

RoHS
Compliant



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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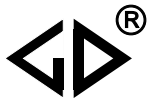
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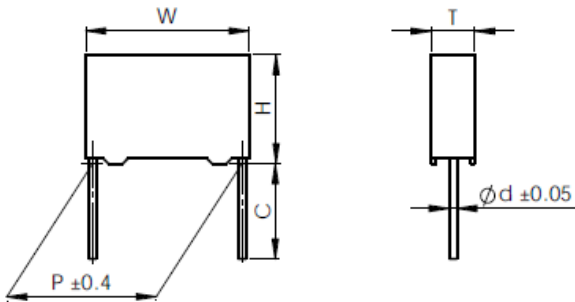


Version history

| Current version | Date | Author | Change description |
|-----------------|------|--------|--------------------|
| | | | |

Metallized polyester film capacitor (Box-type)

■ Outline Drawing



$W \pm 0.4, H \pm 0.4, T \pm 0.4$

■ 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 | $U_R > 100V$ | $R \geq 30\,000M\Omega,$ $RC_N \geq 10\,000\,s,$ | $C_R \leq 0.33\mu F$ $C_R > 0.33\mu F$ | (20°C,100V,1min) | | |
| | $U_R \leq 100V$ | $R \geq 3\,750M\Omega,$ $RC_N \geq 1\,250s,$ | $C_N \leq 0.33\mu F$ $C_N > 0.33\mu F$ | (20°C,10V,1min) | | |
| 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/ μ s) | | | | |
| | | 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

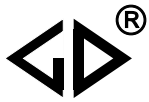
Digit 11 Internal use

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 | | 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).



