



SPECIFICATION FOR APPROVAL

CUSTOMER : _____
CUSTOMER CODE : _____
PRODUCT NAME : Metallized polypropylene film interference suppression Capacitor
PART NUMBER : MKP-X2 SERIES
ISSUED DATE : 2020.11

Zhejiang Qixing Electronics Corp ., Ltd.	Approved by Customer
Drafted	Checked by
Feng Yang	Zhongliang Li



Zhejiang Qixing Electronics Corp ., Ltd.

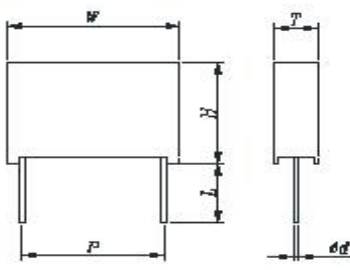


No. 50, Development Avenue, Meishan Town, Changxing County, Zhejiang Province , P.R.China

Tel: 0572-6295698 Fax: 0572-6295700 Post Code: 313119

Revision Sheet

N/O	Rev. Reason	Rev. Point	Maker	Approval	Date
A/0		New issue			2020-11

Product Specification										Unit : mm
Approval		<input checked="" type="checkbox"/> Series <input type="checkbox"/> Individual		Category			Dimension Approval			
Model		MKP-X2				Drawing NO.				
NO.	Cap	Tol	R.V.	W±1	H±1	T±1	P±0.5	d±0.05	L±2	P/N
1	0.022μF	10%	275 VAC	13.0	11.0	5.0	10.0	0.6	18	X2-0275A223K10WLBU**
2	0.047μF	10%	275 VAC	13.0	11.0	5.0	10.0	0.6	18	X2-0275A473K10WLBU**
3	0.1μF	10%	275 VAC	13.0	12.0	6.0	10.0	0.6	18	X2-0275A104K10WLBU**
4	0.1μF	10%	275 VAC	18.0	12.0	6.0	15.0	0.8	18	X2-0275A104K15WLCU**
5	0.22μF	10%	275 VAC	18.0	13.0	7.0	15.0	0.8	18	X2-0275A224K15WLCU**
6	0.47μF	10%	275 VAC	18.0	14.5	8.5	15.0	0.8	18	X2-0275A474K15WLCU**
7	0.68μF	10%	275 VAC	18.0	19.0	11.0	15.0	0.8	18	X2-0275A684K15WLCU**
8	1.0μF	10%	275 VAC	26.0	22.0	12.0	22.5	0.8	18	X2-0275A105K22WLCU**
9	2.2μF	10%	275 VAC	32.0	25.0	14.0	27.5	0.8	18	X2-0275A225K27WLCU**

<p>■ Size specification</p> 		<p>■ Print</p> 
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Sealing	Yellow epoxy	Yellow case	Flame retardant
Terminal	CP	Print method	Laser




■ Feature

- High temperature metallized polypropylene film for dielectric material
- Resistance to lightning impulse of 2000V
- Meet the fire retardance requirement of 94-v0

■ Main Application

- Use in cross power line in anti-interference circuit

Safety Certification

Mark	Specification	File Number
	IEC60384-14	File No.: CQC18001200754 Types: MPX/MKP, X2
	EN/IEC 60384-14	File No.:40049209 AC 275V,X2, 0.0082μF to 10.0μF
	UL 60384-14 and CAN/CSA –E60384-14	File No.: E350995 310VAC 0.0082μF to 10.0μF

■Electrical Characteristics

1	Ref. Standard	IEC 60384-14	
2	Climate category	40/100/21	
3	Flame retardant grade	C	
4	Operating temperature range	-40°C~+100°C	
5	UR Rated voltage	275VAC f=50/60Hz	
6	Electricity capacity range	0.0082μF~10μF	
7	Capacitance Tolerance	±10% (K)	
8	Voltage resistance	Between terminals 4.3UR	
		Between terminals to case: 2120VAC 60S	
9	Dissipation Factor	tgδ≤0.0010 (1kHz) tgδ≤0.0020 (10kHz) (20°C±5°C)	
10	Insulation resistance	IR ≥15000MΩ, CN≤0.33μF	100V, 60S (+20°C±5°C)
		IR*C ≥5000S, CN>0.33μF	

