



SPECIFICATION FOR APPROVAL

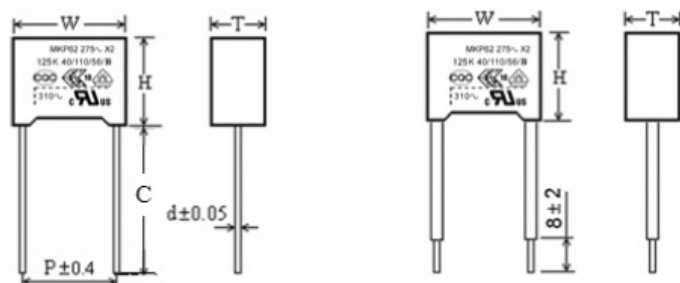
File No.: Q/FRK 0.GS.C42-W02

Product Name	Box-type Metallized Polypropylene Film Interference Suppression Capacitor (Class X2)
Product Type:	C42(MKP62 Series)
Product Code	
Customer	
Customer Code	
Issue Date	2009-01

SURGE COMPONENTS, INC. 95 E. JEFERYN BLVD., DEER PARK, NY 11729
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Metallized polypropylene film interference suppression capacitor (Class X2, 275Vac/305Vac)

■ Outline Drawing



Lead Wire

Insulated Lead Wire(P≥10mm)

Note: There are two kind of the insulated lead wire:

1. Insulated rigid leads;
2. Insulated flexible leads.

■ Features

- metallized polypropylene structure
- Withstanding overvoltage stressing
- Plastic case (UL94 V-0), Epoxy resin sealing.
- Widely used in interference suppression circuit

■ Safety Approvals

•		CQC	GB/T 14472-1998, 275/305VAC, 0.0010μF~10.0μF Certificate No.: CQC03001002875
•		ENEC-VDE	EN/IEC 60384-14:2005, 275/305VAC, 0.0010μF~10.0μF Certificate No.: 40000358
•		UL-CUL	UL1414 CSA C22.2 No.1, 250 VAC, 0.001μF to 1.0μF Certificate No.: E186600
•		UL-CUL	UL1283 CSA C22.2 No.8, 310 VAC, 0.001μF to 10.0μF Certificate No.: E186662
•	CB TEST CERTIFICATE		IEC 60384-14:2005 X2, 275/305 VAC, 0.001μF~10.0μF, 40/110/56/B Certificate No.: DE1--12559/M2

■ Specifications

Class	Class X2		
Climatic Category/Passive Flammability Class	40/110/56/B		
Operating temperature range	-40℃ ~ +110℃		
Rated Voltage	275/305VAC, 50/60Hz		
Capacitance Range	0.0010μF~10.0μF		
Capacitance Tolerance	±10%(K), ±20%(M)		
Voltage Proof	Between Terminals	4.3U _R (Vd.c.), 2s ~5s	
	Between Terminals To Case	2U _R +1 500(Va.c.) 2s ~5s	
Insulation Resistance	Between Terminals	≥15 000MΩ, C _R ≤0.33μF (20℃, 100V, 1min) ≥5 000s, C _R >0.33μF	
	Between Terminals To Case	≥30 000MΩ	
Dissipation Factor	1 000pF≤C _R ≤0.47μF	≤10×10 ⁻⁴ (1kHz, 20℃)	≤20×10 ⁻⁴ (10kHz, 20℃)
	0.47μF<C _R ≤1.0μF	≤20×10 ⁻⁴ (1kHz, 20℃)	≤70×10 ⁻⁴ (10kHz, 20℃)
	C _R >1.0μF	≤30×10 ⁻⁴ (1kHz, 20℃)	-----

Maximum permissible voltage change per unit of time

The table of dV/dt of C42 (MKP62) series (Class X2:275Vac/305Vac):

Rated Voltage (Vac)	Max dv/dt (V/us)					
	P=7.5mm	P=10mm	P=15mm	P=22.5mm	P=27.5mm	P=37.5mm
275/305	500	500	400	200	150	100

