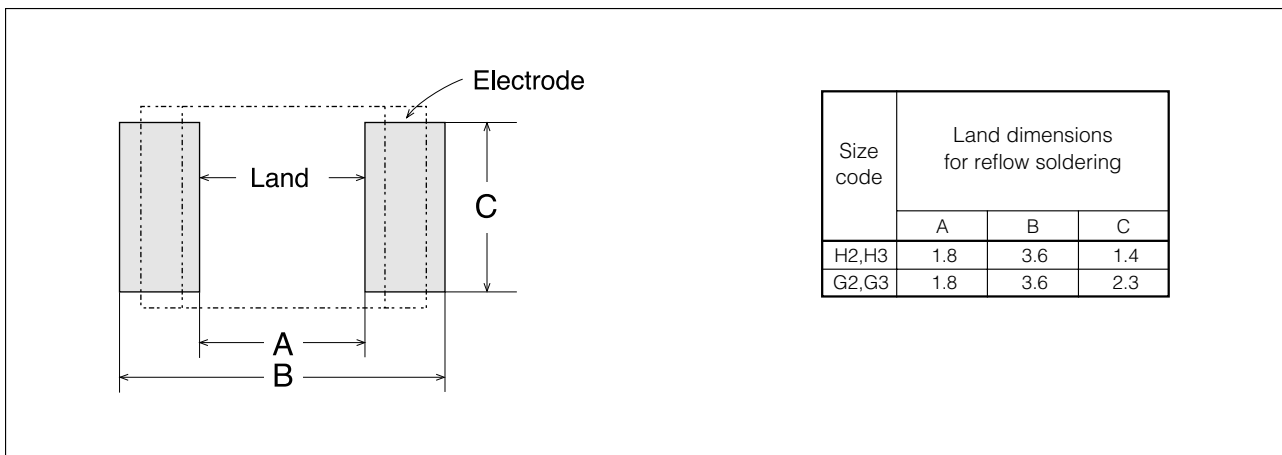
### ■ Rating, Dimensions & Quantity/Reel

- Capacitance tolerance :  $\pm 5\%$  (J)

Cap. ( $\mu\text{F}$ )	Rated volt. 100 VDC					Code	Q'ty
	Part No.	Dimensions (mm)					
		L	W	H			
0.0010	ECWU1102JX5	3.2	1.6	1.1	H2	3000	
0.0012	ECWU1122JX5	3.2	1.6	1.1	H2		
0.0015	ECWU1152JX5	3.2	1.6	1.1	H2		
0.0018	ECWU1182JX5	3.2	1.6	1.1	H2		
0.0022	ECWU1222JX5	3.2	1.6	1.1	H2		
0.0027	ECWU1272JX5	3.2	1.6	1.1	H2		
0.0033	ECWU1332JX5	3.2	1.6	1.5	H3	2000	
0.0039	ECWU1392JX5	3.2	1.6	1.5	H3		
0.0047	ECWU1472JX5	3.2	1.6	1.5	H3		
0.0056	ECWU1562JX5	3.2	2.5	1.5	G2		
0.0068	ECWU1682JX5	3.2	2.5	1.5	G2		
0.0082	ECWU1822JX5	3.2	2.5	2.1	G3		
0.010	ECWU1103JX5	3.2	2.5	2.1	G3		

cap.  $\geq 0.012 \mu\text{F}$  : Please use 100 VDC rating of ECWU(C)

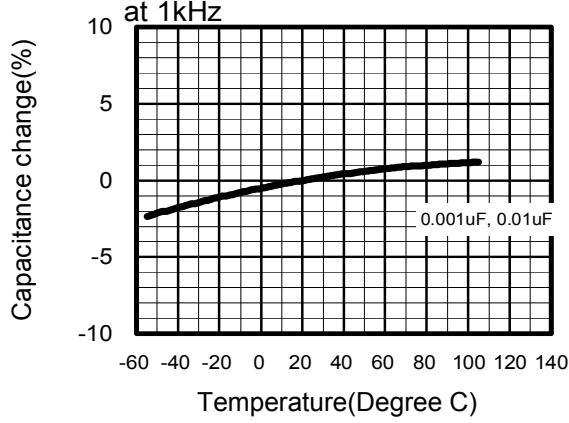
### ■ Recommended for Land Dimensions (mm)



