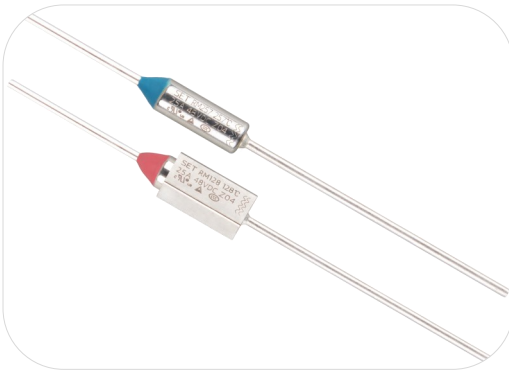


Thermal-Link (OTCO)-Organic Type

RM Series I_r : 25A



Description

Organic Thermal-Link (OTCO) RM series is defined as a non-resettable protective device, functioning one time only. It mainly consists of metal case, spring, conductive nail, sliding contact and thermal pellet. When the Thermal-Link senses abnormal heat and temp. reaches the predetermined fusing temp., thermal pellet melts and the conductive nail separates from the isolated lead with the assistance of the trip spring, thereby the circuit is disconnected.

SETsafe | SETfuse Organic Thermal-Link (OTCO) RM series Rated Functioning Temp. from 72 °C to 310 °C, Rated Current: 25 A, Rated Voltage: 48VDC, , safety certification Includes UL, cUL, complies with RoHS and REACH.

Features

- High Accuracy of Functioning Temp.
- Non-Resettable
- Organic Thermal Pellet
- Metal Case
- Low Resistance
- RoHS & REACH Compliant

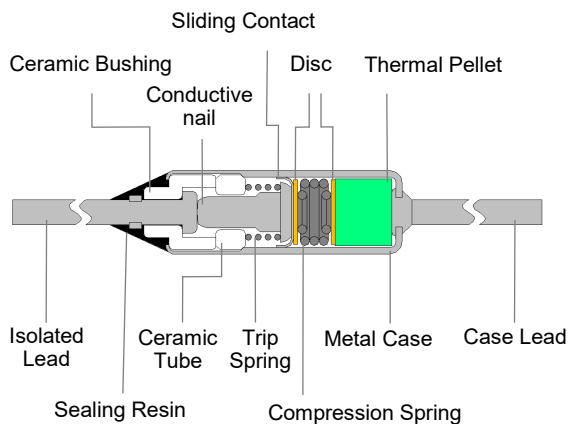
Applications

- Personal Care Appliance
- Kitchen and Toilet Appliance
- Environment Appliances
- Automotive Electronics
- Cleaning Appliances
- Electric Tool

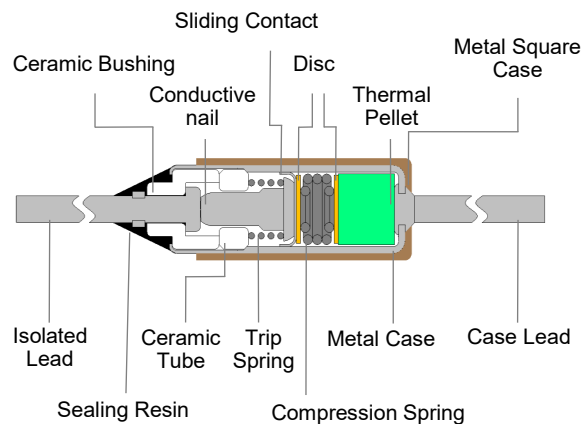
Customization

- Other Temp.
- The Length of Lead Wires
- Taping Packing Available
- Leads Forming Types

