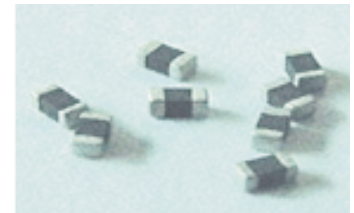


■ 片式負溫度系數熱敏電阻器

CHIP NTC THERMISTOR

片式NTCR具有無引線、片狀化、體積小、響應快等特點。它的瓷體表面采用了玻璃層作保護，同時端頭電極進行了可靠的三層電鍍工藝，實現片式NTC產品優良的焊接性能、高可靠的品質特性。

The chip NTC thermistor has the features of miniature Size, no-lead, quick temperature response. The product's ceramic body are coated with glass. The termination has been carried on craft of electroplating of three layers, suit for reflow and flow solder. Has the high reliability.



• 特征 FEATURES

- 體積小，適合高密度表面貼裝。
- 玻璃釉包覆保護，精度高、阻值漂移小。
- 優良的焊接性和耐焊性，適合波峰焊及再流焊。
- Miniature size, suitable for SMT.
- Porcelain body and glass glaze.
- Excellent in solderability and heat resistance; ideal for wave or re-flow soldering.

• 應用 APPLICATIONS

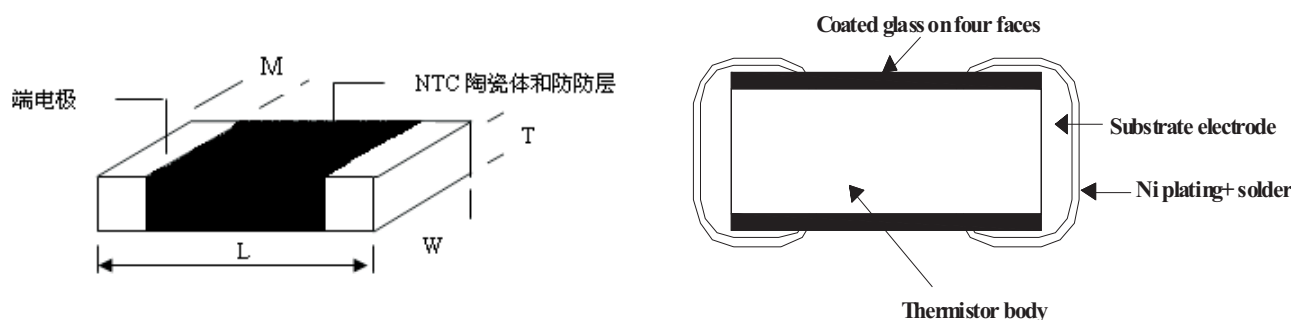
- 可充電電池、CPU的溫度探測。
- IC、LCD、石英振盪器的溫度補償。
- 需溫度補償和探測的各種電路。
- Temperature Sensing in rechargeable batteries and CPU.
- Temperature compensation in IC, LCD, Crystal oscillator and so on.
- Temperature compensation or temperature sensing for various types of circuits.

• 規格型號表示方法 ORDERING CODE

$\frac{CMF}{①}$ $\frac{A}{②}$ $\frac{103}{③}$ $\frac{J}{④}$ $\frac{3500}{⑤}$ $\frac{H}{⑥}$ $\frac{A}{⑦}$ $\frac{N}{⑧}$ $\frac{T}{⑨}$

