

## 1. 適用範圍 / SCOPE

此份規格書涵蓋 HTE0805/1206/1508/2010/2512/3008/3015/3618/3921-series 金屬陶瓷電流感測電阻元件相關規格。

This specification covers HTE0805/1206/1508/2010/2512/3008/3015/3618/3921-series, which are Metal Foil Current Sensing Resistor.

## 2. 產品型號/TYPE NUMBER

| HTE | 0805/1206/1508/2010/2512<br>/3008/3015/3618/3921 | M   | ×W× | R××× | *   | *   | *   |
|-----|--------------------------------------------------|-----|-----|------|-----|-----|-----|
|     | (1)                                              | (2) | (3) | (4)  | (5) | (6) | (7) |

- (1) 產品系列號 / SERIES NUMBER : Ex.HTE0805 = 長電極/ long electrode ; 兩端子 / two terminal ; 有側導 / side electrode ; 尺寸 / size “0.08×0.05”
- (2) 產品材質 / Material : M = 錳銅合金 / MnCu alloy
- (3) 產品瓦特數 / Power Rating : Ex. 1W0=1.0 Watt
- (4) 產品阻值 / Nominal Resistance Value : Ex. 5mΩ → R005 ; 10mΩ → R010
- (5) 元件電阻偏差值 / Resistance Tolerance : Ex. D=±0.5% ; F=±1%
- (6) 產品碼/Product code:Ex. G→Dimension size ; blank→Original design
- (7) 產品碼/Product code:Ex. S→Special design ; blank→Original design

## 3. 產品尺寸 / PRODUCT DIMENSIONS

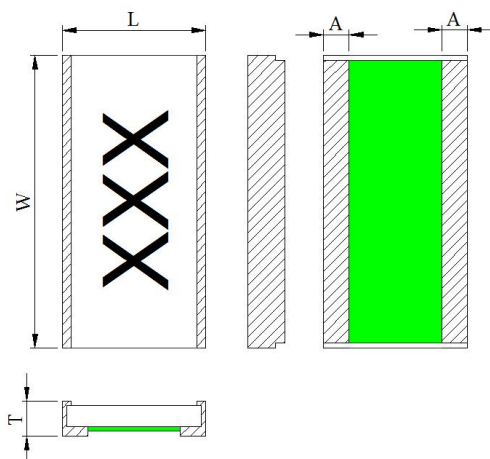


圖 1 / Fig.1

Unit(mm)

| Part Number                     | W         | L         | T         | A         |
|---------------------------------|-----------|-----------|-----------|-----------|
| HTE0805M1W0-series<br>R001~R100 | 2.10±0.20 | 1.35±0.20 | 0.65±0.20 | 0.43±0.20 |

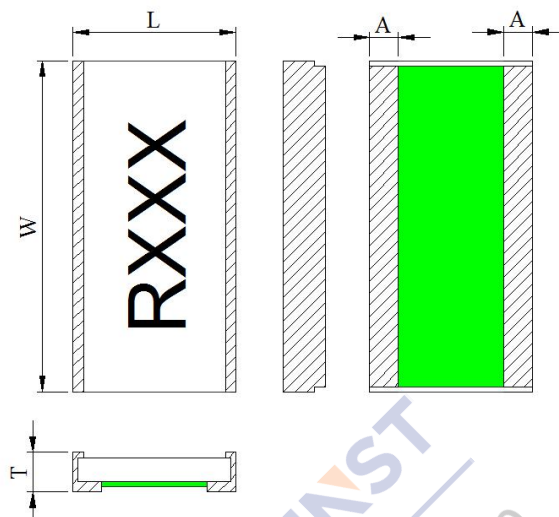


圖 2 / Fig.2

Unit(mm)

| Part Number                         | W         | L         | T         | A         |
|-------------------------------------|-----------|-----------|-----------|-----------|
| HTE1206M1W5-series<br>R001          | 3.30±0.20 | 1.70±0.20 | 0.65±0.20 | 0.55±0.30 |
| HTE1206M1W5-series<br>R002*S~R004*S | 3.30±0.20 | 1.70±0.20 | 0.65±0.20 | 0.40±0.20 |
| HTE1206M1W5-series<br>R005~R100     | 3.30±0.20 | 1.70±0.20 | 0.65±0.20 | 0.40±0.20 |
| HTE1206M2W0-series<br>R005~R100     | 3.30±0.20 | 1.70±0.20 | 0.65±0.20 | 0.40±0.20 |

| Part Number                         | W         | L         | T         | A         |
|-------------------------------------|-----------|-----------|-----------|-----------|
| HTE1508M2W0-series<br>R001*GS       | 3.80±0.20 | 2.20±0.20 | 0.65±0.20 | 0.61±0.20 |
| HTE1508M2W0-series<br>R002*G~R100*G | 3.80±0.20 | 2.20±0.20 | 0.65±0.20 | 0.61±0.20 |

