**规格承认书**

SPECIFICATION

编号(No):

日期(Date):

**客户 (**Customer**)**:

|  |
| --- |
| 高精度NTC热敏电阻芯片 |
| High precision NTC thermistor Chip |

**品名(**Product Name**)**:

**恭成料号（**QAMCN Part Number**）**: CT2X104F3950FB

**客户规格(**Customer’s Part Number**):**

|  |  |  |  |
| --- | --- | --- | --- |
| 客户承认 CUSTOMER CONFIRM | | | |
| 承认章STAMP | 核准APPROVE | 审核  CHECK | 经办人SIGNATURE |
|  |  |  |  |

**恭成科技有限公司**

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1. **外形尺寸 Shape and Dimensions**

|  |  |
| --- | --- |
| * 见图1和表1 | * See Fig.1 and Table 1. |

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| --- | --- |
| **图1 Fig.1** | **表1（Table 1）** 单位 unit: mm |
| |  |  |  | | --- | --- | --- | | 参考值 reference value | | | | L | W | H | | 0.5±0.05 | 0.5±0.05 | 0.3±0.05 | |

1. **产品描述和料号Product Description and Identification (Part Number)**

2.1 产品描述Product Description

高精度NTC热敏电阻芯片，外部尺寸：0.5mm×0.5mm×0.3mm，25℃的零功率电阻值：100kΩ±1%，

B值常数：3950K±1%(25℃/50℃)，标称值测量温度：25℃。

High precision NTC thermistor Chip, Outside dimension: 0.5mm×0.5mm×0.3mm,

Nominal Zero-Power Resistance at 25℃: 100KOhm±1%,

B Constant value: 3950K±1%(25℃/50℃), Nominal value measuring temperature: 25℃

2.2 料号Identification (Part Number)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CT** | **2** | **X** | **104** | **F** | **3950** | **F** | **B** |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ |
|  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | ① 类别 Type | | | CT | 高精度NTC热敏电阻芯片  High precision NTC thermistor Chip | |  |  |  |  |  | | --- | --- | | ② 芯片尺寸代号  Chip dimension code  L×W×H (mm) | | | 1 | 0.45×0.45×0.15 | | 2 | 0.5×0.5×0.3 | | 3 | 0.7×0.7×0.35 | | 4 | 0.9×0.9×0.4 | | 5 | 1.0×1.0×0.5 | | |  | | --- | | ③ 分隔符 Delimiter | | X | |  |  |  |  | | --- | --- | | ④ 25℃的零功率电阻  Nominal Zero-Power Resistance at 25℃ | | | 222 | 2.2kΩ | | 103 | 10kΩ | | 104 | 100kΩ | |  |  |  |  |  | | --- | --- | | ⑤ 电阻值公差  Tolerance of Resistance | | | F | ±1% | | G | ±2% | | H | ±3% | | J | ±5% | | |  |  | | --- | --- | | ⑥ B值常数 B Constant | | | 3435 | 3435K | | 3950 | 3950K | | 4250 | 4250K | |  |  |  |  |  | | --- | --- | | ⑦ B值公差  Tolerance of B Constant | | | F | ±1% | | H | ±3% | |  |  | | ⑧ B值计算方式  B constant calculation method | | | A | 25℃&85℃ | | B | 25℃&50℃ | |

1. **电气性能 Electrical properties**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 序号  Part | 项目  Items | 测试条件  Measure methods | 最小值  Min | 正常值  Nominal | 最大值  Max | 单位  Unit |
| 1 | 25℃电阻值(R25)  Resistance at 25℃ | Ta=25±0.05℃  PT≤0.1mw | 99 | 100 | 101 | kΩ |
| 2 | B值(B25℃/50℃)  B Value | 000 | 3911 | 3950 | 3990 | K |
| 3 | 耗散系数(σ)  Dissipation | Ta=25±0.5℃ | 0.5 | / | / | mw/℃ |
| 4 | 时间常数(τ)  Thermal Time Constant | 静止空气中,电阻变化63.2%  In static air，the time it takes for the resistance to change by 63.2%. | / | / | 3 | 秒sec |
| 5 | 使用温度范围  Operating temperature | / | -40 | / | 125 | ℃ |

