



SPECIFICATION FOR APPROVAL

File No.: Q/FRK 0.GS.E.C23-C12

Product Name	Box-type metallized polyester film capacitor
Product Type:	C23(CL23 Series)
Product Code	
Customer	
Customer Code	
Issue Date	2020-03

Xiamen Faratronic Co. Ltd.			Approved by Customer
Drafted	Checked	Approved	



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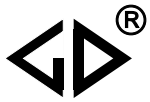
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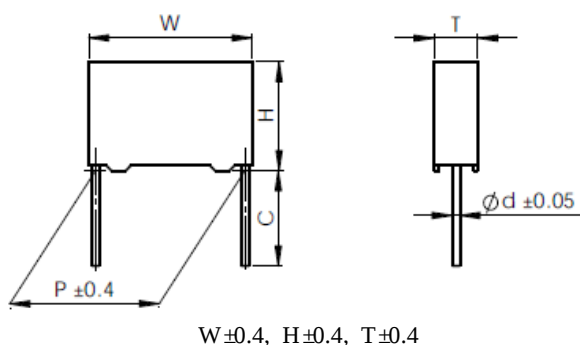


Version history

Current version	Date	Author	Change description

Metallized polyester film capacitor (Box-type)

■ Outline Drawing



■ Features

- High reliability
- Metallized polyester film, non-inductive wound construction
- Plastic case(UL94 V-0), epoxy resin sealing

■ Typical application

- by-passing, blocking, coupling, decoupling,
- pulse, logic, timing, oscillator circuits.

■ Specifications

Reference Standard	GB 7332 (IEC 60384-2)					
Climatic Category	55/105/56					
Rated temperature	85°C					
Operating temperature	-55°C~105°C (+85°C to +105°C: decreasing factor 1.25% per °C for U_R)					
Rated Voltage	63V, 100V, 250V, 400V, 630V, 1 000V					
Capacitance Range	0.0010 μ F~47.0 μ F					
Capacitance Tolerance	$\pm 5\%$ (J), $\pm 10\%$ (K), $\pm 20\%$ (M)					
Voltage Proof	1.6 U_R (5s)					
Dissipation Factor	$\leq 1.0\%$ (20°C,1kHz)					
Insulation Resistance	$U_R > 100V$	$R \geq 30\,000M\Omega$, $C_R \leq 0.33\mu F$ (20°C,100V,1min) $RC_N \geq 10\,000\,s$, $C_R > 0.33\mu F$				
	$U_R \leq 100V$	$R \geq 3\,750M\Omega$, $C_N \leq 0.33\mu F$ (20°C,10V,1min) $RC_N \geq 1\,250s$, $C_N > 0.33\mu F$				
Maximum Pulse Rise Time(dV/dt) 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 .	$U_R(V)$	dV/dt (V/ μs)				
		P=7.5	P=10.0	P=15.0	P=22.5	P=27.5
	63	7.5	6	3	2	1
	100	15	9	5	3	2
	250	30	20	12	8	5
	400	40	30	20	10	7
	630	50	40	25	12	10
	1 000	70	60	30	15	12

■ 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	2	3												

Digit 1 to 3 Series code

C23=CL23

Digit 4 to 5 DC rated voltage

1J=63V 2A=100V 2C=160V 2E=250V 2G=400V 2J=630V 3A=1 000V

Digit 6 to 8 Rated capacitance value

For example: 103=10×10³ pF= 0.01μF

Digit 9 Capacitance tolerance

J= ±5%,K= ±10%, M= ±20%

Digit 10 Lead pitch

3=7.5mm 4=10.0mm 6=15.0mm 9=22.5mm B=27.5mm

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	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)
		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				

Note: Recommend short lead due to long lead could deform easily.



■ Dimensions (mm)

Pattern II (Reduced sizes)

