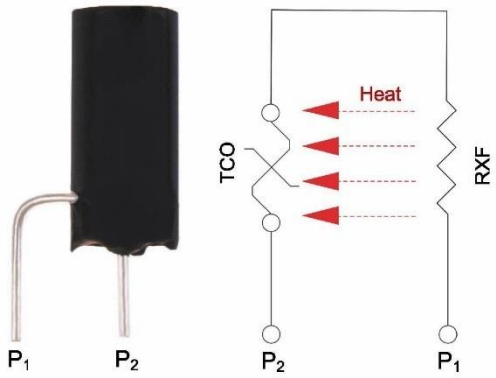
Thermal Link & Fusing Resistor TRXF Series

Product Description

Thermal-link & Fusing Resistor (TRXF) is a unique type of Power Resistor, with **Over Temperature** and **Over Current** Protections. The Thermal-link (TCO) is placed through the core of Fusible Wire Wound Resistor (RXF) and in series with RXF. 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.

Operating Principle



Instruction

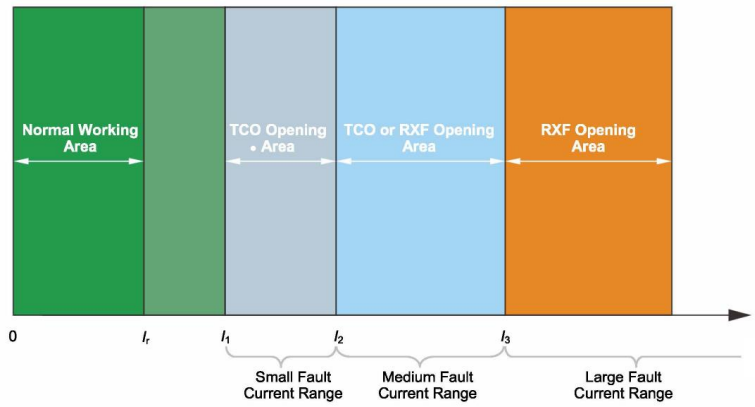
$R_{RXF} \geq 100R_{TCO}$

R_{RXF}: the resistance value of RXF
R_{TCO}: the resistance value of TCO

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

The Fusing Temp. of RXF (T_{RXF}): 1200°C to 1500°C
The Fusing Temp. of TCO (T_{TCO}): 145°C to 221°C

Fault Current Protection Illustration



$I < I_r$, TRXF works normally.

Small Fault Current Protection
At small fault current, $I_1 < I < I_2$, TCO senses the heat that generated by RXF, when the TCO reaches the fusing temp., TCO opens the circuit quickly. In this case, RXF keeps intact and TCO opens.

Medium Fault Current Protection
At medium fault current, $I_2 < I < I_3$, RXF opens in a short time because of much heat generated, meanwhile, RXF conducts its residual heat to TCO. In this case, both RXF and TCO open.

Large Fault Current Protection
At large fault current, such as short circuit, $I > I_3$, RXF opens instantly but TCO keeps intact because the fusing time of RXF is too short to generate enough heat. In this case, RXF opens and TCO keeps intact.

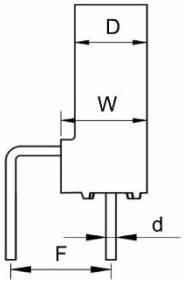
Note: I_r is Rated Current $I_r = \sqrt{P/R}$

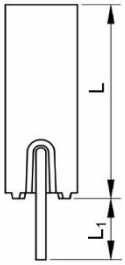
Alpha Therm GmbH
Gewerbering 7
68723 Plankstadt
Germany
Phone: +49 (0) 6202 / 575688 - 0
Fax: +49 (0) 6202 / 575688 - 10
E-Mail: sales@alpha-therm.de
Web: www.alpha-therm.com