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| --- | --- |
| 1. **检验和测试程序**  * **测试条件**   如无特别规定，检验和测试的标准大气环境条件如下：  a. 环境温度：20±15℃；  b. 相对湿度：65±20%；  c. 气压：86 kPa~106 kPa  如果对测试结果有异议，则在下述条件下测试：  a. 环境温度：25±2℃；  b. 相对湿度：65±5%  c. 气压：86kPa ~ 106kPa   * **检查设备**   外观检查：20倍放大镜；  阻值检查：热敏电阻测试仪 | 1. **Test and Measurement Procedures**  * **Test Conditions**   Unless otherwise specified, the standard atmospheric conditions for measurement/test as:  a. Ambient Temperature: 20±15℃  b. Relative Humidity: 65±20%  c. Air Pressure: 86kPa to 106kPa  If any doubt on the results, measurements/tests should be made within the following limits:  a. Ambient Temperature: 25±2℃  b. Relative Humidity: 65±5%  c. Air Pressure: 86kPa to 106kPa   * **Inspection Equipment**   Visual Examination: 20×magnifier  Resistance value test: Thermistor resistance tester |

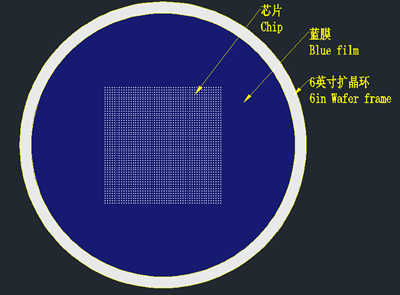
1. **信赖性试验Reliability Test**

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| --- | --- | --- | --- |
| **项目**  **Items** | **测试标准**  **Standard** | **测试条件及方法**  **Test Methods** | **技术要求**  **Criteria** |
| 坠落  Dropping | IEC 60068-2-32 | 从1m的高度让产品自由坠落至水泥地面10 次。  Drop a chip 10 times on a concrete floor from a height of 1 meter. | 无外观损伤。  No visible damage. |
| 可焊性  Solderability | IEC 60068-2-58 | 1. 焊接温度Solder temperature: 245±5℃. 2. 浸渍时间Duration: 3±0.3s. 3. 焊锡成分Solder: Sn/3.0Ag/0.5Cu. 4. 助焊剂Flux: （重量比）25%松香和75%酒精   25% Resin and 75% ethanol in weight. | 1. 无外观损伤；   No visible damage.   1. 组件端电极的焊锡覆盖率不小于95%。   Wetting shall exceed 95% coverage. |
| 耐焊性  Resistance to Soldering Heat | IEC 60068-2-58 | 1. 焊接温度 Solder temperature: 260±5℃. 2. 浸渍时间 Duration: 10±1s. 3. 焊锡成分 Solder: Sn/3.0Ag/0.5Cu. 4. 助焊剂 Flux: （重量比）25%松香和75%酒精   25% Resin and 75% ethanol in weight.   1. 试验后标准条件下放置1~2小时后测量。   The chip shall be stabilized at normal condition for 1~2 hours before measuring. | 1. 无外观损伤；   No visible damage.   1. 试验前后R25的变化率：±3%以内；   R25 variation: within ±3%   1. 试验前后B值的变化率：±2%以内。   B constant variation: within ±2% |
| 温度周期  Temperature cycling | IEC 60068-2-14 | 1. 无负载于下表所示的环境条件下重复5次。   5 cycles of following sequence without loading.   |  |  |  | | --- | --- | --- | | 步骤 Step | 温度Temperature | 时间Time | | 1 | -40±5℃ | 30±3min | | 2 | 25±2℃ | 5±3min | | 3 | 125±2℃ | 30±3min | | 4 | 25±2℃ | 5±3min |  1. 试验后标准条件下放置1~2小时后测量。   The chip shall be stabilized at normal condition for 1~2 hours before measuring. |
| 高温存放  Resistance to dry heat | IEC 60068-2-2 | 1. 在125±5℃空气中，无负载放置1000±24小时。   125±5℃ in air, for 1000±24 hours without loading.   1. 试验后标准条件下放置1~2小时后测量。   The chip shall be stabilized at normal condition for 1~2 hours before measuring. | 1. 无外观损伤；   No visible damage.   1. 试验前后R25的变化率：±5%以内；   R25 variation: within ±5%   1. 试验前后B值的变化率：±2%以内。   B constant variation: within ±2% |
| 低温存放  Resistance to cold | IEC 60068-2-1 | 1. 在-40±3℃空气中，无负载放置1000±24小时。   -40±3℃ in air, for 1000±24 hours without loading.   1. 试验后标准条件下放置1~2小时后测量。   The chip shall be stabilized at normal condition for 1~2 hours before measuring. |
| 湿热存放  Resistance to damp heat | IEC 60068-2-78 | 1. 在40±2℃，相对湿度90~95%空气中，无负载放置1000±24小时。   40±2℃,90~95%RH in air, for 1000±24 hours without loading.   1. 试验后标准条件下放置1~2小时后测量。   The chip shall be stabilized at normal condition for 1~2 hours before measuring. |

