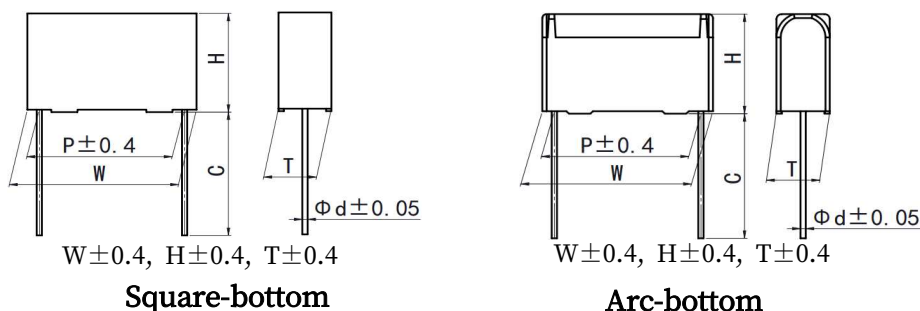


### Version history

Current version	Date	Author	Change description

# Metallized polypropylene film interference suppression capacitor (Class Y2, 300Vac)

## ■ Outline Drawing



## ■ Features

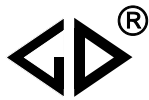
- Withstanding overvoltage stressing
- Excellent active and passive flame resistant abilities
- Widely used in line to ground, line-by-pass, antenna Coupling interference suppression circuit, etc.

## ■ Safety Approvals

●		CQC	IEC 60384-14:2013+AMD1:2016, Y2, 300Vac/1000Vdc, 0.001μF~1.0μF, 40/110/56/B Certificate : CQC04001009958
●		ENEC-SEMKO	EN 60384-14:2013+A1:2016, Y2, 300 Vac/1000Vdc, 0.001μF~1.0μF, 40/110/56/B Certificate : SE/0366-2D
●		UL/CUL	UL60384-14:2016, CSA E60384-14:14, Y2, 300Vac/1000Vdc, 0.001μF~1.0μF, 40/110/56/B Certificate : E186600, CCN: FOWX2/8
●		KC	K60384-14(2006-12), Y2, 300Vac, 0.001 μ F ~ 0.1 μ F, 40/110/56/B Certificate SU03060-12005

## ■ Specifications

Class	Class Y2	
Climatic Category / Passive Flammability Category	40/110/56/B	
Operating Temperature Range	-40°C ~ +110°C	
Rated Voltage (U <sub>R</sub> )	300Vac, 50/60Hz	
Rated DC voltage	1 000Vdc	
Capacitance Range	0.0010μF~1.0μF	
Capacitance Tolerance	±10%(K), ±20%(M)	
Voltage Proof	Between Terminals	2 000Vac(2s) or 4 000Vdc(2s) C <sub>N</sub> ≤0.33μF 3 700Vdc(2s) C <sub>N</sub> >0.33μF
	Between Terminals To Case	2 500Vac(1min)
Insulation Resistance	R≥15 000MΩ, C <sub>N</sub> ≤0.33μF (20°C, 100V, 1min) RC <sub>N</sub> ≥5 000s, C <sub>N</sub> >0.33μF	
Dissipation Factor	≤30×10 <sup>-4</sup> (1kHz,20°C)	≤40×10 <sup>-4</sup> (10kHz,20°C)



■ Part number system

The 15 digits part number is formed as follow:

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

Digit 1 to 3 Series code

C43=MKP63

Digit 4 to 5 A.C. rated voltage

Q1=300V

Digit 6 to 8 Rated capacitance value

For example : 103=10×10<sup>3</sup> 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 form and packaging code

Table 1 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 P=7.5mm) P3=25.4mm;H=18.5mm (For pitch=10/15mm) (Detail parameter refer to page 11)
C	straight lead "C" in the figure above	code	explanation			0	Length tolerance ±0.5mm or standard length
		00 45	standard lead (18mm~26mm) lead length 4.5mm	length			
D E M	Insulated stranded leads  Insulated solid leads  Insulated leads  and box with mounting foot	C5 K0 K2 L0	35mm 100mm 120mm 200mm	Note 1: This length includes the stripping parts.  Note 2: Normally, for P ≥ 27.5 Caps can choice Insulated leads.		1 2 3 4	Length tolerance -5 mm~0 mm Length tolerance 0 mm~+5 mm Length tolerance 0 mm~+10mm Length tolerance ±5 mm
Note: Recommend short lead due to long lead could deform easily.							