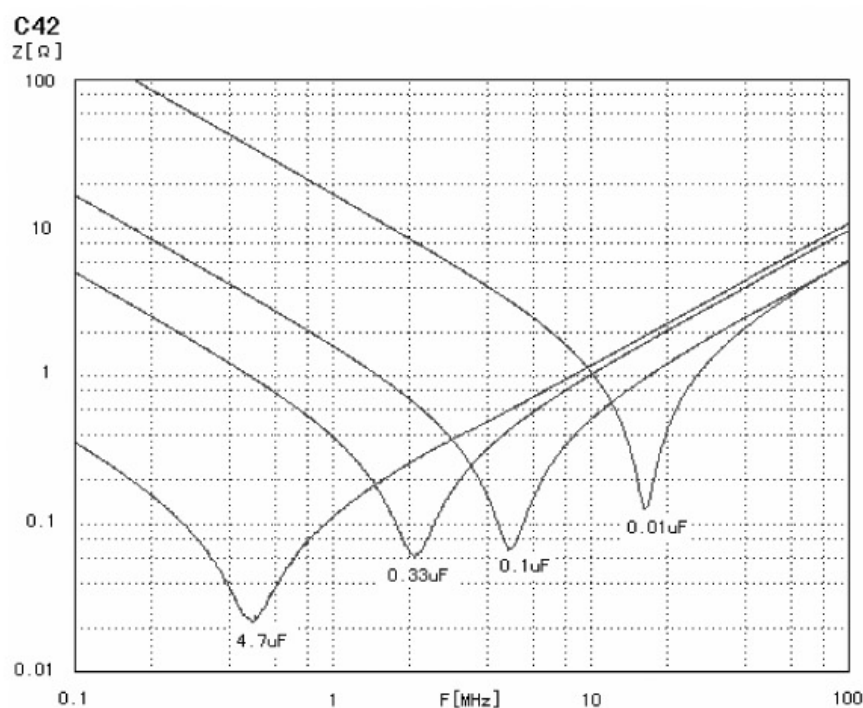
Note:

- 1、Rated voltage pulse slope $(dv/dt)_R$ at rated voltage.
- 2、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 .

Impedance Vs. Frequency

TYPICAL GRAPHS

$Z=f(f)$ Typical values



Part number code system

The 18 digits part number is formed as follow:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
C	4	2															

Digit 1 to 3 Series code of film capacitor

C42=MKP62

Digit 4 to 5 A.C. rated voltage

P2=275V Q2=305V

Digit 6 to 8 Rated capacitance value

For example : 103=10×10³ pF= 0.01μF

Digit 9 Capacitance tolerance

K=±10%, M=±20%

Digit 10 Pitch

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

9=22.5mm B=27.5mm F=37.5mm

Digit 11 Internal use

Digit 12 to 15 Lead dimensions and packaging code

Digit 16 to 18 Internal use

Table 1 lead dimensions and packaging code

Digit 12		Digit 13		Digit 14		Digit 15	
code	explanation	code	explanation	code	explanation	code	explanation
A	ammo-pack	3	F=7.5mm	0	straight	1	each cap. among two consecutive holes P3=12.7mm, H=18.5mm(For pitch=7.5mm)
		4	F=10.0mm			5	P3=25.4mm;H=18.5mm (For pitch=10/15mm) (Detail parameter refer to page 15 of catalog)
		6	F=15.0mm				
C	straight lead “C” in the figure above	code	explanation			0	Length tolerance ±0.5mm or standard length
		00	standard lead length (18mm~26mm)				
		45	lead length 4.5mm				

■ Dimensions(mm)

