DataSheet No.:E16003
Version:V8
Date:2024/4/16

睿思

# PTFR

## High-Stability Precision Thin Film Chip Resistor

| | |
|---|---|
| Resistance | 10Ω~5.1MΩ |
| Tolerance | ±0.01% |
| TCR | ±5ppm/℃ |
| Load Life | ±0.01% |

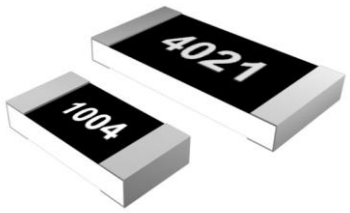
## Applications

Automotive Electronics
Medical Equipment
Precision Instrumentation

**Better Solution for Sustainable High End Manufacturing**

# Tightest Tolerance of ±0.01% & TCR of ±5ppm

# High Reliability, Low Noise, Moisture Resistance, Anti-Sulfur




## Introduction

The long-term stability of thin film chip resistors is the most important. Tight tolerance without good long-term stability is meaningless. The long-term stability of resistors is related to time, power, and temperature. The higher power, higher temperature, and longer time lead to the greater change of resistance. PTFR series launched by Resi has excellent long-term stability. **Under rated power at an ambient temperature of +70℃ for 2000 hours, the typical change in resistance is less than ±0.01% and max. change is less than ±0.1% (for most thin film resistors, the change would be ±0.5%).** In addition, PTFR has excellent TCR performance in temperature range of -55℃ to +155℃.

In terms of moisture resistance, PTFR adopts an enhanced protective coating to prevent resistive layer from moisture. **Under test condition of 85℃, 85%RH and loading 1000 hours, the typical change in resistance is less than ±0.025% and max. change is less than ±0.1% (for most thin film resistors, the change would be ±0.5%).** Larger size, higher rated power, higher resistance, and TCR as low as ± 2ppm/℃ are available for custom requirements. If the standard specifications cannot meet your needs, please contact our sales. Resi is committed to providing customers with the best precision resistor solutions to meet the needs of customers in instrument, medical, automotive, railway, electric power, and other fields.

RoHS AEC-Q200 3D

## Electrical Parameters

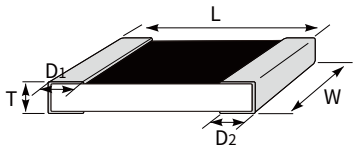
| Size | Rated Power (+70℃) | Max. Operating Voltage | Operating Temperature | E-Series Value | TCR ppm/℃ | Resistance Ω | Tolerance % |
|---|---|---|---|---|---|---|---|
| PTFR0402 | 0.03W$^{L}$<br>0.06W$^{R}$<br>0.13W$^{H}$ | 75V | -55℃~+155℃ | E24, E96 | ±100 | 10≤R<47 | ±0.5 |
| | | | | | ±10, ±25 | 47≤R<100 | ±0.05, ±0.1, ±0.5 |
| | | | | | ±5, ±10, ±25 | 100≤R<3K | ±0.01, ±0.02, ±0.05, ±0.1, ±0.5 |
| | | | | | ±10, ±25 | 3K≤R<100K | ±0.05, ±0.1, ±0.5 |
| | | | | | ±10, ±25 | 100K≤R≤150K | ±0.1, ±0.5 |
| PTFR0603 | 0.06W$^{L}$<br>0.1W$^{R}$<br>0.17W$^{H}$ | 100V | -55℃~+155℃ | E24, E96 | ±50 | 10≤R<47 | ±0.5 |
| | | | | | ±10, ±25 | 47≤R<100 | ±0.05, ±0.1, ±0.5 |
| | | | | | ±5, ±10, ±25 | 100≤R<5.1K | ±0.01, ±0.02, ±0.05, ±0.1, ±0.5 |
| | | | | | ±10, ±25 | 5.1K≤R≤270K | ±0.05, ±0.1, ±0.5 |
| | | | | | ±25 | 270K<R≤332K | ±0.1, ±0.5 |
| | | | | | ±25 | 332K<R≤1M | ±0.1, ±0.5 |
| PTFR0805 | 0.1W$^{L}$<br>0.13W$^{R}$<br>0.25W$^{H}$ | 150V | -55℃~+155℃ | E24, E96 | ±50 | 10≤R<47 | ±0.5 |
| | | | | | ±10, ±25 | 47≤R<100 | ±0.05, ±0.1, ±0.5 |
| | | | | | ±5, ±10, ±25 | 100≤R<10.2K | ±0.01, ±0.02, ±0.05, ±0.1, ±0.5 |
| | | | | | ±10, ±25 | 10.2K≤R≤475K | ±0.05, ±0.1, ±0.5 |
| | | | | | ±25 | 475K<R≤2.7M | ±0.1, ±0.5 |
| PTFR1206 | 0.13W$^{L}$<br>0.25W$^{R}$ | 200V | -55℃~+155℃ | E24, E96 | ±50 | 10≤R<47 | ±0.5 |
| | | | | | ±10, ±25 | 47≤R<100 | ±0.05, ±0.1, ±0.5 |
| | | | | | ±5, ±10, ±25 | 100≤R<33.2K | ±0.01, ±0.02, ±0.05, ±0.1, ±0.5 |
| | | | | | ±10, ±25 | 33.2K≤R≤1M | ±0.05, ±0.1, ±0.5 |
| | | | | | ±25 | 1M<R≤5.1M | ±0.1, ±0.5 |

*The power above is the actual loading power, which refer to the different test results in Performance. L = Low Power, R = Regular Power, H = High power.