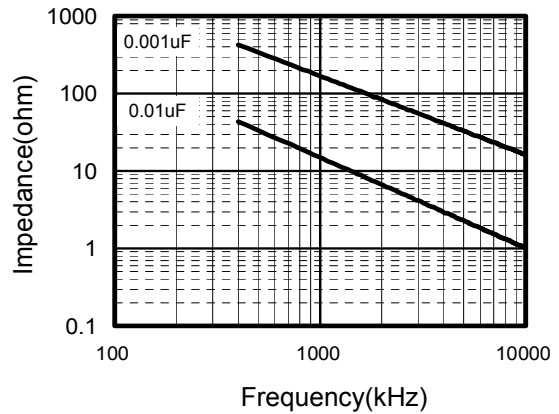
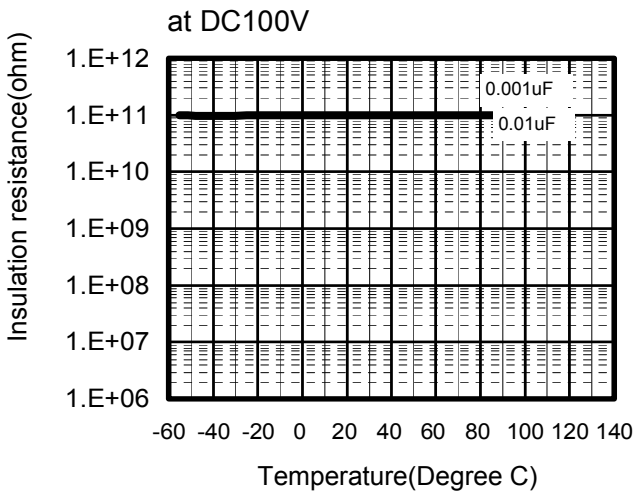
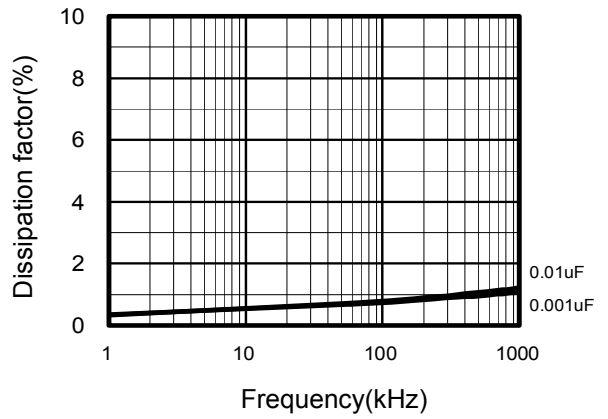
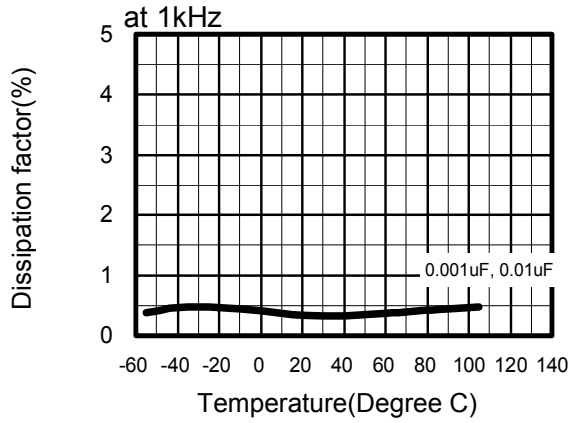
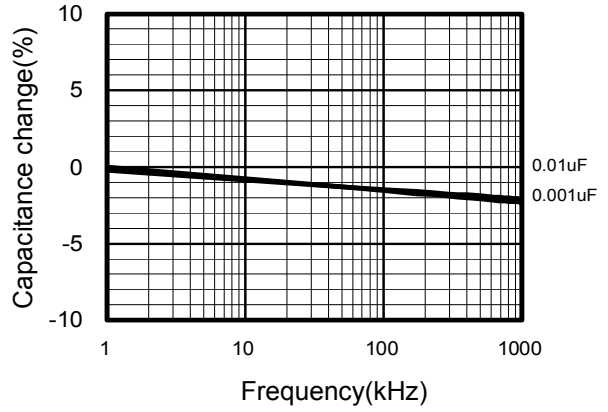
\* It is not warrantable that you can mount the capacitor without trouble under all the mounting condition when "Recommender for Land dimensions" is adopted.