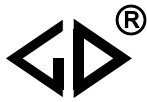
■ **Dimensions (mm)**

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)**

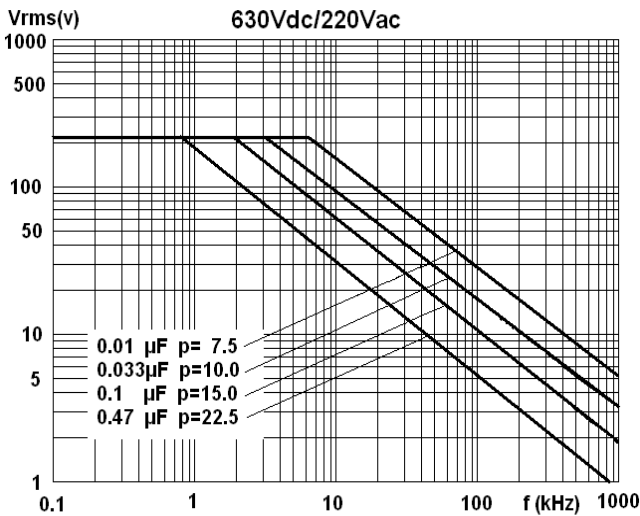
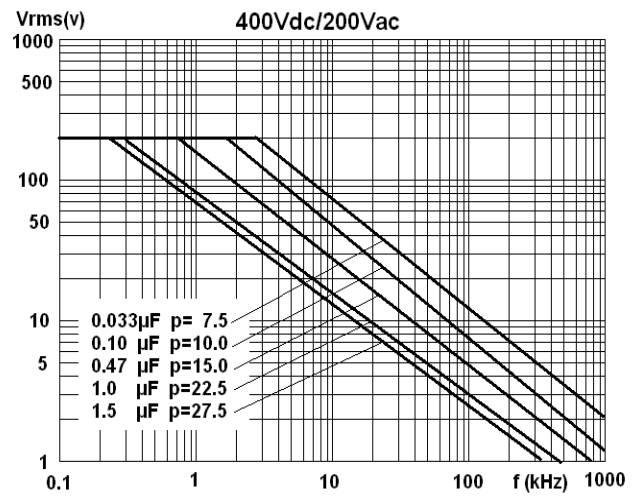
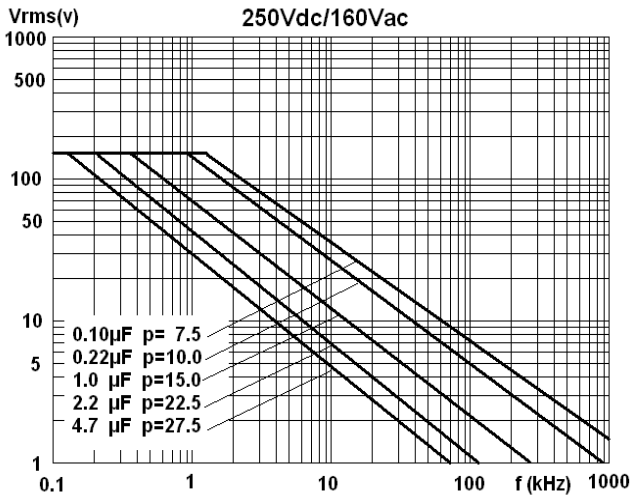
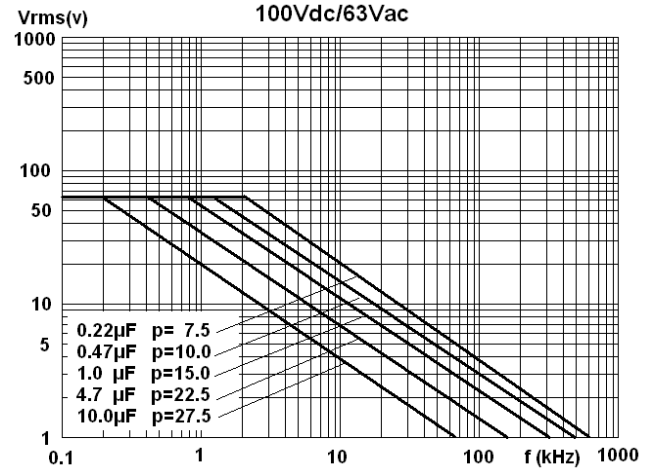
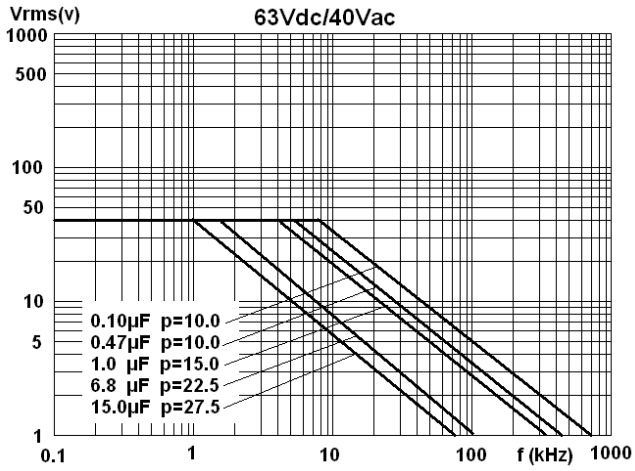
Pattern II (Reduced sizes)

| 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



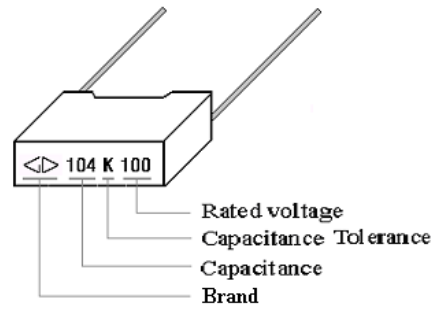
Note: sinusoidal wave-form, environment temperature $\leq 85^{\circ}\text{C}$, internal temperature rise $\Delta T = 15^{\circ}\text{C}$, p (pitch) in mm..

