SPECIFICATION FOR APPROVAL

File No.: Q/FRK 0.GS.E.C43-X02

Product Name	Metallized Polypropylene Film Interference Suppression Capacitor （Y2:300Vac/X1:440VAC）
Product Type:	C43(MKP63 Series)
Product Code	
Customer	
Customer Code	
Issue Date	2009-03

SURGE COMPONENTS, INC.
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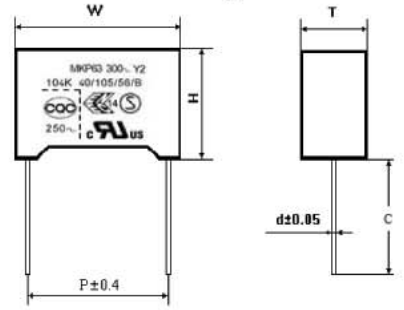
Metallized polypropylene film interference suppression capacitor （Class Y2, 300Vac）

■Outline Drawing



■ Features

- metallized polypropylene structure
- Withstanding overvoltage stressing
- Plastic case (UL94 V-0), Epoxy resin sealing.
- Widely used in across-the-line, line-by-pass, antenna Coupling interference suprression circuit

■ Safety Approvals

●	CQC	CQC	GB/T 14472-1998 Y2, 250VAC； 0.001μF~0.47μF Certificate No.：CQC04001009958
●	14 S	ENEC-SEMKO	EN/IEC 60384-14:2005 Y2, 300 VAC； 0.001μF~0.47μF Certificate No.：SE/0366-2A
●	c UL us	UL-CUL	UL1414，CSA C22.2 No.1 250 VAC, 0.001μF to 1.0μF Certificate No.: E186600
			UL1283，CSA C22.2 No.8 300/480VAC,0.001μF to 1.0μF Certificate No.: E186662
●	CB TEST CERTIFICATE		IEC 60384-14:2005 Y2, 300 VAC； 0.001μF~0.47μF, 40/105/56/B Certificate No.:SE-50628

■Specifications

Climatic Category/Passive Flammability Class	40/105/56/B		
Operating Temperature Range	-40℃ ~+105℃		
Class	Class Y2		
Rated Voltage	300VAC, 50/60Hz		
Capacitance Range	0.0010μF~1.0μF		
Capacitance Tolerance	±10%(K)，±20%(M)		
Voltage Proof	Between Terminals:	2 000VAC(2s) or 3 400VDC(2s)	
	Between Termianls To Case:	2 380VAC(1min)	
Insulation Resistance	≥15 000MΩ， C_R≤0.33μF ≥5 000s， C_R>0.33μF	(20℃, 100V ,1min)	
Dissipation Factor	1 000pF<C_R≤0.47μF	≤15×10^{-4}(1kHz,20℃)	≤20×10^{-4}(10kHz,20℃)
	0.47μF<C_R≤1.0μF	≤20×10^{-4}(1kHz,20℃)	≤40×10^{-4}(10kHz,20℃)

Maximum permissible voltage change per unit of time

The table of dV/dt of C43 (MKP63) series (Class Y2:300Vac):

Rated Voltage (Vac)	Max dv/dt(V/us)					
	P=7.5mm	P=10mm	P=15mm	P=22.5mm	P=27.5mm	P=37.5mm
440/300	800	800	600	500	400	300

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.

