

RoHS
Compliant



SPECIFICATION FOR APPROVAL

File No.: Q/FRK 0.GS.E.C57-C01

Product Name Metallized polyester film surface mounted plastic-housing capacitor
Product Type C57
Product Code C57
Customer
Customer Code
Issue Date 2020-04

| Xiamen Faratronic Co. Ltd. | | | Approved by Customer |
|----------------------------|---------|----------|----------------------|
| Drafted | Checked | Approved | |
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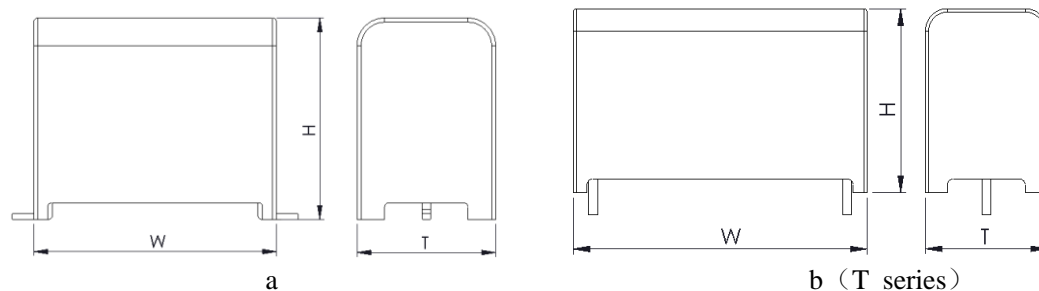
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**Version history**

| Current version | Date | Author | Change description |
|-----------------|------|-------------|--------------------|
| C01 | | Lin Xiaokai | First edition |
| | | | |
| | | | |

Metallized polyester film surface mounted capacitor (Box-type)

■ Outline drawing



Note: The difference between figure a and figure b is only lead forming.

■ Features

- Metallized polyester film, non-inductive wound construction, Plastics housing (UL94 V-0)
- Stability versus temperature, frequency, voltage, time and humidity
- Reliable quality due to self-healing effect
- No piezoelectric effect, non-polar construction, non-linearity distortion
- Reflow-soldering, low cost

■ Typical application

- As intermediate circuit capacitors for SMPS、 Electronic Ballast、 Inverter

■ Specifications

| | | | | |
|--|---|--------------|----------|----------|
| Reference Standard | GB/T 15448 (IEC 60384-19) | | | |
| Climatic Category | 40/105/56 | | | |
| Rated temperature | 85°C | | | |
| Operating temperature range | -40°C~105°C (+85°C to +105°C: decreasing factor 1.25% per °C for U _R) | | | |
| Rated Voltage | 450V | | | |
| Capacitance Range | 0.10μF ~1.00μF | | | |
| Capacitance Tolerance | ±5%(J)、±10%(K)、±20%(M)、-5%~+10%(6) | | | |
| Voltage Proof | 1.5U _R (5s) | | | |
| Dissipation Factor | ≤0.8% (20°C,1kHz) | | | |
| Insulation Resistance | ≥10 000MΩ, C _N ≤0.33 μF ≥6 000s, C _N >0.33 μF (20°C,100V,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/μs) | | |
| | | W=13.0mm | W=17.5mm | W=26.5mm |
| | 450 | 30 | 20 | 10 |
| Welding process | Reflow soldering recommended | | | |

■ 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 | 5 | 7 | | | | | | | | | | | | |
|---|---|---|--|--|--|--|--|--|--|--|--|--|--|--|