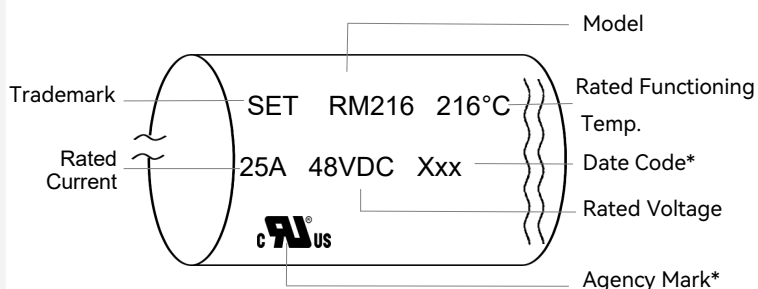
Cylindrical Structure Diagrams



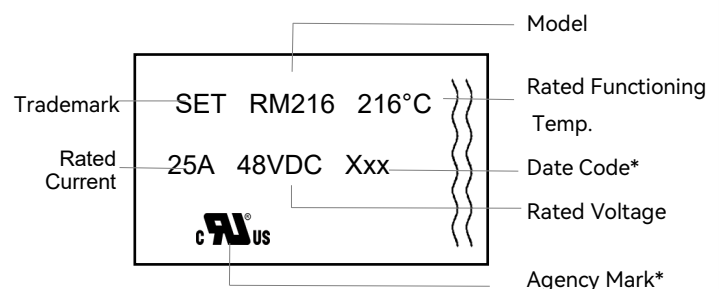
Square Structure Diagrams



Cylindrical Structure Marking



Square Structure Marking

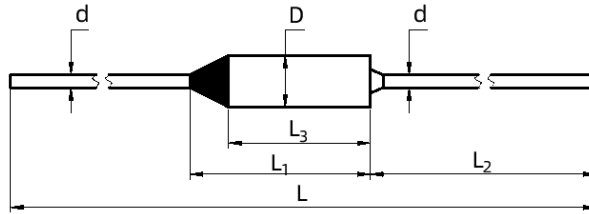


Remark:

1: The Date Code means Year and quarter: A stands for 2000, B stands for 2001 and 01 stands for the first quarter, 02 stands for the second quarter, and so on.

2: TUV/CCC are in the process of certification.

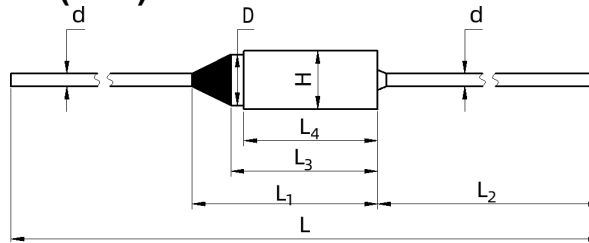
Cylindrical Structure Dimensions (mm)



Lead Length	L	L ₁	L ₂	L ₃	D	d
Standard	65 ± 3	(14)	35 ± 2	(11.5)	Φ 4 ± 0.2	Φ 1.2 ± 0.1
Long	81 ± 3	(14)	35 ± 2	(11.5)	Φ 4 ± 0.2	Φ 1.2 ± 0.1
Option	Customization	(14)	Customization	(11.5)	Φ 4 ± 0.2	Φ 1.2 ± 0.1

Remark: The dimensions in parentheses are for reference only.





Square Structure Dimensions (mm)



Lead Length	L	L ₁	L ₂	L ₃	L ₄	D	H	d
Standard	65 ± 3	(14)	35 ± 2	(11.5)	10.3 ± 0.5	Φ 4 ± 0.2	4.6 ± 0.3	Φ 1.2 ± 0.1
Long	81 ± 3	(14)	35 ± 2	(11.5)	10.3 ± 0.5	Φ 4 ± 0.2	4.6 ± 0.3	Φ 1.2 ± 0.1
Option	Customization	(14)	Customization	(11.5)	10.3 ± 0.5	Φ 4 ± 0.2	4.6 ± 0.3	Φ 1.2 ± 0.1





Remark: The dimensions in parentheses are for reference only.

Agency Information

Agency Symbol	Standards	The File No. and certification No. obtained by SETsafe SETfuse
	UL60691	E214712
	CAN-CSA-E60691	E214712
	EN 60691	Certification in progress
	GB 9816.1	Certification in progress