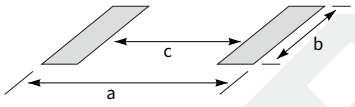
## Dimensions

Unit:mm

**Resistor**




**Land Pattern**




| Size | L | W | T | $D_1$ | $D_2$ | a | b | c | Packaging | Quantity Per Reel | Net Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0402 | 1.00±0.05 | 0.50±0.05 | 0.35±0.05 | 0.20±0.05 | 0.25±0.05 | 1.60±0.2 | 0.60±0.2 | 0.50±0.2 | Tape & Reel | 5000pcs | 0.72mg |
| 0603 | 1.60±0.20 | 0.80±0.20 | 0.40±0.10 | 0.30±0.20 | 0.30±0.20 | 3.00±0.2 | 1.20±0.2 | 1.00±0.2 | Tape & Reel | 5000pcs | 2.07mg |
| 0805 | 2.00±0.20 | 1.25±0.20 | 0.40±0.10 | 0.40±0.20 | 0.40±0.20 | 4.00±0.2 | 1.65±0.2 | 1.20±0.2 | Tape & Reel | 5000pcs | 4.12mg |
| 1206 | 3.20±0.20 | 1.60±0.20 | 0.40±0.10 | 0.50±0.20 | 0.50±0.20 | 5.00±0.2 | 2.00±0.2 | 2.20±0.2 | Tape & Reel | 5000pcs | 8.26mg |

## Part Number Information

Example: PTFR0402A10K0N9 ( PTFR 0402 ±0.05% 10KΩ ±10ppm/°C Standard )

| P | T | F | R | 0 | 4 | 0 | 2 | A | 1 | 0 | K | 0 | N | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

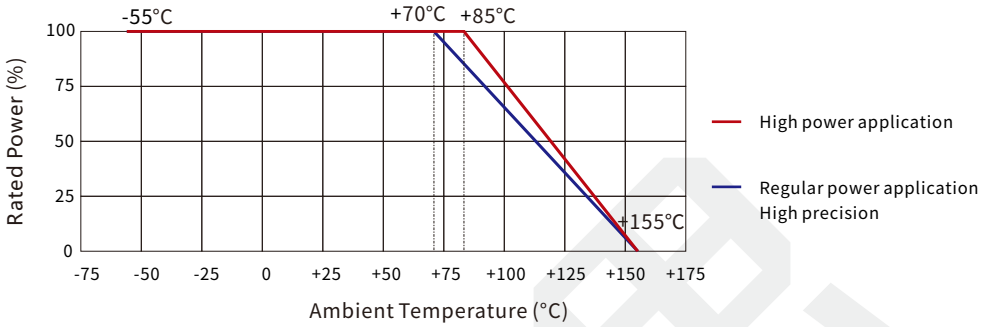
| Series | Size | Tolerance | Resistance | TCR | Code |
|---|---|---|---|---|---|
| PTFR | 0402 | T=±0.01% | 10R0=10Ω | V=±5ppm/°C | 9=Standard |
| | 0603 | Q=±0.02% | 1K00=1000Ω | N=±10ppm/°C | 0-8=Custom |
| | 0805 | A=±0.05% | 1M00=1000000Ω | P=±25ppm/°C | |
| | 1206 | B=±0.1% | 5M10=5100000Ω | Q=±50ppm/°C | |
| | | D=±0.5% | | K=±100ppm/°C | |

For higher/lower resistance, tighter tolerance, higher power, lower TCR and larger size, please contact us.

