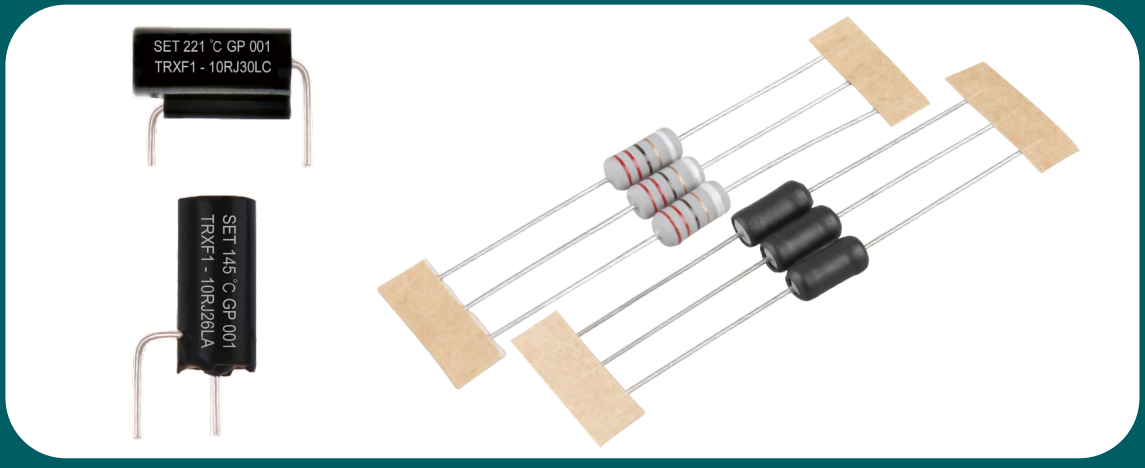
# TRXF

## *Thermal-Link & Fusing Resistor*

- Patented Product
- Over Temp. Protection
- Surge Protection
- Inrush Current Protection
- Small Fault Current Protection
- Short Circuit Protection




## Applications

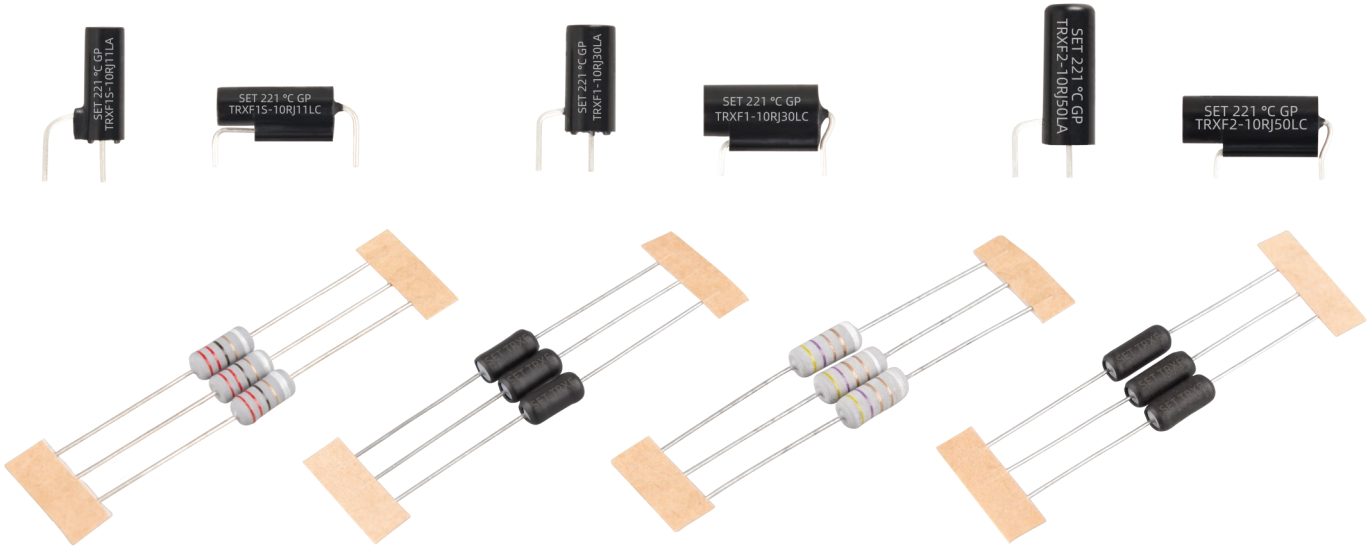
| | | | | |
|---|---|---|---|---|
| Fault Type | Over Temperature | Surge | Inrush Current | Short Circuit |
| Solution | Thermal-link & Fusing Resistor (TRXF) | | | |

SET safe | SET fuse

Providing a Total Solution for High Standard Safety Circuit Protection

# TRXF

## Thermal-Link & Fusing Resistor






## Features

- Patented Product
- Over Current Protection
- Over Temp. Protection
- Surge Protection
- Inrush Current Protection
- Small Fault Current Protection
- Short Circuit Protection
- RoHS & REACH Complaint



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## Thermal-Link & Fusing Resistor ( TRXF-Case Type ) Features Overview

| Page | P17 | P17 | P21 | P21 | P25 | P25 |
|---|---|---|---|---|---|---|
| Shape | | | | | | |
| Structure | Vertical | Horizontal | Vertical | Horizontal | Vertical | Horizontal |
| $R$ Resistance Range | 1.0 Ω - 600 Ω | | 0.27 Ω - 800 Ω | | 0.27 Ω - 1000 Ω | |
| $P$ Power Type | 1 W(S) | | 1 W | | 2 W | |
| Dimensions | Φ3.6 mm × 11.0 mm | | Φ4.8 mm × 11.0 mm | | Φ4.8 mm × 13.5 mm | |
| $T_f$ Rated Functioning Temp. | 145 °C, 150 °C, 221 °C | | | | | |

According to IEC60063-2015，resistance can be customized.

The forming modes and length of lead wires can be customized.





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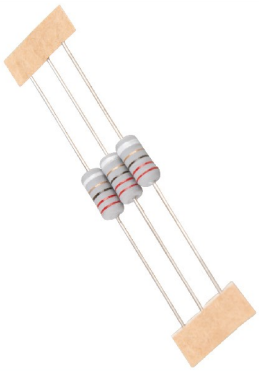
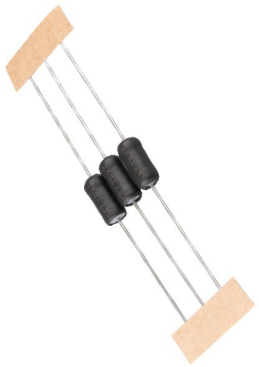
## Thermal-Link & Fusing Resistor ( TRXF-Axial Type ) Features Overview

| Page | P29 | P29 | P34 | P34 |
|---|---|---|---|---|
| Shape |  |  | | |
| Structure | Coating | With Tube | Coating | With Tube |
| R Resistance Range | 0.27 Ω - 800 Ω | | 0.27 Ω - 1000 Ω | |
| | According to IEC60063-2015, resistance can be customized. | | | |
| P Power Type | 1 W | | 2 W | |
| Dimensions | Φ4.4 mm × 9.0 mm | Φ4.6 mm × 9.5 mm | Φ4.4 mm × 10 mm | Φ4.6 mm × 10.5 mm |
| | The forming modes and length of lead wires can be customized. | | | |
| $T_f$ Rated Functioning Temp. | 221 °C | | | |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# TRXF

**Thermal-Link & Fusing Resistor**

## Description

Thermal-Link & Fusing Resistor (TRXF) is an unique type of Power Resistor, with Over Temp. and Over Current Protections. The Alloy Thermal-Link (ATCO) is built in the core of Fusible Wirewound Resistor (RXF) and in series with RXF.
SETsafe | SETfuse TRXF has the same physical size as ordinary RXF as well as large fault current protection. Besides, TRXF can effectively solve the hidden danger of continuous abnormal heat that ordinary RXF may cause when small fault current happens.

## Applications

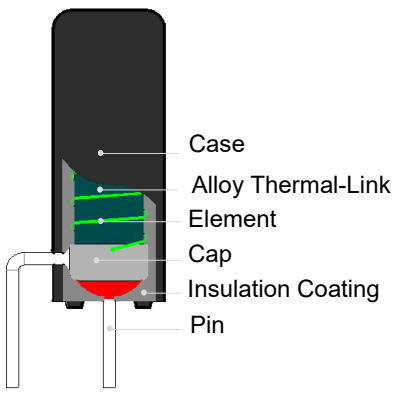
- Power Supply
- Power Strip
- General Lighting
- Personal Care Application
- Smart Home
- Security & Protection



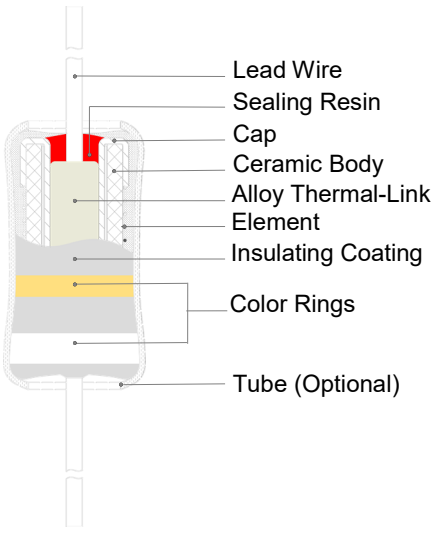
TRXF

## Structure

**Case Type**




**Axial Type**




Note: The color of schematic diagram is for reference only



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## Product Number System

- **Case Type**

TRXF 1 - 4R7 J 30 L A

**Case Type**

A : Round

C : Shape

**Pin Type**

L : Two Pins

**ATCO Code**

| TRXF1S Series | | TRXF1 Series | | TRXF2 Series | |
|---|---|---|---|---|---|
| Code | ATCO Model | Code | ATCO Model | Code | ATCO Model |
| 07 | V6 (145 °C) | 26 | H6 (145 °C) | 46 | B6 (145 °C) |
| 08 | V7 (150 °C) | 27 | H7 (150 °C) | 47 | B7 (150 °C) |
| 11 | V31 (221 °C) | 30 | H31 (221 °C) | 50 | B31 (221 °C) |

**Resistance Tolerance (%)**

J : ± 5

K : ± 10

**Rated Resistance (Ω)**

R47 : 0.47

4R7 : 4.7

47R : 47

470R : 470

**Power Type (W)**

1S : 1

1 : 1

2 : 2

**Product Category**

TRXF : Thermal-Link & Fusing Resistor





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## Product Number System

- **Axial Type**

TRXF 1 - 4R7 J 30 T D

**Case Type**

D : Coating

**Packaging Type**

T : Taping

B : Bulk

**ATCO Code**

30 : H31(221 °C)

**Resistance Tolerance (%)**

J : ± 5

K : ± 10

**Rated Resistance (Ω)**

R47 : 0.47

4R7 : 4.7

47R : 47

470R : 470

**Power Type (W)**

1 : 1

2 : 2

**Product Category**

TRXF: Thermal-Link & Fusing Resistor





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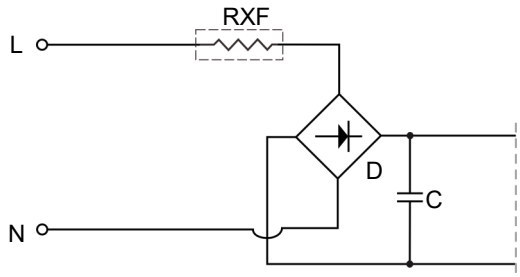
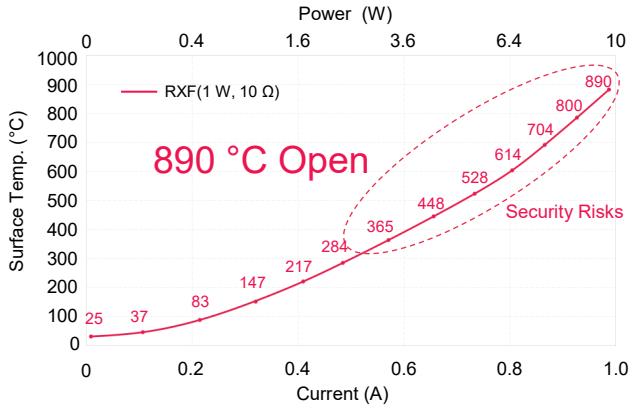
# Application Comparison

## RXF

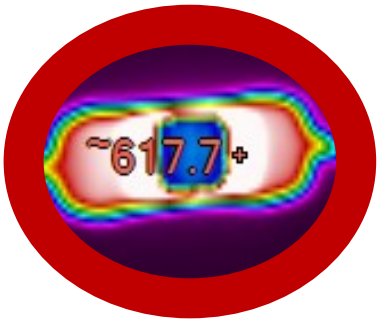
**Security Risks**




Surface Temp. Curve of RXF (For reference only )

Note: Measuring with Thermometer

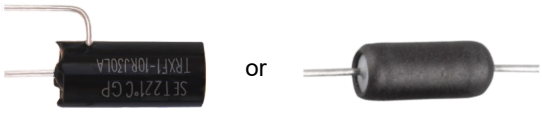


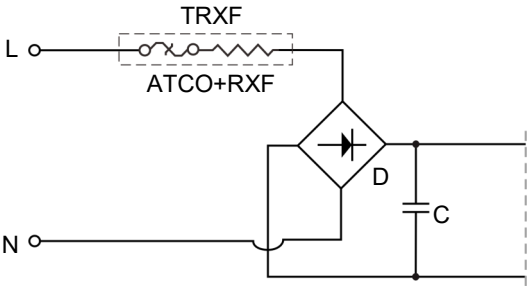

**0.9 A / 8.1 W**

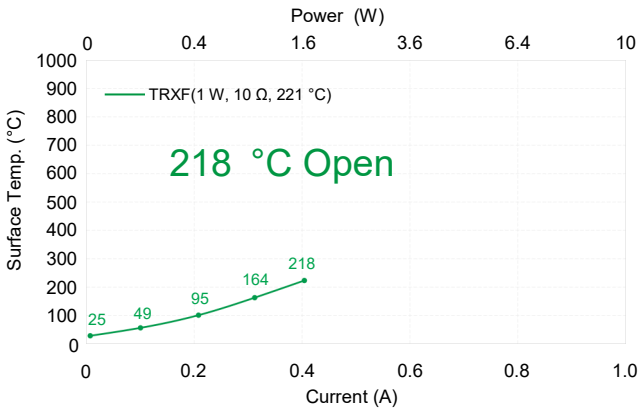
Note: Measuring with FLUKE Infrared Meter (iT27, -20 °C ~ 600 °C)

## TRXF

**Safety**

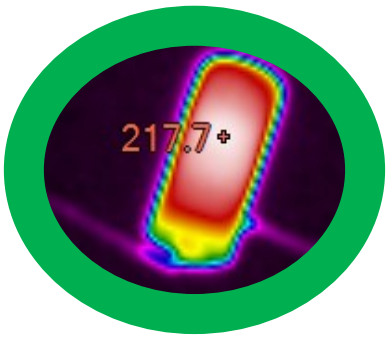



Surface Temp. Curve of TRXF (For reference only)

Note: Measuring with Thermometer




**0.4 A / 1.6 W**

Note: Measuring with FLUKE Infrared Meter (iT27, -20 °C ~ 600 °C)



