

SK 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.

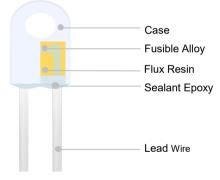
SETsafe | SETfuse Thermal-Link (ATCO)-Alloy Type SK series Rated Functioning Temp. from 102 °C to 221 °C, Rated Current: 10A, safety certification Includes UL, cUL, TUV, PSE, CCC, and complies with RoHS and REACH.

Features

- Make a Mounting Hole
- Lead Wires Insulated
- Non-Resettable
- 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.

Dimensions (mm)

Dimensie	,,	M -					
L	L ₁	L ₂	L ₃	W	т	D	d
17.0 ± 1.0	12.5 ± 1.0	78.0 ± 3.0	5.0 ± 1.0	11.0 ± 1.0	6.0 ± 0.5	5.5 ± 1.0	UL1332 18AWG

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Specifications

S		Model	Fusing Temp.	T _h	T _m	l _r	U _r	AI ®	c AV ®		م م ا		RoHS REACH
(1 _f)			(°C)	(°C)	(°C)	(A)	(V)	UL	cUL	τυν	PSE	ccc	
	221	SK221	218 ± 2	186 182ª	250	10	AC 250	•	•	•	0	•	•
Temp.	205	SK205	199 ± 3	167 163ª	250	10	AC 250	•	•	•	0	•	•
	160	SK160	155 ± 2	130 126ª	200	10	AC 250	0	0	•	•	•	•
jinç	150	SK150	145 ± 2	120 116ª	200	10	AC 250	0	0	•	•	•	•
tior	145	SK145	140 ± 2	115 111ª	200	10	AC 250	0	0	•	•	•	•
Functioning	135	SK135	130 ± 2	105 101ª	200	10	AC 250	0	0	•	•	•	•
	130	SK130	125 ± 2	100 96ª	200	10	AC 250	0	0	•	•	•	•
Rated	125	SK125	121 ± 2	95 91ª	200	10	AC 250	0	0	•	•	•	•
Ř	115	SK115	111 ± 2	85 81ª	200	10	AC 250	0	0	•	•	•	•
-	102	SK102	98 ± 2	72 64ª	200	10	AC 250	0	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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Agency Information

Agency Symbol	Standards	The File No. and certification No. obtained by SETsafe SETfuse
R [®]	UL 60691	E214712
c PL®	CAN-CSA-E60691	E214712
A	EN 60691	R50264747
	GB 9816.1	2020980205000182

Soldering

Hand-Soldering

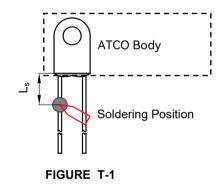
- 1. Soldering should be carried out according to Table T-1.
- 2. The thermal element of ATCO is fusible alloy with low melting point, which is jointed with ATCO lead wires. Improper soldering operation (too high soldering temp., too long soldering time, too short lead wire etc.) may transfer more heat 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. Allow	able Sol	dering Tir	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)
102 to 115	10	1 ^a	4	20	2	5	30	3	6	
116 to 135	10	1 ^a	4	20	3	6	30	5	8	400
136 to 150	10	3	6	20	5	8	30	5	8	400
151 to 230	10	4	7	20	6	9	30	7	10	1

Note:

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



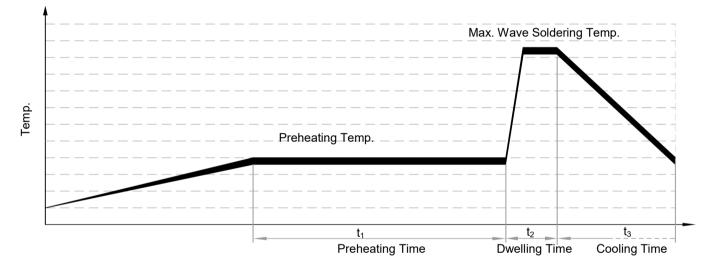
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Wave Soldering

