ELCUT NC Series
Thermal Links

- Radial Design
- Non-resettable thermal link
- Fusible alloy type
- RoHS and REACH compliant
- Simple construction ensures reliability
- Superior thermal sensitivity

Specifications

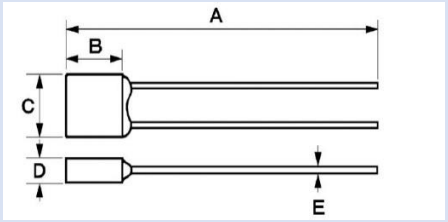
Part No.	Rated functioning Temperature Tf (°C)	Functioning Temperature (°C)	Holding Temperature Th (°C)	Maximum use Temperature (°C)	Maximum Temperature limit Tm (°C)	Ampere (A)	Voltage (V)
NC2	115	111±3	92	77	200	2	AC250
			74	58		3.5	AC125
			66	49		4	DC50
NCX	133	129±3	110	95	200	2	AC250
			91	77		3.5	AC125
			83	68		4	DC50

Safety Standards

Part No.	Safety Standard Approval					
	PSE	UL	C-UL	VDE	CCC	KC
NC2	JET5267-32001-1004 (AC250V)	E50082	E50082	40020225	2009010205323137 (AC250V)	SU05029-9007 (AC250V)
NCX	JET5267-32001-1005 (AC250V)	E50082	E50082	40020225	2009010205323137 (AC250V)	SU05029-9005 (AC250V)

Dimensions (mm)

Lead length



	A	B	C	D	E
Regular	47±3	11.0±0.5	6.7±0.5	2.5±0.3	3.2±0.3

*For proper operation, manufacture's installation cautions must be followed

Installation Cautions (Elcut Brand From Uchihashi Estec)

*Cautions excerpted from Uchihashi Estec Co., Ltd. For questions and complete cautions, please contact Uchihashi Estec Co., Ltd

Thermal Cutoff Use

The following describes the cautions for using thermal cutoffs. If these cautions are not strictly observed, thermal cutoffs may function at temperatures lower than functioning temperatures shown in the catalog, or they may not function at all even if they exceed the functioning temperatures indicated in the catalog. Problems resulting from improper use of thermal cutoffs are the responsibility of users, and not of Uchihashi Estec or its distributors.

1. The electrical rating and rated functioning temperatures of thermal cutoffs are prescribed. Use thermal cutoffs within the rating ranges.

2. Install thermal cutoffs so that their temperatures do not continuously exceed the Maximum / Normal use temperature indicated in the ratings table for each product series (see Manufacturers Catalog).

3. Do not use thermal cutoffs in special conditions, where the use of ordinary electrical equipment such as consumer electronics and electronic office equipment is not appropriate. For example, the use in liquids, in organic solvent, in environments of corrosive gases (many sulfurous acid gas and nitrogen oxide gas), in high or low pressure, in high humidity, or in flammable environments shall be prohibited. Under such conditions, thermal cutoffs may function at temperatures lower than the functioning temperatures or they may not function even if they exceed the functioning temperatures because of hermetically damaged epoxy resin caused by its deterioration.

4. Thermal cutoffs are developed under the assumption that will used in ordinary electrical equipment such as consumer electronics and electronic office equipment. Do not use them in aeronautical equipment, life-support equipment and other machinery for medical purposes, equipment used for engine control in transportation machinery, or in nuclear power equipment.

5. To have thermal cutoffs function as they should, users must select the thermal cutoffs suited to each piece of equipment, and properly choose the positions and methods for installation. Users themselves should decide which type to install in each kind of equipment, and should avail themselves of not only information offered by Uchihashi Estec, but also, their own tests, to confirm that their selections are the best. Such test should involve the preparation of an adequate number of final products for testing, as well as repeated testing under both normal usage conditions and abnormal conditions.

6. Care must be taken, when designing, for the fact that self-temperature rise by energizing will cause thermal cutoffs to function under less ambient temperature.