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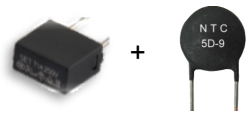
## Comparison for SMPS Applications

| Protective Component | | Short Circuit Protection | Small Fault Current Protection | Surge Protection | Inrush Current Protection |
|---|---|---|---|---|---|
| Fuse | | Common | Common | **Poor** | **Poor** |
| | | Anti-explosion Capacity | No Fire Risk | Fuse - Common, Back-end Components Protection - Poor | Fuse - Common, Back-end Components Protection - Poor |
| Fuse + NTC |  | Common | Good | Common | Hot State - Common, Cold State - Good |
| | | Anti-explosion Capacity | No Fire Risk | / | / |
| Fuse + NTC+ MOV | | Common | Good | Excellent | Hot State - Common, Cold State - Good |
| | | Anti-explosion Capacity | No Fire Risk | / | / |
| RXF | | Common | **Poor** | Good | Good |
| | | Anti-explosion Capacity | Fire Risk | ≥2 kV | / |
| **TRXF** | **or** | **Excellent** | **Excellent** | **Good** | **Good** |
| | | **Good Anti- explosion Capacity** | **No Fire Risk** | **≥2 kV** | **/** |


TRXF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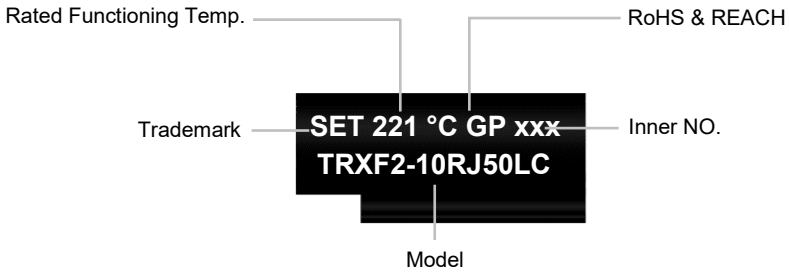
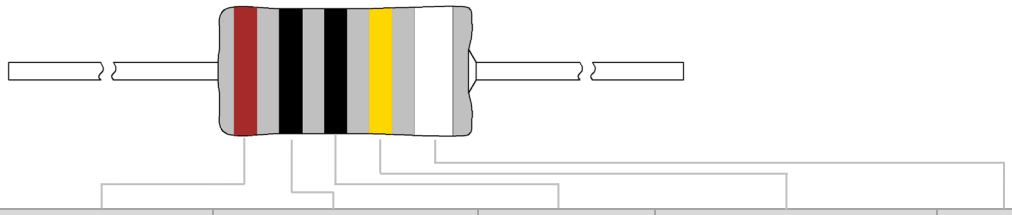
## Marking

- **Case Type**




- **Axial Type**



| Color | | The First Number | The Second Number | Multiple | Resistance Tolerance | $T_f$ |
|---|---|---|---|---|---|---|
| | Black | 0 | 0 | $10^0$ | N/A | N/A |
| | Brown | 1 | 1 | $10^1$ | N/A | N/A |
| | Red | 2 | 2 | $10^2$ | N/A | N/A |
| | Orange | 3 | 3 | $10^3$ | N/A | N/A |
| | Yellow | 4 | 4 | $10^4$ | N/A | N/A |
| | Green | 5 | 5 | $10^5$ | N/A | N/A |
| | Blue | 6 | 6 | $10^6$ | N/A | N/A |
| | Purple | 7 | 7 | $10^7$ | N/A | N/A |
| | Grey | 8 | 8 | $10^8$ | N/A | N/A |
| | White | 9 | 9 | $10^9$ | N/A | 221 °C |
| | Gold | N/A | N/A | $10^{-1}$ | J: ± 5% | N/A |
| | Silver | N/A | N/A | $10^{-2}$ | K: ± 10% | N/A |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## Patents

| Name | Region | Category | Patent NO. |
|---|---|---|---|
| A Device that Combines Thermal-link and Resistor | China | Utility Model | ZL 201020697438.7 |
| | United States | Invention Patent | US 9240300 |
| Thermal Fuse Resistor | China | Utility Model | ZL2016212458250 |
| | United States | Invention Patent | US10347402 |

## Agency Approvals

| Agency Information | | Standards | NO. |
|---|---|---|---|
| | cURus | UL 1412 | E324712 |
| | UL | UL 1412 | E324712 |
| | TUV | IEC 60065<br>EN IEC 60127-8 | R50279979<br>R50560298<br>R50560302 |
| | CQC | SJ 2865 | CQC15001126561<br>CQC15001126562<br>CQC15001126563<br>CQC18001205501 |

## Designed to Standards

| Standards | Standards Name |
|---|---|
| IEC 60115 | Fixed Resistors for Use in Electronic Equipment |
| IEC 60065 | Audio, Video and Similar Electric Apparatus – Safety Requirements |
| UL 60691 | Thermal-Links – Requirements and Application Guide |
| UL1412 | Fusing Resistors and Temperature-Limited Resistors for Radio- and Television-Type Appliances |
| GB/T 9816 | Thermal-Links-Requirements and Application Guide |
| GB/T 17626.5 | Electromagnetic Compatibility-Testing and Measurement Techniques-Surge Immunity Test |
| GB/T 5729 | Fixed Resistors for Use in Electronic Equipment |
| SJ 2865 | Detail Specification for Electronic Components |


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## Glossary

| Item | Description |
|---|---|
| **RXF** | **Fusible Wirewound Resistor**<br>A power resistor which is made by winding a resistive element on a ceramic core, and the core is coated by insulation coating. It intends to interrupt a current flow at a predetermined time when the current exceeds a predetermined value. Fusible Wirewound Resistor is disposable fuse elements and is non-recoverable.<br>— (SETsafe \| SETfuse Standards) |
| **ATCO** | **Alloy Thermal-Link**<br>Alloy Type Thermal-Link, Alloy is the thermal element. — (GB/T 9816.3) |
| ***R*** | **Rated Resistance**<br>Resistance value for which the resistor has been designed, and which is generally used for denomination of the resistor. — (IEC 60115-1) |
| $P_0$ | **Actual Power**<br>The Max. power of TRXF can be used within the allowable operating Temp. range.<br>— (SETsafe \| SETfuse Standards) |
| $I_N$ | **Rated Current**<br>$I_N = \sqrt{P_0 / R}$ — (SETsafe \| SETfuse Standards) |
| $U_N$ | **Rated Voltage**<br>The d.c. or a.c. r.m.s. voltage calculated from the square root of the product of the rated resistance and the rated dissipation. — (IEC 60115-1) |
| $T_f$ | **Rated Functioning Temp.**<br>The temp. of the Alloy Thermal-Link which causes it to change the state of conductivity with a detection current up to 10 mA as the only load. — (IEC 60691)<br>Tolerance: $T_f$ + 0 / -10 °C (GB 9816.1, EN 60691, K60691)<br>Tolerance: $T_f$ ± 7 °C (J60691) |
| **Fusing Temp.** | **Fusing Temp.**<br>The temp. of the Alloy Thermal-Link which causes it to change its state of conductivity is measured with silicone oil bath in which the temp. is increased at the rate of 0.5 °C to 1 °C / minute, with a detection current up to 10 mA as the only load. — (IEC 60691) |
| **TCR** | **Temp. Coefficient of Resistance**<br>Relative variation of resistance between two given temp. divided by the difference in the temp. producing it.<br>— (IEC60115-1) |


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## Operating Principle

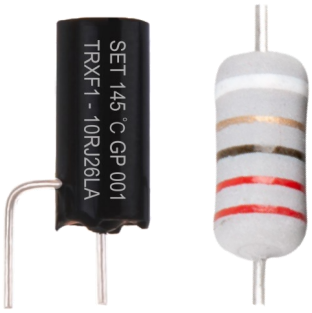
### Instruction

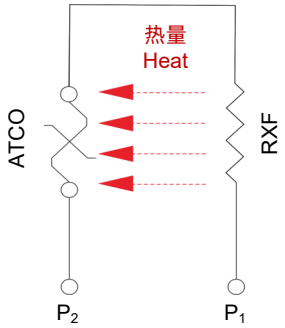
$R_{RXF} \geq 100R_{ATCO}$

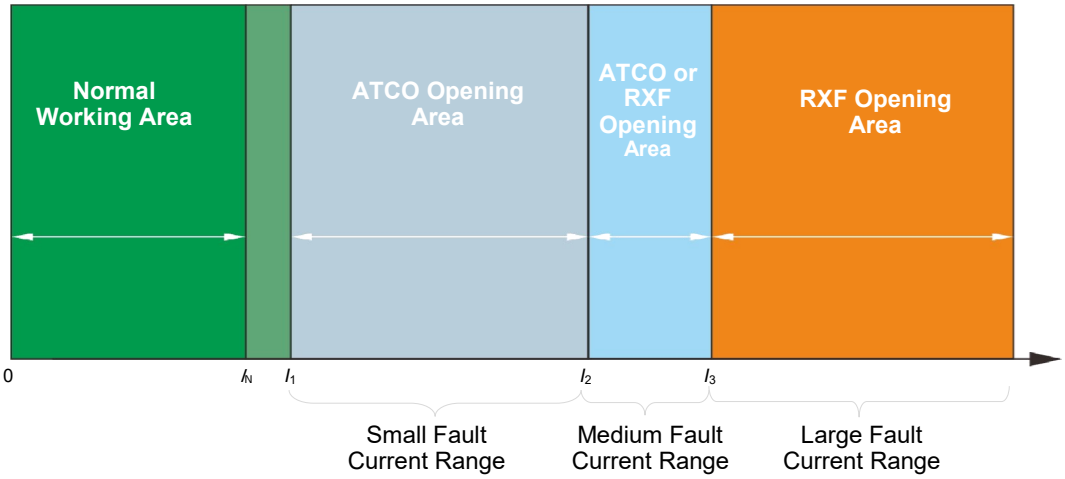
- $R_{RXF}$: the resistance value of RXF
- $R_{ATCO}$: the resistance value of Alloy Thermal-Link (ATCO)

$T_{RXF} \geq 5T_{ATCO}$

- The Fusing Temp. of RXF ($T_{RXF}$): 1200 °C ~ 1500 °C
- The Fusing Temp. of ATCO ($T_{ATCO}$): 145 °C ~ 221 °C




$I_N$: Rated Current

$I_1$: Conventional Fusing Current

- **Small Fault Current Protection**

  Under small fault current, $I_1 < I < I_2$, ATCO senses the heat that generated by RXF. When the ATCO reaches the fusing temp., ATCO opens the circuit quickly. In this case, RXF keeps intact and ATCO opens.

- **Medium Fault Current Protection**

  Under medium fault current, $I_2 < I < I_3$, RXF opens in a short time due to the large heat generated, meanwhile, RXF conducts its residual heat to ATCO. In this case, both RXF and ATCO open.

- **Large Fault Current Protection (Short Circuit Protection)**

  Under large fault current, $I > I_3$, such as short circuit, RXF opens instantly, but ATCO keeps intact because the fusing time of RXF is too short to generate enough heat. In this case, RXF opens and ATCO keeps intact.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# Performance Test

### Mechanical Performance Test

| Item | Test Condition | Criterion |
|---|---|---|
| Tensile Test | A pin withstand 10 N × 60 s | ΔR ≤ ± (1%R + 0.05 Ω) |
| Twist Test | A pin 2 mm away from body, bent 90°, twist 180° × 2 times. | ΔR ≤ ± (1%R + 0.05 Ω) |

### Environmental Test

| Item | Test Condition | Criterion |
|---|---|---|
| Temp. Cycle | 1. - 55 °C × 30 minutes<br>2. Room Temp. × (10 ~ 15) minutes<br>3. 85 °C × 30 minutes<br>4. Room Temp. × (10 ~ 15) minutes<br>5. 5 Cycles from Step 1 to Step 4 | ΔR ≤ ± (2%R + 0.05 Ω) |

### Electrical Performance Test

| Item | Test Condition | Criterion |
|---|---|---|
| TCR | $TCR=\frac{(R_2-R_1)}{R_1(T_2-T_1)}\times 10^6$<br>$R_1$: Resistance Value at 25 °C<br>$R_2$: Resistance Value at 125 °C<br>$T_1$: 25 °C, $T_2$: 125 °C | Within Specified Value |
| Short-Time Overload | $2.5U_N$ × 5 s | No Visible Damage<br>ΔR ≤ ± (2%R + 0.05 Ω) |
| Insulation Resistance | Foil Method: Apply 500 VDC between both terminations of the resistor connected together as one pole and the metal foil as the other pole. | Insulation Resistance ≥ 1,000 MΩ |
| Voltage Proof | Foil Method: Apply 350 VAC × 1 minute (coating type ) or 900 VAC × 1 minute (case type, tube type) between terminations and the metal foil. | No Breakdown or Flashover |
| Fusing Test | Apply specified test current to the resistor (constant current source). | Fusing Time ≤ 60 s |


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**Electrical Performance Test**

| Item | Test Condition | Criterion |
|---|---|---|
| Solderability | Solder Bath (non-activated flux)<br>Scaling Powder: 25% Rosin Alcohol<br>Bath Temp.: (255 ± 5) °C<br>Depth of Immersion (From the seating plane or component body): (1.5 to 2.0) mm<br>Time of Immersion: (2.5 ± 0.5) s | Soldering Area ≥ 95% |
| Surge Test | Combination Wave Generator (1.2/50 μs, 8/20 μs, 2 Ω), apply open-circuit voltage 1.0 kV (R ≤ 10 Ω) or 2.0 kV (R > 10 Ω) to the resistor, 10 pulses test at 1 minute Interval. | Resistor shall not open after the test |
| Fusing Temp. | Silicone oil bath: temp. rise rate is 0.3 °C/minute to 0.5 °C/minute, detection current ≤ 10 mA. | 216 °C to 221 °C ($T_f$ = 221 °C )<br>143 °C to 147 °C ($T_f$ = 150 °C )<br>138 °C to 142 °C ($T_f$ = 145 °C ) |


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## Cold Resistance Test

1. If product TCR is not less than 350 ($10^{-6}$/°C), the measured resistance value shall be corrected as the relative resistance value under 25 °C according to TCR formula.
2. Resistance Measurement (4-terminal test)

## Replacement

As TRXF is a non-resettable product, for safety sake, please use the same type of TRXF for replacement.

## Usage

1. Do not touch the resistor body or pins directly when power is on, to avoid burn or electric shock.
2. When air pressure is from 80 kPa to 106 kPa, the relative altitude shall be +2000 m to - 500 m.

## Storage

1. Please store TRXF with ambient temp. 10 °C ~ 30 °C and relative humidity 30% ~ 75%.
2. Do not store the TRXF at the high temp., high humidity or corrosive gas environment, avoid influencing the solderability of the pins, please use them up within 1 year after receiving the goods.