1. **包装和储存条件Packaging and Storage**
   1. 包装Packaging

包装方式Packaging way：蓝膜包装Blue film packing

包装数量Packaging Quantity：2500个/片 2500pcs/film



* 1. 储存Storage

储存条件Storage Conditions

a. 储存温度 Storage temperature：20±15℃

b. 相对湿度 Relative humidity：≤75%

c. 避免接触腐蚀性气氛和阳光 Keep away from corrosive atmosphere and sunlight.

储存期限Period of Storage：产品交付后3个月 3 Months after delivery

1. **建议焊接工艺Recommended** **Soldering Technologies**
   1. 银电极芯片只适用与金线、 银线的邦定焊接。

Silver electrode chip is only suitable for bonding with gold wire and silver wire.

* 1. 用于邦定的焊接工艺条件 Soldering Technologies for bonding

|  |  |  |  |
| --- | --- | --- | --- |
| **项目**  **Items** | **适用线径**  **Applicable wire diameter** | **条件**  **Condition** | **要求**  **Criteria** |
| 金线  Gold wire | 0.8mil~2.0mil | ① 清洁无尘、无杂质、周围无干扰振动，芯片无氧化。  Clean and dust-free, no impurities, no interference vibration around，no oxidation of the chip.  ② 室内温度Indoor temperature：20~28℃  相对湿度：humidity：40%~60% | ① 焊球直径≥2.6 ~ 2.7倍线径；  Solder ball diameter≥2.6 ~ 2.7 times the wire diameter.  ② 1mil 线径邦定拉力≥3.0g；  1mil Wire diameter bond tension≥3.0g.  ③ 1.2mil 线径邦定拉力≥5g；  1.2mil Wire diameter bond tension≥5g. |
| 银线  Silver wire | 0.8mil~2.0mil | ① 1.5倍线径≤焊点长度≤5倍线径；  Solder joint length within 1.5 times and 5 times the wire diameter.  ② 1.2倍线径≤焊点宽度≤3倍线径；  Solder joint width within 1.2times and 3times wire diameter  ③ 0.3倍线径≤线尾≤1.5倍线径  Tail：≥0.3 times wire diameter，≤1.5 times wire diameter  ④ 1mil 线径邦定拉力≥3.0g；  1mil Wire diameter bond tension≥3.0g.  ⑤ 1.2mil 线径邦定拉力≥5g；  1.2mil Wire diameter bond tension≥5g. |

