

Feature (特性)

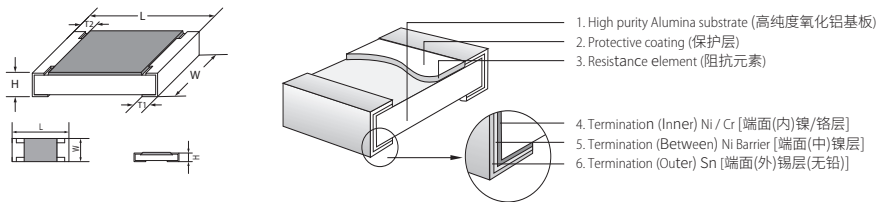
- Thin film NiCr Resistance element
薄膜镍铬阻抗组件
- Very tight tolerance $\pm 0.05\% \sim \pm 1\%$
高精密的公差 $\pm 0.05\% \sim \pm 1\%$
- Extremely low TCR $\pm 5\text{ppm} \sim \pm 50\text{ppm}$
极低的温度系数 $\pm 5\text{ppm} \sim \pm 50\text{ppm}$
- Completed Lead-free 完全无铅产品

Application (应用)

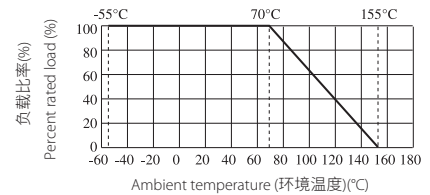
- Automotive 汽车电子
- Automatic equipment 自动化设备
- Communication & telecom 通信终端及设备
- Industrial 工业电子
- Medical Equipment 医疗器材



Figures (型状)



Derating Curve (降功率曲线)



| Type 类型 | Size 尺寸 | L (mm) | W (mm) | H (mm) | A (mm) | B (mm) |
|---------|-------------|-----------|--|-----------|----------|-----------|
| TC02 | 0402 (1005) | 1.00±0.10 | 0.50±0.05 | 0.35±0.05 | 0.2±0.1 | 0.25±0.10 |
| TC03 | 0603 (1608) | 1.60±0.10 | 0.80±0.10 | 0.45±0.10 | 0.3±0.2 | 0.30±0.20 |
| TC05 | 0805 (2012) | 2.00±0.15 | 1.25 ^{+0.15} _{-0.10} | 0.55±0.10 | 0.3±0.2 | 0.40±0.20 |
| TC06 | 1206 (3216) | 3.10±0.15 | 1.55 ^{+0.15} _{-0.10} | 0.55±0.10 | 0.4±0.2 | 0.45±0.20 |
| TC07 | 1210 (3225) | 3.10±0.10 | 2.60±0.20 | 0.55±0.10 | 0.4±0.2 | 0.45±0.20 |
| TC10 | 2010 (5025) | 5.00±0.10 | 2.50±0.20 | 0.55±0.10 | 0.5±0.25 | 0.50±0.20 |
| TC12 | 2512 (6432) | 6.35±0.10 | 3.20±0.20 | 0.55±0.10 | 0.5±0.25 | 0.50±0.20 |

Performance Specifications (性能)

