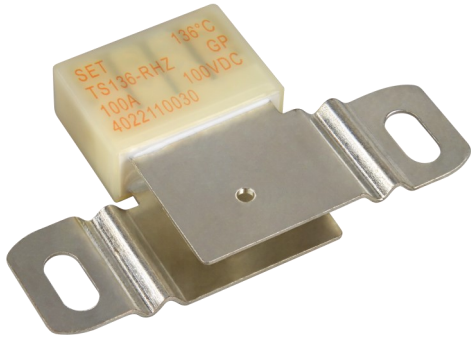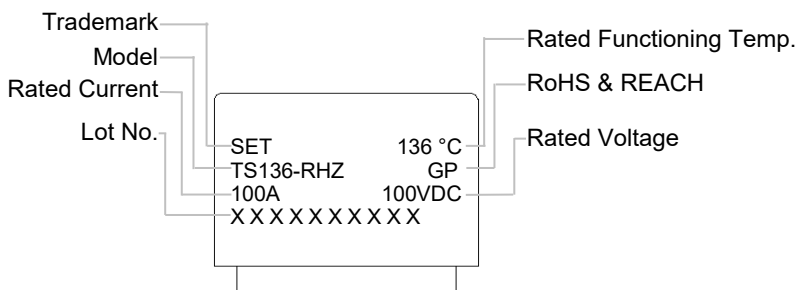## Description

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 a case, the low melting point alloys (thermal element), flux resin, sealant and electrode lead.

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.
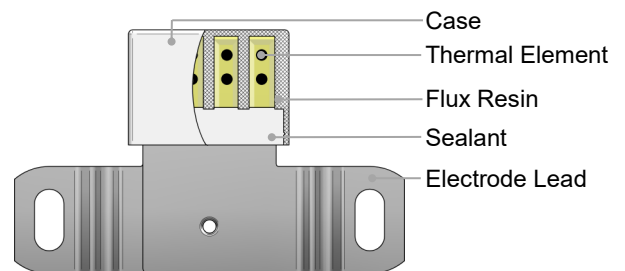
The SETsafe | SETfuse Direct Current Thermal-Link (Alloy Type) is available in axial and radial shapes, with a rated functioning temperature ranging from 102 °C to 136 °C, rated current: 80 A, 100 A, rated voltage: 100 VDC, 250 VAC, 125 VAC. Additionally, it holds UL and cUL Approvals, and is compliant with RoHS and REACH regulations.

Marking

Trademark
Model
Rated Current
Lot No.
Rated Functioning Temp.
RoHS & REACH
Rated Voltage

SET   136 °C
TS136-RHZ   GP
100A   100VDC
X X X X X X X X X X

Structure Diagram

Case
Thermal Element
Flux Resin
Sealant
Electrode Lead

Agency Information

Agency Symbol	Standards	The File No. and certification No. obtained by SETsafe | SETfuse
®RU	UL60691	E214712
c®RU	CAN-CSA-E60691	E214712

