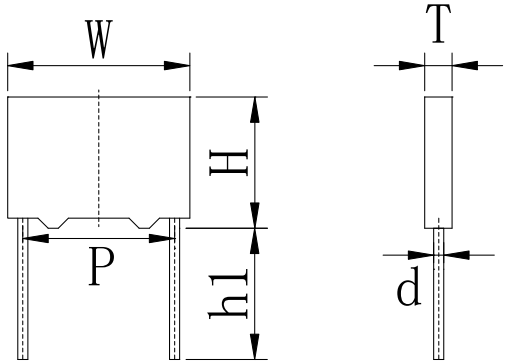
Metallized Polypropylene Film Capacitor (Box-type)

Series/Type:	**CBB24**
Part No.:	**CB24225J2E90P350U**
Specification No.:	**ZXDZ-202302198**

CBB24 type metallized Polypropylene Film Capacitor(Box-type)

Outline Drawing



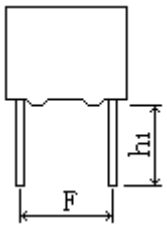
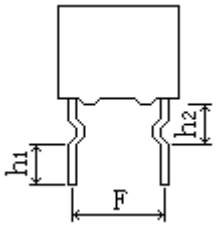
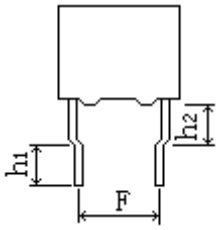
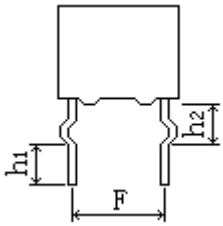
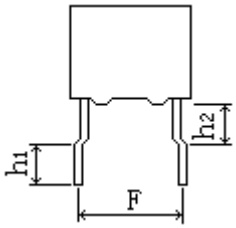
Application and Feature

High-voltage proof, high insulation resistance, Small inherent temperature rise, is suitable for the high frequency, DC, AC, pulse circuits, electronic lighting.

Specification

Reference standard	IEC 60384-16、GB 10190	
Climatic category	40/105/56	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 85~110℃,take 85℃ as the base, the temperature rises 1℃,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。
Rated temperature	85℃	
Operation Temperature Range	-40℃~110℃	
Rated voltage	160Vdc/90Vac、250Vdc/160Vac、400Vdc/220Vac、630Vdc/250Vac、1000Vdc/1250Vdc/400Vac、1600Vdc/600Vac、2000Vdc/700Vac	
Capacitance range	0.00047μF～15.0μF	
Capacitance tolerance	±5%(J)、±10%(K) 、±20%(M) (20℃, 1kHz)	
Voltage proof Between terminations	$U=1.6U_R$，5s(20℃)	
Insulation resistance	C_R≤0.33μF , IR≥100 000MΩ C_R＞0.33μF , IR×C≥30 000s （20℃, 100Vdc, 1min）	
Dissipation factor	1kHz：tgδ≤0.0010 10kHz：tgδ≤0.0020（C_R≤1μF）	
Special requirement		

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		 (0mm≤P-F≤3mm)	 (2.5mm≤P-F≤8mm)
Code of Shaping	CC Shaping Picture S-4	CX Shaping Picture S-5	
Outline Drawings of Shaping	 (0mm≤P-F≤3mm)	 2.5mm≤F-P≤8mm)	

1、/"F" indicates the pitch of Shaping products, Integer times of 2.5mm;

2、2.5mm≤ | P-F | ≤3mm /Choosing the specific crimping method according to the requirement of customer.