| ① | ② | | ③ | ④ | | ⑤ | ⑥ | | ⑦ | | ⑧ | ⑨ |
|--|----------------------------------|---------|-------------------------------------|--------------------------|-----|-------------------------------------|----------------|--------------------|------------------------------|-------|-------------------------|--------------------|
| 產品代號 Code | 規格尺寸 Dimensions (L×W) (mm) | | 標稱阻值 R25 (Ω) Rated resistance | 阻值誤差 (%) Tolerance | | 材料常數 B值 (K) Material constant | B值精度 代碼 (%) | B值溫度 代碼 (°C/°C) | 端電極 Termina Electrode1 | | 包裝方式 Packaging Style | |
| CMF | D | 1.0×0.5 | 10000 | F | ±1 | 直接讀數 3500 | F | ±1 | A | 25/50 | 端電極材料 代號：N為 三層電鍍 | T卷帶盤裝 Tape&Reel |
| 片式 負溫度系數 熱敏電阻器 Chip NTC Thermistor | A | 1.6×0.8 | 前二位為有效數字，第三位表示有效數字后“0”的個數 | G | ±2 | | G | ±2 | B | 25/85 | | B 散裝 Bulk |
| | B | 2.0×1.2 | | H | ±3 | | H | ±3 | C | 0/25 | | |
| | C | 3.2×1.6 | | J | ±5 | | J | ±5 | D | 0/50 | | |
| | | | | K | ±10 | | | | E | 0/100 | | |

• 外形尺寸 SHAPE AND DIMENSIONS



尺寸規格 Dimension

單位(Unit): mm/inch

| 尺寸規格 Dimension | | L (長) | W (寬) | T (厚) max. | M (端頭寬) |
|-------------------|-----------|-------------|-------------|------------|-------------|
| 0402 | 公制 (mm) | 1.00±0.15 | 0.50±0.10 | 0.60 | 0.25±0.10 |
| | 英制 (inch) | 0.040±0.006 | 0.020±0.004 | 0.024 | 0.010±0.004 |
| 0603 | 公制 (mm) | 1.60±0.15 | 0.80±0.15 | 0.95 | 0.30±0.15 |
| | 英制 (inch) | 0.063±0.006 | 0.031±0.006 | 0.037 | 0.012±0.006 |
| 0805 | 公制 (mm) | 2.00±0.20 | 1.25±0.20 | 0.95 | 0.50±0.20 |
| | 英制 (inch) | 0.080±0.008 | 0.050±0.008 | 0.037 | 0.020±0.008 |
| 1206 | 公制 (mm) | 3.20±0.20 | 1.60±0.20 | 1.25 | 0.50±0.20 |
| | 英制 (inch) | 0.126±0.008 | 0.063±0.008 | 0.050 | 0.020±0.008 |

電性能參數 ELECTRICAL CHARACTERISTICS

0402 Series

| 規格型號 TYPE | R ₂₅ (KΩ) | B _(25/50℃) (K) |
|-------------------|----------------------|---------------------------|
| CMFD102□3200 HANT | 1.0 | 3200 |
| CMFD222□3200 HANT | 2.2 | 3200 |
| CMFD332□3300 HANT | 3.3 | 3300 |
| CMFD472□3400 HANT | 4.7 | 3400 |
| CMFD682□3400 HANT | 6.8 | 3400 |
| CMFD103□3500 HANT | 10 | 3500 |
| CMFD103□3900 HANT | 10 | 3900 |
| CMFD223□3900 HANT | 22 | 3900 |
| CMFD333□3950 HANT | 33 | 3950 |
| CMFD473□4050 HANT | 47 | 4050 |
| CMFD683□4100 HANT | 68 | 4100 |
| CMFD104□4200 HANT | 100 | 4200 |
| CMFD224□4300 HANT | 220 | 4300 |

0603 Series

| 規格型號 TYPE | R_{25} (K Ω) | $B_{(25/50^{\circ}\text{C})}$ (K) |
|-------------------|------------------------|-----------------------------------|
| CMFA221□3000 HANT | 0.22 | 3000 |
| CMFA471□3100 HANT | 0.47 | 3100 |
| CMFA102□3200 HANT | 1.0 | 3200 |
| CMFA222□3300 HANT | 2.2 | 3300 |
| CMFA332□3300 HANT | 3.3 | 3300 |
| CMFA472□3500 HANT | 4.7 | 3500 |
| CMFA502□3900 HANT | 5.0 | 3900 |
| CMFA682□3500 HANT | 6.8 | 3500 |
| CMFA103□3435 HANT | 10 | 3435 |
| CMFA103□3900 HANT | 10 | 3900 |
| CMFA103□4050 HANT | 10 | 4050 |
| CMFA153□3900 HANT | 15 | 3900 |
| CMFA223□3950 HANT | 22 | 3950 |
| CMFA333□4000 HANT | 33 | 4000 |
| CMFA473□4050 HANT | 47 | 4050 |
| CMFA503□4050 HANT | 50 | 4050 |
| CMFA683□4100 HANT | 68 | 4100 |
| CMFA104□4200 HANT | 100 | 4200 |
| CMFA224□4300 HANT | 220 | 4300 |