■ Test Method And Performance

| No. | Item | Performance | Test method (GB 7332(IEC 60384-2)) |
|-----|--------------------------------------|--|---|
| 1 | Solderability | Good quality of tinning | Solder temperature:245°C±5°C Immersion time: 2.0s±0.5s |
| 2 | Initial measurement | Capacitance, Tgδ | |
| | Terminal strength (straight lead) | There shall be no visible damage | Tension Ua1: Pull: φd=0.5mm,5N φd≥0.6mm, 10N Bend Ub: The pull of bend: φd=0.5mm, 2.5N φd≥0.6mm, 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°C±5°C Immersion time: 10s±1s |
| | Final measurement | ΔC/C ≤±2%(relative to the initial value) Increase of tgδ: ≤0.003 (C≤1.0μF) ≤0.002 (C>1.0μF) | |
| 3 | Initial measurement | Capacitance, Tgδ | |
| | Rapid change of temperature | There shall be no evidence of deterioration. | θ _A =-55°C, θ _B =+105°C 5 cycles Duration: t=30min |
| | 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 | ΔC/C ≤±5%(relative to the initial value) Increase of tgδ: ≤0.003 (C≤1.0μF) ≤0.002 (C>1.0μF) IR: ≥ 50% of the rated value | |
| 4 | climate sequence | Initial measurement | Capacitance, Tgδ |
| | | Dry heat | +105°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°C~ 35°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. |

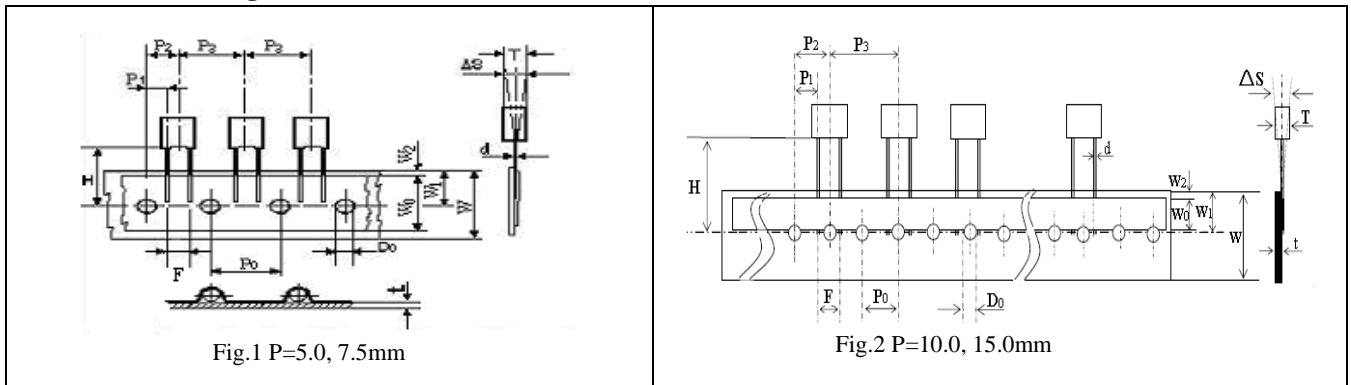
| No. | Item | | Performance | Test method (GB 7332(IEC 60384-2)) |
|-----|-----------------------------|-------------------|--|---|
| 4 | climate sequence (continue) | Final measurement | <p>There shall be no evidence of deterioration and the marking shall be legible.</p> <p>$\Delta C/C \leq \pm 5\%$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

- **Marking:**
For example:



■ Taping specification for box-type capacitors

▲ Outline Drawing



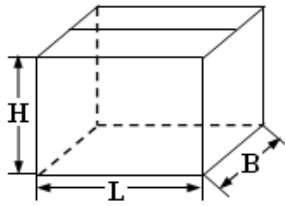
▲ Taping Dimensions(mm)

| 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;

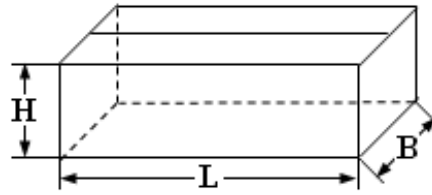
■ Packing box sizes(mm)(example)

1. Out packing box for bulk



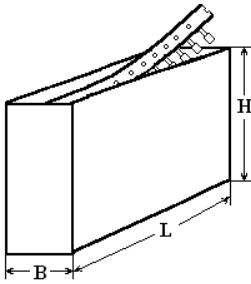
L:375±5
B:375±5
H:265±5

2. Inner packing box for bulk



L:355±3
B:175±3
H:118±3

3. Box sizes for Ammo-pack



L:350±3
B:50±3
H:260±3

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[82EC2150DQ50K](#) [WMF1D68](#) [PHE841ED6150MR17T0](#) [VEA105K50](#) [82EC2220DQ50J](#) [F850AG102M300C](#)