**Electrical Characteristics <Typical Data >**

**Temperature Characteristics**

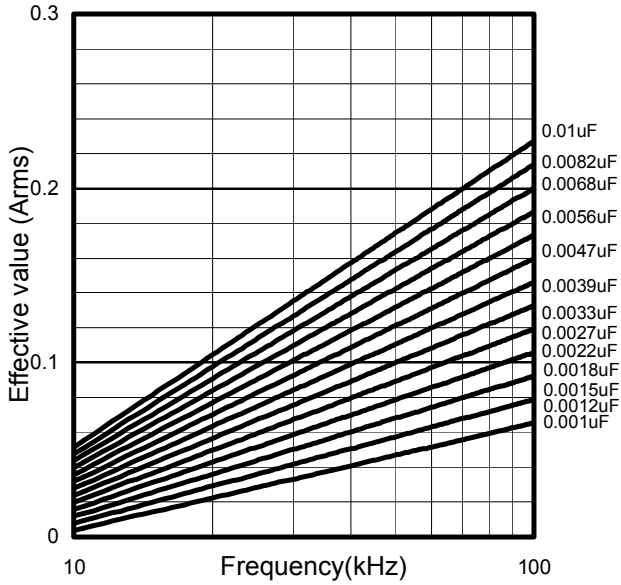


**Frequency Characteristics**



**Applicable Specifications**

**Permissible Current**



**Pulse Handling Capability (dv/dt)**

(Max 1000cycles)

Rating Voltage	Capacitance Value (μF)	Code	dV/dt (V/μs)	Current(A <sub>0-P</sub> )
DC 100V	0.0010	102	1000	1.00
	0.0012	122	920	1.10
	0.0015	152	830	1.25
	0.0018	182	760	1.37
	0.0022	222	690	1.52
	0.0027	272	630	1.70
	0.0033	332	570	1.88
	0.0039	392	530	2.07
	0.0047	472	480	2.26
	0.0056	562	450	2.52
	0.0068	682	410	2.79
	0.0082	822	370	3.03
0.0100	103	340	3.40	

\*Please consult Panasonic if your condition exceeds the above

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

### 2.4.2 Cautions for use of soldering iron

- Be careful that the soldering irons do not directly touch the main body of the chip film capacitor. In particular, don't touch the side (cut section). If touched by the heated soldering iron, lowering of insulation resistance, shortcircuit or other characteristic deterioration may occur.
- Preheat the printed wiring board land sufficiently with the soldering iron, and then solder. Solder without directly touching the iron tip to the electrode of the capacitor.
- Don't reuse the products once removed by the soldering irons.
- Should not mount the chip film capacitors in the mass production by soldering iron. (The temperature control is difficult, and the characteristics may be deteriorated.)
- Should not resolder with heat directly from bottom side of P. W. Board. because capacitor will likely be damaged.

### 3. Washing the mounted boards

#### <Usable detergent and washing method>

(Usable detergent)

Classification	Detergent name	Maker
Alcohol derivative	IPA (isopropyl alcohol)	(Reagent for general industrial use)
Halogenated hydrocarbon	AK-225AES	Asahi Glass Co.

(Washing method)

Item	Condition	Temperature	Time
Immersion washing		50 °C	Within 5 minutes
Steam washing		50 °C	Within 5 minutes
Ultrasonic washing		50 °C	Within 5 minutes

#### <CFC substitute detergent>

As a result of regulation of CFC and chlorine derivative detergents, many substitute detergents come to be used, but the performance of the chip type capacitor may be reduced depending on the type of detergent or washing condition. Check sufficiently beforehand. Consult us in advance if planning to use CFC substitute detergent.