## ■ Dimensions(mm)

Standard type

300Vac						
C <sub>N</sub> (μF)	W	H	T	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	11.0	5.0	10.0	0.6	C43Q1562-41****
0.0068	13.0	11.0	5.0	10.0	0.6	C43Q1682-41****
0.0068	13.0	7.5	9.5	10.0	0.6	C43Q1682-4C****
0.0082	13.0	12.0	6.0	10.0	0.6	C43Q1822-40****
0.010	13.0	12.0	6.0	10.0	0.6	C43Q1103-40****
0.015	13.0	12.0	6.0	10.0	0.6	C43Q1153-4S****
0.0022	17.5	9.5	5.0	15.0	0.6	C43Q1222-60****
0.0027	17.5	9.5	5.0	15.0	0.6	C43Q1272-61****
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	9.5	5.0	15.0	0.6	C43Q1562-61****
0.0068	17.5	9.5	5.0	15.0	0.6	C43Q1682-61****
0.0082	17.5	9.5	5.0	15.0	0.6	C43Q1822-61****
0.010	17.5	9.5	5.0	15.0	0.6	C43Q1103-6S****
0.012	17.5	11.0	5.0	15.0	0.6	C43Q1123-6S****
0.015	17.5	11.0	5.0	15.0	0.6	C43Q1153-6S****
0.018M	17.5	11.0	5.0	15.0	0.6	C43Q1183M6S****
0.018K	17.5	12.0	6.0	15.0	0.6	C43Q1183K6S****
0.022	17.5	12.0	6.0	15.0	0.6	C43Q1223-6S****
0.027M	17.5	12.0	6.0	15.0	0.6	C43Q1273M6S****
0.027K	17.5	12.0	7.0	15.0	0.6	C43Q1273K6S****
0.033	17.5	13.5	7.5	15.0	0.6	C43Q1333-6S****
0.033	17.5	12.5	9.0	15.0	0.6	C43Q1333-6A****
0.039	17.5	13.5	7.5	15.0	0.6	C43Q1393-6S****
0.039	17.5	12.5	9.0	15.0	0.6	C43Q1393-6A****
0.047	17.5	14.5	8.5	15.0	0.6	C43Q1473-6S****
0.047	17.5	12.0	13.0	15.0	0.8	C43Q1473-6C****
0.056	17.5	16.0	10.0	15.0	0.8	C43Q1563-6S****
0.068	17.5	16.0	10.0	15.0	0.8	C43Q1683-6S****
0.082	17.5	19.0	11.0	15.0	0.8	C43Q1823-6S****
0.033	26.5	15.0	6.0	22.5	0.8	C43Q1333-90****
0.039	26.5	15.0	6.0	22.5	0.8	C43Q1393-90****
0.047	26.5	15.0	6.0	22.5	0.8	C43Q1473-9S****
0.056	26.5	15.0	6.0	22.5	0.8	C43Q1563-9S****
0.068M	26.5	15.0	6.0	22.5	0.8	C43Q1683M9S****
0.068K	26.5	16.0	7.0	22.5	0.8	C43Q1683K9S****