## Performance

| Test | Test Method | Standards | Typical | Max. |
|---|---|---|---|---|
| High Temperature Storage | 1000h@+155°C, unpowered | AEC-Q200 TEST 3<br>MIL-STD-202 Method 108 | △R≤±0.01%[L] | R≤47Ω:△R≤±(0.25%+0.05Ω)<br>R≥47Ω:△R≤±(0.1%+0.01Ω) |
| Temperature Cycling | -55°C, 30min ~ +125°C, 30min，1000 cycles | AEC-Q200 TEST 4<br>JESD22 Method JA-104 | △R≤±0.01%[L] | R≤47Ω:△R≤±(0.25%+0.05Ω)<br>R≥47Ω:△R≤±(0.1%+0.01Ω) |
| Bias Humidity | +85°C, 85%RH, powered no less than 10% rated power for 1000h | AEC-Q200 TEST 7<br>MIL-STD-202 Method 103 | △R≤±0.05%[L] | R≤47Ω:△R≤±(0.25%+0.05Ω)[L]<br>R≥47Ω:△R≤±(0.1%+0.01Ω)<br>R≤47Ω:△R≤±(0.5%+0.05Ω)[R]<br>R≥47Ω:△R≤±(0.25%+0.05Ω)<br>R≥47Ω:△R≤±(0.5%+0.01Ω)[H] |
| Load Life | 2000h @ +70°C, rated power, 90min on，30min off | AEC-Q200 TEST 8<br>MIL-STD-202 Method 108 | △R≤±0.01%[L] | R≤47Ω:△R≤±(0.25%+0.05Ω)[L]<br>R≥47Ω:△R≤±(0.1%+0.01Ω)<br>R≤47Ω:△R≤±(0.5%+0.05Ω)[R]<br>R≥47Ω:△R≤±(0.25%+0.05Ω)<br>R≥47Ω:△R≤±(0.5%+0.01Ω)[H] |
| Resistance to Solvent | Immerse in solvent for 3 min and wipe 10 times. Three cycles of three solvents. Dry at ambient temperature after cleaning | AEC-Q200 TEST 12<br>MIL-STD-202 Method 215 | Clear marking. No visible damage | |
| Resistance to Solder Heat | +260±5°C tin bath for 10s | AEC-Q200 TEST 15<br>MIL-STD-202 Method 210 | △R≤±0.01%[L] | △R≤±(0.05%+0.01Ω) |
| Solderability | +245°C tin bath for 3s | AEC-Q200 TEST 18<br>IEC 60115-1 4.17 | No visible damage.<br>95% minimum coverage | |
| TCR | -55°C and +85°C, +25°C Ref. | AEC-Q200 TEST 19<br>IEC 60115-1 4.8 | Within the nominal value range | |
| Flammability | Flame the sample for 10 seconds, twice | AEC-Q200 TEST 20<br>UL-94 V-0 or V-1 is acceptable and does not require electrical testing | Incomplete burnout, thin pad paper not ignited, pine board not charred | |
| Substrate Bending | 0805 and below: 5mm, 1206 1210: 4mm, 2010 2512: 2mm, duration: 60s | AEC-Q200 TEST 21<br>AEC-Q200-005 | △R≤±0.01% | △R≤±0.05% |
| Flame Retardance | 9-32 VDC (clamping current up to 500A), increment of 1.0VDC, at least 1h for each voltage level | AEC-Q200 TEST 24<br>AEC-Q200-001 | Non inflammable | |
| Insulation Resistance | Apply a DC voltage of 100V between the electrode and the substrate for 60s | IEC 60115 -1 4.6 | 10000MΩ, minimum | |
| Withstand Voltage | Apply a AC voltage with an effective maximum overload voltage between the electrode and the substrate at a speed of approximately 100V/s for 60s | IEC 60115-1 4.7 | No breakdown or flashover | |
| Short Time Overload | 2.5x rated voltage, 5s | IEC 60115-1 4.13 | △R≤±0.01%[L] | △R≤±(0.05%+0.01Ω) |
| Low Temperature Operation | -65°C，No Load, 24 h ~ Rated Voltage, 45 min. | IEC 60115-1 4.36 | △R≤±0.01% | △R≤±0.05% |

## Derating Curve

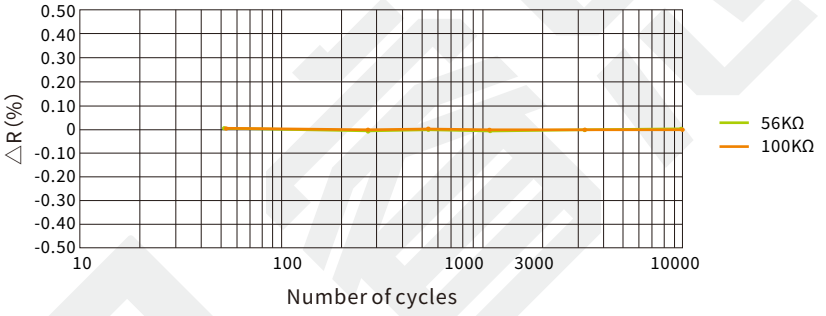



## Temperature Cycling

Test Sample: PTFR0603

Test Method: -55°C (30min) ~ambient temperature(3min)~
+125°C (30min) ~ambient temperature(3min)

