

# 规格承认书

SPECIFICATION FOR APPROVAL

客户 CUSTOMER : 立创

品名 PRODUCT : 绕线不燃性涂装电阻器

规格 TYPE : KNP10W系列

客户承认印  
CUSTOMER APPROVED

**VO**® 广东翔胜电子科技有限公司  
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一式二份 翔胜一份 客户一份

| 出图  | 业务  | 审核  | 核准   |
|---|---|---|--|
| DRAWING   | SALES   | AUDITING  | APPROVED   |
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翔胜电子技术品质部

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**无卤**  
(F,Cl,Br,I)

# KNP SERIES

WIREWOUND NONFLAME RESISTORS 绕线不燃性涂漆装电阻器

FLYWIN

## △ FEATURES 特点

- HIGH QUALITY  
高品质.
- SHOCK RESISTANCE  
耐冲击
- STANDARD TOLERANCE : ±1%、±2%、±5%、±10%  
±1%、±2%、±5%、±10%的标准误差
- VARIETY OF PACKAGING-BULK 52mm、63mm、73mm、93mm  
TAPE, CUT AND FORMED  
可供散装、编带52mm、63mm、73mm、93mm、成型、剪脚
- HIGH RESISTANCE RANGE (0Ω05-1KΩ).  
阻抗范围高 (0Ω05-1KΩ).



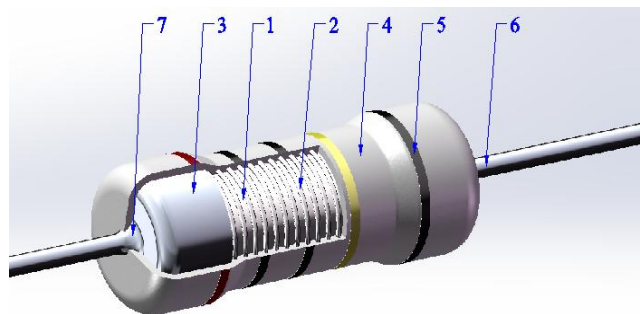
本体



小型化

## △ CONSTRUCTION 结构图

- CERAMIC CORE (HIGH CONDUCTIVITY)  
陶瓷棒心 (高热传导)
- RESISTANCE WIRE  
电阻线
- END CAP (HIGH RELIABILITY FITTING BY ORIGINAL CAP-PRESSING METHOD)  
端帽 (印和度信赖性高)  
HIGH INSULATION AND NON-COMBUSTIBILITY OF FROG RESIN COATING (BULK POWER DIMMED, MINIATURIZED TO BRICK RED)  
高绝缘及不燃性之硅树脂涂料 (本体功率为绿色, 小型化为砖红色)
- COLOR CODE (PER MIL & EIA STANDARDS)  
色码 (符合MIL & EIA规定之标准色码带)
- LEAD WIRE (TINNED COPPER, CP)  
引线 (镀锡铜线、CP线)
- WELDING (LONG RELIABILITY GUARANTEE)  
焊接 (长期可靠性高)