| Part Number                     | W         | L         | T         | A         |
|---------------------------------|-----------|-----------|-----------|-----------|
| HTE2010M2W0-series<br>0M50      | 5.10±0.20 | 2.60±0.20 | 0.65±0.20 | 0.95±0.20 |
| HTE2010M2W0-series<br>R001*S    | 5.10±0.20 | 2.60±0.20 | 0.65±0.20 | 0.65±0.20 |
| HTE2010M2W0-series<br>R002~R100 | 5.10±0.20 | 2.60±0.20 | 0.65±0.20 | 0.65±0.20 |

| Part Number                     | W         | L         | T         | A         |
|---------------------------------|-----------|-----------|-----------|-----------|
| HTE2512M3W0-series<br>R001*S    | 6.40±0.30 | 3.20±0.30 | 0.65±0.20 | 0.60±0.20 |
| HTE2512M3W0-series<br>R002~R100 | 6.40±0.30 | 3.20±0.30 | 0.65±0.20 | 0.60±0.20 |

| Part Number                     | W         | L         | T         | A         |
|---------------------------------|-----------|-----------|-----------|-----------|
| HTE3008M3W0-series<br>R001*S    | 7.60±0.30 | 2.60±0.30 | 0.65±0.20 | 0.68±0.30 |
| HTE3008M3W0-series<br>R002~R100 | 7.60±0.30 | 2.60±0.30 | 0.65±0.20 | 0.68±0.30 |

| Part Number                     | W         | L         | T         | A         |
|---------------------------------|-----------|-----------|-----------|-----------|
| HTE3015M4W0-series<br>R001*S    | 7.70±0.30 | 3.90±0.30 | 0.65±0.20 | 0.70±0.30 |
| HTE3015M4W0-series<br>R002~R100 | 7.70±0.30 | 3.90±0.30 | 0.65±0.20 | 0.70±0.30 |

| Part Number                     | W         | L         | T         | A         |
|---------------------------------|-----------|-----------|-----------|-----------|
| HTE3618M4W0-series<br>R001*S    | 9.10±0.30 | 4.60±0.30 | 0.65±0.20 | 0.80±0.30 |
| HTE3618M4W0-series<br>R002~R100 | 9.10±0.30 | 4.60±0.30 | 0.65±0.20 | 0.80±0.30 |

| Part Number                     | W          | L         | T         | A         |
|---------------------------------|------------|-----------|-----------|-----------|
| HTE3921M5W0-series<br>R001*S    | 11.10±0.40 | 5.10±0.30 | 0.65±0.20 | 0.90±0.30 |
| HTE3921M5W0-series<br>R002~R100 | 11.10±0.40 | 5.10±0.30 | 0.65±0.20 | 0.90±0.30 |

#### 4. 產品結構及使用材料說明 (參考圖 3) / STRUCTURE & MATERIAL (Ref to Fig.3 )

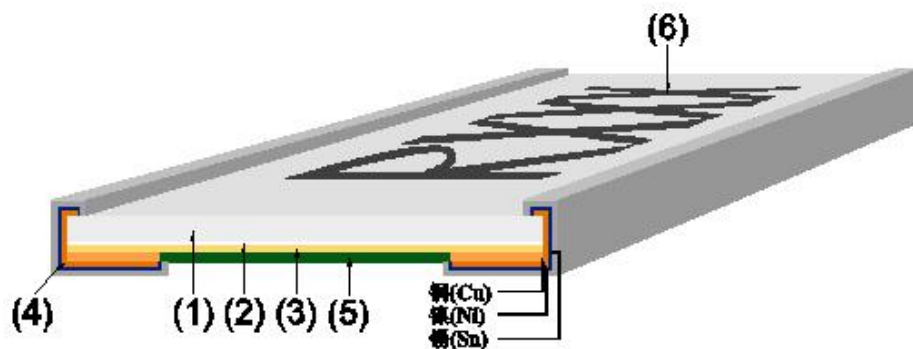


圖 3 / Fig.3

##### 4.1 基板 / Substrate(1) : 氧化鋁陶瓷基板 / Alumina Ceramic

- 4.2 粘著層 / Adhesion layer(2) : 環氧樹脂 / Epoxy
- 4.3 電阻本體 / Resistive element(3) : 銅合金 / Cu – alloy
- 4.4 端電極 / Terminal electrode(4) : 錫、鎳、銅 / Sn、Ni、Cu
- 4.5 保護防焊層 / Protective coating(5) : 防火級環氧樹脂,符合 UL- 94-V0 要求(綠色) /  
Flame-retardant epoxy, meets UL- 94-V0 requirements(green)
- 4.6 文印防焊層 / Marking coating(6) : 防火級環氧樹脂,符合 UL- 94-V0 要求(黑色) /  
Flame-retardant epoxy, meets UL- 94-V0 requirements (black)

