

α Therm



PROVIDING A TOTAL SOLUTION FOR
HIGH STANDARD SAFETY CIRCUIT PROTECTION

Alpha Therm GmbH: Ihr Offizieller Vertriebskanal für SETsafe/SETfuse

Die Alpha Therm GmbH mit Sitz in Plankstadt, Deutschland, ist stolz darauf, der offizielle Vertriebskanal für SETsafe/SETfuse in Deutschland, Europa und weltweit zu sein. Unsere langjährige Partnerschaft mit SETsafe/SETfuse basiert auf einem erfolgreichen und vertrauensvollen Geschäftsmodell.

Wir repräsentieren SETsafe/SETfuse auf internationalen Messen wie der Electronica, InterSolar, ees und vielen weiteren. Von kleinen Standardsicherungen bis hin zu komplexen, kundenspezifischen Automotive-Projekten – wir haben alles erfolgreich umgesetzt. Mit unserer umfassenden Lagerhaltung in Deutschland gewährleisten wir schnelle und zuverlässige Lieferungen.

Kontaktieren Sie uns! Unser kompetentes Team berät Sie ausführlich und findet die optimale Lösung für Ihre Anforderungen. Vertrauen Sie auf Alpha Therm GmbH und SETsafe/SETfuse – Ihre Partner für innovative Sicherheitslösungen.

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Alpha Therm GmbH: Your Official Distribution Channel for SETsafe/SETfuse

Alpha Therm GmbH, based in Plankstadt, Germany, is proud to be the official distribution channel for SETsafe/SETfuse in Germany, Europe, and worldwide. Our long-standing partnership with SETsafe/SETfuse is built on a successful and trustworthy business model.

We represent SETsafe/SETfuse at international trade fairs such as Electronica, InterSolar, ees, and many more. From small standard fuses to complex, customized automotive projects, we have successfully handled it all. With our extensive warehousing in Germany, we ensure fast and reliable deliveries.

Contact us today! Our competent team will provide you with detailed advice and find the optimal solution for your requirements. Trust Alpha Therm GmbH and SETsafe/SETfuse – your partners for innovative safety solutions.

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Description

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

SETsafe | SETfuse Organic Thermal-Link (OTCO) RB series Rated Functioning Temp. from 72 °C to 310 °C, Rated Current: 10 A, Rated Voltage: 250VAC, safety certification Includes CCC, and complies with RoHS and REACH.