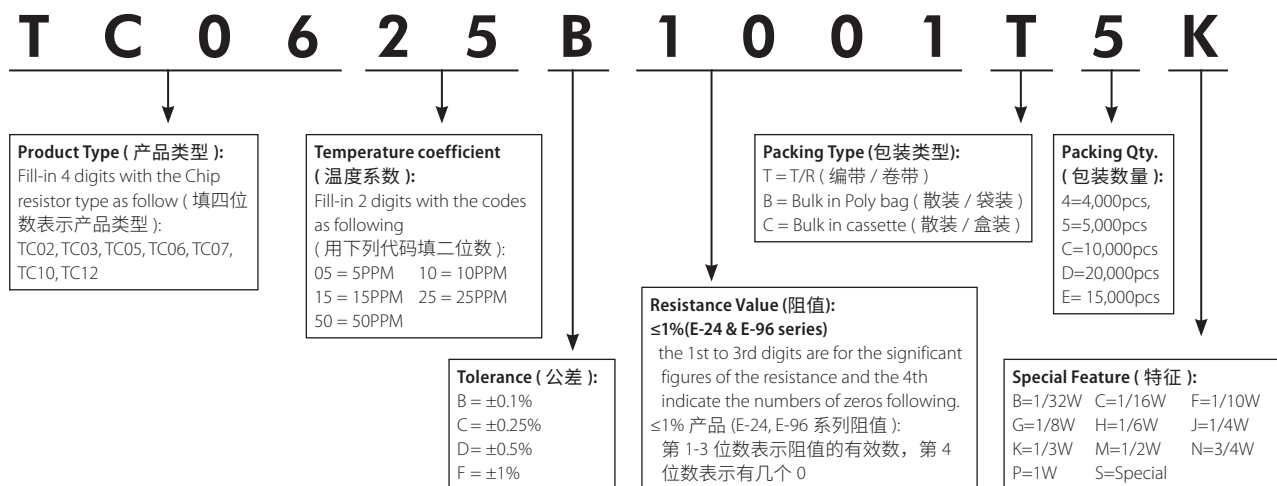
| Test Item 试验项目 | Test Methods 试验方法 | Evaluation Criteria 判定标准 |
|------------------------------|---|--|
| Short-time overload 短时间过负荷 | 2.5x Rated voltage or Max. Overload Voltage whichever is lower for 5 seconds, then check the resistance. 2.5 倍额定电压或最大过负荷电压 (取其低者), 持续 5 秒钟, 然后测阻值 | $\Delta R \leq \pm 0.5\%$ |
| Insulation resistance 绝缘电阻 | 1. Chip Resistor: the measuring voltage shall be, measured with a direct voltage of (100±15)V or a voltage equal to the dielectric withstanding voltage, and apply for 1 min. 2. TH Resistor: the measuring voltage shall be equal to the dielectric withstanding voltage for resistor with an isolation voltage < 500V or (500±50)V DC, for resistors with an isolation voltage ≥ 500V. 1. 贴片电阻: 绝缘耐压 < 100V, 测试电压取绝缘耐压的电压; 绝缘耐压 ≥ 100V, 测试电压为 100±15VDC, 1 分钟后量测阻值。 2. 插件电阻: 绝缘耐压 < 500V, 测试电压取绝缘耐压的电压; 绝缘耐压 ≥ 500V, 测试电压为 500±50VDC, 1 分钟后量测阻值。 | ≥ 1,000MΩ |
| Load life in humidity 湿度寿命 | Resistance change after 1000 hours (1.5hours"ON", 0.5hours"OFF") at RCWV or Max.Working Voltage whichever less in a humidity test chamber controlled at 40±2°C and 90~95% RH. 持续时间: 1000h (1.5h"通", 0.5h"断"); 试验温度: 40±2°C; 相对湿度: 90~95% RH; 试验电压: 额定工作电压或最大工作电压 (取其低者)。 | $\Delta R \leq \pm 0.5\%$ |
| Load life 负载寿命 | Permanent Resistance change after 1000 hours operating at RCWV or Max.Working Voltage whichever less with duty cycle of 1.5 hours "ON", 0.5 hour "OFF" at 70±2°C ambient. 持续时间: 1000h (1.5h"通", 0.5h"断"); 试验温度: 70±2°C; 试验电压: 额定工作电压或最大工作电压 (取其低者)。 | $\Delta R \leq \pm 0.2\%$ > 7KΩ $\Delta R \leq \pm 0.5\%$ |
| Humidity (Steady State) 恒定湿热 | Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2°C and 90~95% RH. 在 40±2°C 和 90~95% RH 相对湿度条件下, 存放 240h 后阻值变化率。 | $\Delta R \leq \pm 0.3\%$ |
| Terminal bending 端子弯曲 | (Applicable for CHIP Resistors 适用晶片电阻) Twist of Test Board: Y/X=3/90mm 60 seconds. 测试板弯曲: Y/X=3/90mm 60 秒。 | $\Delta R \leq \pm 0.2\%$ |
| Solderability 可焊性 | The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Temperature of solder: 245±3°C; Dwell time in solder: 2~3 seconds. 表面光滑、清洁、均匀、有光泽, 锡炉温度: 245±3°C; 浸入时间: 2~3 秒。 | Coverage must be over 95%. |
| Soldering heat 耐焊接热 | (Applicable for TH Resistors 适用插件电阻) Permanent resistor change when leads immersed to a point 2.0~2.5mm from the body in 260±5°C solder 10±1 seconds. 锡炉温度 260±5°C, 浸入深度: 离本体导线根部约 2.0~2.5mm, 处浸入时间 10±1 秒。 | $\Delta R \leq \pm 0.2\%$ |

Electrical Data (电气参数)