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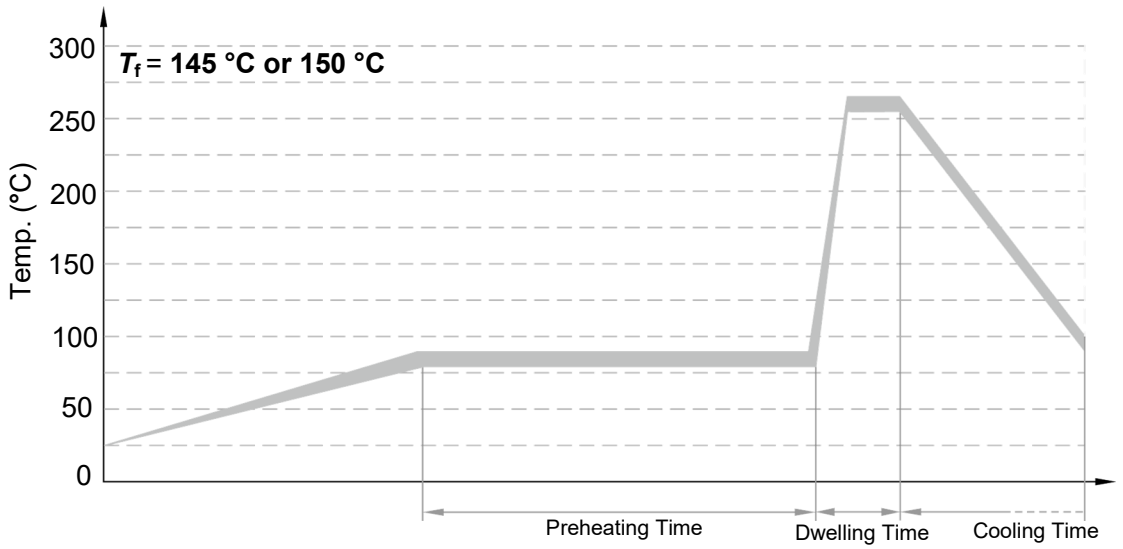
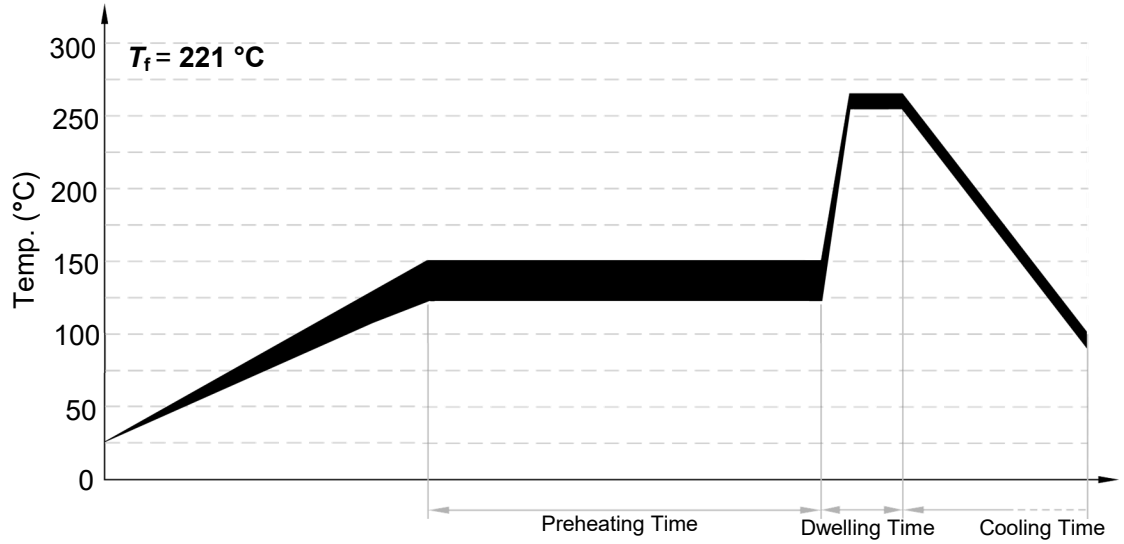
## Soldering Parameters

**Wave Soldering Parameters (For Reference Only)**

The Wave Soldering Parameters are for reference only, before TRXF is for practice usage, relative validation is recommended.




| Item | Temp. (°C) | | Time (s) |
|---|---|---|---|
| Preheating | $T_f$ =145°C or 150°C | $T_f$ =221°C | 60 ~ 100 |
| | 80 ~ 90 | 120 ~ 150 | |
| Dwelling | 260 ± 5 | 260 ± 5 | 4 ~ 5 |

## Recommended Hand-Soldering Parameters

Solder Iron Temp.: (350 ± 5) °C

Soldering Time: 2 s Max. (115 °C ≤ $T_f$ ≤ 150 °C)

3 s Max. ($T_f$ = 221 °C)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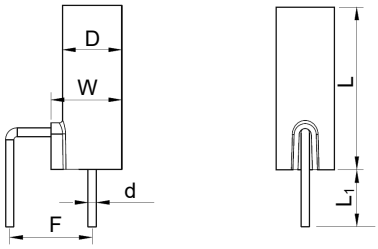
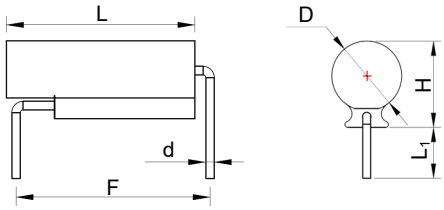
## Vertical

## Dimensions (mm)




| L | $L_1$[a] | W | D | d | F[a] |
|---|---|---|---|---|---|
| 11.0 Max. | 3.5 ± 0.5 | 4.5 ± 0.3 | Φ3.6 ± 0.2 | Φ0.50 ± 0.05 | 5.0 ± 0.5 |

## Horizontal




| L | $L_1$[a] | H | D | d | F[a] |
|---|---|---|---|---|---|
| 11.0 Max. | 3.5 ± 0.5 | 4.8 ± 0.2 | Φ3.6 ± 0.2 | Φ0.50 ± 0.05 | 10.0 ± 0.5 |

[a]: "F" , "$L_1$" and the bending mode of pins can be customized as required.

## Electrical Characteristics

| Item | Parameter |
|---|---|
| Power Type (***P***) | 1 W(S) |
| Rated Resistance (***R***) | 1 Ω ~ 600 Ω |
| Resistance Tolerance | 5% (E24) , 10% (E12) |
| Derating Factor (***f***) | See Rated Power Derating Curve |
| Actual Power( $P_0$ ) | $P_0 = P \times f$ |
| Rated Current ( $I_N$) | $I_N = \sqrt{P_0 / R}$ |
| Rated Voltage ( $U_N$) | $U_N = \sqrt{P_0 \times R}$ |
| Rated Functioning Temp. ($T_f$) | 145 °C, 221 °C |
| Fusing Time | 5 × $P$ ($T_f$ = 221 °C, less than 60 s) |
| | 3 × $P$ ($T_f$ = 145 °C, less than 60 s ) |
| Fusing Temp. | 216 °C ~ 221 °C ($T_f$ = 221 °C) |
| | 138 °C ~ 142 °C ($T_f$ = 145 °C) |
| Surge (For Reference Only) | 2.0 kV ($R$ > 10 Ω) |
| | 1.0 kV ($R$ ≤ 10 Ω) |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## Technical Specifications

| Series | Power Type | Derating Factor (25 °C) | Rated Resistance | Resistance Tolerance | Rated Functioning Temp. ($T_f$) | Fusing Temp. | Agency Approvals | | Environmental Status | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | cURus | CQC | RoHS | REACH |
| | (W) | (%) | (Ω) | (%) | (°C) | (°C) | cURus | CQC | | |
| TRXF1S | 1 | 80 | 1.0 ~ 600 | ± 5, ± 10 | 221 | 216 ~ 221 | ● | ● | ● | ● |
| | | 45 | | | 145 | 138 ~ 142 | ● | ● | ● | ● |

Resistance Selection Table (According to IEC60063-2015, blue font is SETsafe | SETfuse common resistance)

| Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code | Rated Resistance (Ω) | | 标称阻值 Rated Resistance (Ω) | Code |
|---|---|---|---|---|---|---|---|
| 0.10 | R10 | 1.0 | 1R0 | 10 | 10R | 100 | 100R |
| 0.11 | R11 | 1.1 | 1R1 | 11 | 11R | 110 | 110R |
| 0.12 | R12 | 1.2 | 1R2 | 12 | 12R | 120 | 120R |
| 0.13 | R13 | 1.3 | 1R3 | 13 | 13R | 130 | 130R |
| 0.15 | R15 | 1.5 | 1R5 | 15 | 15R | 150 | 150R |
| 0.16 | R16 | 1.6 | 1R6 | 16 | 16R | 160 | 160R |
| 0.18 | R18 | 1.8 | 1R8 | 18 | 18R | 180 | 180R |
| 0.20 | R20 | 2.0 | 2R0 | 20 | 20R | 200 | 200R |
| 0.22 | R22 | 2.2 | 2R2 | 22 | 22R | 220 | 220R |
| 0.24 | R24 | 2.4 | 2R4 | 24 | 24R | 240 | 240R |
| 0.27 | R27 | 2.7 | 2R7 | 27 | 27R | 270 | 270R |
| 0.30 | R30 | 3.0 | 3R0 | 30 | 30R | 300 | 300R |
| 0.33 | R33 | 3.3 | 3R3 | 33 | 33R | 330 | 330R |
| 0.36 | R36 | 3.6 | 3R6 | 36 | 36R | 360 | 360R |
| 0.39 | R39 | 3.9 | 3R9 | 39 | 39R | 390 | 390R |
| 0.43 | R43 | 4.3 | 4R3 | 43 | 43R | 430 | 430R |
| 0.47 | R47 | 4.7 | 4R7 | 47 | 47R | 470 | 470R |
| 0.51 | R51 | 5.1 | 5R1 | 51 | 51R | 510 | 510R |
| 0.56 | R56 | 5.6 | 5R6 | 56 | 56R | 560 | 560R |
| 0.62 | R62 | 6.2 | 6R2 | 62 | 62R | N/A | N/A |
| 0.68 | R68 | 6.8 | 6R8 | 68 | 68R | N/A | N/A |
| 0.75 | R75 | 7.5 | 7R5 | 75 | 75R | N/A | N/A |
| 0.82 | R82 | 8.2 | 8R2 | 82 | 82R | N/A | N/A |
| 0.91 | R91 | 9.1 | 9R1 | 91 | 91R | N/A | N/A |


TRXF


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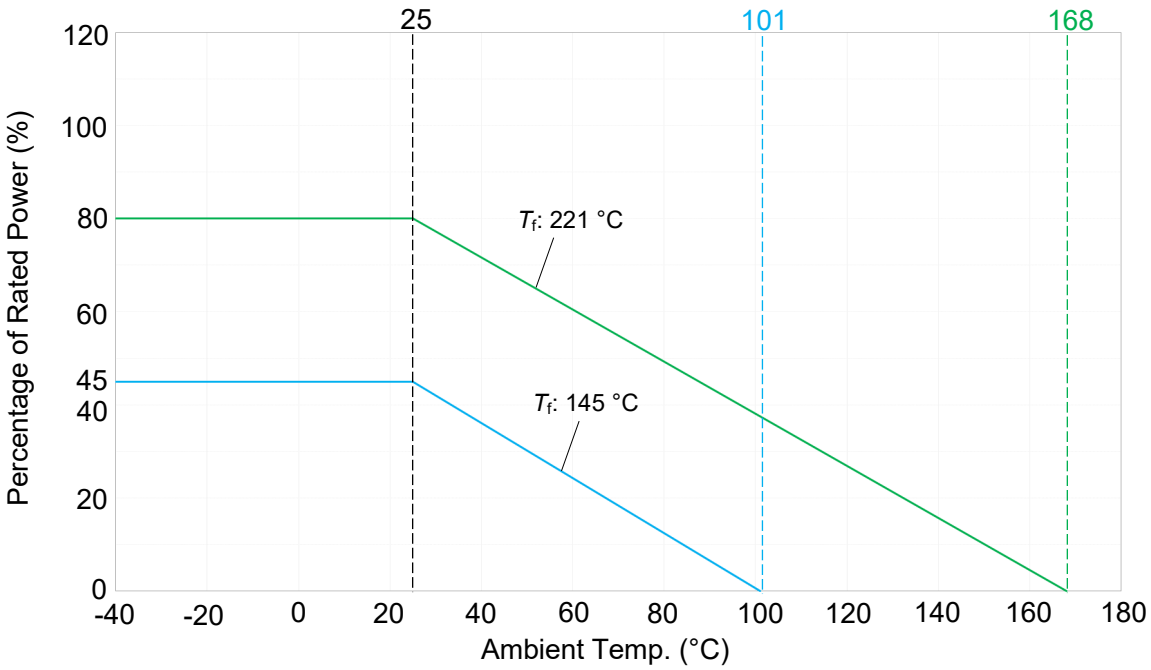
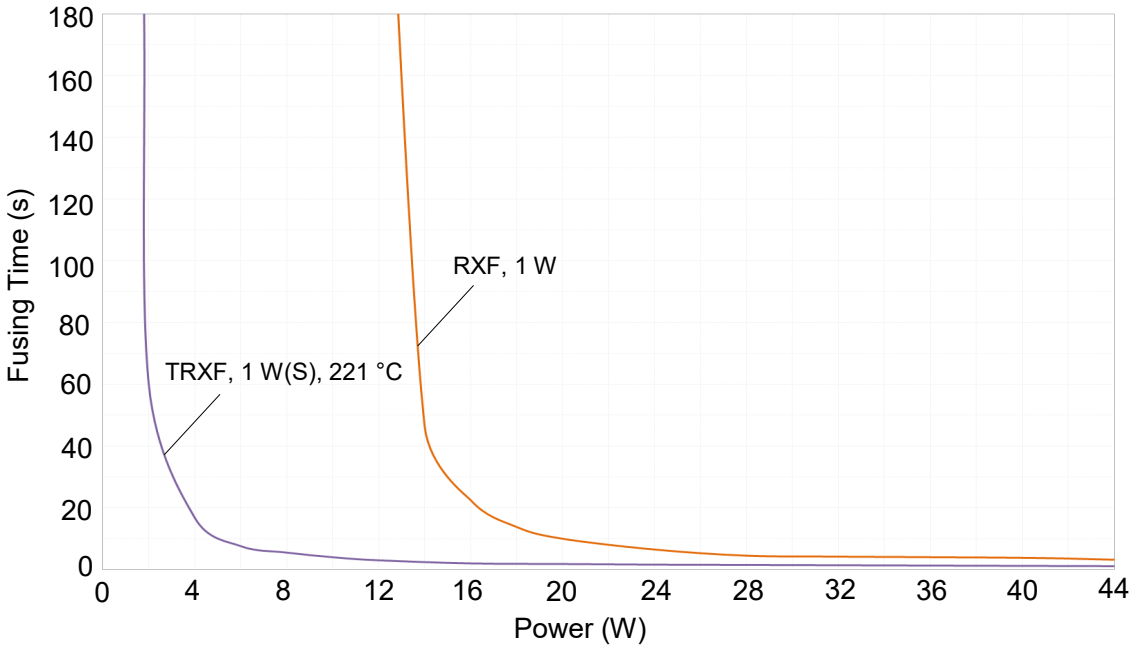
## Rated Power Derating Curve (For Reference Only)

When the ambient temp. exceeds 25 ºC, the rated power value declines as the following curve.




## Fusing Time Curve (For Reference Only)

Compared with RXF, TRXF can open effectively at lower power multiples to protect the circuit timely (ambient temp. 25 °C ± 2 °C).