Sampling Size: 50

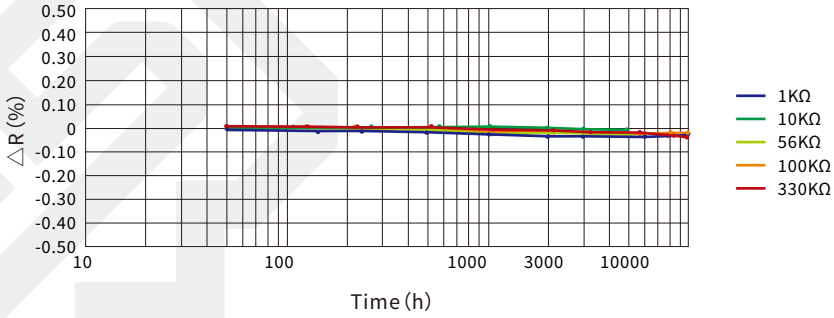



## Load Life

Test Sample:PTFR0603

Test Method: +85°C, 0.1W rated power, 90min on，30min off

Sampling Size: 100

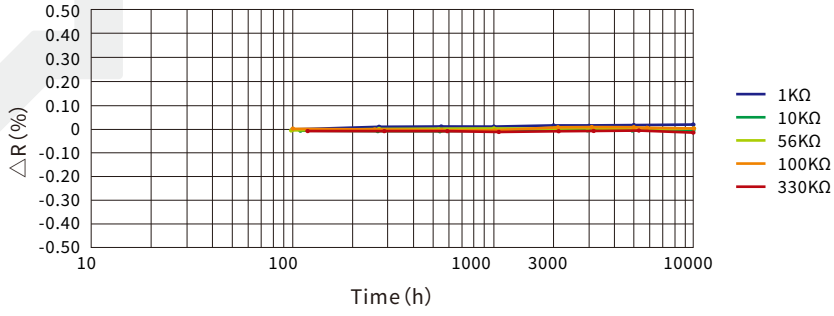



## High Temperature Storage

Test Sample:PTFR0603

Test Method: +155°C, unpowered

Sampling Size: 100

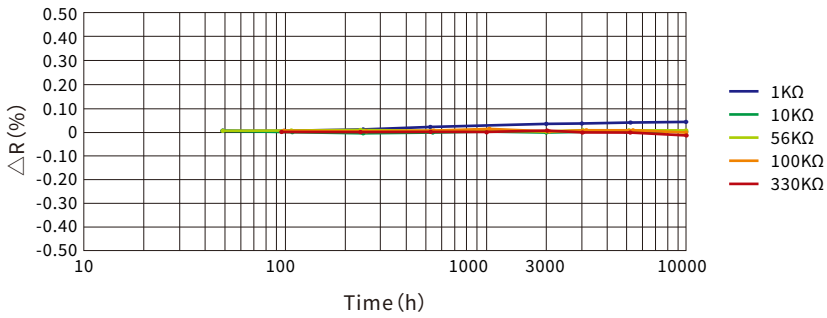



## Bias Humidity

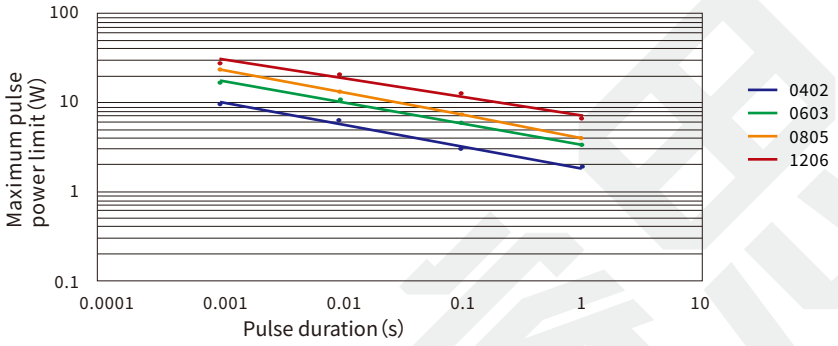
Test Sample:PTFR0603

Test Method: +85°C, 85%RH, 1/10 rated power
90min on, 30min off.

Sampling Size: 100

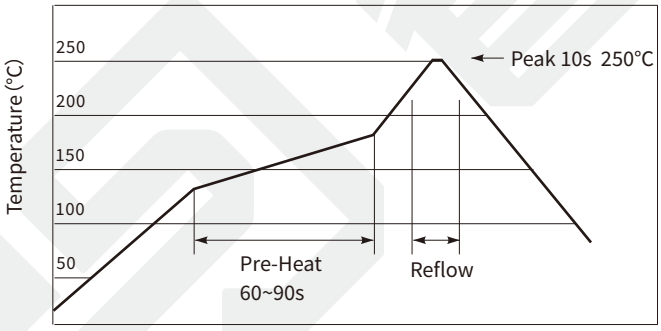


## Maximum Pulse Power Limit



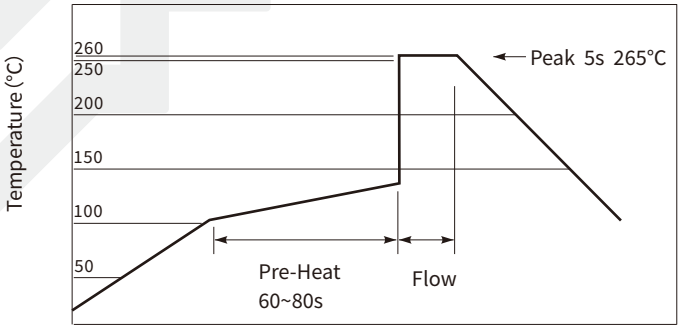

## Reflow Soldering Profile

Resistor Surface Temperature:
Pre-Heat: +130°C~+180°C,60~90sec.
Reflow: Above +220°C,30~90sec.
Max. Temperature: +240°C~+250°C, within 10sec.
Applicable Solder Composition: Sn-Ag-Cu solder
Cycles: limited to 2 (cooling between the first and second reflow)

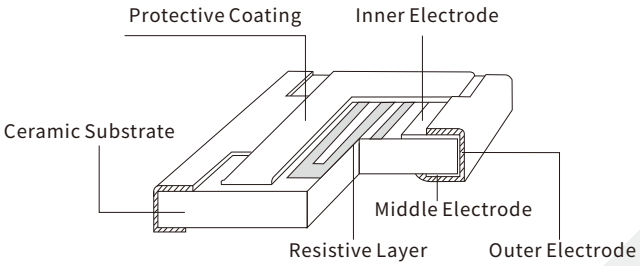



## Flow Soldering Profile

Resistor Surface Temperature:
Pre-Heat: +100°C~+120°C,60~80sec.
Max. Temperature: +255°C~+265°C,within 5sec.
Applicable Solder Composition: Sn-Ag-Cu solder
Cycles: limited to 2



## Construction




## Marking

0402 size: E24 & E96 no marking.

