



# PRODUCT SPECIFICATION

## 规格书

Customer (客户名称):

Customer P/N (客户料号):

Aillen P/N(爱伦料号):MP3S Series

CATEGORY(品名): Metallized Polypropylene Film Capacitor

DESCRIPTION(型号):

Spec No.( 承认书编号):

Date(发行日期):

### AILLEN

**PREPARED**  
(拟定)

**CHECKED**  
(审核)

### CUSTOMER

Please sign a copy after accepting

**APPROVAL**  
(批准)

**SIGNATURE**  
(签名)

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## 1. Application

This specification applied to capacitor for type MP3S(Double sided Metallized Polypropylene Film Capacitor (Box))Reference Standard GB/T 10190 (IEC 60384-16)

## 2. Feature&Application

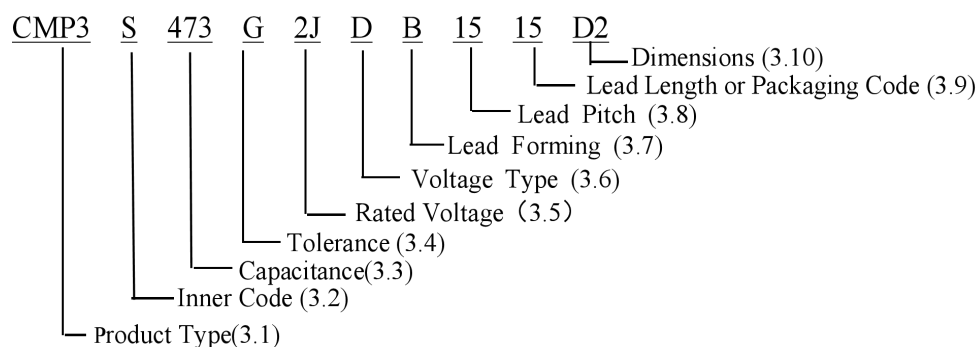
### 2-1 Feature

- Double sided metallized polypropylene film
- Low loss and small inherent temperature rise
- Very high pulse strength
- Outer Coating: Flame retarding plastic case and epoxy filled

### 2-2 Recommended Application

- Widely used in high voltage, high frequency and pulse circuit
- Electronic ballasts and compact lamps
- SNUBBER and SCR commutating circuits

## 3. Part Number System



### 3-1 tape:

| Code | CMEF | CMPP | CMEB | CMPB | CMP3 |
|------|------|------|------|------|------|
| Type | MEF  | MPP  | MEB  | MPB  | MP3S |

### 3-2 Inner Code

### 3-3 Capacitance:

| Code        | 102           | 103          | 104         | 105       | 106        |
|-------------|---------------|--------------|-------------|-----------|------------|
| Capacitance | 0.001 $\mu$ F | 0.01 $\mu$ F | 0.1 $\mu$ F | 1 $\mu$ F | 10 $\mu$ F |

3-4 Tolerance:

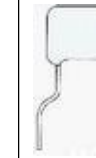
| Code      | G   | H   | J   | K    |
|-----------|-----|-----|-----|------|
| Tolerance | ±2% | ±3% | ±5% | ±10% |

3-5 Rated Voltage:

| Code    | 2G  | 2W  | 2J  | 1K   | 3C   |
|---------|-----|-----|-----|------|------|
| Voltage | 400 | 450 | 630 | 1000 | 1600 |

3-6 Voltage Tyoe: D→DC; A→AC

3-7 Lead forming:

| Code         | B                                                                                 | K                                                                                 | R                                                                                 | U                                                                                 | W                                                                                  | S                                                                                   | T      |
|--------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
| Lead Forming |  |  |  |  |  |  | Taping |

3-8 Lead Pitch:

| Code      | 08    | 10   | 15   | 20   | 22   | 27   | 31   | AX                                                                                                  |
|-----------|-------|------|------|------|------|------|------|-----------------------------------------------------------------------------------------------------|
| Pitch(mm) | 7.5mm | 10mm | 15mm | 20mm | 22mm | 27mm | 31mm | Axial Lead<br> |