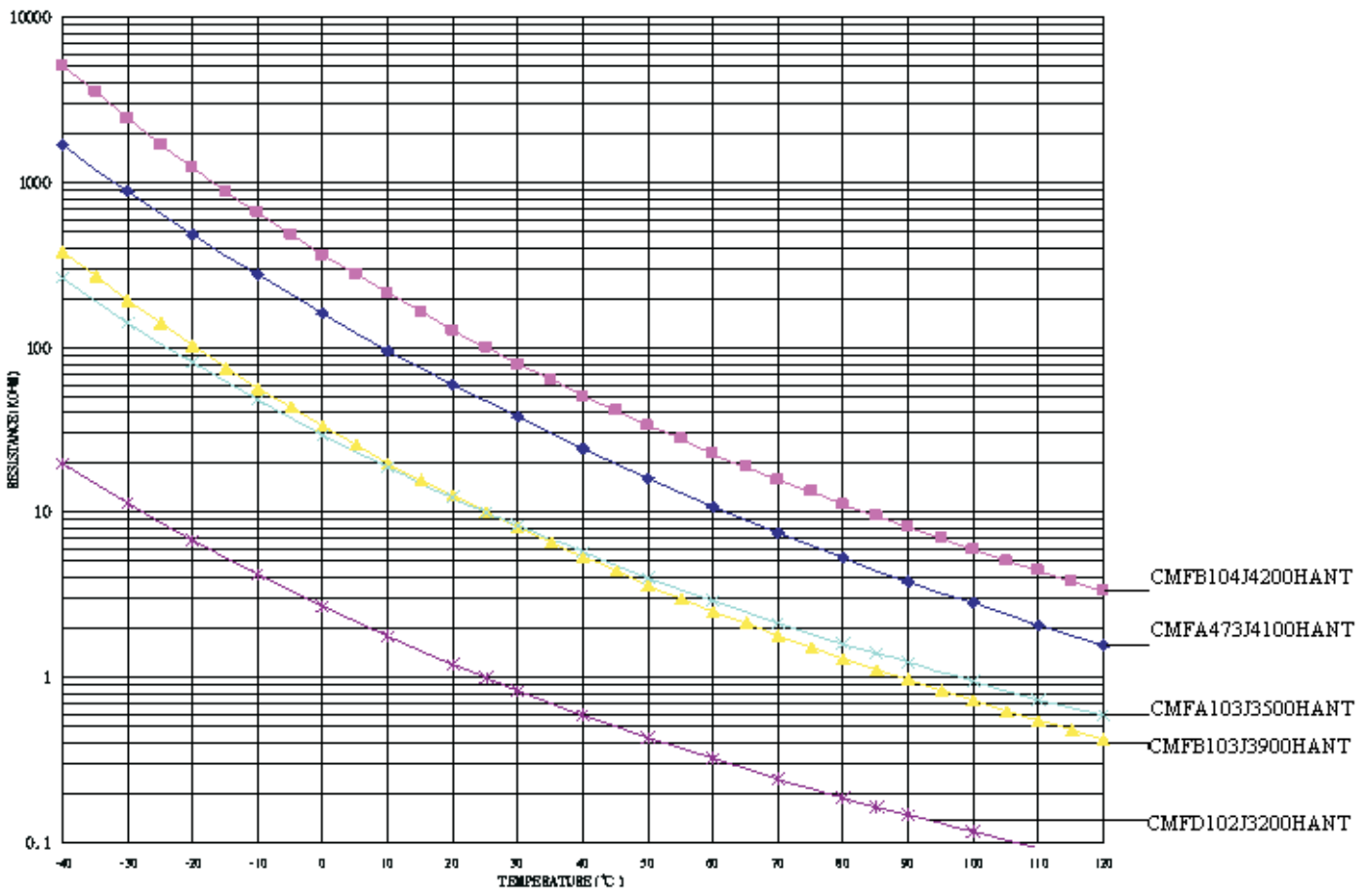
0805 Series

| 規格型號 TYPE | R_{25} (K Ω) | $B_{(25/50^{\circ}\text{C})}$ (K) |
|-------------------|------------------------|-----------------------------------|
| CMFB221□3000 HANT | 0.22 | 3000 |
| CMFB471□3100 HANT | 0.47 | 3100 |
| CMFB102□3200 HANT | 1.0 | 3200 |
| CMFB222□3300 HANT | 2.2 | 3300 |
| CMFB332□3300 HANT | 3.3 | 3300 |
| CMFB472□3500 HANT | 4.7 | 3500 |
| CMFB682□3500 HANT | 6.8 | 3500 |
| CMFB103□3500 HANT | 10 | 3500 |
| CMFB103□3650 HANT | 10 | 3650 |
| CMFB103□3900 HANT | 10 | 3900 |
| CMFB153□3900 HANT | 15 | 3900 |
| CMFB223□3950 HANT | 22 | 3950 |
| CMFB333□4000 HANT | 33 | 4000 |
| CMFB473□4050 HANT | 47 | 4050 |
| CMFB683□4100 HANT | 68 | 4100 |
| CMFB104□4200 HANT | 100 | 4200 |
| CMFB224□4300 HANT | 220 | 4300 |

1206 Series

| 規格型號 TYPE | R_{25} (K Ω) | $B_{(25/50^\circ\text{C})}$ (K) |
|-------------------|------------------------|---------------------------------|
| CMFC102□3200 HANT | 1.0 | 3200 |
| CMFC472□3400 HANT | 4.7 | 3400 |
| CMFC103□3500 HANT | 10 | 3500 |
| CMFC103□4000 HANT | 10 | 4000 |
| CMFC223□3950 HANT | 22 | 3950 |
| CMFC473□4050 HANT | 47 | 4050 |
| CMFC104□4200 HANT | 100 | 4200 |