Digit 1 to 3 Series code

C57

Digit 4 to 5 DC rated voltage

2S=450V

Digit 6 to 8 Rated capacitance value

For example : 104=10×10⁴ pF= 0.10μF

Digit 9 Capacitance tolerance

J=±5%, K=±10%, M=±20%, 6= -5%~+10%

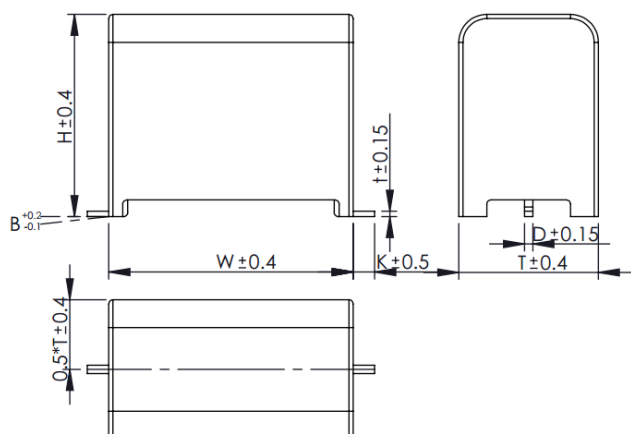
Digit 10 Packing code

0=bulk 1=taping

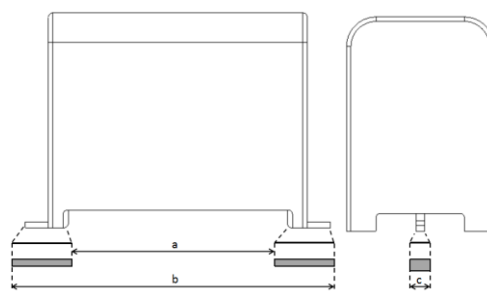
Digit 11 Internal use

Digit 12 to 15 Lead form and dimension code

■ Dimensions(mm)



a-1 Outline drawing



a-2 Installation dimension drawing

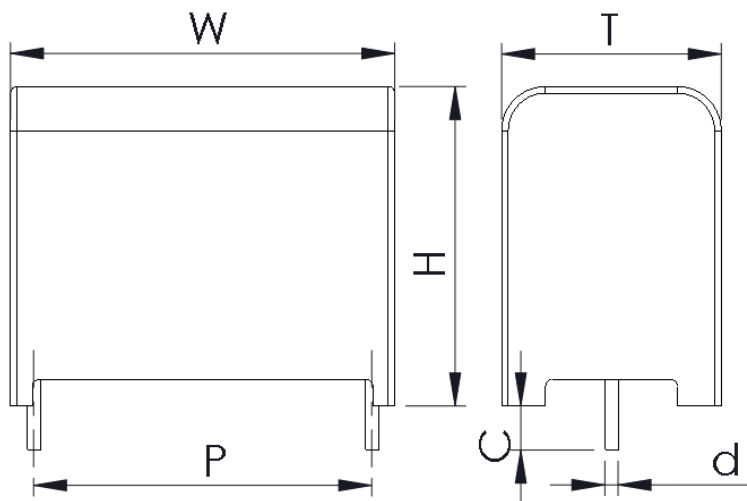
| 450Vdc | | | | | | | | | | |
|---------------------|-------|-------|-------|--------|--------|-------|------|------|-----|-----------------|
| C _N (μF) | W±0.4 | H±0.4 | T±0.4 | D±0.15 | t±0.15 | K±0.5 | a | b | c | Part number |
| 0.10 | 13.0 | 11.0 | 8.5 | 0.75 | 0.45 | 1.4 | 8.4 | 17.8 | 1.6 | C572S104-*05235 |
| 0.15 | 17.5 | 11.0 | 7.0 | 0.75 | 0.45 | 1.6 | 13.4 | 22.3 | 1.6 | C572S154-*07028 |
| 0.22 | 17.5 | 12.0 | 8.0 | 0.75 | 0.45 | 1.6 | 13.4 | 22.3 | 1.6 | C572S224-*07032 |
| 0.33 | 17.5 | 13.0 | 9.0 | 0.75 | 0.45 | 1.6 | 13.4 | 22.3 | 1.6 | C572S334-*07036 |
| 0.47 | 17.5 | 14.5 | 10.0 | 0.75 | 0.45 | 1.6 | 13.4 | 22.3 | 1.6 | C572S474-*07040 |
| 0.68 | 17.5 | 16.5 | 11.5 | 0.75 | 0.45 | 1.6 | 13.4 | 22.3 | 1.6 | C572S684-*07046 |
| 1.00 | 26.5 | 16.5 | 11.0 | 0.90 | 0.65 | 2.0 | 25.5 | 32.1 | 1.6 | C572S105-*0A544 |

Note: 1. “-”=capacitance tolerance code, J=±5%, K=±10%, M=±20%, 6=-5%~+10%.

2. “*”= packing code,0=bulk,1=taping.

3. It is the design dimensions, and the final dimensions will be optimized according to the actual application conditions.