300Vac						
C <sub>N</sub> (μF)	W	H	T	P	d	Part number
0.082	26.5	16.0	7.0	22.5	0.8	C43Q1823-9S****
0.10	26.5	17.0	8.5	22.5	0.8	C43Q1104-9S****
0.12	26.5	17.0	8.5	22.5	0.8	C43Q1124-9S****
0.15	26.5	18.5	10.0	22.5	0.8	C43Q1154-9S****
0.18	26.5	20.0	11.0	22.5	0.8	C43Q1184-9S****
0.22	26.5	22.0	12.0	22.5	0.8	C43Q1224-9S****
0.27	26.5	23.0	13.5	22.5	0.8	C43Q1274-9S****
0.33M	26.5	24.5	15.5	22.5	0.8	C43Q1334M9S****
0.33	26.5	29.5	14.5	22.5	0.8	C43Q1334-9A****
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	18.0	9.0	27.5	0.8	C43Q1154-BS****
0.15	32.0	12.0	18.0	27.5	0.8	C43Q1154-BC****
0.18	32.0	20.0	11.0	27.5	0.8	C43Q1184-BS****
0.22	32.0	20.0	11.0	27.5	0.8	C43Q1224-BS****
0.22M	32.0	12.0	18.0	27.5	0.8	C43Q1224MBC****
★0.22K	32.0	12.0	22.0	27.5	0.8	C43Q1224KBC****
0.27M	32.0	20.0	11.0	27.5	0.8	C43Q1274MBS****
0.27K	32.0	22.0	13.0	27.5	0.8	C43Q1274KBS****
0.33M	32.0	22.0	13.0	27.5	0.8	C43Q1334MBS****
0.33K	32.0	25.0	13.0	27.5	0.8	C43Q1334KBS****
0.33K	32.0	24.5	15.0	27.5	0.8	C43Q1334KBA****
0.33M	32.0	15.0	21.0	27.5	0.8	C43Q1334MBC****
0.39	32.0	24.5	15.0	27.5	0.8	C43Q1394-BA****
0.39	32.0	28.0	14.0	27.5	0.8	C43Q1394-BS****
0.47M	32.0	24.5	15.0	27.5	0.8	C43Q1474MBA****
0.47M	32.0	28.0	14.0	27.5	0.8	C43Q1474MBS****
0.47K	32.0	30.0	16.0	27.5	0.8	C43Q1474KBS****
0.47K	32.0	28.0	17.0	27.5	0.8	C43Q1474KBA****
★0.47	32.0	16.0	27.5	27.5	0.8	C43Q1474-BC****
0.56	32.0	30.0	16.0	27.5	0.8	C43Q1564-BS****
0.56	32.0	28.0	17.0	27.5	0.8	C43Q1564-BA****
0.68M	32.0	29.0	19.0	27.5	0.8	C43Q1684MBA****
0.68K	32.0	30.0	21.0	27.5	0.8	C43Q1684KBA****
0.68	32.0	33.0	18.0	27.5	0.8	C43Q1684-BS****
★0.68	32.0	18.5	31.0	27.5	0.8	C43Q1684-BC****
★0.82M	32.0	18.5	31.0	27.5	0.8	C43Q1824MBC****
0.82M	32.0	33.0	18.0	27.5	0.8	C43Q1824MBS****
0.82K	32.0	37.0	22.0	27.5	0.8	C43Q1824KBS****
1.0	32.0	37.0	22.0	27.5	0.8	C43Q1105-BS****
0.33	41.0	22.0	11.0	37.5	1.0	C43Q1334-FS****
0.39M	41.0	22.0	11.0	37.5	1.0	C43Q1394MFS****
0.39K	41.0	24.0	13.0	37.5	1.0	C43Q1394KFS****
0.47	41.0	24.0	13.0	37.5	1.0	C43Q1474-FS****
0.47	42.0	15.0	24.0	37.5	1.0	C43Q1474-FC****
0.56	41.0	26.0	15.0	37.5	1.0	C43Q1564-FS****
0.56	42.0	28.0	14.0	37.5	1.0	C43Q1564-FA****
0.68M	41.0	26.0	15.0	37.5	1.0	C43Q1684MFA****
0.68M	42.0	28.0	14.0	37.5	1.0	C43Q1684MFS****
0.68K	41.0	30.0	16.0	37.5	1.0	C43Q1684KFS****
0.68	42.0	19.0	24.0	37.5	1.0	C43Q1684-FC****
0.82	41.0	30.0	16.0	37.5	1.0	C43Q1824-FS****
0.82M	42.0	19.0	24.0	37.5	1.0	C43Q1824MFC****
1.0M	41.0	32.0	17.0	37.5	1.0	C43Q1105MFS****
1.0K	41.0	33.5	18.5	37.5	1.0	C43Q1105KFS****

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

2. "\*\*\*\*" =lead form and packaging mode code (refer to table 1)

3. "★" = Arc bottom of the outer shell.



■ Dimensions(mm)

High performance type

300Vac						
C <sub>N</sub> (μF)	W	H	T	P	d	Part number
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****
0.010	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	C43Q1273M60****
0.027K	17.5	14.5	8.5	15.0	0.8	C43Q1273K60****
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****
0.039K	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****
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	24.5	15.5	22.5	0.8	C43Q1224-90****

300Vac						
C <sub>N</sub> (μF)	W	H	T	P	d	Part number
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****
0.68K	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****
0.47K	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****
0.68	41.0	30.0	16.0	37.5	1.0	C43Q1684-F0****
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 form and packaging mode code (refer to table 1)

