

SY Series



Description

Thermal-Link (ATCO)-Alloy Type is defined as a non-resettable protective device functioning one time only. It is widely used in electrical equipment. ATCO is mainly consist of fusible alloy, flux resin, case, sealant and lead wires. Normally, fusible alloy is jointed to the two lead wires. Under abnormal conditions, when the temp. reaches to the fusing temp. of ATCO, the fusible alloy melts and quickly retracts to the two lead wire ends with the aid of the flux resin and disconnects the circuit completely.

SETsafe | SETfuse Thermal-Link (ATCO)-Alloy Type SY series Rated Functioning Temp. from 95 °C to 145 °C, Rated Current: 10A, safety certification Includes PSE, CCC, and complies with RoHS and REACH.

Features

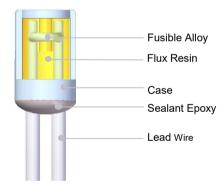
- Lead Wires Insulated
- Non-Resettable

Dimensions

- High Accuracy of Functioning Temp.
- RoHS & REACH Compliant

Structure Diagrams

Radial



Applications

- Electric Heating Appliances
- Home Electrical Appliances

Customization

- Other Temp.
- The Length of Lead Wires
- Lead Wires can Make Pluggable Terminals

Marking

Radial (Color for reference only)



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.

L L1 L2 D d 13.0 ± 1.0 70.0 ± 3.0 5.0 ± 1.0 9.0 ± 1.0 UL1332 18AWG

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Specifications

(<i>T</i> _f) °C		Model	Fusing Temp.	7 _h (°C)	7 _m	l, (A)	U _r	کت ccc	PSE	RoHS REACH
d.									102	
Temp.	145	SY145	140 ± 2	115 111ª	180	10	AC 250	•	•	•
J T G	130	SY130	125 ± 2	100 96ª	180	10	AC 250	•	•	•
onir	125	SY125	121 ± 2	95 91ª	180	10	AC 250	•	•	•
Functioning	120	SY120	115 ± 2	90 86ª	180	10	AC 250	•	•	•
	115	SY115	111 ± 2	85 81ª	180	10	AC 250	•	•	•
Rated	105	SY105	100 ± 2	72 68ª	180	10	AC 250	•	•	•
Ř	95	SY95	91 ± 2	60 52ª	180	10	AC 250	•	0	•

Note:

1: "●"Means certificated, "○"Means non-certificated.

2: RoHS & REACH Compliant .

3: " a ": The temperature measurement point for holding temperature (T_h) shall be positioned 50 mm away from the product body, in accordance with the requirements specified in Appendix I of GB/T 9816.1-2023.



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ATCO Body

FIGURE T-1

Soldering Position

Agency Information

Agency Symbol	Standards	The File No. and certification No. obtained by SETsafe SETfuse
PS E	J60691	JET2121-32001-2029、JET2121-32001-2030 JET2121-32001-2031
	GB 9816.1	2020980205000181

Soldering

Hand-Soldering

- 1. Soldering should be carried out according to Table T-1.
- 2. The thermal element of ATCO is fusible alloy with low melting point, which is jointed with 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 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 ATCO body.
- 4. When soldering, please do not pull / push or twist ATCO body or lead wires.
- 5. After soldering, let it naturally cool for longer than 20 seconds. During cooling, never move the ATCO body or lead wires.

TABLE T-1 Hand-Soldering Time

Rated Functioning Temp.		Max. Allov	vable Sol	dering Tin	ne for Differe	nt Lead V	Vire Lengt	h (Fig.T-1)		Max. Soldering Temp.
(<i>T</i> _f)	L _s	Time)	L _s	Time)	L _s	Tim	е	
	Length -	Tinned Copper Wire	CP Wire	Length	Tinned Copper Wire	CP Wire	Length	Tinned Copper Wire	CP Wire	-
(°C)	(mm)	(s)	(s)	(mm)	(s)	(s)	(mm)	(s)	(s)	(°C)
95 to 101	10	1 ^a	4	20	2	5	30	3	6	
102 to 115	10	1ª	4	20	2	5	30	3	6	400
116 to 135	10	1ª	4	20	3	6	30	5	8	400
136 to 145	10	3	6	20	5	8	30	5	8	1

Note:

a: Auxiliary Heat Sink Fixture is Required to Avoid ATCO Cutting off Unexpectedly.