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	3															

Digit 1 to 3 Series code of film capacitor

C43=MKP63

Digit 4 to 5 A.C. rated voltage

Q1=300V

Digit 6 to 8 Rated capcitance value

For example : 103=10×10^3 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 R	ammo-pack reel-pack	4 6	F=10.0mm F=15.0mm	0 1	straight kinked	1 5	ach 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)
F	lead kinked	3 4 6	F=7.5mm F=10.0mm F=15.0mm	0	B=4.5mm (the length of B)	0	B Length tolerance ±0.5mm
C	straight lead "C" in the figure above	code	explanation			0	Length tolerance ±0.5mm Or standard length
		00 45	standard lead length (18mm~22mm) lead length 4.5mm				

■ Dimensions(mm)

300Vac						
C (μF)	W max	H max	T max	P	d	Part number
0.0010	10.5	9.0	4.0	7.5	0.6	C43Q1102-30****+++
0.0012	10.5	9.0	4.0	7.5	0.6	C43Q1122-30****+++
0.0015	10.5	9.0	4.0	7.5	0.6	C43Q1152-30****+++
0.0018	10.5	9.0	4.0	7.5	0.6	C43Q1182-30****+++
0.0022	10.5	9.0	4.0	7.5	0.6	C43Q1222-30****+++
0.0027	10.5	9.0	4.0	7.5	0.6	C43Q1272-30****+++
0.0033	10.5	11.0	5.0	7.5	0.6	C43Q1332-30****+++
0.0039	10.5	11.0	5.0	7.5	0.6	C43Q1392-30****+++
0.0047	10.5	12.0	6.0	7.5	0.6	C43Q1472-30****+++
0.0056	10.5	12.0	6.0	7.5	0.6	C43Q1562-30****+++
0.0010	13.0	9.0	4.0	10.0	0.6	C43Q1102-40****+++
0.0012	13.0	9.0	4.0	10.0	0.6	C43Q1122-40****+++
0.0015	13.0	9.0	4.0	10.0	0.6	C43Q1152-40****+++
0.0018	13.0	9.0	4.0	10.0	0.6	C43Q1182-40****+++
0.0022	13.0	9.0	4.0	10.0	0.6	C43Q1222-40****+++
0.0027	13.0	9.0	4.0	10.0	0.6	C43Q1272-40****+++
0.0033	13.0	9.0	4.0	10.0	0.6	C43Q1332-40****+++
0.0039	13.0	9.0	4.0	10.0	0.6	C43Q1392-40****+++
0.0047	13.0	11.0	5.0	10.0	0.6	C43Q1472-40****+++
0.0056	13.0	12.0	6.0	10.0	0.6	C43Q1562-40****+++
0.0068	13.0	12.0	6.0	10.0	0.6	C43Q1682-40****+++
0.0082	13.0	12.0	6.0	10.0	0.6	C43Q1822-40****+++
0.01	13.0	12.0	6.0	10.0	0.6	C43Q1103-40****+++
0.0033	17.5	9.5	5.0	15.0	0.6	C43Q1332-61-****+++
0.0039	17.5	9.5	5.0	15.0	0.6	C43Q1392-61-****+++
0.0047	17.5	9.5	5.0	15.0	0.6	C43Q1472-61-****+++
0.0056	17.5	11.0	5.0	15.0	0.6	C43Q1562-61-****+++
0.0068	17.5	11.0	5.0	15.0	0.8	C43Q1682-60****+++
0.0082	17.5	11.0	5.0	15.0	0.8	C43Q1822-60****+++
0.01	17.5	11.0	5.0	15.0	0.8	C43Q1103-60****+++
0.012	17.5	12.0	6.0	15.0	0.8	C43Q1123-60****+++
0.015	17.5	12.0	6.0	15.0	0.8	C43Q1153-60****+++
0.018	17.5	12.0	6.0	15.0	0.8	C43Q1183-60****+++
0.022	17.5	13.5	7.5	15.0	0.8	C43Q1223-60****+++
0.027M	17.5	13.5	7.5	15.0	0.8	C43Q1273M-60****+++
0.027K	17.5	14.5	8.5	15.0	0.8	C43Q1273K-60****+++
0.033	17.5	14.5	8.5	15.0	0.8	C43Q1333-60****+++
0.039M	17.5	14.5	8.5	15.0	0.8	C43Q1393M60****+++
0.039 K	17.5	16.0	10.0	15.0	0.8	C43Q1393K60****+++
0.047	17.5	16.0	10.0	15.0	0.8	C43Q1473-60****+++
0.056	17.5	19.0	11.0	15.0	0.8	C43Q1563-60****+++