Reduced sizes

275Vac						
C (μF)	W max	H max	T max	P	d	Part number
0.033	13.0	9.0	4.0	10.0	0.6	C42P2333-4S*****++
0.039	13.0	9.0	4.0	10.0	0.6	C42P2393-4S*****++
0.047	13.0	9.0	4.0	10.0	0.6	C42P2473-4S*****++
0.056	13.0	11.0	5.0	10.0	0.6	C42P2563-4S*****++
0.068	13.0	11.0	5.0	10.0	0.6	C42P2683-4S*****++
0.082	13.0	11.0	5.0	10.0	0.6	C42P2823-4S*****++
0.10M	13.0	11.0	5.0	10.0	0.6	C42P2104M4S*****++
0.10K	13.0	12.0	6.0	10.0	0.6	C42P2104K4S*****++
0.12	13.0	13.0	7.0	10.0	0.6	C42P2124-4S*****++
0.15	13.0	13.0	7.0	10.0	0.6	C42P2154-4S*****++
0.18	13.0	14.0	8.0	10.0	0.6	C42P2184-4S*****++
0.22M	13.0	14.0	8.0	10.0	0.6	C42P2224M4S*****++
0.10M	17.5	9.5	5.0	15.0	0.6	C42P2104M6A*****++
0.10	17.5	11.0	5.0	15.0	0.6	C42P2104-6S*****++
0.12	17.5	11.0	5.0	15.0	0.6	C42P2124-6S*****++
0.15M	17.5	11.0	5.0	15.0	0.6	C42P2154M6S*****++
0.15K	17.5	12.0	6.0	15.0	0.6	C42P2154K6S*****++
0.18	17.5	12.0	6.0	15.0	0.6	C42P2184-6S*****++
0.22M	17.5	12.0	6.0	15.0	0.6	C42P2224M6S*****++
0.22K	17.5	13.5	7.5	15.0	0.6	C42P2224K6S*****++
0.22K	17.5	12.5	9.0	15.0	0.6	C42P2224K6A*****++
0.22K	17.5	13.5	6.0	15.0	0.6	C42P2224K6B*****++
0.27	17.5	13.5	7.5	15.0	0.6	C42P2274-6S*****++
0.33M	17.5	13.5	7.5	15.0	0.6	C42P2334M6S*****++
0.33K	17.5	14.0	8.0	15.0	0.6	C42P2334K6S*****++
0.33M	17.5	12.5	9.0	15.0	0.6	C42P2334M6A*****++
0.33M	17.5	17.5	6.0	15.0	0.6	C42P2334M6B*****++
0.33K	17.5	18.5	7.5	15.0	0.8	C42P2334K6A*****++
0.39	17.5	14.5	8.5	15.0	0.6	C42P2394-6S*****++
0.47M	17.5	14.5	8.5	15.0	0.6	C42P2474M6S*****++
0.47M	17.5	18.5	7.5	15.0	0.8	C42P2474M6A*****++
0.47K	17.5	16.0	10.0	15.0	0.8	C42P2474K6S*****++
0.56	17.5	19.0	11.0	15.0	0.8	C42P2564-6S*****++
0.60	17.5	19.0	11.0	15.0	0.8	C42P2604-6S*****++
0.68	17.5	19.0	11.0	15.0	0.8	C42P2684-6S*****++
0.82M	17.5	19.0	11.0	15.0	0.8	C42P2824M6S*****++

275Vac						
C (μF)	W max	H max	T max	P	d	Part number
0.22	26.5	15.0	6.0	22.5	0.8	C42P2224-9S*****++
0.27	26.5	15.0	6.0	22.5	0.8	C42P2274-9S*****++
0.33	26.5	15.0	6.0	22.5	0.8	C42P2334-9S*****++
0.39	26.5	15.0	6.0	22.5	0.8	C42P2394-9S*****++
0.47M	26.5	15.0	6.0	22.5	0.8	C42P2474M9S*****++
0.47K	26.5	16.0	7.0	22.5	0.8	C42P2474K9S*****++
0.56	26.5	16.0	7.0	22.5	0.8	C42P2564-9S*****++
0.60	26.5	17.0	8.5	22.5	0.8	C42P2604-9S*****++
0.68	26.5	17.0	8.5	22.5	0.8	C42P2684-9S*****++
0.82	26.5	18.5	10.0	22.5	0.8	C42P2824-9S*****++
1.0	26.5	18.5	10.0	22.5	0.8	C42P2105-9S*****++
1.2	26.5	20.0	11.0	22.5	0.8	C42P2125-9S*****++
1.5M	26.5	20.0	11.0	22.5	0.8	C42P2155M9S*****++
1.5K	26.5	22.0	12.0	22.5	0.8	C42P2155K9S*****++
1.8	26.5	24.5	15.5	22.5	0.8	C42P2185-9S*****++
2.2	26.5	24.5	15.5	22.5	0.8	C42P2225-9S*****++
0.82	32.0	18.0	9.0	27.5	0.8	C42P2824-BS*****++
1.0	32.0	18.0	9.0	27.5	0.8	C42P2105-BS*****++
1.2	32.0	20.0	11.0	27.5	0.8	C42P2125-BS*****++
1.5	32.0	20.0	11.0	27.5	0.8	C42P2155-BS*****++
1.8	32.0	22.0	13.0	27.5	0.8	C42P2185-BS*****++
2.2M	32.0	22.0	13.0	27.5	0.8	C42P2225MBS*****++
2.2K	32.0	25.0	13.0	27.5	0.8	C42P2225KBS*****++
2.7	32.0	28.0	14.0	27.5	0.8	C42P2275-BS*****++
3.3	32.0	33.0	18.0	27.5	0.8	C42P2335-BS*****++
3.9	32.0	33.0	18.0	27.5	0.8	C42P2395-BS*****++
4.7M	32.0	33.0	18.0	27.5	0.8	C42P2475MBS*****++
4.7K	32.0	37.0	22.0	27.5	0.8	C42P2475KBS*****++
5.6	32.0	37.0	22.0	27.5	0.8	C42P2565-BS*****++
6.8M	32.0	37.0	22.0	27.5	0.8	C42P2685MBS*****++
1.8	41.0	22.0	11.0	37.5	1.0	C42P2185-FS*****++
2.2	41.0	24.0	13.0	37.5	1.0	C42P2225-FS*****++
2.7	41.0	24.0	13.0	37.5	1.0	C42P2275-FS*****++
3.3	41.0	28.0	14.0	37.5	1.0	C42P2335-FS*****++
3.9	41.0	30.0	16.0	37.5	1.0	C42P2395-FS*****++
4.7	41.0	30.0	16.0	37.5	1.0	C42P2475-FS*****++
5.6	41.0	33.5	18.5	37.5	1.0	C42P2565-FS*****++
6.8	41.0	33.5	18.5	37.5	1.0	C42P2685-FS*****++
8.2	41.0	37.0	22.0	37.5	1.0	C42P2825-FS*****++
10.0M	41.0	37.0	22.0	37.5	1.0	C42P2106MFS*****++
10.0K	41.0	41.0	26.0	37.5	1.0	C42P2106KFS*****++