Shape & Dimensions

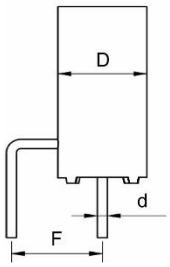
Vertical Installation Pins – 2 Pins

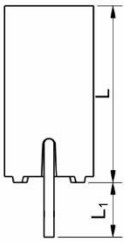
TRXF1S Series





TRXF1 & TRXF2 Series





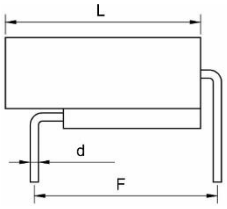
Dimensions

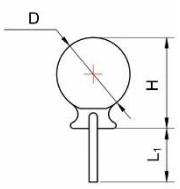
Series	Rated Power (W)	L	L_1[a]	W	D	d	F[a]
TRXF1S	1	11.0 max.	3.5±0.5	4.5±0.3	Ø3.6±0.2	Ø0.5±0.05	5.0±0.5
TRXF1	1	11.0 max.	3.5±0.5	-	Ø4.8±0.2	Ø0.54±0.05	5.0±0.5
TRXF2	2	13.5 max.	3.5±0.5	-	Ø4.8±0.2	Ø0.54±0.05	5.0±0.5

[a]: L_1* and F* and the bending mode of lead wires can be customized as required.

Horizontal Installation Pins – 2 Pins

Ω Shape





Dimensions

Series	Rated Power (W)	L	L_1[a]	H	D	d	F[a]
TRXF1S	1	11.0 max.	3.5±0.5	4.8±0.2	Ø3.6±0.2	Ø0.5±0.05	10.0±0.5
TRXF1	1	11.0 max.	3.5±0.5	6.0±0.2	Ø4.8±0.2	Ø0.54±0.05	10.0±0.5
TRXF2	2	13.5 max.	3.5±0.5	6.0±0.2	Ø4.8±0.2	Ø0.54±0.05	10.0±0.5

[a]: L_1* and F* and the bending mode of lead wires can be customized as required.

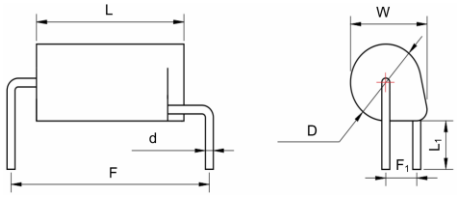
Alpha Therm GmbH
Gewerbering 7
68723 Plankstadt
Germany

Phone: +49 (0) 6202 / 575688 - 0
Fax: +49 (0) 6202 / 575688 - 10
E-Mail: sales@alpha-therm.de
Web: www.alpha-therm.com

Shape & Dimensions

Vertical Installation Pins – 2 Pins

V Shape



Dimensions

Series	Rated Power (W)	L	L_1[a]	W	D	d	F[a]	F_1[a]
TRXF1	1	11.0 max.	3.5±0.5	6.0±0.2	Ø4.8±0.2	Ø0.54±0.05	15.0±0.5	2.10±0.5
TRXF2	2	13.5 max.	3.5±0.5	6.0±0.2	Ø4.8±0.2	Ø0.54±0.05	15.0±0.5	2.25±0.5

[a]: L_1* and F* and the bending mode of lead wires can be customized as required.

Specifications

Series	RXF			T_f of TCO	Agency Approvals			
	Rated Power	Rated Resistance	Tolerance		UL	cUL	TÜV	CQC
	(W)	(Ω)	(%)	(°C)				
TRXF1S	1	1.0 – 600	±5, ±10	145, 150, 221	•	•		•
TRXF1	1	0.27 – 0.47	±5, ±10	145, 150, 221	•	•		•
		0.47 – 800	±5, ±10				•	
TRXF2	2	0.27 – 2.0	±5, ±10	145, 150, 221	•	•		•
		2.0 - 1000	±5, ±10				•	

Part Number System

TXRF – Type

1 – Rated Power (W)

1S	1
1	2
2	3

-

4R7 – Rated Resistance (Ω)

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

J – Tolerance (%)

J	±5
K	±10

30 – TCO Code

TRXF1S		TRXF1		TRXF2	
Code	TCO Model	Code	TCO Model	Code	TCO 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)

