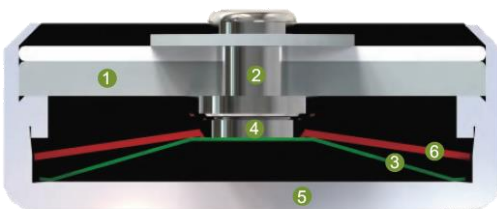


ST01 Series Thermal Protectors



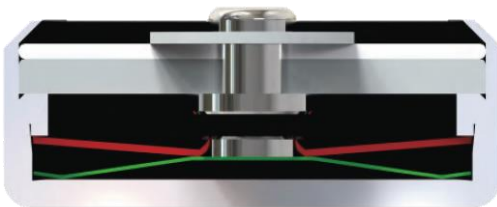
Main parts

- | | |
|------------------------------|-----------------------|
| 1) Ceramic cover plate | 4) movable contact |
| 2) stationary silver contact | 5) Conductive housing |
| 3) spring disc | 6) bimetal disc |



Construction

Stationary silver contact are riveted with ceramic cover plate. The movable contact are welded to the spring disc, which is in the shape of a cross, and the four feet are connected to the bottom of the housing. The inner hole of the bimetal disc is placed on the spring disc through the movable contact. The current pass through the stationary silver contact to the movable contact, and then connects the conductive housing through spring discs to form a loop.



Function

When the circuit is normal, the movable contact is in close contact with the stationary silver contact under the pre-pressure of the spring disc. When the rated operating temperature is reached, the bimetal disc is deformed by heat, snaps into its inverted position and pushes the spring disc downwards. The contact is abruptly opened and the temperature rise of the device to be protected is disrupted. After the circuit is disconnected, the ambient temperature begins to fall. When it reaches the defined reset temperature, the bimetal disc and the spring disc snaps back into its start position, the movable contact and the stationary silver contact will close again, and the circuit returns to the conduction state.

ST01-U1

NC or NO | reset automatically | with connector cables | insulation: Mylar-Nomex



Nominal switching temp. (NST) in 5K	60°C...200°C
Tolerance (standard)	±5K
Reset temp. tolerance	≥35°C (≤ 80°C NST) -35K±15K (≥ 85°C ≤ 180°C NST) -65K±15K (≥ 185°C ≤ 200°C NST)
Thickness	4.9mm
Diameter	9.5mm
Length of the insulation cap	15.0mm
Resistance to impregnation	Suitable
Suitable for installation in protection class	I + II
Pressure resistance to the switch housing	300N
Standard connection	0.33 mm ² / AWG22
Insulation voltage	2.0kV
Recognized standards	UL/TUV/CQC/CB

Operating voltage range AC/DC	up until 500 V AC / 14 V DC
Rated voltage AC	250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0 /cycles	2.5 A / 10,000
Max. current AC cos φ = 1.0 /cycles	6.3 A / 3,000
	7.5 A / 300
Rated current AC cos φ = 0.6 /cycles	1.6 A / 10,000
Rated voltage DC	12.0 V
Max. switching current DC /cycles	40.0 A / 5,000
Total bounce time	< 1 ms
Contact resistance	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m/s ²

ST01-U2

NC or NO | reset automatically | with connector cables | without isolation cap



Nominal switching temp. (NST) in 5K	60°C...250°C
Tolerance (standard)	(60-200°C) ±5K (205-250°C) ±10K
Reset temp. tolerance	≥35°C (≤ 80°C NST) -35K±15K (≥ 85°C ≤ 180°C NST) -65K±15K (≥ 185°C ≤ 200°C NST) 120°C±15K (>200°C NST)
Thickness	4.5mm
Diameter	8.6mm
Resistance to impregnation	Suitable
Suitable for installation in protection class	I
Pressure resistance to the switch housing	200N
Standard connection	0.33 mm ² / AWG22
Insulation voltage	The housing is not isolated
Recognized standards	UL/TUV/CQC/CB