63Vdc (40Vac)						
C _N (μF)	W ±0.4	H ±0.4	T ±0.4	P ±0.4	d	Part number
0.47	10.5	8.5	3.5	7.5	0.5	C231J474-3S****
0.68	10.5	9.0	4.0	7.5	0.6	C231J684-3S****
1.0	10.5	11.0	5.0	7.5	0.6	C231J105-3S****
1.5	10.5	12.0	6.0	7.5	0.6	C231J155-3S****
1.8	10.5	12.0	6.0	7.5	0.6	C231J185-3S****
0.10	13.0	9.0	4.0	10.0	0.6	C231J104-4S****
0.15	13.0	9.0	4.0	10.0	0.6	C231J154-4S****
0.22	13.0	9.0	4.0	10.0	0.6	C231J224-4S****
0.33	13.0	9.0	4.0	10.0	0.6	C231J334-4S****
0.47	13.0	9.0	4.0	10.0	0.6	C231J474-4S****
0.68	13.0	9.0	4.0	10.0	0.6	C231J684-4S****
1.0	13.0	9.0	4.0	10.0	0.6	C231J105-4S****
1.5	13.0	11.0	5.0	10.0	0.6	C231J155-4S****
1.8	13.0	12.0	6.0	10.0	0.6	C231J185-4S****
2.2	13.0	12.0	6.0	10.0	0.6	C231J225-4S****
0.68	17.5	11.0	5.0	15.0	0.8	C231J684-6S****
1.0	17.5	11.0	5.0	15.0	0.8	C231J105-6S****
1.5	17.5	11.0	5.0	15.0	0.8	C231J155-6S****
1.8	17.5	11.0	5.0	15.0	0.8	C231J185-6S****
2.2	17.5	11.0	5.0	15.0	0.8	C231J225-6S****
3.3	17.5	12.0	6.0	15.0	0.8	C231J335-6S****
4.7	17.5	13.5	7.5	15.0	0.8	C231J475-6S****
6.8	17.5	14.5	8.5	15.0	0.8	C231J685-6S****
10.0	17.5	19.0	11.0	15.0	0.8	C231J106-6S****
3.3	26.5	16.0	7.0	22.5	0.8	C231J335-9S****
4.7	26.5	16.0	7.0	22.5	0.8	C231J475-9S****
6.8	26.5	16.0	7.0	22.5	0.8	C231J685-9S****
10.0	26.5	17.0	8.5	22.5	0.8	C231J106-9S****
15.0	26.5	20.0	11.0	22.5	0.8	C231J156-9S****
4.7	32.0	18.0	9.0	27.5	0.8	C231J475-BS****
6.8	32.0	18.0	9.0	27.5	0.8	C231J685-BS****
10.0	32.0	18.0	9.0	27.5	0.8	C231J106-BS****
15.0	32.0	18.0	9.0	27.5	0.8	C231J156-BS****
22.0	32.0	22.0	13.0	27.5	0.8	C231J226-BS****
33.0	32.0	24.5	15.0	27.5	0.8	C231J336-BS****
47.0	32.0	30.0	16.0	27.5	0.8	C231J476-BS****

100Vdc (63Vac)						
C _N (μF)	W ±0.4	H ±0.4	T ±0.4	P ±0.4	d	Part number
0.22	10.5	8.5	3.5	7.5	0.5	C232A224-3S****
0.33	10.5	9.0	4.0	7.5	0.6	C232A334-3S****
0.39	10.5	9.0	4.0	7.5	0.6	C232A394-3S****
0.47	10.5	9.0	4.0	7.5	0.6	C232A474-3S****
0.68	10.5	11.0	5.0	7.5	0.6	C232A684-3S****
1.0	10.5	12.0	6.0	7.5	0.6	C232A105-3S****
0.10	13.0	9.0	4.0	10.0	0.6	C232A104-4S****
0.15	13.0	9.0	4.0	10.0	0.6	C232A154-4S****
0.22	13.0	9.0	4.0	10.0	0.6	C232A224-4S****
0.33	13.0	9.0	4.0	10.0	0.6	C232A334-4S****
0.47	13.0	9.0	4.0	10.0	0.6	C232A474-4S****
0.68	13.0	9.0	4.0	10.0	0.6	C232A684-4S****
1.0	13.0	11.0	5.0	10.0	0.6	C232A105-4S****
1.5	13.0	12.0	6.0	10.0	0.6	C232A155-4S****
0.33	17.5	11.0	5.0	15.0	0.8	C232A334-6S****
0.47	17.5	11.0	5.0	15.0	0.8	C232A474-6S****
0.68	17.5	11.0	5.0	15.0	0.8	C232A684-6S****
1.0	17.5	11.0	5.0	15.0	0.8	C232A105-6S****
1.5	17.5	12.0	6.0	15.0	0.8	C232A155-6S****
1.8	17.5	12.0	6.0	15.0	0.8	C232A185-6S****
2.2	17.5	12.0	6.0	15.0	0.8	C232A225-6S****
3.3	17.5	13.5	7.5	15.0	0.8	C232A335-6S****
4.7	17.5	14.5	8.5	15.0	0.8	C232A475-6S****
1.5	26.5	15.0	6.0	22.5	0.8	C232A155-9S****
1.8	26.5	15.0	6.0	22.5	0.8	C232A185-9S****
2.2	26.5	15.0	6.0	22.5	0.8	C232A225-9S****
3.3	26.5	15.0	6.0	22.5	0.8	C232A335-9S****
4.7	26.5	16.0	7.0	22.5	0.8	C232A475-9S****
6.8	26.5	18.5	10.0	22.5	0.8	C232A685-9S****
10.0	26.5	22.0	12.0	22.5	0.8	C232A106-9S****
4.7	32.0	18.0	9.0	27.5	0.8	C232A475-BS****
6.8	32.0	18.0	9.0	27.5	0.8	C232A685-BS****
10.0	32.0	20.0	11.0	27.5	0.8	C232A106-BS****
15.0	32.0	20.0	11.0	27.5	0.8	C232A156-BS****
22.0	32.0	25.0	13.0	27.5	0.8	C232A226-BS****
33.0	32.0	30.0	16.0	27.5	0.8	C232A336-BS****