Features

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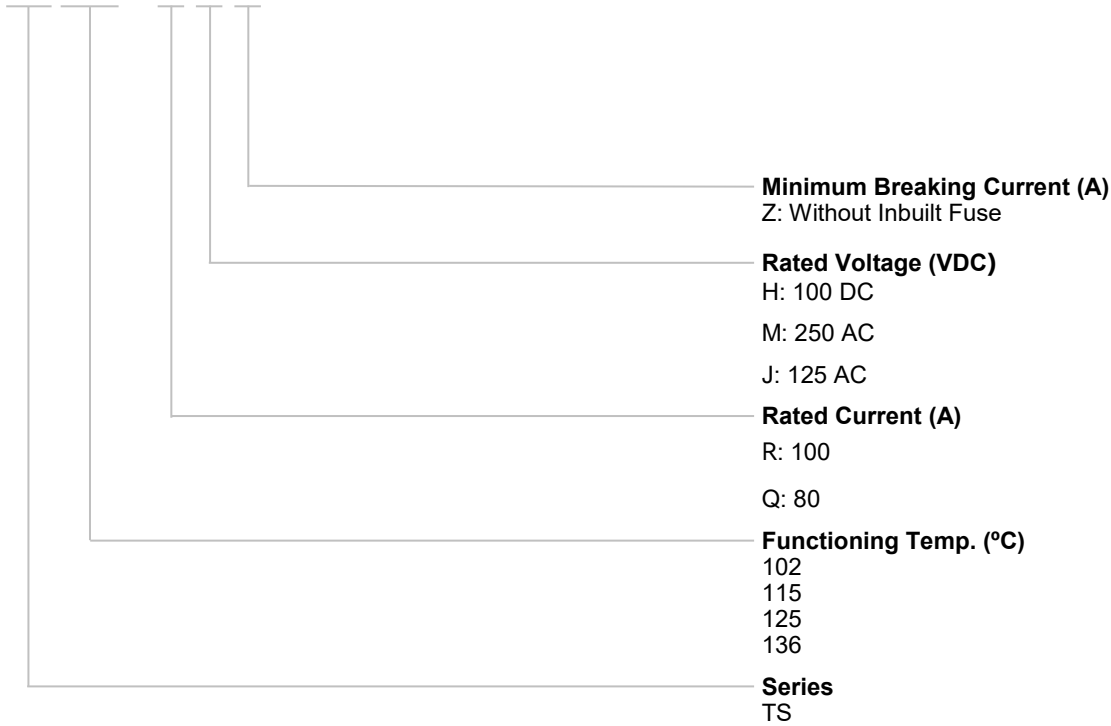- RoHS & REACH Compliant

Applications

- EV Battery Modules
- Automatic Electronics

Customization

- Rated Functioning Temp.
- The Shape of Electrode Lead

Part Number System

TS136 - R H Z

Minimum Breaking Current (A)
Z: Without Inbuilt Fuse

Rated Voltage (VDC)
H: 100 DC

M: 250 AC

J: 125 AC

Rated Current (A)
R: 100

Q: 80

Functioning Temp. (ºC)
102
115
125
136

Series
TS

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)
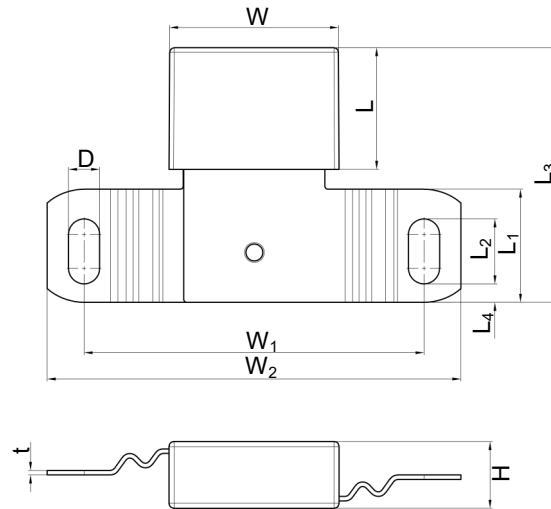
| L	L₁	L₂	L₃	L₄	W	W₁	W₂	D	H	t
21.5 ± 0.5	20.0 ± 0.5	11.5 ± 0.5	45.5 ± 2.0	3.25 ± 0.50	30.0 ± 0.5	60.0 ± 2.0	73.0 ± 2.0	5.5 ± 0.2	11.8 ± 0.5	0.80 ± 0.05