## 5. 電氣特性 / ELECTRICAL CHARACTERISTICS

| Part Number                     | Resistance Value<br>(mΩ) | Power Rating<br>(Watt) | Resistance Tolerance<br>(%) | TCR<br>(ppm/°C) |
|---------------------------------|--------------------------|------------------------|-----------------------------|-----------------|
| HTE0805M1W0-series<br>R001~R100 | 1~9                      | 1.0                    | ±1%(F)                      | ±100            |
|                                 | 10~100                   | 1.0                    | ±0.5%(D) / ±1%(F)           | ±50             |

| Part Number                     | Resistance Value<br>(mΩ) | Power Rating<br>(Watt) | Resistance Tolerance<br>(%) | TCR<br>(ppm/°C) |
|---------------------------------|--------------------------|------------------------|-----------------------------|-----------------|
| HTE1206M1W5-series<br>R001~R100 | 1~9                      | 1.5                    | ±1%(F)                      | ±100            |
|                                 | 10                       | 2                      | ±0.5%(D) / ±1%(F)           | ±50             |
|                                 | 10~100                   | 1.5                    | ±0.5%(D) / ±1%(F)           | ±50             |

| Part Number                         | Resistance Value<br>(mΩ) | Power Rating<br>(Watt) | Resistance Tolerance<br>(%) | TCR<br>(ppm/°C) |
|-------------------------------------|--------------------------|------------------------|-----------------------------|-----------------|
| HTE1508M2W0-series<br>R001*G~R100*G | 1~9                      | 2.0                    | ±1%(F)                      | ±100            |
|                                     | 10~100                   | 2.0                    | ±0.5%(D) / ±1%(F)           | ±50             |

| Part Number                     | Resistance Value<br>(mΩ) | Power Rating<br>(Watt) | Resistance Tolerance<br>(%) | TCR<br>(ppm/°C) |
|---------------------------------|--------------------------|------------------------|-----------------------------|-----------------|
| HTE2010M2W0-series<br>0M50~R100 | 0.5                      | 2.0                    | ±3%(H)                      | ±150            |
|                                 | 1~9                      | 2.0                    | ±1%(F)                      | ±100            |
|                                 | 10~100                   | 2.0                    | ±0.5%(D) / ±1%(F)           | ±50             |

| Part Number | Resistance Value<br>(mΩ) | Power Rating<br>(Watt) | Resistance Tolerance<br>(%) | TCR<br>(ppm/°C) |
|-------------|--------------------------|------------------------|-----------------------------|-----------------|
|-------------|--------------------------|------------------------|-----------------------------|-----------------|

|                                 |        |     |                   |      |
|---------------------------------|--------|-----|-------------------|------|
| HTE2512M3W0-series<br>R001~R100 | 1~9    | 3.0 | ±1%(F)            | ±100 |
|                                 | 10~100 | 3.0 | ±0.5%(D) / ±1%(F) | ±50  |

| Part Number                     | Resistance Value<br>(mΩ) | Power Rating<br>(Watt) | Resistance Tolerance<br>(%) | TCR<br>(ppm/°C) |
|---------------------------------|--------------------------|------------------------|-----------------------------|-----------------|
| HTE3008M3W0-series<br>R001~R100 | 1~9                      | 3.0                    | ±1%(F)                      | ±100            |
|                                 | 10~100                   | 3.0                    | ±0.5%(D) / ±1%(F)           | ±50             |

| Part Number                     | Resistance Value<br>(mΩ) | Power Rating<br>(Watt) | Resistance Tolerance<br>(%) | TCR<br>(ppm/°C) |
|---------------------------------|--------------------------|------------------------|-----------------------------|-----------------|
| HTE3015M4W0-series<br>R001~R100 | 1~9                      | 4.0                    | ±1%(F)                      | ±100            |
|                                 | 10~100                   | 4.0                    | ±0.5%(D) / ±1%(F)           | ±50             |

| Part Number                     | Resistance Value<br>(mΩ) | Power Rating<br>(Watt) | Resistance Tolerance<br>(%) | TCR<br>(ppm/°C) |
|---------------------------------|--------------------------|------------------------|-----------------------------|-----------------|
| HTE3618M4W0-series<br>R001~R100 | 1~9                      | 4.0                    | ±1%(F)                      | ±100            |
|                                 | 10~100                   | 4.0                    | ±0.5%(D) / ±1%(F)           | ±50             |

| Part Number                     | Resistance Value<br>(mΩ) | Power Rating<br>(Watt) | Resistance Tolerance<br>(%) | TCR<br>(ppm/°C) |
|---------------------------------|--------------------------|------------------------|-----------------------------|-----------------|
| HTE3921M5W0-series<br>R001~R100 | 1~9                      | 5.0                    | ±1%(F)                      | ±100            |
|                                 | 10~100                   | 5.0                    | ±0.5%(D) / ±1%(F)           | ±50             |