- Note: 1. “-”=capacitance tolerance code, M=±20%,K=±10%,J=±5%
2. “****”=lead form and packing code (refer to table 1).



■ Dimensions (mm)

Pattern II (Reduced sizes)

250Vdc (160Vac)						
C _N (μF)	W ±0.4	H ±0.4	T ±0.4	P ±0.4	d	Part number
0.068	10.5	8.5	3.5	7.5	0.5	C232E683-3S****
0.10	10.5	8.5	3.5	7.5	0.5	C232E104-3S****
0.15	10.5	9.0	4.0	7.5	0.6	C232E154-3S****
0.18	10.5	11.0	5.0	7.5	0.6	C232E184-3S****
0.22	10.5	11.0	5.0	7.5	0.6	C232E224-3S****
0.27	10.5	12.0	6.0	7.5	0.6	C232E274-3S****
0.33	10.5	12.0	6.0	7.5	0.6	C232E334-3S****
0.033	13.0	9.0	4.0	10.0	0.6	C232E333-4S****
0.047	13.0	9.0	4.0	10.0	0.6	C232E473-4S****
0.068	13.0	9.0	4.0	10.0	0.6	C232E683-4S****
0.10	13.0	9.0	4.0	10.0	0.6	C232E104-4S****
0.15	13.0	9.0	4.0	10.0	0.6	C232E154-4S****
0.22	13.0	11.0	5.0	10.0	0.6	C232E224-4S****
0.33	13.0	11.0	5.0	10.0	0.6	C232E334-4S****
0.39	13.0	12.0	6.0	10.0	0.6	C232E394-4S****
0.47	13.0	12.0	6.0	10.0	0.6	C232E474-4S****
0.10	17.5	11.0	5.0	15.0	0.8	C232E104-6S****
0.15	17.5	11.0	5.0	15.0	0.8	C232E154-6S****
0.22	17.5	11.0	5.0	15.0	0.8	C232E224-6S****
0.33	17.5	11.0	5.0	15.0	0.8	C232E334-6S****
0.47	17.5	11.0	5.0	15.0	0.8	C232E474-6S****
0.68	17.5	12.0	6.0	15.0	0.8	C232E684-6S****
1.0	17.5	13.5	7.5	15.0	0.8	C232E105-6S****
1.5	17.5	14.5	8.5	15.0	0.8	C232E155-6S****
0.22	26.5	15.0	6.0	22.5	0.8	C232E224-9S****
0.47	26.5	15.0	6.0	22.5	0.8	C232E474-9S****
0.68	26.5	15.0	6.0	22.5	0.8	C232E684-9S****
1.0	26.5	15.0	6.0	22.5	0.8	C232E105-9S****
1.5	26.5	16.0	7.0	22.5	0.8	C232E155-9S****
1.8	26.5	16.0	7.0	22.5	0.8	C232E185-9S****
2.2	26.5	17.0	8.5	22.5	0.8	C232E225-9S****
3.3	26.5	20.0	11.0	22.5	0.8	C232E335-9S****
1.5	32.0	18.0	9.0	27.5	0.8	C232E155-BS****
1.8	32.0	18.0	9.0	27.5	0.8	C232E185-BS****
2.2	32.0	18.0	9.0	27.5	0.8	C232E225-BS****
3.3	32.0	18.0	9.0	27.5	0.8	C232E335-BS****
4.7	32.0	20.0	11.0	27.5	0.8	C232E475-BS****
6.8	32.0	22.0	13.0	27.5	0.8	C232E685-BS****
10.0	32.0	24.5	15.0	27.5	0.8	C232E106-BS****