0603 & 0805 size: E24 is a three-digit marking. First two digits are significant and the third digit is the number of zeros; E96 no marking.

1206 size: E24 and E96 are four-digit marking. When 10Ω≤R＜100R, R is used as a decimal point, such as the marking of 75R is 75R0.

When 100Ω≤R, first three digits are significant and the forth digit is the number of zeros.

| Size | E-Series Value | Illustration | Demonstration |
|---|---|---|---|
| **0402** | E24, E96 | | No Marking |
| **0603** | E24 | 182 | 182=1800Ω |
| | E96 | | No Marking |
| **0805** | E24 | 183 | 183=18000Ω |
| | E96 | | No Marking |
| **1206** | E24, E96 | 1804 | 1804=1800000Ω |
| | | 75R0 | 75R0=75Ω |



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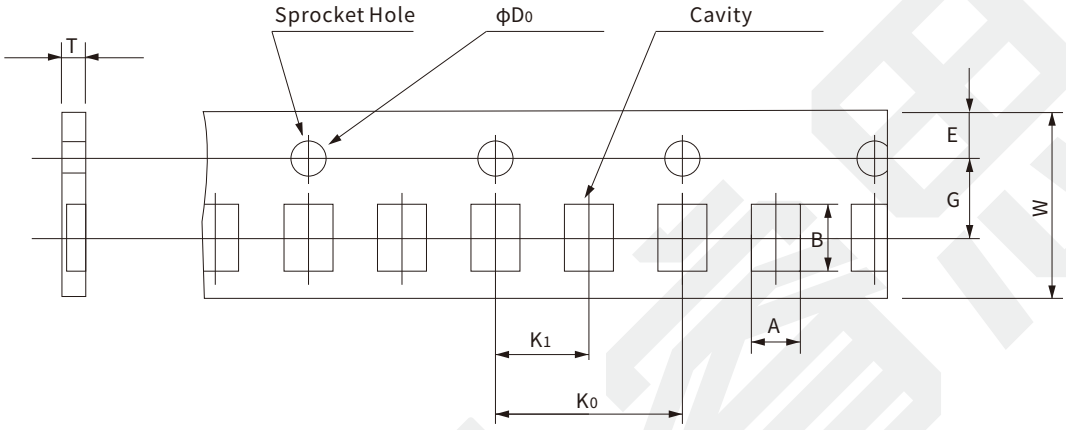
## Packaging

### Tape Specifications

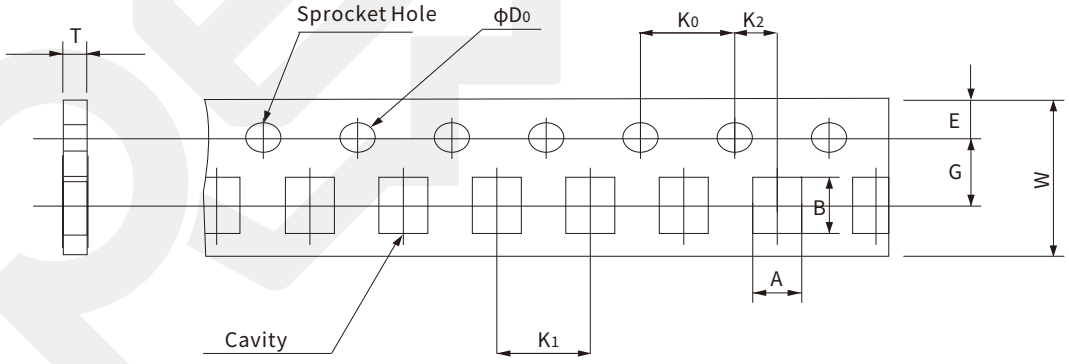
**Pitch: 2mm**




| Size | A | B | E | ϕD0 | K0 | K1 | G | W | T |
|---|---|---|---|---|---|---|---|---|---|
| 0402 | 0.63±0.05 | 1.13±0.05 | 1.75±0.1 | 1.50+0.1 | 4.00±0.1 | 2.00±0.05 | 3.50±0.05 | 8.00±0.3 | 0.43±0.05 |

