Thermal-Link & Fusing Resistor

Active protection

TRXF

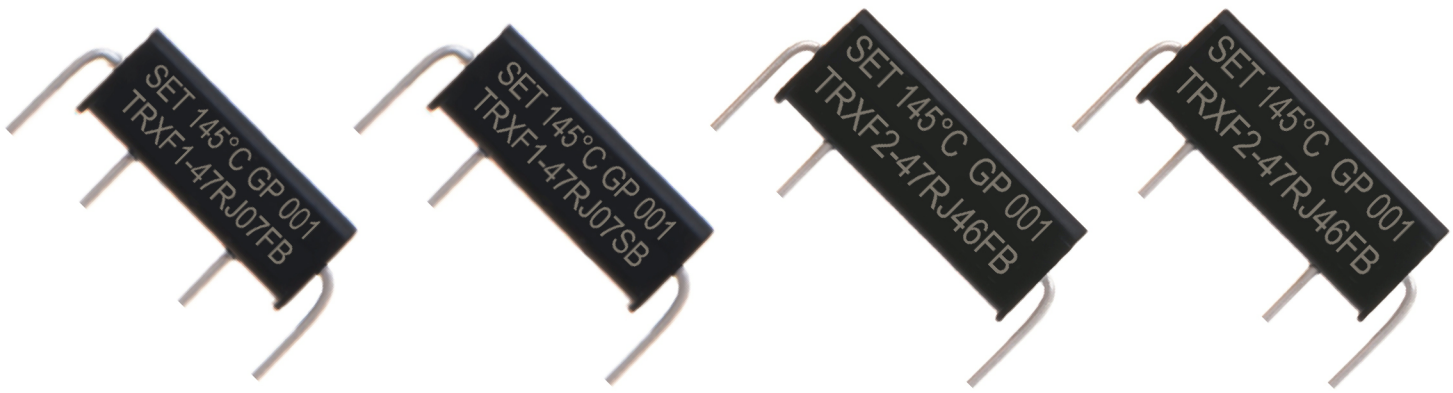
· Miniaturized Product

· Over Temp. Protection

· Over Current Protection

· Halogen free and RoHS compliant

Please refer to the datasheet of each series.



https://setsafe.com/Products/Active-Protection/Thermal-Link-and-Fusing-Resistor-TRXF-Active-Protection.html

2024

SET safe | SET fuse

Providing a Total Solution for High Standard Safety Circuit Protection

TRXF (Active Protection)

Thermal-Link & Fusing Resistor (Active Protection)

SETsafe | SETfuse Thermal-link & Fusing Resistor (TRXF) is an active protection integrated component with Over Temp. and Over Current Protections, in which Alloy Thermal-Link (ATCO) is built in the core of Fusible Wirewound Resistor (RXF) and forming special connection with RXF.

TRXF is used in products such as general lighting, smart homes, small power home appliances, personal care application, security & protection.

SETsafe | SETfuse TRXF is not only able to proceed over temp. protection by ATCO itself but also proceed over current protection by RXF transferring heat to ATCO to open the circuit. TRXF (Active Protection) covers Rated Resistance from 0.47 Ω to 1000 Ω, Rated Functioning Temp.: 115 °C to 150 °C, safety certification includes cURus, TUV, CCC and complies with RoHS and REACH.

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Description, Features, Applications, structure, Dimensions, Agency Information, Marking, Part Numbering System, Technical Parameter, Specifications, Fusing Time Curve, Surface Temp. Curve, Packaging Information

5.1 TRXF1 Series 5

5.2 TRXF2 Series 9

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SETsafe | SETfuse

Thermal-Link & Fusing Resistor (TRXF - Active Protection) Features Overview

Page	5	5	9	9
Shape				
Structure	3 Pins	4 Pins	3 Pins	4 Pins
R Resistance Range	(0.47 ~ 800) Ω		(0.47 ~ 1000) Ω	
	According to IEC60063-2015，resistance can be customized.			
P Power Type	1 W		2 W	
Dimensions	11.5 mm × 4.0 mm × 5.0 mm		14.0 mm × 5.5 mm × 6.0 mm	
	The forming modes and length of lead wires can be customized.			
T_f Rated Functioning Temp.	(115 ~ 150) °C			