1. **R-T 表 R-T table**

**CT2X104F3950FB**

| 温度  Temp. (℃) | R最小值  R\_Min (Kohm) | R中心值  R\_Cent (Kohm) | R最大值  R\_Max (Kohm) |
| --- | --- | --- | --- |
| -40 | 3,084.269 | 3,225.545 | 3,372.955 |
| -39 | 2,892.785 | 3,023.332 | 3,159.454 |
| -38 | 2,714.318 | 2,834.987 | 2,960.724 |
| -37 | 2,547.912 | 2,659.483 | 2,775.662 |
| -36 | 2,392.685 | 2,495.874 | 2,603.252 |
| -35 | 2,247.826 | 2,343.289 | 2,442.561 |
| -34 | 2,112.585 | 2,200.924 | 2,292.728 |
| -33 | 1,986.272 | 2,068.041 | 2,152.960 |
| -32 | 1,868.248 | 1,943.955 | 2,022.527 |
| -31 | 1,757.924 | 1,828.036 | 1,900.755 |
| -30 | 1,654.757 | 1,719.704 | 1,787.021 |
| -29 | 1,558.243 | 1,618.419 | 1,680.751 |
| -28 | 1,467.918 | 1,523.686 | 1,581.415 |
| -27 | 1,383.351 | 1,435.046 | 1,488.524 |
| -26 | 1,304.144 | 1,352.073 | 1,401.624 |
| -25 | 1,229.928 | 1,274.376 | 1,320.298 |
| -24 | 1,160.363 | 1,201.590 | 1,244.157 |
| -23 | 1,095.132 | 1,133.379 | 1,172.844 |
| -22 | 1,033.942 | 1,069.430 | 1,106.026 |
| -21 | 976.520 | 1,009.455 | 1,043.396 |
| -20 | 922.616 | 953.185 | 984.670 |
| -19 | 871.994 | 900.373 | 929.583 |
| -18 | 824.437 | 850.787 | 877.890 |
| -17 | 779.744 | 804.212 | 829.365 |
| -16 | 737.728 | 760.451 | 783.797 |
| -15 | 698.212 | 719.319 | 740.990 |
| -14 | 661.037 | 680.643 | 700.761 |
| -13 | 626.050 | 644.265 | 662.943 |
| -12 | 593.112 | 610.035 | 627.379 |
| -11 | 562.091 | 577.816 | 593.921 |
| -10 | 532.867 | 547.478 | 562.435 |
| -9 | 505.325 | 518.903 | 532.793 |
| -8 | 479.360 | 491.979 | 504.879 |
| -7 | 454.874 | 466.601 | 478.582 |
| -6 | 431.775 | 442.674 | 453.801 |
| -5 | 409.977 | 420.105 | 430.441 |
| -4 | 389.400 | 398.813 | 408.412 |
| -3 | 369.970 | 378.717 | 387.631 |
| -2 | 351.616 | 359.744 | 368.023 |
| -1 | 334.274 | 341.826 | 349.514 |
| 0 | 317.882 | 324.899 | 332.037 |
| 1 | 302.384 | 308.903 | 315.530 |
| 2 | 287.726 | 293.781 | 299.934 |
| 3 | 273.859 | 279.483 | 285.193 |
| 4 | 260.735 | 265.958 | 271.258 |
| 5 | 248.312 | 253.161 | 258.078 |
| 6 | 236.548 | 241.049 | 245.611 |
| 7 | 225.405 | 229.582 | 233.813 |
| 8 | 214.847 | 218.722 | 222.645 |
| 9 | 204.841 | 208.435 | 212.071 |
| 10 | 195.354 | 198.687 | 202.056 |
| 11 | 186.358 | 189.447 | 192.568 |
| 12 | 177.824 | 180.686 | 183.576 |
| 13 | 169.727 | 172.377 | 175.052 |
| 14 | 162.041 | 164.495 | 166.969 |
| 15 | 154.745 | 157.015 | 159.302 |
| 16 | 147.816 | 149.914 | 152.028 |
| 17 | 141.233 | 143.173 | 145.124 |
| 18 | 134.979 | 136.770 | 138.571 |
| 19 | 129.035 | 130.688 | 132.348 |
| 20 | 123.384 | 124.908 | 126.437 |
| 21 | 118.010 | 119.413 | 120.822 |
| 22 | 112.898 | 114.190 | 115.485 |
| 23 | 108.035 | 109.222 | 110.412 |
| 24 | 103.406 | 104.497 | 105.588 |
| 25 | 99.000 | 100.000 | 101.000 |
| 26 | 94.722 | 95.720 | 96.720 |
| 27 | 90.650 | 91.646 | 92.643 |
| 28 | 86.775 | 87.766 | 88.760 |
| 29 | 83.086 | 84.071 | 85.059 |
| 30 | 79.572 | 80.550 | 81.532 |
| 31 | 76.225 | 77.195 | 78.169 |
| 32 | 73.036 | 73.997 | 74.962 |
| 33 | 69.997 | 70.947 | 71.903 |