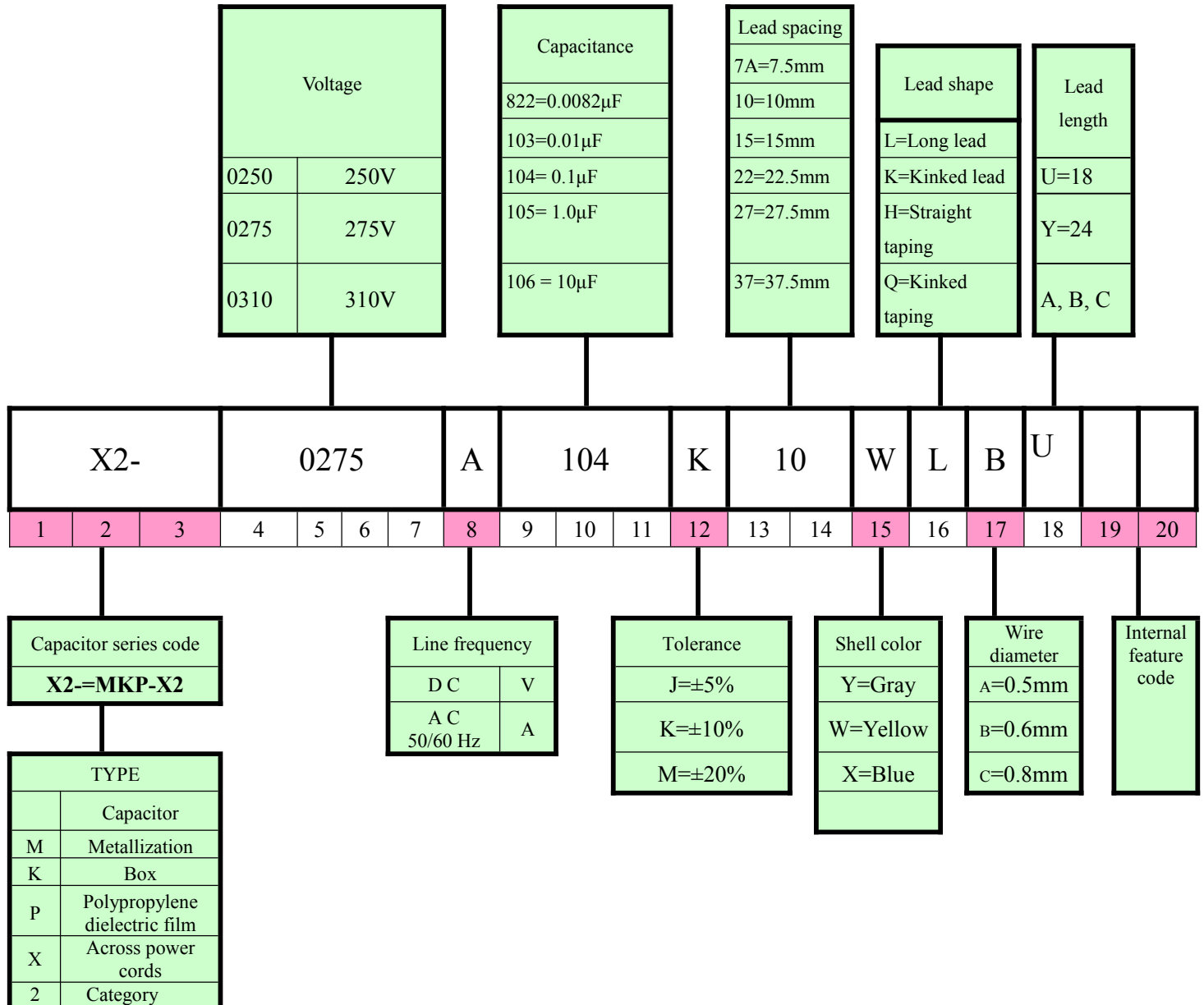
■Performance and test methods

No	Item	Performance and Standard	Test method (IEC60384-2)
1	Capacitance tolerance	$\pm 5\%(J), \pm 10\%(K), \pm 20\%(M)$	
2	Dielectric loss tangent	$tg\delta \leq 0.0010$ (1KHz) $tg\delta \leq 0.0020$ (10KHz)	Typical measuring frequency: 1KHz/10KHz
3	Dielectric strength	There shall be no breakdown or flashover	Between terminals $4.3U_R$ Between terminals to case 2120VAC 60S
4	Insulation resistance	$IR \geq 5000S$ $C_n > 0.33\mu F$	$U_r = 100V$ Charging voltage 100V $T_c: 20$, Time: 60S
5	Solder ability	Tin plating is good, and the surface infiltration area of lead wire is more than 90%	Solder temperature $245^\circ C \pm 5^\circ C$ Immersion time $2.S \pm 0.5S$
6	Initial measurement	Capacitance & $tg\delta$ (10KHz) $C \leq 1\mu F$	
	Terminal strength	There shall be no visible damage	Tension U_{al} : Pull: $\phi d = 0.8mm$ 10N/1mm20N Bend U_b : The force of bend: The terminals shall be bent 2times in each direction
	Resistance to solder heat	There shall be no visible damage	Solder temperature $260^\circ C \pm 5^\circ C$ Immersion time $10.S \pm 1S$
	Final measurement	$\Delta C/C \leq \pm 5\%$	
7	Initial measurement	Capacitance & $tg\delta$ (10KHz) $C \leq 1\mu F$	
	Rapid change of temperature	There shall be no visible damage	$\Theta a = -40^\circ C$ $\Theta b = +100^\circ C$ 5cycles, Duration=30min
	Vibration	There shall be no visible damage	Ferequance 10~500HZ Amplitude 0.75m; Acceleration 100m/S2 Amplitude 3 direction 2h per direction Duration 6h
	Bump	There shall be no visible damage	Bump times: 4000 Acceleration: 400m/S2 Duration of pulse: 6ms
	Final measurement	$\Delta C/C \leq \pm 10\%$	
8	Climate sequence	Initial measurement	Capacitance & $tg\delta$ (10KHz) (10KHz) $C \leq 1\mu F$
		Dry heat	$+100^\circ C$ lasts for 16 hours
		Damp heat, Cyclic	Test Db, Severity: b, the first cycle
		Cold	$-40^\circ C$ lasts for 2 hours
		Low air pressure	There shall be no permanent down, flash over or other harmful deformation when applying U_r at the last 1minute The pressure of $15^\circ C \sim 35^\circ C$ air is 8.0kpa for 1 hour