3-9 Lead length or Packaging Code:

| Code                    | 35    | 04  | 45    | 10   | 15   | 20        |
|-------------------------|-------|-----|-------|------|------|-----------|
| Bulk and Cut Length(mm) | 3.5mm | 4mm | 4.5mm | 10mm | 15mm | 17mm Min. |

| Code   | T1                                                         | T5                                                      | T7                                                      |
|--------|------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| Taping | Straight foot Taping<br>P3=12.7mm (For<br>pitch=5.0/7.5mm) | Straight foot Taping<br>P3=25.4mm(For<br>pitch=10/15mm) | Straight foot Taping<br>P0=12.7mm(For<br>pitch=22/27mm) |

3-10 Dimensions Code

| Code           | D2   |      |     |
|----------------|------|------|-----|
| Dimensions(mm) | W    | H    | T   |
|                | 18±1 | 12±1 | 6±1 |

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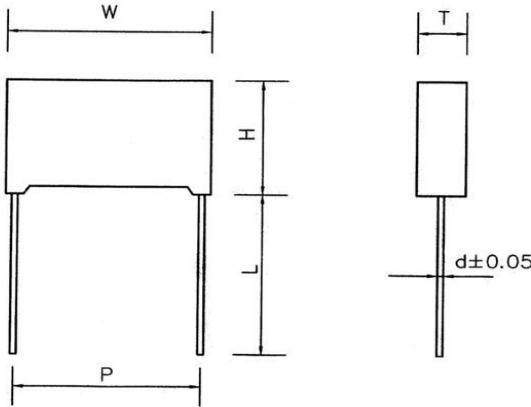
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#### 4. Specification

|                         |                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------|
| Reference Standard      | GB/T 10190 (IEC 60384-16)                                                                                     |
| Climatic Category       | 40/105/56                                                                                                     |
| Rated Temperature Range | -40°C~ 105°C (+85°C to +105°C decreasing factor 1.25% per °C for Rated Voltage)                               |
| Rated Voltage           | 400VDC、630VDC、1000VDC、1600VDC                                                                                 |
| Capacitance Range       | 0.001 ~ 1.5μF                                                                                                 |
| Capacitance Tolerance   | ±2%(G)、±3%(H)、±5%(J)、±10%(K)                                                                                  |
| Voltage Proof           | Terminal to Terminal:(at20±5°C)<br>1.6U <sub>R</sub> (5s) (cut off current 10mA)                              |
| Dissipation Factor      | 0.1%(Max.) at 1KHz,20°C                                                                                       |
| Insulation Resistance   | Terminal to Terminal: (at20°C± 5°C), at 100VDC x 1minute<br>≥ 50000MΩ for C≤0.33μF ,<br>≥ 10000S for C>0.33μF |

#### 5. Dimensions & Specification



|                                            |                                                                             |               |
|--------------------------------------------|-----------------------------------------------------------------------------|---------------|
| Aillen Electronic<br>Technology<br>Limited | Double sided Metallized<br>Polypropylene Film Capacitor<br>MP3S Series(Box) | <b>Aillen</b> |
|--------------------------------------------|-----------------------------------------------------------------------------|---------------|