Specifications

Rated Functioning Temp. (T_f) °C		Model	I_r	U_r	Rated Functioning Temp.	T_h	T_m	® UL	c ® cUL	RoHS REACH
			(A)	(V)	(°C)	(°C)	(°C)	UL	cUL	
136		TS136	80	AC 250	131 ± 3	91	180	●	●	●
			100	AC 125				●	●	●
			100	DC 100				●	●	●
125		TS125	80	AC 250	122 ± 3	80	180	●	●	●
			100	AC 125				●	●	●
			100	DC 100				●	●	●
115		TS115	80	AC 250	112 ± 3	70	180	○	○	●
			100	AC 125				○	○	●
			100	DC 100				○	○	●
102		TS102	80	AC 250	99^{+5}_{-3}	60	180	○	○	●
			100	AC 125				○	○	●
			100	DC 100				○	○	●

Note:
1. "●" Means certificated, "○" Means non-certificated.
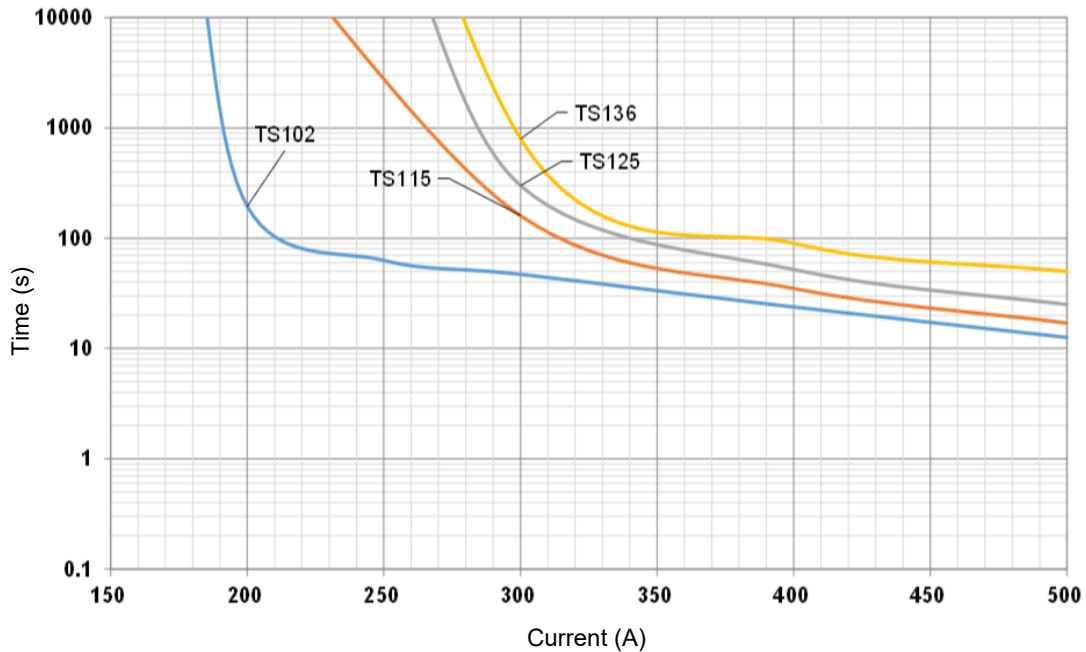2. RoHS & REACH Comply.

