



PRODUCT SPECIFICATION

规格书

Customer (客户名称):

Customer P/N (客户料号):

Aillen P/N(爱伦料号): MKP Series

CATEGORY(品名): 安规电容器

DESCRIPTION(型号): MKP-X2

Spec No.(承认书编号):

Date(发行日期):

AILLEN

PREPARED
(拟定)

CHECKED
(审核)

CUSTOMER

Please sign a copy after accepting

APPROVAL
(批准)

SIGNATURE
(签名)

香港九龙尖沙咀柯士甸路 7-9 号焕利商业大厦 7 楼 63 室

Room 63,7/F,Woon Lee Commercial Building,7-9 Austin Ave, Tsim Sha Tsui, Kowloon, Hong Kong

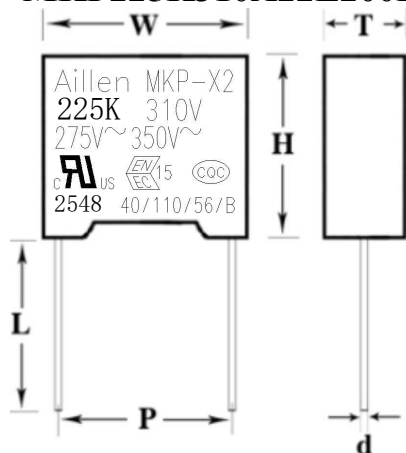
广东省东莞市沙田镇进港中路 28 号

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TEL: 0769-86059566 0769-88050188

FAX: 0769-23124135 <http://www.aillen.com>

MKP225K310A22L200E24-S



- Dimension(mm)

No.	Size(mm)					
	W	H	T	L(min)	P	d
1	26±1	25±0.5	15±0.5	18	22±1	0.8±0.08

-Safety certificate:

Safety certification mark	Country or region	Certificate number
	USA/Canada	UL-US-2342956-0
	China	CQC23001404407
	European Economic Community	ENEC-04649

-Electrical performance

Climatic category and passive flammability class	40/110/56/B
Operating Temperature	-40~110°C
Capacitance	0.47μF
Tolerance	±10%
Maximum Continuous DC Voltage	310VAC 50/60Hz
Dissipation Factor	0.1%Max
Withstand Voltage Between Terminals	1333VDC /5s
Insulation resistance	CR≤0.33μF, IR≥15000MΩ CR>0.33μF, IR·C≥5000S(MΩ·μF)

Issued-date: 2024-5-6

Name

Specification Sheet – MKP

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1.Feature

Metallized polypropylene non-induction construction;
Self-healing property ;
Excellent active and passive flame resistant abilities (conforming to UL94-0) ;
Withstanding over voltage stressing.
THB 1000H.

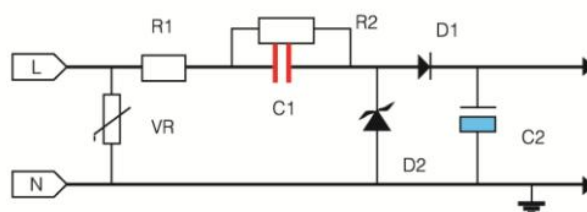
2.Applications

X2 class for interference suppression

Across the line applications

Capacitance divider where is series-connected with the mains in energy meters, LED drivers and control boards in white goods and home appliances

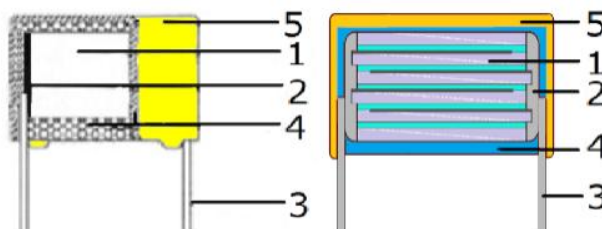
For the purpose of RC voltage divider, please choose “D” mark sub class model. (This“D” mark sub class model has the features of high stability in capacity and smaller in capacity drop, however it does not suitable for using crossing the line or as an EMI suppression filter)