規格外阻值可依客戶需求提供 / We can provide other resistance value per request

#### 6. 產品特性及信賴性測試規範 / PRODUCT CHARACTERISTICS AND RELIABILITY TEST STANDARD

| 測試方法<br>Parameter                | 條件<br>Conditions                                                      | 允收標準<br>Requirements             |
|----------------------------------|-----------------------------------------------------------------------|----------------------------------|
| 瞬間過載測試 /<br>Short Time Over Load | P= 2.5Pr ; T=25±2°C , t = 5sec.                                       | ±(1.0%+0.5mΩ)<br>IEC60115-1 4.13 |
| 高溫測試 /<br>High Temp. Exposure    | T = +155±2°C ; t = 1000h                                              | ±(1.0%+0.5mΩ)<br>IEC60115-1 4.25 |
| 低溫測試 /<br>Low Temp. Storage      | T = -55±2°C ; t = 1000h                                               | ±(1.0%+0.5mΩ)<br>IEC60115-1 4.25 |
| 濕度負載壽命測試 /<br>Moisture Load Life | Vtest = Vmax ; T=60±2°C ; RH=95% ;<br>t= 90min ON , 30min OFF , 1000h | ±(2.0%+0.5mΩ)<br>IEC60115-1 4.25 |

|                                       |                                                                                                                                         |                                                        |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| (60℃、95%RH)                           |                                                                                                                                         |                                                        |
| 冷熱衝擊測試 /<br>Thermal Shock             | [-55℃ 30min. → R.T. 3min. → +155℃ 30min.<br>→ R.T. 3min ],<br>100 個連續循環 / 100Cycles                                                     | ±(1.0%+0.5mΩ)<br>IEC60115-1 4.19                       |
| 在 70℃ 下負載壽命測試 /<br>Load Life at 70℃   | Vtest = Vmax ; T=70±2℃ ;t= 90min ON ,<br>30min OFF,1000h                                                                                | ±(2.0%+0.5mΩ)<br>IEC60115-1 4.25                       |
| 可焊性測試 /<br>Solderability              | 浸入錫爐 / Dip into solder at T = 245±5℃ ,<br>t = 3±1sec.                                                                                   | 錫 涵 蓋 面 積 /The<br>covered area >95%<br>IEC60115-1 4.17 |
| 抗焊熱性測試 /<br>Resistance to Solder Heat | 經熱風式迴焊爐 / Through Reflow<br>Parts are subjected to 3 reflow cycles.                                                                     | ±(1.0%+0.5mΩ)<br>IEC60115-1 4.18                       |
| 機械衝擊測試 /<br>Mechanical Shock          | 加速度 a =100G , 振幅時間 t =6ms<br>a =100G , t =6ms                                                                                           | ±(1.0%+0.5mΩ)<br>IEC60115-1 4.21                       |
| 基板彎曲測試 /<br>Substrate Bending         | 兩支撐點間距 / Span between fulcrums<br>: 90mm ; 振幅 / Bend Width: 2mm ;<br>測試板/Test board: 玻璃纖維板/ Glass-Epoxy<br>Board ;厚度 / Thickness =1.6mm | ±(1.0%+0.5mΩ)<br>IEC60115-1 4.33                       |

## 7. 環境特性 / ENVIRONMENTAL CHARACTERISTIC

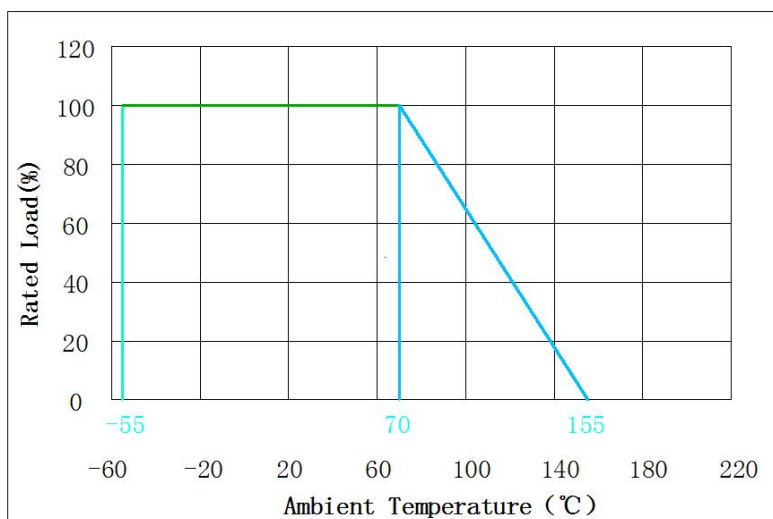
### 7-1 操作溫度範圍: -55℃～155℃ / Operating Temperature:-55℃～155℃

額定功率溫度衰變曲線 / Typical Thermal Derating Curve

額定功率乃指於 70℃ 以內可連續滿額功率使用的術語。

下圖為當操作溫度高於 70℃ 時的可使用功率衰減曲線。

Power rating is based on continuous full load operation at rated ambient temperature of 70℃. For resistors operated at ambient temp. in excess of 70℃, the max. load shall be derated in accordance with the following curve.



### 7-2 存儲條件 / STORAGE CONDITIONS

在溫度+10℃～40℃、相對濕度≤75%的密閉條件下可存放2年。 /

Under airtight in temperature+10℃~40℃、relative humidity  $\leq 75\%$  can store 2 years.

在溫度+10℃~60℃、相對濕度為95%的非露天下最多可存放30天。 /

Without dew in temperature+10℃~60℃、relative humidity be 95% maximum value for 30days.