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.	Who			ng Temp. re is Different	Preheating Time (t ₁)	Max. Wave Soldering	Dwelling Time (t ₂)	Cooling Time (t ₃)
(<i>T</i> _f)	L₅ Length	Preheating Temp.	L _s Length	Preheating Temp.		Temp.		
(°C)	(mm)	(°C)	(mm)	(°C)	(s)	(°C)	(s)	(s)
102 to 130				Recommend	Hand-Soldering	I		
131 to 150	20	80	30	90	< 60	≤ 260	≤ 3	≤ 10
151 to 230	20	90	30	100	< 60	≤ 260	≤ 3	≤ 10

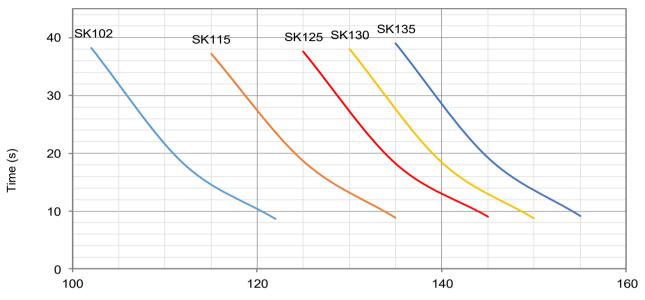


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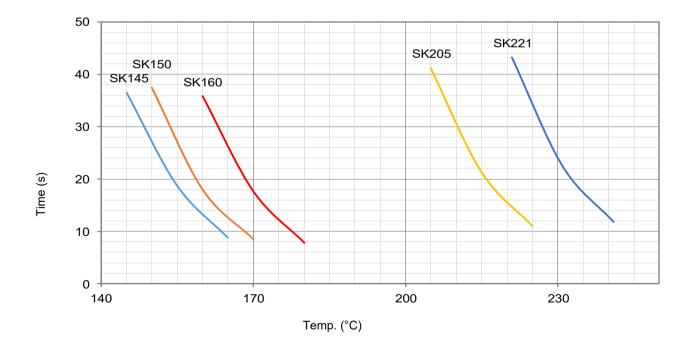
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Product Temp.-Time Curve (Reference)

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



Temp. (°C)



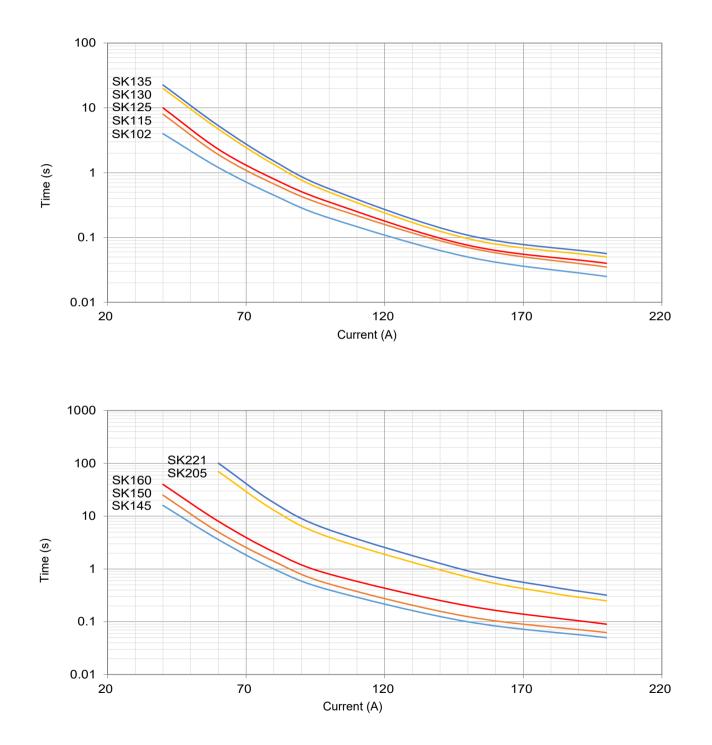
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Thermal-Link (ATCO)-Alloy Type

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

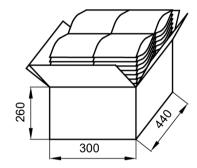
Bulk

Item	PE Bag	Carton
Dimensions (mm)	190 × 180	440 × 300 × 260
Quantity (PCS)	50	3000
Gross Weight (kg)		18.0 ± 10%

50 PCS

S 180

60 Bags





SK Series

Part Numbering System ATCO - SK115 - 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 SK See Specifications **Product Category** ATCO Alloy Thermal-Link

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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)
Tr	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: $T_{\rm f}$ °C (GB 9816.1, EN 60691, K60691). Tolerance: $T_{\rm f} \pm 7$ °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)
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 _r	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)
In	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.
I _{max}	 — (UL 1449) 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.

