

# CL21 (MEF) Type Metallized Polyester Film Capacitor

## 1. Features

- ◆ Metallized polyester film, non-inductive construction
- ◆ Wide capacitance range, small size
- ◆ Self-healing property, long life
- ◆ Epoxy resin sealing

## 2. Typical applications

- ◆ Suitable blocking, By-passing, and coupling
- ◆ Widely used in filter and low pulse circuits



## 3. Specifications

No	tem	Demand of performance	Methods of testing
1	Reference standard	GB7332 (IEC60384-2)	
2	Operating Temperature Range	-40°C ~ 105°C	
3	Rated Voltage	100VDC 250VDC 400VDC 630VDC	
4	Capacitance Range	0.01μF -10μF 1KHz 1.0V	
5	Capacitance Tolerance	±5% (J) ±10% (K) 1KHz 1.0V; Standard tol. : +/-10%	
6	Voltage Proof (V)	No failure Rated Voltage *1.6U <sub>R</sub>	Charge current ≤ 50mA Voltage time: 5S
7	Dissipation Factor (tg δ)	tgδ ≤ 0.01 1KHz	Test conditions : 1KHz, 1.0Vrms, 20°C
8	Insulation Resistance	U <sub>R</sub> > 100V C ≤ 0.33μF, IR ≥ 30000MΩ C > 0.33μF, IR ≥ 10000S U <sub>R</sub> ≤ 100V C ≤ 0.33μF, IR ≥ 15000MΩ C > 0.33μF, IR ≥ 5000S	AT 100VDC, 60SEC, 20°C

## 4. How to order:

<u>CL21</u>	<u>F</u>	<u>104</u>	<u>K</u>	<u>0250</u>	<u>0100</u>	<u>B</u>	<u>000</u>
<u>Type</u>	<u>Material Code</u>	<u>Capacitance Code</u>	<u>Tolerance</u>	<u>Rated Voltage</u>	<u>Size Code</u>	<u>Package Code</u>	<u>Suffix Indicate Special Requirement</u>
CL21 CL21	<b>F: Plastic Film Cap</b> For CL21	<b>pF Code: 1st two digits</b> represent significant figures 3rd digit represents multiplier (number of zeros to follow)  105 = 1μF 104 = 0.1μF 103 = 0.01μF	J: +/-5% K: +/-10%	<b>For DC Voltage</b> 0100: 100VDC 0250: 250VDC 0400: 400VDC 0630: 630VDC	<b>Code for Pitch Size</b> 0100: pitch size 10mm 0150: pitch size 15mm 0200: pitch size 20mm 0225: pitch size 22.5mm 0275: pitch size 27.5mm  Straight, Lead Shape Code 0, 10mm pitch=0100 Inside kink, Lead Shape Code 4, 10mm pitch=4100  First number indicates lead shape code 0 mean straight lead, for shape code 0 Pls refer to other shape code in spec.  Rest three numbers indicates pitch size 100=10mm 150=15mm 200=20mm	<b>B: Bulk</b> <b>A: Ammo Taped</b>	<b>000: Indicating Standard</b> <b>If for cut leads or long leads:</b> 000: mean standard LL 035: cut leads to 3.5mm 040: cut leads to 4mm 250: 25mm long leads