7. Long-term exposure under high-temperature environment may cause thermal cutoffs to fuse off improperly due to thermal deterioration. Therefore, using thermal cutoffs at as low temperature as possible will be recommended. Maximum / Normal Use temperature is the temperature at which we make sure improper function after specified time does not occur. Maximum / Normal Use temperatures are indicated in the manufacturer's catalogs and specifications.

Thermal Cutoff Installation Cautions

1. Do not twist the body or lead wires (do not turn or rotate lead wires respect to the body).

表1 Table 1

シリーズ名 Series name	最大張力 Maximum tension	最大押力 Maximum pressure
32、44、U2、S	4.4N	1.1N
12	5.7N	1.4N
X	7.7N	1.9N
22	15.7N	3.9N

2. Do not push lead wired toward or pull them away from the thermal cutoff body at axial stresses exceeding those shown in Table 1 (room-temperature reference values). Values in Table 1 were calculated from lead wire diameter according to IEC60691.

3. Tangential forces on the leads must be avoided (i.e. pushing or pulling on the leads at an angle to the thermal cutoff body) as such forces may damage the thermal cutoff's seals.

4. When bending a lead wire for installation, fix the part of the lead between the body and the lead section to be bent using a tool, and gently bend the lead section that is at least 3 mm from the body. Never hold the body with a tool (fig 2)

5. Do not damage lead wires by holding with a sharp instrument, and do not bend at a sharp angle.

6. After a thermal cutoff has been connected, do not apply excessive force that will crush the thermal cutoff body, sealant, or lead wires, and ensure that leads are not subjected to tension, pressing, or twisting forces with respect to the thermal cutoff body.

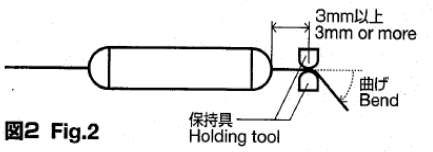


図2 Fig.2

Soldering and Welding Cautions

1. After soldering or welding, leave the thermal cutoff for at least 30 seconds to allow the sealant to cool before conducting any taping, fixing, bending, or redoing any soldering or welding. Any stress applied on the thermal cutoff before cooling may cause a broken wire or loss of air tightness, and this may inhibit the proper functioning of the thermal cutoff. If re-soldering or re-welding is done before a thermal cutoff has cooled, it may fuse off. Cooling time varies depending on the soldering temperature (welding conditions), soldering time, lead wire length, and other factors. To determine cooling time, conduct a test with the thermal cutoff that is to be used.

If, after soldering or welding, the sealant is burned, or thermal cutoff contents have permeated out, replace with a new thermal cutoff even if the resistance value reads normally.

2. Maximum permissible soldering time

a) Using long lead wires allows for a longer soldering time. Using the longest possible leads when soldering or welding.

b) If you must solder or weld with a short lead wire, use a heat sink between the soldering or welding point and the sealant. Users should conduct tests for each application, and individually determine the soldering time that will not adversely affect the thermal cutoffs.

3. Connecting Cautions:
When connecting leads by welding or crimping, measure the electrical resistance of the connection with a low-range ohmmeter, and always ensure that you have a good connection with low resistance. If resistance is high, this could bring about a malfunction due to heating, or cause the thermal cutoff temperature to exceed the stated Maximum / Normal Use temperature. Perform sampling inspections to make sure that connections have sufficient mechanical strength.

Quality Control Cautions
Inspect thermal cutoffs after delivery for any damage during shipment. Before and after installing thermal cutoffs in end products, check their electrical resistance. X-ray inspection will enhance the reliability of quality control.
Storage conditions of ELCUT Thermal Cutoffs must be kept within -10 to +40°Cand Relative humidity 30% to 75%. Storage place must be free from rapid atmospheric changes (in temperature and/or humidity), direct sun, vibration and/or impact.
Please observe the cautions in this application instruction. If a thermal cutoff is not properly used, it may function at a temperature lower than its functioning temperature, or it may not function even if it exceeds its functioning temperature.

Repair and Replacement
1. Thermal cutoffs are not repairable, are small in size and not intended to be replaced.