Operating voltage range AC/DC	up until 500 V AC / 14 V DC
(60 ... 200°C) Operating temperature products	
Rated voltage AC	250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0 /cycles	2.5 A / 10,000
Max. current AC cos φ = 1.0 /cycles	6.3 A / 3,000
	7.5 A / 300
Rated current AC cos φ = 0.6 /cycles	1.6 A / 10,000
Rated voltage DC	12.0 V
Max. switching current DC /cycles	40.0 A / 5,000
(205 ... 250°C) Operating temperature products	
Rated current AC cos φ = 1.0 /cycles	2.5 A / 1,000
Rated current AC cos φ = 0.6 /cycles	1.6 A / 1,000
Total bounce time	< 1 ms
Contact resistance	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m/s ²

ST01-U3

NC or NO | reset automatically | without cables | without isolation cap



Nominal switching temp. (NST) in 5K	60°C...250°C
Tolerance (standard)	(60-200°C) ±5K (205-250°C) ±10K
Reset temp. tolerance	≥35°C (≤ 80°C NST) -35K±15K (≥ 85°C ≤ 180°C NST) -65K±15K (≥ 185°C ≤ 200°C NST) 120°C±15K (>200°C NST)
Thickness	3.4mm
Diameter	8.6mm
Resistance to impregnation	Suitable
Suitable for installation in protection class	I
Pressure resistance to the switch housing	200N
Standard connection	Without cables
Insulation voltage	The housing is not isolated
Recognized standards	UL/TUV/CQC/CB

Operating voltage range AC/DC	up until 500 V AC / 14 V DC
(60 ... 200°C) Operating temperature products	
Rated voltage AC	250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0 /cycles	2.5 A / 10,000
Max. current AC cos φ = 1.0 /cycles	6.3 A / 3,000
	7.5 A / 300
Rated current AC cos φ = 0.6 /cycles	1.6 A / 10,000
Rated voltage DC	12.0 V
Max. switching current DC /cycles	40.0 A / 5,000
(205 ... 250°C) Operating temperature products	
Rated current AC cos φ = 1.0 /cycles	2.5 A / 1,000
Rated current AC cos φ = 0.6 /cycles	1.6 A / 1,000
Total bounce time	< 1 ms
Contact resistance	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m/s ²

ST01-U4

NC or NO | reset automatically | with connector cables | insulation: epoxy resin



Nominal switching temp. (NST) in 5K	60°C...150°C
Tolerance (standard)	±5K
Reset temp.	≥35°C (≤ 80°C NST)
tolerance	-35K±15K (≥ 85°C ≤ 150°C NST)
Thickness	5.4mm
Diameter	9.6mm
Length	16.0mm
Resistance to impregnation	Suitable
Suitable for installation in protection class	I + II
Pressure resistance to the switch housing	300N
Standard connection	0.33 mm ² / AWG22
Insulation voltage	1.5kV
Recognized standards	UL/TUV/CQC/CB

Operating voltage range AC/DC	up until 500 V AC / 14 V DC
Rated voltage AC	250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0 /cycles	2.5A / 10,000
Max. current AC cos φ = 1.0 /cycles	6.3 A / 3,000
	7.5 A / 300
Rated current AC cos φ = 0.6 /cycles	1.6A / 10,000
Rated voltage DC	12.0 V
Max. switching current DC /cycles	40.0 A / 5,000
Total bounce time	< 1 ms
Contact resistance	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m/s ²

ST01-U5

NC or NO | reset automatically | with connector cables | insulation: PET cap



Nominal switching temp. (NST) in 5K	60°C...180°C
Tolerance (standard)	±5K
Reset temp.	≥35°C (≤ 80°C NST)
tolerance	-35K±15K (≥ 85°C ≤ 180°C NST)
Thickness	4.9mm
Diameter	9.0mm
Length of isolation cap	16.0mm
Resistance to impregnation	Suitable
Suitable for installation in protection class	I + II
Pressure resistance to the switch housing	300N
Standard connection	0.33 mm ² / AWG22
Insulation voltage	1.5kV
Recognized standards	UL/TUV/CQC/CB