Specifications

Rated Functioning Temp. (T_f) °C

	Model	Fusing Temp.	T _{UL} ($\frac{UL}{cUL}$)	T _m	I _r	U _r					RoHS REACH
		(°C)	(°C)	(°C)	(A)	(VDC)	UL	cUL	TUV	CCC	
310	RM310	304 ± 3	280	500	25	48	○	○	○	○	●
275	RM275	273 +2/-3	260	500	25	48	●	●	○	○	●
263	RM263	261 ± 2	225	500	25	48	○	○	○	○	RoHS ● REACH *
257	RM257	254 ± 2	237	500	25	48	●	●	○	○	●
240	RM240	238 ± 2	220	500	25	48	●	●	○	○	●
229	RM229	227 ± 2	210	500	25	48	○	○	○	○	●
216	RM216	213 ± 2	203	500	25	48	●	●	○	○	●
205	RM205	203 ± 2	192	500	25	48	○	○	○	○	●
192	RM192	190 ± 2	179	500	25	48	●	●	○	○	●
184	RM184	181 ± 2	171	500	25	48	●	●	○	○	●
172	RM172	168 ± 2	159	500	25	48	○	○	○	○	●
167	RM167	164 ± 2	154	500	25	48	●	●	○	○	●
157	RM157	155 ± 2	144	500	25	48	●	●	○	○	●
152	RM152	149 ± 2	139	500	25	48	●	●	○	○	●
144	RM144	141 ± 2	131	500	25	48	●	●	○	○	●
134	RM134	131 ± 2	121	500	25	48	●	●	○	○	●
128	RM128	124 ± 2	115	500	25	48	●	●	○	○	●
121	RM121	118 ± 2	108	500	25	48	●	●	○	○	●
117	RM117	114 ± 2	104	500	25	48	○	○	○	○	●
110	RM110	108 ± 2	97	500	25	48	●	●	○	○	●
104	RM104	102 ± 2	91	500	25	48	○	○	○	○	●
98	RM98	95 ± 2	85	500	25	48	●	●	○	○	●
94	RM94	91 ± 2	81	500	25	48	○	○	○	○	●
84	RM84	82 ± 2	71	500	25	48	○	○	○	○	●
77	RM77	74 ± 2	64	500	25	48	○	○	○	○	●
72	RM72	69 ± 2	59	500	25	48	○	○	○	○	●

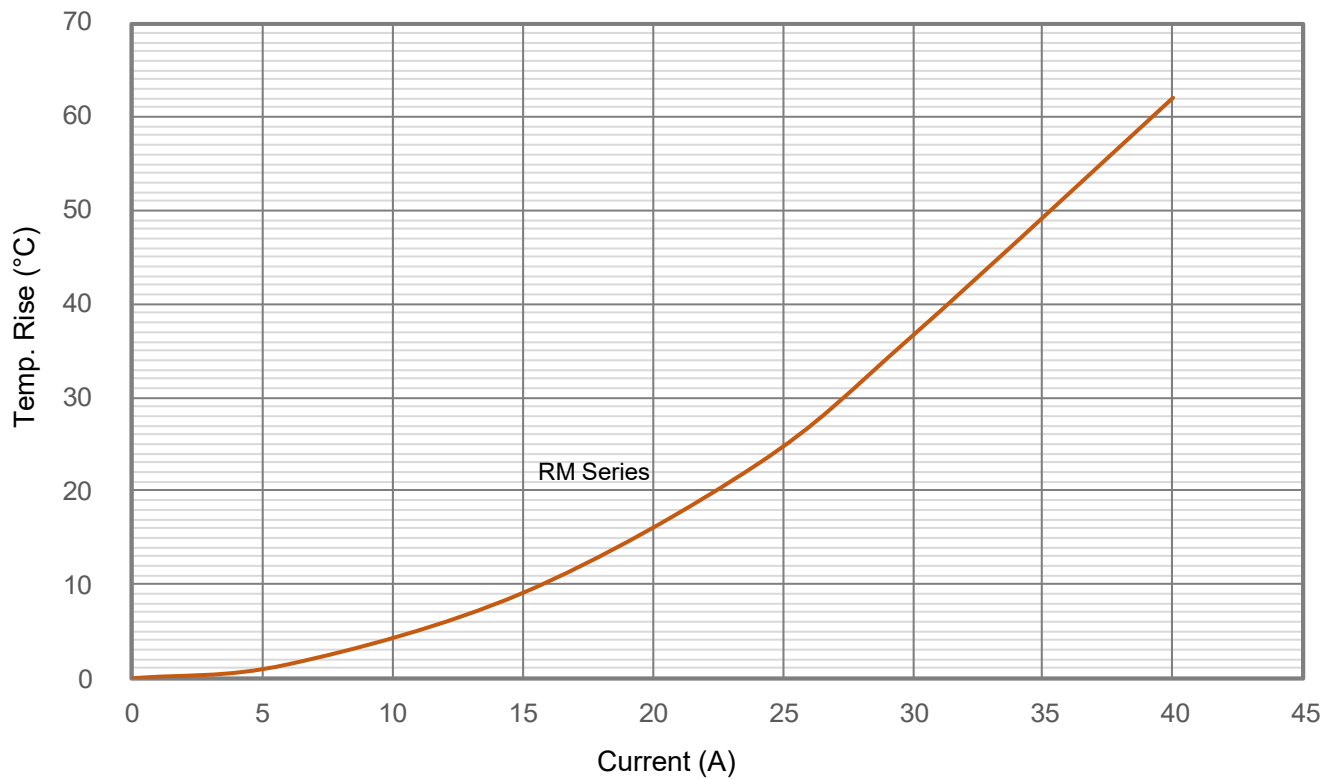
Note:

1. "●"Means certificated, "○"Means non-certificated, "◐"Means Certification in progress, RoHS & REACH Compliant ." * " indicates that RM263 complies with REACH Directive 1907/2006/EC, SVHC Candidate List, Batch 29, Item 235 for most of the content (please consult SET for details).

2. For the T_m test, UL/cUL monitors the temperature of the product itself, while other standards monitor the ambient temperature inside the oven.

3. RM series with a T_f rating 175°C and above comply with UL conductive heat aging (CHAT) requirements.

Cylindrical Structure Temp. Rise (Reference)



Note: The temperature rise test for square products is continuously updated. If you need data, please consult SET.

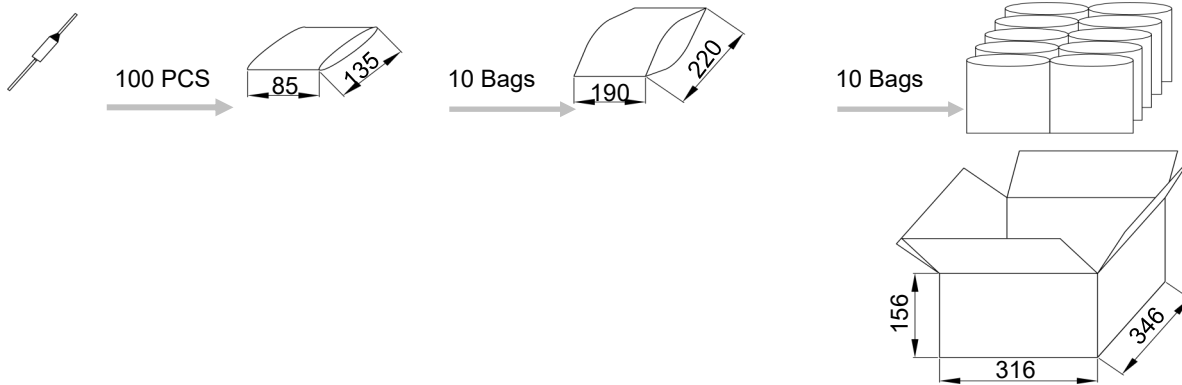
Thermal-Link (OTCO)-Organic Type

RM Series I_r : 25A

Packaging Information

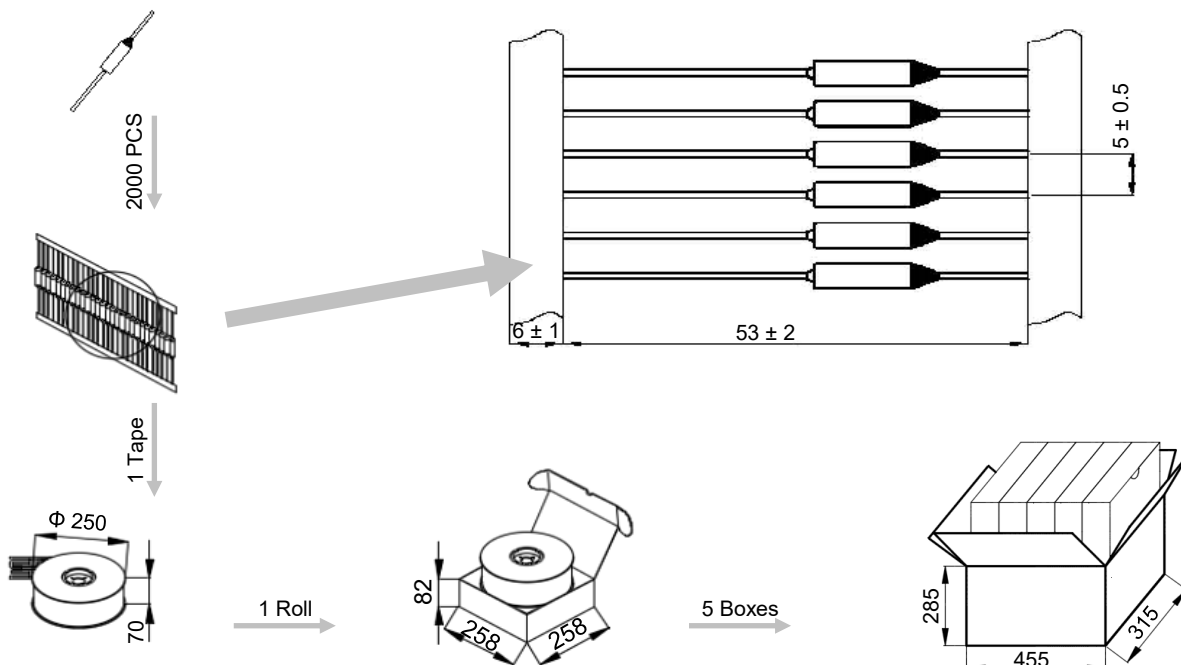
1.Bulk

Item	PE Bag	PE Bag	Carton
Dimensions (mm)	135 x 85	220 x 190	346 x 316 x 156
Quantity (PCS)	100	1000	10000
Gross Weight (kg)	Cylindrical: $13.3 \pm 10\%$ Square: $20.3 \pm 10\%$		



2.Taping

Item	Scroll	Box	Carton
Dimensions (mm)	$\Phi 250 \times \Phi 85 \times 70$	258 x 258 x 82	455 x 315 x 285
Quantity (PCS)	2000	2000	10000
Gross Weight (kg)	Cylindrical: $15.0 \pm 10\%$ Square: $22.0 \pm 10\%$		



Part Numbering System

OTCO - RM 72 - L S A B - 001

Other Options

Packing

B Bulk

T Taping

Leads Forming

A Straight Lead

B Single Lead Bending

C Leads Bending

Lead Length

S Standard

L Long

O Option

Process of Mark

L Laser

Rated Functioning Temp.

72 72 °C, See Specifications

Series

RM Series
See Specifications

Product Category

OTCO Organic Thermal-Link

Glossary

Item	Description