Typical divider circuit

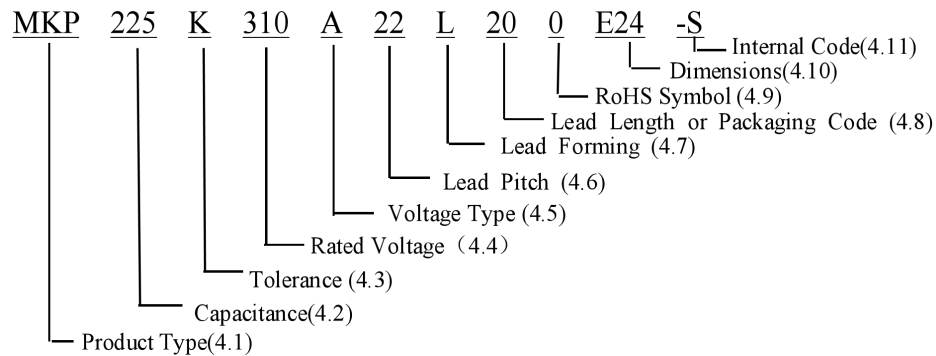
3.Product brief introduction

The MKP X2 capacitor series is wound from a metallized polypropylene film non-inductive structure, and is packaged with tinned coppered steel wire, plastic housing and flame retardant epoxy resin. Good self-healing properties and excellent flame retardancy, in line with UL94V-0 standards.



Code	Part Name	Material Name
1	Dielectric	Metallized Polypropylene Film
2	Solder	Sn-Zn alloy
3	Terminal	CP wire (Ø 0.8or0.6mm)
4	Sealed Material	Epoxy resin
5	Plastic Case	PBT

4.Part Number System



4-1 Product Type

Code	MKP
Type	X2 Metallized polypropylene film interference suppression capacitor

4-2 Capacitance

Code	102	103	104	105	155
Capacitance	0.001 μ F	0.01 μ F	0.1 μ F	1 μ F	1.5 μ F

4-3 Tolerance

Code	K
Tolerance	$\pm 10\%$

4-4 Rated Voltage:

Code	275	310	350
Voltage	275V	310V	350V

4-5 Voltage Type: A→AC

4-6 Lead Pitch

Code	08	10	15	22	27	31
Pitch(mm)	7.5mm	10mm	15mm	22mm	27mm	31mm

4-7 Lead Style

Code	L	M	T	S
Lead Forming	Bulk	Cutting	Taping Hole space P0:12.7 mm	Taping Hole space P0:15.0mm

4-8 Lead length or Packing Code

Code	35	50	10	15	20	H6	HF
Length(mm)	3.5±0.5	5.0±0.5	10.0±1.0	15.0±1.0	18.0 Min	Taping Height H: 16.0 mm	Taping Height H: 18.5 mm

4-9 RoHS Symbol

Code	0	1	2
Meaning	Environmentally friendly products (in compliance with RoHS, Reach, and do not contain PAH or phthalates).	Non environment ally friendly	In addition to being compliant with the aforementioned environmentally friendly criteria “0”, it should also show that the amount of halogens contained in the product meets the criteria

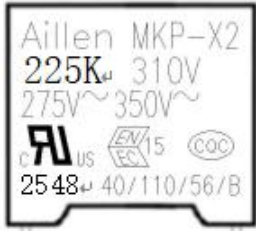
4-10 Dimensions Code

Code	E24		
Dimensions(mm)	W	H	T
	26±1	25±1	15±1

4-11 Internal Code

Code	S
Characteristic	high temperature and high humidity

5.Marking

Marking Item		Example
Manufacturer Marking	Aillen	
Type Designation	MKP	
Sub-Class Code	X2	
Capacitance,Tolerance	224K	
Rated Voltage	310Vac	
Climatic category	40/110/56/B	
Safety Organization Approved Marking	UL	
	CQC	
	ENEC	

6.Specification and test methods

6.1 Test condition: Unless otherwise specified, the standard range of atmospheric Conditions for marking measurements and test is conducted in the following ambient

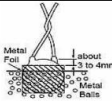
Ambient temperature : 15~35 °C, Relative humidity: 25~75%.

If there may be any doubt on the results, measurements shall be made within the Following limits.

Temperature : 20±2°C , Relative humidity :60~70%.