3、h1:3.0~10.0mm ; h2: ≤5mm(CK Shaping-Picture S-2; CX Shaping-Picture S-5)
≤3mm (CY Shaping-Picture S-3);
≤6mm (CC Shaping-Picture S-4)。

Part number code system

The 17 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	4													

Digit 1 to 4	Series code of film capacitor CB24=CBB24
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 2A=100V 2C=160V 2E=250V 2G=400V 2S=450V 2J=630V 3A=1000V 3B=1250V 3C=1600V 3D=2000V
Digit 11	Pitch code 2=5.0 3=7.5 4=10.0 6=15.0 9=22.5 B=27.5
Digit 12	Internal use
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 kinked	1	consecutive hole between two leads of the capacitor, hole space is 12.7mm
		2	P=10.0mm			2	each capacitor between two consecutive holes, hole space is 15.0mm
		3	P=15.0mm	Y	CY kinked	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	bagged	00	standard lead length 15mm（min）			0	Length tolerance±0.5mm
P	box arrangement						
Q	散装 insert foam	35	lead length 3.5mm				

Product Dimension

Customer Part Number	Product code	Spec.	Appearance Dimensions（mm）							Picture Number
			W	H	T	P	F	h1	d	
			±0.4	±0.4	±0.4	±0.4	±0.4	±0.5	±0.05	
	CB24225J2E90P350U	CBB24-250V-2.2μF-±5%	26.5	22.0	12.0	22.5	22.5	3.5	0.8	S-1

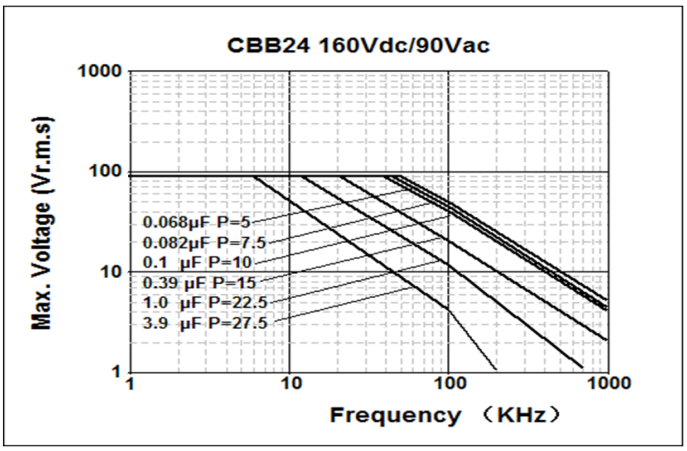
Max dV/dt (V/μs)

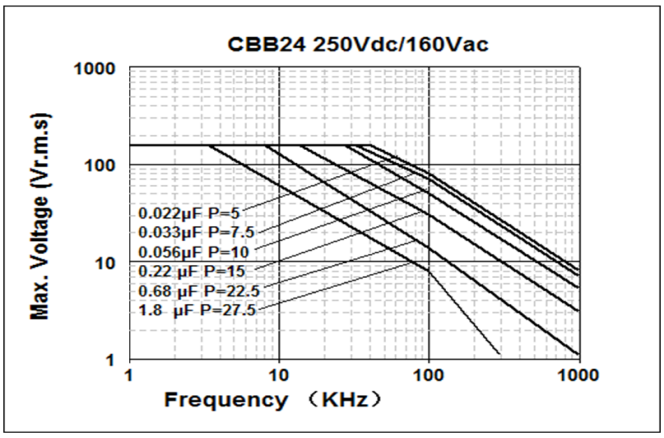
（Vdc）	Max dV/dt （V/μs）					
	P=5.0	P=7.5	P=10.0	P=15.0	P=22.5	P=27.5
160	110	310	190	110	65	55
250	270	660	560	310	130	110
400/450	440	900	780	600	300	130
630	550	1500	1200	900	400	200
1000/1250	975	2 300	2200	2000	800	300
1600	/	/	6 000	4 500	1800	/
2000	/	/	/	9500	4500	/