Features

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

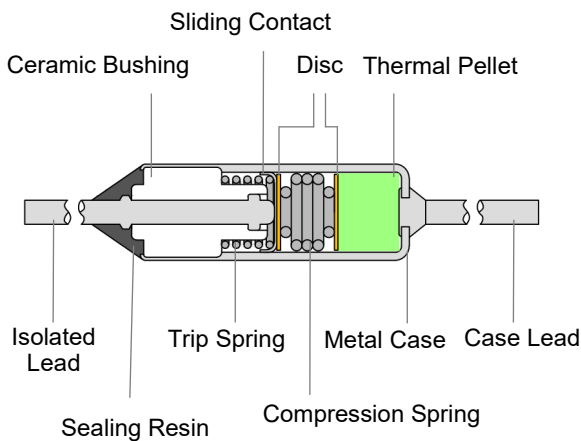
Applications

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

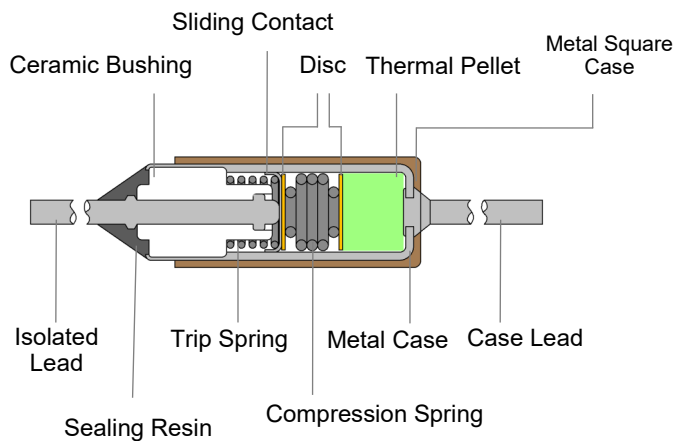
Customization

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

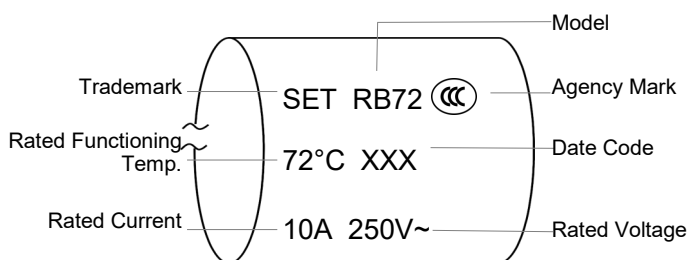
Cylindrical Structure Diagrams



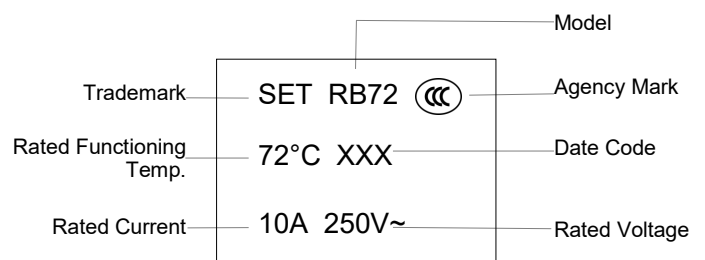
Square Structure Diagrams



Cylindrical Structure Marking

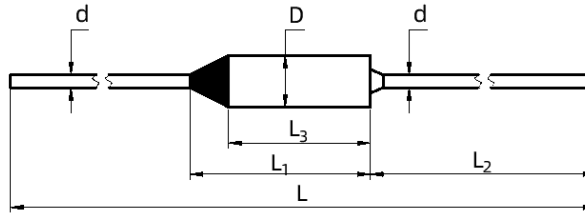


Square Structure Marking



Remark: 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.

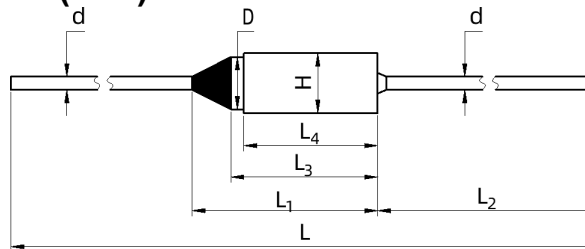
Cylindrical Structure Dimensions (mm)



Lead Length	L	L ₁	L ₂	L ₃	D	d
Standard	65 ± 3	(14)	35 ± 2	(11.3)	Φ 4 ± 0.2	Φ 1 ± 0.1
Long	81 ± 3	(14)	35 ± 2	(11.3)	Φ 4 ± 0.2	Φ 1 ± 0.1
Option	Customization	(14)	Customization	(11.3)	Φ 4 ± 0.2	Φ 1 ± 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	(11.3)	10.3 ± 0.5	Φ 4 ± 0.2	4.6 ± 0.3	Φ 1 ± 0.1
Long	81 ± 3	(14)	35 ± 2	(11.3)	10.3 ± 0.5	Φ 4 ± 0.2	4.6 ± 0.3	Φ 1 ± 0.1
Option	Customization	(14)	Customization	(11.3)	10.3 ± 0.5	Φ 4 ± 0.2	4.6 ± 0.3	Φ 1 ± 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
	GB/T 9816.1	2020980205000192