TCO	Thermal-Link A non-resettable device incorporating a THERMAL ELEMENT which will open a circuit once only when exposed for a sufficient length of time to a temperature in excess of that for which it has been designed. — (GB 9816.1)
OTCO	Organic Thermal-Link Organic type Thermal-Link, organic is the THERMAL ELEMENT.
T_f	Rated Functioning Temp. The temperature 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. — (GB 9816.1) Tolerance: T_f °C (GB 9816.1, EN 60691, K60691). Tolerance: $T_f \pm 7$ °C (J60691).
Fusing Temp.	Fusing Temp. The temperature of the Alloy Thermal-Link which causes it to change its state of conductivity is measured with silicone oil bath in which the temperature 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. — (GB 9816.1)
T_h	Holding Temp. The Maximum temperature at which a Alloy Thermal-Link will not change its state of conductivity when conducting rated current for 168 hours. — (GB 9816.1)
T_m	Maximum Temp. Limit The temperature of the Alloy Thermal-Link stated by the manufacturer, up to which the mechanical and electrical properties of the Alloy Thermal-Link having changed its state of conductivity, will not be impaired for a given time. — (GB 9816.1)
I_r	Rated Current Current used to classify a Thermal-Link. — (IEC60691)
U_r	Rated Voltage Voltage used to classify a Thermal-Link. — (IEC60691)



ATTENTION

Usage

1. Please use OTCO without exceeding the rated current and voltage.
2. Do not use the OTCO in environments out of the standard specifications, such as those containing sulfur dioxide gas, nitrogen oxide gas, ammonia gas or formic acid. It is also not suitable for using in high humidity environment or immersed in liquid.

Replace

OTCO is a non-repairable product. For safety aspect, it shall be replaced by an equivalent OTCO from the same manufacturer, and mounted in the same way.