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Glossary

Item	Description
RXF	**Fusible Wirewound Resistor** 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. — (SETsafe | SETfuse Standards)
ATCO	**Alloy Thermal-Link** Alloy Type Thermal-Link, Alloy is the thermal element. — (GB/T 9816.3)
R	**Rated Resistance** Resistance value for which the resistor has been designed, and which is generally used for denomination of the resistor. — (IEC 60115-1)
U_N	**Rated Voltage** 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.** 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. Tolerance: T_f + 0 / -10 °C (GB 9816.1, EN 60691, K60691) Tolerance: T_f ± 7 °C (J60691) — (IEC 60691)
T_F	**Fusing Temp.** 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** Relative variation of resistance between two given temp. divided by the difference in the temp. producing it. — (IEC60115-1)

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ATTENTION

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

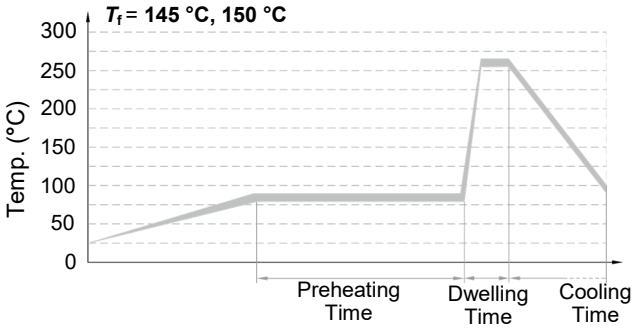
1. Do not touch the resistor body or pins directly when power is on, to avoid burn or electric shock.
2. When air pressure is from 80 kPa to 106 kPa, the relative altitude shall be +2000 m to - 500 m.

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.

Soldering Parameters

Wave Soldering Parameters (For Reference Only)



Item	Temp. (°C)	Time (s)
Preheating	80 ~ 90	60 ~ 100
Dwelling	260 ± 5	4 ~ 5

Hand-Soldering Parameters

Solder Iron Temp.: (350 ± 5) °C

Soldering Time: ≤2 s

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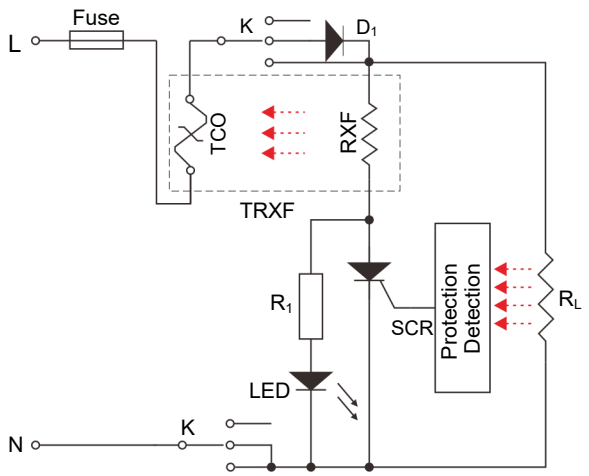
Typical Application for Electric Blanket (4 Pins)

Schematics

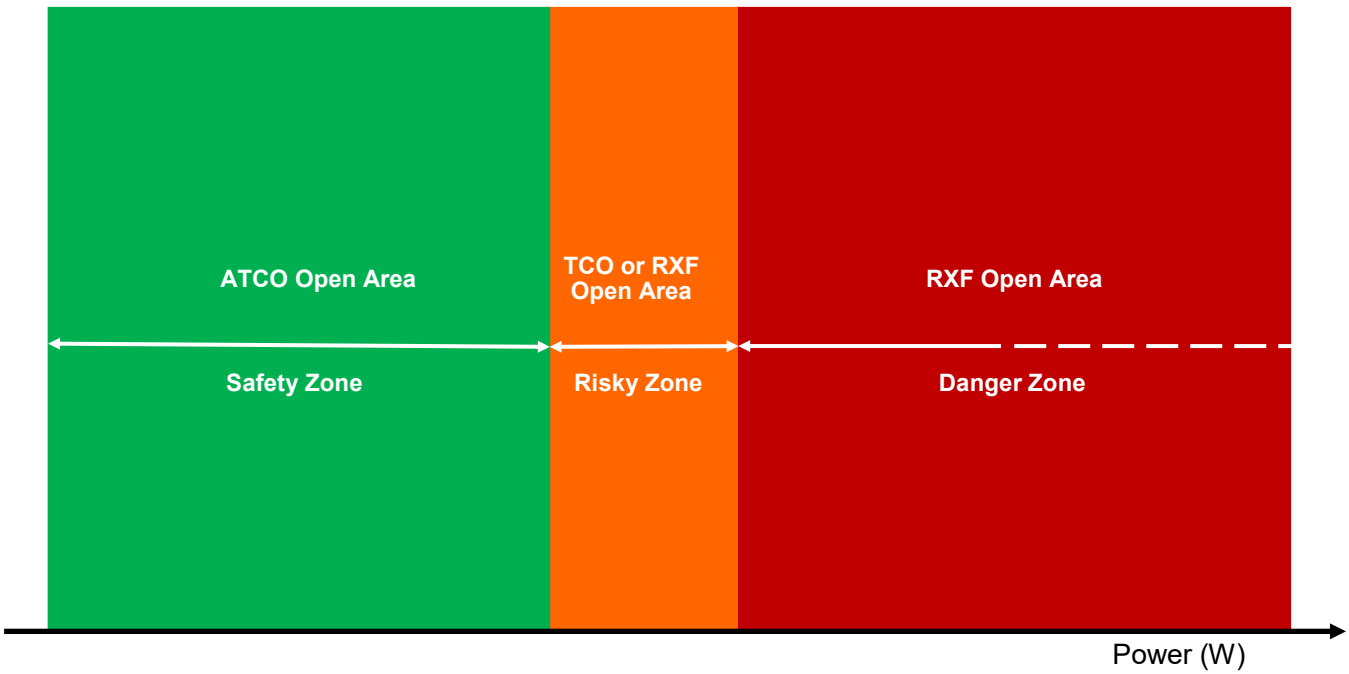
For Electric Blanket Protection Application, For Reference Only.



