

## **DC-ATCO** Direct Current Thermal-Link (Alloy Type)



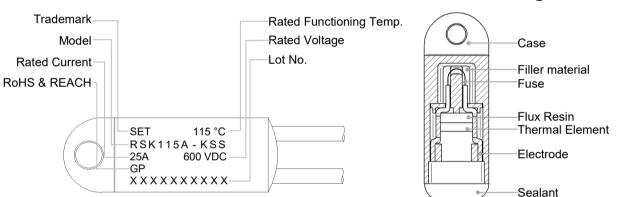


#### Description

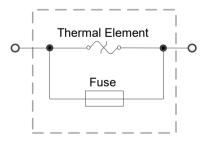
The Direct Current Thermal-Link Alloy Type (DC-ATCO) is a thermal-link that utilizes low melting point alloys, known as the thermal element, which fuse when heated to a specific fusing temperature. This allows for controlled circuit disconnection. The DC-ATCO is composed of various components, including case, filler material, fuse, flux resin, the low melting point alloys (thermal element), electrode leads, sealant and straned conductor. The DC-ATCO is widely employed for over-temperature protection in electrical equipment and electric vehicles. Typically, the low melting point alloys (thermal element) are connected in series between two electrode pins. When the temperature reaches the predetermined fusing temperature of the DC-ATCO, the low melting point alloys (thermal element) melt and swiftly retract to the ends of the two pins, facilitated by the flux resin. This effectively disconnects the circuit.

The SETsafe | SETfuse Direct Current Thermal-Link (Alloy Type) is available in axial and radial shapes, with a rated functioning temperature ranging from 102 °C to 187 °C, rated current 25 A, rated voltage 600 VDC. It is compliant with RoHS and REACH regulations.

Structure Diagram



## **Product Schematic**



#### Features

- 0 to 600 VDC Operating Voltage
- High Accuracy of Functioning Temp.

Stranded Conductor

- Ceramic Case
- Non-Resettable
- RoHS & REACH Compliant

#### **Applications**

- Battery Cooling Heaters
- Air-Conditioners Heaters
- Pre-charged Resistors
- High Power LED

#### Customization

- Rated Functioning Temp.
- Stranded Conductor Size

# Marking

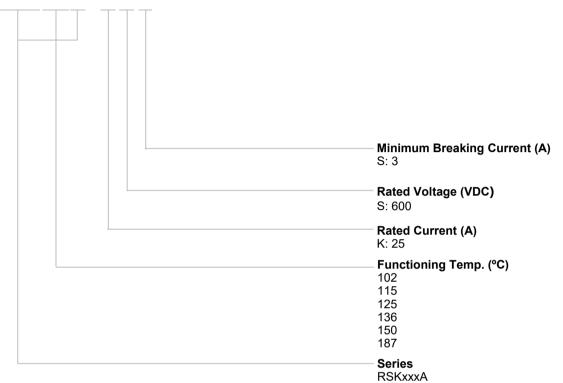


## **DC-ATCO** Direct Current Thermal-Link (Alloy Type)

**RSKxxxA** Series

#### Part Number System

# RSK115A - K S S

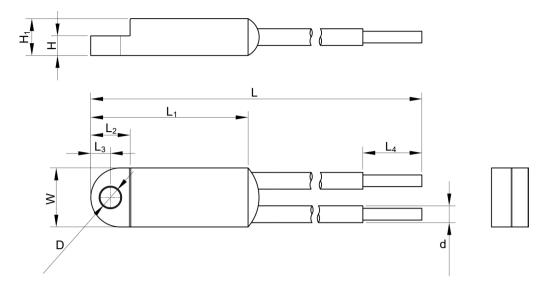


#### Reminder:

Part numbering system in the datasheet is only for selecting correct parameter and product features. Before placing order, please contact us for specifications and use the part number and product code in the specifications to place order to ensure the part is correct. Product code is the unique indentification.