300Vac						
C (μF)	W max	H max	T max	P	d	Part number
0.047	26.5	15.0	6.0	22.5	0.8	C43Q1473-90****+++
0.056	26.5	16.0	7.0	22.5	0.8	C43Q1563-90****+++
0.068	26.5	17.0	8.5	22.5	0.8	C43Q1683-90****+++
0.082	26.5	17.0	8.5	22.5	0.8	C43Q1823-90****+++
0.10	26.5	18.5	10.0	22.5	0.8	C43Q1104-90****+++
0.12	26.5	18.5	10.0	22.5	0.8	C43Q1124-90****+++
0.15	26.5	22.0	12.0	22.5	0.8	C43Q1154-90****+++
0.18	26.5	22.0	12.0	22.5	0.8	C43Q1184-90****+++
0.22	26.5	22.0	12.0	22.5	0.8	C43Q1224-90****+++
0.22	26.5	24.5	15.5	22.5	0.8	C43Q1224-90****+++
0.10	32.0	18.0	9.0	27.5	0.8	C43Q1104-B0****+++
0.12	32.0	18.0	9.0	27.5	0.8	C43Q1124-B0****+++
0.15	32.0	20.0	11.0	27.5	0.8	C43Q1154-B0****+++
0.18	32.0	20.0	11.0	27.5	0.8	C43Q1184-B0****+++
0.22	32.0	22.0	13.0	27.5	0.8	C43Q1224-B0****+++
0.27M	32.0	24.5	15.0	27.5	0.8	C43Q1274MB0****+++
0.27K	32.0	28.0	14.0	27.5	0.8	C43Q1274KB0****+++
0.33	32.0	28.0	14.0	27.5	0.8	C43Q1334-B0****+++
0.39	32.0	33.0	18.0	27.5	0.8	C43Q1394-B0****+++
0.47	32.0	33.0	18.0	27.5	0.8	C43Q1474-B0****+++
0.56	32.0	33.0	18.0	27.5	0.8	C43Q1564-B0****+++
0.68M	32.0	33.0	18.0	27.5	0.8	C43Q1684MB0****+++
0.68K	32.0	37.0	22.0	27.5	0.8	C43Q1684KB0****+++
0.33	41.0	24.0	13.0	37.5	1.0	C43Q1334-F0****+++
0.39	41.0	24.0	13.0	37.5	1.0	C43Q1394-F0****+++
0.47M	41.0	24.0	13.0	37.5	1.0	C43Q1474MF0****+++
0.47K	41.0	26.0	15.0	37.5	1.0	C43Q1474KF0****+++
0.56	41.0	30.0	16.0	37.5	1.0	C43Q1564-F0****+++
0.68M	41.0	30.0	16.0	37.5	1.0	C43Q1684MF0****+++
0.68K	41.0	30.0	16.0	37.5	1.0	C43Q1684KF0****+++
0.82	41.0	33.5	18.5	37.5	1.0	C43Q1824-F0****+++
1.0	41.0	37.0	22.0	37.5	1.0	C43Q1105-F0****+++

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

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

3. For P=7.5mm, CUL(250Vac) approval only. For C>0. 47μF, UL/CUL approval only.

2 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 ΔC/C ≤±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.	θ_A=-40°C, θ_B =+105°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 foreach 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 ΔC/C ≤±5%(relative to the initial value)	
6	climate sequence	Initial measurement		
		Dry heat		+105℃, 16h
		Damp heat,Cyclic		Test Db, Severity: b, the first cycle
		Cold		-40℃, 2h
		Damp heat, cyclic other		Test Db, Severity b, the other cycles,
		Final measurement	There shall be no visible damage, legible marking ΔC/C ≤±5%(relative to the initial value) Increase of tgδ: ≤0.008 (10kHz) Dielectric strength : there shall be no permanent breakdown or flashover I.R.: ≥ 50% of the rated value	