## 8. 焊錫墊尺寸及焊接條件 / SOLDER PAD SIZE AND WELDING CONDITIONS

8-1 建議如下圖焊接方式焊接，並滿足所要求的尺寸。 / Propose that the following picture installation way is installed, and satisfied the required size.

| Part Number                     | P      | W      | D      | Loading |
|---------------------------------|--------|--------|--------|---------|
| HTE0805M1W0-series<br>R001~R100 | 0.60mm | 2.30mm | 1.10mm | 1.0w    |

| Part Number                             | P      | W      | D      | Loading |
|-----------------------------------------|--------|--------|--------|---------|
| HTE1206M1W5-series<br>R001              | 0.50mm | 3.68mm | 1.35mm | 1.5w    |
| HTE1206M1W5/2W0-series<br>R002*S~R004*S | 0.60mm | 3.68mm | 1.30mm | 1.5w    |
| HTE1206M1W5-series<br>R005~R100         | 0.60mm | 3.68mm | 1.30mm | 1.5w    |

| Part Number                         | P      | W      | D      | Loading |
|-------------------------------------|--------|--------|--------|---------|
| HTE1508M2W0-series<br>R001*GS       | 0.70mm | 4.26mm | 1.45mm | 2.0w    |
| HTE1508M2W0-series<br>R002*G~R100*G | 0.70mm | 4.26mm | 1.45mm | 2.0w    |

| Part Number                     | P      | W      | D      | Loading |
|---------------------------------|--------|--------|--------|---------|
| HTE2010M2W0-series<br>0M50      | 0.55mm | 5.75mm | 2.48mm | 2.0w    |
| HTE2010M2W0-series<br>R001*S    | 1.00mm | 5.75mm | 2.25mm | 2.0w    |
| HTE2010M2W0-series<br>R002~R100 | 1.00mm | 5.75mm | 2.25mm | 2.0w    |

| Part Number                     | P      | W      | D      | Loading |
|---------------------------------|--------|--------|--------|---------|
| HTE2512M3W0-series<br>R001*S    | 1.40mm | 7.25mm | 2.35mm | 3.0w    |
| HTE2512M3W0-series<br>R002~R100 | 1.40mm | 7.25mm | 2.35mm | 3.0w    |

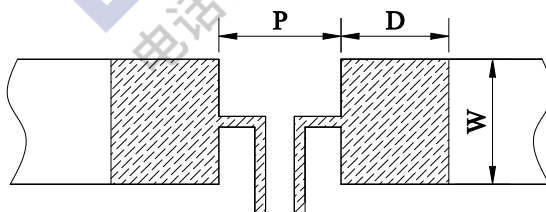
| Part Number                     | P      | W      | D      | Loading |
|---------------------------------|--------|--------|--------|---------|
| HTE3008M3W0-series<br>R001*S    | 0.95mm | 8.63mm | 2.28mm | 3.0w    |
| HTE3008M3W0-series<br>R002~R100 | 0.95mm | 8.63mm | 2.28mm | 3.0w    |

| Part Number                     | P      | W      | D      | Loading |
|---------------------------------|--------|--------|--------|---------|
| HTE3015M4W0-series<br>R001*S    | 1.70mm | 8.74mm | 2.55mm | 4.0w    |
| HTE3015M4W0-series<br>R002~R100 | 1.70mm | 8.74mm | 2.55mm | 4.0w    |

| Part Number                     | P      | W       | D      | Loading |
|---------------------------------|--------|---------|--------|---------|
| HTE3618M4W0-series<br>R001*S    | 2.10mm | 10.35mm | 2.70mm | 4.0w    |
| HTE3618M4W0-series<br>R002~R100 | 2.10mm | 10.35mm | 2.70mm | 4.0w    |

| Part Number                     | P      | W       | D      | Loading |
|---------------------------------|--------|---------|--------|---------|
| HTE3921M5W0-series<br>R001*S    | 2.40mm | 12.65mm | 2.80mm | 5.0w    |
| HTE3921M5W0-series<br>R002~R100 | 2.40mm | 12.65mm | 2.80mm | 5.0w    |

loading : 適用於本公司建議焊墊設計並使用於限定穩定電流下 /  
 suit for specific pad layout and specific steady current



