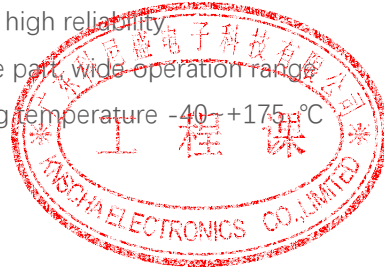


产品特点 Product Features

PLASTIC THERMISTOR NTC

- 1.MF72系列产品为径向引线树脂涂装型
- 2.体积小，功率大，抑制浪涌电流能力强
- 3.反应速度快
- 4.材料常数（B值）大，残余电阻小
- 5.寿命长，可靠性高
- 6.产品规格齐全，工作范围宽
- 7.工作温度-40~ +175℃

- 1.MF72 series in the form of radial resin coated form
- 2.Small dimension, powerful, strong in inrush current limiting
- 3.Fast response
- 4.Large material constant, lower residue resistance
- 5.Long life, high reliability
- 6.Complete part, wide operation range
- 7.Operating temperature -40~+175℃



应用范围 Application scope

- 1.转换电源、开关电源、UPS电源
- 2.电子节能灯、电子镇流器
- 3.电子线路、电源线路等

1. Conversion power, switch mode power supply, UPS power
2. Energy saving lights, ballast
3. Electronic circuit, power supply circuit

产品型号说明 Product Model Description

| KNSCHA | 3220 | N | 2R5 | M | 3R0 |
|---------|--|---|--------------------------------------|---------------------|----------------------------------|
| 品牌 Logo | 尺寸 Size | Negative Temperature Coefficient NTC负温度系数 | Rated Zero-Power Resistance 额定零功率电阻值 | Accuracy Error 精度误差 | Max. Steady State Current 最大稳态电流 |
| | 2220(5750) 3220(8050) 3225(8060) 4032(1008) | | 2R5=2.5Ω 100=10Ω 101=100Ω | K: 10% M: 20% | 3R0: 3A 5R0: 5A 100: 10A |

温度特性 Temperature

| Parameter | Value | Unit |
|---------------------------|------------|------|
| Operating temperature工作温度 | -40 ~ +175 | ℃ |
| Storage temperature存储温度 | -10 ~ +40 | ℃ |
| thermal time constant | ≤18 | S |
| Insulation resistance | ≥6 | mW/℃ |

主要技术参数 Main technical parameters

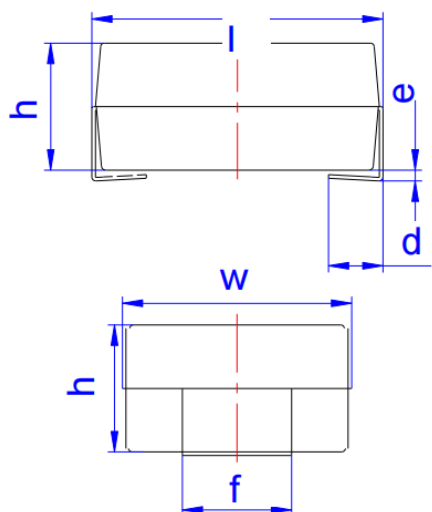
尺寸型号Size: 3220

| P/N | R ₂₅ (Ω) Resistance | Maximum steady-state current (A) | Residual resistance (Ω) | Resistance B _{25/85} (K) | Thermal time constant (s) | Dissipation Coefficient (mW/°C) | Operation Temperature (°C) |
|------------|--------------------------------------|---|-------------------------------|---|---------------------------------|---------------------------------------|----------------------------------|
| | 2.5 | 3 | 0.195 | 2700 | ≤30 | ≥9 | -40 ~ 175 |
| | 3 | 3 | 0.206 | 2700 | | | |
| | 4 | 2 | 0.246 | 2700 | | | |
| | 5 | 2 | 0.286 | 2700 | | | |
| | 6 | 2 | 0.436 | 2700 | | | |
| | 7 | 2 | 0.585 | 2700 | | | |
| | 8 | 1 | 0.735 | 2800 | | | |
| | 10 | 1 | 0.789 | 2800 | | | |
| 192NTC0009 | 12 | 0.7 | 1.180 | 2800 | | | |
| | 15 | 0.7 | 1.465 | 3000 | | | |
| | 16 | 0.7 | 1.560 | 3000 | | | |
| | 18 | 0.7 | 1.774 | 3000 | | | |
| | 20 | 0.6 | 1.988 | 3000 | | | |
| | 22 | 0.6 | 1.950 | 3000 | | | |
| | 25 | 0.5 | 2.609 | 3000 | | | |
| | 30 | 0.5 | 3.706 | 3000 | | | |