T size



b-1 Outline drawing

b-2 Installation dimension drawing

| 450Vdc | | | | | | | | |
|-------------------------|-------------|-------------|-------------|-------------|-------------|--------------|-----|-----------------|
| C_N (μF) | $W \pm 0.4$ | $H \pm 0.4$ | $T \pm 0.4$ | $P \pm 0.3$ | $C \pm 0.3$ | $d \pm 0.05$ | di | Part number |
| 0.10 | 13.0 | 11.0 | 8.5 | 10.0 | 2.0 | 0.6 | 1.1 | C572S104-*T#### |
| 0.15 | 17.5 | 11.0 | 7.0 | 15.0 | 2.0 | 0.6 | 1.1 | C572S154-*T#### |
| 0.22 | 17.5 | 12.0 | 8.0 | 15.0 | 2.0 | 0.6 | 1.1 | C572S224-*T#### |
| 0.33 | 17.5 | 13.0 | 9.0 | 15.0 | 2.0 | 0.6 | 1.1 | C572S334-*T#### |
| 0.47 | 17.5 | 14.5 | 10.0 | 15.0 | 2.0 | 0.6 | 1.1 | C572S474-*T#### |
| 0.68 | 17.5 | 16.5 | 11.5 | 15.0 | 2.0 | 0.6 | 1.1 | C572S684-*T#### |
| 1.00 | 26.5 | 16.5 | 11.0 | 22.5 | 2.0 | 0.8 | 1.3 | C572S105-*T#### |

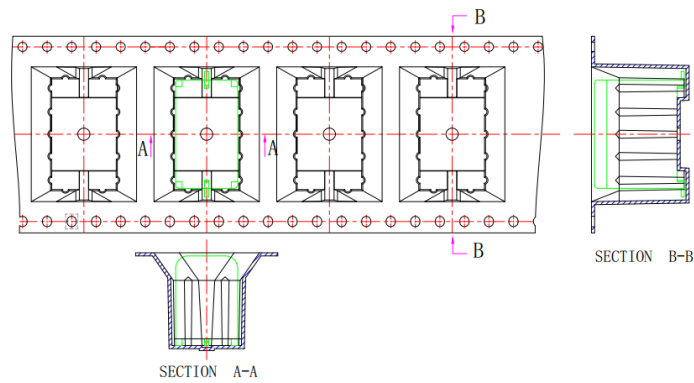
Note: 1. “-”= capacitance tolerance code, J=±5%, K=±10%, M=±20%, 6=-5%~+10%.

2. “*”= packing code, 0=bulk, 1=taping.

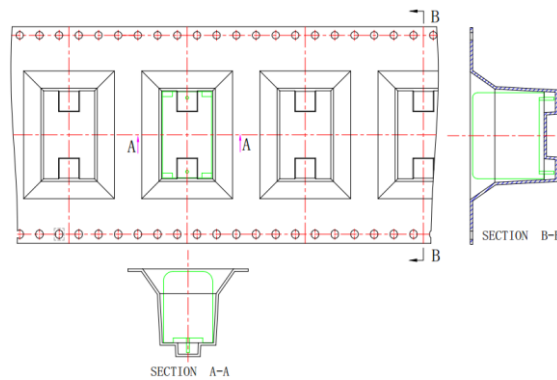
3. “#”= installation dimension.

4. It is the design dimensions, and the final dimensions will be optimized according to the actual application conditions.

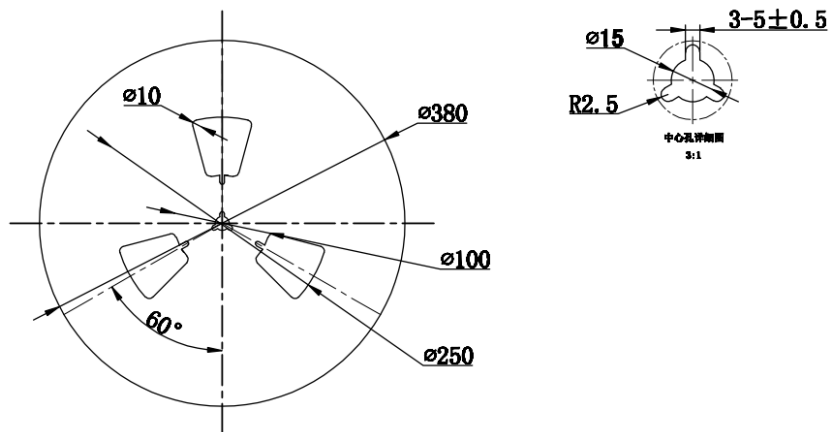
■ Packaging



Taping a



Taping b (T series)



Reel

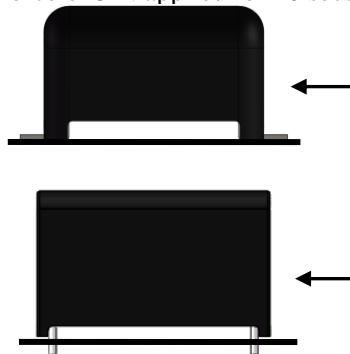
Note:1. The storage time of the product is 12 months with good packing.