Specifications

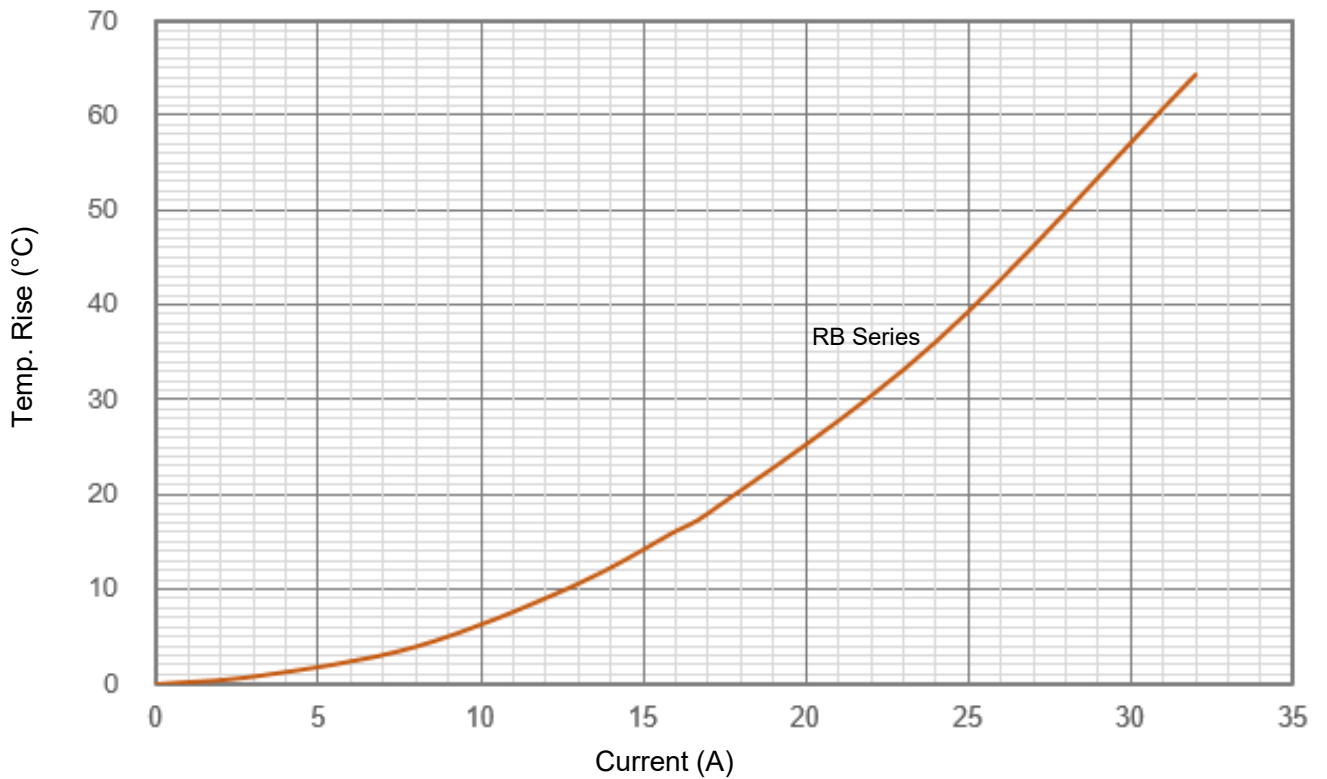
Rated Functioning Temp. (T_f) °C

	Model	Fusing Temp.	T_h	T_m	I_r	U_r	I_n	I_{max}	CCC	RoHS REACH
		(°C)	(°C)	(°C)	(A)	(VAC)	(kA)	(kA)	CCC	
310	RB310	304 ± 3	215	500	10	250	1.5	3	⊖	●
275	RB275	273 +2/-3	215	500	10	250	1.5	3	⊖	●
263	RB263	261 +2/-3	205	480	10	250	1.5	3	⊖	RoHS ● REACH *
257	RB257	254 ± 3	200	480	10	250	1.5	3	●	●
240	RB240	238 +2/-3	200	450	10	250	1.5	3	●	●
229	RB229	227 +2/-3	200	450	10	250	1.5	3	●	●
216	RB216	213 ± 3	186	450	10	250	1.5	3	●	●
205	RB205	203 +2/-3	177	450	10	250	1.5	3	⊖	●
192	RB192	190 +2/-3	162	300	10	250	1.5	3	●	●
184	RB184	181 ± 3	154	250	10	250	1.5	3	●	●
172	RB172	168 ± 3	143	260	10	250	1.5	3	●	●
167	RB167	164 ± 3	137	220	10	250	1.5	3	●	●
157	RB157	155 +2/-3	129	450	10	250	1.5	3	⊖	●
152	RB152	149 ± 3	122	205	10	250	1.5	3	●	●
144	RB144	141 ± 3	114	300	10	250	1.5	3	●	●
134	RB134	131 ± 3	104	250	10	250	1.5	3	●	●
128	RB128	124 ± 3	98	200	10	250	1.5	3	●	●
121	RB121	118 ± 3	93	300	10	250	1.5	3	●	●
117	RB117	114 ± 3	88	200	10	250	1.5	3	●	●
110	RB110	108 +2/-3	82	240	10	250	1.5	3	●	●
104	RB104	102 +2/-3	74	250	10	250	1.5	3	●	●
99	RB99	95 ± 3	69	200	10	250	1.5	3	●	●
94	RB94	91 ± 3	64	300	10	250	1.5	3	●	●
84	RB84	82 +2/-3	54	200	10	250	1.5	3	●	●
77	RB77	74 ± 3	50	300	10	250	1.5	3	●	●
72	RB72	69 ± 3	42	180	10	250	1.5	3	●	●