Storage

1. OTCO must be kept in a place with no sunshine or corrosive gas, the temperature shall be within 10 °C ~ 30 °C and humidity within 30 % ~ 70 %. The validity storage period of OTCO is 12 months after purchase.
2. The case and isolated lead of OTCO are silver-plated. Therefore, to avoid vulcanization, the OTCO shall not be kept around materials such as cardboard or rubber etc. which generate sulfurous acid gas.

Lead Process

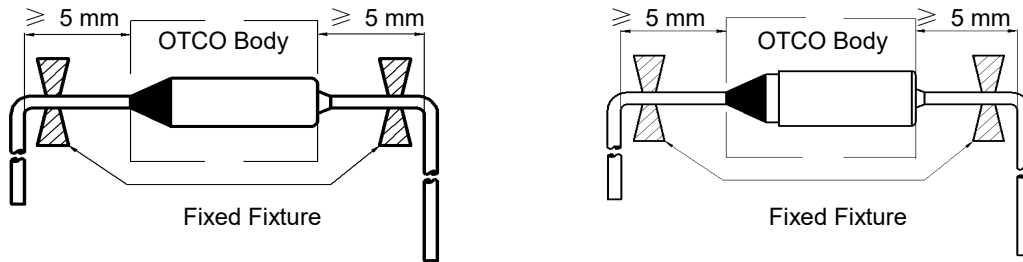


FIGURE 1

1. If lead wires has to be bent, it is important not to apply excessive pressure to the root of the lead wires. The tensile forces applied to the lead wires shall not exceed 22.7 N, and the thrust force applied to the lead wires shall not exceed 5.65 N.
2. The lead wires should be bent at a distance 5 mm or above from the body of OTCO (see Fig.1).
3. To avoid damaging the OTCO, when bending lead wires, please use pincher or similar tools to fix the OTCO.

Installation

Selection of Installation Location

1. Do not locate the OTCO in a place where severe vibration always occurs.
2. To reduce the deviations between the temperature design and the actual situation, it is recommended that the OTCO be installed in close to the thermostat or temperature sensor.

Make Sure the Temp. of Installation Location

1. The body of OTCO will generate heat as current flows through it, resulting the body temp. higher than ambient temp. The influence of temp. rise shall be considered in the design to determine the appropriate OTCO model.
2. It Considering possible temperature shock situations, it is recommended that the temperature of the body and the ambient temperature of the installation location during the operation of the temperature fuse should not exceed $(T_h - 10)^\circ\text{C}$.
3. The end product should be tested to ensure that potential abnormal conditions do not cause ambient temp. to exceed the T_m of the OTCO.

Mounting OTCO

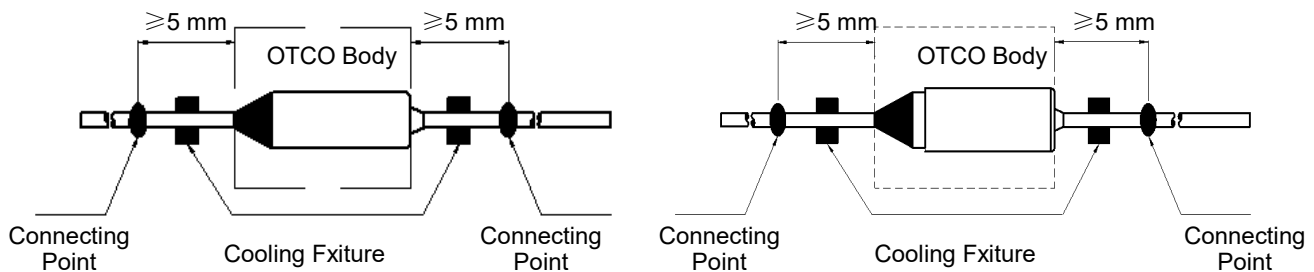


FIGURE 2

1. OTCO can be installed by soldering, welding, riveting or crimping. During and after installation, please do not pull, push or twist OTCO body or lead wires.
2. The connection point of the lead shall be no less than 5 mm away from the OTCO body (see Fig.2).
3. Try to ensure that the body of the OTCO is evenly heated. If the temp. difference is inevitable, make sure that the sealing resin side is connected close to the heat source.
4. For DC circuits, when mounting the OTCO, the isolated lead should be connected to the negative pole, and the Case Lead should be connected to the positive pole.