Default frequency of the related alternating current tests: 50Hz

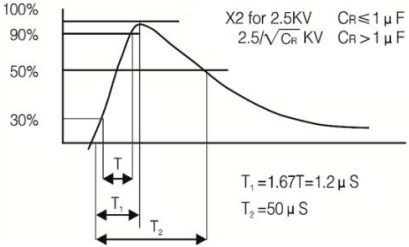
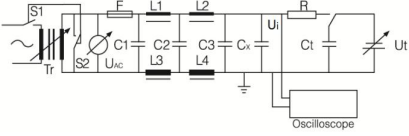
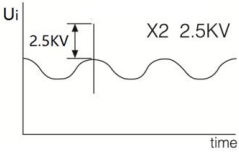
6.2 Specification and test methods

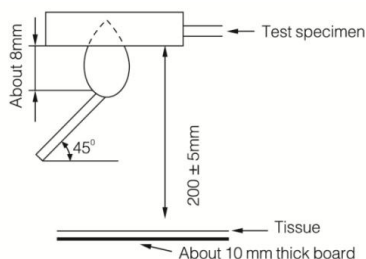
3.2 Specification and test methods								
No	Item		Test method	Specification				
1	Appearance		The appearance shall be inspected by naked eyes.	No marked defect on appearance				
2	Dimensions		The dimensions shall be measured with slide calipers	Dimensions of capacitor and taping shall satisfy specified requirement.				
3	Marking		The marking shall be checked by 4x magnifying glass.	Legible marking				
4	Climatic category and passive flammability class		/	40/110/56/B				
5	Rated Temperature Range		/	-40℃~ 110℃				
6	Rated Voltage		/	275VAC、310VAC、350VAC				
7	Capacitance Range		The capacitance shall be measured at 25℃ with 1KHz 1±0.2 Vrms.	0.01μF~4.7μF				
8	Capacitance Tolerance			±10%(K)				
9	Dissipation Factor		The dissipation factor shall be measured at 25℃ with 1KHz 1±0.2 Vrms.	0.1%Max				
10	Insulation Resistance		The insulation resistance shall be measured with 100VDC within 60±5 sec of charging.	$C_R \leq 0.33\mu F$, $IR \geq 15000M\Omega$ $C_R > 0.33\mu F$, $IR \cdot C \geq 5000S(M\Omega \cdot \mu F)$				
11	Dielectric Strength (Voltage Proof)	Between Terminals	The capacitor should not be damaged when test voltages of table below are applied between the lead wires for 5 sec. <table><tr><th>Type</th><th>Test Voltage</th></tr><tr><td>X2</td><td>DC1333V/5s</td></tr></table>	Type	Test Voltage	X2	DC1333V/5s	No failure
		Type	Test Voltage					
X2	DC1333V/5s							
Between Terminals To Case:	First, the terminals of the capacitor should be connected together. Then, as shown in figure below, a metal foil should be closely wrapped around the body of the capacitor to the distance of about 3 to 4mm from each terminal. Then, the capacitor should be inserted into a container filled with metal balls of about 1mm diameter. Finally, ac voltage of table below is applied for 60 sec. between the capacitor lead wires and metal balls. <table><tr><th>Type</th><th>Test Voltage</th></tr><tr><td>X2</td><td>AC2100V/60s</td></tr></table> 	Type	Test Voltage	X2	AC2100V/60s			
Type	Test Voltage							
X2	AC2100V/60s							