2. After the opening of the packing bag, the best produce time and surroundings is in 72h, temperature $<30^\circ\text{C}$, humidity $<60\% \text{RH}$; if the time is more than 72h, please keep the products in the $<10\% \text{RH}$ drying cabinet in a timely manner, and the rules should be followed during the next production.

3. When the production need a longer time, please dry the product before the reflow: open the packing bag in the drying box ($55^\circ\text{C} \pm 5^\circ\text{C}$ (humidity $<10\% \text{RH}$), more than 72h), reduce the bad probability due to damp.

4. When the product is seriously damp, please contact with our engineer.


■ Test Method And Performance

| No. | Item | Performance | Test method (IEC60384-19) |
|-----|--|--|---|
| 1 | Solderability | Good quality of tinning | Solder temperature: $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Immersion time: $2.0\text{s} \pm 0.5\text{s}$ Immersion depth: 2mm |
| 2 | Mounting | No visible damage Capacitance: $ \Delta C/C \leq 5\%$ $\text{tg}\delta \leq 0.008$ 1kHz $\text{tg}\delta \leq 0.015$ 10 kHz IR: $\geq 30\,000\text{M}\Omega$, $C_R \leq 0.33\mu\text{F}$ $\geq 10\,000\text{s}$, $C_R > 0.33\mu\text{F}$ | Method: Reflow Soldering The time for bonding joints temperature of the capacitor remains at 221°C in 70s. The maximum bonding Joints temperature not excess 250°C |
| 3 | “2. Mounting” products are used as the following Test Project products, their final measurements are used as Reference value | | |
| 3.1 | Adhesion | No visible damage | (According to CECC 32201) Force of 5 N applied for 10 secs  |
| 3.2 | climate sequence | Initial measurement | Not required, see subgroup 3 |
| | | Rapid change of temperature | There shall be no evidence of deterioration. $\theta_A = -40^{\circ}\text{C}$, $\theta_B = +105^{\circ}\text{C}$ 5 cycles, Duration: $t = 30\text{min}$ |
| | | Dry heat | $+105^{\circ}\text{C}$, 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, Applying U_R for 1 minute after the test finished. |
| | Final measurement | 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 $\text{tg}\delta$: ≤ 0.008 (10kHz) IR: $\geq 50\%$ of the rated value | |

| No. | Item | Performance | Test method (IEC60384-19) |
|-----|--------------------------|--|--|
| 3.3 | 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 $\text{tg}\delta \leq 0.005$ (1kHz) IR: $\geq 50\%$ of the rated value | Temperature: $40^\circ\text{C} \pm 2^\circ\text{C}$ Humidity: $93 \begin{smallmatrix} +2 \\ -3 \end{smallmatrix} \% \text{RH}$ Duration: 1344h |
| 3.4 | 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 $\text{tg}\delta \leq 0.005$ (10kHz) IR: $\geq 50\%$ of the rated value | Temperature: $+85^\circ\text{C}$ Voltage: U_R Duration: 1 000h |
| 3.5 | Charging and discharging | $\Delta C/C \leq \pm 5\%$ (relative to the initial value) Increase of $\text{tg}\delta: \leq 0.005$ (10kHz) 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: $220/C_R(\Omega)$ Discharging resistance: $R=10/C_R(\Omega)$ or 20Ω (whichever is the greater) C_R : rated capacitance (μF) |

■ Marking
 474K450

Marking Introduction :

| Sign | Explain | Sign | Explain | Sign | Explain | Sign | Explain |
|---|---------|------|---------------------------------------|------|---------------|-------|--------------------------|
|  | Brand | 474K | Capacitance and Capacitance tolerance | 450 | Rated voltage | ***** | Traceability information |

■ Quality ensuring test (before shipment)

| Inspection item (each batch) | Inspection level (GB 2828) | |
|------------------------------|----------------------------|-------|
| | IL | AQL |
| Appearance inspection | S-4 | 1.5% |
| Dimensions | | |
| Capacitance | II | 0.65% |
| Tangent of the loss angle | | |
| Dielectric strength | | |
| Insulation resistance | S-3 | 2.5% |
| Solderability | | |