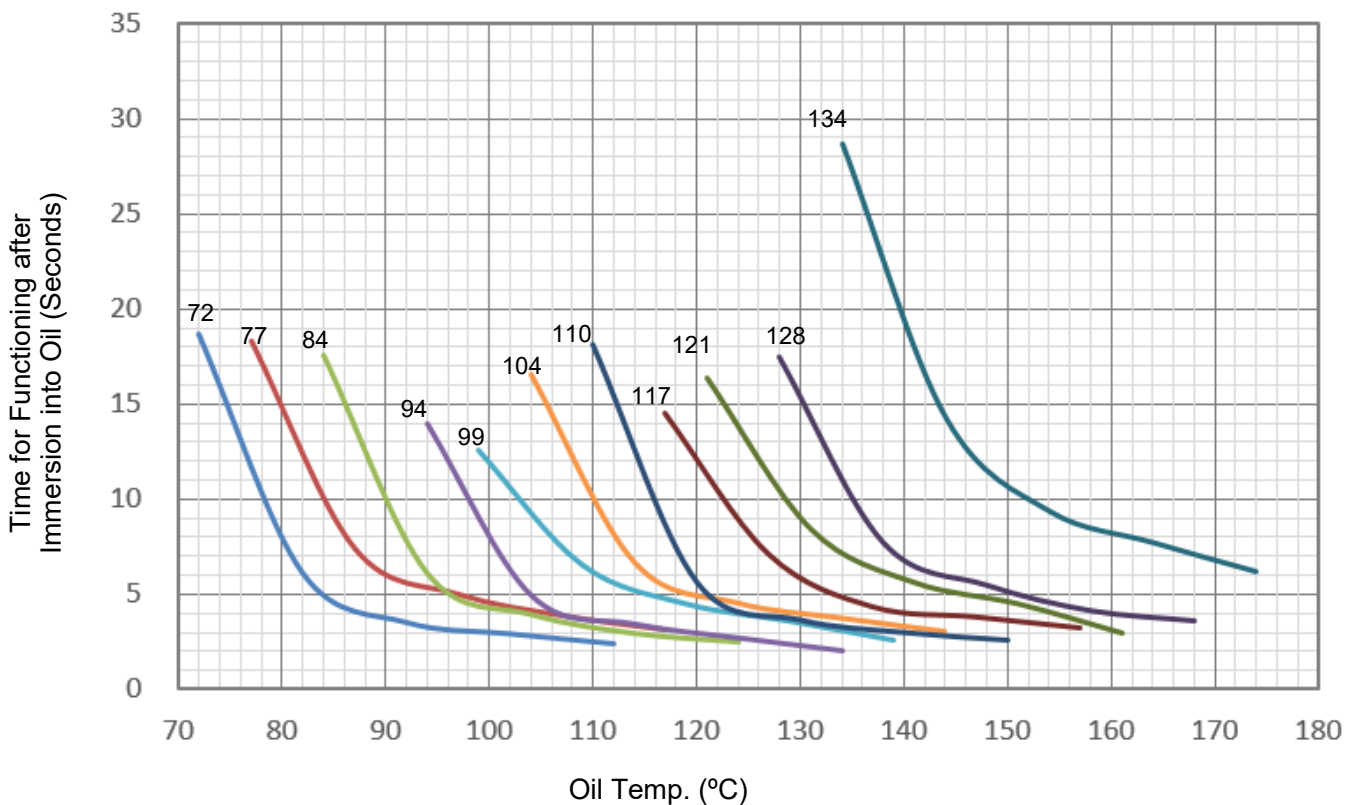
Note:

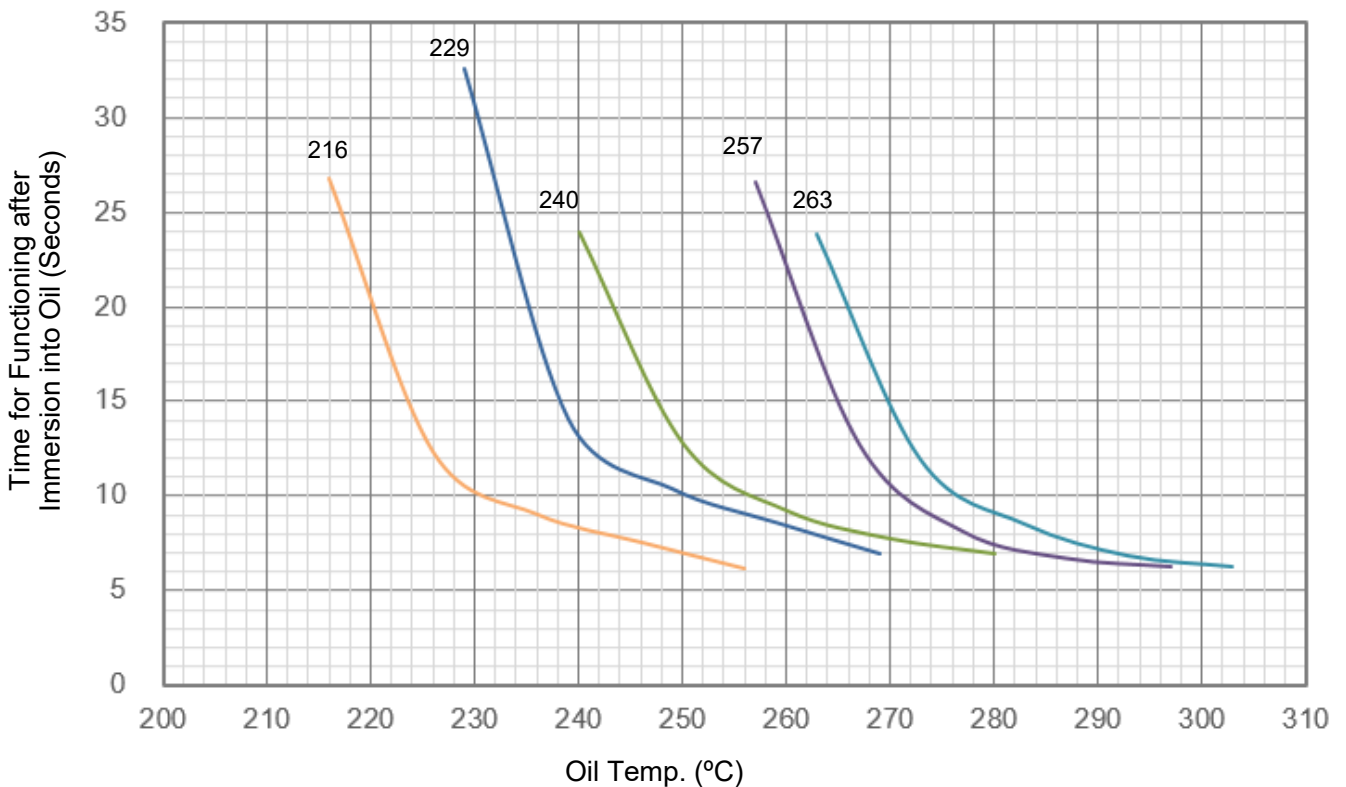
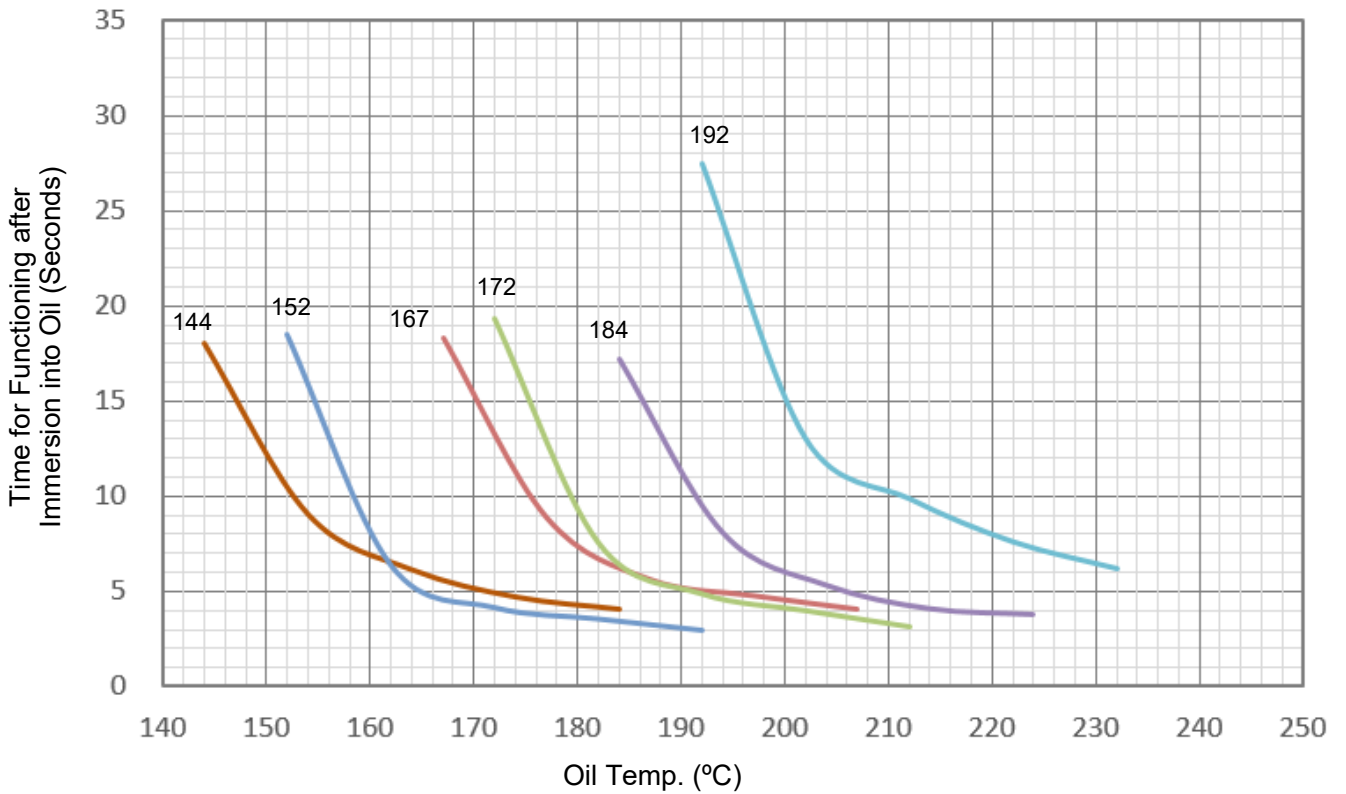
1. "●"Means certificated, "○"Means non-certificated, "⊖"Means Certification in progress, RoHS & REACH Compliant. " * " indicates that RB263 complies with REACH Directive 1907/2006/EC, SVHC Candidate List, Batch 29, Item 235 for most of the content (please consult SET for details).