Operating voltage range AC/DC	up until 500 V AC / 14 V DC
Rated voltage AC	250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0 /cycles	2.5A / 10,000
Max. current AC cos φ = 1.0 /cycles	6.3 A / 3,000
	7.5 A / 300
Rated current AC cos φ = 0.6 /cycles	1.6A / 10,000
Rated voltage DC	12.0 V
Max. switching current DC /cycles	40.0 A / 5,000
Total bounce time	< 1 ms
Contact resistance	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m/s ²

ST01-U6

NC or NO | reset automatically | with connector cables | insulation: PBT housing for M4 screw

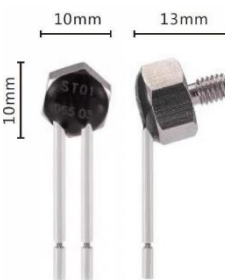


Nominal switching temp. (NST) in 5K	60°C...180°C
Tolerance (standard)	±5K
Reset temp.	≥35°C (≤ 80°C NST)
tolerance	-35K±15K (≥ 85°C ≤ 180°C NST)
Thickness	5.6mm
Diameter	9.8mm
Length	18.3mm
Resistance to impregnation	Suitable
Suitable for installation in protection class	I + II
Pressure resistance to the switch housing	300N
Standard connection	0.33 mm ² / AWG22
Insulation voltage	1.5kV
Recognized standards	UL/TUV/CQC/CB

Operating voltage range AC/DC	up until 500 V AC / 14 V DC
Rated voltage AC	250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0 /cycles	2.5A / 10,000
Max. current AC cos φ = 1.0 /cycles	6.3 A / 3,000
	7.5 A / 300
Rated current AC cos φ = 0.6 /cycles	1.6A / 10,000
Rated voltage DC	12.0 V
Max. switching current DC /cycles	40.0 A / 5,000
Total bounce time	< 1 ms
Contact resistance	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m/s ²

ST01-U7

NC or NO | reset automatically | with connector cables | case material: M4x6mm brass housing

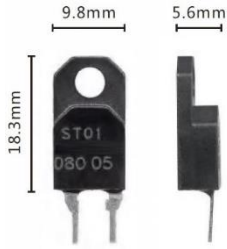


Nominal switching temp. (NST) in 5K	60°C...180°C
Tolerance (standard)	±5K
Reset temp.	≥35°C (≤ 80°C NST)
tolerance	-35K±15K (≥ 85°C ≤ 180°C NST)
Thickness + 6mm Screw	13.0mm
Diameter	10.0mm
Length	10.0mm
Resistance to impregnation	Suitable
Suitable for installation in protection class	I + II
Pressure resistance to the switch housing	300N
Standard connection	0.33 mm ² / AWG22
Insulation voltage	1.5kV
Recognized standards	UL/TUV/CQC/CB

Operating voltage range AC/DC	up until 500 V AC / 14 V DC
Rated voltage AC	250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0 /cycles	2.5A / 10,000
Max. current AC cos φ = 1.0 /cycles	6.3 A / 3,000
	7.5 A / 300
Rated current AC cos φ = 0.6 /cycles	1.6A / 10,000
Rated voltage DC	12.0 V
Max. switching current DC /cycles	40.0 A / 5,000
Total bounce time	< 1 ms
Contact resistance	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m/s ²

ST01-U8

NC or NO | reset automatically | with pin pitch 5.08mm | insulation: PBT housing for M4 screw