### Tape Specifications

**Pitch: 4mm**

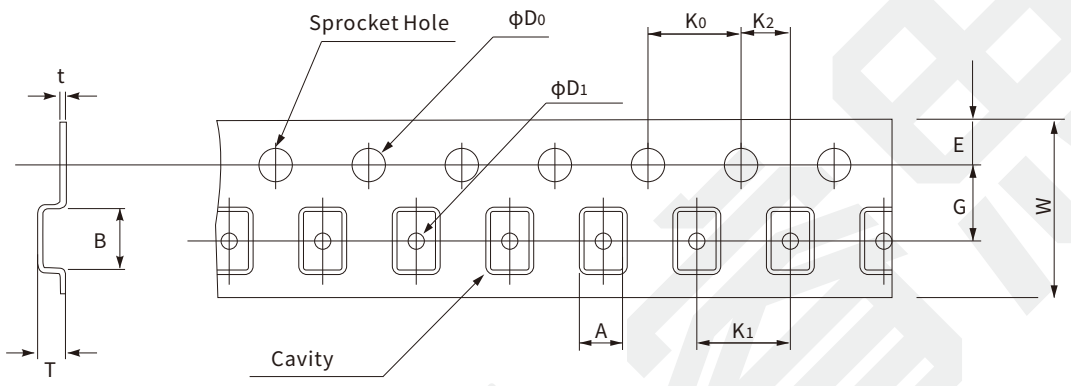



| Size | A | B | E | ϕD0 | K0 | K1 | K2 | G | W | T |
|---|---|---|---|---|---|---|---|---|---|---|
| 0603 | 1.10±0.1 | 1.90±0.1 | 1.75±0.1 | 1.50+0.1 | 4.00±0.1 | 4.00±0.1 | 2.00±0.05 | 3.50±0.05 | 8.00±0.3 | 0.60±0.05 |
| 0805 | 1.65±0.2 | 2.40±0.2 | 1.75±0.1 | 1.50+0.1 | 4.00±0.1 | 4.00±0.1 | 2.00±0.05 | 3.50±0.05 | 8.00±0.3 | 0.75±0.05 |

## Packaging

### Tape Specifications

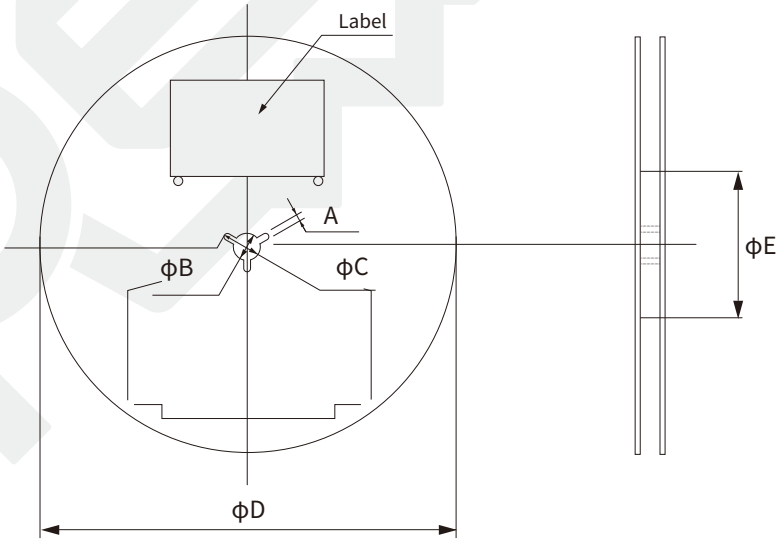
**Pitch: 4mm**




| Size | A | B | ϕD0 | ϕD1 | K0 | K1 | K2 | E | G | W | T | t |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1206 | 2.00±0.2 | 3.60±0.2 | 1.55±0.05 | 1.05±0.05 | 4.00±0.1 | 4.00±0.1 | 2.00±0.05 | 1.75±0.1 | 3.50±0.05 | 8.00±0.3 | 1.5Min. | 0.3Max. |

### Reel Specifications

**Unit: mm**




| A | ϕB | ϕC | ϕD | ϕE |
|---|---|---|---|---|
| 2±0.5 | 13±0.2 | 21±0.8 | 180-1.5 | 60+1 |