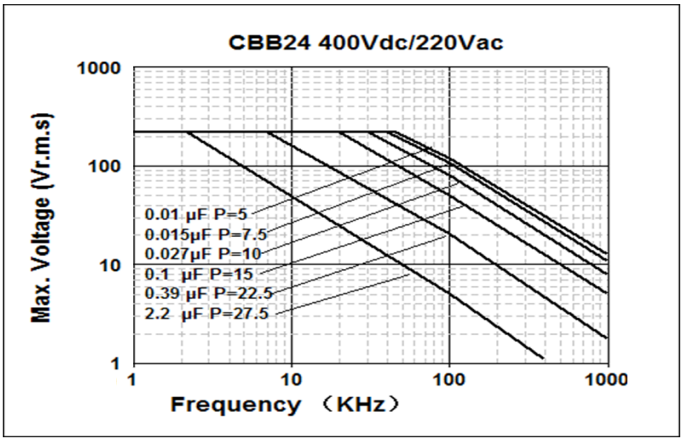
Rated voltage pulse slope (dV/dt)R at rated voltage.

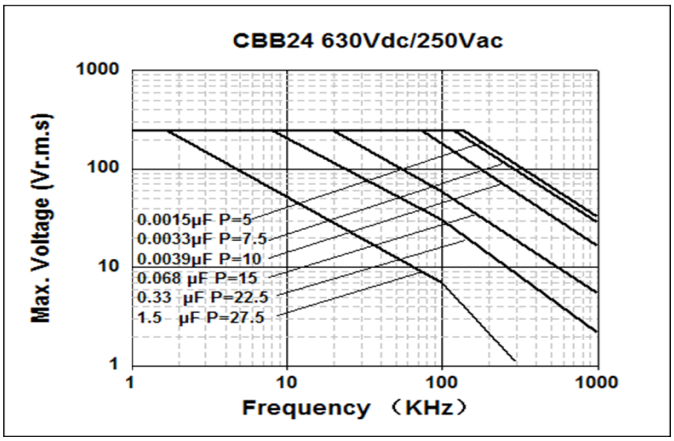
If the working voltage(U) is lower than the rated voltage(UR), the capacitor can be worked at a higher dV/dt. In this case, the maximum allowed dV/dt is obtain by multiplying the up value with UR/U.