## **Dimensions (Unit: mm)**



L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	W	Н	H <sub>1</sub>	D	d
132.0 ± 5.0	32.0 ± 1.0	8.00 ± 0.5	4.0 ± 0.5	10.0 ± 1.0	12.0 ± 1.0	4.0 ± 0.5	7.5 ± 1.0	3.5 ± 0.3	AWG12

# **Specifications**

( <i>T</i> <sub>f</sub> ) °C		Model	/r (A)	U <sub>r</sub> DC (V)	Rated Functioning Temp. (°C)	7 <sub>h</sub> (°C)	7 <sub>m</sub> (°C)	I <sub>min</sub> (A)	RoHS REACH
Temp.	187	RSK187A-KSS	25	600	182 *5	140	250	3	•
Functioning Te	150	RSK150A-KSS	25	600	146 ± 3	100	250	3	•
	136	RSK136A-KSS	25	600	131 ± 3	80	250	3	•
unct	125	RSK125A-KSS	25	600	122 ± 3	70	250	3	•
Rated F	115	RSK115A-KSS	25	600	112 ± 3	65	250	3	•
Ra	102	RSK102A-KSS	25	600	99*3	55	250	3	•

Note:

1. RoHS & REACH Comply.



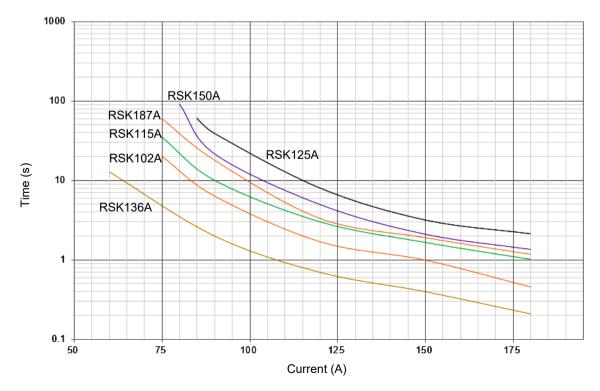
### **Temp.-Time Curve**

1000 100 RSK115A RSK102A RSK150A RSK187A RSK136A RSK125A Time (s) 10 1 0.1 80 105 130 155 180 205 Temp. (°C)

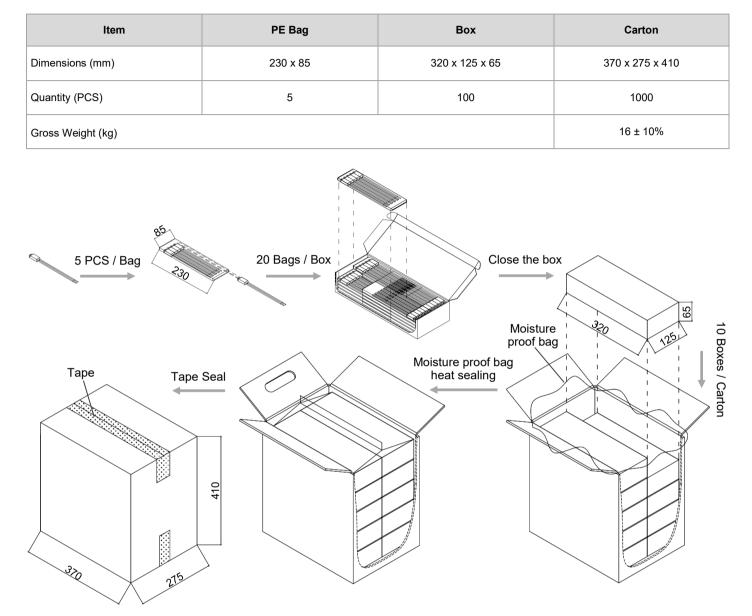
The functioning temperature time curve of Alloy Thermal-Link in different Temp. oil bath (For reference only).

#### **Current-Time Curve**

This is an illustrated curve, describing the opening time at Multi-times rated current in the condition of the room Temp. 25 °C (For reference only).