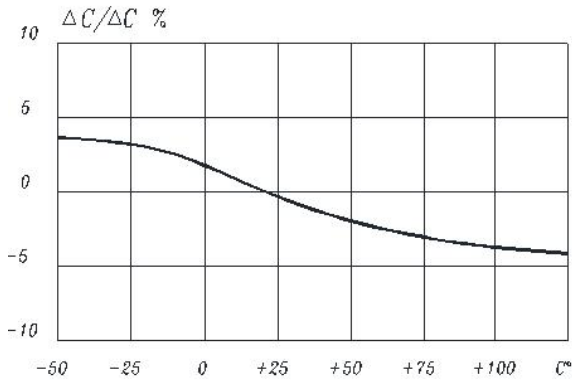
		Damp heat, Cyclic		Test Db, Severity: b, the other cycles, Applying Ur for 1minute after the test finished
		Final measurement	There shall be no evidence of deformation $\Delta C/C \leq \pm 5\%$ $\Delta \text{tg}\delta \leq 0.0080$ (10KHz) $C \leq 1\mu\text{F}$; $\text{IR} \geq 50\%$ of the rated value	
9	Damp heat steady state		There shall be no evidence of deformation And the marking shall be legible $\Delta C/C \leq \pm 5\%$ $\Delta \text{tg}\delta \leq 0.0080$ (10KHz) $C \leq 1\mu\text{F}$; $\text{IR} \geq 50\%$ of the rated value	Temperature: $40 \pm 2^\circ\text{C}$ Humidity: $93 \pm 2\%$ RH Duration: 56days
10	Impulse test		No permanent breakdown or arc	Pulse rate 24 max Peak voltage 2000v
11	Endurance		There shall be no evidence of deformation And the marking shall be legible $\Delta C/C \leq \pm 10\%$ $\Delta \text{tg}\delta \leq 0.0080$ (10KHz) $C \leq 1\mu\text{F}$; $\text{IR} \geq 50\%$ of the rated value	Temperature: $+100^\circ\text{C} \pm 2^\circ\text{C}$ Voltage: $1.25 \times \text{UR}$ The voltage rises to 1000v per hour Duration 0.1s Duration: 1000h
12	Flame retardant test		After leaving the flame, any capacitor shall continue to burn for no more than 30 seconds, and the dripping shall not ignite the cotton paper provided under it.	Flame height: $12 + 1$ (mm) Each test sample was exposed once to the flame under the test capacitor pad cotton paper. Exposure time to the flame is shown below 10S $250 < V(\text{mm}^3) \leq 500$ 20S $500 < V(\text{mm}^3) \leq 1750$ 30S $1750 < V(\text{mm}^3)$
13	Spontaneous combustion test		Gauze wound around capacitor should not be burned by flame.	The sample shall be wrapped with unprocessed pure cotton cloth in at least one layer but not more than two layers, each sample shall be able to withstand 20 discharge of storage capacitors; The interval between each discharge should be 5S. Gauze wound around capacitor should not be burned by flame. Storage capacitor charging voltage $U_i = 2.0\text{kv}$ $0\% \sim +7\%$