■ Maximum permissible voltage change per unit of time

Rated Voltage (Vac)	Max dV/dt(V/us) at 425Vdc					
	P=7.5mm	P=10mm	P=15mm	P=22.5mm	P=27.5mm	P=37.5mm
300	800	800	600	500	400	300

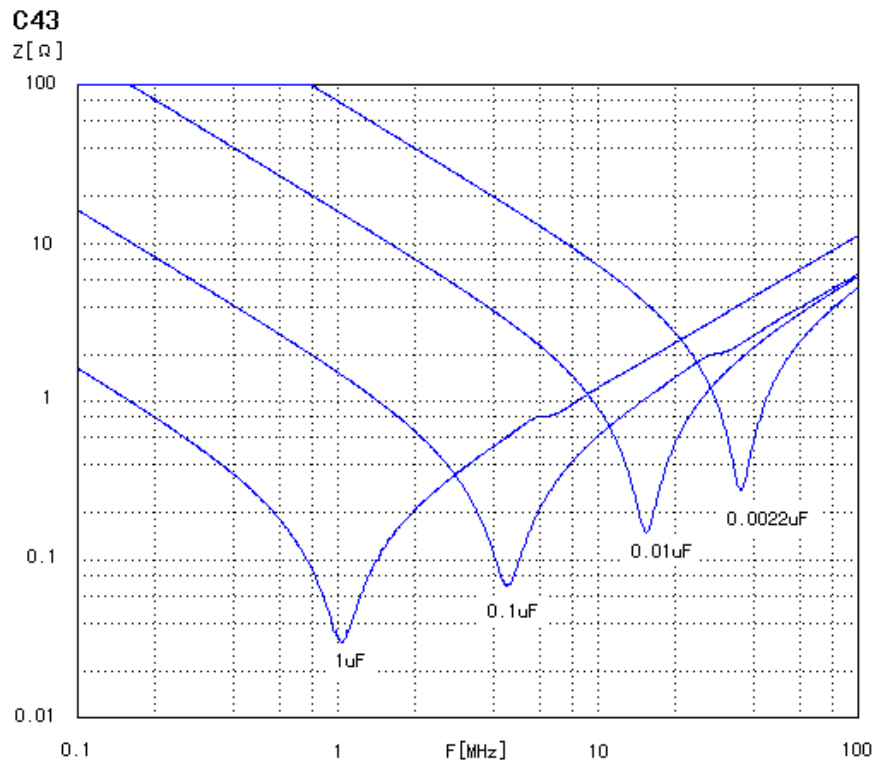
Note:

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  $U_R/U$ .

■ Impedance Vs. Frequency

TYPICAL GRAPHS

$Z=f(f)$  Typical values



## ■ Test Method And Performance(IEC 60384-14)

Group	Item	Conditions of test	Performance requirements	
A1	4.1 Visual examination	Dimensions: gauging by vernier caliper	No visible damage & legible marking	
	4.1Dimensions(Gauging)		Fit detail specification	
A2	4.2.2 Capacitance	Measuring frequency: Capacitance: 1kHz Tangent of loss angle: CN≤1μF: 10kHz Voltage proof between terminals: 1500V (a.c.) IR. test voltage: 100Vd.c.	Within specified tolerance	
	4.2.3 Tangent of loss angle		No permanent breakdown or flashover	
	4.2.1 Voltage proof			
	4.2.5 Insulation Resistance		I.R.:≥the rated value	
B1	4.5 Solderability	Methods: Groove welding Ta, Method 1 Solder temperature: 245°C±5°C Immersion time: 2.0s±0.5s	Good quality of tinning	
C1A	Initial measurement	4.1Visual examination	Dimensions: gauging by vernier caliper Measuring frequency: Capacitance: 1kHz Tangent of loss angle: CN≤1μF: 10kHz	No visible damage & legible marking
		4.1Dimensions(Gauging)		Fit detail specification
		4.2.2Capacitance		Within specified tolerance
		4.2.3Tangent of loss angle		
	4.1.1 Creepage distances and Clearances	Gauging by vernier caliper	Creepage distances≥4.0mm Clearances≥3.0mm	
	4.3 Robustness of Terminations (straight lead)	Tense: 0.50<d≤0.80, 10N 0.80<d≤1.25, 20N Ub bending test: Bend: 0.50<d≤0.80, 5N 0.80<d≤1.25, 10N The terminals shall be bent 2 times in each direction	No visible damage	
	4.4 Resistance to Soldering heat	Capacitors are not pre-dried Groove Method Tb, Method 1A Solder temperature: 260°C±5°C Immersion time: 10s±1s	No visible damage & legible marking	
4.19 Component solvent resistance	Solvent: industrial isopropyl Solvent temperature:23°C±5°C Dipping time:5min±0.5min Method 2: (without Sassafras test) Recovery time: 48h	Comply with the specifications in the product size table		
	Final measurement	Appearance inspection Cap. measuring frequency: 1kHz Tangent of loss angle: CN≤1μF: 10kHz	No visible damage Cap.:  ΔC /C≤5% Tangent of loss angle: CN≤1μF: ≤0.008 (10kHz)	