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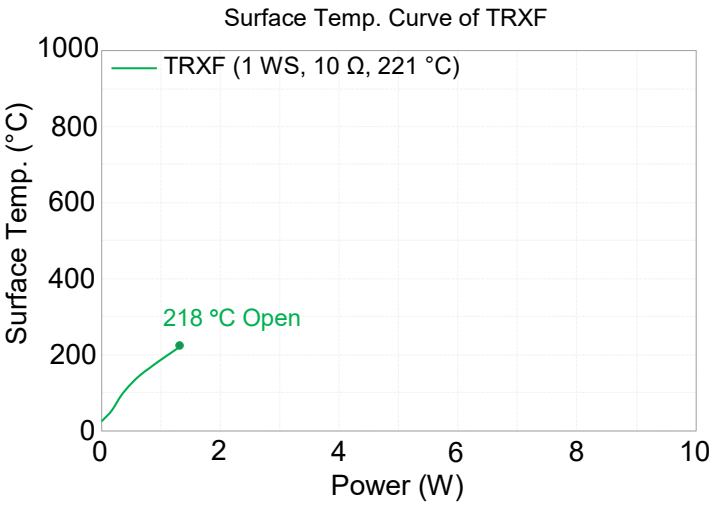
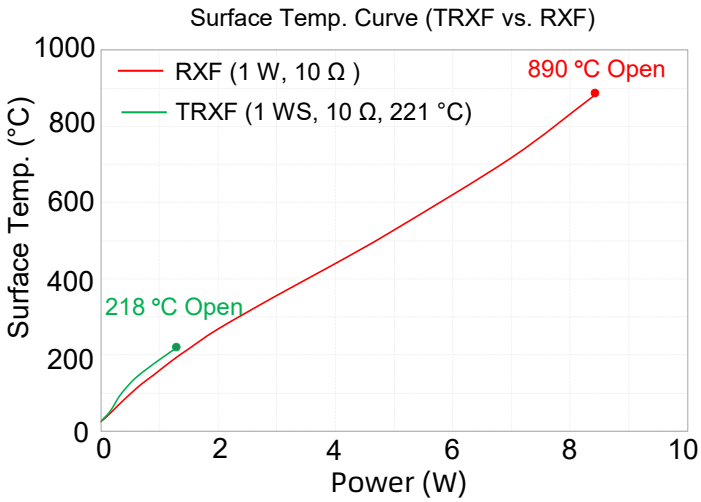
## Surface Temp. Curve (For Reference Only)

The surface temp. of TRXF is always at a lower level, when small fault current happens to the device, TRXF is able to open the circuit timely without additional damage (ambient temp. 25 °C ± 2 °C).

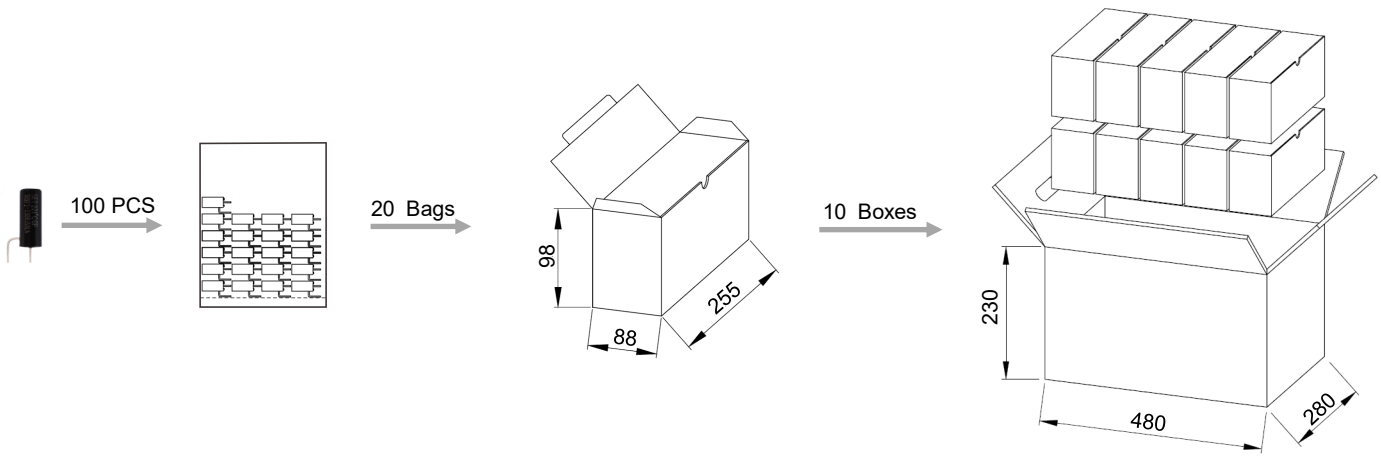



## Packaging Information

**Bulk**

| Item | PE Bag | Box | Carton |
|---|---|---|---|
| Dimensions (mm) | 135 × 85 | 255 × 88 × 98 | 480 × 280 × 230 |
| Quantity (PCS) | 100 | 2,000 | 20,000 |
| Gross Weight (Vertical) (kg) | | | 7.2 ± 10% |
| Gross Weight (Horizontal) (kg) | | | 8.0 ± 10% |





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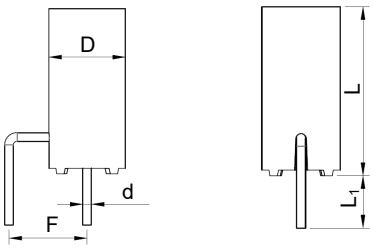
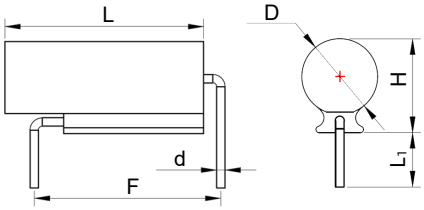
## Vertical

## Dimensions (mm)




| L | $L_1$[a] | D | d | F[a] |
|---|---|---|---|---|
| 11.0 Max. | 3.5 ± 0.5 | Φ4.8 ± 0.2 | Φ0.54 ± 0.05 | 5.0 ± 0.5 |

## Horizontal




| L | $L_1$[a] | H | D | d | F[a] |
|---|---|---|---|---|---|
| 11.0 Max. | 3.5 ± 0.5 | 6.0 ± 0.2 | Φ4.8 ± 0.2 | Φ0.54 ± 0.05 | 10.0 ± 0.5 |

[a]: "F" , "$L_1$" and the bending mode of pins can be customized as required.

## Electrical Characteristics

| Item | Parameter |
|---|---|
| Power Type (***P***) | 1 W |
| Rated Resistance (***R***) | 1 Ω ~ 800 Ω |
| Resistance Tolerance | 5% (E24) , 10% (E12) |
| Derating Factor (***f***) | See Rated Power Derating Curve |
| Actual Power( $P_0$ ) | $P_0 = P \times f$ |
| Rated Current ( $I_N$) | $I_N = \sqrt{P_0 / R}$ |
| Rated Voltage ( $U_N$) | $U_N = \sqrt{P_0 \times R}$ |
| Rated Functioning Temp. ($T_f$) | 145 °C, 221 °C |
| Fusing Time | 5 × $P$ ($T_f$ = 221 °C, less than 60 s) |
| | 3 × $P$ ($T_f$ = 145 °C, less than 60 s ) |
| Fusing Temp. | 216 °C ~ 221 °C ($T_f$ = 221 °C) |
| | 138 °C ~ 142 °C ($T_f$ = 145 °C) |
| Surge (For Reference Only) | 2.0 kV ($R$ > 10 Ω) |
| | 1.0 kV ($R$ ≤ 10 Ω) |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TRXF

## Specifications

| Series | Power Type | Derating Factor (25 °C) | Rated Resistance | Resistance Tolerance | Rated Functioning Temp. ($T_f$) | Fusing Temp. | Agency Approvals | | | Environmental Status | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | cURus | TUV | CQC | RoHS | REACH |
| | (W) | (%) | (Ω) | (%) | (°C) | (°C) | cURus | TUV | CQC | | |
| TRXF1 | 1 | 50 | 0.27 ~ 0.47 | ± 5, ± 10 | 145 | 138 ~ 142 | ● | N/A | ● | ● | ● |
| | | 100 | | | 221 | 216 ~ 221 | | | | | |
| | | 50 | 0.47 ~ 800 | ± 5, ± 10 | 145 | 138 ~ 142 | ● | ● | ● | ● | ● |
| | | 100 | | | 221 | 216 ~ 221 | | | | | |

Resistance Selection Table (According to IEC60063-2015, blue font is SETsafe | SETfuse common resistance)

| Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code |
|---|---|---|---|---|---|---|---|
| 0.10 | R10 | 1.0 | 1R0 | 10 | 10R | 100 | 100R |
| 0.11 | R11 | 1.1 | 1R1 | 11 | 11R | 110 | 110R |
| 0.12 | R12 | 1.2 | 1R2 | 12 | 12R | 120 | 120R |
| 0.13 | R13 | 1.3 | 1R3 | 13 | 13R | 130 | 130R |
| 0.15 | R15 | 1.5 | 1R5 | 15 | 15R | 150 | 150R |
| 0.16 | R16 | 1.6 | 1R6 | 16 | 16R | 160 | 160R |
| 0.18 | R18 | 1.8 | 1R8 | 18 | 18R | 180 | 180R |
| 0.20 | R20 | 2.0 | 2R0 | 20 | 20R | 200 | 200R |
| 0.22 | R22 | 2.2 | 2R2 | 22 | 22R | 220 | 220R |
| 0.24 | R24 | 2.4 | 2R4 | 24 | 24R | 240 | 240R |
| 0.27 | R27 | 2.7 | 2R7 | 27 | 27R | 270 | 270R |
| 0.30 | R30 | 3.0 | 3R0 | 30 | 30R | 300 | 300R |
| 0.33 | R33 | 3.3 | 3R3 | 33 | 33R | 330 | 330R |
| 0.36 | R36 | 3.6 | 3R6 | 36 | 36R | 360 | 360R |
| 0.39 | R39 | 3.9 | 3R9 | 39 | 39R | 390 | 390R |
| 0.43 | R43 | 4.3 | 4R3 | 43 | 43R | 430 | 430R |
| 0.47 | R47 | 4.7 | 4R7 | 47 | 47R | 470 | 470R |
| 0.51 | R51 | 5.1 | 5R1 | 51 | 51R | 510 | 510R |
| 0.56 | R56 | 5.6 | 5R6 | 56 | 56R | 560 | 560R |
| 0.62 | R62 | 6.2 | 6R2 | 62 | 62R | 620 | 620R |
| 0.68 | R68 | 6.8 | 6R8 | 68 | 68R | 680 | 680R |
| 0.75 | R75 | 7.5 | 7R5 | 75 | 75R | 750 | 750R |
| 0.82 | R82 | 8.2 | 8R2 | 82 | 82R | N/A | N/A |
| 0.91 | R91 | 9.1 | 9R1 | 91 | 91R | N/A | N/A |


TRXF


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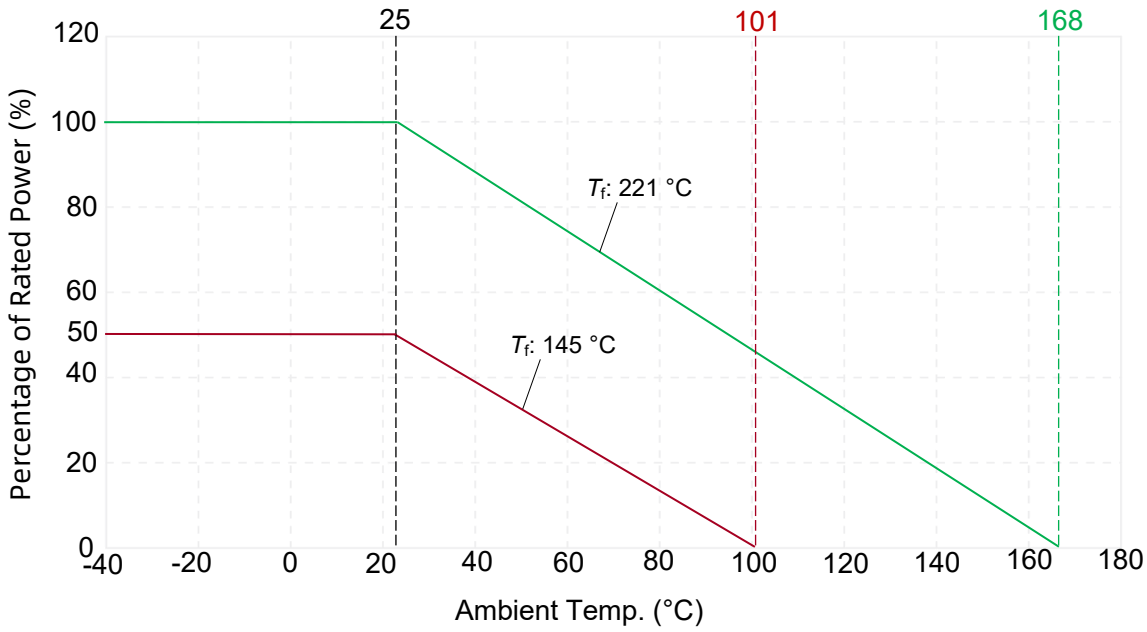
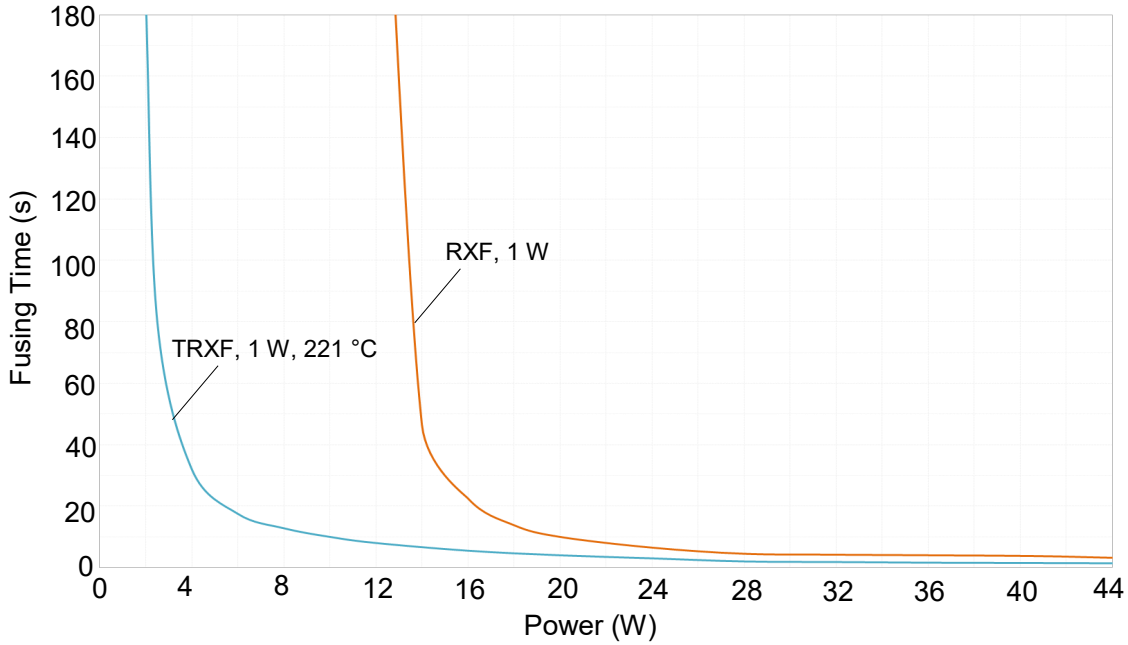
## Rated Power Derating Curve (For Reference Only)

When the ambient temp. exceeds 25 ºC, the rated power value declines as the following curve.




## Fusing Time Curve (For Reference Only)

Compared with RXF, TRXF can open effectively at lower power multiples to protect the circuit timely (ambient temp. 25 °C ± 2 °C).