• 阻值溫度特性曲綫 Resistance temperature Characteristic Curve



可靠性測試 Reliability Testing

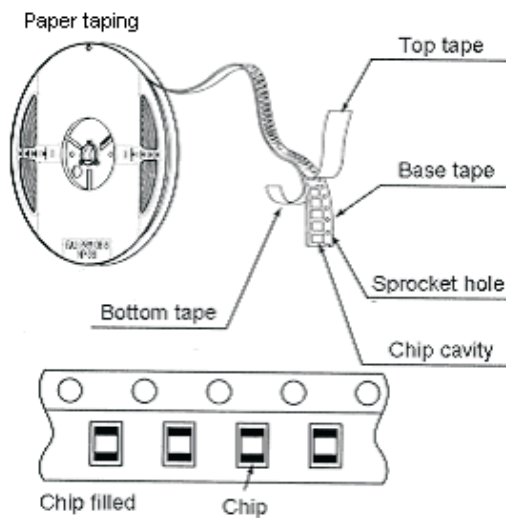
| 項目 Item | 標準 Specified value | 測試方法 Test methods | | | | | | | | | |
|--------------------------------|---|---|---------|-----------------------|--------------------|-----------|---------|---------|-----------|---------|-----|
| 可焊性 Solder ability | 至少90%端電極表面被焊錫覆蓋。 At least 90% of terminal electrode should be covered with solder. 無機械損傷 No mechanical damage. | 浸入松香助焊劑約 Immersion into the colophony flux for:2sec. 焊錫溫度 Solder temperature:255±5℃ 焊錫時間 Duration:5±0.5s | | | | | | | | | |
| 耐焊性 Resistance to Soldering | 至少75%焊錫覆蓋在端電極表面。 At least 75% of terminal electrode should be covered with solder. R ₂₅ 變化率小於 Resistance value change within ±5% | 預熱溫度 Preheating temperature:100~150℃ 預熱時間 Preheating time:60s 浸錫溫度 Solder temperature:285±5℃ 浸錫時間 Duration:10±0.5s | | | | | | | | | |
| 耐低溫 Low temperature | 無機械損傷 No mechanical damage. R ₂₅ 變化率小於 ±5% Resistance value change:within ±5% B值 (B _{25/50}) 變化率小於 ±2% B value change within ±2% | 測試溫度 Temperature:-40±2℃ 測試時間 Testing time:500±2h | | | | | | | | | |
| 耐高溫 High temperature | | 測試溫度 Temperature:+125±2℃ 測試時間 Testing time:500±2h | | | | | | | | | |
| 耐潮濕 Humidity | | 濕度 Humidity:90 to 95%RH 溫度 Temperature:55±2℃ 測試時間 Testing time:500±2h | | | | | | | | | |
| 溫度循環 Thermal Shock | | 第1步-40℃ step1:30±3min 第2步室溫 step 2 Ordinary temperature:10min 第3步step 3:+125℃,30min±30min 第4步室溫 step4 Ordinary temperature:10±2min 1步到4步共循環5次 Total of 5 cycles | | | | | | | | | |