Group	Item	Conditions of test	Performance requirements	
C1B	Initial measurement	4.1 Visual examination	No visible damage & legible marking	
		4.1 Dimension s(Gauging)	Fit detail specification	
		4.2.2 Capacitance		
		4.2.3 Tangent of loss angle		
			Dimensions: gauging by vernier caliper Measuring frequency: Capacitance: 1kHz Tangent of loss angle: $C_N \leq 1\mu\text{F}$ : 10kHz	Within specified tolerance
	4.5 Solderability	Methods: Groove welding Ta, Method 1 Solder temperature: $245^\circ\text{C} \pm 5^\circ\text{C}$ Immersion time: $2.0\text{s} \pm 0.5\text{s}$	Good quality of tinning	
	4.20 Solvent resistance of the marking	Solvent: Industrial isopropanol. Solvent temperature: $23^\circ\text{C} \pm 5^\circ\text{C}$ Dipping time: $5\text{min} \pm 0.5\text{min}$ Condition: scrub Scrub material: absorbent cotton Reverting time: No	The marking shall be legible	
	4.6 Rapid change of temperature	$T_A = -40^\circ\text{C}$ , $T_B = +110^\circ\text{C}$ 5 cycles, Duration: $t=30\text{min}$	No visible damage	
	4.7 Vibration (straight lead)	Amplitude 0.75mm or acceleration $98\text{m/s}^2$ (whichever is the smaller severity), f: 10Hz to 500Hz. Three directions, 2h for each direction, total 6h.	No visible damage	
4.8 Bump (straight lead)	4 000 times, Acceleration: $400\text{m/s}^2$ , Pulse duration, 6ms	No visible damage		
	Final measurement	Appearance inspection Cap. measuring frequency: 1kHz	No visible damage Cap.: $ \Delta C /C \leq 5\%$	
C1	4.11 Climatic sequence	Initial measurement	According to the conditions of Group C1A and C1B	According to the requirements of Group C1A and C1B
		Dry heat	+110°C, 16h	No visible damage & legible marking
		Damp heat, Cyclic	Test Db, Severity: b, the first cycle Temperature: +55°C, 24h each cycle, Method 2	
		Cold	-40°C, 2h	
		Damp heat, Cyclic	Test Db, Severity b, the other cycles Temperature: +55°C, 24h each cycle, Method 2	
		Final measurement	Measuring frequency: Capacitance: 1kHz Tangent of loss angle: $C_N \leq 1\mu\text{F}$ : 10kHz; Voltage proof between terminals: 1500V(a.c.), 1min Voltage proof between terminal and housing: $2U_R + 1500\text{V(a.c.)}$ , 1min Insulation resistance test voltage: 100Vd.c.	Cap.: $ \Delta C /C \leq 5\%$ Increase of $\text{tg}\delta$ : $C_N \leq 1\mu\text{F}$ : $\leq 0.008$ (10kHz) No permanent breakdown or flashover I.R.: $\geq 50\%$ of the rated value



