



SPECIFICATION FOR APPROVAL

File No.: Q/FRK 0.GS.E.C42-B06

Product Name	Box-type Metallized Polypropylene Film Interference Suppression Capacitor (Class X2) THB version (Temperature Humidity Bias)
Product Type	MKP62 THB version (Temperature Humidity Bias)
Type Code	C42-W
Product Code	
Customer	
Customer Code	
Issue Date	2012-02

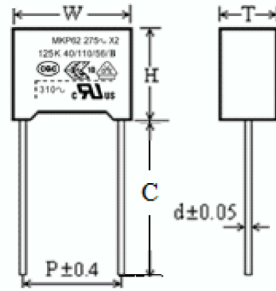


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Metallized polypropylene film interference suppression capacitor (Class X2, 275Vac/305Vac)

THB version (Temperature Humidity Bias)

■ **Outline Drawing**






W±0.4mm, H±0.4mm, T±0.4mm

■ **Features**

- High stability of capacitance value under severe ambient conditions such as high ambient temperatures and high humidity.
- For connection in series with the mains.
- Withstanding over voltage stressing
- Excellent active and passive flame resistant abilities.

■ **Safety Approvals**

• 	CQC	GB/T 14472-1998, X2, 275/305Vac, 0.0010μF~10.0μF, 40/110/56/B Certificate No.: CQC03001002875
• 	ENEC-VDE	EN 60384-14:2005, X2, 275/305Vac, 0.0010μF~10.0μF, 40/110/56/B Certificate No.: 40000358
• 	UL/CUL	UL1414, CSA C22.2 No.1, 250 Vac, 0.001μF to 1.0μF Certificate No.: E186600
		UL1283, CSA C22.2 No.8, 310 Vac, 0.001μF to 45.0μF 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, DE1-40344

■ **Specifications**

Class	Class X2		
Climatic Category/Passive Flammability Category	40/110/56/B		
Operating Temperature Range	-40°C ~ +110°C		
Rated Voltage (U _R)	275/305Vac(ENEC/CQC), 250Vac(UL1414), 310Vac(UL1283)		
Maximum continuous DC voltage	630Vdc		
Capacitance Range	0.010μF~4.7μF		
Capacitance Tolerance	±10%(K), ±20%(M)		
Voltage Proof	Between Terminals:	1 800Vdc(2s)	
	Between Terminals To Case:	2 110Vac (1min)	
Insulation Resistance	≥15 000MΩ, C _R ≤0.33μF ≥5 000s, C _R >0.33μF		(20°C, 100V, 1min)
Dissipation Factor	0.0010μF≤C _R ≤0.47μF	≤10×10 ⁻⁴ (1kHz,20°C)	≤20×10 ⁻⁴ (10kHz,20°C)
	0.47μF<C _R ≤1.0μF	≤20×10 ⁻⁴ (1kHz,20°C)	≤40×10 ⁻⁴ (10kHz,20°C)
	1.0μF<C _R ≤10μF	≤30×10 ⁻⁴ (1kHz,20°C)	-----

■ **Part number 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

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=10.0mm 6=15.0mm

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

Digit 11 W, indicate this is THB version (Temperature Humidity Bias)

Digit 12 to 15 Lead form and packaging code

Digit 16 to 18 Internal use

Table1 Lead form and packaging code

Digit 12		Digit 13		Digit 14		Digit 15	
code	explanation	code	explanation	code	explanation	code	explanation
A	ammo-pack	3 4 6	F=7.5mm F=10.0mm F=15.0mm	0	straight	1 5	each cap. among two consecutive holes P3=12.7mm, H=18.5mm(For pitch=7.5mm) P3=25.4mm;H=18.5mm (For pitch=10/15mm) (Detail parameter refer to page 15)
C	straight lead “C” in the figure above	code	explanation			0	Length tolerance ±0.5mm Or standard length
		00 45	standard lead length (18mm~26mm) lead length 4.5mm				
D E	Insulated flexible leads Insulated rigid leads	C5 K0 K2 L0	lead length 35mm lead length 100mm lead length 120mm lead length 200mm			1	Length tolerance -5~0

■ **Dimensions(mm)**

275Vac [#]						
C _R (μF)	W ±0.4	H ±0.4	T ±0.4	P ±0.4	d ±0.05	Part number
0.010	17.5	11.0	5.0	15.0	0.6	C42P2103-6W*****
0.015	17.5	11.0	5.0	15.0	0.6	C42P2153-6W*****
0.022	17.5	11.0	5.0	15.0	0.6	C42P2223-6W*****
0.033	17.5	11.0	5.0	15.0	0.6	C42P2333-6W*****
0.047	17.5	11.0	5.0	15.0	0.6	C42P2473-6W*****
0.068	17.5	11.0	5.0	15.0	0.6	C42P2683-6W*****
0.10	17.5	12.0	6.0	15.0	0.6	C42P2104-6W*****
0.15	17.5	13.5	7.5	15.0	0.6	C42P2154-6W*****
0.22	17.5	14.5	8.5	15.0	0.8	C42P2224-6W*****
0.27	17.5	16.0	10.0	15.0	0.8	C42P2274-6W*****
0.33	17.5	16.0	10.0	15.0	0.8	C42P2334-6W*****
0.39	17.5	19.0	11.0	15.0	0.8	C42P2394-6W*****
0.47	17.5	19.0	11.0	15.0	0.8	C42P2474-6W*****
0.10	26.5	15.0	6.0	22.5	0.6	C42P2104-9W*****
0.15	26.5	15.0	6.0	22.5	0.6	C42P2154-9W*****
0.22	26.5	15.0	6.0	22.5	0.6	C42P2224-9W*****
0.27	26.5	16.0	7.0	22.5	0.6	C42P2274-9W*****
0.33	26.5	16.0	7.0	22.5	0.6	C42P2334-9W*****
0.39	26.5	17.0	8.5	22.5	0.8	C42P2394-9W*****
0.47	26.5	17.0	8.5	22.5	0.8	C42P2474-9W*****
0.56	26.5	18.5	10.0	22.5	0.8	C42P2564-9W*****
0.68	26.5	18.5	10.0	22.5	0.8	C42P2684-9W*****
0.82	26.5	20.0	11.0	22.5	0.8	C42P2824-9W*****
1.0	26.5	22.0	12.0	22.5	0.8	C42P2105-9W*****
1.2	26.5	24.5	15.5	22.5	0.8	C42P2125-9W*****
1.5	26.5	24.5	15.5	22.5	0.8	C42P2155-9W*****