Aillen Electronic Technology Limited	X2 Metallized Polypropylene Film Interference Suppression Capacitors MKP Series(Box)	Aillen
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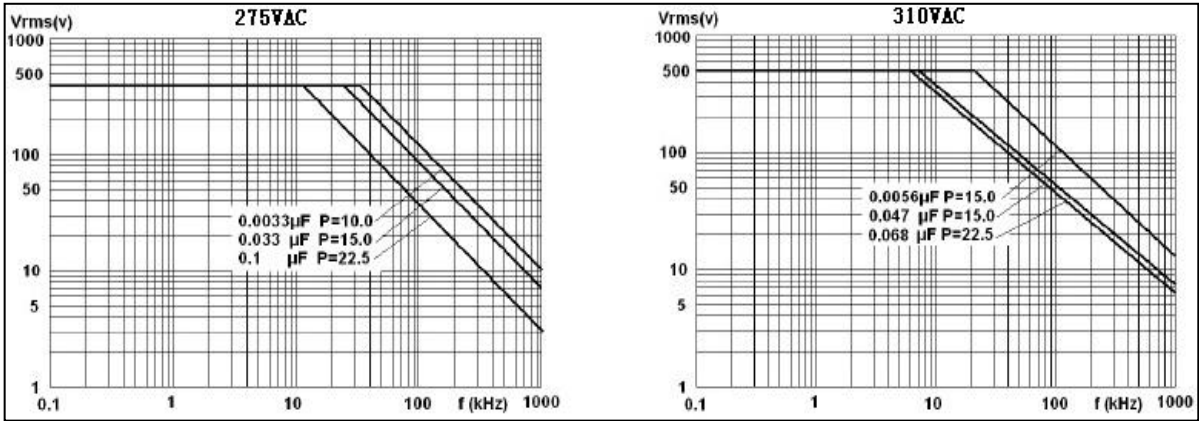
No	Test items	Test method	Specification	
12	Robustness of Termination	The capacitor body shall be held in such a manner so that the axis of the lead is vertical. The tensile force of 10N(for lead of Ø0.6~Ø0.8mm)shall be applied to the lead in a direction of its axis and acting in a direction away from the body of the capacitor for 10±1 seconds.	The capacitor shall be no broken and the lead shall be no loosened or cut off.	
13	Solderability of leads	The lead wire of a capacitor should be dipped Into molten solder for 2±0.5sec. The depth of immersion is up to about 1.5 to 2.0mm from the root of lead wires. Temp.of solder: Lead Free solder(Sn-3Ag-0.5Cu) 245±5°C H63 Eutectic Solder 235±5°C	A new uniform coating of solder shall cover a minimum of 95% of the surface being immersed	
14	Resistance to Soldering heat	Temperature of solder bath 260±5°C. The immersing depth of lead shall be a position 2-0.5mm from the seating plane, using a thermal screen. The thickness of the screen is 1.5±0.5mm. The immersion time shall be 10±1 seconds. Post-treatment:The capacitor shall be preserved at the standard atmospheric condition for 1 to 2 hours.	Appearance	No visible damage
			Capacitance Change	Within ±5%
			Dissipation Factor	Refer to Item 6.2.9
			Voltage proof (between leads)	Refer to Item 6.2.11
15	Solvent Resistance	The capacitor shall be immersed into isopropyl alcohol for 30±5 s	Appearance: No visible damage Legible marking	
16	Damp heat steady state	The capacitor shall be stored for 56 days (1350±8hours) at a temperature of 40°C±2°C and a relative humidity of (93±3) %. Pre-treatment: the capacitor shall be stored at a temperature of 85°C±2°C for 1 hour,and then the capacitor shall be recovered for 24±2 hours. Post-treatment: the capacitor shall be stored for 1 to 2 hours at the standard atmospheric condition。(Temperature:15 to 35°C,Relative humidity:45 to 75%,Atmospheric pressure:86 to 106kPa)	Capacitance Change	Within ±5%
			Dissipation Factor	$\Delta \tan \delta \leq 0.005$ (CR≤1.0μF) $\Delta \tan \delta \leq 0.008$ (CR>1.0μF)
			IR	IR≥50%Spec
			Voltage proof	Refer to Item 6.2.11
17	THB Test (Damp heat test with loading)	The 240Vac voltage shall be applied continuously to the capacitor at a temperature of 85°C and a relative humidity of 85% for 1000 hours.and then shall be let alone at ordinary condition for 24 hours. After the test , the capacitor shall be satisfied with the following performance.	Appearance	No visible damage
			Capacitance Change	Within±10%
			Dissipation Factor	$\Delta \tan \delta \leq 2.4\%$ at 10KHz, C≤1uF $\Delta \tan \delta \leq 1.5\%$ at 1KHz,C>1uF
			IR	IR≥50%Spec
			Voltage proof	Refer to Item 6.2.11