# **Packaging Information**





## Glossary

ltem	Description
DC-ATCO	<b>DC-Alloy Thermal-Link</b> DC-Alloy type Thermal-Link, Alloy is thermal element.
T <sub>f</sub>	<b>Rated Functioning Temp.</b> The temperature of the 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, EN 60691, K60691). Tolerance: $T_f \pm 7$ °C (J60691).
Fusing Temp.	<b>Fusing Temp.</b> 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.
T <sub>h</sub>	Holding Temp. The Maximum temperature at which a Thermal-Link will not change its state of conductivity when conducting rated current for 168 hours.
T <sub>m</sub>	<b>Maximum Temp. Limit</b> The temperature of the Thermal-Link stated by the manufacturer, up to which the mechanical and electrical properties of the Thermal-Link having changed its state of conductivity, will not be impaired for a given time.
I <sub>min</sub>	<b>Minimum Breaking Current</b> The minimum current that Fuse requires after the Alloy of Thermal-Link opens in the circuit.
l <sub>r</sub>	Rated Current The current used to classify a Thermal-Link, which is the maximum current that Thermal-Link allows to carry and is able to cut off the circuit safely.
U,	Rated Voltage The voltage used to classify a Thermal-Link, which is the maximum voltage that Thermal-link allows to carry and is able to cut off the circuit safely.





ATTENTION

#### Usage

- 1. When atmosphere pressure is from 80 kPa to 106 kPa, the related altitude shall be from -500 m to 2000 m.
- 2. Operating voltage less than rated voltage of DC-ATCO, operating current less than rated current of DC-ATCO.
- 3. Do not touch the DC-ATCO body or lead wires directly when power is on, to avoid burn or electric shock.

## Replacement

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

## Storage

Do not store the DC-ATCO at the high temp., high humidity or corrosive gas environment. The product shall be stored at  $25 \pm 5$  °C and  $\leq 70\%$  RH, avoid direct sunlight and shall use them up within 1 year after receiving the goods.

## Installation

Make Sure the Temp. of Installation Position

- 1. It is recommended that a dummy DC-ATCO with inbuilt thermo-couple shall be used to determine the proper temp.
- 2. he terminal product should be tested to ensure that potential abnormal conditions do not cause ambient temp. to exceed the  $T_m$  of the DC-ATCO.
- 3. Mount the DC-ATCO at the location where temp. rises evenly.

Installation position of mechanical performance requirements

- 1. Ensure that the lead wire is long enough, and avoid actions such as press, tensile or twist.
- 2. The seal or body of DC-ATCO must not be damaged, burned or over heated.



#### **Mechanical Connection**

#### Riveting

- 1. Choose small resistivity riveting material and be riveted.
- 2. A flexible lead or lead with low resistance should be used to rivet the DC-ATCO.
- 3. Contact resistance should be minimal, Large contact resistance will lead to higher temp., DC-ATCO Functioning in advance.

### Soldering

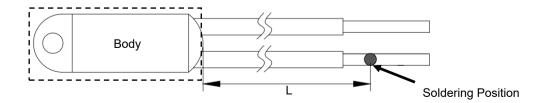
#### Hand-Soldering

- 1. Soldering should be carried out according to Table T-1.
- 2. The thermal element of DC-ATCO is thermal element with low melting point, which is jointed with DC-ATCO lead wires. Improper soldering operation (too high soldering temp., too long soldering time, too short lead wire etc.) may transfer more heat to the thermal element and DC-ATCO may open in advance.
- 3. When soldering conditions are more severe than those listed in Table T-1, a heat sink fixture should be used between soldering point and DC-ATCO body.
- 4. When soldering, please do not pull / push or twist DC-ATCO body or lead wires.
- 5. After soldering, let it naturally cool for longer than 20 seconds. During cooling, never move the DC-ATCO body or lead wires.