2. Replacement of thermal cutoffs is not recommended, because, insulation characteristics and other safety characteristics of the equipment may have been affected by the excessive heat. Replacement of functioned thermal cutoff must be made by the customer's risk ensuring following conditions: a) Replace with the same manufacturer's same thermal cutoff having the same type No. b) Install the thermal cutoff in exactly the same way. c) The cause/reason of the thermal cutoff function is cleared completely. d) Insulation characteristics and other safety characteristics of the equipment are not decreased.

Thermal Cutoff (Design Factors)
The following describes instructions and includes explanations of cautions to be observed in designing equipment for the installations of ELCUT thermal cutoffs (thermal links), and in the use of thermal cutoffs to ensure that they function as intended, When designing equipment in which ELCUT thermal cutoffs are to be installed and then using thermal cutoffs, we ask that you carefully read these instructions and gain a full understanding.

1. When designing, make it sure to secure as much longer lead wires as possible, and put lead wires and body to the nearest place where heat generates in order to ensure the thermosensitive functions. When using thermal cutoffs in equipment with winding functions such as transformers and motors, install the thermal cutoffs in places with good heat conductance, which will allow them to most directly sense the heat of the windings. Design equipment so that the bodies and both lead wires of thermal cutoffs are evenly heated. (Fig 1). Ensure that the stated Maximum / Normal Use temperature will not be exceed.

2. Appropriate insulation distances (clearances and creepage distances in accordance with IEC 60664-1) need to be kept between lead wires of the thermal cutoffs and other conductive materials.

3. When designing end products, be sure that thermal cutoffs are not installed in locations where they would be subject to severe or continuous vibration.

4. Design end products so that, after a thermal cutoff functions due to abnormal heating of the equipment, the thermal cutoff does not reach a temperature above its stated Maximum temperature limit owing to overshoots.

5. Install thermal cutoffs so that their function is triggered only by abnormally high temperatures.

6. Although thermal cutoffs are highly reliable, there are limits to the abnormal states with which a single thermal cutoff can cope. Further, if a thermal cutoff is damaged for some reason, it is possible that it will not break a circuit under abnormal conditions. If there is a possibility that personal or property damage would arise if a circuit is not broken during abnormal equipment operation (i.e. when there is a high required safety level), it is effective to add one or more thermal cutoffs with different temperature ratings.

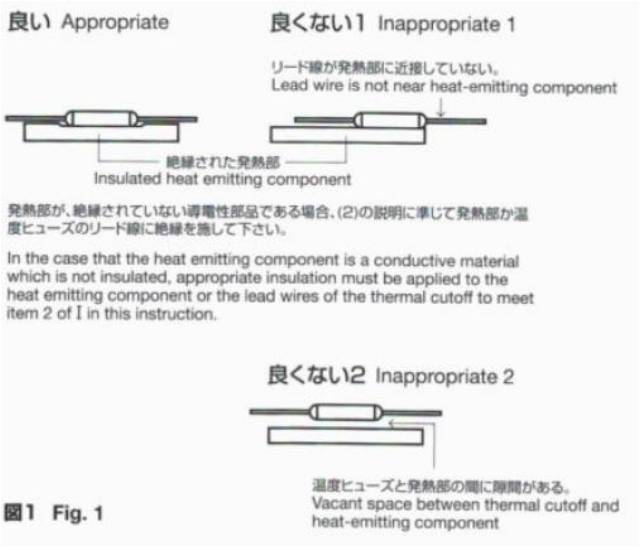


図1 Fig. 1

7. The mechanical strength and rigidity of the hardware used for mounting the thermal cutoff shall be adequate. Brackets, clamps or screws used for mounting the thermal cutoff shall withstand thrust and tensile forces, torques, vibrations and cyclic temperature changes expected during normal operating conditions of the equipment.

8. The mounted thermal cutoff shall be adequately protected from harmful effects produced by possible spillage of liquids from the equipment, for example by covers.

9. For sealing-in with impregnating fluids or use of cleaning solvents, investigation (trial tests) with prototypes and initial products is required to ensure that intended sealing or cleaning does not affect marking and function of the thermal cutoffs for each individual application.