| P/N                 | Rated<br>voltage | Cap<br>( $\mu$ F) | Size (mm)   |             |             |           |                        |
|---------------------|------------------|-------------------|-------------|-------------|-------------|-----------|------------------------|
|                     |                  |                   | W $\pm$ 0.5 | H $\pm$ 0.5 | T $\pm$ 0.5 | P $\pm$ 1 | $\Phi$ d<br>$\pm$ 0.08 |
| CMP3S224J2EDB1515D3 | 250VDC           | 0.22              | 18.0        | 13.5        | 7.5         | 15.0      | 0.80                   |
| CMP3S394J2EDB1515D5 | 250VDC           | 0.39              | 18.0        | 16.0        | 10.0        | 15.0      | 0.80                   |
| CMP3S124J2GDB1515D3 | 400VDC           | 0.12              | 18.0        | 13.5        | 7.5         | 15.0      | 0.80                   |
| CMP3S103J2JDB1515D1 | 630VDC           | 0.01              | 18.0        | 11.0        | 5.0         | 15.0      | 0.80                   |
| CMP3S153J2JDB1515D1 | 630VDC           | 0.015             | 18.0        | 11.0        | 5.0         | 15.0      | 0.80                   |
| CMP3S183J2JDB1515D1 | 630VDC           | 0.018             | 18.0        | 11.0        | 5.0         | 15.0      | 0.80                   |
| CMP3S223J2JDB1515D1 | 630VDC           | 0.022             | 18.0        | 11.0        | 5.0         | 15.0      | 0.80                   |
| CMP3S223J2JDB1515D2 | 630VDC           | 0.022             | 18.0        | 12.0        | 6.0         | 15.0      | 0.80                   |
| CMP3S333J2JDB1515D2 | 630VDC           | 0.033             | 18.0        | 12.0        | 6.0         | 15.0      | 0.80                   |
| CMP3S333K2JDB1515D2 | 630VDC           | 0.033             | 18.0        | 12.0        | 6.0         | 15.0      | 0.80                   |
| CMP3S473J2JDB1515D2 | 630VDC           | 0.047             | 18.0        | 12.0        | 6.0         | 15.0      | 0.80                   |
| CMP3S473G2JDB1515D2 | 630VDC           | 0.047             | 18.0        | 12.0        | 6.0         | 15.0      | 0.80                   |
| CMP3S104J2JDB1515D5 | 630VDC           | 0.100             | 18.0        | 16.0        | 10.0        | 15.0      | 0.80                   |
| CMP3S334J2JDB2215E6 | 630VDC           | 0.330             | 26.5        | 22.0        | 12.0        | 22.5      | 0.80                   |
| CMP3S224J2JDB2715F0 | 630VDC           | 0.220             | 31.0        | 18.0        | 9.0         | 27.5      | 0.80                   |
| CMP3S103J1KDB1515D1 | 1000VDC          | 0.01              | 18.0        | 11.0        | 5.0         | 15.0      | 0.80                   |
| CMP3S153J1KDB1515D1 | 1000VDC          | 0.015             | 18.0        | 11.0        | 5.0         | 15.0      | 0.80                   |
| CMP3S183J1KDB1515D3 | 1000VDC          | 0.018             | 18.0        | 13.5        | 7.5         | 15.0      | 0.80                   |
| CMP3S333J1KDB1515D3 | 1000VDC          | 0.033             | 18.0        | 13.5        | 7.5         | 15.0      | 0.80                   |
| CMP3S473J1KDB1515D5 | 1000VDC          | 0.047             | 18.0        | 16.0        | 10.0        | 15.0      | 0.80                   |
| CMP3S563J1KDB1515D4 | 1000VDC          | 0.056             | 18.0        | 14.5        | 8.5         | 15.0      | 0.80                   |
| CMP3S683K1KDB1515D5 | 1000VDC          | 0.068             | 18.0        | 16.0        | 10.0        | 15.0      | 0.80                   |
| CMP3S823J1KDB2215E4 | 1000VDC          | 0.082             | 26.5        | 19.0        | 10.0        | 22.5      | 0.80                   |
| CMP3S104K1KDB2215E4 | 1000VDC          | 0.100             | 26.5        | 19.0        | 10.0        | 22.5      | 0.80                   |
| CMP3S474K1KDB2715F8 | 1000VDC          | 0.470             | 32.0        | 33.0        | 18.0        | 27.5      | 0.80                   |
| CMP3S472J3CDB1515D1 | 1600VDC          | 0.0047            | 18.0        | 11.0        | 5.0         | 15.0      | 0.80                   |
| CMP3S333J3CDB1515D5 | 1600VDC          | 0.033             | 18.0        | 16.0        | 10.0        | 15.0      | 0.80                   |
| CMP3S104J3CDB2715F1 | 1600VDC          | 0.100             | 31.5        | 19.5        | 10.8        | 27.5      | 0.80                   |

|                       |      |                            |      |   |  |
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## 6. Reliability Testing