Temp.-Time Curve

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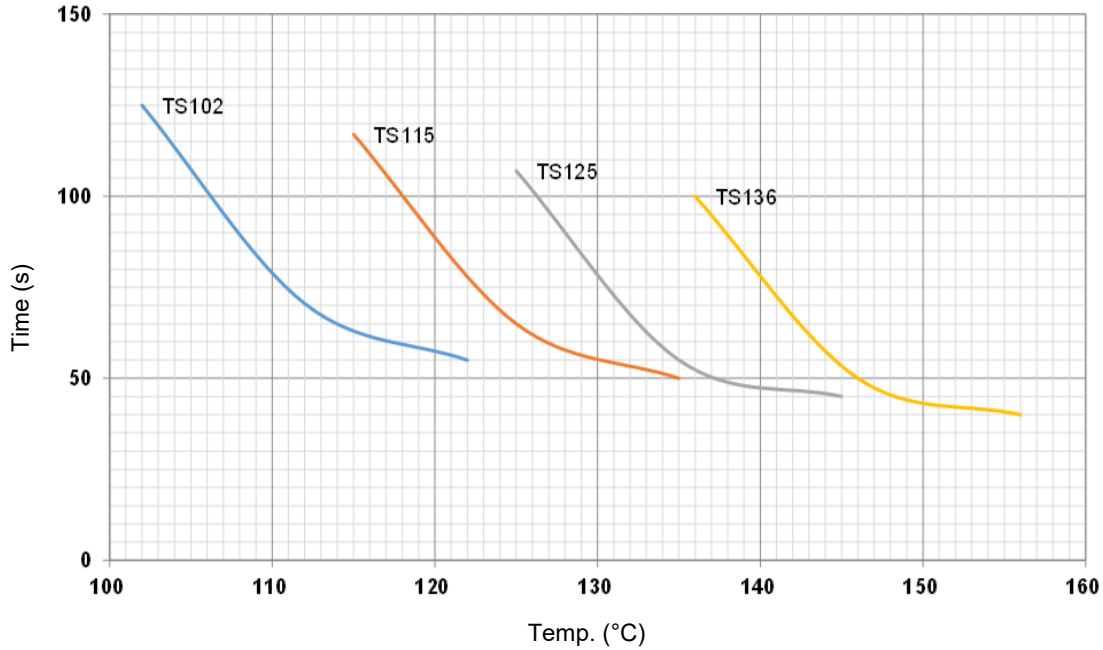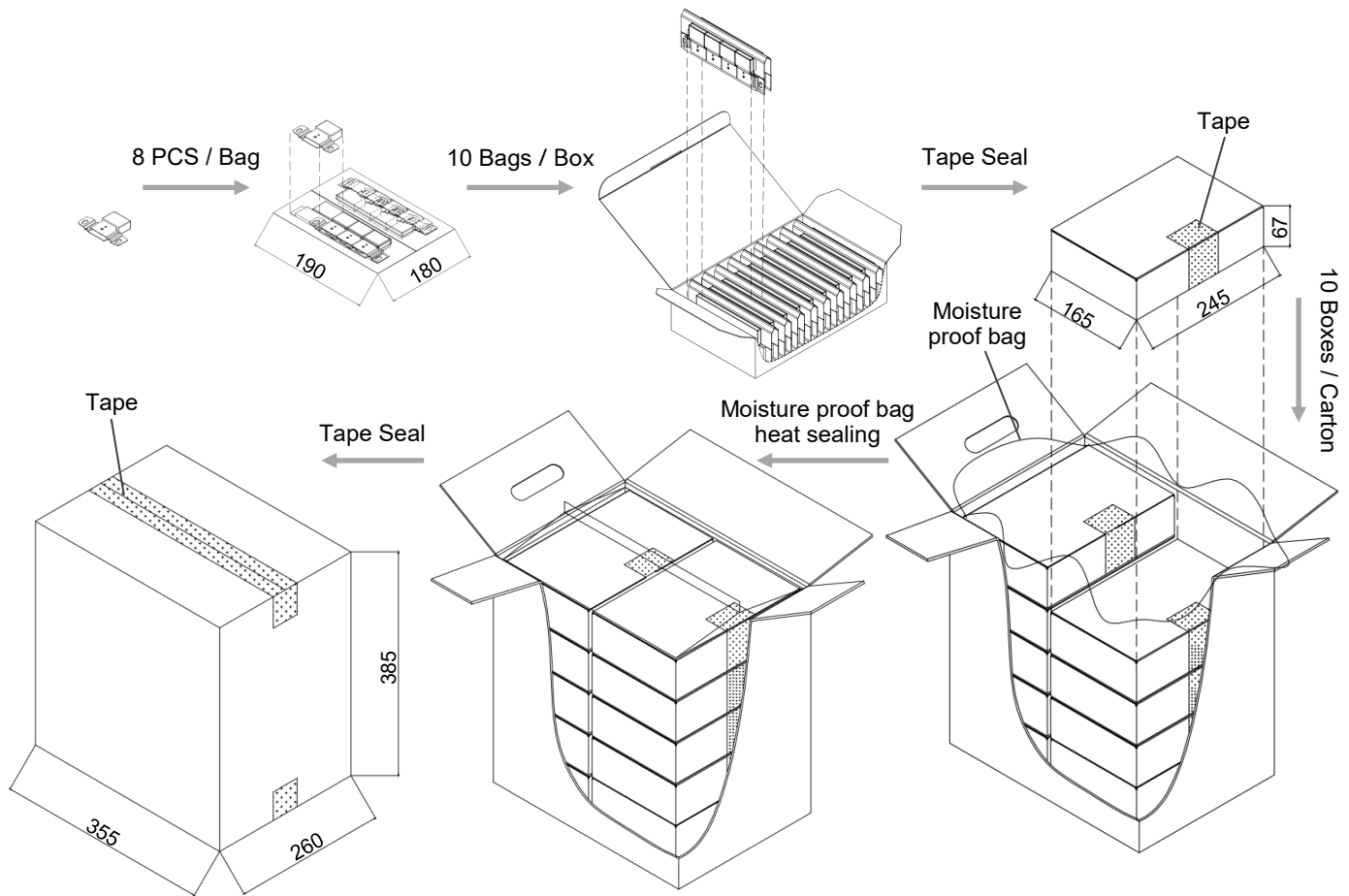