## 5. CL21 Series Capacitors Dimensions (Table 1)

Unit: mm

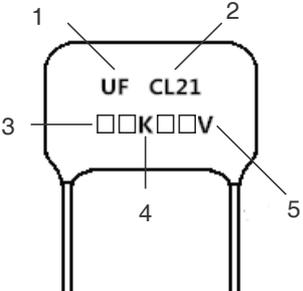
Capacitance (uF)	Rated Voltage	Size (mm)				
		W Max	H Max	T Max	P±1.0	d±0.05
0.01	100VDC	10.0	8.0	4.5	7.5	0.6
	250VDC	10.0	8.0	4.5	7.5	0.6
	400VDC	10.0	8.0	4.5	7.5	0.6
	630VDC	13.0	8.5	5.5	10.0	0.6
0.015	100VDC	10.0	8.5	5.0	7.5	0.6
	250VDC	10.0	8.5	5.0	7.5	0.6
	400VDC	10.0	8.5	5.0	7.5	0.6
	630VDC	13.0	9.5	6.0	10.0	0.6
0.022	100VDC	10.0	8.0	5.0	7.5	0.6
	250VDC	10.0	8.0	5.0	7.5	0.6
	400VDC	13.0	9.5	5.5	10.0	0.6
	630VDC	13.0	9.5	5.5	10.0	0.6
0.033	100VDC	10.0	8.5	5.0	7.5	0.6
	250VDC	10.0	8.5	5.0	7.5	0.6
	400VDC	13.0	9.5	5.5	10.0	0.6
	630VDC	13.0	9.5	5.5	10.0	0.6
0.047	100VDC	10.0	8.5	5.0	7.5	0.6
	250VDC	10.0	9.0	5.5	7.5	0.6
	400VDC	13.0	8.0	5.0	10.0	0.6
	630VDC	13.0	9.5	6.5	10.0	0.6
0.068	100VDC	10.0	8.5	5.5	7.5	0.6
	250VDC	10.0	8.5	5.5	7.5	0.6
	400VDC	13.0	9.0	6.0	10.0	0.6
	630VDC	13.0	11.5	7.0	10.0	0.6
0.1	100VDC	10.0	9.5	5.5	7.5	0.6
	250VDC	13.0	9.5	5.5	10.0	0.6
	400VDC	13.0	10.5	5.5	10.0	0.6
	630VDC	18.0	10.5	6.0	15.0	0.8
0.15	100VDC	13.0	8.5	5.5	10.0	0.6
	250VDC	13.0	10.5	5.0	10.0	0.6
	400VDC	13.0	11.5	7.0	10.0	0.6
	630VDC	18.0	12.0	7.0	15.0	0.8
0.22	100VDC	13.0	8.5	5.5	10.0	0.6
	250VDC	13.0	11.0	6.0	10.0	0.6
	400VDC	18.0	12.0	6.5	15.0	0.8
	630VDC	18.0	13.5	8.0	15.0	0.8

## 5. CL21 Series Capacitors Dimensions (Table 2)

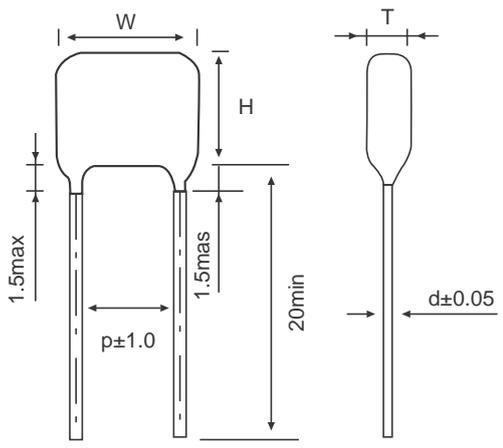
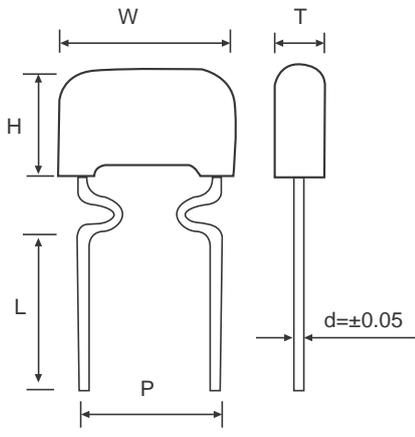
Unit: mm

Capacitance (uF)	Rated Voltage	Size (mm)				
		W Max	H Max	T Max	P±1.0	d±0.05
0.33	100VDC	13.0	8.5	5.5	10.0	0.6
	250VDC	18.0	10.5	6.0	15.0	0.8
	400VDC	18.0	12.5	7.0	15.0	0.8
	630VDC	18.0	16.5	9.5	15.0	0.8
0.47	100VDC	13.0	9.0	5.5	10.0	0.6
	250VDC	18.0	12.0	6.5	15.0	0.8
	400VDC	18.0	15.0	8.0	15.0	0.8
	630VDC	23.0	16.5	9.5	20.0	0.8
0.68	100VDC	13.0	10.0	6.0	10.0	0.6
	250VDC	18.0	13.5	8.0	15.0	0.8
	400VDC	18.0	17.0	9.5	15.0	0.8
	630VDC	23.0	18.0	11.0	20.0	0.8
1.0	100VDC	18.0	13.0	7.5	15.0	0.8
	250VDC	18.0	15.5	9.5	15.0	0.8
	400VDC	23.0	17.5	9.5	20.0	0.8
	630VDC	25.0	20.0	12.5	22.5	0.8
1.2	100VDC	18.0	12.0	7.0	15.0	0.8
	250VDC	23.0	15.0	8.0	20.0	0.8
	400VDC	23.0	18.5	10.5	20.0	0.8
	630VDC	31.0	21.0	12.0	27.5	0.8
1.5	100VDC	18.0	12.5	7.5	15.0	0.8
	250VDC	23.0	16.5	9.0	20.0	0.8
	400VDC	25.0	19.0	10.5	22.5	0.8
	630VDC	31.0	22.5	13.5	27.5	0.8
2.2	100VDC	18.0	16.0	10.0	15.0	0.8
	250VDC	23.0	20.0	9.0	20.0	0.8
	400VDC	31.0	20.0	11.0	27.5	0.8
3.3	100VDC	23.0	15.5	8.5	20.0	0.8
	250VDC	25.0	21.0	11.5	22.5	0.8
	400VDC	31.0	23.0	13.5	27.5	0.8
4.7	100VDC	23.0	17.0	10.0	20.0	0.8
	250VDC	31.0	22.0	12.5	27.5	0.8
6.8	100VDC	25.0	18.0	12.0	22.5	0.8
10.0	100VDC	31.0	19.0	12.0	27.5	0.8