## △ SPECIFICATION: 规格描述

EXAMPLE 例: KNP10W-1K±5%-AP

| KNP           | 10W                 | 1K  | ±5%              | A                   | P                      |
|---------------|---------------------|---|------------------|---------------------|------------------------|
| 品名<br>PRODUCT | 额定功率<br>RATED POWER | 阻值范围<br>RESISTANCE RANGE                  | 误差值<br>TOLERANCE | 线径<br>WIRE DIAMETER | 形状<br>SHAPE            |
| CR 碳膜电阻器      | 1/8W 1/4WS          | 0Ω1-22MΩ                                  | ±10% K           | 0:0.40CU S:0.40CP   | T26 编带26MM             |
| MF 金膜电阻器      | 1/4W 1/2WS          | 阻值表示方法<br>RESISTANCE VALUE REPRESENTATION | ±5% J            | 2:0.50CU X:0.50CP   | T52 编带52MM             |
| MO 氧化膜电阻器     | 1/2W 1WS            | 阻值单位按Ω, K, M                              | ±2% G            | 6:0.60CU T:0.60CP   | T63 编带63MM             |
| MGR 高压玻璃釉电阻器  | 1W 2WS              | 1000Ω=1K 1000K=1M                         | ±1% F            | 9:0.70CU Q:0.70CP   | T73 编带73MM             |
| KNP 绕线电阻器     | 2W 3WS              | 例: 9Ω1/5K6/4M7                            | ±0.5% D          | A:0.75CU D:0.80CP   | T93 编带93MM             |
| NKNP 无感绕线电阻器  | 3W 5WS              |   |                  | C:0.80CU            | P 散装                   |
| FR 保险电阻器      | 5W 7WS              |   |                  |                     | M、MB、MK 卧式成型散装         |
| FRKNP 绕线保险电阻器 | 7W                  |   |                  |                     | FY、FKY、FYL、FKYL 立式成型散装 |
| SCF 高压脉冲电阻器   | 10W                 |   |                  |                     | FT 立式成型编带              |

NOTE1注解: RATED VOLTAGE 额定电压 =  $\sqrt{\text{POWER RATING 额定功率} \times \text{RESISTANCE VALUE 公称阻值}}$