Cylindrical Structure Temp. Rise (Reference)



Cylindrical Structure Response Time (Reference)



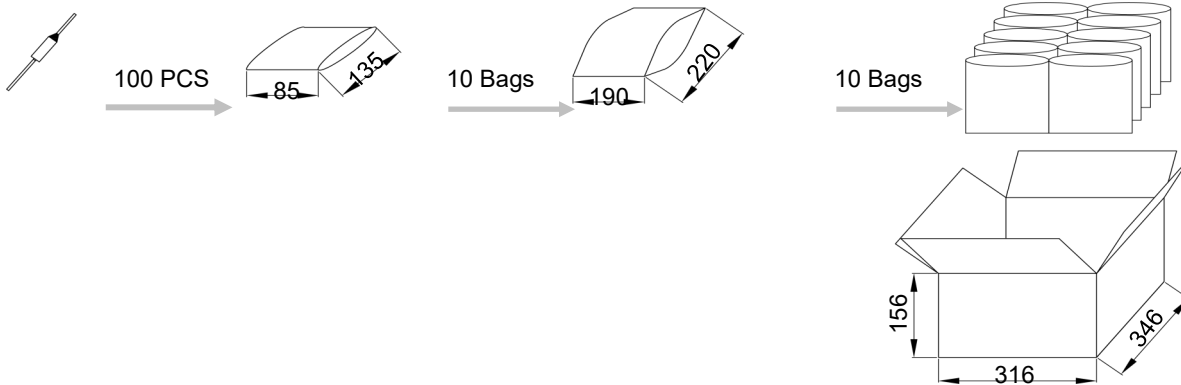


Note: The response time of 157/205/275/310 are testing, the temperature rise and response time testing of square products are continuously being updated. If you require any data, please consult SET.