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

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

■ Dimensions(mm)

275Vac						
C (μF)	W max	H max	T max	P	d	Part number
0.0010	10.5	9.0	4.0	7.5	0.6	C42P2102-30*****++
0.0012	10.5	9.0	4.0	7.5	0.6	C42P2122-30*****++
0.0015	10.5	9.0	4.0	7.5	0.6	C42P2152-30*****++
0.0018	10.5	9.0	4.0	7.5	0.6	C42P2182-30*****++
0.0022	10.5	9.0	4.0	7.5	0.6	C42P2222-30*****++
0.0027	10.5	9.0	4.0	7.5	0.6	C42P2272-30*****++
0.0033	10.5	9.0	4.0	7.5	0.6	C42P2332-30*****++
0.0039	10.5	9.0	4.0	7.5	0.6	C42P2392-30*****++
0.0047	10.5	9.0	4.0	7.5	0.6	C42P2472-30*****++
0.0056	10.5	9.0	4.0	7.5	0.6	C42P2562-30*****++
0.0068	10.5	9.0	4.0	7.5	0.6	C42P2682-30*****++
0.0082	10.5	9.0	4.0	7.5	0.6	C42P2822-30*****++
0.010	10.5	9.0	4.0	7.5	0.6	C42P2103-30*****++
0.012	10.5	9.0	4.0	7.5	0.6	C42P2123-30*****++
0.015	10.5	9.0	4.0	7.5	0.6	C42P2153-30*****++
0.018	10.5	9.0	4.0	7.5	0.6	C42P2183-30*****++
0.022	10.5	9.0	4.0	7.5	0.6	C42P2223-30*****++
0.027	10.5	11.0	5.0	7.5	0.6	C42P2273-30*****++
0.033	10.5	11.0	5.0	7.5	0.6	C42P2333-30*****++
0.039	10.5	12.0	6.0	7.5	0.6	C42P2393-30*****++
0.047	10.5	12.0	6.0	7.5	0.6	C42P2473-30*****++
0.0047	13.0	9.0	4.0	10.0	0.6	C42P2472-40*****++
0.0056	13.0	9.0	4.0	10.0	0.6	C42P2562-40*****++
0.0068	13.0	9.0	4.0	10.0	0.6	C42P2682-40*****++
0.0082	13.0	9.0	4.0	10.0	0.6	C42P2822-40*****++
0.010	13.0	9.0	4.0	10.0	0.6	C42P2103-40*****++
0.012	13.0	9.0	4.0	10.0	0.6	C42P2123-40*****++
0.015	13.0	9.0	4.0	10.0	0.6	C42P2153-40*****++
0.018	13.0	9.0	4.0	10.0	0.6	C42P2183-40*****++
0.022	13.0	9.0	4.0	10.0	0.6	C42P2223-40*****++
0.027	13.0	9.0	4.0	10.0	0.6	C42P2273-40*****++
0.033	13.0	11.0	5.0	10.0	0.6	C42P2333-40*****++
0.039	13.0	11.0	5.0	10.0	0.6	C42P2393-40*****++
0.047	13.0	11.0	5.0	10.0	0.6	C42P2473-40*****++
0.056	13.0	11.0	5.0	10.0	0.6	C42P2563-40*****++
0.068	13.0	12.0	6.0	10.0	0.6	C42P2683-40*****++
0.082	13.0	12.0	6.0	10.0	0.6	C42P2823-40*****++
0.10	13.0	12.0	6.0	10.0	0.6	C42P2104-40*****++
0.12	13.0	14.0	8.0	10.0	0.6	C42P2124-40*****++
0.15	13.0	14.0	8.0	10.0	0.6	C42P2154-40*****++