# KNP SERIES

WIREWOUND NONFLAME RESISTORS 绕线不燃性涂漆装电阻器

## △ PERFORMANCE 性能

| CHARACTERISTICS<br>特性项目               | SPECIFICATIONS<br>规格值  | TEST METHODS JIS C 5202<br>测试方法 JIS C 5202标准  |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
|---------------------------------------|--|---|---|----------------|-----------------|-----------|-----------|------------|----|--------------|-------|-----|----------|-----|----|--------------|--|
| DC RESISTANCE<br>直流阻抗值                | J (±5%)  | RESISTANCE VALUE TEST AT ROOM TEMPERATURE 25°C<br>阻值测试在室温25°C   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| T. C. R温度系数                           | <table border="1"> <tr> <td>1/4W</td> <td>1/2WS</td> <td rowspan="8">±350PPM</td> </tr> <tr> <td>1/2W</td> <td>1WS</td> </tr> <tr> <td>1W</td> <td>2WS</td> </tr> <tr> <td>2W</td> <td>3WS</td> </tr> <tr> <td>3W</td> <td>5WS</td> </tr> <tr> <td>5W</td> <td>7WS</td> </tr> <tr> <td>7W</td> <td>10W</td> </tr> </table> | 1/4W  | 1/2WS   | ±350PPM        | 1/2W            | 1WS       | 1W        | 2WS        | 2W | 3WS          | 3W    | 5WS | 5W       | 7WS | 7W | 10W          | $\frac{R2-R1}{R1(T2-T1)} \times 10^6 \text{PPM}/^\circ\text{C}$ R1: RESISTANCE VALUE AT ROOM TEMPERATURE (T1)<br>常温 (T1) 阻抗值<br>R2: RESISTANCE VALUE AT ROOM TEMPERATURE +100°C (T2)<br>常温+100°C 阻抗值 |
| 1/4W                                  | 1/2WS  | ±350PPM   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 1/2W                                  | 1WS  |   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 1W                                    | 2WS  |   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 2W                                    | 3WS  |   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 3W                                    | 5WS  |   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 5W                                    | 7WS  |   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 7W                                    | 10W  |   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| LOAD LIFE IN HUMIDITY<br>湿度寿命         | RESISTANCE CHANGE RATE ±(5%+0.05Ω)<br>WITH NO EVIDENCE OF RESISTOR DAMAGE.<br>阻抗值变化率 (5%±0.05Ω), 电阻器不可有损伤  |   | RESISTANCE CHANGE AFTER 1000H(1.5H ON, 0.5H OFF) AT RATED VOLTAGE IN A HUMIDITY CHAMBER CONTROLLED AT 40+/-2°C AND 90-95% RELATIVE HUMIDITY. (when the test voltage exceeds the working voltage, considering the working voltage)<br>温度40+/-2°C, 相对湿度90-95%于恒温恒湿箱中, 加额定直流电压测试1.5小时停止0.5小时, 连续1000小时。(当实验电压超过最高使用电压, 采用最高使用电压) |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| LOAD LIFE<br>温度寿命                     | RESISTANCE CHANGE RATE ±(5%+0.05Ω) MAX WITH NO EVIDENCE OF RESISTOR DAMAGE.<br>阻抗值变化率 (5%±0.05Ω), 电阻器不可有损伤   | RESISTANCE CHANGE AFTER 1000H OPERATING AT RATED VOLTAGE WITH DUTY CYCLE OF 1.5H ON 0.5H OFF AT 70°C±2°C (when the test voltage exceeds the working voltage, considering the working voltage)<br>温度70+/-2°C, 加额定直流电压测试1.5小时停止0.5小时, 连续1000小时 (当实验电压超过最高使用电压时, 采用最高使用电压)   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| SHORT TIME OVER LOAD<br>短时间过负荷        | ±(1%+0.05Ω)  | RESISTANCE CHANGE AFTER THE APPLICATION OF A POTENTIAL OF 10T RATED VOLTAGE FOR 5 SE (when the test voltage exceeds the maximum overload, consider using the maximum overload voltage)<br>额定电压X10倍, 测试5秒 (当实验电压超过最高过负载时, 采用最高过负载电压)   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| PULSE OVER LOAD<br>断续过负荷              | 1/4W, 1/2W, 1W, 2W, 3W, 5W, 7W, 10W  | RESISTANCE CHANGE AFTER 10000C(1SEC ON, 25SEC OFF) AT 4T RATED VOLTAGE (AC) when the test voltage exceeds the maximum overload, consider using the maximum overload voltage)<br>额定电压*4倍 (交流电压), 测试1秒停止25秒, 测试10000次。(当实验电压超过最高过负荷电压, 采用最高过负荷电压)   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