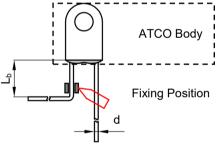




TABLE T-3 Distance between Body and Bending Point

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

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										М	od	el										1			
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		
	XG31 S	XG32 S			XG16 S				XG9		XG8	XG4 S	XG3 S			XG2 S		XG1 S			XG18	XG0	е		
	KG31 >	KG32 >			KG16 >				KG9	KG5		KG4	KG3			KG2		KG1			KG18 >	KGO	2		
	0				0	G150			G136			G130	G125			G115		G102			0	0	40		
						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		
				Υ17	Υ16	77	Υ6		Υ9		Υ8	Υ4	۲3			Y2		۲			Υ18	۲o	5		
	X31	X32		X17	X16	X7	X6		6X	X5	X8	Х4	X3			X2		X1			X18	оx	ю		-
	K31	K32		K17	K16	K7	K6		K9	K5	K8	K4	ξ			Ϋ́		K K			K18	КO	2		
					F16	F7	F6				F8	F4	F3			F2		Ę			F18	РO	Ļ		,
						RQ150						RQ130	RQ125			RQ115						0	20		
	R31	R32			R16	R7	R6			R5		R4	R3			R2		Ł			R18	RO	15		П П
	U31	U32			U16	U7	00			U5		U4	U3			U2		IJ			U18	ŋ	10		\square
	C31	C32			C16	C7	C6	C13	റ	C5	C8	C4	ប្ល			C2		ü	C21		C18	C	5		
	B31	B32			B16	B7	BG	B13	B9	B5	B8	B4	B3			B2		B1	B21		B18	BO	ю		Ţ
	H31	H32			H16	H7	9H	H13	6Н	H5	H8	H4	Н3			H2		H	H21		H18	РН	2		Ĩ
0	V31	V32	0	0	V16	77	V6	V13	67	٧5	87	V4	<3	0	0	٧2	0	2	V21	0	V18	N0	-		
230	221	205	200	187	160	150	145	139	136	135	133	130	125	123	120	115	105	102	97	95	86	76	A) urrent	/AC) oltage	Product Structure
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Thermal-Link (ATCO)-Alloy Type Feature & Model List Overview

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											M	00	lel										1	1		
0	0	0	0)	0	0	HW7	HW6	С	0	HW5	0	HW4	HW3	0	0	HW2	0	HW1	0	0	HW18	OWH	15	0	
0	0	0)	0	0	HI 7	HIG	c	0	HL5	0	HL4	HL3	0	0	HL2	0	HL1	0	0	HL18	HLO	10	800	
0	0	0	0	>	0	0	С	HN145	С	HN136	0	0	0	HN125	0	0	0	0	0	0	0	0	0	15	0	
0	0	0)	0	0	HC7					0		HC3	0	0	HC2	0	HC1	0	0	HC18	HCO	5	690	
0		0	0	>	0	0	С	HP145	C	HP136	0	0	0	HP125	0	0	0	0	0	0	0	0	0	10		
0	0	0)	0	0	С	HS145	С	99		0	0	HS125	0	0	0	0	0	0	0	0	0	5	0	
0	0	0)	0	0	HR7	HR6	С	0	HR5	0	HR4	HR3	0	0	HR2	0	HR1	0	0	HR18	HRO	15	500	
0	0	0)	0	0	HI17	HUG	C	0	HU5	0	HU4	HU3	0	0	HU2	0	HU1	0	0	HU18	θŊΗ	10		
0	0	0	0)	0	0	С	0	C	0136	0	0	0	Q125	0	0	Q115	0	Q102		0	0	0	25	0	
0	0	0)	0	0	С	0	C	P136	0	0	0	P125	0	0	P115	0	P102		0	0	0	20	400	
0	0	0	0)	0	0	XM7	0	C	0	XM5	0	XM4	XM3	0	0	0	0	0	0	0	0	0	ю	0	
0	0	0)	0	0	KM7	0	C	0	KM5	0	KM4	KM3	0	0	0	0	0	0	0	0	0	2	320	
0		0	0)	0	0	С	0	c	0136	0	0	0	0	0	0	Q115	0	0	0	0	0	0	25		
0	0	0	0)	0	0	TM150		C	TM136	0	0	0	0	0	0	TM115	0	TM102	0	0	0	0	15 16		
0	0	0)	0	0	SM150	0	C	SM136	0	0	0	0	0	0	SM115	0	SM102	0	0	0	0	10		
0	0	0)	0	0	7M7	0	C	YM9	0	0	YM4	0	0	0	0	0	0		0	0	0	5	300	
0	0	0)	0		77	0	C	67	0	0	Υ4	0	0	0	0	0	0	0	0	0	0	5		
0	0	0	0)	0	0	XM7	0	C	0	XM5	0	XM4	0	0	0	0	0	0	0	0	0	0	ю		
0		0	0)	0	0	KM7			0	KM5	0	_	0	0	0	0	0	_		0	0	0	2		
0	0	0	0)	0	0	C	F		0	0	0	TY130	TY125	0	TY120	TY115		0	0	TY95	0	0	15	250	
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230	221	205	200	2	187	160	150	145	130	136	135	133	130	125	123	120	115	105	102	97	95	86	76() Trent	(C) tage	ure
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Thermal-Link (ATCO)-Alloy Type Feature & Model List Overview