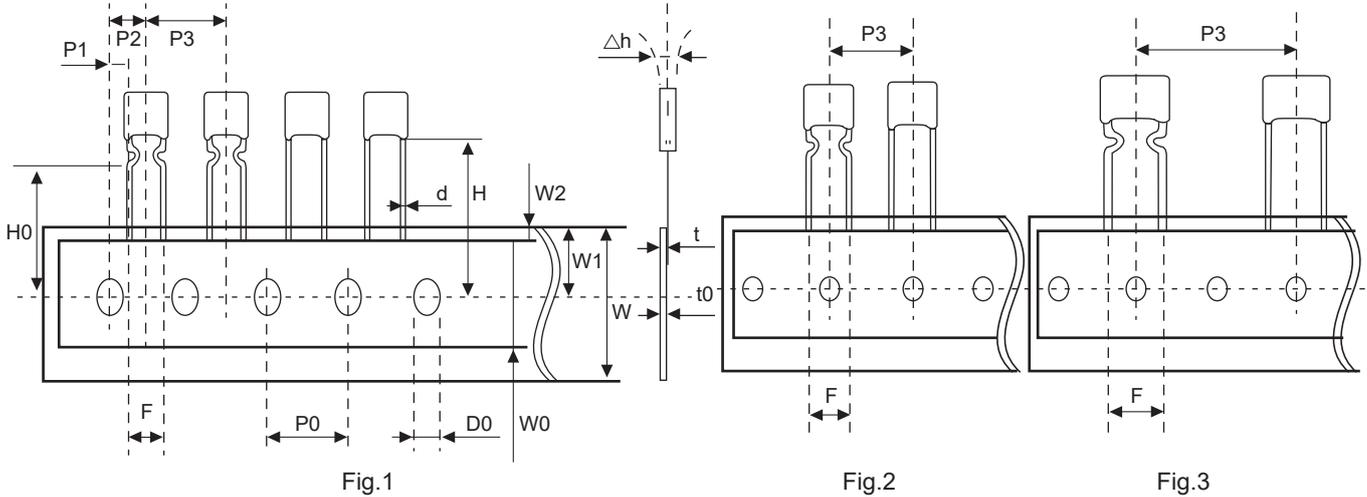
## 6. Marking of Polyester Capacitor

Example	Explanation	
	1	UF: Company Logo
	2	CL21: Series code
	3	□□: Capacitance Code
	4	K: Capacitance Tolerance
	5	□□ V: Rated Voltage

## 7. Lead Configuration

Lead Style	Drawing	Lead Length L (mm)
Code 0: Long Straight		① $[2.5 \leq L < 6.0] \pm 0.5$ ; ② $[6.0 \leq L \leq 10] \pm 1.0$
Code 4: Inside Kink Lead		① $[2.5 \leq L < 6.0] \pm 0.5$ ; ② $[6.0 \leq L \leq 10] \pm 1.0$