|                                       | 1/2WS, 1WS, 2WS, 3WS, 5WS, 7WS   | RESISTANCE CHANGE AFTER 10000C(1SEC ON, 25SEC OFF) AT 4T RATED VOLTAGE (AC) when the test voltage exceeds the maximum overload, consider using the maximum overload voltage)<br>额定电压*4倍 (交流电压), 测试1秒停止25秒, 测试10000次。(当实验电压超过最高过负荷电压, 采用最高过负荷电压)   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| RESISTANCE TO SOLVENT<br>耐溶剂性         | NO VISIBLE DAMAGES TO PROTECTIVE COATING AND MARKING (外观无异常, 标识能够清楚易辨)   | SOAK 3MIN IN THE MELTING AGENT TO AGAIN AND AGAIN WIPE 10 TIMES (三氯乙稀浸泡3分钟, 再用湿布反复擦拭10次)  |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| INSULATION RESISTANCE<br>绝缘阻抗         | >100MΩ   |   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| ELECTRIC WITHSTANDING VOLTAGE<br>绝缘耐压 | RESISTANCE CHANGE RATE ±(1%+0.05Ω) WITH NO EVIDENCE OR RESISTOR DAMAGE.<br>阻抗值变化率±(1%+0.05Ω), 电阻器不可有损伤   | ELECTRIC RESISTANCE BOTH ENDS THE CONJUNCTION LINE PUT ON THE METALS V TYPE THE SLOT, ACCORDING TO THE ELECTRIC VOLTAGE PROVISION OF THE CHARACTERISTIC WATCH 60 SECONDS INFLICTION<br>电阻两端导线置于金属V型槽上, 依特性表之电压规定施加60秒   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| TEMPERATURE CYCLING<br>温度循环           | RESISTANCE CHANGE RATE IS ±(1%+0.05Ω) MAX, WITH NO EVIDENCE OF RESISTOR DAMAGE.<br>阻抗值变化率±(1%+0.05Ω) 以内, 电阻器不可有损伤  | <table border="1"> <thead> <tr> <th>STEP 步骤、</th> <th>TEMPERATURE 温度</th> <th>TIME (MIN) 放置时间</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55°C±2°C</td> <td>30</td> </tr> <tr> <td>2</td> <td>ROOM TEMP 室温</td> <td>10-15</td> </tr> <tr> <td>3</td> <td>85°C±2°C</td> <td>30</td> </tr> <tr> <td>4</td> <td>ROOM TEMP 室温</td> <td>10-15</td> </tr> </tbody> </table>                      | STEP 步骤、  | TEMPERATURE 温度 | TIME (MIN) 放置时间 | 1         | -55°C±2°C | 30         | 2  | ROOM TEMP 室温 | 10-15 | 3   | 85°C±2°C | 30  | 4  | ROOM TEMP 室温 | 10-15  |
| STEP 步骤、                              | TEMPERATURE 温度   | TIME (MIN) 放置时间   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 1                                     | -55°C±2°C  | 30  |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 2                                     | ROOM TEMP 室温   | 10-15   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 3                                     | 85°C±2°C   | 30  |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 4                                     | ROOM TEMP 室温   | 10-15   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| RESISTANCE TO SOLDERING HEAT<br>耐热性   | RESISTANCE CHANGE RATE IS ±(1%+0.05Ω) MAX, WITH NO EVIDENCE OF RESISTOR DAMAGE.<br>阻抗值变化率 (1%±0.05Ω) 以内, 电阻器不可有损伤  | PUT THE LEAD LINE OF RESISTANCE INTO THE SOLDERING ABOUT 3.2 TO 4.8MM<br>PLEASE TAKE IMPLEMENTATION ON THE BASIS OF THE TABLE BELOW<br>将电阻两端导线浸入锡炉约3.2至4.8mm依下表规定实施 <table border="1"> <thead> <tr> <th>TEMPERATURE 温度</th> <th>DIP TIME 放置时间</th> </tr> </thead> <tbody> <tr> <td>350°C±10°C</td> <td>3±0.5 SEC</td> </tr> <tr> <td>260°C±5°C</td> <td>10±1.0 SEC</td> </tr> </tbody> </table> | TEMPERATURE 温度  | DIP TIME 放置时间  | 350°C±10°C      | 3±0.5 SEC | 260°C±5°C | 10±1.0 SEC |    |              |       |     |          |     |    |              |  |
| TEMPERATURE 温度                        | DIP TIME 放置时间  |   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 350°C±10°C                            | 3±0.5 SEC  |   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| 260°C±5°C                             | 10±1.0 SEC   |   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| SOLDERABILITY<br>焊锡性                  | 95% COVERAGE MINIMUM<br>95%覆盖于导线上  | TEST TEMPERATURE OF SOLDER: 230°C±5°C<br>DWELL TIME IN SOLDER: 3±0.5 SEC<br>锡炉温度: 230°C±5°C 浸锡时间: 3±0.5 秒   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| SOLDER JOINT PULL<br>焊点拉力             | PULLING TEST FOR 1/8W≥1.8KG, 1/4W≥3.8KG, 1/2W BIGGER THAN ≥5KG<br>拉力强度 1/8W≥1.8KG, 1/4W≥3.8KG, 1/2W 含以上≥5KG  | SECURE BOTH LEAD WIRE ON EACH SIDE OF PULLING MACHING AND THEN PULL IT<br>将成品电阻铜线一端夹在拉力器的一端, 铜线另一端也夹在拉力器上, 再摇动拉力器   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |
| Life & failure rate<br>寿命失效率          | Under the rated condition Use Life ≥ 10000H<br>额定条件下使用寿命≥10000小时   | failure rate ≤ 10PPM<br>失效率 ≤ 10PPM   |   |                |                 |           |           |            |    |              |       |     |          |     |    |              |  |