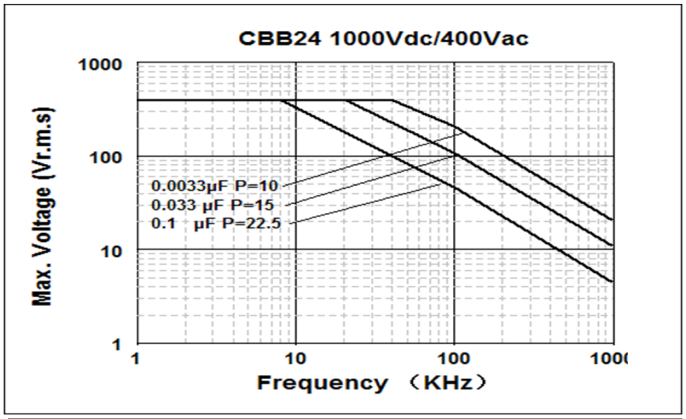
Max. Voltage (Vr.m.s) versus Frequency

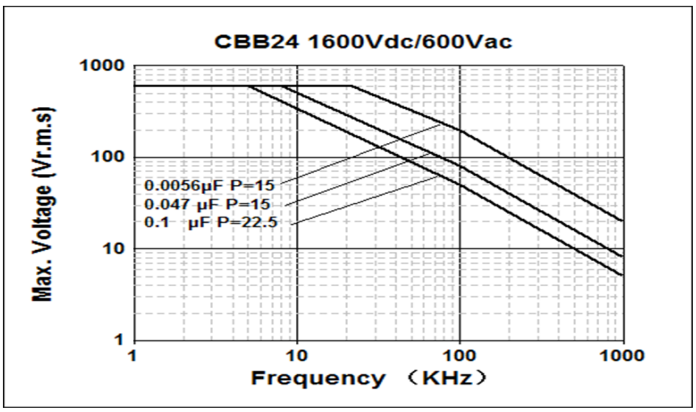


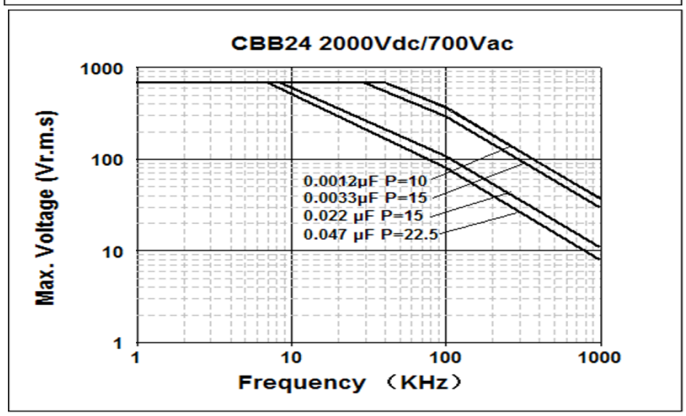






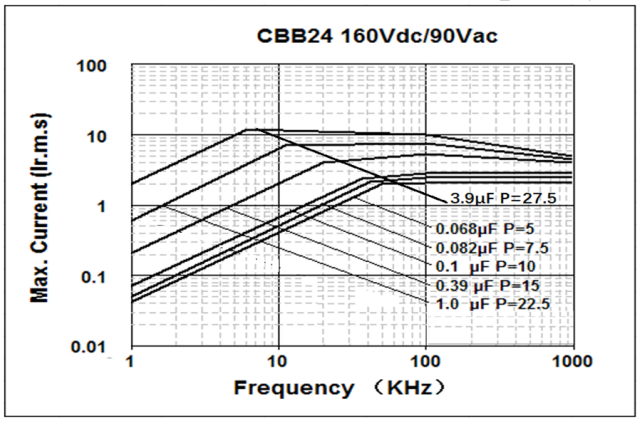


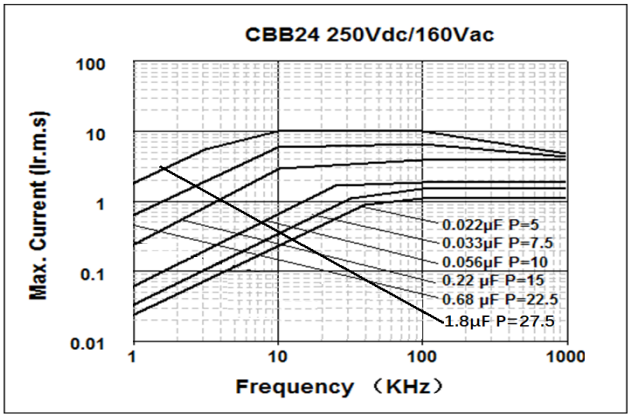


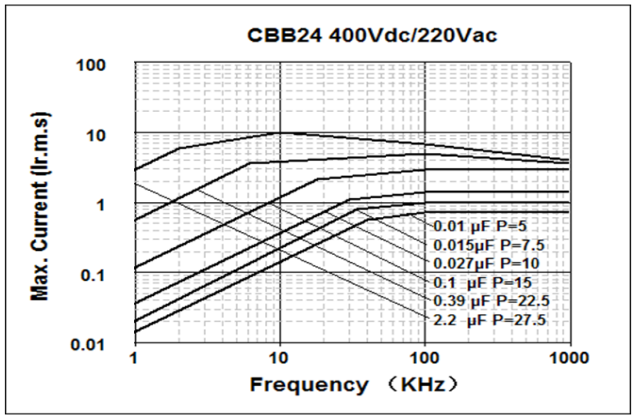


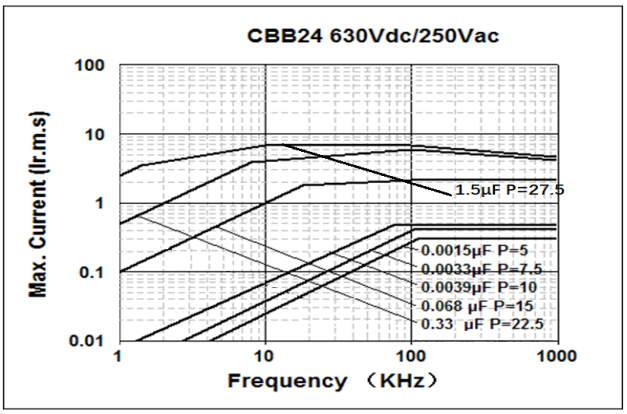
Environment temperature≤85℃,internal temperature rise △T=10℃ P (pitch) in mm