Current-Time Curve

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

Item	PE Bag	Box	Carton
Dimensions (mm)	190 x 180	165 x 245 x 67	355 x 260 x 385
Quantity (PCS)	8	80	800
Gross Weight (kg)			27.5 ± 10%

8 PCS / Bag

190 180

10 Bags / Box

Tape Seal

Tape

67

165 245

10 Boxes / Carton

Moisture proof bag

Moisture proof bag heat sealing

Tape Seal

Tape

385

355 260

Glossary

Item	Description
DC-ATCO	**DC-Alloy Thermal-Link** DC-Alloy type Thermal-Link, Alloy is thermal element.
T_f	**Rated Functioning Temp.** 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.	**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.
T_h	**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_m	**Maximum Temp. Limit** 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_{min}	**Minimum Breaking Current** The minimum current that Fuse requires after the Alloy of Thermal-Link opens in the circuit.
I_r	**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_r	**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 ± 5 °C and ≤ 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
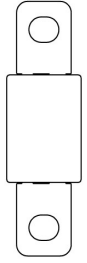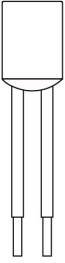
1. Ensure that the lead wire is long enough, and avoid actions such as press, tensile or twist.
2. The seal or body of DC-ATCO must not be damaged, burned or over heated.

Mechanical Connection
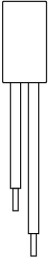
Riveting

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.

