



Metallized Polypropylene Film Capacitor(Dipped-type)

Series/Type:

CBB21L

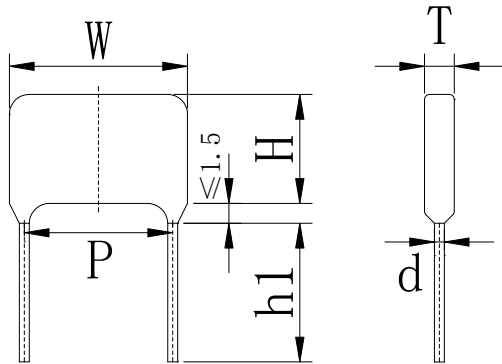
Part No.:

See table “Product Dimension”

CBB21

CBB21L type metallized Polypropylene Film Capacitor (Dipped-type)

1、Outline Drawing



2、 Application and Feature:

Metallized polypropylene film, excellent electric property, is suitable for the DC filter, DC-blocking circuit (PFC, DC-Link).

3、Specification:

Reference standard	IEC 60384-16、 GB 10190	
Climatic category	40/105/21	
Rated temperature	85°C	
Operation Temperature Range	-40°C~105°C	
Rated voltage	250Vdc/400Vdc/450Vdc、 520Vdc/630Vdc	
Capacitance range	0.022μF~1.0μF	
Capacitance tolerance	±5%(J)、 ±10%(K)、 ±20%(M) (20°C, 1kHz)	
Voltage proof between terminations	1.6U _R , 5s(20°C)	
Insulation resistance	C _R ≤ 0.33μF, IR ≥ 60 000MΩ C _R > 0.33μF, IR × C ≥ 20 000s (20°C, 100Vdc, 1min)	
Dissipation factor	1kHz: tgδ ≤ 0.0010 10kHz: tgδ ≤ 0.0020 (C _R ≤ 1μF) (20°C)	
dV/dt	200 V/μs	

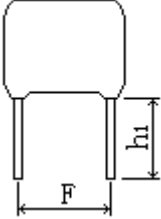
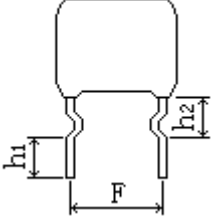
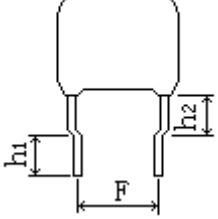
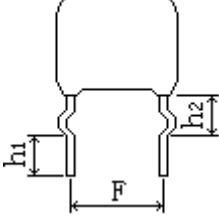
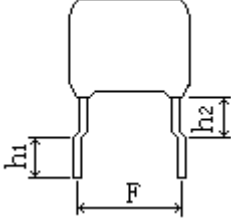
① The frequency of the alternating current in the rated voltage is 50Hz(working frequency),the working voltage of the capacitor decreases as the frequency increases.

② The working voltage of the capacitor decreases as the temperature rises. between 85~105°C,take 85°C as the base, the temperature rises 1°C,the rated working voltage of the capacitor decreases 1.25%.

③ The working voltage of the capacitance decreases as the capacitance increases.

④ Above mentioned instructions shall be fully considered when using the capacitor.

4、 Outline of shaping

Code of Shaping	CT Shaping Picture S-1	CK Shaping Picture S-2	CY Shaping Picture S-3
Outline Drawings of Shaping		 <p>($0\text{mm} \leq P-F \leq 3\text{mm}$)</p>	 <p>($2.5\text{mm} \leq P-F \leq 8\text{mm}$)</p>
Code of Shaping	CC Shaping Picture S-4	CX Shaping Picture S-5	
Outline Drawings of Shaping	 <p>($0\text{mm} \leq P-F \leq 3\text{mm}$)</p>	 <p>$2.5\text{mm} \leq F-P \leq 8\text{mm}$</p>	
<p>1、 F 2.5mm /"F" indicates the pitch of Shaping products, Integer times of 2.5mm;</p> <p>2、 $2.5\text{mm} \leq P-F \leq 3\text{mm}$ /Choosing the specific crimping method according to the requirement of customer.</p> <p>3、 $h_1: 3.0 \sim 10.0\text{mm}$; $h_2: \leq 5\text{mm}$ (CK Shaping-Picture S-2; CX Shaping-Picture S-5) $\leq 3\text{mm}$ (CY Shaping-Picture S-3); $\leq 6\text{mm}$ (CC Shaping-Picture S-4)。</p>			

5 Part number code system

The 16 digits part number is formed as follow:

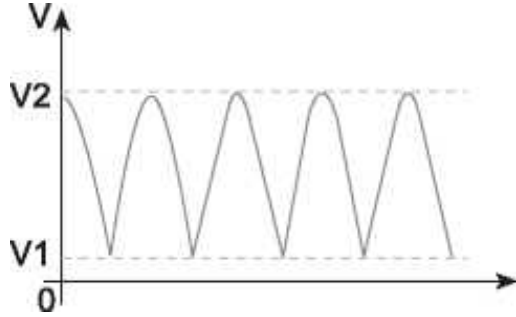
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
C	B	2	1													

Digit 1 to 4	Series code of film capacitor CB21=CBB21
Digit 5 to 7	Rated capacitance value code For example: 103=10×10 ³ pF=0.01 μ F
Digit 8	Capacitance tolerance code J=±5% K=±10% M=±20%
Digit 9 to 10	DC rated voltage code 2E=250V 2G=400V 2S=450V 2T=520V 2J=630V
Digit 11	Pitch code 2=5.0 3=7.5 4=10.0 6=15.0
Digit 12	Internal use 0=CBB21 series L=CBB21L series
Digit 13~16	Lead form and packing code
Digit 17	Special code
Table1	Lead form and packing code

Digit13		Digit14		Digit15		Digit16	
Code	explanation	Code	explanation	Code	explanation	Code	explanation
A or R	ammo-pack or reel-pack	0	P=5.0mm	0	Straight	0	each capacitor between two consecutive holes, hole space is 12.7mm
		1	P=7.5mm			K	CK弯脚 CK kinked
		2	P=10.0mm	Y	CY弯脚 CY kinked		
		3	P=15.0mm			3	consecutive hole between two leads of the capacitor, hole space is 15.0mm
K or Y	CK CY lead kinked (in bulk)	0	F=5.0mm	0	h1=3.5mm	0	h1 length tolerance ±0.5mm
		1	F=7.5mm				
		2	F=10.0mm				
		3	F=15.0mm				
B	in bulk or cut lead (in bulk)	00	standard lead length 20mm (min)	0		0	Length tolerance ±0.5mm
		35	lead length 3.5mm				

6、Application characteristics

The series product is only recommended to use in DC-filter or DC-blocking circuits. It means the voltage applied to the capacitors must be unidirectional ripple voltage. The typical voltage curve is as follows reference. If you have any questions for this note, please feel free to contact with our technical engineer.



Here: $V_1 \geq 0$, $V_2 \leq U_R$, U_R is the rated voltage of the capacitor

8、Test Method And Performance

No.	Item	Performance	Test method(GB2693-2001)
1	Solderability	After solderability, good quality of tinning, there shall no continuous part of uncoated pin	Solder temperature: 235°C±5°C Immersion time: 2.0s±0.5s
2	Terminal strength	There shall be no visible damage	Tense: 0.50≤d≤0.80, 10N 0.80<d≤1.25, 20N The terminals shall be bent 2 times in each direction
3	Resistance to solder heat	There shall be no visible damage ΔC/C: ≤3% (relative to the initial value) Increase of tgδ: ≤0.004	Solder temperature:260°C±5°C Immersion time: 10s±0.5s
4	Initial measurement	Capacitance tgδ C _R ≤1μF: Test frequency , 10kHz C _R >1μF: Test frequency , 1kHz	
	Rapid change of temperature	There shall be no evidence of deterioration.	θ _A =-40°C, θ _B =+105°C 5 cycles Duration: t=30min
	Vibration	There shall be no evidence of deterioration.	Amplitude 0.75mm or acceleration 98m/s ² (whichever is the smaller severity), f:10Hz to 500Hz.Three perpendicular directions, 2h for each direction, total 6h.
	Bump	There shall be no evidence of deterioration.	4000 times,Acceleration:390m/s ² , Pulse duration,6ms
	Final measurement	There shall be no visible damage ΔC/C: ≤3% (relative to the initial value) Increase of tgδ: ≤0.004 IR: ≥50% of the rated value	