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0	o U31 R31	0 U32 R32	0	0 0	0 U16 R16	0 U7 R7	C6 U6 R6	0	0	0 U5 R5 0	0	0 U4 R4 0	ୁ ମ3 ଅ	0	0	。 U2 R2	0	0 01 R1	0	0	018 R18 0	0 NO RO	10 10 15 15		
0	0	0	0	0	0	0	0	C13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8 8.5 9		
																					C18	_	9		
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	H31																				0	_	2		
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0	0	0	0	0	0	C7	C6	C13	60	C5	80 C8	C4	ü	0	0	C2	0	0	0	0	0	0	7		
0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	5	C21	0	C18	Ö	5		
0	0	0	0	0	0	B7	BG	B13	B9	B5	B8	B4	B3	0	0	B2	0	B1	B21	0	B18	BO	ς	50	
0	0	0	0	0	0	H7	9H	H13	бH	H5	H8	H4		0	0	H2	0	Ħ	H21	0	H18	РH	2		
0	0	0	0	0	0	77	V6	V13	٨9	V5	V8	V4	V3	0	0	۲2 ۲2	0	۲۶	V21	0	V18	٥ ۱	-		
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 (VDC) Rated Voltage	Product Structure

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											М	od	el										/	N		
C)	0	0	0	0	C	HN150	0	0	HN136	0	0	0	HN125	0	0	0	0	0	0	0	0	0	15		ectrode)
C							HP150			HP136				HP125									0	10	200	
C							HS150			HS136				HS125									0	5		Axial Shape (Flat Electrode)
							QD150			QD136			QD130	QD125			QD115		QD102				0	25		
							PD150			PD136			PD130	PD125			PD115		PD102				0	20	5	
							TD150			TD136			TD130	TD125			TD115		TD102				0	15 16	125	
							SD150			SD136			SD130	SD125			SD115		SD102				0	10		
							GA150			GA136			GA130	GA125			GA115		GA102			GA86	GA76	50		
										Q136				Q125			Q115		Q102				0	25	120	e
										P136				P125			P115		P102				0	20		Radial Shape
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														КЗ			Ş		К Ч			K18	0	2		
														XG3			XG2		XG1			XG18	0	3		Radial Shape (Screw Hole)
C)	0	0	0	0	C	0	0	0	0	0	0	0	KG3	0	0	KG2	0	KG1	0	0	KG18	0	2		
230	2024	221	205	200					139 139	136 136	0 ₁₃₅	ini 133	130 130	cti 125	123 173	щ 120	115 6q	105 2 8 t	H 102	97	95	86	76	Ir (A) Rated Current	Ur (VDC) Rated Voltage	Product Structure