SPECIFICATION FOR APPROVAL

File No.: Q/FRK 0.GS.E.C31-C12

Product Name	Metallized polypropylene film capacitor(dipped)
Product Type:	CBB21
Product Code	C312E104J32Y400
Customer	
Customer Code	
Issue Date	2022-02

Xiamen Faratronic Co. Ltd.			Approved by Customer
Drafted	Checked	Approved	
庄佳炜	倪宏明	张文刚	

Xiamen Faratronic Co. Ltd.
Add: 99 Xinyuan Road, Haicang District, Xiamen, China

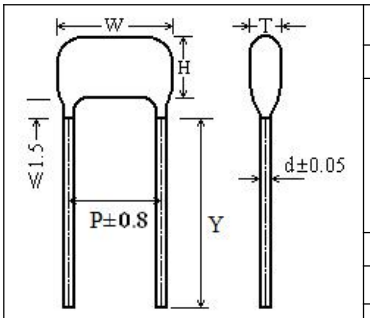
Marketing/Sales center
TEL: 0086-592-6208620 6208505
FAX: 0086-592-6208777
Mail: Vitawang@faratronic.com.cn
Donny@faratronic.com.cn
James@faratronic.com.cn
Http: www.faratronic.com.cn

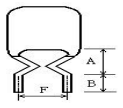
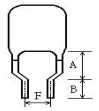
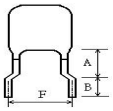
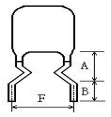
Version history

Current version	Date	Author	Change description

Metallized polypropylene film capacitor(dipped)

■ Outline Drawing



Forming Lead Shapes			
I	II	III	IV
			
P ≥ F		P < F	
0mm≤P-F≤3mm	3mm<P-F≤8mm	3mm<F-P≤5mm	0mm<F-P≤3mm
F±0.8mm; A≤5.0mm; B=4.5±0.5mm			

■ Features

- Metallized polypropylene structure
- Low loss at high frequency
- Small inherent temperature rise
- Flame retardant epoxy resin powder coating (UL94/V-0)

■ Typical application

- Widely used in high frequency, DC,AC and pulse circuits
- Suitable for S-correction circuits of large screen monitor
- Suitable for the situation where applies high frequency and high current pulse

■ Specifications

Reference Standard	GB/T 10190(IEC 60384-16)
Climatic Category	40/105/21
Rated temperature	85℃
Operating temperature	-40℃~105℃ (+85℃ to +105℃: decreasing factor 1.25% per ℃ for U_R)
Rated Voltage	250V
Capacitance Range	0.10μF
Capacitance Tolerance	±5%(J)
Voltage Proof	1.6U_R (5s)
Dissipation Factor	≤10×10^{-4}(20℃, 1kHz)
Insulation Resistance	R≥100 000MΩ, C_N≤0.33μF RC_N≥30 000s, C_N>0.33μF (20℃,100V,1min)

Maximum Pulse Rise Time(dV/dt)

If the working voltage(U) is lower than the rated voltage(U_R),the capacitor can be worked at a higher dV/dt. In this case, the maximum allowed dV/dt is obtain by multiplying the right value with U_R/U.

Pattern II				
U_R(V)	dV/dt(V/us)			
	P=7.5	P=10.0	P=15.0	P=22.5
100/250	660	560	310	130
400	900	780	600	300
630	1 500	1 200	900	400
1 000/1 250	2 500	2 200	--	--

■ Part number system

The 15 digits part number is formed as follow

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

Digit 1 to 3 Series code

C31= CBB21

Digit 4 to 5 D.C. rated voltage

2A=100V 2E=250V 2G=400V

2J=630V 3A=1000V 3B=1250V

Digit 6 to 8 Rated capacitance value

For example: 103=10×10^{3}pF=0.01μF

Digit 9 Capacitance tolerance

J=±5%, K=±10%, M=±20%

Digit 10 Pitch

3=7.5mm 4=10mm 5=12.5mm 6=15mm

8=20mm 9=22.5mm A=25mm C=30mm

Digit 11 Internal use

S= PatternII

Digit 12 to 15 Lead form and packaging code

Table 1 lead form and packing code

Digit 12		Digit 13		Digit 14		Digit 15	
code	explanation	code	explanation	code	explanation	code	explanation
A	ammo-pack	3 4 6	F=7.5mm F=10.0mm F=15.0mm	1	kinked	A	each cap. between two consecutive holes P3=12.7mm,H=20.0mm (For pitch=7.5mm)
						E	P3=25.4mm;H=20.0mm (For pitch=10.0/15.0mm)
F	lead kinked	4 6 7 8 9	F=10.0mm F=15.0mm F=17.5mm F=20.0mm F=22.5mm	0	B=4.5mm The length of B	0	B Length tolerance ±0.5mm
Y	straight lead "Y" in the figure above	code	explanation			0	Length tolerance ±0.5mm
		40	lead length 4.0mm				
Digit12-15 code "C000"means standard lead length (18mm ~ 30mm) Note: Recommend short lead due to long lead could deform easily.							