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WIREWOUND NONFLAME RESISTORS 绕线不燃性涂漆装电阻器

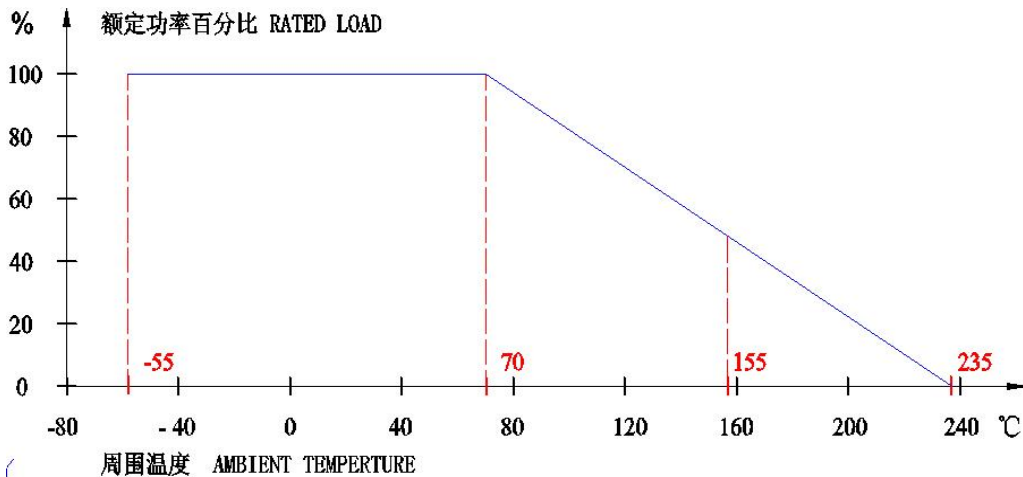
## △ POWER CHARACTERISTIC 电力特性

| POWER PATED<br>额定功率<br>ITEM<br>项目              | 1/4W                             | 1/2WS  | 1/2W   | 1WS    | 1W     | 2WS    | 2W     | 3WS    | 3W     | 5WS    | 5W     | 7WS    | 7W     | 10W    |
|--|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MAX WORKING VOLTAGE<br>最高使用电压                  | 200V                             | 250V   | 250V   | 350V   | 350V   | 500V   | 500V   | 500V   | 500V   | 500V   | 500V   | 500V   | 500V   | 500V   |
| MAX OVERLOAD VOLTAGE<br>最高过负荷电压                | 400V                             | 500V   | 500V   | 700V   | 700V   | 1000V  | 1000V  | 1000V  | 1000V  | 1000V  | 1000V  | 1000V  | 1000V  | 1000V  |
| MAX INTERMITTENCE OVER LOAD VOLTAGE<br>最高断续过负荷 | 400V                             | 500V   | 500V   | 700V   | 700V   | 1000V  | 1000V  | 1000V  | 1000V  | 1000V  | 1000V  | 1000V  | 1000V  | 1000V  |
| ELECTRIC WITHSTANDING VOLTAGE<br>绝缘耐电压         | 300V                             | 300V   | 300V   | 300V   | 350V   | 350V   | 400V   | 400V   | 500V   | 500V   | 500V   | 500V   | 500V   | 500V   |
| RESISTANCE TOLERANCE<br>阻抗误差值                  | K (±10%) J (±5%) G (±2%) F (±1%) |        |        |        |        |        |        |        |        |        |        |        |        |        |
| RANGE (OHM)<br>阻抗值范围                           | MIN                              | 0.05 Ω | 0.05 Ω | 0.05 Ω | 0.05 Ω | 0.05 Ω | 0.05 Ω | 0.05 Ω | 0.05 Ω | 0.05 Ω | 0.05 Ω | 0.05 Ω | 0.05 Ω | 0.05 Ω |
|  | MAX                              | 150 Ω  | 150 Ω  | 200 Ω  | 200 Ω  | 330 Ω  | 330 Ω  | 510 Ω  | 510 Ω  | 680 Ω  | 680 Ω  | 1K Ω   | 1K Ω   | 12K Ω  |

NOTE注解: 1M ohm is high risk resistance for thin film resistors.