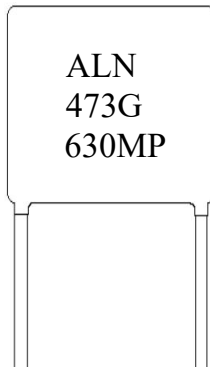
| No  | Test items                               | Performance                                                                                                           | Test Method                                                                                                                                                                                    |
|-----|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6-1 | Withstand voltage<br>(Between Terminals) | Shall be no abnormality                                                                                               | 160% Of Rated Voltage, 5sec.                                                                                                                                                                   |
|     | Between terminal and<br>Enclosure        | Shall be no abnormality                                                                                               | UR×160 %, 1-5sec.                                                                                                                                                                              |
| 6-2 | Capacitance                              | Within the tolerance specified                                                                                        | 1KHz, 1Vrms Max. at 25°C                                                                                                                                                                       |
| 6-3 | Tense Strength of<br>Terminal            | No wire breakage and No<br>Damage of Capacitor<br>Capacitance Change : ≤ ±5%                                          | 1. Load Force : 1.0 Kg<br>2. Holding Time : 10 ± 1sec                                                                                                                                          |
| 6-4 | Bending Strength of<br>Terminal          | No wire breakage and No<br>Damage of Capacitor                                                                        | 1. Load Force : 0.5 Kg<br>2. Bending Time : 4 x 90° in 5sec                                                                                                                                    |
| 6-5 | Solder-ability                           | 1. Appearance : No Visible<br>Damage<br>2. Covering an area of > solder<br>95%<br>3. Capacitance Change : ≤<br>±5%    | Soldering preheating<br>1.Preheating temperature<br>of T < 120 °C<br>2.Preheating time capacitor t< 5 min<br>Single wave soldering<br>1.Solder temperature: 235±5°C<br>2.Solder time: 2±0.5sec |
| 6-6 | Heat Shock test                          | Appearance : No Visible<br>Damage<br>Withstand Voltage : Normal<br>Capacitance Change :<br>≤ ±5% of the initial value | The terminal of capacitor shall be<br>immersed in the melting solder.<br>a. Solder temperature: 270±5°C<br>b. Solder time: 3±0.5sec<br>c. Test Voltage: 100% of The Rate<br>Voltage For 1min.  |
| 6-7 | Cold Resistance                          | Appearance :<br>No Visible Damage<br>Capacitance Change :<br>≤ ±5% of the initial value                               | a. Test Temperature: -40°C<br>b. Test Times: 2Hrs                                                                                                                                              |
| 6-8 | Dry Heat Resistance                      | Appearance :<br>No Visible Damage<br>Withstand Voltage : Normal<br>Capacitance Change :<br>≤ ±5% of the initial value | a. Test Temperature: 85°C ± 2°C<br>b. Test Times: 2Hrs                                                                                                                                         |

|                                            |                                                                             |               |
|--------------------------------------------|-----------------------------------------------------------------------------|---------------|
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|--------------------------------------------|-----------------------------------------------------------------------------|---------------|

| No   | Test items                | Performance                                                                                                                                                                                                                    | Test Method                                                                                                                                                                          |
|------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6-9  | Humidity Resistance       | Appearance : No Visible<br>Damage<br>Withstand Voltage : Normal<br>Capacitance Change :<br>$\leq \pm 10\%$ of the initial value<br>Insulation Resistance:<br>$\geq 50\%$ of the rated value<br>$DF ( \tan \delta ) \leq 0.1\%$ | a. Test Temperature:<br>$40^{\circ}\text{C} \pm 2^{\circ}\text{C}$<br>b. Relative Humidity:<br>90 ~ 95%<br>c. Test Times: 500 HRS                                                    |
| 6-10 | Charge & Discharge        | Appearance : No Visible<br>Damage<br>Capacitance Change :<br>$\pm 10\%$ of the initial value<br>Insulation Resistance:<br>$\geq 50\%$ of the rated value<br>$DF ( \tan \delta ) \leq 0.1\%$                                    | a. Test Voltage :<br>Rated Voltage Charge for 2sec.<br>Discharge for 2 sec.<br>Repeated for $1000 \pm 100$ cycles<br>b. Test Temperature: $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ |
| 6-11 | Load Life Test            | Appearance : No Visible<br>Damage<br>Capacitance Change :<br>$\pm 10\%$ of the initial value<br>Insulation Resistance:<br>$\geq 50\%$ of the rated value<br>$DF ( \tan \delta ) \leq 0.1\%$                                    | a. Test Temperature: $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$<br>b. Test Times: $1000 \pm 24$ Hrs<br>c. Test Voltage:<br>125% of The Rated Voltage                                 |
| 6-12 | Temperature Cycle<br>Test | Appearance : No Visible<br>Damage<br>Capacitance Change :<br>$\pm 5\%$ of the initial value<br>Insulation Resistance:<br>$\geq 50\%$ of the rated value<br>$DF ( \tan \delta ) \leq 0.1\%$                                     | $-40 \pm 3^{\circ}\text{C}$ for 30 minutes to $85 \pm 2^{\circ}\text{C}$ for<br>30 minutes, cycled five times in<br>sequence                                                         |

