

# **Film Capacitors**

Double sided Metallized Polypropylene Film Capacitor(Box-type)

Series/Type : MMKP82



### **Dimensions/Key Parameter Comparison Table** (UNIT:mm)

					Dimension								
Item	Customer Number	Number	Rated Voltage	Rated Capacity	Voltage Discran pancy	Encapsu lation	₩±0.5	H±0.5	T±0.5	P±0.5	d	L±0.5	Figure
1		MMKP82 102J2000D2Z15	2000Vdc	102	J	塑壳	17.5	11	5	15	0.8		2
2		MMKP82 182J2000D2Z15	2000Vdc	182	J	塑壳	17.5	11	5	15	0.8		2
3		MMKP82 152J2000D2Z15	2000Vdc	152	J	塑壳	17.5	11	5	15	0.8		2
4		MMKP82 682J2000D2Z15	2000Vdc	682	J	塑壳	17.5	135	7.5	15	0.8		2



Key parts parameters, components, etc :

Item	Component Name	Material	Note
1	Capacitor core		
		Double-sided metallized film	Specially treated
2	Electrode		
		Metal spraying layer	
3	Leading-out	CP line	
	terminal		
4	Case	PBT	UL94-V0
5	Filling resin	Epoxy resin	UL94-V0





**Outline Drawing** 

Figure 1





Identification



Symbol	Instructions	Symbol	Instructions
	Brand	2000	Rated DC voltage
MMKP82	Туре	102J	Nominal capacitance and deviation

The contents are variable



# Figure 2



## ■ Braid size table (mm)

Technical index name	Codo	Dimension		
	Code	P=15.0		
Braid type	/	/	/	
Capacitor spacing	PO	25.4	$\pm 1.0$	
Tape loading hole distance	P1	12.7	$\pm 0.3$	
Lead position	P2	5.2	$\pm 0.7$	
Capacitor body position	P3	12.7	$\pm 1.3$	
Lead spacing	F	15.0	+0.8/-0.2	
Capacitor side tilt	riangle h	0	$\pm 2.0$	
Distance from capacitor bottom to hole center	Н	18.5	$\pm 0.5$	
Bag width	W	18.0	+1/-0.5	
Tape width	WO	10.Omin	/	
Tape loading hole location	W1	9.0	$\pm 0.5$	
Tape location	W2	3max	/	
Tape loading hole diameter	DO	4.0	$\pm 0.2$	
Total braid thickness	t	0.7	$\pm 0.3$	
Distance from the lead line to the bottom of the paper bag	L	Omin	/	



#### Application and Feature

Double sided metallized polypropylene, low loss, low-profile, Small inherent temperature rise, is suitable for the high voltage, high frequency, pulse circuits, electronic ballast and compact lamps.



Tolerance:						
Tolerance	J	к	М			
Code	±5%	±10%	±20%			

Lead line shape:

#### Lead straight pin (code: 1) pin can be brackable packaging;

	Code	1075	1100	1150	1225	1275	1325	1375
	Pitch code	7.5 mm	10 mm	15 mm	22.5 mm	27.5 mm	32.5 mm	37.5 mm
Commonly used pin pitch						·		

Note:

Foot pitch can be adjusted according to product design, the above table is the common size.

Lead wire braid ( code: 2) Examples: Z7.5, Z10, Z15, 10K7.5, 15K10, etc.



Specification:

Reference standard	Reference IEC 60384-16、GB 10190 standard		Instructions	
Climatic category	40/105/56			
Rated temperature	85°C for $U_{Rdc}$ , 75°C for $U_{Rac}$		① The frequency of the alternating current in the rated voltage is 50Hz(working frequency) the	
Operation Temperature Range	Operation -40°C~105°C Temperature Range		working voltage of the capacitor decreases as the frequency increases.	
Rated voltage	250Vdc、400Vdc、630Vdc、 1000/1250Vdc、1600Vdc、 2000Vdc	of the capacitor decreas the temperature rises. between 85~105°C,take	of the capacitor decreases as the temperature rises. between 85~105°C,take 85°C	
Capacitance range	0.001 µ F~3.3 µ F		as the base, the temperature rises 1°C,the rated working voltage of the capacitor decreases 1.25%, The	
Capacitance tolerance	±5%(J)、±10%(K)、±20%(M) (20±5°C,1KHz)		working voltage (ac) of the capacitor decreases as the temperature rises. between 75~105°C,take 75°C as the base, the temperature rises 1°C,the rated working voltage of the capacitor decreases 1.35%	
Voltage proof between terminations	U=1.6U <sub>R</sub> , $5s(20\pm5^{\circ}C)$			
	$C_R \leq 0.33 \mu F$ , $IR \geq 100\ 000 M\Omega$		3 The working voltage of	
Insulation	$C_R > 0.33 \mu$ F, IR×C $\geq 30~000$ s		the capacitance decreases as the capacitance increases.	
resistance	(20°C, 1min, 100Vdc)		(4) Above mentioned	
Dissipation factor	≤0.0010 (1KHz, 20°C)		instructions shall be fully considered when using the capacitor.	
Special requirement				