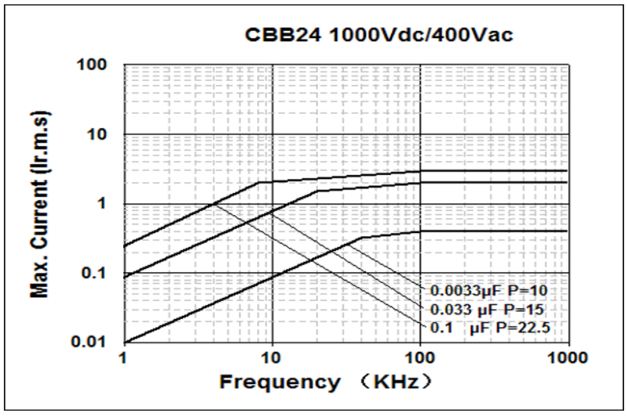
Max. Current (Ir.m.s) versus Frequency

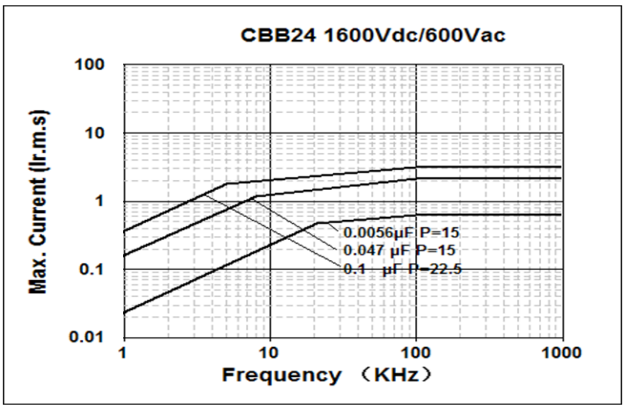


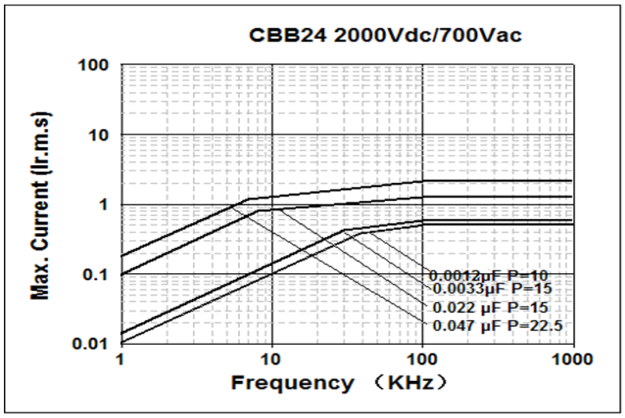












Environment temperature≤85℃,internal temperature rise △T=10℃ P (pitch) in mm

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	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/s2, 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	