#### TABLE T-1 Hand-Soldering Time

Rated								
Functioning Temp.		Time		Time		Time	Max. Soldering	
( <i>T</i> <sub>f</sub> )	Length	Tinned Copper Wire	Length	Tinned Copper Wire	Length	Tinned Copper Wire	Temp.	
(°C)	(mm)	(s)	(mm)	(s)	(mm)	(s)	(°C)	
76 ~ 101	10	1 <sup>a</sup>	20	2	30	3		
102 ~ 115	10	1 <sup>a</sup>	20	2	30	3		
116 ~ 135	10	1 <sup>a</sup>	20	3	30	5	400	
136 ~ 150	10	3 20		20 5		5		
151 ~ 230	10	4	20	6	30	7		

a: Auxiliary heat sink fixture is required to avoid DC-ATCO cutting off unexpectedly.



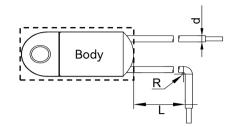




## Lead Wire Forming

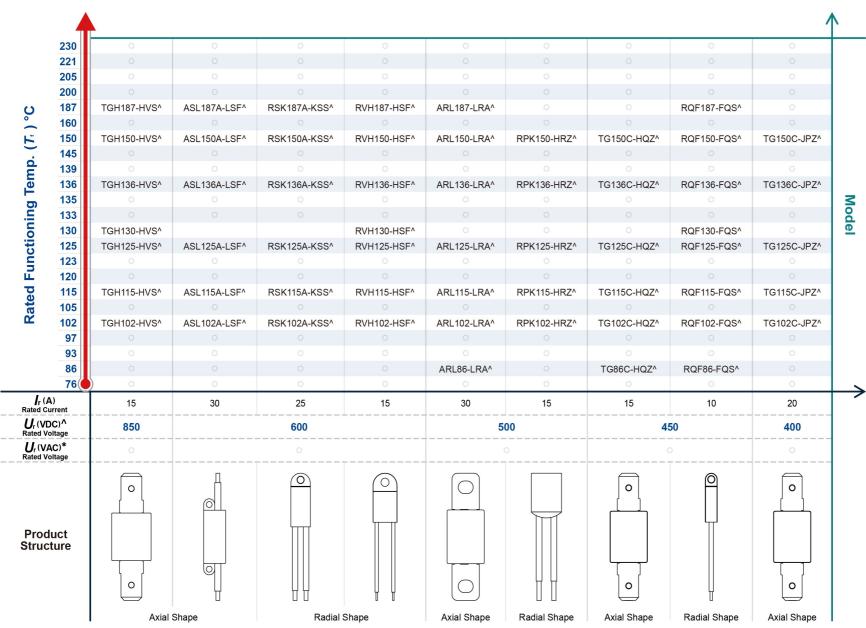
- 1. If lead wire has to be bent, please pay attention to the distance between body and bending point. Refer to Table T-3.
- When bending leads, please use pincher or similar tools to fix the product as shown in Figure T-2 to avoid damaging the product.
- During forming and mounting, lead wire should not be cut, nicked, bent sharply, to avoid breaking the product.
- 4. Tangential forces on the leads must be avoided (i.e. pushing or pulling on the leads at angle to DC-ATCO body) as such forces may damage the seal of DC-ATCO.
- 5. Bending radius  $R: \ge 15 d$ , as shown in Figure T-2.