Max dV	/dt (V	/μs)
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	dV/dt(V/µs)					
Rated voltage (V)	P=7.5mm	P=10.0mm	P=15.0mm	P=22.5mm	P=27.5mm	
250	1 200	1 000	600	300	200	
400	1 800	1 500	900	500	300	
630	3 200	3 200	2 500	1 500	900	
1000/1250	6 000	6 000	3 300	2 200	1 000	
1600	/	/	6 500	3 000	2 000	
2000	/	/	10 000	5 000	2 200	
	Rated voltage pulse slope (dV/dt) <sub>R</sub> at rated voltage.					

1. 2.

If the working voltage(U) is lower than the rated voltage(U<sub>R</sub>), 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 U<sub>R</sub>/U.





sine wave, ambient temperature  $\leq 85^{\circ}$ , the internal temperature rise $\Delta T=15^{\circ}$ .





Note:

sine wave, ambient temperature  $\leqslant\!85\,^\circ\!\!\mathbb{C},$  the internal temperature rise  $\!\!\!\Delta T\!\!=\!\!15\,^\circ\!\!\mathbb{C}.$ 



	Te	st 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	引出端强度 Terminal strength	外观无可见损伤 There shall be no visible damage	拉力: 0.50≤d≤0.80, 10N 0.80 <d≤1.25, 20n<br="">弯曲试验 Ub: 每个方向上连续进行二次弯曲 Tense: 0.50≤d≤0.80, 10N 0.80<d≤1.25, 20n<br="">The terminals shall be bent 2 times in each direction</d≤1.25,></d≤1.25,>
3	耐焊接热 Resistance to solder heat (▲注 Note)	外观无可见损伤,标识清晰, 电容量变化ΔC/C: ≤3%, tgδ的增加: ≤0.002 There shall be no visible damage ΔC/C: ≤3% (relative to the initial value) Increase of tgδ: ≤0.002	焊料温度: 260℃±5℃ 浸渍时间: 10s±0.5s Solder temperature:260°C±5°C Immersion time: 10s±0.5s



No.	Item	P	erformance	Test method(GB2693-2001)
	Initial measurement C <sub>R</sub> ≤1μF: Test frequency , 10kHz C <sub>R</sub> >1μF: Test frequency , 1kHz			
	Rapid change of temperature	There shall be no	visible damage	$\theta_{A} = -40^{\circ} C$ , $\theta_{B} = +105^{\circ} C 5$ cycles Duration: t=30min
5	Vibration	There shall be no	visible damage	Amplitude 0.75mm or acceleration 98m/s <sup>2</sup> (whichever is the smaller severity), f:10Hz to 500Hz.Three perpendicular directions, 2h for each direction, total 6h.
	Bump	There shall be no	visible damage	4000 times,Acceleration:390m/s2, Pulse duration,6ms
	Final measurement	There shall be no ΔC/C: ≤3% (relat Increase of tgδ: IR: ≥50% of the	visible damage tive to the initial value) ≤0.002 e rated value	
		Initial measurement		
5	1. /	Dry heat		+105℃, 16h
	climate sequence	Damp heat, Cyclic		Test Db, he first cycle
		Cold		-40℃, 2h



No.	Item	Performance		Test method(GB2693-2001)
		Low air pressure	There shall be no permanent breakdown, flashover or other harmful deformation.	8.5kPa (85mbar), 1h
		Damp heat, cyclic other		试验 Db, 其余循环 Test Db, the other cycles
5	climate sequence	Final measurement	There shall be no visible damage, legible marking $\Delta C/C \leq 3\%$ (relative to the initial value) Increase of tg $\delta$ : $\leq 0.003$ IR: $\geq 50\%$ of the rated value	
6	Damp heat steady state	There shall legible mark (relative to Increase of t C <sub>R</sub> ≤1µF ≤0 C <sub>R</sub> >1µF ≤0 IR: ≥50% of	be no visible damage, ing $\Delta C/C \leqslant 5\%$ the initial value) $\log \delta$ : 0.002 (10kHz) .002 (1kHz) the rated value	Temperature:40°C±2°C Humidity: 93± <sup>2</sup> 3 %RH Duration: 56days
7	Endurance	There shall be no visible damage, legible marking $\Delta C/C \leq 5\%$ (relative to the initial value) Increase of tg $\delta$ : $\leq 0.003$ I.R: $\geq 50\%$ of the rated value		T=85℃, 1000h, Applied Voltage: 1.25×U <sub>R</sub>