400Vdc (200Vac)						
C _N (μF)	W ±0.4	H ±0.4	T ±0.4	P ±0.4	d	Part number
0.022	10.5	8.5	3.5	7.5	0.5	C232G223-3S****
0.033	10.5	8.5	3.5	7.5	0.5	C232G333-3S****
0.047	10.5	9.0	4.0	7.5	0.6	C232G473-3S****
0.068	10.5	11.0	5.0	7.5	0.6	C232G683-3S****
0.082	10.5	12.0	6.0	7.5	0.6	C232G823-3S****
0.10	10.5	12.0	6.0	7.5	0.6	C232G104-3S****
0.010	13.0	9.0	4.0	10.0	0.6	C232G103-4S****
0.015	13.0	9.0	4.0	10.0	0.6	C232G153-4S****
0.022	13.0	9.0	4.0	10.0	0.6	C232G223-4S****
0.033	13.0	9.0	4.0	10.0	0.6	C232G333-4S****
0.047	13.0	9.0	4.0	10.0	0.6	C232G473-4S****
0.056	13.0	9.0	4.0	10.0	0.6	C232G563-4S****
0.068	13.0	11.0	5.0	10.0	0.6	C232G683-4S****
0.10	13.0	11.0	5.0	10.0	0.6	C232G104-4S****
0.15	13.0	12.0	6.0	10.0	0.6	C232G154-4S****
0.047	17.5	11.0	5.0	15.0	0.8	C232G473-6S****
0.068	17.5	11.0	5.0	15.0	0.8	C232G683-6S****
0.10	17.5	11.0	5.0	15.0	0.8	C232G104-6S****
0.15	17.5	11.0	5.0	15.0	0.8	C232G154-6S****
0.22	17.5	12.0	6.0	15.0	0.8	C232G224-6S****
0.33	17.5	13.5	7.5	15.0	0.8	C232G334-6S****
0.47	17.5	14.5	8.5	15.0	0.8	C232G474-6S****
0.56	17.5	16.0	10.0	15.0	0.8	C232G564-6S****
0.68	17.5	16.0	10.0	15.0	0.8	C232G684-6S****
0.22	26.5	15.0	6.0	22.5	0.8	C232G224-9S****
0.33	26.5	15.0	6.0	22.5	0.8	C232G334-9S****
0.47	26.5	15.0	6.0	22.5	0.8	C232G474-9S****
0.68	26.5	16.0	7.0	22.5	0.8	C232G684-9S****
1.0	26.5	18.50	10.0	22.5	0.8	C232G105-9S****
1.5	26.5	22.0	12.0	22.5	0.8	C232G155-9S****
0.68	32.0	18.0	9.0	27.5	0.8	C232G684-BS****
1.0	32.0	18.0	9.0	27.5	0.8	C232G105-BS****
1.5	32.0	20.0	11.0	27.5	0.8	C232G155-BS****
1.8	32.0	20.0	11.0	27.5	0.8	C232G185-BS****
2.2	32.0	22.0	13.0	27.5	0.8	C232G225-BS****
3.3	32.0	24.5	15.0	27.5	0.8	C232G335-BS****
4.7	32.0	30.0	16.0	27.5	0.8	C232G475-BS****
6.8	32.0	33.0	18.0	27.5	0.8	C232G685-BS****

Note: 1. “-”=capacitance tolerance code, M=±20%,K=±10%,J=±5%

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

■ Dimensions (mm)

Pattern II (Reduced sizes)

630Vdc (220Vac) [@]						
C _N (μF)	W ±0.4	H ±0.4	T ±0.4	P ±0.4	d	Part number
0.0022	10.5	8.5	3.5	7.5	0.5	C232J222-3S****
0.0047	10.5	8.5	3.5	7.5	0.5	C232J472-3S****
0.0068	10.5	8.5	3.5	7.5	0.5	C232J682-3S****
0.010	10.5	8.5	3.5	7.5	0.5	C232J103-3S****
0.015	10.5	9.0	4.0	7.5	0.6	C232J153-3S****
0.022	10.5	11.0	5.0	7.5	0.6	C232J223-3S****
0.033	10.5	12.0	6.0	7.5	0.6	C232J333-3S****
0.047	10.5	12.0	6.0	7.5	0.6	C232J473-3S****
0.0047	13.0	9.0	4.0	10.0	0.6	C232J472-4S****
0.0068	13.0	9.0	4.0	10.0	0.6	C232J682-4S****
0.010	13.0	9.0	4.0	10.0	0.6	C232J103-4S****
0.015	13.0	9.0	4.0	10.0	0.6	C232J153-4S****
0.022	13.0	9.0	4.0	10.0	0.6	C232J223-4S****
0.033	13.0	11.0	5.0	10.0	0.6	C232J333-4S****
0.047	13.0	11.0	5.0	10.0	0.6	C232J473-4S****
0.068	13.0	12.0	6.0	10.0	0.6	C232J683-4S****
0.033	17.5	11.0	5.0	15.0	0.8	C232J333-6S****
0.047	17.5	11.0	5.0	15.0	0.8	C232J473-6S****
0.068	17.5	11.0	5.0	15.0	0.8	C232J683-6S****
0.10	17.5	12.0	6.0	15.0	0.8	C232J104-6S****
0.15	17.5	13.5	7.5	15.0	0.8	C232J154-6S****
0.22	17.5	16.0	10.0	15.0	0.8	C232J224-6S****
0.33	17.5	19.0	11.0	15.0	0.8	C232J334-6S****
0.10	26.5	15.0	6.0	22.5	0.8	C232J104-9S****
0.15	26.5	15.0	6.0	22.5	0.8	C232J154-9S****
0.22	26.5	16.0	7.0	22.5	0.8	C232J224-9S****
0.33	26.5	16.0	7.0	22.5	0.8	C232J334-9S****
0.47	26.5	17.0	8.5	22.5	0.8	C232J474-9S****
0.68	26.5	22.0	12.0	22.5	0.8	C232J684-9S****
0.33	32.0	18.0	9.0	27.5	0.8	C232J334-BS****
0.47	32.0	18.0	9.0	27.5	0.8	C232J474-BS****
0.68	32.0	20.0	11.0	27.5	0.8	C232J684-BS****
1.0	32.0	20.0	11.0	27.5	0.8	C232J105-BS****