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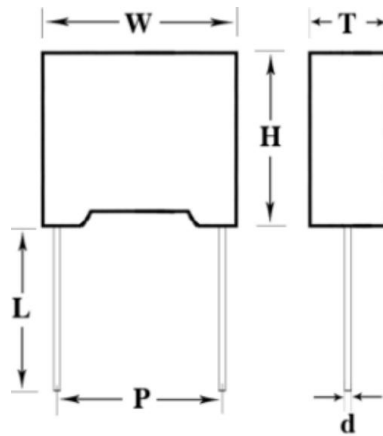
No	Test items	Test method	Specification	
18	Endurance test(life)	The capacitor shall be subjected to three impulses as shown below.  $X2 \text{ for } 2.5KV \quad CR \leq 1 \mu F$ $2.5/\sqrt{CR} \text{ KV} \quad CR > 1 \mu F$ $T_1 = 1.67T = 1.2 \mu S$ $T_2 = 50 \mu S$ Then the capacitors are placed at a temperature of 110°C for 1000 hours. Throughout the test, the capacitors are subjected 50Hz/60Hz , 1.25UR voltages, except that once each hour the voltage is increased to 1000 Vrms for 0.1sec. Post-treatment: the capacitor shall be preserved for 24±2 hours at standard atmospheric condition.	Appearance	No visible damage
			Capacitance Change	Within±10%
			Dissipation Factor	$\Delta tg\delta \leq 0.005$ $(CR \leq 1.0 \mu F)$ $\Delta tg\delta \leq 0.008$ $(CR > 1.0 \mu F)$
			IR	IR≥50%Spec
			Voltage proof	Refer to Item 6.2.112
19	Flammability	The capacitor should be individually wrapped in at least one but not more than two complete layers of cheese-cloth. The capacitor should be subjected to 20 discharges. The interval between successive discharges should be 5 sec. The UAC should be maintained for 2 min. after the last discharge.  $C_{1,2}: 1\mu f \pm 10\% \quad C_3: 0.033\mu f \pm 5\% \text{ } 10kV$ $L_{1to4}: 1.5mH \pm 20\% \text{ } 16A \text{ Rod core choke}$ $Ct: 3\mu f \pm 5\% \text{ } 10kV \quad R: 100\Omega \pm 2\%$ $Cx: \text{Capacitor under test } U_{AC}: UR \pm 5\%$ $F: \text{Fuse, Rated } 10A \quad U_R: \text{Rated Voltage}$ $U_t: \text{Voltage applied to } Ct$ 	The cheese-cloth should not be on fire.	

No	Test items	Test method	Specification																					
20	Passive flammability	 Length of flame:12mm Gas burner: Length 35mm min. Inside diameter:0.5±0.1mm Outside diameter: 0.9mm min. Gas: Butane gas purity 95% min.	Severity and Requirements <table><tr><th rowspan="3">Flaming Ratings</th><th colspan="3">Severity Level</th><th rowspan="3">Maximum flaming time(s)</th></tr><tr><th colspan="3">Flame is applied for a time (S) against the capacitor volumes range (mm)</th></tr><tr><th>250< Volumes ≤500</th><th>500< Volumes ≤1750</th><th>Volumes >1750</th></tr><tr><td>B</td><td>20</td><td>30</td><td>60</td><td>10</td></tr><tr><td>C</td><td>10</td><td>20</td><td>30</td><td>30</td></tr></table>	Flaming Ratings	Severity Level			Maximum flaming time(s)	Flame is applied for a time (S) against the capacitor volumes range (mm)			250< Volumes ≤500	500< Volumes ≤1750	Volumes >1750	B	20	30	60	10	C	10	20	30	30
Flaming Ratings	Severity Level				Maximum flaming time(s)																			
	Flame is applied for a time (S) against the capacitor volumes range (mm)																							
	250< Volumes ≤500	500< Volumes ≤1750	Volumes >1750																					
B	20	30	60	10																				
C	10	20	30	30																				