Operating Principle

When electric blanket works normally, the SCR is off, the current flows through the internal ATCO to R_L to normal heat, and the LED is on. Once the circuit is abnormal, the detective circuit triggers SCR on, and current flows through R and heats up rapidly. The heat is transferred to ATCO and ATCO opens the circuit quickly, and LED indicator is off.

Over Rated Power Fusing Graph



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Description

SETsafe | SETfuse Thermal-link & Fusing Resistor (TRXF) is an active protection integrated component with Over Temp. and Over Current Protections, in which Alloy Thermal-Link (ATCO) is built in the core of Fusible Wirewound Resistor (RXF) and forming special connection with RXF.

TRXF is used in products such as general lighting, smart homes, small power home appliances, personal care application, security & protection.

SETsafe | SETfuse TRXF is not only able to proceed over temp. protection by ATCO itself but also proceed over current protection by RXF transferring heat to ATCO to open the circuit. TRXF1 series Rated Resistance from 0.47 Ω to 800 Ω, Rated Functioning Temp.: 115 ℃ to 150 ℃, safety certification includes cURus, TUV, CCC and complies with RoHS and REACH.

Features

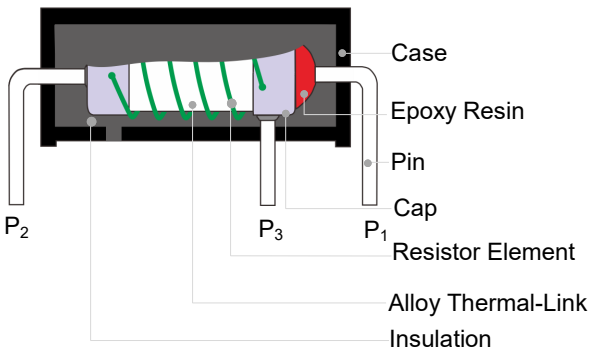
- Over Temp. Protection
- Over Current Protection
- Surge Protection
- RoHS & REACH Compliant

Applications

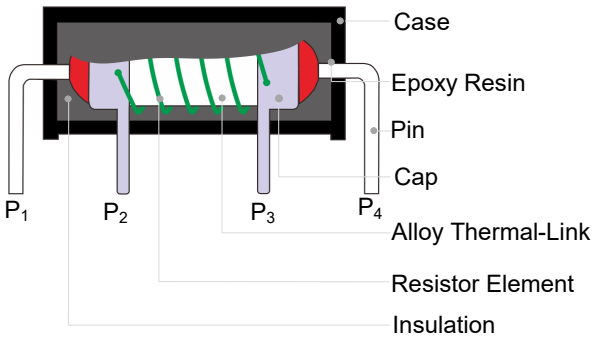
- Electric Blanket
- Battery
- LED Drives