#### <Drying after washing>

Dry after washing so that the detergent is not left over. If drying is insufficient, the detergent is left over on the element surface, and the insulation resistance is measured to be lowered. Dry enough so as not to leave detergent.

### 3.1. Washing of chip type

- Since the chip type capacitor does not have a coating, components of flux or detergent left over on the element at the time of washing may be activated and invade into the inside of the capacitor, and adverse effects may be caused. Observe the following cautions.
- In the case of washing, use flux and cream solder with halogen content of 0.1wt.% or less when mounting.
- In the case of ultrasonic washing, note that peeling of protective film, electrode separation due to resonance, or characteristic deterioration may occur depending on the detergent used or ultrasonic output. Check carefully beforehand.
- When using a CFC substitute detergent, with the washing method of spraying detergent (rinsing water) to the substrate at high pressure, the protective film on the element surface may be peeled off due to the water pressure. Check carefully beforehand.

### 3.2. Washing of leaded type

The film capacitor varies significantly in the effect of washing depending on the structure and material, and generally it is less affected by CFC or alcohol derivative washing solvent, and is likely to be affected by highly polar solvent.

The lead type film capacitor is coated with an epoxy resin excellent in chemical resistance, and is hardly affected by detergent, but it is recommended to be washed for short duration.

Applicability of detergents in film capacitors is listed for reference.

< List of applicability of detergents >

Washing condition		Chip type	Lead type	Box type	
				ECQUL	
Solvent	Alcohol	Ethanol Ultrasonic washing or immersion washing for 5 min			
		Isopropyl alcohol (IPA) Ultrasonic washing or immersion washing for 5 min			
	Silicon	FRW-17 Ultrasonic washing for 5 min, 60 FRW-1N Ultrasonic washing for 5 min, 60 FRW-100 Steam drying for 1 min, 100			
		Halogen	Asahi Clean AK-225AES Ultrasonic washing or immersion washing for 5 min		
	HCFC141b-MS Ultrasonic washing or immersion washing for 5 min				
	Petroleum hydrocarbon	P3 Cold Cleaner 225S Ultrasonic washing for 5 min 60 IPA ultrasonic rinsing for 5 min at ordinary temperature hot air drying for 5 min, 40			
Toluene Ultrasonic washing or immersion washing for 5 min		×			
Terpene	Terpene Cleaner EC-7 Spray washing for 5 min at ordinary temperature purified water spraying for 5 min, 50 hot air drying for 5 min, 80	×			
Water	Purified water	Ultrasonic washing for 5 min 60 wind-free drying for 5 min, 85	×		
	Surface active agent	Clean Through 750H Ultrasonic washing for 5 min, 60 purified water ultrasonic washing for 5 min, 60 hot air drying for 5 min, 85	×		
		Clean Through 750L Ultrasonic washing for 5 min, 60 purified water ultrasonic washing for 5 min, 60 hot air drying for 5 min, 85	×		
		Clean Through 710M Ultrasonic washing for 5 min, 60 purified water ultrasonic washing for 5 min, 60 hot air drying for 5 min, 85	×		
		Clean Through LC-841 Ultrasonic washing for 5 min, 60 purified water ultrasonic washing for 5 min, 60 hot air drying for 5 min, 85	×		
		Ultrasonic washing for 5 min, 60 purified water ultrasonic washing for 5 min, 60 hot air drying for 5 min, 85	×		
		Shower washing for 1 min, 60 purified water ultrasonic washing for 5 min, 60 hot air drying for 5 min, 85	×		
: Washing enabled		× : Washing disabled : Not confirmed			

< Wash-free flux >

Wash-free	Low residue flux	ULF-500VS			
	Inactivated flux	AM-173			

Washing disabled (x mark) detergent should be avoided because the appearance may be impaired, the characteristic may be deteriorated, and the reliability cannot be guaranteed