Group	Item	Conditions of test	Performance requirements
C2	4.12 Damp heat, steady state	Temperature: 40°C ±2°C Humidity: 93±3%RH Duration: 56 days	No visible damage & legible marking Cap.:   ΔC   /C ≤5% Increase of tgδ:
	Final measurement	Tangent of loss angle: C <sub>N</sub> ≤ 1μF: 10kHz Voltage proof between terminals: 1500V(a.c.), 1min Voltage proof between terminal and housing: 2U <sub>R</sub> +1500V(a.c.), 1min Insulation resistance test voltage: 100Vd.c.	C <sub>N</sub> ≤ 1μF: ≤0.008 (10kHz) No permanent breakdown or flashover I.R.: ≥50% of the rated value
C3	Initial measurement	Measuring frequency capacitance: 1kHz Tangent of loss angle: C <sub>N</sub> ≤ 1μF: 10kHz Insulation resistance test voltage: 100Vd.c.	Within specified tolerance
	4.13 Impulse voltage	Each individual capacitor shall be subjected to 24 impulses of the same polarity, the time between impulses shall not be less than 10s, and the peak value of the voltage impulse: 5.0kV (suitable for C <sub>N</sub> ≤ 1μF)	There are three or more waveforms which indicate that no self-heating breakdown have occurred when it is monitored by the monitor (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)
	4.14 Endurance	Temperature : +110°C Duration : 1000h Voltage: at 1.7 U <sub>R</sub> except that once every hour the voltage shall be increased to 1000V <sub>rms</sub> for 0.1s; and each capacitor individually through a resistor of 47.0Ω ± 5 %.	No visible damage & legible marking Cap.:   ΔC   /C ≤10% Increase of tgδ:
	Final measurement	Tangent of loss angle: C <sub>N</sub> ≤ 1μF: 10kHz Voltage proof between terminals: 1500V(a.c.), 1min Voltage proof between terminal and housing: 2U <sub>R</sub> +1500V(a.c.), 1min	C <sub>N</sub> ≤ 1μF: ≤0.008 (10kHz) No permanent breakdown or flashover I.R.: ≥50% of the rated value


Group	Item	Conditions of test	Performance requirements								
C4	4.15 Charging and discharging	<p>Times: 10 000</p> <p>Duration of charging: 0.5s</p> <p>Duration of discharging: 0.5s</p> <p>Charging voltage: <math>\sqrt{2}U_R</math> Vd.c.</p> <p>Charging resistance: <math>220/C_N(\Omega)</math> or the current <math>\leq 1.0A</math> (whichever is the minor)</p> <p>Discharging resistance:</p> $R = \frac{\sqrt{2}U_R}{C_N \times \frac{dU}{dt}} (\Omega)$ <p><math>C_N</math>: Capacitance (<math>\mu F</math>)</p> <p><math>dU/dt(V/us)</math> : 100V/<math>\mu s</math></p>	<p>Cap.: <math> \Delta C /C \leq 10\%</math></p> <p>Increase of <math>tg\delta</math>:</p> <p><math>C_N \leq 1\mu F</math>: <math>\leq 0.008</math> (10kHz)</p> <p><math>C_N &gt; 1\mu F</math>: <math>\leq 0.005</math> (1kHz)</p> <p>I.R.: <math>\geq 50\%</math> of the rated value</p>								
C6	4.17 Passive flammability	<p>Needle flame test</p> <p>The category of flammability: B</p> <p>Expose time: 1 time</p> <table border="0"> <tr> <td>Capacitor Volume</td> <td>Exposing time</td> </tr> <tr> <td><math>250 &lt; V(mm^3) \leq 500</math></td> <td>20s</td> </tr> <tr> <td><math>500 &lt; V(mm^3) \leq 1750</math></td> <td>30s</td> </tr> <tr> <td><math>V(mm^3) &gt; 1750</math></td> <td>60s</td> </tr> </table>	Capacitor Volume	Exposing time	$250 < V(mm^3) \leq 500$	20s	$500 < V(mm^3) \leq 1750$	30s	$V(mm^3) > 1750$	60s	<p>The flaming time of each capacitor shall not go beyond 10s after it is taken apart from the flame.</p> <p>Drop of each capacitor caused by flame shall not fire the tissue below.</p>
Capacitor Volume	Exposing time										
$250 < V(mm^3) \leq 500$	20s										
$500 < V(mm^3) \leq 1750$	30s										
$V(mm^3) > 1750$	60s										
C7	4.18 Active flammability	<p>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 cloth.</p> <p>Each sample shall be subjected to 20 discharges, the interval between successive discharges shall be 5s.</p> <p><math>U_i = 5.0kV_0^{+7} \%</math></p> <p><math>U_R</math> be applied and be maintained for <math>120_0^{+10}</math> s after the last discharge.</p>	<p>The cheese cloth around the capacitor shall not burn with a flame.</p>								

■ Marking (For example)

 MKP63 300~ Y2  
 104K 40/110/56/B







P ≤ 27.5mm

 MKP63 300~105M Y2  
 40/110/56/B L50003



P > 27.5mm

Marking Introduction:

Sign	explain	Sign	explain
	Brand	40/110/56/B	Climate category / Passive Flammability Class
MKP63	Type		CQC Approval
Y2	Class		ENEC-SEMKO Approval
300~	Rated voltage		UL & CUL Approval
104K 105M	Rated capacitance and tolerance	L50003	Lot No.