## 8-2 建議客戶焊接參數 / Recommended Customer Soldering Parameters

### 8-2-1 回流焊溫度曲線 / Solder reflow Temperature condition (圖 4 / Fig.4)

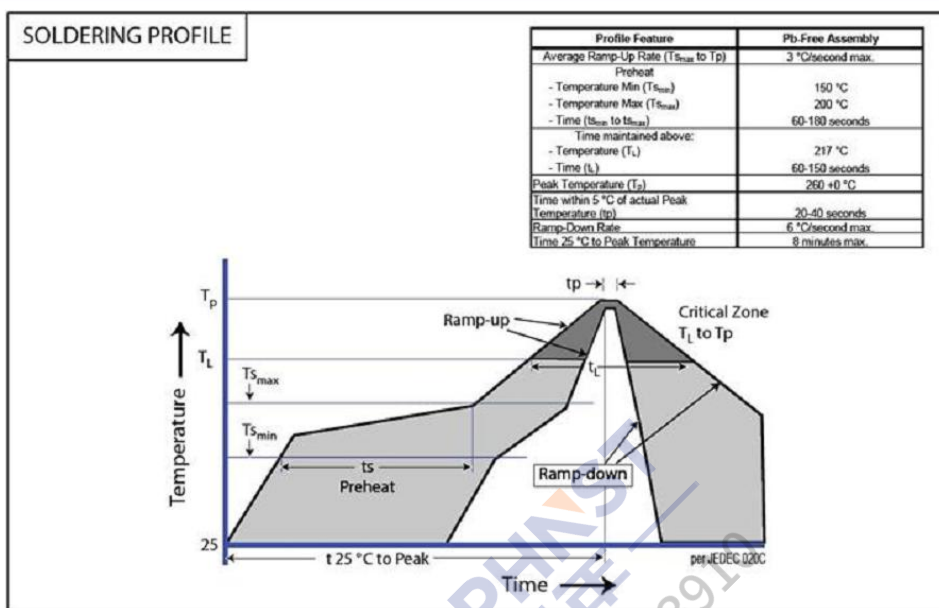


圖4 / Fig.4

8-2-2 允許烙鐵焊接條件(熱風設備) / Rework temperature (hot air equipment) : 350°C, 3~5seconds

8-2-3 焊接方法建議 / Recommended reflow methods

焊接熱源方式可用紅外線, 熱蒸氣, 熱風. / IR, vapor phase oven, hot air oven

如果焊錫溫度超過允許最高溫度, 則產品本身會有功能損壞的疑慮. / If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

## 9. 批量生產後出貨測試項目 / Lot ACCEPTANCE TEST REQUIREMENTS

每一批生產均須作入庫檢驗, 每一批生產單量不可超過500Kpcs. /

Qualification shall consist of passing a program of following tests. Parts shall be pulled from each lot and maximum lot quantity shall be within 500Kpcs.

### 9-1 外觀 / Visual

方法 / Procedure : 利用放大鏡進行檢查 / Visual

標準 / Acceptance Criteria : 不能有髒汙、不潔、文印錯誤、破損等 / No parts are outstandingly stained

### 9-2 尺寸 / Dimensions

方法 / Procedure : 使用合適且經校正的尺規 / As appropriate, calipers, micrometers, optical comparator, or approved gages

標準 / Acceptance Criteria : 尺寸均在規定標準範圍內 / No parts outside specific dimensions

### 9-3 單體元件電阻( $R_o$ ) / Resistance ( $R_o$ )

方法 / Procedure : 在 25℃ 下利用四線量測技術量測之 / Resistance shall be measured with 25℃ in the 4-wire resistance test

標準 / Acceptance Criteria : 電阻值均在規定標準範圍內 / The resistance of the test device shall be within the limits specified

#### 9-4 電阻溫度係數 / TCR

方法 / Procedure : 利用四線法量測出元件分別在 25℃ 及 125℃ 下的電阻值, 並將其帶入下面公式中即可得出 TCR 值 / Getting the sampling device resistance values measured in 25℃ and 125℃ and put them in to the following equation to calculate the TCR

標準 / Acceptance Criteria : 溫度係數值均在規定標準範圍內 / All parts must within the specific  

$$TCR = (R_b - R_a) / R_a \times 1 / (T_b - T_a) \times 10^6$$

#### 9-5 絕緣電阻 / Insulation resistance (Ri)

方法 / Procedure : 利用絕緣測試儀量測 / Resistance between protective layer and resistive shall be measured by high ohm meter

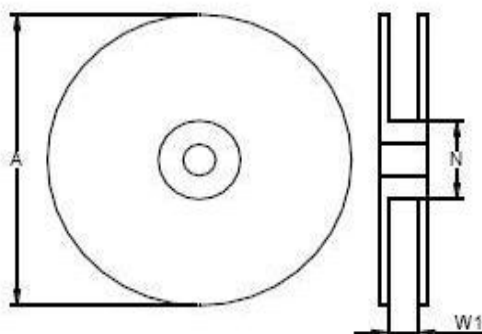
標準 / Acceptance Criteria : 防焊層與電阻本體絕緣電阻至少高於 100MΩ / The resistance of the test device shall over 100MΩ