Packaging Information

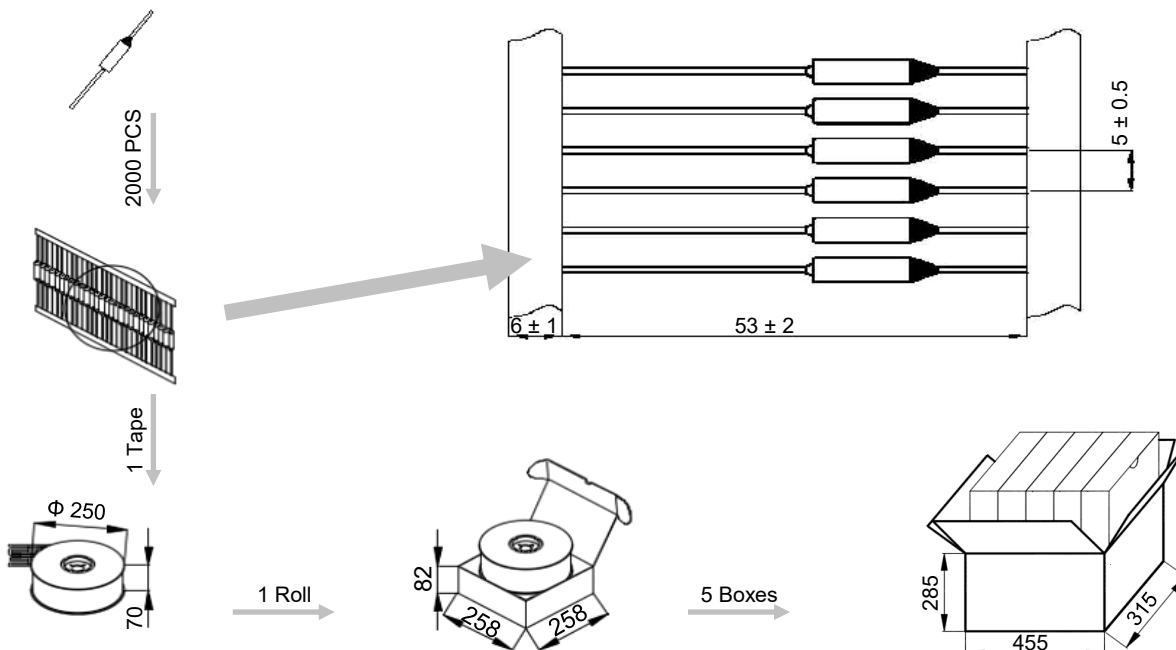
1. Bulk

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: 11 ± 10% Square: 18 ± 10%



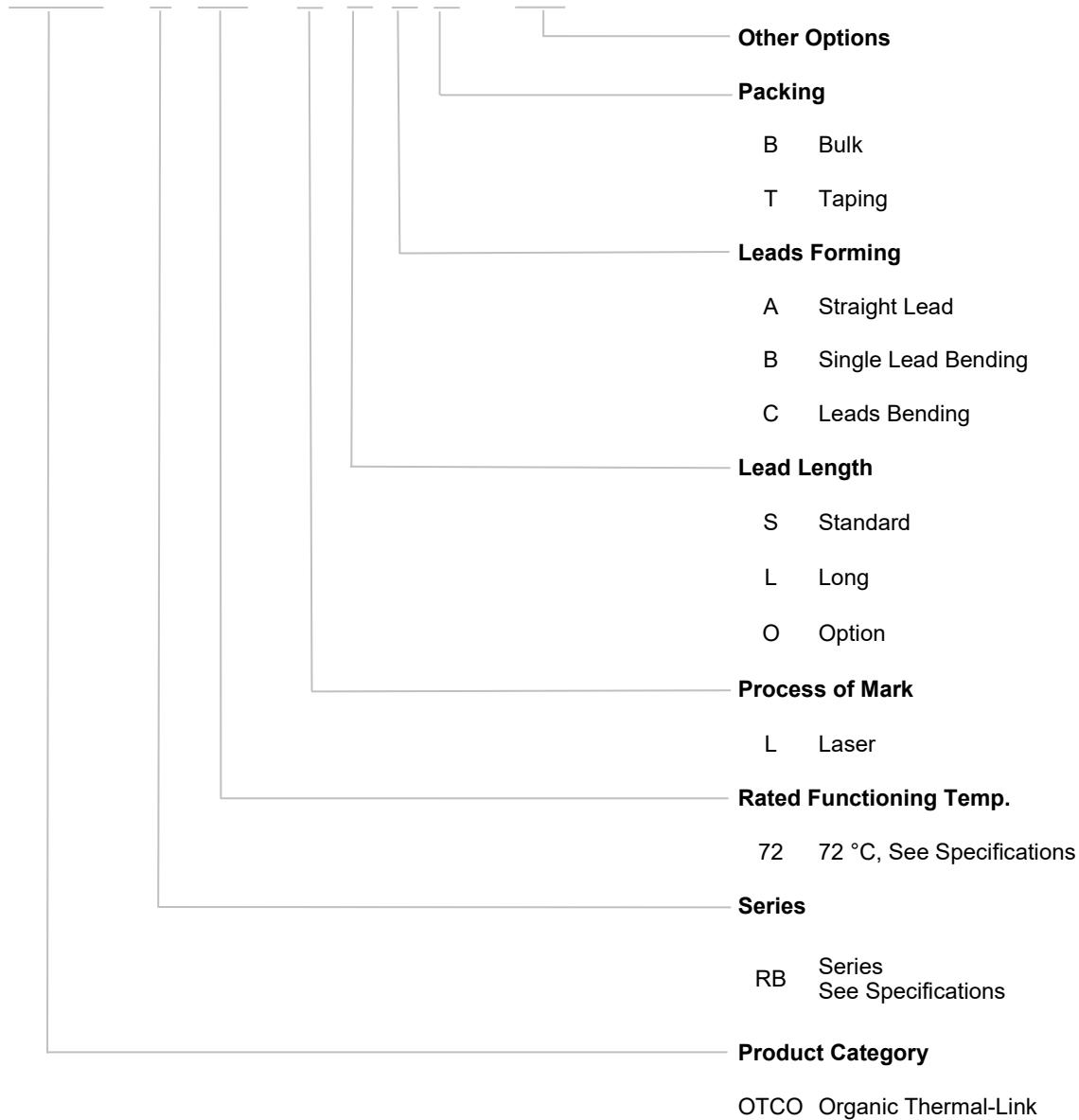
2. Taping

Item	Scroll	Box	Carton
Dimensions (mm)	Φ 250 x Φ 85 x 70	258 x 258 x 82	455 x 315 x 285
Quantity (PCS)	2000	2000	10000
Gross Weight (kg)			Cylindrical: 12.7 ± 10% Square: 19.7 ± 10%