电性测试 Electrical Test

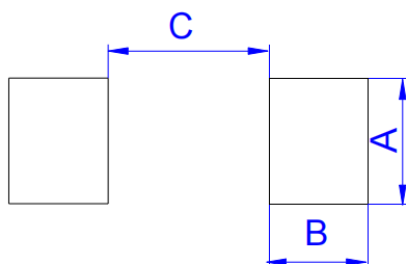
| 序号 No. | 项目 Items | 测试方法及备注 Test Methods and Remarks |
|--------|---|--|
| 1 | 25℃ 零功率电阻值 Nominal Zero-Power Resistance at 25℃ (R25) | 环境温度 Ambient temperature: 25±0.05℃ 测试功率 Measuring electric power: ≤ 0.1mW |
| 2 | B 值常数 Nominal B Constant | 分别在环境温度 25±0.05℃, 50±0.05℃ 或 85±0.05℃ 下测量电阻值。 Measure the resistance at the ambient temperature of 25±0.05℃, 50±0.05℃ or 85±0.05℃. $B(25-50^{\circ}\text{C}) = \frac{\ln R_{25}}{1/T_{25}} - \frac{\ln R_{50}}{1/T_{50}} \quad B(25-85^{\circ}\text{C}) = \frac{\ln R_{25}}{1/T_{25}} - \frac{\ln R_{85}}{1/T_{85}}$ T: 绝对温度 (K) Absolute temperature (K) |
| 3 | 热时间常数 Thermal Time Constant | 在零功率条件下, 当热敏电阻的环境温度发生急剧变化时, 热敏电阻元件产生最初温度 T ₀ 与最终温度 T ₁ 两者温度差的 63.2% 的温度变化所需要的时间, 通常以秒 (s) 表示。 The total time for the temperature of the thermistor to change by 63.2% of the difference from ambient temperature T ₀ (°C) to T ₁ (°C) by the drastic change of the power applied to thermistor from Non-zero Power to Zero-Power state, normally expressed in second (S). |
| 4 | 耗散系数 Dissipation Factor | 在一定环境温度下, NTC 热敏电阻通过自身发热使其温度升高 1℃ 时所需要的功率, 通常以 mW/°C 表示。可由下面公式计算: The required power which makes the NTC thermistor body temperature raise 1℃ through self-heated, normally expressed in milliwatts per degree Celsius (mW/°C). It can be calculated by the following formula: $\delta = \frac{W}{T - T_0}$ |
| 5 | 额定功率 Rated Power | 在环境温度 25℃ 下因自身发热使表面温度升高 100℃ 所需要的功率。 The necessary electric power makes thermistor's temperature rise 100℃ by self-heating at ambient temperature 25℃ . |
| 6 | 允许工作电流 Permissible operating current | 在静止空气中通过自身发热使其升温为 1℃ 的电流。 The current that keep body temperature of chip NTC on the PC board in still air rising 1℃ by self-heating. |

尺寸图 Dimensional drawings



| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| l | 7.7 | | 8.3 | 0.303 | | 0.327 |
| w | 6.0 | | 6.6 | 0.236 | | 0.260 |
| h | 3.3 | | 4.0 | 0.122 | | 0.150 |
| d | 1.2 | | 1.8 | 0.047 | | 0.071 |
| e | 0 | | 0.3 | 0 | | 0.012 |
| f | 2.7 | | 3.3 | 0.106 | | 0.130 |

推荐焊盘布局 Recommended solder pad layout



| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | | 3.5 | | | 0.138 | |
| B | | 2.8 | | | 0.110 | |
| C | | 4.5 | | | 0.177 | |

焊接指南 Dimensional drawings

建议使用温和的非活性焊剂进行焊接，并适当清洁PCB。

The usage of mild, non-activated fluxes for soldering is recommended, as well as proper cleaning of the PCB.

根据JEDEC J-STD-020C，这些部件适用于回流焊

The components are suitable for reflow soldering per JEDEC J-STD-020C.

建议焊接条件 Recommended Soldering Technologies

回流焊 Re-flowing Profile

温升：1~2°C/sec.

1~2°C/sec. Ramp

预热：150~190°C/90±30 sec.

Pre-heating: 150~190°C/90±30 sec.

大于 240°C时间：20~40sec

Time above 240°C: 20~40 sec.

峰值温度：最高 260°C/10 sec.

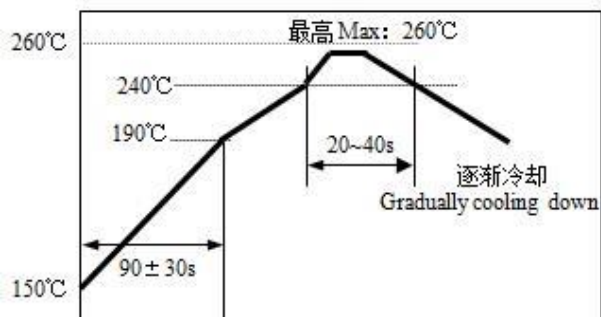
Peak temperature: 260°C Max./10 sec.

焊锡：Sn/3.0Ag/0.5Cu

Solder paste: Sn/3.0Ag/0.5Cu

回流焊：最多 2 次

Max.2 times for re-flowing



手工焊 Iron Soldering Profile

烙铁功率：最大 30W

Iron soldering power: Max.30W

预热：150°C/60 sec.

Pre-heating: 150°C/60 sec.

烙铁头温度：最高 350°C

Soldering Tip temperature: 350°C Max.

焊接时间：最多 3sec.

Soldering time: 3 sec Max.