275Vac [#]						
C _R (μF)	W ±0.4	H ±0.4	T ±0.4	P ±0.4	d ±0.05	Part number
0.47	32.0	18.0	9.0	27.5	0.8	C42P2474-BW*****
0.56	32.0	18.0	9.0	27.5	0.8	C42P2564-BW*****
0.68	32.0	18.0	9.0	27.5	0.8	C42P2684-BW*****
0.82	32.0	20.0	11.0	27.5	0.8	C42P2824-BW*****
1.0	32.0	20.0	11.0	27.5	0.8	C42P2105-BW*****
1.2	32.0	22.0	13.0	27.5	0.8	C42P2125-BW*****
1.5	32.0	22.0	13.0	27.5	0.8	C42P2155-BW*****
2.2	32.0	28.0	14.0	27.5	0.8	C42P2225-BW*****
2.7	32.0	33.0	18.0	27.5	0.8	C42P2275-BW*****
3.3	32.0	33.0	18.0	27.5	0.8	C42P2335-BW*****
3.9	32.0	37.0	22.0	27.5	0.8	C42P2395-BW*****
4.7	32.0	37.0	22.0	27.5	0.8	C42P2475-BW*****

Note: 1. “-”=capacitance tolerance code, M=±20%,K=±10%
 2. “****”=lead form and packaging mode code (refer to table 1)
 3. ”#”when the rated voltage is 305VAC,the digit 4-5 is Q2.

■ **Maximum permissible voltage change per unit of time**

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

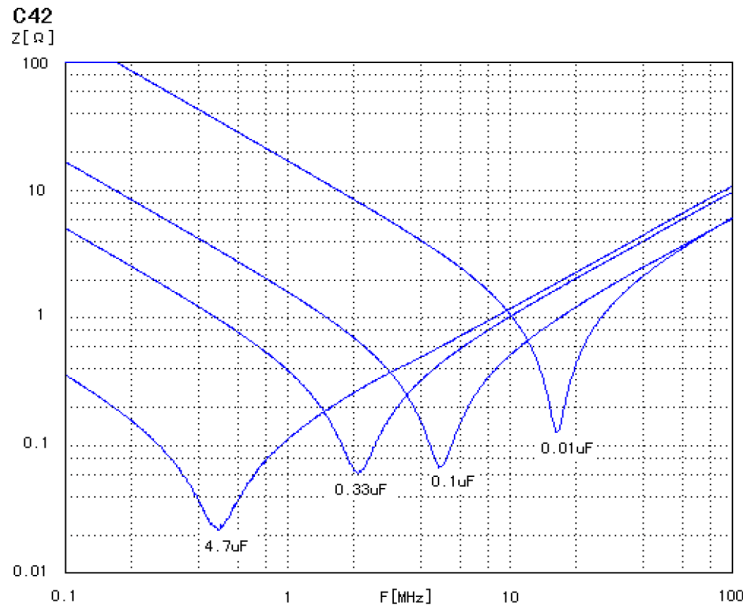
Note:

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



■ **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	S-3	2.5%
Solderability		

■ Test Method And Performance

No.	Item	Performance	Test Method (IEC 60384-14)
1	Solderability	Good quality of tinning	Solder temperature: 245°C ±5°C Immersion time: 2.0s±0.5s
2	Terminal strength	There shall be no visible damage	Tense: 0.50<d≤0.80, 10N 0.80<d≤1.25, 20N Bend: 0.50<d≤0.80, 5N 0.80<d≤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°C ±5°C Immersion time: 10s ± 1s
4	Solvent resistance of the marking	The marking shall be legible	Solvent: Industrial isopropanol. Solvent temperature: 23°C ±5°C Dipping time: 5min ± 0.5min Condition: scrub Scrub material: absorbent cotton Reverting time: No
5	Initial measurement	Capacitance、Tgδ	
	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=30min
	Vibration	There shall be no evidence of deterioration.	Amplitude 0.75mm or acceleration 100m/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: 400m/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°C, 16h
		Damp heat, Cyclic	Test Db, Severity: b, the first cycle
		Cold	-40°C, 2h
		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 tgδ: $C_R \leq 1\mu\text{F}$: ≤0.008 (10kHz) $C_R > 1\mu\text{F}$: ≤0.005 (1kHz) Dielectric strength : there shall be no permanent breakdown or flashover I.R.: ≥ 50% of the rated value