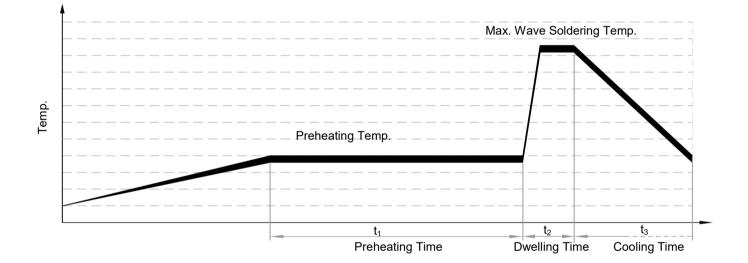
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Wave Soldering

The wave soldering parameters as Table T-2, for reference only, when ATCO is for practice use, you need to do some validation experiments. For example, using X-RAY to see the fusible alloy of ATCO whether damage after wave soldering.

TABLE T-2 Wave Soldering Parameters Setting

Rated Functioning Temp.	Whe	-		ng Temp. re is Different	Preheating Time (t ₁)	Max. Wave Soldering	Dwelling Time (t ₂)	Cooling Time (t ₃)
(<i>T</i> _f)	L _s Length	Preheating Temp.	L _s Length	Preheating Temp.		Temp.		
(°C)	(mm)	(°C)	(mm)	(°C)	(s)	(°C)	(s)	(s)
95 to 130				Recommend	I Hand-Soldering	J		
131 to 145	20	80	30	90	< 60	≤ 260	≤ 3	≤ 10

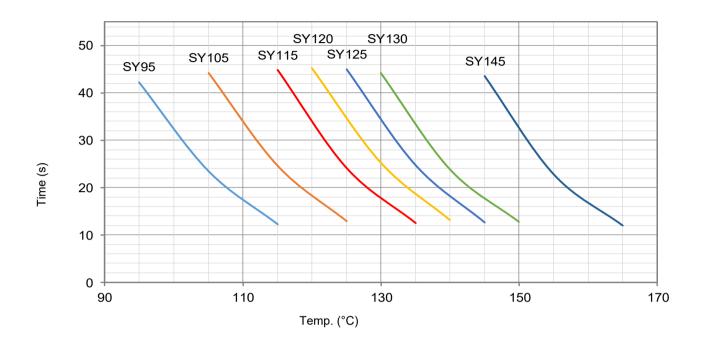


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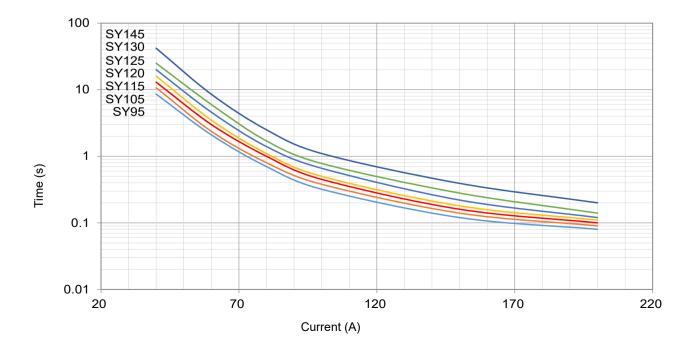
Product Temp.-Time Curve (Reference)

The Temp.-Time Curve of Thermal-Link in different temp. oil bath.



Product Current-Time Curve (Reference)

The Current-Time Curve shows functioning time at multi-times rated current at room temperature 25 ± 2 °C.