275Vac						
C (μF)	W max	H max	T max	P	d	Part number
0.010	17.5	9.5	5.0	15.0	0.8	C42P2103-6A*****++
0.012	17.5	9.5	5.0	15.0	0.8	C42P2123-6A*****++
0.015	17.5	9.5	5.0	15.0	0.8	C42P2153-6A*****++
0.018	17.5	9.5	5.0	15.0	0.8	C42P2183-6A*****++
0.022	17.5	9.5	5.0	15.0	0.8	C42P2223-6A*****++
0.027	17.5	9.5	5.0	15.0	0.8	C42P2273-6A*****++
0.033	17.5	9.5	5.0	15.0	0.8	C42P2333-6A*****++
0.039	17.5	9.5	5.0	15.0	0.8	C42P2393-6A*****++
0.047	17.5	9.5	5.0	15.0	0.8	C42P2473-6A*****++
0.056	17.5	9.5	5.0	15.0	0.8	C42P2563-6A*****++
0.068	17.5	9.5	5.0	15.0	0.8	C42P2683-6A*****++
0.082	17.5	9.5	5.0	15.0	0.8	C42P2823-6A*****++
0.010	17.5	11.0	5.0	15.0	0.8	C42P2103-60*****++
0.012	17.5	11.0	5.0	15.0	0.8	C42P2123-60*****++
0.015	17.5	11.0	5.0	15.0	0.8	C42P2153-60*****++
0.018	17.5	11.0	5.0	15.0	0.8	C42P2183-60*****++
0.022	17.5	11.0	5.0	15.0	0.8	C42P2223-60*****++
0.027	17.5	11.0	5.0	15.0	0.8	C42P2273-60*****++
0.033	17.5	11.0	5.0	15.0	0.8	C42P2333-60*****++
0.039	17.5	11.0	5.0	15.0	0.8	C42P2393-60*****++
0.047	17.5	11.0	5.0	15.0	0.8	C42P2473-60*****++
0.056	17.5	11.0	5.0	15.0	0.8	C42P2563-60*****++
0.068	17.5	11.0	5.0	15.0	0.8	C42P2683-60*****++
0.082	17.5	11.0	5.0	15.0	0.8	C42P2823-60*****++
0.10	17.5	11.0	5.0	15.0	0.8	C42P2104-60*****++
0.12	17.5	12.0	6.0	15.0	0.8	C42P2124-60*****++
0.15	17.5	12.0	6.0	15.0	0.8	C42P2154-60*****++
0.18	17.5	13.5	7.5	15.0	0.8	C42P2184-60*****++
0.22	17.5	13.5	7.5	15.0	0.8	C42P2224-60*****++
0.27	17.5	14.5	8.5	15.0	0.8	C42P2274-60*****++
0.33	17.5	16.0	10.0	15.0	0.8	C42P2334-60*****++
0.39	17.5	19.0	11.0	15.0	0.8	C42P2394-60*****++
0.47	17.5	19.0	11.0	15.0	0.8	C42P2474-60*****++

Note: 1. “-”=capacitance tolerance code, M=±20%,K=±10%

2. “*****”=lead dimensions and packing mode code (refer to table 1)

3. “#”when the rated voltage is 305VAC,the digit 4~5 is Q2.

