Thermal Cutoffs *Axial type*

ELCUT 22 Series

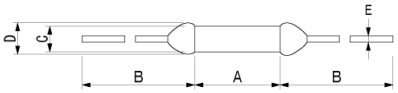
Not RoHS Compliant

Part Number	Rated Functioning Temperature Tf (°C)	Cut-off Temperature (°C) (Functioning Temperature)	Maximum Temperature Limit T_m (°C)	Holding Temperature Th Tc (°C)	Normal Use Temperature (°C)	Electrical Rating		Safety Standard Approval			
						Ampere (A)	Voltage (V)	UL	c-UL	CCC	PSE
221R	102	98 ± 3	200	83	76	4	250 AC	•	•	•	•
				79	76	5	125 AC	•	•	•	•
223R	130	126 ± 3	200	102	102	5	250 AC	•	•	•	•
					102	7	125 AC	•	•	•	•
225R	150	146 ± 3	200	123	120	5	250 AC	•	•	•	•
					120	7	125 AC	•	•	•	•

Features

- Non-resettable thermal cutoff which uses a fusible alloy for its thermal element.
- Extremely simple construction ensures reliability.
- Sealed thermal element reduces deterioration with age.
- Superior thermal sensitivity.
- Thermal element housed in an insulating container.

Diagram



Dimensions (mm)	A	B	C	D	E
Standard Lead	11.5 ± 0.5	37 ± 3	3.3 ± 0.2	3.6 or less	1.0 ± 0.05
Long Lead*	11.5 ± 0.5	67 ± 3	3.3 ± 0.2	3.6 or less	1.0 ± 0.05

* A "(L)" suffix in the part number indicates the long lead version

Distributed by:

CHATHAM COMPONENTS INC.
1221 US Highway 22 Suite 6, Lebanon, NJ 08833
◆Tel: 908-840-4428 ◆Fax: 908-840-4430 ◆website: www.cci-tco.com ◆email: info@cci-tco.com.

Cautions

Form Manufacturer's (Uchihashi Estec) CatLog V2001.9

These materials describe the cautions for using thermal cutoffs. If these cautions are not strictly observerd, thermal cutoffs may function at temperatures lower than the 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 the user, and not of Uchihashi Estec.

1. The electrical ratings 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 Normal use temperatures shown in Table 1.

Table 1

(unit:˚C)

Thermal cutoff rated functioning temperatures	Normal use temperatures						
Series	12 • 32 • X • U2 • S	22		44		6	
Rated Voltage	AC250V • AC125V	AC250V	AC125V	AC250V • AC125V	AC50V • DC50V	AC250V • AC125V	AC50V • DC50V
76	50	-	-	-	-	-	-
102	76	76	76	76	61	-	-
115	89	89	83	89	71	86	-
130	102	102	102	102	82	98	78
133	108	108	103	108	86	102	-
139	113	113	110	113	90	-	-
150	120	120	120	120	96	114	91
169	120	-	-	-	-	-	-
187	130	130	130	130	104	-	-

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 (mainly sulfurous acid gas and nitrogen oxide gas), in high or low pressure, or in high humidity 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 they will be 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 tests 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.

When used in special conditions described in above item 3. or 4., please consult a sales person of Uchihashi Estec.

APPLICATION INSTRUCTIONS FOR ELCUT THERMAL CUTOFFS

The following instructions include explanations of cautions to be observed in designing equipment for the installation 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 the thermal cutoffs, we ask that you carefully read these instructions and gain a full understanding.

I. Cautions to be observed when designing for use of thermal cutoffs

1. Ensuring that thermal cutoffs' thermosensitive functions are fully exercised requires that equipment be designed so that thermal cutoff lead wires are as long as possible. 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 (see Fig. 1)

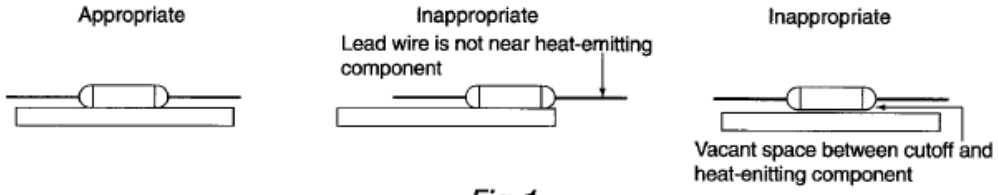


Fig.1

2. When designing end products, be sure that thermal cutoffs are not installed in locations where they would be subject to severe or continuous vibration.
3. 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 maximum temperature limit owing to overshoots.
4. Install thermal cutoffs so that their function is triggered only by abnormally high temperatures.
5. 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 properly 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.

II. Cautions to be observed when installing thermal cutoffs

1. Do not twist the body or lead wires (i.e. do not turn or rotate lead wires respect to the body).
2. Do not push lead wired toward, or pull them away from the thermal cutoff body at axial stresses exceeding those shown in Table 2 (room-temperature reference values). Values in Table 1 were calculated from lead wire diameter according to UL1020, CSA C22.2 No.209, EN60691 and IEC691.

Table 2

Series name	Maximum tension	Maximum pressure
6,32,44,U2,S	0.45 kg	0.14 kg
12	0.68 kg	0.18 kg
X	1.13 kg	0.36 kg
21,22	1.81 kg	0.45 kg

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 installatiion, 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 (see Fig.2).

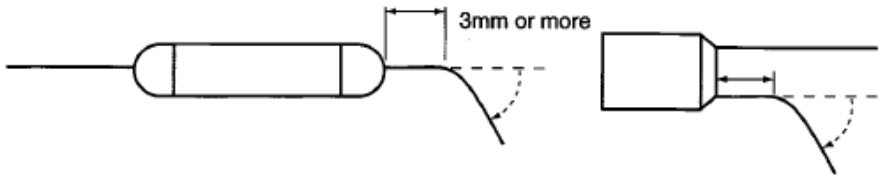


Fig.2

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.

III. Soldering and Welding cautions

1. Cautions to be observed when soldering and welding

   (a) 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 resoldering or rewelding is done before a thermal cutoff has cooled, the added heat may cause it to function. 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.

   (b) 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 normal usage temperature.
   Perform sampling inspections to make sure that connections have sufficient mechanical strength.

IV. 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.

Please observe the foregoing cautions. If a thermal cutoff is not properly used, it may function at a temperature lower that its function temperature, or it may not function even if it exceeds its functioning temperature.