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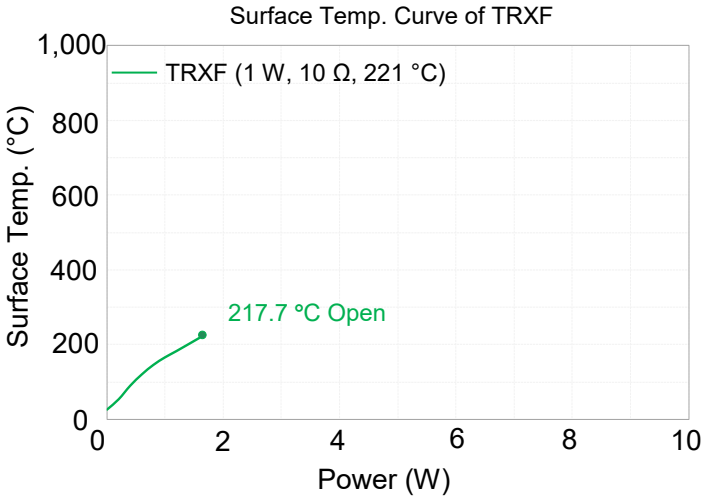
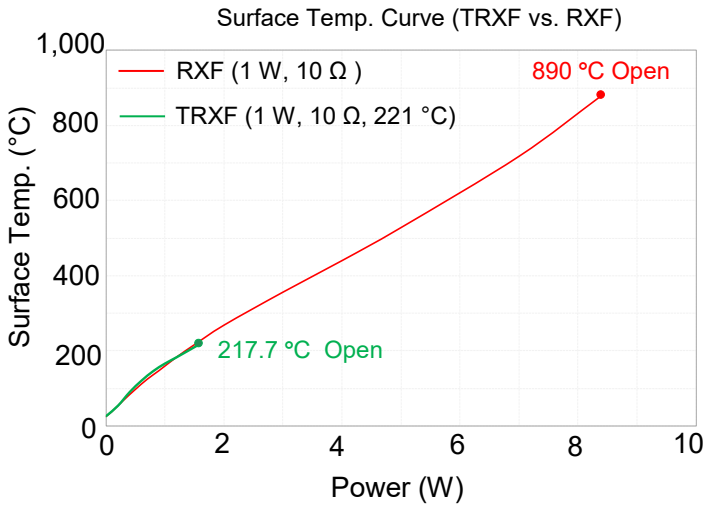
## Surface Temp. Curve (For Reference Only)

The surface temp. of TRXF is always at a lower level, when small fault current happens to the device, TRXF is able to open the circuit timely without additional damage (ambient temp. 25 °C ± 2 °C).

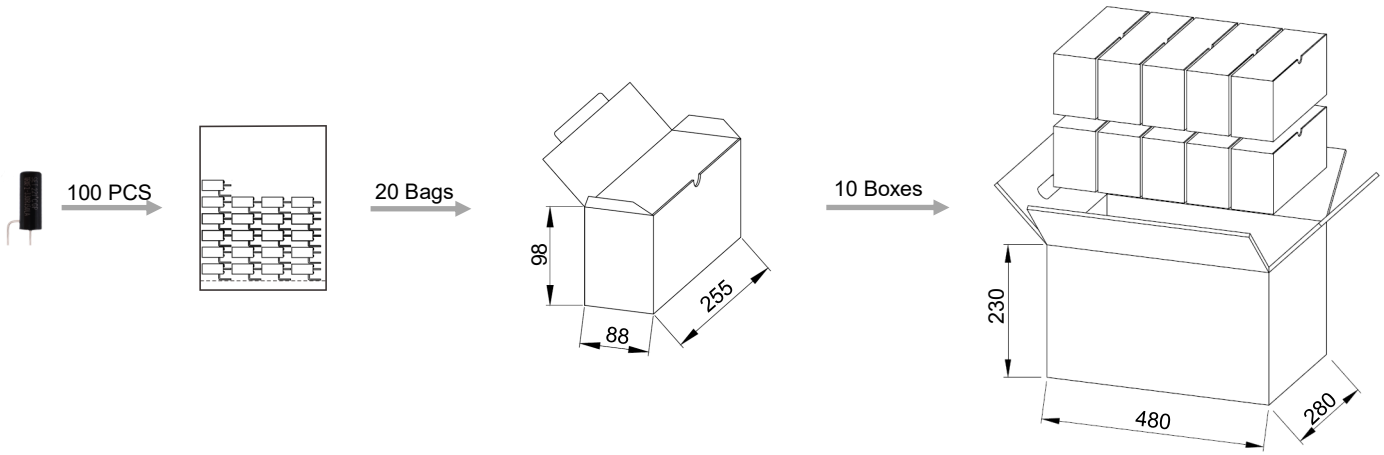



## Packaging Information

**Bulk**

| Item | PE Bag | Box | Carton |
|---|---|---|---|
| Dimensions (mm) | 135 × 85 | 255 × 88 × 98 | 480 × 280 × 230 |
| Quantity (PCS) | 100 | 2,000 | 20,000 |
| Gross Weight (Vertical) (kg) | | | 10.5 ± 10% |
| Gross Weight (Horizontal) (kg) | | | 12.0 ± 10% |





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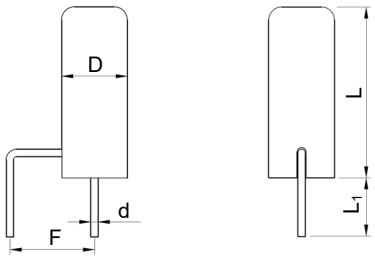
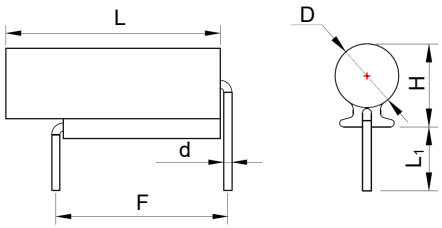
## Vertical

## Dimensions (mm)




| L | $L_1$[a] | D | d | F[a] |
|---|---|---|---|---|
| 13.5 Max. | 3.5 ± 0.5 | Φ4.8 ± 0.2 | Φ0.54 ± 0.05 | 5.0 ± 0.5 |

## Horizontal




| L | $L_1$[a] | H | D | d | F[a] |
|---|---|---|---|---|---|
| 13.5 Max. | 3.5 ± 0.5 | 6.0 ± 0.2 | Φ4.8 ± 0.2 | Φ0.54 ± 0.05 | 10.0 ± 0.5 |

[a]: "F" , "$L_1$" and the bending mode of pins can be customized as required.

## Electrical Characteristics

| Item | Parameter |
|---|---|
| Power Type (***P***) | 2 W |
| Rated Resistance (***R***) | 0.27 Ω ~ 1,000 Ω |
| Resistance Tolerance | 5% (E24) , 10% (E12) |
| Derating Factor (***f***) | See Rated Power Derating Curve |
| Actual Power( $P_0$ ) | $P_0 = P \times f$ |
| Rated Current ( $I_N$) | $I_N = \sqrt{P_0 / R}$ |
| Rated Voltage ( $U_N$) | $U_N = \sqrt{P_0 \times R}$ |
| Rated Functioning Temp. ($T_f$) | 150 °C, 221 °C |
| Fusing Time | 3 × $P$ ($T_f$ = 221 °C, less than 60 s) |
| | 2 × $P$ ($T_f$ = 150 °C, less than 60 s ) |
| Fusing Temp. | 216 °C ~ 221 °C ($T_f$ = 221 °C) |
| | 143 °C ~ 147 °C ($T_f$ = 150 °C) |
| Surge (For Reference Only) | 2.0 kV ($R$ > 10 Ω) |
| | 1.0 kV ($R$ ≤ 10 Ω) |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## Specifications

| Series | Power Type | Derating Factor (25 °C) | Rated Resistance | Resistance Tolerance | Rated Functioning Temp. ($T_f$) | Fusing Temp. | Agency Approvals | | | Environmental Status | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | cURus | TÜVRheinland | CQC | RoHS | REACH |
| | (W) | (%) | (Ω) | (%) | (°C) | (°C) | cURus | TUV | CQC | | |
| TRXF2 | 2 | 60 | 0.27 ~ 2.0 | ± 5, ± 10 | 150 | 143 ~ 147 | ● | N/A | ● | ● | ● |
| | | 80 | | | 221 | 216 ~ 221 | | | | | |
| | | 60 | 2.0 ~ 1000 | ± 5, ± 10 | 150 | 143 ~ 147 | ● | ● | ● | ● | ● |
| | | 80 | | | 221 | 216 ~ 221 | | | | | |

Resistance Selection Table (According to IEC60063-2015, blue font is SETsafe | SETfuse common resistance)

| Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code |
|---|---|---|---|---|---|---|---|
| 0.10 | R10 | 1.0 | 1R0 | 10 | 10R | 100 | 100R |
| 0.11 | R11 | 1.1 | 1R1 | 11 | 11R | 110 | 110R |
| 0.12 | R12 | 1.2 | 1R2 | 12 | 12R | 120 | 120R |
| 0.13 | R13 | 1.3 | 1R3 | 13 | 13R | 130 | 130R |
| 0.15 | R15 | 1.5 | 1R5 | 15 | 15R | 150 | 150R |
| 0.16 | R16 | 1.6 | 1R6 | 16 | 16R | 160 | 160R |
| 0.18 | R18 | 1.8 | 1R8 | 18 | 18R | 180 | 180R |
| 0.20 | R20 | 2.0 | 2R0 | 20 | 20R | 200 | 200R |
| 0.22 | R22 | 2.2 | 2R2 | 22 | 22R | 220 | 220R |
| 0.24 | R24 | 2.4 | 2R4 | 24 | 24R | 240 | 240R |
| 0.27 | R27 | 2.7 | 2R7 | 27 | 27R | 270 | 270R |
| 0.30 | R30 | 3.0 | 3R0 | 30 | 30R | 300 | 300R |
| 0.33 | R33 | 3.3 | 3R3 | 33 | 33R | 330 | 330R |
| 0.36 | R36 | 3.6 | 3R6 | 36 | 36R | 360 | 360R |
| 0.39 | R39 | 3.9 | 3R9 | 39 | 39R | 390 | 390R |
| 0.43 | R43 | 4.3 | 4R3 | 43 | 43R | 430 | 430R |
| 0.47 | R47 | 4.7 | 4R7 | 47 | 47R | 470 | 470R |
| 0.51 | R51 | 5.1 | 5R1 | 51 | 51R | 510 | 510R |
| 0.56 | R56 | 5.6 | 5R6 | 56 | 56R | 560 | 560R |
| 0.62 | R62 | 6.2 | 6R2 | 62 | 62R | 620 | 620R |
| 0.68 | R68 | 6.8 | 6R8 | 68 | 68R | 680 | 680R |
| 0.75 | R75 | 7.5 | 7R5 | 75 | 75R | 750 | 750R |
| 0.82 | R82 | 8.2 | 8R2 | 82 | 82R | 820 | 820R |
| 0.91 | R91 | 9.1 | 9R1 | 91 | 91R | 910 | 910R |


TRXF


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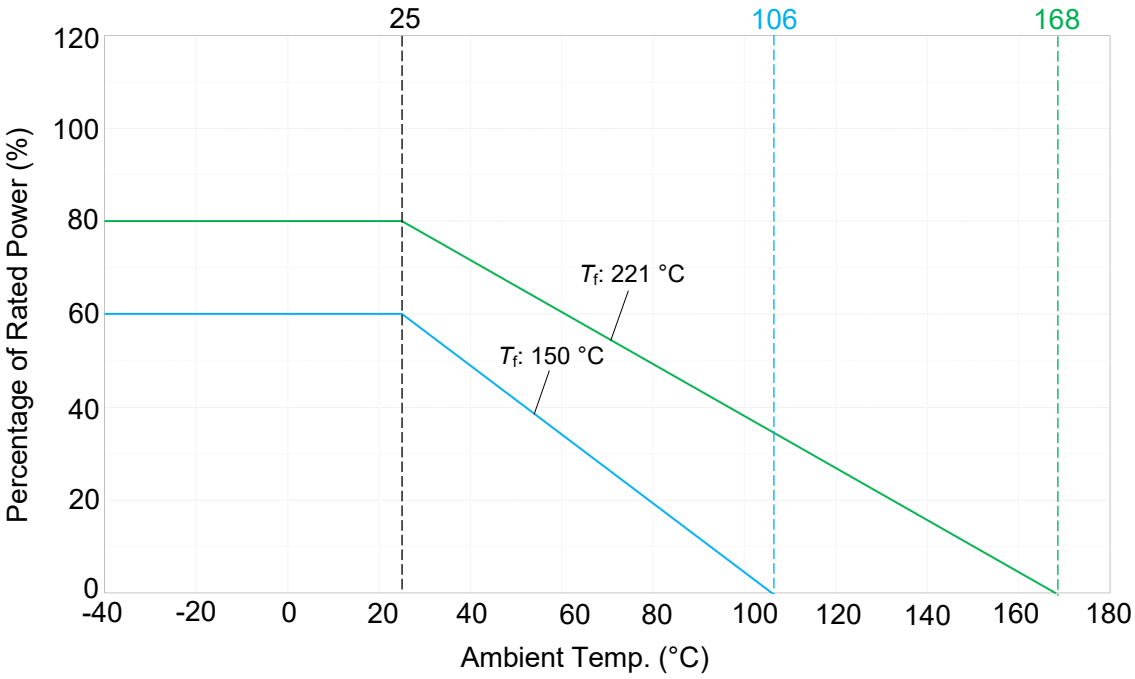
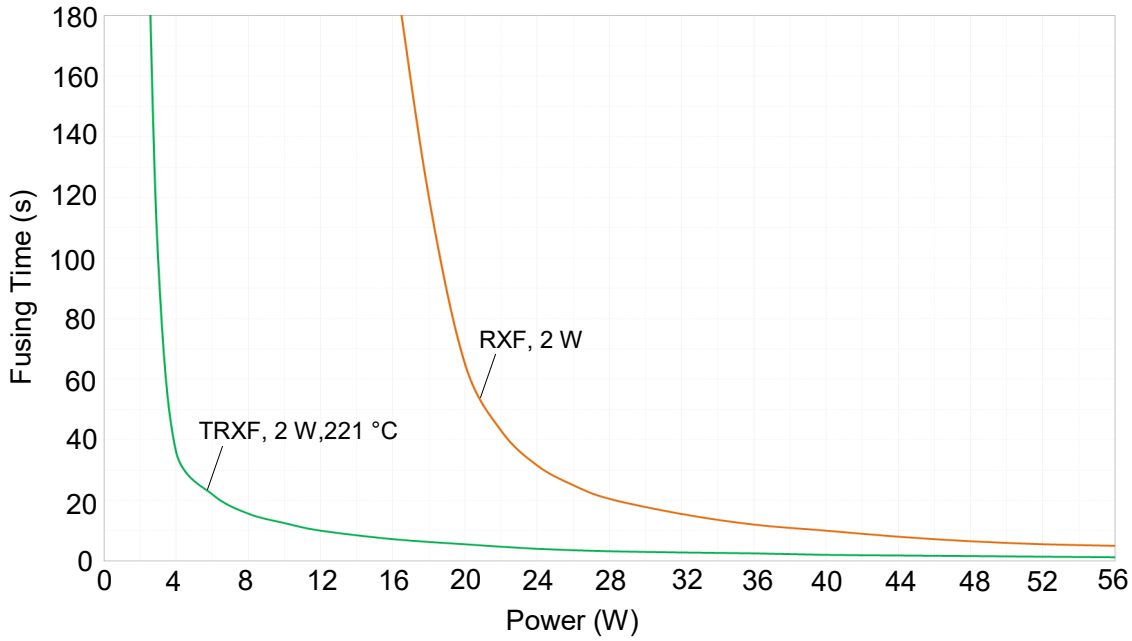
## Rated Power Derating Curve (For Reference Only)

When the ambient temp. exceeds 25 ºC, the rated power value declines as the following curve.