■ Dimensions(mm)

275Vac						
C (μF)	W max	H max	T max	P	d	Part number
0.15	26.5	15.0	6.0	22.5	0.8	C42P2154-90*****++
0.18	26.5	15.0	6.0	22.5	0.8	C42P2184-90*****++
0.22	26.5	15.0	6.0	22.5	0.8	C42P2224-90*****++
0.27	26.5	16.0	7.0	22.5	0.8	C42P2274-90*****++
0.33	26.5	16.0	7.0	22.5	0.8	C42P2334-90*****++
0.39	26.5	17.0	8.5	22.5	0.8	C42P2394-90*****++
0.47	26.5	17.0	8.5	22.5	0.8	C42P2474-90*****++
0.56	26.5	18.5	10.0	22.5	0.8	C42P2564-90*****++
0.68	26.5	18.5	10.0	22.5	0.8	C42P2684-90*****++
0.82	26.5	22.0	12.0	22.5	0.8	C42P2824-90*****++
1.0	26.5	22.0	12.0	22.5	0.8	C42P2105-90*****++
1.2	26.5	24.5	15.5	22.5	0.8	C42P2125-90*****++
1.5	26.5	24.5	15.5	22.5	0.8	C42P2155-90*****++

275Vac						
C (μF)	W max	H max	T max	P	d	Part number
0.47	32.0	18.0	9.0	27.5	0.8	C42P2474-B0*****++
0.56	32.0	18.0	9.0	27.5	0.8	C42P2564-B0*****++
0.68	32.0	18.0	9.0	27.5	0.8	C42P2684-B0*****++
0.82	32.0	20.0	11.0	27.5	0.8	C42P2824-B0*****++
1.0	32.0	20.0	11.0	27.5	0.8	C42P2105-B0*****++
1.2	32.0	22.0	13.0	27.5	0.8	C42P2125-B0*****++
1.5	32.0	22.0	13.0	27.5	0.8	C42P2155-B0*****++
1.8	32.0	24.5	15.0	27.5	0.8	C42P2185-B0*****++
2.2	32.0	28.0	14.0	27.5	0.8	C42P2225-B0*****++
2.7	32.0	33.0	18.0	27.5	0.8	C42P2275-B0*****++
3.3	32.0	33.0	18.0	27.5	0.8	C42P2335-B0*****++
3.9	32.0	37.0	22.0	27.5	0.8	C42P2395-B0*****++
4.7	32.0	37.0	22.0	27.5	0.8	C42P2475-B0*****++
1.8	41.0	26.0	12.0	37.5	1.0	C42P2185-F0*****++
2.2M	41.0	26.0	12.0	37.5	1.0	C42P2225-F0*****++
2.2K	41.0	28.0	14.0	37.5	1.0	C42P2225-F0*****++
2.7	41.0	28.0	14.0	37.5	1.0	C42P2275-F0*****++
3.3	41.0	30.0	16.0	37.5	1.0	C42P2335-F0*****++
3.9	41.0	32.0	17.0	37.5	1.0	C42P2395-F0*****++
4.7	41.0	33.5	18.5	37.5	1.0	C42P2475-F0*****++
5.6	41.0	37.0	22.0	37.5	1.0	C42P2565-F0*****++
6.8	41.0	37.0	22.0	37.5	1.0	C42P2685-F0*****++
8.2	41.0	41.0	26.0	37.5	1.0	C42P2825-F0*****++
10.0	41.0	43.0	28.0	37.5	1.0	C42P2106-F0*****++

Note: 1. “-”=capacitance tolerance code, M=±20%,K=±10%

2. “*****”=lead dimensions and packing mode code (refer to table 1)

3. “#”when the rated voltage is 305VAC,the digit 4~5 is Q2.