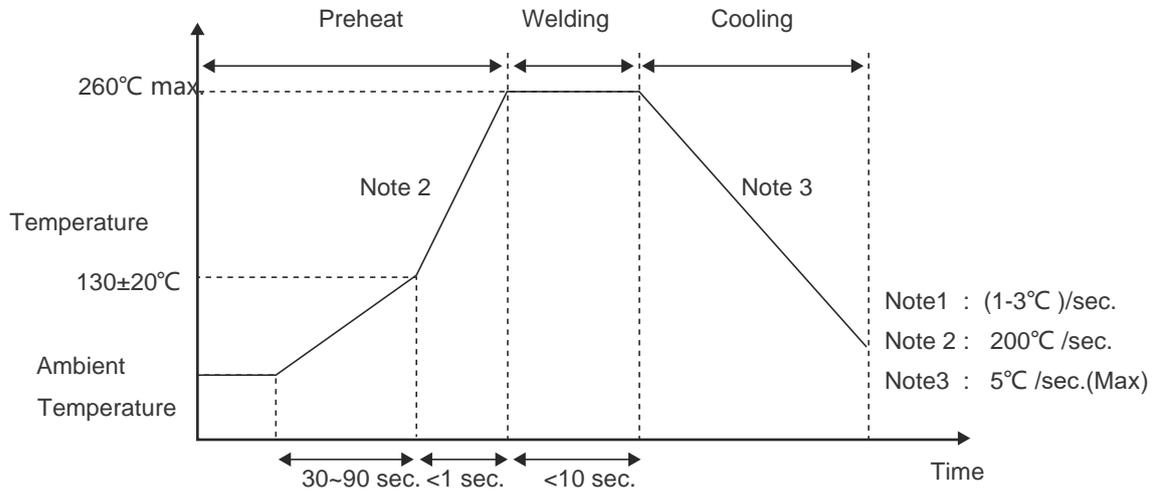
## 8. Taping And Dimensions (mm)



Symbol	Fig.1	Fig.2	Fig.2	Fig.3	Fig.3	Tolerance
	P=5.0	P=7.5	P=10	P=15	P=20/22.5	
P3	12.7	12.7	12.7	25.4	30.0	±1.0
P2	6.35	/	/	/	/	±1.3
P0	12.7	12.7	12.7	12.7	15.0	±0.3
P1	3.85	/	/	/	/	±0.7
F	5.0	7.5	10.0	15.0	20.0/22.5	±1.0
H	20.0	20.0	20.0	20.0	20.0	±1.0
H0	16.5	16.5	16.5	16.5	16.5	±0.5
Δ h	0	0	0	0	0	±2.0
W	18.0	18.0	18.0	18.0	18.0	+1.0/-0.5
W0	12.0	12.0	12.0	12.0	12.0	±1.0
W1	9.0	9.0	9.0	9.0	9.0	±0.5
W2	3.0	3.0	3.0	3.0	3.0	Max
D0	4.0	4.0	4.0	4.0	4.0	±0.3
d	0.5	0.6	0.6	0.8	0.8	±0.05
t	1.0	1.1	1.1	1.4	1.4	±0.2
t0	0.38	0.38	0.38	0.47	0.47	±0.04

## 9. Soldering Condition

### Wave Soldering Graph



Note: Film capacitor is not suitable for reflow soldering welding, because it will cause thermal contraction and affect electrical performance.

### Iron Soldering Condition

Item	Condition
Temperature of soldering copper bit	$360^\circ\text{C}$ (max.)
Soldering duration	3sec (max.)
Space between soldering position and coating layer	2mm (min.)

## 10. Storage conditions

1 It must be noted that the solder ability of the terminals may be deteriorated when stored in an atmosphere filled with moisture, dust or a reactive oxidizing gas.(hydrogen chloride, hydrogen sulfide, sulfuric acid, etc.)

2 It shouldn't be located in particularly high temperature and high humidity, it must submit to the following conditions (under the unchanging primal package):