焊锡：Sn/3.0Ag/0.5Cu

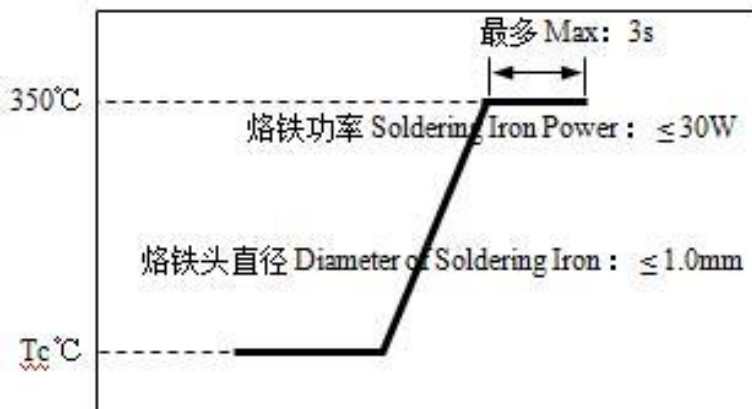
Solder paste: Sn/3.0Ag/0.5Cu

手工焊：最多 1 次

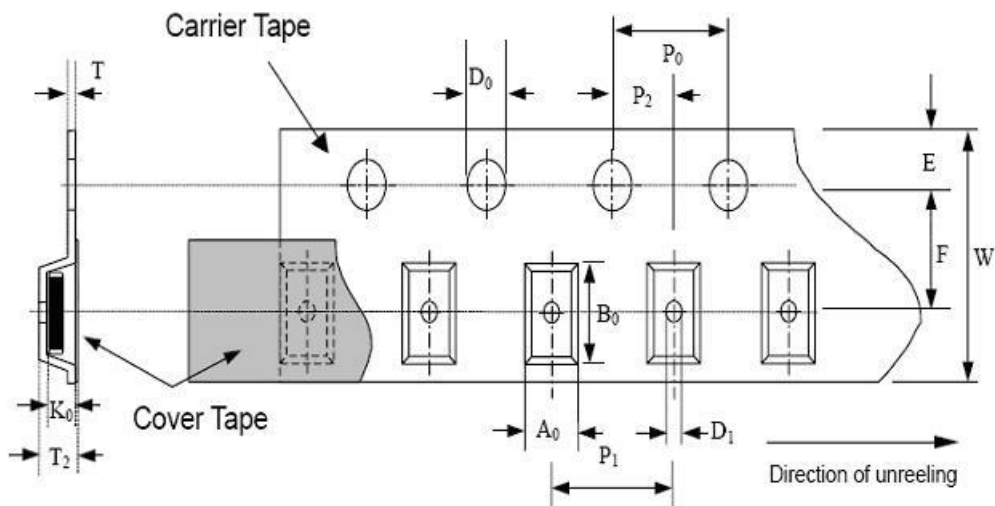
Max.1 time for iron soldering

[注：不要使烙铁头接触到端头]

[Note: Take care not to apply the tip of the soldering iron to the terminal electrodes.]

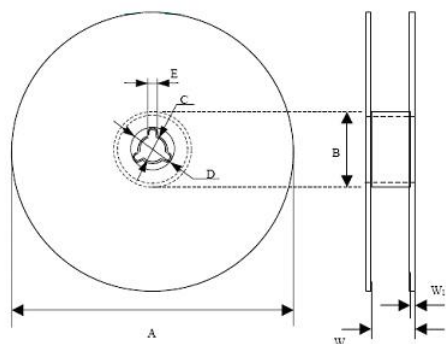


编带包装: Taping and packaging Specification



| Type | A ₀ ±0.20 | B ₀ ±0.20 | K ₀ ±0.10 | T max | T ₂ max | D ₀ +0.05 | D ₁ ±0.05 | P ₁ ±0.10 | P ₂ ±0.05 | P ₀ ±0.1 | W ±0.30 | E ±0.10 | F ±0.05 |
|------|-------------------------|-------------------------|-------------------------|----------|-----------------------|-------------------------|-------------------------|-------------------------|-------------------------|------------------------|------------|------------|------------|
| 3220 | 7.0 | 8.7 | 3.85 | 0.3 | 5.50 | 1.55 | 1.55 | 12.00 | 2.00 | 4.00 | 16.00 | 1.75 | 7.50 |
| 4032 | 8.4 | 10.8 | 3.85 | 0.3 | 5.50 | 1.55 | 1.55 | 12.00 | 2.00 | 4.00 | 24.00 | 1.75 | 11.50 |

卷轴尺寸 Reel dimension



| Type | A | B | C | D | E | W-W1 | W ₁ |
|-----------|-----------|----------|----------|----------|---------|----------|----------------|
| 3220-4032 | 329.0±1.0 | 60.0±0.5 | 13.0±0.2 | 21.0±0.2 | 2.0±0.5 | 17.2±0.7 | 2.3±0.15 |

盘装数量 Quantity of taping packing (pcs): 1000

| RoHS | |
|------|---|
| | LOT : P/N : QTY: KPCS N.W: KGS G.W: KGS |