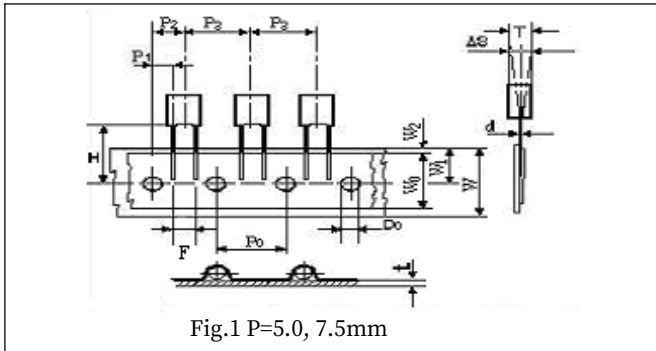
**■ Taping specification for box-type capacitors**
**▲ Outline Drawing**


Fig.1 P=5.0, 7.5mm

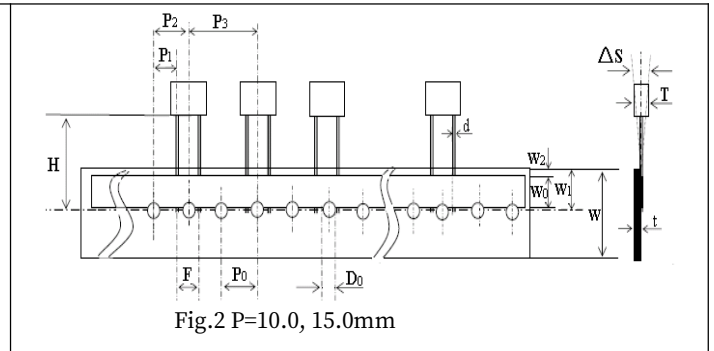


Fig.2 P=10.0, 15.0mm

**▲ Taping Dimensions(mm)**

Technology index title	Code	Dimensions				Tolerance
		P=5.0	P=7.5	P=10.0	P=15.0	
Taping type	—	Fig 1	Fig 1	Fig2	Fig 2	—
Part number Digit12-15	Ammo-pack	A201	A301	A405	A605	
Taping pitch	$P_3$	12.7	12.7	25.4	25.4	$\pm 1.0$
Feed hole pitch	$P_0$	12.7	12.7	12.7	12.7	$\pm 0.3$
Center of wire	$P_1$	3.85	2.6	7.7	5.2	$\pm 0.7$
Center of body	$P_2$	6.35	6.35	12.7	12.7	$\pm 1.3$
Pitch of taping wire	$F^{**}$	5.0	7.5	10.0	15.0	+0.6 -0.1
Component alignment	$\Delta S$	0	0	0	0	$\pm 2.0$
Height of component from tape center	$H^{***}$	18.5	18.5	18.5	18.5	$\pm 0.5$
Carrier tape width	W	18.0	18.0	18.0	18.0	+1.0 -0.5
Hold down tape width	$W_0$	6min	10min	10min	10min	—
Hole position	$W_1$	9.0	9.0	9.0	9.0	$\pm 0.5$
Hold down tape position	$W_2$	3max	3max	3max	3max	—
Feed hole dia.	$D_0$	4.0	4.0	4.0	4.0	$\pm 0.2$
Tape thickness	t	0.7	0.7	0.7	0.7	$\pm 0.2$

**Note:** \*  $P_0=15\text{mm}$  is also available;

\*\*F can be other lead spacing;

\*\*\*H=16.5mm is available;