### 10. 包裝訊息 / PACKAGING INFORMATION

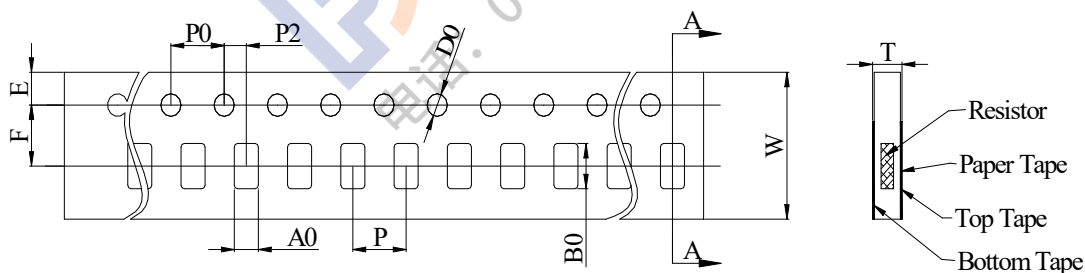
#### 10-1 包裝數量、重量 / QUANTITY & WEIGHT

| 型號 / Type Number       | 數量 / Quantity (pcs) | 重量 / Weight (g) |
|------------------------|---------------------|-----------------|
| HTE0805M1W0-series     | 5,000               | 150±30          |
| HTE1206M1W5/2W0-series | 5,000               | 160±40          |
| HTE1508M2W0-series(G)  | 4,000               | 180±40          |
| HTE2010M2W0-series     | 4,000               | 210±40          |
| HTE2512M3W0-series     | 4,000               | 270±50          |
| HTE3008M3W0-series     | 4,000               | 340±50          |
| HTE3015M4W0-series     | 2,000               | 360±50          |
| HTE3618M4W0-series     | 2,000               | 440±50          |
| HTE3921M5W0-series     | 2,000               | 510±60          |

#### 10-2 捲輪規格 / Reel & Tape specifications



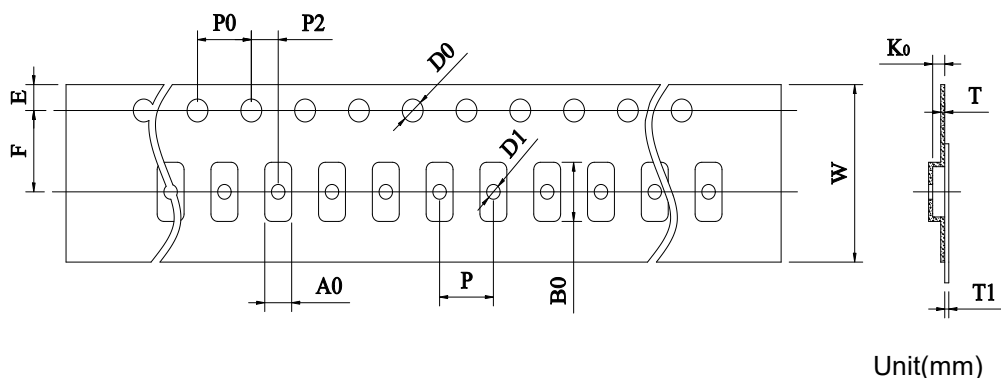
| 型號 / Type Number       | A±5 (mm) | N±2 (mm) | W1±1 (mm) |
|------------------------|----------|----------|-----------|
| HTE0805M1W0-series     | 178      | 60       | 9.0       |
| HTE1206M1W5/2W0-series | 178      | 60       | 9.0       |
| HTE1508M2W0-series(G)  | 178      | 60       | 13        |
| HTE2010M2W0-series     | 178      | 60       | 13        |
| HTE2512M3W0-series     | 178      | 60       | 13        |
| HTE3008M3W0-series     | 178      | 60       | 17        |
| HTE3015M4W0-series     | 178      | 60       | 17        |
| HTE3618M4W0-series     | 178      | 60       | 17        |
| HTE3921M5W0-series     | 178      | 60       | 24.5      |



Unit(mm)

| HTE0805M1W0-series |             |    |             |    |             |    |             |
|--------------------|-------------|----|-------------|----|-------------|----|-------------|
| W                  | 8.00 ± 0.30 | P0 | 4.00 ± 0.10 | P  | 4.00 ± 0.10 | P2 | 2.00 ± 0.10 |
| A0                 | 1.55 ± 0.10 | B0 | 2.30 ± 0.10 | D0 | 1.50 ± 0.10 | F  | 3.50 ± 0.10 |
| E                  | 1.75 ± 0.10 | T  | 0.87 ± 0.10 | /  | /           | /  | /           |

| HTE1206M1W5/2W0-series |             |    |             |    |             |    |             |
|------------------------|-------------|----|-------------|----|-------------|----|-------------|
| W                      | 8.00 ± 0.30 | P0 | 4.00 ± 0.10 | P  | 4.00 ± 0.10 | P2 | 2.00 ± 0.10 |
| A0                     | 2.05 ± 0.20 | B0 | 3.65 ± 0.20 | D0 | 1.50 ± 0.10 | F  | 3.50 ± 0.10 |
| E                      | 1.75 ± 0.10 | T  | 0.87 ± 0.10 | /  | /           | /  | /           |



| HTE1508M2W0-series(G) |              |    |             |    |             |    |             |
|-----------------------|--------------|----|-------------|----|-------------|----|-------------|
| W                     | 12.00 ± 0.40 | P0 | 4.00 ± 0.10 | P  | 4.00 ± 0.10 | P2 | 2.00 ± 0.10 |
| A0                    | 2.30 ± 0.20  | B0 | 4.10 ± 0.20 | D0 | 1.50 ± 0.10 | F  | 5.50 ± 0.10 |
| E                     | 1.75 ± 0.10  | T  | 0.25 ± 0.10 | T1 | Max. 0.1    | K0 | 0.75 ± 0.20 |