Direct Current Thermal-Link Alloy Type (DC-ATCO) Features & Model List Overview

Rated Functioning Temp. (T_f) °C

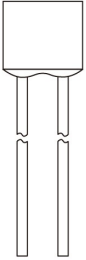| T_f °C									
230	○	○	○	○	○	○	○	○	○
221	○	○	○	○	○	○	○	○	○
205	○	○	○	○	○	○	○	○	○
200	○	○	○	○	○	○	○	○	○
187	TGH187-HVS^	ASL187A-LSF^	RSK187A-KSS^	RVH187-HSF^	ARL187-LRA^	○	○	RQF187-FQS^	○
160	○	○	○	○	○	○	○	○	○
150	TGH150-HVS^	ASL150A-LSF^	RSK150A-KSS^	RVH150-HSF^	ARL150-LRA^	RPK150-HRZ^	TG150C-HQZ^	RQF150-FQS^	TG150C-JPZ^
145	○	○	○	○	○	○	○	○	○
139	○	○	○	○	○	○	○	○	○
136	TGH136-HVS^	ASL136A-LSF^	RSK136A-KSS^	RVH136-HSF^	ARL136-LRA^	RPK136-HRZ^	TG136C-HQZ^	RQF136-FQS^	TG136C-JPZ^
135	○	○	○	○	○	○	○	○	○
133	○	○	○	○	○	○	○	○	○
130	TGH130-HVS^			RVH130-HSF^	○	○	○	RQF130-FQS^	○
125	TGH125-HVS^	ASL125A-LSF^	RSK125A-KSS^	RVH125-HSF^	ARL125-LRA^	RPK125-HRZ^	TG125C-HQZ^	RQF125-FQS^	TG125C-JPZ^
123	○	○	○	○	○	○	○	○	○
120	○	○	○	○	○	○	○	○	○
115	TGH115-HVS^	ASL115A-LSF^	RSK115A-KSS^	RVH115-HSF^	ARL115-LRA^	RPK115-HRZ^	TG115C-HQZ^	RQF115-FQS^	TG115C-JPZ^
105	○	○	○	○	○	○	○	○	○
102	TGH102-HVS^	ASL102A-LSF^	RSK102A-KSS^	RVH102-HSF^	ARL102-LRA^	RPK102-HRZ^	TG102C-HQZ^	RQF102-FQS^	TG102C-JPZ^
97	○	○	○	○	○	○	○	○	○
93	○	○	○	○	○	○	○	○	○
86	○	○	○	○	ARL86-LRA^	○	TG86C-HQZ^	RQF86-FQS^	○
76	○	○	○	○	○	○	○	○	○

I_r (A) Rated Current	15	30	25	15	30	15	15	10	20
U_r (VDC)^ Rated Voltage	850	600			500			450	400
U_r (VAC)* Rated Voltage	○	○			○			○	○

Product Structure

Axial Shape	Radial Shape	Radial Shape		Axial Shape	Radial Shape	Axial Shape	Radial Shape	Axial Shape

Direct Current Thermal-Link Alloy Type (DC-ATCO) Features & Model List Overview

Rated Functioning Temp. (T_r) °C

T_r °C	20A	15A	10A	15A	15A	10A	5A	60A	20A	15/16A	10A	25A
230	○	○	○	○	○	○	○	○	○	○	○	○
221	○	○	○	○	○	○	○	○	○	○	○	○
205	○	○	○	○	○	○	○	○	○	○	○	○
200	○	○	○	○	○	○	○	○	○	○	○	○
187	○	○	○	○	○	○	○	○	○	○	○	○
160	○	○	○	○	○	○	○	○	○	○	○	○
150	TG150C-JSZ*	○	○	○	HN150^*	HP150^*	HS150^*	○	QD150^	PD150^	TD150^	SD150^
145	○	○	○	○	○	○	○	○	○	○	○	○
139	○	○	○	○	○	○	○	○	○	○	○	○
136	TG136C-JSZ*	○	○	○	HN136^*	HP136^*	HS136^*	○	QD136^	PD136^	TD136^	SD136^
135	○	○	○	○	○	○	○	○	○	○	○	○
133	○	○	○	○	○	○	○	○	○	○	○	○
130	○	○	○	○	○	○	○	○	QD130^	PD130^	TD130^	SD130^
125	TG125C-JSZ*	○	○	○	HN125^*	HP125^*	HS125^*	ALP125-PLZ^	QD125^	PD125^	TD125^	SD125^
123	○	○	○	○	○	○	○	○	○	○	○	○
120	○	○	○	○	○	○	○	○	○	○	○	○
115	TG115C-JSZ*	○	○	ALP115-HLZ^	○	○	○	○	QD115^	PD115^	TD115^	SD115^
105	○	○	○	○	○	○	○	○	○	○	○	○
102	TG102C-JSZ*	○	○	○	○	○	○	ALP102-PLZ^	QD102^	PD102^	TD102^	SD102^
97	○	○	○	○	○	○	○	○	○	○	○	○
93	○	○	○	○	○	○	○	○	○	○	○	○
86	○	TG86C-HSZ*	RPF86-FPF^	○	○	○	○	○	○	○	○	○
76	○	○	○	○	○	○	○	○	○	○	○	○
I_r (A) Rated Current	20	15	10	15	15	10	5	60	20	15 16	10	25
U_r (VDC)^ Rated Voltage	○	400		200				180		125		
U_r (VAC)* Rated Voltage	600	○	○	690		500		○		○		