| 34 | 67.100 | 68.039 | 68.985 |
| 35 | 64.337 | 65.265 | 66.200 |
| 36 | 61.703 | 62.618 | 63.541 |
| 37 | 59.189 | 60.092 | 61.003 |
| 38 | 56.791 | 57.681 | 58.579 |
| 39 | 54.502 | 55.379 | 56.264 |
| 40 | 52.317 | 53.180 | 54.052 |
| 41 | 50.230 | 51.080 | 51.938 |
| 42 | 48.237 | 49.073 | 49.918 |
| 43 | 46.334 | 47.155 | 47.986 |
| 44 | 44.515 | 45.321 | 46.138 |
| 45 | 42.776 | 43.569 | 44.371 |
| 46 | 41.114 | 41.892 | 42.681 |
| 47 | 39.525 | 40.289 | 41.063 |
| 48 | 38.005 | 38.755 | 39.515 |
| 49 | 36.551 | 37.286 | 38.033 |
| 50 | 35.160 | 35.881 | 36.613 |
| 51 | 33.829 | 34.536 | 35.254 |
| 52 | 32.555 | 33.248 | 33.952 |
| 53 | 31.335 | 32.014 | 32.704 |
| 54 | 30.166 | 30.832 | 31.508 |
| 55 | 29.047 | 29.699 | 30.362 |
| 56 | 27.975 | 28.614 | 29.264 |
| 57 | 26.948 | 27.573 | 28.210 |
| 58 | 25.963 | 26.576 | 27.199 |
| 59 | 25.020 | 25.619 | 26.230 |
| 60 | 24.115 | 24.701 | 25.300 |
| 61 | 23.247 | 23.821 | 24.407 |
| 62 | 22.415 | 22.976 | 23.550 |
| 63 | 21.616 | 22.166 | 22.727 |
| 64 | 20.850 | 21.388 | 21.937 |
| 65 | 20.114 | 20.641 | 21.179 |
| 66 | 19.408 | 19.923 | 20.450 |
| 67 | 18.731 | 19.234 | 19.749 |
| 68 | 18.080 | 18.572 | 19.076 |
| 69 | 17.454 | 17.936 | 18.430 |
| 70 | 16.854 | 17.325 | 17.808 |
| 71 | 16.277 | 16.738 | 17.210 |
| 72 | 15.722 | 16.173 | 16.635 |
| 73 | 15.189 | 15.630 | 16.082 |
| 74 | 14.676 | 15.108 | 15.550 |
| 75 | 14.184 | 14.605 | 15.038 |
| 76 | 13.710 | 14.122 | 14.545 |
| 77 | 13.254 | 13.657 | 14.071 |
| 78 | 12.815 | 13.209 | 13.614 |
| 79 | 12.393 | 12.779 | 13.175 |
| 80 | 11.987 | 12.364 | 12.751 |
| 81 | 11.596 | 11.965 | 12.344 |
| 82 | 11.220 | 11.580 | 11.951 |
| 83 | 10.857 | 11.210 | 11.572 |
| 84 | 10.508 | 10.853 | 11.207 |
| 85 | 10.172 | 10.509 | 10.856 |
| 86 | 9.848 | 10.177 | 10.517 |
| 87 | 9.536 | 9.858 | 10.190 |
| 88 | 9.235 | 9.550 | 9.875 |
| 89 | 8.945 | 9.253 | 9.571 |
| 90 | 8.666 | 8.967 | 9.277 |
| 91 | 8.396 | 8.691 | 8.995 |
| 92 | 8.136 | 8.424 | 8.722 |
| 93 | 7.885 | 8.167 | 8.458 |
| 94 | 7.644 | 7.919 | 8.204 |
| 95 | 7.410 | 7.680 | 7.958 |
| 96 | 7.185 | 7.449 | 7.721 |
| 97 | 6.968 | 7.226 | 7.492 |
| 98 | 6.758 | 7.010 | 7.271 |
| 99 | 6.556 | 6.802 | 7.057 |
| 100 | 6.360 | 6.601 | 6.851 |
| 101 | 6.171 | 6.407 | 6.652 |
| 102 | 5.989 | 6.220 | 6.459 |
| 103 | 5.813 | 6.039 | 6.273 |
| 104 | 5.643 | 5.864 | 6.093 |
| 105 | 5.478 | 5.694 | 5.918 |
| 106 | 5.319 | 5.531 | 5.750 |
| 107 | 5.166 | 5.373 | 5.587 |
| 108 | 5.017 | 5.220 | 5.430 |
| 109 | 4.873 | 5.072 | 5.277 |
| 110 | 4.735 | 4.929 | 5.130 |
| 111 | 4.600 | 4.790 | 4.987 |
| 112 | 4.470 | 4.656 | 4.849 |
| 113 | 4.345 | 4.527 | 4.716 |
| 114 | 4.223 | 4.401 | 4.586 |
| 115 | 4.105 | 4.280 | 4.461 |
| 116 | 3.992 | 4.162 | 4.340 |
| 117 | 3.881 | 4.048 | 4.222 |
| 118 | 3.775 | 3.938 | 4.108 |
| 119 | 3.671 | 3.831 | 3.998 |
| 120 | 3.571 | 3.728 | 3.891 |
| 121 | 3.474 | 3.628 | 3.788 |
| 122 | 3.381 | 3.531 | 3.687 |
| 123 | 3.290 | 3.437 | 3.590 |
| 124 | 3.202 | 3.346 | 3.496 |
| 125 | 3.116 | 3.257 | 3.405 |