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## Popular Part Numbers

| Part Number | Size | Tolerance | Resistance | TCR | Power | Max. Operating Voltage |
|---|---|---|---|---|---|---|
| PTFR0603B47R0N9 | 0603 | ±0.1% | 47Ω | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B47R0P9 | 0603 | ±0.1% | 47Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B51R0N9 | 0603 | ±0.1% | 51Ω | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B51R0P9 | 0603 | ±0.1% | 51Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B56R0P9 | 0603 | ±0.1% | 56Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B68R0P9 | 0603 | ±0.1% | 68Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B75R0N9 | 0603 | ±0.1% | 75Ω | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B91R0P9 | 0603 | ±0.1% | 91Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B100RN9 | 0603 | ±0.1% | 100Ω | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B100RP9 | 0603 | ±0.1% | 100Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B130RP9 | 0603 | ±0.1% | 130Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B160RP9 | 0603 | ±0.1% | 160Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B200RN9 | 0603 | ±0.1% | 200Ω | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B200RP9 | 0603 | ±0.1% | 200Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B330RP9 | 0603 | ±0.1% | 330Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B360RP9 | 0603 | ±0.1% | 360Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B430RP9 | 0603 | ±0.1% | 430Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B470RP9 | 0603 | ±0.1% | 470Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B510RN9 | 0603 | ±0.1% | 510Ω | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B510RP9 | 0603 | ±0.1% | 510Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B560RP9 | 0603 | ±0.1% | 560Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B750RP9 | 0603 | ±0.1% | 750Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B820RP9 | 0603 | ±0.1% | 820Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B910RP9 | 0603 | ±0.1% | 910Ω | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B1K00N9 | 0603 | ±0.1% | 1KΩ | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B1K00P9 | 0603 | ±0.1% | 1KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B1K30P9 | 0603 | ±0.1% | 1.3KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B1K50N9 | 0603 | ±0.1% | 1.5KΩ | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B1K50P9 | 0603 | ±0.1% | 1.5KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B2K00N9 | 0603 | ±0.1% | 2KΩ | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B3K60P9 | 0603 | ±0.1% | 3.6KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B3K90P9 | 0603 | ±0.1% | 3.9KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B4K70N9 | 0603 | ±0.1% | 4.7KΩ | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B4K70P9 | 0603 | ±0.1% | 4.7KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B5K10N9 | 0603 | ±0.1% | 5.1KΩ | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B5K10P9 | 0603 | ±0.1% | 5.1KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B5K60P9 | 0603 | ±0.1% | 5.6KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B6K20P9 | 0603 | ±0.1% | 6.2KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B6K80P9 | 0603 | ±0.1% | 6.8KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B7K50P9 | 0603 | ±0.1% | 7.5KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B8K20P9 | 0603 | ±0.1% | 8.2KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B10K0N9 | 0603 | ±0.1% | 10KΩ | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B10K0P9 | 0603 | ±0.1% | 10KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B11K0P9 | 0603 | ±0.1% | 11KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B18K0P9 | 0603 | ±0.1% | 18KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B20K0N9 | 0603 | ±0.1% | 20KΩ | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B20K0P9 | 0603 | ±0.1% | 20KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B22K0P9 | 0603 | ±0.1% | 22KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B24K0P9 | 0603 | ±0.1% | 24KΩ | ±25ppm/°C | 0.1W | 100V |

## Popular Part Numbers

| Part Number | Size | Tolerance | Resistance | TCR | Power | Max. Operating Voltage |
|---|---|---|---|---|---|---|
| PTFR0603B30K0P9 | 0603 | ±0.1% | 30KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B33K0P9 | 0603 | ±0.1% | 33KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B36K0P9 | 0603 | ±0.1% | 36KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B39K0P9 | 0603 | ±0.1% | 39KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B43K0P9 | 0603 | ±0.1% | 43KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B47K0N9 | 0603 | ±0.1% | 47KΩ | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B47K0P9 | 0603 | ±0.1% | 47KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B51K0P9 | 0603 | ±0.1% | 51KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B62K0P9 | 0603 | ±0.1% | 62KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B91K0P9 | 0603 | ±0.1% | 91KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B100KN9 | 0603 | ±0.1% | 100KΩ | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B100KP9 | 0603 | ±0.1% | 100KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B110KP9 | 0603 | ±0.1% | 110KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B150KP9 | 0603 | ±0.1% | 150KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B160KP9 | 0603 | ±0.1% | 160KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B200KN9 | 0603 | ±0.1% | 200KΩ | ±10ppm/°C | 0.1W | 100V |
| PTFR0603B200KP9 | 0603 | ±0.1% | 200KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0603B330KP9 | 0603 | ±0.1% | 330KΩ | ±25ppm/°C | 0.1W | 100V |
| PTFR0805B47R0N9 | 0805 | ±0.1% | 47Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B51R0N9 | 0805 | ±0.1% | 51Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B56R0N9 | 0805 | ±0.1% | 56Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B62R0N9 | 0805 | ±0.1% | 62Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B68R0N9 | 0805 | ±0.1% | 68Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B75R0N9 | 0805 | ±0.1% | 75Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B82R0N9 | 0805 | ±0.1% | 82Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B100RN9 | 0805 | ±0.1% | 100Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B100RP9 | 0805 | ±0.1% | 100Ω | ±25ppm/°C | 0.13W | 150V |
| PTFR0805B110RN9 | 0805 | ±0.1% | 110Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B120RN9 | 0805 | ±0.1% | 120Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B130RN9 | 0805 | ±0.1% | 130Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B180RN9 | 0805 | ±0.1% | 180Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B200RN9 | 0805 | ±0.1% | 200Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B220RN9 | 0805 | ±0.1% | 220Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B240RN9 | 0805 | ±0.1% | 240Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B270RN9 | 0805 | ±0.1% | 270Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B300RN9 | 0805 | ±0.1% | 300Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B330RN9 | 0805 | ±0.1% | 330Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B390RN9 | 0805 | ±0.1% | 390Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B430RN9 | 0805 | ±0.1% | 430Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B470RN9 | 0805 | ±0.1% | 470Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B510RN9 | 0805 | ±0.1% | 510Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B560RN9 | 0805 | ±0.1% | 560Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B680RN9 | 0805 | ±0.1% | 680Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B750RN9 | 0805 | ±0.1% | 750Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B820RN9 | 0805 | ±0.1% | 820Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B910RN9 | 0805 | ±0.1% | 910Ω | ±10ppm/°C | 0.13W | 150V |
| PTFR0805Q1K00P9 | 0805 | ±0.02% | 1KΩ | ±25ppm/°C | 0.13W | 150V |
| PTFR0805B1K00N9 | 0805 | ±0.1% | 1KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B1K00P9 | 0805 | ±0.1% | 1KΩ | ±25ppm/°C | 0.13W | 150V |