Soldering

1. Soldering should be carried out according to below table. If secondary soldering is required, wait until the OTCO cools to room temp.
2. Soldering is not recommended for Thermal-Link with $T_f \leq 110^\circ\text{C}$, while non heating processes such as crimping and riveting are recommended.
3. In the process of soldering, cooling fixture should be used between soldering point and OTCO body (see Fig.2).
4. It is recommended to take X-ray after soldering, to confirm that the thermal pellet has no shrinkage after soldering.

TABLE 1: Max. Allowable Soldering Time for Different Length of Soldering Point from OTCO Body

Rated Functioning Temp. (T_f)	Length	Time	Length	Time	Length	Time	Max. Soldering Temp.
($^\circ\text{C}$)	(mm)	(s)	(mm)	(s)	(mm)	(s)	($^\circ\text{C}$)
≤ 110	5	N / A	15	N / A	25	N / A	400
111 ~ 150	5	N / A	15	1	25	2	
151 ~ 190	5	1	15	2	25	3	
≥ 191	5	1	15	3	25	5	

Welding

1. Avoid welding current flowing into the inside of the OTCO. The welding current will cause the internal parts to be welded together, resulting in the failure function of OTCO.
2. During the welding process, the lead wires of the OTCO must be supported to avoid the damage of the OTCO.
3. In the process of welding, cooling fixture should be used between welding point and OTCO body (See Fig.2).
4. It is recommended to take X-ray after welding, to confirm that the thermal pellet has no shrinkage after welding.

Riveting or Crimping

1. Select materials with low resistance (such as copper) for riveting and crimping.
2. Contact resistance shall be as small as possible. Large contact resistance will cause high temp. to make OTCO open in advance.
3. It is better to crimp OTCO leads to stranded lead wires rather than solid wires as the stranded wire may be crimped tighter and maintain better electrical contact during temp. cycling.
4. During the riveting and crimping process, ensure that the lead wires shall not be reversed, sealing resin shall not be destroyed.
5. When the working temp. exceeds 150°C , soldering reinforcement is recommended after riveting and crimping.

The isolated lead is forbidden to contact OTCO body directly to avoid short circuit (See Fig.3).