| Type 类型 | Power Rating 功率 at 70°C | Operating Temperature 工作温度范围 | Max.Working Voltage 最大工作 电压 | Max.Overload Voltage 最大过负荷 电压 | Dielectric With-standing Voltage 绝缘耐压 | Resistance Range 阻值范围 | | | | TCR 温度系数 |
|------------|-------------------------------|------------------------------------|--------------------------------------|--|--|-----------------------|------------|-----------|-----------|-------------|
| | | | | | | ±0.05% | ±0.1% | ±0.25% | ±0.5% ±1% | |
| TC02 | 1/16W | -55°C~+155°C | 25V | 50V | 100V | / | 100Ω~2KΩ | 100Ω~2KΩ | 100Ω~2KΩ | ±5PPM/°C |
| | | | | | | / | 50Ω~12KΩ | 50Ω~12KΩ | 50Ω~12KΩ | ±10PPM/°C |
| | | | | | | / | 10Ω~332KΩ | 10Ω~332KΩ | 10Ω~332KΩ | ±25PPM/°C |
| | | | | | | / | 10Ω~332KΩ | 10Ω~332KΩ | 10Ω~332KΩ | ±50PPM/°C |
| TC03 | 1/10W | -55°C~+155°C | 75V | 150V | 300V | / | 100Ω~4KΩ | 100Ω~4KΩ | 100Ω~4KΩ | ±5PPM/°C |
| | 1/6W | | | | | / | 10Ω~50KΩ | 10Ω~50KΩ | 10Ω~50KΩ | ±10PPM/°C |
| | | | | | | 4.7Ω~332K | 4.7Ω~1MΩ | 1.5Ω~1MΩ | 1Ω~1MΩ | ±25PPM/°C |
| TC05 | 1/8W | -55°C~+155°C | 150V | 300V | 500V | / | 100Ω~10KΩ | 100Ω~10KΩ | 100Ω~10KΩ | ±5PPM/°C |
| | 1/4W | | | | | / | 10Ω~100KΩ | 10Ω~100KΩ | 10Ω~100KΩ | ±10PPM/°C |
| | | | | | | 4.7Ω~511K | 4.7Ω~2MΩ | 1Ω~2MΩ | 1Ω~2MΩ | ±25PPM/°C |
| | | | | | | 4.7Ω~511K | 4.7Ω~2MΩ | 1Ω~2MΩ | 1Ω~2MΩ | ±50PPM/°C |
| TC06 | 1/4W | -55°C~+155°C | 200V | 400V | 500V | / | 100Ω~15KΩ | 100Ω~15KΩ | 100Ω~15KΩ | ±5PPM/°C |
| | 1/3W | | | | | / | 10Ω~200KΩ | 10Ω~200KΩ | 10Ω~200KΩ | ±10PPM/°C |
| | | | | | | 4.7Ω~1M | 4.7Ω~2.5MΩ | 1Ω~2.5MΩ | 1Ω~2.5MΩ | ±25PPM/°C |
| | | | | | | 4.7Ω~1M | 4.7Ω~2.5MΩ | 1Ω~2.5MΩ | 1Ω~2.5MΩ | ±50PPM/°C |
| TC07 | 1/3W | -55°C~+155°C | 200V | 400V | 500V | / | 100Ω~25KΩ | 100Ω~25KΩ | 100Ω~25KΩ | ±5PPM/°C |
| | | | | | | / | 50Ω~200KΩ | 50Ω~200KΩ | 50Ω~200KΩ | ±10PPM/°C |
| | | | | | | 4.7Ω~1M | 4.7Ω~2.5MΩ | 1Ω~2.5MΩ | 1Ω~2.5MΩ | ±25PPM/°C |
| | | | | | | 4.7Ω~1M | 4.7Ω~2.5MΩ | 1Ω~2.5MΩ | 1Ω~2.5MΩ | ±50PPM/°C |
| TC10 | 1/3W | -55°C~+155°C | 200V | 400V | 500V | / | 100Ω~25KΩ | 100Ω~25KΩ | 100Ω~25KΩ | ±5PPM/°C |
| | 1/2W | | | | | / | 50Ω~200KΩ | 50Ω~200KΩ | 50Ω~200KΩ | ±10PPM/°C |
| | | | | | | 4.7Ω~1M | 4.7Ω~3MΩ | 1Ω~3MΩ | 1Ω~3MΩ | ±25PPM/°C |
| | | | | | | 4.7Ω~1M | 4.7Ω~3MΩ | 1Ω~3MΩ | 1Ω~3MΩ | ±50PPM/°C |
| TC12 | 3/4W | -55°C~+155°C | 200V | 400V | 500V | / | 100Ω~25KΩ | 100Ω~25KΩ | 100Ω~25KΩ | ±5PPM/°C |
| | 1W | | | | | / | 50Ω~200KΩ | 50Ω~200KΩ | 50Ω~200KΩ | ±10PPM/°C |
| | | | | | | 10Ω~1M | 4.7Ω~3MΩ | 1Ω~3MΩ | 1Ω~3MΩ | ±25PPM/°C |
| | | | | | | 10Ω~1M | 4.7Ω~3MΩ | 1Ω~3MΩ | 1Ω~3MΩ | ±50PPM/°C |

Ordering Procedure (Example:Thin Film TC06 1/3W 0.1% 25PPM 1KΩ T/R-5000)

订购方式(例如: 薄膜TC06 1/3W 0.1% 25PPM 1KΩ T/R-5000)



Remark: Please refer to page 140 for ordering guide. 注: 下单请详见 P140 页说明。