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Packaging Information

Bulk

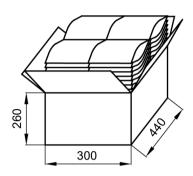
Item	PE Bag	Carton
Dimensions (mm)	190 × 180	440 × 300 × 260
Quantity (PCS)	50	3000
Gross Weight (kg)		14.0 ± 10%



50 PCS

ુજ 180

60 Bags



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Part Numbering System ATCO - SY115 - M T W A B - 001 **Other Options** Packing В Bulk Т Taping Leads Forming Straight Lead A В Single Lead Bending С Leads Bending D Leads Kinking Е Leads Bending and Kinking Color of Insulation Tube W White Y Yellow R Red Κ Black Ν None **Insulation Tube Material** Т Teflon S Silicone Ν None Lead Wire Type Μ Multi stranded tinned copper wire Rated Functioning Temp. 115 °C, See Specifications 115 Series Series SY See Specifications **Product Category**

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ATCO Alloy Thermal-Link



SY <u>Series</u>

Glossary

Item	Description
тсо	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)
АТСО	Alloy Thermal-Link Alloy Type Thermal-Link, Alloy is the thermal element. — (GB 9816.1)
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: <i>T</i> _f °C (GB 9816.1, EN 60691, K60691). Tolerance: <i>T</i> _f ± 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)
l,	Rated Current 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. — (GB 9816.1)
U,	Rated Voltage 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. — (GB 9816.1)
J _n	Nominal Discharge Current Being able to withstand 15 peak currents of waveform 8/20 µs to test the product's durability of withstanding pulse current. — (UL 1449)
I _{max}	Max. Discharge Current Being able to withstand 1 peak current of waveform 8/20 μs to test max. pulse current that the product can withstand. — (UL 1449)

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ATTENTION

Usage

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

Replace

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

Storage

Do not store the ATCO at the high temp., high humidity or corrosive gas environment, avoid influencing the solder-ability of the lead wires, the product shall be used up within 1 year after receiving the goods.

Installation

Make Sure the Temp. of Installation Position.

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

Installation position of mechanical performance requirements.

- 1. Do not locate the ATCO in a place where severe vibration always occurs.
- 2. Ensure that the lead wire is long enough, and avoid actions such as press, tensile or twist.
- 3. The seal or body of ATCO must not be damaged, burned or over heated.



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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 ATCO.
- 3. Contact resistance should be minimal, large contact resistance will lead to higher temp., ATCO Functioning in advance.

Crimping

- 1. Choose small resistivity crimping material and be crimped.
- 2. A flexible lead or lead with low resistance should be used to rivet the ATCO.
- 3. Contact resistance should be minimal, large contact resistance will lead to higher Temp., ATCO Functioning in advance.

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.
- 2. When bending leads, please use pincher or similar tools to fix the product as shown in Fig.T-2, to avoid damaging the product.
- 3. 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 ATCO body) as such forces may damage the seal of ATCO.

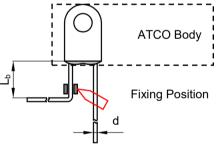




TABLE T-3 Distance between Body and Bending Point

	d	(mm)	< 1.0	1.0 - 1.2	> 1.2
Circular lead	L _b	(mm)	≥ 3	≥5	≥ 10

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										Μ	od	el										1	١		
0	TK221	TK205	0	0	TK160	TK150	TK145	0	0	TK135	0	TK130	TK125	0	0	TK115	0	TK102	0	0	0	0	15 16		
SE230			SE200			SE150	SE145			SE135			SE125			SE115		SE102				0	10		
SKL230			SKL200																			0	10		
0	SK221	SK205	0		SK160	SK150	SK145			SK135		SK130	SK125			SK115		SK102				0	10		
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	KG31	KG32			KG16	KG7	KG6		KG9	KG5	KG8	KG4	KG3			KG2		KG1			KG18	KG0	5		
						G150			G136			G130	G125			G115		G102				0	40		1
						N150			N136			N130	N125			N115		N102				0	30		
									Q136							Q115						0	25		
									P136							P115						0	20		-
						T150			T136				T125			T115		T102				0	15 16	250	
						S150			S136				S125			S115		S102				0	10		
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	B31	B32			B16	B7	B6	B13	B9	B5	B8	B4	B3			B2		B1	B21		B18	BO	ю		
	H31	H32			H16	H7	9H	H13	6H	H5	H8	H4	H3			H2		H	H21		H18	РH	0		ŭ
	V31	V32			V16	77	V6	V13	67	V5	V8	V4	V3			V2		۲1	V21		V18	07	-		
230	221	205	200	187	160	150	r). 145	139	136	135	133	130		123	120	115	105	102	97	95	86	76	Ir (A) Rated Current	Ur (VAC) Rated Voltage	Product Structure