■ Dimensions(mm)

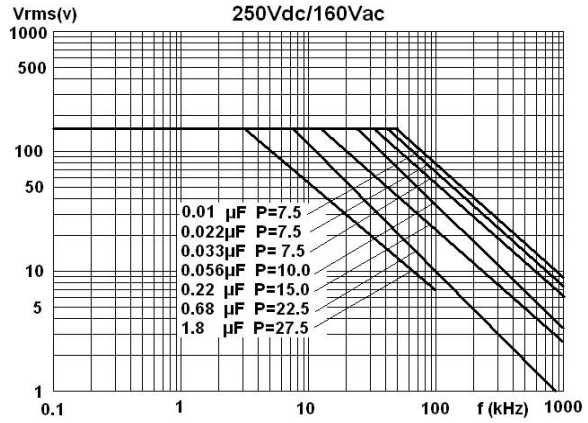
250Vdc						
C_N (μF)	W max	H max	T max	P	d	Part number
0.10	11.0	12.0	7.0	7.5	0.6	C312E104J32Y400

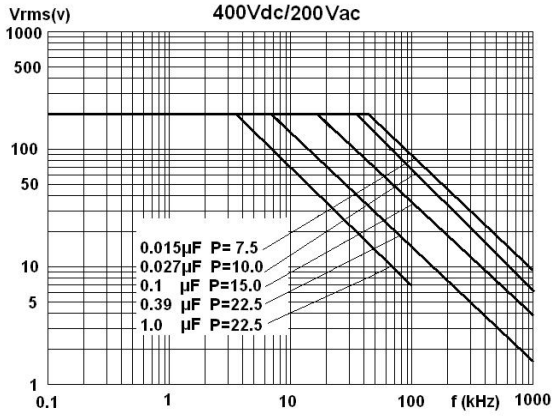
Note：1. "-"=capacitance tolerance code, M=±20%,K=±10%,J=±5%

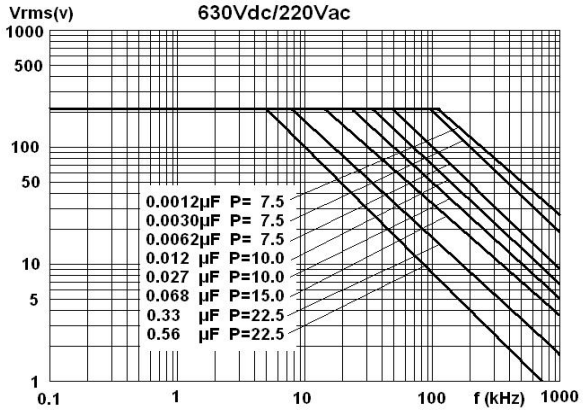
2. "****"=lead form and packing code（refer to table 1）

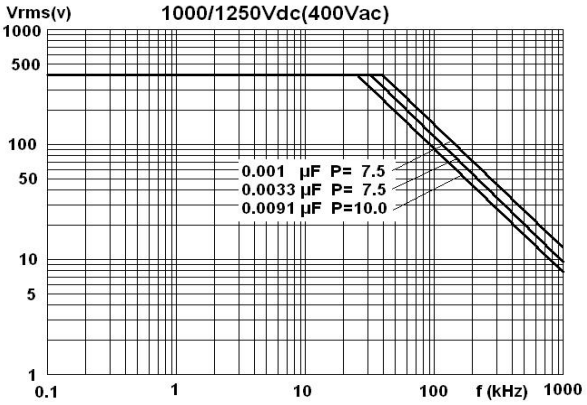
3. "#"when the rated voltage is 250Vdc,the digit 4~5 is 2E.

■ MAX. VOLTAGE(Vr.m.s) VERSUS FREQUENCY









Note: sinusoidal wave-form, environment temperature≤85℃,internal temperature rise △T=10℃, p (pitch) in mm.