Nominal switching temp. (NST) in 5K	60°C...180°C
Tolerance (standard)	±5K
Reset temp.	≥35°C (≤ 80°C NST)
tolerance	-35K±15K (≥ 85°C ≤ 180°C NST)
Thickness	5.6mm
Diameter	9.8mm
Length	18.3mm
Resistance to impregnation	Suitable
Suitable for installation in protection class	I + II
Pressure resistance to the switch housing	300N
Connection	11x0.4x0.76mm; pitch 5.08mm
Insulation voltage	1.5kV
Recognized standards	UL/TUV/CQC/CB

Operating voltage range AC/DC	up until 500 V AC / 14 V DC
Rated voltage AC	250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0 /cycles	2.5A / 10,000
Max. current AC cos φ = 1.0 /cycles	6.3 A / 3,000
	7.5 A / 300
Rated current AC cos φ = 0.6 /cycles	1.6A / 10,000
Rated voltage DC	12.0 V
Max. switching current DC /cycles	40.0 A / 5,000
Total bounce time	< 1 ms
Contact resistance	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m/s ²

ST01-U9

NC or NO | reset automatically | with connector cables | insulation: round PBT housing

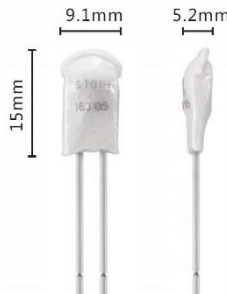


Nominal switching temp. (NST) in 5K	60°C...180°C
Tolerance (standard)	±5K
Reset temp.	≥35°C (≤ 80°C NST)
tolerance	-35K±15K (≥ 85°C ≤ 180°C NST)
Thickness	5.6mm
Diameter	9.2mm
Resistance to impregnation	Suitable
Suitable for installation in protection class	I + II
Pressure resistance to the switch housing	300N
Standard connection	0.33 mm ² / AWG22
Insulation voltage	1.5kV
Recognized standards	UL/TUV/CQC/CB

Operating voltage range AC/DC	up until 500 V AC / 14 V DC
Rated voltage AC	250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0 /cycles	2.5A / 10,000
Max. current AC cos φ = 1.0 /cycles	6.3 A / 3,000
	7.5 A / 300
Rated current AC cos φ = 0.6 /cycles	1.6A / 10,000
Rated voltage DC	12.0 V
Max. switching current DC /cycles	40.0 A / 5,000
Total bounce time	< 1 ms
Contact resistance	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m/s ²

ST01H-U1

NC | PTC self-hold type | with connector cables | insulation: Mylar-Nomex



Nominal switching temp. (NST) in 5K	60°C...180°C
Tolerance (standard)	±5K
Reset temp.	≥35°C
Thickness	5.2mm
Diameter	9.1mm
Length of the insulation cap	15.0mm
Resistance to impregnation	Suitable
Suitable for installation in protection class	I + II
Pressure resistance to the switch housing	300N
Standard connection	0.33 mm ² / AWG22
Insulation voltage	2.0kV
Recognized standards	UL/TUV/CQC/CB

Operating voltage range AC/DC	100V ... 250 V
Rated voltage AC	250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0 /cycles	2.5A / 1,000
Max. current AC cos φ = 1.0 /cycles	6.3 A / 1,000
Rated current AC cos φ = 0.6 /cycles	1.6A / 1,000
Total bounce time	< 1 ms
Contact resistance	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m/s ²

ST01HT

NC | reset automatically | with connector cables | insulation: Teflon shrink cap

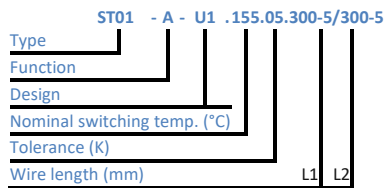
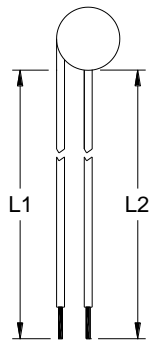