## Fusing Time Curve (For Reference Only)

Compared with RXF, TRXF can open effectively at lower power multiples to protect the circuit timely (ambient temp. 25 °C ± 2 °C).





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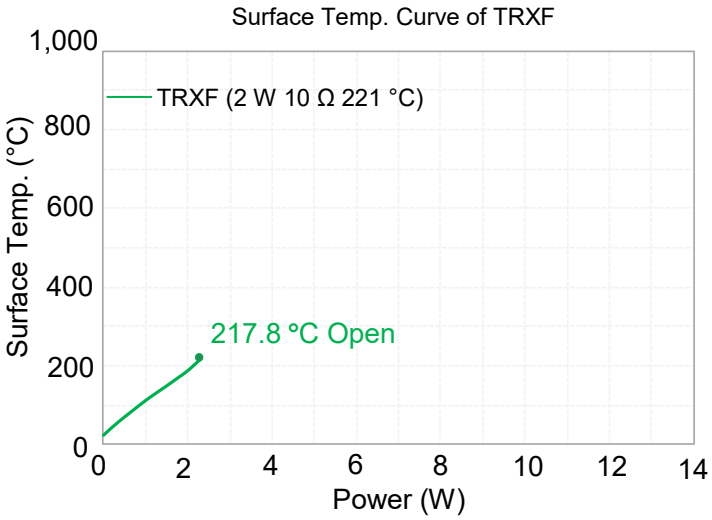
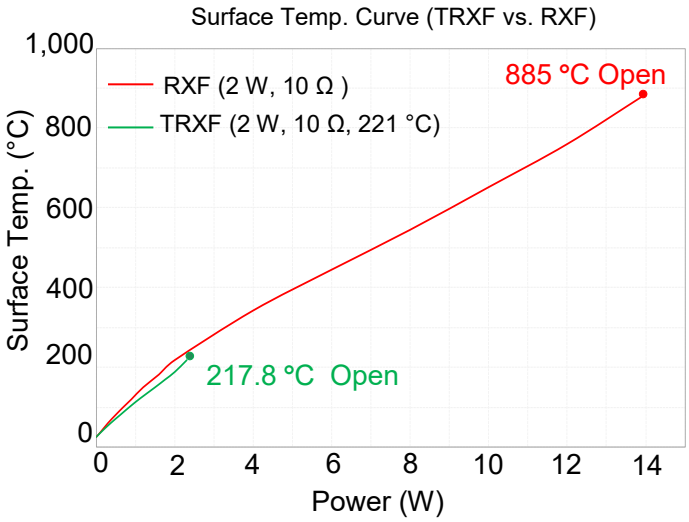
## Surface Temp. Curve (For Reference Only)

The surface temp. of TRXF is always at a lower level, when small fault current happens to the device, TRXF is able to open the circuit timely without additional damage (ambient temp. 25 °C ± 2 °C).

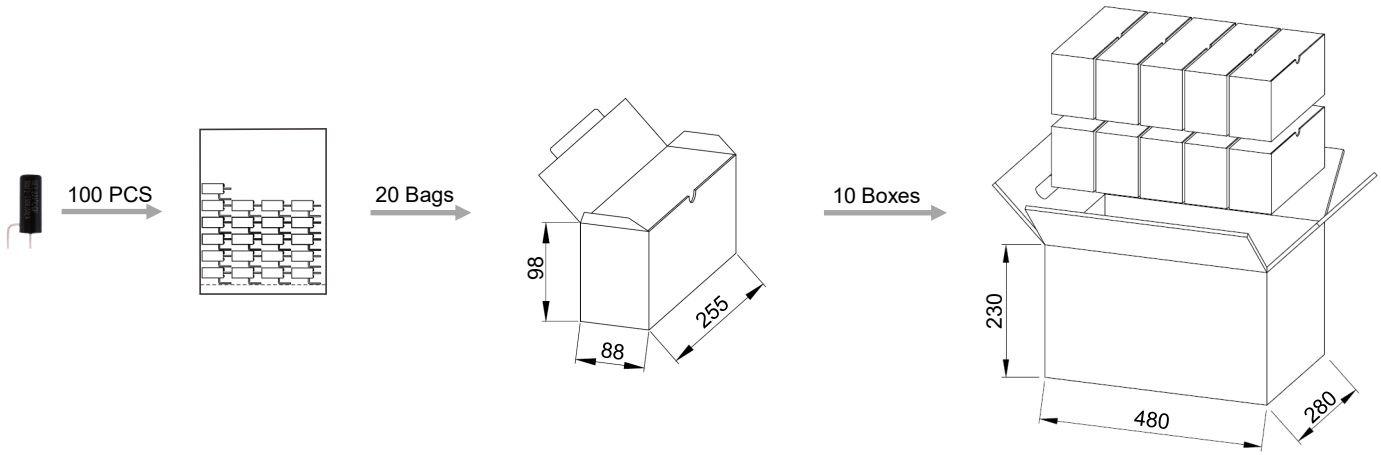



## Packaging Information

**Bulk**

| Item | PE Bag | Box | Carton |
|---|---|---|---|
| Dimensions (mm) | 135 × 85 | 255 × 88 × 98 | 480 × 280 × 230 |
| Quantity (PCS) | 100 | 2,000 | 20,000 |
| Gross Weight (Vertical) (kg) | | | 12.0 ± 10% |
| Gross Weight (Horizontal) (kg) | | | 14.0 ± 10% |





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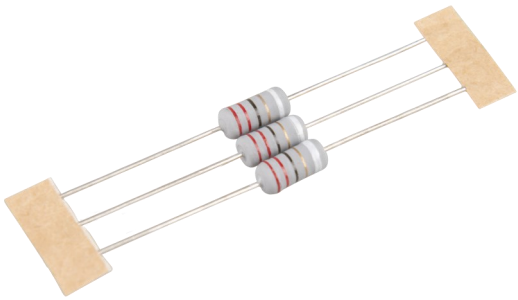
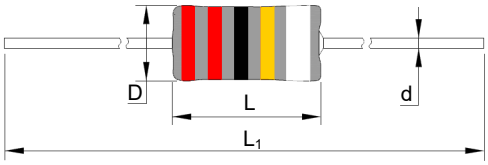
## Coating

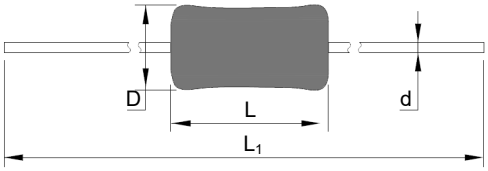


## Dimensions (mm)




| L | $L_1$[a] | D | d |
|---|---|---|---|
| 9.0 ± 1.0 | 60.0 ± 2.0 / 72.0 ± 2.0 | Φ4.4 ± 0.5 | Φ0.54 ± 0.05 |

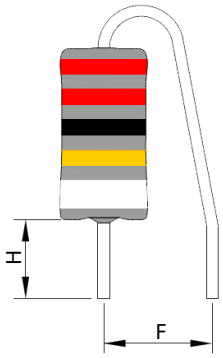
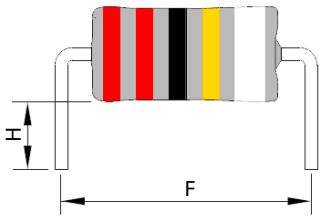
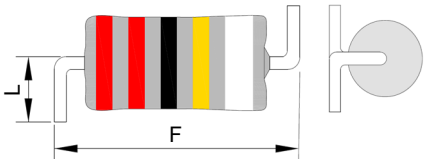
## With Tube




| L | $L_1$[a] | D | d |
|---|---|---|---|
| 9.5 ± 1.0 | 60.0 ± 2.0 / 72.0 ± 2.0 | Φ4.6 ± 0.5 | Φ0.54 ± 0.05 |

[a]: Blue font is SETsafe | SETfuse common length.

## Leads Forming Types

| Type A | | Type B | | Type C | |
|---|---|---|---|---|---|
|  | |  | |  | |
| H (mm) | F (mm) | H (mm) | F (mm) | L (mm) | F (mm) |
| 3.5 ± 0.5 | 5.0 / 7.5 ± 0.5 | 3.5 ± 0.5 | (12.0 ~ 18.0) ± 0.5 | 3.0 ± 0.5 | 13 ± 1 |
| The forming modes and length of lead wires can be customized | | | | | |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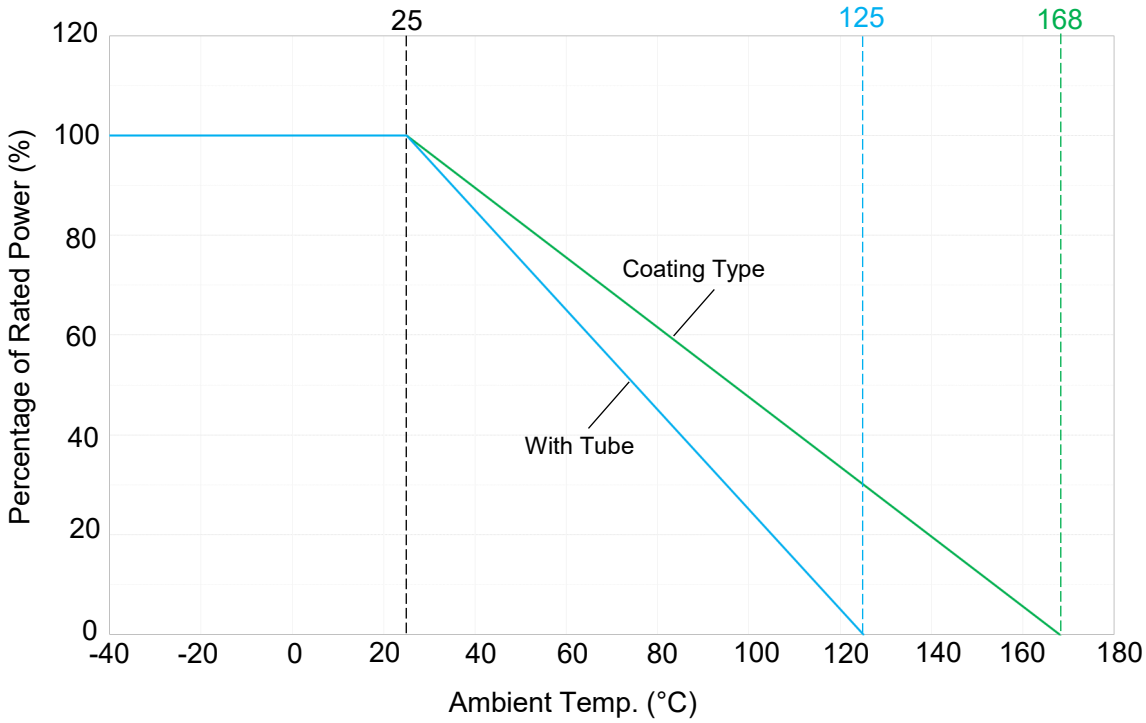
## Electrical Characteristics

| Item | Parameter |
|---|---|
| Power Type (***P***) | 1 W |
| Rated Resistance (***R***) | 0.27 Ω ~ 800 Ω |
| Resistance Tolerance | 5% (E24) , 10% (E12) |
| Derating Factor (***f***) | See Rated Power Derating Curve |
| Actual Power( $P_0$ ) | $P_0 = P \times f$ |
| Rated Current ( $I_N$) | $I_N = \sqrt{P_0 / R}$ |
| Rated Voltage ( $U_N$) | $U_N = \sqrt{P_0 \times R}$ |
| Fusing Time | 5 × $P_0$ (小于60 s, less than 60 s ) |
| Rated Functioning Temp. ($T_f$) | 221 °C |
| Fusing Temp. | 216 °C ~ 221 °C |
| Surge (For Reference Only) | 2.0 kV ($R$ > 10 Ω) |
| | 1.0 kV ($R$ ≤ 10 Ω) |

## Rated Power Derating Curve (For Reference Only)

When the ambient temp. exceeds 25 ºC, the rated power value declines as the following curve.
(The Max. working temp. of polyolefin tube is 125 °C )





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## Specifications

| Series | Power Type | Derating Factor (25 °C) | Rated Resistance | Resistance Tolerance | Rated Functioning Temp. ($T_f$) | Fusing Temp. | Agency Approvals | | | Environmental Status | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | UL | TUV | CQC | RoHS | REACH |
| | (W) | (%) | (Ω) | (%) | (°C) | (°C) | UL | TUV | CQC | | |
| TRXF1 (Axial Type) | 1 | 100 | 0.27 ~0.43 | ± 5, ± 10 | 221 | 216 ~ 221 | ● | ● | N/A | ● | ● |
| | | | 0.47 ~ 800 | | | | ● | ● | ● | | |

Resistance Selection Table (According to IEC60063-2015, blue font is SETsafe | SETfuse common resistance)

| Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code |
|---|---|---|---|---|---|---|---|
| 0.10 | R10 | 1.0 | 1R0 | 10 | 10R | 100 | 100R |
| 0.11 | R11 | 1.1 | 1R1 | 11 | 11R | 110 | 110R |
| 0.12 | R12 | 1.2 | 1R2 | 12 | 12R | 120 | 120R |
| 0.13 | R13 | 1.3 | 1R3 | 13 | 13R | 130 | 130R |
| 0.15 | R15 | 1.5 | 1R5 | 15 | 15R | 150 | 150R |
| 0.16 | R16 | 1.6 | 1R6 | 16 | 16R | 160 | 160R |
| 0.18 | R18 | 1.8 | 1R8 | 18 | 18R | 180 | 180R |
| 0.20 | R20 | 2.0 | 2R0 | 20 | 20R | 200 | 200R |
| 0.22 | R22 | 2.2 | 2R2 | 22 | 22R | 220 | 220R |
| 0.24 | R24 | 2.4 | 2R4 | 24 | 24R | 240 | 240R |
| 0.27 | R27 | 2.7 | 2R7 | 27 | 27R | 270 | 270R |
| 0.30 | R30 | 3.0 | 3R0 | 30 | 30R | 300 | 300R |
| 0.33 | R33 | 3.3 | 3R3 | 33 | 33R | 330 | 330R |
| 0.36 | R36 | 3.6 | 3R6 | 36 | 36R | 360 | 360R |
| 0.39 | R39 | 3.9 | 3R9 | 39 | 39R | 390 | 390R |
| 0.43 | R43 | 4.3 | 4R3 | 43 | 43R | 430 | 430R |
| 0.47 | R47 | 4.7 | 4R7 | 47 | 47R | 470 | 470R |
| 0.51 | R51 | 5.1 | 5R1 | 51 | 51R | 510 | 510R |
| 0.56 | R56 | 5.6 | 5R6 | 56 | 56R | 560 | 560R |
| 0.62 | R62 | 6.2 | 6R2 | 62 | 62R | 620 | 620R |
| 0.68 | R68 | 6.8 | 6R8 | 68 | 68R | 680 | 680R |
| 0.75 | R75 | 7.5 | 7R5 | 75 | 75R | 750 | 750R |
| 0.82 | R82 | 8.2 | 8R2 | 82 | 82R | N/A | N/A |
| 0.91 | R91 | 9.1 | 9R1 | 91 | 91R | N/A | N/A |