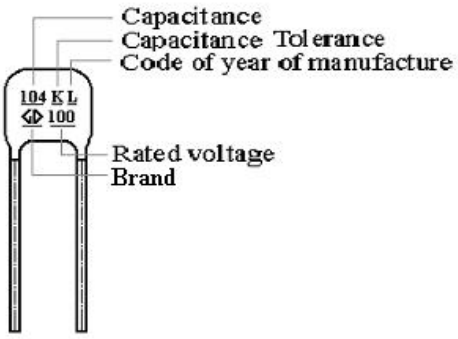
■ Test Method And Performance

No.	Item		Performance	Test method(IEC 60384-16)
1	Solderability		Good quality of tinning	Solder temperature:245˚C±5˚C Immersion time: 2.0s±0.5s
2	Initial measurement		Capacitance Tgδ:1kHz, C>1.0μF 10kHz, C≤1.0μF	
	Terminal Strength (straight lead)		There shall be no visible damage	Tension: 0.6≤ϕd≤0.8mm, 10N ϕd=1.0mm, 20N Bend: 0.6≤ϕd≤0.8mm, 5N ϕd=1.0mm, 10N The terminals shall be bent 2 times in each direction.
	Resistance to solder heat		There shall be no visible damage	Solder temperature:260˚C±5˚C Immersion time: 10s±1s
	Final measurement		Δ C/C ≤ ± 3 % (relative to the initial value) Increase of tgδ: ≤0.004 (10kHz,C≤1.0μF) ≤0.004 (1kHz,C>1.0μF)	
3	Initial measurement		Capacitance Tgδ:1kHz, C>1.0μF 10kHz, C≤1.0μF	
	Rapid change of tempe rature		There shall be no evidence of deterioration.	θ_A=-40˚C, θ_B =+105˚C 5 cycles, Duration: t=30min
3	Vibration(straight lead)		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 directions, 2h for each direction, total 6h.
	Bump(straight lead)		There shall be no evidence of deterioration.	4 000 times, Acceleration: 390m/s^2,Pulse duration, 6ms
	Final measurement		ΔC/C ≤±3%(relative to the initial value) Increase of tgδ: ≤0.004 (10kHz, C≤1.0μF) ≤0.004 (1kHz, C>1.0μF) IR: ≥ 50% of the rated value	
4	climate sequence	Initial measurement	Capacitance Tgδ:1kHz, C>1.0μF 10kHz, C≤1.0μF	
		Dry heat		+105℃, 16h
		Damp heat, Cyclic		Test Db, Severity: b, the first cycle
		Cold		-40℃, 2h
		Low air pressure	There shall be no permanent breakdo wn, flashover or other harmful defor mation when applying U_R at the last 1 minute.	15℃~ 35℃, 8.5kPa, 1h,

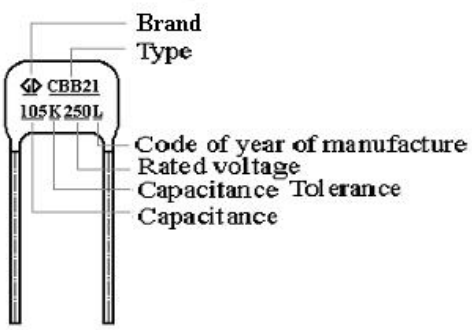
No.	Item		Performance	Test method(IEC 60384-16)
4	climate sequence (continue)	Damp heat, cyclic other		Test Db, Severity b, the other cycles, Applying U_R for 1 minute after the test finished.
		Final measurement	There shall be no evidence of deterioration and the marking shall be legible. ΔC/C ≤±5%(relative to the initial value) Increase of tgδ: ≤0.005 (10kHz, C≤1.0μF) ≤0.005 (1kHz, C>1.0μF) IR: ≥ 50% of the rated value	
5	Damp heat steady state		There shall be no evidence of deterioration and the marking shall be legible. Δ C/C ≤ ± 5 % (relative to the initial value) Increase of tgδ ≤0.002 IR: ≥50% of the rated value	Temperature:40˚C ±2˚C Humidity: 93^{+2}_{-3} %RH Duration: 21days
6	Endurance		ΔC/C ≤±5%(relative to the initial value) Increase of tgδ: ≤0.004 (10kHz, C≤1.0μF) ≤0.004 (1kHz, C>1.0μF) IR: ≥ 50% of the rated value	Temperature: +85℃ Voltage: 1.25×U_R(50Hz) Duration: 1 000h
7	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 +85˚C: $-3.25\%\leq(C_f-C_d)/C_d\leq0$	Static method: The capacitors should be kept at the following temperature in turn: a.(+20±2) ˚C b.(–40±2) ˚C d.(20±2) ˚C f.(+85±2) ˚C g.(+20±2) ˚C
8	Charging and discharging		ΔC/C ≤±5%(relative to the initial value) Increase of tgδ: ≤0.005 (10kHz, C≤1.0μF) ≤0.005 (1kHz, C>1.0μF) IR: ≥ 50% of the rated value	Times: 10 000 Duration of charging: 0.5s Duration of discharging: 0.5s Charging voltage: rated voltage Charging resistance: 220/C_R(Ω) Discharging resistance: R=10/C_R(Ω) or 20Ω (whichever is the greater) C_R: rated capacitance (μF)