L – Pin Type

L: 2 Pins

A – Shape

A: Round

C: Ω Shape or V Shape

Alpha Therm GmbH
Gewerbering 7
68723 Plankstadt
Germany

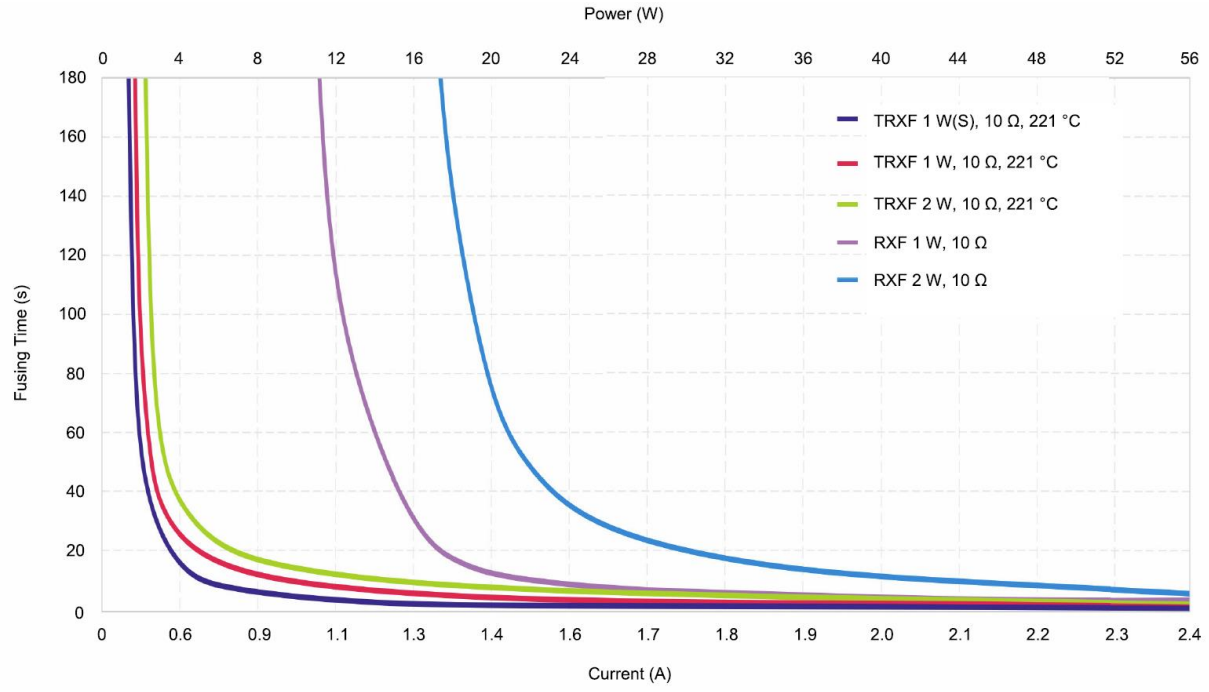
Phone: +49 (0) 6202 / 575688 - 0
Fax: +49 (0) 6202 / 575688 - 10
E-Mail: sales@alpha-therm.de
Web: www.alpha-therm.com

Typical Application Parameters

Model	Rated Power	Rated Resistance	T_f of TCO	Surge	Short Circuit Voltage	I^2t	Main Application
	(W)	(Ω)	(°C)	(kV)	(Vac)	(A^2s)	
TRXF1S-2R0K11LA(C)	1	2.0	221	1.2	264	0.609	Power Adapter
TRXF1S-3R3K11LA(C)	1	3.3	221	1.3	264	0.251	Power Adapter, LED Lamp
TRXF1S-5R1J11LA(C)	1	5.1	221	1.5	264	0.345	Power Adapter, LED Lamp
TRXF1S-10RJ11LA(C)	1	10	221	1.8	264	0.457	Power Adapter, LED Lamp
TRXF1S-22RJ11LA(C)	1	22	221	2.0	264	0.237	LED Lamp
TRXF1S-100RJ11LA(C)	1	100	221	2.0	264	0.035	LED Lamp
TRXF1-2R2K30LA(C)	1	2.0	221	1.3	264	1.533	Power Adapter
TRXF1-3R3J30LA(C)	1	3.3	221	1.8	264	1.298	Power Adapter, LED Lamp
TRXF1-5R1J30LA(C)	1	5.1	221	2.0	264	0.507	Power Adapter, LED Lamp
TRXF1-10RJ30LA(C)	1	10	221	2.5	264	0.327	Power Adapter, LED Lamp
TRXF1-22RJ30LA(C)	1	22	221	2.5	264	0.350	LED Lamp
TRXF1-100RJ30LA(C)	1	100	221	2.5	264	0.092	LED Lamp
TRXF2-2R2K50LA(C)	2	2.0	221	1.5	264	1.620	Power Adapter
TRXF2-3R3J50LA(C)	2	3.3	221	2.0	264	2.618	Power Adapter, LED Lamp
TRXF2-5R1J50LA(C)	2	5.1	221	2.5	264	0.678	Power Adapter, LED Lamp
TRXF2-10RJ50LA(C)	2	10	221	2.5	264	0.520	Power Adapter, LED Lamp
TRXF2-22RJ50LA(C)	2	22	221	3.0	264	0.693	LED Lamp
TRXF2-100RJ50LA(C)	2	100	221	3.0	264	0.076	LED Lamp