|                       |      |                            |      |   |
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## 7. Marking



|     |                               |
|-----|-------------------------------|
| ALN | Aillen                        |
| 473 | CAPACITANCE                   |
| G   | CAPACITANCE TOLERANCE         |
| 630 | RATED VOLTAGE                 |
| MP  | METALLIZED POLYPROPYLENE FILM |

## 8. Storage conditions and duration

Packaged capacitors should be kept in clean, ventilated, dry coffers, not near the heat source, not subject to direct sunlight, is strictly prohibited and chemical reagents, acid and harmful gas storage together.

Capacitor at a temperature within the range 20 ~ 25 °C, humidity less than 50% of the state of storage for one year.

## 9. Packing for tinned-wire capacitors

### 9-1 Outline Drawing

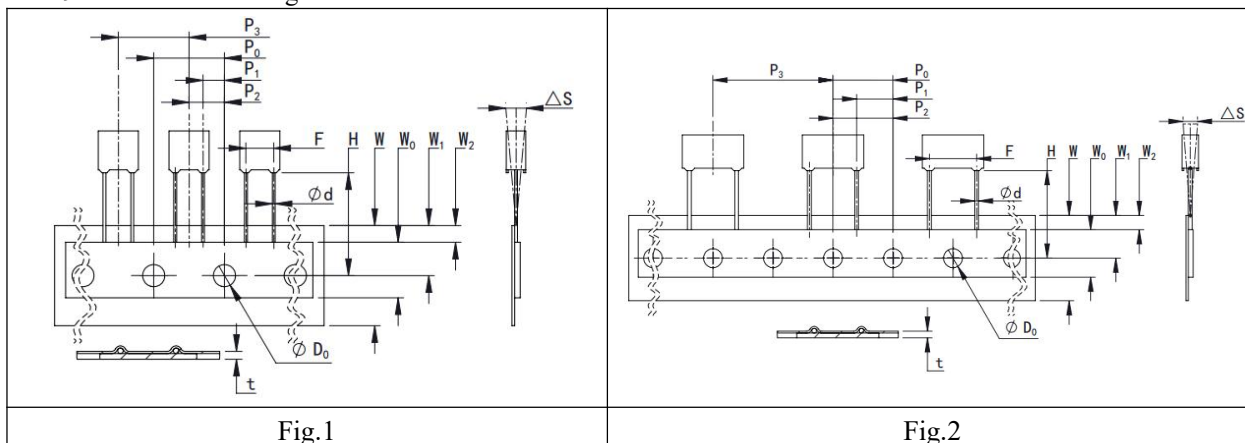


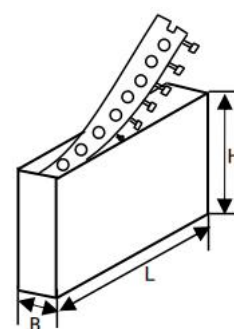
Fig.1

Fig.2

### 9-2 Taping & Box Dimensions(mm)

| Mark | Taping Dimensions(mm) |       |        |        |           |
|------|-----------------------|-------|--------|--------|-----------|
|      | P=5.0                 | P=7.5 | P=10.0 | P=15.0 | Tolerance |
| Type | Fig.1                 | Fig.1 | Fig. 2 | Fig. 2 | /         |
| P3   | 12.7                  | 12.7  | 25.4   | 25.4   | ±1.0      |
| P0   | 12.7                  | 12.7  | 12.7   | 12.7   | ±0.3      |