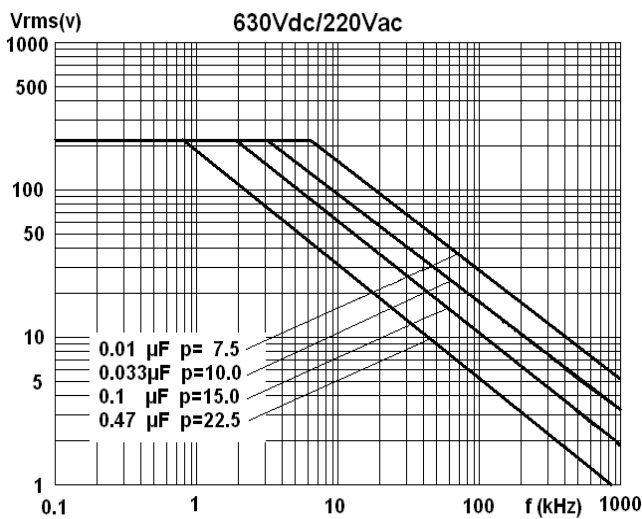
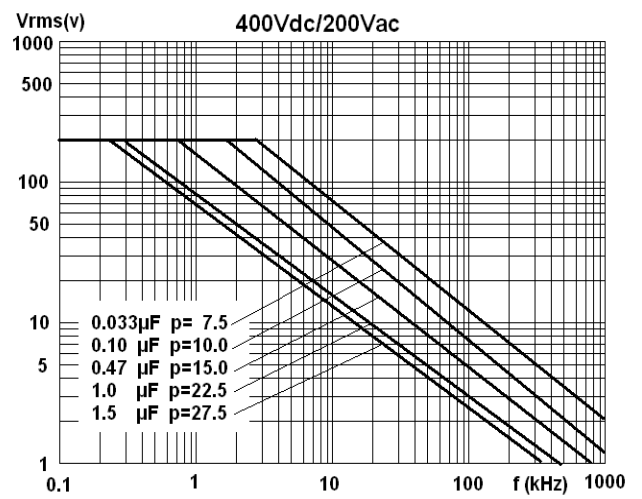
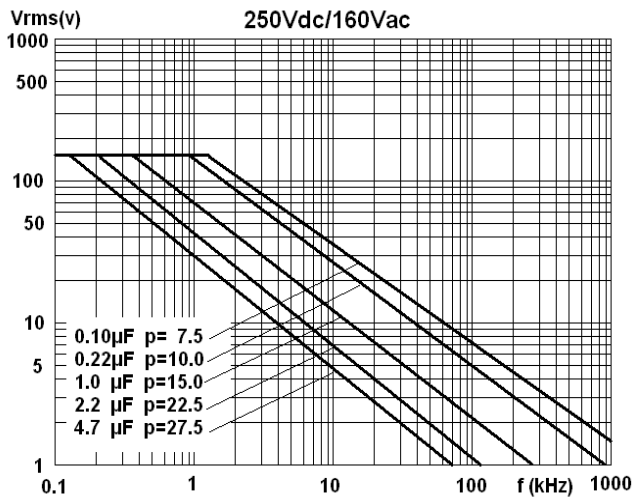
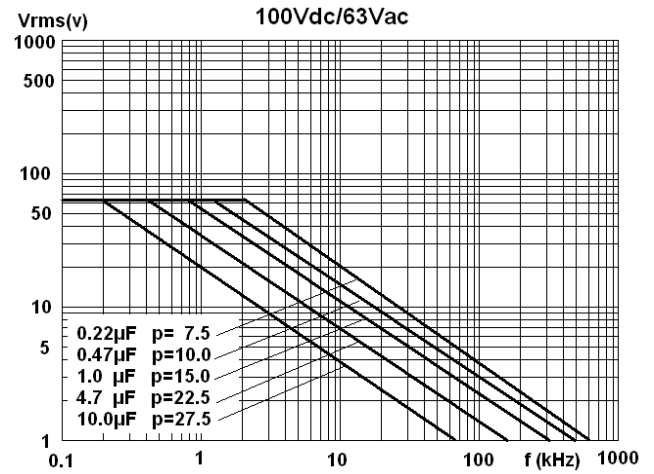
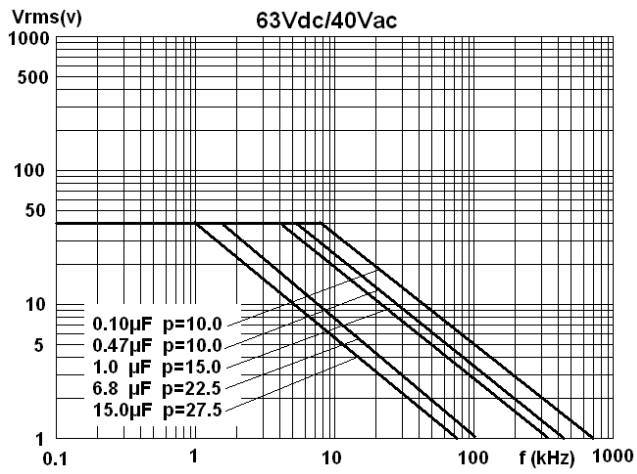
1 000Vdc (300Vac)						
C _N (μF)	W ±0.4	H ±0.4	T ±0.4	P ±0.4	d	Part number
0.0010	10.5	8.5	3.5	7.5	0.5	C233A102-3S****
0.0015	10.5	8.5	3.5	7.5	0.5	C233A152-3S****
0.0022	10.5	8.5	3.5	7.5	0.5	C233A222-3S****
0.0033	10.5	8.5	3.5	7.5	0.5	C233A332-3S****
0.0047	10.5	8.5	3.5	7.5	0.5	C233A472-3S****
0.0068	10.5	9.0	4.0	7.5	0.6	C233A682-3S****
0.010	10.5	11.0	5.0	7.5	0.6	C233A103-3S****
0.015	10.5	12.0	6.0	7.5	0.6	C233A153-3S****
0.0010	13.0	9.0	4.0	10.0	0.6	C233A102-4S****
0.0015	13.0	9.0	4.0	10.0	0.6	C233A152-4S****
0.0022	13.0	9.0	4.0	10.0	0.6	C233A222-4S****
0.0033	13.0	9.0	4.0	10.0	0.6	C233A332-4S****
0.0047	13.0	9.0	4.0	10.0	0.6	C233A472-4S****
0.0056	13.0	9.0	4.0	10.0	0.6	C233A562-4S****
0.0068	13.0	9.0	4.0	10.0	0.6	C233A682-4S****
0.010	13.0	9.0	4.0	10.0	0.6	C233A103-4S****