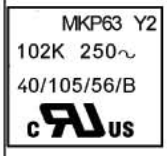
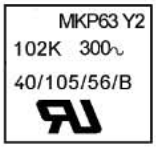
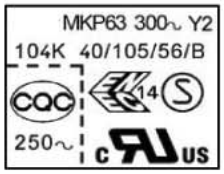
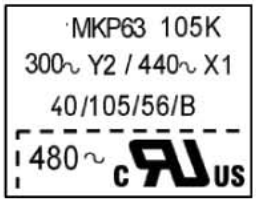
No.	Item	Performance	Test Method (IEC 60384-14)
7	Damp heat steady state	There shall be no visible damage, legible marking ΔC/C ≤±5%(relative to the initial value) Increase of tgδ: ≤0.008 (10kHz) Dielectric strength : there shall be no permanent breakdown or flashover I.R.: ≥ 50% of the rated valueIR: ≥50% of the rated value	Temperature:40°C ±2°C Humidity: 93^{+2}_{-3} %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: 5.0kV
9	Endurance	There shall be no visible damage, legible marking ΔC/C≤±10%(relative to the initial value) Increase of tgδ: ≤0.008 (10kHz) Dielectric strength : There shall be no breakdown or flashover I.R. : ≥ 50% of the rated value	+105°C, 1.7U_RVa.c. 1 000h The voltage shall be subjected to 1 000Vrms for 0.1s every one hour during test.
10	Charging and discharging	ΔC/C ≤±10%(relative to the initial value) Increase of tgδ: C_R≤1μF: ≤0.008 (10kHz) C_R>1μF: ≤0.005 (1kHz) I.R.: ≥ 50% of the rated value	Times: 10 000 Duration of charging: 0.5s Duration of discharging: 0.5s Charging voltage: $\sqrt{2}U_R$ Vd.c. Charging resistance: 220/C_R(Ω) or the current ≤1.0A (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
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(mm^3)≤500 20s 500<V(mm^3)≤1750 30s V(mm^3)>1750 60s

No.	Item	Performance	Test Method (IEC 60384-14)
12	Active flammability	The cheese cloth 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 5^{+1}_{0} s. Ui=5.0kV $^{+7}_{0}$ % Throughout the test, the $U_R \pm 5\%$ shall be applied across the capacitor under test and shall be maintained for 120 $^{+10}_{0}$ s after the last discharge, unless a blown fuse cause an open circuit.

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	P=7.5		10.0mm≤P≤27.5mm	P=27.5	P=37.5
C_R	102≤C_R≤562		102≤C_R≤474	564≤C_R≤684	334≤C_R≤105
	250VAC	300VAC			
Y2					

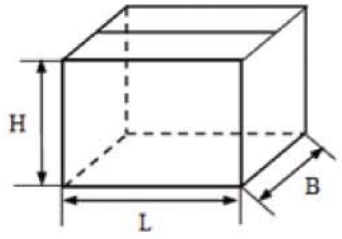
5 Packaging in bulk

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



L:375mm

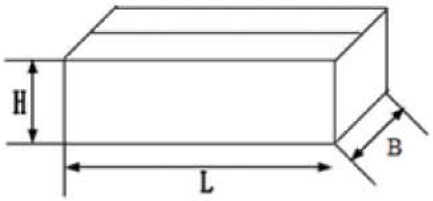
B:375mm

H:265mm

Plane drawing

Overlooking Drawing

Inner packing box

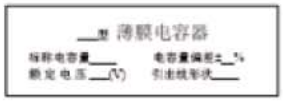


L:355mm

B:175mm

H:118mm

Plane drawing



Overlooking Drawing