| 跌落 Drop | | 從高度為1米的空中自由落到混凝土地板重10次。 Drop 10 times on a concrete floor from a high of 1m. | | | | | | | | | |
| 振動 Vibration | 振動頻率 Vibration Frequency:10-55Hz 振幅 Amplitude modulation:1.52mm 各方向各振2小時: XYZ direction for 2hrs each | | | | | | | | | | |
| 端電極強度 Terminal strength | 無機械損傷 No mechanical damage. | <table border="1"> <thead> <tr> <th>尺寸 Size</th> <th>推力 (N) Thrust force</th> <th>時間(s) Thrust force</th> </tr> </thead> <tbody> <tr> <td>0402/0603</td> <td>5</td> <td>5±1</td> </tr> <tr> <td>0805/1206</td> <td>10</td> <td>5±1</td> </tr> </tbody> </table> | 尺寸 Size | 推力 (N) Thrust force | 時間(s) Thrust force | 0402/0603 | 5 | 5±1 | 0805/1206 | 10 | 5±1 |
| 尺寸 Size | 推力 (N) Thrust force | 時間(s) Thrust force | | | | | | | | | |
| 0402/0603 | 5 | 5±1 | | | | | | | | | |
| 0805/1206 | 10 | 5±1 | | | | | | | | | |
| 抗彎強度 Flexure strength | 無機械損傷 No mechanical damage R ₂₅ 變化率小於 ±5% Resistance value change:within ±5% |  <table border="1"> <thead> <tr> <th>尺寸 Size</th> <th>彎曲 (h) Curve</th> <th>施加速度 Speed</th> </tr> </thead> <tbody> <tr> <td>0402/0603</td> <td>0.7(mm)</td> <td rowspan="2">0.5mm/s</td> </tr> <tr> <td>0805/1206</td> <td>1.0(mm)</td> </tr> </tbody> </table> | 尺寸 Size | 彎曲 (h) Curve | 施加速度 Speed | 0402/0603 | 0.7(mm) | 0.5mm/s | 0805/1206 | 1.0(mm) | |
| 尺寸 Size | 彎曲 (h) Curve | 施加速度 Speed | | | | | | | | | |
| 0402/0603 | 0.7(mm) | 0.5mm/s | | | | | | | | | |
| 0805/1206 | 1.0(mm) | | | | | | | | | | |

包裝 Packaging

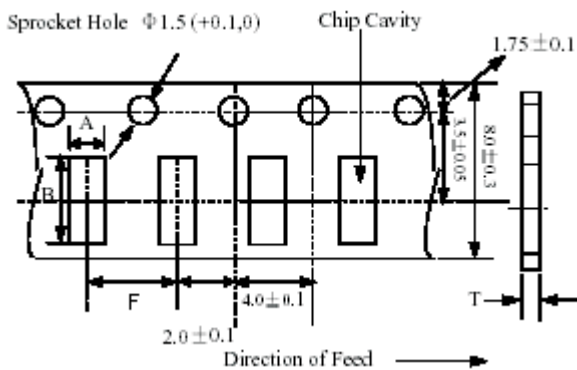
標準包裝數量 Standard Quantity

| | | | | |
|---------------|-------|------|------|------|
| Type | 0402 | 0603 | 0805 | 1206 |
| Quantity(pcs) | 10000 | 4000 | 4000 | 3000 |