TRXF


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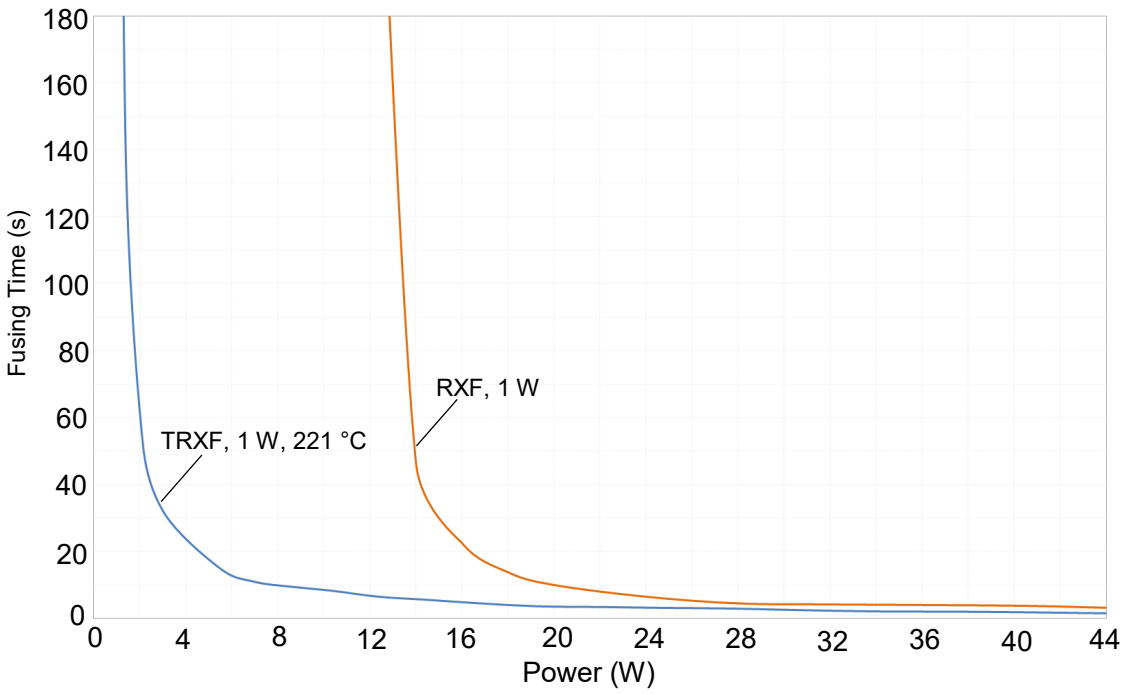
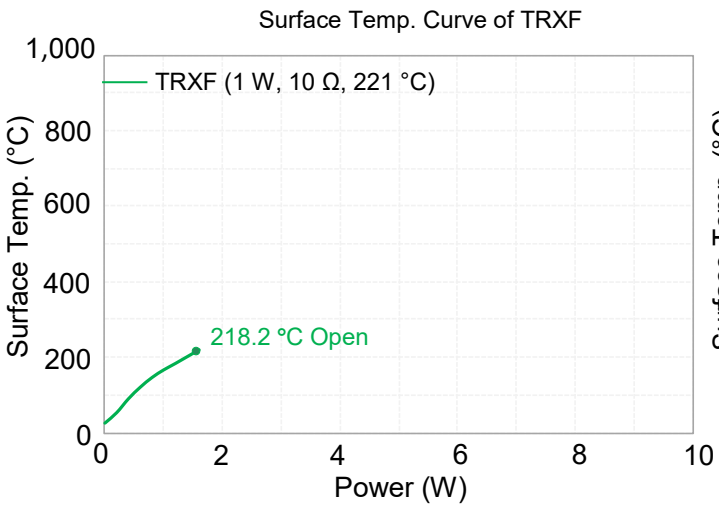
## Fusing Time Curve (For Reference Only)

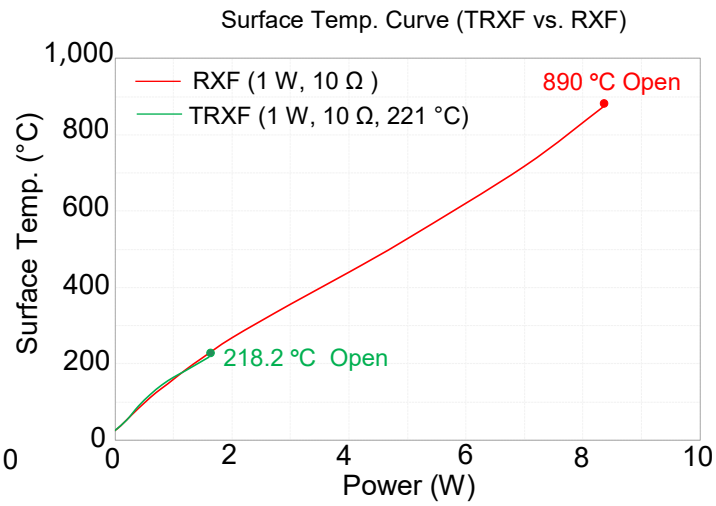
Compared with RXF, TRXF can open effectively at lower power multiples to protect the circuit timely (ambient temp. 25 °C ± 2 °C).




## Surface Temp. Curve (For Reference Only)

The surface temp. of TRXF is always at a lower level, when small fault current happens to the device, TRXF is able to open the circuit timely without additional damage (ambient temp. 25 °C ± 2 °C).





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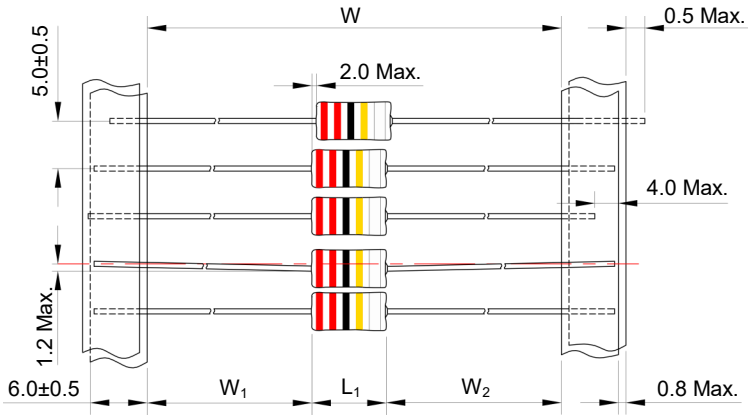
# Packaging Information

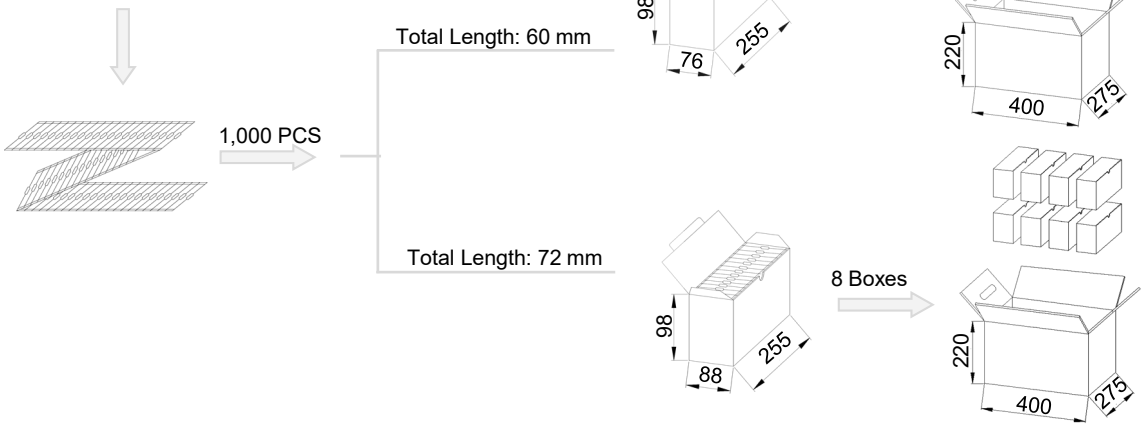
## Taping

| Total Length | Item | Box | Carton |
|---|---|---|---|
| 60 mm | Quantity (PCS) | 1,000 | 10,000 |
| | Gross Weight (kg) | 6.5 ± 10% | |
| 72 mm | Quantity (PCS) | 1,000 | 8,000 |
| | Gross Weight (kg) | 6.4 ± 10% | |

| Tape Dimensions (mm) | | |
|---|---|---|
| Symbol | Total Length | |
| | 60 mm | 72 mm |
| W | 52 ± 2 | 64 ± 2 |
| $L_1$ (Coating) | 9.0 ± 1.0 | |
| $L_1$ (With Tube) | 9.5 ± 1.0 | |
| $\lvert W_1 - W_2 \rvert$ | 2.0 Max. | |

Unit: mm

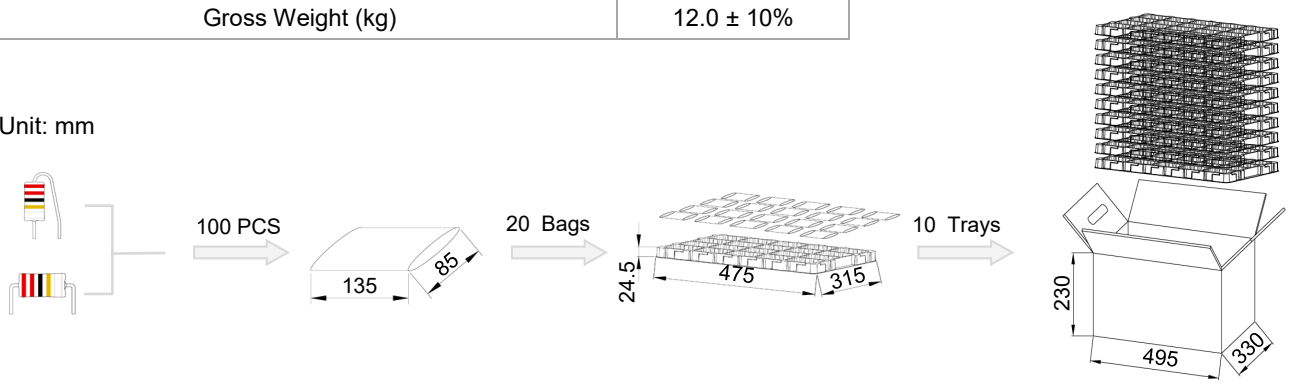



## Bulk

| Item | PE Bag | Tray | Carton |
|---|---|---|---|
| Quantity (PCS) | 100 | 2,000 | 20,000 |
| Gross Weight (kg) | | | 12.0 ± 10% |

Unit: mm





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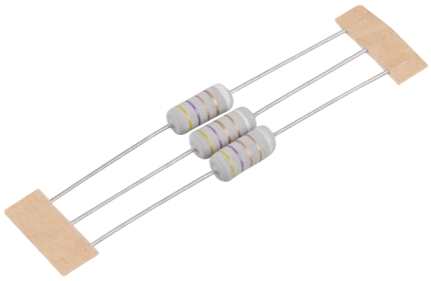
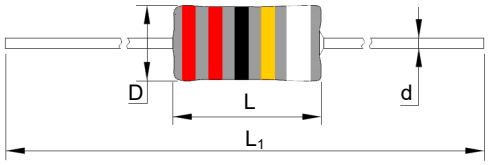
## Coating

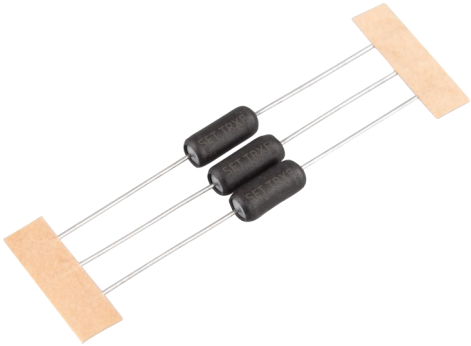


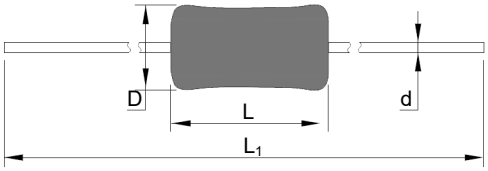
## Dimensions (mm)




| L | $L_1$[a] | D | d |
|---|---|---|---|
| 10.0 ± 1.0 | 60.0 ± 2.0 /72.0 ± 2.0 | Φ4.4 ± 0.5 | Φ0.54 ± 0.05 |

## With Tube

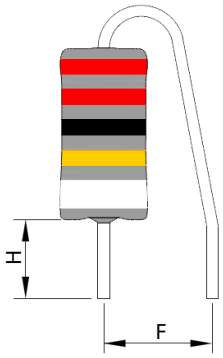
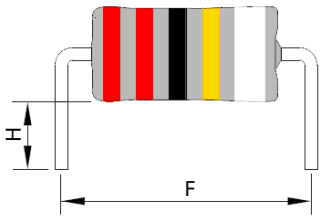
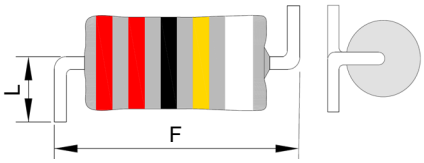





| L | $L_1$[a] | D | d |
|---|---|---|---|
| 10.5 ± 1.0 | 60.0 ± 2.0 /72.0 ± 2.0 | Φ4.6 ± 0.5 | Φ0.54 ± 0.05 |

[a]: Blue font is SETsafe | SETfuse common length.

## Leads Forming Types

| Type A | | Type B | | Type C | |
|---|---|---|---|---|---|
|  | |  | |  | |
| H (mm) | F (mm) | H (mm) | F (mm) | L (mm) | F (mm) |
| 3.5 ± 0.5 | 5.0 / 7.5 ± 0.5 | 3.5 ± 0.5 | (12.0 ~ 18.0) ± 0.5 | 3.0 ± 0.5 | 13 ± 1 |

The forming modes and length of lead wires can be customized.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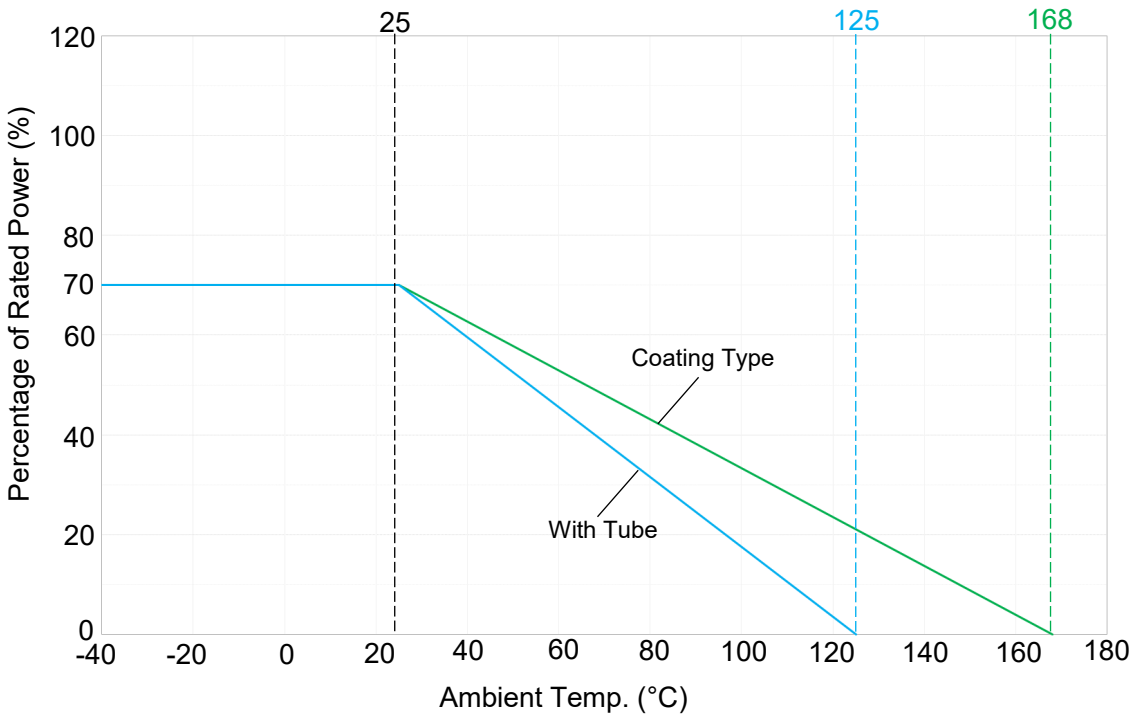
## Electrical Characteristics

| Item | Parameter |
|---|---|
| Power Type (***P***) | 2 W |
| Rated Resistance (***R***) | 0.27 Ω ~ 1,000 Ω |
| Resistance Tolerance | 5% (E24) , 10% (E12) |
| Derating Factor (***f***) | See Rated Power Derating Curve |
| Actual Power( $P_0$ ) | $P_0 = P \times f$ |
| Rated Current ( $I_N$) | $I_N = \sqrt{P_0 / R}$ |
| Rated Voltage ( $U_N$) | $U_N = \sqrt{P_0 \times R}$ |
| Fusing Time | 4 × $P_0$ (小于60 s, less than 60 s ) |
| Rated Functioning Temp. ($T_f$) | 221 °C |
| Fusing Temp. | 216 °C ~ 221 °C |
| Surge (For Reference Only) | 2.0 kV ($R$ > 10 Ω) |
| | 1.0 kV ($R$ ≤ 10 Ω) |