■ **Marking（example）**

P≤10.0mm



P>10.0mm



■ Taping for dipped-type capacitor

▲ Outline Drawing

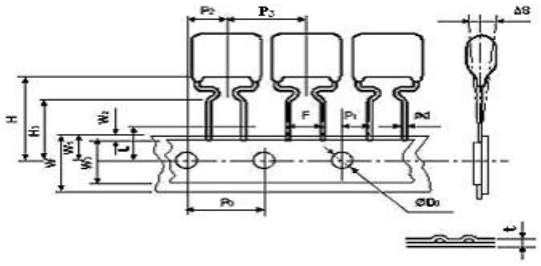


Fig.1

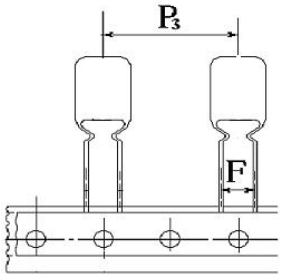


Fig 2

▲ Taping Dimensions(mm)

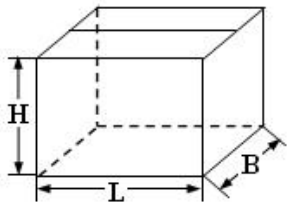
Technology index title	Code	Dimensions (mm)				
		P=5.0	P=7.5	P=10.0	P=15.0	Tolerance
Taping type	—	Fig 1	Fig 1	Fig 2	Fig 2	——
Part number Digit12-15	Ammo-pack	A21A	A31A	A41E	A61E	
Taping pitch	P_3	12.7	12.7	25.4	25.4	±1.0
Feed hole pitch	P_0	12.7	12.7	12.7	12.7	±0.3
Center of wire	P_1	3.85	2.60	7.7	5.2	±0.7
Center of body	P_2	6.35	6.35	12.7	12.7	±1.3
Pitch of taping wire	F**	5.0	7.5	10.0	15.0	+0.8 -0.2
Component alignment	△S	0	0	0	0	±2.0
Height of crankle from tape center	H	20.0	20.0	20.0	20.0	±1.0
Height of component from tape center	H_0	16.0	16.0	16.0	16.0	±0.5
Carrier tape width	W	18.0	18.0	18.0	18.0	+1.0 -0.5
Hold down tape width	W_0	10min	10min	10min	10min	——
Hole position	W_1	9.0	9.0	9.0	9.0	+0.75 -0.5
Hold down tape sition	W_2	3max	3max	3max	3max	——
Feed hole dia.	D_0	4.0	4.0	4.0	4.0	±0.3
Tape thickness	t	0.7	0.7	0.7	0.7	±0.2

Note: * P_0=15mm is also available;

** F can be other lead spacing;

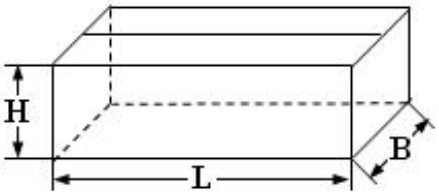
■ Packing box sizes(mm)(example)

1. Out packing box for bulk



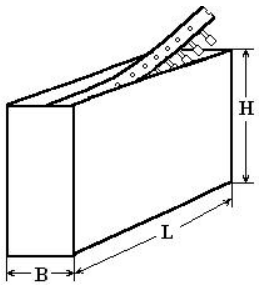
L:375±5
B:375±5
H:265±5

2. Inner packing box for bulk



L:355±3
B:175±3
H:118±3

3. Box sizes for Ammo-pack



L:350±3
B:50±3
H:260±3