Nominal switching temp. (NST) in 5K	205...250°C
Tolerance (standard)	±10K
Reset temp.	120°C ± 15K
Thickness	4.9mm
Diameter	9.1mm
Length of the insulation cap	20.0mm
Resistance to impregnation	Suitable
Suitable for installation in protection class	I + II
Pressure resistance to the switch housing	300N
Standard connection	0.33 mm ² / AWG22
Insulation voltage	2.0kV
Recognized standards	UL/TUV/CQC/CB

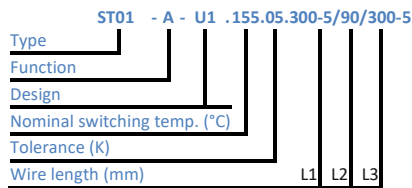
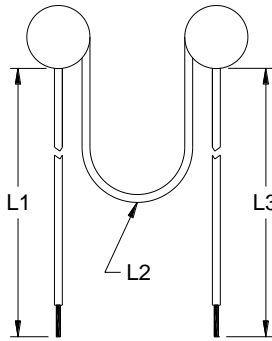
Operating voltage range AC/DC	up until 500 V AC / 14 V DC
Rated voltage AC	250 V (VDE) 277 V (UL)
Rated current AC cos φ = 1.0 /cycles	2.5A / 1,000
Rated current AC cos φ = 0.6 /cycles	1.6A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC /cycles	2.5 A / 6,000
Total bounce time	< 1 ms
Contact resistance	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m/s ²

Order Code System

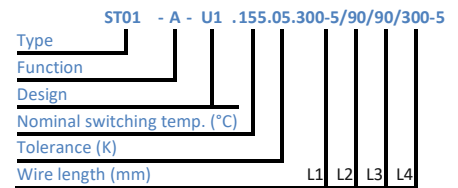
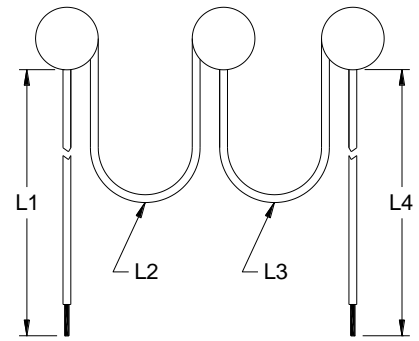
ST01 Single



ST01 Twin



ST01 Triple



Standard connection wires

Isolation material	Max. Temp.	Max. operating voltage	Size	UL-Style
XLPE	150°C	300V	AWG 22	3398
			AWG 24	
PFA	250°C	600V	AWG 22	10362
			AWG 24	

Other wires are available on request.

Available switching & reset temperatures

Switching °C	Reset °C	Switching °C	Reset °C	Switching °C	Reset °C	Switching °C	Reset °C
60 ± 5K	≥35	110 ± 5K	80 ± 15K	160 ± 5K	130 ± 15K	210 ± 10K	120 ± 15K
65 ± 5K	≥36	115 ± 5K	85 ± 15K	165 ± 5K	135 ± 15K	215 ± 10K	120 ± 15K
70 ± 5K	≥36	120 ± 5K	90 ± 15K	170 ± 5K	140 ± 15K	220 ± 10K	120 ± 15K
75 ± 5K	≥38	125 ± 5K	95 ± 15K	175 ± 5K	145 ± 15K	225 ± 10K	120 ± 15K
80 ± 5K	53±15K	130 ± 5K	100 ± 15K	180 ± 5K	150 ± 15K	230 ± 10K	120 ± 15K
85 ± 5K	57±15K	135 ± 5K	105 ± 15K	185 ± 5K	125 ± 15K	235 ± 10K	120 ± 15K
90 ± 5K	60 ± 15K	140 ± 5K	110 ± 15K	190 ± 5K	130 ± 15K	240 ± 10K	120 ± 15K
95 ± 5K	65 ± 15K	145 ± 5K	115 ± 15K	195 ± 5K	135 ± 15K	245 ± 10K	120 ± 15K
100 ± 5K	70 ± 15K	150 ± 5K	120 ± 15K	200 ± 5K	140 ± 15K	250 ± 10K	120 ± 15K
105 ± 5K	75 ± 15K	155 ± 5K	125 ± 15K	205 ± 10K	120 ± 15K		

Electric strength

When the product is in the breaking state, the lead wires should be able to withstand AC500V lasting for 1min without breakdown or flash-over; The part between the lead wires and the case should be able to withstand AC 2000V lasting for 1min without breakdown or flash-over.