Thermal-Link (ATCO)-Alloy Type Feature & Model List Overview

SY Series

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0	0	0	0	0	0	1	JWH	HW6	0	0	HW5	0	HW4	HW3	0	0	HW2	0	HW1	0	0	HW18	ИWO	15	800	
0	0	0	0	0	0	1		HL6		0	HL5	0	HL4		0	0	HL2	0	HL1	0	0	HL18	HLO	10		
0	0	0	0	0			0	HN145	0	HN136	0	0	0	HN125	0	0	0	0	0	0	0	0	0	15	690	
0	0	0	0	0			HC/	HC6	0	0	HC5	0		HC3	0	0	HC2	0	HC1	0	0	HC18	HCO	5	ö	
0		0	0	0	0		0	HP145	0	HP136	0	0	0	HP125	0	0	0	0	0	0	0	0	0	10		
0	0	0	0	0			С	HS145	0	HS136	0	0	0	HS125	0	0	0	0	0	0	0	0	0	5	0	
0	0	0	0	0	0	1	HK/	HR6	0	0	HR5	0	HR4	HR3	0	0	HR2	0	HR1	0	0	HR18	HRO	15	500	
0	0	0	0	0		1	ΗU/	HU6	0	0	HU5	0	HU4	HU3	0	0	HU2	0	HU1	0	0	HU18	HUO	10		
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0	0	0	0	0	0	!	XM/	0	0	0	XM5	0	XM4	XM3	0	0	0	0	0	0	0	0	0	e		
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0	0	0	0	0		-	XM/	0	0	0	XM5	0	XM4	0	0	0	0	0	0	0	0	0	0	n		
0		0	0	0		-	KM/	0	0	0	KM5	0	KM4	0	0	0	0	0	0	0	0	0	0	7		
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230	221	205	200	187	160		150	145	139	136	135	133	130	125	123	120	115	105	102	97	95	86	76	Ir (A) Rated Current	Ur (VAC) Rated Voltage	Product Structure

Thermal-Link (ATCO)-Alloy Type Feature & Model List Overview

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	1 1	16 16<			H7	B7	0	C7	0	0	0	0	0	0	0	0	0	0	0	0	0	U7	R7	0	
	1 1	1 1			H6	BG	0	C6	0	0	0	0	0	0	0	0	0	0	0	0	C6	00	R6	0	
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50			Ur (VDC) Rated Voltage			50										90									
			Product Structure										Ţ		Ĭ	П									
Product Structure	Product Structure																								
Product Structure	Product Structure																								

SET safe | SET fuse

SY Series

230	221 0	200	0		145 0			133 0		125 KG3 XG3	123 0	120	115 KG2 XG2	1 05 °	102 KG1 XG1	0	0	86 KG18 XG18	76() 0	Ir (A) 2 3 Rated Current 2 3	Ur (VDC) Rated Voltage	Product Structure
0										K3			К2		K1			K18	0	2	60	
0										X3			X2		X1			X18	0	ю		
Ö					F6	F13		F8	F4				F2		F1			F18	0	ю		
0					9X		6X												0	4		
0				S150			S136			S125			S115		S102				0	10	100	
0				T150			T136			T125			T115		T102				0	15 16	Q	
0							P136			P125			P115		P102				0	20		
0							Q136			Q125			Q115		Q102				0	25	120	
0				GA150			GA136		GA130	GA125			GA115		GA102			GA86	GA76	50		
0				SD150			SD136		SD130	SD125			SD115		SD102				0	10		
0				TD150			TD136		TD130	TD125			TD115		TD102				0	15 16	1	
0				PD150			PD136		PD130	PD125			PD115		PD102				0	20	125	
0				QD150			QD136		QD130	QD125			QD115		QD102				0	25		
0				HS150			HS136			HS125									0	5		
0				HP150			HP136			HP125									0	10	200	
0				HN150			HN136			HN125									0	15		