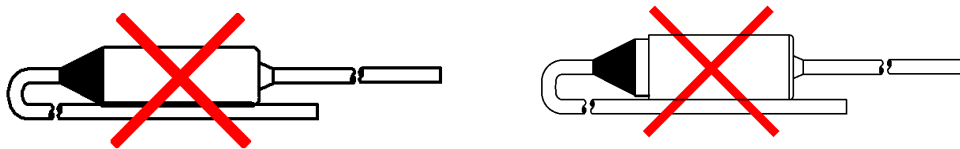


FIGURE 3

Thermal-Link (OTCO)-Organic Type

RM Series I_r : 25A

		额定电压 U_r (VDC)												24 VDC		48 VDC	
		250 VAC															
		16												25		30	
		20												25		30	
		25												30		30	
		30												30		30	
		35												35		35	
		40												40		40	
		45												45		45	
		50												50		50	
		55												55		55	
		60												60		60	
		65												65		65	
		70												70		70	
		75												75		75	
		80												80		80	
		85												85		85	
		90												90		90	
		95												95		95	
		100												100		100	
		105												105		105	
		110												110		110	
		115												115		115	
		120												120		120	
		125												125		125	
		130												130		130	
		135												135		135	
		140												140		140	
		145												145		145	
		150												150		150	
		155												155		155	
		160												160		160	
		165												165		165	
		170												170		170	
		175												175		175	
		180												180		180	
		185												185		185	
		190												190		190	
		195												195		195	
		200												200		200	
		205												205		205	
		210												210		210	
		215												215		215	
		220												220		220	
		225												225		225	
		230												230		230	
		235												235		235	
		240												240		240	
		245												245		245	
		250												250		250	
		255												255		255	
		260												260		260	
		265												265		265	
		270												270		270	
		275												275		275	
		280												280		280	
		285												285		285	
		290												290		290	
		295												295		295	
		300												300		300	
		305												305		305	
		310												310		310	
		315												315		315	
		320												320		320	
		325												325		325	
		330												330		330	
		335												335		335	
		340												340		340	
		345												345		345	
		350												350		350	
		355												355		355	
		360												360		360	
		365												365		365	
		370												370		370	
		375												375		375	
		380												380		380	
		385												385		385	
		390												390		390	
		395												395		395	
		400												400		400	
		405												405		405	
		410												410		410	
		415												415		415	
		420												420		420	
		425												425		425	
		430												430		430	
		435												435		435	
		440												440		440	
		445												445		445	
		450												450		450	
		455												455		455	
		460												460		460	
		465												465		465	
		470												470		470	
		475												475		475	
		480												480		480	
		485												485		485	
		490												490		490	
		495												495		495	
		500												500		500	
		505												505		505	
		510												510		510	
		515												515		515	
		520												520		520	
		525												525		525	
		530												530		530	
		535												535		535	
		540												540		540	
		545												545		545	
		550												550		550	
		555												555		555	
		560												560		560	
		565												565		565	
		570												570		570	
		575												575		575	
		580												580		580	
		585												585		585	
		590												590		590	
		595												595		595	
		600												600		600	
		605												605		605	
		610												610		610	
		615												615		615	
		620												620		620	
		625												625		625	
		630												630		630	
		635												635		635	
		640												640		640	
		645												645		645	
		650												650		650	
		655												655		655	
		660												660		660	
		665												665		665	
		670												670		670	
		675												675		675	
		680												680		680	
		685												685		685	
		690												690		690	
		695												695		695	
		700												700		700	
		705												705		705	
		710												710		710	
		715												715		715	
		720												720		720	
		725												725		725	
		730												730		730	
		735												735		735	
		740												740		740	
		745												745		745	
		750												750		750	
		755												755		755	
		760												760		760	
		765												765		765	
		770												770		770	
		775												775		775	
		780												780		780	
		785												785		785	
		790												790		790	
		795												795		795	
		800												800		800	
		805												805		805	
		810												810		810	
		815												815		815	
		820												820		820	
		825												825		825	
		830												830		830	
		835												835		835	
		840												840		840	
		845												845		845	
		850												850		850	
		855												855		855	
		860												860		860	
		865												865		865	
		870												870		870	
		875												875		875	
		880												880		880	
		885												885		885	
		890												890		890	
		895												895		895	
		900												900		900	
		905												905		905	
		910												910		910	
		915												915		915	
		920												920		920	
		925												925		925	
		930												930		930	
		935												935		935	
		940												940		940	
		945												945		945	
		950												950		950	
		955												955		955	
		960												960		960	
		965												965		965	
		970												970		970	
		975												975		975	
		980												980		980	
		985												985		985	
		990												990		990	
		995												995		995	
		1000												1000		1000	
		1005												1005		1005	
		1010												1010		1010	
		1015												1015		1015	
		1020												1020		1020	
		1025												1025		1025	
		1030												1030		1030	
		1035												1035		1035	
		1040												1040		1040	
		1045												1045		1045	
		1050												1050		1050	
		1055												1055		1055	
		1060												1060		1060	
		1065												1065		1065	
		1070												1070		1070	
		1075												1075		1075	
		1080												1080		1080	
		1085												1085		1085	
		1090												1090		1090	
		1095												1095		1095	
		1100												1100		1100	
		1105												1105		1105	
		1110												1110		1110	
		1115												1115		1115	
		1120												1120		1120	
		1125												1125		1125	
		1130												1130		1130	
		1135												1135		1135	
		1140												1140		1140	
		1145												1145		1145	
		1150												1150		1150	
		1155												1155		1155	
		1160												1160		1160	
		1165												1165		1165	
		1170												1170		1170	
		1175												1175		1175	
		1180												1180		1180	
		1185												1185		1185	
		1190												1190		1190	
		1195												1195		1195	
		1200												1200		1200	
		1205												1205		1205	
		1210												1210		1210	
		1215												1215		1215	
		1220												1220		1220	
		1225												1225		1225	
		1230												1230		1230	
		1235												1235		1235	
		1240												1240		1240	
		1245												1245		1245	
		1250												1250		1250	
		1255												1255		1255	
		1260												1260		1260	
		1265												1265		1265	
		1270												1270		1270	
		1275												1275		1275	
		1280												1280		1280	
		1285												1285		1285	
		1290												1290		1290	
		1295												1295		1295	
		1300												1300		1300	
		1305												1305		1305	
		1310												1310		1310	
		1315												1315		1315	
		1320												1320		1320	
		1325												1325		1325	
		1330												1330		1330	
		1335												1335		1335	
		1340												1340		1340	
		1345												1345		1345	
		1350												1350		1350	
		1355												1355		1355	
		1															