Structure Diagrams

3 Pins



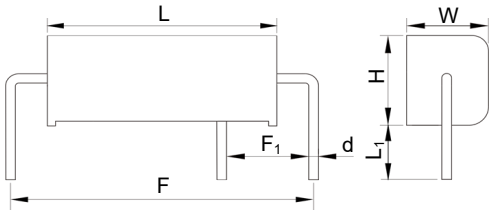
4 Pins



Note: The color of schematic diagram is for reference only

Dimensions（mm）

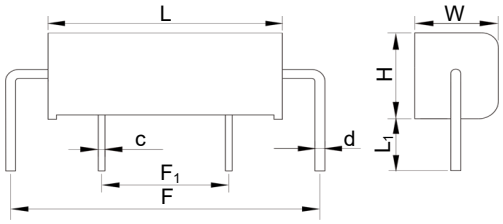
3 Pins



L	L_1[a]	W	H	d	F[a]	F_1
11.5±0.5	3.5±0.5	4.5 Max.	5.0±0.5	Φ0.50±0.05	16.0±1.0	5.0±0.5

Note:
a: F, L_1 and the bending mode of pins can be customized as required.

4 Pins



L	L_1[a]	W	H	d	c*	F[a]	F_1
11.5±0.5	3.5±0.5	4.5 Max.	5.0±0.5	Φ0.50±0.05	□0.35±0.10	16.0±1.0	5.0±1.0

Note:
a: F, L_1 and the bending mode of pins can be customized as required.
c*: Cross-section of pin is square.

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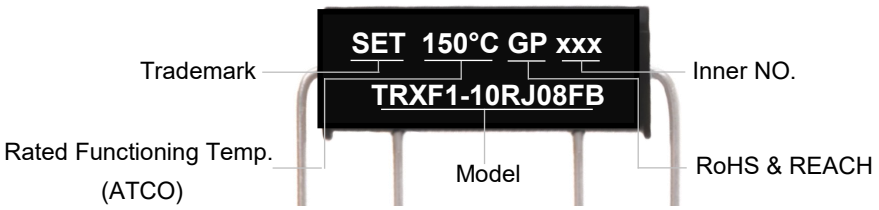
Agency Information

Agency Symbol		Standards	The File No. and certification No. obtained by SETsafe | SETfuse	Rated Resistance (Ω)
	cURus	UL 60691	E214712	0.47 to 470
	CCC	GB 9816	2020980205000194	1 to 600
	TUV	IEC 60065	R50279979	0.47 to 800

Marking



Part Numbering System

TRXF 1 - 4R7 J 08 F B - 001

Other Options

Case Type

B :	Square

Pin Type

S :	3 Pins
F :	4 Pins

ATCO Code

03 :	115 ℃	06 :	135 ℃
04 :	125 ℃	07 :	145 ℃
05 :	130 ℃	08 :	150 ℃

Tolerance

J :	±5%	K :	±10%

Rated Resistance (Ω)

R47 :	0.47	47R :	47
4R7 :	4.7	470R :	470

Power Type

1 :	1 W

Product Category

Technical Parameter

Item	Parameter
Power Type (***P***)	1 W
Rated Resistance (***R***)	0.47 Ω ~ 800 Ω
Resistance Tolerance	5% (E24), 10% (E12)
Fusing Time (less than 60 seconds)	115 ℃ ≤ T_f ≤ 135 ℃: 4 W
	145 ℃ ≤ T_f ≤ 150 ℃: 6 W
Rated Functioning Temp. (T_f)	115 ℃, 125 ℃, 130 ℃, 135 ℃ 145 ℃, 150 ℃
Fusing Temp. (T_F)	T_f = 115 ℃: 109 ℃ ~ 113 ℃
	T_f = 125 ℃: 119 ℃ ~ 123 ℃
	T_f = 130 ℃: 123 ℃ ~ 127 ℃
	T_f = 135 ℃: 128 ℃ ~ 132 ℃
	T_f = 145 ℃: 138 ℃ ~ 142 ℃
	T_f = 150 ℃: 143 ℃ ~ 147 ℃