## ■ Soldering suggestions

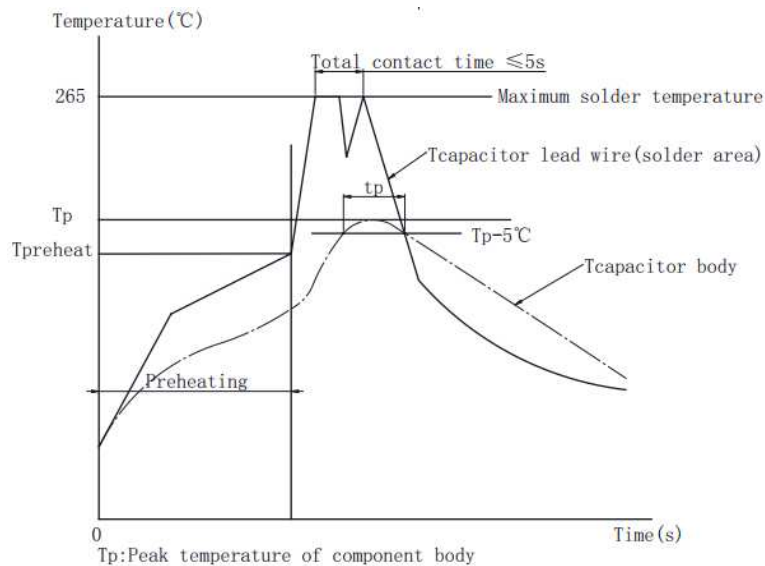
### ▲ Manual soldering

Max. temperature: 350°C, time: 3s

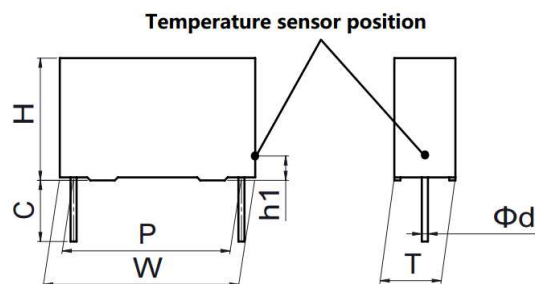
### ▲ Wave soldering

There are many factors affecting the heating of film capacitor during the wave soldering process, such as: preheating temperature, preheating time, soldering temperature, soldering time, other heat sources influence and so on.

The typical soldering profile is as below:



▲ Because overheating could damage the capacitor, we recommend paying attention to the maximum capacitor temperature and heating time, use temperature sensor to detect the maximum capacitor body temperature.

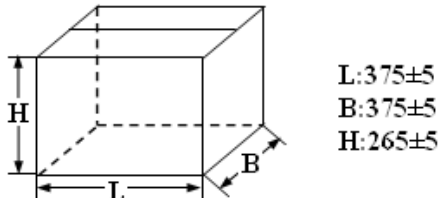


Temperature sensor position (Tcapacitor body)	The capacitor body surface of lead side, capacitor height position from PCB: h1=2~3mm		
Maximum capacitor body temperature Tp(°C)	OPP film P $\leq$ 15mm	OPP film P>15mm	PET film
Maximum capacitor lead wire temperature(°C)	265	265	265
Maximum capacitor body heating time tp=Tp-5°C	30s		

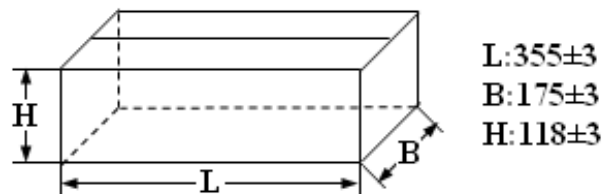
Note: If re-working or dipping twice is necessary, it should be done after the capacitor returns to the normal temperature.

### ■ Packing box sizes(mm)(example)

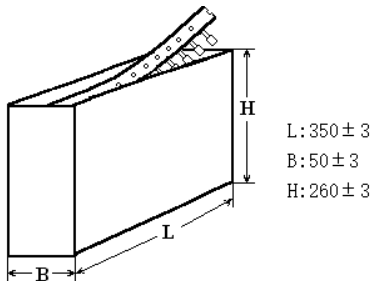
1. Out packing box for bulk



2. Inner packing box for bulk



3. Box sizes for Ammo-pack



### ■ Storage conditions

▲ It must be noted that the solderability of the terminals may be deteriorated when stored in an atmosphere filled with moisture, dust, or a reactive oxidizing gas.(hydrogen chloride, hydrogen sulfide, sulfuric acid,etc.)

▲ It shouldn't be located in particularly high temperature and high humidity, it must submit to the following conditions(unchanging primal package):

Temperature: -40°C to 35°C

Humidity: Average per year ≤70%RH;

For 30 full days randomly distributed throughout the year ≤80%RH

Storage time for tinned lead wire: (from the date marked on the capacitor's body or the label glued to the package) :

Bulk(packed with plastic bag): ≤24 months ;

Taping and line up: ≤12 months

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