Fusing Characteristics

Compared with RXF, TRXF can open effectively at lower power multiples to protect the circuit timely.



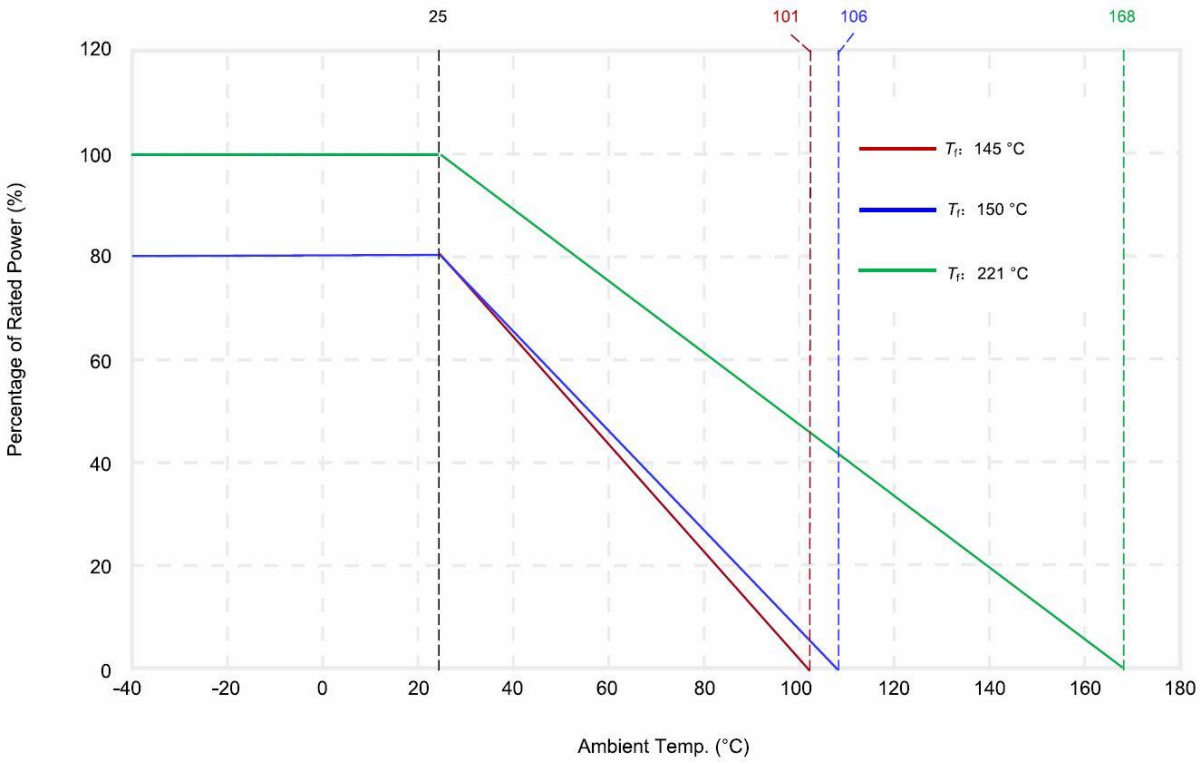
Fusing Time Curve of TRXF & RXF Comparison (For Reference Only)