Product Structure

Axial Shape   Radial Shape   Axial Shape   Radial Shape

Direct Current Thermal-Link Alloy Type (DC-ATCO) Features & Model List Overview

Rated Functioning Temp. (T_{r}) °C

T_{r} °C													
230	○	○	○	○	○	○	○	○	○	○	○	○	ADN230B-NEZ
221	○	○	○	○	○	○	○	○	○	○	○	○	○
205	○	○	○	○	○	○	○	○	○	○	○	○	○
200	○	○	○	○	○	○	○	○	○	○	○	○	○
187	○	○	○	○	○	○	○	○	○	○	○	○	○
160	○	○	○	○	○	○	○	○	○	○	○	○	○
150	○	○	○	○	○	○	○	○	○	○	S150^	T150^	○
145	○	○	○	○	○	○	○	○	○	○	○	○	○
139	○	○	○	○	○	○	○	○	○	○	○	○	○
136	Q136^*	Q136*	Q136*	P136^*	P136*	P136*	TB136-UHZ^	TB136-UJZ*	TS136-RHZ^	TS136-RJZ*	S136^	T136^	○
135	○	○	○	○	○	○	○	○	○	○	○	○	○
133	○	○	○	○	○	○	○	○	○	○	○	○	○
130	○	○	○	○	○	○	TB130-UHZ^	TB130-UJZ*	○	○	○	○	○
125	Q125^*	○	○	P125^*	○	○	TB125-UHZ^	TB125-UJZ*	TS125-RHZ^	TS125-RJZ*	○	○	○
123	○	○	○	○	○	○	○	○	○	○	○	○	○
120	○	○	○	○	○	○	○	○	○	○	○	○	○
115	Q115^*	Q115*	Q115*	P115^*	P115*	P115*	TB115-UHZ^	TB115-UJZ*	TS115-RHZ^	TS115-RJZ*	S115^	T115^	○
105	○	○	○	○	○	○	○	○	○	○	○	○	○
102	Q102^*	○	○	P102^*	P102*	P102*	TB102-UHZ^	TB102-UJZ*	TS102-RHZ^	TS102-RJZ*	S102^	T102^	○
97	○	○	○	○	○	○	○	○	○	○	○	○	○
93	○	○	○	○	○	○	○	○	○	○	○	○	○
86	○	○	○	○	○	○	○	○	○	○	○	○	○
76	○	○	○	○	○	○	○	○	○	○	○	○	○

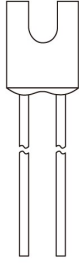| I_{r} (A) Rated Current	25		20			200		100		10	15 / 16	50
U_{r} (VDC)^ Rated Voltage	120					100	○	100		100		60
U_{r} (VAC)* Rated Voltage	400	300	250	400	300	250	○	125	○	125	○	○