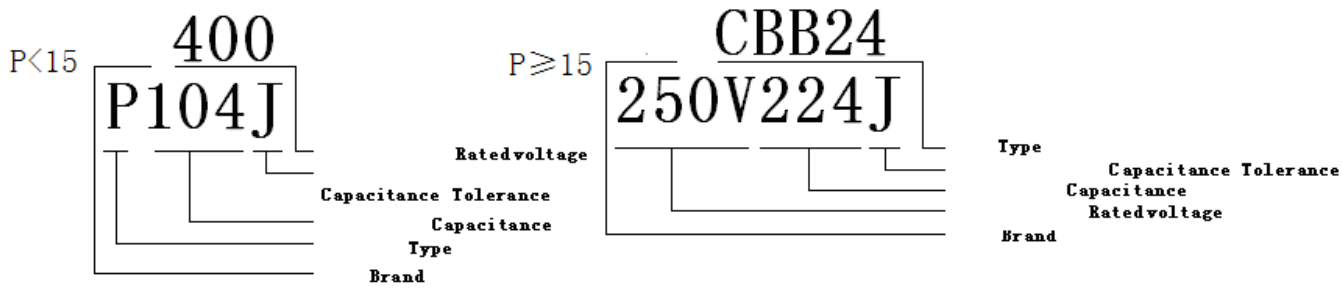
No.	Item	Performance		Test method(GB2693-2001)
5	climate sequence	Initial measurement		
		Dry heat		+105℃, 16h
		Damp heat, Cyclic		Test Db, he first cycle
		Cold		-40℃, 2h
		Low air pressure	There shall be no permanent breakdown, flashover or other harmful deformation.	8.5kPa（85mbar）, 1h
		Damp heat, cyclic other		Test Db, the other cycles
		Final measurement	There shall be no visible damage, legible marking ΔC/C ≤5% (relative to the initial value) Increase of tgδ：≤0.005 IR: ≥50%of the rated value	
6	Damp heat steady state	There shall be no visible damage, legible marking ΔC/C ≤5% (relative to the initial value) Increase of tgδ: C_R≤1μF ≤0.002 (10kHz) C_R>1μF ≤0.004 (1kHz) IR: ≥50% of the rated value		Temperature:40˚C±2˚C Humidity: $93\pm^{2}_{3}$ %RH Duration: 56days
7	Endurance	There shall be no visible damage, legible marking ΔC/C≤5%(relative to the initial value) Increase of tgδ：≤0.004 I.R: ≥50% of the rated value		T=85℃，1000h, Applied Voltage: 1.25×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≤(Cb-Cd)/Cd≤+3% Characteristic at upper category temperatu +105˚C: 4.0%≤(Cf-Cd)/Cd≤0 I.R. (test at point f): IR≥2500 MΩ CR≤0.33 μF τ≥750s CR＞0.33 μF	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	ΔC/C≤5% (relative to the initial value) Increase of tgδ：≤0.005 I.R.: ≥50% of the rated value	Times: 10000 Duration of charging: 0.5s Duration of discharging: 0.5s Charging voltage: U_R

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

Marking



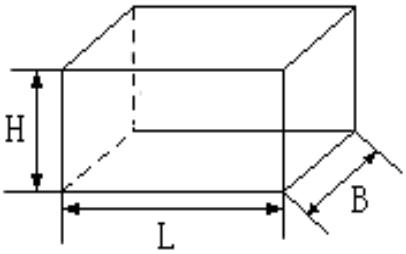
Packaging

Packaging bags

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 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.



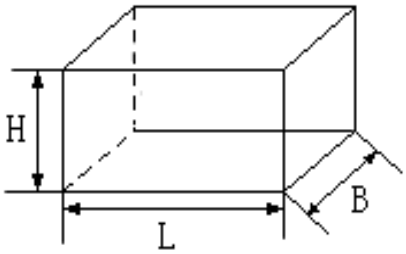
L±5mm	220	470
B±5mm	200	340
H±5mm	105	235

Board packaging

The capacitor will insert the lead into the plastic foam, and put it into the packing box. Every 6 boxes are packed in the outer box.