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Specifications

Series	Power Type	Rated Functioning Temp. (T_f)	Rated Resistance (R)	Resistance Tolerance	Fusing Temp. (T_F)	Agency Information			Environmental Status	
						cURus	TUV	CCC	RoHS	REACH
	(W)	(°C)	(Ω)	(%)	(°C)	cURus	TUV	CCC		
TRXF1	1	115	1 ~ 470	±5, ±10	109 ~ 113	●	N/A	●	●	●
			480 ~ 600			N/A	N/A	●		
		125	1 ~ 470		119 ~ 123	●	N/A	●	●	●
			480 ~ 600			N/A	N/A	●		
		130	0.47 ~ 0.91		123 ~ 127	●	●	N/A	●	●
			1 ~ 600			●	●	●		
		135	0.47 ~ 0.91		128 ~ 132	●	●	N/A	●	●
			1 ~ 600			●	●	●		
		145	0.47 ~ 0.91		138 ~ 142	●	●	N/A	●	●
			1 ~ 600			●	●	●		
		150	0.47 ~ 0.91		143 ~ 147	●	●	N/A	●	●
			1 ~ 600			●	●	●		

Note: ”●"Means certificated, RoHS & REACH Compliant .

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	600	600R
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	800	800R
0.91	R91	9.1	9R1	91	91R	N/A	N/A

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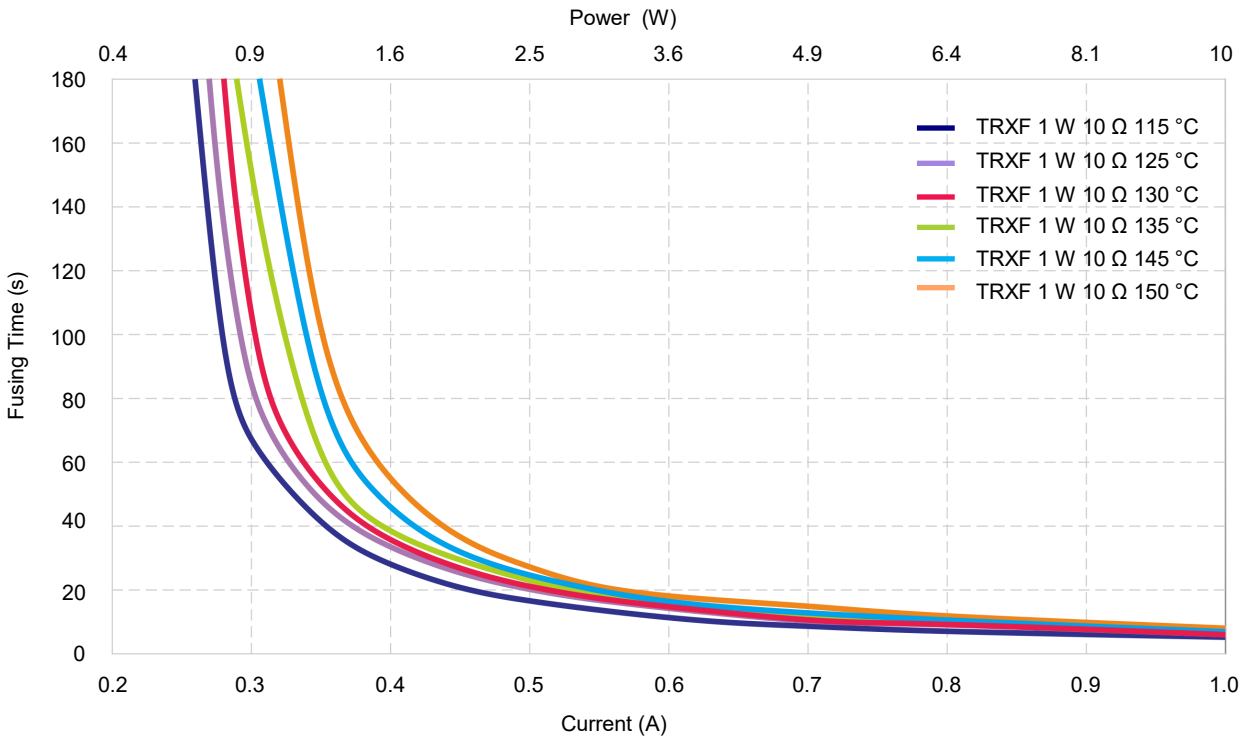
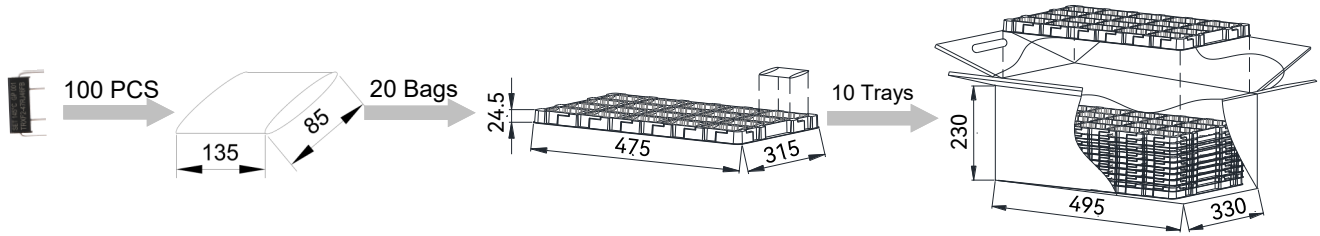
Fusing Time Curve (For Reference Only)