## Rated Power Derating Curve (For Reference Only)

When the ambient temp. exceeds 25 ºC, the rated power value declines as the following curve.
(The Max. working temp. of polyolefin tube is 125 °C )





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## Specifications

| Series | Power Type | Derating Factor (25 °C) | Rated Resistance | Resistance Tolerance | Rated Functioning Temp. ($T_f$) | Fusing Temp. | Agency Approvals | | | Environmental Status | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | UL | TUV | CQC | RoHS | REACH |
| | (W) | (%) | (Ω) | (%) | (°C) | (°C) | UL | TUV | CQC | | |
| TRXF2 (Axial Type) | 2 | 70 | 0.27 ~ 0.43 | ± 5, ± 10 | 221 | 216 ~ 221 | ● | ● | N/A | ● | ● |
| | | | 0.47 ~ 1000 | | | | ● | ● | ● | | |

Resistance Selection Table (According to IEC60063-2015, blue font is SETsafe | SETfuse common resistance)

| Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code | Rated Resistance (Ω) | Code |
|---|---|---|---|---|---|---|---|
| 0.10 | R10 | 1.0 | 1R0 | 10 | 10R | 100 | 100R |
| 0.11 | R11 | 1.1 | 1R1 | 11 | 11R | 110 | 110R |
| 0.12 | R12 | 1.2 | 1R2 | 12 | 12R | 120 | 120R |
| 0.13 | R13 | 1.3 | 1R3 | 13 | 13R | 130 | 130R |
| 0.15 | R15 | 1.5 | 1R5 | 15 | 15R | 150 | 150R |
| 0.16 | R16 | 1.6 | 1R6 | 16 | 16R | 160 | 160R |
| 0.18 | R18 | 1.8 | 1R8 | 18 | 18R | 180 | 180R |
| 0.20 | R20 | 2.0 | 2R0 | 20 | 20R | 200 | 200R |
| 0.22 | R22 | 2.2 | 2R2 | 22 | 22R | 220 | 220R |
| 0.24 | R24 | 2.4 | 2R4 | 24 | 24R | 240 | 240R |
| 0.27 | R27 | 2.7 | 2R7 | 27 | 27R | 270 | 270R |
| 0.30 | R30 | 3.0 | 3R0 | 30 | 30R | 300 | 300R |
| 0.33 | R33 | 3.3 | 3R3 | 33 | 33R | 330 | 330R |
| 0.36 | R36 | 3.6 | 3R6 | 36 | 36R | 360 | 360R |
| 0.39 | R39 | 3.9 | 3R9 | 39 | 39R | 390 | 390R |
| 0.43 | R43 | 4.3 | 4R3 | 43 | 43R | 430 | 430R |
| 0.47 | R47 | 4.7 | 4R7 | 47 | 47R | 470 | 470R |
| 0.51 | R51 | 5.1 | 5R1 | 51 | 51R | 510 | 510R |
| 0.56 | R56 | 5.6 | 5R6 | 56 | 56R | 560 | 560R |
| 0.62 | R62 | 6.2 | 6R2 | 62 | 62R | 620 | 620R |
| 0.68 | R68 | 6.8 | 6R8 | 68 | 68R | 680 | 680R |
| 0.75 | R75 | 7.5 | 7R5 | 75 | 75R | 750 | 750R |
| 0.82 | R82 | 8.2 | 8R2 | 82 | 82R | 820 | 820R |
| 0.91 | R91 | 9.1 | 9R1 | 91 | 91R | 910 | 910R |


TRXF


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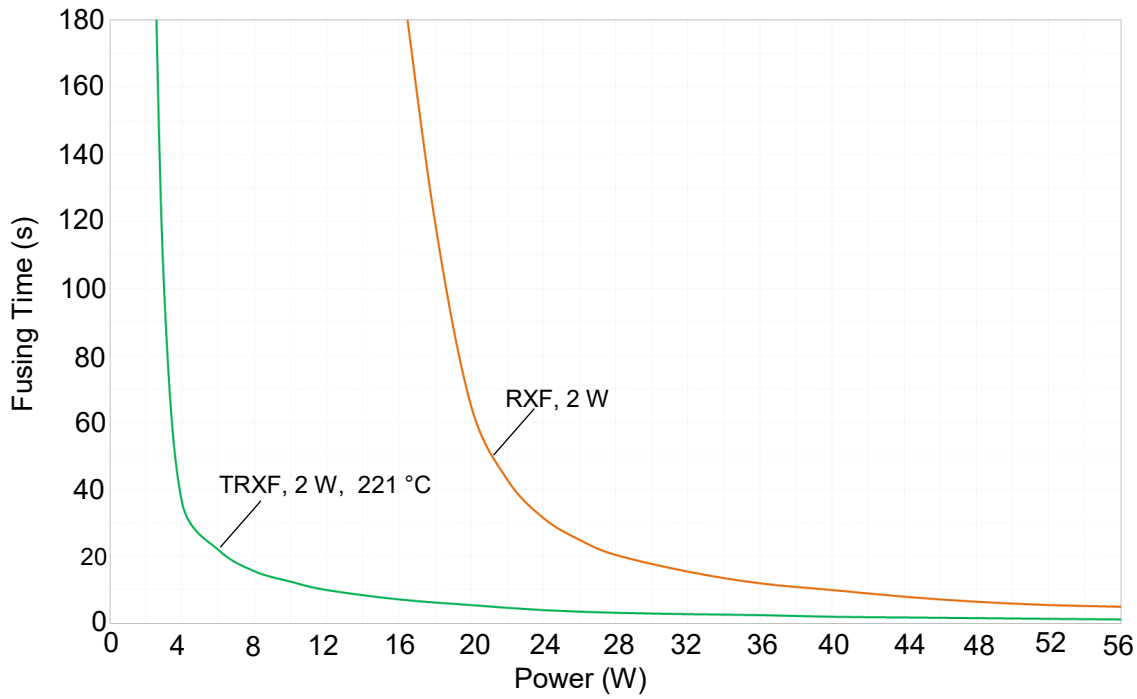
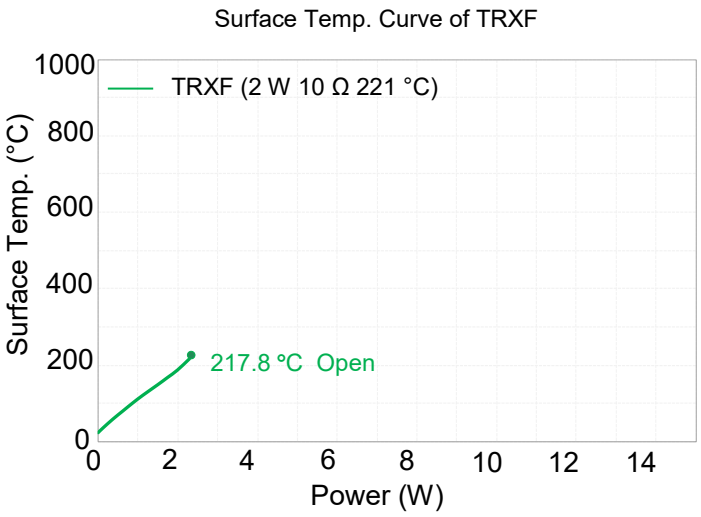
## Fusing Time Curve (For reference only)

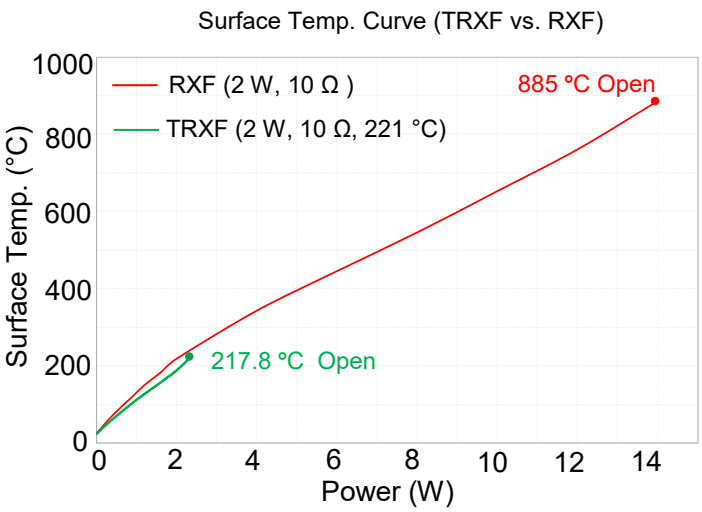
Compared with RXF, TRXF can open effectively at lower power multiples to protect the circuit timely (ambient temp. 25 °C ± 2 °C).




## Surface Temp. Curve (For reference only)

The surface temp. of TRXF is always at a lower level, when small fault current happens to the device, TRXF is able to open the circuit timely without additional damage (ambient temp. 25 °C ± 2 °C).





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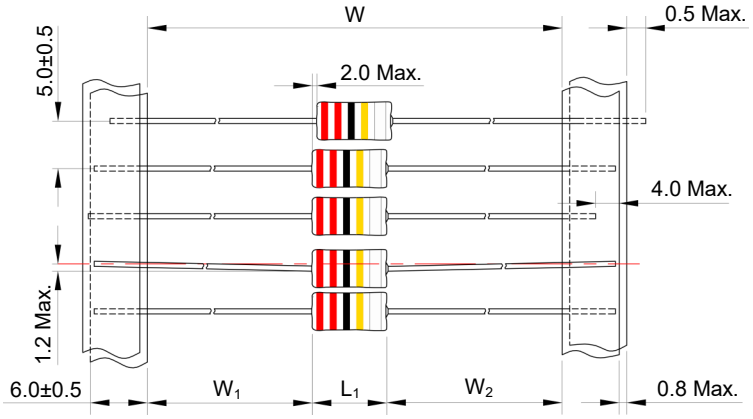
# Packaging Information

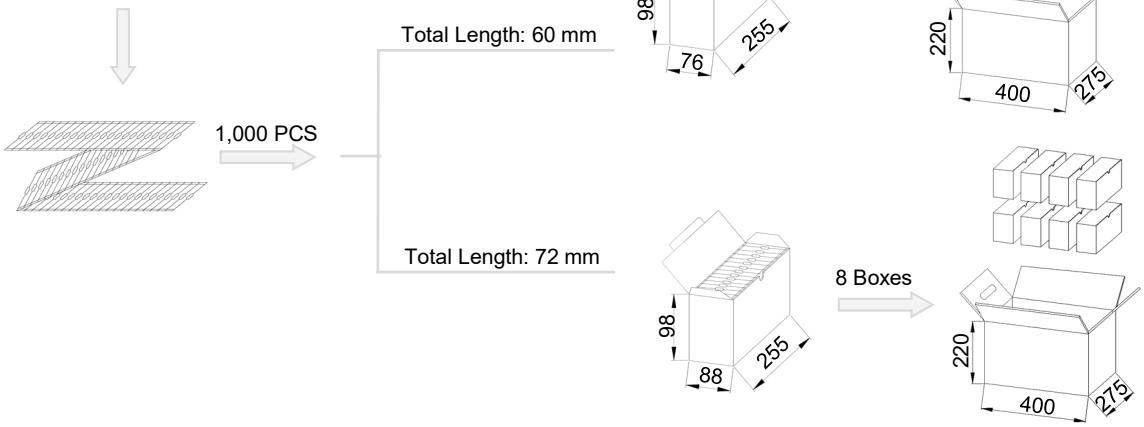
## Taping

| Total Length | Item | Box | Carton |
|---|---|---|---|
| 60 mm | Quantity (PCS) | 1,000 | 10,000 |
| | Gross Weight (kg) | 7.0 ± 10% | |
| 72 mm | Quantity (PCS) | 1,000 | 8,000 |
| | Gross Weight (kg) | 6.9 ± 10% | |

| Tape Dimensions (mm) | | |
|---|---|---|
| Symbol | Total Length | |
| | 60 mm | 72 mm |
| W | 52 ± 2 | 64 ± 2 |
| $L_1$ (Coating) | 10.0 ± 1.0 | |
| $L_1$ (With Tube) | 10.5 ± 1.0 | |
| $\lvert W_1 - W_2 \rvert$ | 2.0 Max. | |

Unit: mm

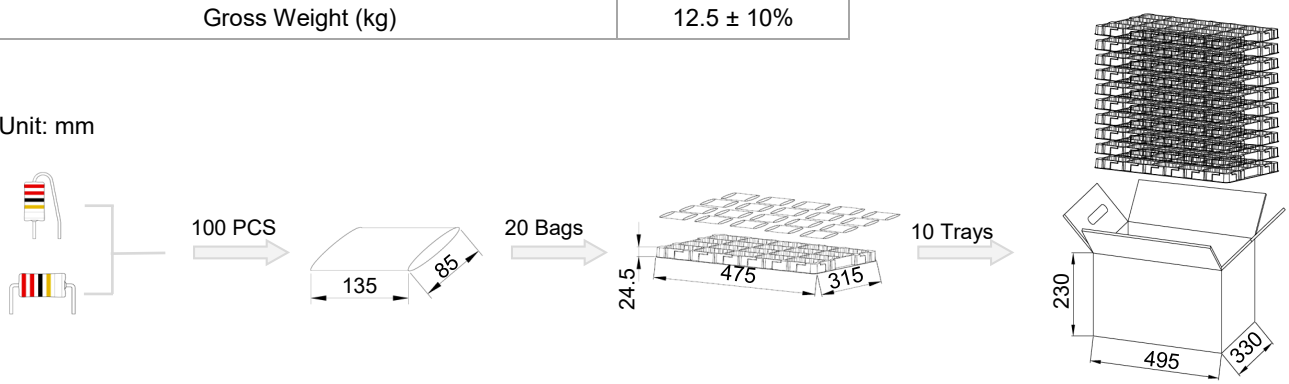



## Bulk

| Item | PE Bag | Tray | Carton |
|---|---|---|---|
| Quantity (PCS) | 100 | 2,000 | 20,000 |
| Gross Weight (kg) | | | 12.5 ± 10% |

Unit: mm





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