2 Test Method And Performance:

No.	Item	Performance	Test Method (IEC 60384-14)
1	Solderability	Good quality of tinning	Solder temperature: $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Immersion time: $2.0\text{s} \pm 0.5\text{s}$
2	Terminal strength	There shall be no visible damage	Tense: $0.50 < d \leq 0.80$, 10N $0.80 < d \leq 1.25$, 20N Bend: $0.50 < d \leq 0.80$, 5N $0.80 < d \leq 1.25$, 10N The terminals shall be bent 2 times in each direction
3	Resistance to solder heat	There shall be no visible damage $\Delta C/C \leq \pm 5\%$ (relative to the initial value)	Solder temperature: $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Immersion time: $10\text{s} \pm 1\text{s}$
4	Solvent resistance of the marking	The marking shall be legible	Solvent: Industrial isopropanol. Solvent temperature: $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Condition: scrub Scrub material: absorbent cotton Reverting time: No
5	Initial measurement	Capacitance、 $\text{Tg}\delta$	
	Rapid change of temperature	There shall be no evidence of deterioration.	$\theta_A = -40^{\circ}\text{C}$, $\theta_B = +110^{\circ}\text{C}$ 5 cycles Duration: $t = 30\text{min}$
	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 directions, 2h for each direction, total 6h.
	Bump	There shall be no evidence of deterioration.	4 000 times, Acceleration: 390m/s^2 , Pulse duration, 6ms
	Final measurement	There shall be no visible damage $\Delta C/C \leq \pm 5\%$ (relative to the initial value)	
6	climate sequence	Initial measurement	
		Dry heat	$+110^{\circ}\text{C}$, 16h
		Damp heat, Cyclic	Test Db, Severity: b, the first cycle
		Cold	-40°C , 2h
		Low air pressure	There shall be no permanent breakdown, flashover or other harmful deformation when applying U_R at the last 1 minute. $15^{\circ}\text{C} \sim 35^{\circ}\text{C}$, 8.5kPa, 1h,
		Damp heat, cyclic other	Test Db, Severity b, the other cycles,
		Final measurement	There shall be no visible damage, legible marking $\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\text{tg}\delta$: $C_R \leq 1\mu\text{F}$: ≤ 0.008 (10kHz) $C_R > 1\mu\text{F}$: ≤ 0.005 (1kHz) Dielectric strength : there shall be no permanent breakdown or flashover I.R.: $\geq 50\%$ of the rated value

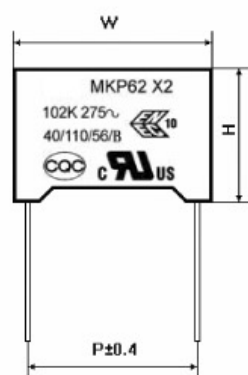
No.	Item	Performance	Test Method (IEC 60384-14)
7	Damp heat steady state	There shall be no visible damage, legible marking $\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\tan \delta$: $C_R \leq 1\mu F$: ≤ 0.008 (10kHz) $C_R > 1\mu F$: ≤ 0.005 (1kHz) Dielectric strength : there shall be no permanent breakdown or flashover I.R.: $\geq 50\%$ of the rated value IR: $\geq 50\%$ of the rated value	Temperature: $40^\circ\text{C} \pm 2^\circ\text{C}$ Humidity: $93 \pm \frac{2}{3} \% \text{RH}$ Duration: 56 days
8	Impulse voltage	There are three or more waveforms which indicate that no self-heating breakdown have occurred when it is monitored by the monitor	Each individual capacitor shall be subjected to 24 impulses of the same polarity (when any three successive impulses are shown by the monitor to have a wave form indicating that no self-healing breakdown have taken place the impulses can be stopped), the time between impulses shall not be less than 10S, and the peak value of the voltage impulse: 2.5kV (suitable for $C_R \leq 1\mu F$; When $C_R > 1\mu F$, the capacitor can endure pulse voltage value is $2.5/\sqrt{C_R}$ kV)
9	Endurance	There shall be no visible damage, legible marking $\Delta C/C \leq \pm 10\%$ (relative to the initial value) Increase of $\tan \delta$: $C_R \leq 1\mu F$: ≤ 0.008 (10kHz) $C_R > 1\mu F$: ≤ 0.005 (1kHz) Dielectric strength : There shall be no breakdown or flashover I.R. : $\geq 50\%$ of the rated value	+110°C, 1.25 U_R V.a.c., 1 000h The voltage shall be subjected to 1000Vrms for 0.1s every one hour during test.
10	Charging and discharging	$\Delta C/C \leq \pm 10\%$ (relative to the initial value) Increase of $\tan \delta$: $C_R \leq 1\mu F$: ≤ 0.008 (10kHz) $C_R > 1\mu F$: ≤ 0.005 (1kHz) I.R.: $\geq 50\%$ of the rated value	Times: 10 000 Duration of charging: 0.5s Duration of discharging: 0.5s Charging voltage: $\sqrt{2}U_R$ V.d.c. Charging resistance: $220/C_R (\Omega)$ or the current $\leq 1.0\text{A}$ (whichever is the minor) Discharging resistance: $R = \frac{\sqrt{2}U_R}{C_R \times \frac{dU}{dt}} (\Omega)$ C_R : Capacitance (μF) dU/dt (V/us) : 100V/ μs