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



Packaging Information

Item	PE Bag	Plastic Tray	Carton
Dimensions (mm)	135 × 85	475 × 315 × 24.5	495 × 330 × 230
Quantity (PCS)	100	2,000	20,000
Gross Weight (3 Pins) (kg)			7.5 ± 10%
Gross Weight (4 Pins) (kg)			9.0 ± 10%



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TRXF (Active Protection)

Thermal-Link & Fusing Resistor (Active Protection)

TRXF2 Series

Description

SETsafe | SETfuse Thermal-link & Fusing Resistor (TRXF) is an active protection integrated component with Over Temp. and Over Current Protections, in which Alloy Thermal-Link (ATCO) is built in the core of Fusible Wirewound Resistor (RXF) and forming special connection with RXF.

TRXF is used in products such as general lighting, smart homes, small power home appliances, personal care application, security & protection.

SETsafe | SETfuse TRXF is not only able to proceed over temp. protection by ATCO itself but also proceed over current protection by RXF transferring heat to ATCO to open the circuit. TRXF2 series Rated Resistance from 0.47 Ω to 1,000 Ω, Rated Functioning Temp.: 115 ℃ to 150 ℃, safety certification includes cURus, TUV, CCC and complies with RoHS and REACH.

Features

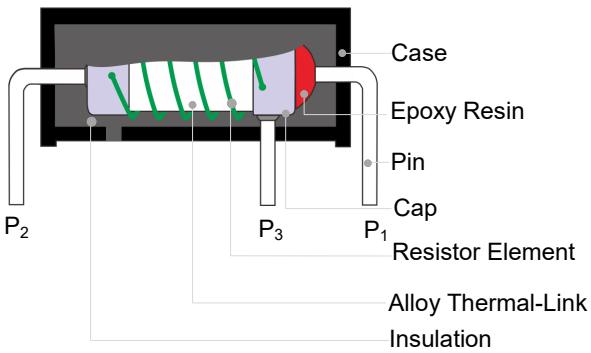
- Over Temp. Protection
- Over Current Protection
- Surge Protection
- RoHS & REACH Compliant

Applications

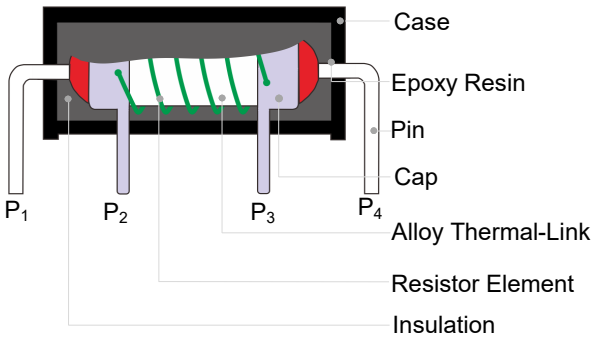
- Electric Blanket
- Battery
- LED Drives

Structure Diagrams

3 Pins



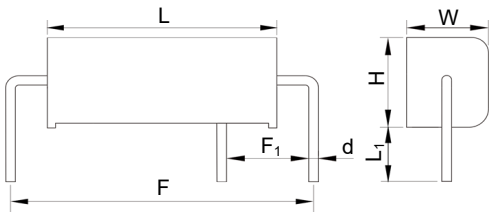
4 Pins



Note: The color of schematic diagram is for reference only

Dimensions（mm）

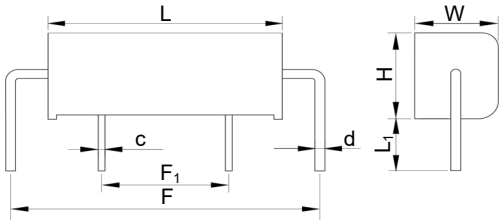
3 Pins



L	L_1[a]	W	H	d	F[a]	F_1
14.0±0.5	3.5±0.5	6.0 Max.	6.0±0.5	Φ0.54±0.05	18.0±1.0	5.0±0.5

Note:
a: F, L_1 and the bending mode of pins can be customized as required.