0.015	13.0	11.0	5.0	10.0	0.6	C233A153-4S****
0.022	13.0	11.0	5.0	10.0	0.6	C233A223-4S****
0.010	17.5	11.0	5.0	15.0	0.8	C233A103-6S****
0.015	17.5	11.0	5.0	15.0	0.8	C233A153-6S****
0.022	17.5	11.0	5.0	15.0	0.8	C233A223-6S****
0.033	17.5	12.0	6.0	15.0	0.8	C233A333-6S****
0.047	17.5	12.0	6.0	15.0	0.8	C233A473-6S****
0.068	17.5	13.5	7.5	15.0	0.8	C233A683-6S****
0.10	17.5	14.5	8.5	15.0	0.8	C233A104-6S****
0.033	26.5	15.0	6.0	22.5	0.8	C233A333-9S****
0.047	26.5	15.0	6.0	22.5	0.8	C233A473-9S****
0.068	26.5	15.0	6.0	22.5	0.8	C233A683-9S****
0.10	26.5	15.0	6.0	22.5	0.8	C233A104-9S****
0.15	26.5	16.0	7.0	22.5	0.8	C233A154-9S****
0.22	26.5	17.0	8.5	22.5	0.8	C233A224-9S****
0.33	26.5	20.0	11.0	22.5	0.8	C233A334-9S****
0.15	32.0	18.0	9.0	27.5	0.8	C233A154-BS****
0.22	32.0	18.0	9.0	27.5	0.8	C233A224-BS****
0.33	32.0	20.0	11.0	27.5	0.8	C233A334-BS****
0.47	32.0	20.0	11.0	27.5	0.8	C233A474-BS****
0.68	32.0	28.0	14.0	27.5	0.8	C233A684-BS****
1.0	32.0	30.0	16.0	27.5	0.8	C233A105-BS****
1.5	32.0	37.0	22.0	27.5	0.8	C233A155-BS****