No.	Item	Performance	Test Method (IEC 60384-14)
11	Passive flammability	The flaming time of each capacitor shall not go beyond 10s after it is taken apart from the flame. Drop of each capacitor caused by flame shall not fire the tissue below.	Ref.item 4.17 Needle flame test The category of flammability: B Expose time: 1 time Capacitor Volume Exposing time $250 < V(\text{mm}^3) \leq 500$ 20s $500 < V(\text{mm}^3) \leq 1750$ 30s $V(\text{mm}^3) > 1750$ 60s
12	Active flammability	The cheesecloth around the capacitor shall not burn with a flame.	The specimens shall be individually wrapped in at least 1, but not more than 2, complete layers of cheesecloth, the cheesecloth shall be untreated pure cotton. Each sample shall be subjected to 20 discharged, the interval between successive discharges shall be 5s. $U_i = 2.5kV_0^{+7}\%$

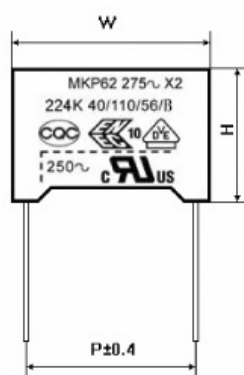
3 Quality ensuring test (before shipment):

Inspection item (each batch)	Inspection level (GB 2828)	
	IL	AQL
Appearance inspection	II	1.5%
Dimensions		
Capacitance	II	0.25%
Tangent of the loss angle		
Dielectric strength		
Insulation resistance		
Solderability	S-3	2.5%

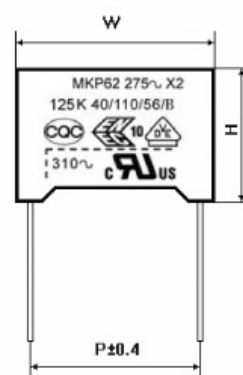
4 Marking:



P=7.5 or 10.0mm



P≥15.0mm and $C_R \leq 1.0\mu F$



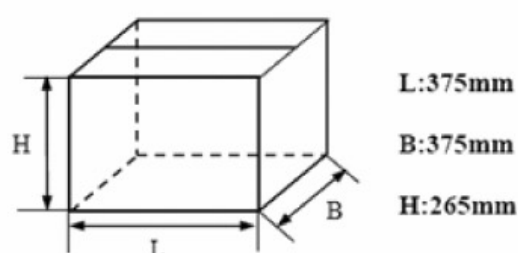
$C_R > 1.0\mu F$

Marking Introduction:

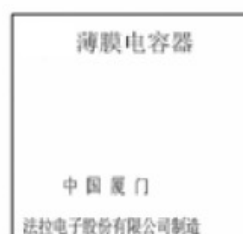
Sign	explain	Sign	explain
	Brand		ENEC-VDE Approval
MKP62	Type		CQC Approval
275~	Rated voltage		UL, CUL Approval
X2	Class	250~/310~	Rated voltage (UL, UCL)
102/224/125K	Rated capacitance and tolerance	40/110/56/B	Climate category / Passive Flammability Class

5 Packaging in bulk

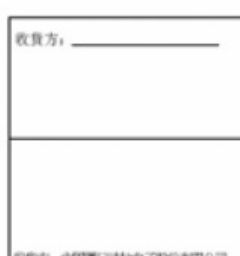
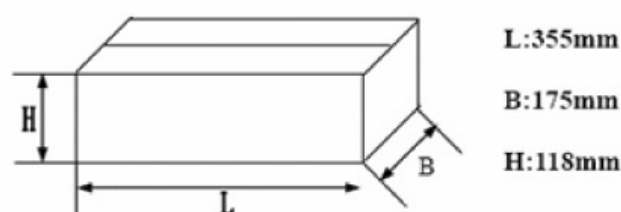
- 5.1 A certain quantity of capacitors and the qualified bill shall be packed with a plastic bag . Then put several plastic bags into one small packing box, sealed with adhesive paper. One big packing box contains four small packing box. Packing with small or big box depends on the customer's purchase quantity.
- 5.2 The dimensions of packing boxes refer to the drawing .
- 5.3 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.

Out packing box

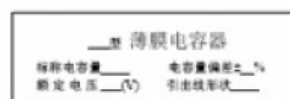
Plane drawing



Overlooking Drawing

**Inner packing box**

Plane drawing



Overlooking Drawing