4 Pins



L	L_1[a]	W	H	d	c*	F[a]	F_1
14.0±0.5	3.5±0.5	6.0 Max.	6.0±0.5	Φ0.54±0.05	□0.40±0.10	18.0±1.0	7.5±1.0

Note:
a: F, L_1 and the bending mode of pins can be customized as required.
c*: Cross-section of pin is square.

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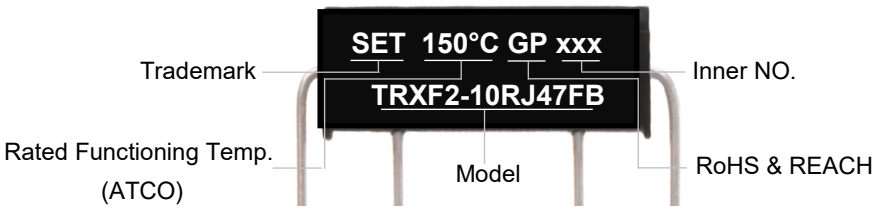
Agency Information

Agency Symbol		Standards	The File No. and certification No. obtained by SETsafe | SETfuse	Rated Resistance (Ω)
	cURus	UL 60691	E214712	0.47 to 1,000
	CCC	GB 9816	2020980205000194	2 to 1,000
	TUV	IEC 60065	R50279979	0.47 to 1,000

Marking



Part Numbering System

TRXF 2 - 4R7 J 47 F B - 001

Other Options

Case Type

B :	Square

Pin Type

S :	3 Pins
F :	4 Pins

ATCO Code

42 :	115 ℃	45 :	135 ℃
43 :	125 ℃	46 :	145 ℃
44 :	130 ℃	47 :	150 ℃

Tolerance

J :	±5%	K :	±10%

Rated Resistance (Ω)

R47 :	0.47	47R :	47
4R7 :	4.7	470R :	470

Power Type

2 :	2 W

Product Category

Technical Parameter

Item	Parameter
Power Type (***P***)	2 W
Rated Resistance (***R***)	0.47 Ω ~ 1,000 Ω
Resistance Tolerance	5% (E24), 10% (E12)
Fusing Time (less than 60 seconds)	115 ℃ ≤ T_f ≤ 135 ℃: 4 W
	145 ℃ ≤ T_f ≤ 150 ℃: 6 W
Rated Functioning Temp. (***T_f***)	115 ℃, 125 ℃, 130 ℃, 135 ℃ 145 ℃, 150 ℃
Fusing Temp. (***T_F***)	T_f = 115 ℃: 109 ℃ ~ 113 ℃
	T_f = 125 ℃: 119 ℃ ~ 123 ℃
	T_f = 130 ℃: 123 ℃ ~ 127 ℃
	T_f = 135 ℃: 128 ℃ ~ 132 ℃
	T_f = 145 ℃: 138 ℃ ~ 142 ℃
	T_f = 150 ℃: 143 ℃ ~ 147 ℃

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Specifications

Series	Power Type	Rated Functioning Temp. (T_f)	Rated Resistance (R)	Resistance Tolerance	Fusing Temp. (T_F)	Agency Information			Environmental Status	
						cURus	TUV	CCC	RoHS	REACH
	(W)	(°C)	(Ω)	(%)	(°C)					
TRXF2	2	115	0.47 ~ 1,000	±5, ±10	109 ~ 113	●	N/A	●	●	●
		125	0.47 ~ 1.000		119 ~ 123	●	N/A	●	●	●
		130	0.47 ~ 1.8		123 ~ 127	●	N/A	●	●	●
			2 ~ 1,000			●	●	●		
		135	0.47 ~ 1.8		128 ~ 132	●	N/A	●	●	●
			2 ~ 1,000			●	●	●		
		145	0.47 ~ 1.8		138 ~ 142	●	N/A	●	●	●
			2 ~ 1,000			●	●	●		
		150	0.47 ~ 1.8		143 ~ 147	●	N/A	●	●	●
			2 ~ 1,000			●	●	●		

Note: ”●"Means certificated, RoHS & REACH Compliant .