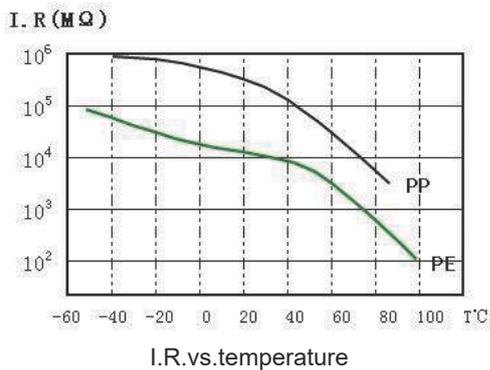
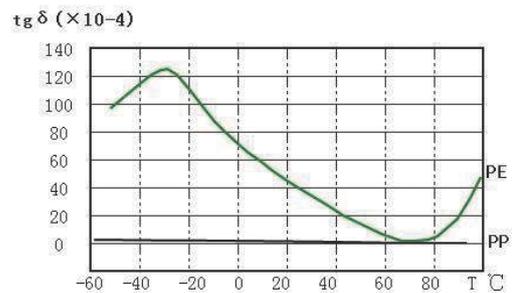
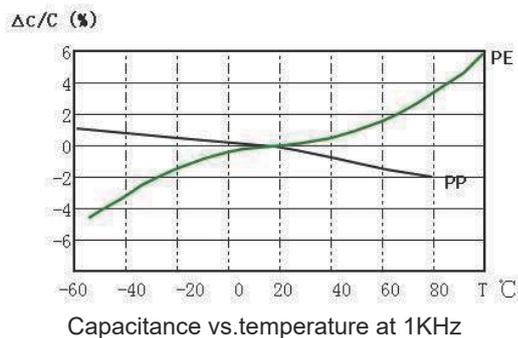
A、Temperature:  $20 \pm 5^\circ\text{C}$  B、Humidity:  $65 \pm 5\% \text{RH}$

C、Storage time: (from the date marked on the capacitor's body or the label glued to the package)

Bulk:  $\leq 24$  months Taping:  $\leq 12$  months

## 11. Film capacitor characteristics typical curve

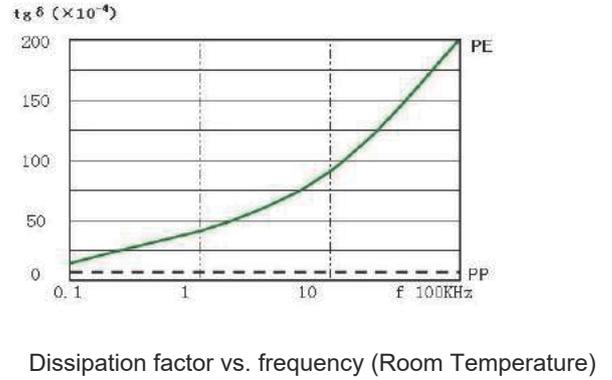
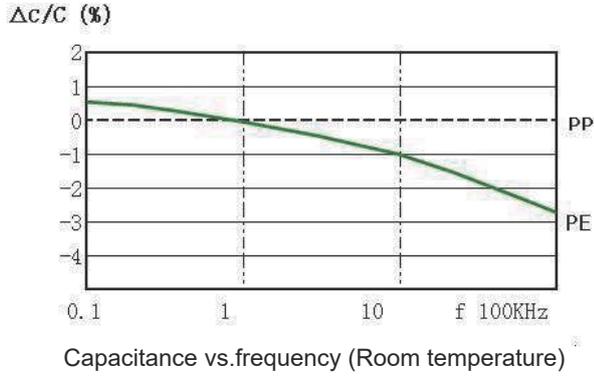
Temperature Characteristics



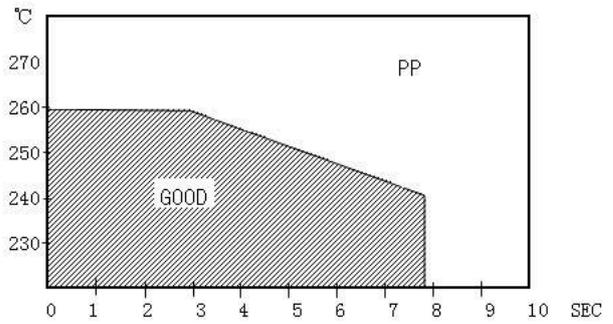
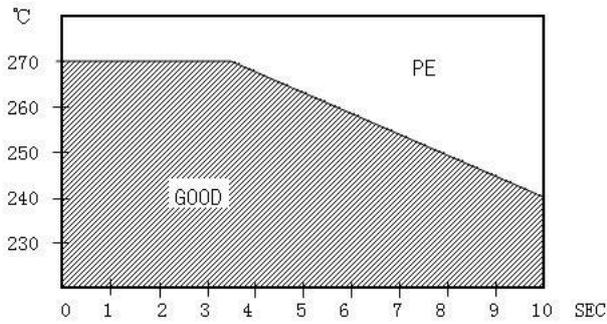
**PE: Polyester Film**

**PP: Polypropylene Film**

Frequency Characteristics



Soldering temperature vs time



Important Note: CL21 metallized polyester capacitors is not suitable for reflow soldering welding.