| HTE2010M2W0-series |              |    |             |    |             |    |             |
|--------------------|--------------|----|-------------|----|-------------|----|-------------|
| W                  | 12.00 ± 0.30 | P0 | 4.00 ± 0.10 | P  | 4.00 ± 0.10 | P2 | 2.00 ± 0.10 |
| A0                 | 2.85 ± 0.20  | B0 | 5.45 ± 0.20 | D0 | 1.50 ± 0.10 | F  | 5.50 ± 0.10 |
| E                  | 1.75 ± 0.10  | T  | 0.25 ± 0.10 | T1 | Max. 0.1    | K0 | 0.80 ± 0.20 |

| HTE2512M3W0-series |              |    |             |    |             |    |             |
|--------------------|--------------|----|-------------|----|-------------|----|-------------|
| W                  | 12.00 ± 0.30 | P0 | 4.00 ± 0.10 | P  | 4.00 ± 0.10 | P2 | 2.00 ± 0.10 |
| A0                 | 3.40 ± 0.20  | B0 | 6.75 ± 0.20 | D0 | 1.50 ± 0.10 | F  | 5.50 ± 0.10 |
| E                  | 1.75 ± 0.10  | T  | 0.25 ± 0.10 | T1 | Max. 0.1    | K0 | 1.00 ± 0.20 |

| HTE3008M3W0-series |              |    |             |    |             |    |             |
|--------------------|--------------|----|-------------|----|-------------|----|-------------|
| W                  | 16.00 ± 0.30 | P0 | 4.00 ± 0.10 | P  | 4.00 ± 0.10 | P2 | 2.00 ± 0.10 |
| A0                 | 2.80 ± 0.20  | B0 | 8.00 ± 0.20 | D0 | 1.50 ± 0.10 | F  | 7.50 ± 0.10 |
| E                  | 1.75 ± 0.10  | T  | 0.30 ± 0.10 | T1 | Max. 0.1    | K0 | 0.80 ± 0.20 |

| HTE3015M4W0-series |              |    |             |    |             |    |             |
|--------------------|--------------|----|-------------|----|-------------|----|-------------|
| W                  | 16.00 ± 0.30 | P0 | 4.00 ± 0.10 | P  | 8.00 ± 0.10 | P2 | 2.00 ± 0.10 |
| A0                 | 4.15 ± 0.20  | B0 | 7.95 ± 0.20 | D0 | 1.50 ± 0.10 | F  | 7.50 ± 0.10 |
| E                  | 1.75 ± 0.10  | T  | 0.30 ± 0.10 | T1 | Max. 0.1    | K0 | 0.90 ± 0.20 |

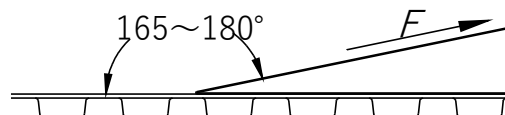
| HTE3618M4W0-series |              |    |             |    |             |    |             |
|--------------------|--------------|----|-------------|----|-------------|----|-------------|
| W                  | 16.00 ± 0.30 | P0 | 4.00 ± 0.10 | P  | 8.00 ± 0.10 | P2 | 2.00 ± 0.10 |
| A0                 | 4.85 ± 0.20  | B0 | 9.35 ± 0.20 | D0 | 1.50 ± 0.10 | F  | 7.50 ± 0.10 |
| E                  | 1.75 ± 0.10  | T  | 0.30 ± 0.10 | T1 | Max. 0.1    | K0 | 0.90 ± 0.20 |

| HTE3921M5W0-series |              |    |              |    |             |    |              |
|--------------------|--------------|----|--------------|----|-------------|----|--------------|
| W                  | 24.00 ± 0.30 | P0 | 4.00 ± 0.10  | P  | 8.00 ± 0.10 | P2 | 2.00 ± 0.10  |
| A0                 | 5.50 ± 0.20  | B0 | 11.50 ± 0.20 | D0 | 1.50 ± 0.10 | F  | 11.50 ± 0.10 |
| E                  | 1.75 ± 0.10  | T  | 0.30 ± 0.10  | T1 | Max. 0.1    | K0 | 0.90 ± 0.20  |

### 10-3 密封膠膜剝離強度要求 / Peeling Strength of Seal Tape

F = 剝離強度 : 0.1 – 1.0N ( 10 - 100gf )

F = Peeling Strength: 0.1 – 1.0N (10 - 100gf)



## 11. 其他 / OTHERS

- 11-1 如果在使用中有超出本規格書的要求，必須經由雙方協商確認。 / In the event that an impropriety is found beyond this specification , it shall be fixed by mutual agreement between the parties.
- 11-2 如果本規格書有不適當的情況，必須通過雙方協商並由本公司修改。 / In the event that an impropriety is found in this specification , Juneway Electronic Technology Co., Ltd. shall amend it by mutual agreement between the parties.

 **DGP HNT**  
— 華年 —  
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