## Popular Part Numbers

| Part Number | Size | Tolerance | Resistance | TCR | Power | Max. Operating Voltage |
|---|---|---|---|---|---|---|
| PTFR0805B1K10N9 | 0805 | ±0.1% | 1.1KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B1K20N9 | 0805 | ±0.1% | 1.2KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B1K30N9 | 0805 | ±0.1% | 1.3KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B1K50N9 | 0805 | ±0.1% | 1.5KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805D1K50N9 | 0805 | ±0.5% | 1.5KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B2K00N9 | 0805 | ±0.1% | 2KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B2K20N9 | 0805 | ±0.1% | 2.2KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B2K70N9 | 0805 | ±0.1% | 2.7KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B3K00N9 | 0805 | ±0.1% | 3KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B3K60N9 | 0805 | ±0.1% | 3.6KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B3K90N9 | 0805 | ±0.1% | 3.9KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B4K70N9 | 0805 | ±0.1% | 4.7KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B5K10N9 | 0805 | ±0.1% | 5.1KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B5K10P9 | 0805 | ±0.1% | 5.1KΩ | ±25ppm/°C | 0.13W | 150V |
| PTFR0805B6K20N9 | 0805 | ±0.1% | 6.2KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B6K80N9 | 0805 | ±0.1% | 6.8KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B7K50N9 | 0805 | ±0.1% | 7.5KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B8K20N9 | 0805 | ±0.1% | 8.2KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B10K0N9 | 0805 | ±0.1% | 10KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B11K0N9 | 0805 | ±0.1% | 11KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B13K0N9 | 0805 | ±0.1% | 13KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B13K7N9 | 0805 | ±0.1% | 13.7KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B16K0N9 | 0805 | ±0.1% | 16KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B18K0N9 | 0805 | ±0.1% | 18KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B24K0N9 | 0805 | ±0.1% | 24KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B33K0N9 | 0805 | ±0.1% | 33KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B36K0N9 | 0805 | ±0.1% | 36KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B39K0N9 | 0805 | ±0.1% | 39KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B47K0N9 | 0805 | ±0.1% | 47KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B51K0N9 | 0805 | ±0.1% | 51KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B56K0N9 | 0805 | ±0.1% | 56KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B62K0N9 | 0805 | ±0.1% | 62KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B68K0N9 | 0805 | ±0.1% | 68KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B75K0N9 | 0805 | ±0.1% | 75KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B82K0N9 | 0805 | ±0.1% | 82KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B100KN9 | 0805 | ±0.1% | 100KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B100KP9 | 0805 | ±0.1% | 100KΩ | ±25ppm/°C | 0.13W | 150V |
| PTFR0805B110KN9 | 0805 | ±0.1% | 110KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B120KN9 | 0805 | ±0.1% | 120KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805D150KN9 | 0805 | ±0.5% | 150KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B180KN9 | 0805 | ±0.1% | 180KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B200KN9 | 0805 | ±0.1% | 200KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B220KN9 | 0805 | ±0.1% | 220KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B249KN9 | 0805 | ±0.1% | 249KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B300KN9 | 0805 | ±0.1% | 300KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B330KN9 | 0805 | ±0.1% | 330KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B360KN9 | 0805 | ±0.1% | 360KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B390KN9 | 0805 | ±0.1% | 390KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B430KN9 | 0805 | ±0.1% | 430KΩ | ±10ppm/°C | 0.13W | 150V |
| PTFR0805B470KN9 | 0805 | ±0.1% | 470KΩ | ±10ppm/°C | 0.13W | 150V |


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## Revision

| Version | Revised Content | Date | Approver |
|---|---|---|---|
| V0-V1 | 1.Add a table of the tightest tolerance and lowest TCR corresponding to different resistance<br>2.The tightest tolerance has been optimized from ±0.02% to ±0.01%<br>3.Add reliability test charts of load life, bias humidity, temperature cycling and high temperature storage<br>4.Add a table of Standing Stock | 2020/01/16 | LFY |
| V1-V2 | 1.Modify Code in Part Number Information to: 9=standard product, 0-8=custom product<br>2.Upload the latest product image<br>3.Modify the format of resistance in the table of Standing Stock<br>4.Unify header and footer | 2020/02/19 | LFY |
| V2-V3 | 1.Add Q=±0.02% in Part Number Information | 2020/03/19 | YBP |
| V3-V4 | 1.Add derating curve, with an operating temperature range of -55 ℃ -+155 ℃ | 2020/06/05 | LFY |
| V4-V5 | 1.The TCR of 0402 size and greater-than-100Kohm resistance increases ±10ppm/℃ | 2020/12/09 | LFY |
| V5-V6 | 1.Temperature of load life: +70°C. Duration: 2000h | 2021/11/10 | LWW |
| V6-V7 | 1.Change the datasheet style<br>2.Add logo of 3D model diagrams<br>3.Add packaging dimension information<br>4.Add resistor structure diagram<br>5.Add marking information<br>6.Add recommended solder pad<br>7.Add reflow soldering curve<br>8.Add weight information<br>9.Display revision logs<br>10.Add disclaimer<br>11.Temporarily remove 2512 size | 2023/04/20 | LFY |
| V7-V8 | 1.Launch high power and low power version PTFR | 2024/04/16 | LFY |

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