■ Capacitor coding specification

- Product part numbers:

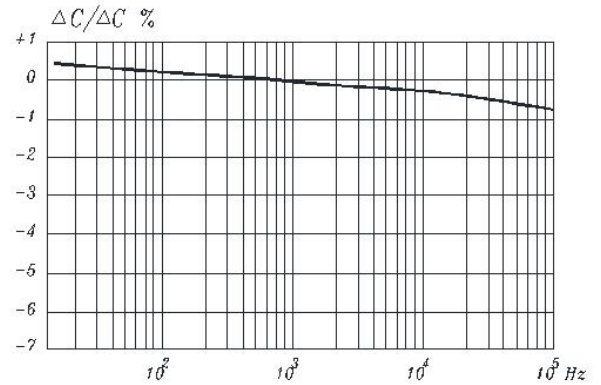


■ Characteristic curve

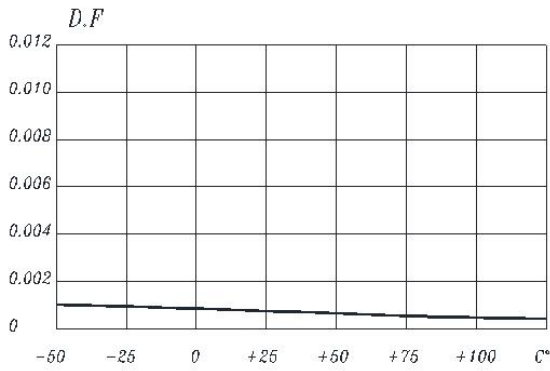


(1KHz)

Capacitance varying with temperature

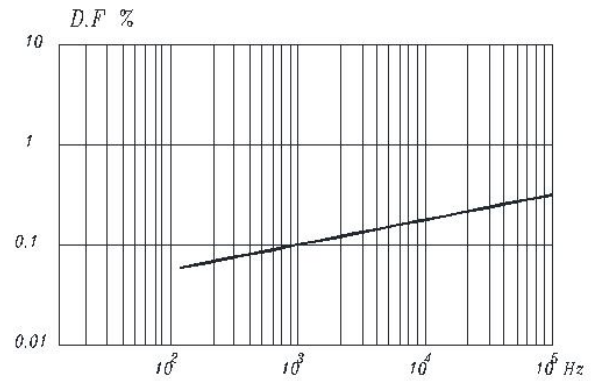


Capacitance varying with frequency

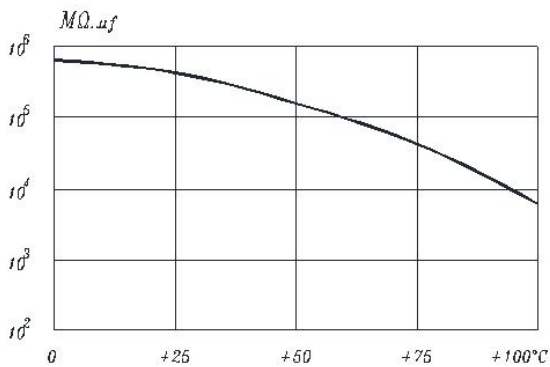


(1KHz)

Dissipation Factor varying with temperature



Dissipation Factor varying with frequency



(1KHz)

Insulation Resistance varying with temperature