Part Numbering System

OTCO - RB 72 - L S A B - 001



Glossary

Item	Description
TCO	<p>Thermal-Link</p> <p>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.</p> <p style="text-align: right;">— (GB 9816.1)</p>
OTCO	<p>Organic Thermal-Link</p> <p>Organic type Thermal-Link, organic is the THERMAL ELEMENT.</p>
T_f	<p>Rated Functioning Temp.</p> <p>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.</p> <p style="text-align: right;">— (GB 9816.1)</p> <p>Tolerance: T_f °C (GB 9816.1, EN 60691, K60691). Tolerance: $T_f \pm 7$ °C (J60691).</p>
Fusing Temp.	<p>Fusing Temp.</p> <p>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.</p> <p style="text-align: right;">— (GB 9816.1)</p>
T_h	<p>Holding Temp.</p> <p>The Maximum temperature at which a Alloy Thermal-Link will not change its state of conductivity when conducting rated current for 168 hours.</p> <p style="text-align: right;">— (GB 9816.1)</p>
T_m	<p>Maximum Temp. Limit</p> <p>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.</p> <p style="text-align: right;">— (GB 9816.1)</p>
I_r	<p>Rated Current</p> <p>The current used to classify a Alloy Thermal-Link, which is the Maximum current that Alloy Thermal-Link allows to carry and is able to cut off the circuit safely.</p> <p style="text-align: right;">— (GB 9816.1)</p>
U_r	<p>Rated Voltage</p> <p>The voltage used to classify a Alloy Thermal-Link, which is the Maximum voltage that Alloy Thermal-Link allows to carry and is able to cut off the circuit safely.</p> <p style="text-align: right;">— (GB 9816.1)</p>
I_n	<p>Nominal Discharge Current</p> <p>Being able to withstand 15 peak currents of waveform 8/20 μs to test the product's durability of withstanding pulse current.</p> <p style="text-align: right;">— (UL 1449)</p>
I_{max}	<p>Max. Discharge Current</p> <p>Being able to withstand 1 peak current of waveform 8/20 μs to test max. pulse current that the product can withstand.</p> <p style="text-align: right;">— (UL 1449)</p>



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

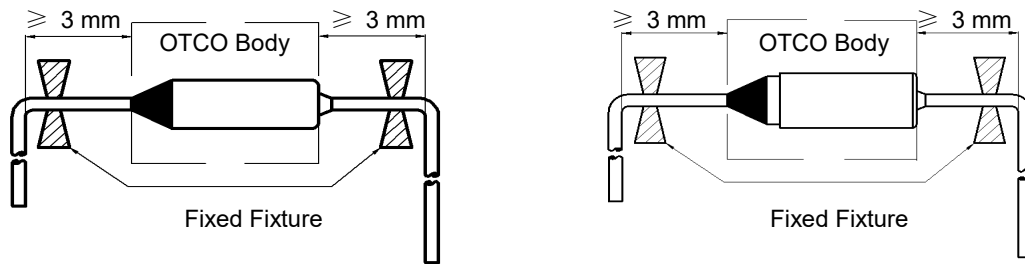


FIGURE 1

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 15.7 N, and the thrust force applied to the lead wires shall not exceed 3.9 N.
2. The lead wires should be bent at a distance 3 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

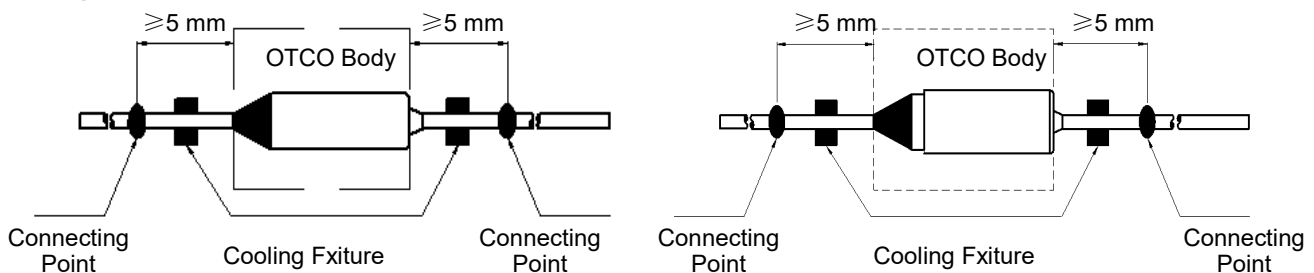


FIGURE 2

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.

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).

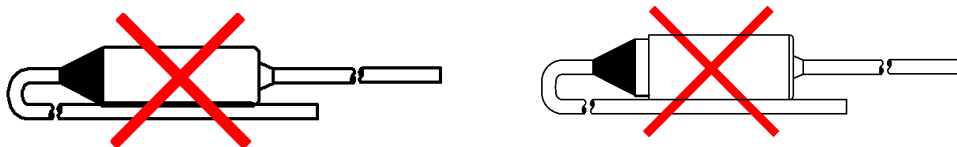


FIGURE 3