7. Typical graphs



8. Specification Sheet



P/N	Rated voltage	Capacitance (μF)	Size (mm)				
			W±0.5	H±0.5	T±0.5	P±0.5	Φd±0.05
MKP563K310A15L200Z1-S	310VAC	0.056	18.0	11.0	5.0	15.0	0.60
MKP104K310A15L200Z1-S	310VAC	0.100	18.0	11.0	5.0	15.0	0.60
MKP474K310A22L200E3-S	310VAC	0.470	26.5	17.0	8.5	22.5	0.80
MKP105K310A22L200E4-S	310VAC	1.0	26.5	19.0	10.0	22.5	0.80
MKP105K310A22L200E5-S	310VAC	1.0	26.5	20.0	11.0	22.5	0.80
MKP225K310A22L200E24-S	310VAC	2.2	26.0	25.0	15.0	22.5	0.80
MKP335K310A27L200F48-S	310VAC	3.3	32.0	30.0	16.0	27.5	0.80

- 1) Specification are subject to change without notice should a safety or technical concern arise regarding the product , please be sure to contact our sales offices
- 2) The sizes in the above table are all general specifications. If you need other specifications, please contact us
- 3) All Part numbers are provided in bulk.

8.Taping specification:

8-1 Outline Drawing

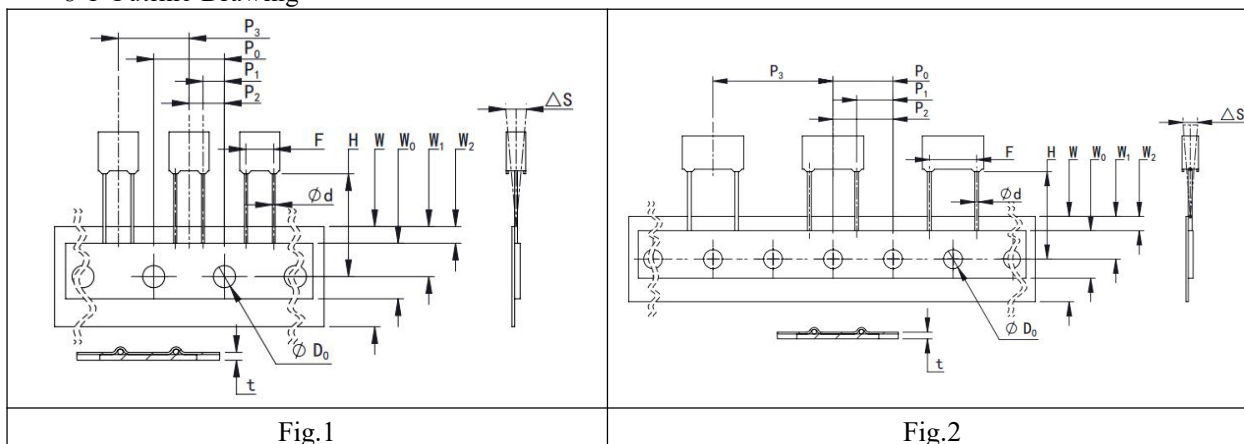


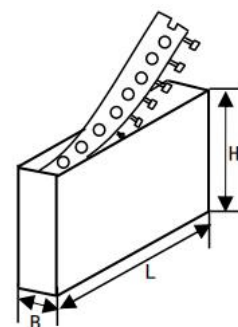
Fig.1

Fig.2

8-2 Taping & Box Dimensions(mm)

Mark	Taping Dimensions(mm)				Tolerance
	P=5.0	P=7.5	P=10.0	P=15.0	
Type	Fig.1	Fig.1	Fig. 2	Fig. 2	/
P3	12.7	12.7	25.4	25.4	±1.0
P0	12.7	12.7	12.7	12.7	±0.3
P1	3.85	3.75	7.7	5.2	±0.7
P2	6.35	6.35	12.7	12.7	±1.3
F	5	7.5	10	15	+0.6/-0.2
ΔS	0	0	0	0	±2.0
H	18.5	18.5	18.5	18.5	±0.8
H0	16	16	16	16	±0.5
W	18	18	18	18	+1/-0.5
W0	8min	10min	10min	10min	/
W1	9	9	9	9	±0.5
W2	3max	3max	3max	3max	/
D0	4	4	4	4	±0.2
t	0.5	0.5	0.5	0.5	±0.2

Note: If you need other taping, please contact us.



L=335±3mm
B=55/50±3mm
H=265/350±3mm