#### TABLE T-3 Distance between Body and Bending Point



**FIGURE T-2** 

	d	(mm)	< 1.0	1.0 to 1.2	> 1.2
Lead Wire	L	(mm)	≥ 3	≥ 5	≥ 10



**RSKxxxA** Series

ETsafe

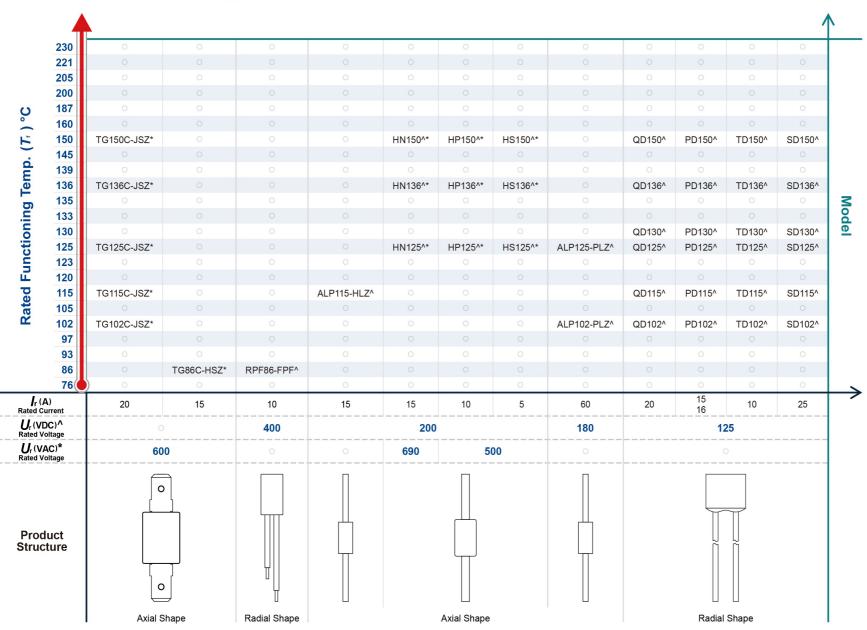
SET fuse

Direct Current Thermal-Link (Alloy Type)

DC

ATC

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**RSKxxxA** Series

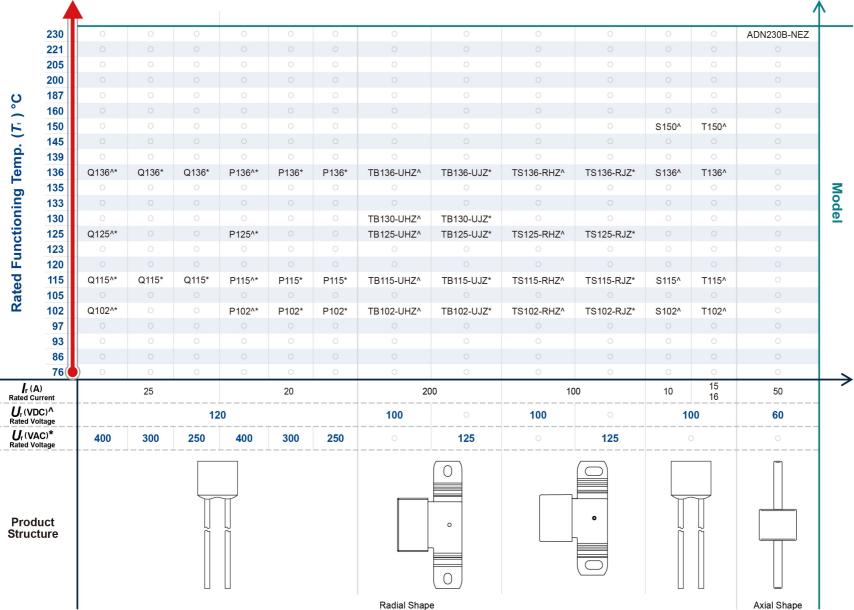
ETsafe

SET fuse

Direct Current Thermal-Link (Alloy Type)

DC

ATCO



Direct Current Thermal-Link (Alloy Type)