| P1   | 3.85                  | 3.75  | 7.7    | 5.2    | ±0.7      |
| P2   | 6.35                  | 6.35  | 12.7   | 12.7   | ±1.3      |
| F    | 5                     | 7.5   | 10     | 15     | +0.6/-0.2 |
| ΔS   | 0                     | 0     | 0      | 0      | ±2.0      |
| H    | 18.5                  | 18.5  | 18.5   | 18.5   | ±0.8      |
| H0   | 16                    | 16    | 16     | 16     | ±0.5      |
| W    | 18                    | 18    | 18     | 18     | +1/-0.5   |
| W0   | 8min                  | 10min | 10min  | 10min  | /         |
| W1   | 9                     | 9     | 9      | 9      | ±0.5      |
| W2   | 3max                  | 3max  | 3max   | 3max   | /         |
| D0   | 4                     | 4     | 4      | 4      | ±0.2      |
| t    | 0.5                   | 0.5   | 0.5    | 0.5    | ±0.2      |

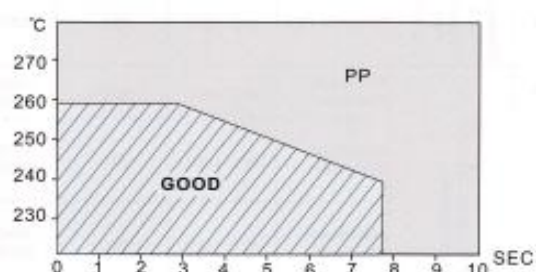
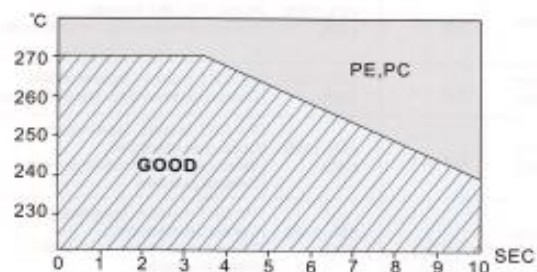
Note: If you need other taping, please contact us.



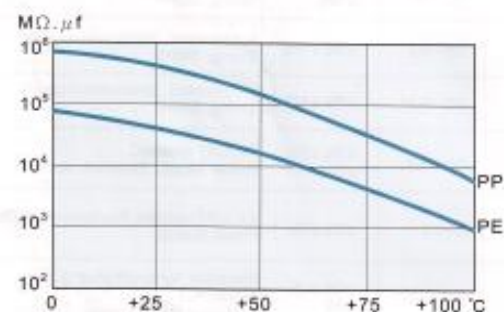
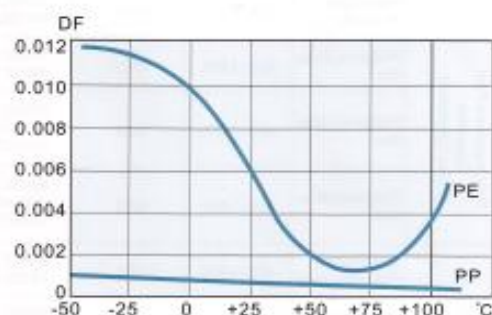
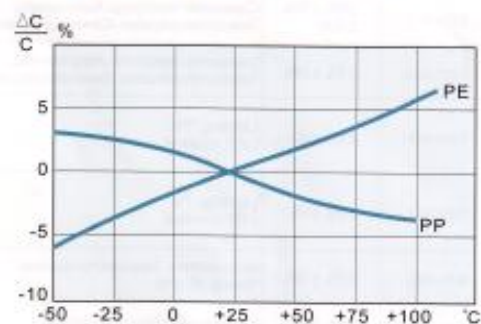
$L=335\pm 3\text{mm}$   
 $B=55/50\pm 3\text{mm}$   
 $H=265/350\pm 3\text{mm}$

## 10. Typical graphs

*Soldering Temperature VS Time*



*Temperature Characteristics*



PP: 聚丙烯薄膜 (Polypropylene Film)

PE: 聚酯薄膜 (Polyester Film)

*Frequency Characteristics*