Alpha Therm GmbH
Gewerbering 7
68723 Plankstadt
Germany

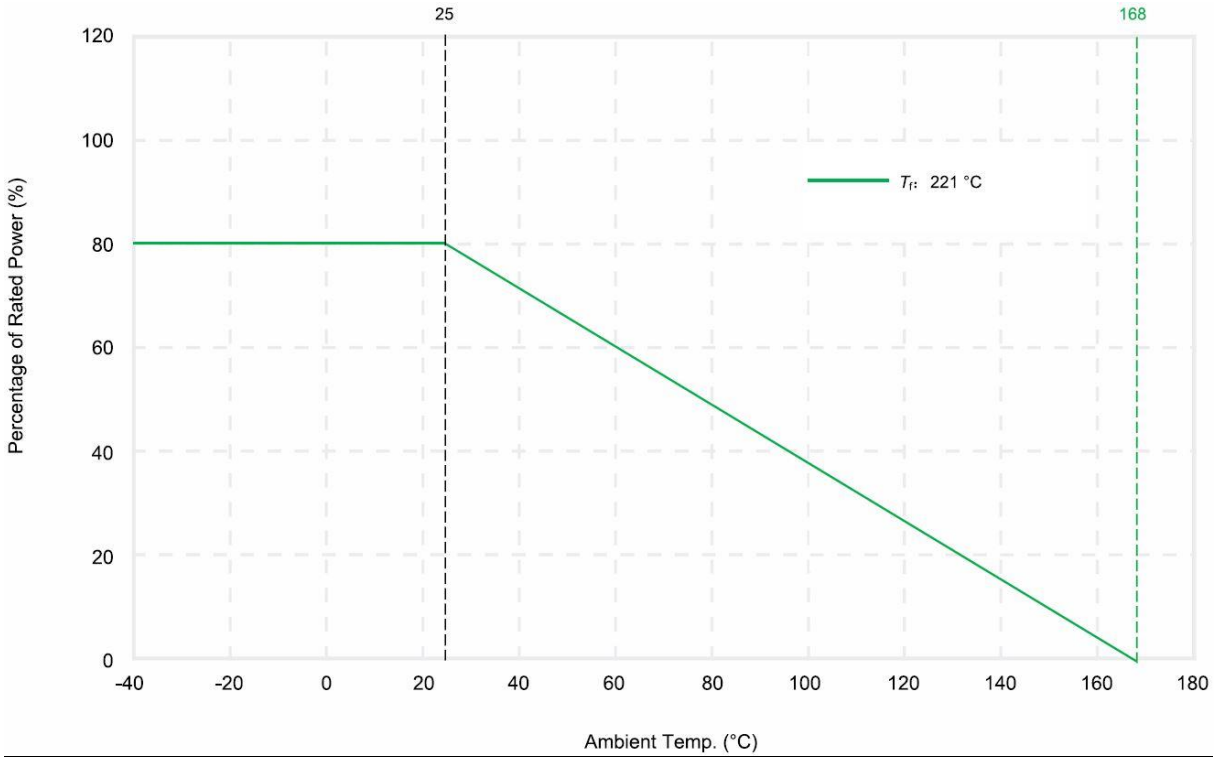
Phone: +49 (0) 6202 / 575688 - 0
Fax: +49 (0) 6202 / 575688 - 10
E-Mail: sales@alpha-therm.de
Web: www.alpha-therm.com

Ambient Temperature

When the Ambient Temperature exceeds 25°C, the rated power value declines as the following curve.



Rated Power Derating Curve of TRXF 1W (For Reference Only)



Rated Power Derating Curve of TRXF 2W (For Reference Only)

Alpha Therm GmbH
Gewerbering 7
68723 Plankstadt
Germany
Phone: +49 (0) 6202 / 575688 - 0
Fax: +49 (0) 6202 / 575688 - 10
E-Mail: sales@alpha-therm.de
Web: www.alpha-therm.com