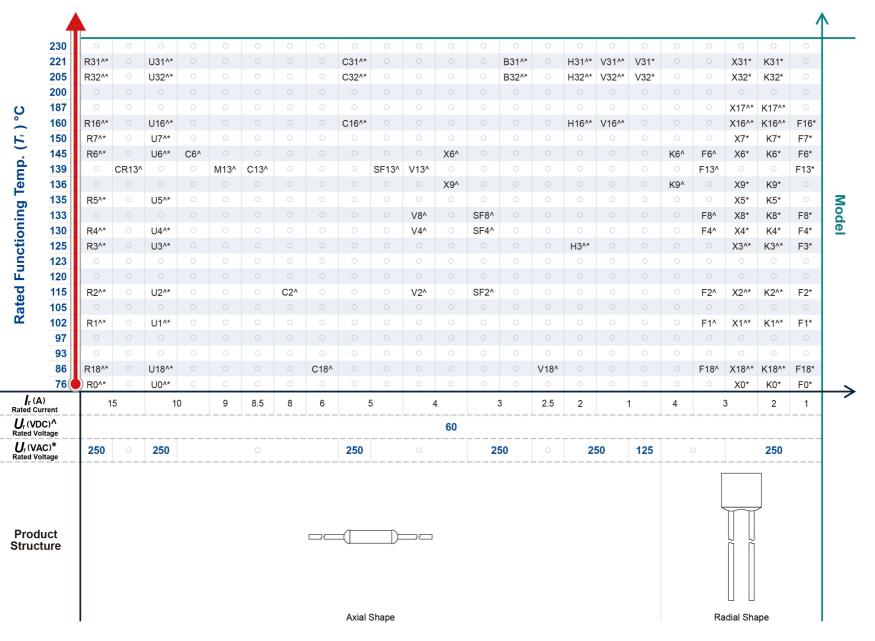
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ATCO

ETsafe

SET fuse

**RSKxxxA** Series



**RSKxxxA** Series

**ET** safe **SET** fuse

Direct Current Thermal-Link (Alloy Type)

DC

ATC

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	230	0	0	0	0	0	0	0	0	0	0	0	ADN230B-NDZ^	ADN230B-PDZ^	0	ADN230B-QBZ^	
	221	XG31*	KG31*			C31*		B31*		H31*			0	0	ADN205B-NDZ^	0	
	205	XG32*	KG32*			C33*		B32*		H32*							
	200	0															
O	187	0															
。(	160	XG16*	KG16*				B16*										
Ĕ	150	XG7*	KG7*	C7^	C7*		B7^*		H7^*		V7^*						
<u> </u>	145	XG6*	KG6*	C6^	C6*		B6^*		H6^*		V6^*						
du	139	0		C13^	C13*		B13^*		H13^*		V13^*						
ler	136	XG9*	KG9*	C9^	C9*		B9^*		H9^*		V9^*						
6	135	XG5*	KG5*	C5^	C5*		B5^*		H5^*		V5^*						3
Ľ.	133	XG8*	KG8*	C8^	C8*		B8^*		H8^*		V8^*						Model
ou	130	XG4*	KG4*	C4^	C4*		B4^*		H4^*		V4^*						e
cti	125	XG3^*	KG3^*	C3^	C3*		B3^*				V3^*						
Ŭ,	123	0															
Rated Functioning Temp. ( <i>T</i> , ) °C	120	0															
	115	XG2^*	KG2^*	C2^	C2*		B2^*		H2^*		V2^*						
	105	0															
œ	102	XG1^*	KG1^*		C1^*	C1*	B1^*	B1*	H1^*	H1*	V1^*	V1*					
	97	0				C21^*		B21^*		H21^*		V21^*					
	93	0															
	86	XG18^*	KG18^*		C18^*	C18*	B18^*	B18*	H18^*	H18*	V18^*	V18*					
	76	) XG0*	KG0*	0	C0*	0	B0^*	B0*	H0^*	H0*	V0^*	V0*	0	0	0	0	$\rightarrow$
r ( <i>I</i> r ( <i>I</i> Rated C	A) urrent	3	2	7	Ę	5	3		:	2		1	50	55	50	80	-
Ur(VI Rated V	DC)^ oltage	6	60				50						49	4	8	24	
Ur (V	AC)*	2	50	0	250	125	250	125	250	125	250	125		(	0		
Product Structure									Axial Sha	IDE							
			Shape										ihe				

**RSKxxxA** Series

SET safe SET fuse

DC-ATCO Direct Current Thermal-Link (Alloy Type)