No.	Item	Performance	Test method(GB2693-2001)
8	Temperature characteristic	$\begin{split} \mathrm{IR} &\geq 2500 \mathrm{M} \Omega  C_{\mathrm{R}} &\leq 0.33 \ \mathrm{\mu} \ \mathrm{F} \\ \mathrm{IR} &\geq 750 \mathrm{s} \qquad C_{\mathrm{R}} &> 0.33 \ \mathrm{\mu} \ \mathrm{F} \\ \mathrm{Measuring \ capacitance \ at \ test \ point \ b, \ d, \ f: \\ \mathrm{Characteristic \ at \ lower \ category \\ temperature \ -40^{\circ} \ \mathrm{C}: \qquad 0 &\leq (C_{\mathrm{b}} - C_{\mathrm{d}})/C_{\mathrm{d}} &\leq +3\% \\ \mathrm{Characteristic \ at \ upper \ category \\ temperature \ +105^{\circ} \ \mathrm{C}: \qquad -4.0\% &\leq (C_{\mathrm{f}} - C_{\mathrm{d}})/C_{\mathrm{d}} &\leq 0 \\ \mathrm{I.\ R. \ (test \ at \ point \ f \ ): } \\ \mathrm{IR} &\geq 2500 \mathrm{M} \Omega  C_{\mathrm{R}} &\leq 0.33 \ \mathrm{\mu} \ \mathrm{F} \\ \mathrm{IR} \geq 750 \mathrm{s} \qquad C_{\mathrm{R}} &> 0.33 \ \mathrm{\mu} \ \mathrm{F} \end{split}$	Static method: The Capacitors should be kept at the following temperature in turn: $a(20\pm2)$ ° C, $b(-40\pm3)$ ° C, $d(20\pm2)$ ° C, $f(105\pm2)$ ° C, $g(20\pm2)$ ° C
9	Charging and discharging	$\Delta$ C/C $\leqslant$ 5% (relative to the initial value) Increase of tg $\delta$ : $\leqslant$ 0.003 I.R.: ≥50% of the rated value	Times: 10000 Duration of charging: 0.5s Duration of discharging: 0.5s Charging voltage: U <sub>R</sub>

▲ Note: / Wave-soldering instructions

(1),

Pre-heating with a maximum temperature of  $110^{\circ}$ C

(2)、

Leaded film capacitors are not suitable for reflow soldering.



Classification by product dimension P is lead space before kink, T is thickness, reference outline drawing)	Solder bath temperature	Soldering time	Recommended Soldering temperature chart
P>7.5mm P≤7.5mm,T>4mm		10±1s	300 °C 250 200
P≪7.5mm,T≪4mm	260±5℃	<4s	$150 \\ 100 \\ 50 \\ 0 \\ 0 \\ 50 \\ 100 \\ 150 \\ 200 \\ s \\ 250 \\ t$

# Quality ensuring test (before shipment):

	Inspection level (GB2828.1-2012)	
Inspection item (each batch)	IL	AQL
1. Appearance inspection	П	1 5%
2. Dimensions	11	1.570
1. Capacitance		
2. Tangent of the loss angle	п	0.25%
3. Dielectric strength	11	0.2370
4. Insulation resistance		
1. Solderability	S-3	2.5%



Packaging :

1、

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 Several small packing cases packing box. Packing with small or big box depends on the customer's purchase quantity.

2

Film capacitance for molding tape packaging can also be carried out.

3 装

Packing cases with film capacitors are allowed to be transported by any means provided that direct rain or snow and mechanical damage are avoided.

Box size (variable)

1.

Inner packing boxes in bulk

 $(L355/B175/H118 \pm 10 mm)$ 



## 2

Dimensions of radial braided packing box  $(L330/B48/H320 \pm 10mm)$ 



外包装箱尺寸 Outer packing box size  $(L375/B375/H265 \pm 10 \text{ mm})$ 



Outer packing box size  $(L540/B340/H335 \pm 10 mm)$ 



**Environmental requirement** 

Compliance with RoHS and REACH requirements.