Note: 1. “-”=capacitance tolerance code, M=±20%,K=±10%,J=±5%

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

3. “@” Not suitable for across-the-line applications. Pls refer to the Interference Suppression Capacitors.

■ MAX. VOLTAGE(Vr.m.s) VERSUS FREQUENCY



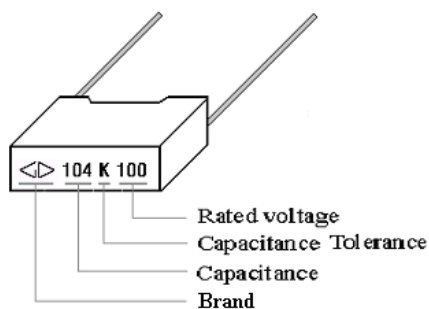
Note: sinusoidal wave-form, environment temperature $\leq 85^{\circ}\text{C}$, internal temperature rise $\Delta T = 15^{\circ}\text{C}$, p (pitch) in mm..

■ Test Method And Performance

No.	Item		Performance	Test method (GB 7332(IEC 60384-2))
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	Initial measurement		Capacitance, $\text{Tg}\delta$	
	Terminal strength (straight lead)		There shall be no visible damage	Tension U_{a1} : Pull: $\phi d = 0.5\text{mm}$, 5N $\phi d \geq 0.6\text{mm}$, 10N Bend U_b : The pull of bend: $\phi d = 0.5\text{mm}$, 2.5N $\phi d \geq 0.6\text{mm}$, 5N The terminals shall be bent 2 times in each direction.
	Resistance to solder heat		There shall be no visible damage, legible marking	Solder temperature: $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Immersion time: $10\text{s} \pm 1\text{s}$
	Final measurement		$\Delta C/C \leq \pm 2\%$ (relative to the initial value) Increase of $\text{tg}\delta$: ≤ 0.003 ($C \leq 1.0\mu\text{F}$) ≤ 0.002 ($C > 1.0\mu\text{F}$)	
3	Initial measurement		Capacitance, $\text{Tg}\delta$	
	Rapid change of temperature		There shall be no evidence of deterioration.	$\theta_A = -55^{\circ}\text{C}$, $\theta_B = +105^{\circ}\text{C}$ 5 cycles Duration: $t = 30\text{min}$
	Vibration (straight lead)		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 (straight lead)		There shall be no evidence of deterioration.	4 000 times, Acceleration: 390m/s^2 , Pulse duration, 6ms
	Final measurement		$\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\text{tg}\delta$: ≤ 0.003 ($C \leq 1.0\mu\text{F}$) ≤ 0.002 ($C > 1.0\mu\text{F}$) IR: $\geq 50\%$ of the rated value	
4	climate sequence	Initial measurement	Capacitance, $\text{Tg}\delta$	
		Dry heat		$+105^{\circ}\text{C}$, 16h
		Damp heat, Cyclic		Test Db, Severity: b, the first cycle
		Cold		-55°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, Applying U_R for 1 minute after the test finished.