薄膜电阻1M以上阻值为高风险阻值

## △ POWER DERATING CURVE 负载衰减曲线



NOTE注解:

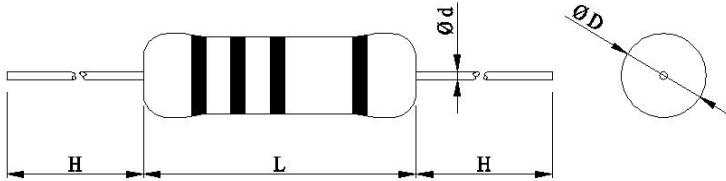
- 1 RATED AMBIENT TEMPERATURE :70°C  
额定周围温度: 70°C
- 2 OPERATING TEMPERATURE RANGE:-55°C~+235°C  
使用温度范围: -55°C~+235°C
- 3 FOR RESISTORS IPERATED IN AMBIENT TEMPERATURE OVER 70°C, POWER RATING SHALL BE DERATED IN ACCORDANCE WITH THE FIGURE  
周围温度70°C以上使用时, 根据降功率曲线将减轻额定功率

# KNP SERIES

WIREWOUND NONFLAME RESISTORS 绕线不燃性涂漆装电阻器

## △ TYPE DIMENSION 型号尺寸

◆ BULK TYPE 散装

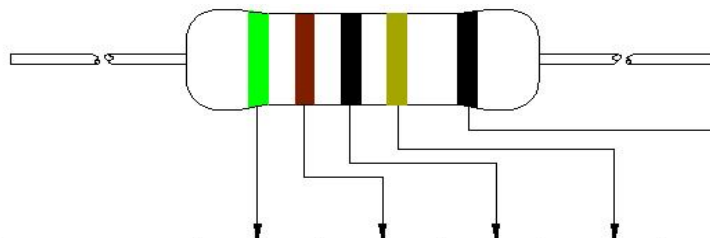


| POWER<br>功率 | DIMENSION 尺寸 (mm) |        |         |       |
|-------------|-------------------|--------|---------|-------|
|             | L±1.0             | ØD±1.0 | Ød±0.05 | H±3.0 |
| 10W         | 41                | 7.5    | 0.75    | 30    |

## △ PACKAG 包装

| POWER<br>功率 | SHAPE<br>形状 | MPQ (KPCS)<br>最小包装量 | QTY-BOX (KPCS)<br>单盒数量 | QTY-CARTON (KPCS)<br>单箱数量 |
|-------------|-------------|---------------------|------------------------|---------------------------|
| 10W         | P           | 0.02                | 0.2                    | 2                         |

## △ COLOR CODE 色码



| COLOR<br>颜色 | NO. 1<br>第一数字 | NO. 2<br>第二数字 | NO. 3<br>倍率      | NO. 4<br>允许误差 | NO. 5<br>识别码 |
|-------------|---------------|---------------|------------------|---------------|--------------|
| BLACK (黑)   | 0             | 0             | 10 <sup>0</sup>  |               | KNP          |
| BROWN (棕)   | 1             | 1             | 10 <sup>1</sup>  | ±1% (F)       |              |
| RED (红)     | 2             | 2             | 10 <sup>2</sup>  | ±2% (G)       |              |
| ORANGE (橙)  | 3             | 3             | 10 <sup>3</sup>  |               |              |
| YELLOW (黄)  | 4             | 4             | 10 <sup>4</sup>  |               |              |
| GREEN (绿)   | 5             | 5             | 10 <sup>5</sup>  |               | NKNP         |
| BLUE (蓝)    | 6             | 6             | 10 <sup>6</sup>  |               | SCF          |
| VIOLET (紫)  | 7             | 7             | 10 <sup>7</sup>  |               |              |
| GRAY (灰)    | 8             | 8             | 10 <sup>8</sup>  |               |              |
| WHITE (白)   | 9             | 9             | 10 <sup>9</sup>  |               | FR           |
| GOLD (金)    |               |               | 10 <sup>-1</sup> | ±5% (J)       |              |
| SILVER (银)  |               |               | 10 <sup>-2</sup> | ±10% (K)      |              |

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