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	600	600R
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

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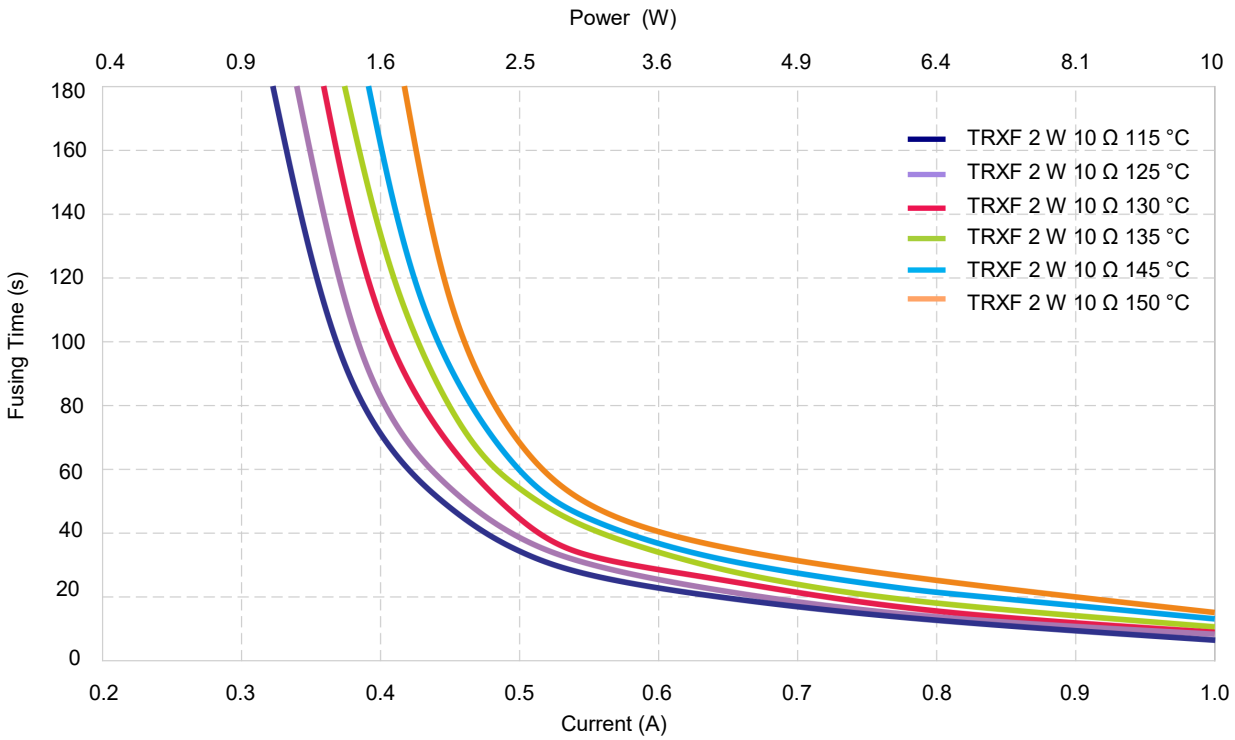
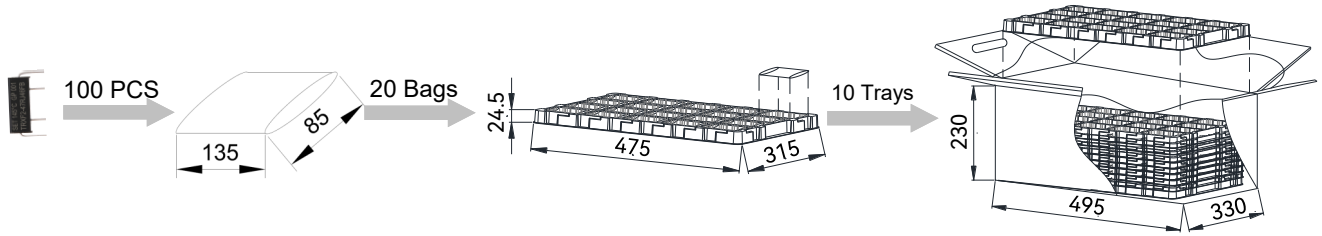
Fusing Time Curve (For Reference Only)

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



Packaging Information

Item	PE Bag	Plastic Tray	Carton
Dimensions (mm)	135 × 85	475 × 315 × 24.5	495 × 330 × 230
Quantity (PCS)	100	2,000	20,000
Gross Weight (3 Pins) (kg)			11.5 ± 10%
Gross Weight (4 Pins) (kg)			12 ± 10%



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