• 包裝圖 Packaging Drawings



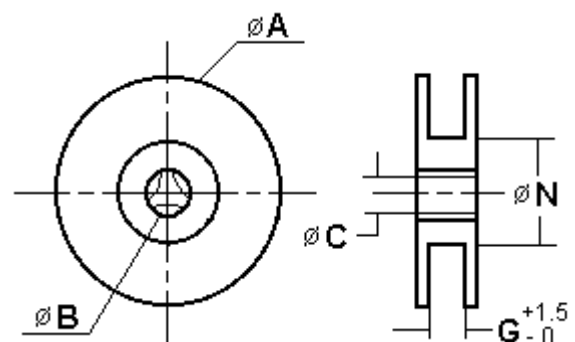
包裝尺寸 Packaging Dimmensions(unit:mm)



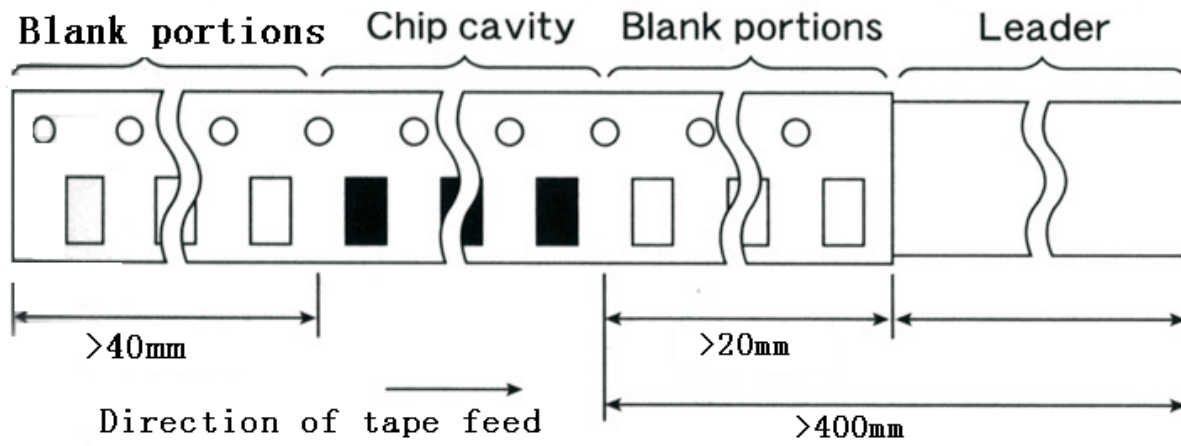
| Part NO. | A | B | F | T |
|----------|----------------|----------------|----------------|--------|
| 0402 | 0.65 ± 0.1 | 1.15 ± 0.1 | 2.0 ± 0.05 | 0.8max |
| 0603 | 1.0 ± 0.2 | 1.8 ± 0.2 | 4.0 ± 0.2 | 1.1max |
| 0805 | 1.5 ± 0.2 | 2.3 ± 0.2 | 4.0 ± 0.2 | 1.1max |
| 1206 | 1.9 ± 0.2 | 3.5 ± 0.2 | 4.0 ± 0.2 | 1.1max |

• 卷盤尺寸 ReelDimmensions(unit:mm)

| | A | B | C | N | G |
|-------|---------------|--------------|----------------|--------------|----|
| CF-8 | 178 ± 2.0 | 22 ± 2.0 | 12.5 ± 1.5 | 57 ± 2.0 | 8 |
| CF-12 | 330 ± 2.0 | 22 ± 2.0 | 12.5 ± 1.5 | 98 ± 2.0 | 12 |



導帶和空白部分 Leader and blank portion



剥落力量 Peeling off force: 0.05 to 0.7N in the direction show below.