Packing diagram, inner packing box and outer packing box dimensions are shown in the figure below

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.



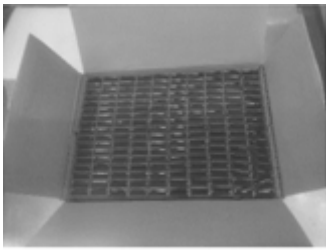
L±5mm	220	470
B±5mm	200	340
H±5mm	105	235

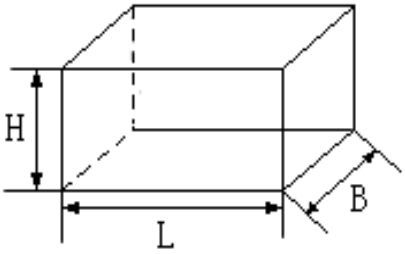
Row box packaging

The capacitor will be arranged by a plater, and put it into the packing box. Every4 boxes are packed in the outer box.

Packing diagram, inner packing box and outer packing box dimensions are shown in the figure below

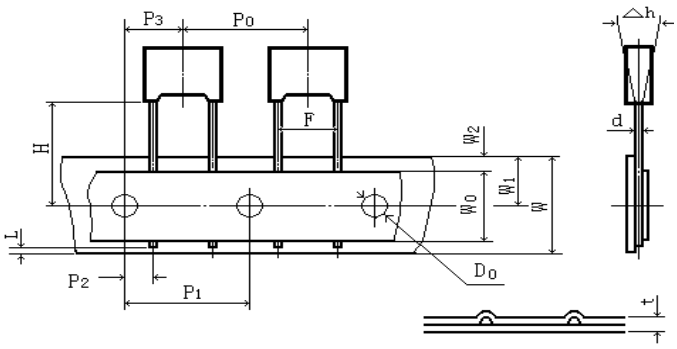
For the packing box with capacitors, all kinds of shipments are permitted, but the sprinkle of rain or snow and mechanical damage must be avoided.



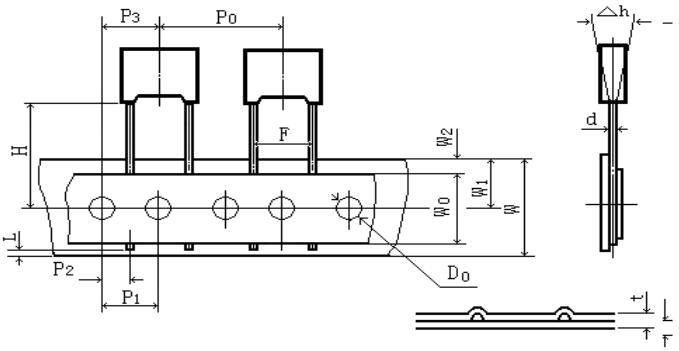


L±5mm	330	470
B±5mm	230	340
H±5mm	100	235

Specification of radial taping capacitors



Picture T-1



Picture T-2

Dimensions of taping (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	25.4	12.7	7.7	12.7	10.0	0	18.0	11.0min	9.0	0.5-3.0	18.5	4.0	0.7	0min
	P=15.0	T-2	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。

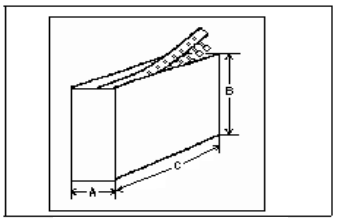
F can be other lead space。

If you need other taping, please contact us

Dimensions of taping packing

Ammo-pack

Code	Size(mm)
A	53±5
B	267±5
C	325±5



picture 6

◆ 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：≤ 30℃.
- Humidity ≤70%RH, no dew allowed on the capacitor.