No.	Item	Performance		Test method(GB2693-2001)
5	climate sequence	Initial measurement		
		Dry heat		+105°C, 16h
		Damp heat, Cyclic		Test Db, he first cycle
		Cold		-40°C, 2h
		Low air pressure	There shall be no permanent breakdown, flashover or other harmful deformation.	8.5kPa (85mbar) , 1h
		Damp heat, cyclic other		Test Db, the other cycles
		Final measurement	There shall be no visible damage, legible marking $\Delta C/C \leq 5\%$ (relative to the initial value) Increase of $tg\delta$: ≤ 0.005 IR: $>50\%$ of the rated value	
6	Damp heat steady state	There shall be no visible damage, legible marking $\Delta C/C \leq 5\%$ (relative to the initial value) Increase of $tg\delta$: $C_R \leq 1\mu F \leq 0.002$ (10kHz) $C_R > 1\mu F \leq 0.004$ (1kHz) IR: $\geq 50\%$ of the rated value		Temperature: $40^\circ C \pm 2^\circ C$ Humidity: $93 \pm 3\%$ RH Duration: 21 days
7	Endurance	There shall be no visible damage, legible marking $\Delta C/C \leq 5\%$ (relative to the initial value) Increase of $tg\delta$: $C_R \leq 1\mu F \leq 0.004$ (10kHz) $C_R > 1\mu F \leq 0.004$ (1kHz) I.R: $\geq 50\%$ of the rated value		T=85°C, 1000h T=85°C, 1000h, Applied Voltage: $1.25 \times U_R$

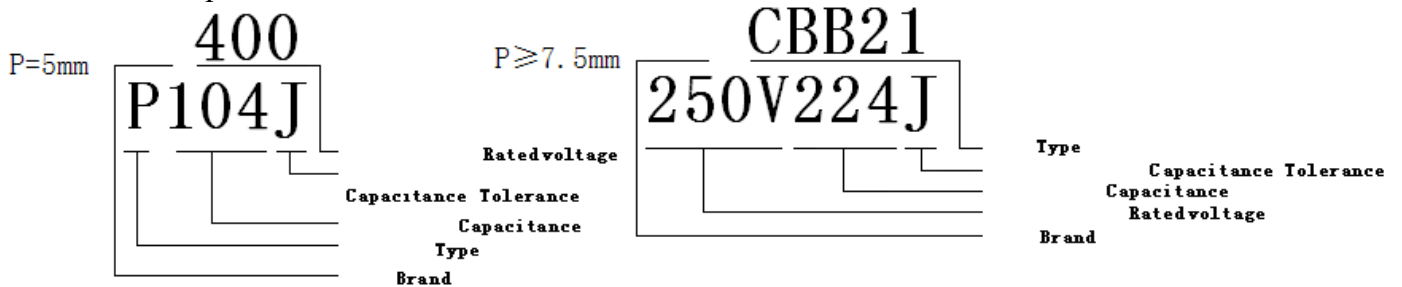
No.	Item	Performance	Test method(GB2693-2001)
8	Temperature characteristic	Measuring capacitance at test point b, d, f: Characteristic at lower category temperature -40°C: $0 \leq (C_b - C_d) / C_d \leq +3\%$ Characteristic at upper category temperature +105°C: $-4.0\% \leq (C_f - C_d) / C_d \leq 0$ I.R. (test at point f): $IR \geq 2500M\Omega \quad C_R \leq 0.33 \mu F$ $IR \geq 750s \quad C_R > 0.33 \mu F$	Static method: The Capacitors should be kept at the following temperature in turn: a(20±2) °C, b(-40±3) °C, d(20±2) °C, f(105±2) °C, g(20±2) °C
9	Charging and discharging	$\Delta C / C \leq 5\%$ (relative to the initial value) Increase of $tg\delta$: $C_R \leq 1\mu F \quad \leq 0.004 \quad (10kHz)$ $C_R > 1\mu F \quad \leq 0.004 \quad (1kHz)$ I.R.: $\geq 50\%$ of the rated value	Times: 10000 Duration of charging: 0.5s Duration of discharging: 0.5s Charging voltage: U_R

9、Quality ensuring test (before shipment):

Inspection item (each batch)	Inspection level (GB 2828)	
	IL	AQL
Appearance inspection	S-4	1.5
Dimensions		
Capacitance	II	0.04
Tangent of the loss angle		
Dielectric strength		
Insulation resistance		
Solderability	S-3	2.5

10、Marking :

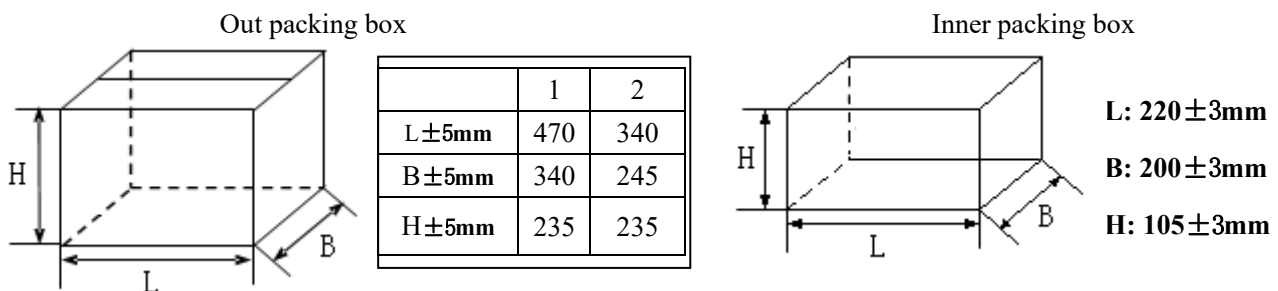
For example



11、 Packaging:

A、 Packaging in bulk

A certain quantity of capacitors and the qualified bill shall be packed with a plastic bag . Then put several plastic bags into one small packing box, sealed with adhesive paper. One big packing box contains 6 or 3 small packing box. Packing with small or big box depends on the customer's purchase quantity. The dimensions of packing boxes refer to the drawing . For the packing box with capacitors, all kinds of shipments are permitted, but the sprinkle of rain or snow and mechanical damage must be avoided.



Note: Out packing box have two difference size, includes the bigger one and the smaller one. Those were marking in the 1、2 different ways.

B、

Specification of radial tapping capacitors

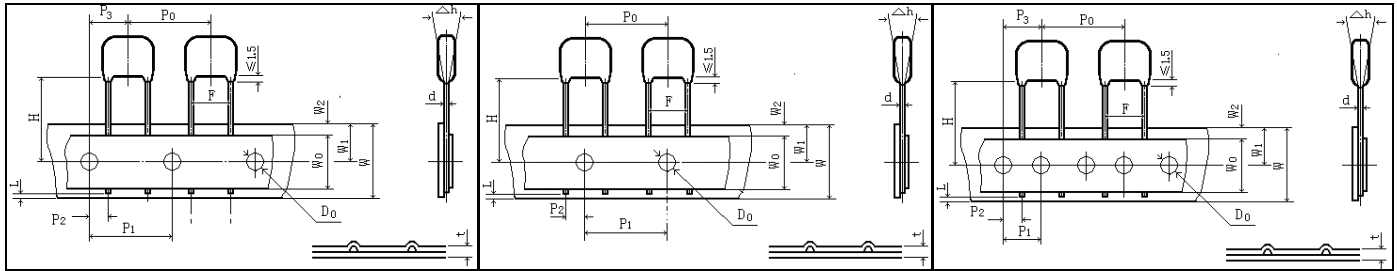


图 T-1/Picture T-1

图 T-2/Picture T-2

图 T-3/Picture T-3

Dimensions of tapping

(mm)

sign		P ₀	P ₁	P ₂	P ₃	F	△h	W	W ₀	W ₁	W ₂	H	D ₀	t	L	
deviation	fig.	±1.0	±0.2	±0.5	±1.3	+0.4 -0.2	±2.0	±0.5	/	±0.5	/	±0.5	±0.2	±0.2	/	
Dimensions	P=5.0	T-1	12.7	12.7	3.85	6.35	5.0	0	18.0	11.0min	9.0	0.5-3.0	18.5	4.0	0.7	0min
	P=7.5	T-1	12.7	12.7	2.6	6.35	7.5	0	18.0	11.0min	9.0	0.5-3.0	18.5	4.0	0.7	0min
	P=10.0	T-2	12.7	12.7	5.0	/	10.0	0	18.0	11.0min	9.0	0.5-3.0	18.5	4.0	0.7	0min
	P=15.0	T-3	25.4	12.7	5.2	12.7	15.0	0	18.0	11.0min	9.0	0.5-3.0	18.5	4.0	0.7	0min

Note:

P is lead space before kink

P1=15.0mm is also available

F can be other lead space。

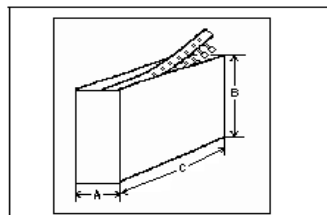
Parallelism of tapping lead $|F_1-F_2| \leq 0.25\text{mm}$ 。

If you need other tapping, please contact us

Dimensions of tapping packing

Ammo-pack

代号Code	尺寸Size(mm)
A	53±5
B	267±5
C	325±5



◆ **Cautions of using:**

Permissible conditions:

- Do not exceed upper category temperature.
- Avoid overload of capacitors.
- Pulse current should be within the figures calculated by dv/dt .

Handling cautions:

- Do not apply excessive force to the lead wire root area.
- Be careful to lead cusp.

Recommend storage conditions:

- Temperature: $\leq 30^{\circ}\text{C}$.
- Humidity $\leq 70\%RH$, no dew allowed on the capacitor.

Other cautions:

- The capacitor is a miniaturized design. Please meet the requirements of the specification for use and storage, so as to avoid early failure of capacitance loss.