■ Reflow soldering process – parameters and suggestions

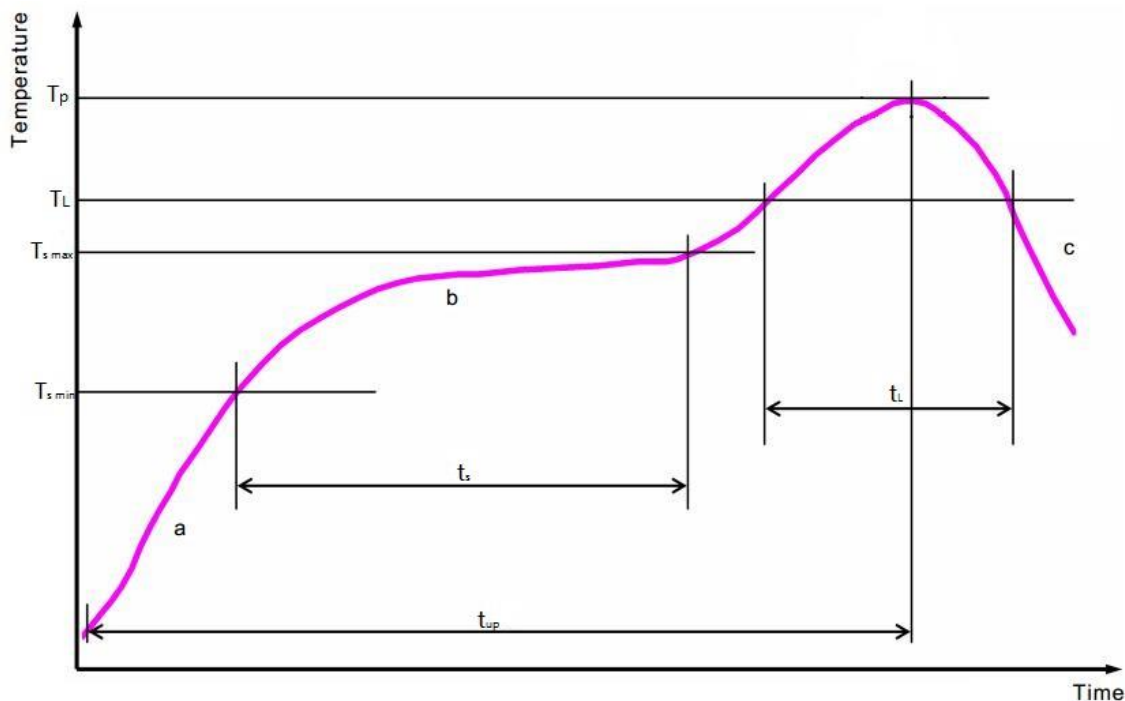
1. Suggested guidelines about the main reflow parameters are as follows:

| Limits | Classification | Time in Oven 30°C to T_p t_{up} (s) | Preheating T_s 150°C to 200°C t_s (s) | $\geq T_L=220^\circ\text{C}$ t_L (s) | T_p (°C) |
|--------|----------------|---|---|---|---------------|
| | Min | 150 | 60 | 45 | 240 |
| | Max | 200 | 120 | 70 | 250 |
| | Optimum | 180 | 90 | 65 | 245 |

- Max temp. ramp rate = 3 °C / sec (heating) and 6 °C / sec (cooling)

- Second reflow = be sure that, before the second reflow, the temperature on the capacitor surface is below 50 °C

This is Reflow soldering process parameters and suggestions, the actual reflow requirements, please communicate with the engineer.



2. Dispensing suggestion:

Since the product is big and heavy, it is suggested this product dispensing at the bottom or side to improve the stability level.

■ Suggested Solder paste:

We suggest to use a Sn / Ag / Cu solder paste (suggested thickness 0.10 – 0.15 mm) with a melting point of around 217 °C.

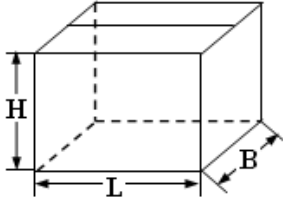
■ Suggested manual soldering parameters(for Touch only the landing areas on PCB with the soldering iron)

We only suggest to use the component with reflow soldering. If you have to solder with iron, please refer to the parameters of hand-soldering detailedly.

Time: ≤ 5 sec; Temperature: ≤ 350 °C.

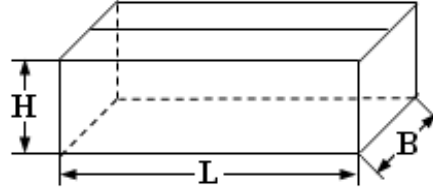
■ Packing box sizes(mm)(example)

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