Product Structure

Radial Shape

Axial Shape

Direct Current Thermal-Link Alloy Type (DC-ATCO) Features & Model List Overview

Rated Functioning Temp. (T_r) °C — Model

T_r (°C)	15	10	9	8.5	8	6	5	4	3	2.5	2	1	4	3	2	1
230																
221	R31^*	U31^*				C31^*				B31^*	H31^*	V31^*	V31*	X31*	K31*	
205	R32^*	U32^*				C32^*				B32^*	H32^*	V32^*	V32*	X32*	K32*	
200																
187														X17^*	K17^*	
160	R16^*	U16^*				C16^*					H16^*	V16^*		X16^*	K16^*	F16*
150	R7^*	U7^*												X7*	K7*	F7*
145	R6^*	U6^*	C6^				X6^					K6^	F6^	X6^	K6^	F6^
139		CR13^		M13^	C13^		SF13^	V13^					F13^			F13*
136								X9^				K9^		X9^	K9^	
135	R5^*	U5^*												X5*	K5*	
133								V8^	SF8^				F8^	X8^	K8^	F8*
130	R4^*	U4^*						V4^	SF4^				F4^	X4*	K4*	F4*
125	R3^*	U3^*									H3^*			X3^*	K3^*	F3*
123																
120																
115	R2^*	U2^*			C2^			V2^	SF2^				F2^	X2^*	K2^*	F2*
105																
102	R1^*	U1^*											F1^	X1^*	K1^*	F1*
97																
93																
86	R18^*	U18^*				C18^						V18^	F18^	X18^*	K18^*	F18*
76	R0^*	U0^*												X0*	K0*	F0*
I_r (A) Rated Current	15	10	9	8.5	8	6	5	4	3	2.5	2	1	4	3	2	1
U_r (VDC)^ Rated Voltage	60															
U_r (VAC)* Rated Voltage	250	250					250		250		250	125		250		

Product Structure

Axial Shape

Radial Shape

SETsafe | SETfuse
TS Series

Direct Current Thermal-Link Alloy Type (DC-ATCO) Features & Model List Overview

Rated Functioning Temp. (T_f) °C — vertical axis · **Model** — horizontal axis

T_f (°C)	XG	KG	C	C	C	B	B	H	H	V	V	ADN (50A/49V)	ADN (55A/48V)	ADN (50A/48V)	ADN (80A/24V)
230												ADN230B-NDZ^	ADN230B-PDZ^		ADN230B-QBZ^
221	XG31*	KG31*		C31*		B31*		H31*						ADN205B-NDZ^	
205	XG32*	KG32*		C33*		B32*		H32*							
200															
187															
160	XG16*	KG16*				B16*									
150	XG7*	KG7*	C7^	C7*		B7^*		H7^*		V7^*					
145	XG6*	KG6*	C6^	C6*		B6^*		H6^*		V6^*					
139			C13^	C13*		B13^*		H13^*		V13^*					
136	XG9*	KG9*	C9^	C9*		B9^*		H9^*		V9^*					
135	XG5*	KG5*	C5^	C5*		B5^*		H5^*		V5^*					
133	XG8*	KG8*	C8^	C8*		B8^*		H8^*		V8^*					
130	XG4*	KG4*	C4^	C4*		B4^*		H4^*		V4^*					
125	XG3^*	KG3^*	C3^	C3*		B3^*				V3^*					
123															
120															
115	XG2^*	KG2^*	C2^	C2*		B2^*		H2^*		V2^*					
105															
102	XG1^*	KG1^*		C1^*	C1*	B1^*	B1*	H1^*	H1*	V1^*	V1*				
97				C21^*		B21^*		H21^*		V21^*					
93															
86	XG18^*	KG18^*		C18^*	C18*	B18^*	B18*	H18^*	H18*	V18^*	V18*				
76	XG0*	KG0*		C0*		B0^*	B0*	H0^*	H0*	V0^*	V0*				
I_r (A) Rated Current	3	2	7	5		3		2		1		50	55	50	80
U_r (VDC)^ Rated Voltage	60	60	50	50	50	50	50	50	50	50	50	49	48	48	24
U_r (VAC)* Rated Voltage	250		250	125		250	125	250	125	250	125				

Product Structure

Radial Shape (XG, KG) · Axial Shape (C / B / H / V) · Block type (ADN series)

SETsafe | SETfuse — TS Series