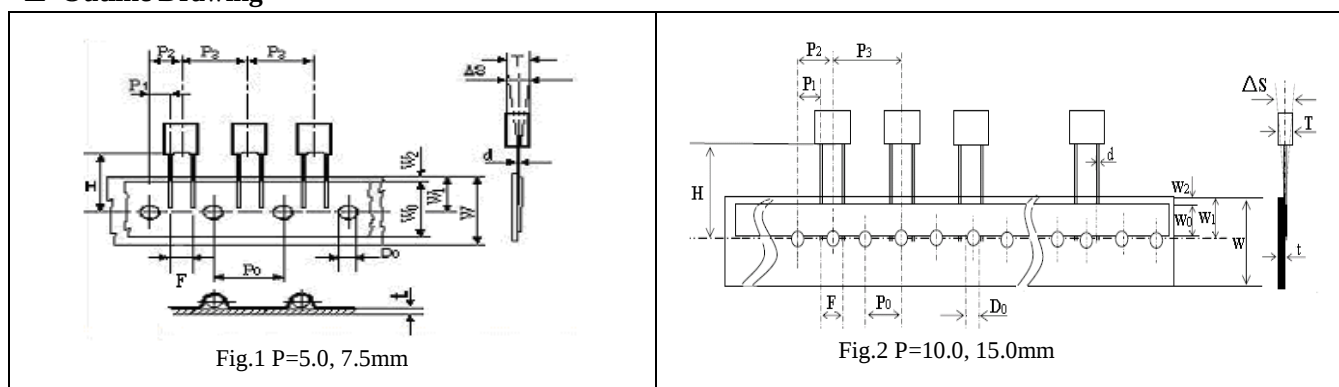
No.	Item		Performance	Test method (GB 7332(IEC 60384-2))
4	climate sequence (continue)	Final mea surement	There shall be no evidence of deterioration and the marking shall be legible. $\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\tan \delta$: ≤ 0.005 ($C \leq 1.0\mu F$) ≤ 0.003 ($C > 1.0\mu F$) IR: $\geq 50\%$ of the rated value	
5	Damp heat steady state		There shall be no evidence of deterioration and the marking shall be legible. $\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\tan \delta \leq 0.005$ IR: $\geq 50\%$ of the rated value	Temperature: $40^\circ C \pm 2^\circ C$ Humidity: $93 \pm 2\%$ RH Duration: 56days
6	Endurance		There shall be no evidence of deterioration and the marking shall be legible. $\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\tan \delta$: ≤ 0.003 ($C \leq 1.0\mu F$) ≤ 0.002 ($C > 1.0\mu F$) IR: $\geq 50\%$ of the rated value	Temperature: $+85^\circ C/+100^\circ C$ Voltage: $1.25 \times U_R / 1.25 \times U_c$ ($U_c = 0.8U_R$) Duration: 2 000h
7	Temperature characteristic		Measuring capacitance at test point b, d, f: Characteristic at lower category temperature $-55^\circ C$: $-10\% \leq (C_b - C_d)/C_d \leq 0\%$ Characteristic at upper category temperature $+100^\circ C$: $0\% \leq (C_f - C_d)/C_d \leq +10\%$ I.R. (test at point f): $U_R \leq 100V$: $\geq 75 M\Omega$ ($C \leq 0.33\mu F$) $\geq 25s$ ($C > 0.33\mu F$) $U_R > 100V$: $\geq 150 M\Omega$ ($C \leq 0.33\mu F$) $\geq 50s$ ($C > 0.33\mu F$)	Static method: The Capacitors should be kept at the following temperature in turn: a(20 ± 2) $^\circ C$, b(-55 ± 3) $^\circ C$, d(20 ± 2) $^\circ C$, f(100 ± 2) $^\circ C$, g(20 ± 2) $^\circ C$
8	Charging and discharging		$\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\tan \delta$: ≤ 0.003 ($C \leq 1.0\mu F$) ≤ 0.002 ($C > 1.0\mu F$) IR: $\geq 50\%$ of the rated value	Times: 10 000 Duration of charging: 0.5s Duration of discharging: 0.5s Charging voltage: rated voltage Charging resistance: $220/C_N(\Omega)$ Discharging resistance: $R = 10/C_N(\Omega)$ or 20Ω (whichever is the greater) C_N : rated capacitance (μF)

- **Marking:**
For example:



■ Taping specification for box-type capacitors

▲ Outline Drawing



▲ 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	±1.0
Feed hole pitch	P ₀	12.7	12.7	12.7	12.7	±0.3
Center of wire	P ₁	3.85	2.6	7.7	5.2	±0.7
Center of body	P ₂	6.35	6.35	12.7	12.7	±1.3
Pitch of taping wire	F**	5.0	7.5	10.0	15.0	+0.6 -0.1
Component alignment	△S	0	0	0	0	±2.0
Height of component from tape center	H***	18.5	18.5	18.5	18.5	±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	±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	±0.2
Tape thickness	t	0.7	0.7	0.7	0.7	±0.2

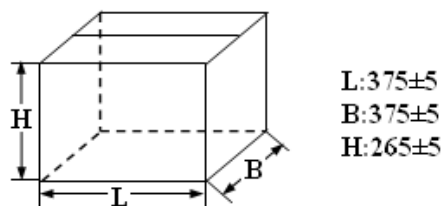
Note: * P₀=15mm is also available;

**F can be other lead spacing;

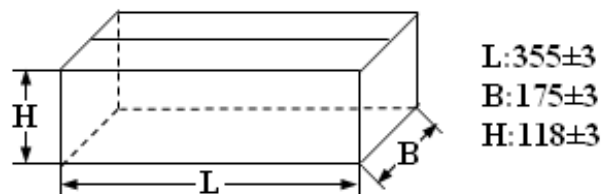
***H=16.5mm is available;

■ Packing box sizes(mm)(example)

1. Out packing box for bulk



2. Inner packing box for bulk



3. Box sizes for Ammo-pack