Insulation resistance

Under normal conditions, the insulation resistance between leads (terminal) and case should be more than 100MΩ measured by ohmmeter of DC 500V.

Contact resistance

The contact resistance of standard lead wire length 55mm products should be lower than 50mΩ.

Tensile resistance test

Terminal & leads should endure more than 30N axes direction pull lasting for 1 minute without break or looseness.

High temperature test

Keep the thermal protector in an incubator which temp. is 30K higher than its rated switching temperature for sixteen hours, and test it two hours later after taking out from the incubator, while the temperature change does not exceed the initial value of ± 5K or ± 5%, returns the maximum value.

Low temperature resistance test

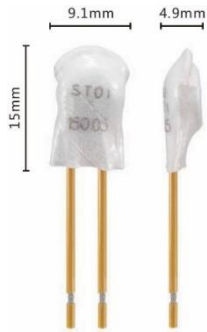
Keep the thermal protector in a -40°C incubator for two hours, and test it two hours later after taking out from the incubator, while the temperature change does not exceed the initial value of ± 5K or ± 5%, returns the maximum value.

Anti-Vibration test

Thermal protector should be able to withstand the amplitude 1.5mm, frequency 10-55Hz, scanning change cycles of 3-5 times/min. The vibration direction X, Y, Z and each direction vibrates on a continuous basis for 2 hours while the temperature change does not exceed the initial value of ±5K or ±5%, returns the maximum value.

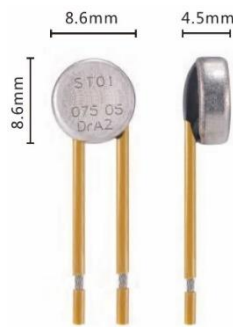
Designs & Dimensions

ST01 U1



60°C ... 200°C

ST01 U2



60°C ... 250°C

ST01 U3



60°C ... 250°C

ST01 U4



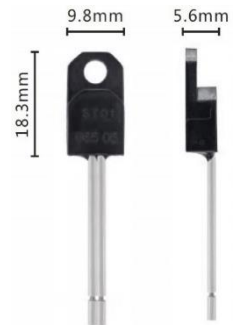
60°C ... 150°C

ST01 U5



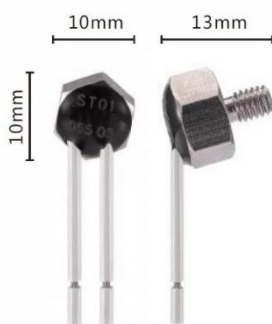
60°C ... 180°C

ST01 U6



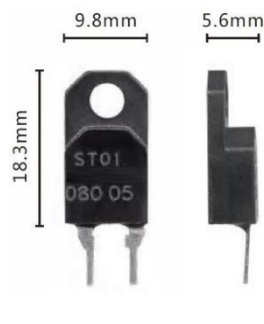
60°C ... 180°C

ST01 U7



60°C ... 180°C

ST01 U8



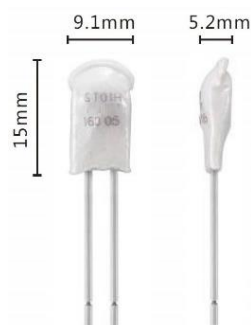
60°C ... 180°C

ST01 U9



60°C ... 180°C

ST01H



60°C ... 180°C

ST01HT



205°C ... 250°C

ST01 Triple



60°C ... 250°C

Errors and omissions excepted